

FY2020 Supplemental Paving Request

City Council Special Meeting

Mayor Joseph A. Curtatone

Richard E. Raiche, PE, PMP

Director of Infrastructure & Asset Management

26 November 2019

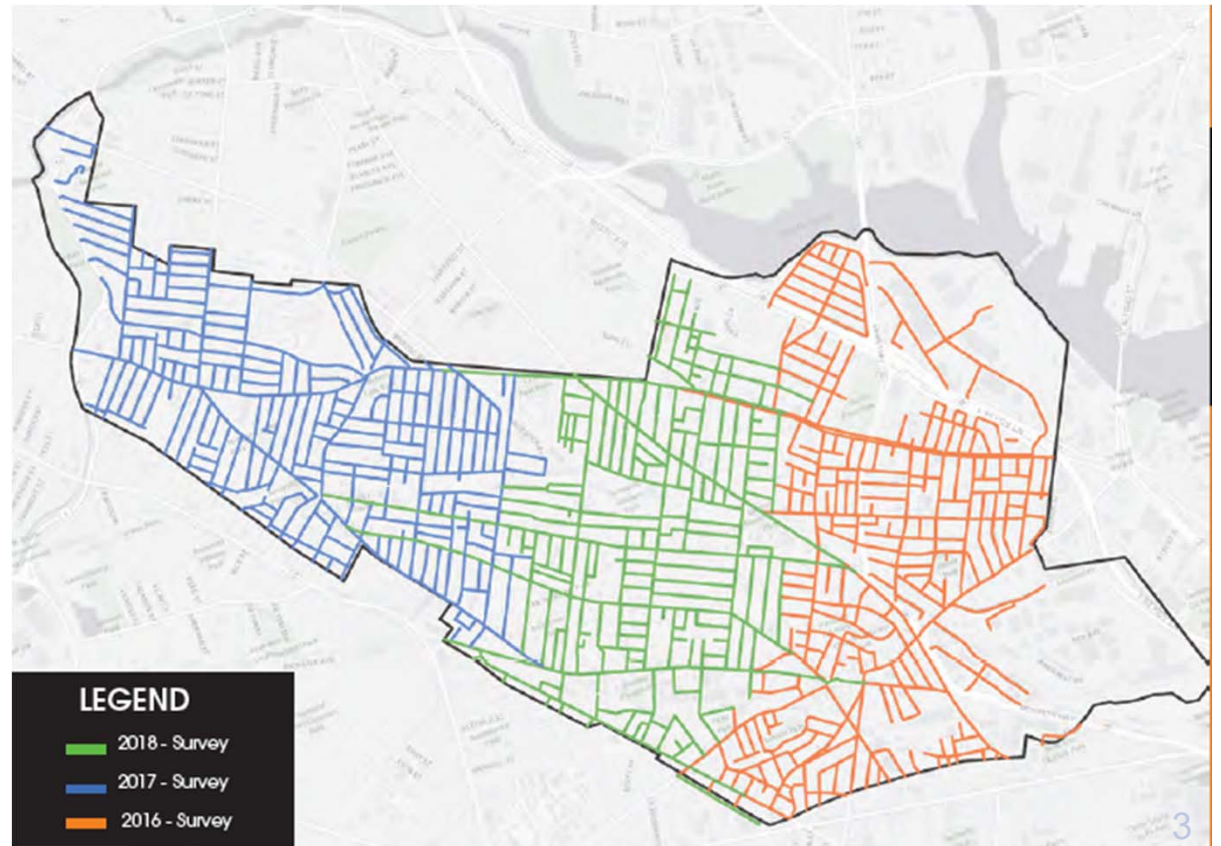


Pavement & Sidewalk Management Plan

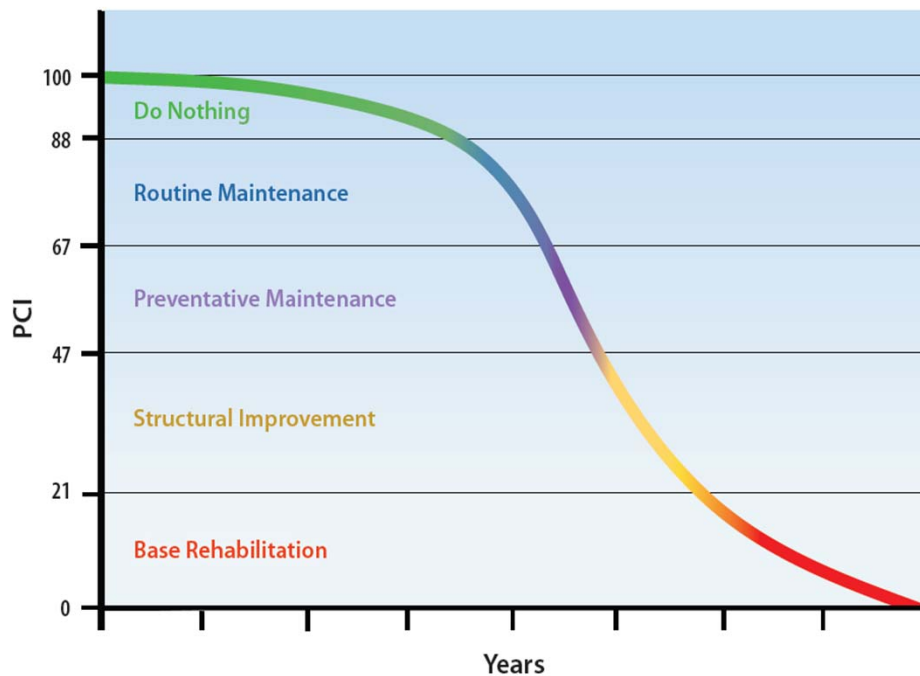
Analysis of program performance

Pavement Condition Index survey

- Re-surveyed central Somerville
- **NEW for FY2020:** Added private ways to database

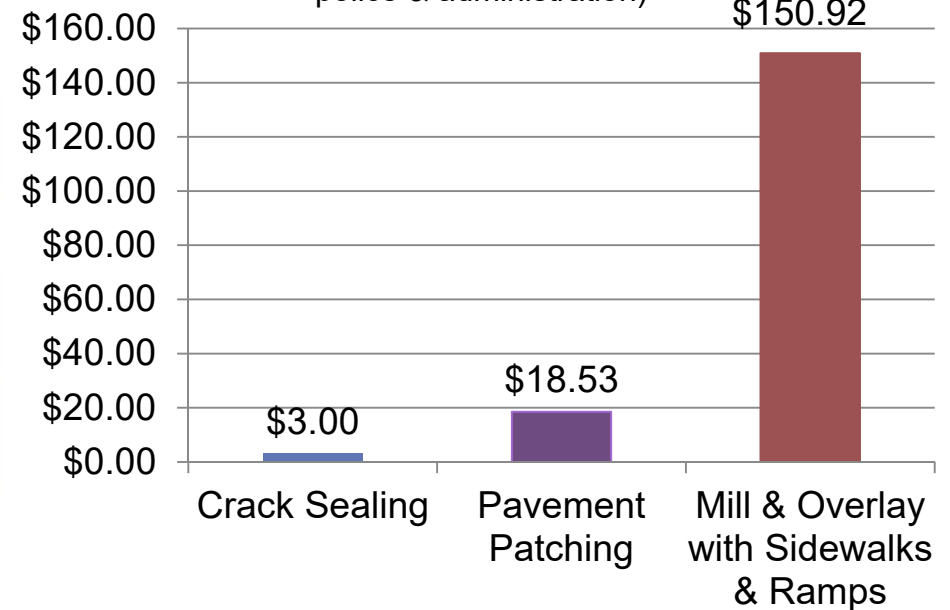


PCI informs rehabilitation



Rehabilitation cost per square yard

(Construction cost only, excluding engineering, police & administration)

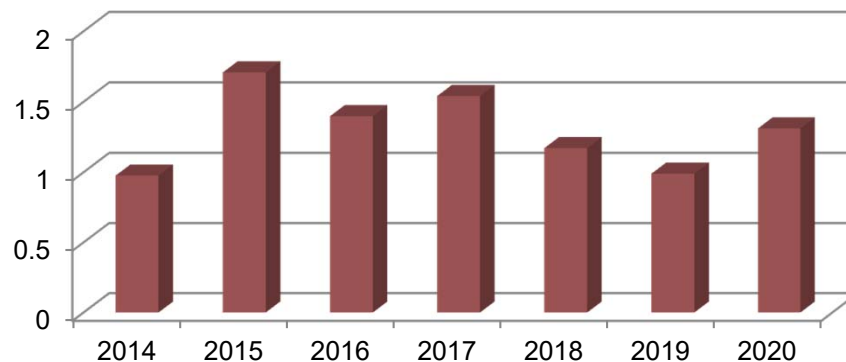


Miles: Mill & overlay with sidewalks & ramps

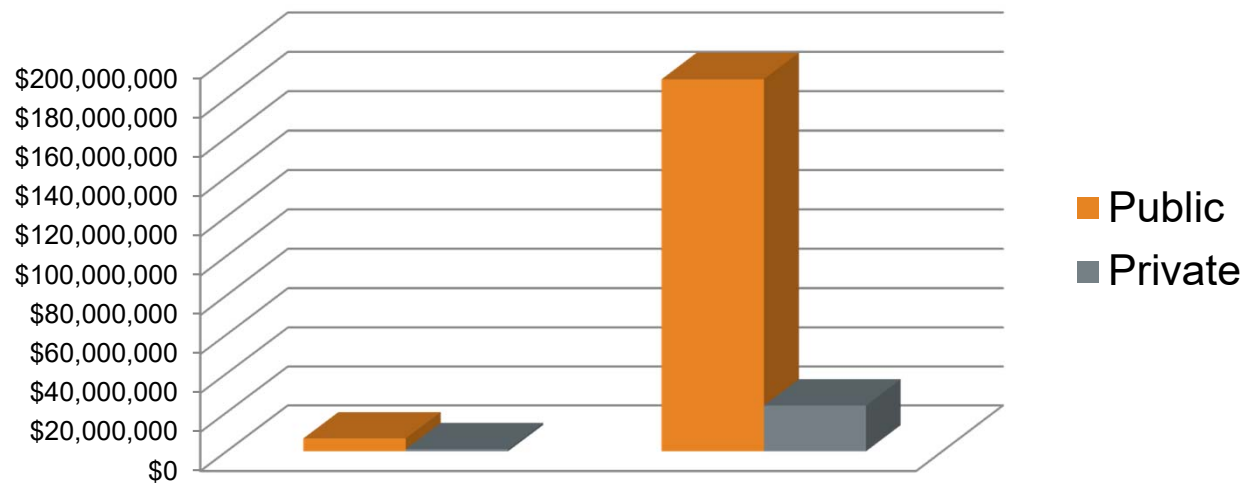
	Do Nothing (100 - 88)	Preventative Maintenance (87 - 47)	Full Construction (46 - 0)	Total
Public	16.3	29.3	46.5	92.1
Private	3.5	3.9	6.7	14.2
Total	19.9	33.2	53.2	106.3

- Current approach, production, and backlog implies a 50 year horizon pave current miles requiring paving

Miles completed per contract



Dollars: Mill & overlay with sidewalks & ramps

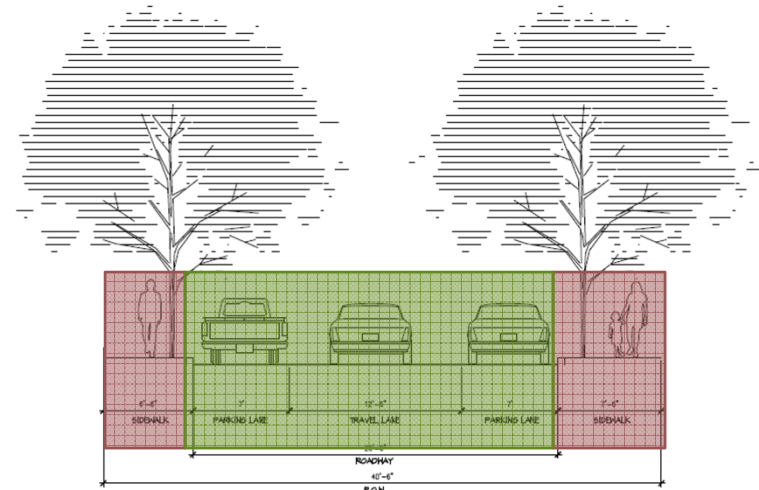
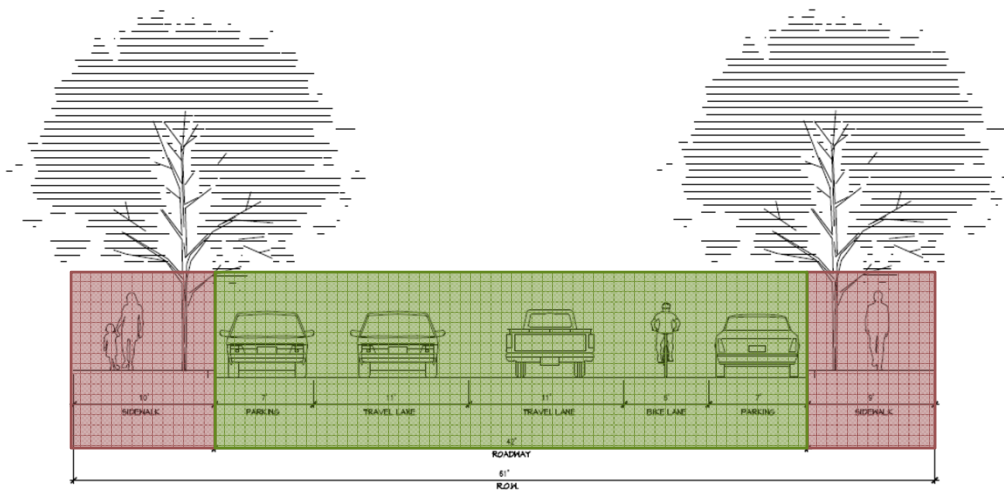


- Current funding and backlog implies a 50-plus year horizon to fund identified needs

	Preventative Maintenance (87 – 47)	Full Construction (46 - 0)	Total
Public	\$6,660,869	\$189,666,293	\$196,327,162
Private	\$1,089,614	\$23,501,894	\$24,591,509
Total	\$7,750,483	\$213,168,188	\$220,918,671

Cost and time breakdown

- Sidewalks & ADA ramps required for full-width repaving
 - Sidewalks = 60- to 65-percent of total cost, months to complete
 - Roadway = 35- to 40-percent of total cost, days to complete



High-level conclusions

- Prioritization logically ranks streets
 - Current approach, funding, and backlog yield untenable time period for attaining acceptable pavement condition
 - Increasing funding and construction by a factor of 5 or 10 is unaffordable and logistically impossible
 - Costs and complexity of sidewalk construction drive the equation
 - Architectural Access Board (and our own inclusionary goals) require sidewalks with full-width repaving
- We need to approach PMP & SMP differently

New approach

- Decouple sidewalks from pavement prioritization
- Maintain overall funding level for sidewalks, but target pedestrian priority areas
 - NEW: Engineering worked with broad range of departments to develop sidewalk prioritization
- Mill & overlay automobile and bike travel lanes only
- Continue investment in preventative maintenance

Example funding

City Funds \$3,730,000

Chapter 90 \$1,200,000

Total \$4,930,000

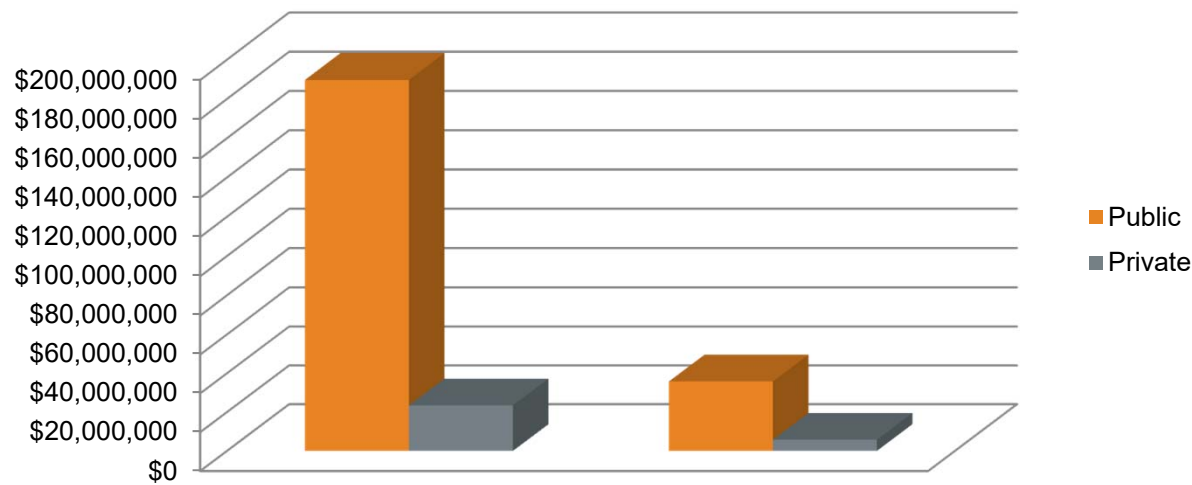
Preventative Maintenance \$900,000

Sidewalk Only \$2,500,000

Mill & Overlay Travel Lane Only \$1,530,000

Note: showing in 2020\$ for comparison, annual request will be escalated 4%

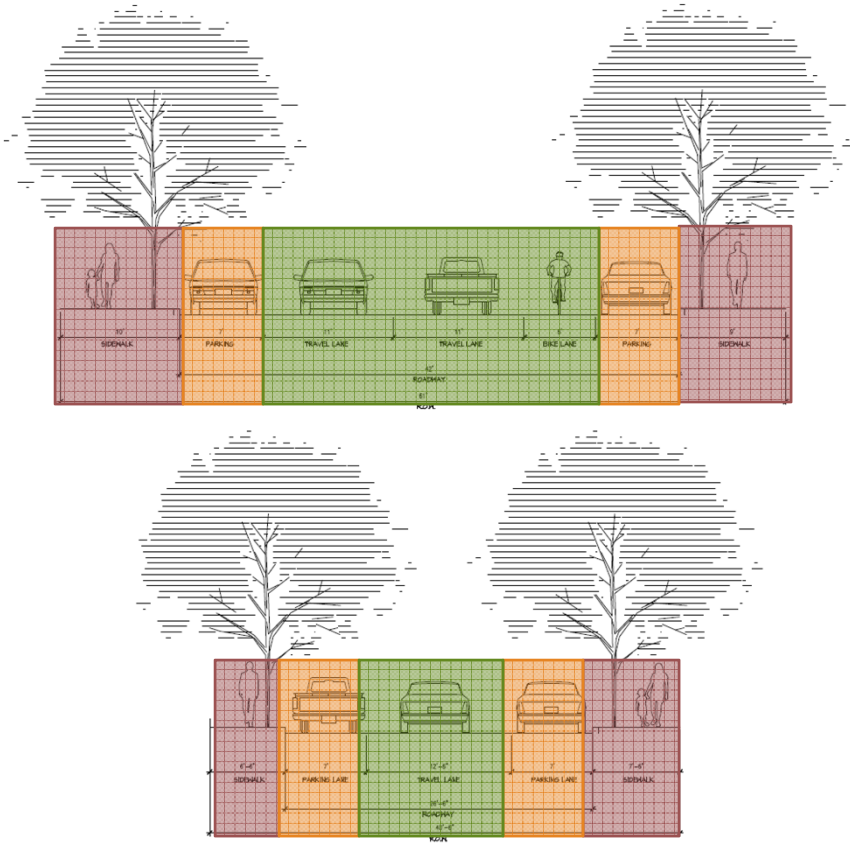
Better production with new approach



	Full width & sidewalks	Travel lanes only
Public	\$189,666,293	\$35,799,222
Private	\$23,483,439	\$5,764,575
Total	\$213,149,732	\$41,563,797

- Preliminary, conservative evaluation of costs to prove concept
 - \$0.7 to \$0.8M per mile compared to \$4M
 - 20% of full width
- Goals achievable in 10 to 20 years

Cost breakdown on average



- Sidewalk = 60-percent
- Parking zone = 20-percent
- Travel lanes = 20-percent

Additional considerations

- Parking lanes will remain in poor condition; however:
 - Curb lines likely to change in future as a result of the parking study, bike prioritization, mobility conclusions, green stormwater infrastructure needs, urban forestry, etc.
 - Water, sewer, drain and gas utility work likely to require full-depth reconstruction of many streets
 - Therefore deferring investment on the curb line and parking zone makes sense
- Improves bike safety
- Boston and Cambridge have started similar “partial paving” programs

Elm Street, Tremont Street, Cambridge



Revised Pavement & Sidewalk Management Plan

The road to a better program

Prioritization

Travel lanes for vehicles & bicycles

Sidewalks for pedestrian routes

Pavement prioritization algorithm

$$\text{NPR} = (0.40 * (100 - \text{PCI})) + (0.50 * \text{FCP}) + (0.30 * \text{PCP}) + (0.10 * \text{ADT})$$

Network Priority Ranking (NPR)

- Pavement Condition Index (PCI)
- Functional Classification Priority (FCP)
- Pavement Classification Priority (PCP)
- Average Daily Traffic (ADT)

Functional Classification	FCP Value	Equivalent ADT	ADT Factor
AR - Arterial	90	20,000	100
MA - Minor Arterial	80	15,000	75
CO - Collector	70	8,000	40
RT - Residential Local	50	2,500	15
RE - Residential Dead End	40	500	5

Sidewalk management program algorithm

$$\text{NPR} = (0.40 * (100 - \text{SCI})) + (0.60 * \text{RCP})$$

Network Priority Ranking (NPR)

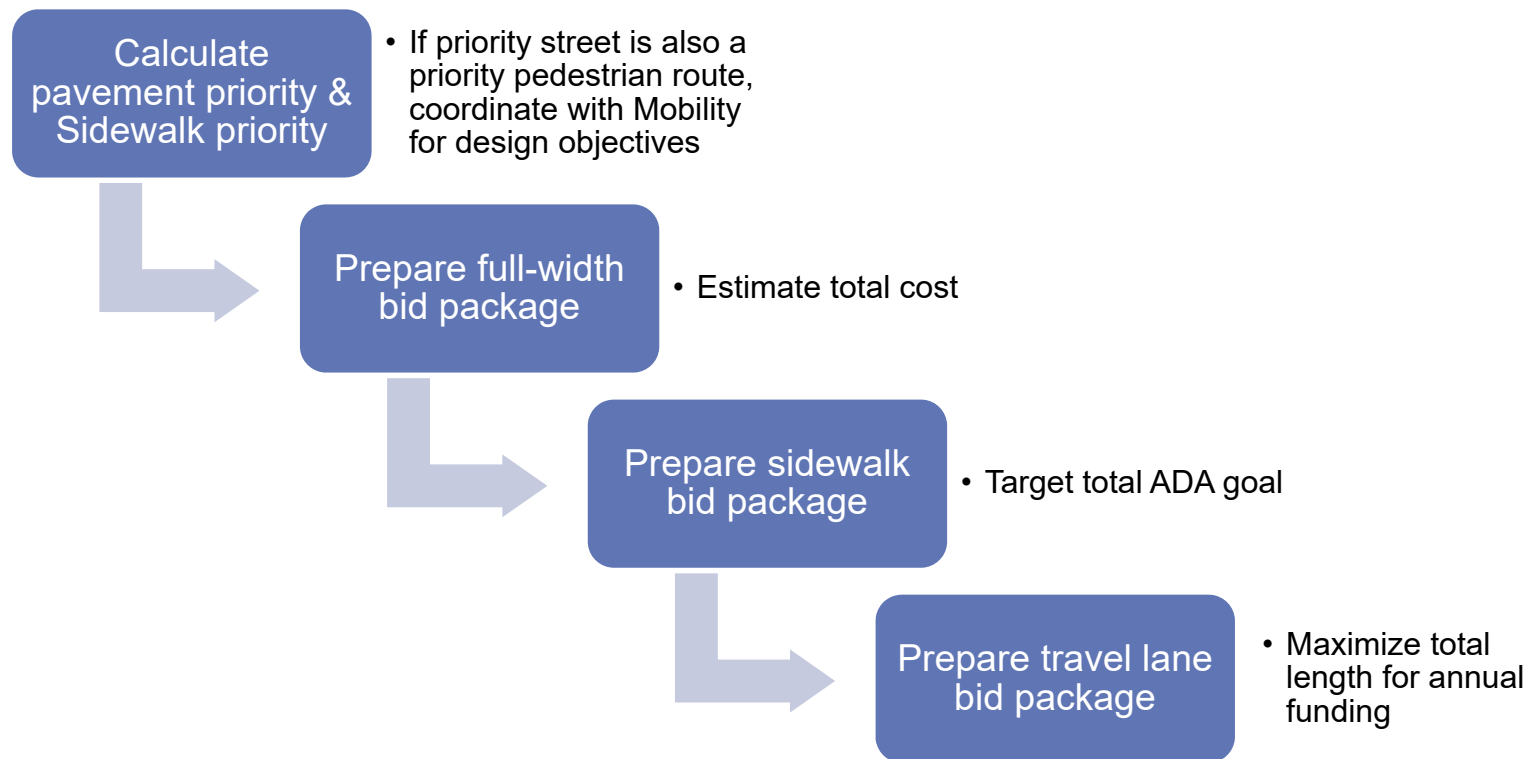
- Sidewalk Condition Index (SCI)
- Route Classification Priority (RCP)

Route Classification	RCP Value
4 – Business District	100
3 – Transit Corridor	95
2 – Dense Neighborhood	85
1 – Side Street	75
0 – Calm Street	65

Road & Sidewalk Selection

Building annual construction contracts

Workflow



ID # 209273 – Requesting a supplemental appropriation of \$500,000 to the Engineering Division Capital Outlay Street Repairs Account in order to perform mill and overlay paving of the travel way in prioritized streets.

Agenda Item 5

Supplement FY2020 Construction

- \$3.73M bond approved by City Council 24 Oct 2017
 - Mill & overlay with sidewalk reconstruction
 - Holland Street, College Ave from Davis to Powder House
 - College Ave from Powder House to City line – add-alternative
 - Note: These routes are also priority sidewalk routes
 - Sidewalk & ADA ramp construction package
- Add \$500,000 capital outlay for travel lane only mill & overlay
 - Top priority vehicle route / non-priority pedestrian route:
 - Inner Belt Road
- Note: Mix of bond and capital outlay is a typical strategy

Provisional Future Plan

FY2021 intended use & status

- Mill & overlay with sidewalk
 - Pearl Street
 - Coordination: Water complete, gas CY2020, Sewer & Mobility needed
- Sidewalks & ramps
 - Various locations
- Mill & overlay travel lane only
 - North Street
 - Utility & Mobility coordination needed

Long-range priorities

- Mill & overlay with sidewalk
 - Elm Street
 - Broadway (Powder House to Arlington)
 - School Street (Medford to Highland)
 - Cross Street (Broadway to Auburn)
 - Newton Street
- Mill & overlay travel lane only
 - Summer Street (Willow to Cedar)
 - School Street (Highland to Somerville)
 - Cameron Avenue
 - Mount Vernon Street
 - Stickney Avenue

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