



Central Business District, Dover, NH • Summer 2020

# STREET TREE INVENTORY

## INSTRUCTIONS

## Introduction

Thank you for assisting with Dover's Street Tree Inventory in the Central Business District (CBD)!

This survey will take place in July and August of 2020. This is a survey of street trees only (Figure 1).

This document contains instructions on how to complete the inventory and provides additional information to assist with responding to the survey questions for each tree.

This inventory is part of a coastal resilience project funded by the New Hampshire Coastal Program. Results from this inventory will be used to guide future street tree plantings and to inform the development of a street tree plan for the CBD. The inventory results will also be analyzed alongside city-wide tree canopy data obtained from LiDAR imagery.

Please contact Liz Durfee, planning consultant with EF | Design & Planning, LLC, at 603-969-4594 or [efd.planning@gmail.com](mailto:efd.planning@gmail.com) with questions about the survey.



Figure 1. Example of a street tree on Central Ave in Dover. Street trees are trees planted in the right-of-way, often in a tree pit in the sidewalk or in the grassy median between the sidewalk and street.

# Instructions

## Step I: Sign Up

- Contact Liz Durfee (603-969-4594 or [efd.planning@gmail.com](mailto:efd.planning@gmail.com)) to sign up to survey trees on a specific block(s) or streets(s) that are within the CBD zoning district (Figure I). A list of the streets in the CBD to be surveyed is included in Appendix A of these instructions. Maps of each street segment are available at: <https://www.dropbox.com/sh/cwnfgldhd68rdmn/AADRpNsmKsjCI9LyDtisuh-Za?dl=0>.
- Sign and return the waiver located in Appendix B or [here](#) to [efd.planning@gmail.com](mailto:efd.planning@gmail.com).

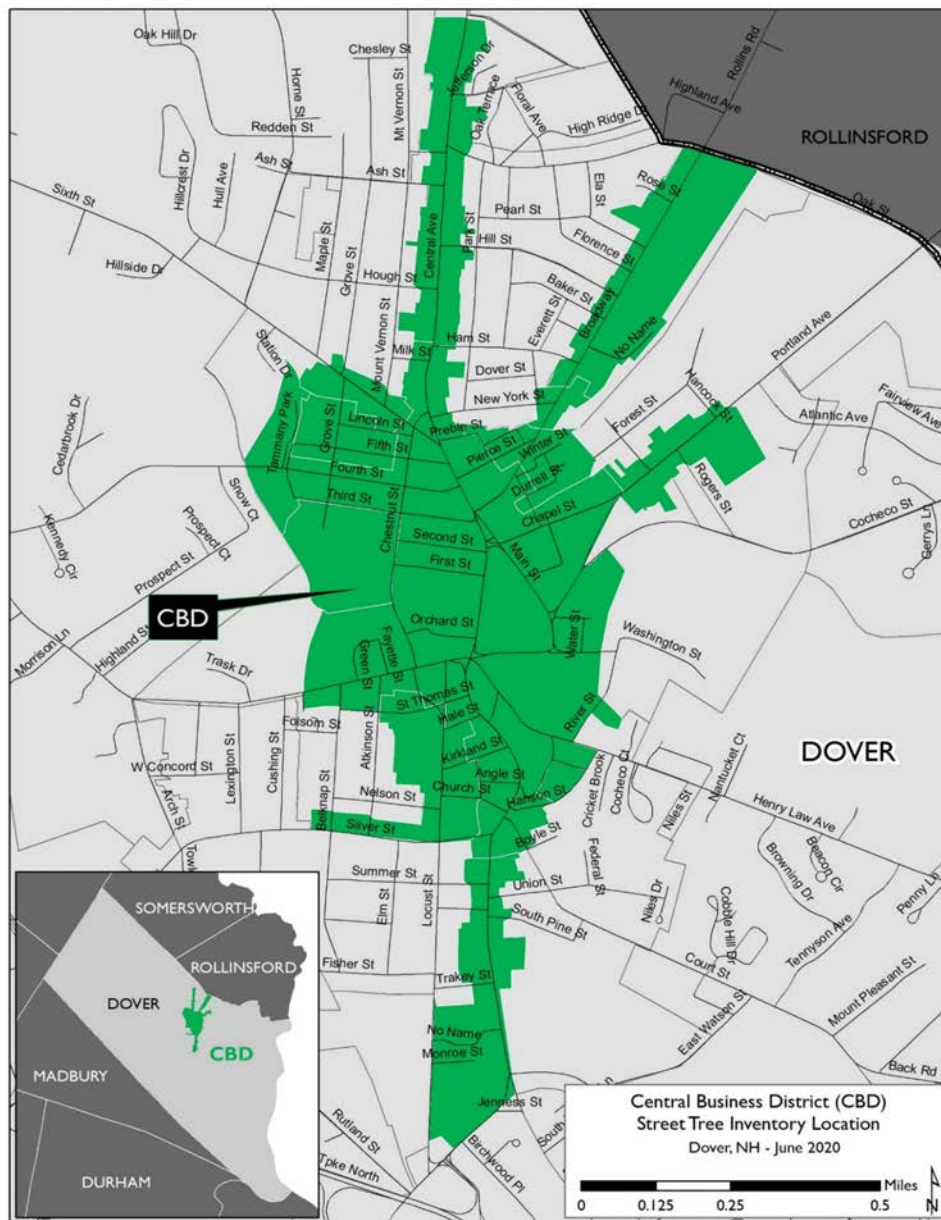


Figure I. Map of the Central Business District (CBD)

## Step 2: Review Instructions

- Review these instructions to familiarize yourself with the survey questions and process.

## Step 3: Download SurveyI23

- Download the free SurveyI23 for ArcGIS app on your mobile phone, iPad, or tablet (please note that whichever mobile device you choose to use must have cellular service).
- Open the SurveyI23 app on your mobile device and, if prompted, allow the app to access your location.
- SurveyI23 may prompt you to create an account or log in to an existing account. Do not create an account and do not try to log in to an existing account. This survey can and should be accessed without using an account login and password.
- To access the survey, login to your email on the same mobile device that you downloaded SurveyI23 to, and click on the survey link that you were given by Liz Durfee or Jackson Rand
  - Note: This survey link is not a normal website link. If you copy and paste this link into your web browser, nothing will happen. If you click on the link from your computer, nothing will happen. This survey link is a “mobile app link”, and will become “clickable” on your mobile device once you download the SurveyI23 app.
- Alternatively, to access the survey you can take a photo of the QR Code that you were given by Liz Durfee or Jackson Rand.

*Note: Electronic surveys are preferred but if you wish to complete a paper survey, SRPC can provide you with a paper survey form to complete.*

## Step 4: Gather field equipment

- Flexible tape measure, or a string and ruler if you do not have a tape measure
- Yard stick, or a stick or pole that is at least as long as your arm
- Mobile device with **SurveyI23** app downloaded
- Link to the survey (provided via email)
- Printed copy of these instructions. Printed copies are available in the Planning Department at City Hall for individuals who are not able to print at home.
- Tree Identification Guide or plant identification app, optional
- Water, sunscreen, snacks, masks, hand sanitizer, as needed.

## Examples of Tree Identification Resources

### Free online resources:

- Arbor Day Foundation's What Tree is That? online guide:  
<https://www.arborday.org/trees/whattree/whatTree.cfm?ItemID=E6A>
- Know Your Trees from Cornell University:  
[https://extension.unh.edu/resources/files/Resource003744\\_Rep5341.pdf](https://extension.unh.edu/resources/files/Resource003744_Rep5341.pdf)

### Tree identification book or guide for purchase:

- Peterson's A Field Guide to Eastern Trees: Eastern United States and Canada
- National Audubon Society's Field Guide to North American Trees: Eastern Region
- Arbor Day Foundation's What Tree is That? printed guidebook  
(<https://shop.arborday.org/product.aspx?zpid=583>)

### Plant ID apps:

- Virginia Tech vTree
- PlantSnap
- Botany Buddy
- PictureThis-Plant ID
- National Wildlife Federation (NWF) Guide to Trees

## Step 5: Complete the Survey

### A. General Guidance:

- Start at one end of the street or block you are assigned to survey. Inventory all trees on one side of the street before moving to the other.
- Use the maps provided by SRPC to help identify the street trees, which are located in the right-of-way. Trees located in the sidewalk are easy to identify. On streets without a sidewalk, it can be harder to determine which trees should be surveyed. When in doubt about whether a tree is a street tree, collect the information.
- Inventory both the street trees and the empty tree pits or tree boxes cuts (Figure 3). If you see bare soil or a stump in a section of sidewalk that has been cut out, it is likely a tree used to be there. Please include these sites in your survey collection.
- Click on the link to the survey to open the survey and begin collecting data. You should have received this link from Jackson Rand after signing up.
- If you are unsure how to answer a question, leave it blank.
- Please be safe and mindful of others, park in allowed locations, use crosswalks when crossing the street, and avoid stepping into the road while completing the survey.



Figure 3. Empty tree pit

## B. Additional Information for Survey Questions in SurveyI23

*This section has additional information and instructions for each survey question you will see in the SurveyI23 app.*

### 1. Location

When you reach a new tree, stand next to it, and add the tree location by clicking on the button to the left of the coordinates. This button is circled in red in Figure 4.

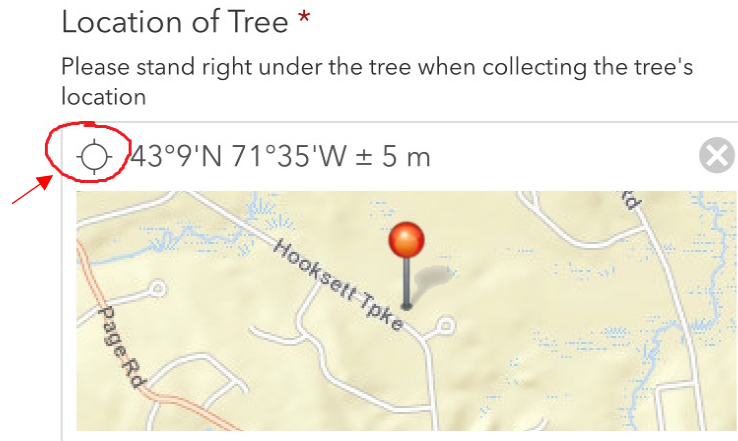


Figure 4. Screenshot of SurveyI23 add a location

### 2. Street name

### 3. Your name

### 4. Date survey completed (MM/DD/YYYY)

### 5. What type of site is this? (multiple choice)

- Existing tree
- New tree
- Stump
- Empty planting site
- Other

### 6. How big is the tree pit or tree box in square feet?

The tree pit, tree box, or tree well is the area that has been cut out of the sidewalk (see Figure 5).

- For rectangular sidewalk cuts: measure and calculate the length (ft) x width (ft) of the box.
- For round sidewalk cuts: measure the radius (distance from the edge of the circle to the middle of the circle) and multiply the radius (ft) x radius (ft) x 3.14.
- If the sidewalk cut is an irregular shape, make your best estimate of the area of the cut.
- If the tree is located in a grassy median or edge of lawn, enter "0".



Figure 5. Tree pit, also referred to as a tree box or tree well

**7. Measure the distance from the edge of the tree box to the nearest building or edge of the sidewalk. Is there at least 4 feet of unobstructed sidewalk available for people to pass by?** (yes/no/unknown)

**8. What side of the building is the tree located on?** (multiple choice)

Turn on satellite view in Google Maps and look at your location in relation to the building. If you are west of the building, choose “west”.

- North
- South
- East
- West
- Northeast
- Northwest
- Southeast
- Southwest
- Unknown

**9. What is the common name of the tree?** Optional, if known (multiple choice)

- If you do not know, please choose “unknown”.
- You can try to use a tree guide or plant identifier app to identify the tree, but if you are unable to confirm the name of the tree with certainty, please choose “unknown” and staff will determine the species.
- If the species is not listed, please choose “other”.

**10. What shape is the crown (branches and leaves)?** (see Figure 6) (multiple choice)

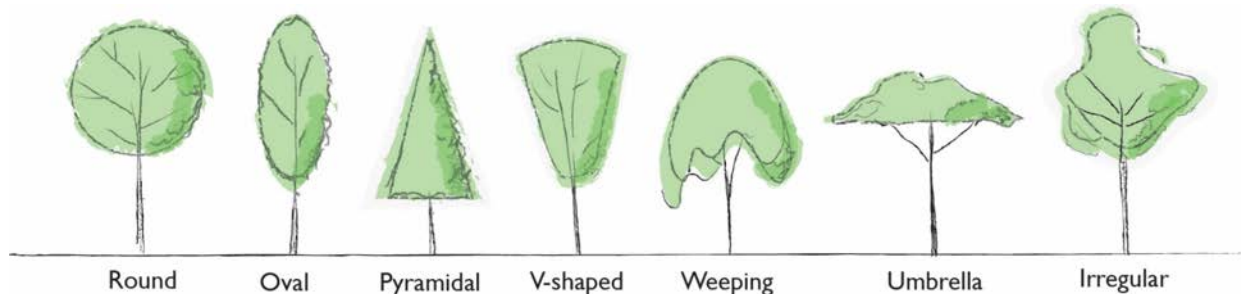


Figure 6. Tree crown shapes

**11. What is the tree’s diameter at breast height (DBH) or 4.5 feet from the ground, in inches?**

Measure the diameter of the tree at approximately 4.5 feet from the ground.

- If there is a fork in the trunk or multiple branches, measure just below the split.
- If you have a measuring tape, measure the circumference (the distance around the trunk) in inches, and divide this by 3.14.
- You can use a string and ruler or yard stick to determine the circumference if you do not have a flexible measuring tape.

## 12. What is the height of the tree in feet?

Use the method described below to estimate the height using a yard stick (or any stick) and a tape measure. This method was adapted from USU Forestry Extension. Do not climb the tree.

- Use a yardstick or a stick that is equal in length to the distance from your eye (cheekbone) to your fingers when your arm is fully extended in front of your face. Break off part of the stick or mark it at the correct length if you do not find one that is exactly right.
- Hold the stick out in front of you with your arm fully extended. The stick must be held vertically and your arm should be parallel to the ground. If your cheekbone to fingers length was 28 inches, you should be standing with your arm out straight with the bottom of the stick in your hand at about eye level and the top of the stick 28 inches above your hand.
- Face the tree. Look in the direction of your outstretched hand. Walk toward or away from the tree until the tip of the stick is visually lined up with the top of the tree and the bottom of the stick is lined up with the bottom of the tree. Your line of sight to the tree base should be as close as possible to horizontal. In sighting to the top and bottom of the stick rotate your eye rather than your head.
- The distance from where you are standing to the base of the tree is (approximately) equal to the height of the tree. Measure this distance in feet using a measuring tape. If you do not have a long measuring tape, pace out the distance and convert your steps to feet based on the size of your step.

**Before you go out to complete the survey...**

Watch this video from Arthur Temple College of Forestry on how to use the yard stick method to measure the height of a tree:

<https://www.youtube.com/watch?v=cDy5OjfMfZ8>

## 13. What is the overall health of the tree? (multiple choice)

- Good: healthy, vigorous, with no apparent signs of insect, disease, or mechanical injury (i.e. broken branches).
- Fair: average condition and vigor for the area but may be in need of some corrective pruning, show minor insect injury or disease, or show root damage.
- Poor: in a general state of decline. May show severe mechanical (significant bark or limb injury), insect, or disease damage, but is not dead.
- Dead/dying: no new growth or leaves evident in spring/summer, hollow, broken branches, or trunk.

**14. Maintenance needs questions (yes/no/unknown)**

- Is there any visible injury or physical damage?
- Is there any visible disease or pest damage?
- Are there visible pruning needs, such as branches that are interfering with pedestrian or vehicular travel or visibility?
- Does the tree appear to need water? Indicators of this include curling or wilted leaves that turn brown at the edge, yellowing leaves, or early leaf drop or early fall color.
- Does the tree pit need mulch? If there is no mulch or a very sparse layer of mulch, it is likely that mulch is needed.
- Has there been any vandalism at the site?
- Are there utility wires above or in the tree?
- Are there streetlights above or next to the tree?
- Is there root damage to the sidewalk or curb?
- Does the size and location of the tree appear to be appropriate for the site? Use your best judgement.
- Please upload photos of any potential maintenance issues.

**15. Is there a plaque or marker that indicates that the tree was planted in memorial or in honor of an individual, organization, or event, or that it has cultural or historical significance? If so, please provide this information below. (Fill in the blank)**

**16. Please take and upload a photo of the tree.**

**17. Please add any additional notes you may have about the tree or site.**

## Appendix A: Streets within the CBD to be surveyed

Maps of street segments are available at:

<https://www.dropbox.com/sh/cwnfgldhd68rdmn/AADRpNsmKsJCI9LyDtisuh-Za?dl=0>

Streets in CBD	Miles in CBD	Portion of Street to Survey
Academy St*	0.10	Kirkland St to Church St
Angle St**	0.09	Academy St to Central Ave
Ash St*	0.04	One lot west of Central Ave
Atkinson St	0.09	Washington to St Thomas St
Atkinson St	0.05	One lot north of Silver St
Baker St	0.04	One lot west of Broadway
Belknap St	0.11	Washington To St Thomas St
Brick Rd*	0.03	One lot east of Central Ave
Broadway*	1.02	Central to Oak Street
Central Ave	0.12	Birchwood Pl to Jenness St north side only
Central Ave	0.31	Jenness to Trakey St west side only
Central Ave	0.26	Trakey St to Silver St
Central Ave	0.34	Silver St. to Washington St
Central Ave	0.21	Washington St to Franklin Sq
Central Ave	0.24	Franklin Sq to Chestnut St
Central Ave	0.21	Chestnut St to Hough St
Central Ave	0.18	Hough St to Ash St
Central Ave	0.30	Ash St to Abbey Sawyer Memorial Dr
Chapel St*	0.31	Main St to Portland Ave
Chestnut St	0.46	Washington Ave to Central Ave
Chestnut St	0.11	Washington St to Locust St
Church St	0.16	Locust St to Central Ave
Court St*	0.10	Boyle St to Central Ave
Cushing Ct	0.01	Chestnut St to end
Durrell St	0.15	Saint John St to Winter St
East St	0.04	Two lots north of New York St
Essex St	0.04	One lot north of Portland Ave
Exit Ramp (southwest side of Central Ave and Washington St intersection)	0.05	Central Ave to Washington St (at intersection)
Fayette St	0.08	Green St to Washington St
Fifth St	0.42	Fourth to Central Ave
First St	0.21	Chestnut to Central Ave
Florence St	0.03	One block west of Broadway
Fourth St	0.50	Cocheco River to Central Ave
Franklin Plz	0.05	Main St to Central Ave
Franklin Sq	0.03	Main St to Central Ave

<b>Streets in CBD</b>	<b>Miles in CBD</b>	<b>Portion of Street to Survey</b>
George St	0.21	Central to Henry Law Ave
Green St	0.14	Washington to Fayette
Grove St	0.39	South of Sixth St
Hale St	0.09	Locust St to Central Ave
Ham St	0.03	One lot east west of Broadway
Ham St	0.05	One lot east of Central Ave
Hancock St	0.03	One lot north of Portland Ave
Hanson St*	0.27	Central to Henry Law Ave, west side only
Henry Law Ave*	0.32	Central Ave to River St
Henry Law Ave*	0.05	River St to Hanson St, south side only
Hill St	0.10	Central Ave to Park St
Hough St	0.05	One lot west of Central Ave
Kirkland St*	0.16	Locust St to Central Ave
Lincoln St	0.17	Grove St to Chestnut St
Locust St	0.53	Silver to Washington
Main St	0.30	Washington to Chapel St
Mechanic St	0.10	School St to Chapel St
Milk St*	0.04	One lot west of Central Ave
Monroe St**	0.10	Locust St to end
Mount Vernon St	0.04	One lot north of Sixth St
Nelson St	0.04	One lot east of Locust St
New York St	0.05	Three lots east of Central Ave
New York St*	0.05	Broadway to East St
Oak St	0.05	One lot east of Central Ave
Orchard St	0.17	Chestnut to Central Ave
Pearl St**	0.03	One lot west of Broadway
Pierce St	0.20	Central Ave to Broadway
Portland Ave*	0.25	Main St to Chapel St
Portland Ave*	0.30	Chapel St to Atlantic Ave
Preble St	0.16	Central Ave to Pierce St
Reservoir St*	0.04	One lot west of Central Ave
River St**	0.12	Henry Law Ave to north side of the Skatepark
Rogers St	0.04	One lot south of Portland Ave
Rose St	0.05	One lot west of Broadway
Saint John St	0.14	Chapel St to Broadway
Scenic Dr**	0.04	One lot south of Washington, east side only
School St	0.09	Main St to Mechanic St
Second St	0.21	Chestnut to Central Ave
Silver St	0.30	Belknap to Central Ave
Sixth St	0.32	Central to Middle St
Sonnett St**	0.08	George St to Hanson St
South Pine St	0.05	One lot east of Central Ave

<b>Streets in CBD</b>	<b>Miles in CBD</b>	<b>Portion of Street to Survey</b>
Spring St*	0.04	One lot west of Central Ave
St Thomas St	0.15	Atkinson to Locust St
St Thomas St	0.07	Belknap to Atkinson, north side only
Summer St*	0.05	One lot west of Central Ave
Tammany Park*	0.17	Fourth St to Fifth St
Third St*	0.44	Frances Dr to Central Ave
Trakey St*	0.05	One lot west of Central Ave
Twombly St*	0.12	Preble St to Pierce St
Union St	0.03	One lot east of Central Ave
Washington St	0.26	Scenic Dr to Central Ave
Washington St	0.25	Central Ave to River St
Williams St	0.08	Central Ave to Henry Law Ave
Winter St	0.14	Saint John St to end
Young St**	0.08	Portland Ave to end
*A portion of the street does not have sidewalk. It may be more difficult to determine which trees are located in the right-of-way in areas with no sidewalk.		
**No sidewalk. It may be more difficult to determine which trees are located in the right-of-way in areas with no sidewalk.		

## Appendix B: Waiver for Participation in the Survey

**Strafford Regional Planning Commission**  
**Volunteer Service Statement & Agreement**

Date: \_\_\_\_\_, 2020

I make this **Statement** and **Agreement** in order to provide, and to be authorized to perform, the following uncompensated services to my community:

**Data collection and inventory,**

**Under the direction of Strafford Regional Planning Commission's  
Coastal Resilience Project, Task 1 – Dover Urban Street Plan,**

**Between July and September 2020.**

In performing the specified volunteer service, I acknowledge:

- That I am 18 years of age or older and know of no reason, medical or otherwise, which would prevent me from performing the tasks required;
- That I have acquainted myself with what is required to perform those tasks, and represent that I have the skill and ability to perform them;
- That I assume full responsibility for my own safety and the safety of others who might be affected by my actions or omissions. I hereby agree to release, defend, indemnify and hold harmless Strafford Regional Planning Commission (SRPC), its agents, employees, and officers, from any and all claims of illness, bodily injury, personal injury, or property damage, occurring to me or to others, arising from my negligent, reckless, wanton or intentional conduct while participating in this activity.
- That I will perform the volunteer service in compliance with the standards and specifications established, or approved, by SRPC, and will honor the direction of SRPC officials/staff to suspend or terminate service;
- That I agree to the foregoing in consideration for being permitted to perform volunteer service for and on behalf of the SRPC.

Volunteer Signature: \_\_\_\_\_

Volunteer Printed Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_