Planning for the protection & planting of street trees in new private development projects

MTNYC
8.29.2013
New York City Population

Bronx: 1,392,002
Brooklyn: 2,532,645
Manhattan: 1,601,948
Queens: 2,247,848
Staten Island: 470,467

Total: 8,244,910

The Urban Landscape

NYC is 14% Parkland

- more than 5,000 individual properties
- 800 athletic fields
- nearly 1,000 playgrounds
- 550 tennis courts
- 66 public pools
- 48 recreational facilities
- 5 stadia
- 17 nature centers
- 13 golf courses
- 14 miles of beaches
- 1,200 monuments
- 22 historic house museums
615,000 Street Trees
Parks Commissioner

First Deputy Commissioner for Operations

Bronx Borough Commissioner
- Chief of Operations
- Deputy Chief of Operations
- Director of Forestry (1 Bronx River Parkway, Bronx Park)

Brooklyn Borough Commissioner
- Chief of Operations
- Deputy Chief of Operations
- Director of Forestry (Prospect Park Garage, Prospect Park West)

Manhattan Borough Commissioner
- Chief of Operations
- Deputy Chief of Operations
- Director of Forestry (5-Boro Garage, Randall’s Island)

Queens Borough Commissioner
- Chief of Operations
- Deputy Chief of Operations
- Director of Landscape Management (Flushing Meadows Garage, Flushing Meadows Corona Park)

Staten Island Borough Commissioner
- Chief of Operations
- Deputy Chief of Operations
- Director of Forestry (Staten Island Garage, Clove Lakes Park)

Chief of Forestry, Horticulture, and Natural Resources Group (Central Forestry & Horticulture, Olmsted Center, Flushing Meadows Corona Park/ NRG, Arsenal North)

Emergency Tree Risk Management in NYC
NYC Urban Forest Management

planting

maintenance

preservation

emergency response

risk management
The mission of Forestry, Horticulture and Natural Resources is to protect, restore, expand, and manage New York City’s natural spaces and green infrastructure to maximize their benefits and promote their value within and outside of the urban ecosystem.
Urban Forest Loss

- Research by Columbia University, NYC
- Used remote sensing data from LANDSAT satellites
- NYC lost 4.5% vegetative cover between 1984 – 2002 (9,000 acres)
- US Forest Service study found NYC lost 1.8% area of tree canopy between 2004 and 2009
Street Trees Benefits

Now known as i-Tree Streets

A US Forest Service method for street trees that:

- measures existing trees
- quantifies their benefits
- assesses management costs
- compares costs vs. benefits
Street Tree Benefits

**Annual Benefits**

- **Property Values**: $52 million
- **Stormwater**: $36 million
- **Energy**: $27 million
- **Air Quality**: $5.3 million
- **CO₂ Reduction**: $0.75 million

**Total Benefits**: $121,000,000

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Urban Forestry Challenges
Utilities
Asian longhorned beetle
*Anoplophora glabripennis*

**Origins** -- China; came to U.S. in solid wood-packing material

**First U.S. discovery** – 1996

**Earliest probable infestation** – 1980s

**Host species** -- maple, horse chestnut, elm, birch, poplar, willow, ash, London plane (47% of NYC tree population)

**Flight ability** -- 1,200 feet (1/5 mile)
Urban Forestry Challenges

Storm Event Tree
Service Requests
9/16 (1726 hours)
- 10/1 (0900 hours)

Service Request Status
- Open (5232)
- Closed (5105)

[Map showing tree service requests across New York City]

City of New York
Parks & Recreation
Michael R. Bloomberg, Mayor
Adrian Benepe, Commissioner

NYC Parks
Created by Jessica Braden, Central Forestry & Horticulture, NYC Department of Parks & Recreation, October 5, 2010.
Fire and Stabbings!
And of Course, Bad Driving?
How Does Construction Damage Trees?
Below Ground Damage
Above Ground Damage
Insufficient Tree Protection
Insufficient Tree Protection
Planning for Trees in Construction

Parks
Building Plan Review

This page is for projects pre-filed with the NYC Department of Buildings on or after May 3, 2010. If you have a project pre-filed with DOB before May 3, 2010, please visit the Planting Requirements page.

Parks' Building Plan Review is a multi-step design review process administered by Parks and the Department of Buildings (DOB) to help the building community acquire the appropriate permits for the protection of existing trees and the planting of new trees.

Parks will review the Builder's Pavement Plan (BPP) prior to DOB approval and evaluate the location of street trees, the size of tree pits on-site, as well as any planned tree removals. The Building Plan Review greatly reduces the chances that changes to tree pit size and tree species will be required after construction is complete, thereby expediting your Street Tree Planting Permit Sign-Off and the issuance of your Certificate of Occupancy.

To complete the Building Plan Review, please follow the step-by-step directions below.

See the Building Plan Review Flowchart.

Building Plan Review: Step-by-Step

Step 1: Examine Your Site Plan Against Parks' Building Plan Review Checklist

Reference the Building Plan Review Checklist to make sure your site plan possess all necessary information required by our Forestry offices. If any information is missing, revise your site plan accordingly. Failure to complete this step will delay the rest of your Plan Review process.
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NYC Parks requires the following information to be added to site plan (if applicable) for your Parks Plan Review

Existing and Proposed Landscape:
- Planting strips, landscape islands
- Existing tree inventory with DBH and species for all trees on property as well as trees within 50 ft of property lines
- Proposed tree removals with DBH and species
- All tree bed dimensions (including lawns)
- Two proposed species for all new proposed trees to be planted

Existing and Proposed Infrastructure (continued):
- Street furniture including but not limited to bus stops and shelters, newsstands, mailboxes, telephones, signs, bicycle racks or any other obstruction on the sidewalk
- Manholes, storm drains, catch basins, valve boxes, septic tanks, leach fields, drywells, site drainage
- Fire escapes, awnings, balconies, terraces or any structure protruding from building that may interfere with any tree
- Sidewalk vaults, utility vaults, retaining walls
- Subway entrances, subway right-of-way, ventilation grates, and exit hatches
- Fire hydrants, protective bollards, street lights, traffic signs and signals, FDNY call box

Drawing Protocols:
- Title (including legal street address(es)
- North arrow Scale bar (written and graphic formats)
- Graphic legend(s) & space for NYC Parks approval seal

Property Description:
- Zoning lot and tax lot boundary lines with dimensions
- Block and lot numbers with associated BIS numbers

Existing and Proposed Infrastructure:
- Adjoining streets and alleys, etc., with applicable names
- All proposed sidewalk widths
- Utility lines, utility poles, water, sewer, gas, electric, fuel tanks, & any other underground infrastructure that may restrict tree planting

Existing and Proposed Property Improvements:
- Outline of existing and proposed buildings, garages or any other building accessories
- Building entrances, sidewalk hatches, stoops, stairs, ramps
- Note of significant grade change
- Driveway dimensions, curb lines, curb cuts, pedestrian ramps, total frontage (ft)
- Encroachments, fences and walls located in the right of way

Textboxes & drawings (must be on all plans):
- "Will contact NYC Parks if any underground infrastructure (gas/water/electric etc.) affects any proposed/existing trees on site. Project Manager is aware that any work done on or near a city tree requires a permit from NYC Parks. This includes utility, sidewalk, pruning or any other work within the drip line of a tree (within the right of way) done by the general contractor or any subcontractors. Will follow NYC Parks planting & forestry specifications. Utilities may not be labeled. If unknown, the Project Manager must amend plan with NYC Parks in future."
- "Total number of: trees required by NYC DOB
  - Existing trees to protect
  - Proposed trees to remove/relocate
  - Proposed trees to plant
  - Trees to plant offsite or pay into tree fund
- "All pit sizes indicated are to be fully excavated to the dimensions labelled and replaced with new topsoil to NYC Parks Standards."
Textboxes & drawings (must be on all plans):

☐ “Will contact NYC Parks if any underground infrastructure (gas/water/electric etc.) affects any proposed-existing trees on site. Project Manager is aware that any work done on or near a city tree requires a permit from NYC Parks. This includes utility, sidewalk, pruning or any other work within the dripline of a tree (within the right of way) done by the general contractor or any subcontractors. Will follow NYC Parks planting & forestry specifications. Utilities may not be labelled. If unknown, the Project Manager must amend plan with NYC Parks in the future.”

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  - Existing trees to protect
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  - Trees to plant offsite or pay into tree fund

☐ “All pit sizes indicated are to be fully excavated to the dimensions labelled and replaced with new topsoil to NYC Parks Standards.”
### Tree Planting & Stake Detail

Not to Scale

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<th>Borough</th>
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<th>Fax</th>
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<td>212 860 1359</td>
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<td></td>
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<tr>
<td>Bronx</td>
<td>One Bronx River Parkway</td>
<td>718 430 1877</td>
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"Total number of trees required by NYC DOB: 1
Existing trees to protect: 0
Proposed trees to remove/relocate: 0 (must have DPR approval and documentation for tree removals)
Proposed trees to plant: 1
Trees to plant offsite or pay into tree fund: 0"

“All pit sizes indicated are to be fully excavated to the dimensions labelled and replaced with new topsoil to NYC Parks Standards.”
THE CONTRACTOR WILL CONTACT NYC PARKS IF ANY UNDERGROUND INFRASTRUCTURE (GAS/WATER/ELECTRIC ETC.) AFFECTS ANY PROPOSED/EXISTING TREES ON SITE. WE ARE AWARE ANY WORK DONE ON OR NEAR A CITY TREE REQUIRES A PERMIT FROM NYC PARKS. THIS INCLUDES UTILITIES, SIDEWALKS, PRUNING, OR ANY OTHER WORK THAT MAY IMPACT ANY TREE WITHIN THE DRIPLINE; DONE BY THE GENERAL CONTRACTOR OR ANY SUBCONTRACTORS, WILL FOLLOW NYC PARKS PLANTING SPECIFICATIONS AND FAVOR AMENDED PLAN.

SPECIAL STREET TREE NOTES:
1. ALL STREET TREES ARE UNDER THE JURISDICTION OF THE N.Y.C. DEPARTMENT OF PARKS & RECREATION. REMOVAL OF ANY STREET TREE IDENTIFIED ON THIS PLAN AS TO BE PRESERVED IS A VIOLATION OF N.Y.C. LAW AND IS SUBJECT TO DEPARTMENT OF PARKS & RECREATION PENALTIES.
2. A PERMIT ISSUED BY THE N.Y.C. DEPARTMENT OF PARKS & RECREATION IS REQUIRED PRIOR TO REMOVING ANY EXISTING TREE SO INDICATED ON THIS PLAN.
3. YOU MUST OBTAIN ALL REQUIRED N.Y.C.D.P.R. PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK WHICH MAY IMPACT A STREET TREE. THIS INCLUDES BUT IS NOT LIMITED TO THE INSTALLATION OF A SIDEWALK AND/OR CURB FOR WHICH A PROTECTION PERMIT IS REQUIRED. ALSO THE PLANTING AND REMOVAL OF STREET TREES REQUIRE A PROPER PERMIT.

REQUIRED STREET TREE PLANTING CALCULATION (FROM ST-1 FORM)
74 ROME AVENUE
1 STREET TREE PER 25 LF OF STREET FRONTAGE
22.67 LF - 25 = 0.90 (1) TREE REQUIRED
PLANT 01 TREE(S) ON-SITE
PLANT 00 TREE(S) OFF-SITE
REMOVE/PRESERVE 00 EXISTING STREET TREE(S)

72 ROME AVENUE
1 STREET TREE PER 25 LF OF STREET FRONTAGE
14.66 LF - 25 = 0.58 (0) TREES REQUIRED
PLANT 01 TREE(S) ON-SITE
PLANT 00 TREE(S) OFF-SITE
REMOVE/PRESERVE 00 EXISTING STREET TREE(S)

70 ROME AVENUE
1 STREET TREE PER 25 LF OF STREET FRONTAGE
22.67 LF - 25 = 0.90 (1) TREE REQUIRED
PLANT 01 TREE(S) ON-SITE
PLANT 00 TREE(S) OFF-SITE
REMOVE/PRESERVE 00 EXISTING STREET TREE(S)

1 OF 1
NYC PARKS AND RECREATION DEPARTMENT NOTES:

1. Existing sidewalk conc to remain until building construction is complete, to help against any soil compaction.

2. Existing curb and conc flags surrounding existing tree to be removed by hand held jackhammer, so as not to compact any soil or damage roots.

REPLACE SIDEWALK W/ NEW SIDEWALK PER NYCDOT STANDARD DETAIL H-1045. CONCRETE SCORING PATTERN SHALL BE 5X5'S W/ TROWELED JOINTS AND CONCRETE COLOR SHALL BE FLOATED UPON NYCDOT HIGHWAY SPECIFICATIONS SECTION 4.13 (H).

WHERE INDICATED BY HATCH (APPROX 30'-6" x 5'-6" = 92 SF), REPLACE SECTIONS OF ROAD, TOP COURSE, WHERE DAMAGED BY CONSTRUCTION OR AS REQUIRED BY NYCDOT.

SOIL LEVEL IN TREE PIT TO ALIGN W/ T.O. SIDEWALK, ADD 3" MULCH TO ENTIRE PIT.

12'-6" W/F LOCATION OF EXIST TREE

TO CENTERLINE OF ROAD

ADJUST SECTIONS OF NTH SIDWALK.

EXISTING LIGHT POLE TO BE REMOVED TEMPORARILY FOR CONSTRUCTION ACCESS -- TO BE REMOVED UPON COMPLETION OF CONSTRUCTION.

REMOVE EXISTING CURB (30'-6") AND REPLACE WITH NEW STEEL FACED CONCRETE CURB PER NYCDOT STD. DETAIL H-1010.

NOTES:

1. PROVIDE JOINT SEALANTS AT EXP JT TO MATCH ADJ EXISTING SIDEWALK.

PLEASANT AVE
Preserve Trees Where Possible

127 x 3” Replacement Trees
5 Steps of Tree Preservation
Step 1 - Assess Existing Trees

- Identify Species
- Measure Diameter at Breast Height
- Estimate Age Class
- Assess Condition
- Assess Pruning Needs
- Note Special Comments
Calculate the Critical Root Zones

Methods
1. ISA Best Management Practices: Managing Trees During Construction
2. 1” of Diameter Breast Height (DBH) equals 1.5’ radius of CRZ

Example: 10” DBH tree has a CRZ of 30 feet (15 feet radius)

Quick Rule of Thumb in the Field:
Dripline or half height – whatever is greater
Step 2 - Design with Trees in Mind
Design for Tree Health and Future Growth

Before - Design

Need property owners permission to remove and not replace

After
Special Techniques for Work in the CRZ

**Construction Techniques**
1. Pneumatic excavation
2. Hand Excavation
3. Trenchless technology

**Design Techniques**
1. Ground Beams
2. Pier footings
3. Root bridges
4. Ramping
5. Porous surfacing
6. Flexible surfacing
Step 3 - Formulate a Tree Protection Plan
Specify Tree Protection
TREE PROTECTION NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK AND VERIFY ALL SITE CONDITIONS, BOTH ABOVE AND BELOW THE SURFACE, PRIOR TO COMMENCING WORK. ANY DISCREPANCIES BETWEEN PLANS AND ACTUAL FIELD CONDITIONS SHOULD BE BROUGHT TO THE ATTENTION OF THE RESIDENT ENGINEER IN WRITING PRIOR TO THE COMMENCEMENT OF WORK.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PREVENTION OF ALL EXISTING TREES THAT ARE TO BE RETAINED WITHIN CONTRACT LIMIT LINE.

3. THE RESIDENT ENGINEER SHALL NOTIFY THE CONTRACTOR IN WRITING AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY TREE PROTECTION, PRUNING, TREE REMOVALS, ERECTIONS WITHIN SHADES, DECOMPOSITION, TUTORIAL, AND PLANTED WORK.

4. WHEN A TREE PROTECTION DEFICIENCY IS DETERMINED BY THE DIRECTOR OF LANDSCAPE CONSTRUCTION AS IDENTIFIED BY THE CONTRACTOR, THE DEFICIENCY WITHIN THE TIMEFRAME WILL RESULT IN LIQUIDATED DAMAGES. AS PER GENERAL CONDITIONS, SPECIAL PROVISIONS, SECTION C, ARTICLE 4 "TREE WORK: REMOVAL"

5. ANY DAMAGE TO EXISTING TREES DURING CONSTRUCTION SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL MITIGATE SUCH DAMAGED TREES TO THE SATISFACTION OF THE AGENCY AS THE CONTRACTORS DIRECT, AS PER GENERAL CONDITIONS, SPECIAL PROVISIONS, SECTION C, ARTICLE 4 "TREE WORK: REMOVAL"

6. ALL TREES WITHIN THE CONTRACT LIMIT LINE ARE TO RECEIVE AT LEAST ONE (1) INCH OF WATER EQUIVALENT TO 75 GALLONS OF WATER PER 1,000 SQUARE FEET OF TREE PROTECTION 24 HOURS PRIOR TO THE MONTHS OF MARCH AND OCTOBER AS DETERMINED BY THE DIRECTOR OF LANDSCAPE CONSTRUCTION. IF THERE IS ANY GROWTH BELOW 1100 GALLONS, THE CONTRACTOR MUST SUPPLEMENT THE AMOUNT RECEIVED BY UTILIZING ROOFER OR AS DIRECTED BY THE AGENCY. IF A WATER SOURCE IS UNAVAILABLE AT THE SITE, THE CONTRACTOR MUST PROVIDE FREE RENTAL BASIS TO APPLY THE REQUIRED AMOUNTS OF WATER. AS PER GENERAL CONDITIONS, SPECIAL PROVISIONS, SECTION C, ARTICLE 4 "TREE WORK: REMOVAL"

7. PREPARATORY PRUNING WORK SHALL BE PERFORMED UNDER THE DIRECTOR OF LANDSCAPE CONSTRUCTION OR HIS REPRESENTATIVE. THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE GUIDELINES STANDARDS AND BY QUALIFIED PERSONNEL. THE CONTRACTOR SHALL NOTIFY THE DIRECTOR OF LANDSCAPE CONSTRUCTION 718-750-6773 AND WILLIAM STEVENS, DIR. OF MANHATTAN FORESTRY (212) 680-8455 AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF SUCH WORK. (ITEM "PREPARATORY PRUNING OF TREE OVER 6" TO 12" DIAM.")

8. TEMPORARY WOODEN TREE GUARD WITH WOOL FOR INDIVIDUAL TREES, TEMPORARY WOODEN TREE GUARD FOR GRAVES, AND TEMPORARY SNOW PLOW BUTTON SHALL BE MAINTAINED THROUGHOUT THE COURSE OF THE CONTRACT (ITEM "TEMPORARY WOODEN TREE GUARD WITH WOOL", "TEMPORARY WOODEN TREE GUARD FOR GRAVES", AND "TEMPORARY SNOW PLOW BUTTON")

9. TEMPORARY WOODEN TREE GUARD AND TEMPORARY SNOW PLOW BUTTONS ARE NOT TO BE REMOVED UNTIL DIRECTED BY THE DIRECTOR OF LANDSCAPE CONSTRUCTION OR HIS REPRESENTATIVE.

10. THE CONTRACTOR SHALL TAKE EXTREME CARE TO PROTECT THE ROOT SYSTEM OF EXISTING TREES. DUST MATERIAL, EQUIPMENT, OR VEHICLES SHALL NOT BE STORED OR PLACED WITHIN 10' OF THE TREE TO MINIMIZE SURFACE EROSION AND ENSURE PROPER ROOT AND SOIL COMPOSITION. THIS APPLIES TO ALL AREAS WITHIN THE CONTRACT LIMIT LINE.

11. IF STOPLING OCCURS WITHIN 10' OF THE EXISTING TREE, A STOP WORK ORDER SHALL BE ISSUED IMMEDIATELY. WORK SHALL NOT RESUMED UNTIL THE REQUIRED WORK IS PROPERLY COMPLETED AND SATISFACTORY.

12. CONSTRUCTION ACCESS ROUTE IS DIAGRAMIC. FINAL ROUTE SHALL BE ESTABLISHED ON SITE AND APPROVED BY THE RESIDENT ENGINEER.

13. AS SHOWN ON THE PLANS, THE DESIGNATED TREE ZONE SHALL BE COVERED WITH LANDSCAPE FABRIC, WHICH WILL BE PROTECTED AT LEAST 100 FEET IN ALL DIRECTIONS WITH WOODEN/plastic DIAMETER OF 1 2/3 INCHES TO PROTECT THE ROOTS FROM DAMAGE CAUSED BY HYDRAULIC EQUIPMENT. SUCH COVERING SHALL BE MAINTAINED DURING THE COURSE OF CONSTRUCTION AND REMOVED BY HAND OR AS SPECIFIED BY THE RESIDENT ENGINEER. (ITEMS "PROTECT DIRT. TREE ROOT WITHIN LANDSCAPE FABRIC", "PROTECT DIRT. TREE ROOT WOODEN/plastic DIAMETER OF 1 2/3 INCHES"

14. ANY DISCIPLINE WITHIN AREAS DESIGNATED "HAND ERECTION ONLY" AS INDICATED ON TREE PROTECTION PLANS SHALL BE DONE BY HAND OR PLUMBER ERECTION AND IN THE PRESENCE OF THE DIRECTOR OF LANDSCAPE CONSTRUCTION OR HIS REPRESENTATIVE AND THE RESIDENT ENGINEER. (ITEMS "HAND ARGON PLUMBER ERECTION"

15. ALL DISCIPLINE AND PLANT INSTALLATIONS WITHIN THE 10' OF TREES ARE TO BE BY HAND AND NOT USED TO MINIMIZE NOISE DISTURBANCE AND ROOT DAMAGE.

16. RESIDUES OVER 1 1/2 INCH IN DIAMETER SHALL NOT BE CUT WITHOUT THE WRITTEN PERMISSION OF THE RESIDENT ENGINEER.

17. THE CONTRACTOR SHALL PROVIDE FRONTAGE CARE IN CONFORMITY WITH THE DIRECTOR OF FORESTRY.
Step 4 – Install & Maintain Tree Protection
Install & Maintain Tree Protection
Step 5 - Perform any Required Remedial Tree Work

Soil Restoration & Pruning
Working On or Near Trees

Any person, contractor, or entity that needs to perform work on or within 50 feet of a street tree is required to obtain a permit from Parks prior to the start of construction, and perform all work in compliance with Parks' Tree Protection Protocol. Parks' jurisdiction often extends across a front yard or lawn all the way to the building line, so please contact your Borough Forestry office if it is unclear whether a tree is on public or private property.

Examples of work requiring a Tree Work Permit include, but are not limited to:

- Installing a sidewalk, driveway or utility line
- Pruning
- Extending the current tree planting space
- Building construction within 50 feet of a City tree
- Hanging holiday lights
- Excavation or felling near a City tree.

The Permit Process

Through the Tree Work Permit process, our Parks Forestry staff will work with you to review all proposed site work and, in line with our Tree Protection Protocol, design a plan for all affected City trees. Along with a Tree Work Permit, we may also require that you hire a Certified Arborist (CA) to oversee all work and serve as a liaison to Parks concerning site work.

The Tree Work Permit process begins when you file a PA Forestry Application with the appropriate Borough Forestry Office. All work will be completed at the owner/applicant's expense.

Damage to Trees

Any damage done to a City tree will lead to substantial fines and may prevent you from receiving permits from Parks in the future. Careful planning and protective measures can prevent injury and destruction of City-owned trees and help avoid costly project delays, fines, or litigation.

It is illegal and punishable by law for citizens to damage, remove, or otherwise harm a street tree or park tree. Learn more on our Illegal Tree Work and Damage page.

Consulting Arborists

After review of the proposed tree work, Parks may require a Certified Arborist (CA) to be onsite during the project and serve as a Liaison to Parks. The CA's primary role will be to ensure that all work is done to industry standards and our protocol. The CA will be a person independent of, and not associated with, those persons performing the tree pruning, tree removal, and tree planting or transplanting operations, or any construction operations. Prospective Consulting Arborists will be approved by Parks based on their qualifications and their ability to provide the necessary staff and services for a given project.

Consulting Arborist Approval

http://www.nycgovparks.org/services/forestry/tree-work-permit
Additional Resources
Thank you.