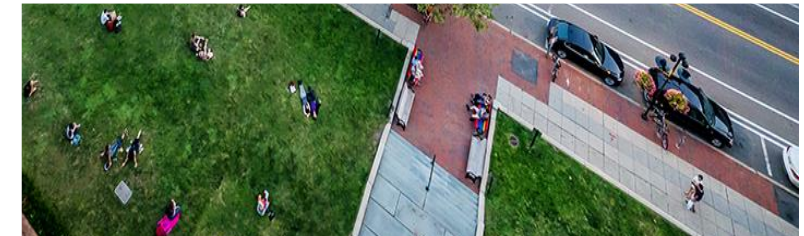
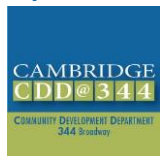


City of Cambridge
Community Development Department

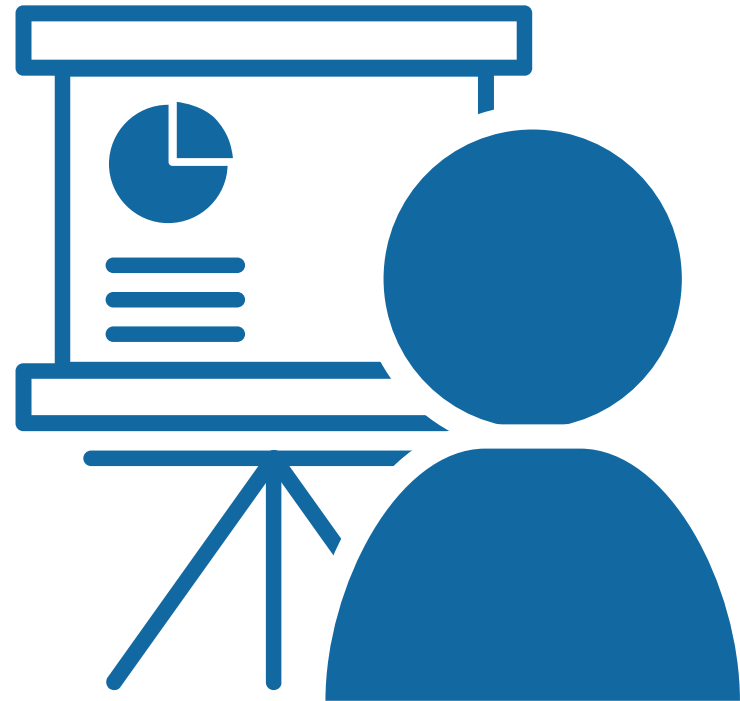
Joint Meeting of Bicycle, Pedestrian, Transit Advisory Committees

April 21, 2021



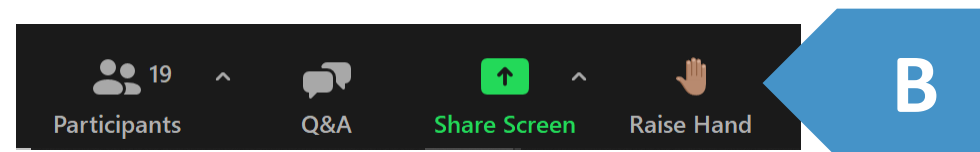
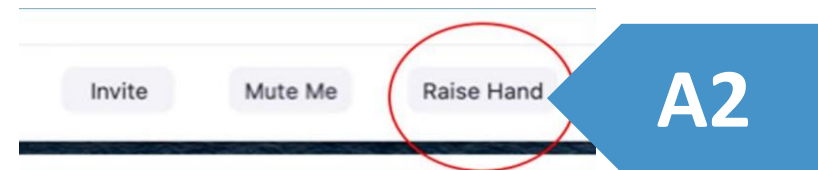
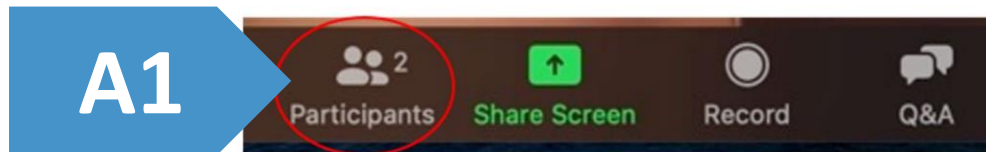
Meeting Agenda

1. Zoom meeting protocols
2. Mid-Mass Ave
3. Public Comment
4. Five-Year Plan for Street and Sidewalk Reconstruction
5. Green Infrastructure
6. Public Comment
7. Other Updates and Announcements



Committee Member Instructions

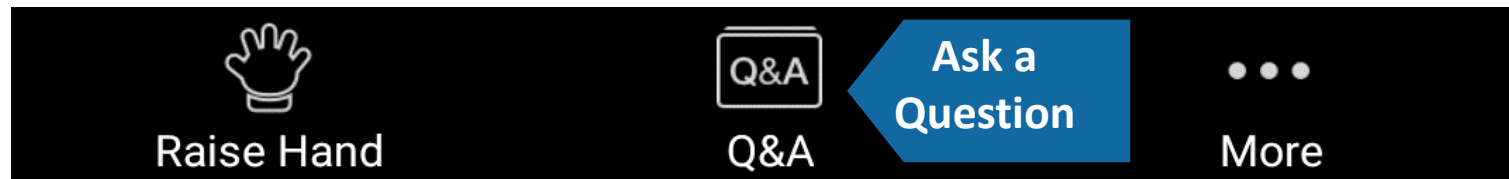
- Committee members may speak and show webcam video
- Use "Raise Hand" button to help manage discussion
 - Located at the bottom of the Participants panel (See A1-2 below) OR at the bottom of the screen (see B below)
 - *9 to Raise Hand by phone
- Please stay muted unless speaking
 - *6 to mute/unmute by phone



Public Comment Instructions

- Members of the public are muted and cannot show webcam video
- Public can write questions or ask for assistance in Q&A window at any time
 - Questions may be submitted at any time and will be addressed as time allows, during discussion/comment periods
- During the Public Comment period, use the "Raise Hand" button to signal you have a question/comment. A staff member will then enable you to unmute yourself and you will have 3 minutes to speak.
 - *9 to Raise Hand by phone
 - *6 to Mute/Unmute by phone
- Please be respectful! Participants will be removed for inappropriate behavior

Bottom Panel of
Zoom Screen





Mid-Mass Ave

Patrick Baxter, Traffic, Parking, & Transportation Dept.

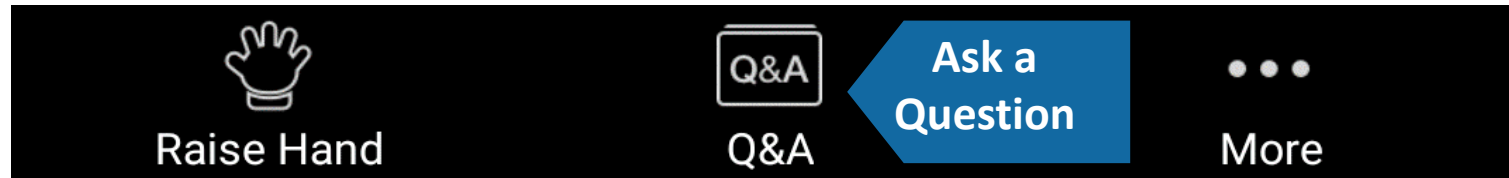


Public comment

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Bottom Panel of
Zoom Screen





Five-Year Plan for Street and Sidewalk Reconstruction

Kathy Watkins, Dept. of Public Works



CAMBRIDGE
DEPARTMENT
OF PUBLIC
**THE
WORKS**

City of Cambridge
Department of Public Works

Five Year **Sidewalk and Street** Reconstruction Plan

April 2021



INTRODUCTION | COMPLETE STREETS

Complete Streets are **streets for everyone**. They are designed and operated to enable **safe access for all users**. Pedestrians, bicyclists, motorists, and public transportation (transit) users of all ages and abilities are able to safely move along and across a Complete Street. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They help buses run on time and make it safe for people to walk to and from train stations.

More sidewalks and bicycle facilities are included in Complete Streets, which provide **increased accessibility for pedestrians and cyclists**.

During design and construction of Complete Streets, the City's goal is to communicate projects with neighborhoods, facilitate an integrated design process, minimize disruption to community life, and provide reasonable access for all users during reconstruction.

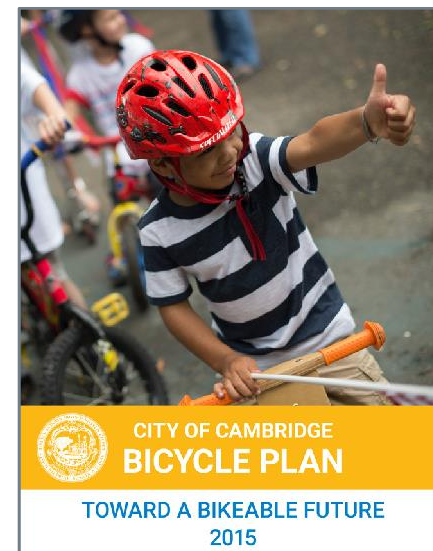
INTRODUCTION | BICYCLE ORDINANCE

In 2019, the Cambridge City Council passed a **Cycling Safety Ordinance** to support the City's commitment to Vision Zero and the construction of a connected network of permanent separated bicycle lanes across the City. The 2020 amendments to the Ordinance aim to **increase the rate that protected bike lanes are created in the City** by adding ambitious requirements for the installation of approximately 25 miles of separated bike lanes within the next six to eight years.

Under the Ordinance, whenever improvements are made under the City's Five Year Sidewalk and Street Reconstruction Plan, **the improvements shall be consistent with the Cambridge Bicycle Plan**. If improvements are made to a segment of the separated bicycle network, a permanent separated bicycle lane shall be installed along that segment.

Improvements do not include routine maintenance, repairs, restriping of the road surface, or emergency repairs to the surface of the roadway.

www.cambridgema.gov/streetsandtransportation/policiesordinancesandplans/cyclingsafetyordinance



INTRODUCTION | VISION ZERO

On March 21, 2016, the Cambridge City Council unanimously passed resolutions put forth by the City Manager to formally adopt Complete Streets and Vision Zero policies, showing that the City is committed to achieving these goals, assuring safe access for all users.



Vision Zero calls for the elimination of fatalities and serious injuries resulting from traffic crashes, and emphasizes that they can and should be prevented. The City of Cambridge is the 17th city in the U.S. to commit to a Vision Zero policy.



PRIORITIES | CONSTRAINTS

Projects are constrained when:

- Budget predictions are uncertain.
- Sewer separation/storm water management project schedules are uncertain.
- Future street condition assessments change.
- Utility failure, repair, or replacement is not considered.
- Severe winter conditions lead to higher-than-expected levels of deterioration on streets.



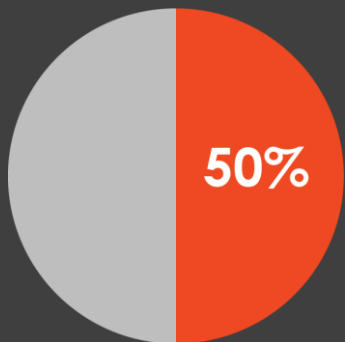
The Department of Public Works (DPW) will review the Five Year Plan on an annual basis. The variables and constraints are significant, and thus the annual revisions may need to reflect these uncertainties.

PRIORITIES | HIGH PRIORITY AREAS

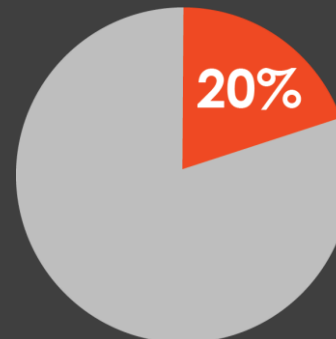


Reconstruct sidewalks and streets in poor condition in **High Priority Areas**:

- Areas within a 150-foot buffer of parks, major squares, libraries, schools, youth centers, senior housing, and senior centers.
- Areas within a 40-foot buffer of bus routes.
- Major thoroughfares to maintain the structural integrity of streets under heavy traffic.
- Streets on Cambridge Bicycle Plan's Bicycle Network Vision.
- Priorities identified by the Commission for Persons with Disabilities.



Just over 50% of City sidewalks and streets are located outside High Priority Areas. These corridors serve residential connections and need to be maintained to the extent that funding allows.



Approximately 20% of street and sidewalk funding will be reserved for areas located outside High Priority Areas.

PRIORITIES | HIGH PRIORITY AREAS



Projects are evaluated in coordination with the **Cambridge Bicycle Plan** to identify streets with non-existent or inadequate bicycle facilities, particularly where reconstruction could improve route connectivity and continuity for cyclists. The Plan is set to be updated in 2021.

For more information, visit: www.cambridgema.gov/CDD/Transportation/bikesincambridge/bicyclenetworkplan

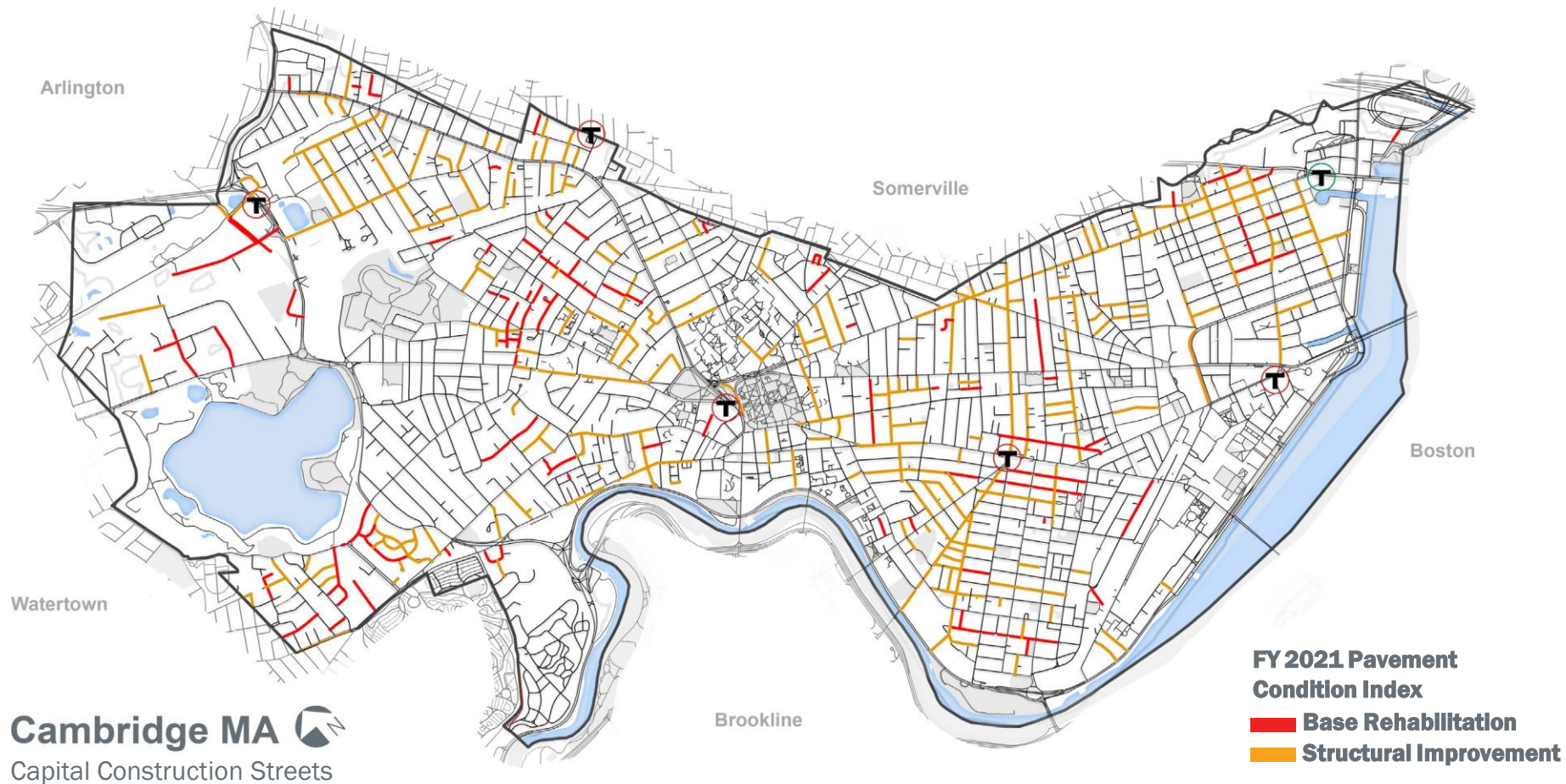
PRIORITIES | SIDEWALK CONDITIONS



Each block of sidewalk received a rating between 0 (excellent) and 35 (poor) based on the following criteria:

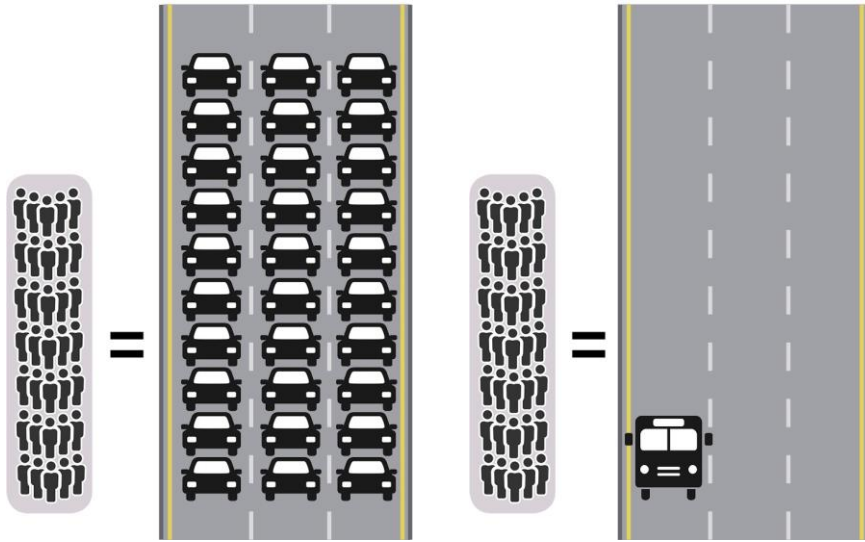
- Driveway conditions
- Trees or other obstructions
- Cross-slope
- Overall structural condition

PRIORITIES | PAVEMENT CONDITIONS



New street condition assessments are completed every three years and the plan is updated accordingly.

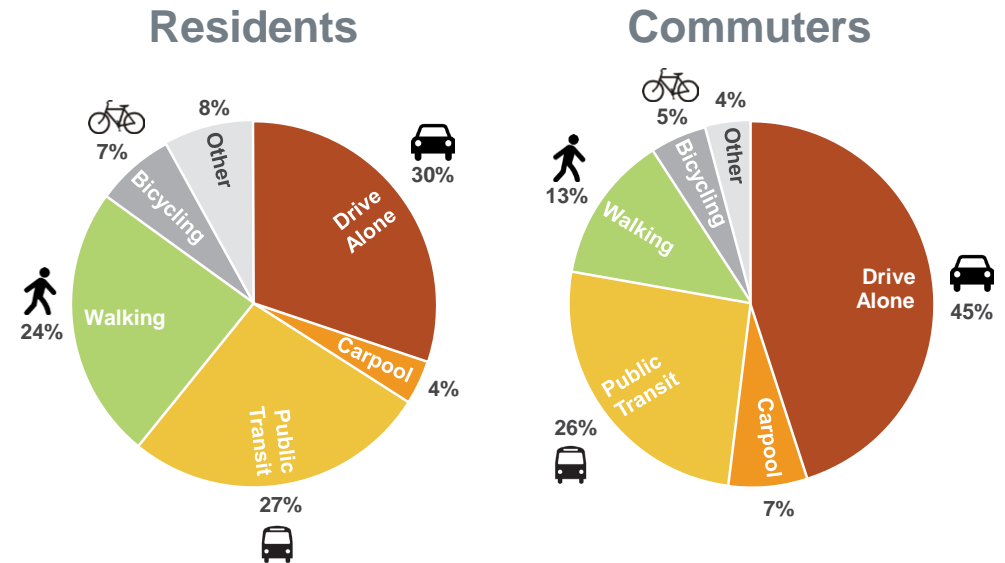
PRIORITIES | TRANSIT



The graphics above illustrate the same number of people in cars versus in a bus.



Cambridge Commuting: Getting Around



Benefits of good transit access:

- A sustainable and efficient mode of transportation that moves people safely compared to driving in private automobiles.
- In some cases, more people on the road may be on buses than in private cars.
- Dense economic and commercial centers thrive (e.g., Kendall Square).

5 YEAR PLAN | SCOPE OF WORK

Our approach emphasizes **streets designed and operated for everyone**. The following elements allow pedestrians, bicyclists, motorists, and transit users of all ages and abilities to safely move along and across **Complete Streets**.



Accessibility: Ensure pedestrian ramps and sidewalks are accessible for all, and implement universal design



Vision Zero: Eliminate fatalities and serious injuries resulting from traffic crashes



Transit: Provide accessibility of bus stops and prioritization of transit



Bicycle network: Support people of all ages and abilities to bike safely throughout the City

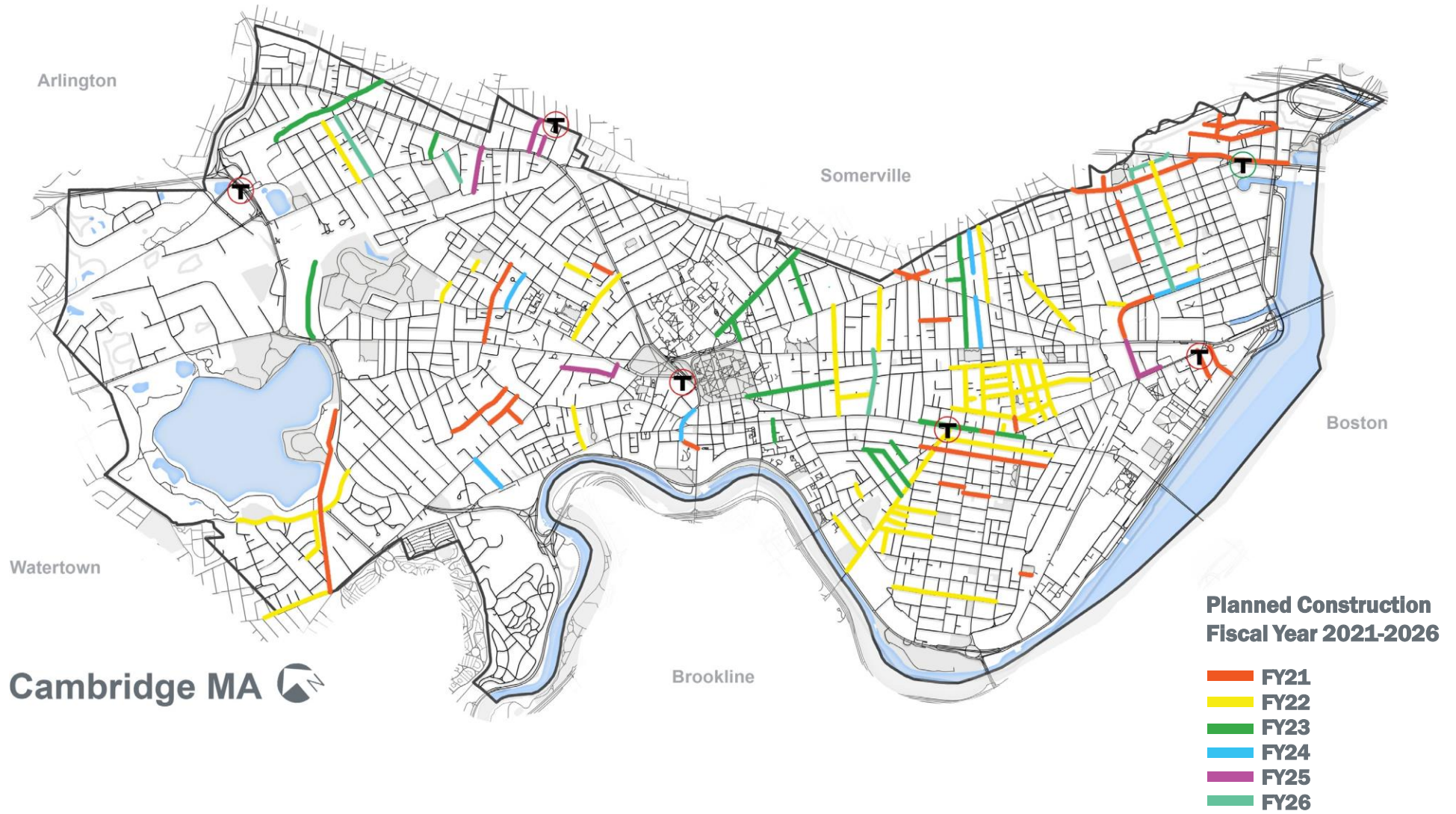


Street trees & green infrastructure: Reduce urban heat island and improve water quality



Infrastructure: Maintain and improve City infrastructure; coordinate with private utilities to facilitate upgrades

5 YEAR PLAN | **PLANNED CONSTRUCTION**



For an interactive construction map, visit: www.cambridgema.gov/theworks/constructionmap

5 YEAR PLAN | FUNDING

Each year, approximately **\$13.5 million** is spent on the Complete Streets Program:

- \$5 million per year starting in 2022 to further implementation of separated bike lanes
- \$2.5 million comes from the State (Chapter 90)
- \$6 million comes from the City budget

Due to more demand than **funding** or **ability to construct**, the City must identify streets:

- In high priority locations that benefit the most people
- That have overlapping needs/benefits
- That prioritize accessibility, active transportation, and safety
- That maintain infrastructure

In addition to the Complete Streets funding summarized above, the City allocated **\$232 million** for the following projects in this year's plan:

- \$38 million for Central Square improvements
- \$6 million for Eliot Street improvements
- \$9 million for Inman Square improvements
- \$45 million for Kirkland Street improvements
- \$80 million for The Port improvements
- \$54 million for River Street reconstruction



PROGRAMS | SEWER SEPARATION & STORMWATER

The City has an ongoing Five Year Capital Program for sewer separation, stormwater management and infrastructure renewal. The City is committed to **restoring** and **enhancing streets, sidewalks,** and **bicycle facilities** as an integral part of the Capital Program. These projects are subject to change in the schedule due to financial, legal, environmental, and level of service considerations.



PROGRAMS | SEWER SEPARATION & STORMWATER

Twenty-five years of major investment in sewer and stormwater infrastructure and maintenance has had a **significant, positive impact on improving the water quality** of discharges to receiving waters.

The amount of Combined Sewer Overflows to the Charles River and Alewife Brook have **significantly decreased** over the past two decades: Charles River by 98%, Alewife Brook by 85%. In the Lower Charles, **water quality has improved from a grade of D to a B**. This is a significant accomplishment, but the work is not done to reach the goal of a swimmable Charles River.



Investment in infrastructure over a long period of time provides a more reliable system that better serves residents, who experience fewer backups, reduced flooding, and fewer emergency repairs.

To view the Ten Year Sewer and Drain Infrastructure Plan, visit: www.cambridgema.gov/theworks/tenyearplan

PROGRAMS | STREET & SIDEWALK

Street and sidewalk construction projects generally include:

- Paving
- Sidewalk and pedestrian ramps
- Traffic calming
- Street trees
- Stormwater management and green infrastructure
- Bike and transit improvements

The City actively maintains and ensures safe, accessible City-owned street and sidewalks by:

- Conducting pothole repairs
- Paving streets through Miscellaneous Patch Contract
- Removing sidewalk obstructions, such as botanical, bicycle, signs, etc.
- Enforcing snow and ice removal

TOOLBOX DESIGN ELEMENTS

STREET & SIDEWALK RECONSTRUCTION



Raised Crosswalks
[at side streets]



Flexi Pave
[at trees]



Curb Extensions & Ramps
[for accessibility]



New Sidewalks
[brick & concrete]



Sidewalk Construction

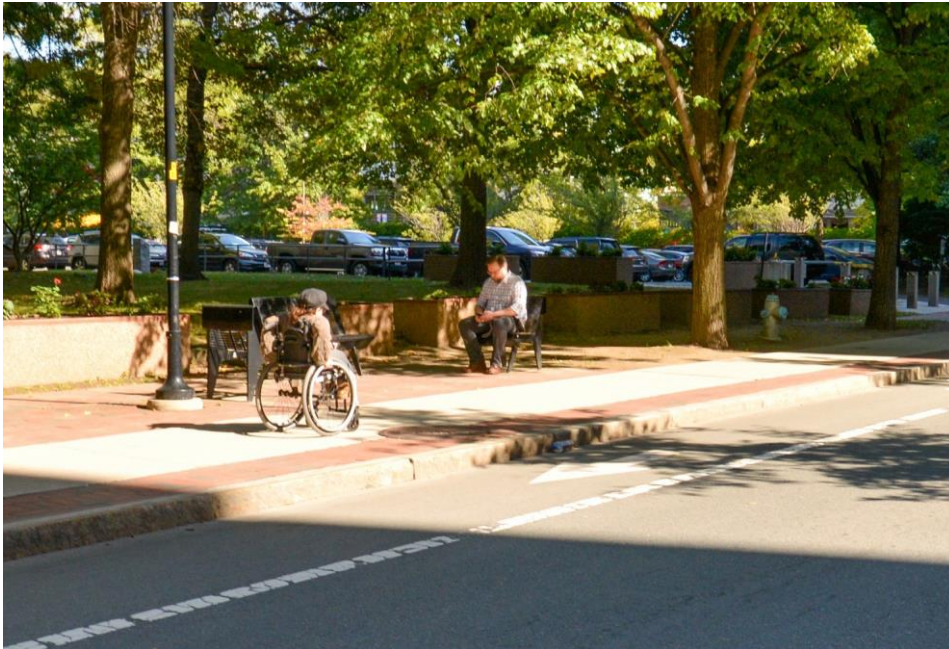


New Tree Plantings



PROGRAMS | MISCELLANEOUS SIDEWALK

- Budget: \$800,000 per year
- Program is used to address discrete sections of sidewalk throughout the City.
- Repairs typically a block in length, but can be as small as one panel.
- Priority given to sidewalks and curb cuts in High Priority Areas, and as identified by **Commission for Persons with Disabilities and the DPW**.
- The DPW makes smaller repairs throughout the year to maintain accessibility across the City.
- Portion of Miscellaneous Sidewalk Program funding reserved for **sidewalks and curb cuts** where access is of acute importance.
- If you know of a location that is a critical access issue and is not addressed in the Five Year Plan, please contact the Commission.



Cambridge Commission for Persons with Disabilities

Rachel Tanenhaus, Executive Director
Kate Thurman, Disability Project Coordinator
51 Inman Street, Second Floor
Cambridge, MA 02139

ccpd@cambridgema.gov

Voice: 617-349-4692 / TTY: 617-492-0235

Fax: 617-349-4766

www.cambridgema.gov/disabilities

PROGRAMS | CLIMATE CHANGE

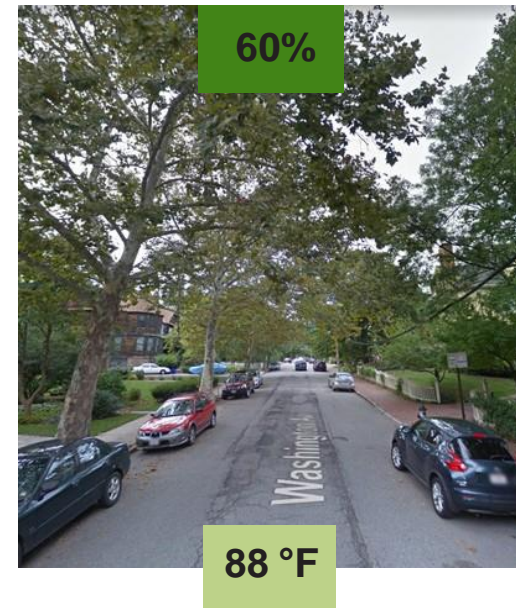
Our climate is changing, bringing more severe storms, more extreme floods, and more intense heat waves. Through projects in the Five Year Plan, we have opportunities to implement resiliency strategies, ranging from green infrastructure to improved drainage to additional tree plantings.



PROGRAMS | HEALTHY FOREST - HEALTHY CITY

A healthy urban forest is a vital part of a healthy city. Trees - whether they are on streets and in parks, on private properties and campuses - help us lower sidewalk temperatures in the summer, reduce home cooling costs, improve air quality, and support a living ecosystem.

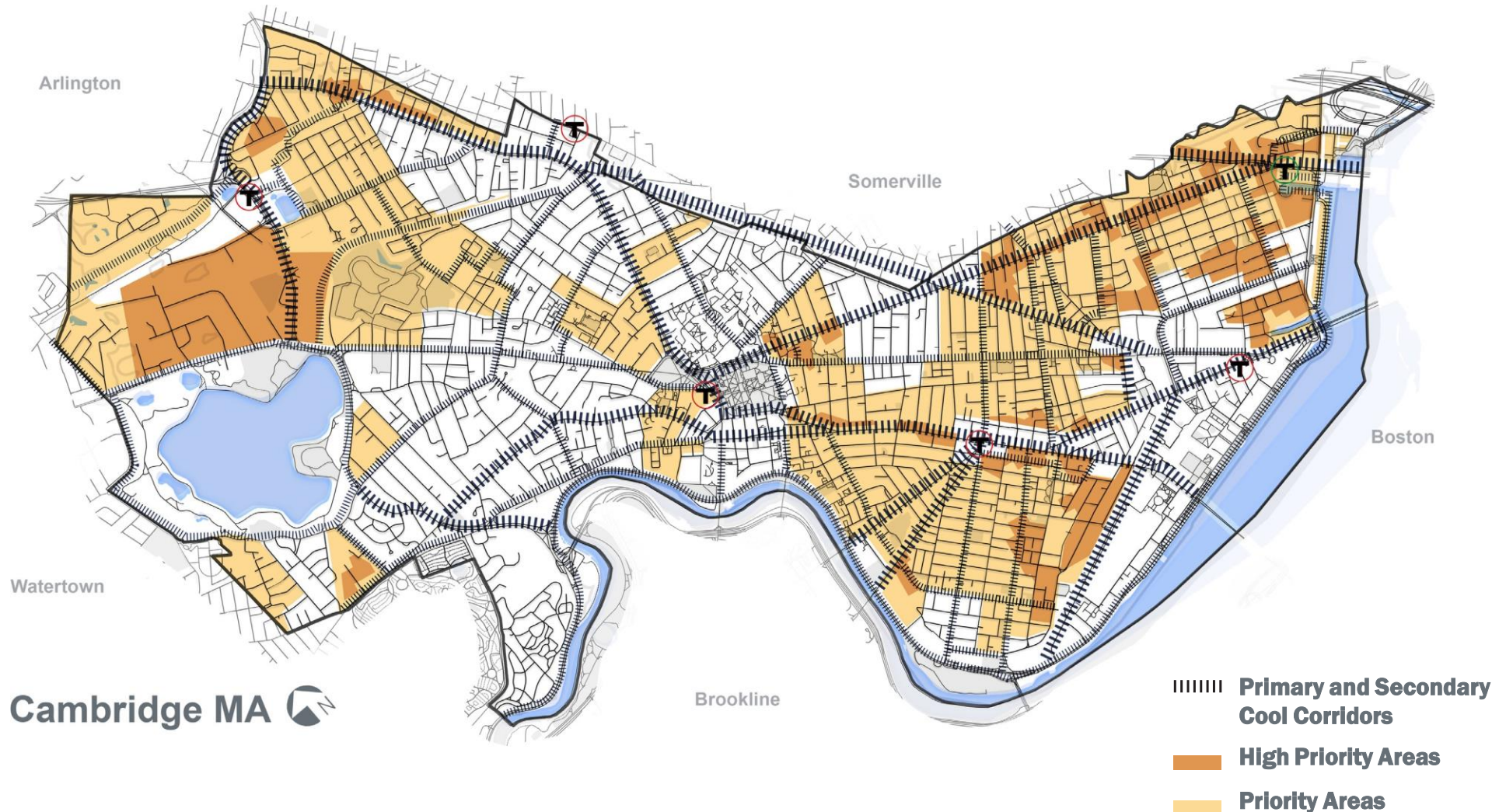
The City maintains over 19,000 trees and has developed an Urban Forest Master Plan to guide the development of the urban forest into the future. The goals are: increase canopy cover where lacking; enhance canopy cover in the public realm to create “cool corridors”; and incentivize each landowner to increase canopy cover.



The images above show the cooling impact on a 90-degree day relative to streetscape. As the tree canopy increases, the “feels like” temperature decreases. It is our common responsibility to plant and maintain trees every year to sustain our urban forest and foster a healthy city.

For more information, visit: www.cambridgema.gov/Departments/publicworks/urbanforestmasterplan

PROGRAMS | HEALTHY FOREST - HEALTHY CITY



The map shows the priority planting areas through the City on both public and private properties. The City is committed to increasing the tree canopy on streets and sidewalks through our construction projects.

DESIGN | PEDESTRIAN RAMPS



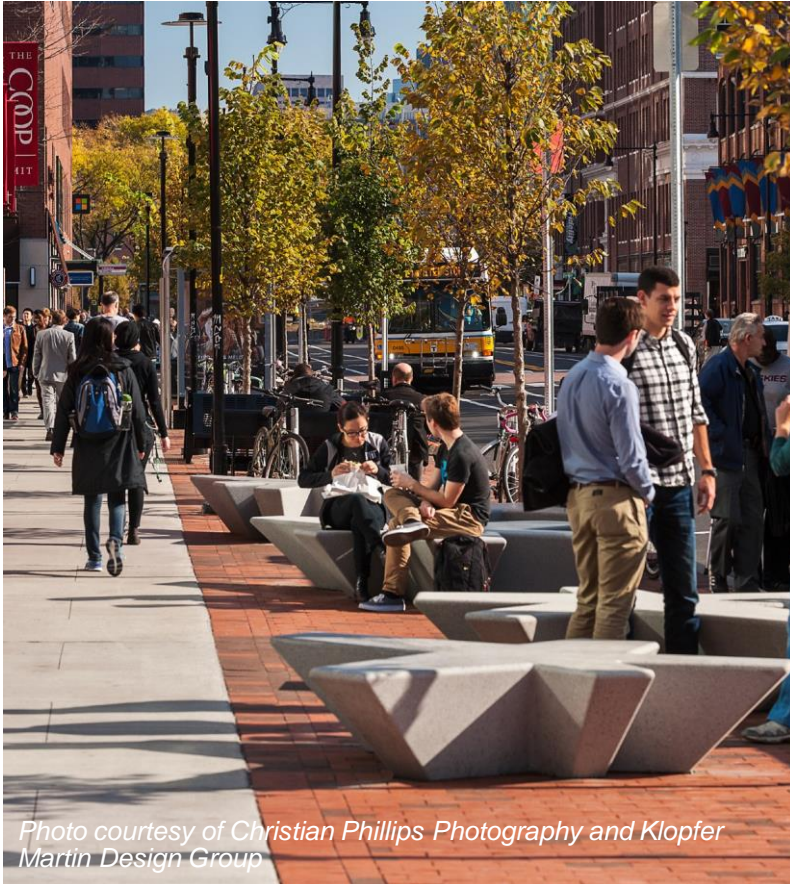
Pedestrian ramps are a critical element of the accessible sidewalk. The details of the design and construction have a significant impact on their usability.

- All new pedestrian ramps, including landing areas, will be concrete and include tactile warning strips.
- All slopes will meet ADA/AAB requirements.
- All new pedestrian ramps will be designed to:
 - Minimize ponding
 - Locate ramps as close to the intersection as possible

The best design for pedestrian crossings, particularly on narrow side streets, may be a modified raised crosswalk that:

- Allows pedestrians to cross the street without having to ramp down.
- Reduces the risk of ponding.
- Keeps the crossing more in line with the sidewalk.

DESIGN | SIDEWALK MATERIALS



Concrete and wire-cut brick without beveled edges, placed on a smooth asphalt base, will be utilized as the sidewalk materials of choice throughout the City. Concrete is the material most frequently used in the city (~70%) and provides a relatively inexpensive, durable, and easy-to-maintain accessible sidewalk.

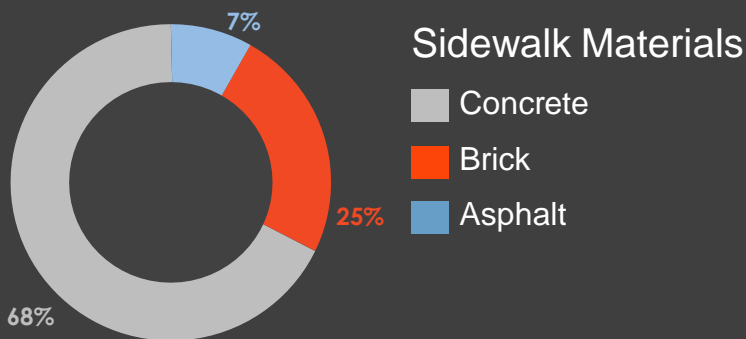
The City policy is to replace existing sidewalks with the same material at no cost to the property owner. However, during construction, property owners are contacted and may choose to change the sidewalk material. On larger projects, a more unified approach to sidewalk materials has been implemented as part of a community process.

Historic Districts

The DPW works collaboratively with the Historic Commission to ensure that sidewalk reconstruction work is appropriate and not incongruous to the district.

Standard Details

For more information, visit: www.cambridgema.gov/theworks/ourservices/engineering/Resources/standarddetails



DESIGN | BICYCLE FACILITIES

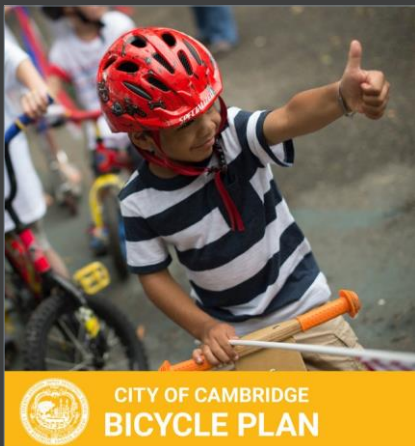


Photo courtesy of
Nichol Figueiredo

Bicycle Facilities

Many sections of Cambridge are well served by bicycle-friendly infrastructure, but there are still significant gaps and areas in need of improvement. Improvements for bicycling are considered in all projects undertaken by the City.

The design of bicycle facilities will be guided by the **Cycling Safety Ordinance** and the **Bicycle Plan**. The fundamental guiding principle for this Plan is to enable people of all ages and abilities to bicycle safely and comfortably throughout the City.



DESIGN | TRANSIT

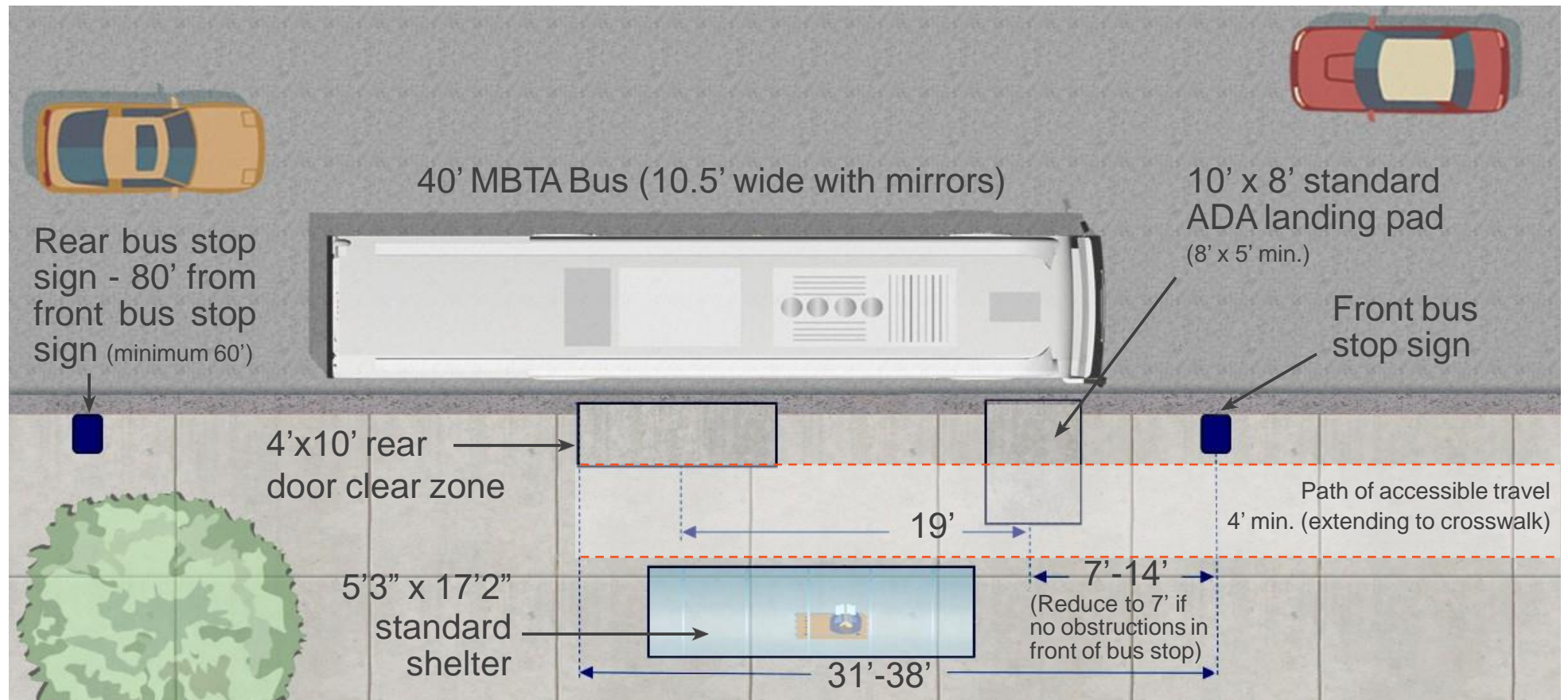
Transit considerations include:

Priority

The City performed a bus delay and reliability assessment to explore options for transit priority (e.g., dedicated lanes) in roadway projects where there are expected benefits.

Accessibility

The City developed a bus stop standard to ensure accessibility and also provide amenities when appropriate.



SCOPE | NEW CONSTRUCTION



Private Entities

Requirements specific to street and sidewalk reconstruction projects constructed by private entities within the City of Cambridge public Right-of-Way will adhere to the same requirements as City projects in addition to the below requirements:

- If a full block of sidewalk is being reconstructed, a Professional Engineer must submit a stamped design prior to construction and a certification of compliance after construction is complete.
- If more than 30 feet of sidewalk, a curb cut, or a driveway is being constructed, a survey and design will generally be required. Survey and design requirements will be determined by the DPW based on the specific location.

SCOPE | STREET TREES

Existing Street Trees

Existing street trees will be protected during construction and the sidewalks will be carefully evaluated to ensure adequate accessible routes through the neighborhood.

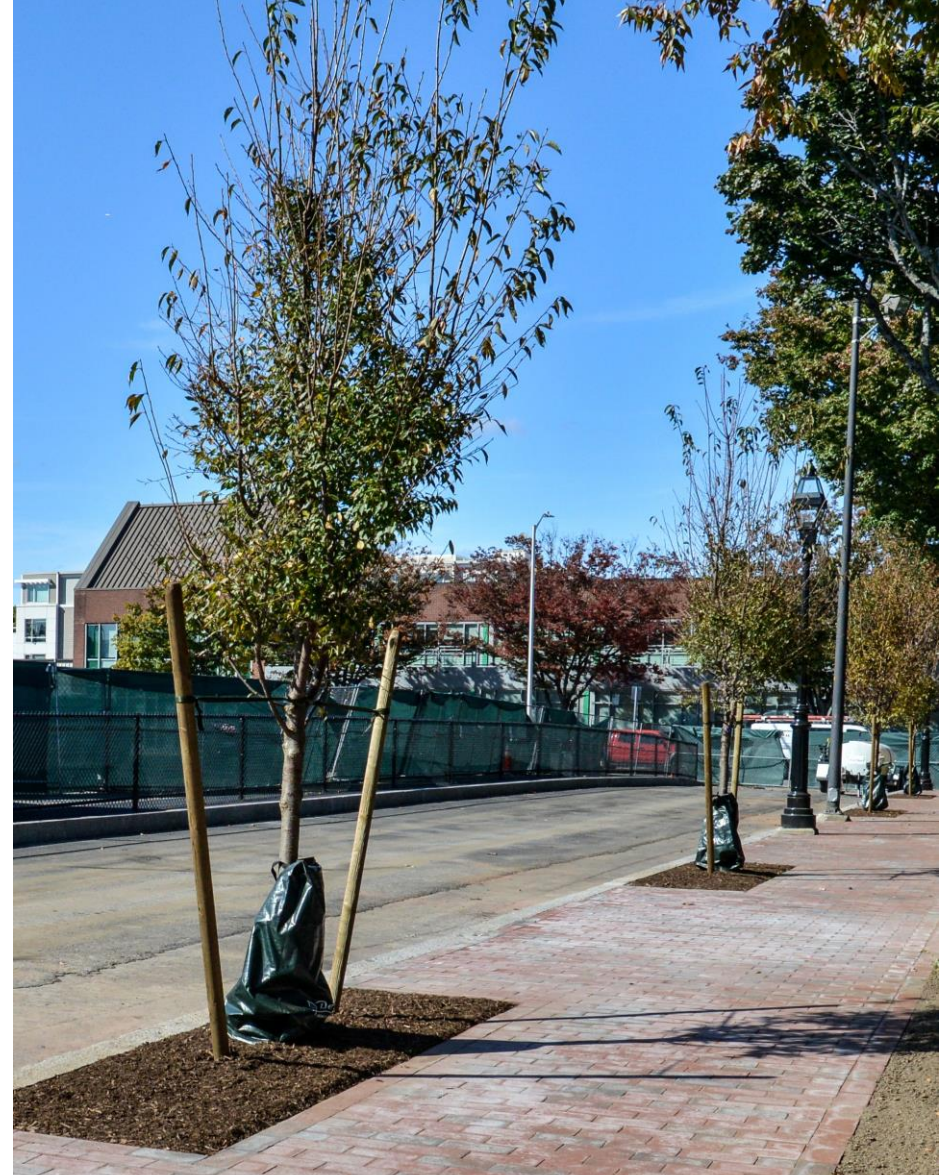
New Tree Plantings

The City Arborist will review each street and sidewalk project to determine tree planting opportunities, with a goal of 20-foot spacing, evaluating the location of overhead and underground utilities, proximity to intersections, site lines, building setbacks, locations of entrances, etc.

- On **narrow sidewalks** (less than 8 feet wide), a minimum of 4 feet of sidewalk width will be retained adjacent to new trees.
- On **wider sidewalks** (8 feet wide or greater), a minimum of half of the overall sidewalk width will be retained for pedestrians.

Back of Sidewalk Trees

The Arborist will work with residents interested in back of sidewalk tree plantings.



Goals

- **Protect existing** street trees during construction.
- Increase the number of street trees while maintaining **accessible sidewalks**.

SCOPE | GREEN INFRASTRUCTURE

Stormwater discharges are contributing to at least 55% of impairments to Massachusetts' assessed waters. The goal is to **improve the water quality** of stormwater before discharging to outfalls at the Alewife Brook and Charles River.

The City is incorporating green infrastructure on projects, as conditions and space allow.



Installation of site infiltration system at Longfellow Park.

Types of Improvements

- Porous asphalt
- Infiltrating catch basins
- Rain gardens/bio basins
- Site infiltration

Siting Evaluation

- Soil conditions
- Groundwater
- Space constraints
- Maintenance

CONSTRUCTION | PEDESTRIAN ACCESS



Where pedestrian routes are closed, alternate pedestrian routes shall be provided.



The Manual on Uniform Traffic Control Devices (MUTCD), published by the U.S. Department of Transportation/Federal Highway Administration, includes specific requirements for pedestrian access in work zones.



Whenever possible, work should be done in a manner that does not create a need to detour pedestrians from existing routes or crossings.

CONSTRUCTION | BICYCLE ACCESS

Construction sites must:

- Maintain bicycle access through construction sites at all times. Where maintaining bike lanes is not possible:
 - Ensure adequate space for bicycles in travel lane.
 - Post “*Bicycles May Use Full Lane*” signs.
- Place all road signs outside the bicycle lanes.
- Use asphalt as a temporary surface.
- Place asphalt around edges for a smooth and uniform transition.
- Provide advance notice and smooth transition when steel plates are required.
- Spray paint the edges pink and post caution signs where raised castings are exposed.



For the City of Cambridge Bicycle Accommodation During Construction Guidelines, visit:
www.cambridgema.gov/theworks/ourservices/engineering/Resources/contractorresources

CONSTRUCTION | TRANSIT



Communicate closely with the Massachusetts Bay Transportation Authority (MBTA) on any impact (diversions) to transit routes.

- Hold monthly interdepartmental meetings with the MBTA.
- Coordinate with the DPW and MBTA service planning staff as needed.

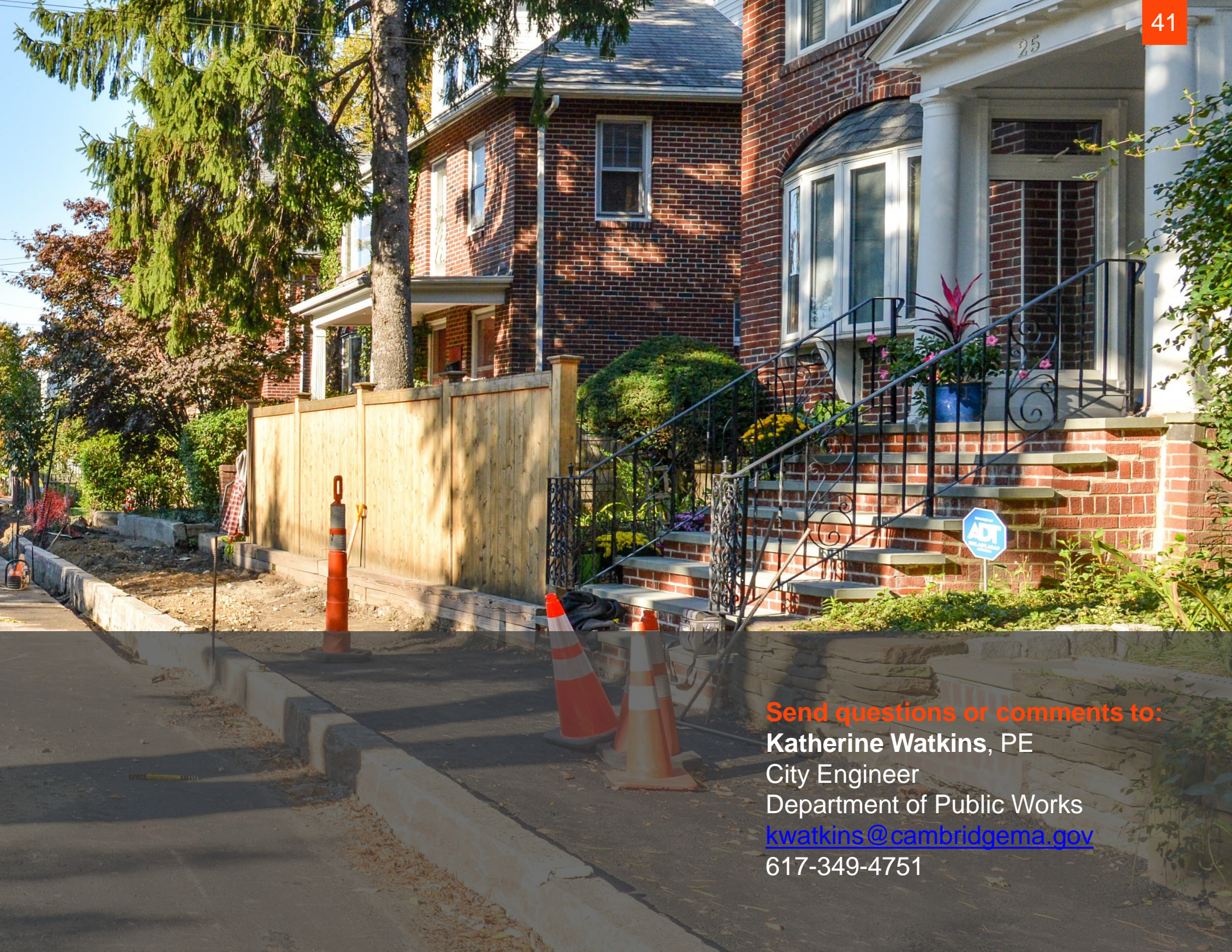
During construction, routes and stops may be moved.

- Communicate relocated bus stops to the public via notices and signage.
- Ensure accessibility at temporary stops.

NEXT STEPS | CONCLUSION

The Five Year Plan is a living document that will be updated regularly. As part of that process, the DPW will:

- Review the plan annually with the Commission for Persons with Disabilities and Pedestrian, Bicycle, and Transit Committees.
- Update the pavement condition and sidewalk condition data and corresponding maps.
- Annually update the Five Year Plan to account for the changing conditions of our streets and sidewalks.



Send questions or comments to:

Katherine Watkins, PE

City Engineer

Department of Public Works

kwatkins@cambridgema.gov

617-349-4751



For more information:

City of Cambridge
Department of Public Works
147 Hampshire Street
Cambridge, MA 02139
617-349-4800

www.cambridgema.gov/theworks/fiveyearplan

Photos & Graphics by Kleinfelder





Green Infrastructure

Jim Wilcox, Dept. of Public Works



Project updates

Project	Status	Next event
MBTA-MassDOT Silver Line Extension Alternatives Analysis	Developing a universe of alternatives	Public meeting on Zoom 4/27/2021 6:00 PM
MBTA Fare Payment Verification Public Meeting	MBTA proposing to verify fares on buses and Green Line trolleys using unarmed employees with new technology Asking for feedback	Public meeting on Zoom 4/29/2021 6:00 PM
Concord Avenue Transit Signal Priority (City)	Selecting consultant for developing signal timing plans	None expected

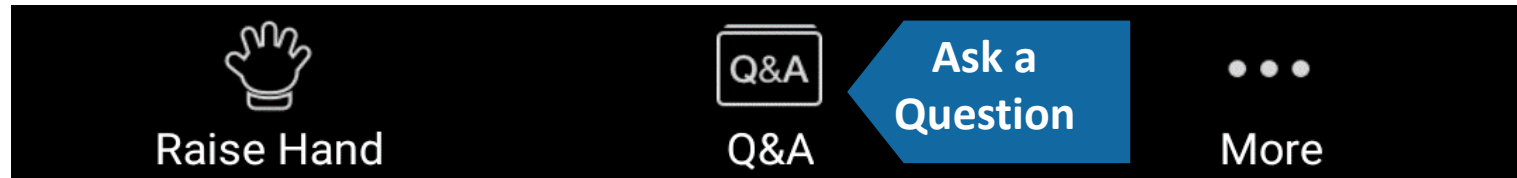


Public comment

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Zoom Screen





Other Announcements



Thank You