TOWN OF GREENBURGH
TREE TECHNICAL MANUAL
STANDARDS AND SPECIFICATIONS

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“He who plants a tree, plants a hope.”
~ Lucy Larcom, Plant a Tree

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# Town of Greenburgh, NY

## Tree Technical Manual

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“The best time to plant a tree was 20 years ago. The next best time is now.”

~ Chinese Proverb

Photos: Town of Greenburgh Town Hall
1.0 INTENT AND PURPOSE

The Town of Greenburgh is home to a tremendous number of trees, including magnificent individual trees, large stands of trees, native trees and trees of significance, all of which provide the Town with a unique visual character. Trees remove carbon dioxide from the air, abate noise, impede soil erosion, assist in the prevention of flooding, and provide necessary shade and screening. Furthermore, trees act as natural barriers, support habitat for wildlife and provide green space. This promotes and sustains other environmental benefits, which result in advantageous microclimatic effects and a reduction in the use of fossil fuels. Aesthetically pleasing, trees also provide vital links to the natural world, soften the hard edges of developed areas, provide continuity in areas undergoing dynamic change, visually connect and define the character of neighborhoods, and enhance property values and the quality of life within the Town. These aesthetic, environmental and economic considerations reflect the critical need to retain and enhance the Town’s suburban forest. The aim of this Manual is to encourage tree retention and relocation, whenever feasible and desirable, combined with the planting of new trees and the responsible removal of trees that have become overgrown, are at the end of their life span, have become a hazard, are affecting buildings, or are substantially interfering with a permitted use of a property, all in an effort to enhance and improve the tree stock within the Town of Greenburgh. The Town is dedicated to the planting and protection of one of its greatest natural resources.

The Town of Greenburgh enacted its first Tree Ordinance, Chapter 56 entitled “Trees,” in 1974. The ordinance was created to regulate the removal of trees on certain properties within the community, and was later amended, in its entirety, in 1987. In 1991, the Town Code underwent a series of changes and Chapter 56 was reinstated as Chapter 260 of the Town Code entitled “Trees.” Chapter 260 was then amended in 2010 in order to regulate all properties within the Town to further improve tree management on both public and private property. The title of the chapter was changed to “Tree Preservation.”

Chapter 260 – Tree Preservation, is the Town’s chief regulatory tool to provide for responsible protection of Regulated Trees, to promote the health, safety, environment, ecosystems, community character, and general welfare of the residents of the Town of Greenburgh, to protect real estate values and to avoid substantial deleterious impacts on adjacent properties. Through the regulations and standards of care provided for in this Manual, the framework for preservation, protection, and
planting of trees is established. Together as a community we can assure that these invaluable resources remain significant contributions to the environment, streets and parks – and continue to help define the unique character of the Town of Greenburgh.

The Tree Technical Manual is a separately published document issued by the Town Board, through the Department of Community Development and Conservation, to establish specific technical regulations, standards and specifications necessary to implement the Ordinance, and to achieve the Town’s tree preservation goals. The aim of these goals is to provide quality and dependable care and function as benchmark indicators to measure achievement in the following areas:

- Ensure and promote preservation of the existing tree canopy cover within the Town;
- Provide standards of maintenance required for Regulated Trees;
- Establish criteria for determining when a tree is unsafe and a possible threat to the public health, safety and welfare;
- Encourage significant tree retention and relocation through innovative site planning that is responsive to existing vegetation;
- Provide a standardized content for Tree Reports required by the Town;
- Increase the survivability of trees during and after construction activities by providing protection standards and best management practices;
- Establish mitigation and replacement standards for trees permitted to be removed;
- Establish maintenance standards for new trees that are planted in the Town; and
- Enhance the existing tree stock in the Town.

The Town of Greenburgh Tree Technical Manual may be viewed on the Town’s website at www.greenburghny.com. The Manual also may be purchased from the Town of Greenburgh through the Office of the Town Clerk, located on the 1st floor of Town Hall, 177 Hillside Avenue, Greenburgh, New York 10607, phone 914.993.1500.
“We plant trees not for ourselves, but for future generations.”
~ Caecilus Statius, 220-168 B.C.

Photo: Red oak tree, Secor Road at Ferncliff Cemetery, Town of Greenburgh
2.0 INTRODUCTION—USE OF THE MANUAL

2.1 TOWN OF GREENBURGH REGULATED TREES

2.1.1 Town of Greenburgh Town Code

Chapter 260 - Tree Preservation, of the Town Code protects specific trees on public and private property from indiscriminate destruction or removal. This Tree Technical Manual establishes procedures and standards for the purposes of: (1) educating people who reside and conduct business within the Town; and (2) encouraging the protection, preservation, and planting of trees. Trees which are within the three categories listed below are classified as “Regulated Trees,” and must be maintained in accordance with the standards and regulations contained in this Manual. A permit from the Department of Community Development and Conservation, the Department of Public Works, or the Department of Parks and Recreation is required prior to removal of any Regulated Tree. Trees which do not fall within any of these categories may be maintained or removed without Town review or approval.

2.1.1.1 Protected Trees
* Any tree that is eight (8) inches DBH or greater.
* Any tree that is four (4) inches DBH or greater within a wetland, watercourse or wetland/watercourse buffer, as defined in Chapter 280 of the Town of Greenburgh Town Code.
* Any Tree of Significance, as defined in Chapter 260 of the Town of Greenburgh Town Code.
* Any tree designated by the New York State Department of Environmental Conservation as a protected native plant.

2.1.1.2 Public/Street Trees

All trees growing within the public street right-of-way, outside of private property, and all trees growing within the limits of a Town Park or on Town-owned property. For any encroachment activity proposed within the drip line of a tree located in the public street right-of-way, outside of private property, or any other Town-owned land (except a Town Park), a permit from the Commissioner, Department of Public Works is required prior to work commencing. For any encroachment activity proposed within the drip line of a tree located within a Town Park, a permit from the Commissioner, Department of Parks and Recreation is required prior to work commencing.

2.1.1.3 Designated Trees

All trees, when associated with a development project, which are specifically designated to be planted or preserved by the Town Board, Planning Board, Zoning Board of Appeals or Historic and Landmark Preservation Board.
2.2 REQUIRED PRACTICES

Required practices are to be implemented by the property owner, project applicant, certified arborist, licensed professional tree care company, landscape architect, contractor, agent or designee – and are the minimum standards by which the care of a Regulated Tree is to be administered.

Required practices identified throughout the Manual are reasonable measures that are consistent with best management practices in the tree care industry and are intended to promote healthy, structurally sound trees.

In all such cases, the Commissioner, Department of Community Development and Conservation, Commissioner, Department of Public Works, Commissioner, Department of Parks and Recreation or Town Forestry Officer shall, if justified by field conditions such as a conflict with utilities or through cause of a public nuisance, have the discretion to modify or add to any condition, practice or standard mentioned within the Manual.

2.3 RECOMMENDED PRACTICES

Recommended practices identified throughout the Manual are not mandatory, however, they provide additional proactive measures for the care of trees, such as fertilization, reduction of tree hazards, protection from specific disturbances, and procedures for pruning trees damaged during weather related events.

Note: A recommended practice may be required if it is so specified in a court order, within the conditions of approval for a tree removal permit or development project, or as mitigation for injury or disturbance.

In all such cases, the Commissioner, Department of Community Development and Conservation, Commissioner, Department of Public Works, Commissioner, Department of Parks and Recreation or Town Forestry Officer shall, if justified by changing field conditions such as a conflict with utilities or through cause of a public nuisance, have discretion to modify, redesignate or add to any condition, practice or standard mentioned within the Manual.

2.4 DEFINED TERMS

A selection of terms that are unique to the arboricultural and construction industries are defined to provide a uniform understanding of the words and concepts used and mentioned throughout this document. Words that are defined are noted in italics throughout the document and are found under Definitions, Section 3.0 of the Manual, and Section 260-2 of the Town of Greenburgh Town Code (see Appendix A).

2.5 APPENDICES
The appendices at the end of this *Manual* provide supplemental information referenced within the *Manual* and sources of technical information for specific or uncommon situations.

### 2.6 ASSUMPTIONS AND LIMITING CONDITIONS

* This *Manual* has been prepared as a guide. As such, the Town of Greenburgh expressly assumes no responsibility for matters legal in character regarding this *Manual*.

* Care has been taken to obtain reasonable information from reliable sources for this *Manual*.

* Visual aids contained within this *Manual*, such as sketches, diagrams, graphs, and photos, may not be created to scale and shall not be construed as engineered data for construction.

* This *Manual* has been crafted to conform with the current standards of care, best management practices, evaluation and appraisal procedures, diagnostic and reporting techniques and sound arboricultural practices as recommended by the sources listed in the bibliography.
“The best friend on earth of man is the tree. When we use the tree respectfully and economically, we have one of the greatest resources on the earth.”

~ Frank Lloyd Wright

Photo: American beech, Greenville Reform Church, Town of Greenburgh
3.0 DEFINITIONS

For the purposes of this Manual and interpretation of regulations, the following definitions shall apply:


3.2 APPLICANT – Any person, corporation, partnership, firm or any other entity making an application pursuant to Chapter 260 of the Town of Greenburgh Town Code.


3.4 APPROVAL AUTHORITY – The approving board that has established its role as the “Lead Agency” for carrying out the State Environmental Quality Review process relative to a development application, or the Town Forestry Officer, the Commissioner, Department of Public Works, or the Commissioner, Department of Parks and Recreation, whoever has jurisdiction over granting the approval of a tree removal permit.

3.5 ARBORIST REPORT – A report prepared by a certified arborist containing specific information on the species, size, location, condition, structure, height, crown integrity, crown spread, age, pruning history, presence of pests and disease, potential impacts of development and/or tree removal, recommended actions and mitigation measures regarding one or more trees on an individual lot or project site, which report includes the arborist’s signature and license number.

3.6 CAC – The Conservation Advisory Council, established pursuant to Chapter 520 of the Town of Greenburgh Town Code.

3.7 CERTIFIED ARBORIST – An individual who has obtained knowledge and competency through an accredited body including, but not limited to, the current International Society of Arboriculture arborist certification program, or is a member of the American Society of Consulting Arborists or a professional forester in the New York State cooperating consultant forester program, or is a member of the New Jersey Society of Certified Tree Experts, or is a licensed arborist with the State of Connecticut Department of Environmental Protection.

3.8 CLEAR CUTTING – The injury and/or removal of either, (1) 50% or more of trees from a property or, (2) such number of trees so that a property contains less than the number of tree units required for such property under Table 1. Tree Unit Minimum Standard Requirement Table, in Section 260-14. Clear cutting is a prohibited activity under Chapter 260 - Tree Preservation.
3.9 COMPACTION – Compression of the soil structure or texture by any means that creates an upper layer that is impermeable (see Soil Compaction Damage, Section 4.3.5.3).

3.10 CONTRACTOR – A person, corporation, partnership, firm or entity in possession of a valid home improvement license from the County of Westchester and valid Certificates of Insurance, including proof of liability for personal and property damage and worker’s compensation.

3.11 CRITICAL ROOT ZONE – The minimum volume of roots necessary for maintenance of tree health and stability. The critical root zone of a tree of significance is a circle with a radial distance of one and one-half feet for every one inch DBH. The critical root zone for all trees other than trees of significance is a circle with a radial distance of one foot for every one inch DBH with a minimum of eight feet.

3.12 CROWN – The area of a tree containing leaf or needle-bearing branches.

3.13 DEAD TREE – A tree that lacks vitality as may be indicated by rot, falling limbs, and/or lack of normal foliage.

3.14 DESIGNATED BUFFER AREA – An area, shown on an approved plan, designated by a board of the Town, which is to remain in its natural state and where no construction disturbance shall occur.

3.15 DESIGNATED TREE – A tree which is specifically selected to be preserved by the Town Board, Planning Board, Zoning Board of Appeals or Historic and Landmark Preservation Board.

3.16 DIAMETER AT BREAST HEIGHT (DBH) – The diameter of the tree trunk or sum of the trunks, at four and one-half feet above natural grade level. The diameter may be calculated by using the following formula: DBH = circumference at 4.5-feet divided by 3.142 \( \left( \frac{D}{C / \pi} \right) \).

3.17 DISTURBANCE – Any activity from construction or development, including removal of vegetation; excavation; fill; or any combination thereof, including the conditions resulting from any excavation or fill, that encompasses an area 500 square feet or greater, one dimension of which must be a minimum of 10 feet. For purposes of this definition, area measurements must be made along a horizontal plane from within the boundaries of a lot.

3.18 DRIP LINE – The outermost limit of the canopy of a tree as delineated by the perimeter of its branches and which, extended perpendicularly to the ground, encloses the tree.

3.19 ENCROACHMENT ACTIVITY – Any activity that is conducted on, or
encroaches on, adjacent public property or the public street right-of-way, including, but not limited to, land disturbing activities, building activities, installation of irrigation systems, sod installation, pesticide application, tree planting, tree pruning, and tree removal, which may impact the soil, vegetation (including trees), sidewalk, curb, path, driveway, landscape strip, road, utilities, or other infrastructure as determined by the Commissioner, Department of Public Works or the Commissioner, Department of Parks and Recreation.

3.20 EXCESSIVE PRUNING – Removing one-fourth (25 percent) or greater, of the functioning leaf, stem or root area of a tree. Excessive pruning is a prohibited activity under Chapter 260.

3.21 FALL ZONE – The area around a tree based on the topography, site conditions, wind and other factors that influence the natural direction where the entire tree or pieces of a tree, would land on a property.

3.22 FORESTRY OFFICER – An individual, who is a certified arborist that has expertise regarding trees, tree planting, and tree maintenance, appointed by the Town of Greenburgh Town Board to administer and enforce the provisions of Chapter 260.

3.23 GIRDLING – Any activity that injures the bark of a tree trunk, typically extending around much of the tree’s circumference.

3.24 GRADING – The alteration of topography through the removal, movement or addition of soil, fill, or other material.

3.25 HAZARDOUS TREE – A tree identified as structurally defective which posed or poses an imminent risk or increased likelihood that all, or part, of the tree would fail resulting in a risk of personal injury, death or property damage in the fall zone.

3.26 INJURY – Any act which significantly weakens the tree, or its stems, trunk or roots, which may also include, but is not limited to, the following listed acts: excessive pruning, girdling or partial girdling of the tree trunk, excavations within the critical root zone and/or compaction of the roots, raising or lowering the existing grade, or poisoning in any manner (including, but not limited to, the addition of paint, brine, oil, gasoline, toxins, petroleum products, concrete or stucco mix, dirty water, etc., to the ground around a tree), which list is not exclusive of other acts which may have deleterious results. Causing injury to a tree is a prohibited activity under Chapter 260 - Tree Preservation.

3.27 LICENSED PROFESSIONAL TREE CARE COMPANY – A business which has a current and valid Westchester County Home Improvement license, is registered with the Tree Care Industry Association (TCIA) or the International Society of Arboriculture (ISA) and employs at least one (1) certified arborist, and which carries valid certificates of insurance, including proof of liability coverage for personal and property damage and worker's compensation for work performed.
3.28 MONTHLY INSPECTION REPORT – A written report prepared by the property owner, certified arborist, architect, developer, landscape architect, builder, applicant or other designated individual to document that a monthly tree inspection or any other required measure by an approval authority has been accomplished. The certified arborist shall perform a site inspection to monitor the tree condition on a minimum interval of 4 weeks. The Forestry Officer shall be in receipt of the progress report during the first week of each calendar month until project completion.

MULCH – Organic matter composed of aged wood chips, pine straw, pine bark, leaves, compost, or a combination thereof, that is applied in a layer on the ground over the roots of a tree to retain soil moisture, improve soil texture, cover and suppress the growth of unwanted vegetation, increase soil nutrients, and provide a favorable habitat for beneficial organisms.

3.29 PERSON – Includes one or more persons, estates, trusts, receivers, cooperative associations, clubs, companies, firms, joint ventures, syndicates, corporations, partnerships, associations or any other entity and their respective agents.

3.30 PRIVATE TREE – Any tree privately owned and growing on private property.

3.31 PROTECTED ROOT ZONE – The area of land surrounding the trunk of a regulated tree which has been specifically delineated on a tree protection and preservation plan as approved by permit issued by the approval authority, or in the absence of such information, the area of land surrounding the trunk of a tree contained within a circle having a radius which is calculated by multiplying the diameter of the tree by eighteen (18).

3.32 PROTECTED TREE – Any tree that is eight (8) inches DBH or greater; or, any tree that is four (4) inches DBH or greater within a wetland, watercourse or wetland/watercourse buffer as defined in Chapter 280; or, any Tree of Significance, as defined in Chapter 260; or, any tree designated by the New York State Department of Environmental Conservation as a protected native plant.

3.33 PUBLIC/STREET TREE – Any tree growing within the public street right-of-way, outside of private property, and any tree growing within the limits of a Town Park or on Town property.

3.34 RECOMMENDED PRACTICE – Any action, treatment, technique or procedure that may be implemented for superior care or preservation of trees. Recommended practices may be required under specific conditions of approval for development projects or injury mitigation.

3.35 REGULATED TREE – Any Protected Tree, Public/Street Tree or Designated Tree.

3.36 REPLACEMENT PLANTINGS – Trees, shrubs, or other plants that may be
required by the approval authority, to mitigate the removal of a tree or trees on a site.

3.37 REQUIRED PRACTICE – A mandatory action, treatment, technique or standard of care required to be implemented by the property owner, developer, contractor or designee for superior care and/or the preservation of trees.

3.38 ROOT BUFFER – A temporary layer of material to protect the soil texture and roots (see Root Buffer, Section 4.2.5.2).

3.39 SITE PLAN – A drawing or set of drawings (e.g. property survey, site plan, grading plan, demolition plan, site improvement plan, utility plan, landscape plan) which shows existing site conditions and proposed landscape improvements, including trees to be removed, relocated and retained, and which shall include the following minimum information: surveyed tree location, species, size, drip line area (including trees located on neighboring property which overhang the project site) and public/street trees located within thirty (30) feet of the project site; paving, concrete, trenching or grade change located within any tree protection zone; existing and proposed utility pathways; surface and subsurface drainage and aeration systems to be used; walls, tree wells, retaining walls and grade change barriers, both temporary and permanent; landscaping, irrigation and lighting within the drip line of trees, including all lines, valves, etc.; location of other landscaping and significant features (e.g. wetlands, watercourses, rock outcroppings); and details for tree protection.

3.40 TARGET – A term used to include people, vehicles, structures or something subject to damage by a tree (see Hazardous Tree, Section 3.25).

3.41 TOPPING – The indiscriminate cutting back of tree branches to stubs or lateral branches that are not large enough to assume the terminal role, which can lead to branch dieback, decay, and unstable sprout production from the cut ends, resulting in a potentially hazardous situation once the sprouts become large and heavy. Other names for topping include “heading,” “tipping,” “hat-racking,” and “rounding over.” Topping is a prohibited activity under Chapter 260 - Tree Preservation.

3.42 TREE – Any woody plant of a species which has a single trunk or multiple trunks.

3.43 TREE APPRAISAL – A method of determining the appraised value of a tree (see Tree Reports, Section 8.0).

3.44 TREE INVENTORY – A comprehensive list or chart of individual trees on a project site which provides information including the species, size, and overall condition, and which shall provide a number for each tree which correlates with the number provided on the site plan and within the arborist report.

3.45 TREE OF SIGNIFICANCE – A tree with unique or noteworthy characteristics or intrinsic value, including, but not limited to, species, age, location,
Notes

historical significance, ecological value, and/or aesthetics, or a tree with a DBH of 30 inches or more.

3.46 TREE PROTECTION AND PRESERVATION PLAN – A drawing prepared and stamped by a landscape architect, professional engineer or land surveyor licensed in the State of New York, which provides accurate trunk locations and drip line areas of all trees or groups of trees to be preserved within a construction/development area. In addition, for all regulated trees the plan must accurately identify the trunk diameter, drip line and species of the tree, and clearly indicate the tree protection zone to be enclosed with the specified tree protection fencing as a bold dashed line.

3.47 TREE PROTECTION AND PRESERVATION REPORT – A written report prepared by a certified arborist, which outlines measures to protect and preserve trees on a property (see Tree Protection and Preservation Report, Section 4.2.2 and Tree Reports, Section 8.0). This report shall include requirements for pre-construction; treatments during demolition and/or construction; methods of avoiding injury; the establishment of a tree protection zone for each tree (see TPZ formula in 3.48 below); a tree monitoring and inspection schedule; and shall provide for continued maintenance of those trees after construction according to the requirements in this Manual.

3.48 TREE PROTECTION ZONE (TPZ) – The area of temporary fenced tree enclosure reserved around a tree or group of trees in which no grading, access, stockpiling or other deleterious activity shall occur, unless otherwise approved. A TPZ must be identified for each tree to be retained, and be shown on all applicable site plans for a development project. Prohibited and permitted or required activities within the TPZ are outlined in Sections 4.2.5.1 and 4.2.5.2.

Determining the TPZ. Unless otherwise specified, the approved minimum TPZ shall be formulated in the following way: the TPZ radius shall be 10 times the DBH of the trunk (see Drip Line, Section 3.18). For example, a 12-inch DBH = a 120-inch (10-foot) radius from the perimeter of the trunk – or a 20-foot TPZ. In all cases, the minimum TPZ for any tree to be retained shall be 12-feet. The Approval Authority retains discretionary right to extend or modify the TPZ at any time.

3.49 TREE PROTECTION FENCE – A temporary enclosure, consisting of chain link fence, a minimum of six (6) feet in height, mounted on two inch diameter galvanized iron posts, driven into the ground to a depth of at least 2-feet at no more than 10-foot spacing, erected around a tree to be protected at the boundary of the tree protection zone, or approved alternate fence as authorized by the approval authority (see Tree Protection Fencing, Section 4.2.6).

3.50 TREE PRUNING – The removal or reduction of certain plant parts that are not required or are no longer effective, in order to retain or improve the tree’s health, natural habit, balance, stature, value and contribution to the landscape design.
3.51 TREE, PUBLIC NUISANCE – Either an individual tree or shrub on any private property or in any public street right-of-way, town park or other town-owned land, or a specific type of species, which is apt to destroy, impair or otherwise interfere with, any street improvements, sight distance requirements, sidewalks, curbs, public/street tree, gutters, sewers, or other public improvements, including above and below ground utilities.

3.52 TREE REMOVAL – The complete removal of a tree, such as cutting to the ground or extraction of the tree.

3.53 TREE REMOVAL PERMIT – A permit issued by the approval authority granting permission to remove a regulated tree or trees.

3.54 TREE REPORT – A document submitted to the Town for review that is prepared by a certified arborist retained by the property owner or agent.

(A) Letter Report. A ‘letter report’ shall provide a brief description of the tree, and information to determine whether or not the tree is dead, dying, diseased, hazardous or constitutes a public nuisance (see Tree Reports; Tree Protection and Preservation Report and Tree Appraisal, Section 8.00).

(B) Tree Survey Report. In the case of a development approval, a tree survey report is required to provide information about all trees on the site including: inventory of all trees, species (must provide Latin and common name - “unknown” is unacceptable), size, location, condition, structure, height, crown integrity, crown spread, age, pruning history, presence of pests and disease, maintenance needs, potential impacts of disturbance, recommended mitigation measures, tree appraisal value, etc. (see Tree Reports; Tree Protection and Preservation Report and Tree Appraisal, Section 8.00). The ‘tree survey report’ shall include a list of all trees removed within the past twelve (12) months from the property.

3.55 TREE TECHNICAL MANUAL – This document.

3.56 TRENCHING – Any excavation to provide irrigation, install foundations, utility lines, services, pipe, drainage or other property improvements below grade. Trenching within the TPZ is injurious to roots and tree health and is prohibited, unless specifically permitted by the approval authority and performed under the supervision of a certified arborist.

3.57 VERTICAL MULCHING – Augering, hydraulic or air excavation of vertical holes within a tree’s protected root zone to loosen and aerate the soil, typically to mitigate compacted soil. Holes are typically penetrated 4 to 6 feet on center, 2 to 3 feet deep, 2 to 6 inches in diameter and backfilled with either perlite, vermiculite,
“People who will not sustain trees will soon live in a world which cannot sustain people.”

~ Bryce Nelson

Photo: Tree preservation on a construction site, Town of Greenburgh
4.0 – PROTECTION OF TREES DURING CONSTRUCTION AND DEVELOPMENT

4.1 INTRODUCTION

Successful tree protection and preservation occurs when the goals of a development project are achieved with minimal impact to trees designated for retention. Success is measured over time, when trees continue to flourish, for many years after development has occurred. In order for this to take place, decisions regarding tree protection and preservation should be left to a professional who is knowledgeable in all areas with respect to trees - either a certified arborist, landscape architect or licensed professional tree care company representative. These professionals understand how trees grow, both as individuals and in groups. They understand the processes of design and development, as well as the methods of construction. Additionally, they know how trees respond to changes in the physical environment imposed by land development. Finally, they understand that tree preservation requires a commitment by all parties involved in the process—from the applicants’ team to the decision making bodies, along with active members of the community.

Trees differ in their capacity to adapt to altered growing conditions. Healthy, vigorous trees are better able to tolerate impacts such as mechanical injury, soil compaction, changes in soil conditions, existing grade and soil moisture, and microclimatic changes, than trees in poor condition. Mature, healthy trees have established, stable biological systems in the preexisting physical environment. Disruption of this environment by construction and development activities interrupts a tree’s physiological processes causing weakening of energy reserves and a decline in vigor, often resulting in the tree’s death. This reaction may develop from one (1) to ten (10) years or more after disruption, making it difficult to prove the cause and effect relationship of such activities. The tree protection regulations and standards set forth in this manual are intended to guide construction and development projects to insure that appropriate practices will be implemented in the field to eliminate undesirable consequences that may result from uninformed or careless acts, and to preserve both trees and property values in the Town of Greenburgh.

The purpose of this section is to provide information which, when implemented appropriately, will reduce the harmful impacts of construction and development on trees to a minimal level.

Typical negative impacts that may occur during construction and development include:

* Mechanical injury to roots, trunk or branches
* Compaction of soil, which disrupts the functioning root system, inhibits the development of new roots, and also restricts drainage
Notes
* Changes in existing grade which can sever or suffocate roots
* Alteration of the water table – either raising or lowering
* Microclimate change, exposing sheltered trees to sun and/or wind
* Sterile soil conditions, associated with stripping off topsoil.

Construction and development projects requiring disturbance within the drip line of regulated trees are required to implement the protective practices described in this Section.

4.2 PRE-CONSTRUCTION REQUIREMENTS

The following steps must take place prior to building permit issuance, or when noted, prior to the commencement of any site work.

4.2.1 Tree Protection and Preservation Plan
On the tree protection and preservation plan submitted for the project, the applicant shall plot the accurate trunk locations and drip line areas of all trees or groups of trees to be preserved within the construction/development area. In addition, for all regulated trees to be preserved, the plan must accurately identify the trunk diameter and drip line, and clearly indicate the tree protection zone to be enclosed with the specified tree protection fencing as a bold dashed line.

4.2.2 Tree Protection and Preservation Report
In addition to the tree protection and preservation plan, a property owner shall have a tree protection and preservation report prepared and submitted if any disturbance is proposed within the drip line of a protected or designated tree (see Definitions, Section 3.47 and Tree Reports, Section 8.0). The report must be prepared by a certified arborist to: (1) assess impacts to trees; (2) recommend mitigation measures to reduce impacts to a minimal level; and, (3) identify guidelines to be followed throughout all phases of a construction and development project. Projects protecting only public/street trees with fencing (see Tree Protection Fencing, Section 4.2.6) are exempt from preparing a tree protection and preservation report.

4.2.3 Pre-construction meeting
The applicant, certified arborist, contractor, licensed professional tree care company representative, construction superintendent and other pertinent personnel are required to meet with the Forestry Officer and Building Inspector or designee, in order to review procedures, tree protection measures and to establish haul routes, staging areas, wash-out areas, contacts, watering and mulching requirements, etc.

4.2.4 Pre-construction treatments
Prior to site work commencing, a number of activities may be implemented if deemed appropriate by the certified arborist to invigorate trees and thereby increase their tolerance of construction impacts. The applicability of each to a
given situation depends on the amount of time available for treatment and tree response before construction begins, as well as the condition of the tree, its history of care, and its potential to respond to treatment. The goal is to maximize stored carbohydrates and the effectiveness of growth regulators in the tree to quickly produce new root, shoot, and adaptive growth and to compartmentalize and seal off wounds. Appropriate treatments shall be applied as early as possible since mature trees need time to respond.

4.2.4.1 Irrigation

Providing supplemental irrigation for trees under drought stress may be the single most important treatment. Irrigation systems should be designed to saturate the soil within the **tree protection zone** to the depth of the root system and to replace that water once it is depleted. Light, frequent irrigations should be avoided.

Illustration 4-1: Drip irrigation
*From: Town of Greenburgh Library*

4.2.4.2 Fertilization

The need for supplemental fertilization depends on the history of care of the tree. In general, fertilizing is recommended if the tree has been growing slowly, has poor color, or if the leaf litter (leaves on the ground surrounding the tree) has been removed. Type, amount, and method of fertilization should be left to a **certified arborist** or **licensed professional tree care company** representative.

4.2.4.3 Pest Control

Pests that significantly affect tree health should be controlled both before and during construction. For example, pests that have the ability to defoliate trees and stimulate production of new leaves at the expense of stored carbohydrates should be handled appropriately. **Certified arborists** have the knowledge and expertise to determine when pest populations reach maximum allowable thresholds requiring control measures to be implemented.
4.2.5 Tree Protection Zone (TPZ)
Each tree to be retained on a site shall have a designated TPZ identifying an area sufficiently large enough to protect the tree and roots from disturbance. The required TPZ area can be determined by the formula outlined (see Definitions, Tree Protection Zone, Section 3.48). The TPZ shall be shown on the approved Tree Protection and Preservation Plan for the project. Improvements or activities such as paving, utility and irrigation trenching and other supplemental activities must occur outside the TPZ, unless authorized by the approval authority and performed under the supervision of a certified arborist. Unless otherwise specified, tree protection fencing shall serve as the TPZ.

4.2.5.1 Activities prohibited within the TPZ include:

* Storage or parking of vehicles, equipment, building materials, refuse, excavated spoils or the storage or dumping of poisonous materials on or around trees and roots. Poisonous materials include, but are not limited to, paint, brine, oil, gasoline, toxins, petroleum products, concrete or stucco mix, dirty water or any other material which may be harmful to the health of a tree or trees.

* The use of tree trunks as a winch support, anchorage, as a temporary utility pole, sign posts or other similar function.

* Attaching any object to any tree designated for protection or preservation.

* Cutting of tree roots by utility trenching, foundation digging, placement of curbs and trenches and other miscellaneous excavation without prior written authorization by the approval authority. If so approved, these activities shall only be performed under the supervision of a certified arborist.

* Soil disturbance or a change in grade (see Grading Limitations, Section 4.3.2 and Trenching, Section 4.3.3).

* Drainage changes.

4.2.5.2 Activities permitted or required within the TPZ include:

* Mulching. Prior to construction, organic mulch may be spread within the TPZ to a depth of 2- to 4-inches, leaving the trunk clear of mulch, to help prevent inadvertent compaction, moisture loss, bacterial or fungal infections, adventitious roots and possible trunk decay from occurring. The broader the mulched area, the more effective it will be at reducing competition from other plants and retaining moisture. The actual size of the area to be mulched depends on the size of the tree. For a 1- to 2-inch
DBH tree, a mulch circle of at least 6 feet in diameter is recommended. For larger DBH trees, mulching out to the *drip line* is recommended if possible. Do not place black plastic under the mulch - this restricts water movement and oxygen availability to the roots. Mulch may be removed if improvements or other landscaping is required.

* Root Buffer. When areas under the tree canopy cannot be fenced, a temporary buffer is required and shall cover the *protected root zone* and remain in place at the specified thickness until final grading occurs *(see Definitions, Section 3.38, and Heavy Equipment, Section 4.3.3.4).*

* Irrigation, aeration, fertilizing, *vertical mulching* or other beneficial practices that have been specifically approved for use within the TPZ, by the *approval authority.*

* Erosion Control. If a tree is adjacent to or in the immediate proximity to a grade slope of 10% or more, then approved soil erosion control measures and/or silt fencing must be installed outside the TPZ to prevent siltation and/or erosion within the TPZ.

**4.2.6 Tree Protection Fencing for Protected Trees, Public/Street Trees and Designated Trees**

Fenced enclosures shall be erected around trees to be protected to achieve three main goals: (1) to keep the *crown* and branching structure clear from contact by equipment, materials and activities; (2) to preserve roots and soil conditions in an intact, healthy and non-compacted state, and; (3) to identify the *tree protection zone* (TPZ) in which no soil *disturbance* is permitted and other activities are restricted, unless otherwise approved in writing by the Town *(see Tree Protection Zone, Section 3.48 and 4.2.5).*

**4.2.6.1 Size and Type of Fence.**

All trees to be preserved shall be protected with six foot (6’) high chain link fence. Fences are to be mounted on two inch diameter galvanized iron posts, driven into the ground to a depth of at least 2-feet at no more than 10-foot spacing *(see Public Works Department Detail #XX, Appendix B).* This detail shall appear on all *site plans*, and shall also be provided on the approved *tree protection and preservation plan.*

**4.2.6.2 Area to be Fenced.**

**4.2.6.2.1 Drip Line Tree Protection**

The fencing shall enclose the entire area under the *drip line* or, if different, the *TPZ* of the tree(s) to be protected and preserved, throughout the life of the project, or until final improvement work within the area is required, typically towards the end of the project, and only with authorization from the *Forestry Officer* *(see Illustrations 4-2 and 4-3).*
Parking Areas: If the fencing must be located on paving or sidewalk that will not be demolished, the posts may be supported by an appropriate grade level concrete base.

4.2.6.2.2 Planting Strip Tree Protection
For trees situated within a narrow planting strip, only the planting strip shall be enclosed with the required chain link protective fencing in order to keep the sidewalk, street and/or parking area open for public use (see Illustration 4-4).

4.2.6.2.3 Tree Well/Planter Pit Tree Protection
Trees situated in a small tree well or sidewalk planter pit shall have the trunk protected with strapped-on planking to a height of eight (8) feet or to the limits of the lowest branches, whichever is greater. Similarly, such protection shall be required for any tree trunks that are within five (5) feet of construction activities. During installation of the wood slats, caution must be used to avoid damaging any bark or branches. Major scaffold limbs may also need protection as directed by the Forestry Officer.

Illustration 4-5: Trunk protection
*From: Round Rock, TX*

4.2.6.3 Duration.
Tree protection fencing shall be erected prior to site work commencing and remain in place until a final inspection is conducted by the Town, except for work specifically required as provided for on the approved site plans, in which case the certified arborist, Forestry Officer and/or Commissioner, Department of Public Works or Commissioner, Department of Parks and Recreation (in the case of public/street trees) must be consulted. Removal of tree protection fencing without Town approval will result in the issuance of a
stop work order, and penalties or fines imposed by the Town of Greenburgh Justice Court if corrective measures are not immediately taken.

4.2.6.4 ‘Warning’ Sign.
A warning sign shall be prominently displayed on each fence surrounding a tree or group of trees. The sign shall be a minimum of 8.5 x 11-inches and clearly state:

WARNING - Tree Protection Zone - DO NOT ENTER - This tree is valued at $ (insert value of tree).

Illustration 4-6: Warning sign example
From: Seattle, WA

4.2.7 Tree Pruning, Tree Surgery and Tree Removal prior to Construction
Prior to construction, various trees may require that branches be pruned clear from structures, activities, building encroachment or may need to be strengthened by means of mechanical support (cabling and/or bracing) or surgery. The most compelling reason to prune is to develop a strong, safe framework and proper tree structure. Such pruning, surgery or removal of trees shall adhere to the following standards:

4.2.7.1 Pruning limitations.

4.2.7.1.1 Minimum Pruning
If the certified arborist, landscape architect or licensed professional tree care company representative recommends that trees be pruned, and the type of pruning is left unspecified, the standard pruning shall consist of ‘crown cleaning’ as defined by ISA Pruning Guidelines (see Types of
Pruning, Section 7.5.4). Trees shall be pruned to reduce hazards and develop a strong, safe framework.

4.2.7.1.2 Maximum Pruning
Maximum pruning shall only occur in the rarest situation approved by the Forestry Officer after discussion with the applicant’s certified arborist, landscape architect or licensed professional tree care company representative. No more than one-fourth (25 percent) of the functioning leaf and stem area may be removed within one calendar year of any regulated tree, and no removal of foliage may occur so as to cause the unbalancing of the tree. It must be recognized that trees are individual in form and structure, and that pruning needs may not always fit strict rules. The certified arborist, landscape architect or licensed professional tree care company representative shall assume all responsibility for special pruning practices that vary from the standards outlined in this manual (see Excessive Pruning, Section 3.20).

4.2.7.1.3 Tree Workers
Pruning shall not be attempted by construction or contractor personnel. All pruning must be performed by a certified arborist or licensed professional tree care company worker, according to specifications contained within this Manual (see Pruning Mature Trees, Section 7.5).

4.2.7.2 Surgery.
Prior to construction activities commencing, if it is advisable to promote health and prolong the useful life or structural characteristics of trees, then they shall be provided the appropriate treatments (e.g. cavity screening, bark tracing, wound treatment, cables, bracing rods or pole supports) as specified by the certified arborist (see ANSI A-300, Appendix C).

4.2.7.3 Tree removal procedure.
When regulated trees are approved for removal and adjacent trees that are to be preserved (as shown on the approved Tree Protection and Preservation Plan) must be protected, then the following removal practices apply:

4.2.7.3.1 Tree Removal
Removal of trees that extend into the branches or roots of regulated trees to be retained shall not be attempted by demolition or construction personnel, grading or other heavy equipment. A certified arborist or licensed professional tree care company worker shall remove the tree carefully in a manner that causes no damage above or below ground to trees that are to be protected and preserved.

4.2.7.3.2 Stump Removal
Before performing stump extraction, the contractor, certified arborist and/or licensed professional tree care company representative shall first
consider whether or not roots may be entangled with trees that are to remain. If so, these stumps shall have their roots severed prior to extraction. Tree removal shall include the grinding of stump and roots to a minimum depth of 12-inches but expose soil beneath the stump to provide drainage.

4.2.8 Inspection Schedule for Development Projects
The certified arborist, landscape architect or licensed professional tree care company retained by the applicant must conduct the following required inspections of construction sites containing protected and designated trees. Inspections shall verify that the type of tree protection and replacement plantings are consistent with the procedures and standards outlined within this Manual and conditions of approval for development projects. For each required inspection or meeting, a written summary of the changing tree related conditions, actions taken, and any other pertinent information must be provided to the Forestry Officer.

4.2.8.1 Inspection of Tree Protection Fencing.
The Forestry Officer must be in receipt of a written statement from the certified arborist or licensed professional tree care company verifying that s/he has conducted a field inspection of the trees and that the tree protection fencing is in place prior to any site work commencing, unless otherwise authorized by the approval authority.

4.2.8.2 Inspection of Rough Grading.
The certified arborist or licensed professional tree care company representative must perform an inspection during the course of rough grading adjacent to the TPZ to ensure trees will not be injured by compaction, cut or fill, drainage and trenching, and if required, inspect aeration systems, tree wells, drains and special paving. The contractor must provide the certified arborist or licensed professional tree care company with at least 48 hours advance notice of such activity so that an inspection can take place.

4.2.8.3 Monthly Inspections.
The certified arborist or licensed professional tree care company representative must perform monthly inspections to monitor changing conditions and tree health. The Town Forestry Officer must be in receipt of an inspection summary during the first week of each calendar month, or immediately if there are any necessary changes to the approved site plans or protection measures (see Definitions, Monthly Inspection Report, Section 3.28).

4.2.8.4 Activity within the Tree Protection Zone.
Any disturbance within the TPZ requires authorization from the approval authority and direct onsite supervision by the certified arborist or licensed professional tree care company representative (see Trenching, Excavation and Equipment Use, Section 4.3.3).
4.2.8.5 Landscape Architect/Certified Arborist Inspection.

For development projects, prior to issuance of a temporary or final certificate of occupancy or completion, the applicant or contractor must request the landscape architect or certified arborist to perform an on-site inspection of all plant stock, quality of the materials, and proper planting practices, and to determine if the irrigation is functioning consistent with the approved site plans. The Forestry Officer must be in receipt of written verification of landscape architect/certified arborist approval prior to scheduling the final inspection, unless otherwise authorized by the approval authority.

4.2.8.6 Final Town Inspection.

Only after all of the above inspections are completed to the satisfaction of the Town Forestry Officer, shall a final town inspection be scheduled. The final inspection will be conducted on-site and include the applicant, certified arborist, contractor, licensed professional tree care company representative, construction superintendent, Town Forestry Officer, Town Consultant, Building Inspector or designee, and/or other pertinent personnel.

4.3 CONSTRUCTION AND DEMOLITION ACTIVITIES NEAR TREES

Soil disturbance or other harmful and damaging activity within any designated tree protection zone (TPZ) is prohibited unless approved in writing by the approval authority based on a tree report submitted by the applicant’s certified arborist. If injury to a tree occurs unintentionally, or soil disturbance has been specifically permitted under project approval, then the following mitigation is required:

4.3.1 Soil Compaction

If compaction of the soil occurs, it must be mitigated as outlined in Soil Compaction Damage, Section 4.3.5.3 and/or Soil Improvement, Section 7.9.

4.3.2 Grading Limitations within the Tree Protection Zone

* Grade changes within the TPZ are not permitted without specific written approval from the Town.
* Grade changes under specifically approved circumstances shall not allow more than 6-inches of clean fill soil added or allow more than 4-inches of existing soil to be removed from natural grade unless mitigated.
* Grade fills over 6-inches, or impervious surface overlay, shall incorporate an approved permanent aeration system, permeable material or other approved mitigation.
* Grade cuts exceeding 4-inches shall incorporate retaining walls or an appropriate transition equivalent, subject to approval by the Bureau of Engineering.
* Grade changes outside of the TPZ shall not significantly alter drainage to the tree.
4.3.3 Trenching, Excavation and Equipment Use

Trenching, excavation or boring activity within the TPZ of trees to be retained on a project site is restricted to the following activities, conditions and requirements, if permitted by the approval authority. Mitigating measures shall include prior notification to and direct supervision by a certified arborist.

4.3.3.1 Notification. Contractor shall notify the certified arborist and Forestry Officer in writing, a minimum of 24 hours in advance of the activity within the TPZ. The activity shall be specified, and measures to protect the tree to be impacted must be spelled out prior to commencement of the work. All work must be performed under the supervision of the certified arborist.

4.3.3.2 Root Severance. Roots that are encountered shall be cut to sound wood and repaired (see Root Injury, Section 4.4.1.1). Roots 2-inches and greater in diameter must remain injury free.

4.3.3.3 Excavation. Any approved excavation, demolition or extraction of material shall be performed with equipment located outside the TPZ. Methods permitted are by hand digging, hydraulic or pneumatic air excavation technology and shall only be performed under the supervision of a certified arborist. Excavation within the TPZ during hot, dry weather is not permitted.

* If excavating or trenching for drainage, utilities, irrigation lines, etc., it is required that the contractor tunnel under any roots 2-inches in diameter and greater.
* Prior to excavation for foundation/footings/walls, grading or trenching within the TPZ of a tree to be retained, roots shall first be severed cleanly 1- foot outside the TPZ and to the depth of the future excavation, which work must be performed under the supervision of a certified arborist. The trench must then be hand dug and roots pruned with a saw or narrow trencher with sharp blades, or other approved root pruning equipment so as to leave a clean cut.

4.3.3.4 Heavy Equipment. Use of backhoes, steel tread tractors or any heavy vehicles within the TPZ is prohibited unless written approval is provided by the approval authority. If permitted, a protective root buffer (see Root Buffer, Section 4.2.5.2 and Damage to Trees, Section 4.4) is required. The protective buffer shall consist of a base course of tree chips spread over the root area to a minimum of 6-inches in depth, layered by 3/4-inch gravel to stabilize 3/4-inch plywood on top. This buffer within the TPZ must be maintained until all disturbance within the TPZ is complete, and tree protection fencing has been installed. If this does not occur, then the root buffer must be maintained throughout the entire construction process.
4.3.3.5 Structural Design. If harmful activity or disturbance of roots greater than 2-inches in diameter will occur within the TPZ, site plans shall specify a design of special foundation, footing, walls, concrete slab or pavement designs subject to Building Department approval. Discontinuous foundations such as concrete pier and structural grade beam must maintain natural grade (not to exceed a 4-inch cut), to minimize root loss and allow the tree to use the existing soil. Basement excavations shall be designed outside the TPZ of all protected and designated trees (see Excavation, Section 4.3.3.3) and shall not be injurious to other mature or neighboring property trees, or any public/street trees.

4.3.4 Trenching & Tunneling

Trenches shall be routed outside the tree protection zone whenever possible. If trenching or pipe installation has been approved within the TPZ of a tree to be retained, then the work must be performed under the supervision of a certified arborist. The trench shall be either cut by hand, by air excavation, hydraulic vac-on excavation or, by mechanically boring a tunnel under the roots with a horizontal directional drill and hydraulic or pneumatic air excavation technology. Soil removed from the trenches should be placed on the side away from trees, and replaced as soon as possible. In all cases, the contractor must install the utility pipe immediately, backfill with good quality soil and soak within the same day.

The method by which trenches are routed across root systems of trees can greatly reduce the percentage of roots severed. For electric, gas, telephone and cable television, as well as service drops for water and sewer, an alternative to open trenching is tunneling. Tunneling under root systems can greatly reduce both damage to trees and the cost to repair landscape and other features destroyed in the trenching process. Installation of private utility improvements shall be tunnel bored beneath the tree and roots per Table 4-1.

4.3.4.1. Public Utilities. Underground public utility improvements or repairs shall be performed in accordance with the requirements of the Commissioner, Department of Public Works.

4.3.4.2 Public/Street Trees. Exclusions for public/street trees in the publicly owned right-of-way (ROW).

* Public/Street Trees that are in conflict with utility infrastructure where the conflict cannot be resolved may be removed if approved by the Commissioner, Department of Public Works (e.g., a tree located directly on top of a damaged sanitary sewer lateral).

* Emergency utility repairs approved by the Commissioner, Department of Public Works, shall be exempt from the above restriction zones within the TPZ.
TABLE 4-1
Trenching & Tunneling Distance

<table>
<thead>
<tr>
<th>TRENCING DISTANCE</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the DBH at 4.5 feet is:</td>
<td>Bore pits shall be located at a minimum distance as specified by the trenching distance table above.</td>
</tr>
<tr>
<td>6-9”</td>
<td>10’</td>
</tr>
<tr>
<td>10-14”</td>
<td>10-14’</td>
</tr>
<tr>
<td>15-19”</td>
<td>15-19’</td>
</tr>
<tr>
<td>Over 19”</td>
<td>20’+</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPTH OF TUNNELING</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Diameter</td>
<td>Depth of Tuneling</td>
</tr>
<tr>
<td>9” or less measured at 4.5’</td>
<td>2.5’</td>
</tr>
<tr>
<td>10-14” measured at 4.5’</td>
<td>3.0’</td>
</tr>
<tr>
<td>15-19” measured at 4.5’</td>
<td>3.5’</td>
</tr>
<tr>
<td>&gt; 19” measured at 4.5’</td>
<td>4.0’</td>
</tr>
</tbody>
</table>

4.3.5 Injury Mitigation
A mitigation program must be submitted and approved by the Town if the approved development project will cause drought stress, dust accumulation or soil compaction to trees that are to be retained on a site. To help reduce impact injury to a tree, one or more of the following mitigation measures shall be implemented and supervised by the certified arborist or licensed professional tree care company representative as follows:

4.3.5.1 Irrigation Program. Irrigate to wet the soil within the TPZ to a depth of 24 to 30-inches. In the alternative, apply sub-surface irrigation at regular specified intervals by injecting on approximate 3-foot centers, 10- gallons of water per inch DBH, within the TPZ. Duration shall be until project completion or monthly until seasonal rainfall totals at least 12-inches of rain, unless specified otherwise by the certified arborist in consultation with the Town Forestry Officer.

4.3.5.2 Dust Control Program. During periods of extended drought, wind or grading, spray wash trunk, limbs and foliage to remove accumulated construction dust.

4.3.5.3 Soil Compaction Damage. Compaction of the soil is the largest killer of trees on construction sites due to suffocation of roots and ensuing decline
of tree health. If a compaction event to the upper 12-inch soil horizon within the tree protection zone has or will occur by any means, then one or more of the following mitigation measures must be implemented (see Compaction and Grade Change, Sections 4.3.1 and 4.3.2, and Soil Improvement, Section 7.9).

4.3.5.3.1 **Type I Mitigation.** If an approved paving, hardscape or other compromising material encroaches within the TPZ, an aeration system shall be designed by the certified arborist or landscape architect and used within this area (subject to approval by the Forestry Officer).

4.3.5.3.2 **Type II Mitigation.** If inadvertent compaction of the soil has occurred within the TPZ, the soil shall be loosened by one or more of the following methods to promote favorable root conditions: vertical mulching, soil fracturing, core-venting, radial trenching, air excavating or other method approved by the Forestry Officer (see Soil Improvement, Section 7.9).

4.3.5.3.3 **Type III Mitigation.** For Town-owned improvements in the right-of-way, areas within the TPZ that will be improved (e.g., asphalt, concrete or pavement) the soil shall be compacted to 95% proctor density. For unimproved areas (e.g., grass, open landscape strip, etc.) the soil in the TPZ shall not exceed 85% by water jet compaction.

4.4 DAMAGE TO TREES

4.4.1 **Reporting**

Any damage or injury to a tree shall be reported within 6-hours to the certified arborist, landscape architect or licensed professional tree care company representative, and Town Forestry Officer or Building Inspector so that mitigation can take place. All mechanical or chemical injury to branches, trunk or to roots 2-inches and greater in diameter shall also be reported in the monthly inspection report. In the event of injury, the following mitigation and damage control measures shall apply:

4.4.1.1 **Root injury:** If trenches are cut or tunnels are bored and tree roots 2-inches in diameter or larger are encountered they must be cleanly cut back to a sound wood lateral root under the supervision of a certified arborist. All exposed root areas within the TPZ shall be backfilled or covered within one (1) hour. Exposed roots may be kept from drying out by temporarily covering the roots and draping layered burlap or carpeting over the upper 3-feet of trench walls. The materials must be kept wet until backfilled to reduce evaporation from the trench walls.

4.4.1.2 **Bark or trunk wounding:** Current bark tracing and treatment methods shall be performed by a certified arborist or licensed professional tree care company worker within two (2) days.
4.4.1.3 **Limb or tree canopy injury:** Remove broken or torn limbs back to an appropriate branch capable of resuming terminal growth, within five (5) days. If leaves are heat scorched from equipment exhaust pipes, consult the certified arborist within six (6) hours so that appropriate measures can be taken.

4.4.2 **Penalty for damage to public/street trees**

In the event that public/street trees or their roots have been damaged, the contractor or property owner shall be required to pay for a certified arborist to conduct an assessment of the damages incurred. The assessment will be provided in report form to the contractor or property owner, the Town Forestry Officer and the Commissioner, Department of Public Works. If treatment is required in order to correct the damages, the contractor or property owner shall bear the burden of the costs associated with such treatment. In the event impacts cannot be alleviated, the contractor or property owner will be required to pay for the costs of removal and replacement, which shall be at the sole discretion of the Town of Greenburgh. Any required new trees to be planted shall take place after site work is completed.

If for any reason the Town determines that new trees cannot be planted in the location of trees caused to be removed due to damages incurred, the contractor or property owner will be required to pay a penalty fee of between $500 and $5,000 per tree, based on the size, species, condition and location, which fee shall be paid to the Town and deposited into the Town Tree Fund (See Town Tree Fund, Section 5.4.1).

4.5 **PAVEMENT AND HARDSCAPE CONFLICTS WITH TREE ROOTS**

Conflicts may occur when tree roots grow adjacent to pavement, foundations, sidewalks or curbs (hardscape). Inappropriate or thoughtless extraction of these surfaces can cause severe injury to roots, and instability or even death of the tree. The following alternatives must first be considered before root pruning within the TPZ of, or removal of, a regulated tree is permitted.

4.5.1 **Removal and replacement of pavement or sidewalk**

* Removal of existing pavement over tree roots shall include the following precautions: Break hardscape into manageable pieces with a jackhammer or pick and hand load the pieces onto a loader. The loader must remain on undisturbed pavement or away from exposed roots. Do not remove base rock that has been exploited by established absorbing roots. Apply untreated wood chips over the exposed area within one (1) hour, then wet the chips and base rock and keep moist until overlay surface is applied.

* Replacement of pavement or sidewalk: An alternative to the severance of roots greater than 2-inches in diameter should be considered and discussed with the Commissioner, Department of Public Works before
Notes

cutting roots. If an alternative is not feasible, remove the sidewalk, and grind roots only as approved by the Commissioner, Department of Public Works, and replace sidewalk using #3 dowels at the expansion joint if within 10-feet of a public/street tree. Use a wire mesh reinforcement if within 10-feet of the trunk of a protected or designated tree.

4.5.2 Alternative methods to prevent root cutting

The following alternatives shall be considered before cutting roots of healthy trees that are to remain in the landscape, which may result in tree instability, decline or death of the tree:

* Grinding a raised sidewalk edge.
* Ramping the walking surface over the roots or lifted slab with pliable paving.
* Routing the sidewalk around the tree roots.
* Install flexible paving or rubberized sections.
* On private property, a new sidewalk or driveway design should consider alternatives to conventional pavement and sidewalk materials. Substitute permeable materials to consider instead of typical asphalt or concrete overlay, sub-base or footings include: permeable paving materials, interlocking pavers, flexible paving, wooden walkways, porches elevated on posts and brick or flagstone walkways on sand foundations. Any substitute materials proposed for use must be discussed with and approved by, the Commissioner, Department of Public Works.

4.5.3 Avoiding conflict

Conflicts and associated costs can be avoided or reduced by implementing the following planting practices:

* Plant deep rooted trees that are proven to be non-invasive.
* Over soil that shrinks and swells, install a sidewalk with higher strength that has wire mesh and/or expansion slip joint dowel reinforcement.
* Follow soil loosening planting techniques to promote deep rooting.
* Install root barrier only along the hardscape area of the tree (but allow roots to use open lawn or planter strip areas).
* Dedicate at least 10-linear feet of planting space for the growth of each tree.
* Consider using CU-Structural Soil when planting trees in confined areas (See CU-Structural Soil, Section 5.11.2.1).
Illustration 4-7: Sidewalk lifting/heaving by tree roots

From: University of Florida
Notes

The great French Marshall Lyautey once asked his gardener to plant a tree. The gardener objected that the tree was slow growing and would not reach maturity for 100 years. The Marshall replied, 'In that case, there is no time to lose; plant it this afternoon!'

~ As told by John F. Kennedy

Photo: Replacement plantings installed as mitigation for tree removal, Halston House, Town of Greenburgh
5.0 REMOVAL, REPLACEMENT AND PLANTING OF TREES

5.1 INTRODUCTION

A regulated tree may not be removed without Town review and approval, except in certain emergency situations. The purpose of Town review is to verify that the removal is permitted under Town law, and to prevent unnecessary removal of trees. In certain circumstances, a tree which is cut down and removed must be replaced by the property owner or, in the case of public/street trees, the developer. This section describes the type and size of tree required, in accordance with the required number of tree units on a property, and the planting techniques to be used. It also describes how to determine the replacement value of a tree, when one or more cannot be replaced on-site, therefore requiring a deposit into the Town Tree Fund, and the circumstances in which the Town may require a security deposit or bond to assure the survival of trees both during, and after completion of, construction and development projects.

5.2 TREE REMOVAL

5.2.1 Allowable Removal

A tree removal permit is required prior to the removal of any regulated tree, except in emergency situations outlined in Hazardous Trees, Section 6.00. Removal of regulated trees may be permitted if:

- The tree is determined to be dead, dying, diseased, hazardous (see Hazardous trees, Sections 5.2.3 and 6.0), a detriment to or crowding an adjacent regulated tree, or if it is determined to be a public nuisance tree.

- The tree trunk is in contact with or the basal flare is under, the footprint of an existing building (for example, uplifting foundation, contact or damage to eves, gutter, etc.) or located in an area of proposed expansion (for example residential addition or deck construction, etc.).

- The tree is substantially interfering with a permitted use of the property, and removal is selective, as determined by the approval authority. In these instances, a certified arborist must submit an e

- In the case of public/street trees, either the Commissioner, Department of Public Works or the Commissioner, Department of Parks and Recreation, issues a written approval.

- In the case of a designated tree shown on a previously approved site plan or landscape plan, the Board issuing the approval must approve the tree for removal.
* Removal of the tree is subject to other applicable Town laws. If this is the case, removal must comply with the standards and procedures provided in such other Town law.

* One or more of the standards outlined in § 260-10 are satisfied.

### 5.2.2 Permit Application

<table>
<thead>
<tr>
<th>Tree Removal Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Completed Town of Greenburgh Tree Removal Permit or Hazardous Tree Removal Permit Application (available at the Town of Greenburgh, Department of Community Development and Conservation, 177 Hillside Avenue, Greenburgh, NY 10607, or at <a href="http://www.greenburghny.com">www.greenburghny.com</a>).</td>
</tr>
<tr>
<td>* Payment of appropriate fees.</td>
</tr>
<tr>
<td>* Photograph(s) of the tree(s) proposed for removal.</td>
</tr>
<tr>
<td>* Town of Greenburgh Tax Map indicating where the subject property is located.</td>
</tr>
<tr>
<td>* Property survey of the subject site, with locations of tree(s) proposed for removal identified.</td>
</tr>
<tr>
<td>* If required, a Tree Report from a certified arborist on company letterhead (see Tips for Selecting a Certified Arborist and Licensed Professional Tree Care Company, Section 7.12, and Tree Reports, Section 8.0) — to include the following information for each tree: A written narrative describing the tree species (common and/or scientific); location (in relation to street, structures and property line); size (DBH, height &amp; crown spread); condition (foliage, vigor, structural integrity, etc.); life expectancy and prognosis (is the tree hazardous, diseased, in severe decline, potential for property damage, etc.?).</td>
</tr>
<tr>
<td>* Prior to the submission of the application and until a permit is granted or denied and the appeal process completed, the trunk of all trees slated for removal shall be encircled with orange tape, or other method of tagging, as approved by the Forestry Officer, at 4 and one-half feet above natural grade level.</td>
</tr>
</tbody>
</table>

Tree Removal Permit and Hazardous Tree Removal Permit Applications are available at the Town of Greenburgh Town Hall, Department of Community Development and Conservation, 177 Hillside Avenue, Greenburgh, NY 10607, or at www.greenburghny.com. The following is a checklist of items necessary for Town review of proposed tree removal. Additional information may be required by the approval authority.

When the approval authority is the Forestry Officer, Commissioner, Department of Public Works, or Commissioner, Department of Parks and Recreation, s/he may refuse to accept an application until the applicant has complied with each of the requirements set forth. The Forestry Officer, Commissioner, Department of Public Works, or the Commissioner, Department of Parks and Recreation shall have up to 20 business days from the date the application is deemed complete, to grant, grant with conditions or deny the permit application.

When the approval authority is the Town Board, Planning Board or Zoning Board of Appeals, said Board may refuse to accept an application until the applicant has complied with each of the requirements set forth. In addition, said Board shall not make a decision on the tree removal permit application until such
time as it renders its final approval decision.

In all cases, the tree removal permit must be on site during the removal, and until all site work is completed. For development projects, the tree removal permit must remain on site until a Final Certificate of Occupancy or Completion is issued by the Town Building Department.

5.2.3 Hazardous Trees

To remove a protected or designated tree that has been verified as a hazardous tree, as defined within Chapter 260 of the Town Code and the Town’s Tree Technical Manual, a hazardous tree removal permit issued by the Town Forestry Officer is required prior to the removal of the tree, unless emergency conditions exist (see Emergency Removal Conditions, Section 6.3).

In the event a protected or designated tree is removed or cut down, when it is necessary for the immediate protection of public health, safety or property, pursuant to the requirements in this Manual, within five (5) business days after such act, unless the time period is extended by the Forestry Officer, the person on whose property the tree is located shall submit for a hazardous tree removal permit to the Department of Community Development and Conservation, on forms prescribed by the Town of Greenburgh. The Forestry Officer will require photographs, or other appropriate documentation explaining and confirming the nature of the immediate threat. In the event three (3) or more trees are removed, a tree report from a certified arborist will be required in addition to any other required documentation.

If there is a catastrophic weather event where significant tree damage has occurred, the Town Supervisor may declare a waiver of the hazardous tree removal permit requirements for a specified period of duration and within specific neighborhoods. The requirement to submit to the Forestry Officer a letter with photographs, or other appropriate documentation explaining and confirming the nature of the immediate threat and, in addition, to obtain a tree report from a certified arborist if three (3) or more trees are removed, will be waived.

5.3 TREE REPLACEMENT

Replacement Plantings. There are specific requirements which determine whether or not a protected or designated tree must be replaced. In summary, they are:

5.3.1 Protected Trees

If a permit is granted for the removal of any protected tree, regardless of whether or not the tree is healthy or is a hazardous tree, and the subject property does not meet the tree unit minimum standard requirements, the property owner shall plant new trees which have a minimum DBH of one and one-half inches (1.5”) each. In order to determine how many trees are required to be planted, you must consult the Tree Unit Minimum Standard Requirement Table, (see Appendix D). When trees are required to be planted, in order for them to count toward the
tree unit minimum standard requirement, they must be selected from the Town’s Official Replacement Planting List (see Appendix E). All newly planted trees shall retain their plant identification tag until a final inspection by the Town is conducted.

5.3.2 Designated Trees
When authorizing removal of a Designated Tree, the approval authority shall require tree replacement if it is necessary or desirable to implement the intent of the original site design, and shall also consider whether or not the site meets the tree unit minimum standard requirement as provided for in the Tree Unit Minimum Standard Requirement Table, (see Appendix D). The species, size and location of the replacement trees shall be determined by the approval authority, taking into consideration the value of the tree removed and the site design. All newly planted trees shall retain their plant identification tag until a final inspection by the Town is conducted.

5.3.3 Public/Street Trees
If the Town authorizes removal of a public/street tree at any time, including those in connection with a development project, the approval authority shall specify the replacement requirements in the permit authorizing removal.

5.3.4 When Replacement Plantings Fail to Survive
All replacement plantings which fail to survive for three (3) full growing seasons, or for a different period of time when specified in a permit approval letter issued by the approval authority, shall be replaced by the permit holder at no expense to the Town. Said replacement shall be made within 60 days following written demand for such replacement from the Town Forestry Officer or Commissioner, Department of Public Works or Commissioner, Department of Parks and Recreation, or within an extended period of time as may be specified. Should the permit holder fail to replace the trees pursuant to demand within the required period of time, the Town Forestry Officer or Commissioner, Department of Public Works or Commissioner, Department of Parks and Recreation has the right to serve a summons and/or declare the maintenance bond, if any, in default and apply the escrow cash deposit and/or the proceeds of the bond to replace the required plantings.

5.4 WHEN TREES CANNOT BE REPLACED ON-SITE

5.4.1 Town Tree Fund
In lieu of planting replacement trees on a subject property in order to meet the tree unit minimum standard requirement, and only when technically impractical or impossible (such as when it is proven that the presence of rock outcroppings or steep slope areas prevent the proper installation of replacement plantings), a fee shall be paid to the Town Tree Fund to defray the Town's costs for acquisition, maintenance, and installation of plantings on Town properties, in accordance with Chapter 230, Fees, of the code of the Town of Greenburgh. The total amount
required to be paid as a fee-in-lieu shall be determined by the difference between the total number of tree units on the property, and the minimum required number of tree units on the property, based on the Tree Unit Minimum Standard Requirement Table, Appendix D. When a property subject to any development approval does not meet the minimum number of required tree units, the property owner will be required to pay a fee of $500.00 for each tree unit or portion thereof, which is less than the required number as provided for in the Tree Unit Minimum Standard Requirement Table, Appendix D. All such fees will be placed into the Town Tree Fund. Such payment of fee-in-lieu shall be verified as paid prior to the issuance of a tree removal permit.

5.5 TREE REPLACEMENT STANDARDS FOR ON-SITE TREE REPLACEMENT

When a Protected or Designated Tree is to be replaced on-site, the following standards apply:

5.5.1 Species

When determining what type of tree to plant as replacement, refer to the Town’s Official Replacement Planting List (see Appendix E), unless the approval authority determines that a different species would be more suitable for the location. Factors to be considered when selecting a replacement tree include the long term health of the tree in the location and its compatibility with the adjacent uses as well as design considerations.

* Replacement Planting List. The list of official tree species for the Town of Greenburgh may change from to time due to the introduction of new information, new species and hybrids. The Department of Community Development and Conservation is charged with continually updating the Town’s Official Replacement Planting List. This list is broken down into three categories or “zones” of trees, and includes additional lists for shrubs and grasses. Zone “A” consists of trees which, at maturity, can grow up to 30 feet in height. Zone “B” trees are those which typically grow to between 30 feet and 50 feet in height at maturity. Zone “C” consists of trees which will generally reach greater than 50 feet in height at maturity. Please note that these heights are approximations under ideal growing conditions and may not necessarily represent the actual size of the tree at maturity.

5.5.2 Location

The location of replacement trees on-site shall be approved by the approval authority. If it is not possible to replace the tree on site in order to conform with the tree unit minimum standard requirement, it must be documented in writing by a certified arborist or licensed professional tree company representative, and submitted to the approval authority for review. If approved by the approval authority, Section 5.4.1 shall apply.
5.5.3 Number and Size
In determining how many and what size trees are required to be planted on site, please refer to Appendix D - Tree Unit Minimum Standard Requirement Table, which outlines the tree unit minimum standard requirements on a property.

5.5.4 Timing of Plantings
All required replacement plantings shall be satisfied within one (1) year of the date of approval for a tree removal permit, unless otherwise indicated in the permit approval letter. A one (1) year extension may be granted by the approval authority, provided a written request is submitted by the permit holder thirty (30) days in advance of the one (1) year cutoff date.

5.6 TREE VALUE REPLACEMENT STANDARD
When the value of a tree needs to be determined for establishing the amount of security/bond required, or for any other purpose, the value shall be determined by using the most recent edition of the Guide for Plant Appraisal published by the Council of Tree and Landscape Appraisers (see Tree Appraisal, Section 8.4).

5.7 TREE PERFORMANCE BOND
When planting and restoration work shall exceed $10,000 and it is necessary to ensure the protection of retained trees and the installation of required replacement plantings, the approval authority may require that the applicant furnish the town with a performance bond, cash escrow, or irrevocable letter of credit from an approved financial institution or surety, as approved by the Town Attorney in an amount sufficient to cover 90% of the protection, planting and restoration work to be completed in accordance with the approved plans accompanying all applications. The remaining 10% of the cost of the protection, planting and restoration work shall be in cash and deposited by the applicant in a special tree preservation escrow account maintained by the town. The total amount of the bond and cash deposit shall reflect all protection, replanting and restoration costs and shall be in accordance with each set of individual circumstances. Upon completion of all protection, replanting and restoration work to the satisfaction of the approval authority, the performance bond shall be canceled and replaced with a maintenance bond to be approved by the Town Attorney and to run for a term of three (3) full growing seasons. The growing season

Illustration 5-1: Tree Planting Zones
for Westchester County is March through October. The 10% cash in escrow shall remain on deposit with the town until the maintenance bond is canceled. If new trees or shrubs planted as part of the restoration work do not survive three (3) full growing seasons, they shall be replaced in-kind, and the term of the maintenance bond shall be extended to run for a term of three (3) full growing seasons from the time any necessary replanting has taken place, to the satisfaction of the Town Forestry Officer.

5.8 PRE-INSTALLATION

When selecting trees to plant from the Town’s Official Replacement Planting List (see Appendix E), it is important to keep in mind that you will want to plant the right tree in the right place (see Tree Planting Zones, Illustration 5-1 below). Factors to consider when selecting a tree to be planted on your property include: the type of tree (deciduous or coniferous); height at maturity; growth rate; canopy spread; form or shape; soil, sun and moisture requirements; fruit; and hardiness zone compatibility. If you are unsure of what type of tree to plant on your property, you can consult a certified arborist, licensed professional tree company representative, landscape architect, the Cornell Cooperative Extension of Westchester County, or, you may contact the Town Forestry Officer in the Department of Community Development for advice and to discuss your specific situation.

5.8.1 Check Above Ground

Do not plant your tree where it will interfere with buildings, overhead utility lines, pavement, or intersection sightlines as it grows. Make sure your planting spot is at least:

* 3-5 feet from pavement and/or fencing on all sides
* 10-15 feet from buildings or other trees
* 20-25 feet from overhead electric wires, if you are selecting a tree other than those specified in Zone “A” of the Town’s Official Replacement Planting List.

5.8.2 Check Below Ground

At least 72 hours in advance of planting, please call 811, or visit www.call811.com to get your underground utility lines marked. This will allow you to dig your planting holes safely, and in the proper location.

5.9 TREE AND SHRUB PLANTING SPECIFICATIONS

Planting specifications apply for all trees and shrubs that are planted as required under a tree removal permit, or under a development permit issued by a board of the Town. Using the following specifications will result in consistent town-wide plantings, and superior tree growth and vitality. To achieve this, the landscape architect or certified arborist shall incorporate these items into their specifications.

5.9.1 PLANTING STOCK AND MATERIALS
5.9.1.1 Quality

It is the contractor’s responsibility to supply stock that meets ANSI Z60.1-1996 and Town of Greenburgh *Tree Technical Manual* Standards.

All plants and trees installed within the Town of Greenburgh shall conform with ANSI Z60.1, *Specifications for Acceptance of Nursery Trees at the Time of Delivery*, in all ways.

* Plants shall be sound, healthy, vigorous, and free of plant disease and insect pests and their eggs.
* Container stock shall be grown for at least 8-months in containers which delivered and shall not be root bound or have girdling roots.
* Trees shall not have been topped or headed.
* Trees and shrubs with broken tops, branches or injured trunks must be rejected.
* The landscape architect or certified arborist shall inspect and verify, in writing, that all plant material to be installed on the site meets the above standards and is acceptable.

⇒ The inspection shall occur after delivery of stock to the project site.

⇒ Written verification must be submitted to the Department of Community Development and Conservation within one (1) week of acceptance (see Certified Arborist/Landscape Architect inspection, Section 4.2.8.5).

5.9.1.2 Miscellaneous Materials

The following materials shall be considered for use unless otherwise specified:

* Tree stakes. If staking is necessary for support, use two stakes in conjunction with a wide, flexible tie material on the lower half of the tree, which will hold the tree upright, provide flexibility, and minimize injury to the trunk. Stakes shall be trimmed so that the branches clear the top of the stake. Remove support staking and ties after the first year of growth.

* Tree Ties. Tree ties may include one of two types. The first is a 10 gauge wire, cushioned with a rubber hose around the trunk. The wire must not touch the trunk. The second is a plastic chain lock, also known as a twist brace. All tree ties must be removed within one (1) year of installation.

* Mulch. All newly planted trees must be mulched with 2-4 inches of organic mulch, spread out to the edge of the root ball. The mulch must be kept at least two inches away from the trunk (see *Mulching, Section 4.2.5.2*). Volcano mulching is not permitted (see *Illustration 5-2 on following page*). This practice can restrict
oxygen and water availability to the roots and may lead to stem-girdling roots or root rot.

* Root Control Barriers. Use along all public sidewalks, and indicate on approved site plans.

* Trunk Guards. For trees in turf areas requiring regular mowing and/or weed eating, the tree trunk shall be protected with a guard to prevent wounding.

Illustration 5-2: Volcano mulching - NOT PERMITTED
From: www.caroldunk.com

* Tree Guards. When trees will be installed in a tree well or planting pit, tree guards shall be installed as directed by the Commissioner, Department of Public Works. Strong metal guards around the edge of a planting pit protect the soil and the tree by discouraging pedestrians and dogs from walking through the pit, which can lead to soil compaction. The Town of Greenburgh does not recommend tree grates, which sit flush with the sidewalk, because trash and debris can accumulate beneath the grates and trees that outgrow a grate can be fatally girdled or strangled.

5.10 PLANTING TREES AND SHRUBS
The ideal time to plant trees and shrubs is during the dormant season, either in the Fall after leaf drop or early Spring before budbreak. At these times weather conditions are cool and allow plants to establish roots in the new location before
Spring rains and Summer heat stimulate new growth. Proper handling during planting is essential to ensure a healthy future for new trees and shrubs. Before you begin planting your tree, be sure you have had all underground utilities located prior to digging (See Section 5.8.2).

If the tree you are planting is balled or bare root, it is important to understand that its root system has been reduced by 90-95 percent of its original size during transplanting. As a result of the trauma caused by the digging process, trees commonly exhibit what is known as transplant shock. Containerized trees may also experience transplant shock, particularly if they have circling roots which must be cut. Indicators of transplant shock are slow growth and reduced vigor following transplanting. Proper site preparation before and during planting coupled with good follow-up care reduces the amount of time the plant experiences transplant shock and will allow the tree to quickly establish in its new location. Carefully follow the steps outlined below, and you can significantly reduce the stress placed on the tree or shrub at the time of planting.

5.10.1 Perform percolation test
If the soil is dry, add a few inches of water in the hole. Let it drain before planting the tree.

5.10.2 Dig the hole
Make the hole wide, as much as three times the diameter of the root ball. To check the proper depth of the root ball, place the tree in the hole and lay a pole or shovel across the original grade - the top of the root ball should be 1 to 2-inches higher. It is important to make the hole wide so that the roots on the newly establishing tree can push through the surrounding soil in order to establish themselves.

5.10.3 Identify the trunk flare
The trunk flare is where the roots spread at the base of the tree. This point should be visible after the tree has been planted. If the trunk flare is not partially visible, you may have to remove some of the soil from the top of the root ball, which can inadvertently occur during digging at the nursery. The root ball should be set so that the trunk flare is exactly at the existing grade in loamy or sandy soils, and above the existing grade in clayey or poorly drained soils (up to 1/3 rd of the ball can be above the existing grade).

5.10.4 Remove tree container for containerized trees
Remove the tree from the container by carefully cutting down the sides of the container. Expose the trunk flare, if necessary, inspect the root ball for circling roots and trim the root ball in the following way:

* Thick circling roots: straighten and/or cut cleanly
* Thin roots: make three to four vertical cuts 1/2-inch deep around root ball, spread the bottom out if necessary
5.10.5 Placing the Tree
Before placing the tree in the hole, check to see that the hole has been dug to the proper depth, and no more. Planting too deeply is a chronic problem, largely due to the root ball often covering the root flare. Then locate the tree in the hole, and rotate it to direct the main branches away from any street, fence or building, when necessary. Have someone view the tree from several directions to confirm that the tree is straight. To avoid damage when setting the tree in the planting hole, always lift the tree by the root ball and never by the trunk or stem.

5.10.6 Filling the Hole
Fill the planting hole about one-third full and gently but firmly pack the soil around the base of the root ball. Then, if the root ball is wrapped, cut and remove any fabric, burlap, plastic, string, and wire from around the trunk and root ball to facilitate growth. Be careful not to damage the trunk or roots in the process. Add about 1-inch of water, and let drain. Fill the remainder of the hole, taking care to firmly pack soil to eliminate air pockets that may cause roots to dry out. To avoid this problem, add the soil a few inches at a time and settle with water. Continue this process until the hole is filled and the tree is firmly planted. Caution must be taken not to cover the root flare or trunk with soil. Since soil conditions in Westchester County tend not to be deficient in essential elements, applying fertilizer at the time of planting may not be necessary, except where a soil test would indicate otherwise.

5.10.7 Stake if necessary
If the tree is grown and dug properly at the nursery, staking for support will not be necessary in most home landscape situations. Studies have shown that trees establish more quickly and develop stronger trunk and root systems if they are not staked at the time of planting. However, protective staking may be required on sites where lawn mower damage, vandalism, or windy conditions are concerns. If staking is necessary for support, use two stakes in conjunction with a wide, flexible tie material on the lower half of the tree, which will hold the tree upright, provide flexibility, and minimize injury to the trunk. Place stakes at the edge of the root ball (drive them 2-feet into undisturbed ground), and avoid contact with the branches (See Proper Tree Staking, Illustration 5-3). Stakes shall be trimmed so that the branches clear the top of the stake. Remove support staking and ties after the first year of growth.

5.10.8 Berm, Mulch and Water
In non-turf areas, form a soil berm 3 to 4-inches high at the outermost edge of the root ball. Place about 2-4 inches of organic mulch over root ball and berm, keeping the mulch away from the trunk a minimum of 2-inches to avoid moist bark conditions and to prevent decay of the living bark. Mulch will act as a blanket to hold moisture, moderate soil temperature extremes, and reduce competition from grass and weeds. Finally, fill the berm with water to capacity (see Watering Schedule, Section 7.8).
5.11 PLANTING IN DIFFICULT SOIL CONDITIONS

5.11.1 Turf Areas
In turf areas that receive regular watering, the watering berm may be eliminated. The turf shall be maintained a minimum of one (1) foot from the new tree stem, and mulch placed on top of the root ball. The mulch shall be kept a minimum of 2-inches from the tree trunk. In turf areas, install a trunk guard (see Trunk Guards, Section 5.9.1.2).

5.11.2 Planting Pits
Planting pits shall be a minimum of 25-square feet (5’x5’) in size and shall be dug a minimum of 1-foot wider than the root ball or spread of bare roots. All pits must be dug with vertical sides, with the center of the planting hole slightly raised to aid in draining excess moisture away from the plant. Tree guards shall be installed along planting pits when directed by the Commissioner, Department of Public Works (see Tree Guards, Section 5.9.1.2). Follow the guidelines outlined in Section 5.10 for planting trees and shrubs.

5.11.3 Alternate Specifications
Occasionally, tree planting must occur in poor or difficult soil where standard planting techniques will result in poor-to-average performance or mortality (such as unique or unusual regional geology, slope, soil volume, restrictive physical or chemical properties, poor drainage, etc.). In this case, the certified arborist must investigate alternative solutions to enable long term tree growth. Alternative planting specifications or plans that vary from the native or typical soil conditions shall be submitted to the Town Forestry Officer for approval prior to installation. Examples include the utilization of CU-Structural soil, suspended pavements and...
5.11.3.1 CU-Structural Soil

Healthy trees require a large volume of non-compacted soil with adequate drainage and aeration and reasonable fertility. CU-Structural Soil meets these needs while also fulfilling engineers’ load-bearing requirements for base courses under pavement.

CU-Structural soil (U.S. Patent # 5,849,069) is intended for paved sites to provide adequate soil volumes for tree roots under pavements. It can be used under pedestrian mall paving, sidewalks, parking lots, and low-use access roads. Research at Cornell University has shown that tree roots in CU-Structural Soil profiles grow deep into the base course material, away from the fluctuating temperatures at the pavement surface. One benefit of this is that roots are less likely to heave and crack pavement than with conventional paving systems.

Planting a tree into CU-Structural Soil is much like conventional planting. It is recommended that the pavement opening be expandable (via removable pavers or through use of a mulched area) to allow for trunk growth and root flare at the base of the tree. CU-Structural Soil should be used at a depth of at least 24-inches, although 36-inches is preferable. CU-Structural Soil can be used right up to the surface grade where there is a pavement opening that is large enough to allow for tree installation.

Trees in parking lots, as well as paved plazas, benefit from the use of CU-Structural Soil. Whether there is a curb or not, quality, well-drained topsoil may be used around the tree where the opening is at least 5’ x 5’. If the opening is smaller, CU-Structural Soil may be used right up to the root ball.

Please refer to the Appendices section of the *Manual* for additional documentation relative to CU-Structural Soil.

Alternative soils, such as CU-Structural Soil, including written specifications and physical samples, shall be submitted for approval from the Town Forestry Officer by the certified arborist or landscape architect.

5.12 TRANSPANTING TREES

In cases where tree retention is not practical or desirable, transplanting trees should be considered as an alternative. Transplanting large trees is difficult, expensive, and requires expertise and equipment. Pre-approval from the Town Forestry Officer will be required for the transplanting of a protected tree. Such a tree will be under warranty as if it is a new tree, and will need to follow replacement requirements should the tree die or severely decline. It is important to consider the special conditions required to relocate trees. Size, time of year, preparation and post-transplanting care are critical to ensure a higher survival rate. When transplanting protected trees from existing landscapes it is important
to select healthy, vigorous trees, dig an appropriate sized root ball, select a site that is consistent with the tree’s cultural needs, and provide a properly sized planting hole approximately 2-3 times the root ball width. You will also need to protect the root ball, trunk, and crown during lifting, transportation, and storage. The most important and most difficult aspect of the transplanting process is creating and implementing a multi-year aftercare program, which will provide for adequate moisture to the root ball. The entire transplanting proposal must be submitted by a certified arborist for review by the Town Forestry Officer. Designated trees may only be transplanted if written approval is provided by the approval authority.

The following procedures should be used as guidelines for transplanting trees:

* Trees should generally be moved during their least active or dormant period. Deciduous trees should only be transplanted when their leaves are absent from the tree, normally in late fall, winter or early spring. Coniferous trees are best moved in late fall or winter. However, adequate water uptake prior to dormancy is critical to the coniferous tree surviving winter transplantation. Broadleaf evergreen trees are generally best moved as growth begins in the spring.

* The soil should be irrigated to a depth of 12 inches two to three days prior to digging and the soil should not be soaked. One additional day for the tree to absorb the moisture and for excess water to drain away from the roots should be allowed.

* As a general rule, root ball diameter for transplanting should be 6 inches per 1 inch diameter of tree trunk measured at 4 feet six inches above the natural grade. Roots should be cut by hand using an axe, chainsaw, or root pruning shears, depending on the size of the root ball. Do not use a back hoe or similar equipment to sever roots, as this will cause unnecessary damage to the root system. If root damage such as root splitting occurs, ensure that the proper repair (i.e., pruning) is undertaken prior to transplanting. (Vancouver)

* Before transplanting a tree to a new site, the prepared ground should be made moist but not wet. Stake or guy the tree only if it is unable to stand on its own. The planting area should be irrigated, but avoid applying fertilizers until new growth is evident.

5.13 FOLLOW-UP CARE

After properly planting your tree, it is a required practice that the appropriate follow-up care be provided. Implementation of these measures will help to achieve long-term survival of your tree (See Proper Tree Maintenance, Illustration 5-4, Page 5-15).

Be sure to keep the soil moist but not soaked; overwatering causes leaves to turn yellow or fall off. Water trees at least 1-2 times per week, barring rain, and more frequently during hot weather. When the soil is dry below the surface of the
mulch, it is time to water. Continue to mid-Fall, tapering off for lower temperatures that require less-frequent watering.

Other follow-up care may include minor pruning of branches damaged during the planting process. Prune sparingly immediately after planting and wait to begin necessary corrective pruning until after a full season of growth in the new
“If a tree is treated as a living organism, with an understanding of its vital functions, it will be a constant source of profit and pleasure to men.”

~ N.T. Mirov

Photo: East Hartsdale Avenue, Town of Greenburgh
6.0 HAZARDOUS TREES

6.1 INTRODUCTION

Property owners are responsible for the trees on their own property. In emergency situations, when a protected or designated tree must be removed in order to eliminate an immediate threat, the Town does not require advance permission for removal. However, it does require documentation of the problem and the filing of an application, which may be submitted after the fact (See Hazardous Tree Removal Permit, Section 6.3.2). This is to avoid the unlawful removal of sound trees on the grounds that they are hazardous. If there is no immediate danger, and the structural deficiency can be corrected, it should be. If the Town determines that there was no reasonable basis for believing there was an emergency, the property owner and/or person performing such work will be issued a summons and face penalties for violating Town law.

In circumstances where a private property owner believes s/he may have a hazardous tree on their property, it is recommended that a licensed professional tree care company or certified arborist be contacted to perform an assessment and make an appropriate professional recommendation.

6.2 HAZARDOUS TREES

6.2.1 Hazardous Tree Responsibility

On private property, it is the responsibility of the property owner to mitigate or abate a known hazardous condition of a protected or designated tree that may be of questionable structure or deemed as hazardous. Most tree hazards can be prevented with regular checkups by a licensed professional tree care company or certified arborist and timely maintenance action authorized by the property owner. Public/Street trees on town property that may be a public safety hazard should be reported to the Town of Greenburgh Department of Public Works at (914) 993-1576. Trees within Town Parks that may represent a public safety hazard should be reported to the Town of Greenburgh Department of Parks and Recreation at (914) 693-8985.

6.2.2 Recognizing Tree Hazards

Determining whether or not a tree’s defects constitute a condition that presents an imminent hazard requires a high degree of knowledge and experience. The health and safety of a tree are two distinct and separate functional characteristics. A vigorous and healthy tree may not necessarily be of sound wood or structure. Hazard tree assessment of a protected or designated tree should only be evaluated by a certified arborist or licensed professional tree care company representative who is familiar with tree physiology and can interpret the external signs of weaknesses, can perform internal checks if necessary, and recommend mitigation (see Hazardous Tree Reduction and Prevention, Section 6.5).
6.3 EMERGENCY TREE REMOVAL

6.3.1 Abatement
When a tree has partially failed or it is apparent it is about to fail and come in contact with a target, the tree may be removed without prior Town review or approval. The Town does not require a tree report before the removal of up to three (3) trees in these instances, however, appropriate documentation and a permit application must be submitted, after the fact.

6.3.2 Hazardous Tree Removal Permit
In the event a protected or designated tree is removed or cut down, when it is necessary for the immediate protection of public health, safety or property, pursuant to the requirements in this Manual, within five (5) business days after such act, unless the time period is extended by the Forestry Officer, the person on whose property the tree is located shall submit for a hazardous tree removal permit to the Department of Community Development and Conservation, on forms prescribed by the Town of Greenburgh. The Forestry Officer will require photographs, or other appropriate documentation explaining and confirming the nature of the immediate threat, such as a written assessment of the tree from a certified arborist. In the event more than three (3) trees are removed, a tree report from a certified arborist will be required in addition to any other required documentation.

If it cannot be determined that the tree or trees were hazardous at the time of removal, or if it appears that any documentation was falsified or altered in any way, the Forestry Officer will issue a summons to the property owner and/or person which performed such work, and the matter will be handled through the Town Justice Court.

6.3.2.1 Town Supervisor Waiver
If there is a catastrophic weather event where significant tree damage has occurred, the Town Supervisor may declare a waiver of the hazardous tree removal permit requirements for a specified period of duration and within specific neighborhoods. The requirement to submit to the Forestry Officer a letter with photographs, or other appropriate documentation explaining and confirming the nature of the immediate threat and, in addition, to obtain documentation from a certified arborist if more than three (3) trees are removed, will be waived.

6.4 TREE EVALUATION CHECKLIST
This section is intended to assist the property owner in understanding tree defects and how they may be interpreted by a certified arborist. Many tree defects are not readily apparent because decay or structural damage may be internal. Also, poor tree health may not reflect poor tree structure. Hazardous trees must be carefully evaluated. The following checklist of criteria that is typically used by professionals
may indicate potential or current tree hazards. The checklist is not meant to be a comprehensive guide, however, it is an outline of indicators that may alert a property owner to potential hazards and suggest action to avert a tree failure and liability. If the answer to one or more of the checklist items is “yes,” it is advisable to contact a certified arborist or licensed professional tree care company representative to discuss how to reduce the potential hazard.

6.4.1 Hazard Evaluation Questionnaire

* **Target:** If a precarious tree or branch falls will it hit cars, houses, structures, power lines or people? If so, immediate action may be necessary.
* Dead Branches: Are there dead tops or branches? Is the tree dead or in severe decline?
* Cracks: Are there deep, open cracks in the trunk or branches? These are major starting points for trunk and branch failure.
* Crotch/Stress Cracks: Are there deep, open cracks below joining trunks or stems? Along other areas of the trunk?
* Tree Architecture: Has the tree grown beyond its species specific shape into a hazardous form? Is the tree leaning?
* History: Has the tree recently lost large branches?
* Edge Tree: Were neighboring trees recently removed, leaving trees exposed at the edge that may be subject to unexpected wind dynamics and blow-over?
* **Topping:** Are large branches growing rapidly from topping cuts? These sprouts have weak attachments and may weaken further as they grow. Is there decay below topping cuts?
* **Storm injury:** Are there broken branches, split trunks, or injured roots? Are branches close to power lines?
* Root Rot: Are there fungal fruiting bodies (mushrooms) on roots or along the trunk or base of the tree? Were roots injured by construction?
* Rots and Cankers: Are there hollows or cankers (dead spots) in the trunk or major branches, some with fungal fruiting bodies?
* **Construction injury:** Have roots, trunk, or branches been injured?
* Is there a new lawn or garden over injured roots? The added fertilizer may stimulate the growth of fungi that will rot the supporting roots while the top gets heavier. A moderate storm could cause the tree to fall.
* Staking/Guying of trees. Staking and guying of small to medium size trees may benefit from the additional support. Discretion must be exercised so that the guying does not hide weaknesses, such as toppling over, which result from poor quality nursery stock or girdling roots. All staking/guying should be removed within one (1) year of installation.
6.5 HAZARDOUS TREE REDUCTION AND PREVENTION

Review the following list to reduce hazardous conditions.

* Plant trees that are not problematic and that fit the site. The Town of Greenburgh promotes planting ‘the right tree in the right place.’ Please refer to the Town’s Official Replacement Planting List (see Appendix E) and Tree Planting Zones (see Illustration 5-1) when selecting trees to plant. Together, these will assist you to avoid planting a tree that may become a problem.

* A healthy, vigorous tree that receives regular care is less likely to become a hazardous tree than one that is ignored. Prevention is the best solution to the hazardous tree problem.

* The risk of a hazardous tree may be reduced by properly removing dead and broken branches, reducing branch end weights, by mechanically supporting weak branches from below, or by cabling and/or bracing. In some cases, targets may be removed, such as by moving picnic tables, play areas or other items from beneath a precarious tree, fencing to prevent access to such trees, or rerouting pedestrian or vehicular traffic.

* If there are no other options to abate the hazard, the tree may need to be removed entirely. Steps outlined in the Tree Removal Procedure (see Section 4.2.7.3) should be submitted as soon as possible for review by the Town.

Photo: Hazardous Tree - Town of Greenburgh
The following checklist will help property owners avoid future problems:

- Inspect your trees carefully at least once each season every year. Annually, have a certified arborist or licensed professional tree care company representative inspect your trees and provide you with a written report.

- Avoid planting brittle species where falling limbs could injure people or property (see Inherent Failure Patterns for Selected Species, Appendix XX).

- Prune trees when they are young (see Pruning Young Trees, Section 7.7) and only when needed thereafter.

- Use correct pruning methods, always making the pruning cut outside the branch collar. This will allow only the minimum of decay infection (see Illustrations 7-1 and 7-2).

- Do not allow topping (see Definition, Section 3.41). Topping is a prohibited activity.

- Always plant the right tree in the right place (see Town’s Official Replacement Planting List, Appendix E). Select trees based upon their mature height and shape, and make sure the species selected matches the soil and other site characteristics. For example, avoid planting tall-growing trees such as oaks near overhead power lines or too close to your house (see Tree Planting Zones, Illustration 5-1, and Inherent Failure Patterns for Selected Species, Appendix XX).

- Water thoroughly (generally, until saturation is reached) during dry periods, slowly applying at least 2-inches of water per week (see Watering, Section Schedule, Section 7.8).

- Always erect tree protection fencing (see Section 4.2.6) along the tree protection zone (TPZ) of trees during construction. Insist that these tree protection zones be honored by construction workers.

- Consider hiring a licensed professional tree care company or certified arborist to cable or brace weak forks of branches in larger trees of high value.

- Do not plant trees with a narrowly-forked stem v-crotch, included bark or girdling root ball.

- Where a valuable specimen tree may be suspected of developing into a hazardous tree, it is recommended that you contact a certified arborist to perform an assessment of the tree. It may be possible to use landscaping to keep people at a safe distance. This may require techniques such as rerouting walks, moving patio furniture, or planting shrubs and hedges to function as barriers to keep foot traffic at a safe distance (see Hazardous Trees, Sections 5.2.3 and 6.0). If a hazardous situation cannot be avoided, removal of the tree may be the only option.

- Be aware of invasive species (i.e. Norway Maple, Tree of Heaven) which dominate areas where they become established. They are commonly found along roadsides, the edges of lawns and forests, in open areas, and in many other areas where native vegetation has been disturbed. Invasives spread quickly and aggressively push out native plants. It is important to recognize them and to avoid planting them. Invasive species are considered hazardous trees within the Town of Greenburgh.
“To exist as a nation, to prosper as a state, and to live as a people, we must have trees.”
~Theodore Roosevelt

Photo: Copper beech, Hackley School property, Town of Greenburgh
7.0 TREE MAINTENANCE GUIDELINES

7.1 INTRODUCTION

This chapter establishes the minimum standards of care and maintenance of the Town of Greenburgh’s regulated trees. These standards apply to all persons who own or are engaged in the business of caring for, repairing, maintaining, or preserving these trees. The following standards of care are set forth for pruning (including utility, fire and traffic encroachment), planting, watering, soil and nutrient requirements, insect, disease and fruit control. Guidelines for selecting a certified arborist and licensed professional tree care company are also given. These standards and guidelines are based on sound arboricultural principles and are applicable to trees, shrubs and woody plants.

7.2 CARE OF REGULATED TREES

All owners of regulated trees are to follow the required maintenance standards set forth in this Manual. If special pruning or situations require a variance from these standards, it is the responsibility of the certified arborist or licensed professional tree care company representative and property owner, to clarify why the changes are needed and review them with the Town Forestry Officer prior to such work taking place.

7.3 PROHIBITED ACTIVITIES

Improper maintenance may constitute a prohibited activity as defined by the Town of Greenburgh Town Code, Chapter 260-5 and a violation which may be subject to penalty. The following permitted and prohibited maintenance practices for protected and designated trees apply.

7.3.1 Excessive Pruning

Except for clearance pruning of utility lines, traffic or performing work on a public nuisance tree, excessive pruning (see Excessive Pruning, Section 3.20) shall be considered a prohibited activity.

7.3.2 Topping

Topping shall be considered a prohibited activity (see Topping, Section 3.41). Seek alternatives to topping (see Crown Reduction, Section 7.5.4.4).

7.3.3 Other prohibited activities

Taking any action foreseeably leading to the death of a tree or permanent damage to its health, including but not limited to cutting, girdling, poisoning, over watering, volcano mulching, unauthorized relocation, transplanting or transportation of a tree, trenching, excavating, altering the grade, or paving within the drip line.
of any tree regulated by this chapter shall be considered a prohibited activity (see Town of Greenburgh Town Code Chapter 260, Appendix A).

7.4 STANDARDS FOR PRUNING REGULATED TREES

The most compelling reason to prune trees is to develop a strong, safe framework. All work to be performed on regulated trees shall be in accordance with the following standards:

7.4.1 Specifications

All specifications for work on designated trees and trees of significance shall be written and shall be administered by a certified arborist or licensed professional tree care company representative, and shall be designed to promote the preservation of tree structure, health, stability and survival.

7.4.2 Industry Standards

All work on regulated trees shall be in accordance with the most current edition of the following industry standards: (see Performance Standards, Standard Practices for Tree Care Operations - ANSI A300-1995 Appendix F; Safety Standards, ANSI Z133.1-1994, Appendix G; and ISA Tree Pruning Guidelines, Appendix H).

7.5 PRUNING MATURE TREES

Pruning is the most common tree maintenance procedure. Although forest trees grow quite well with only nature's pruning, landscape trees require a higher level of care to maintain their safety and aesthetics. Pruning should be done with an understanding of how the tree responds to each cut. Improper pruning can cause damage that will last for the life of the tree, or worse, shorten the tree's life.

7.5.1 Reasons for Pruning

Since each pruning cut has the potential to change the growth of the tree, no branch should be removed without a reason. Common reasons for pruning are to remove dead branches, to remove crowded or rubbing limbs, and to eliminate hazards. Trees may also be pruned to increase light and air penetration to the inside of the tree’s crown or to the landscape below. In most cases, mature trees are pruned as a corrective or preventive measure.

Routine thinning does not necessarily improve the health of a tree. Trees produce a dense crown of leaves to manufacture the sugar used as energy for growth and development. Removal of foliage through pruning can reduce growth and stored energy reserves. Heavy or excessive pruning can be a significant health stress for the tree, and is therefore a prohibited activity (see Prohibited Activities, Section 7.3).

Yet if people and trees are to coexist in a suburban environment, then we sometimes have to modify the trees. These built environments do not mimic natural forest conditions. Safety is a major concern. Also, we want trees to
complement other landscape plantings and lawns. Proper pruning, with an understanding of tree biology, can maintain good tree health and structure while enhancing the aesthetic and economic values of our landscapes.

7.5.2 When to Prune

Most routine pruning to remove weak, diseased, or dead limbs can be accomplished at any time during the year with little effect on the tree. As a rule, growth is maximized and wound closure is fastest if pruning takes place before the spring growth flush. Some trees, such as maples and birches, tend to “bleed” if pruned early in the spring. It may be unsightly, but it is of little consequence to the tree.

To reduce the probability of insect infestation, disease or infection, the following seasonal restrictions apply, except when public safety is a concern (see Tree Pruning, Surgery and Removal, Section 4.2.7):

* All species: Do not prune during the flush of spring shoot growth
* Pine (Pinus spp.) or Elm (Ulmus spp.): Do not prune May-October
* Trees with thin bark: Do not prune in summer when sun scald injury may be a factor
* Deciduous trees (leafless in winter): Best pruned November-February
* Hazardous trees of any species may be pruned any time of the year for abatement reasons

7.5.3 Making Proper Pruning Cuts

Pruning cuts should be made just outside the branch collar (see Illustration 7-1 below). The branch collar contains trunk or parent branch tissue and should not be damaged or removed. If the trunk collar has grown out on a dead limb to be removed, make the cut just beyond the collar. Do not cut the collar.

Illustration 7-1: Proper Tree Cuts
From: International Society of Arboriculture

If a large limb is to be removed, its weight should first be reduced. This is
done by making an undercut about 12 to 18 inches from the limb’s point of attachment. Make a second cut from the top, directly above or a few inches farther out on the limb. Doing so removes the limb, leaving the 12- to 18-inch stub. Remove the stub by cutting back to the branch collar. This technique reduces the possibility of tearing the bark (see Illustration 7-2 below).

Illustration 7-2: Proper pruning cuts
*From: International Society of Arboriculture*

7.5.4 Types of Pruning

7.5.4.1 **Crown Cleaning** is removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches from the crown of a tree.

7.5.4.2 **Crown Thinning** is the selective removal of branches to increase light penetration and air movement through the crown. Thinning opens the foliage of a tree, reduces weight on heavy limbs, and helps retain the tree’s natural shape.

7.5.4.3 **Crown Raising** removes the lower branches from a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas.

7.5.4.4 **Crown Reduction** reduces the size of a tree, often for clearance for utility lines. Reducing the height or spread of a tree is best accomplished by pruning back the leaders and branch terminals to lateral branches that are large enough to assume the terminal roles (at least one-third the diameter of the cut stem). Compared to topping, reduction helps maintain the form and structural integrity of the tree.

Illustration 7-3: Types of crown pruning
*From: International Society of Arboriculture*
7.5.5 Tree Injury
Climbing and pruning practices must not injure the tree except for the actual pruning cuts. Climbing spikes may only be used on trees approved for removal.

7.6 PRUNING DISTRESSED TREES
Distressed trees require as much leaf area as possible to overcome stressed conditions. To avoid additional injury, the following measures shall be followed for these trees.

7.6.1 Injury or Disturbance
If a tree has been damaged by injury or disturbance, delay pruning until deadwood becomes evident (typically 1-3 years after injury). Crown cleaning is then recommended (see Section 7.5.4.1).

7.6.2 Neglect
Trees that have received little or no care or maintenance may need moderate crown thinning, reduction of end weights or a combination of pruning methods in order to improve the tree’s health and structure.

7.7 PRUNING YOUNG TREES
The average life expectancy for trees growing in harsh urban and suburban conditions is much less than that of trees growing in rural or forested areas. By pruning trees early on, it will improve life expectancy and is a proven, cost-effective measure. Added benefits are also reflected in safer trees with fewer branch failures and a strong, well-balanced crown. For trees that serve as replacement plantings for protected or designated trees, they shall be pruned in the following way:

* Young trees should be pruned during the second year after planting to improve their structure, and only minor crown cleaning every 3-7 years thereafter. Refer to ISA Tree Pruning Guidelines (Appendix H) and the Tree Owner’s Manual for the Northeastern and Midwestern United States (Appendix M).

* Main branches should be spaced at least 18-inches apart to alleviate a tight grouping of branches.

* Select permanent branching and allow temporary low branching on the lowest part of the trunk to remain.

7.8 WATERING SCHEDULE
An important factor in tree survival is providing the correct amount of water. The first three (3) years after planting are most critical, however, it is beneficial to pay attention to watering needs throughout a tree’s life. Periods of extreme heat, wind or drought may require more or less water than recommended in these specifications. The method and amount that is applied may vary depending upon soil composition, heat, wind, planted in turf or ground cover, periods of abnormal rainfall or in poorly drained soils.
7.8.1 Newly planted trees
* During the establishment period (1-3 years), trees should be watered thoroughly to their root depth as frequently as needed, typically 1-3 times per week, unless it has rained, and more frequently during hot weather. Water the area within the drip line and provide a deep soaking so that the entire root ball receives water.

7.8.2 Mature trees
* During periods of extreme weather (heat, wind and/or drought) it is recommended that mature trees be watered once per month during the irrigation season (usually March through September).

7.8.3 Irrigation Plan

7.8.3.1 Commercial Properties
The following requirements are mandatory for all replacement plantings:

* Hand watering systems are required for trees that are part of a development project and must be watered to insure tree survival during the course of construction until automatic irrigation is installed.
* An automatic irrigation system must be installed. Tree irrigation shall not share the same irrigation zone, including valves and circuits, as shrubs and plants due to different watering requirements. A minimum of one (1) bubbler each shall be provided for all newly planted trees. Trees greater than 4-inches DBH shall have two (2) bubblers. Bubblers shall be located 1-2 feet from the trunk.
* All automatic irrigation systems shall be equipped with an electronic controller capable of dual or multiple programming. Controller(s) shall have multiple cycle start capacity and a flexible calendar program, including the capability of being set to water every five (5) days. All automatic irrigation systems shall be equipped with a rain and freeze sensor shut-off device.
* The irrigation system must be designed by a licensed landscape architect.
* Irrigation plans must be submitted and approved by the Town Forestry Officer, prior to building permit issuance.

7.8.3.2 Residential Properties
Trees planted on residential properties are not required to have irrigation systems. However, when irrigation systems do not exist, trees need to be hand watered.

7.8.4 Amount
Unless otherwise specified, the volume of water applied at each irrigation
should be in the range of 1-1/2 gallons per inch of trunk diameter when measured at four and one-half (4.5) feet above natural grade level. The final decision of whether to water or not should be based on accurate soil probe samples that are taken from the root ball in order to determine soil moisture content.

Illustration 7-4: Tree watering - drip irrigation system

From: Town of Greenburgh

7.9 SOIL IMPROVEMENT

During development, compaction of the soil is the largest single factor responsible for the decline of trees. Ninety percent of the damage to the upper eighteen inches of soil occurs during the first pass of heavy equipment - and cannot be reversed. Every effort to avoid compaction of soil porosity within the tree protection zone shall be taken at all times. When required by the conditions of a development approval for a project, or as mitigation for injury or a prohibited activity, the following performance standards for improvement of compacted or damaged soil shall be implemented:

7.9.1 Aeration

Soil that is damaged or compacted within the tree protection zone of regulated trees shall be loosened or aerated to promote root growth and enhance tree vitality. One of the following aeration methods shall be specified in an effort to correct compacted soil conditions:

* Vertical Mulching: auger holes 2 to 4-inch diameter, 2 to 3-feet deep, on 4-foot centers and backfilled with porous material such as perlite, vermiculite or volcanic rock (see Definitions, Section 3.57).
* Radial Trenching: with an air excavator or air spade, excavate a soil trench 3 to 6-inches wide and a minimum of 12-inches deep, starting at a distance from the trunk equal to three times the trunk diameter (for a tree with a DBH of 16-inches, start the radial trench 48-inches or 4-feet, from the trunk). Extend this out to the drip line area. The
trenches shall radiate out from one (1) foot apart at the closest point. Backfill with clean topsoil or compost. A 2- to 4-inch layer of organic mulch may also be added over the top of the backfilled trenches.

* Subsurface injections under moderate hydraulic pressure using a three (3) foot probe and applied on 3-foot centers under the drip line.

7.9.2 Drainage
Adequate drainage must be provided to the surrounding soil for the planting of new trees. If the trees are to be planted in impermeable or infertile soil, and water infiltration rates are less than 2-inches per hour, then one of the following drainage systems or other approved measures must be implemented.

* French drain, a minimum of three feet in depth
* Drain tiles or lines beneath the trees
* Auger six (6) drain holes at the bottom perimeter of the planting pit, a minimum of 4-inches in diameter, 24-inches deep and filled with medium sand or fine gravel

7.10 INSECT AND DISEASE CONTROL
Generally, insect populations do not threaten tree health to the point of mortality. More often, when insect populations become too great they create a nuisance. For example, scale on tulips or aphids feeding on crabapples produce sticky honeydew that may be a nuisance if dripping on cars or at a storefront entry. Occasionally, however, pests such as eastern tent caterpillars or gypsy moths can defoliate and severely damage a tree. If action is warranted, Integrated Pest Management (I.P.M.) suggests that the pest source be identified and targeted with a specific and timely treatment. If insects or disease can lead to the death of a protected or designated tree, then it is the responsibility of the property owner to have the condition evaluated according to the following guidelines and treat the problem in a timely fashion to prevent further deterioration of the tree.

7.10.1 Insects
For treatment, consult a certified arborist or licensed professional tree care company. Accurate timing is critical for success.

7.10.2 Disease and Decay - above ground
A disease such as bleeding necrosis which erodes the health or weakens the structure of a protected or designated tree may compromise the safety of people or property (see Hazardous Trees, Sections 5.2.3 and 6.0, and Illustration 7-4 below). It is the property owner’s responsibility to have a known hazardous condition corrected in a timely fashion. Consult with a certified arborist or licensed professional tree care company for remedy possibilities, for example, pruning out infected branches, thinning, or the spray application of a chemical treatment.
Fruiting bodies, mushrooms or “conks” are common on trunks of decaying trees. Production of fruiting bodies on a living tree is a sign of extensive decay in the stem at that point, and is often referred to as heart rot. Have trees suspected of having heart rot or hollows inspected by a certified arborist or licensed professional tree care company to determine if sufficient live wood is present for structural safety. Inspect such trees every few years to be sure new growth is maintaining sound structure. Large trunks and main branches with extensive decay may have little sound wood to support the tree.

Illustration 7-5: Fruiting bodies on maple tree
*From: Town of Greenburgh*
7.10.3 Disease - below ground

Soilborne diseases, such as Armillaria Root Rot (*Armillaria spp. complex*) or Phytophthora Root Rot (*Phytophthora spp.*), are present in Westchester County soils. Often, a poor landscape design surrounding old trees encourages harmful, and often lethal diseases. The following conditions that favor a disease environment must be avoided.

* Conditions to avoid: Compacting of the soil within a tree’s *drip line*, adding fill dirt, rototilling, trenching, removing soil from the tree root area, and excessive or regular watering on or near the tree trunk area and planting incompatible water-loving plants within a tree’s *drip line*. Combined with poorly-drained soil, these factors often activate normally dormant fungi to become opportunistic and infect the tree to cause the decline and eventual death of the tree. This decline can be slow and may not be evident for many years.

* Landscape Design. When planning landscaping around a *protected* or *designated tree*, an evaluation of the tree and soil must be performed to determine if there is a disease present. If the tree is diseased and landscaping will contribute to decline, permanent damage or render it hazardous, it is the obligation of the property owner to take reasonable measures to reduce or eliminate the conditions that may cause the decline of the *protected or designated tree*.

* To identify cultural conditions that may lead to diseases such as Armillaria Root Rot, Verticillium Wilt, Phytophthora or other soilborne fungi, consult with a *certified arborist* or *licensed professional tree care company* representative.

7.10.4 Foliar disease

Leaf spot or galls may be chronic or reoccur with specific seasons. Though many of these diseases destroy leaf tissue and become unsightly, they may not significantly reduce the trees health and therefore need not be treated. Contact a *certified arborist* or *professional tree care company* representative if you suspect that your tree may have a foliar disease.

7.11 FRUIT CONTROL

While all trees produce flowers or fruit of some kind, some trees can be considered a nuisance if the use area is not compatible with the litter generated by the tree. For example, the dropping fruit of the Black Walnut (*Juglans nigra*), American Sweet Gum (*Liquidambar styraciflua*), or acorn drop of a Northern Red Oak (*Quercus rubra*) may be a safety hazard if it is in the proximity of a handicap ramp or other high pedestrian area and will thus justify control measures. When these circumstances exist, it is recommended that a *certified arborist* or *licensed professional tree care company* be contacted for assessment and recommendation.
7.12 TIPS FOR SELECTING A CERTIFIED ARBORIST AND LICENSED PROFESSIONAL TREE CARE COMPANY

7.12.1 Who should you look for?

Hiring a tree care provider deserves careful consideration and caution. A mistake can be expensive and long-lasting, while the right choice can assure health, beauty and longer life for your trees and landscape. The following suggestions will help you select a certified arborist and licensed professional tree care company:

* Check the phone directory, usually under trees or tree care service/company. Listings in the directory should indicate some degree of permanence.
* Look for professional membership affiliations. Organizations include the International Society of Arboriculture (ISA), Tree Care Industry Association (TCIA), American Society of Consulting Arborists (ASCA), Connecticut Tree Protective Association (CTPA), the New Jersey Society of Certified Tree Experts, and the New York State cooperating consultant forester program. Such membership demonstrates a willingness to stay current on techniques and information.
* Be wary of door-knockers. These are especially common after storms. Most reputable tree care providers have all the work they can handle without going door-to-door.
* Request that the sales person be a certified arborist or licensed professional tree care company worker that has been certified through a program of the International Society of Arboriculture (ISA) or equivalent. This program is the industry standard of performance for appropriate training, experience and knowledge about tree care.
* Be sure that the licensed professional tree care company has a current and valid Westchester County Home Improvement license.
* Require a certificate of insurance, including liability for personal injury and property damage (such as your house and your neighbor’s), and workers compensation. Phone its insurance company to make certain each policy is current. Under some circumstances, the property owner may be held financially responsible if an uninsured worker is hurt on your property or if damage is done to a neighbor’s property.
* It is best to select a certified arborist or licensed professional tree care company that is familiar with the trees and ordinances of the Town of Greenburgh. Ask for local references and other jobs the company or individual has done in Greenburgh. Call the Forestry Officer to verify that work has been performed in the Town. Experience, education and good reputation are signs of a quality individual/company. Keep this in mind when selecting a landscape architect as well.
* Have more than one certified arborist or licensed professional tree care company.
care company look at your job and give you a written estimate that clearly states its scope of work. Don’t expect a company to lower its bid to match another’s bid. Be willing to pay for the estimate if necessary. Two or more opinions and estimates are worth the extra effort.

* A quality certified arborist and/or licensed professional tree care company will offer a wide range of tree care services including pruning, fertilizing, cabling, pest control, removal, etc.
* A reputable certified arborist and/or licensed professional tree care company will not recommend topping (See Definitions, Section 3.41). Topping is a prohibited activity. Instead, when necessary, crown cleaning or crown reduction methods would be suggested (See Types of Pruning, Section 7.5.4).
* A knowledgeable certified arborist and/or licensed professional tree care company representative will perform only accepted practices and will wear safety equipment. For example, the use of climbing spikes is unacceptable if the tree is to remain in the landscape. These should be used only for tree removal. Safety equipment includes the use of a hard hat, as well as eye and ear protection.
* Beware of a tree care provider who is eager to remove a living tree. Removal should ALWAYS be a last resort.
* Tree removal should not be performed by one individual. Reputable companies send more than one person to a removal job.

7.12.2 The Contract for Services

To be assured of having your work performed to the standards you expect, a contract should include all the necessary assurances. Most companies will provide their own contract and should include the following basics:

* Dates that work will begin and end.
* List exactly what will work be done. If your tree is to be sprayed, get a written statement detailing the insect or disease to be treated, the chemical to be used and what precautions you need to take (cover patio furniture, keep pets/children inside, etc.). If fertilizing, how many pounds of fertilizer per inch of trunk diameter will be applied and by what method.
* Cleanup procedures should be listed and whether downed logs will need to be removed from the site or cut and left at the curb for pickup (and into what lengths).
* Clarify if tree removal includes grinding the stump and surface roots and, if so, how deep? Will the company remove grindings & backfill the hole?
* The total dollar amount you will be charged.
* Work is usually priced in one of two ways: (a) as a single price for the job; or (b) on an hourly basis, plus materials. When using the latter, be sure to include the wording, “...but not to exceed...”.
7.12.3 Using Professionals for Preventative Care

* A proactive tree and plant health care program can assure that minor, early pruning will prevent major, corrective pruning later on. An annual inspection will likely help you develop the landscape relatively hazard-free and display attractive curb appeal.

* Consulting arborists also offer advice and appraisals, diagnosis of problems and recommend treatment. They also can serve as a ‘second opinion,’ if needed.
“Each generation takes the earth as trustees. We ought to bequeath to posterity as many forests and orchards as we have exhausted and consumed.”

~ J. Sterling Morton

Photo: Landscaped island located at the Landmark @ Eastview site, Town of Greenburgh
8.0 TREE REPORTS

8.1 INTRODUCTION

A tree report is required for development projects involving tree removal and may be required for individual tree removal permit applications, including hazardous tree removal permits. The report must be prepared by a certified arborist for the applicant and submitted to the Town for the purpose of providing accurate information and opinion regarding the condition, welfare, maintenance, preservation or value of a protected or designated tree.

8.1.1 When a written report is required

Generally, there are two circumstances in which tree reports are required: (1) when a tree removal permit is sought, and (2) to complete and verify a site plan, assess tree impacts and establish tree protection for property development when within the drip line of a protected or designated tree. Types of report formats are: Letter Report, Tree Survey Report, Tree Protection and Preservation Report and Tree Appraisal.

Tree Reports are not required when a hazardous tree removal permit application is submitted for up to three (3) trees, or when a Town Supervisor Waiver has been issued (see Emergency Tree Removal, Section 6.3).

8.1.2 Who may prepare the report

The tree report is to be prepared by an individual who has obtained knowledge and competency through an accredited body, and who is retained by the applicant or property owner. This person shall possess a current International Society of Arboriculture arborist certification, be a member of the American Society of Consulting Arborists, be a professional forester in the New York State cooperating consultant forester program, be a member of the New Jersey Society of Certified Tree Experts, or be a licensed arborist with the State of Connecticut Department of Environmental Protection (see Certified Arborist, Section 3.7).

8.2 REPORT FOR INDIVIDUAL TREE REMOVAL PERMIT

8.2.1 Tree Removal Permit

The procedure (see Tree Removal Checklist, Section 5.2.2 and Allowable Removal, Section 5.2.1) involves three steps which must be completed and approved to remove a protected tree. The information contained within the application will be reviewed by the Town Forestry Officer for written response within 20 business days.

8.2.2 Submittals

For this purpose, the following information is to be submitted to the Town Forestry Officer for review:

* A completed tree removal permit or hazardous tree removal permit
application (delivered to the Town of Greenburgh, Department of Community Development and Conservation, 177 Hillside Avenue, 2nd Floor, Greenburgh, NY 10607).

* A filing fee in the appropriate amount (see Fee Schedule, Appendix I) for review and records management.

* A tree report prepared by a certified arborist, if required (See Section 8.1.1).

8.2.3 Written authorization

To remove a publicly-owned tree (public/street tree), the property owner shall first have obtained written permission from the Commissioner, Department of Public Works or the Commissioner, Department of Parks and Recreation. For a protected tree on private property, the tree removal permit issued by the Town Forestry Officer must be on site when the tree is being removed. For removal of regulated trees involved in property development, the approval letter and approved plans serve as the permit approval and must be maintained on the project site. No separate written permit is needed.

8.3 TREE REPORTS

8.3.1 Letter Report

A brief format is acceptable for (1) and (2) below, and can generally be used for assessing up to three trees. All letter reports shall contain the following information: Arborist name and certification number; purpose of the report and for whom; site address; date of inspection(s); a to-scale diagram of the tree(s) location, accurate size of the trunk diameter (measurement taken at four and one-half feet above natural grade level); proximity to structures; condition of the tree health (presence of decay, disease, insect infestation); condition of the tree structure; interface with utility services; conclusion and recommendations, photographs (encouraged) and tree protection instructions (if needed).

8.3.1.1 Removal

If for tree removal only, and not in connection with a property development, a letter report must be provided which, in addition to the information outlined above, shall provide information and a determination on whether the tree is dead, dying, diseased, hazardous, a detriment to or crowding an adjacent regulated tree, constitutes a public nuisance (see Public Nuisance Tree, Section 3.51), or substantially interferes with a permitted use of the property.

8.3.1.2 Development

If the proposed tree removal is in connection with development on a single family residential lot (not a subdivision or site plan proposal), the letter report shall also clearly indicate whether or not any protected or designated tree is located so close to the ‘building area or building
footprint’ that it will be killed or permanently injured by disturbance. The report must make specific recommendations for trees to be protected and preserved during the course of construction that are consistent with the specifications within this Manual (see Tree Protection and Presentation Report, Section 8.3.3).

8.3.1.3 Specific situations
Other conditions may require the following additional information on an as needed basis if requested by the Forestry Officer: tree protection and preservation plans; appraised value (see Tree Appraisal, Section 8.4); and any other supporting information, photographs, diagrams, etc. that may be necessary.

8.3.2 Tree Survey Report
A more extensive tree survey report is required for all development projects except those identified in Section 8.3.1.2. The report shall inventory all trees that are 4-inches DBH and greater (measured at four and one-half feet above natural grade level) on site, including trees to be removed, relocated and retained on the property (also including trees on neighboring properties that overhang the project site) and all public/street trees in the right-of-way within 30-feet of the project site.

8.3.2.1 Requirements
All ‘tree survey reports’ shall contain the following information: Arborist name and certification number; cover letter; title page; table of contents (if necessary); purpose of the report and for whom; site address; date of inspection(s); site plan (showing the location of each tree by number that correlates with the tree inventory submitted); information about all trees on the site including: species (must provide name - ”unknown” is unacceptable), size, location, condition, structure, height, crown integrity, crown spread, age, pruning history, presence of pests and disease, and presence of decay. The report shall also provide information on maintenance needs, whether the tree is in imminent danger of failing, potential impacts of disturbance, tree appraisal value, conclusion, recommendations (such as mitigation measures), and rating for suitability for preservation, along with a tree protection and preservation plan. The report shall include a separate list of all protected trees with location numbers, as well as a list of all trees removed from the property within the past twelve (12) months. If necessary, other supporting information, photographs, diagrams, etc. may be required to be provided.

8.3.2.2 Appraised Value
The monetary value that each tree contributes to the real estate value of the property shall be determined and listed separately within the tree survey report (see Tree Appraisal, Section 8.4).
8.3.3 Tree Protection and Preservation Report

All protected and designated trees to be retained on a development site shall be shown on all approved sets of plans and shall be protected during the construction process. A tree protection and preservation report submitted for review and consideration by the approval authority is required when trees to be retained may be injured by disturbance. The tree protection and preservation report shall assume compliance with the standards in Section 4.0 of this Manual (see Protection of Trees During Construction and Development). In addition, the following information must be included in the report:

8.3.3.1 Scope and Construction Phasing

The tree protection and preservation report shall identify, but not be limited to, written recommendations for the health and long-term welfare of trees that are to be protected and preserved during the following distinct phases and conditions: preconstruction; during construction, post construction, demolition activities; methods of avoiding injury, damage treatment and inspections. Schedules shall be included.

8.3.3.2 Tree Protection Zone

The tree protection and preservation report shall establish a tree protection zone (TPZ) for each tree to be protected and clearly outline site-specific measures for protection of the trees during construction and outline a course of action for continued maintenance of those trees after construction is complete. After project approval, any changes to the protection measures must be approved in writing, by the approval authority. This portion of the report shall include the following elements:

* Disclosure of all trees on and near the site

The property owner or designee shall provide accurate information to the certified arborist to develop the tree protection measures and to enable accurate recommendations to ensure their survival. The site plan shall accurately show the surveyed location, species (must provide name - “unknown” is unacceptable), size of trunk and leaf canopy of all trees; show the drip line of any neighboring trees that may overhang the site, and public/street trees that are within 30-feet on each side of the project. Failure to show a tree on the site plan which is later determined to be affected by construction will result in the issuance of a stop work order by the Town of Greenburgh. No work will be permitted to continue until mitigation can be agreed upon by the property owner and the Town. If mitigation cannot be agreed upon by the two parties, within twenty (20) calendar days of issuance of a stop work order, a summons shall be issued and the matter will be handled by the Town Justice Court.
8.4 TREE APPRAISAL

Landscaping may significantly add to the real estate value of a property. An individual tree has an inherent value to the real estate that can be determined by an appraisal prepared by a certified arborist. An appraisal is a process for determining a monetary opinion of the value of a tree as it relates to either the property, a group of trees and/or the immediate community. A certified arborist is required to determine this value, and must exercise good and fair judgment by adjusting the basic value by the tree’s condition and location. The Town of Greenburgh requires that certified arborists use the trunk formula method of appraisal.

8.4.1 Method of Appraisal

The certified arborist must prepare the appraisal by using the most current edition of the ‘Guide for Plant Appraisal’, published by the Council of Tree and Landscape Appraisers.

8.4.1.1 The Trunk Formula Method

The tree shall be appraised by determining the basic tree value and adjusting this value by a condition and location rating. The appraised value shall be determined by using the most recent edition of the Guide for Plant Appraisal, published by the Council of Tree and Landscape Appraisers. All trees 4-inches DBH and greater shall be calculated in this manner.

8.5 TREE BONDS

Once a value is established for trees to be preserved on a development site, the approval authority may require that a tree performance bond be posted (See Section 5.7). This bond is to ensure that the developer complies with the conditions of approval for tree preservation during the construction phase. If trees are injured or die...
during construction and development, the approval authority has the right to declare the bond in default and apply the proceeds to pay for any required replacement plantings.

8.6 POST-CONSTRUCTION EVALUATION OF RETAINED TREES

This evaluation must be prepared by the applicant’s certified arborist and submitted prior to the issuance of a final certificate of occupancy or completion by the Building Department.

The Town of Greenburgh requires a post-construction evaluation in order to compare tree health before and after construction. Information to be included in the evaluation shall resemble that which is required in the arborist report. If it is determined that any tree designated for preservation is injured or destroyed, the approval authority shall have the right to require in-kind replacement of the tree, or in the alternative, withdraw money from any bond posted in order to replace the subject tree in-kind. When trees are so large and mature that they cannot be replaced in-kind, the approval authority shall have the right to require the planting of multiple trees instead, through consultation with the Forestry Officer.