

# Implementation Project Tables

The recommendations set forth in this report are intended for the use of DCR, MassDOT and the municipalities that line the Charles River as a blueprint for improving connectivity throughout the region and to help meet MassDOT’s challenge to triple walking and bicycling in the Commonwealth.

The recommendations are conceptual in nature and will require further analysis and study before moving forward to implementation. The following summary tables categorize each measure by order of magnitude costs, timeline, and jurisdiction. Projects which have been identified as both early to mid-term actions and low to medium cost are listed as priority projects for municipalities and state agencies to act upon in the near future.

The variety of projects presented in this report will help move Greater Boston closer to becoming a truly multi-modal region and will help create a model for integrating green infrastructure that connects people and nature.

## Priority Projects

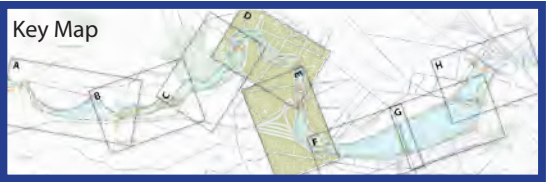
PROJECT AREA/DESCRIPTION	DESCRIPTION	JURISDICTIONAL INVOLVEMENT
UPPER CHARLES RIVER BASIN (GALEN ST BRIDGE TO ELIOT BRIDGE)		
Watertown Square Intersection Irving Street / Charles River Road	Shared lane markings on Charles River Rd and N Beacon St to continue bike lanes through the intersection New crossing with pedestrian signal, entry node to path with art, seating, etc.	Watertown DCR, Watertown
N. Beacon Street / Charles River Road Arsenal Mall and Arsenal Park Path	Improvements to crosswalks and widen path to 10 feet at pinch point Path connection with new crosswalk between Arsenal Street and the N. Beacon Street Bridge	DCR, DOT DCR, Watertown
N. Beacon Street Bridge (north end) N. Beacon Street Bridge	Pedestrian actuated signal; improve crosswalks Lane reduction, new bike lanes or cycle tracks	DCR, DOT DCR
Community Rowing Launch Site North Beacon St Bridge (south end)	Improve path visibility at boat launch Improve path crossing	DCR DCR, DOT, City of Boston
Arsenal Bridge (south end) Soldiers Field Road parking lot (east of Western Avenue)	Improve crosswalks and curb ramps at path crossing; remove or tighten free-right turn lanes Improve path connection through parking lot; improve crosswalk	DCR, DOT, City of Boston DCR
Everett Street at Soldiers Field Road	New crosswalks across Soldiers Field Road	DCR, City of Boston
MIDDLE CHARLES RIVER BASIN (ELIOT BRIDGE TO BU BRIDGE)		
Memorial Drive at Hawthorn Street JFK Street	Enhanced crosswalk; potential entry node to river with art, seating, etc. Bike lanes from Anderson Bridge to Eliot Street	DCR, City of Cambridge City of Cambridge
Dewolfe Street River Street	Bike/ped ROW and streetscape improvements (from Memorial Drive to Mt. Auburn Street) Bike/ped ROW and streetscape improvements (from Memorial Drive to Putnam Avenue)	City of Cambridge City of Cambridge
Path improvements along Memorial Drive Path along Soldiers Field Road (west of Anderson Bridge)	Raised crosswalks along path at driveways, widen path to 10 ft between River Street Bridge and BU Bridge Improve path crossings to be more visible at driveways to boathouse (potential raised crosswalk)	DCR, City of Cambridge DCR
LOWER CHARLES RIVER BASIN (BU BRIDGE TO CRAIGIE BRIDGE)		
Memorial Drive Rotary at BU Bridge Memorial Drive / Ames Street	Colored bike lanes in conflict areas, signage and curb adjustments Improve crosswalks; proposed pedestrian actuated signal	DCR, City of Cambridge DCR, City of Cambridge
Path west of Longfellow Bridge Longfellow Bridge (Cambridge side)	Add wayfinding signage to direct bicyclists/pedestrians to and from the Longfellow Bridge Improve crosswalks at on/off ramp from bridge to Memorial Drive/Land Boulevard	DCR, City of Cambridge DCR, City of Cambridge
Commonwealth Avenue / BU Bridge Boylston Ave to Beacon Street via Charlesgate East ramp	Improve all crosswalks; potential two-stage left turn queue box for bikes Sidewalk widened to shared-use path, improved crossings (part of proposed Charlesgate connection)	DOT, City of Boston DCR, City of Boston
Beacon Street to Harvard Bridge Harvard Bridge / Storrow Dr WB off-ramp	New crosswalk, extend curb to remove slip lane; proposed path connection under Storrow Drive ramp & around gatehouse New traffic signal and crossings (part of proposed Charlesgate connection)	DCR, City of Boston DCR, DOT, City of Boston
Beacon Street / Massachusetts Ave Dartmouth Street	Improve crosswalks and other intersection improvements (part of proposed Charlesgate connection) Bike/ped ROW and streetscape improvements; add counterflow bike lane to improve access to overpass	DCR, City of Boston City of Boston
Charles Circle Leverett Circle	Bike improvements: bike lanes, shared lane markings, green bike lanes in conflict areas, etc. Improvements to existing crosswalk, new crosswalk, and other at-grade improvements	DCR, DOT, City of Boston DCR, DOT, City of Boston
NEW CHARLES RIVER BASIN (CRAIGIE BRIDGE TO NORTH STATION)		
North Station to Martha Road connection Nashua Street at North Station	New path connection between North Station and Martha Road, including wayfinding signage Improve bike wayfinding between North Station and the Charles River	City of Boston City of Boston

All Recommended Projects | Sections A - C



PROJECT AREA/DESCRIPTION			DESCRIPTION	TIMELINE										JURISDICTION			COST			POTENTIAL FUNDING ASSISTANCE			ADDITIONAL NOTES
MAP SECTION	PROJECT #			PRIORITY PROJECT	EARLY ACTION (1-2 yrs)	MID TERM (3-6 yrs)	LONG RANGE (>6 yrs)	MASS DCR	MASS DOT	CITY OF BOSTON	CITY OF CAMBRIDGE	CITY OF NEWTON	TOWN OF WATERTOWN	OTHER	LOW	MEDIUM	HIGH	MIT	HARVARD	NON-PROFIT FOUNDATION	OTHER		
UPPER CHARLES RIVER BASIN (GALEN ST BRIDGE TO ELIOT BRIDGE)																							
NORTH SIDE (WATERTOWN - CHARLES RIVER RD - GREENOUGH BLVD )																							
A	1	Watertown - Main Street	Adjust vehicular travel lane widths to accommodate bike lanes		•								•		•								
	2	Watertown Square Intersection	Shared lane markings on Charles River Road and N. Beacon Street to continue bike lanes through the intersection	•	•								•		•								
	3	Galen Street Bridge (north end)	Entry node to path with art, seating, etc.; improved crossings through intersection			•		•					•				•						
	4	Park between Riverside Street and Charles River Road	Path from Riverside Street to primary riverfront path; improved crossings			•		•					•				•						
	5	Irving Street	Bike/ped ROW and streetscape improvements (from Charles River Road to Mt. Auburn Street)			•							•				•				•		
	6	Irving Street / Charles River Road	New crossing with pedestrian signal, entry node to path with art, seating, etc.	•		•		•					•				•					•	
	7	Riverside Street from Irving Street to Perkins School	Bike/ped ROW and streetscape improvements			•							•				•					•	
	8	Beechwood Avenue and Paul Street	Bike/ped ROW and streetscape improvements (from Charles River Road to N. Beacon Street)			•							•				•						
	9	Watertown Square to North Beacon Street	Path improvements proposed in Watertown Riverfront Park Restoration Plan				•	•									•						
	10	Charles River Road (various locations)	New crosswalks to access river at Wheeler Lane, Beechwood Avenue and Paul Street			•		•					•				•						
	11	Charles River Rd between Bay St & Watertown Yacht Club	Complete sidewalk on north side of Charles River Road			•		•					•				•						
	12	N. Beacon Street / Charles River Road	Improvements to crosswalks and widen path to 10 feet at pinch point	•		•		•		•							•						
	13	Arsenal Mall and Arsenal Park Path	Path connection with new crosswalk between Arsenal Street and the N. Beacon Street Bridge	•		•		•					•	•			•						
B	1	Arsenal Street	Bike/ped ROW and streetscape improvements from School Street to the Arsenal Bridge				•						•		•		•						
	2	Talcott Avenue	Bike/ped ROW and streetscape improvements				•						•		•		•						
	3	N. Beacon Street Bridge (north end)	Pedestrian actuated signal; improve crosswalks	•		•		•	•							•							
	4	N. Beacon Street Bridge	Lane reduction, new bike lanes or cycle tracks	•		•		•								•							
	5	Arsenal Street between Coolidge Ave and Greenough Blvd	Widen/improve sidewalk				•						•			•							
	6	Greenough Blvd at Arsenal Street (western intersection)	Improve crosswalk			•		•	•				•			•						•	
	7	Arsenal Street at Greenough Blvd (eastern intersection)	Improve crosswalks; potential reconfiguration of intersection				•		•	•		•				•						•	
	8	Greenough Blvd at Arsenal Street (from western thru eastern intersection)	Realign two sections of Greenough Blvd. to meet at a simple 4-way intersection with Arsenal Street				•		•	•						•						•	
C	1	Greenough Blvd from Arsenal Street to Eliot Bridge	Road diet and parkland expansion			•		•	•		•					•		•				•	
	2	Grove Street	Bike/ped ROW and streetscape improvement (from Greenough Blvd. to future Waterown Path extension)			•		•					•			•							
	3	Path at Grove Street crossing	Entry node to the river with art, seating, etc.				•	•					•			•							
SOUTH SIDE ( NEWTON -SOLDIERS FIELD ROAD - BRIGHTON)																							
A	14	Galen Street Bridge (south end)	Improve path visibility; improve crossing			•		•	•				•		•								
	15	Watertown Street and Aldrich Street	Bike/ped ROW and streetscape improvements (from Galen Street to Casey Park)			•							•		•								
	16	Water Street	Bike/ped ROW and streetscape improvements (from Galen Street to Nonantum Road)			•							•		•								
	17	Hunt Street/Maple Street	Bike/ped ROW and streetscape improvements (from Galen Street to Nonantum Road)			•						•	•			•							
	18	Jefferson Street	Bike/ped ROW and streetscape improvements (from Galen Street to Maple Street)			•						•	•			•							
	19	Nonantum Road (various locations)	Improvements to bicycle transition from roadway to path adjacent to Nonantum Road (Water Street, Maple Street and Brook Street intersections)			•		•	•				•	•		•							
	20	Nonantum Rd at Maple Street	Potential location for new bike/ped bridge across river (located above culvert)					•					•	•		•						•	
	21	Nonantum Rd at Charlesbank Rd	Potential new signal			•		•								•							
B	8	Brooks Street	Bike/ped ROW and streetscape improvements (Nonantum Road to Washington Street)			•				•						•							
	9	Community Rowing Launch Site	Improve path visibility at boat launch	•		•		•		•						•							
	10	N. Beacon Street Bridge (south end)	Improve path crossing	•		•		•	•	•	•					•							
	11	N. Beacon Street Bridge (south end)	Add crossing from south end of bridge to pool across Nonantum Road				•		•	•	•					•							
	12	Soldiers Field Road connection to Parsons Street	New crossings from river path to Parsons Street (in conjunction with new path connection); includes study for new signal at crossing of Soldiers Field Road; includes entry node to the river with art, seating, etc.			•		•	•	•	•					•				•			
	13	Birmingham Parkway	New path connection between Parsons Street and N. Beacon Street along the parkway, new crosswalks at N. Beacon Street signal				•	•	•		•					•							
	14	N. Beacon Street	Bike/ped ROW and streetscape improvements (from bridge to Birmingham Parkway)				•	•	•		•					•							
	15	Parsons Street	Bike/ped ROW and streetscape improvements (from N. Beacon Street to Washington Street)				•	•	•		•					•							
	16	Arsenal Bridge (south end)	Improve crosswalks and curb ramps at path crossing; remove or tighten free-right turn lanes	•		•		•	•	•	•					•		•				•	
	17	Soldiers Field Road at Western Ave/Arsenal Bridge	New crosswalks						•	•	•					•						•	
	18	Birmingham Parkway from N. Beacon to Lincoln Street	Road diet and/or path along north side of parkway						•	•	•					•		•				•	
	19	Birmingham Parkway from Lincoln Street to Western Ave	Bike/ped ROW and streetscape improvements				•		•	•						•						•	
C	20	Intersection of Leo M Birmingham Pkwy & Lincoln Street	Improve existing crosswalks; add crosswalks across the Parkway				•		•	•						•						•	
	21	Market Street	Bike/ped ROW and streetscape improvements (from N. Beacon Street to Birmingham Parkway)				•		•	•						•						•	
	4	Western Avenue	Bike/ped ROW and streetscape improvements (from Birmingham Parkway to Everett Street)			•				•						•							
	5	Soldiers Field Road parking lot (east of Western Avenue)	Improve path connection through parking lot; improve crosswalk	•				•								•							
	6	Telford Street	Bike/ped ROW and streetscape improvements (from pedestrian overpass to Western Avenue)			•				•						•							
	7	Everett Street	Bike/ped ROW and streetscape improvements (from Soldiers Field Road to Western Avenue)				•			•						•							
	8	Everett Street at Soldiers Field Road	New crosswalks across Soldiers Field Road	•		•		•		•						•							
	9	Soldiers Field Road / Herter Park	New path from Soldiers Field Road/Everett Street to existing path network in Herter Park; entry node to river with art, seating, etc.			•		•	•	•						•				•			
	10	Soldiers Field Road / Smith Playground	Potential new crosswalk at Soldiers Field Road from Smith Playground to Herter Park; includes study to incorporate future signal				•		•	•	•					•							

All Recommended Projects | Sections D - E



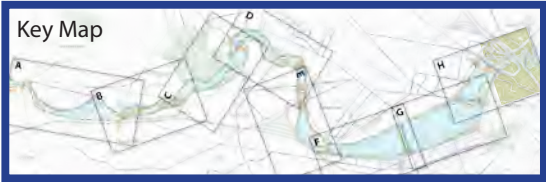
PROJECT AREA/DESCRIPTION			DESCRIPTION			TIMELINE			JURISDICTION					COST			POTENTIAL FUNDING ASSISTANCE			ADDITIONAL NOTES			
MAP SECTION	PROJECT #					PRIORITY PROJECT	EARLY ACTION (1-2 yrs)	MID TERM (3-6 yrs)	LONG RANGE (>6 yrs)	MASS DCR	CITY OF BOSTON	CITY OF CAMBRIDGE	CITY OF NEWTON	TOWN OF WATERTOWN	OTHER	LOW	MEDIUM	HIGH	MIT	HARVARD	NON-PROFIT FOUNDATION	OTHER	
MIDDLE CHARLES RIVER BASIN (ELIOT BRIDGE TO BU BRIDGE)																							
NORTH SIDE (MEMORIAL DRIVE - WEST CAMBRIDGE )																							
D	1	Intersection at Memorial Drive & Gerry's Landing Road	Improve existing crosswalks					•		•	•	•				•	•						
	2	Gerry's Landing Road	Bike/ped ROW and streetscape improvements - curb cuts and area sidewalks					•		•	•	•						•					
	3	Memorial Drive at Sparks Street	New path connection from Sparks Street to parkland, including new crosswalk at Memorial Drive						•	•	•	•										•	} Potential interest from Mount Auburn Hospital - Note: Assumes installation of traffic signal in separate process
	4	Memorial Drive from Sparks Street to JFK Park	Reduction of travel lanes with parkland expansion						•	•	•	•							•			•	
	5	Memorial Drive at Hawthorn Street	Enhanced crosswalk; potential entry node to river with art, seating, etc.	•		•				•	•	•					•					•	
	6	Hawthorn Street from Mt Auburn St to Memorial Dr	Bike/ped ROW and streetscape improvements						•			•	•				•						
	7	University Road	Bike/ped ROW and streetscape improvements (from JFK Park to Mt. Auburn Street)					•			•	•	•				•						
	8	University Road to Memorial Drive	Improved path connection to river						•		•	•	•				•						
	9	Memorial Drive at JFK Park	New crosswalk in conjunction with changes per project D-4						•	•	•	•	•				•						
	10	JFK Street	Bike lanes from Anderson Bridge to Eliot Street	•			•	•				•	•				•						
	11	Dewolf Street	Bike/ped ROW and streetscape improvements (from Memorial Drive to Mt. Auburn Street)	•			•	•				•	•				•				•		
	12	Dewolf Street at Memorial Drive	Improve crosswalks; add entry node to river with art, seating, etc.				•		•	•		•	•				•	•			•		
	13	John W. Weeks Bridge	Improve Weeks Bridges for bicycle access and ADA compliance						•		•	•	•			•			•		•		
	14	Memorial Drive between Dewolfe and Western Ave	Widen sidewalk on Cambridge-side of Memorial Drive						•		•	•	•				•	•					
	15	Memorial Drive between Dewolfe and Western Ave	Lane reduction due to westbound left-turn lane onto Western Avenue Bridge						•		•	•	•				•	•					
E	1	Memorial Drive and Western Ave	Potential new crosswalk across Memorial Drive on the east side of intersection				•	•		•	•	•				•							
	2	River Street	Bike/ped ROW and streetscape improvements (from Memorial Drive to Putnam Avenue)	•			•	•			•	•	•				•	•					
	3	Pleasant Street	Bike/ped ROW and streetscape improvements (from Memorial Drive to Putnam Avenue)					•				•	•				•	•					
	4	Parking lot enhancements	Connection through parking lot and to river, primarily within City of Cambridge right-of-way					•	•			•	•				•	•					
	5	Memorial Dr between Pleasant Street and Magazine Street	Raised crosswalks at all parking lot entrances on the Cambridge side of Memorial Drive					•		•		•	•				•	•					
	6	Path improvements along Memorial Drive	Raised crosswalks along path at driveways, widen path to 10 ft between River Street Bridge and BU Bridge	•			•	•	•	•		•	•				•	•	•				
	7	Magazine Street	Bike/ped ROW and streetscape improvements (from Memorial Drive to Massachusetts Avenue)					•		•		•	•				•	•					
	8	Magazine Street at Memorial Drive	Entry node to river with art, seating, etc.						•	•		•	•				•	•					
	9	East End of Magazine Beach	Include new path connection below the Boston University Bridge to connect the Dr. Paul Dudley White path/Magazine Beach to the future Grand Junction trail link to Kendal Square.						•	•								•				•	- Potential funding assistance from Solomon Foundation
SOUTH SIDE (BRIGHTON - ALLSTON)																							
D	16	Eliot Bridge (East Side)	Realign paths between underpass and bridge sidewalk to be ADA compliant					•		•							•						
	17	Path along Soldiers Field Road (west of Anderson Bridge)	Improve path crossings to be more visible at driveways to boathouse (potential raised crosswalk)	•			•			•	•	•					•	•					
	18	Sinclair Weeks Bridge	Improve overpass for bicycle access and ADA compliance					•		•	•	•						•		•			- Involvement of Mass. Historic Commission likely
E	10	Cambridge Street	Proposed bike lane/cycle track In coordination with Boston Bike Master Plan effort					•		•	•	•					•	•					
	11	Path downstream of River Street Bridge	Widen path to 10 ft with cantilever					•		•	•	•					•	•	•				- Partial widening part of River Street Bridge design
	12	BU Bridge / Grand Junction Path	Connection between the bridge and the Grand Junction Path						•	•	•	•	•					•			•		- Potential interest from Boston University
	13	Boardwalk path below BU Bridge	Replace existing boardwalk path with a non-slip surface material					•		•	•	•					•				•		- Potential involvement of Boston University

All Recommended Projects | Sections F - H



PROJECT AREA/DESCRIPTION			DESCRIPTION	TIMELINE			JURISDICTION					COST			POTENTIAL FUNDING ASSISTANCE			ADDITIONAL NOTES				
MAP SECTION	PROJECT #			PRIORITY PROJECT	EARLY ACTION (1-2 yrs)	MID TERM (3-6 yrs)	LONG RANGE (>6 yrs)	MASS DCR	MASS DOT	CITY OF BOSTON	CITY OF CAMBRIDGE	CITY OF NEWTON	TOWN OF WATERTOWN	OTHER	LOW	MEDIUM	HIGH	MIT	HARVARD	NON-PROFIT FOUNDATION	OTHER	
LOWER CHARLES RIVER BASIN (BU BRIDGE TO CRAIGIE BRIDGE)																						
NORTH SIDE (CAMBRIDGEPORT - MIT - EAST CAMBRIDGE)																						
F	1	Memorial Drive Rotary at BU Bridge	Colored bike lanes in conflict areas, signage and curb adjustments	●	●			●		●					●	●						- Potential involvement of Boston University
	2	Path east of BU Bridge	Widen sidewalk/path between BU Bridge and BU Boathouse		●			●		●					●		●				●	
	3	Vassar Street at Amesbury Street	Direct bike/ped traffic on Vassar to Amesbury St through signage and other enhancements		●					●					●			●				
	4	Amesbury Street	Bike/ped ROW and streetscape improvements (from Memorial Drive to Vassar Street)		●					●					●							- Potential involvement of private property owner
	5	Amesbury Street at Memorial Drive	Improve crosswalks; add entry node to river; potential signal phase adjustments		●			●	●	●					●	●			●			
	6	Connection to Fort Washington Park	Improve connection from Vassar St to the park with a new crossing through parking lot		●					●				●	●				●			
	7	Grand Junction Overpass	Proposed railroad overpass connecting Pacific Street to Vassar Street per MIT plan				●			●					●			●				
	8	Memorial Drive / Endicott Street	Improve crosswalk on westbound side of Memorial Drive		●			●	●	●						●				●		
	9	Memorial Drive / Massachusetts Ave	Improve all crosswalks; potential reconfiguration of intersection to mitigate bike lane pinch point		●			●	●	●						●				●		
G	1	Memorial Drive at MIT Sailing Pavilion	Improve crosswalks		●			●		●					●				●			
	2	Ames Street	Bike/ped ROW and streetscape improvements (from Memorial Drive to Main Street)		●					●					●	●			●			
	3	Memorial Drive / Ames Street	Improve crosswalks; proposed pedestrian actuated signal	●				●		●					●				●			
	4	Wadsworth Street	Bike/ped ROW and streetscape improvements (from Memorial Drive to Main Street)		●			●		●					●	●			●			
	5	Memorial Drive / Wadsworth Street	Improve crosswalks		●					●					●				●			
	6	Path west of Longfellow Bridge	Add wayfinding signage to direct bicyclists/pedestrians to and from the Longfellow Bridge	●				●		●					●							
	7	Longfellow Bridge (Cambridge side)	Improve crosswalks at on/off ramp from bridge to Memorial Drive/Land Boulevard	●	●			●		●					●							
H	1	Path along Broad Canal/Cambridge Parkway	New crosswalks for path crossing; new signals on Land Blvd.			●		●		●						●						
	2	Binney Street / Edward H Land Boulevard	New path connection to river; potential reconfiguration of intersection			●		●		●						●						
	3	Path at Lechmere Canal	Improve ADA access from path to bridge above			●		●		●						●	●					
	4	Upstream-side of Museum of Science	New bridges over the Lechmere Canal and the old Charles River lock per Rosales/Schlaman Bergmann design			●		●		●							●			●	- Potential involvement of Museum of Science	
SOUTH SIDE (STORROW DR - BACK BAY - BEACON HILL)																						
F	10	Commonwealth Avenue / BU Bridge	Improve all crosswalks; potential two-stage left turn queue box for bikes	●	●		●		●	●	●				●					●		- Potential involvement of Boston University
	11	Storrow Drive crossing below BU Bridge	Potential new signal and crossing to connect BU Bridge stair with Esplanade				●		●	●	●					●				●		
	12	Pedestrian overpass east of BU Bridge	Make ADA compliant, may require replacement of bridge				●		●	●	●					●	●			●		
	13	Silber Way	Bike/ped ROW and streetscape improvements (from Comm Ave to Storrow overpass)		●					●					●						●	- Potential involvement of Solomon Foundation
	14	Boylston Ave to Beacon Street via Charlesgate East ramp	Sidewalk widened to shared-use path, improved crossings (part of proposed Charlesgate connection)	●	●			●		●						●				●		
	15	Beacon Street to Harvard Bridge	New crosswalk, add curb extension to remove slip lane; proposed path connection under Storrow Drive ramp and around gatehouse (part of proposed Charlesgate connection)	●	●			●		●						●				●		
	16	Harvard Bridge / Storrow Dr WB off-ramp	New traffic signal and crossings (part of proposed Charlesgate connection)	●	●			●	●	●						●				●		
G	17	Beacon Street / Massachusetts Ave	Improve crosswalks and other intersection improvements (part of proposed Charlesgate connection)	●	●			●		●						●				●		
	8	Beacon Street between Mass Ave and Berkeley Street	Proposed bike lane/cycle track per City of Boston Bike Master Plan		●					●					●							
	9	Fairfield Street	Bike/ped ROW and streetscape improvements (from Beacon Street to Storrow Drive overpass)					●		●					●							
	10	Fairfield Street overpass	Entry node to river with art, seating, etc.			●		●								●						
H	11	Dartmouth Street	Bike/ped ROW and streetscape improvements; add counterflow bike lane to improve access to overpass	●	●					●					●							
	12	Charles Street	Proposed bike lane/cycle track per City of Boston Draft Bike Master Plan (from Charles Circle to Beacon Street)		●											●						
	5	Charles Circle	Bike improvements: bike lanes, shared lane markings, green bike lanes in conflict areas, etc.	●	●			●	●	●					●							
	6	Blossom Street at Storrow Drive	Entry node to river with art, seating, etc. at base of bike/ped overpass			●										●	●				●	
	7	Leverett Circle	Improvements to existing crosswalk, new crosswalk, and other at-grade improvements	●	●			●	●	●						●						
	8	Leverett Circle	Proposed pedestrian overpass		●			●	●	●							●					

All Recommended Projects | Craigie Dam - North Station



PROJECT AREA/DESCRIPTION			DESCRIPTION	TIMELINE		JURISDICTION				COST			POTENTIAL FUNDING ASSISTANCE			ADDITIONAL NOTES					
MAP SECTION	PROJECT #			PRIORITY PROJECT	EARLY ACTION (1-2 yrs)	MID TERM (3-6 yrs)	LONG RANGE (>6 yrs)	MASS DCR	CITY OF BOSTON	CITY OF CAMBRIDGE	CITY OF NEWTON	TOWN OF WATERTOWN	OTHER	LOW	MEDIUM		HIGH	MIT	HARVARD	NON-PROFIT FOUNDATION	OTHER
NEW CHARLES RIVER BASIN (CRAIGIE BRIDGE TO NORTH STATION)																					
NORTH SIDE (CAMBRIDGE - NORTH POINT PARK - CHARLESTOWN )																					
H	9	Charles River Dam Road to North Point Park	Proposed inlet bridge per North Point Master Plan				●	●		●							●			●	- Potential involvement of North Point developer
	10	Charles River Dam Road	New pedestrian-actuated signal and crosswalk to provide direct connection from Museum of Science to future Inlet Bridge																		
	11	Draw One Walkway	Path connection adjacent to existing bridge between Spaulding Hospital/Nashua Street to the North Point Park			●		●		●			●				●				
SOUTH SIDE (WEST END - NORTH STATION - NORTH END)																					
H	12	Martha Road	Bike/ped ROW and streetscape improvement per City of Boston Bike Master Plan (from Storrow Dr. to Causeway)		●				●					●	●						
	13	Nashua Street	Bike/ped ROW and streetscape improvement; consider lane reduction (from Storrow Dr. to North Station)		●			●		●					●	●					
	14	North Station to Martha Road connection	New path connection between North Station and Martha Road, including wayfinding signage	●	●	●				●				●	●					●	} Potential involvement of Delaware North Company
	15	Nashua Street at North Station	Improve bike wayfinding between North Station and the Charles River	●	●					●				●						●	
	16	Nashua Street Park connection to North Station	Future South Bank Bridge project per DCR design contract			●	●	●	●	●						●					

# Appendices





Appendix 1 Public Comments on the Draft Report

KEY


= Comment incorporated into report ( how + where)

= Comment not incorporated into report (with explanation)

#	Section of Basin	Category	Public Comment (team response below)	Private Residents: Various	Boston Transportation Dept.	City of Cambridge	Cambridge Bike Adv. Committee	Charles River Watershed Assoc.	Charles River Conservancy	Charles River Transp. Mgt. Assn.	Explained Association	Friends of the Community Path	Watertown Ped-Bike Adv. Comm.	Livable Streets Alliance	Solomon Foundation
1	All	ADA access	Recommendation that all curb ramps be 8' in width <i>This has been added into the General Recommendations section of the Executive Summary</i>		•										
2	Middle	Bridge: BU	improvements needed to BU Bridge pedestrian boardwalk to include wider, non-slip boards <i>Narrative was added to both the Section E map and list of Recommended Projects that includes a recommendation for a non-slip surface to be added to the existing boardwalk below the BU Bridge</i>					•							
3	Upper	Bridge: N Beacon	Bridge should be reconfigured from 4 to 3 lanes to provide bike lanes. <i>Narrative within the introduction of Section A now includes more explicit recommendation that the bike lanes called out for in the map graphic would necessitate a lane reduction from 4 to 3 lanes.</i>	•											
4	Lower	Draw 1 Walkway	Draw 1 walkway should be an early action project since MBTA has already agreed to fund and build it <i>Because this project is on an established timeline, the report does not need to recommend it for priority action.</i>								•				
5	All	Exec. Summary	Text should indicate study was commissioned to 1) evaluate conditions and 2) make recommendations <i>Text has been added added to page ii to make this reference.</i>			•									
6	All	Exec. Summary	Diagram on p.iii needs a title <i>A title has been added to this diagram.</i>			•									
7	All	Exec. Summary	On p.iv, the 2nd bullet from top should reference the need to prioritize pathway users, not just signal conditions <i>2nd bullet from top on p.iv was reworded.</i>			•									
8	All	Exec. Summary	"Key recommendations" should include the need for improvements to the BU Bridge rotary <i>The Key Recommendation bullet referencing the BU Bridge has been altered to include improvements on both sides of the river.</i>			•									
9	All	Goals	Need to include "a healthier citizenry" as a key goal for the project (see page 2 of introduction) <i>Reference to public health is now included in the Purpose and Goals section of the report.</i>			•									
10	Lower	Grand Junction	MIT has already built the new at-grade crossing of the Grand Junction at Pacific; update Fig 60/Section F plan <i>Section F Recommendations map has been changed to show an existing at-grade crossing rather than a proposed overpass.</i>			•									
11	Middle	Hawthorne St	Make clear that signal has already been installed as part of Anderson Bridge project <i>Section D Recommendations map was fixed to show this as an existing traffic signal.</i>			•									
12	All	Planning	Study negelected to reference Mass DOT Sept 2013 Healthy Transportation Policy Directive (P-13-0001) <i>Reference to the Policy Directive was made on p.iv of the Executive Summary and page 2 of the report.</i>				•	•							
13	All	Typo	Figure 60 on page 27 should be 61. <i>Figure 60 was changed to Figure 61.</i>	•											
14	Middle	Typo	The Pierce Booathouse referenced in Figure 69 is between BU Bridge and the Harvard Bridge <i>Caption for Figure 69 has been fixed.</i>	•											
15	All	Typo	All maps are referred to as "Figure xx" while all other graphics do not reference "Figure"...should be consistent <i>No change; lengthening captions is problematic for layout in several instances</i>			•									
16	Middle	Bridge: Eliot Mem	Improvements needed for existing underpasses, especially regarding drainage issues and ADA compliance. <i>Text has been added into the Intro for Section D to reflect this need.</i>	•			•								
17	Lower	Charlesgate	More emphasis needed on the removal of Bowker Overpass and the ped/bike improvements <i>No change; due to MassDOT's concurrent study for the Bowker Overpass, recommendations in this report focus on near-term improvements between the Emerald Necklace and the Charles River Basin.</i>										•		
18	Upper	Allston	Lincoln Street between Franklin and Birmingham Parkway should be one way westbound with a contra-flow, one-way bike lane eastbound. <i>No change; an interesting idea but one that would require additional study.</i>	•											
19	All	Boat House	High Visibility or raised crosswalks needed at all boat house driveways <i>No change; current recommendations include improvements in those locations</i>				•		•						
20	Upper	Bridge intersections	Improvements needed at Brooks/Nonantum, N Beacon St/Nonantum and Arsenal/SFR <i>No change; current recommendations include improvements in those locations</i>		•										



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21	Upper	Bridge: Arsenal St	A larger refuge island needed on south side of the bridge adjacent to right turn lane <i>No change; current recommendation is shown as an existing crosswalk in need of improvement, which could include a larger crossing island and other improvements.</i>				•								
22	Upper	Bridge: Arsenal St	Protected bike lane or cycle track needed across bridge <i>No change; because of the traffic volumes over the bridge, bicycle access is assumed to remain on the sidewalks of the bridge.</i>								•				
23	Upper	Bridge: Arsenal St	More space needed at south side intersections with the Esplanade path <i>No change; current recommendation is shown as an existing crosswalk in need of improvement, which could include a larger crossing island and other improvements.</i>												•
24	Middle	Bridge: BU	Bike connectivity improvements needed from Essex St to BU bridge <i>No change; the Town of Brookline has recently developed bicycle-connectivity improvements from Essex to the BU Bridge.</i>				•								
25	Middle	Bridge: BU	Rethink design of BU Bridge/Mem Drive on-ramp intersection; concurrent signals needed for pedestrian access <i>No change; a redesign of this nature is beyond the scope of the Connectivity Study.</i>						•						
26	Middle	Bridge: BU	Text for Section F needs to make clear that the City of Cambridge already has a design for the rotary that is in process. The Fig 60 image should reflect city's design (similar with a few key differences) <i>The text and graphic has been changed to ensure consistency with the City's design.</i>			•									
27	Lower	Bridge: Craigie	Show new signal and crosswalk on O'Brien Hwy to coincide with new Inlet Bridge; discussion needed in text as well <i>A recommendation for a new traffic signal at that location was added to the map and narrative.</i>			•									
28	Middle	Bridge: Eliot Mem	East of Eliot Bridge on Boston side, the under-used path close to the river should be designated the primary path. <i>No change; this was considered but it was determined the one closer to Soldier Field Road would remain the primary path.</i>	•											
29	Lower	Bridge: Harvard	Include access point from west bound bike lane to Esplanade ramp through the crash barrier (an off-set will improve safety) <i>No change; engineering concern about the loss of crash barrier structural integrity if a cut were included. Proposed traffic signal 100' to the south will improve access betw. bridge bike lanes+ the ramp.</i>						•						
30	Upper	Bridge: N Beacon	Protected bike lane or cycle track needed across bridge <i>No change; current recommendation is for a "bike lane or cycle track" across the N. Beacon Bridge.</i>								•				
31	Upper	Bridge: N. Beacon	Pedestrian activated signal needed on north side of bridge; or perhaps a raised crosswalk and bump-out <i>No change; current recommendation is for a pedestrian-actuated signal at that location.</i>				•					•			
32	Upper	Bridge: N. Beacon	Enlarge crossing island at the N. Beacon/SFR intersection <i>No change; enlarging island would likely remove an existing traffic lane, a long term plan to redo the de-facto rotary in this area will be necessary ultimately.</i>												
33	Middle	Bridge: River/Western	Add a 2-way cycle track on the Allston side, between the River and Western bridges <i>No change; MassDOT's design includes a one-way cycle track on the Allston side between the two bridges.</i>											•	
34	Middle	Bridge: River/Western	City of Cambridge has already proposed to include bike lanes from bridge to Putnam; Figure 58/Section E should be fixed <i>Figure 58, Section E Recommendations map has been fixed to indicate a "proposed bike lane" on River Street.</i>			•									
35	Lower	Charles Circle	Include green bike lane or green sharrows throughout Charles Circle, both directions <i>No change; design drawing is conceptual only, and likely to evolve in a more-detailed study and final striping plan.</i>											•	
36	Lower	Community Path	On priority project H10, say: further study at Camb.-Somerville line/connection betw NorthPoint Path + Fitchburg Rail crossing of Community Path Ext. here (+ Grand Junction Path) being built by Developer. <i>Both narrative text and the plan in Figure 78 have been adjusted.</i>								•				
37	Lower	Community Path	Most of the Community Path connection thru North Point development has been designed <i>Descriptive label for the Community Path on Figure 78, has been changed accordingly.</i>			•									
38	Lower	Connect Historic Boston	Add narrative and map graphic for Connect Historic Boston bike loop (Section H) <i>Narrative and map graphic was added to Section H.</i>		•										
39	All	Context	Existing path system diagram should show the key proposed links such as Grand Junction, Community Path extension and E Boston Greenway, etc. (Fig. 37 and in Exec Summary, p.ii) <i>The Figure 37 graphic is now updated to show key proposed path linkage projects.</i>			•									
40	Upper	Everett St	Extend streetscape improvements throughout the Everett Street corridor <i>No change; recommendations for streetscape improvements on Everett will need to be vetted by the City of Boston.</i>				•								



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41	Upper	Everett St	Improvements to the Everett St/SFR intersection should include stormwater controls <i>No change; stormwater management has little direct impact on improved pedestrian and bicycle connectivity, which is the scope of this Study.</i>				•								
42	Upper	Greenough Blvd	Revise document to show Solomon's current thinking for the Greenough redesign (10' path away from roadway and 5' bike lanes on a 2-lane boulevard) <i>Graphics within Section C have been revised to reflect the Solomon Foundation's current design concepts.</i>											•	
43	Upper	Greenough Blvd	Include reference to a potential connection from Greenough to Mt. Auburn Cemetery thru Cambridge Cemetery <i>No change; this idea has not come up before during the multi-year planning process and requires more detailed study.</i>											•	
44	Middle	Harvard Sq	Add more trees and native vegetation instead of grass downriver from Anderson Bridge <i>No change; detailed landscape design such as this is beyond the scope of the project.</i>				•								
45	All	Intersections	Include more NTOR signs, LPI and LBI at all intersections along the Basin <i>These are now added as general recommendations for all traffic signals along the Basin.</i>			•		•							
46	All	Intersections	Ensure curb cuts line up with crosswalks; well marked crosswalks; repair crossing signals; add yield to pedestrian signs <i>These are now added as general recommendations for all intersection treatments along the Basin.</i>				•								
47	Upper	Intersections	Improvements needed at Maple/Nonantum Rd intersection <i>No change; per Figure 40, Section A map improvements at this intersection are already indicated.</i>										•		
48	Middle	Intersections	Mt. Auburn/Fresh Pond Pwy intersection improvements are important but not mentioned in report <i>No change; improvements at this intersection is beyond the scope of this Study.</i>			•									
49	All	Leverett Circle	Pedestrian countdown indicators needed <i>This has been added as a general recommendation for all traffic signals along the Basin.</i>	•											
50	All	Maps	Regional Context Map (Figure 37) should include proposed paths as well as existing <i>Figure 37 is now revised to show proposed greenway connections and the East Coast Greenway route will be removed</i>							•					
51	Lower	Martha Road	Consider either bike lane or enhanced SLM with color <i>No change; the light blue dashed line used on Figure 78, Section H map is a catch-all that could include various deesign treatments that improve ped/bike connectivity, include a bike lane or enhanced SLM.</i>	•											
52	Middle	Mem Drive	The new connection to Sparks St needs further evaluation and detail <i>No change; the recommended crosswalk location is conceptual, further study will be needed.</i>			•									
53	Middle	Mem Drive	Don't think new crosswalk connection at JFK Park is a good location (poor sight lines due to curve) <i>No change; the recommended crosswalk location is conceptual, further study will be needed.</i>			•									
54	All	Mem Drive	More ped/bike crossings needed throughout Mem Drive <i>No change; new at-grade connections or other improvements are shown where connections to/from destinations and neighborhoods are identified and feasible.</i>										•		
55	Upper	Misc	Change map label and/or text to indicate the GSA property at the north side of the Arsenal St bridge is under construction as a park <i>No change; a note that references the new park is already incorporated into the Recommendations map, Figure 46.</i>	•											
56	All	Misc	Plan needs to be more explicit about path networks' ability to serve traffic intolerant cyclists; see "8-80 Cities" concept. <i>This idea has been added near the end of the narrative in the Executive Summary narrative.</i>			•									
57	All	Misc	Brief section on importance of Hubway is needed, perhaps with suggestions for new station sites <i>Hubway is now referenced in the Intro section of the report. No recommendations for station sites are given, as each individual Hubway city has their own process and fund-raising strategy for new stations.</i>			•									
58	Middle	Misc	In Fig. 58/Sect E: refer to potential for long-term redev for theShopping Center betw. Pleasant + Magazine. Until then, ped/bike improv'ts should be made thru parking lot, some of which is public ROW." <i>No change; this note is included in the narrative of the Study on the opposite page.</i>			•									
59	All	Misc	A map summarizing the counts is included on p.1 but there should be an accompanying narrative to describe the reason for it, and the results <i>Narrative has been added to the introduction.</i>			•									
60	Middle	Misc	Change map label and text to indicate that Weeks Bridge will soon become bike and ADA accessible <i>The narrative and the plan in Figure 55 have been adjusted to reflect completion of accessibilty improvements on the span over the river.</i>	•											



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61	Lower	MIT	Include green street retrofit opportunities along Ames St and Wadsworth St <i>No change; green infrastructure may not have a direct impact on improved pedestrian and bicycle connectivity, which is the scope of this Study.</i>				•								
62	Lower	Nashua St	Further study needed to determine if bike improvements can be made utilizing travel or parking lane <i>Note was changed to indicate that either a travel lane or parking reduction along Nashua Street.</i>	•											
63	Upper	Newton	Consider crossing and dedicated signal in the vicinity of Starbucks and McDonalds on SFR <i>No change; the team felt that the presence of those two businesses does not warrant a new traffic signal.</i>				•								
64	Upper	Parsons Street	New ped connection and signal across SFR in Figure 44 is too far upstream and doesn't contain good site lines <i>No change; the crossing location is conceptual only; more study will be needed to determine a final location.</i>											•	
65	All	Planning	Need to reference 2011 Cambridge Riverfront Plan <i>No change; the 2011 Cambridge plan is one of a large number of former planning efforts that were not cited in this study.</i>		•										
66	All	Priority projects	Highest priorities for City of C include: 1) improve existing paths, 2) support Mem Dr Phase II, 3) widen path from BU to River St bridges, 4) BU rotary (including SWs on Camb side of Mem Drive) <i>No change; all of these are currently included in the list of Priority Projects.</i>		•										
67	All	Priority projects	Secondary proj: -access to future Gr. Junction path; -Longfellow connections; -Ames St imp., -access on Weeks Br over SoldiersField Rd <i>No change; all projects are included in the Study as recommendations.</i>		•										
68	All	Priority projects	Secondary NEW projects for City of Cambridge -Greenough Blvd path, -Inlet bridge, -new signal to MOS, - Mt. Auburn/Fresh Pd Pwy intersection improve't -Mem Dr road diet + path near Hawthorne St <i>New signal across Charles River Dam Road has been added to the recommendations; other projects are already included or beyond the scope of the Study.</i>		•										
69	All	Storrow Drive	More ped/bike crossings needed along Storrow Dr and SFR <i>No change; new grade-separated and at-grade connections are shown where connections to/from destinations and neighborhoods are identified and feasible.</i>										•		
70	Middle	Storrow Overpasses	Make University Rd and Bay State Rd overpasses bicycle and ADA accessible <i>No change; overpass at the west end of Bay State Road is already recommended for accessibility improvements.</i>	•											
71	All	Toolboxes	Ped toolbox should show more: LPI, No RTOR, short cycle lengths, exclusive vs. concurrent, etc. <i>LPI has been added to the Pedestrian Countdown Signal text; the rest will remain unchanged.</i>		•										
72	All	Toolboxes	Ped toolbox needs to show hi-vis, thermo crosswalks, ideally as continental style (perhaps to replace shared-use path which seems less relevant) <i>A photo of a hi-vis crosswalk has replaced the one of the shared use path.</i>		•										
73	All	Toolboxes	Bicycle toolbox should show 10' travel lane or lane removal as a method to fit bike lanes <i>No change; the bicycle toolbox is not intended to show every possible improvement, only a sampling.</i>		•										
74	All	Toolboxes	Both toolboxes should include traffic calming <i>No change; the pedestrian and bicycle toolboxes are not intended to show every possible improvement, only a sampling.</i>		•										
75	All	Toolboxes	Bicycle toolbox should include bicycle signals, especially in light of the FHWA interim approval <i>A photo of a bicycle signal has been added to the Bicycle Facility Toolbox instead of the image of buffered bike lane.</i>		•										
76	Upper	Watertown	More improvements needed to Galen St Bridge <i>No change; the team felt that the level of traffic on the Galen Street bridge precluded improvements beyond those shown at the path crossings on the north and south sides.</i>					•							
77	Upper	Watertown	Need to describe the Watertown Riverfront Restoration Plan which includes an innovative braille trail project funded in cooperation with Solomon Foundation and Perkins School for the Blind <i>Narrative was added to the Introduction to Section A within the report.</i>											•	
78	Upper	Watertown	Figure 43 diagram is missing a shoreline path along Squibnocket Park and thru Watertown Yacht Club per Charles River Basin Masterplan <i>No change; Study's recommendations include improvements at the Charles River Road/Arsenal St intersection instead.</i>											•	
79	All	Report	Need to add narrative describing the final public meeting and comment period <i>Narrative section describing the final meeting and comment period has been added.</i>												
80	All	ADA access	Study references accessibility without explicitly proposing many ADA improvements; recommend a new section called "Accessibility Inventory + Planning" <i>Wording within the Executive Summary and the Introduction has been added to strengthen the importance of accessibility.</i>			•					•				



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
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81	Middle	Bridge: BU	BU Bridge Rotary need a fundamental examination and reorganization. <i>No change; a full reorganization and examination of the rotary is beyond the scope of the Study.</i>	•											
82	Lower	Bridge: Craigie	Protected bike lane or cycle track needed across bridge <i>No change; a separate study by DCR in 2010 recommended bike lanes along the Craigie bridge and draw bridge, which will be implemented after the Longfellow Bridge reconstruction is complete.</i>								•				
83	Lower	Bridge: Craigie	Include Bus Priority facility on in-bound side of Craigie Bridge <i>No change; improvements to transit along the Basin is not within the scope of the Study.</i>						•						
84	Middle	Bridge: Eliot Mem	Connection needed between Eliot Bridge and Path network near Alewife Station <i>No change; connectivity improvement over this distance is not within the scope of the Study.</i>						•						
85	Middle	Bridge: Elliot Mem	Improvements needed for at-grade crossing at each end of bridge <i>No change; because of the existence of the underpasses on each side of the bridge, the team felt significant improvements at the at-grade intersections wasn't necessary.</i>					•							
86	Middle	Cambridge Street	Incorporate recent ideas and concepts from the project to realign the Mass Pike <i>No change; MassDOT's planning for the Mass Pike realignment is an ongoing effort without resolution at this point.</i>		•								•		
87	Lower	Charles Circle	Further study needed to enhance pedestrian connection from Charles St T Station to new ped bridge <i>No change; after construction is complete there will be a well-designed pedestrian connection to the new ped bridge.</i>		•										
88	Lower	Charlesgate	Explore stormwater controls as part of Charlesgate connection improvements <i>No change; enhanced stormwater controls at the Charlesgate connection has little direct impact on improved pedestrian and bicycle connectivity, which is the scope of this Study.</i>				•								
89	All	Habitat	More focus on protection of wildlife and habitat needed, especially for White Geese <i>A reference to the importance of the Basin to wildlife and habitat has been added to the introduction</i>	•											
90	All	Habitat	Consider daylighting historic streams <i>No change; this would be beyond the scope of this Study.</i>	•											
91	All	Implementation	a more detailed implementation plan is missing; include 5, 10 and 25 year goals for the Basin. <i>Note was added into the Exec. Summary to emphasize that a key goal of the Connectivity Study is to help guide DCR and MassDOT's Capital Planning efforts to ensure collaboration over a 5 or 10 year period.</i>					•					•		
92	All	Implementation	Study needs a clearer set of "next steps;" DCR/DOT need to: a) prioritize recommendations, b) identify existing and new funding, c) coordinate with adjacent cities, and d) further engage community. <i>No change; current report includes Implementation Project Tables that identify priorities and jurisdictional involvement.</i>			•					•				
93	All	Intersections	Study more intersections for concurrent signal timing for ped and bike crossing <i>General recommendations within the Executive Summary now include further study of concurrent vs. exclusive signals.</i>			•									
94	Middle	Magazine Beach	Incorporate stormwater controls at Magazine Beach <i>No change; enhanced stormwater controls at Magazine Beach has little direct impact on improved pedestrian and bicycle connectivity, which is the scope of this Study.</i>				•								
95	All	Maps	Maps should show DCR, Mass DOT, and Municipal Jurisdictions within the whole study area (especially on all Recommendations maps) <i>No change; project team looked into the logistics of adding jurisdictional boundaries and would require changes to all maps and numerous graphics within the report.</i>			•					•				
96	All	Misc	Need to recommend locations for additional bike parking, water fountains and Hubway stations <i>No change; it is beyond the scope of this study to recommend locations for new landscaping and pieces of site furniture.</i>			•	•	•							
97	All	Planning	Coordinate with Esplanade Assoc. 2020 vision plan <i>No change; to our knowledge, some Connectivity Study recommendations are not inconsistent with the Esplanade 2020 Vision Plan.</i>				•								
98	All	Planning	More dramatic and large scale improvements are missing from the study <i>No change; the scope of the study is far short of a long-term master plan that might include larger-scale, more-visionary improvements along the Basin.</i>					•							
99	All	Planning	Inadequate funding from the State, the Feds and most cities should be clearly stated in the Study; Study should recommend percentage of surface transportation funding used for Basin projects <i>No change; it is beyond the scope of the Study to recommend high-level policy changes.</i>								•				
100	Middle	St. Mary's Street	A contraflow bike lane on St. Mary's Street could avoid the need for an opposite direction route on Carlton Street and University Road. <i>No change; while this is a good idea, it makes more sense for it to be studied as part of the City of Boston bike master plan.</i>	•											



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101	All	Stormwater	Report should highlight any existing GI stormwater controls to date; what is net loss of unpaved space? <i>No change; enhanced stormwater controls could be a nice enhancement to the Basin but has little direct impact on improved pedestrian and bicycle connectivity, which is the scope of this Study.</i>	•			•								
102	Lower	Storrow Drive	Consider a road diet for Storrow Drive in the vicinity of the Esplanade <i>No change; while this is a good idea, it is beyond the scope of the Connectivity Study to make a credible recommendation.</i>						•						
103	Upper	Watertown	include reference to the Tri-City Riverwalk concept developed as part of the 2006 waterfront planning process <i>Reference to this concept has been made in the text of the Study.</i>											•	
104	Middle	Bridge: BU	Plan should include an underpass below the north end of the BU bridge so peds/bikes can avoid crossing at the rotary <i>This recommendation was added to the Recommendations map and matrix.</i>											•	
105	Lower	Bridge: Longfellow	Relocate all four lanes of Storrow drive under one arch of the Longfellow Bridge <i>No change; while this is a good idea, it is beyond the scope of the Connectivity Study to make a credible recommendation.</i>						•						
106	Middle	Bridge: River/Western	In "background and Analysis" section, saying at-grade improvements at River/Western will "significantly" improve conditions overstates the case <i>No change; the team believes the enhancements at this intersection will, in fact, be significant.</i>		•										
107	All	Exec. Summary	On p.iv, the text should reference 2012 GreenDOT Implementation Plan and 2013 Healthy Transpo Policy Directive rather than referencing Sec. Davey <i>Text has been changed to add reference to Healthy Transpo Policy Directive but reference to Secretary Davey will remain.</i>		•										
108	Lower	Grand Junction	Grand Junction Pathway corridor should be kept intact as a viable rail and transit corridor <i>No change; this is beyond the scope of the Connectivity Study and is currently being looked into by MIT.</i>						•						
109	All	Landscape	Add vegetated buffers along river bank <i>No change; vegetated buffers along the river bank would be a nice feature along the Basin but has little direct impact on improved pedestrian and bicycle connectivity, which is the scope of this Study.</i>				•								
110	All	Lighting	include reference to improve lighting along the basin (including at Elliot Bridge Underpass) <i>A recommendation was added to the Executive Summary that a more-detailed lighting study should be pursued by DCR.</i>	•	•	•		•	•	•				•	
111	All	Maintenance	Include reference to the need for year round maintenance, including basic repair and repaving of existing paths <i>No change; this recommendations is already included on p.iv of the Executive Summary.</i>			•	•				•			•	
112	All	Maintenance	Pathways need to be part of the regular street repaving program <i>No change; discussions are on-going at DCR on this issue.</i>					•							
113	All	Maintenance	During winter, all paths should be plowed and made accessible for all users <i>No change; discussions are on-going at DCR on this issue.</i>								•			•	
114	Lower	Mem Drive	Plan should advocate narrowing the wide median in the MIT area and create more useable parkland. <i>No change; this would have been accommodated in the Memorial Drive Phase II planning project, which is complete.</i>	•											
115	Lower	Mem Drive	Emphasize stormwater management improvements as part of Mem Drive Phase II project <i>No change; stormwater management has little direct impact on improved pedestrian and bicycle connectivity, which is the scope of this Study.</i>				•								
116	All	Misc	Add sanitary facilities or portable toilets at regular intervals <i>No change; facilities such as these are elements of a Master Plan and are not part of the scope of the Connectivity Study.</i>				•								
117	Lower	MOS	Show new path connection from Lechmere Canal, thru DCR parking lot west of MOS garage to O'Brien highway (Fig 78/Section H) <i>The text on p. 33 has been modified to include the option of a new path connection behind the historic stable for enhanced access to and from the Lechmere Canal path.</i>		•			•							
118	Lower	Nashua St	We oppose lane reductions on Nashua St for bicycle facilities as it would hamper bus service <i>No charge; any changes of that magnitude would require extensive outreach to stakeholders in which concerns about impact to bus service will be considered.</i>						•						
119	All	Planning	Incorporate the Esplanade 2020 plan to create a separate bicycle path along the length of the basin <i>No change; incorporating a separate bicycle-only facility along the entire length of the Basin requires far more extensive study and is considered beyond the scope of this Study.</i>							•				•	



Appendix 1 Public Comments on the Draft Report

KEY

= Comment incorporated into report ( how + where)

= Comment not incorporated into report (with explanation)

#	Section of Basin	Category	Public Comment (team response below)	Private Residents- Various	Boston Transportation Dept.	City of Cambridge	Cambridge Bike Adv. Committee	Charles River Watershed Assoc	Charles River Conservancy	Charles River Transp. Mgt. Assn.	Esplanade Association	Friends of the Community Path	Watertown Ped-Bike Adv. Comm.	Livable Streets Alliance	Solomon Foundation
120	All	Signage	Incorporate a comprehensive wayfinding system along the basin that includes direction, time and distances <i>No change; this recommendations is already included on p.iv of the Executive Summary.</i>				•	•					•		
121	All	Stormwater	More emphasis is needed on a green infrastructure approach (to comply with total maximum daily load) for stormwater <i>No change; green infrastructure could be a nice enhancement to the Basin but has little direct impact on improved pedestrian and bicycle connectivity, which is the scope of this Study.</i>				•								
122	All	Stormwater	Include a green infrastructure (GI) facility toolbox, similar to Ped/Bike toolbox <i>No change; green infrastructure could be a nice enhancement to the Basin but has little direct impact on improved pedestrian and bicycle connectivity, which is the scope of this Study.</i>				•								
123	All	Storrow Drive	Storrow Drive (and other parkways) should be closed every Sunday morning in warm weather, not just for the 4th of July; "Open Streets" events should be emphasized <i>No change; encouragement programs and/or events are elements of a Master Plan and are not part of the scope of the Connectivity Study.</i>			•		•			•				
124	All	Underpasses	Conceptual support for underpasses <i>No change; wording within Study will remain unchanged. Recommendations for an underpass below the BU Bridge on the Cambridge side of the river will be included however.</i>		•	•									
125	All	Underpasses	Impassioned support for underpasses below the River, Western and Anderson bridges <i>See text (pp 1,11,22) re MassDOT support for building an underpass at the South end of Anderson Br, in close cooperation w/ DCR, if it recieves all permits and has no adverse impact on wetlands + parkland</i>	•			•	•			•		•		
126	Upper	Watertown	Provide path access immediatley adjacent to Watertown Yacht Club <i>No change; improvements instead are recommended at the Charles River Road/N Beacon intersection.</i>				•								
127	All	Wider paths	Path widths should either be 12-14' paved or 10' paved with 4'-8' soft surface path adjacent <i>Current recommendation for 10' paved path with parallel soft-surface path is now clarified to reference a desired 4'-6' width</i>		•	•	•		•		•		•		
128	Middle	Bridge: River St	Widen path along westbound on-ramp to SFR <i>No change; path along the westbound on-ramp to SFR was widened by DCR in 2010.</i>		•										
129	Lower	Bridge intersections	Request for BTD engineering to review any new signal at south end of Harvard Bridge <i>No change; any further study of key recommendations will involve stakeholders such as the Boston Transportation Dept.</i>		•										
130	Middle	Bridge: BU	Bike lane concept through BU Rotary, won't work as shown; rotary should be configured as a roundabout <i>No change; bike lanes are currently being studied by the City of Cambridge and will be retained in the recommendations.</i>	•											
131	Upper	Bridge: N. Beacon	Connect the North Beacon/Greenough Blvd intersection to the Watertown Community Path <i>No change; options to facilitate this connection through Arsenal Park is already shown in the Report, see Figure 42.</i>				•								
132	Lower	Critical Gaps	Fig. 14 should show a critical gap at the intersection of Land Blvd and O'Brien Highway <i>No change; because of the on-going nature of design discussions related to future changes at this intersection.</i>			•									
133	Lower	Grand Junction	Grand junction path connection to Esplanade preferable to Storrow Dr traffic signal <i>No change; both are considered options in the current study.</i>		•										
134	Middle	Harvard Sq	Narrow Memorial Drive, widen pathway, add stormwater features upriver of Anderson Bridge <i>No change; all improvements and features can be resolved if the "road diet" recommendation is implemented in the future.</i>				•						•		
135	Middle	Harvard Sq	The Mem Drive road diet upriver of Anderson Bridge should include bike lanes and a 10' shared path, not two separate paths <i>No change; bike lanes are unlikely to be used by many bicyclists whereas a separate path is likely to be popular with runners.</i>											•	
136	Middle	Hawthorne St	Preference to not see new signal at intersection of Memorial Drive and Hawthorne St for aesthetic reasons <i>No change; traffic signal already implemented by MassDOT as part of the Anderson Bridge reconstruction.</i>	•											
137	All	Misc	More priority should be given to gaps in off-road path network <i>No change; the report includes significant emphasis on gaps in the off-road path network.</i>								•				
138	All	Misc	Use dashed lines to delineate the parts of the path where bike traffic is to be expected <i>A recommendation has been added to incorporate yellow skip-striping along the primary paths within the system.</i>	•											
139	All	Signage	Do not rename the doctor Paul Dudley White Bike Path as a generic greenway <i>The recommendation is now to rename and rebrand the path system as the "Paul Dudley White Pathway"</i>			•	•								
140	All	Signage	Revise pathway signs to call the system "Charles River Greenway" <i>The recommendation is now to rename and rebrand the path system as the "Paul Dudley White Pathway"</i>				•								

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141	All	Stormwater	Include areas of permeable surface as long as the surface is adequatley hard for bike wheels along paths and parking lots <i>Report notes that permeable paving is up to 3X the cost of standard asphalt, but recommendations include its use in large areas of pavement, such as parking lots, but not used for paths</i>				•	•							
142	Upper	Watertown	Speed table needed at Galen St bridge crossing <i>No change; not included because of the high levels of traffic on connecting roadway (traffic calming elements like speed tables are typically used only onto local-service or minor collector streets.)</i>					•							





Memorandum

To: Amy Getchell, MassDOT and Dan Driscoll, DCR

From: Phil Goff, Alta Planning + Design

CC: Cynthia Smith, Halvorson Design Partnership; Jerry Friedman, HDR; Shannon Simms, Alta Planning + Design

Date: September 20, 2012

Re: Proposed Pathway Crossing Signal and Crosswalk Analysis - Harvard Bridge and Charlesgate East/Beacon Street intersection

The purpose of this study is to analyze the effects of installing or modifying signalized crossings at the intersections of 1) the Harvard Bridge (Massachusetts Avenue) / Storrow Drive exit ramp and 2) Charlesgate East / Beacon Street. These locations were chosen to accommodate pedestrian and bicycle accessibility and safety in conjunction with a proposed shared-use path connection from the edge of the Muddy River to the Harvard Bridge. The potential path alignment—currently being studied in a separate effort funded by the Solomon Foundation—runs through DCR parkland that sits between Storrow Drive’s east and west-bound traffic lanes between the Harvard Bridge and the Bowker Overpass.

The traffic assessment was made of the two study locations using the Synchro/SimTraffic software package. Synchro is a traffic analysis tool which is capable of calculating the delay and level of service (LOS) for intersections and includes the option of incorporating the effects of pedestrian crossings in the signal timings and operations. SimTraffic is the micro-simulation component of Synchro which evaluates the operations of intersections by simulating motorists activity based on traffic counts, signal timings, etc. The PM peak hour volumes were used for the analysis,



Figure 1: Study Area 1 and 2 in context

since this is typically a high vehicle volume hour and is also assumed to coincide with the largest pathway volume. Traffic volumes were obtained through existing studies of these intersections (courtesy of BTD) and supplemental counts taken during May 2012. The average intersection peak hour factor (PHF) and heavy vehicle percentage was used for each movement as well. These traffic volumes were used for both the existing and proposed condition to adequately compare the implications of the proposed alternatives. Traffic volumes do not take into account modest level of traffic increases between now and potential implementation.

1 Harvard Bridge / Storrow Drive Exit

The proposed pathway will cross the Harvard Bridge (Massachusetts Ave) at the Storrow Drive off-ramp intersection on the northbound bridge approach and the westbound approach from the off-ramp. Currently, both the northbound and southbound movements, across the Harvard Bridge, have free movement from Memorial Drive in Cambridge to Beacon Street in Boston. The westbound approach, via the Storrow Drive off-ramp, is one-way, stop controlled and right-turn-only movement.

This study addresses whether northbound queues caused by the addition of a traffic signal on Massachusetts Avenue will cause spillback into the intersection of Massachusetts Ave / Beacon St, located approximately 340 feet to the south.

In addition, queuing in the southbound direction at the Massachusetts Ave / Beacon St intersection is an existing concern, especially during events at Fenway Park and elsewhere. This study evaluated the potential for southbound queues at the Massachusetts Ave / Beacon St intersection to interfere with the operations of the proposed signalized pathway crossing at the Harvard Bridge / Storrow Dr off-ramp intersection.

1.1 Existing Conditions

The Storrow Drive off-ramp currently has minimal delay and operates at LOS B conditions under stop control. Queuing is minimal at this intersection. The Massachusetts Ave / Beacon St intersection operates at an overall LOS B, with approximately 15 seconds of delay. The 95<sup>th</sup> percentile queues in the southbound direction are approximately 190 feet long, falling 150 feet short of the crossing proposed at the Storrow Drive off-ramp. Existing traffic volumes, LOS, delay and queues are shown in Table 1 below.



Figure 2: Existing circulation at Harvard Bridge / Storrow Dr off-ramp



Table 1: Existing Conditions

Harvard Bridge / Storrow Dr off-ramp (Existing)				
Movement	Volume	LOS	Delay (sec)	95 <sup>th</sup> queue (feet)
WB-R	106	B	10.3	20
Massachusetts Ave / Beacon St (existing)				
Movement	Volume	LOS	Delay (sec)	95 <sup>th</sup> queue (feet)
WB-LTTTR	707	C	21.2	130
NB –LTT	888	B	17.7	270
SB-TTR	1064	A	8.8	190
Overall		B	15.1	

Currently, pedestrian and bicyclist circulation takes place on the sidewalks and in the bike lanes along the Harvard Bridge. A ramp down to the Charles River Reservation Path system from the sidewalk on the east side of the bridge currently exists. Cyclists moving from the Esplanade up the ramp to the Harvard Bridge typically either ride around the existing crash barrier to access the bike lane going north, ride on the sidewalk heading north or south, or in some rare circumstances cross over the Harvard Bridge at the uncontrolled location where the off-ramp meets the bridge. If the proposed path were to be constructed in the DCR parkland just west of the bridge, a pedestrian/bike crossing would likely be warranted to provide access from the ramp down to the Esplanade to the new path and open space. If this path were built without a new signal and crossing of the bridge, it would both minimize use of the new path and parkland, and would entice more jay-walking at this location.

1.2 Proposed Signal Alternative 1

Proposed Signal Alternative 1 is a full signal with a pedestrian/bicycle (path-crossing) phase. The path-crossing phase would require a total of 29 seconds to allow pedestrians and bicyclists to cross Massachusetts Avenue safely at a crosswalk located across the northern edge of the intersection (see Figure 3). The right turning movement from Storrow Dr would be restricted by a solid red arrow during the path-crossing phase and a flashing red arrow during the Massachusetts Avenue through movement.

The signal would be coordinated with the signal at Massachusetts Ave / Beacon St, which would reduce delay slightly at both intersections. By linking the two signals, the red lights for southbound traffic can be timed so that vehicles are stopped at both signals at the same time. This will help to minimize queues from blocking the crosswalk on Harvard Bridge. In



Figure 3: Aerial view of Harvard Bridge / Storrow Dr off-ramp Alternative 1

addition, queue detectors should be installed on the Storrow Drive off-ramp, to prevent back up onto Storrow Drive, as well as on northbound and southbound Massachusetts Avenue to prevent back up at the Massachusetts Avenue / Beacon St intersection and at the location of the proposed crossing.

Installing a signal at this intersection provides an overall LOS B, with 18 seconds of delay. Based on the Synchro results and SimTraffic simulation used for this Study, the 95<sup>th</sup> percentile queues in the northbound direction are expected to be approximately 230 feet, leaving a minimum 110 foot gap between the back of the queue and the intersection of Massachusetts Ave / Beacon St.

Table 2: Alternative 1

Massachusetts Ave / Storrow Dr (Alternative 1B)				
Movement	Volume	LOS	Delay (sec)	95 <sup>th</sup> queue (feet)
WB-R	106	D	39.4	95
NB-T	856	C	20.7	230
SB-T	1064	B	14.0	230
Overall		B	18.2	
Massachusetts Ave / Beacon St (Alternative 1B)				
Movement	Volume	LOS	Delay (sec)	95 <sup>th</sup> queue (feet)
WB-LTTTR	707	C	25.9	135
NB –LTT	888	B	15.4	300
SB-TTR	1064	A	2.2	20
Overall		B	12.9	

1.3 Proposed Signal Alternative 2

Proposed signal Alternative 2 also proposes a full signal with the pedestrian/bicycle crossing located across Massachusetts Avenue at the southern edge of the intersection with the Storrow Dr off-ramp (see Figure 4). The pedestrian phase again would be 29 seconds for the total phase length. Right turns from the Storrow Dr off-ramp will be allowed during through movements and the pedestrian phase.

Analysis showed that both intersections operate at LOS B, with less than 20 seconds of delay. Queuing in both the southbound and northbound directions would not block the existing intersections. The signal should be coordinated with the Massachusetts Ave /



Figure 4: Aerial view of Harvard Bridge / Storrow Dr off-ramp Alternative 2

Appendix 1 Harvard Bridge Signal and Charlesgate East Crosswalk Study continued

Charles River Basin Connectivity Study: Harvard Bridge Signal and Charlesgate East Crosswalk Study

Beacon St signal so that southbound traffic would be stopped at the Harvard Bridge / Storrow Dr signal at the same time or before the southbound traffic is stopped at the Massachusetts Ave / Beacon St intersection. This would reduce the chances of vehicles stopping in the proposed crosswalk across the Harvard Bridge. In addition, queue detectors would be installed on Massachusetts Avenue in both directions.

Table 3: Alternative 2

Massachusetts Ave / Storrow Dr (Alternative 2)				
Movement	Volume	LOS	Delay (sec)	95 <sup>th</sup> queue (feet)
WB-R	106	A	6	35
NB-T	856	B	15.6	180
SB-T	1064	B	18.8	235
Overall		B	16.8	
Massachusetts Ave / Beacon St (Alternative 2)				
Movement	Volume	LOS	Delay (sec)	95 <sup>th</sup> queue (feet)
WB-LTTTR	707	C	21.2	130
NB-LTT	888	B	17.7	270
SB-TTR	1064	A	9.5	190
Overall		B	15.3	

One item to note is that several illegal left-turn movements from the Storrow Dr off-ramp to Massachusetts Ave southbound were observed during traffic counts. To mitigate this, lane delineators and/or signage should be considered to restrict this movement so that vehicles avoid conflicts with pedestrians in the crosswalk (while bridge traffic is stopped).

1.4 Conclusion

Either of the two signalization alternatives proposed above for the shared-use pathway crossing of the Harvard Bridge will provide efficient pedestrian and bicycle accommodations without an adverse effect on traffic flows. Alternative 1, with a full coordinated signal, allows a single-stage crossing from the proposed path to the existing ramp down to the Esplanade. Vehicle traffic flow is less affected by Alternative 2, but this requires a two-stage crossing for pathway users wishing to cross from the proposed path to the Esplanade via the existing ramp. In either option, new overhead signs, advanced warnings that read “Do not block intersection”, as well as advanced queue detectors are recommended.

Charles River Basin Connectivity Study: Harvard Bridge Signal and Charlesgate East Crosswalk Study

2 Charlesgate East / Beacon Street Intersection

2.1 Existing Conditions

The proposed pathway to the Harvard Bridge requires pedestrian/bicycle improvements at the Charlesgate East / Beacon Street intersection on the western side of the intersection in order to connect with the sidewalk/path adjacent to the Muddy River. The intersection is currently signalized with two exclusive through lanes and a through-right turn lane in the westbound direction (Beacon Street), and two through lanes and a left turn lane with a channelized island in the northbound direction (Charlesgate East). Both Charlesgate E and Beacon St are one-way streets. The intersection operates at an overall LOS B with approximately 10 seconds of delay in existing conditions. Existing traffic volumes, LOS, delay and queues are shown in Table 4 below.



Figure 5: Existing circulation at Charlesgate East / Beacon Street

Currently, there is very little demand for pedestrians or cyclists to cross from the west side of Charlesgate East to the north side of Beacon Street. Those wishing to move east or west currently use the existing crosswalk on the east side of Charlesgate East at Beacon or the existing crosswalk at Charlesgate West at Beacon. A potential new path through the DCR property between the Bowker Overpass and the Harvard Bridge would create far more demand from pedestrians and bicyclists – especially those coming from the Back Bay Fens and the Emerald Necklace – to cross Beacon Street via a potentially enhanced path adjacent to the Muddy River. If this path were built without a new crosswalk and/or changes to the existing signal timing, it would both minimize use of the new path and parkland, and would entice more jay-walking at this location.

Table 4: Existing Conditions

Charlesgate E / Beacon St (existing)				
Movement	Volume	LOS	Delay (sec)	95 <sup>th</sup> queue (feet)
WB-TTTR	564	B	10.7	55
NB-L	148	B	18.2	80
NB-TT	386	A	6.2	50
Overall		B	10.1	



2.2 Proposed Alternative 1

Two alternatives are proposed to accommodate a new crosswalk on the west side of the Charlesgate East / Beacon Street intersection. Crosswalk Alternative 1 is a two-stage crossing, allowing pedestrians to cross from the sidewalk/path adjacent to the Muddy River to the left-turn island, and then separately across Beacon Street (see Figure 6). The phase for the Beacon Street through movement would be set to provide sufficient crossing time, 24 seconds, for the crosswalk between the southern portion of the pathway and left-turn island. The northbound Charlesgate East through movement phase will also be set to provide sufficient time, 26 seconds, for pedestrians to clear the crosswalk across the west side of Beacon Street. Maximum recall, or full use of the allocated green time, is provided to allow the northbound left-turn movement to clear.

The overall delay at the intersection using Alternative 1 would be increased by 8 seconds but would remain at LOS C. Both the westbound approach and northbound left turn movement would have increased delay of 10 to 15 seconds and operate at LOS C.

Table 5: Alternative 1

Charlesgate E / Beacon St (Alternative 1)				
Movement	Volume	LOS	Delay (sec)	95 <sup>th</sup> queue (feet)
WB-TTTR	564	C	24.1	115
NB-L	148	C	26.6	120
NB-TT	386	A	5.3	55
Overall		B	17.8	

2.3 Proposed Alternative 2

Crosswalk Alternative 2 proposes eliminating the left-turn slip lane and island with a left-turn lane to provide a single-stage pedestrian crossing of Beacon Street (see Figure 7). Charlesagate East’s traffic movement would be given 50 seconds of time, with the left turning movement held for the first 32 seconds of pedestrian crossing time. The final 18 seconds of this phase would prohibit pedestrian/bicyclist crossing, while giving a green arrow to left

turning vehicles. However, this phasing would require taking green time from the westbound Beacon Street and northbound left movements. Phases for these movements would need to continue to be long enough to provide sufficient crossing time for pedestrians moving east-west across Charlesgate East.

The reallocation of green time to provide the single-stage crossing would increase delay on the westbound and northbound through movements, though both would still operate at LOS C. Overall, the intersection would operate at LOS B with 19 seconds of delay.



Figure 7: Aerial view of Charlesgate East / Beacon Street Alternative 2

Table 6: Alternative 2

Charlesgate E / Beacon St (Alternative 2)				
Movement	Volume	LOS	Delay (sec)	95 <sup>th</sup> queue (feet)
WB-TTTR	564	C	25.2	120
NB-L	148	C	29.8	120
NB-TT	386	A	4.9	50
Overall		B	18.7	

2.4 Conclusion

Either of the two alternatives proposed above for the pathway crossing at Charlesgate East / Beacon Street will provide efficient pedestrian and bicycle accommodations with minimal adverse effect on traffic flows. Crosswalk Alternative 1 has less of an effect on vehicle delays, but requires some pedestrians and bicyclists to complete a two-stage crossing from the Muddy River sidewalk/path to the north side of Beacon Street. Crosswalk Alternative 2 provides a single-stage crossing of Beacon Street, with only a slight increase in vehicle delays over Alternative 1. Alternative 2 would also require a significant reconstruction of one corner of the intersection while Alternative 1 requires only crosswalk striping, retiming of the signal and enlargement of the existing left-turn traffic island.