



Chestnut Street

Sidney Street to Pleasant Street

Reconstruction Project

CAMBRIDGE
DEPARTMENT
OF PUBLIC
**THE
WORKS**



City of Cambridge
Department of Public Works

Five Year Sidewalk and Street Reconstruction Plan

April 2021

PLANNING INFRASTRUCTURE IMPROVEMENTS

The objectives of the 10 Year Plan are to:

- Address high-risk infrastructure conditions
- Remove inflow/infiltration (I/I) from sewer systems
- Eliminate sanitary sewer overflows (SSOs) and reduce CSOs
- Manage stormwater quality and quantity
- Reduce flooding and protect neighborhoods
- Climate Change, Adaptation and Resiliency
- Address fats, oils, and grease (FOG) in the sewer system
- Conduct operation and maintenance activities

Ten Year **Sewer and Drain**
Infrastructure Plan

April 2019

PROGRAMS REGULATIONS & REQUIREMENTS

The City must ensure that the Infrastructure Plan meets or exceeds federal and state regulations, including:



Infrastructure Improvements and Maintenance:

- MassDEP (inflow and infiltration)
- EPA



Untreated discharges regulated through the NPDES Program:

- Municipal Separate Storm Sewer System (MS4)
- Combined Sewer Overflow (CSO)
- Total Maximum Daily Load (TMDL)



Activities related to floodplain areas:

- Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP)
- Wetlands Protection Act
- Zoning Flood Plane Overlay

INFRASTRUCTURE ENVIRONMENTAL FOCUS



The Boston Globe

THURSDAY, JUNE 10, 2021

Quincy required to spend \$100m for cleanup

US says it must repair sewers after polluting waterways

By David Abel

Two years after the federal government sued Quincy for discharging sewage and untreated wastewater into Boston Harbor, the city on Wednesday reached an agreement with the US attorney's office and the Environmental Protection Agency that will require it to spend more than \$100 million to repair its antiquated sewer system.

Over the past decade, in violation of the Clean

Water Act, Quincy has discharged a range of pollutants into the harbor and surrounding waterways, including E. coli and other harmful bacteria, federal officials found. Sometimes, with heavy rains, outfalls from the sewer system spread sewage along the city's coast, including Wollaston Beach and the Adams Shore area.

The settlement requires local officials to implement "extensive remedial measures" to reduce the discharge of sewage and other pollutants into waters that include Quincy Bay, Dorchester Bay, Hingham Bay, the Neponset River, and Boston Harbor, which federal officials said would cost more than \$100 million.

In addition, the city will be required to pay

the government a civil penalty of \$115,000.

"The work required under the proposed settlement will achieve cleaner and healthier water in Quincy and nearby areas," said Deb Szaro, acting regional administrator of the EPA in New England, who added that it would complement the nearly \$5 billion spent over recent decades to clean Boston Harbor. "This will protect people's health, making it safer to enjoy beaches or other recreation in or on the bays and rivers in the area."

Under the proposed consent decree, Quincy will be required to abide by a schedule to identify all remaining leaks from its stormwater and sani-

QUINCY, Page A12

DCF's struggle to find beds worsens

Hit hard by pandemic, agency has considered housing kids in offices

By Matt Stout

GLOBE STAFF

In mid-May, the supervisors at one Department of Children and Families office sent an unusual request to staff. Employees were asked to work in shifts in the office, covering nearly every hour of the day for a week — with at least two on premises overnight, according to an e-mail reviewed by the Globe.

That last part was crucial. A teenager in DCF custody needed a place to stay, and the office north of Boston appeared to be the best option.

"There was nowhere to place her," said one social worker in the DCF office, who asked to remain anonymous out of fear of retaliation from the agency. At the last minute, the worker said, staff were able to track down an emergency foster home for the teen. "I've worked at DCF for over 20 years. This is the first time I've ever heard of housing (a child) in the office. Ever."

As Massachusetts' strained child welfare system emerges from the pandemic, attorneys and staff say the longstanding challenge of finding beds for at-risk children is reaching new levels of desperation, stressing DCF in ways they say they have rarely, if ever, seen.

Staff in at least three offices in Eastern Massachusetts have been forced at times to draw up plans to house children on site, going as far as to schedule staff or solicit volunteers in case a

DCF, Page A7

MASSACHUSETTS NEAR TOP OF LIST FOR LACK OF PLACEMENT STABILITY

Percentage of three or more placements of children in state care for less than 12 months by state in 2019

Tennessee	31.1%
Washington, D.C.	29.1%
Massachusetts	26.5%
Kansas	26.1%



LANS TURNER/GLOBE STAFF

A NEW LOOK FOR DOWNTOWN LYNN

The city has long been known for its industrial past, but now there are signs of life, with abandoned factories becoming lofts, restaurants popping up, and a budding arts scene taking off. Above, umbrellas shelter the outdoor patio of the Eclipse Lounge and Grill while framing one of 48 Beyond Walls murals, this one by SMUG, aka Sam Bates.

On the Street, D1.

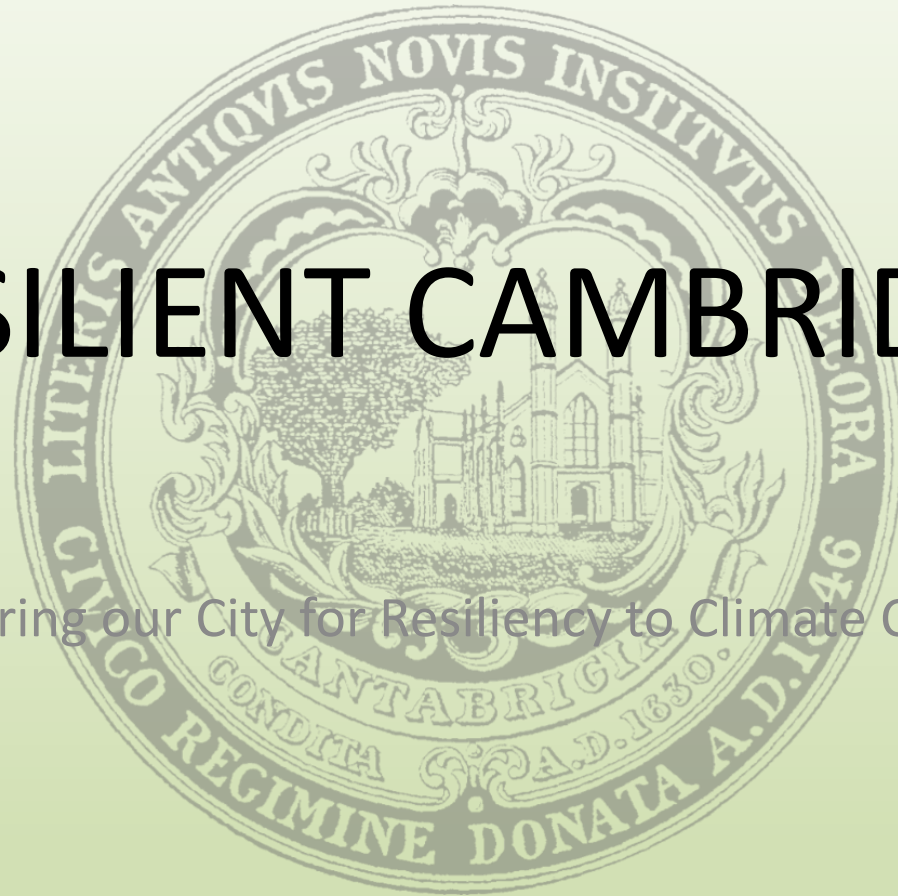
Photo courtesy of Stantec

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.

RESILIENT CAMBRIDGE

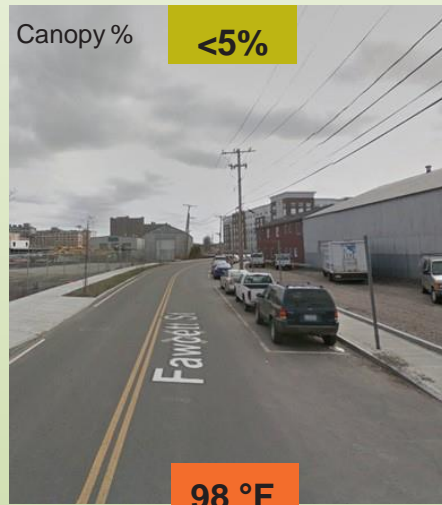
Preparing our City for Resiliency to Climate Change



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.

PRIORITIES | LEVEL OF SERVICE – FLOODING

Cambridge FloodViewer v2.1

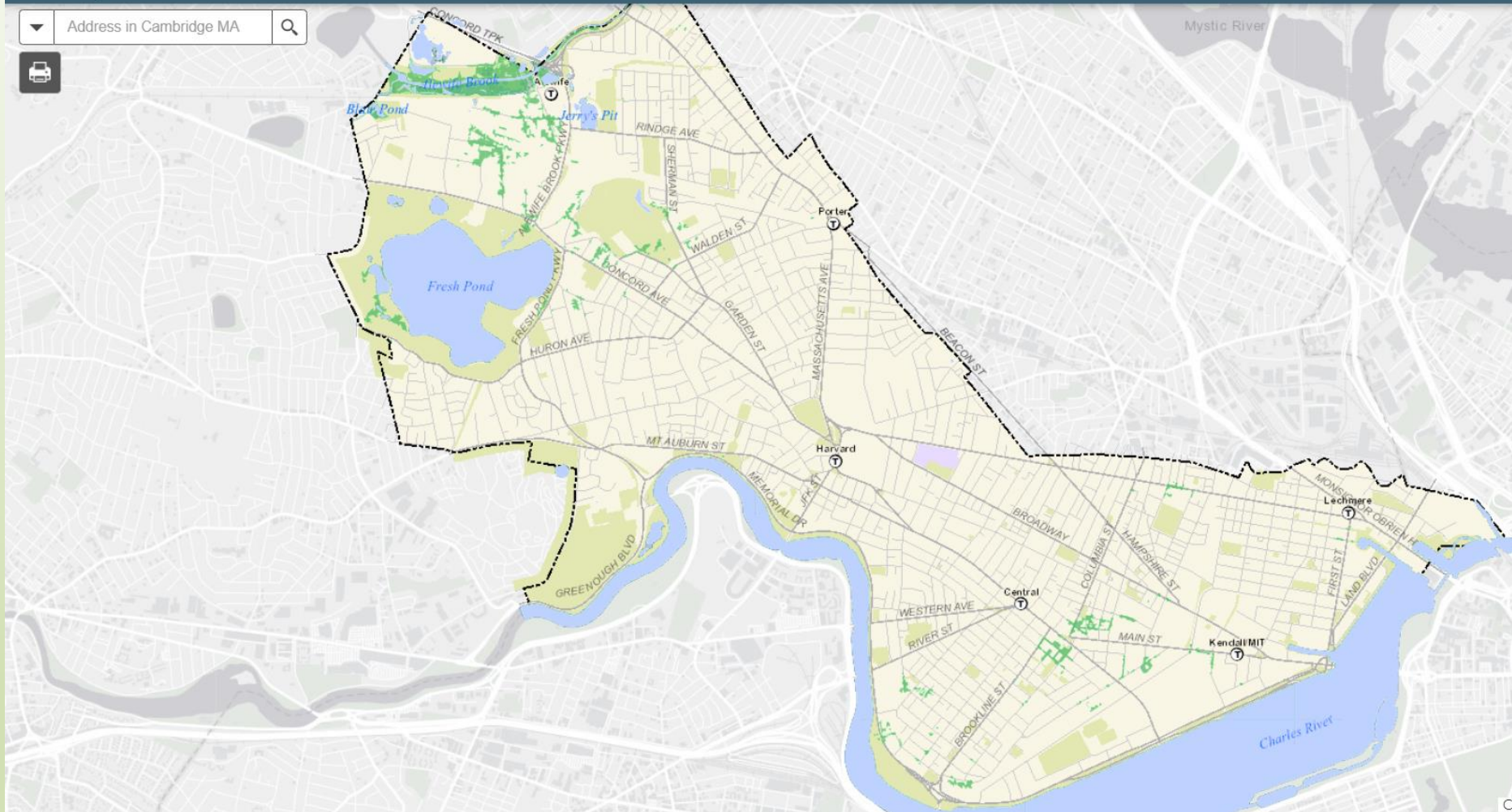
City of Cambridge, Massachusetts

About CCPR

CDD Homepage

Cambridge DPW

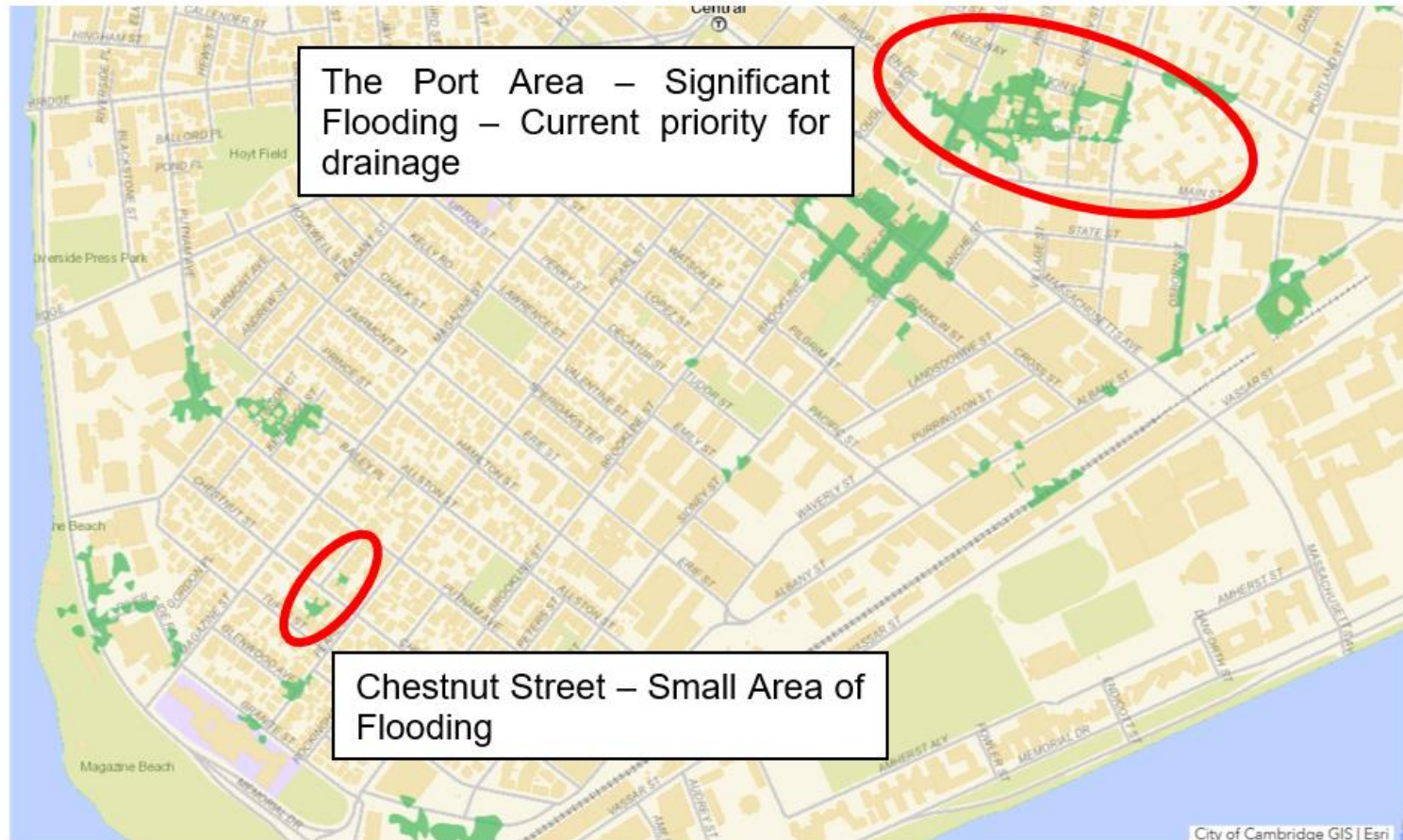
▼ Address in Cambridge MA 🔍



Present Day 10% Probability of Flooding from Precipitation
Cambridge FloodViewer, www.cambridgema.gov/Services/floodmap

PRIORITIES | LEVEL OF SERVICE – FLOODING

Figure 3 – Precipitation Flooding – Present Day, 10-Year Storm





The Port Infrastructure Project:

Phase 1 completed: 0.40 MG stormwater storage tank in Municipal Parking Lot

Phase 2 in design: 1.2 MG stormwater storage and 0.2 MG sanitary storage, and maximize green infrastructure in right of way

STRATEGIES GREEN INFRASTRUCTURE

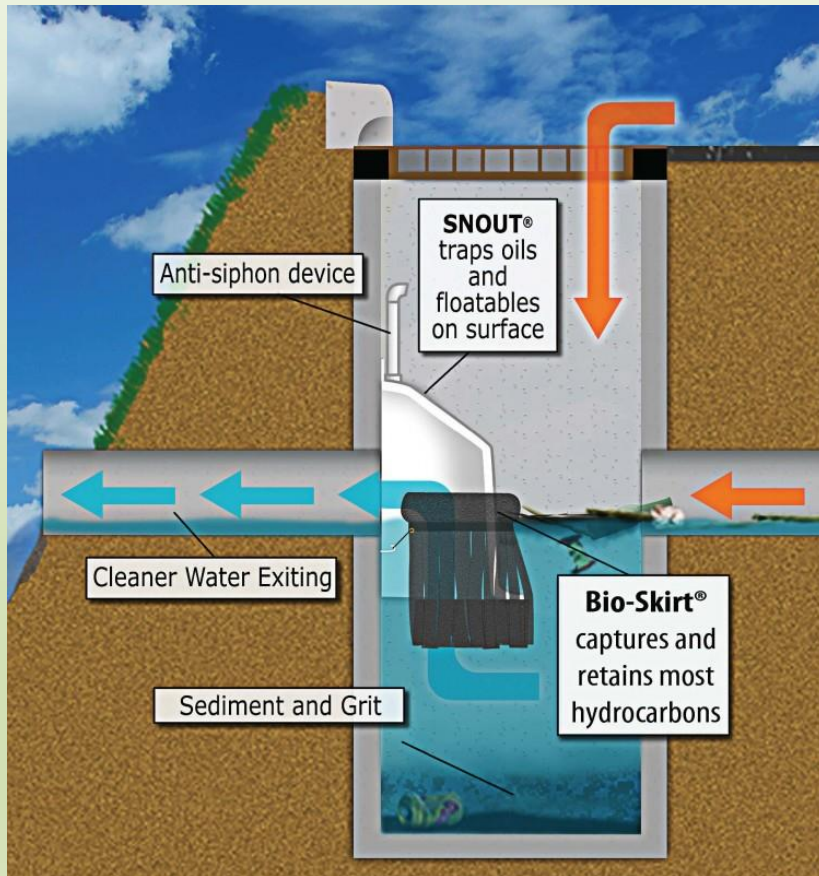


STRATEGIES | GREEN INFRASTRUCTURE



2070 10% Probability of Flood
Cambridge FloodViewer, w

STRATEGIES | GREY INFRASTRUCTURE



2070 10% Probability of Flooding from Precipitation
Cambridge FloodViewer, www.cambridgema.gov/Services/floodmap

STRATEGIES | RAISED SIDE STREET CROSSINGS



2070 10% Probability of Flooding from Precipitation
Cambridge FloodViewer, www.cambridgema.gov/Services/floodmap

STRATEGIES | WHAT CAN RESIDENTS DO?

CITY OF CAMBRIDGE



Flooding: Is Your Property Protected?

- Existing Conditions
- New Construction
- Climate Change

September 2016



3 Install Backwater Valves

Flooding can cause flow from sanitary sewer and drain lines to back up through pipes into buildings. These backups cause damage that is difficult to repair and also creates a health hazard. A good way to protect buildings from sewage and drainage backups is to install backwater valves; a device installed to prevent sewage and drainage from flowing backwards into basement fixtures, such as dishwashers, sinks, showers, toilets, washing machines, or floor drains. Backwater valves have a flap door inside which allows wastewater to flow in one direction, out towards the street, but closes automatically and does not allow flow backwards through your pipe and into the basement.

TIPS

- Changes to the plumbing in your property must be done by a licensed plumber or contractor.
- Valves should be installed on sewer and drain lines that are connected to equipment that is below the potential flood level. Therefore, valves may be needed on washing machine drain lines, laundry sinks, floor drains, and sump pumps.

WHERE TO INSTALL

- Install on the plumbing of each basement fixture.
- Valves should be accessible for monthly maintenance.
- A licensed plumber can determine the appropriate installation location.



BENEFITS: HELPS PREVENT DAMAGE TO A STRUCTURE AND AVOID HAZARDOUS AND COSTLY CLEANUP, AS WELL AS PROTECT THE HEALTH AND SAFETY OF THE OCCUPANTS OF THE STRUCTURE.

2 Build Exterior Floodwalls

An exterior floodwall can protect a window well or stair against low level flooding. Constructed of concrete or masonry, the walls should be supported by and securely tied into a footing as they will not be undercut by scouring. Understanding your particular flood situation and soil conditions is important in order to properly evaluate if a flood wall is the right solution for you.



EXCESSIVE RAIN CAN OVERWHELM SEWER AND DRAIN PIPES, CAUSING BACK-UPS



During a rainfall or sewer backup event, the backwater valve closes to block sanitary sewage from entering your basement fixtures. Please be aware that closed valves also prevent basement wastewater from exiting into municipal sewer pipes.

DESIGN PROCESS:

- Community Input (obtained from the first, second and third community meetings)
 - Met with residents on Chestnut at Newton
 - Email communications with concerned residents
- City/State/Federal policies
 - Developed an accessible route to meet ADA regulations (even side)
 - One bump out required to achieve accessibility
- Meet with Fire Department to discuss:
 - Hydrant relocation on Chestnut St at Whitney Ave
 - Possible impacts of traffic calming tolls on emergency responding time

Community Feedback:

- Vehicles traveling too fast*
- Too many trucks – too big*
- Trucks going too fast*
- Roadway in bad condition – Potholes
- Noise*
- Vehicles turning too fast into Chestnut Street from Magazine*
- Sidewalks in poor condition
- Utility poles – to be evaluated
- Poor drainage*
- Pearl Street crashes
- Sidewalk access concerns
- Safety concerns – Day care

* Repeated Concern

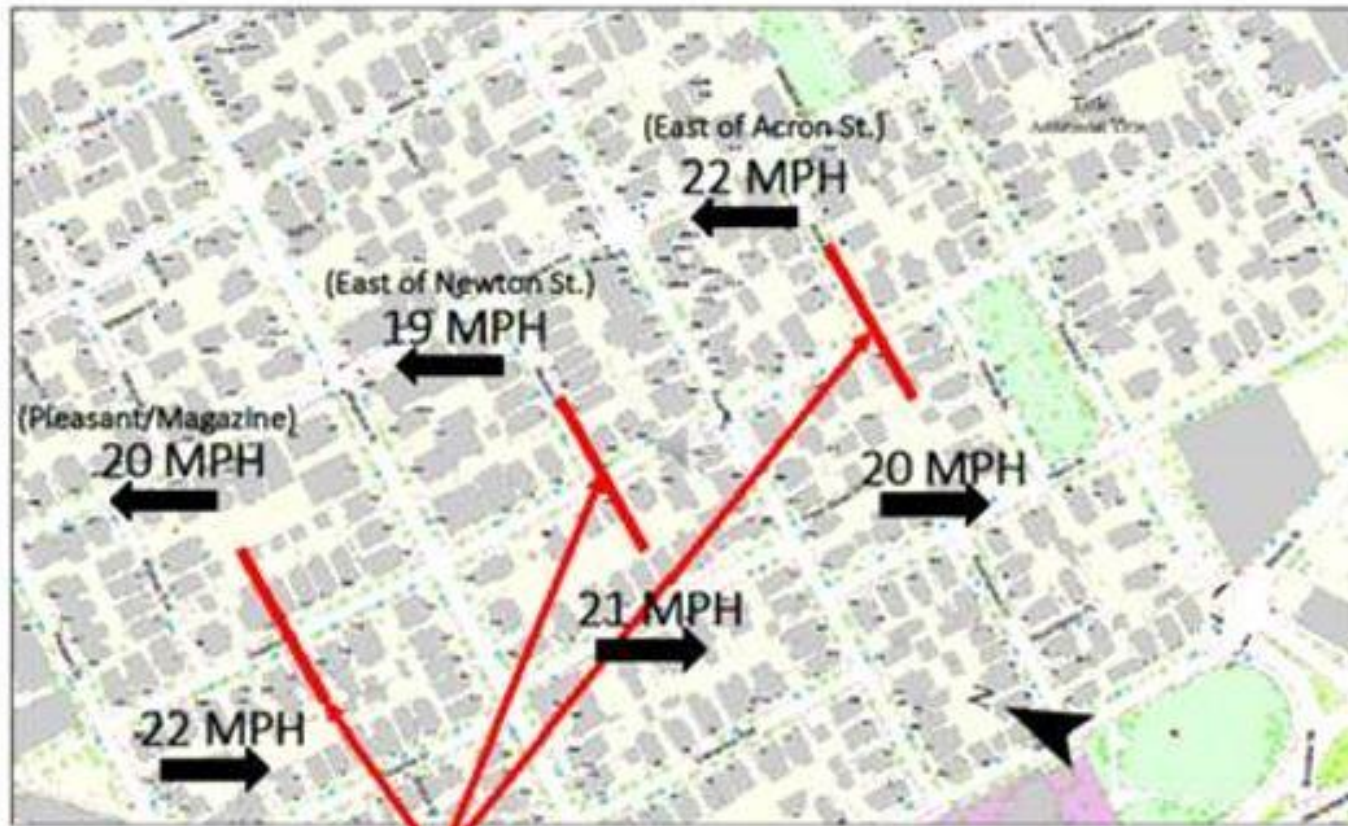
CHESTNUT STREET Reconstruction – Second Meeting: 2/11/2020

Community Feedback:

City Staff presented preliminary DRAFT site plans:

- Enough on street parking
- Vehicle speeds appear to be excessive
- Eliminate some on-street parking spaces to accommodate traffic calming elements, trees and infrastructure to mitigate drainage concerns
- Improve driver sight lines on Chestnut at Brookline
- Improve pedestrian safety
- Improve drainage conditions at Newton (low point in Chestnut)

Figure 1 – Speed Data from May 15th and 16th, 2019



Counter Location

CHESTNUT STREET Reconstruction – Third Meeting: 12/10/2020

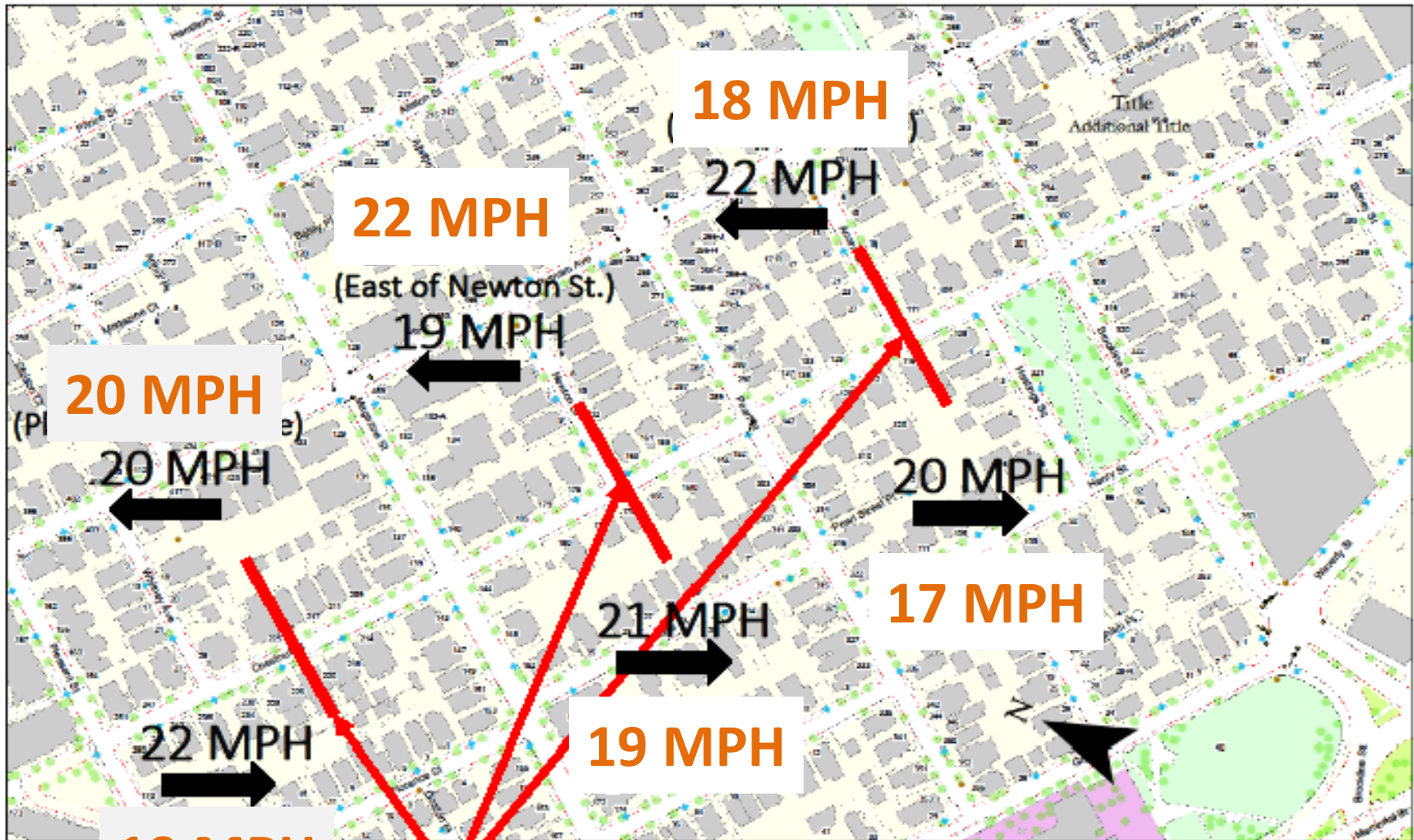
Community Feedback:

(City Staff met with at the request of select abutters at the intersection of Chestnut and Newton Streets on 10/28/2020 – prior to community meeting)

- Traffic speed & safety
- Stormwater overflow from streets impacting low lying property. Recognizing that a primary source of property flooding comes from the street itself--the street acting like a conduit.
- Substantial loss of on-street parking if ineffective bio-retention structures are constructed. We recognize that the current scheme proposed by the city reduces the number of lost parking spaces (number not defined), but we still need clarity about the rationale for the location of the bio retention basins, their effectiveness during storm events, consequent water table elevation and the basins' construction.

85th Percentile - May 15, 16 2019

85th Percentile - May 18, 19 2021



Counter Location

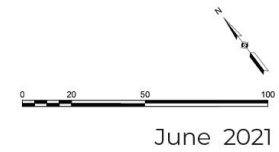
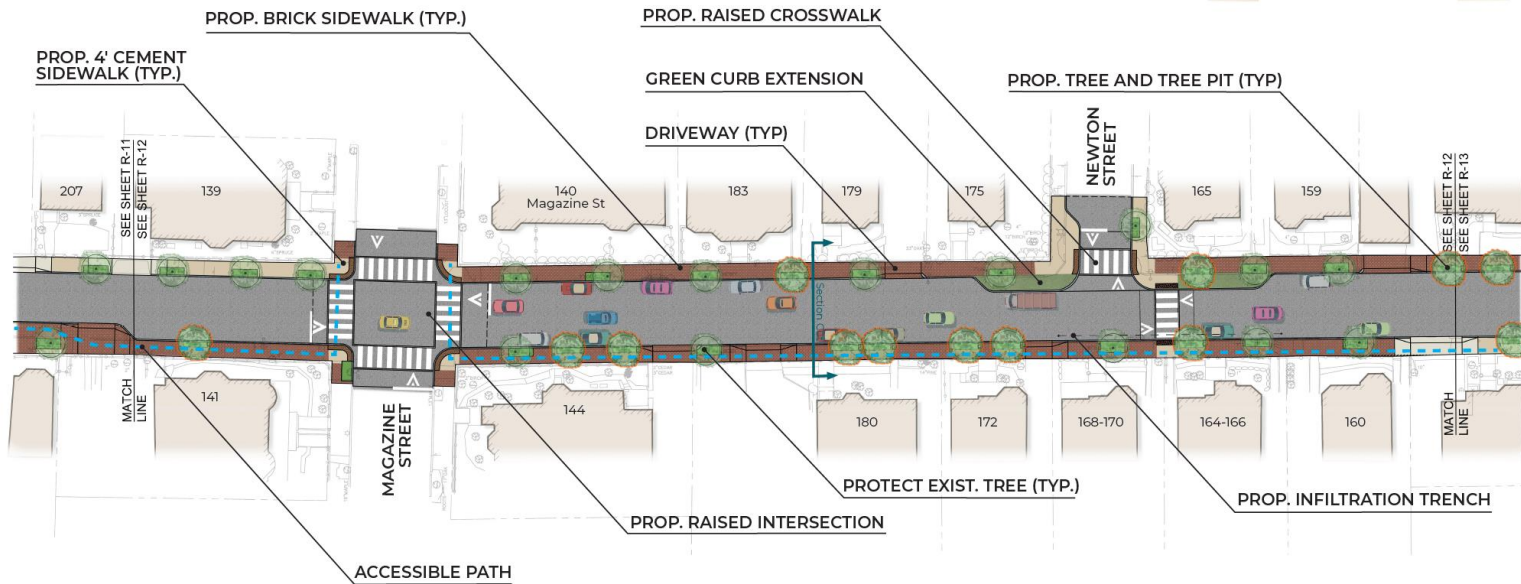
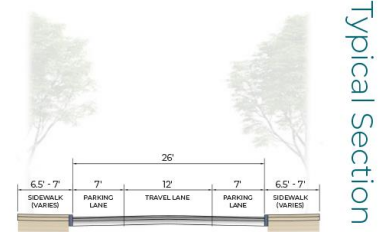
Green Curb Extension 20 Ft – Raised Crosswalk

CHESTNUT STREET
Sheet R-12

**NOT FINAL DESIGN
FOR DISCUSSION ONLY**

Design Highlight

Design Highlight	Concept
ADA Accessible Sidewalk(s)	✓
Raised Crosswalks at Intersections	✓
Parking Maintained (both sides)	✓
Infiltration Trench (Green Infrastructure Design)	✓



PROS & CONS:

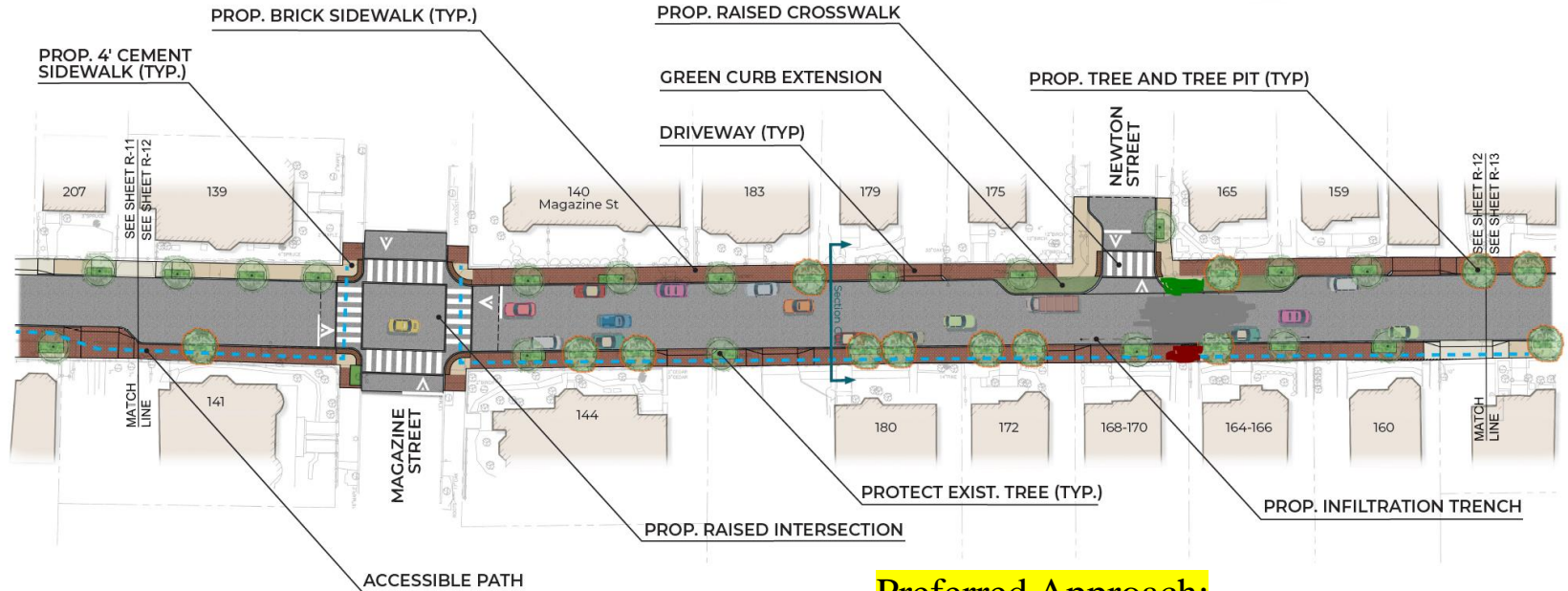
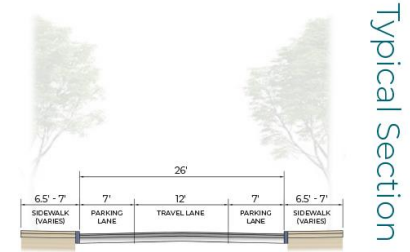
- Provides green infrastructure for improved water quality
- Eliminates 2 legal on-street parking spaces
- Raised device would provide minimal impact on further speed reduction based on speed data

Green Curb Extension — 20-foot length from intersection

CHESTNUT STREET
Sheet R-12

**NOT FINAL DESIGN
FOR DISCUSSION ONLY**

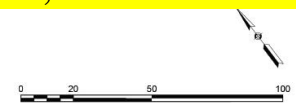
Design Highlight	Concept
ADA Accessible Sidewalk(s)	✓
Raised Crosswalks at Intersections	✓
Parking Maintained (both sides)	✓
Infiltration Trench (Green Infrastructure Design)	✓



Preferred Approach:
Provides green infrastructure, Maintains all legal on-street parking.



CHESTNUT STREET
CAMBRIDGE, MASSACHUSETTS



June 2021

PROS:

- Provides green infrastructure for improved water quality
- No impact on legal on-street parking

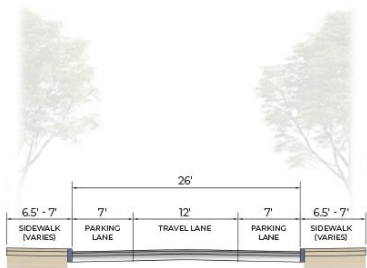
Thank you



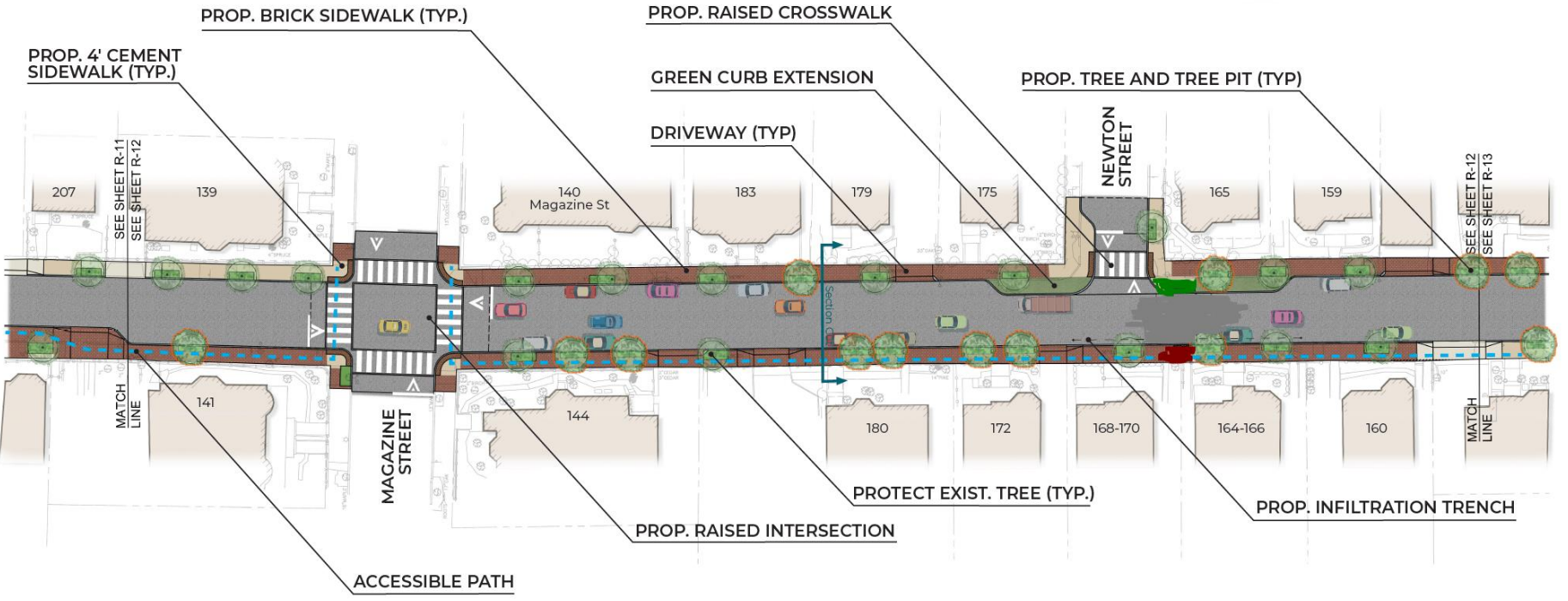
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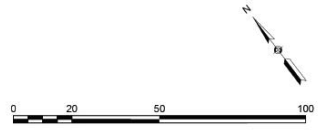
Design Highlight	Concept
ADA Accessible Sidewalk(s)	✓
Raised Crosswalks at Intersections	✓
Parking Maintained (both sides)	✓
Infiltration Trench (Green Infrastructure Design)	✓



Typical Section



CHESTNUT STREET
CAMBRIDGE, MASSACHUSETTS



June 2021

Green Curb Extension – 20 Ft.

CHESTNUT STREET
Sheet R-12

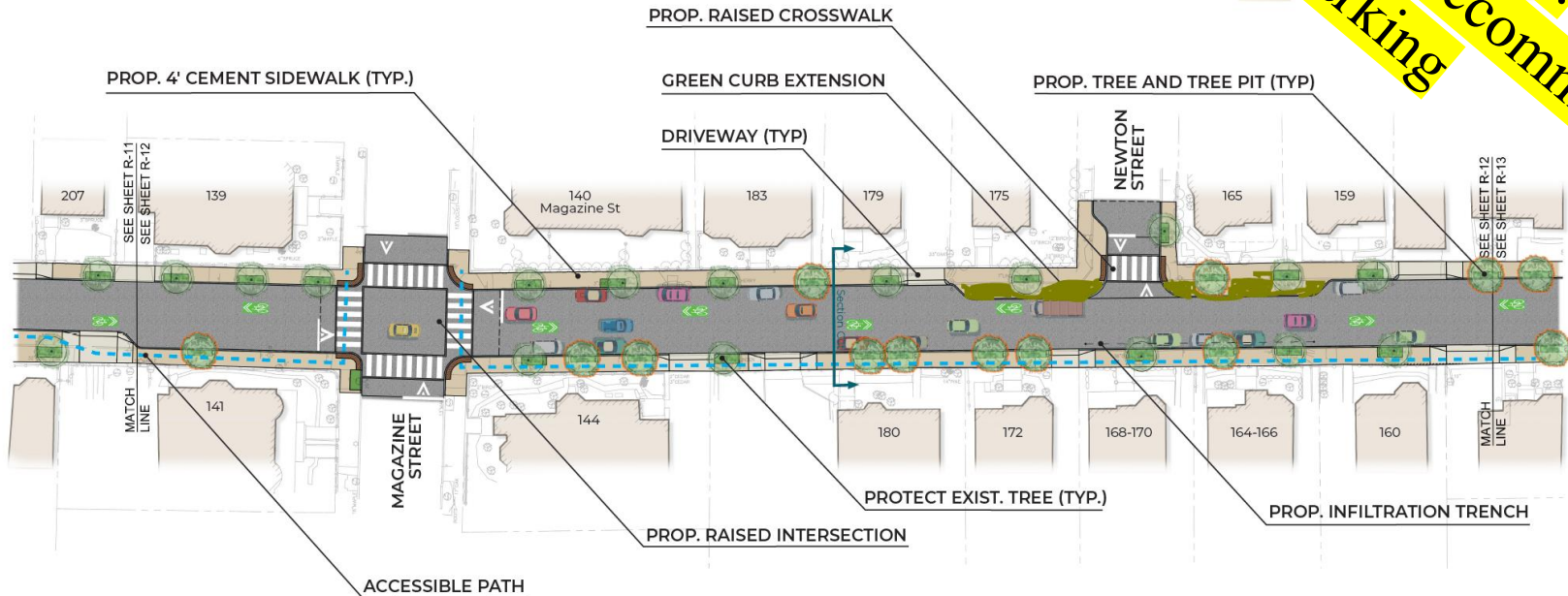
**NOT FINAL DESIGN
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Design Highlight

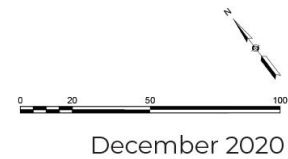
ADA Accessible Sidewalk(s)	✓
Raised Crosswalks at Intersections	✓
Parking Maintained (both sides)	✓
Infiltration Trench (Green Infrastructure Design)	✓

**Proposed Approach:
Improves bike accommodations
Maintains parking**

Typical Section



CHESTNUT STREET
CAMBRIDGE, MASSACHUSETTS



- Provides green infrastructure
- No impact on legal on-street parking