Community Path Feasibility Study
School Street to Cambridge Line

City of Somerville
Mayor’s Office of Strategic Planning & Community Development
April 6, 2006
Presentation Outline

- Project Overview
- Project Segments / Alternate Alignments
- Project Components
- Alternative Analysis
- Questions
Project Overview

- Project Context
- Previous Feasibility Study
- Project Locus
Project Context

Map showing project context with various locations and paths:
- Minuteman Commuter Bikeway
- Mystic Way Path
- Alewife Brook
- Community Path
- Lechmere
- Grand Junction
- Waltham
- Lexington
- Medford

Legend:
- Existing path
- Potential path
- Path under study
- Path under design
- MBTA Station

20 Minuts bike ride @ 10 mph
Existing Path Images
Existing Path Images
Existing Path Section
Previous Feasibility Study

- Two public meetings held in January 2001
- Study finalized May 2001
- Conclusions
  - Strong community interest in the development of a separate trail
  - Recommended development of path along west side of railroad
  - Develop new retaining walls that allow path
Previous Feasibility Study

NH Mainline (Lowell Line)

Recommended Alignment
Fitchburg Line
McGrath Highway
I-93
Lowell Line
Project Locus
Project Segments / Alternate Alignments

- School Street
- Medford Street
- Walnut Street
- McGrath Highway
- Cross Street
- Washington Street
- Fitchburg Line
Existing Conditions

- 7 Corridor Segments
- 7 Major Crossings
Project Crossings

- School Street  ➢  1-lane w/ parallel parking
- Medford Street ➢  2-lane w/ parallel parking
- Walnut Street  ➢  1-lane w/ parallel parking
- McGrath Highway ➢  6-lane arterial
- Cross Street   ➢  2-lane
- Washington Street ➢  6-track bridge
- Fitchburg Line ➢  Former Red Bridge
School Street Crossing
Project Segment No. 1
Alternate Path Alignment
Medford Street Crossing
Underpass
Pedestrian Underpass

Alternate Path Alignment
Walnut Street Crossing
Project Segment No. 3
Alternate Path Alignment
Alternate Path Alignment
Alternate Path Alignment
Cross Street Crossing
Project Segment No. 5
Project Segment No. 5
Project Segment No. 5
Alternate Path Alignment
RWT Track Overcrossing

Source: Rails with Trails: Lessons Learned - 2002. USDOT
Cantilevered Walk
Cantilevered Walk - Example
Washington Street Crossing
Washington Street Crossing
Washington Street Bridge

Abandoned Rail Bed

Freight

Commuter Rail

Spur to BET
Washington Street Bridge

Original Bridge (1920)
- Community Path
- Green Line Extension
- Commuter Rail

Bridge Ext. (1927)
- Commuter Rail
- Freight Line

Washington St.
Project Segment No. 6
Red Bridge Crossing
Project Segment No. 7
Project Components

- Rail-with-Trail
- Dynamic Envelope
- Constrained Sections
- Fencing
- Crossings
- Walls
Project Type

- Rail-with-Trail (RWT)

Any shared use path or trail located on or directly adjacent to an active railroad corridor.
RWT Projects

- Regional Examples
  - Lowell Canal Trail
  - Southwest Corridor Park
  - Neponset River Trail
  - Blackstone River Bikeway, RI
  - Eastern Promenade Trail, ME
Dynamic Envelope Delineation
Constrained Sections

Source: Rails with Trails: Lessons Learned - 2002. USDOT
Fencing Styles

Source: Rails with Trails: Lessons Learned - 2002. USDOT

Type-I Picket Fence
Where trespassing is not as much of a problem, a low wood rail fence can still serve as an effective reminder to trail users to stay off the tracks.

Type-II Post and Cable
This inexpensive fence is occasionally requested by a railroad or used on a RWT primarily where trespassing has not been an historical problem, there is adequate setback, and the fence serves primarily to demarcate the railroad property boundaries. The fence does not provide any screening or anti-trespassing features.

Type-III Chain-Link
Chain-link fences are popular due to their effectiveness in keeping trail users off the tracks, relative low cost, and ease of maintenance. Chain-link fence may not be appropriate for rural areas where there is no history of trespassing, or for areas with a high history of trespassing, since it is very easy to cut and vandalize. Most chain-link fences are visually unappealing and tend to project an image of an urban industrial environment. For this reason, trail designers should explore using other, more appealing types of fences whenever possible.

Type-IV Vinyl Coated Chain-Link
Similar to Type II, but with either a plastic woven fabric or wood battens in the chain-link material providing a solid-type barrier to help catch debris and provide wind and visual buffering.

Type-V Israeli Style Steel Fence
Sometimes referred to as “Israel-style” fencing for its use in Israel to protect kibbutzim, this product is more expensive than chain link, difficult to vandalize, difficult to scale, and relatively easy to repair if it is cut. It would be inappropriate for areas requiring aesthetic treatment, and provides limited screening or buffering benefits.

Type-VI Wrought Iron Picket Fence
This is the ultimate in vandal resistant fencing, and is used in locations that have a history of trespassing. It is virtually impossible to cut and difficult to scale. Because of its cost and visual impact, it is typically used at specific locations rather than along the entire corridor.

Type-VII Wall
Very rarely used due to its cost and visual impact, solid concrete block walls are virtually indestructable and offer complete buffering and screening from rail debris or trains. A wall may be appropriate where a RWT must be placed very close to tracks for short distances. Walls are most commonly used in areas where a grade separation requires retaining wall adjacent to the trail. Wall design in active rail corridors should be carefully coordinated with rail engineers, because they can have an effect on the structural integrity of the rail bed, alter drainage patterns in the rail corridor, and, in some circumstances, impede railroad access by railroad maintenance equipment.
Road Crossing

Midblock Path Crossing


Varies - see MUTCD Section 9B

30 m (100 ft)  2.4 m (8 ft)  10 m (30 ft)  2.4 m (8 ft)

Roadway
Intersection traffic control devices as warranted depending on conditions.
See MUTCD.

Path
HWY

XING

15 m
1.2 m (4 ft)
1.5 m (5 ft)
1.2 m (4 ft)

W2-1
Diagonal Road Crossing

Road Crossing
Retaining Walls
Alternate Analysis

- Alternate 1
- Alternate 2
- Alternate 3
- Alternate 3 Modified
## Concept: Pros / Cons

<table>
<thead>
<tr>
<th>Alternate #1</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
|              | low impact to railroad R.O.W.  
short term ability to construct | indirect route  
street crossings (8)  
op poor vertical/horizontal alignment  
walls / easements  
new pedestrian bridge (1) |

<table>
<thead>
<tr>
<th>Alternate #2</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
|              | moderate impact to Railroad R.O.W.  
Improved alignment | bridge modifications (2)  
street crossings (2)  
new pedestrian bridge (2)  
walls / easements |

<table>
<thead>
<tr>
<th>Alternate #3</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
|              | preferred alignment  
coordinates w/ greenline extension  
shared costs | requires portion of railbed  
bridge work (2)  
new pedestrian bridge (1)  
walls / easements |
## ALTERNATE #1

<table>
<thead>
<tr>
<th>Segment</th>
<th>Project Type</th>
<th>Length (ft)</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Street</td>
<td>At-grade crossing</td>
<td>50</td>
<td>LF</td>
<td>200</td>
<td>$10,000</td>
</tr>
<tr>
<td>Segment 1</td>
<td>Bottom of embankment, access road</td>
<td>720</td>
<td>LF</td>
<td>500</td>
<td>$360,000</td>
</tr>
<tr>
<td>Medford Street</td>
<td>At-grade crossing</td>
<td>130</td>
<td>LF</td>
<td>200</td>
<td>$26,000</td>
</tr>
<tr>
<td>Segment 2</td>
<td>Along embankment</td>
<td>450</td>
<td>LF</td>
<td>2000</td>
<td>$900,000</td>
</tr>
<tr>
<td>Walnut Street</td>
<td>At-grade crossing</td>
<td>50</td>
<td>LF</td>
<td>200</td>
<td>$10,000</td>
</tr>
<tr>
<td>Segment 3</td>
<td>Along embankment, transition down</td>
<td>900</td>
<td>LF</td>
<td>2000</td>
<td>$1,800,000</td>
</tr>
<tr>
<td>McGrath Highway</td>
<td>At-grade crossing</td>
<td>150</td>
<td>LF</td>
<td>100</td>
<td>$15,000</td>
</tr>
<tr>
<td>Segment 4</td>
<td>Transition up, top of embankment</td>
<td>500</td>
<td>LF</td>
<td>2000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Cross Street</td>
<td>At-grade crossing</td>
<td>200</td>
<td>LF</td>
<td>200</td>
<td>$40,000</td>
</tr>
<tr>
<td>Segment 5</td>
<td>Sidewalk/path combination</td>
<td>700</td>
<td>LF</td>
<td>100</td>
<td>$70,000</td>
</tr>
<tr>
<td>Washington Street</td>
<td>At-grade crossing</td>
<td>110</td>
<td>LF</td>
<td>200</td>
<td>$22,000</td>
</tr>
<tr>
<td>Segment 6</td>
<td>Use railbed</td>
<td>2850</td>
<td>LF</td>
<td>100</td>
<td>$285,000</td>
</tr>
<tr>
<td>Fitchburg Line</td>
<td>New bridge over R.R.</td>
<td>135</td>
<td>LF</td>
<td>1500</td>
<td>$202,500</td>
</tr>
<tr>
<td>Segment 7</td>
<td>Use railbed</td>
<td>470</td>
<td>LF</td>
<td>100</td>
<td>$47,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>7415</strong></td>
<td></td>
<td></td>
<td><strong>$4,787,500</strong></td>
</tr>
</tbody>
</table>
## Alternate #2

<table>
<thead>
<tr>
<th>Segment</th>
<th>Project Type</th>
<th>Length (ft)</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Street</td>
<td>At-grade crossing</td>
<td>50</td>
<td>LF</td>
<td>200</td>
<td>$10,000</td>
</tr>
<tr>
<td>Segment 1</td>
<td>Along embankment</td>
<td>720</td>
<td>LF</td>
<td>2000</td>
<td>$1,440,000</td>
</tr>
<tr>
<td>Medford Street</td>
<td>New Box Culvert</td>
<td>130</td>
<td>LF</td>
<td>6000</td>
<td>$780,000</td>
</tr>
<tr>
<td>Segment 2</td>
<td>Along embankment</td>
<td>450</td>
<td>LF</td>
<td>2000</td>
<td>$900,000</td>
</tr>
<tr>
<td>Walnut Street</td>
<td>At-grade crossing</td>
<td>50</td>
<td>LF</td>
<td>200</td>
<td>$10,000</td>
</tr>
<tr>
<td>Segment 3</td>
<td>Along embankment, transition down</td>
<td>900</td>
<td>LF</td>
<td>2000</td>
<td>$1,800,000</td>
</tr>
<tr>
<td>McGrath Highway</td>
<td>Underpass</td>
<td>150</td>
<td>LF</td>
<td>200</td>
<td>$30,000</td>
</tr>
<tr>
<td>Segment 4</td>
<td>Transition up, top of embankment</td>
<td>500</td>
<td>LF</td>
<td>2000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Cross Street</td>
<td>At-grade crossing</td>
<td>60</td>
<td>LF</td>
<td>200</td>
<td>$12,000</td>
</tr>
<tr>
<td>Segment 5</td>
<td>Elevated structure</td>
<td>820</td>
<td>LF</td>
<td>4000</td>
<td>$3,280,000</td>
</tr>
<tr>
<td>Washington Street</td>
<td>Elevated structure</td>
<td>80</td>
<td>LF</td>
<td>4000</td>
<td>$320,000</td>
</tr>
<tr>
<td>Segment 6</td>
<td>Use railbed</td>
<td>2480</td>
<td>LF</td>
<td>100</td>
<td>$248,000</td>
</tr>
<tr>
<td>Fitchburg Line</td>
<td>New bridge over R.R.</td>
<td>135</td>
<td>LF</td>
<td>1500</td>
<td>$202,500</td>
</tr>
<tr>
<td>Segment 7</td>
<td>Use railbed</td>
<td>470</td>
<td>LF</td>
<td>100</td>
<td>$47,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>6995</strong></td>
<td></td>
<td></td>
<td><strong>$10,079,500</strong></td>
</tr>
</tbody>
</table>
## Alternate #3

<table>
<thead>
<tr>
<th>Segment</th>
<th>Project Type</th>
<th>Length (ft)</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Street</td>
<td>At-grade crossing</td>
<td>50</td>
<td>LF</td>
<td>200</td>
<td>$10,000</td>
</tr>
<tr>
<td>Segment 1</td>
<td>Along embankment</td>
<td>720</td>
<td>LF</td>
<td>2000</td>
<td>$1,440,000</td>
</tr>
<tr>
<td>Medford Street</td>
<td>New Box Culvert</td>
<td>130</td>
<td>LF</td>
<td>6000</td>
<td>$780,000</td>
</tr>
<tr>
<td>Segment 2</td>
<td>Along embankment</td>
<td>450</td>
<td>LF</td>
<td>2000</td>
<td>$900,000</td>
</tr>
<tr>
<td>Walnut Street</td>
<td>New Box Culvert</td>
<td>50</td>
<td>LF</td>
<td>6000</td>
<td>$300,000</td>
</tr>
<tr>
<td>Segment 3</td>
<td>Transition out into railbed</td>
<td>900</td>
<td>LF</td>
<td>750</td>
<td>$675,000</td>
</tr>
<tr>
<td>McGrath Highway</td>
<td>Relocate freight, use railbed</td>
<td>150</td>
<td>LF</td>
<td>550</td>
<td>$82,500</td>
</tr>
<tr>
<td>Segment 4</td>
<td>Relocate freight, use railbed</td>
<td>500</td>
<td>LF</td>
<td>550</td>
<td>$275,000</td>
</tr>
<tr>
<td>Cross Street</td>
<td>Relocate freight, use railbed</td>
<td>60</td>
<td>LF</td>
<td>550</td>
<td>$33,000</td>
</tr>
<tr>
<td>Segment 5</td>
<td>Relocate freight, use railbed</td>
<td>820</td>
<td>LF</td>
<td>550</td>
<td>$451,000</td>
</tr>
<tr>
<td>Washington Street</td>
<td>Use rail bridge</td>
<td>80</td>
<td>LF</td>
<td>400</td>
<td>$32,000</td>
</tr>
<tr>
<td>Segment 6</td>
<td>Use railbed</td>
<td>2480</td>
<td>LF</td>
<td>100</td>
<td>$248,000</td>
</tr>
<tr>
<td>Fitchburg Line</td>
<td>New bridge over R.R.</td>
<td>135</td>
<td>LF</td>
<td>1500</td>
<td>$202,500</td>
</tr>
<tr>
<td>Segment 7</td>
<td>Use railbed</td>
<td>470</td>
<td>LF</td>
<td>100</td>
<td>$47,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>6995</strong></td>
<td></td>
<td></td>
<td><strong>$5,476,000</strong></td>
</tr>
</tbody>
</table>
### ALTERNATE #3-Modified

<table>
<thead>
<tr>
<th>Segment</th>
<th>Project Type</th>
<th>Length (ft)</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Street</td>
<td>At-grade crossing</td>
<td>50</td>
<td>LF</td>
<td>200</td>
<td>$10,000</td>
</tr>
<tr>
<td>Segment 1</td>
<td>Along Gillman Station (shared cost*)</td>
<td>720</td>
<td>LF</td>
<td>1000</td>
<td>$720,000</td>
</tr>
<tr>
<td>Medford Street</td>
<td>New Bridge (shared cost*)</td>
<td>130</td>
<td>LF</td>
<td>6000</td>
<td>$780,000</td>
</tr>
<tr>
<td>Segment 2</td>
<td>Along embankment</td>
<td>450</td>
<td>LF</td>
<td>2000</td>
<td>$900,000</td>
</tr>
<tr>
<td>Walnut Street</td>
<td>New Bridge (shared cost*)</td>
<td>50</td>
<td>LF</td>
<td>6000</td>
<td>$300,000</td>
</tr>
<tr>
<td>Segment 3</td>
<td>Use railbed*</td>
<td>900</td>
<td>LF</td>
<td>200</td>
<td>$180,000</td>
</tr>
<tr>
<td>McGrath Highway</td>
<td>Use railbed*</td>
<td>150</td>
<td>LF</td>
<td>200</td>
<td>$30,000</td>
</tr>
<tr>
<td>Segment 4</td>
<td>Use railbed*</td>
<td>500</td>
<td>LF</td>
<td>200</td>
<td>$100,000</td>
</tr>
<tr>
<td>Cross Street</td>
<td>Use railbed*</td>
<td>60</td>
<td>LF</td>
<td>200</td>
<td>$12,000</td>
</tr>
<tr>
<td>Segment 5</td>
<td>Use railbed*</td>
<td>820</td>
<td>LF</td>
<td>200</td>
<td>$164,000</td>
</tr>
<tr>
<td>Washington Street</td>
<td>Use rail bridge</td>
<td>80</td>
<td>LF</td>
<td>400</td>
<td>$32,000</td>
</tr>
<tr>
<td>Segment 6</td>
<td>Use railbed</td>
<td>2480</td>
<td>LF</td>
<td>100</td>
<td>$248,000</td>
</tr>
<tr>
<td>Fitchburg Line</td>
<td>New bridge over R.R.</td>
<td>135</td>
<td>LF</td>
<td>1500</td>
<td>$202,500</td>
</tr>
<tr>
<td>Segment 7</td>
<td>Use railbed</td>
<td>470</td>
<td>LF</td>
<td>100</td>
<td>$47,000</td>
</tr>
</tbody>
</table>

**Total** | **6995** | **$3,725,500**

*New Gillman Square Station, Medford St. / Walnut St. bridge replacements and freight track relocation completed as part of Green line extension to Medford.*
Alternate #3 modified

- Medford Street Entrance
- Path under Rebuilt Medford Street Bridge
- New Pedestrian Overpass
- Green Line Station
- Community Path
- Redevelopment Site
- Pearl Street
- Medford Street
- School Street
- School Street
- Pearl Street
- Green Line Station
- Community Path
- Redevelopment Site
Alternate #3 modified

- Path Access from Washington Street
- Allston Street Connection
- Joy Street Entrance
- Green Line Station
- Community Path
- New Pedestrian Overpass
Alternate #3 modified

Potential Future Connection Into Innerbelt District

Community Path

Brickbottom Connection (stairs)

To North Point & Charles River

Elevated Green Line

MBTA Fitchburg Commuter Line

McGrath / O'Brien Hwy
Preliminary Conclusions

- Alternate #3-modified is preferred
- Green Line Extension and Path are mutually beneficial
  - Path provides access to stations
  - Path provides emergency/maintenance access potential
  - Path construction occurs with Green Line
  - Bridges rebuilt as part of Green Line Extension
  - Stations provide greater use of path
  - Shared costs
- Alternate #2 provides fall-back options
Questions