# Public Facilities Committee Report

## City of Newton
## In City Council

### Wednesday, April 21, 2021

Present: Councilors Leary (Chair), Laredo, Kelley, Danberg, Norton, Kalis, Gentile and Crossley

Also Present: Councilor Wright

City Staff Present: Chief Operating Officer Jonathan Yeo, Chief of Staff for the Department of Public Works Shawna Sullivan, and City Engineer Lou Taverna

**#140-21** **Discussion on the Transportation Network Improvement Program**
PUBLIC FACILITIES COMMITTEE requesting an update on the City's Transportation Network Improvement Plan (Roads Program).
**Action:** **Public Facilities Held 7-0 (Councilor Norton not voting)**

**Note:** Chief Operating Officer, Jonathan Yeo explained that the administration will be adding $2.5 million to the Transportation Network Improvement Program. Mr. Yeo explained that this way the streets that are outlined in the presentation tonight can be repaired.

Committee members asked the following questions and made the following comments regarding the update from the COO:

Q: How much of the budget was cut last year and is this increase based on last year's reduced allocation?

A: Mr. Yeo explained that that the current year reduced allocation was $5 million. He noted that this would be further discussed during the budget process and there are still opportunities to add funds to this budget. The current budget is $5 million and in the past the City was able to use Free Cash to get to the $9 million figure. But the City never has budgeted for that amount. During the pandemic, Free Cash had to be used for other purposes.

During the budget process, it would be helpful to see what has been allocated to the Transportation Network Improvement Program in the past and how much of the funds came out of Free Cash.

Shawna Sullivan, Chief of Staff for the Department of Public Works introduced Conrad Ledger, Environmental Partners who gave the attached presentation on Newton's 2021 Transportation Network Improvement Program. The highlights of this presentation includes program goals,

details on pavement management, how road projects are selected, the various road pavements and the history. There will also be an update on the bicycle, pedestrian, and sidewalk improvements.

Mr. Leger explained that their goal is to establish benchmarks and coordinate infrastructure improvements to leverage available funding in an efficient manner benefitting all users. The infrastructure includes City-owned roadways, pedestrian/bicycle infrastructure, ADA and AAB compliance and public transit. He also explained that pavement management is the practice of planning pavement maintenance to maximize the value of the roadway network.

Mr. Leger explained that they have been conducting roadway assessments every other year and these assessments are done by machine-learning technology. The system takes photographs every 10 ft along the roadway network. He noted that this is a non-biased opinion and is cost effective. Once the assessment is completed each roadway is given a 0-100 rating (PCI) which allows them to put each roadway into a repair category. The categories include major rehabilitation, minor rehabilitation, preventative maintenance, routine maintenance, and no maintenance. Mr. Leger explained that the City's overall road network is at a 68.53 PCI and he provided the attached chart that shows many miles of roads in the City are in each category. The chart also shows the approximate cost for the City to repair all the roads.

Mr. Leger than explained the roadway selection process. The factors include the budget, existing conditions, the complete streets program, cost-benefit value, community needs and existing conditions. The definition and equation for the cost-benefit value is attached. There is also a brief overview of the work done between 2017-2020.

## ROADWAY SELECTION PROCESS

### Yearly Process

This process typically begins in Fall and includes:

1. Update of database and work completed
2. Review of 5-year CIP
3. Discuss "new" high priority roadways
4. Balance budget appropriations based on available funding
5. Evaluate pavement preservation candidates
6. Prepare bid documents, compile roadway quantities, assess needs for construction oversight

The next portion of the presentation discussed the road treatments the City is currently using. For routine maintenance the City is using crack sealing and fog sealing. Mr. Leger explained that crack sealing is to prevent water going into cracks. He noted that they will be using these methods for streets that were repaired at the start of this program to be able to preserve these roadways. Fog seal is a spray that gets put on the street. One version of a fog seal is an emulsion. This will

be used to make a roadway darker and can prevent the roadway from cracking. Another version of fog seal is a rejuvenator which will help with the look of the roadway and make it more flexible. Mr. Leger explained that they are moving towards using the rejuvenator version because with the emulsion base the striping on the roadway needs to be removed and put back down after the work is completed.

For preventative maintenance the bonded wearing course is used. This has been used on Nahanton St and River St in the past. This is beneficial to use due to the volume of traffic in Newton. Mr. Leger noted that this gives the street the look of a brand new road. The hot in-place recycling is also used for preventative maintenance. This was used on Washington Street last year. There have been issues in the past with this method. This has made them look at what roads this treatment should be used on.

Mill & Overlay and Reclamation will be continued to be used for rehabilitation projects. This is the griding up of the old asphalt and replacing it with new asphalt at the end. Mr. Leger explained that it takes up approximately 2 inches of pavement. The sidewalks are also worked on through this process when they are in poor condition or in need of replacement. Mr. Leger also noted they try to not use too much of reclamation during the rehabilitation process because it is disruptive.

A new treatment that is being tried this year is cold in-place recycling. Mr. Leger explained that they plan to use this treatment on Chestnut and Dedham Street. This recycles the asphalt that is there now, putting it back down and using it as the base of the roadway and putting new asphalt on top of it. There is no heating for these treatments which takes away the concern for trees and tree canopies. The goal of this treatment to lengthen the useful life of the roadway.

They will also be using maintenance overlay for roadways that are in poor condition or sections of roadway that are in poor condition. Mr. Leger explained that this is where they would overlay an entire roadway with an asphalt treatment. These roadways are not higher on the repair list usually due to traffic flows, but this is a way is to still treat the roads for the residents who live there or need to travel on the roadway. Mr. Leger noted that they have been successful with this program over the past three years and have made a large dent in roadways that fall below a PCI of 25. They also have already completed a number of roadways in the City with this treatment.

The last treatment that is used is a concrete overlay. Mr. Leger explained that this was done as a trial on Cherry Street last year. This method has decreased the cost of repairing the concrete roadways in the City. They will continue to monitor the roadways that are repaired with the concrete overlay treatment.

The FY22 Budget distribution is shown in the attached presentation.

Ms. Sullivan explained the attached updates on the bicycle & pedestrian improvements.

Committee members asked the following questions:

Q: How much of the 25,000 linear ft of sidewalk improvements will be new versus repairs?

A: Ms. Sullivan explained that she can get an exact number but most of Chestnut Street is being replaced between Beacon Street and Route 9. She noted that there are spots of this sidewalk that can not be replaced do to trees. There will also be work on several other sidewalks in the City.

Q: What is the goal to install sidewalk installation on small residential streets?

A: Ms. Sullivan explained that they are developing a sidewalk database which will help the department prioritize and understand how much sidewalk needs to be installed. The priority would be to install sidewalks on school routes and village centers. The $200,000 will help add an additional couple of miles to this project. Mr. Leger noted that he has worked with a number of communities on these databases. The most substantial part of this work is getting the inventory done, which EPG and City staff are working on.

Q: What criteria is used to drop a roadway from repair consideration?

A: Mr. Leger explained that utility work may defer the roadway to another year. Also, a road could be moved to do a different treatment category.

Q: How is the City coordinating with utility companies?

A: Ms. Sullivan explained that they meet monthly with each of the utilities.

Q: What construction companies are used for road repairs?

A: Ms. Sullivan explained that they use D &R, Newport, Indus, All States and D 'Ambrosia.

Q: Which contactors are recommended for driveway paving?

A: Ms. Sullivan explained they have been advised by the Law Department not to recommend contractors for private work.

Q: Where has the average PCI been over the past five years?

A: Mr. Leger explained that the last time they did inspections it was right around 68.53. When the program began the average PCI was at 62. He further explained that they do the inspections every other year and within the last year or so is where the average leveled off. He will further investigate this question.

Q: Are capital roads projects carried over from year to year?

A: Mr. Leger explained that they do carry over between construction seasons but the project is usually completed by the end of the fiscal year. He explained that this year they did have to carry over Walnut Street because it needed to go through design last year. West Newton Square and Newtonville were also carried over this year.

Q: Has EPG been involved with utilities undergrounding utilities?

A: Mr. Leger explained it is very expensive to underground utilities and this is usually dealt with on a case-to-case basis. He also explained that they usually do a feasibility study to see what would be impacted from undergrounding the utilities and coming up with a cost to do this particular project. Mr. Leger explained that he believes that they do not need to go to the utilities to do this feasibility study but he will further investigate this question.

Q: If there was no backlog for the program, what would it cost the City to just keep up with the maintenance of the roadways?

A: Mr. Leger explained that he would need to research this further but this is a scenario he could run.

Q: Will Waverly Ave be paved this year?

A: Ms. Sullivan explained that Waverley and Ward both have water main repair or replacements. Happening. On Ward Street it's a full replacement of an MWRA line along with Newton's line. On Waverly Ave they will be cleaning and lining which will require pits every 100 ft. The hope is that MWRA will pave these streets, if not they will be scheduled next season. The City does have to wait for the road to settle over the course of a winter before it is repaved. Ms. Sullivan explained that they will be educating neighbors on what is happening with these roads.

Q: What is the rejuvenator treatment?

A: Mr. Leger explained that it is a spray treatment over the existing roadway and the existing line striping shows through so there is no need to restripe. The goal is the use this treatment on Beacon Street this year where there are many different types of existing line striping.

Q: Can the City look at the set of metrics to find the best time to remove a tree and replant versus to leave it in place and do a patchwork sidewalk job?

A: Ms. Sullivan explained that they would need to work with the Parks, Recreation and Culture Department and in particular Marc Welch on this issue.

Q: Is there a policy put in place that requires MWRA to pave after their work is complete?

A: Ms. Sullivan explained that if the road has not been paved in the past five years than they can patch.

Q: What is the average PCI in the surrounding communities?

A: Mr. Leger explained that they typically see the average in the low 70s. Newton is still below average but that is the point of the Transportation Network Improvement Program. He noted that Newton has made progress since this program has started.

Q: Are the roads that have been completed being monitored?

A: Mr. Leger explained that these roads are being monitored. They also continue to make sure that they are doing the right treatments on each roadway.

Q: Is there a focus on crosswalks around schools?

A: Ms. Sullivan noted that this is a priority and they work with Safe Routes to schools on the issues related to sidewalks and crosswalks.

Q: Why are Engineering and Transportation budgeted cost so high?

A: Mr. Leger explained that the engineering budget go towards a number of different components. This includes pavement management and construction oversite and transportation includes traffic calming and intersection improvements.

Q: West Newton Square is still difficult to navigate. What is the plan for this roadway?

A: Ms. Sullivan explained they will be working on this roadway as soon as they can. Additionally, traffic engineers continue to adjust the timing of the traffic signals. She explained that the software is in place, but it has not been completely coordinated. Eversource still has work that needs to be done.

Q: Why do pavement markings fade so quickly?

A: Mr. Leger explained that this is due to traffic volumes and the plowing that happens. DPW has collected an inventory of the striping in the City.

Q: What type of paint is used?

A: Mr. Leger explained that there are three types of paint which include a water-based paint, thermoplastic and epoxy. He noted that the water-based paints lasts 1 to 2 years. He also noted that epoxy and thermoplastic do need to be removed.

Councilors thanked Mr. Ledger and Ms. Sullivan for their on the Transportation Network Improvement Plan.

Councilor Laredo motioned to hold which passed 7-0 with Councilor Norton not voting.

The Committee adjourned at 9:37 p.m.

**Respectfully Submitted,**

**Alison M. Leary, Chair**

# Transportation Network Improvements
## 2021 Program Update

City of Newton

April 21th, 2021

ENVIRONMENTAL PARTNERS

## TRANSPORTATION NETWORK IMROVEMENTS

### Program Goals

Our primary goal is to establish benchmarks and coordinate infrastructure improvements to leverage available funding in an efficient manner benefitting all users.

The City's Infrastructure Asset Management Program assists in guiding decision makers to prioritize repairs.

City-owned Roadways

Pedestrian and Bicycle Infrastructure

ADA and AAB Compliance

Public Transit

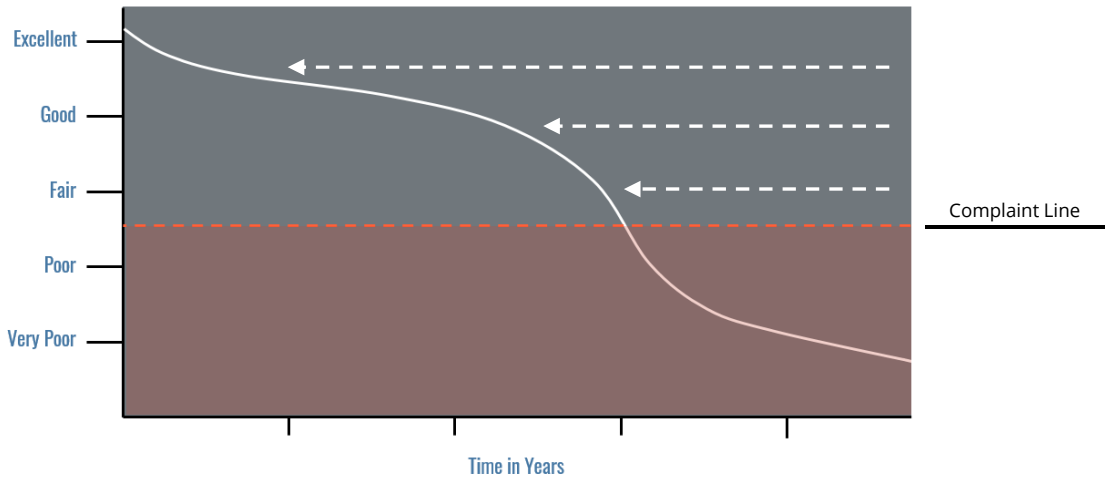
# PAVEMENT MANAGEMENT

## What is Pavement Management?

Pavement Management is the practice of planning pavement maintenance to maximize the value of the roadway network.

*Enables you to perform the Right Repair at the Right Time on the Right Road!*

# PAVEMENT DETERIORATION CURVE



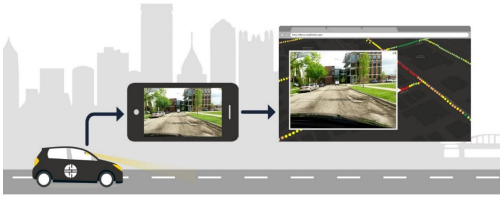

Life-Cycle Analysis


## DATA COLLECTION

### Roadway Assessments

- Completed using Machine-Learning Technology
- Provides photographs every 10' along the roadway network
- Non-Biased
- Extremely cost-effective
- High resolution photographs for planning

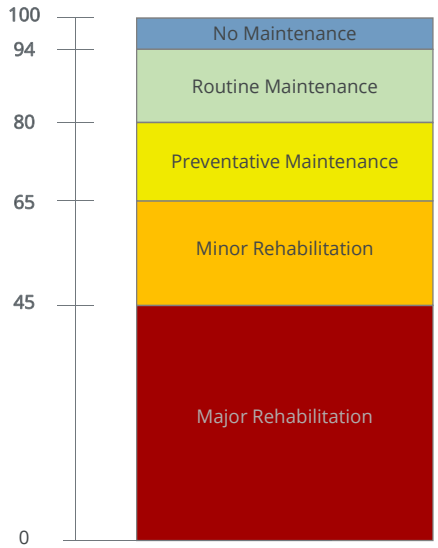
Commonwealth Avenue - Newton



# ANALYSIS & REPORTING

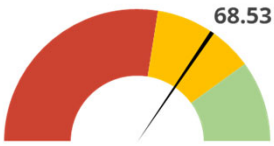
## Maintenance Categories

- No Maintenance Required
- Routine Maintenance - $1.00
  - Fog Seal
  - Crack Seal
- Preventative Maintenance - $14.00
  - Bonded Wearing Course
  - Cape Seal
  - Shim and Overlay
- Minor Rehabilitation - $50.00
  - Mill and Overlay
  - Cold In-Place Recycling
- Major Rehabilitation - $60.00
  - Full Depth Reclamation




# ANALYSIS AND REPORTING

## Roadway Network




**Road Network Rating**

PCI

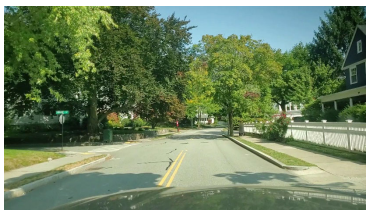
0-100 Rating Scale

| Repair Category | Length (Miles) | Square Yardage | Estimated Costs |
|---|---|---|---|
| No Maintenance Required | 43.00 | 747,298 | $0 |
| Routine Maintenance | 30.93 | 503,707 | $503,707 |
| Preventative Maintenance | 68.72 | 1,078,720 | $10,787,201 |
| Minor Rehabilitation | 96.33 | 1,517,334 | $75,866,703 |
| Major Rehabilitation | 35.17 | 519,646 | $31,178,774 |
| **Totals** | **274.15** | **4,366,705** | **$118,336,385** |

Existing Conditions – Backlog

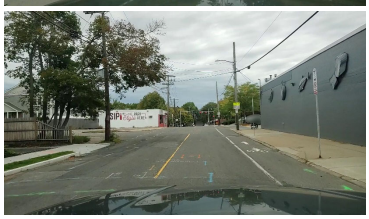
Includes presumed percentage of sidewalk enhancements

Lake Avenue
Routine Maint.



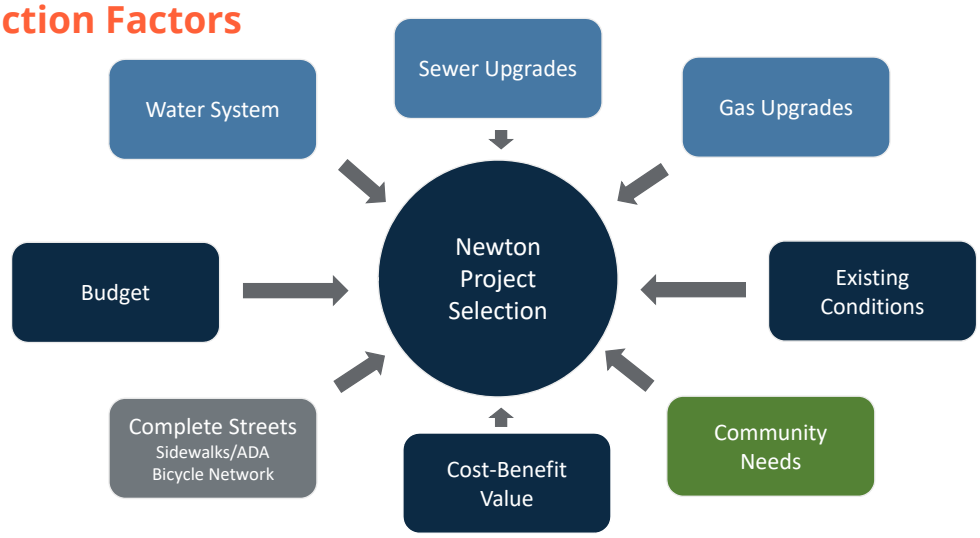
Lowell Avenue
Preventative Maint.

Walnut Street
Minor Rehabilitation



# ROADWAY SELECTION PROCESS

## Selection Factors




# ROADWAY SELECTION PROCESS

## Cost-Benefit Value

Data driven guide to prioritize which roadways should be worked on first to get the most benefit from dollars spent

$$CBV = \frac{(Traffic)x(Service\ Life)}{(Unit\ \$)x(Condition)}$$

Higher CBV = Higher Priority

# ROADWAY SELECTION PROCESS

## Yearly Process

This process typically begins in Fall and includes:

1. Update of database and work completed
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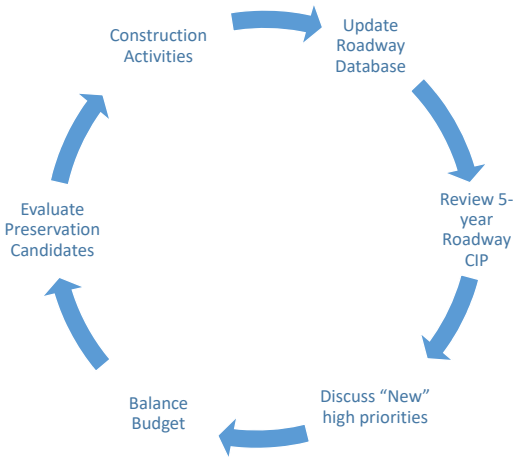
3. Discuss "new" high priority roadways
4. Balance budget appropriations based on available funding
5. Evaluate pavement preservation candidates
6. Prepare bid documents, compile roadway quantities, assess needs for construction oversight



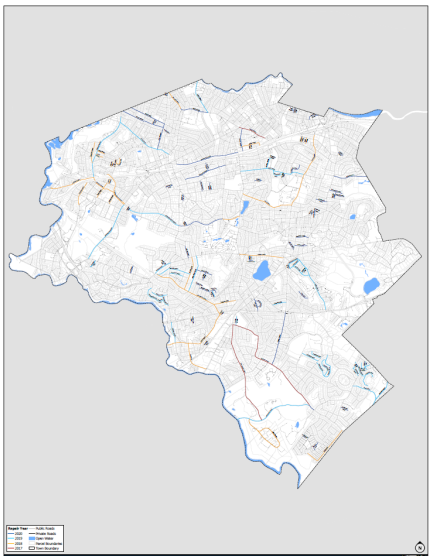

# TRANSPORTATION NETWORK IMROVEMENTS

## 2017 – 2020 Work History

| 2017-2018 | | | |
|---|---|---|---|
| **Year and Treatment** | **Length (ft)** | **Length (miles)** | **Total Costs** |
| Crack Seal | 31,655 | 6.00 | $120,000 |
| Preservation | 35,630 | 6.75 | $1,400,000 |
| Hot In-Place Rec | 5,650 | 1.07 | $450,000 |
| Rehabilitation | 24,497 | 4.64 | $5,100,000 |
| **Total 2017-2018** | **97,432** | **18.45** | **$7,070,000** |

| 2019 | | | |
|---|---|---|---|
| **Year and Treatment** | **Length (ft)** | **Length (miles)** | **Total Costs** |
| Preservation | 30,810 | 5.84 | $1,600,000 |
| Rehabilitation | 27,425 | 5.19 | $6,100,000 |
| Maintenance Overlay | 18,470 | 3.50 | $350,000 |
| **Total 2019** | **76,705** | **14.53** | **$8,050,000** |

| 2020 | | | |
|---|---|---|---|
| **Year and Treatment** | **Length (ft)** | **Length (miles)** | **Total Costs** |
| Crack Seal | 23,850 | 4.52 | $210,000 |
| Preservation | 4,000 | 0.76 | $260,000 |
| Hot In-Place Rec | 4,000 | 0.76 | $180,000 |
| Rehabilitation | 23,150 | 4.38 | $3,200,000 |
| Maintenance Overlay | 20,365 | 3.86 | $620,000 |
| Concrete Overlay | 2,000 | 0.38 | $310,000 |
| **Total 2020** | **77,365** | **14.65** | **$4,780,000** |
| | | | |
| **Program Totals** | **251,502** | **47.63** | **$19,900,000** |



## 2021 ROAD TREATMENTS

### Routine Maintenance

Crack Seal

Fog Seal & Rejuvenator

## 2021 ROAD TREATMENTS

### Preventative Maintenance


Bonded Wearing Course

## 2021 ROAD TREATMENTS

### Preventative Maintenance


Hot In-Place Recycling

## 2021 ROAD TREATMENTS

### Rehabilitation

Mill and Overlay

Reclamation

## 2021 ROAD TREATMENTS

### Rehabilitation

Cold In-Place Recycling

## 2021 ROAD TREATMENTS

### Overlays

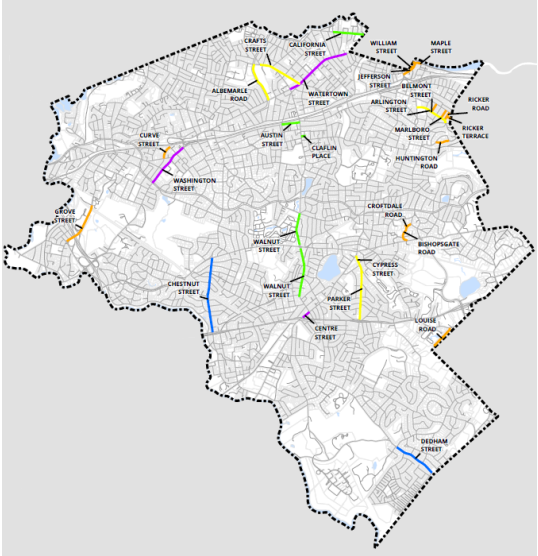
Maintenance Overlay

Concrete Overlay

# FY2022 BUDGET DISTRIBUTION

## $7.5 MILLION

| Funding Category | Length (ft) | Estimated Cost |
|---|---|---|
| **2021** | **48,510** | **$7,493,081** |
| 1. Mill and Overlay | 10,300 | $2,554,294 |
| 2. Cold In-Place | 7,250 | $550,000 |
| 3. Concrete Overlay | 6,500 | $1,440,000 |
| 4. Maintenance Overlay | 10,910 | $692,787 |
| 5. Preservation (BWC) | 2,400 | $106,000 |
| 6. Preservation (Crack/Fog) | TBD | $375,000 |
| 7. Engineering Services | N/A | $450,000 |
| 8. Street Maintenance | N/A | $725,000 |
| 9. Transportation Budget | N/A | $400,000 |
| 10. Sidewalk Budget | N/A | $200,000 |
| Capital Project | 3,200 | |
| Carry Over FY21 | 7,950 | |




# Bicycle & Ped Improvements

- Parker Street (entire length), and Cypress Street / Centre Street up to Beacon St
  - bike lanes (parking restrictions, pending April 29 Traffic Council meeting vote)
- Beacon Street (Washington to Centre)
  - bike lanes (parking restrictions already approved by Traffic Council, striping in Spring 2021)
- West Newton Square
  - bike lanes
  - shorter pedestrian crossings
- Newtonville Walnut Street, Austin Street, and Highland Avenue
  - shorter pedestrian crossings
- Crafts Street bike lane extension from North Street to Watertown Street
- Walnut Street, Homer Street to Forest Street
  - Crosswalks across Walnut Street at every bus stop, including four new crosswalks
  - New RRFB to cross Walnut Street at Carthay Circle / Whole Foods
- Chestnut Street (Route 9 to Beacon Street)
  - Reduced corner radius at two intersections
  - New crosswalks across Chestnut Street at three locations

## Bicycle & Ped Improvements

- Washington Street, Chestnut to Lowell
  - Implemented three new crosswalks in Fall 2020
  - Restriping plan, possible protected bike lanes. Public input process starting in May 2021
  - Pedestrian Hybrid Beacon (aka HAWK) controlled crosswalk and bump-outs proposed near Trader Joe's bus stop (developer mitigation)
- Watertown Street / Edinboro Street
  - New sidewalk bump-outs to fix ADA issues, and shorten pedestrian crossing
- Watertown Street / West Street
  - New sidewalk bump-outs to fix ADA issues, and shorten pedestrian crossing
- California Street / Los Angeles Street (developer mitigation)
  - New bump-outs, new crosswalk across California Street, new RRFB
- Commonwealth Ave Carriage Lane
  - Legal, two-way bicycle travel (in design)
- Commonwealth Ave Greenway, Marriot to Lyons Field (in design)
  - Proposed off-street two-way bike path, new sidewalks, and new crosswalks across Comm Ave
- Library Parking Lot (in design)
  - Improved pedestrian access and circulation within the parking lot

## Bicycle & Ped Improvements

- Beethoven Ave / Puritan Road
  - Raised table intersection
- Allen Ave at Pine Ridge Road and at Plainfield Street
  - Curb bump-outs, and new crosswalks across Allen Ave for better access to Richardson Field
- Waltham Street / Derby Street / Fairway Drive
  - Bump-outs and median islands
- Lowell Street / Austin Street (in design)
  - Bump-outs and median islands
- Lowell Street / Hull Street (in design)
  - Bump-outs and reduced pedestrian crossing distances

## Bicycle & Ped Improvements

- Walnut Street / Crafts Street (shovel ready)
  - Eliminates high-speed soft right-turn
  - Creates new crosswalks across Walnut Street and across Crafts Street
- Waltham Street / River Street (shovel ready)
  - Reduces wide pavement area
  - Eliminates median island, and shortens crosswalk distance
  - Creates new crosswalk across Waltham Street
- Windsor Road / Kinmonth Rd (development mitigation)
  - Creates typical T-intersection
  - Significantly reduces crossing distance across Kinmonth Road for pedestrians on Windsor Road
- Pettee Square (Oak Street / Chestnut Street) – in design
  - Raised intersection design, includes Upper Falls Greenway crossing as part of raised table intersection
  - Placement making project to enhance Pettee Square

## THANK YOU

ENVIRONMENTAL PARTNERS

**Newton - Transporation Network Improvements** **140-21**

**2021 Roads Construction List**

| Year/Repair/Contract | To | From | Length (ft) |
|---|---|---|---|
| **2021** | | | **45,310** |
| **1. Mill and Overlay** | | | **10,300** |
| Albermarle Road (East) | Watertown Street | Crafts Street | 2,300 |
| Arlington Street | Park Street | Nonantum Street | 1,500 |
| Crafts Street | North Street | Watertown Street | 2,600 |
| Cypress Street | Parker Street | Centre Street | 700 |
| Parker Street | Route 9 | Cypress Street | 3,200 |
| | | | |
| **2. Cold In-Place** | | | **7,250** |
| Chestnut Street | Boyleston Street | Beacon Street | 4,500 |
| Dedham Street | Brookline Street | Spiers Road | 2,750 |
| | | | |
| **3. Concrete Overlay** | | | **6,500** |
| Centre Street | Boylston Street | Walnut Street | 350 |
| Washington Street | Commonwealth Aver | Perkins Street | 2,200 |
| Watertown Street | Walnut Street | Pearl Street | 3,950 |
| | | | |
| **4. Maintenance Overlay** | | | **10,910** |
| Belmont Street | Tremont Street | Arlington Street | 550 |
| Bishopsgate Road | Beacon Street | Intervale Road | 2,000 |
| Croftdale Street | Bishopsgate Road | Dead End | 150 |
| Curve Street | Prospect Street | Auburn Street | 800 |
| Grove Street | Rt 128 Ramps | MBTA Bridge (190' | 1,600 |
| Huntington Road | Farlow Road | Chamberlain Road | 750 |
| Jefferson Street | Centre Street | Maple Street | 1,100 |
| Louise Road | Florence Street | Dead End | 1,500 |
| Maple Street | Nonantum Street | City Limit | 500 |
| Marlboro Street | Tremont Street | Arlington Street | 900 |
| Ricker Road | Tremont Street | Arlington Street | 550 |
| Ricker Terrace | Ricker Road | City Limit | 260 |
| Williams Street | Jefferson Street | City Limit | 250 |
| | | | |
| **5. Preservation (BWC)** | | | **2,400** |
| Grove Street | Maintenance Overlay | Woodland Street | 2,400 |
| | | | |
| **6. Preservation (Crack/Fog)** | | | |
| Preservation (Crack/Fog) | Misc | Misc | |
| | | | |
| **7. Engineering Services** | | | |
| Engineering Services | NA | NA | |
| | | | |
| **8. Street Maintenance** | | | |
| Street Maintenance | NA | NA | |
| | | | |
| **9. Transportation Budget** | | | |
| Transportation Budget | NA | NA | |
| | | | |
| **10. Sidewalk Budget** | | | |
| Sidewalk Budget | NA | NA | |
| | | | |
| **Carry Over FY21** | | | **7,950** |
| Austin Street | Walnut Street | Lowell Street | 1,000 |
| California Street | Faxon Street | Town Line | 1,800 |
| Claflin Place | Walnut Street | Dead End | 250 |
| Walnut Street | Beacon Street | Homer Street | 2,000 |
| Walnut Street | Forest Street | Beacon Street | 2,900 |
| | | | |
| **Grand Total** | | | **45,310** |