Cambridge Urban Forest Master Plan

Task Force meeting #2

June 28, 2018

CAMBRIDGE DEPARTMENT OF PUBLIC THE WORKS

KLEINFELDER Bright People. Right Solutions.

clf conservation law foundation

BARTLETT TREE EXPERTS SCIENTIFIC TREE CARE SINCE 1907

APPLIED ECOLOGICAL SERVICES

REED HILDERBRAND

F² VJ ASSOCIATES

INTRODUCTION

PRACTICE / ARBORICULTURE

ADVOCACY / REGULATION

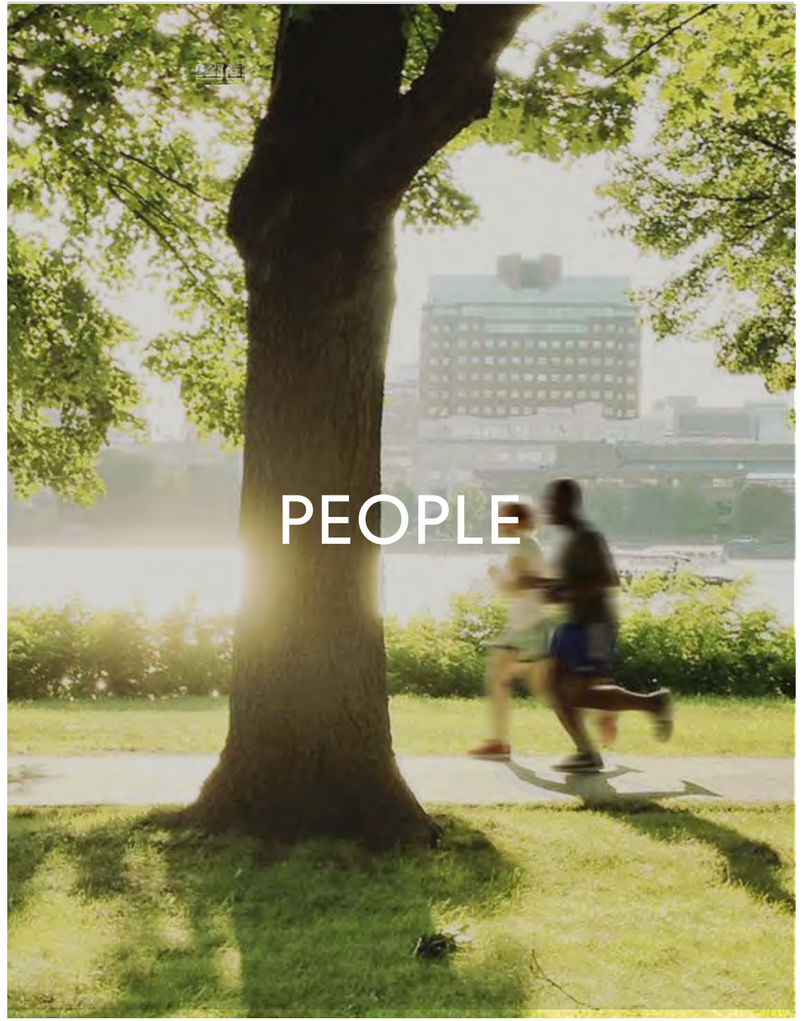
DISCUSSION AND QUESTIONS

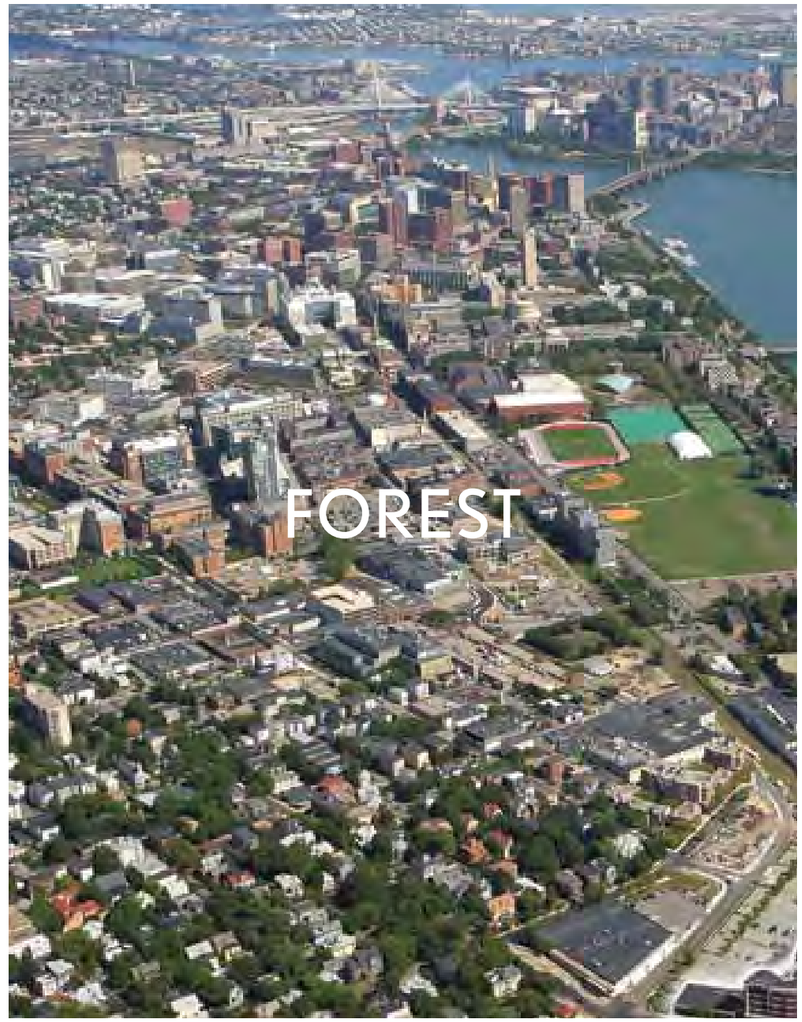
PUBLIC COMMENTS

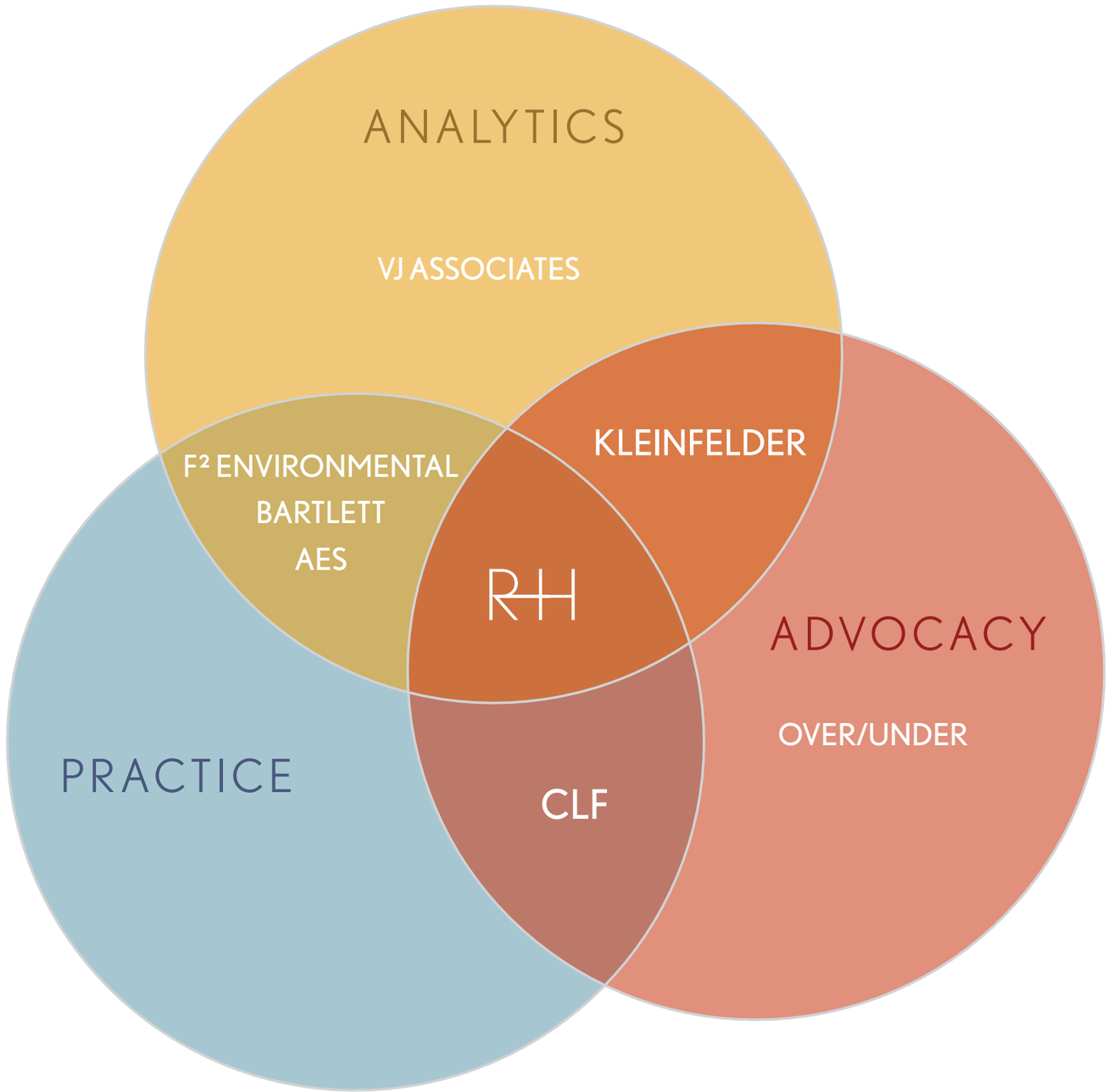
To maintain, plan, build, and sustain a healthy, connective urban forest at a time when the urban forest is more important than ever before.

How do we measure success?

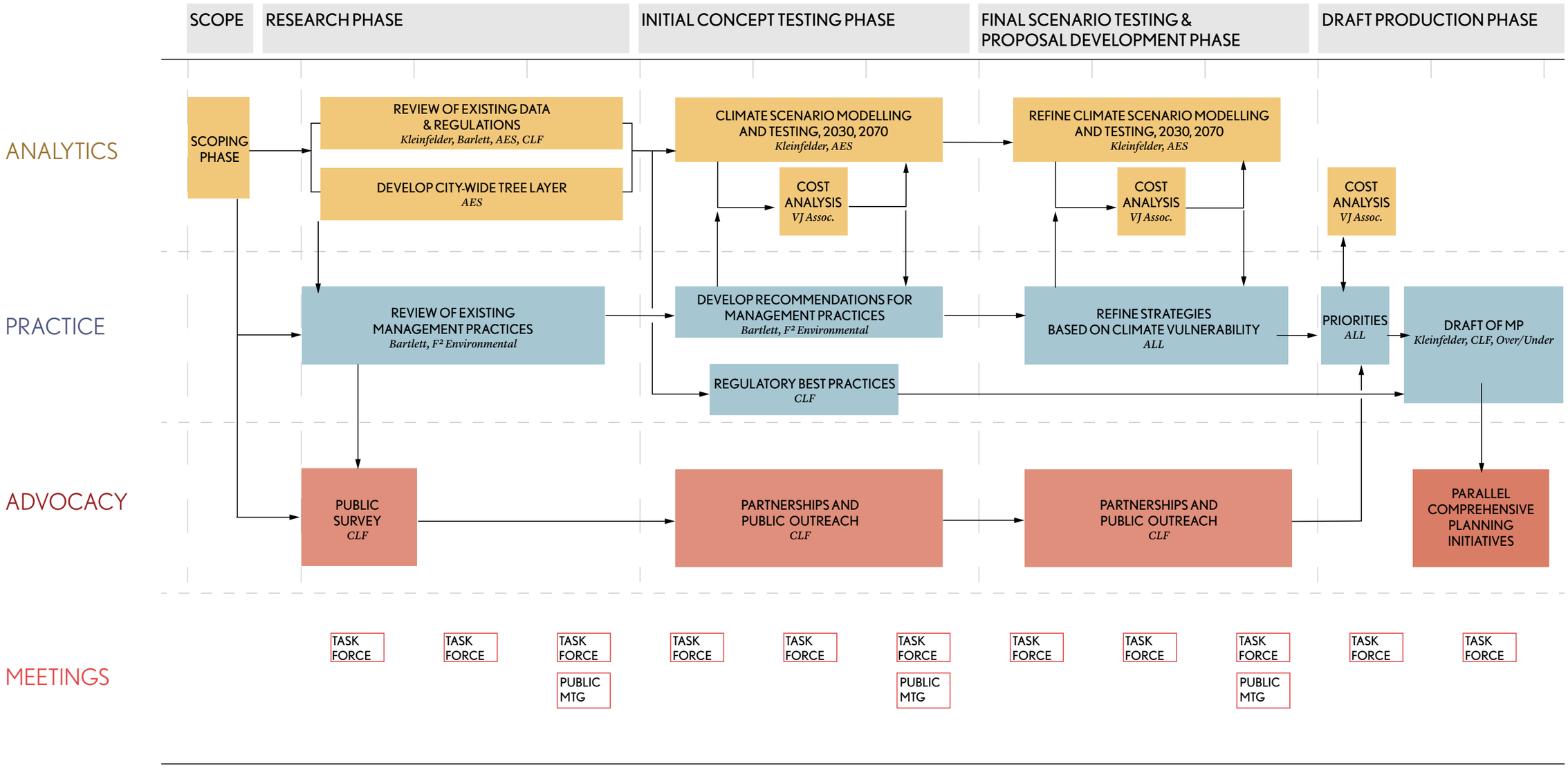

TREES


PEOPLE

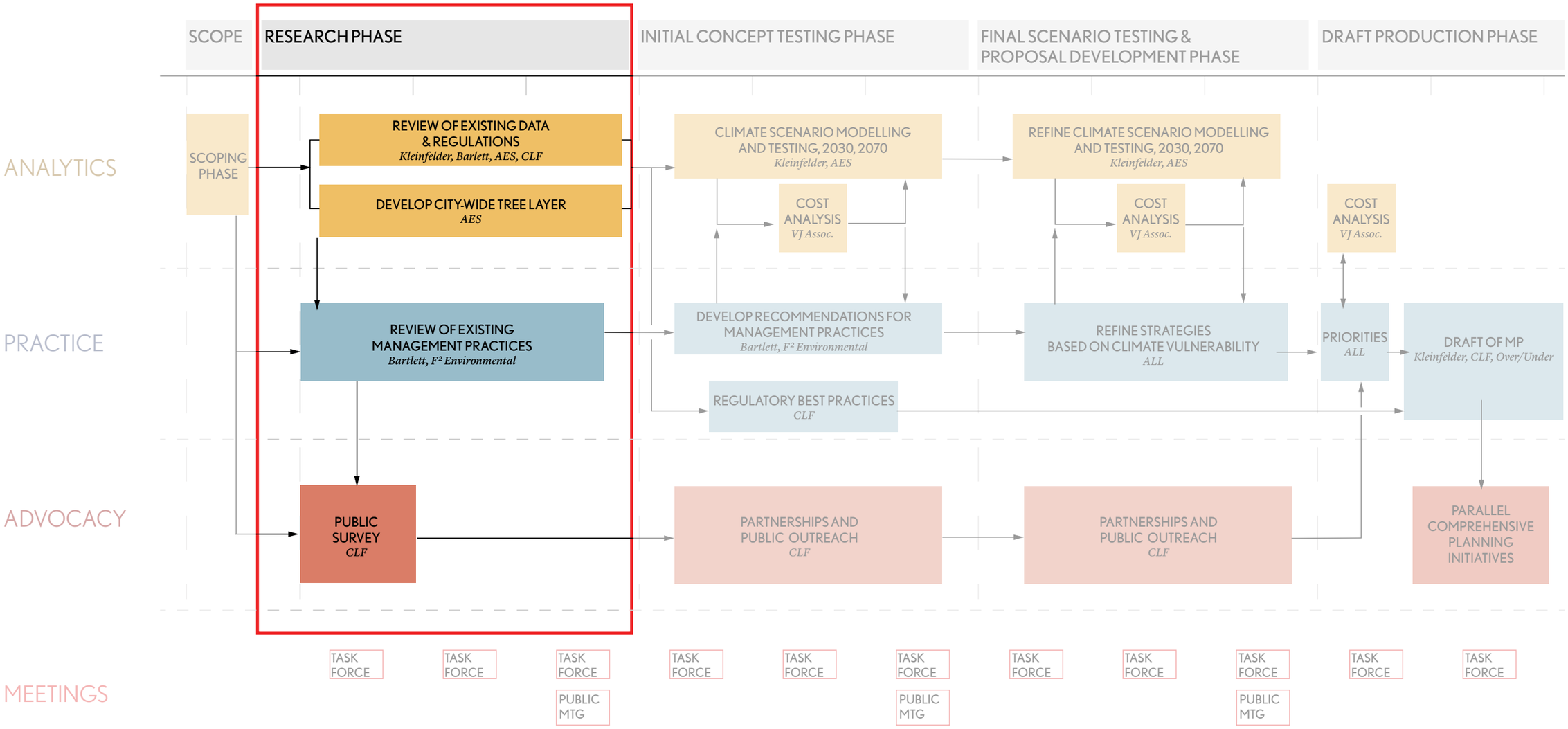

FOREST


ANALYTICS
VJ ASSOCIATES
F² ENVIRONMENTAL
BARTLETT
AES
KLEINFELDER
RH
ADVOCACY
OVER/UNDER
PRACTICE
CLF

PROCESS | OVERVIEW



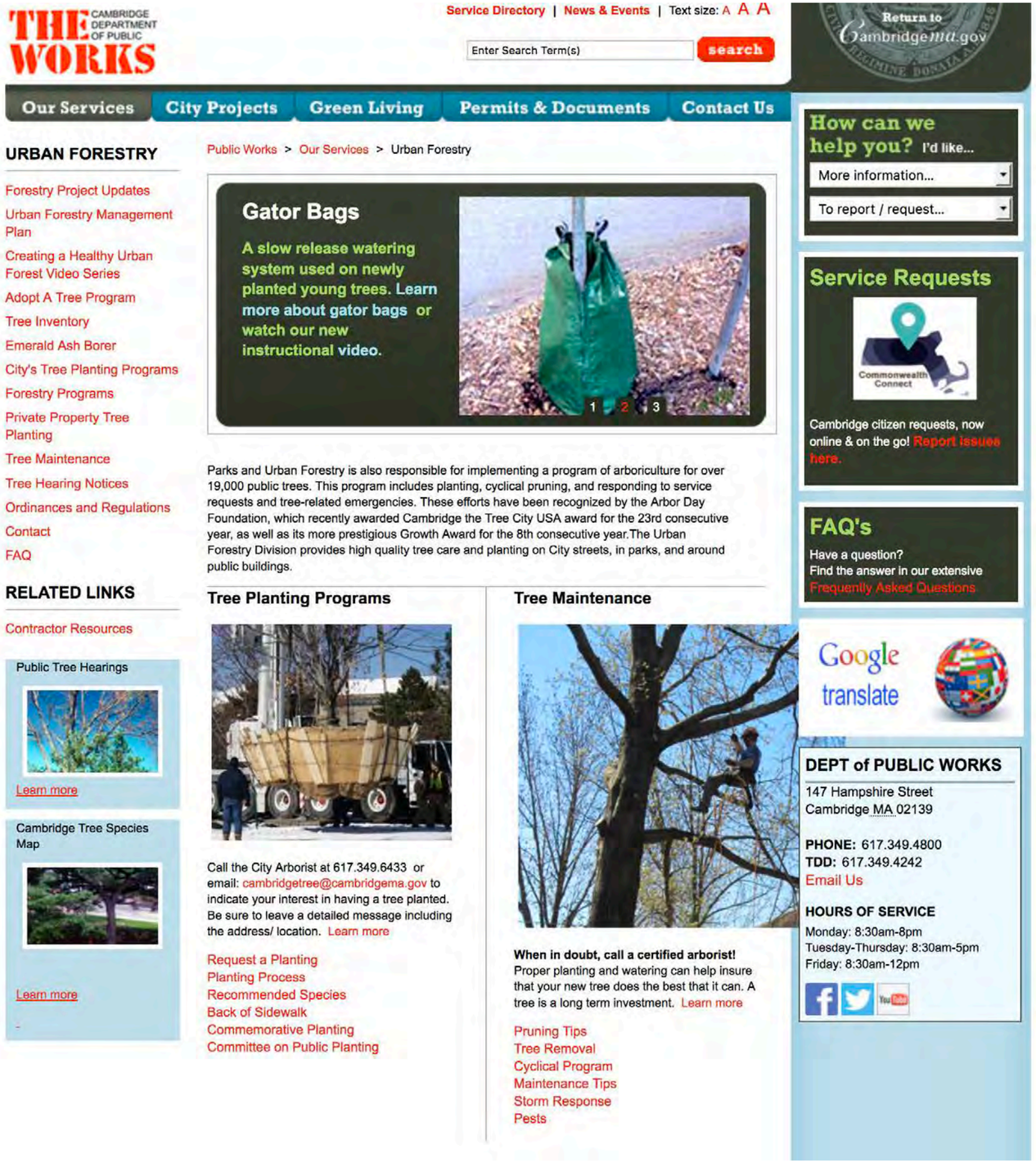
PROCESS | OVERVIEW



PRACTICE

ARBORICULTURE

ABOVE AND BELOW GROUND


THE WORKS
CAMBRIDGE DEPARTMENT OF PUBLIC
Service Directory | News & Events | Text size: A A A
Enter Search Term(s)
search
Return to Cambridgema.gov
Our Services
City Projects
Green Living
Permits & Documents
Contact Us
URBAN FORESTRY
Forestry Project Updates
Urban Forestry Management Plan
Creating a Healthy Urban Forest Video Series
Adopt A Tree Program
Tree Inventory
Emerald Ash Borer
City's Tree Planting Programs
Forestry Programs
Private Property Tree Planting
Tree Maintenance
Tree Hearing Notices
Ordinances and Regulations
Contact
FAQ
RELATED LINKS
Contractor Resources
Public Tree Hearings
Learn more
Cambridge Tree Species Map
Learn more
Public Works > Our Services > Urban Forestry
Gator Bags
A slow release watering system used on newly planted young trees. Learn more about gator bags or watch our new instructional video.
1 2 3
Parks and Urban Forestry is also responsible for implementing a program of arboriculture for over 19,000 public trees. This program includes planting, cyclical pruning, and responding to service requests and tree-related emergencies. These efforts have been recognized by the Arbor Day Foundation, which recently awarded Cambridge the Tree City USA award for the 23rd consecutive year, as well as its more prestigious Growth Award for the 8th consecutive year.The Urban Forestry Division provides high quality tree care and planting on City streets, in parks, and around public buildings.
Tree Planting Programs
Call the City Arborist at 617.349.6433 or email: cambridgetree@cambridgema.gov to indicate your interest in having a tree planted. Be sure to leave a detailed message including the address/ location. Learn more
Request a Planting
Planting Process
Recommended Species
Back of Sidewalk
Commemorative Planting
Committee on Public Planting
Tree Maintenance
When in doubt, call a certified arborist!
Proper planting and watering can help insure that your new tree does the best that it can. A tree is a long term investment. Learn more
Pruning Tips
Tree Removal
Cyclical Program
Maintenance Tips
Storm Response
Pests
How can we help you? I'd like...
More information...
To report / request...
Service Requests
Commonwealth Connect
Cambridge citizen requests, now online & on the go! Report issues here.
FAQ's
Have a question?
Find the answer in our extensive Frequently Asked Questions
Google translate
DEPT of PUBLIC WORKS
147 Hampshire Street
Cambridge MA 02139
PHONE: 617.349.4800
TDD: 617.349.4242
Email Us
HOURS OF SERVICE
Monday: 8:30am-8pm
Tuesday-Thursday: 8:30am-5pm
Friday: 8:30am-12pm

Cambridge has a strong and growing department

— Forestry Budget: $18 per capita in 2016 and $19.75 per capita 2017. (Compare with $7.30 average per capita spending for other Tree Cities in MA)

— Today the average municipal expenditure on tree planting in U.S. is $5.83 per capita (Nature Conservancy report)

— 6 out of 8 forestry staff are certified arborists

— Forestry division growing

— Cartegraph, new Tree tracking system

TREE CITY USA®

Tree performance depends on management above grade and below

CURRENT PRACTICES
CHALLENGES
ADDITIONAL RESEARCH
BEST MANAGEMENT PRACTICES
OPEN QUESTIONS / NEXT STEPS

Above Ground

— Species Selection
— Pruning
— Pests & Diseases
— Tree Removal

City of Cambridge recommends select species for new planting

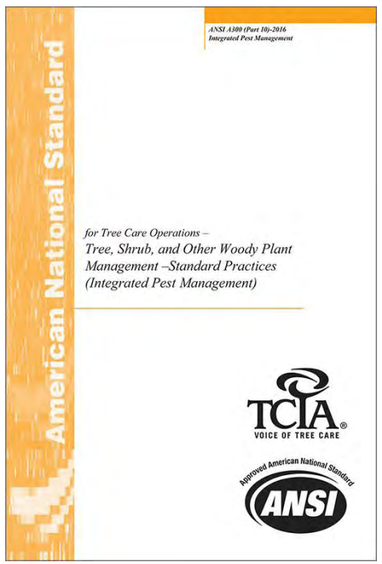
Ornamental Tree (overhead wires present)	Height (feet)
Amur maackia (Maackia amurensis)	20-30
Accolade cherry (Prunus 'Accolade')	20
Akebono cherry (Prunus x yedoensis 'Akebono')	25
Autumn cherry (Prunus subhirtella 'Autumnalis')	25-40
Crabapple spp (Malus sp.)	15-25
Eastern redbud (Cercis canadensis)	20-30
Hedge Maple (Acer campestre)	25-30
Japanese tree lilac (Syringa reticulata)	20-30
Kwanzan cherry (Prunus serrulata 'Kwanzan')	25
Okame cherry (Prunus x incam 'Okame')	15-25
Paperbark maple (Acer griseum)	30
Sargent cherry (Prunus sargentii)	25-40
Serviceberry (Amelanchier sp.)	20-30
Snowgoose cherry (Prunus serrulata 'Snowgoose')	20

Shade Tree (no wires present)	Height (feet)
American elm (Ulmus americana)	50-70
Armstrong Red maple (Acer x freemanii)	50-70
Black oak (Quercus velutina)	50-60
Black tupelo (Nyssa sylvatica)	30-50
Dawn redwood (Metasequoia glyptostroboides)	75
Elm cultivars (Ulmus sp.)	40-60
Ginkgo (Gingko biloba)	40-80
Golden raintree (Koelreuteria paniculata)	30-40
Hackberry (Celtis occidentalis)	60
Honeylocust (Gleditsia triacanthos)	45-50
Hornbeam (Carpinus caroliniana)	35
Katsuratree (Cercidiphyllum japonicum)	50
Kentucky coffeetree (Gymnocladus dioicus)	75
Littleleaf linden (Tilia cordata)	45-60
London planetree (Platanus x acerifolia)	80
Pear spp (Pyrus sp.)	30-40
Pin oak (Quercus palustris)	75
Red maple (Acer rubrum)	40-70
Red oak (Quercus rubra)	75
River birch (Betula nigra)	50-70
Silver linden (Tilia tormentosa)	30-40
Sophora (Sophora (Styphnolobium) japonica)	50
Swamp White oak (Quercus bicolor)	45
Sweetgum (Liquidambar styraciflua)	65
Tuliptree (Liriodendron tulipifera)	70-90
Zelkova (Zelkova serrata)	50-70

Approach is proactive and reactive

Proactive
- 6 year street tree/8 year municipal tree rotation scheduled under contract
- Pruning contract follows American National Standard for Tree Care Operations
- Pruning around utilities - Eversource relationship

Reactive
- Hazard
- Storm damage
- Public notice



http://www.reddeer.ca/city-services/electric-light-and-power/electrical-safety-information/trees-and-power-lines/

Existing threats are managed pro-actively

EMERALD ASH BORER

https://www.constructionspecifier.com/seeing-the-urban-forests-for-the-trees-secondary-benefits-of-our-cities-wood-2/

DUTCH ELM DISEASE

http://hvphc.com/wp/wp-content/uploads/2012/03/Dutch_Elm_Disease.jpg

Existing threats are managed pro-actively

—Pest treatment at Fresh Pond

HEMLOCK WOOLY ADELGID

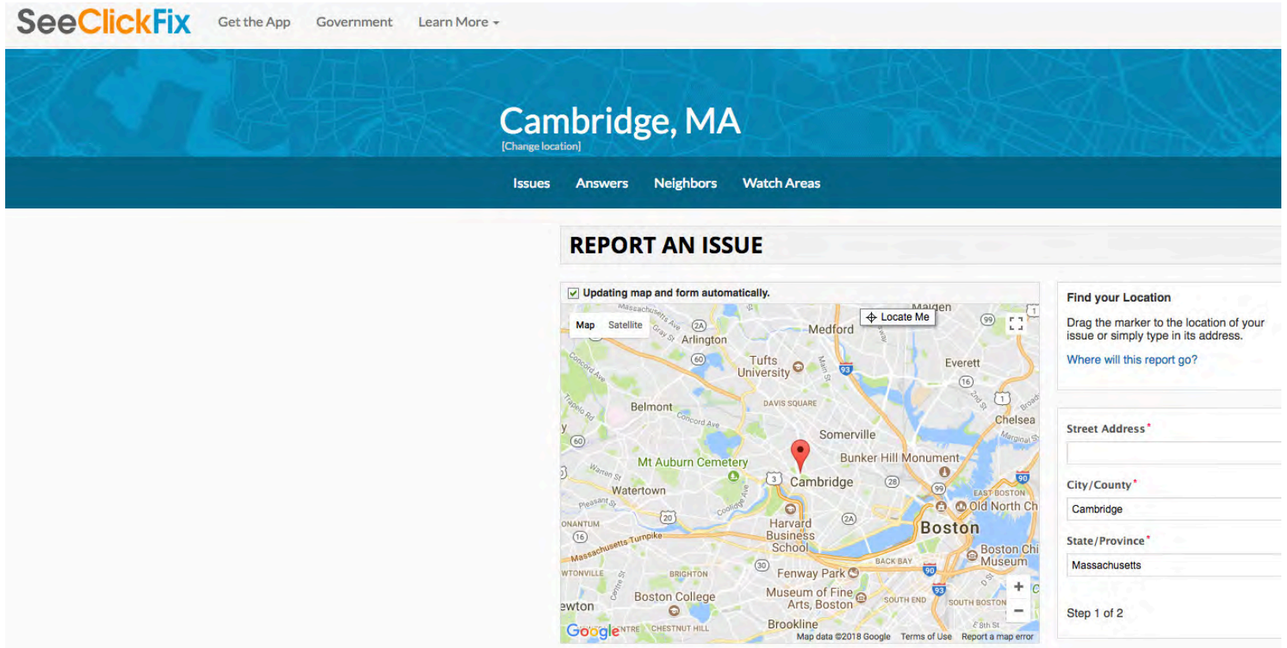
https://en.wikipedia.org/wiki/Adelgidae

WINTER MOTH

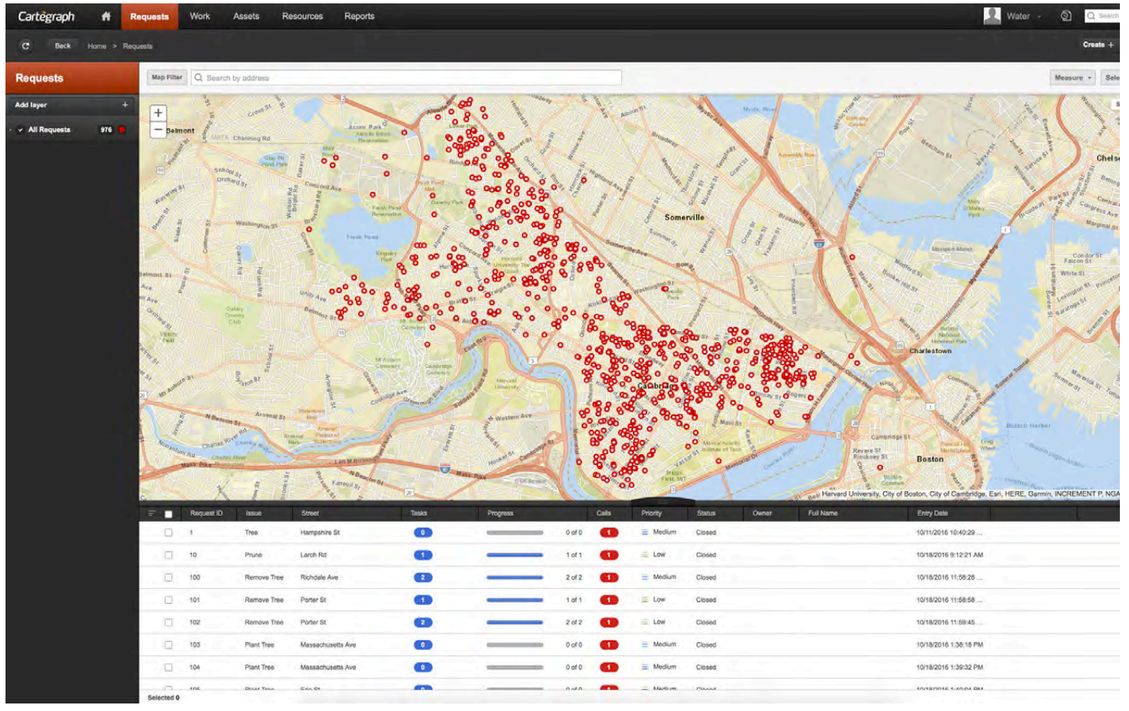
https://www.cedarlawn.com/plant-health-care/winter-moth-control/

ABOVE GROUND | TREE REMOVALS

Removals are identified and tracked electronically



CLICK-FIX

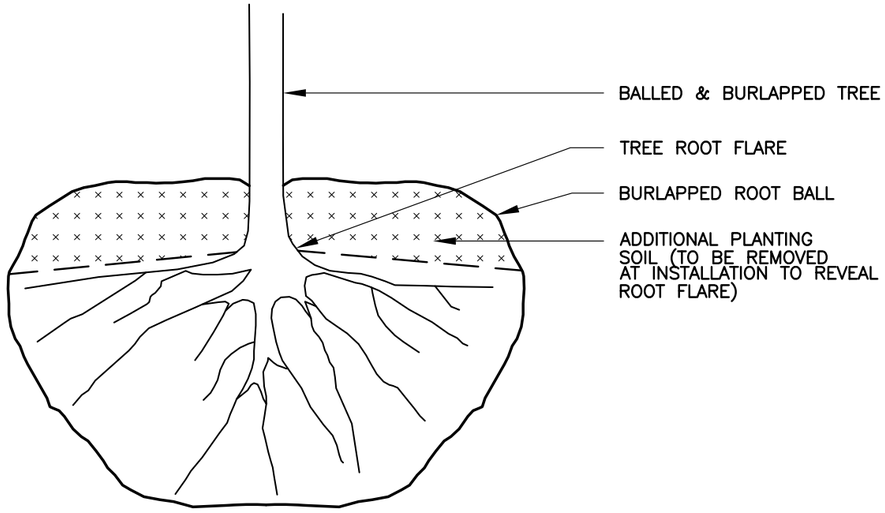


CARTEGRAPH

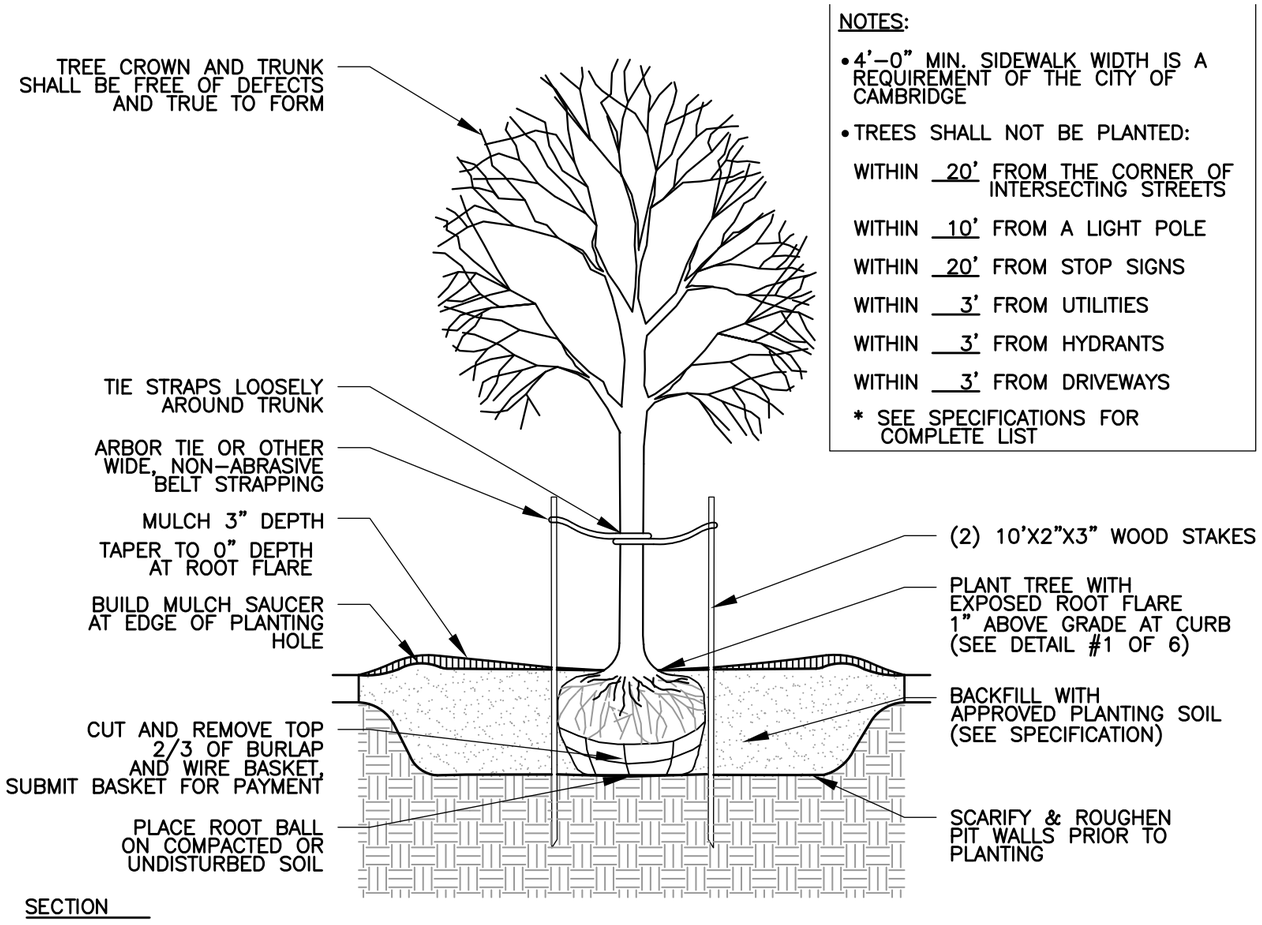
Below Ground

— Planting Details
— Irrigation
— Mulching
— Soil Details

Standard replanting: expose root flare



NOTE:
TREE TO BE PLANTED WITH EXPOSED ROOT FLARE 1" ABOVE GRADE AT CURB

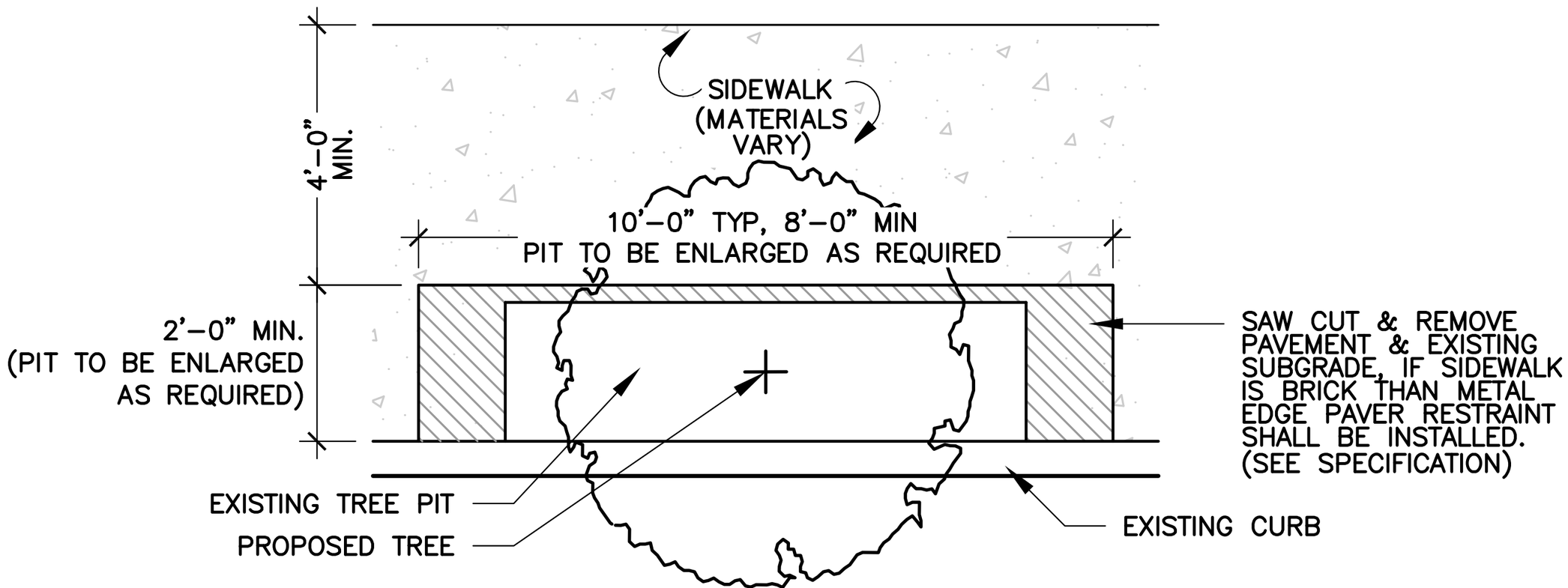


SECTION

CITY PLANTING DETAIL

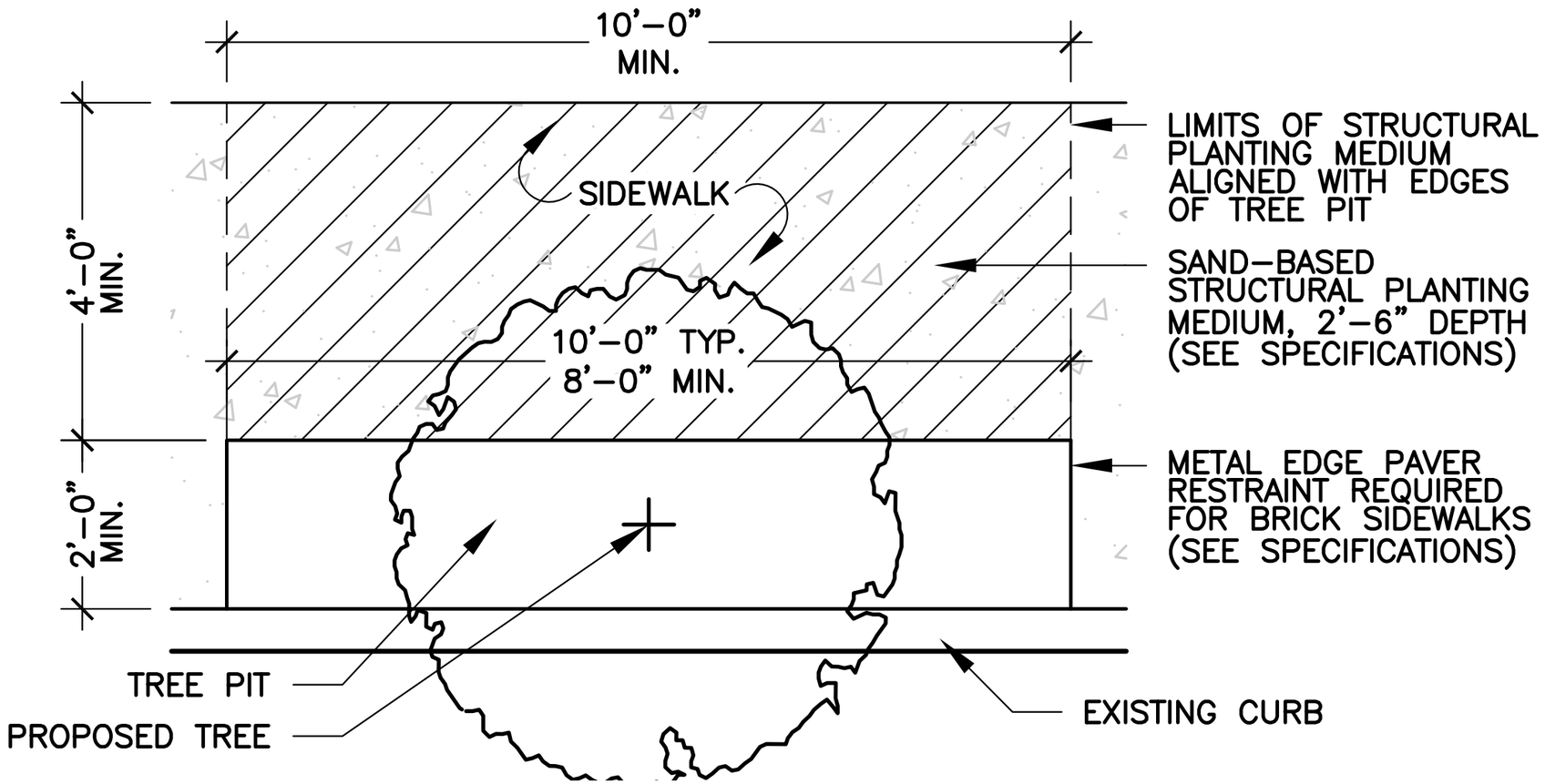
Standard replanting: mininum soil area, 32 sq ft
New standard for fall plantings

ADAAG R301.3.1 (recommended) min sidewalk pinch point of 4’



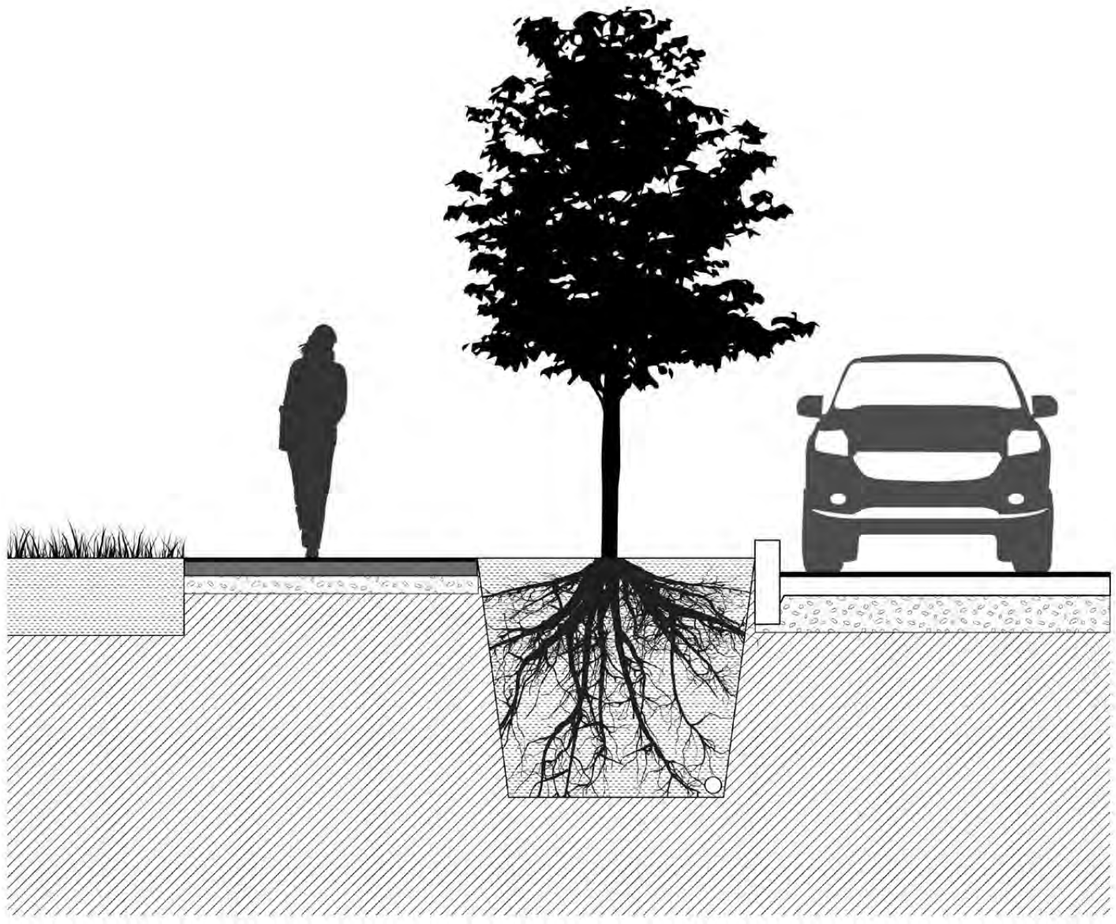
CITY PLANTING DETAIL

New Plantings with rebuilt sidewalk: mininum soil area 144 sq ft +

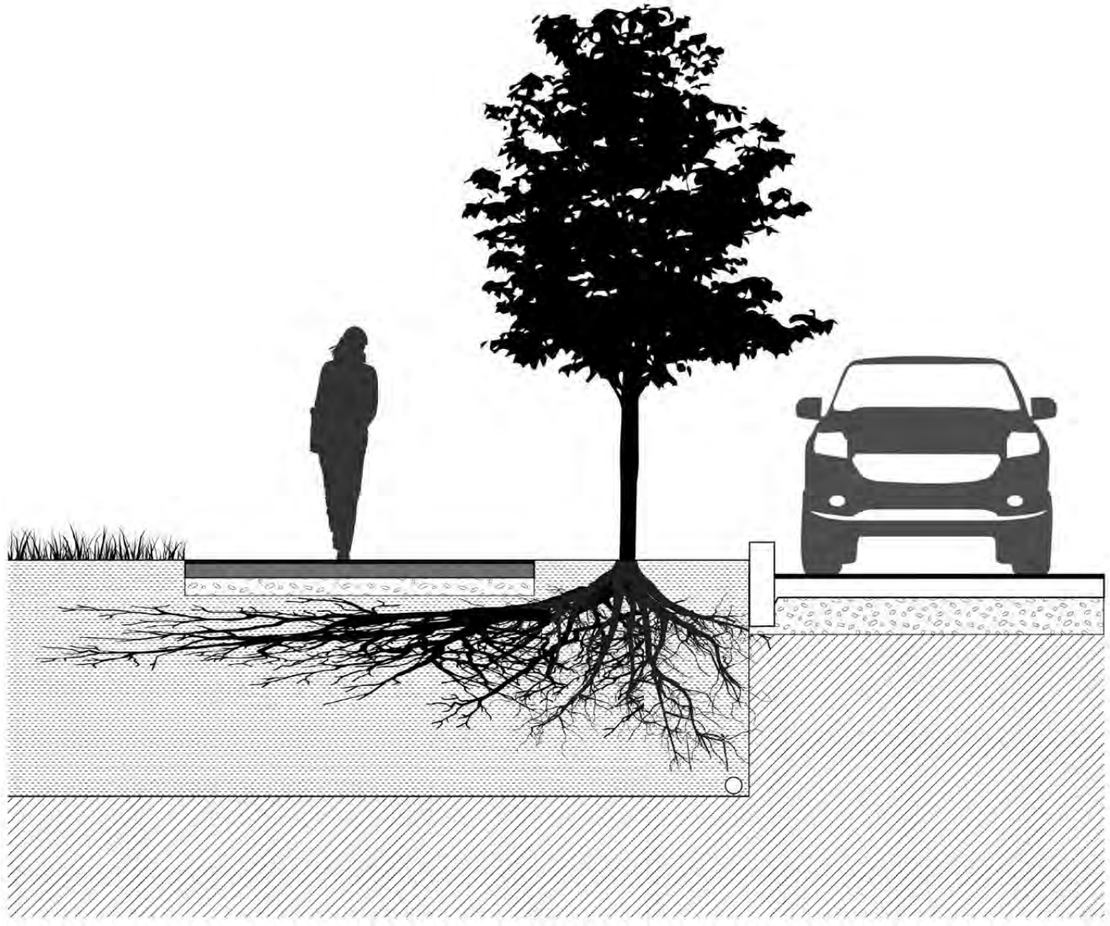


CITY PLANTING DETAIL

Strategies maximize soil volumes

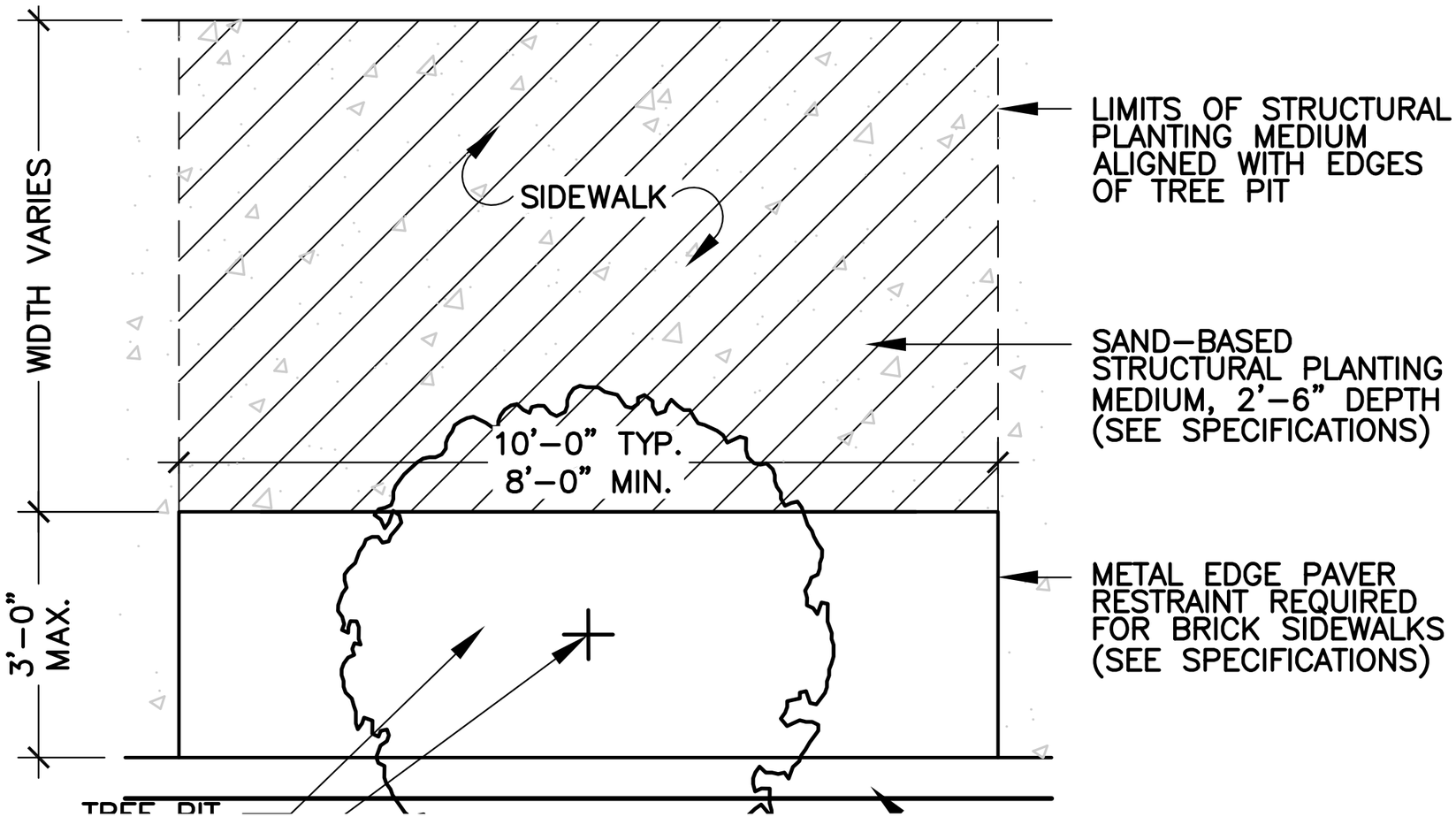


TREES CONFINED IN PITS



TREEWAYS WITH STRUCTURAL SOIL UNDER SIDEWALKS

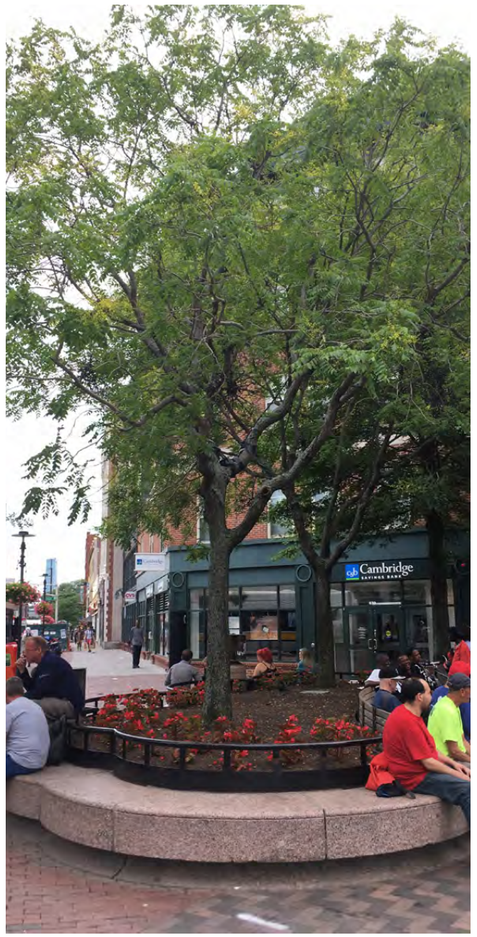
New Plantings with rebuilt sidewalk: SBSS extent grows as sidewalk widens



CITY PLANTING DETAIL

Strategies for managing access and limiting compaction

OPEN PIT



PLANTING BED

MULCH

TREE GRATE

FLEXIPAVE

For establishment and maintenance

GATOR BAGS

http://www.homegardeningproducts.com/Treegator-Original-Slow-Release-Watering-Bag-98183-R_p_3.html

WATER BY BIKE PROGRAM

Performance Mulch with Organic Compost - Park trees

2.05 MULCH

A. Mulch shall be high quality, shredded or double-ground, premium bark mulch consisting of clean, organic plant material.

B. Shall be uniform in color, a good brown color. The composition of the shredded pine bark material shall not exhibit a noticeable degree of any color change characteristics when wet.

C. The mulch must be free of dirt, insects, disease and extraneous debris that would be harmful to all trees being installed.

D. The shredded pine bark mulch material shall not have an unpleasant odor.

E. Bark Mulch shall be a well-graded material conforming to the following:

1. pH between 4.0 – 8.0
2. Particle size 100% passing a 50mm (2 inch) screen
3. Soluble salt content < 4.0 mmhos/cm

F. Prior to the Contractor ordering shredded pine bark mulch material, the Contractor shall submit to the City Arborist, at the Contractor's expense, one cubic foot sample of the shredded pine bark mulch material. The Contractor shall not order any delivery of the shredded pine bark mulch material until the Contractor's sample has been inspected and approved by the City Arborist.

G. If the City Arborist disapproves of the sample submitted by the Contractor, then the Contractor shall continue at no expense to the City, to obtain other sources of pine bark mulch material as specified until the Contractor's sample of such material, meets with the City Arborist's approval.

2017 Delivered Prices

Products	Jan- March $ Per Yard	April – June $ Per Yard
Natural Hemlock Bark	$29.50	$30.00
Premium Hemlock Blend	$26.50	$27.00
Aged Hemlock	$27.00	$28.50
100% Spruce Bark (Aged)	$26.25	$26.75
Dark Pine	$24.25	$24.75
Natures Black (no dye)	$27.50	$28.50
Pitch Black (color enhanced)	$24.25	$24.75
Kidsafe Playground Chips	$22.00	$22.50
Performance Mulch (Bark/compost blend)	$25.00	$26.00
Organic Compost (certified)	$29.00	$30.00
Compost	$20.00	$21.00

Traditionally uses compost/biosolids (sludge) 50/50

SPECIAL w/ compost instead of biosolids 50/50

Call 207-232-3329

$30 CUYD DELIVERED

Loads must be delivered on or before March 31st to receive early season price.
Prices are based on full trailer loads.
COD or Terms based on credit approval. We accept Visa and MasterCard.
Past due balances over agreed terms are subject to a 1.5% per month late fee.
A fuel surcharge may apply if diesel prices reach $3.00 per gallon.

Performance Mulch w/ Organic Compost 50/50

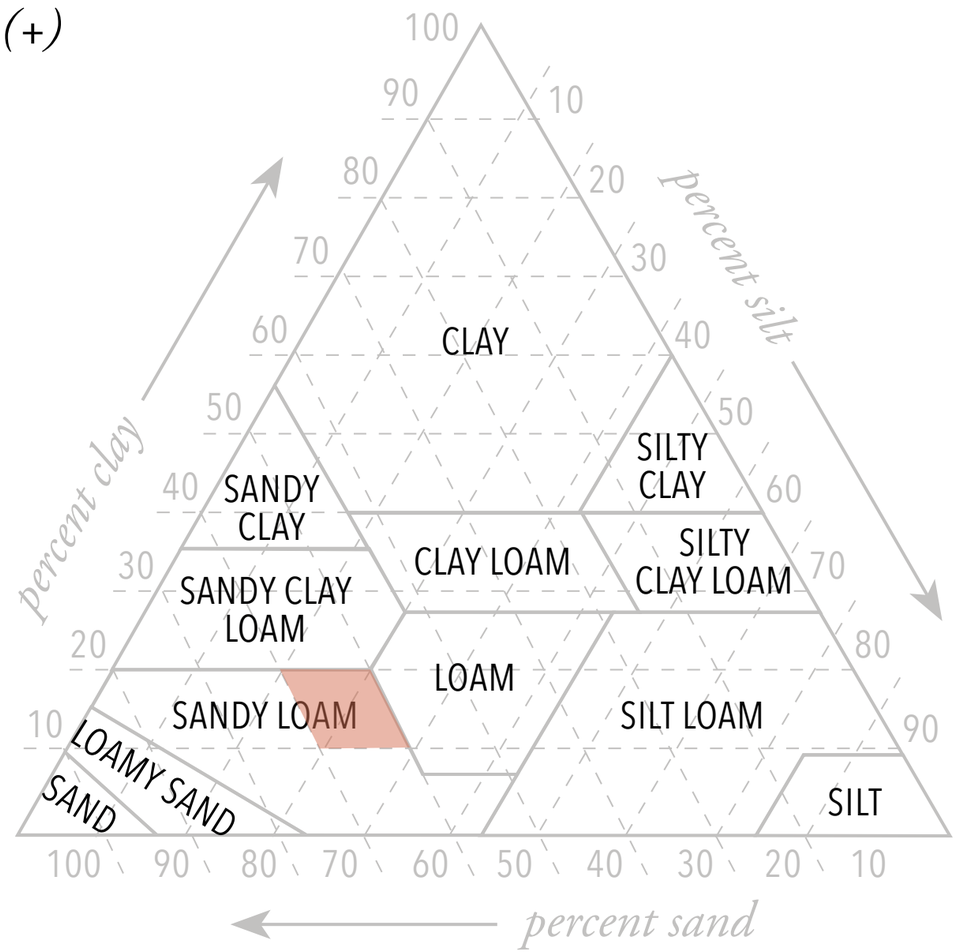
Characterizing standard re-planting soils

2mm (+)

Sand

Silt

Clay



2.01 PLANTING SOILS

A. Contractor shall provide all planting soil required to complete the planting operation. Planting soil shall be a natural, fertile, friable loam typical of cultivated planting soil of the locality, containing at least 10% and not more than 20% decayed organic matter (humus). Planting soil shall be free of sub-soil, stones greater than one and one-quarter inches, earth clods, sticks, stumps, clay lumps, roots, or other objectionable, extraneous matter or debris. Planting soil shall not be by test either excessively acid or alkaline nor contain toxic substances. Planting soil shall not be delivered or used for planting while in a frozen or muddy condition.

B. Soil for planting trees shall be one of the following sandy loams; "course sandy loam ", "sandy loam", and "fine sandy loam": determined by mechanical analysis (ASTM D 422) and based on the "USDA Classification System" and as defined in this Section. It shall be of uniform composition, without admixture of subsoil. Planting soil for trees shall have the following grain size distribution for material passing the #10 sieve:

Millimeter	Percent Passing by Weight	
	Maximum	Minimum
2	-------	100
1	100	80
0.5	87	67
0.25	78	48
0.10	68	30
0.05	55	22
0.002	7	2

1. Maximum size shall be one and one quarter inches largest dimension. The maximum retained on the #10 sieve shall be 25% by weight of the total sample.
2. The ratio of the particle size for 80% passing (D_{80}) to the particle size for 30% passing (D_{30}) shall be 6.0 or less. ($D_{80}/D_{30} < 6.0$)

C. Name of planting soil supplier and sample to be approved by the City Arborist.

City of Cambridge TREE PLANTING CONTRACT - SPECIFICATIONS 3

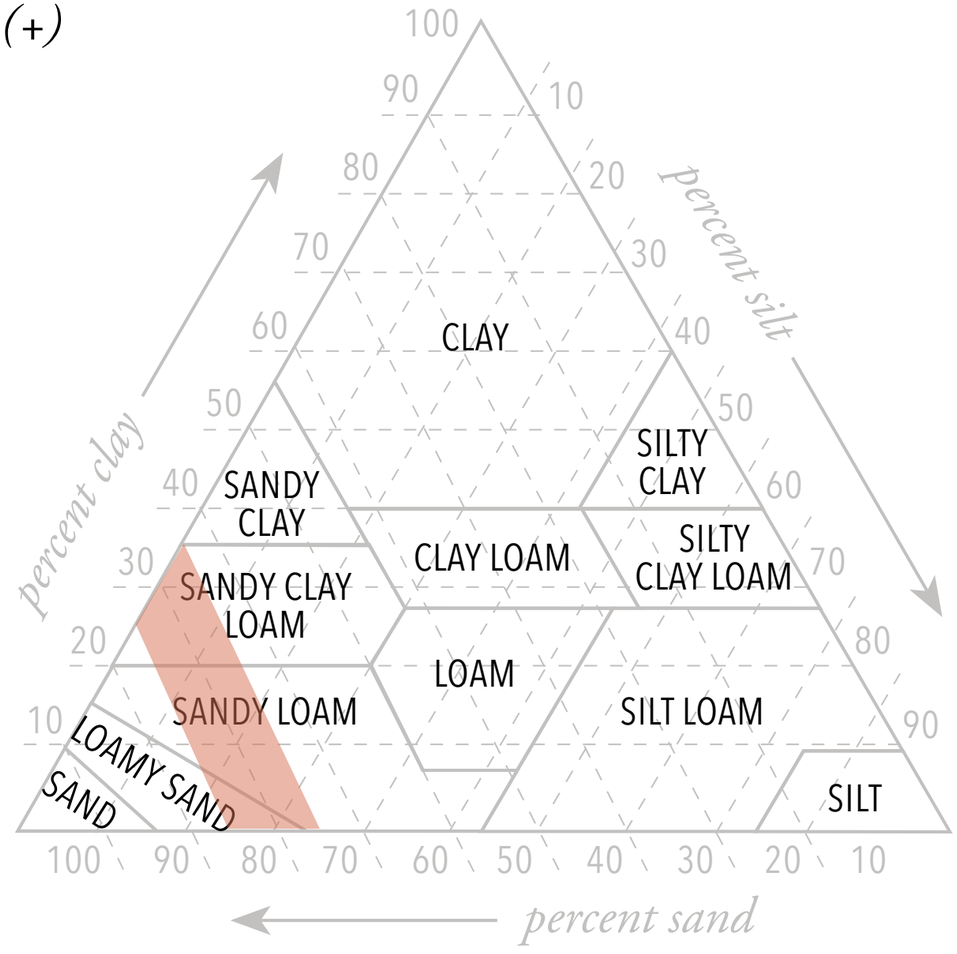
Characterizing sand-based structural soils

2mm (+)

Sand

Silt

Clay



2.02 STRUCTURAL PLANTING MEDIUM ("SPM")

A. In specific areas designated in the Contract Documents the soil underlying the pavement cross section and the granular base material will be replaced with a material designed to structurally support the pavement slab and promote the root growth of street trees. This soil will be called Structural Planting Medium in this Section and shall be a mixture of Sand, Base Loam and Compost. Structural Planting Medium shall be the manufactured product of a commercial processing facility specializing in the production of manufactured soils and loam borrow. Structural Planting Medium shall be manufactured from sands, loams and compost, in accordance with the requirements of this Section. Structural Planting Medium shall be manufactured outside the Project limits and transported onto the Project for placement.

B. The Structural Planting Medium shall consist of a blend of four parts by volume of Sand, one part by volume of Planting Soil and one part by volume of Compost. Blending of the components shall be carried out with earth moving equipment prior to placement. The components shall be blended to create a uniform mixture as determined by the Owner's Representative.

C. Structural Planting Medium gradation shall be determined by the Soil and Plant Tissue Laboratory, University of Massachusetts, Amherst, using H_2O_2 to destroy organic matter. Structural Planting Medium shall conform to the following grain size distribution for material passing the #4 sieve:

U.S. Sieve No.	Percent Passing by Weight	
	Maximum	Minimum
#4	----	100
#10	81	100
#20	57	88
#40	27	57
#100	11	24
#200	08	12
.002mm	01	02

D. Structural Planting Medium shall not contain less than 1.5 percent nor more than 3.0 percent organic matter as determined by the loss on ignition of oven-dried samples passing #10 sieve (Muffle furnace temperature: 450 +/- 10 degrees C for 8 hours).

E. The acidity range of the Structural Planting Medium shall be pH 5.5 to 6.5. Structural Planting Medium shall have a starting pH of no lower than 5.0 at the manufacturing site.

F. Structural planting medium shall be pH adjusted as required for planting of trees and shall be adjusted prior to delivery to the Project sites in accordance with recommendations by UMASS Soil & Plant Tissue Laboratory.

1. When pH of loam borrow is equal to or greater than 7 use aluminum sulfate to adjust pH downward to required levels.
2. When pH of loam borrow is less than 7 use either sulphur or ferrous sulfate to adjust pH downward to required levels.
3. When pH of loam borrow must be raised to the required levels use limestone.

CURRENT PRACTICES

CHALLENGES

ADDITIONAL RESEARCH

BEST MANAGEMENT PRACTICES

OPEN QUESTIONS / NEXT STEPS

Conditions that limit health / increase mortality

Urban pressures

— Soil volume
— Utility conflicts
— Soil Compaction
— Fertility / nutrient cycling
— Gas Leaks
— Raised Fences
— Deicing Salts and Contaminants

Climate

— Moisture / drought
— Salt / pH
— Pests and Diseases

Conditions that limit health / increase mortality

MASS AVE BETWEEN HUDSON ST AND SHEPARD ST

MASS AVE BETWEEN MARTIN ST AND HUDSON ST

EXETER PARK TREE WELL

Conditions that limit health / increase mortality

MASS AVE BETWEEN EXETER PARK AND FOREST ST

CURRENT PRACTICES

CHALLENGES

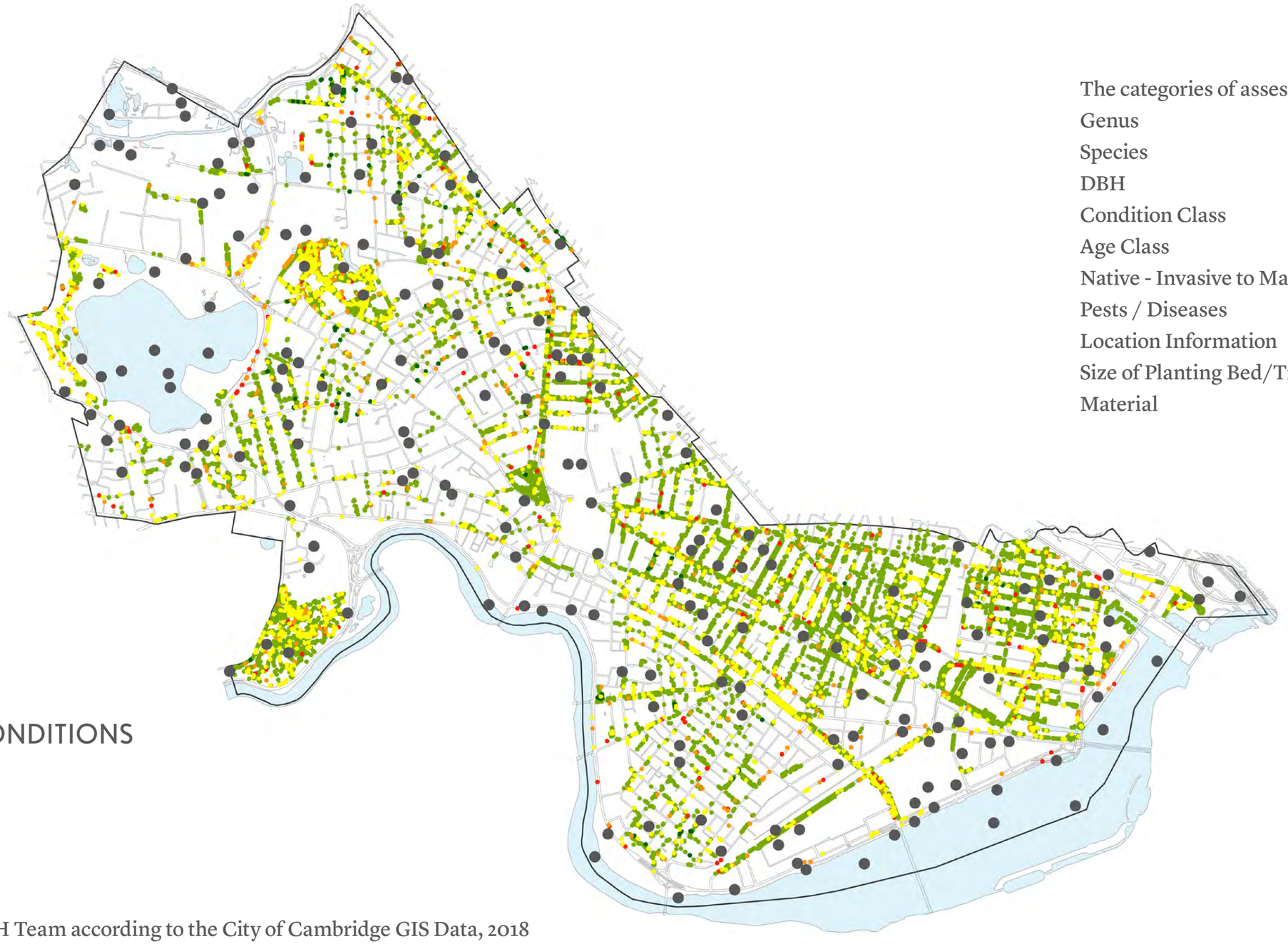
ADDITIONAL RESEARCH

BEST MANAGEMENT PRACTICES

OPEN QUESTIONS / NEXT STEPS

RSEARCH ABOVE GROUND | SURVEY OF CURRENT CONDITIONS

200 random 1 acre plots equal a 5% representative sample



The categories of assessment:
Genus
Species
DBH
Condition Class
Age Class
Native - Invasive to Massachusetts
Pests / Diseases
Location Information
Size of Planting Bed/Tree Pit
Material

TREE HEALTH CONDITIONS

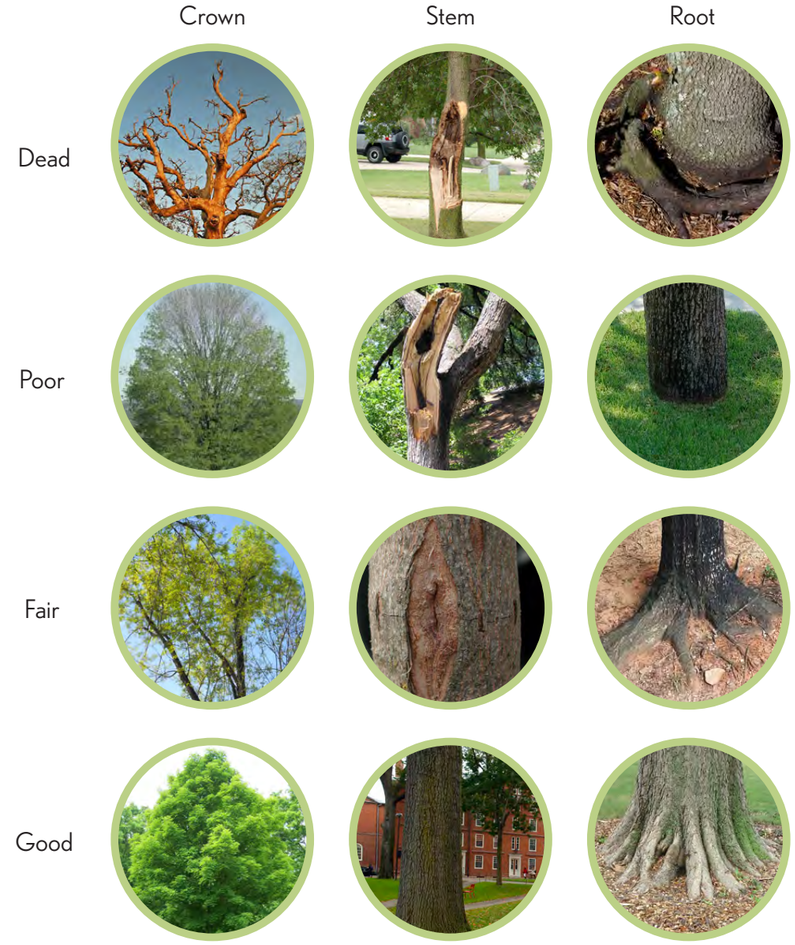
- Good
- Fair
- Poor
- Dead

Source: Prepared by RH Team according to the City of Cambridge GIS Data, 2018

Standard health metrics will be used

	Dead	Poor	Fair	Good
Tree Condition	tree is completely dead	Most of the canopy is affected with dieback undesirable leaf color, leaf size and new growth. Parts of the tree are in the process of failure.	Parts of the canopy undesirable leaf color, leaf size and new growth. Tree or parts of the tree are likely to fail.	Tree health and condition is acceptable

EXAMPLES OF TREE CONDITIONS:



CITY CURRENTLY COLLECTS

— Genus/ Species/Common Name
— Diameter (diameter at breast height, DBH)
— Tree Condition
— Neighborhood
— Created
— Creator

BARTLETT NEEDS AS REQUIRED

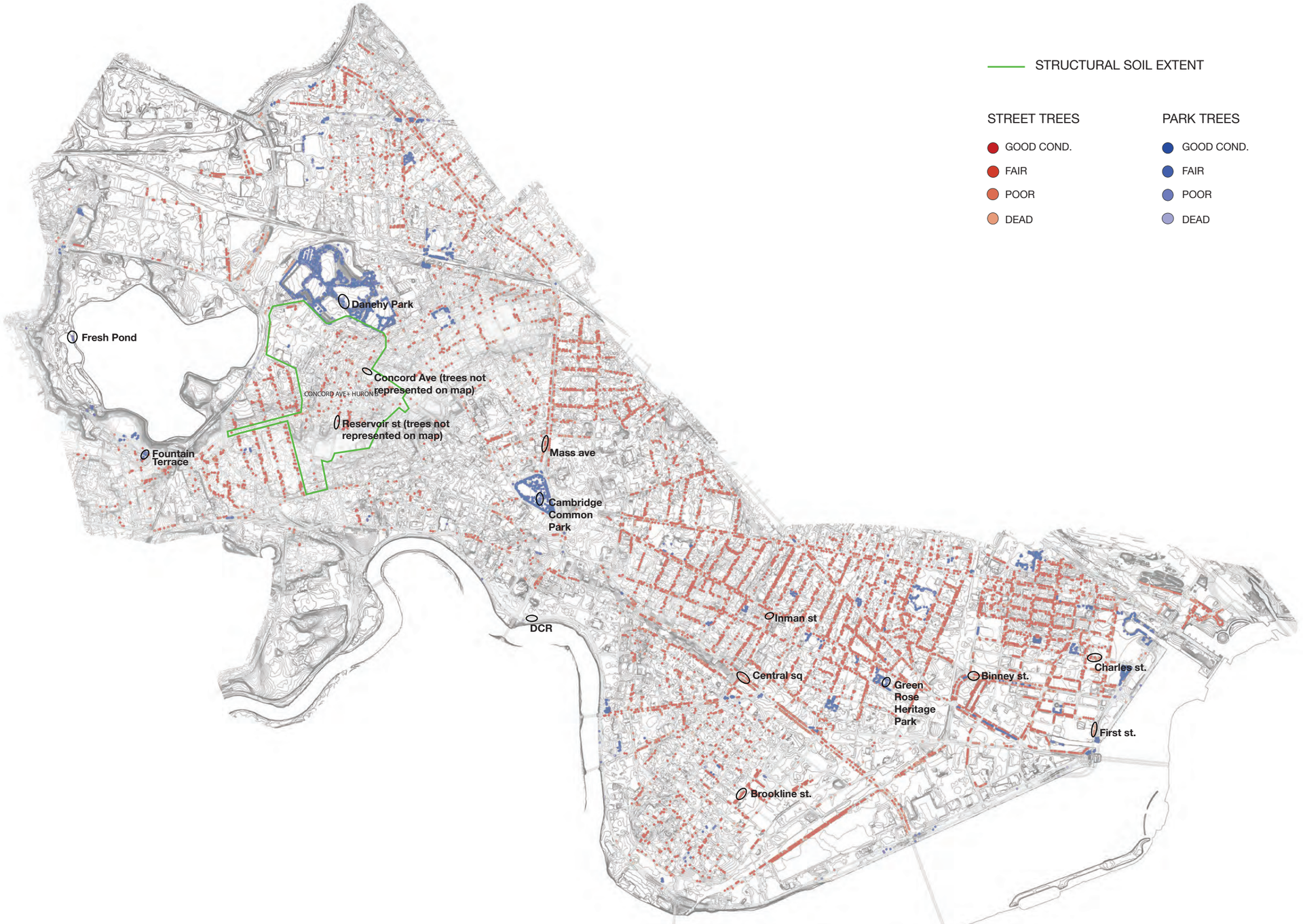
— Species Code
— Native to Massachusetts
— Invasive to Massachusetts
— Pests / Diseases

BARTLETT RECOMMENDS

— Location
— Street Name
— Street Number
— Diameter Measurement Height
— Trunks
— Age Class
— Canopy Radius
— Height Class
— Root Zone Infringement
— Tree Maintenance Activities and Priorities
— Tree Risk Assessment
— Tree Defects / Concerns
— Modified Date
— Planting Date
— Ecosystem Services Quantification

RESEACH PRACTICE | SOIL SURVEY

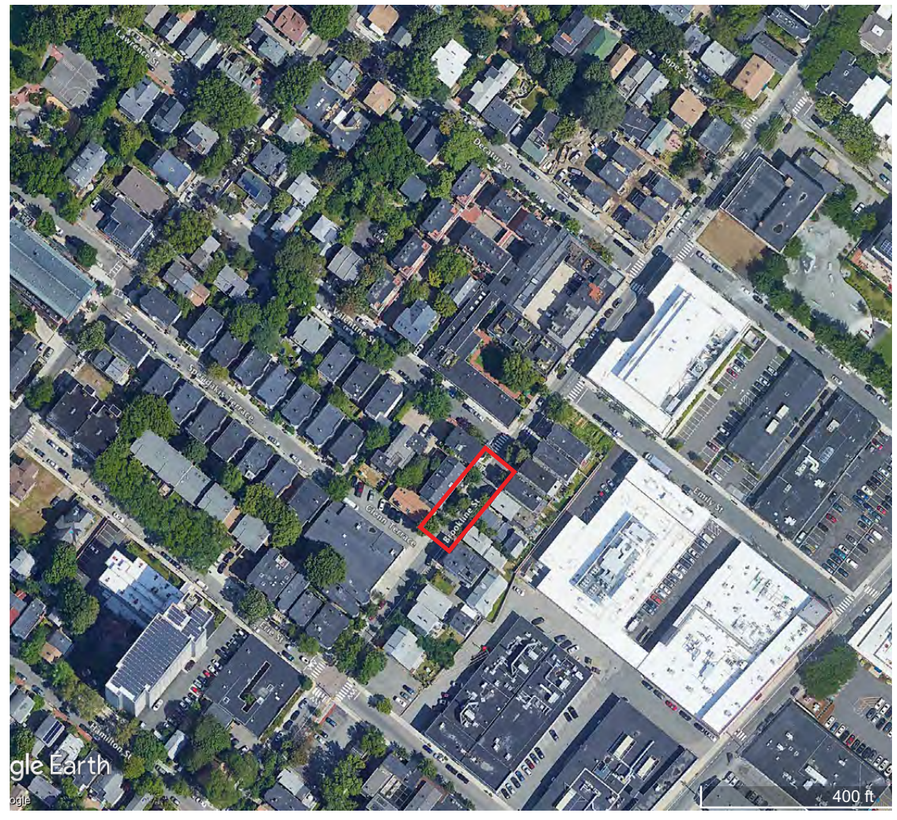
A representative sample to assess city soils



STRUCTURAL SOIL EXTENT

STREET TREES	PARK TREES
GOOD COND.	GOOD COND.
FAIR	FAIR
POOR	POOR
DEAD	DEAD

A representative sample to assess city soils



A protocol that tests at three depths and for biology, chemistry and texture

0” - 12” biological analysis

textural and chemical analysis

12” - 24” textural and chemical analysis

24” - 36” textural and chemical analysis

CURRENT PRACTICES
CHALLENGES
ADDITIONAL RESEARCH
BEST MANAGEMENT PRACTICES
OPEN QUESTIONS / NEXT STEPS

TREE SUPPORT SYSTEMS

—are used to help support defects or certain tree conditions that could lead to failure.

ROOT DEFECTS

— proactive response to potential long-term issues

LIGHTNING PROTECTION

—a preferred path to the ground for lightning (parks, cemeteries)

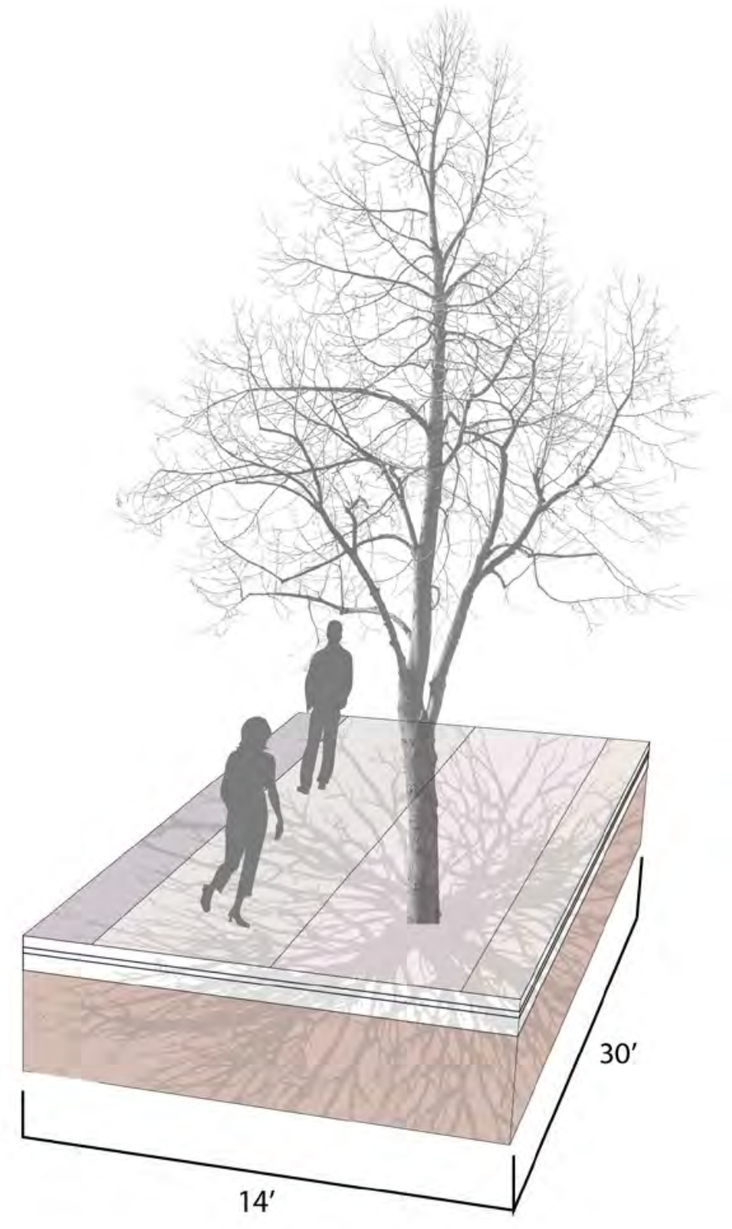
PROACTIVE PEST MANAGEMENT

—regular monitoring including pest identification, pest population level, life stages, and techniques like regular visual inspections, using traps, phenology calendars to track life stages, monitoring key trees, etc.

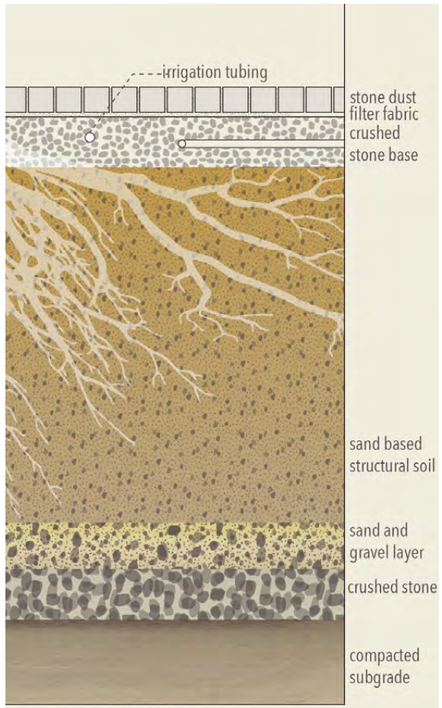
RISK ASSESSMENT

—a windshield assessment for all trees once a year and after large storm events

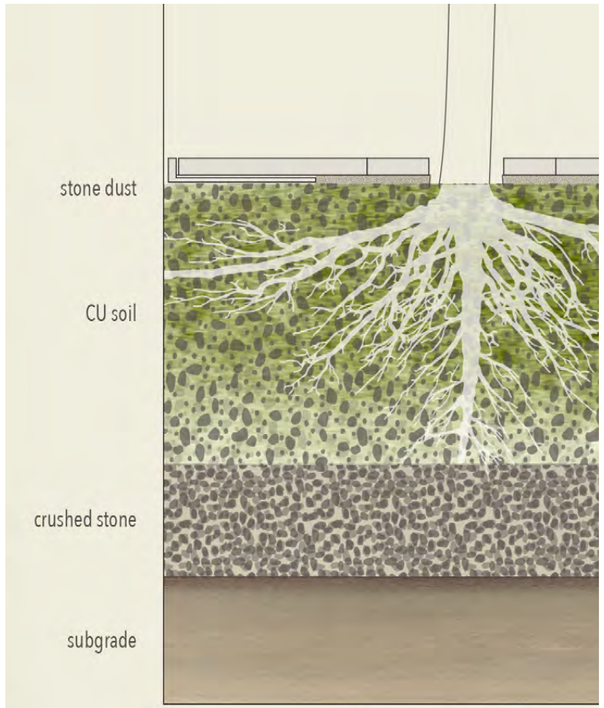
Adequate Soil Volume - 1250 cu ft per tree



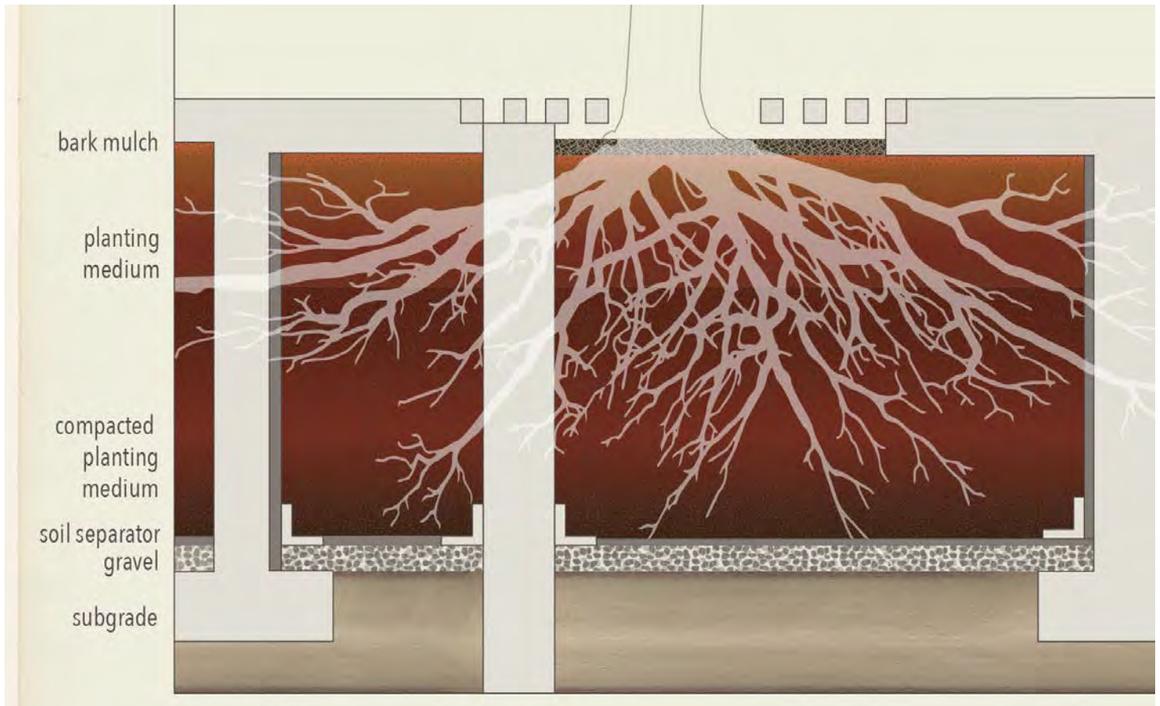
Engineered Soils — the right system in the right place



SBSS

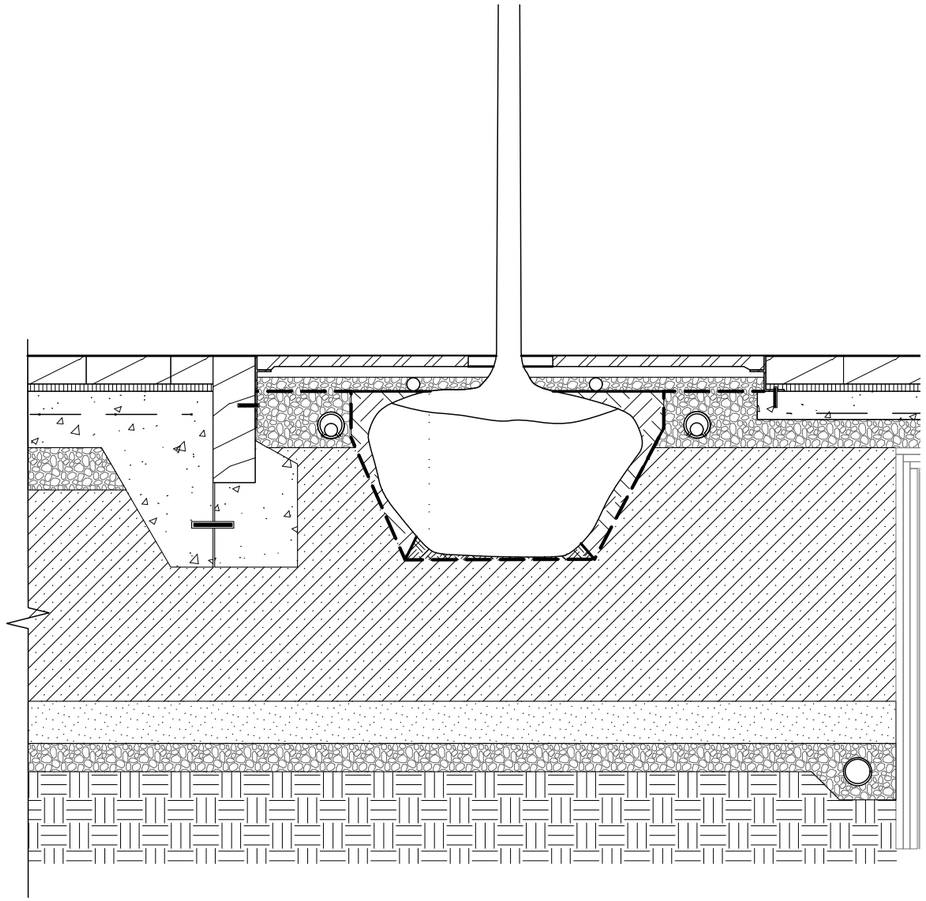


CU SOIL

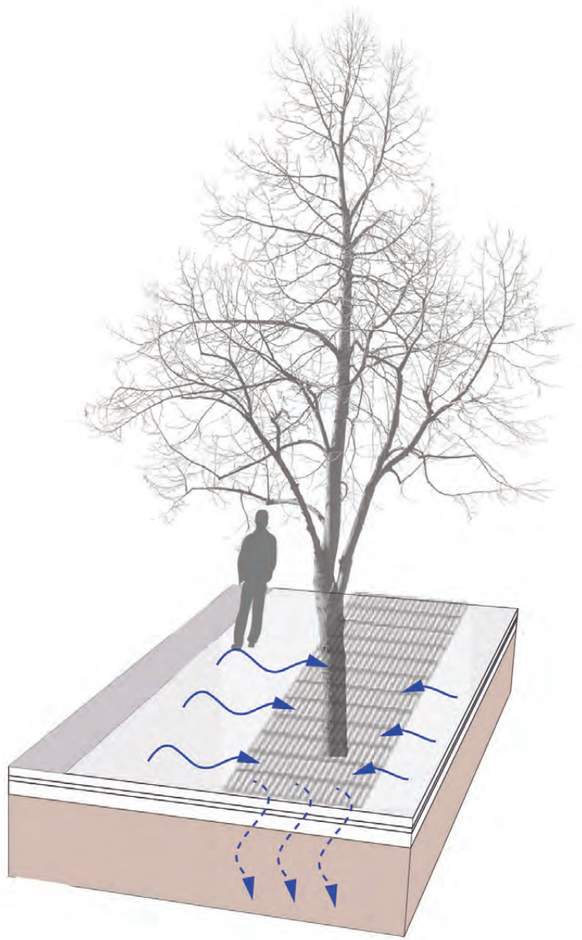


SUSPENDED PAVEMENT SYSTEMS

Absorptive ground plane

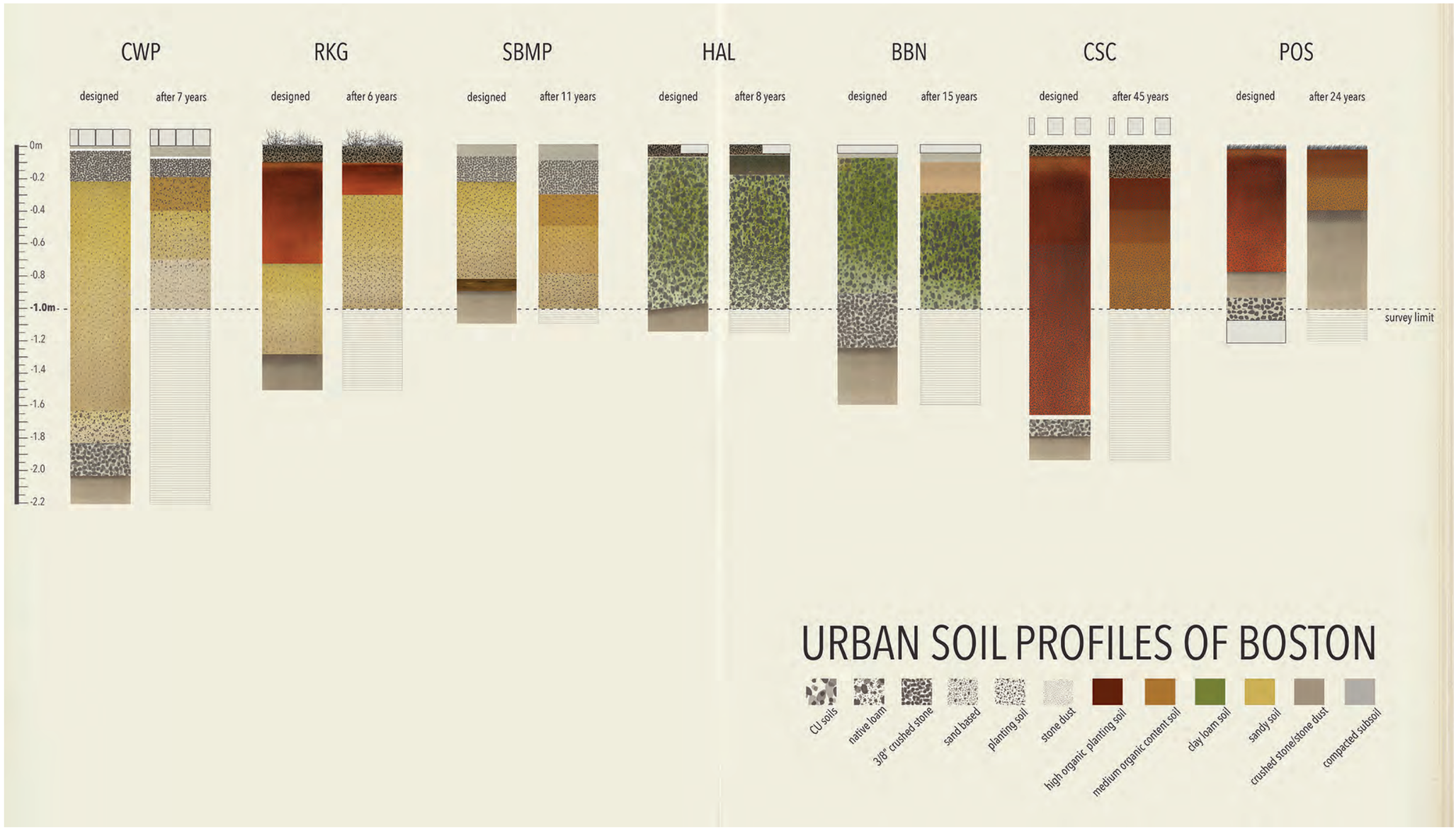


TREE GRATES

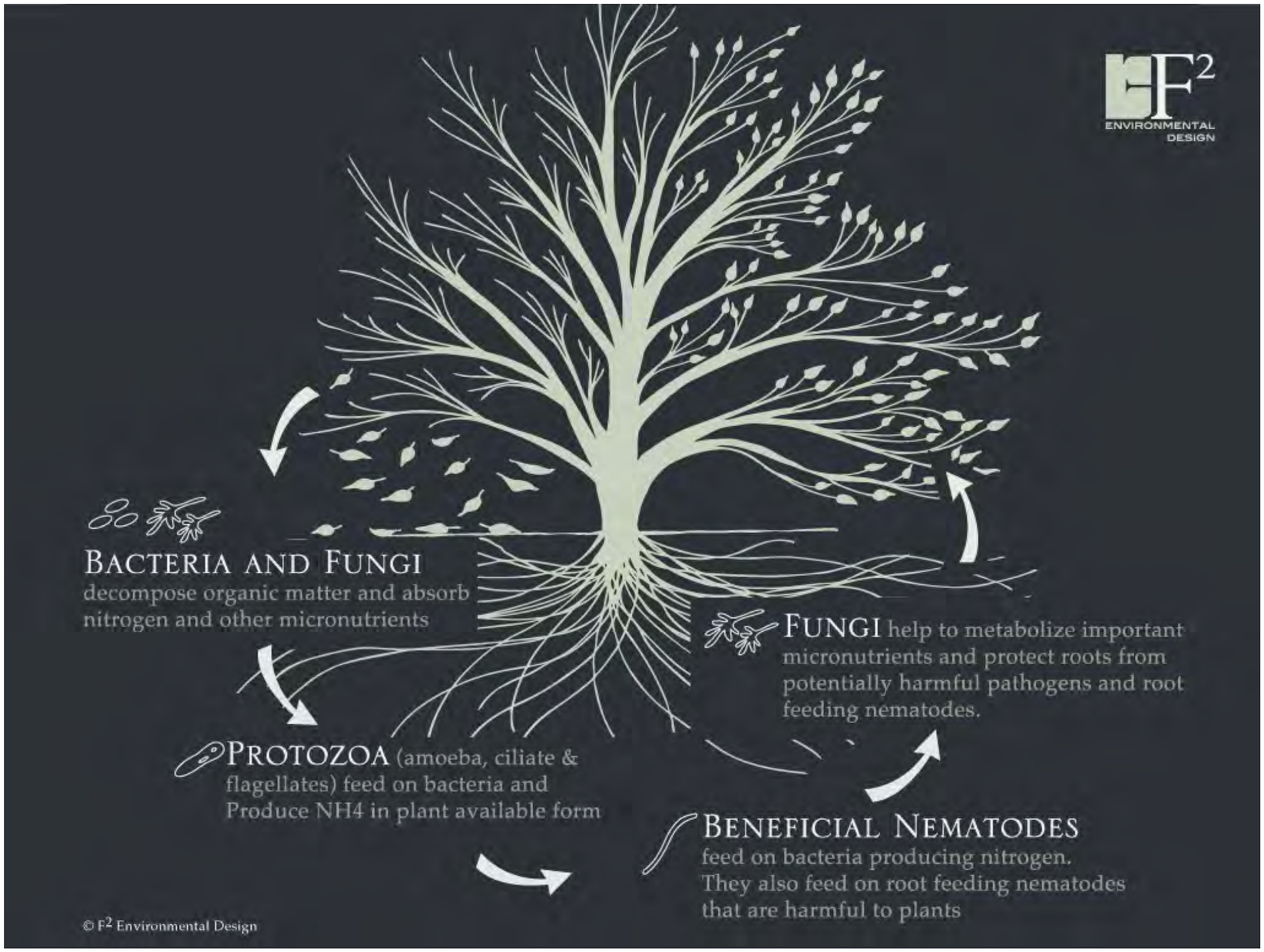


PERVIOUS PAVEMENT

Managing moisture, compaction, and drainage



Nutrient cycling



Large scale compost systems

BATTERY PARK, NYC

Soil Testing

Soil Foodweb Analysis

Report prepared for:
Greentree Foundation
Jim Stevenson
220 Community Dr.
Manhasset, NY 11030 USA
(866) 597-5320
jstevenson@greentreefdn.org

Report Sent:
Sample#: 03-008473 | Submission:03-003819
Unique ID: MH-Upper
Plant: Lawn
Invoice Number: 0
Sample Received: 4/7/2010

For interpretation of this report please contact:
Local Advisor: or regional lab
Soil Foodweb New Yor
soilfoodwebny@aol.co
631-750-1553
Consulting fees may apply

Organism Biomass Data	Dry Weight	Active Bacterial (µg/g)	Total Bacterial (µg/g)	Active Fungal (µg/g)	Total Fungal (µg/g)	Hyphal Diameter (µm)
Results	0.870	53.9	656	25.6	149	2.5
Comments	Too Dry	Excellent	Excellent	Excellent	Good	
Expected Range Low	0.45	15	100	15	100	
Expected Range High	0.85	25	300	25	300	

	Protozoa Numbers/g Flagellates	Protozoa Numbers/g Amoebae	Protozoa Numbers/g Ciliates	Total Nematodes #/g	Percent Mycorrhizal Colonization ENDO	Percent Mycorrhizal Colonization ECTO
Results	1585	9512	32	0.39	Not Ordered	Not Ordered
Comments	Low	Low	Low	Low		
Expected Range Low	10000	10000	50	20	40%	40%
Expected Range High			100	30	80%	80%

Organism Biomass Ratios	Total Fungal to Total Bacterial	Active to Total Fungal	Active to Total Bacterial	Active Fungal to Active Bacterial	Plant Available N Supply (lbs/acre)
Results	0.23	0.17	0.08	0.47	50-75
Comments	Low	Low	Low	Low	
Expected Range Low	0.8	0.25	0.25	0.75	
Expected Range High	1.5	0.95	0.95	1.5	

Nematodes per Gram of Soil
Identification to genus

Bacterial Feeders	
Heterocephalobus	0.15
Fungal/Root Feeders	
Filenchus	0.08
Paraphelenchus	0.11

1645 Washington Ave. Bohemia, NY 11716 USA
631-750-1553 | soilfoodwebny@aol.com
www.soilfoodweb.com

03-008473: Page 1 of 2

Compost Foodweb Analysis

Report prepared for:
BPCPC
Eileen Calvanese
2 South End Ave
New York, NY 10280 USA
(212) 267-9707
ecalvanese@bpcparks.org

Report Sent:
Sample#: 03-006485 | Submission:03-002798
Unique ID: 3
Plant:
Invoice Number: 0
Sample Received: 3/15/2007

For interpretation of this report please contact:
Local Advisor: or regional lab
Soil Foodweb, Inc.
soilfoodwebny@aol.co
(631) 474-8848
Consulting fees may apply

Organism Biomass Data	Dry Weight	Active Bacterial (µg/g)	Total Bacterial (µg/g)	Active Fungal (µg/g)	Total Fungal (µg/g)	Hyphal Diameter (µm)
Results	0.340	105	1413	148	1204	2.25
Comments	Too Wet	Excellent	Good	Excellent	Excellent	
Expected Range Low	0.45	15	100	15	100	
Expected Range High	0.85	25	3000	25	300	

	Protozoa Numbers/g Flagellates	Protozoa Numbers/g Amoebae	Protozoa Numbers/g Ciliates	Total Nematodes #/g	Percent Mycorrhizal Colonization ENDO	Percent Mycorrhizal Colonization ECTO
Results	133696	167007	0	12.6	Not Ordered	Not Ordered
Comments	High	High	Low	Low		
Expected Range Low	10000	10000	50	20		
Expected Range High			100	30		

Organism Biomass Ratios	Total Fungal to Total Bacterial	Active to Total Fungal	Active to Total Bacterial	Active Fungal to Active Bacterial	Plant Available N Supply (lbs/acre)
Results	0.85	0.12	0.07	1.41	300+
Comments	Good	High	Good	Good	
Expected Range Low	0.75	0.01	0.01	0.75	
Expected Range High	1.5	0.1	0.1	1.5	

Nematodes per Gram of Soil
Identification to genus

Bacterial Feeders	
Pelodera	0.09
Rhabditis	4.25

555-7 Hallock Ave. Port Jefferson Station, NY 11776 USA
(631) 474-8848 | soilfoodwebny@aol.com
www.soilfoodweb.com

03-006485: Page 1 of 2

Soil Amendments - compost tea, biochar, humate, etc.

HARVARD YARD

Management for inundation

BATTERY PARK, NYC

Management for inundation

SOIL ANALYSIS REPORT FOR RESEARCH 11/14/12

SOIL AND PLANT TISSUE TESTING LAB
WEST EXPERIMENT STATION
UNIVERSITY OF MASSACHUSETTS
AMHERST, MA 01003

LAB NUMBER: S121106-125
BAG NUMBER: 112567

SOIL WEIGHT: 4.95 g/5cc

BATTERY PARK CONSERVANCY
75 BATTERY PLACE
NEW YORK, NY 10280

COMMENTS: TFLEISHER@BPCPARKS.ORG, ECALVANESE@BPCPARKS.ORG

ANALYSIS REPORT

SAMPLE ID: WPSG
SOIL TYPE:

SOIL PH 6.4 ALUMINUM (AL): 8 PPM (Soil Range: 10-300)
BUFFER PH 6.9 ORGANIC MATTER: 5.7 %. Desirable range 4-8%.

NUTRIENT LEVELS:	PPM	LOW MEDIUM HIGH VERY_HIGH
PHOSPHORUS (P)	22	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
POTASSIUM (K)	139	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
CALCIUM (CA)	1047	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
MAGNESIUM (MG)	450	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

CATION EXCH CAP 11.2 MEQ/100G
PERCENT BASE SATURATION K= 3.2 MG=33.2 CA=47.1
SOLUBLE SALTS 3.71 dS/M (Soil Range: 0.08-0.50)

MICRONUTRIENT	PPM	SOIL_RANGE	MICRONUTRIENT	PPM	SOIL_RANGE
Boron (B)	1.1	0.1-2.0	Copper (Cu)	0.3	0.3-8.0
Manganese (Mn)	2.0	3 - 20	Iron (Fe)	2.9	1.0- 40
Zinc (Zn)	3.1	0.1- 70	Sulfur (S)	80.9	1.0- 40

EXTRACTED LEAD (PB) 0 PPM. ESTIMATED TOTAL LEAD IS 29 PPM.

SOIL ANALYSIS REPORT FOR RESEARCH 11/28/12

SOIL AND PLANT TISSUE TESTING LAB
WEST EXPERIMENT STATION
UNIVERSITY OF MASSACHUSETTS
AMHERST, MA 01003

LAB NUMBER: S121120-106
BAG NUMBER: 112790

SOIL WEIGHT: 4.64 g/5cc

BATTERY PARK CONSERVANCY
75 BATTERY PLACE
NEW YORK, NY 10280

COMMENTS: TFLEISHER@BPCPARKS.ORG, ECALVANESE@BPCPARKS.ORG

ANALYSIS REPORT

SAMPLE ID: WPGB
SOIL TYPE:

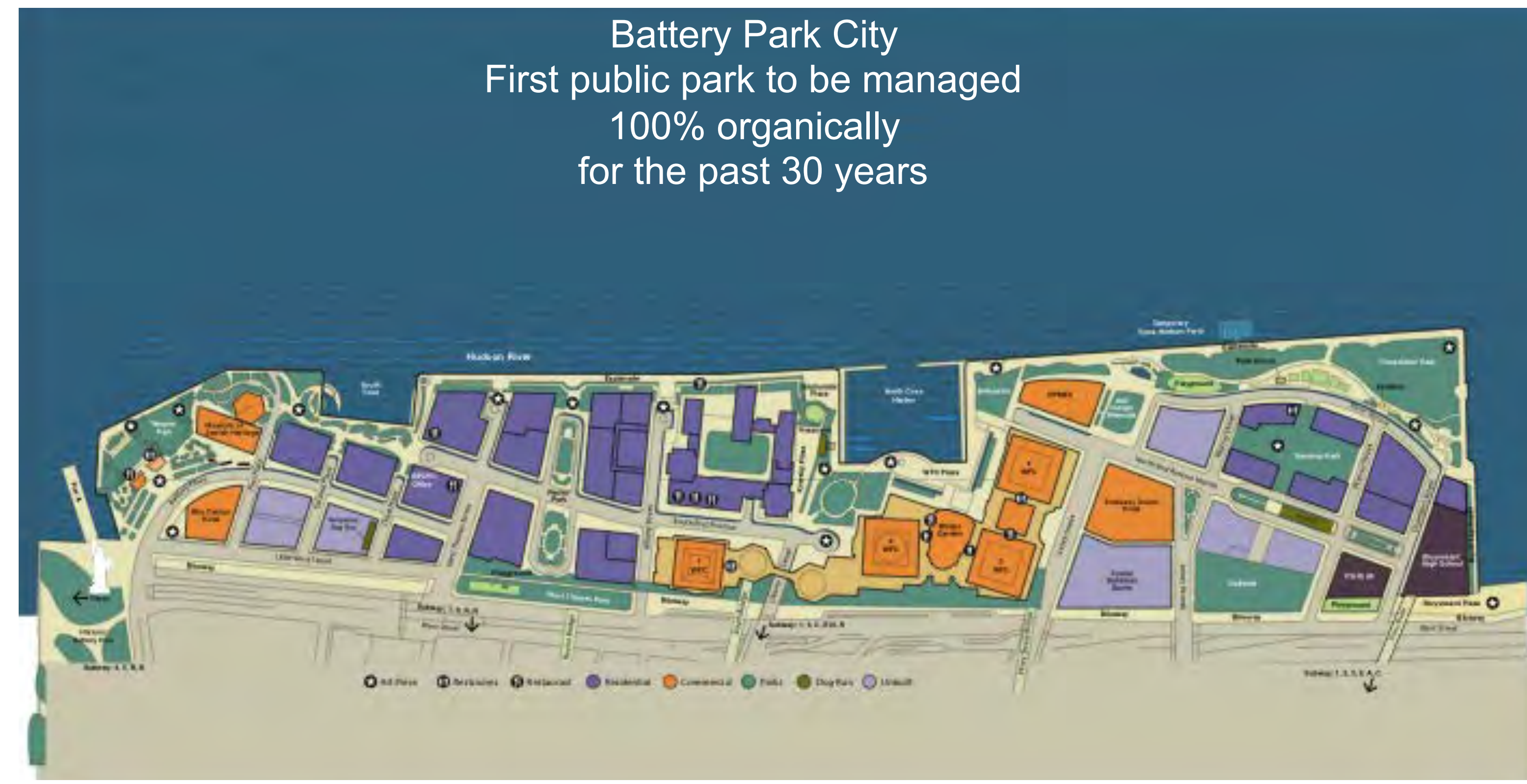
SOIL PH 7.2 ALUMINUM (AL): 8 PPM (Soil Range: 10-300)
BUFFER PH 7.3

NUTRIENT LEVELS:	PPM	LOW MEDIUM HIGH VERY_HIGH
PHOSPHORUS (P)	26	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
POTASSIUM (K)	146	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
CALCIUM (CA)	964	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
MAGNESIUM (MG)	447	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

CATION EXCH CAP 8.9 MEQ/100G
PERCENT BASE SATURATION K= 4.3 MG=41.4 CA=54.5
SOLUBLE SALTS 0.32 dS/M (Soil Range: 0.08-0.50)

MICRONUTRIENT	PPM	SOIL_RANGE	MICRONUTRIENT	PPM	SOIL_RANGE
Boron (B)	1.8	0.1-2.0	Copper (Cu)	0.1	0.3-8.0
Manganese (Mn)	2.8	3 - 20	Iron (Fe)	4.3	1.0- 40
Zinc (Zn)	3.0	0.1- 70	Sulfur (S)	38.9	1.0- 40

EXTRACTED LEAD (PB) 0 PPM. ESTIMATED TOTAL LEAD IS 31 PPM.



Growth medium

BROOKLYN BRIDGE PARK

Remediation for winter salt

CURRENT PRACTICES
CHALLENGES
ADDITIONAL RESEARCH
BEST MANAGEMENT PRACTICES
OPEN QUESTIONS

TREE DATABASE (Cartegraph)

— Analytics: evaluation of existing or best practices, performance over time, comparative analysis

— Feedback system for residents/ Proactive participation

FORMALIZE PRACTICES

— In house procedures

— Contracted work

BEFORE PLANTING

— Where should we plant trees? Are the conditions right? Are there alternative vegetative strategies?

— How can we manage barriers to planting? — conflict with solar access, views, etc.

— When should we be replanting, is it worth planting in tree pits or wait until sidewalk repair?

— How can we align tree selection and conditions?

DURING PLANTING

— What conditions, elements, and soil system (currently one SBSS spec) influence success?

AFTER PLANTING

— How are trees managed for establishment?

— How are trees and soils protected and nurtured over time?

— How can we respond to changing conditions (pest outbreak/drought)?

— How can we share responsibility for the urban forest?

— How can we use technology to monitor and respond pro-actively?

DISCUSSION / QUESTIONS

ADVOCACY / REGULATIONS

Deanna Moran

Conservation Law Foundation

M.G.L. Chapter 87: Shade Trees

— Applies to trees within the public right of way or within 20 feet of the public right of way with Tree Warden and Owner's consent

— Establishes powers for tree wardens

— Removal of healthy public shade trees requires advertised public hearing

— Trees that pose immediate hazards do not require a hearing to be removed

City Tree Removal Policy

City Tree Protection Ordinance
— Tree Replacement Fund
— Enforcement

City Zoning Articles 5 & 19
— Tree Study
— Tree Protection Plan

City Zoning Article 20 (Overlay Districts)
— Parkway Overlay
— Prospect Street Overlay

https://www.urbanforestprofessionals.com/wp-content/uploads/UrbanForestPro-68.jpg

Committee on Public Planting

— Advises City Council, City Manager, Public Works Commissioner, and other department heads on public planting issues

Tree Ambassador/Water by bike

— Paid summer position inspect, weed, and water young street trees via bicycle and cargo trailer

Planting Requests

— If a tree was removed from an existing well and you would like a replacement there is no expense to you

— If you'd like to have a tree planted where no tree well currently exists, the City will inspect the area and determine if it is suitable

Back of Sidewalk Program

— If a tree cannot be planted within the public right of way, the City will plant trees along the back of the sidewalk (up to 20 feet from the public way) on private property of interested, eligible owners

Adopt-a-Tree Program

— Residents commit to water and tending a tree near a specific address (home, school, business, etc.)

Commemorative Tree Program

— For cost of $200 you can receive purchase a tree in remembrance of a loved one or important event

— Evaluting barriers to buy-in/participation
  developers
  small property owners
  large private land-owners
  quasi-public and state property owners

— Assessing formal vs. informal policies

— Relationship with the state

— Cross-departmental city coordination

Feasibility Survey/Study

— Why are things working or not working

— Insights about what will be well-suited for Cambridge

— Narrowing the world of possibilities – not supporting a particular policy or proposal

https://nexusofchange.wordpress.com/2012/04/08/occupy-atlanta-surveys-public-opinion-for-better-society/

Seattle, WA

— Tree protection code

— Green Factor

Atlanta, GA

— Robust tree ordinance

Nashville, TN

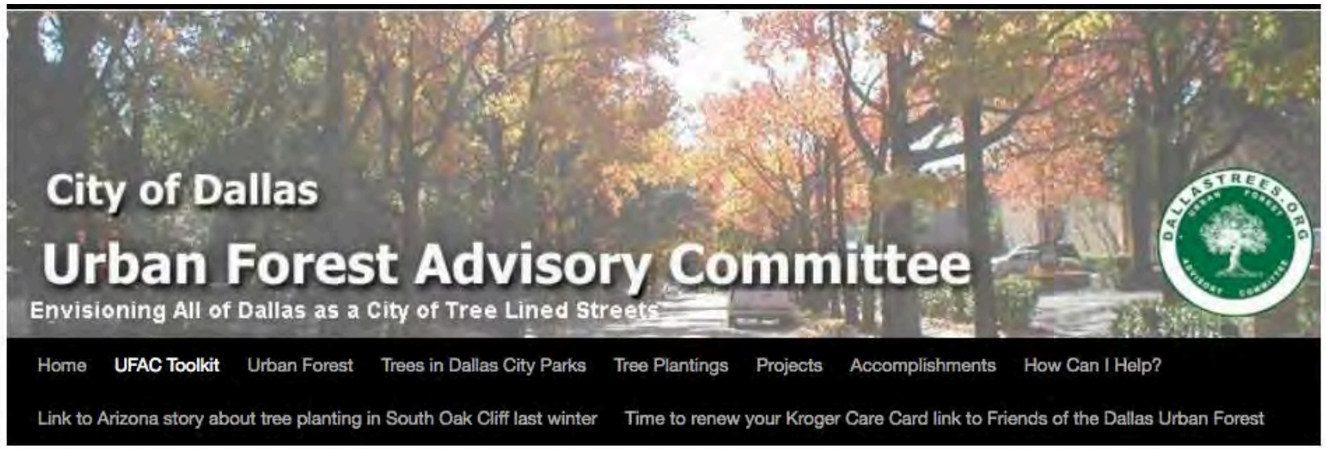
— Protected trees and tree removal permits

Arlington, VA

— Subsidized plantings on private property

Dallas, TX

— Flexibility of Tree Fund



UFAC Toolkit

UFAC has prepared a Toolkit to assist neighborhood associations and groups interested in organizing tree planting events that qualify for free trees that may be provided through the City of Dallas MOWmentum and for the Reforestation Fund. Trees from these programs are targeted for planting in City of Dallas street medians and in the "parkway", which in most neighborhoods is the strip of grassy area between the sidewalk and the street.

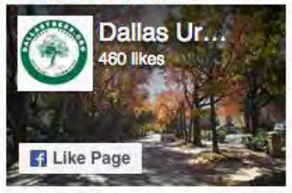
TOOLKIT

In the Toolkit Table 3.1 List of Sample Forms, Letters, and Checklist consists of examples of Forms/Letters/Checklist to assist Neighborhoods to organize a tree planting project, identify volunteers and supporters, obtain and plant trees, and follow-up after the tree-planting event. These sample documents are go-by's and can to altered for your specific Neighborhood Tree Planting Project needs. Below are links to editable versions of the examples shown in the Toolkit that you can download and modify.

Coming Events

- June 19, 2018
  - UFAC Meeting at 6:00 pm

UFAC on Facebook



Helpful Links

1. Dallas City Arborist
2. TAMU Tree Guide
3. UFAC Tree Guide
4. MOWmentum Program
5. UFAC Bulletin
6. UFAC BOLETIN INFORMATIVO
7. Planting & caring for trees in your yard
8. Plantación y cuidado de los árboles de su jardín
9. Alliance for Community Trees
10. Turtle Creek Park Study
11. Texas Forest Service

DISCUSSION / QUESTIONS

PUBLIC COMMENT

TASK FORCE MEETING SCHEDULE

JUNE 12	Introduction
JUNE 28	RESEARCH: Regulatory and Management Review
JULY 26	RESEARCH: Initial Data Analysis
AUGUST 30	TESTING: Process and Key Questions
SEPTEMBER 27	TESTING: Baseline
OCTOBER 25	TESTING: Findings
NOVEMBER 29	PROPOSAL DEVELOPMENT:TBD
DECEMBER 20	PROPOSAL DEVELOPMENT:TBD
JANUARY 31	PROPOSAL DEVELOPMENT:TBD
FEBRUARY 28	DRAFT DOCUMENTATION: TBD
MARCH 28	DRAFT DOCUMENTATION: TBD
APRIL 25	DRAFT DOCUMENTATION: TBD

www.cambridgema.gov/UFMP