



**rails-to-trails**  
conservancy



# **Dedham Greenway Dedham Square to Boston City Line**



# CONTENTS

---

## INTRODUCTION

Purpose and Needs Statement	2
Project Goals	4
Current Condition	5
Public Input	12
My Neighborhood	
I'm Concerned About the Greenway Because	
I'm Excited About the Greenway Because	
Preference for Greenway Activities	

## DETERMINATION OF FEASIBILITY

Comparable Trails	16
-------------------	----

## RECOMMENDATIONS

Trail Design Considerations	21
Sub-Grade, Sub-Base and Trail Surface	23

Trail Alignment Recommendations	
Segment 1	26
Segment 2	27
Segment 3	28
Segment 4	29
Segment 5	30
Segment 6	31
Segment 7	32
Segment 8	33
Opinion of Probable Cost	34
Potential Funding Sources	36

# **Dedham Greenway Dedham Square to Boston City Line**

---

Rails-to-Trails Conservancy Project Team

Carl Knoch

October 2014

## **ACKNOWLEDGEMENTS**

Rails-to-Trails Conservancy would like to thank the town of Dedham and the individuals and organizations that contributed to this project.

Special thanks to Virginia LeClair, Environmental Coordinator for the Town of Dedham for her guidance and support.

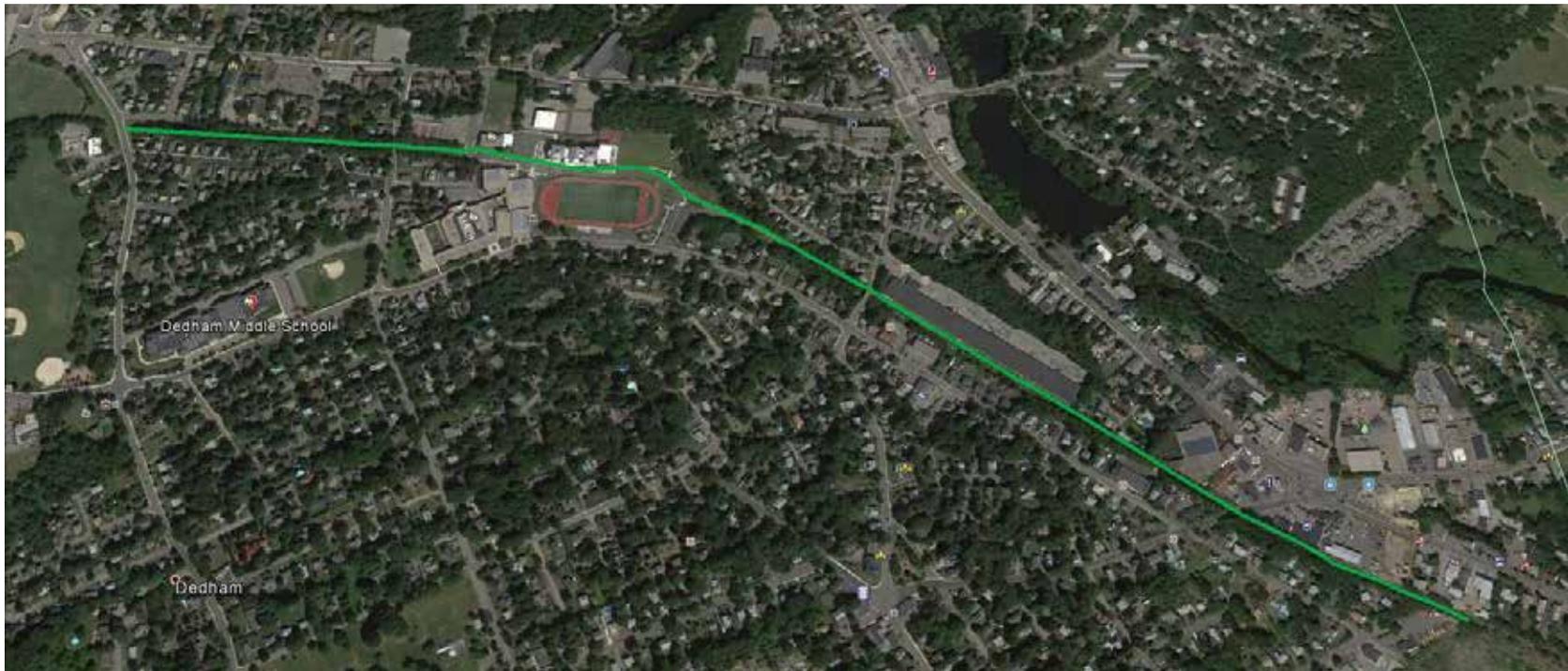
# INTRODUCTION

## PURPOSE AND NEEDS STATEMENT

---

The proposed Dedham Greenway from the Boston City Line to Dedham Square in Massachusetts would create a 1.54 mile public green space along a former railroad corridor. This concept plan investigates the opportunities and constraints affecting the proposed greenway and sets out design concepts that can be utilized by the community for the next phase of implementation.

Greenways are one of the few practical strategies that have emerged as an antidote to the problems of loss of open space, uncontrolled growth and fragmented communities; there are multiple ways that trails and greenways can help build more livable communities.



Greenways and trails are designed to produce real, tangible benefits that can be summarized by four major outcomes:

- **Resource conservation:** Greenways preserve precious open space, which is crucial to the long-term livability and sustainability of a neighborhood or region.
- **Health and recreation:** Greenways promote public health by creating safe opportunities for individuals and families to engage in physical activities, such as walking and bicycling.
- **Community revitalization:** In both urban neighborhoods and rural communities, greenways encourage economic and community revitalization by stimulating small business creation and improving community quality of life.
- **Alternative transportation:** While originally created for recreation, thousands of bicycle commuters now use greenways and trails to get to work, thereby reducing traffic congestion and air pollution while building physical activity into their daily lives.

In addition to these tangible outcomes, greenways also produce important intangible benefits. When the opportunity to build a new greenway arises, something remarkable often happens in a community. Individuals, state and local government, the private sector and community-based groups unite in the common purpose of building a greenway. Greenway building is community building.

## PROJECT GOALS

---



The goals of this study are to define design concepts and design alternatives for the greenway and to propose additional steps required to proceed to the design and construction stage of the project.

Outcomes of this project include the following:

- Conceptual images, and actual comparables and other supporting data
- Documentation regarding accepted standards for development of the trail (In all cases, the standards used will be tied to an accepted industry reference manual.)
- A list of all site constraints (based upon a field review)
- Recommendations for support facilities such as trailheads, parking areas, maintenance facilities, utilities, comfort facilities, information boards, tables, benches, etc.
- Recommendations for trail surface and trail width
- A preliminary cost analysis for the construction of the trail/tunnel
- Funding options for the development, operation, maintenance, management and security of the trail

## CURRENT CONDITION

---



*Looking east between River Street and Readville Street*



*River Street – Missing Bridge*



*Looking east from Walnut Street Bridge*



*Looking west toward Avery School*



*Avery School sidewalk*



*Mt. Vernon Street from Corridor*



*Looking west from Mt. Vernon Street*

## PUBLIC INPUT

Card #	Where I Live	My Closest Park	Where I Do Things
1	Fairview Street	Oakdale School	Bike to Dedham Square
2	30 Hazelnut Place	?	Walking my dogs
3	121 Garfield Road	Condon Park	Walking
4	East Dedham – Faith Hill	Condon Park	Bike, walk, garden
5	Emmett Avenue	Condon Park	Walk
6	Village Center	Old Village Cemetery/Old Jail	Try to bike roads, dangerous
7	Clark Street	Eastern Avenue, Memorial Park	Nothing, go to gym
8	Clark Street	Eastern Avenue, Memorial Park	Nothing, go to gym
9	Rodman Place	Dedham Common	Wilson Mountain, town street
10	Willow Street	Wilson Mountain	Wilson Mountain, Dedham Streets, my imagination
11	N/A Conner LL	LO3 Clark Memorial	N/A Tenants
12	Madison Street	Oakdale School Playground	
13	Spragne Street	Paul Park	Walking
14	N.A.		
15	MBACC, High Street	Condon Park	Out of town
16	Flanagan Place	Condon Park	Do not see me using it
17	Linden Place	Memorial Park	Walking
18	Clifford Street,	Readville	
19	24 Spruce Street.	Memorial Field	H.S. pool swim
20	254 Whitting Place	High School	Walk the streets
21	Milton Street		Commuting
22	580 Bridge St.	Dedham Common, SMA, Wilson Mountain	Walking, biking
23	Pleasant Street	Dolan Center	Needham, town streets
24	Mt. Vernon Street	Endicott Estate	Run, bike, walk, connect to the greenways, Neponset River
25	31 Michael Road	Memorial Park	My treadmill
26	106 River St.	Condon Park	
27	11 Eleanor St.	Memorial Park	Wilson Mountain, Harwick Port (Cape Cod bike trail)
28	22 Old Farm Road	SMA, Wilson Mountain	Dog walking
29	South End, Boston	South West Corridor	Visiting parents
30	Roslindale	Neponset River Reservation	Biking to Dedham Center from Readville
31	Hanard Street	Churchill Park	Biking, walking, relaxing, sitting
32	28 Flanagan Place	Condon Park	?
33	28 Flanagan Place	Condon Park	Wilson Reservation
34	Central Avenue	Memorial Park	High School, Behind St., Mary's Rectory for Garden
35	480 Whiting Ave.	Condon Park	Running, walking
36	438 Whiting Ave.	Oakdale Park	Oakdale
37	Riverdale	Riverdale/Keough	Walking with my grandkids

## I'm Concerned about the Greenway Because

### SAFETY ISSUES

There are legitimate safety concerns, primarily for property owners close to proposed greenway.

### SECURITY, SAFETY

Safety

What's the record of personal safety on greenways?

Crime, people getting hurt at night

Safely linking the two communities, i.e., pedestrian lights, pedestrian bridge or tunnels

Drainage, safety, loitering, litter, decrease property value, close to home  
As an abutter, I am concerned about the security of my property, trespassing.

Safety and privacy issues

Safety and security issues

We want safe, clean places to run, but we have concerns.

### MAINTENANCE ISSUES

Who will be responsible for trash?

Maintenance issues

I am concerned about upkeep.

Litter, maintenance

Litter, leveling of land and drainage, access hours, regular maintenance and associated funding, access point locations

I'm really concerned about maintenance and upkeep.

Keeping up the trail, overall upkeep

Cleanup, maintained, property value

Who will maintain the greenway?

Poor maintenance

### COST ISSUES

\$ Cost concerns; how will cost be allocated to taxpayers?

Funding to develop, who pays to maintain, effects on abutters: litter, crime, noise, breakage

How much, and where the funding will come from

Funding; will greenway be open to public at night?

Funding

How will this be funded?

Who's footing the bill? My taxes are high enough.

### INCREASED TAXES

Tax increases

### PRIVACY ISSUES

Invasion of privacy of neighbors

Privacy concerns with lots of people so close to backyards

Privacy for direct abutters

Promoting security and privacy to abutting homes

How will you control noise and late-night parties?

Noise during the day

Because I live close...when I am brushing my teeth in my bathroom, [I am concerned] that I will look out my window only to see strangers staring at me.

Night activities that will be drawn to the path

[Because] my property is so close to the planned greenway, [I am concerned] that it will be like visitors using the path are in my yard.

Love the concept of the greenway, but I am concerned about the noise issue.

Teenagers

Teenage drug use and drinking

Teenage activity during the night, drinking

What will be done about kids, trouble at night when people aren't using the path

Vandalism /Property Damage

How to prevent it being a corridor for vandalism if open to everyone

Damage to property

Vandalism to property

**OTHER ISSUES**

If this is similar to other ideas that come up in Dedham, this will never happen.

That conversation will be shut down and not productive

That Dedham will use opportunity to address current problems (kids drinking, etc.) if we don't go forward

Removal of invasive species—could be good if done well, or a disaster (Japanese Knotweed)

I would like to see the area east of Walnut St. to the Avery School lowered to original grade.

I would be concerned about cutting down more trees like they did when building the school.

Lack of access, connections onto trail or destinations

What good is it if it is not continuous and connected to the rest of Dedham?

Can police patrol the trail? Wide enough for a police car to drive?

Cleaning up the weeds and invasive species, improved privacy, plants, fencing for direct abutters, regular patrolling and maintenance, increased property value?

Brings the community together, many different programs could be run, economic capabilities, beautify community, put East Dedham in positive light, etc.

Safe biking, place to exercise

I need a place to walk safely and to bike.

I want to be able to safely ride a bike in MY TOWN.

**I'm Excited About the Greenway Because**

Safe place to walk and bike, way to commute to Readville MBTA [commuter rail], safe route to DMS, DHS and Avery, connect to other greenways in and around Boston

Excited about all of the possibilities... connecting open spaces and connecting families to nature

A safe place to walk with family, not on the street

This concept has great potential but has anxiety level in the planning.

I'm really excited about the possible greenway. It would be a place for me to walk alone safely. If it were planted with mostly native plant materials—like High Line in NYC—it would provide welcome habitats for native bugs and birds, thereby replacing non-nourishing foods for these beings at the bottom of our food chain. We have removed so much of their needs. We need them.

I'd like a connection to Motherbrook and the MBACC [Motherbrook Arts and Community Center].

New business opportunities, ice cream, deli, exercise route, art

Great concept, but [I] has many concerns.

New commuter corridor

It will give families a place to be together for “fun” time.

It is a wonderful idea. Will the greenway have a gate that can be closed at dusk?

Ability to transform a blighted and unsafe space into open green space with access [for] all; opportunity to reduce litter, truancy, other bad behaviors; space to safely walk and bike

A connection to Readville community and the Neponset Greenways multi-use path to either Blue Hills Reservation or Boston Harbor or Port Norfolk

To see the space used for recreation instead of a dumping ground

An off-street path from Readville to Dedham Center

Opportunity to replace invasive (non-native) plants with native plants that don’t attempt to take over our yards

Walking, recreation, parks and art; more use of Dedham open space; will bring in more tourists to Dedham; clean up tracks

Easy access to safe, clean space for running

Love the concept of the greenway, but I am concerned about the noise issue.

I am really excited about the prospect of having a quiet place near my house to walk with my family and go for a run. I am excited about the potential commercial opportunities and beautification of the east side of Dedham.

Great idea for unused land; opportunity to create a “destination” that will attract visitors to Dedham; nothing like it currently exists in town.

Unifying park that will attract all precincts for multiple uses

I’m really excited about the greenway to display sculpture and art, to connect to Motherbrook Arts and [Community] Center, to help with designation as MA cultural district.

I’m excited about the greenway: beatifies rundown and overgrown area; provides further opportunities for recreation—especially biking; offers opportunity for private investment (Dedham Land Trust); Dedham area pride; connection to East Dedham and Dedham Center.



## Preference for Greenway Activities

Walking	16.5%
Cycling	16.5%
Public gardens	14.3%
Running	9.9%
Security	7.7%
Fitness classes	6.6%
Picnic areas	6.6%
Public art and performances	5.5%
Commuting	4.4%
Pocket parks	2.2%
Fencing	2.2%
Walking club for seniors	1.1%
Public events, festivals	1.1%
Outdoor classrooms	1.1%
Historical markers	1.1%
Restrict access to private property	1.1%
Connect to other greenways	1.1%
Water fountain for dogs	1.1%

## DETERMINATION OF FEASIBILITY

With minor exceptions, a continuous corridor of suitable land exists from the Boston City Line to Dedham Square. Most of the land within this corridor is owned by the Town of Dedham and is in public ownership. The major obstacle to the development of the Dedham Greenway is the railroad cut at Mt. Vernon Street where a bridge for the roadway over the rail corridor was removed and the cut filled. A railroad bridge at River Street was removed, but the abutments are still in place, and a prefabricated pedestrian bridge could be placed here to return the railroad corridor to a usable condition for the greenway.



*Danvers Trail - before*

### COMPARABLE TRAILS

*Danvers Rail Trail – Danvers, Mass.*

The Danvers Rail Trail is a 4 and 1/3-mile non-motorized shared-use path linking schools, downtown Danvers, parks, residential areas and trails in the neighboring towns of Peabody, Wenham and Topsfield.



*Danvers Trail - completed*

## *QueensWay – Brooklyn, N.Y.*

The QueensWay is a community-led effort to transform a blighted, 3.5-mile stretch of abandoned railway in Central Queens (Rego Park, Forest Hills, Woodhaven, Richmond Hill and Ozone Park) into a new linear park and cultural greenway. At this time, a team of consultants are conducting a feasibility study and planning process to identify options for converting the abandoned railway into a pedestrian and bike path, incorporating cultural and community programs, and connecting the adjacent neighborhoods to each other and to Forest Park.



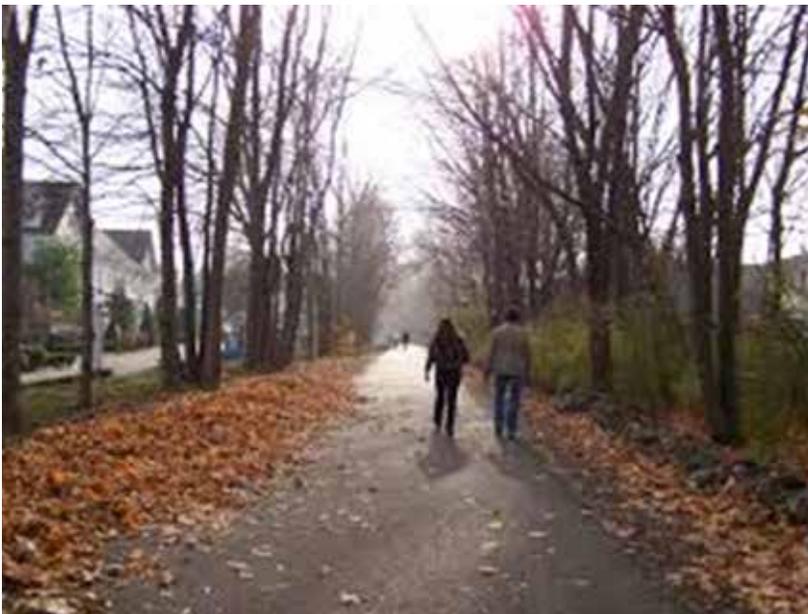
## *Saugus Rail Trail – Saugas, Mass.*

The Saugas Rail Trail starts at the Revere town line near Salem Street and goes past the Anna Parker Playground and the Belmonte Middle School, through Central Street to Chute Brook and out to Boston Street. The Saugas trail is a part of a roughly 10-mile trail that has been in the works for nearly 20 years. If all goes according to plan, the path will start in Everett, run through Malden, Revere and Saugas, and finish in Lynn.



## *Clipper City Rail Trail – Newburyport, Mass.*

The Clipper City Rail Trail project is a 1.1-mile trail between the Merrimack River and the MBTA Commuter Rail Station. The trail will be open to non-motorized uses such as bicycling, jogging and walking.



## *Methuen Rail Trail – Methuen, Mass.*

The Methuen Rail Trail is a 2.5-mile multi-use trail along an abandoned railroad corridor. The trail runs from Manchester Street Park past the train depot at the corner of Union and Railroad Streets and through the Nevins Bird Sanctuary—and parallel to Route 28 to the New Hampshire state line. The trail makes Methuen an integral part of the Merrimack Valley’s biking and walking network.



*Somerville Community Path – Somerville, Mass.*



*Three Rivers Bike Path – St. Johnsbury, Vt*



*Mass Central Rail Trail – Rutland, Mass.*



*Centerville Road Underpass, Pa.*



# RECOMMENDATIONS



## TRAIL DESIGN CONSIDERATIONS

### Trail Users

Trails are designed for the people who use them. The Dedham Greenway should be a multi-use facility that accommodates non-motorized uses. In addition, because of the ability to make a connection to other proposed trail projects that could lead into downtown Boston, an asphalt surface is recommended to facilitate commuting by bicycle.

#### PEDESTRIANS

Pedestrians include a wide variety of people such as walkers, hikers, joggers, runners, people pushing baby strollers and people who want to read interpretive signs or watch birds and other types of wildlife. These users travel at low speeds (an average of three to seven miles per hour) and tend to have fewer specific design requirements than other users. Many pedestrians prefer a surface that is softer than asphalt (such as crushed stone) to prevent knee, shin and foot strains. Other pedestrians may be attracted to hard surfaces so that they can walk faster (power-walkers) or push a stroller more easily.

If the trail is designed as a pedestrian-only pathway, it should have a minimum of a six- to eight-foot-wide tread. Trees and other

vegetation should be trimmed to allow for a minimum overhead clearance of seven feet.

#### BICYCLISTS

When considering trail design for bicyclists, it is important to keep in mind that there are several types of bicyclists: commuting, recreational and touring, as well as elderly and very young cyclists. There are also different types of bicycles: road or touring bikes, mountain bikes, three-wheel and four-wheel bikes, tandem bikes and kids' with training wheels. The different types of cyclists and equipment imply somewhat different needs, abilities and design requirements.

The American Association of State Highway and Transportation Officials (AASHTO) provides a Guide for the Development of Bicycle Facilities. AASHTO guidelines are viewed as the national standard for bikeway design.

AASHTO recommends a minimum 10-foot-wide tread for bicycle paths under most conditions, with at least a 2-foot wide cleared, graded shoulder on either side of the tread. Depending upon anticipated uses and volume, a 12- or even 14-foot-wide trail with shoulders may be advisable. An eight-foot-wide pathway is the absolute minimum for a





multi-use trail that accommodates bicyclists. Vertical clearance for safe bicycle use is at a minimum of eight feet.

To accommodate the speed of bicyclists, particularly on paved trails, the trail should be designed for a specific speed, which is the maximum safe speed that bicyclists can maintain over a specific segment of the trail. A trail's design speed should be set at a level that is at least as high as the preferred speed of faster cyclists. AASHTO recommends developing shared-use paths for a minimum design speed of 20 miles per hour for level terrain and 30 miles per hour for a downgrade that exceeds 4 percent. On slower, unpaved pathways, a 15-mile-per-hour design speed is adequate.

Providing adequate stopping sight distance (the distance required to bring a bicycle traveling at the pathway's design speed to a complete, controlled stop) is critical for bicycle and pedestrian safety. Paved or unpaved multi-use trails should maintain a minimum sight distance of 150 feet for bicyclists.

#### **IN-LINE SKATERS**

In-line skating is another activity on trails, particularly in urban areas. Multi-use trails

that accommodate pedestrians and cyclists are likely to attract in-line skaters as well. Generally, in-line skaters prefer a paved surface. They require the same trail width as a bicyclist (10-foot minimum) and the same overhead clearance as a pedestrian (7-foot minimum).

#### **OTHER USERS**

When designing the trail, take into consideration how well the trail will accommodate baby strollers, people walking their pets, birdwatchers and other occasional—often slower—users.

#### **ACCESSIBILITY**

The trail should be designed to be accessible—free of barriers and obstructions—and usable by people in wheelchairs.

The primary sources of information for developing accessible standards are the Uniform Federal Accessibility Standards and the Americans with Disabilities Act Accessibility Guidelines.

## SUB-GRADE, SUB-BASE AND TRAIL SURFACE

It is easy to assume that the difference between a smooth trail and a bumpy one is the material used to surface the trail. This is rarely the case.

The sub-grade is the native soil mass of the surrounding landscape; the sub-base is a man-made layer of stone and rock constructed on top of the sub-grade; the trail surface is the material installed on top of the sub-base. Working together as a unit, the structural qualities of these three components determine the strength and quality of the trail. Properly evaluated, designed and constructed, these layers will result in a trail with a smooth surface that will require little maintenance over many years.

### Sub-Grade

The sub-grade is the trail's foundation. To be suitable for trail development, the sub-grade must be able to accommodate the trail's intended uses. The suitability and structural properties of the sub-grade will determine how the sub-base and trail surface must be designed and constructed. A highly suitable sub-grade has moderate slopes, good drainage and firm, dry soils.

Soil composition is the most important factor in determining the sub-grade's structural

suitability. The best foundation for a multi-use trail is firm, well-drained soil.

Proper drainage is defined as the efficient removal of excess water from the trail cross section. Proper drainage of the surface and subsurface waters is the most important consideration in trail design, construction and management. Improper drainage will have the greatest detrimental impact on the surface and sub-grade of a trail.

### Sub-Base

The sub-base lies between the sub-grade and the trail surface and serves as a secondary, built foundation for the trail surface. The purpose of the sub-base is to transfer and distribute the weight from the trail surface to the sub-grade. The sub-base serves a vital drainage function, preventing water from migrating up from the sub-grade into the trail's surface. It also allows natural cross drainage to flow through the trail cross section.

Sub-base is usually made up of graded aggregate stone (gravel), which provides bearing strength and improves drainage. The thickness of the sub-base is dependent on the condition of the sub-grade. As a general rule, the sub-base should be four to eight inches

thick. Four inches is sufficient if the sub-grade is in excellent condition; up to eight inches may be required if the sub-grade is in poor condition.

The sub-base can be placed by either hand or machine and should be compacted with a mechanical roller. The sub-base surface should be smooth and level because the trail surface will only be as firm, smooth and resilient as the sub-base and sub-grade.

### Design Load

The trail's design load is another factor influencing depth of the sub-base. Design load is the maximum weight that the trail can carry at any point along its length. The trail should be accessible by emergency vehicles, such as police cars and ambulances. The minimum design load based on static wheel load (at each axle) should be 5,000 pounds, and the minimum design load based on gross vehicle weight should be at least 12,000 pounds. The maximum speed for vehicles equaling the weight of the design load should be 15 miles per hour.

### Trail Surface

Many trail surface types are available for multi-use trails. Surface materials are either

hard or soft, defined by the material's ability to absorb or repel water. Hard surfaces include soil cement, crushed stone, asphalt and concrete. Soft surfaces include wood chips and natural earth.

Hard surface materials are more practical for multi-use trails. They are more expensive to purchase and install, but require less maintenance and can withstand heavier use. Hard surfaces also accommodate the widest range of trail users. Some hard trail surfaces are softer than others.

Trail surfacing can be used to encourage or discourage particular types of use. If you want to encourage as many users as possible, choose one of the hardest surface types. Surface type can also be used to control the speed of travel on the trail. The softer the trail surface, the slower the speed.

When selecting a trail surface material, a number of factors need to be considered: availability of the surface material, purchase cost, installation cost, life expectancy, accessibility, and maintenance cost and user types.

Keep in mind that the trail surface can be upgraded at some future time if construction funding resources are insufficient or usage

dictates a more substantial surface. Dozens of high-quality rail-trail projects have been developed in this way. After a trail is open, even with a less than ideal surface, support for it grows quickly and public pressure grows to develop a higher-quality facility.

### **HARD SURFACE TYPES**

#### **Crushed Stone**

This trail surface type is very popular because it accommodates a wide variety of trail users and can be compacted into a firm surface. It can be composed of a variety of different stone types; the most frequently used is limestone. The rock is crushed into a fine material and densely compacted to hold up extremely well under heavy use. This surface is most compatible with the natural environment and complements the aesthetic appeal of surrounding landscapes and historic transportation corridors.

If this surface is finely crushed and properly packed, it can accommodate virtually every trail user, from joggers to cyclists. It also works well for people using wheelchairs as long as the stone diameter is less than 3/8 inch. Mixing stone dust with the stones provides a smoother surface because the dust can act as a binding agent, decreasing the

“marble” effect of gravel. This surface type is not suitable for in-line skates or skateboards.

For the best surface, spread the stone with a paving machine four inches thick over a prepared sub-grade and then compact it using a motorized roller to two inches.

Crushed-stone trails require a minimum amount of maintenance. Generally, they will need to be resurfaced every 7 to 10 years. Spot repairs and some re-grading will be required over that span of time.

Crushed-stone trail surfaces are most prone to damage in spring when the frozen trail surface begins to thaw. Even cyclists can put a “groove” into a crushed-stone surface during “mud season.”

#### **Asphalt**

Popular in a wide variety of trail settings, this trail surface works particularly well on trails that are used for bicycle commuting and in-line skating. Cross-country skiers and snowmobilers find that snow tends to melt more quickly on asphalt surfaces because the black pavement absorbs the heat from the sun. In addition, equestrians do not like to use an asphalt trail because it is hard on horses' hooves, and the hooves can leave imprints in the asphalt in hot weather.

Asphalt is actually “cement” comprising tar, oils and stone. In asphalt concrete surface, a graded aggregate stone is mixed with asphalt. Small aggregate stones result in a smooth surface with few voids. Coarse grades of stone result in a rough, porous surface.

Asphalt conforms to the contours of the sub-grade and sub-base. If they have been prepared properly, the surface will be smooth and level. Asphalt should be installed two inches thick with a paving machine and compacted by a roller.

### At-Grade Crossings

The proper design of roadway and railroad track crossings is an important component of a well-designed trail.

The number-one priority of a road crossing design is safety. This means proper signage to warn trail users of an approaching road crossing and signage to make roadway drivers aware of an approaching pedestrian crossing. Sightlines should be clear for a distance that will allow trail users to determine a safe interval between vehicles to cross the roadway.

All at-grade road crossings should be designed to be perpendicular to the traffic flow, i.e., not at an angle.

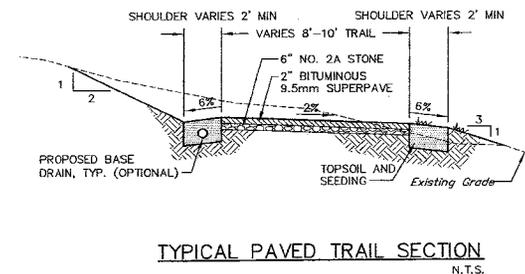
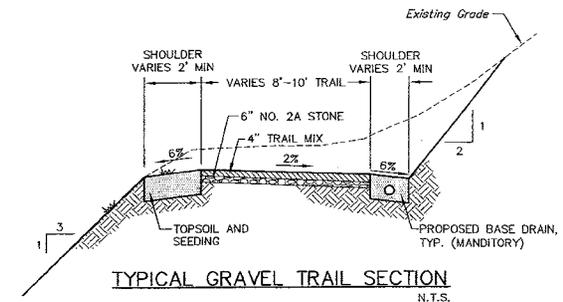
On light-volume roads (roads with less than 4,000 vehicles per day with a posted speed of 30 miles per hour), a crosswalk with appropriate signage for both road and trail users is considered an acceptable standard. On higher-volume roads (roads with 4,000 to 6,000 vehicles per day with a posted speed of more than 40 miles per hour), a traffic signal that is activated by trail users is the accepted standard. Lowering the speed limit to less than 40 miles per hour should be considered if a traffic signal isn't desirable.

To control trail access from roadways, bollards or gates should be installed. If gates are used, a five-foot side opening is required to permit passage of bicycles and wheelchairs.

If the trail needs to cross railroad tracks, it should be at a right angle to the rails. The more the crossing deviates from this angle, the greater the potential for a cyclist's front wheel to be trapped in the rail flangeway, causing loss of steering control. It is important that the trail crossing be at the same elevation as the rails.

Consideration should be given to the materials of the crossing surface and to the flangeway depth and width. If the crossing angle is less than 45 degrees, consider

widening the trail to give cyclists adequate room to cross the tracks at a right angle. If this is not possible, compressible flangeway fillers can enhance cyclists' safety while allowing trains to continue operating. Place railroad-crossing warning signs and pavement markings on the trail.



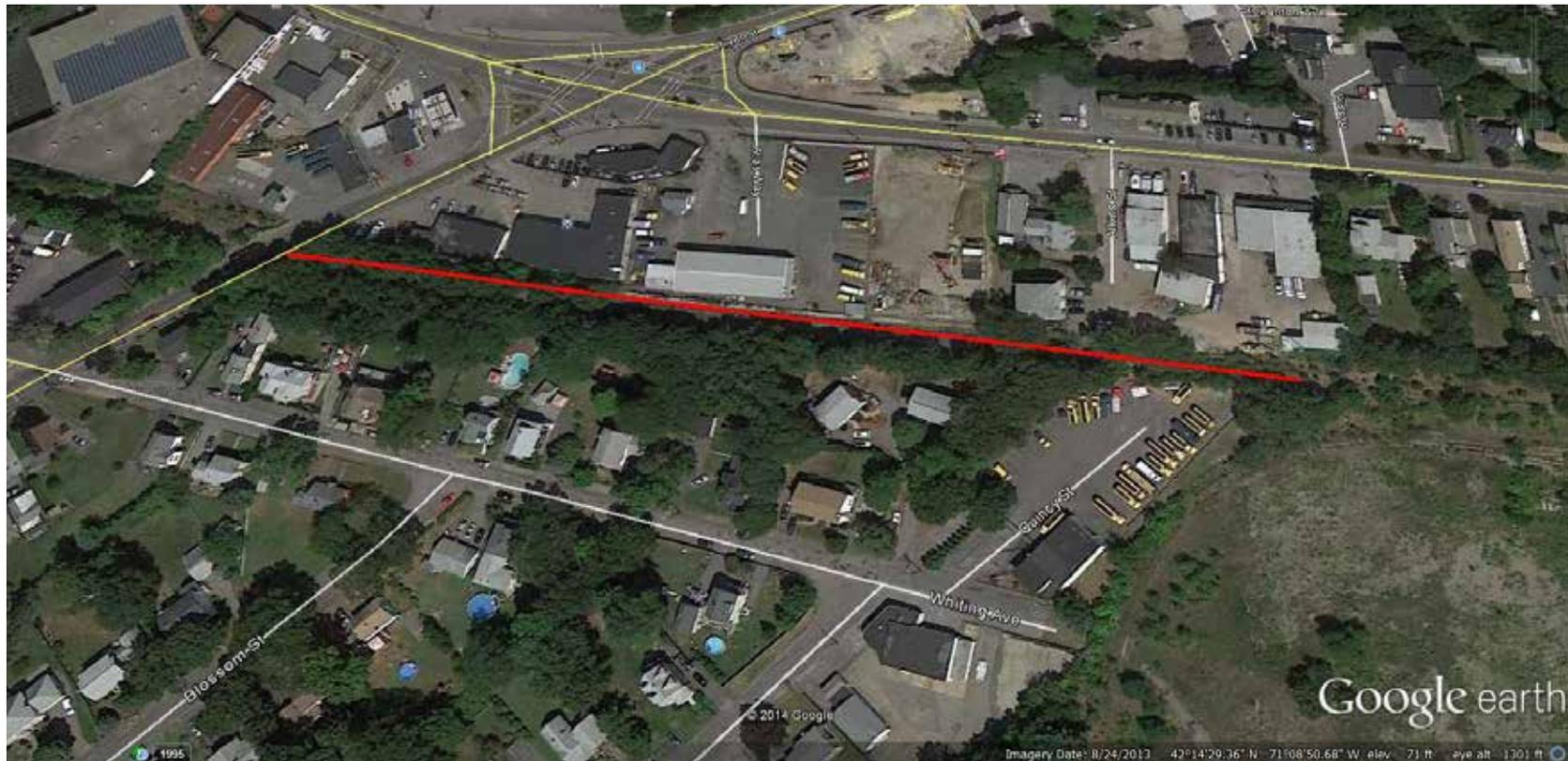
## TRAIL ALIGNMENT

It is recommended that the entire length of the Dedham Greenway consists of a 10-foot wide asphalt surface with 2-foot shoulders on each side of the asphalt surface; the shoulders may consist of a mowed grass strip or a crushed-stone strip.

### SEGMENT 1

#### Readville to River Street

The Dedham Greenway in this segment would occupy an elevated former railroad bed for approximately 0.2 miles. Street access currently does not exist at the Readville end of this segment. An accommodation needs to be developed to facilitate parking for trail users at the end of Whiting Avenue and a connection from parking to the trail—a distance of approximately 0.06 miles. Due to the elevated nature of the former rail bed, it is recommended that split-rail fencing be installed along any steep slopes.



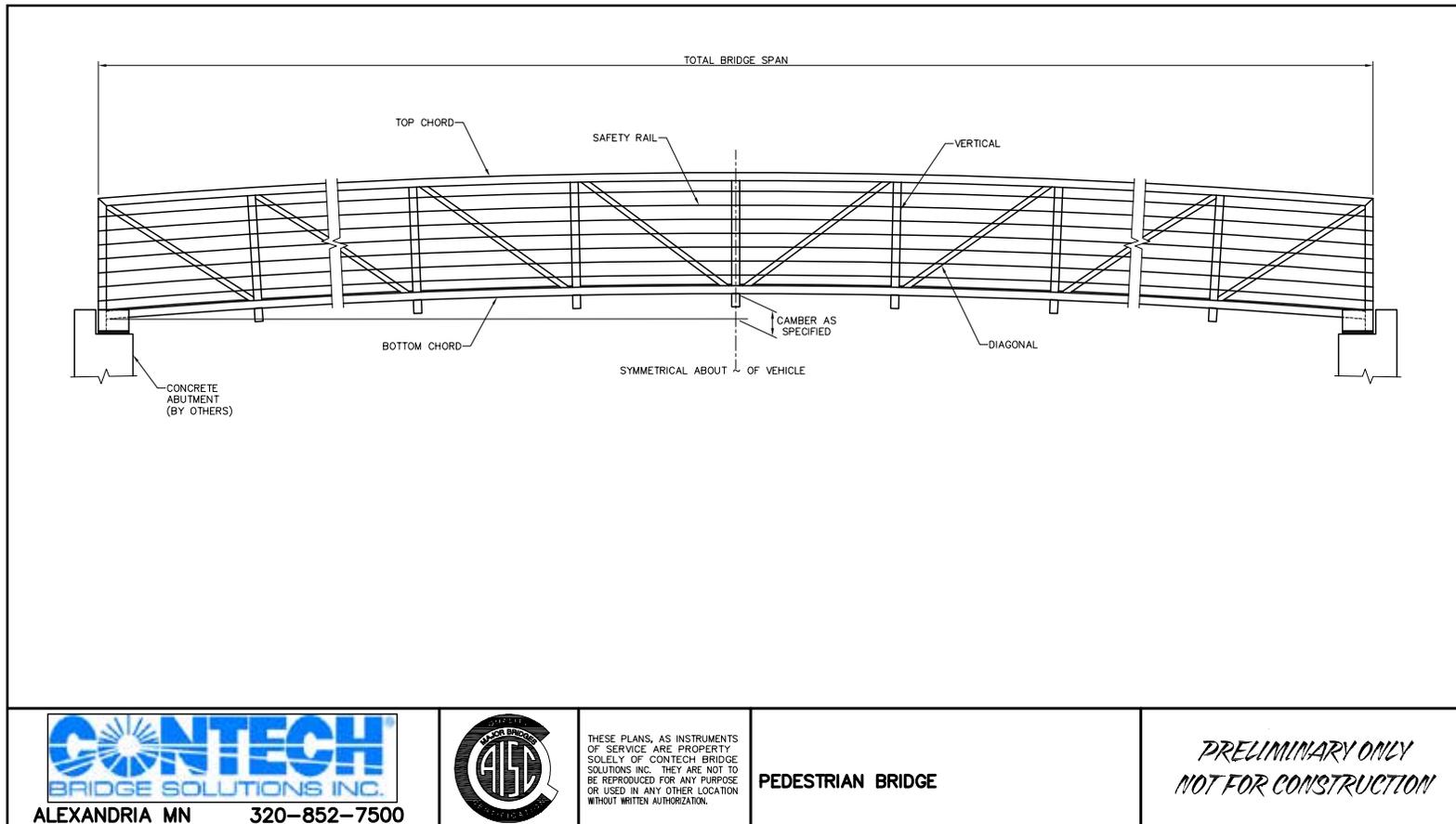
## SEGMENT 2

### River Street

It will be necessary to construct a bridge to carry the Dedham Greenway across River Street. The abutments from the former railroad

bridge are still in place. No testing has been conducted to determine if these abutments would support a new bridge structure or if they are tall enough to meet MassDOT (Massachusetts Department of Transportation) standards for bridge height.

The following is a preliminary drawing for a prefabricated bridge that is recommended for the crossing of River Street.

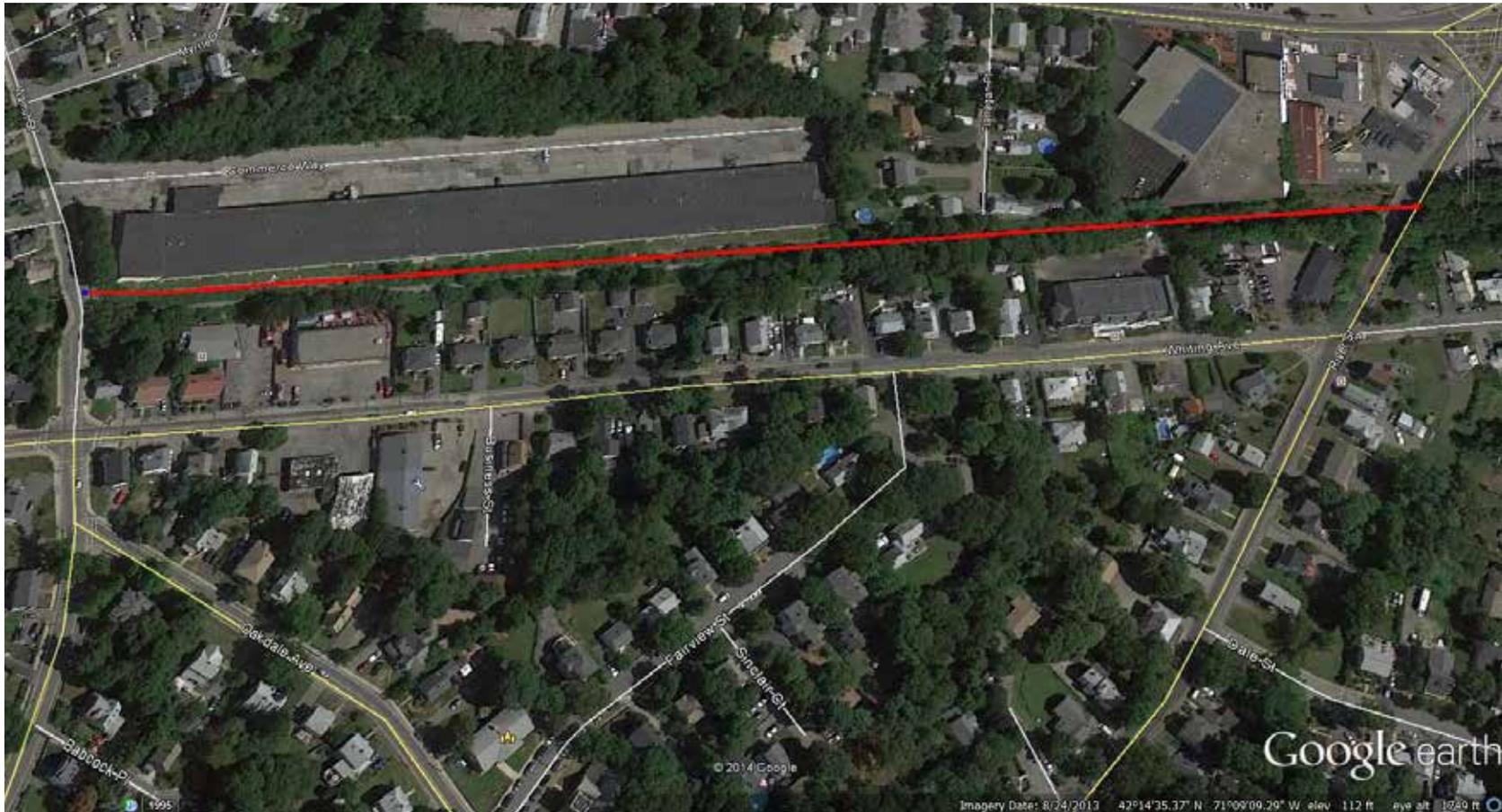


## SEGMENT 3

### River Street to Walnut Street

This approximately 0.4-mile segment along the former railroad bed is heavily overgrown, and on-the-ground reconnaissance was not

conducted for that reason. Based on comments made during the public meeting, we have ascertained that there are some significant drainage issues that must be addressed in this segment. Also, this segment passes behind a number of personal residences on Whiting Avenue. Accommodations will need to be negotiated with these property owners to protect their privacy.

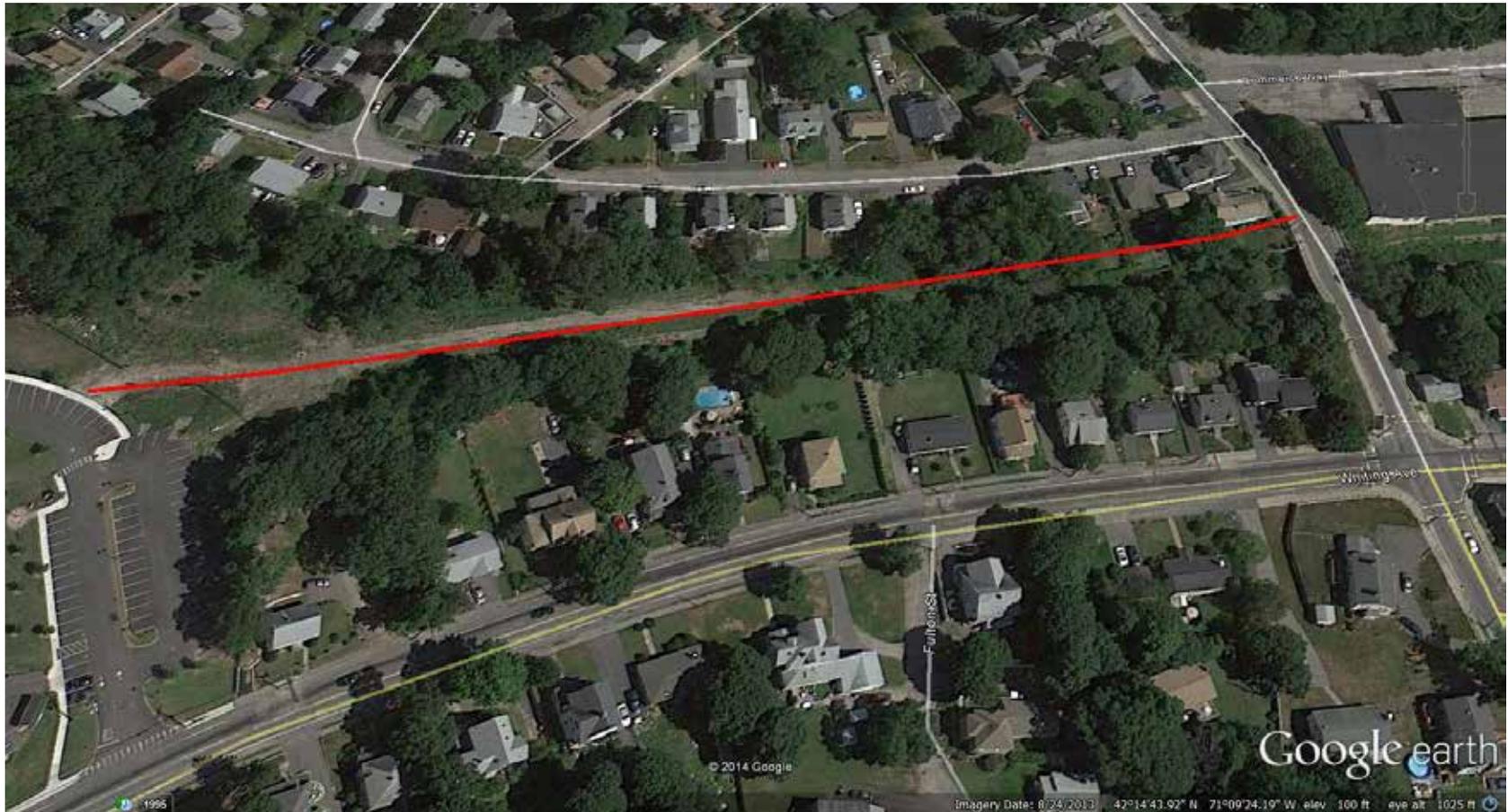


## SEGMENT 4

### Walnut Street to Avery School Boundary

Some improvement was conducted in this 0.2-mile segment, which included clearing grading and plating trees. Some crushed stone was

also placed along this segment. Further improvements are required to accommodate the recommended asphalt surface and to allow for proper drainage. This segment is also bordered by residential housing. Dedham will have to work with these property owners to address privacy concerns.



## SEGMENT 5

### Avery School

Through this segment, walkers would use the existing sidewalk and cyclists would use the existing driveway to pass through the Avery School property. The greenway picks up again at the end of the Avery School sidewalk.

Alternatives will need to be looked at for passage through this section, such as including a sidewalk on the opposite side of the existing sidewalk to accommodate walkers using the trail and/or a bike lane incorporated into the driveway.



**SEGMENT 6****Avery School to Mount Vernon Street**

This 0.06-mile segment is currently heavily overgrown, and on the

ground reconnaissance was not conducted. From the end of the Avery School sidewalk to Mount Vernon Street, the slope declines so that at Mount Vernon Street the corridor is in a cut. On one side of this segment are public tennis courts, and on the other a couple of private residences that are grade separated from the corridor.



## SEGMENT 7

### Mount Vernon Street

At one time, a bridge carried Mount Vernon Street over the railroad corridor. With the abandonment of the railroad corridor, the bridge was removed and the cut filled. To accommodate the passage of the

Dedham Greenway, a culvert will need to be installed where the Mount Vernon Street fill currently exists. This will require either a temporary closure of Mount Vernon Street or a reduction to one lane while fill is removed and the box culvert installed. Accommodation will have to be made for storm water runoff from Mount Vernon Street. Below is a rendering of what the Mount Vernon Street underpass may look like.



## SEGMENT 8

### Mount Vernon Street to East Street

This 0.25-mile segment provides the most opportunity for creative trail development. It is a cut with residential housing along Avery Street grade separated from the corridor. The area was asphalt paved

at one time, but the surface is currently in poor condition due to lack of maintenance and the growth of trees and weeds. This area is much wider than a standard single-track rail bed. The Dedham Greenway could follow a serpentine course passing by raised flower beds and sitting areas. Below is a rendering of what this segment could look like once the Dedham Greenway is developed.



## OPINION OF PROBABLE COSTS

### Construction Costs

In the opinion of Rails-to-Trails Conservancy, the probable construction costs for the Dedham Greenway from Readville to East Street in Dedham will be approximately \$1.4 million.

This figure does not include design and engineering expenses, which can generally be estimated at about 20 percent of total construction costs. The analysis supporting this estimate of probable construction costs follows in the tables below. These probable costs are based upon April 2014 estimates.

Segment	Description	Sub-Total
1	Readville to River Street	\$181,632
2	River Street Pedestrian Bridge	\$78,000
3	River Street to Walnut Street	\$316,800
4	Walnut Street to Avery School	\$158,400
5	Avery School Pass Through	
6	Avery School to Mt. Vernon Street	\$48,000
7	Mt. Vernon Street Underpass	\$400,000
8	Mt. Vernon Street to East Street	\$198,000
TOTAL		\$1,380,832

# COSTS

## SEGMENT 1

	Length/Linear Feet	Unit Costs	Subtotal
Readville to River Street			
10-foot asphalt trail	1,056	\$150	\$158,400
Split-rail fence	2,112	\$11	\$23,232

## SEGMENT 2

	Length/Linear Feet	Unit Costs	Subtotal
River Street Pedestrian Bridge			
Pedestrian Bridge	60	\$40,000	\$40,000
CONTECH Bridge Solutions			
Design/Survey/Bid			\$12,000
Construct Footings			\$11,000
Assemble and Set Bridge			\$15,000

## SEGMENT 3

	Length/Linear Feet	Unit Costs	Subtotal
River Street to Walnut Street			
10-foot asphalt trail	2,112	\$150	\$316,800

## SEGMENT 4

	Length/Linear Feet	Unit Costs	Subtotal
Walnut Street to Avery School			
10-foot asphalt trail	1,056	\$150	\$158,400

## SEGMENT 5

	Length/Linear Feet	Unit Costs	Subtotal
Avery School Pass Through			

## SEGMENT 6

	Length/Linear Feet	Unit Costs	Subtotal
Avery School to Mt. Vernon Street			
10-foot asphalt trail	320	\$150	\$48,000

## SEGMENT 7

	Length/Linear Feet	Unit Costs	Subtotal
Mt. Vernon Street Underpass			
	1		\$400,000

## SEGMENT 8

	Length/Linear Feet	Unit Costs	Subtotal
Mt. Vernon Street to East Street			
10-foot asphalt trail	1,320	\$150	\$198,000

## POTENTIAL FUNDING SOURCES

### FEDERAL FUNDING SOURCES

Bicycle and pedestrian projects are broadly eligible for funding from almost all major federal-aid highway, transit, safety and other programs. Bicycle projects must be principally for transportation rather than recreation purposes, and must be designed and located pursuant to the transportation plans required of states and metropolitan planning organizations (MPOs). Additional federal funding sources not directly related to transportation can be used creatively to enhance and restore open space, wetlands and wildlife habitat along trails, and also fund interpretation of cultural and natural resources.

#### Land and Water Conservation Fund (LWCF)

LWCF was established in 1965 to help provide “close-to-home park and recreation opportunities throughout the nation. Money for the fund comes from the sale or lease of non-renewable resources, primarily federal offshore oil and gas leases and surplus federal land sales. A large portion of the annual LWCF allocation goes toward acquisition of land for federal land management agencies; however, a portion of the money is provided to cities, counties and park districts to acquire land and develop parks.

LWCF funds are provided to each state annually by the National Park Service. State funding is based on a population formula. A state administers the program through a State Liaison Officer, who recommends projects to the National Park Service for approval. Local governments are eligible applicants. Communities must be able to match LWCF grants with a 50 percent provision of funding or services.

In order to qualify for funding, a project must meet two criteria. First, the project must be primarily for recreation purposes, not transportation. Second, the organization leading the project must

guarantee that the project will be maintained in perpetuity for public recreational use. Any deviation from recreational use must be approved by the National Park Service, and property of at least equal recreational value must be provided to replace the loss.

Additional information can be found on the National Park Service website at [www.nps.gov/lwcf](http://www.nps.gov/lwcf).

Contact:

Melissa Cryan

617.626.1171

[melissa.cryan@state.ma.us](mailto:melissa.cryan@state.ma.us)

#### Recreational Trails Program (RTP)

RTP provides funds to the states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. RTP is an assistance program of the U.S. Department of Transportation Federal Highway Administration (FHWA). Federal transportation funds benefit various types of recreation, including hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving or using other off-road motorized vehicles.

The Moving Ahead for Progress in the 21st Century Act (MAP-21) reauthorized RTP through federal fiscal years 2013 and 2014 as a set-aside from the federal Transportation Alternatives Program. The amount set aside is equal to the state’s fiscal year 2009 RTP apportionment. (From fiscal year 1993 through fiscal year 2012, RTP funds were distributed to the states by legislative formula; half of the funds were distributed equally among all states, and half were distributed in proportion to the estimated amount of non-highway recreational fuel use in each state.)

RTP funds come from the Federal Highway Trust Fund and represent a portion of the motor fuel excise tax collected from non-highway recreational fuel use: fuel used for off-highway recreation by snowmobiles, all-terrain vehicles, off-highway motorcycles and off-highway light trucks.

Each state administers its own program. Contact your state's RTP administrator for guidance on state policies and project eligibility requirements.

Massachusetts Contact:

Paul Jahnige, Director of Trails and Greenways  
 Department of Conservation and Recreation (DCR)  
 136 Damon Road  
 Northampton, MA 01060-1818  
 Tel: 413.586.8706x20  
 Fax: 413.784.1663  
 paul.jahnige@state.ma.us

**Congestion Mitigation and  
 Air Quality Improvement Program (CMAQ)**

CMAQ funds are authorized for transportation projects within non-attainment areas defined by the Clean Air Act Amendments of 1990. To be funded, projects must contribute to attainment of the National Ambient Air Quality Standards. Funds may be used for either construction of bicycle transportation facilities and pedestrian walkways or non-construction projects (such as maps, brochures, public service announcements related to safe bicycle use). Funding is provided through an 80 percent federal-20 percent state/local match.

Additional information is available on the FHWA web site at [www.fhwa.dot.gov/environment/cmaqpgs/index.htm](http://www.fhwa.dot.gov/environment/cmaqpgs/index.htm).

**Transportation Alternatives Program (TA)**

TA program projects are federally funded, community-based projects that expand travel choices and enhance the transportation experience by integrating modes and improving the cultural, historic and environmental aspects of our transportation infrastructure. TA projects must be 1 of 10 eligible activities and must relate to surface transportation.

For example, projects can include the creation of bicycle and pedestrian facilities, streetscape improvements, refurbishment of historic transportation facilities and other investments that enhance communities, connections and access. The federal government provides funding for TA projects through our nation's federal-aid highway transportation legislation.

Eligible activities include conversion of abandoned railway corridors to trails; acquisition of railroad rights of way; planning, design and construction of multi-use trails and rail-with-trail projects.

Ned Codd, P.E.  
 Assistant Secretary for GreenDOT  
 Massachusetts Department of Transportation  
 10 Park Plaza, Boston, MA 02116  
 Codd, Ned (DOT) <[ned.codd@state.ma.us](mailto:ned.codd@state.ma.us)>  
 Phone: 857-368-9021  
[www.mass.gov/massdot](http://www.mass.gov/massdot)

## **Safe Routes to School (SRTS)**



SRTS is a federal-aid program of the U.S. Department of Transportation's Federal Highway Administration (FHWA). The program provides funds to states to improve the ability of primary and middle school students to walk and bicycle to school.

SRTS is managed by MassDOT through our MassRIDEstravel options team to promote walking and bicycling to school in order to improve students' health, reduce traffic congestion and improve air quality in Massachusetts communities. This program is a key initiative of the Healthy Transportation Compact.

For more information, go to <http://safety.fhwa.dot.gov/saferoutes/> or [www.saferoutesinfo.org](http://www.saferoutesinfo.org).

## **STATE OF MASSACHUSETTS SOURCES**

### **Community Preservation Act (CPA)**

This Commonwealth act allows a municipality to add an increment to local property taxes that goes into a fund that may be used for historical preservation, low-income housing and open space; the funds raised are currently matched 1:1 by the Commonwealth. Trails are one of the approved uses under CPA.

This is a likely source of funding for the local portion of the cost of rail-trails in Sudbury, Concord and Acton—communities that have passed the CPA. The use of CPA funds must be approved by the local CPC before going to Town Meeting for final approval.

## **Parkland Acquisitions and Renovations for Communities**

Administered by the Executive Office of Energy and Environmental Affairs (EEA), this program

funds the acquisition, development or renovation of parks or outdoor recreation facilities. Awards range from \$50,000 to \$500,000. Learn more at [www.mass.gov/eea/dcs-grants](http://www.mass.gov/eea/dcs-grants).

## **FOUNDATIONS AND OTHER PRIVATE GRANT PROGRAMS**

### **Kodak American Greenways Program**

Eastman Kodak Company, The Conservation Fund and the National Geographic Society team up each year to present the Kodak American Greenways Awards Program. One major element of the program involves "seed" grant awards to organizations that are growing our nation's network of greenways, blueways, trails and natural areas.

Operated by The Conservation Fund, this program invites land trusts, local governments and other organizations to submit proposals for small greenway project grants. Funded projects typically advance one or more of the following Program goals:

- Catalyzing new greenway projects
- Assisting grassroots greenway organizations
- Leveraging additional money for conservation and greenway development
- Promoting use and enjoyment of greenways

More information is available on The Conservation Fund website at [www.conservationfund.org/kodak\\_awards](http://www.conservationfund.org/kodak_awards).

### **Bikes Belong Grant Program**

Connecting communities, one bike project at a time

The Bikes Belong Grant Program strives to put more people on bicycles more often by funding important and influential projects that leverage federal funding and build momentum for bicycling in communities across the U.S. These projects include bike paths and rail-trails, as well as mountain bike trails, bike parks, BMX facilities and large-scale bicycle advocacy initiatives.

Additional information on the grant program is available on the Bikes Belong website at [www.bikesbelong.org/grants](http://www.bikesbelong.org/grants).

#### **PeopleForBikes Community Grant Program**

The program provides funding for important and influential projects that leverage federal funding and build momentum for bicycling in communities across the U.S. These projects include bike paths and rail trails, as well as mountain bike trails, bike parks, BMX facilities, and large-scale bicycle advocacy initiatives.

Since 1999, we have awarded 272 grants to non-profit organizations and local governments in 49 states and the District of Columbia. Our investments total nearly \$2.5 million and have leveraged \$650 million in public and private funding.

The PeopleForBikes Community Grant Program is supported by bicycle industry partners.





**Northeast Regional Office** / 2133 Market Street, Suite 222 / Camp Hill, PA 17011  
tel 717.238.1717 / fax 717.238.7566 / [www.railstotrails.org](http://www.railstotrails.org)

**National Headquarters** / 2121 Ward Court, NW, 5th Floor / Washington, DC 20037  
tel 202.331.9696 / fax 202.223.9257 / [www.railstotrails.org](http://www.railstotrails.org)