McGrath Corridor - A vision for the future in Somerville, MA

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Prepared by the Department of Landscape Architecture & Regional Planning
University of Massachusetts, Amherst
Landscape Architecture 609
Professor Robert Ryan
Editors: Nathan Frazee &
Kathryn Ostermier
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Graduate Student Design Team

Gray Scenario
- Youjin Kwon
- Ryan Ball
- Tai-Hsiang Cheng

Green Scenario
- Feiqiang Tong
- Andrew Weir
- Patrick McGeough

Super Green Scenario
- Nathan Frazee
- Jennifer Masters
- Kathryn Ostermier
- Fangfang Wang

Special Thanks

Luisa Oliveira
Somerville Senior Planner, Landscape Architect
Sarah Spicer
Somerville Intern Planner
Brad Rawson
Somerville Senior Planner
Rob May
Somerville Director of Economic Development
Hayes Morrison
Somerville Director of Transportation and Infrastructure
Robert T. King
Somerville Director of Engineering
Rachel F. Kelly
Somerville Green Infrastructure
George Proakis
Acting Somerville Director of Planning
Arn Franze
Somerville Director of Parks and Open Space
Lenni Armstrong
Somerville Depave

A huge thank you to Professor Robert Ryan who saw the team through the seven weeks offering expertise and guidance in the efforts to achieve a deeper knowledge and understanding of greenway development, particularly as it pertains to a unique urban context.

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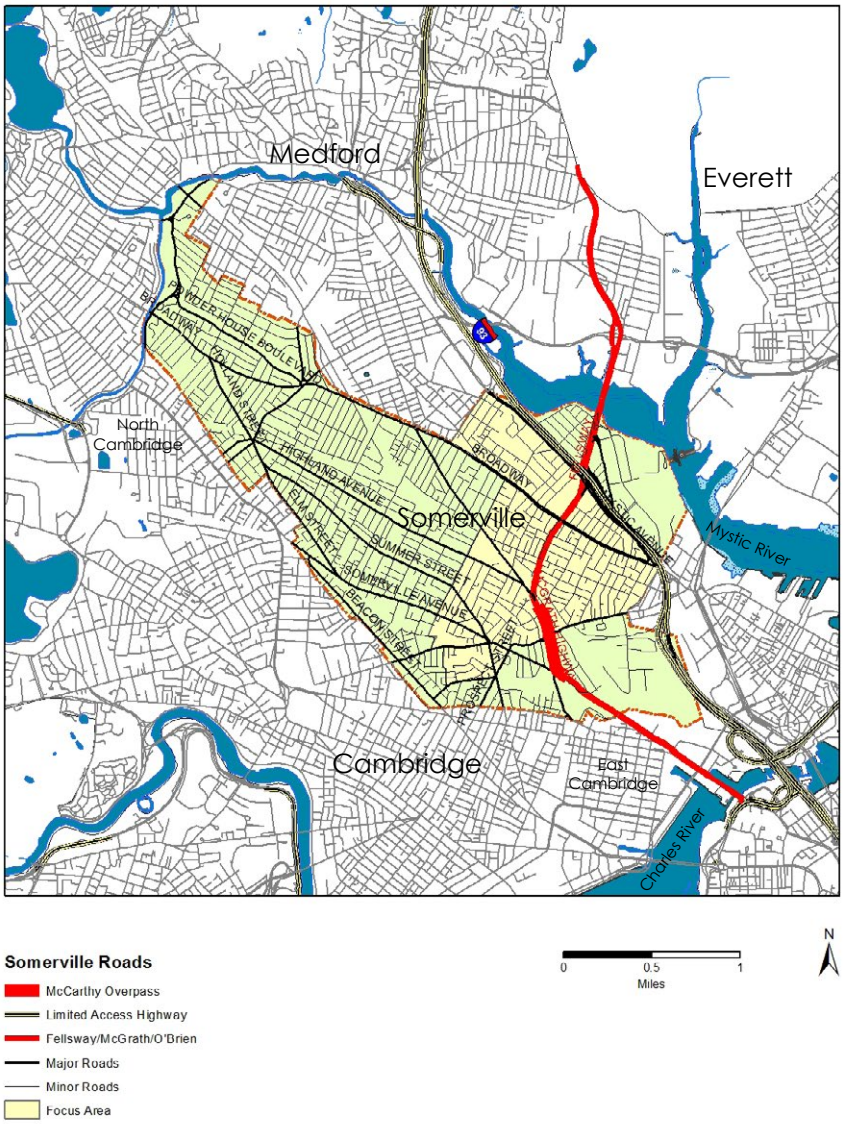
1.00 Introduction

The McGrath Highway Background

McGrath Highway is the name given to Massachusetts Route 28 where it passes through Somerville. To the north, where it continues across the Mystic River into Medford, it is known as the Fellsway. To the south, in Cambridge, it is the Monsignor O'Brien Highway. Elevated in places, McGrath effectively cuts off much of East Somerville from the rest of the city as well as acting as a source of concentrated air pollution. Redesign and/or removal of this highway would create an opportunity to reconnect neighborhoods and increase green infrastructure in what is one of the most densely urbanized cities in the US.

There is a need to create a vision for this corridor along with connections to a proposed extension of the Green Line and a new Community Path that will connect Boston to Cambridge and adjacent cities. Other important areas to connect to include the Mystic River and Assembly Square (currently being redeveloped as a major shopping area and housing area), and the Brickbottom neighborhood (a former industrial area) to the south. Foss Park, Somerville's largest open space, also lies along the McGrath corridor.



Route 28 through Somerville: The red line shows the route of the McGrath Highway through Somerville and beyond. The thick portion of the line denotes the McCarthy overpass where the highway is elevated.

Project Goals

This project seeks to create opportunities for green connections and city beautification along the McGrath Highway corridor.

Key directives are:

- Build greenway connections including pedestrian path and bike lanes
- Increase open space
- Minimize storm water flows and create on site infiltration through green infrastructure.
- Improve tree canopy
- Enhance economic growth and revitalization

The studio's primary goal is to plan this urban greenway project at multiple scales. The studio synthesizes information about natural features, recreation resources, and development patterns to create a green infrastructure network that addresses the unique problems and opportunities of the study area. Moreover, the studio focuses on finding innovative strategies for enhancing green space in the city, creating urban wildlife habitats, improving recreation access, and enhancing environmental quality.

Studio Process

The studio sought to rethink the role of the street and highway, in particular of McGrath Highway, envisioning them as "green connectors" that provide both enhanced social and ecological function. Working at multiple scales, we developed three scenarios, Gray, Green, and Super Green, that developed different but complementary approaches to this issue.

Initial Steps

The studio started with a general introduction to greenways, corridors that can provide ecological connection between areas of habitat as well as opportunities for alternative, non-automotive, transport. These can range from miles across to the width of a hedgerow or line of trees depending upon location and purpose. Within a densely urban context like Somerville, we rapidly focused on connecting to areas of open space and to the river with vegetation and on promoting alternative transportation opportunities for residents that sought to reconnect neighborhoods separated by large highways such as McGrath and I-93. In particular we carried out a number of precedent studies, looking at the effects of removing elevated highways in a variety of contexts across the country.

The next step was analysis and assessment. Teams looked at multiple aspects of the site at a range of scales: at regional physical and social systems such as hydrology and transportation, at city level socioeconomic data and alternative transportation infrastructure, at corridor level street widths and tree canopy, to name just a few.

Initial Meeting

As the above work progressed, the studio held its first meeting with the clients - the City of Somerville in Somerville on September 12th, 2011. Students heard presentations from George Proakis, Acting Director of Planning, Hayes Morrison, Director of Transportation and Planning, Rob May, Director of Economic Development, Brad Rawson, Economic Development Planner, Arn Franze, Director of Parks and Open Space, and Rachel Kelly, Green Infrastructure Planner. Also present were Sarah Spicer whose thesis work on the McGrath corridor informed much of our early thinking, and the studio's primary contact with the city, Luisa Oliveira, Senior Planner and Landscape Designer.

Better informed as to the challenges and opportunities facing Somerville, the studio, led by Ms. Oliveira, went on a tour of the McGrath corridor from Union Square to Assembly Square and the Mystic River to the north.

Preliminary Designs

Over the next few weeks the studio focused on completing its analysis and developing a range of preliminary design proposals for the McGrath Corridor. These focused on greening the corridor using a number of possible strategies, some requiring more intervention than others. Options ranged from boulevarding McGrath to transforming it into a park similar to the Highline in New York. These ideas, and others, were presented to the City of Somerville at a second meeting on October 3rd, 2011.

Final Design Development

Previously formed into teams focusing on North, Central, and South McGrath, the studio now reformed into teams looking at the entire corridor through the eyes of three scenarios - gray, green, and super green (see later for a detailed description of these alternatives). Incorporating feedback from the second client meeting, each team developed a detailed proposal for the entire corridor. These were presented to the Landscape Architecture and Regional Planning Department on October 17th and students made revisions following that meeting and had a final presentation October 27th, 2011.

Studio tour of the McGrath Corridor: Luisa Oliveira talks to studio members about possibilities for change in East Somerville.

2.00 Assessment

Somerville Challenges and Opportunities

Like every city, Somerville has its environmental issues, innate or acquired. However, a well thought out planning and design process can create opportunities from such challenges. Following input from the city, the studio team created a list of relevant challenges. The challenges listed below are relevant to the problem-solving process in our studio goals.

The large number of Impermeable front yards increase the surface runoff and non-point source pollution of the city.

Complicated traffic situations occur repetitively along McGrath highway creating dangerous intersections for pedestrians.

1. Brownfields:
Somerville contains numerous brownfields, many of which are found within or near residential areas. Somerville's dense urban grain makes remediation and redeveloping of these spaces more challenging. However, conversion of brownfields to public open space has become the leading strategy for increasing the amount of municipal public open space in the city.

2. Environmental Justice:
East Somerville contains the highest portion of low-income residents and also carries the highest burden from transportation infrastructure such as the elevated I-93, Route 28, and several rail lines. This transportation infrastructure forms significant barriers around East Somerville, limiting access to public parks, play grounds and open spaces. Making connections across these obstacles is one of the priorities of the design team.

3. Ground and surface water pollution:
Point and non-point source pollution from both within and outside the degrade the quality of Somerville's surface water. Water pollution has became a critical issue in the fulfilment of Somerville's Open Space and Recreation Plan. Somerville's urban development, which has expansive impermeable surfaces especially in paved residential yards and commercial lots, is a large source of non-point source pollution. However, the Mystic River and Alewife Brook continue to attract residents and non-residents alike to engage in water-oriented recreational activities such as boating, wildlife viewing, etc. This attraction to the water makes it imperative that the city addresses environmental issues created by development in regards to the waterways.

Other opportunities may also include the historic richness of the city and scenic landscapes such as the Mystic River waterfront and Prospect Hill. Additionally, the Brickbottom and Assembly Square areas are slotted for significant redevelopment. There is a great need for improved open space and recreational opportunitiies combimed with commercial redevelopment for both residents and non-residents (Curtatone, 2009).

Regional pollution are manifest in water bodies near the mouth of Mystic River.

Elevated I-93 became the main barrier of the city, blocking the view as well as pedestrian connectivity throughout the city.

Poorly planned transportation patterns and undeveloped space beneth I-93, create a lack of conectivity for pedestrians.

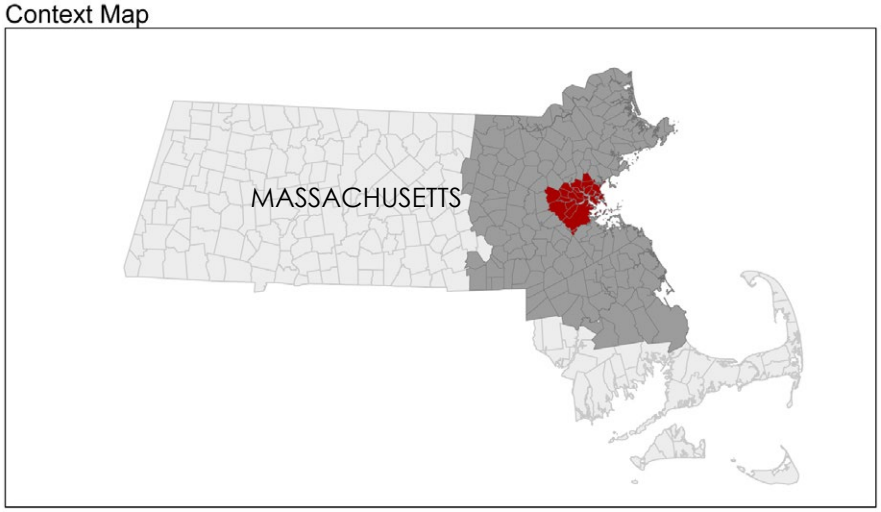
The view of Medford industrial area from prospect street shows the close proximity to residential areas.

A successful case of conversion space from a vacant automobile service station to flower market.

Regional Assessment

Location

Context Map



Legend

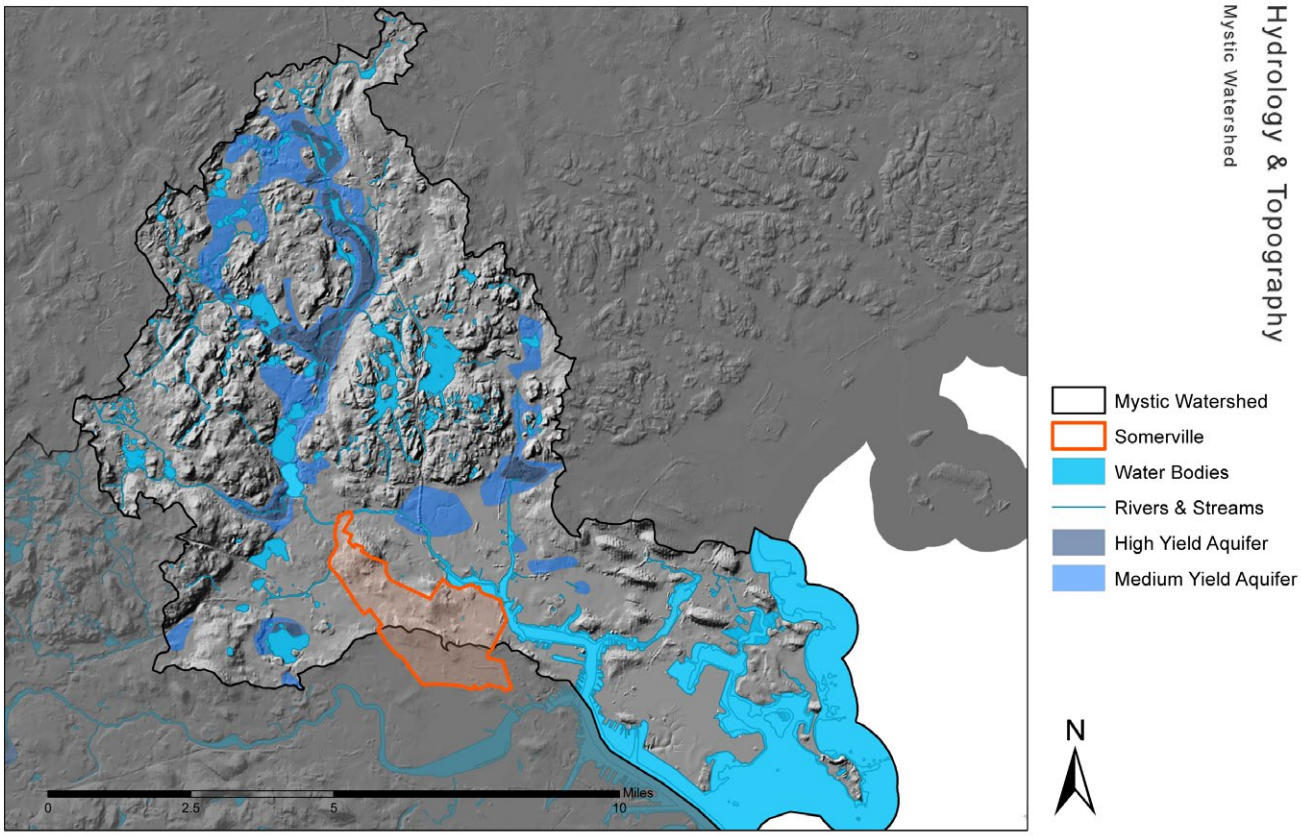
- The Inner Core
- MetroFuture growth and Preservation areas
- The State of Massachusetts

0 5 10 20 30 40 Miles

Somerville is located in the eastern part of the Massachusetts State. To its south is the city of Boston. Somerville is part of Metro Future Area which is a plan to create a "Greater Boston Region."

There are two watershed that surround Somerville. The northern side is Mystic River and the southern side is Charles River watersheds.

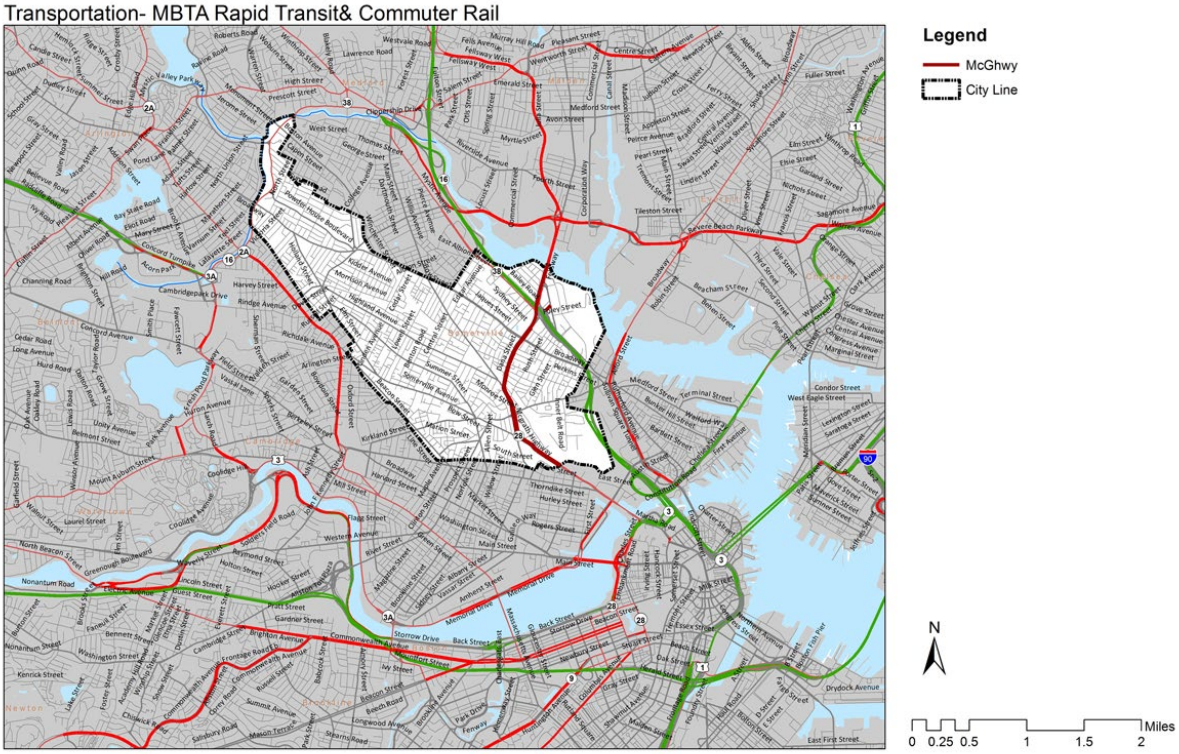
Hydrology and Topography



Somerville's northern boundary is established by the Mystic River and its southern side is Charles River watersheds. Surrounded by two watersheds,Somerville is considered as an aquifers and flood plains area. Significant topography shapes the city, to its west, it was mountains and valleys to its east plains.

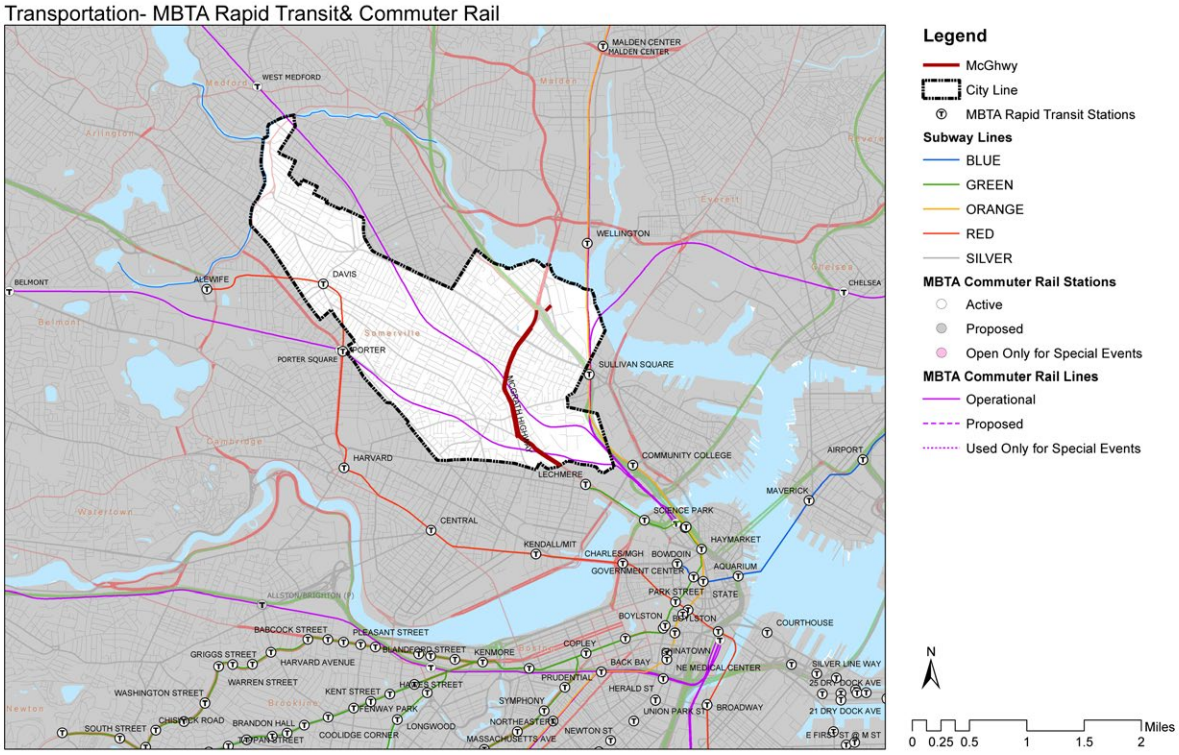
Transportation

Transportation- MBTA Rapid Transit& Commuter Rail

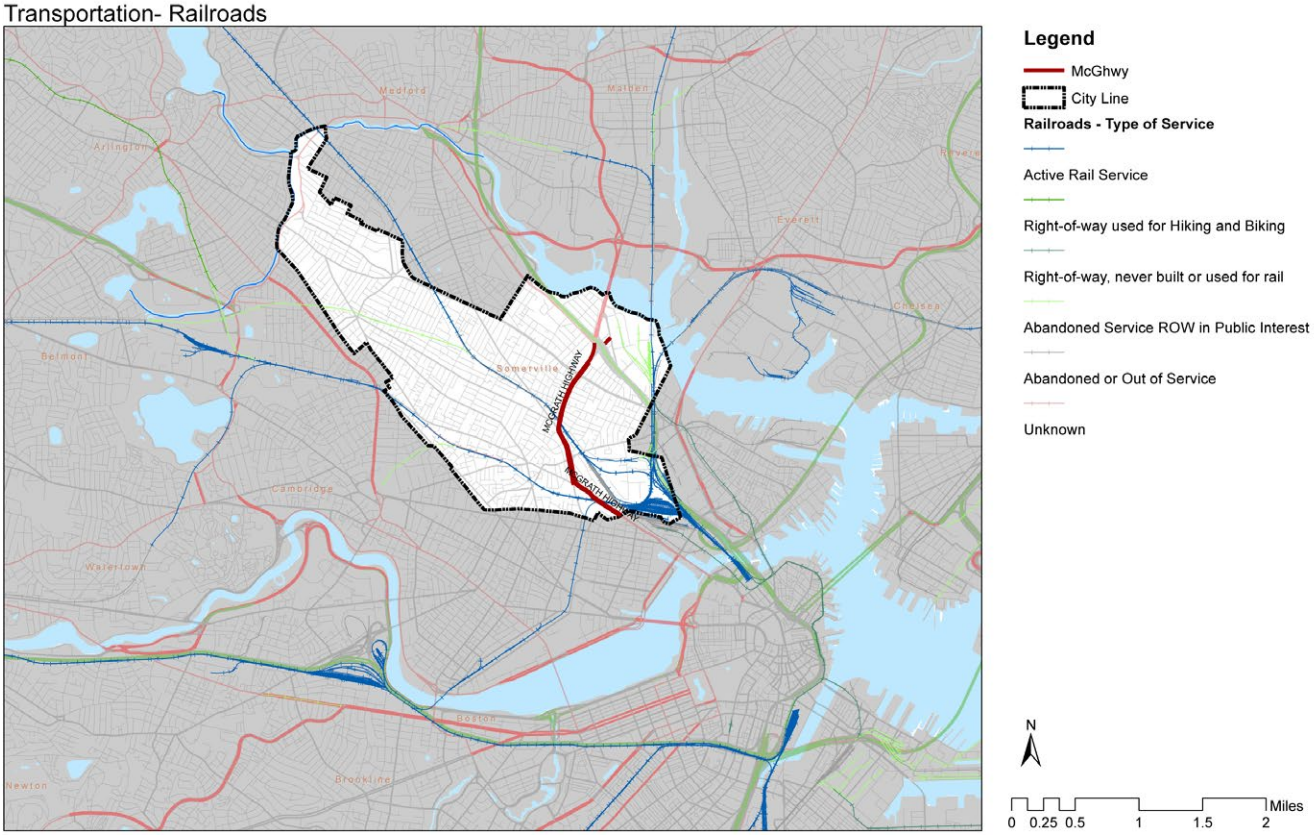


Somerville is surrounded by an extensive roadway system including I-93 which goes through the northern portion. Local routes distribute traffic through out the city and connect Somerville to Boston and surrounding towns. Somerville is historically underserved by transportation. Although the Green Line Extension Project will improve this situation, currently there is only one MBTA train stop within Somerville. Also, there is a huge rail hub in the city, which acts as an unsightly boudary rather than a stimulation. The rail service runs through Somerville but provides little service to the area and people who are burdened with the majority of the needed infrastructure. However, the city is attempting to utilize abandoned railway lines to create a Community Path, which present an oppurtunity to revitalize the railways.

Transportation- MBTA Rapid Transit& Commuter Rail

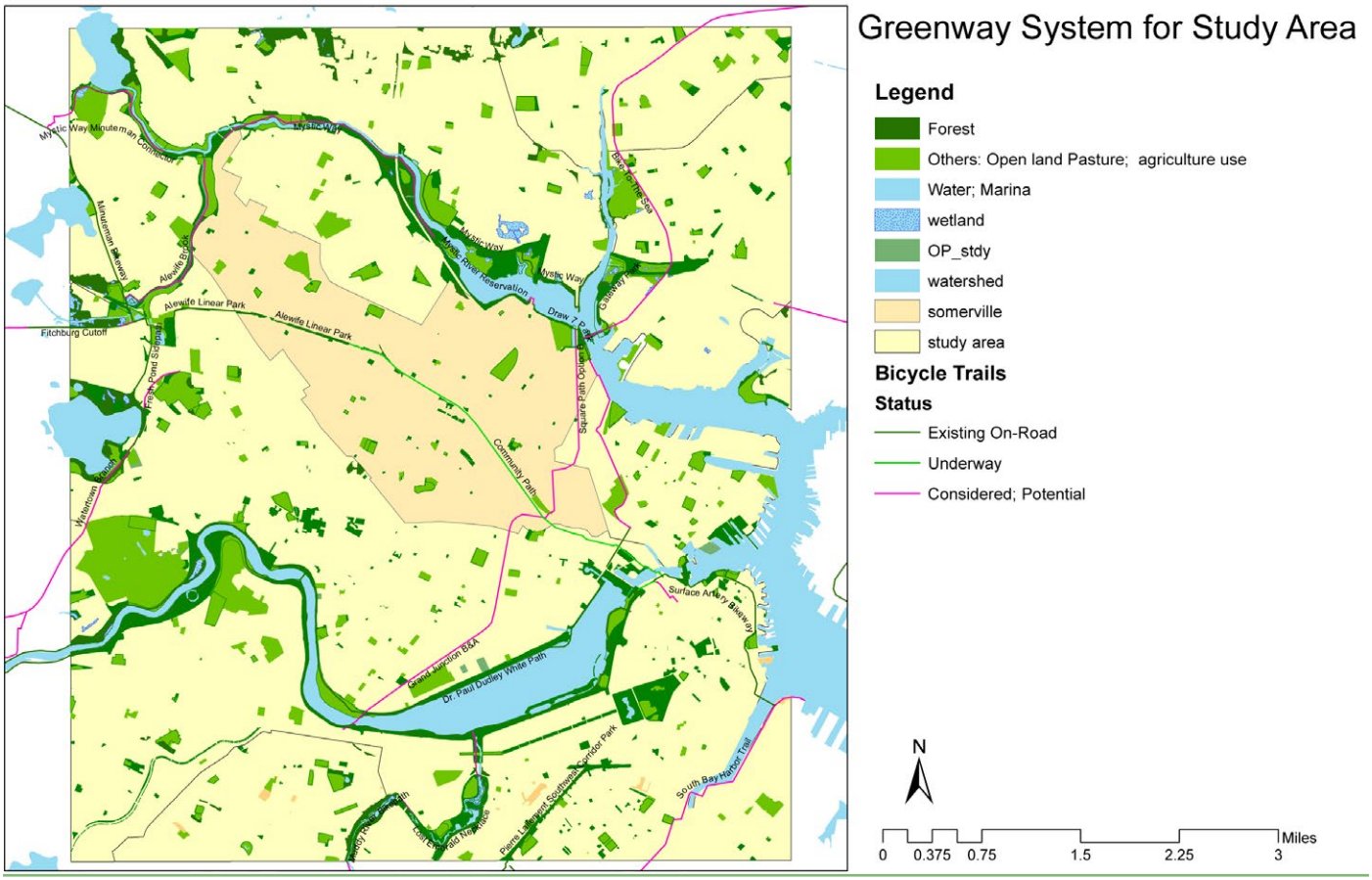


Transportation- Railroads



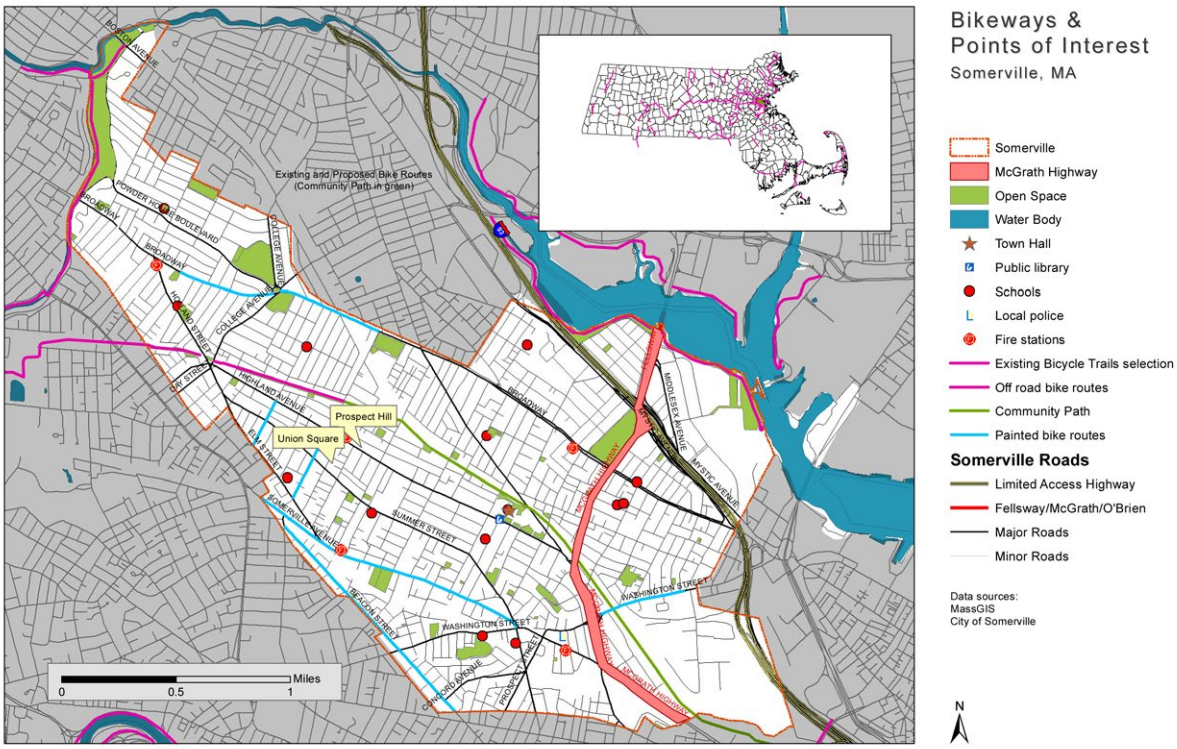
Regional and Green Connections

Existing Condition



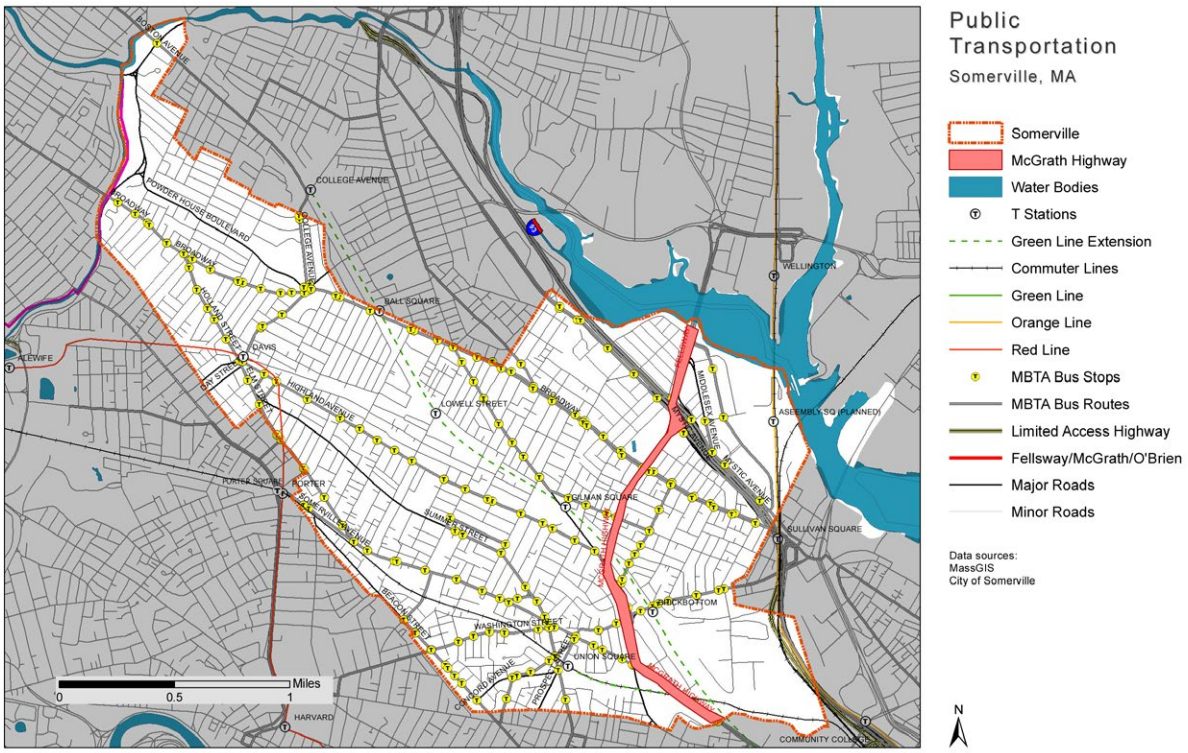
Citywide Assessment

Bikelane Connections



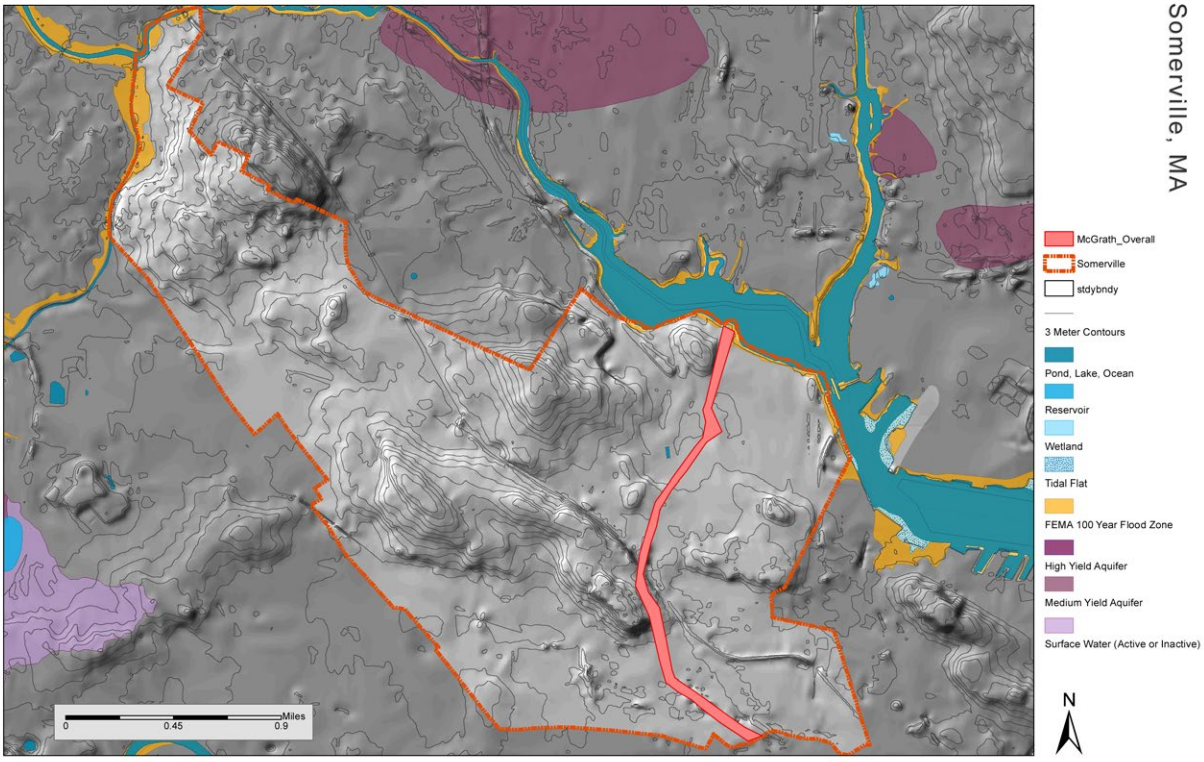
One bike trail across Somerville is called the Community Path which connects to the Minuteman Bike Trail west of the city. It begins in east of Somerville to the middle of the city, being considered as a vital connection to Boston and rest of Commonwealth.

Public Transportation / MBTA



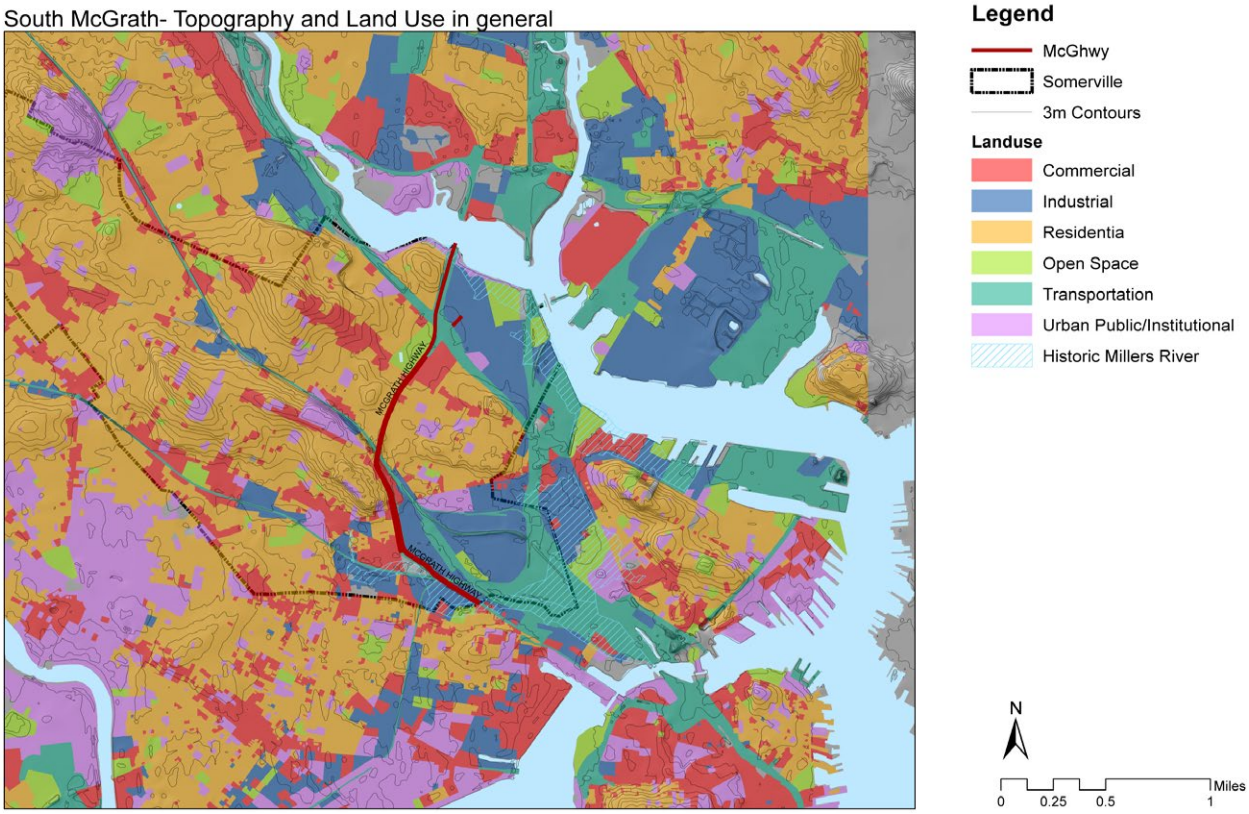
There are public transportation options like buses services which go through the entire city of Somerville. However, Somerville is largely ignored by MBTA rail service. However, the Green Line Extension is going to be constructed in Somerville according to citywide plan.

Hydrology and Topography



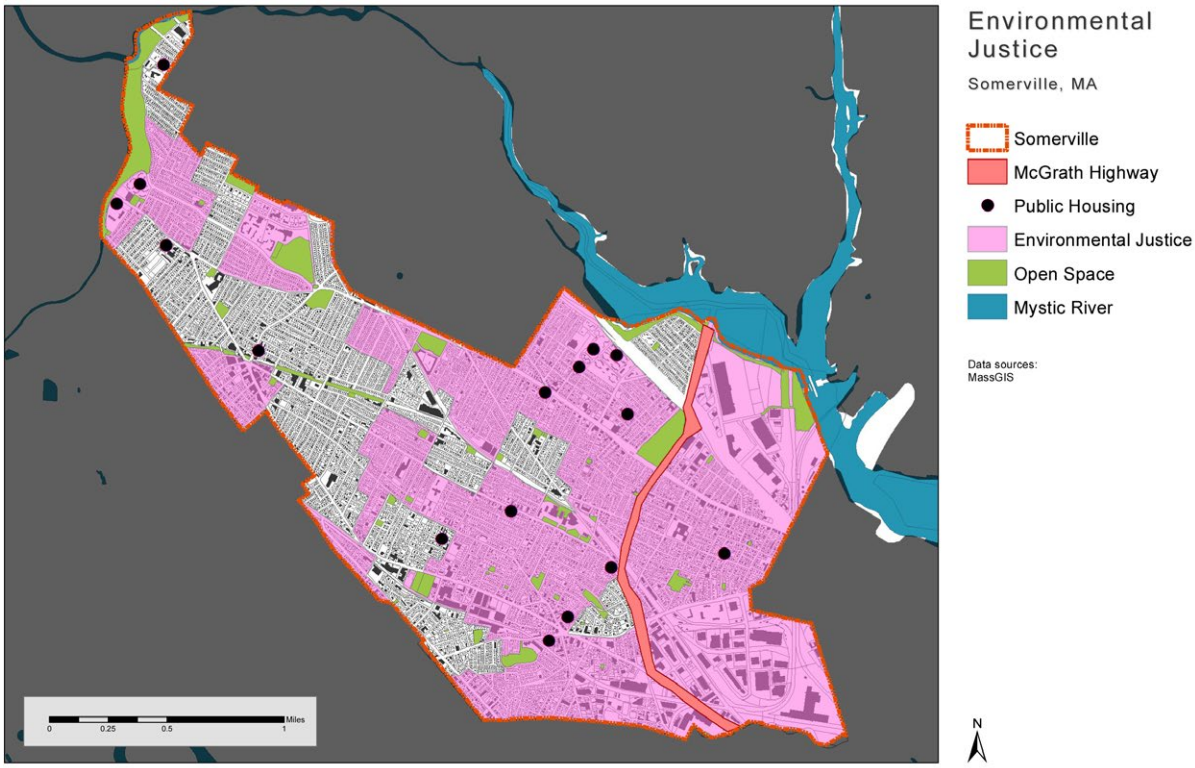
Land Use

South McGrath- Topography and Land Use in general



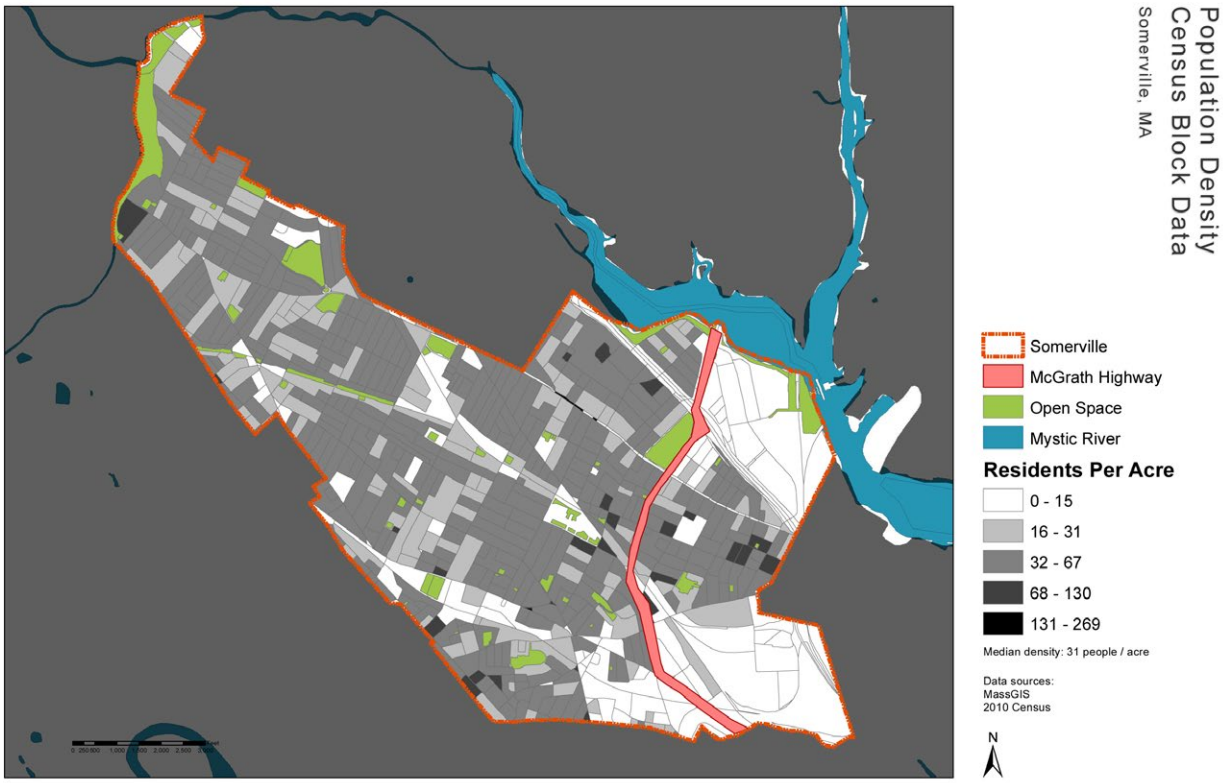
The city of Somerville has a typical topography of postglacial landform. Prospect Hill and Ten Hills neighborhood occupy the highest point of the city. The southern portion of the McGrath Highway is mainly an industrial area. While moving to the north, the land use transitions to residential use.

Environmental Justice



The entire corridor (except Prospect Hill neighborhood) is identified as an Environmental Justice area. Public housing is mostly located in East Somerville, for example: Ten Hills, and at Medford intersection.

Population Density



Somerville is considered one of most densely populated cities in New England. The city has a population density of 29 persons per acre (18,900 per square mile) (Curtatone, 2009).

Open Space and Tree Canopy

According to Somerville's Open Space and Recreation Plan, of the city's 4.1 square miles, only about 177 acres, or 6.75%, meet the definition of open space." (Somerville Open Space plan, 2009, p. 5). Foss Park is a state-owned and managed park which is located in the crossing of I-93 and Somerville. East Somerville neighborhood has virtually no open space. The city is evaluating many of the city parks and attempting to revitalize them and improve the recreation facilities throughout the city.

According to the USDA Forest Service itree program, Somerville has a citywide tree canopy coverage is approximately 24%, this includes street trees as well as urban forests. The Urban Forestry Initiative is challenging Somerville to increase tree canopy coverage to better living conditions for the residents.

Conclusion

The McGrath Highway is like a barrier seperating Somerville into two pieces. The city lacks connections between neighborhoods. To provide more ecological services to the city, increase of tree canopy and infiltration opportunities is of critical importance. The studio goals and objectives are to address these issues in an attempt to improve the physical and spatial qualities of the McGrath Highway corridor within Somerville.

3.00 Case Studies

A very useful method for landscape architects to come up with solutions to problems is to review case studies. Case studies are reports on projects that have been completed and can be used to see what solutions were found to the problems facing that specific project. For this report, the design teams reviewed projects that have addressed elevated highway systems throughout the United States and assessed how some of the solutions in these projects could be applied to Somerville.

Octavia Boulevard

Located in San Francisco, CA, Octavia Boulevard renovated a elevated highway that had been destroyed and was outdated. The solution allowed for a more aesthetic layout where secondary roads handled local traffic and a boulevarded highway continued throughout the city. This allowed for green open space and recreational opportunities to be installed.

(Image source: Siegel, 2007)

(Image source: Cieplinsky, 2007)

(Image source: Siegel, 2007)

Riverfront Parkway

Located in Chattanooga, TN, the Riverfront Parkway allows for connections to the waterfront addresses the issue of the highway becoming a barrier for the city. This design allows for a park along the waterfront and an increase in tree canopy coverage to help reduce the intrusive presence of the highway.

(Image source: Southern Travel News, 2008)

(Image source: Glatting Jackson Kercher Anglin, 2000)

(Image source: TNVacation.com, 2012)

Park East Freeway

Located in Milwaukee, WI, Park East Freeway like many other freeway projects, was intended to help traffic flow through the city. The project was over scaled and never had the amount of traffic that was projected. Because of this, the project never was completed and has been dismantled to create at grade streets with integrated park systems throughout.

(Image source: Tysons, 2012)

(Image source: Museum of the City, 2010)

(Image source: City of Milwaukee Planning Dept., 2007)

Westside Highway

Located in New York City, NY, the Westside Highway runs along the Hudson River. An elevated highway was constructed in the 1920s through the 1950s. In 1973, the elevated highway was shut down due to neglect and structural damage. Because of this, the highway has been brought back down to grade and a more pedestrian and environmentally conscious design has been implemented.

(Image source: Thomas Balsley Associates, 2010)

(Image source: Removing Freeways - Restoring Cities, 2007)

(Image source: Lueck, 2009)

Embarcadero

Located in San Francisco, CA, the Embarcadero was a double decker freeway that ran along the bay waterfront. The freeway was eventually closed and torn down because of damage cause from an Earthquake. The road was brought down to grade and a boulevard system was created. The adjacent properties were revitalized and have created a tourist hot spot.

(Image source: Lost SF, 2010)

(Image source: PlanetWare Inc., 2012)

(Image source: Ger-Nis International, LLC., 2010)

Case Study Conclusion

By looking at these projects, the design team was better able to understand how similar issues to Somerville have been solved. An overlapping theme was the deconstruction of the elevated portions of the highway. Each project presented shows how the deconstruction of the elevated highway allowed for more of a connection to either the waterfront or other parts of the city. Pedestrian networks were established where otherwise they could not have been and vast amounts of revitalization of adjacent properties was possible.

4.00 Alternatives

Introduction

There are a variety of ways to tackle the issues the McGrath Highway presents in Somerville. In efforts to obtain some advice in this matter, Craig Nicolson, a University of Massachusettes professor and member of the Boston Metropolitan Urban Long-Term Research Area (BMA-ULTRA) Project was consulted. Professor Nicolson presented the scenario approach and it could be used to show a variety of trends and give a scientific approach to design. The type of scenarios discussed dealt with existing trends and how additional greening efforts could be done to alter the study area.

With these concepts in mind, the area teams developed different scales that would address short term low cost solutions as well as long term goals with intense green infrastructure improvements. The Gray Scenario dealt primarily with the short term goals and the Green Scenario began to address some of the long term goals with a concentration on green infrastructure improvements.

These early scenarios were developed in the three study areas and presented to the city of Somerville. Following the presentation to the city the design teams were asked to further push the envelope of possibility and develop a third scenario, Super Green, which would not be restricted by financial and engineering aspects. This scenario would provide an extreme solution that could be used to excite and encourage interaction from the community on possible design concepts.

To properly address these scenarios there was a shift in group member layout. The initial groups had been based on geographical locations, north, central and southern. Each member within those groups was assigned one of the design scenarios, grey, green, and super green. Following these changes the groups were than based on design scenarios throughout the entire corridor rather than geographical location. Below are the basic elements that will be addressed in each of the design scenarios.

Scenario Digram: The breakdown of scenarios was presented as three different levels, Gray, Green, and Super Green. Each scenario had the basic elements that were incorporated throughout the design.

Gray Scenario

The Gray Scenario will address short term feasible solutions to improving the corridor of McGrath through Somerville. These improvements will enhance the existing green infrastructure and improve pedestrian networks based on current infrastructure layouts. The ways in which this will be possible is to shrink the amount of lanes that are currently on McGrath Highway. Based on traffic studies done by Massachusetts Department of Transportation the amount of traffic in this area is much lower than the structure was intended to handle. This indicates that reducing the number of lanes is a feasible opportunity and the fewer lanes would be able to adequately handle the traffic volumes throughout the corridor. With the additional room created from the reduction of lanes, additional tree canopy can in introduced and enhanced pedestrian networks can be established.

Green Scenario

The Green Scenario addressed the long term goals that were presented by the city. The primary issue was to lower the elevated portion of the McGrath Highway and increase tree canopy. With the elimination of the elevated the McGrath Highway a boulevard street was possible with a large increase of green open space throughout the corridor. This layout allows for infiltration elements throughout the corridor as well as larger planting areas to handle larger and healthier trees. This boulevard system is developed throughout the entire corridor.

Super Green Scenario

The Super Green Scenario introduces possibilities for the corridor that are very extreme. The southern portion incorporates an elevated park system on the infrastructure where currently cars travel. In this scenario the cars are brought down to street level and the elevated portion provides for a corridor for safe and enhanced pedestrian and green open space. As the highway enters the central section it is lowered allowing for the existing pedestrian bridge to be replaced with a much larger and greened version. The tree coverage over the highway would allow for the pollutants from the automobiles to be filtered before entering the space where people inhabit. The corridor than enters the northern portion where it is tunneled under Interstate 93. This allows for a much more expansive green open space and helps transition the corridor into the extensive Mystic Waterfront Park. These solutions provide maximum infiltration opportunities while accommodating the flow of the automobile. Tree canopy is maximized throughout the corridor and green open spaces are included when ever possible.

Each of these scenarios is explained further in this report. Each section has a chapter that will walk the reader through the corridor. This walk through will begin in the southern portion of the McGrath Highway at the Cambridge/Somerville city line.

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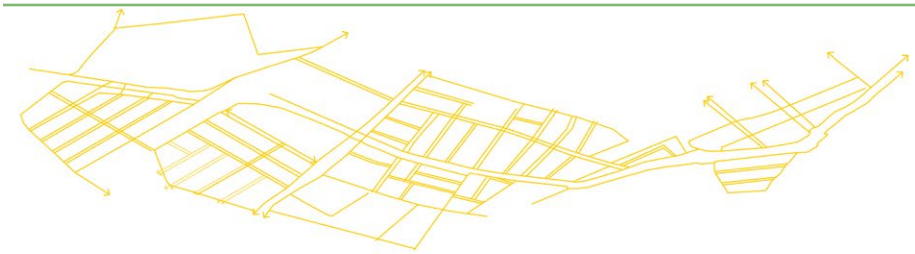
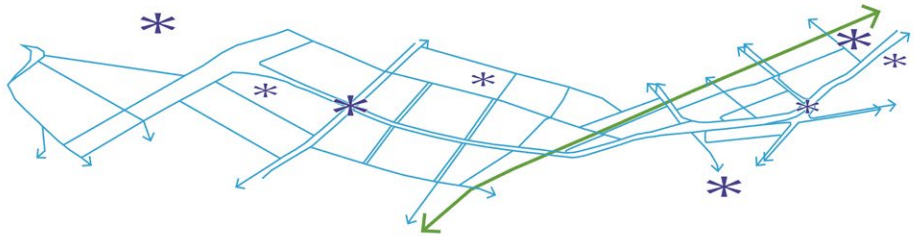
5.00 Gray Scenario

YouJin Kwon, Ryan Ball, Tia-Hsiang Cheng



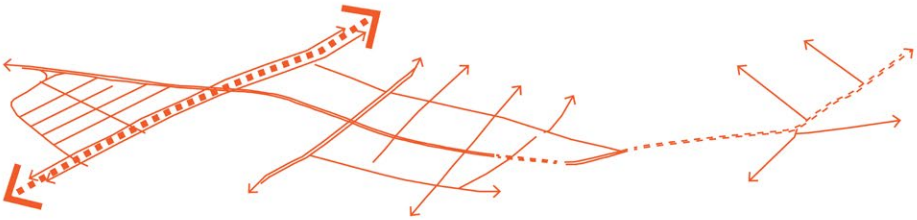
Pedestrian Circulation



Bicycle Circulation

Community Path

Major/minor Nodes



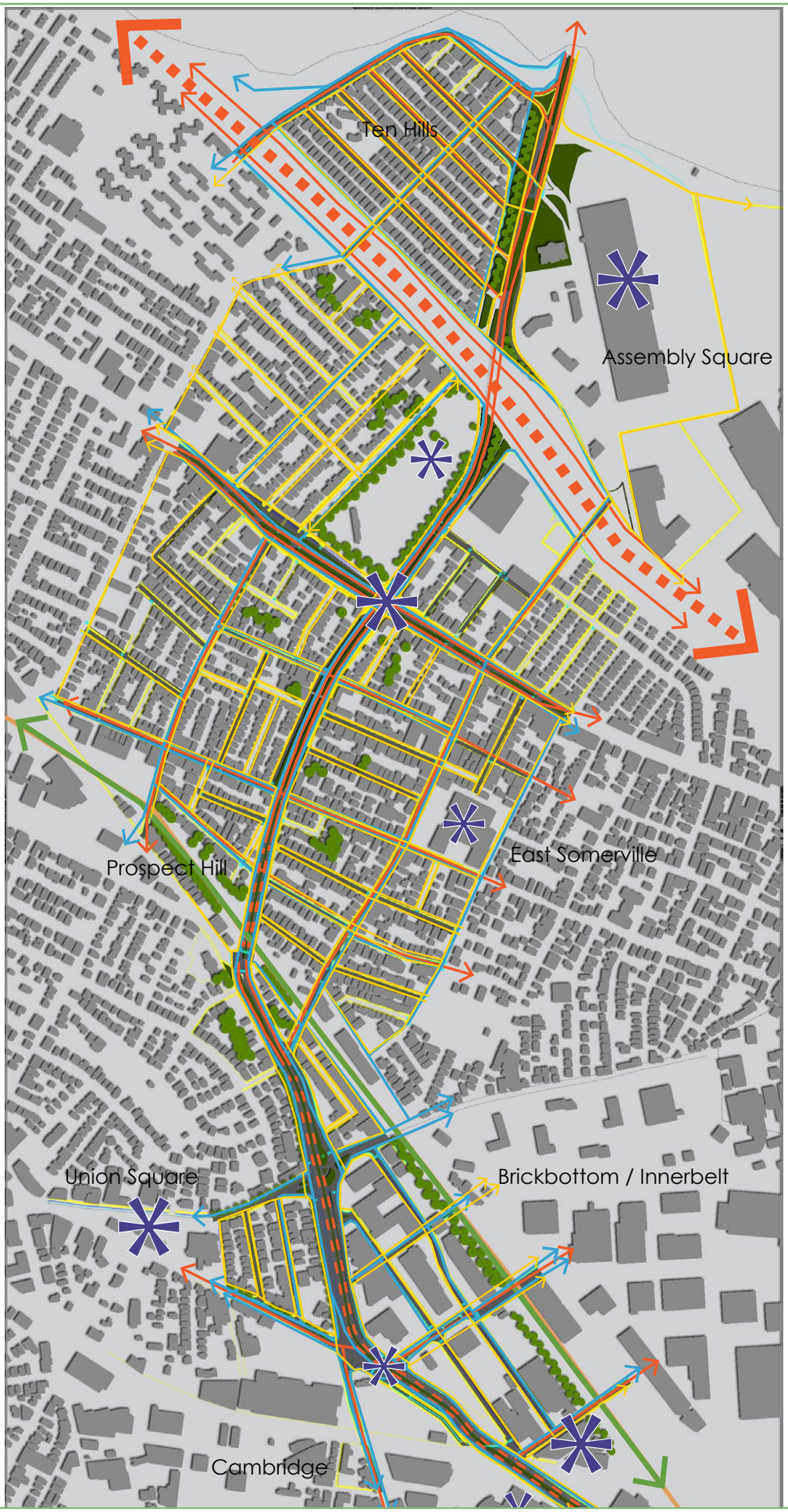
Vehicular Circulation

Raised Highway

The proposal for the gray scenario concentrates on more immediate results. The gray scenario creates connectivity across the McGrath Highway to local destinations, proposes commercial infill creating a stronger commercial corridor with more jobs, and enlivens the aesthetics with streetscape improvements and new art facades and sculpture throughout the area.

In this scenario, the McGrath Highway becomes a boulevard with 2 lanes in each direction. This reclaimed space becomes the catalyst for a strong network of pedestrian and bicycle corridors. These corridors that stretch beyond McGrath Highway create strong connection across the highway and serve to stitch together neighborhoods by providing safe alternative transportation routes and easy access to popular local destinations. These connections could also serve to provide safe transportation from local neighborhoods to potential locations of employment.

The improvements seek to create a unique identity for the McGrath Highway corridor and adjacent areas. These improvements unify two historically divided portions of Somerville while providing job opportunities for local individuals.


Ten Hills
Assembly Square
Prospect Hill
East Somerville
Union Square
Brickbottom / Innerbelt
Cambridge

Introduction

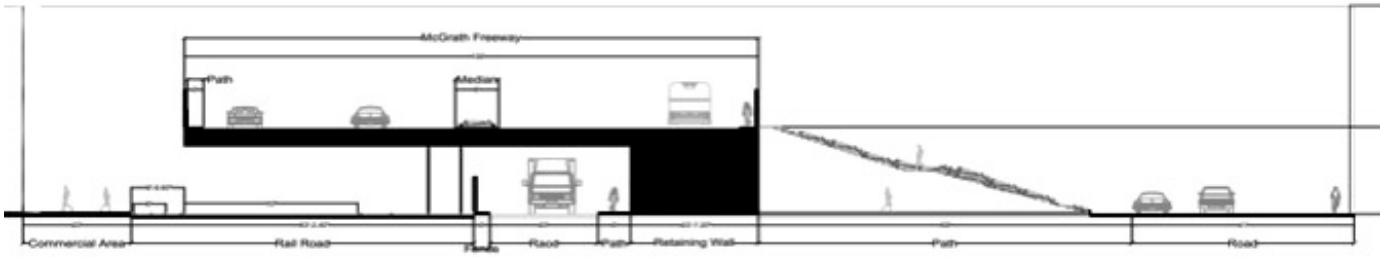
South Focus Plan

The south focus area begins at the ramp of McGrath Highway where the highway becomes elevated. In this elevated portion, the McGrath highway crosses railroad lines and multiple roads that present challenges to the design team. McGrath Highway cuts off this portion of Somerville preventing easy acess from Union Square to Brickbottom. The south focus area is also a gateway from Cambridge. In its current state, there is no identifying signage or structures signifying this. There is also a lack of commercial activity in the immediate area.

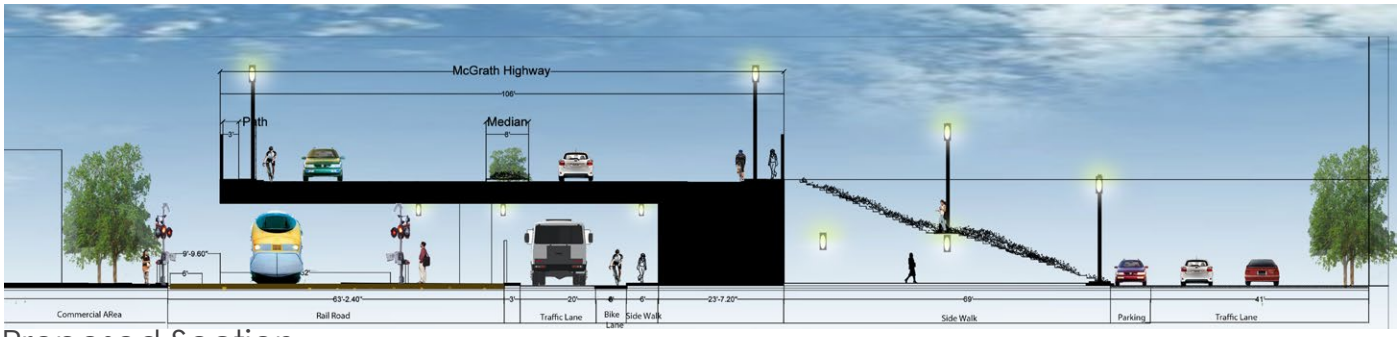
Goals

The south focus area plan proposes enhancing the gate way, creating connections from Cambridge to Somerville, and utilizing temporary art and commercial activities to create a vibrant urban atmostphere and attractive useful spaces. Cambrige is connected to Somerville by reinforcing and increasing amount of side walks and pedestrian corridors, while supplementing the pedestrian realm with significantly safer bicycle lanes. This bicycle lane provides safe passage for cyclists utilizing many secondary road systems to increase bicycle traffic on slower roads.

SECTION 1. Intersection of rail line & McGrath Highway



Existing Section



Proposed Section

This sections demonstrates the proposed connection from Pittsburg Street to McGrath as well as from Pittsburg Street to Commercial area through the railroad wood pedestrian ADA crossing and signals. Continuous lighting systems provide safe, comfortable passage through areas adjacent to and beneath McGrath Highway.

SECTION 2. McGrath Highway

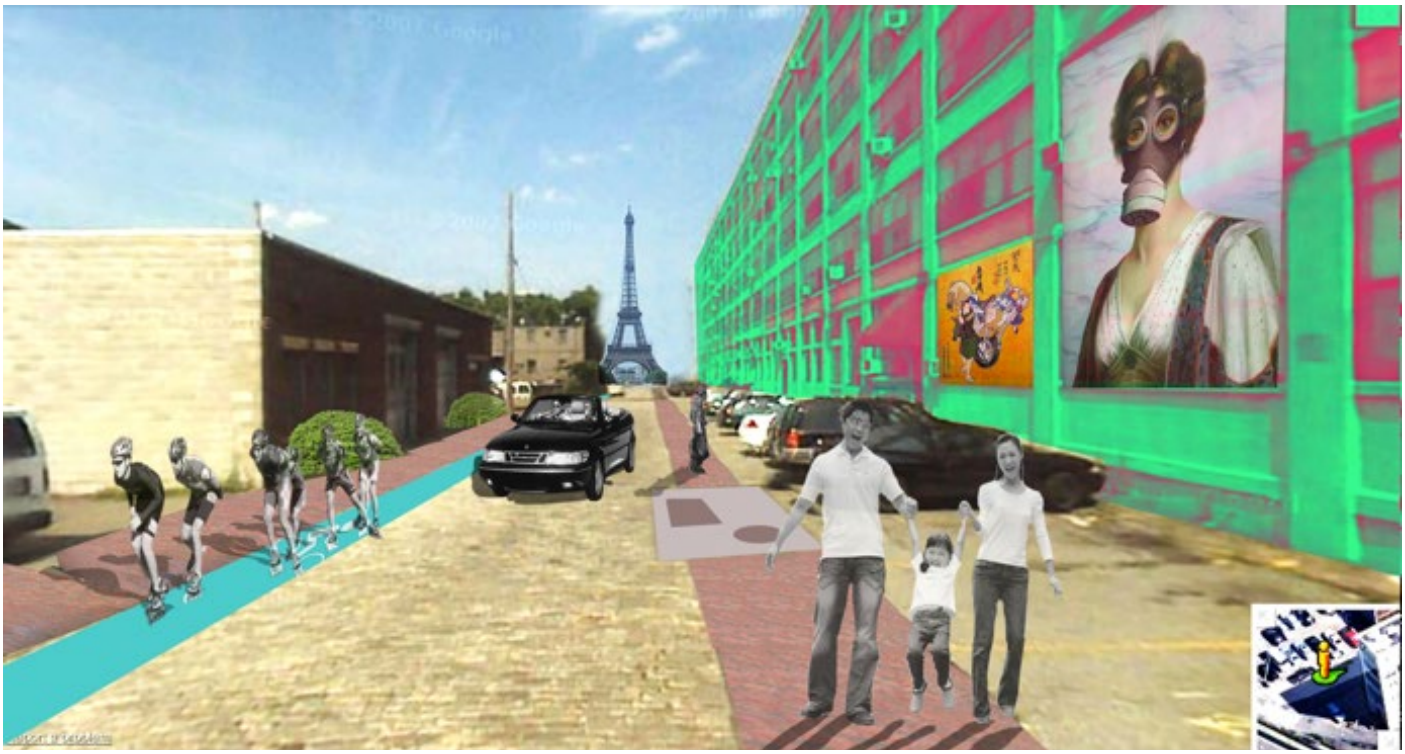
Existing Section

Proposed Section

Section 2 demonstrates streetscape improvements that include enhanced sidewalk, increased tree canopy. Multiple bike lines both on and beside McGrath begin to create multi-modal transportation corridors

PERSPECTIVE VIEW 1. Pittsburg Street

Existing Street View



Proposed Street View

This perspective before and after exhibits the potential for connecting to the community path from Brickbottom. Because this area would be a significant destination and node of activity, art installations permeating out from Union Square seek to link Brickbottom to Union Square physically and aesthetically. The proposed street art program would provide unity to the city as a whole.

PERSPECTIVE VIEW 2. Somerville Ave. / McGrath Intersection

Existing Street View

Proposed Street View

This perspective shows the opportunity for enhancing the gateway from Cambrige to Somerville. A focus on safer pedestrian networks provide safe crossings and inviting spaces for visitors. Areas beneath McGrath provide new opportunity for temporary art and temporary commercial activities. This would create a destination along the corridor from Union Square to Brickbottom thereby attracting individuals from the vibrant Union Square area. Additional bike lanes and pedestrian crossings add to the increasing amount of non-automotive transporation networks.

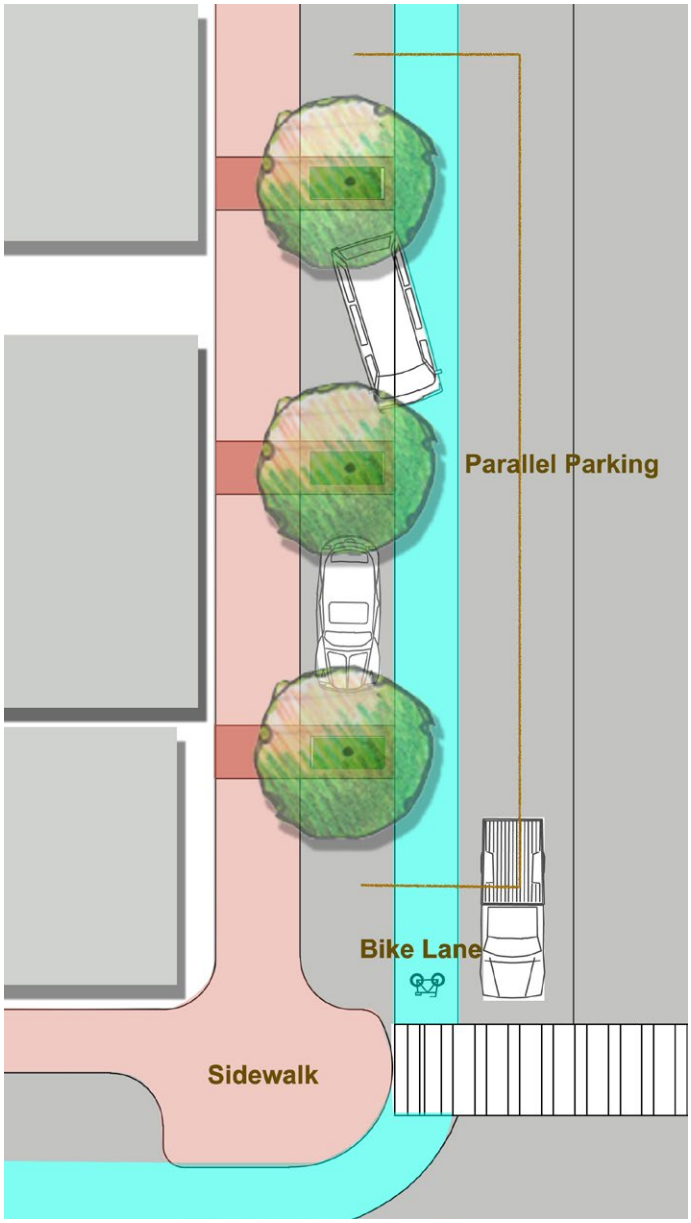
PERSPECTIVE VIEW 3. Washington Street/ McGrath Intersection

Existing Street View

Proposed Street View

The intersection of McGrath Highway and Washington Street is a continuation of the corridors of bicycle lanes and pedestrian corridors. Existing street trees are maintained and supplemented to create consistency along the street edge. McGrath Highway undergoes a facelift that utilizes unused space for commercial advertisements along the walls and columns. Lighting is installed beneath McGrath to create a safer environment past dark.

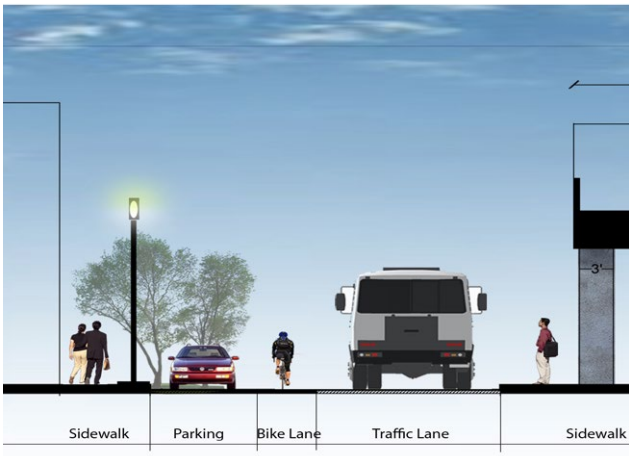
PARALLEL PARKING DETAIL



Proposed Plan

Street View - Washington / McGrath Intersection

Streetscape improvements include parallel parking utlizing tree bump outs to deliniate spaces and create unity and consistency along street edge. Sidewalk width is increased and bump outs added at intersections to provide a safer and more comfortable pedestrian environment.



Proposed Section

The addition of parallel parking alleviates existing issues with limited pedestrian space. Existing street trees create a tight cramped sidewalk space. By shifting the trees further away from the buildings, it allows more space for the pedestrian. In addition, a bike lane is added at the edge of the road connecting nodes along McGrath Highway. A continuous pattern of paving creates a visual aesthetic connection from Union Square to Brickbottom and InnerBelt areas.

Central Focus Area

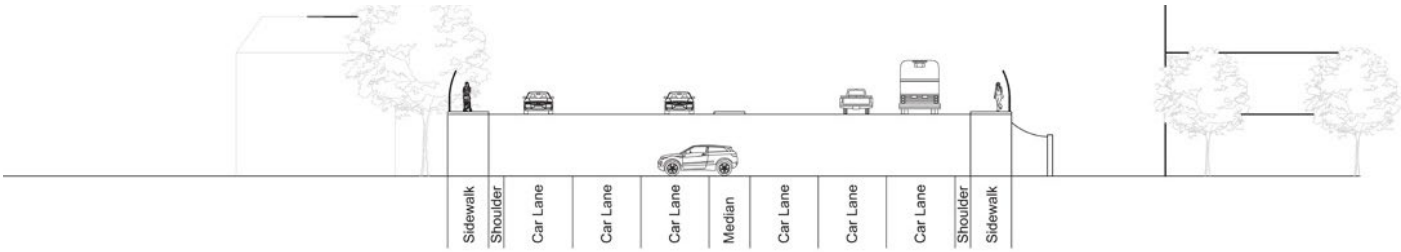
Focus Plan

0 50' 100' 200' 400'

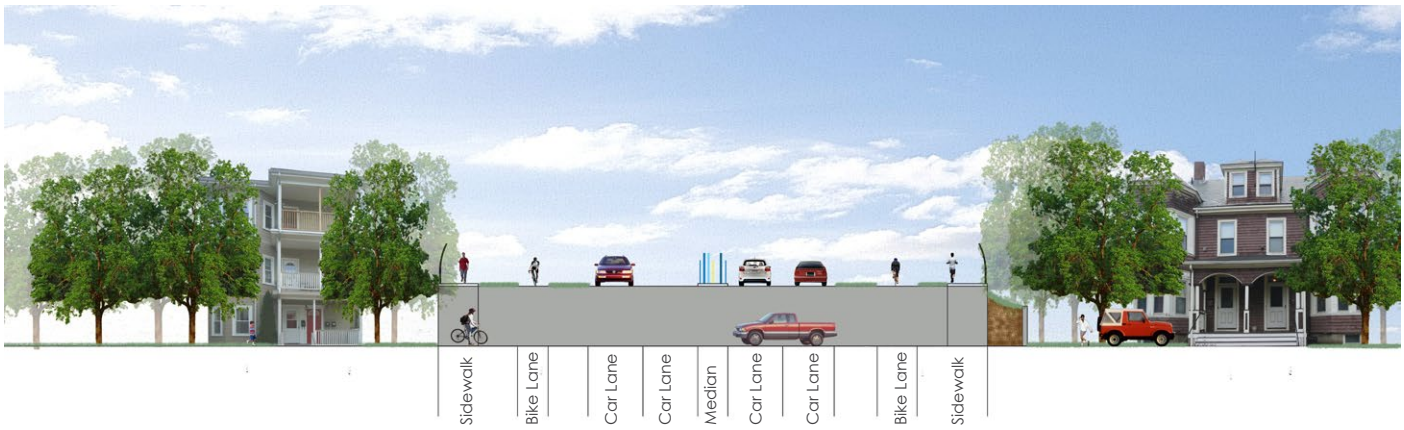
The central McGrath Highway corridor focus area's primary objectives are to provide the necessary linkage from Brickbottom and Union Square located in the south focus area to the neighborhoods north of each area ultimately connecting to the north focus area. Better connectivity is achieved through bike lanes along the major north-south residential roads such as Cross Street and Walnut Street as well as east-west roads including Broadway, Bonair Street, and Pearl Street. This focus area provides opportunities for redevelopment of existing commercial spaces currently focused only on car industry to mixed use commercial which provides more robust and attractive options for local residents. The McGrath Highway becomes a corridor of public art opportunities integrated into the newly narrowed McGrath Highway and multi-modal corridor.

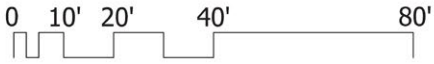
SECTION 1 : McGrath Highway & Gilman Street

Existing Street View



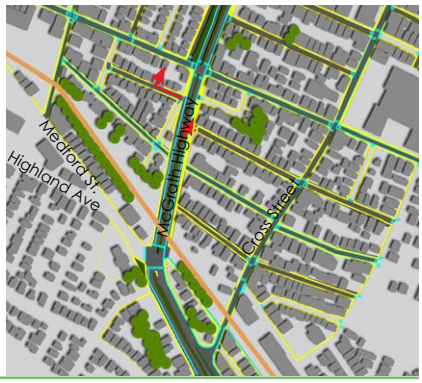
Existing Section





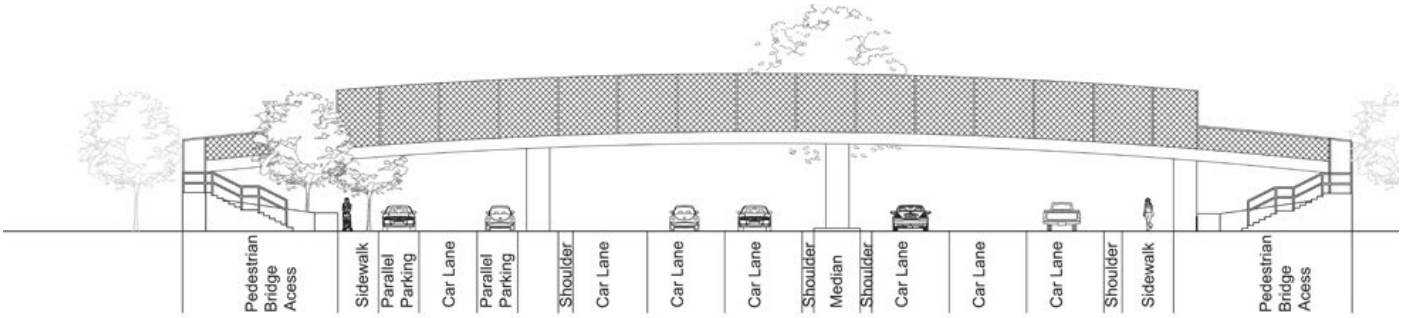
Proposed Section

Gilman Street provides an important connection east-west through McGrath Highway. At this point the McGrath Highway is elevated and allows for a multi-modal passage beneath the road. Bike lanes, wider sidewalks, and narrowed roads are proposed for Gilman Street to shift the focus from automotive transportation to alternative means. The McGrath Highway above shows the opportunity for public art incorporated down the median of the highway. Safe comfortable bike lanes separated from traffic with green buffer strips of grass plantings are provided going each direction.

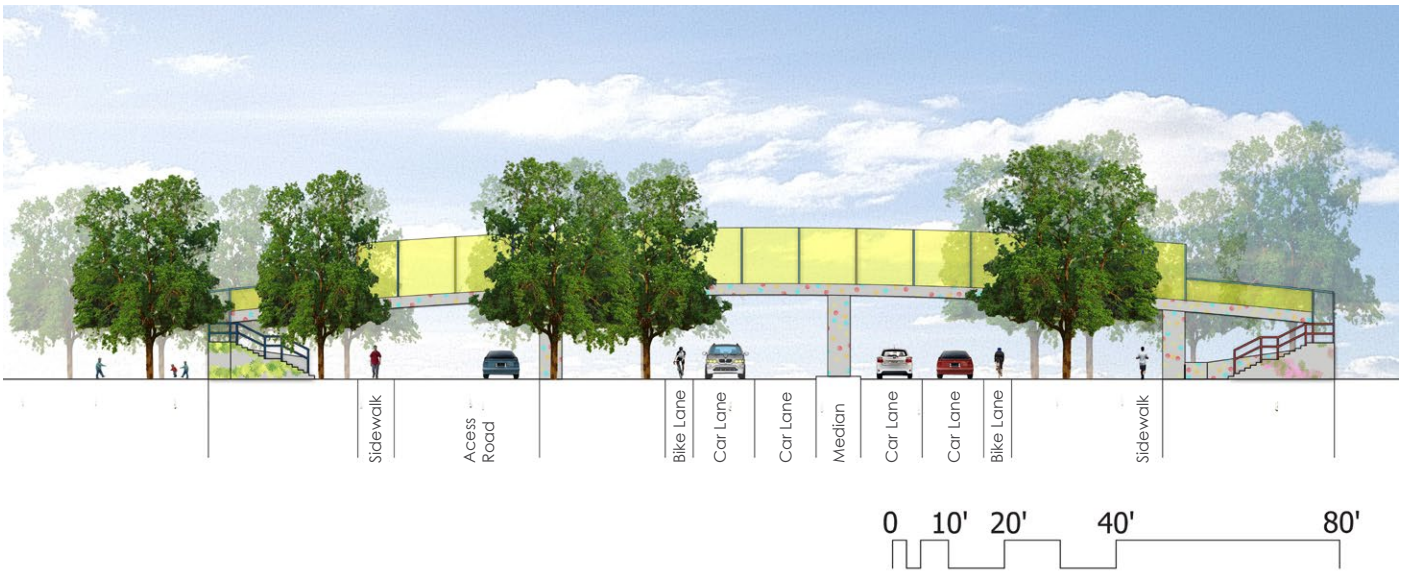


SECTION 2 : McGrath Highway & Otis Street

Existing Street View



Existing Section



Proposed Section

Otis Street provides another important method of crossing McGrath Highway. In its current condition, the pedestrian overpass gives a bleak unappealing look to the area. Retrofitting the bridge with temporary public art exhibits that changes periodically can provide an eventful experience in utilizing the overpass and opportunities to advertise for local city events and programs.

PERSPECTIVE VIEW 1 : McGrath Highway & Otis Street

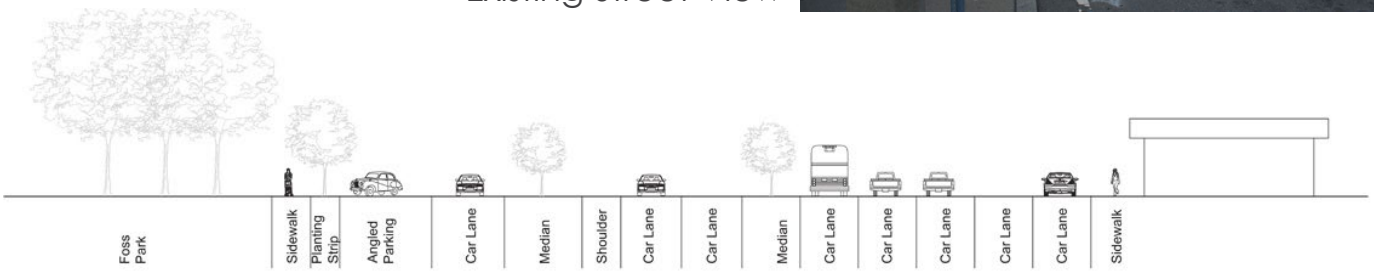
Existing Street View

Proposed Street View

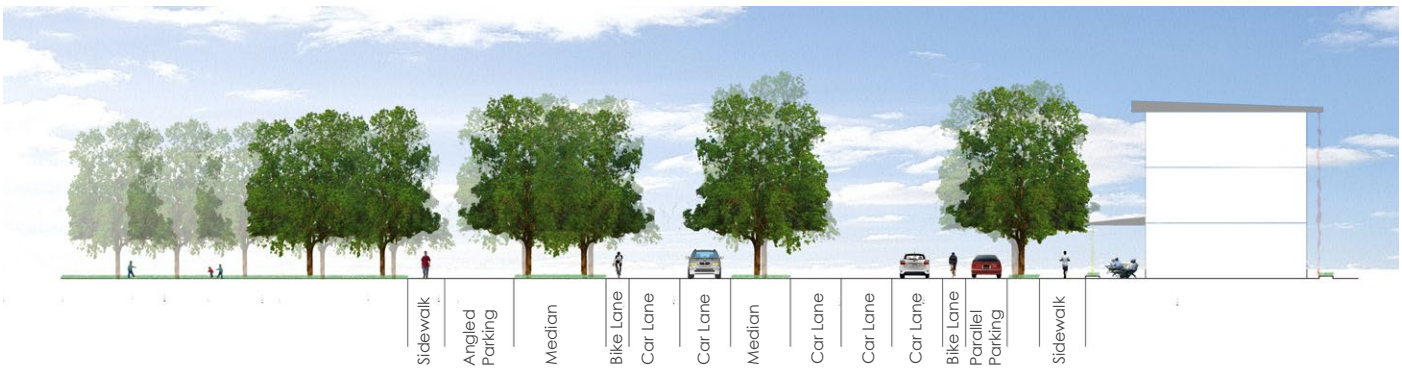
The overpass is currently used when necessary due to the lack of alternative crossings. With a narrowed McGrath Highway, many more safe at-grade crossings become possible. Therefore, it becomes necessary to create aesthetic interest in the existing infrastructure through interesting temporary art exhibits on the pedestrian bridge. This attracts visitors both to the adjacent playground as well as the newly proposed commercial development along the eastern portion of McGrath Highway.

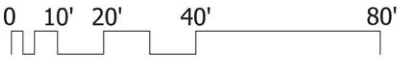
SECTION 3 : Broadway & Foss Park

Existing Street View



Existing Section



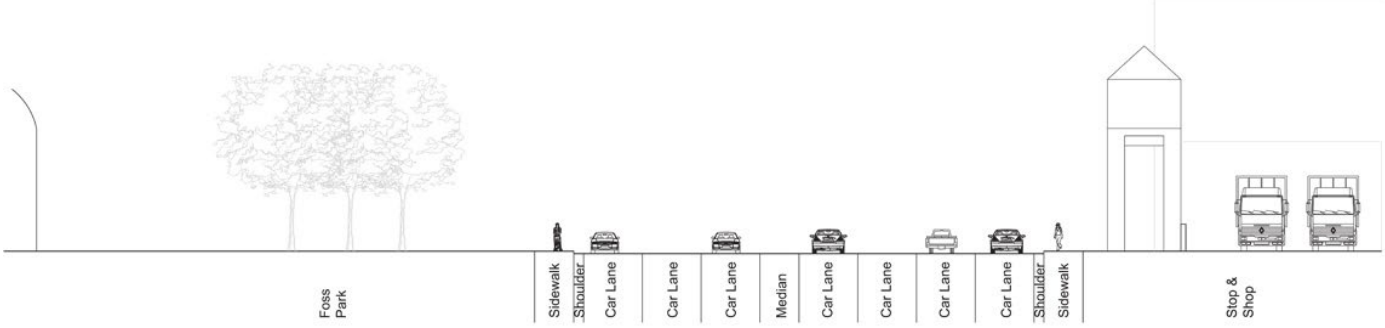


Proposed Section

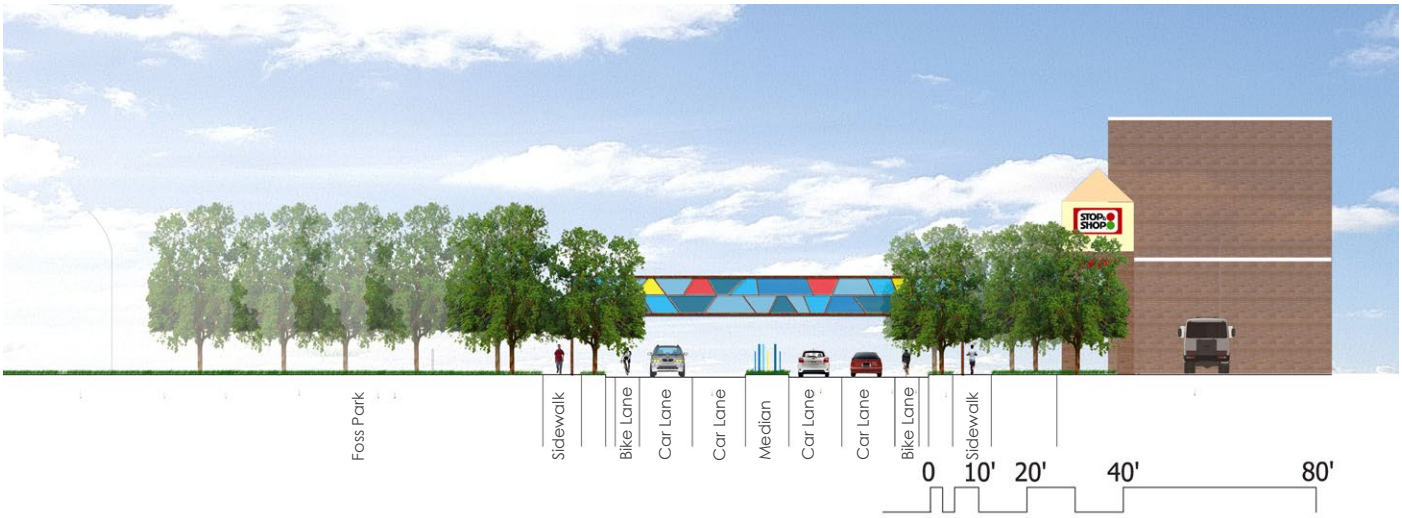
The southern edge of Foss Park at Broadway consists of an oversized road and adjacent parking areas . This area shows a proposed commerical development at the southwestern intersection of McGrath and Broadway. Broadway becomes a two-lane road with a single turn lane at McGrath. This space provides room for an expanding sidewalk that allows for outdoor spaces utilized by the proposed commercial development as well as wider sidewalks. Parallel parking is provided along the southern side of Broadway. Bike lanes are added on each side of Broadway. Existing median tree plantings are reinforced with more plantings as is the edge of Foss Park.

SECTION 4 : McGrath Highway & Foss Park

Existing Street View



Existing Section



Proposed Section

McGrath Highway becomes more problematic as one nears the I-93 overpass. Currently this oversized highway area is littered with signs while McGrath Highway corridor detracts from the beauty of Foss Park. This image depicts the narrowing of the highway that allows for bike lanes and wider sidewalks. The remainder of the reacquired space is used to expand the eastern edge of Foss Park and supplements the existing edge tree planting creating a double allee for the pedestrian. This allows the existing Foss Park fence to be set back from the sidewalk creating a safer and more comfortable park edge Existing sign overpasses provide opportunity for additional public art.

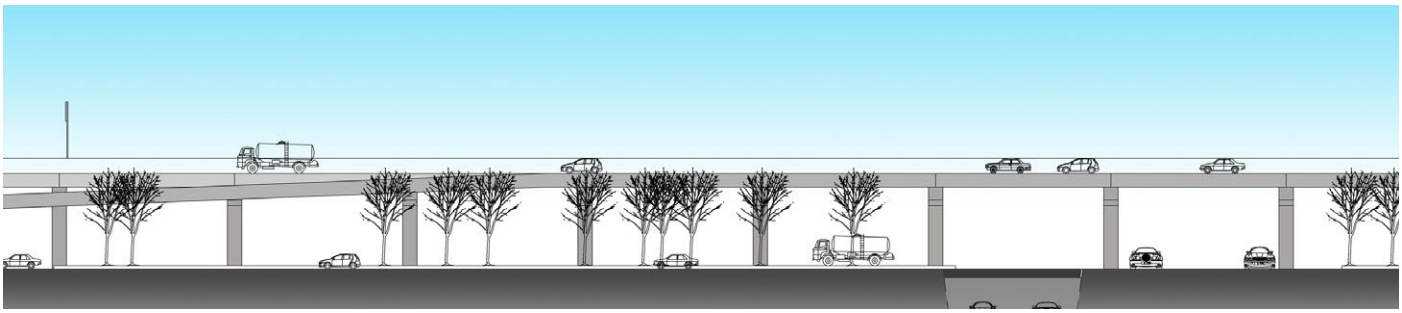
North Focus Area

Focus Plan

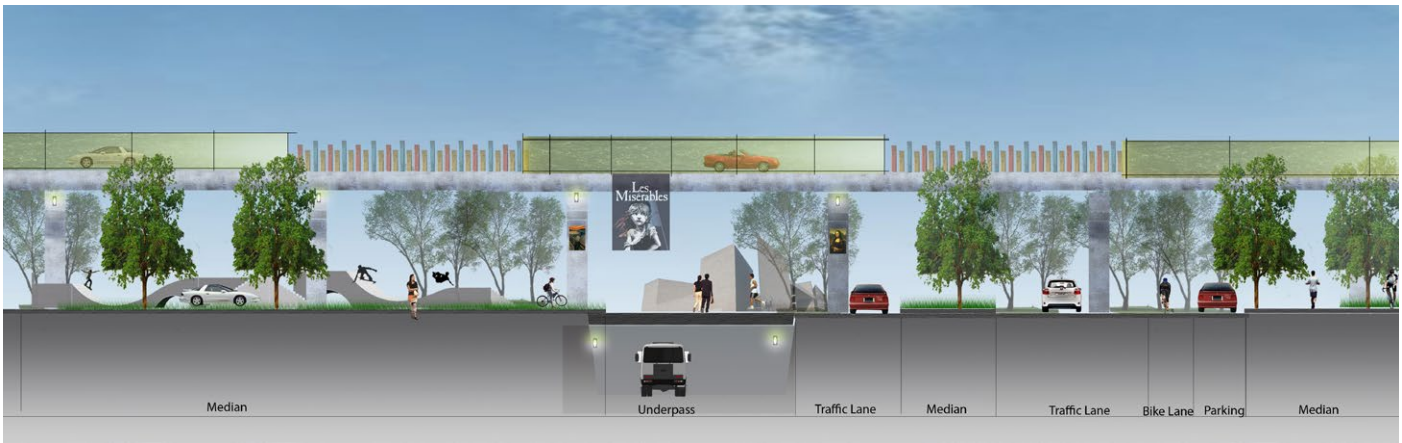
The north focus area begins at the I-93 intersection with McGrath Highway and runs to the bridge across the Mystic River to the edge of Medford. The focus area is primarily composed of Ten Hills neigborhood to the west and Assembly Square commercial area to the east. The major issues addressed in the north focus area are making connections across McGrath Highway to provide direct safe connections across McGrath from Assembly Square to Ten Hills and connecting north-south under I-93 providing much needed access for non-vehicular traffic. This non-vehicular traffic is diverted away from the intersection between I-93 and McGrath Highway to provide safer crossing through the extremely dangerous intersection. The facade and adjacent areas of I-93 are enlivened with art installations and street tree plantings.

SECTION 1 : McGrath Highway & I-93

Existing Street View



Existing Section



Proposed Section

The underside of I-93 is currently undeveloped, provides for no amenities, and appears dangerous and disconnected. The gray scenario proposes art installations and lighting to create a much more inviting safe environment beneath the interstate. Spaces beneath the interstate are utilized for various outdoor activities such as skateboard parks and basketball courts creating an urban extension of the existing Foss Park

PERSPECTIVE 1 : McGrath Highway Beneath I-93

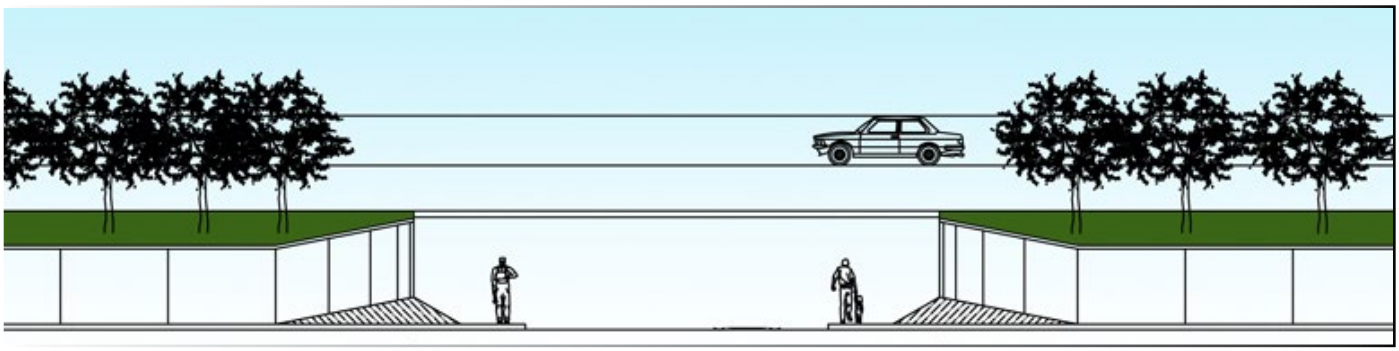
Existing Street View

Proposed Street View

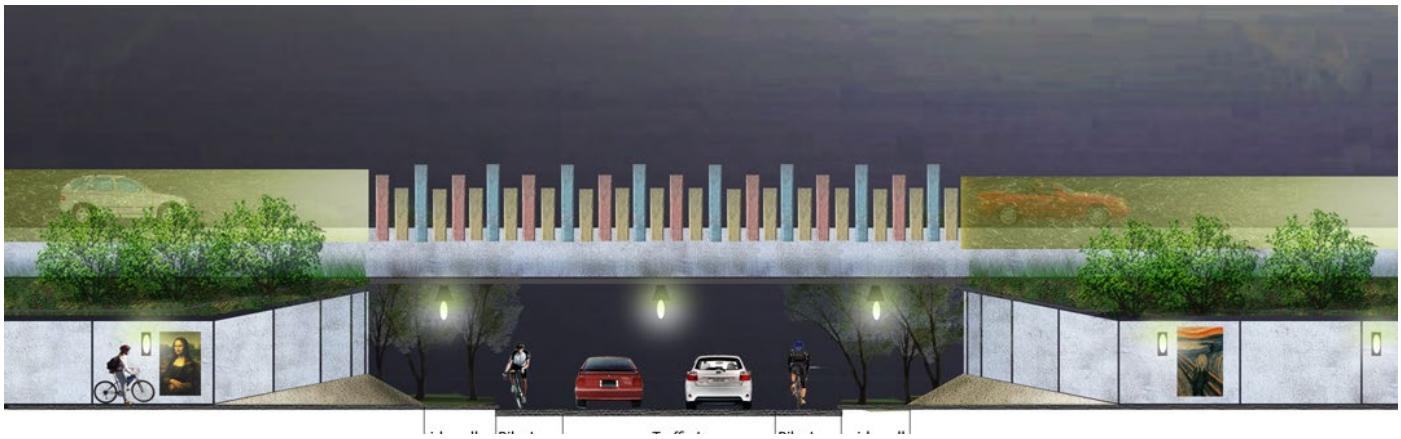
Pedestrian connections beneath the interstate integrate new paving with added artistic lighting installations create an inviting safe pedestrian environment.

SECTION 2 : I-93 & Temple Street

Existing Street View



Section Temple existing

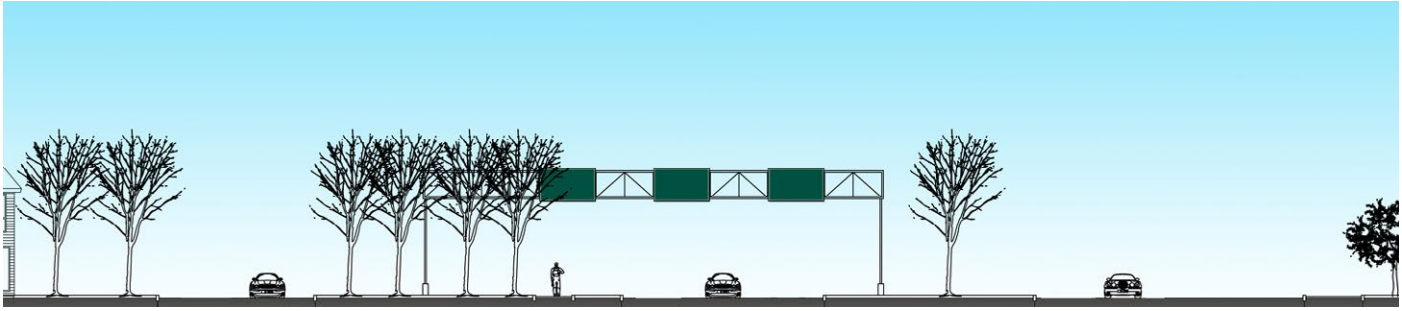


Proposed Section

The current state of Temple Street is consistent with the other underpasses of I-93 in that it is a dangerous pedestrian environment that lacks ample lighting. Temple Street is one of the two opportunities beneath I-93 that allows for safe bicycle connections. The addition of lighting and art installations provide an aesthetic consistency permeating out from the McGrath corridor.

SECTION 3 : McGrath Highway & I-93

Existing Street View

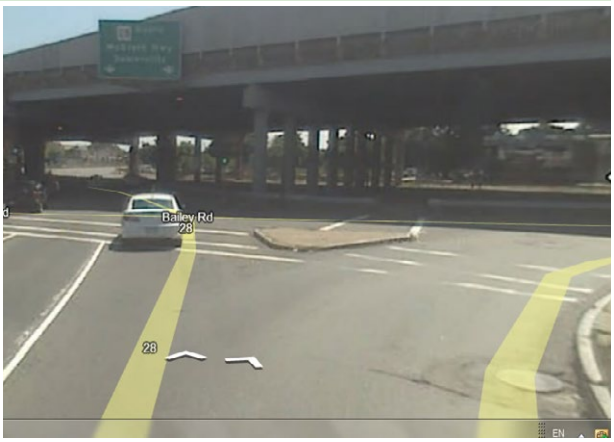


Existing Section

Proposed Section

The McGrath corridor currently divides the Ten Hills neighborhood from the Assembly Square commercial areas. With the reduction of the McGrath Highway, new opportunity emerges for safe crossings that allow for connections across the corridor connecting the two nodes. Bike lanes are proposed along the frontage road allowing for safe passage off but parallel with McGrath creating a bike corridor leading north to Medford.

PERSPECTIVE 2 : McGrath Highway & I-93



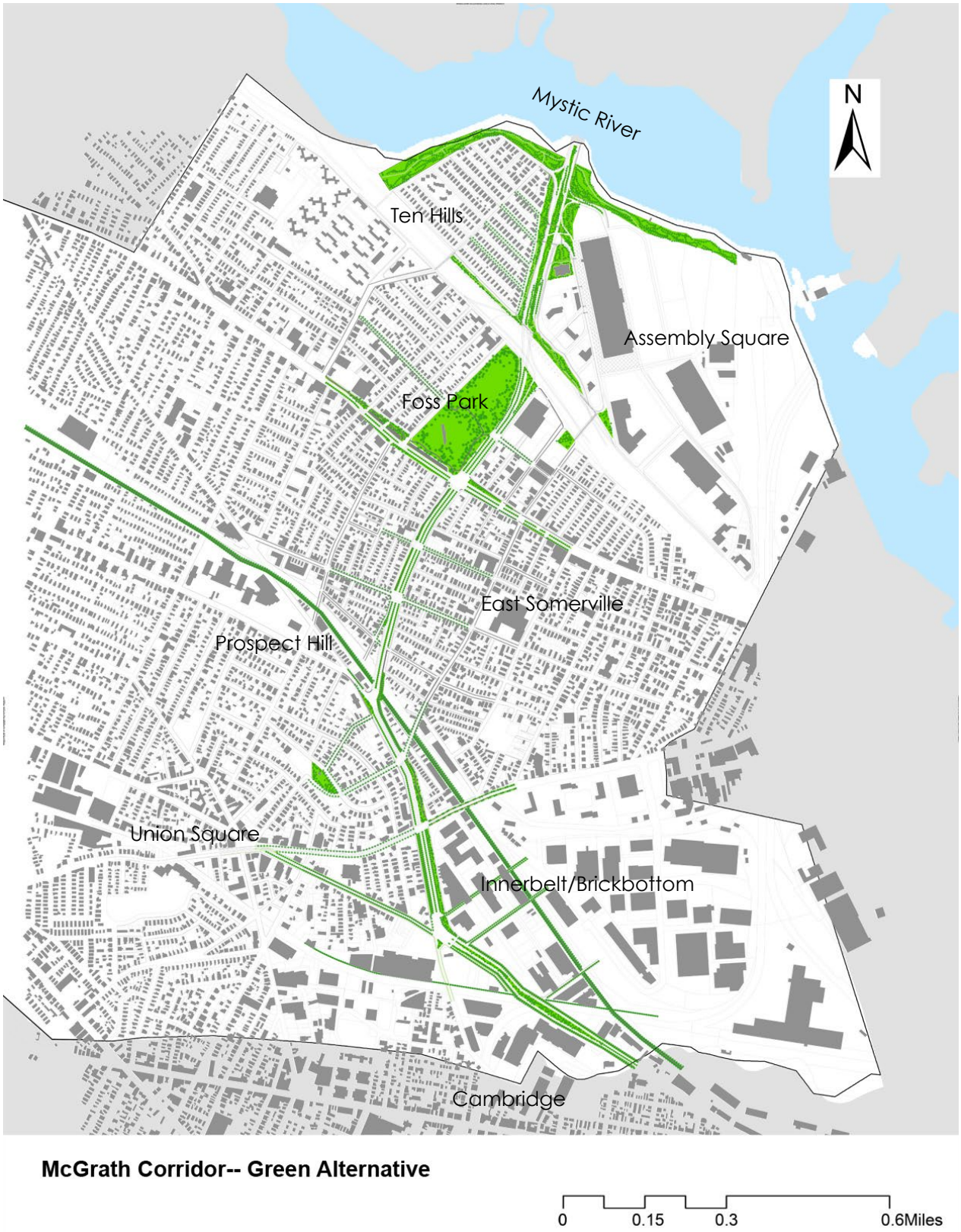
Existing Street View

Proposed Street View

Proposed conditions of the McGrath Highway corridor provide for a safe pedestrian atmosphere that allows for both bike and pedestrian connections through the intersection. Art is displayed in numerous methods along both the I-93 corridor and McGrath Highway.

6.00 Green Scenario

Feiqiang Tong, Andrew Weir, Patrick McGeough



Green Scenario master plan: A program of linear green space and multiuse paths and bike lanes connects the Cambridge border to the Mystic River via Foss Park and the Community Path, and neighborhoods to each other.

McGrath Corridor: Green Scenario

The Green Scenario seeks to balance environmental and transportation needs, largely within the existing footprint of the McGrath Highway corridor. This scenario proposes a mixed-used network with biking, green space and storm-water infiltration areas that could reunite neighborhoods that have been divided by the existing highway. This green network would connect to the proposed Community Path and to the Green Line Extension Project currently uderway.

Another major goal is to calm traffic on the McGrath Highway by lowering traffic speeds, narrowing lane widths, and reducing the current travel lanes from six (or more) to four. This could reduce noise and pollution and create a safe and inviting means of travel across and along the corridor for pedestrians, bicyclists, and bus riders.

This scenario goes beyond environmental and social issues and promotes economic development through adding green space, drawing people into the city, and thus encouraging local retail and business opportunities. This source of revitalization could allow the areas classified as Environmental Justice areas the opportunity to rebound and develop into thriving urban environments.

Introduction

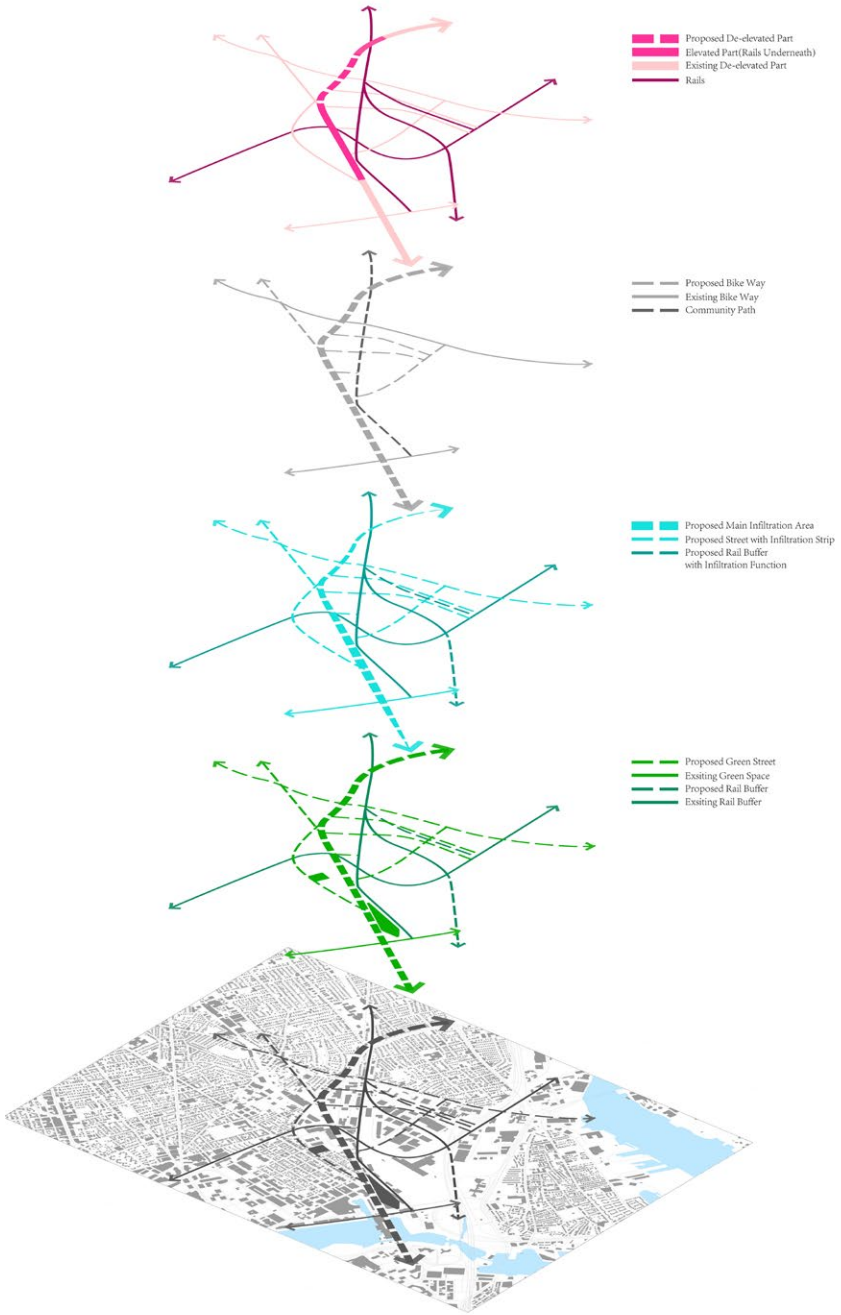
South Focus Plan

Green Scenario southern McGrath: Greened edges, including sidewalks and bikeways, and a planted median are added to McGrath. Paths and trees spread out into the surrounding areas.

McGrath Corridor: Green Scenario

The southern McGrath Corridor, running from the Somerville city line up to the intersection with Highland Ave, marks a significant gateway connecting to Boston. This southern portion of the McGrath corridor is dominated by industrial land use. The connection between Union Square and Brickbottom is cut off by not only the McGrath Highway but also a large rail hub and commuter rail to which there is very limited access from within the city. Another project underway is the North Point Redevelopment which will be a large mix-used residential area.

Most of North Point and the west side of South McGrath Corridor used to be the tideland of Millers River which once provided drainage for the entire south end of the city. The green alternative connects to proposed devlopment and transportation infrastructure while recovering lost infiltration function in the area.



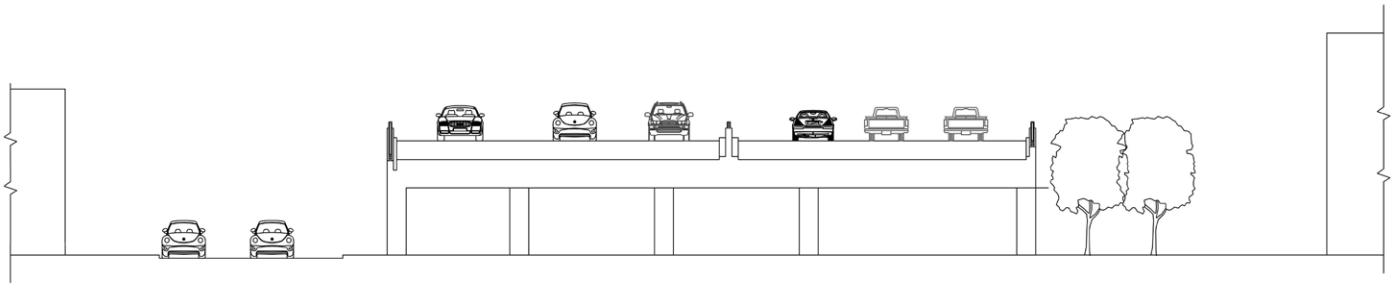
Layer function diagram: Roads, multiuse paths, infiltration, and green space all combine to create a socially and ecologically enhanced corridor.

Design Proposal

For this purpose, the southern portion of McGrath is didvided into four sections, the first of which runs from the Cambridge border to where McGrath crosses an existing rail line. This design suggests removing travel lanes and adjacent parking and using the space to form a green gateway to the city.

The second section is from the intersection of McGrath and the railway to the intersection of Somerville Avenue. After taking away street parking, pedestrian and bike routes are configured to connect to the Brickbotton and Innerbelt districts.

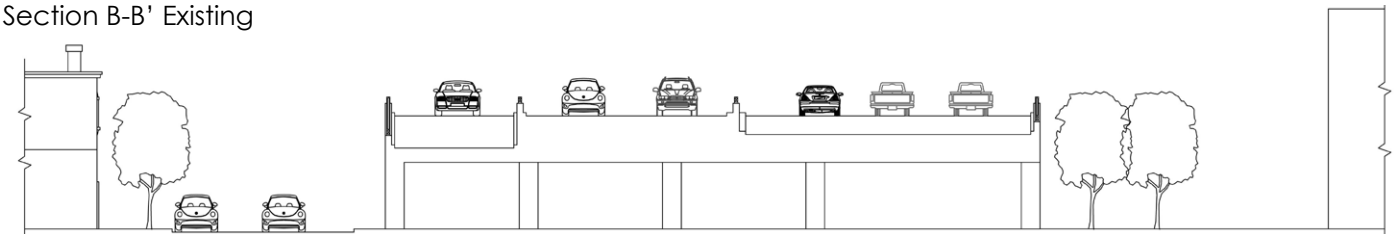
Section A-A' Existing



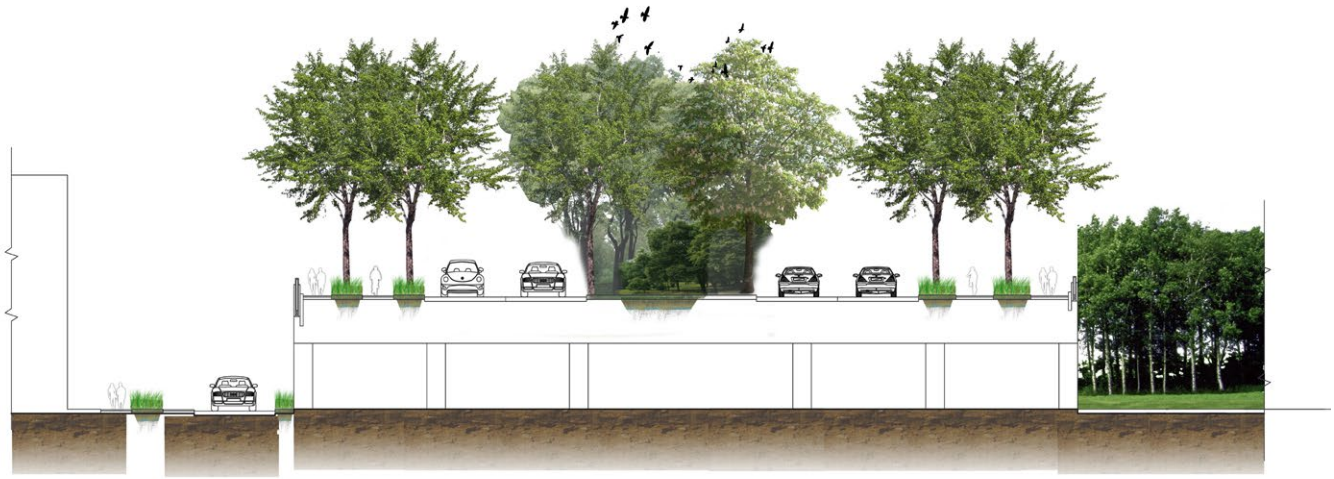
Section A-A' Proposed

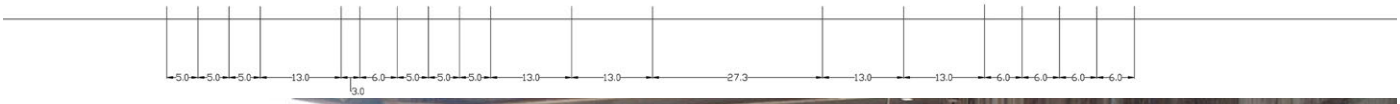
McGrath Corridor: Green Scenario

Section B-B' Existing



Section B-B' Proposed



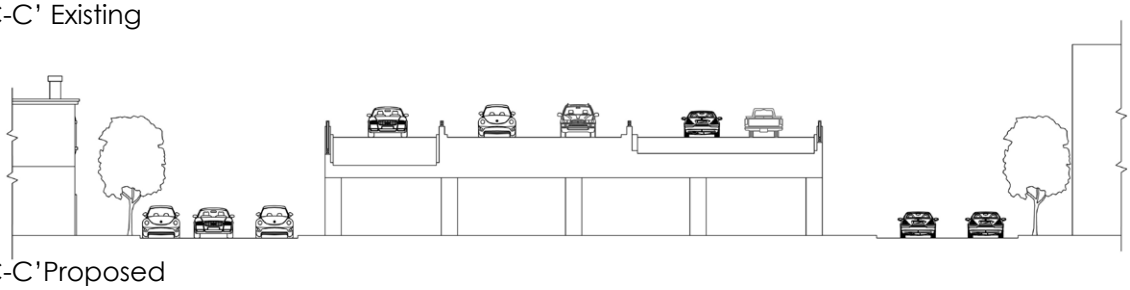


Before and After: Proposed views of McGrath at the railway intersection (perspective 1)

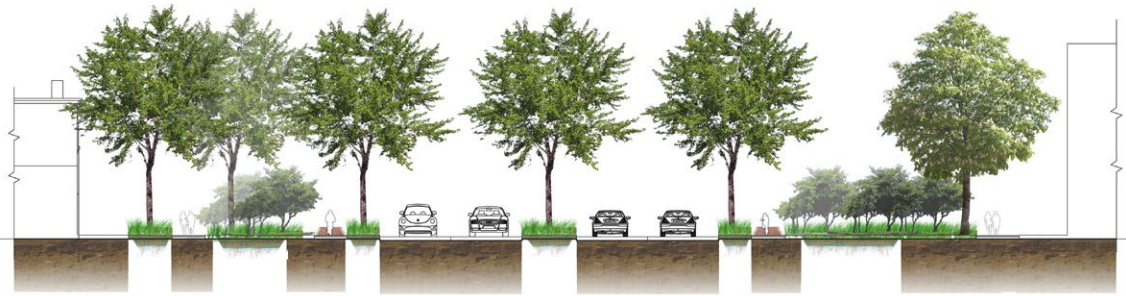
McGrath Corridor: Green Scenario

The third part of the McGrath Highway southern portion runs from the intersection of Somerville Avenue to the intersection of Washington Street. In this portion, land use on both sides of McGrath has changed from industrial to residential. Thus the design here de-elevates McGrath and emphasizes developing linear green open spaces along the corridor to provide a better living environment while promoting infiltration and ecological habitat.

Section C-C' Existing



Section C-C'Proposed

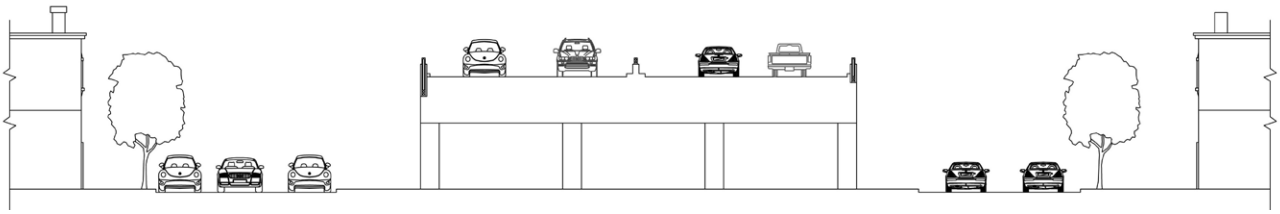


Before and After: A proposed view of the McGrath Highway corridor shows how de-elevating the highway could allow for additional space and a much more pedestrian oriented environment (perspective 2).

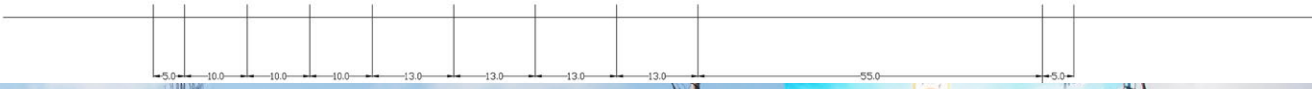
McGrath Corridor: Green Scenario

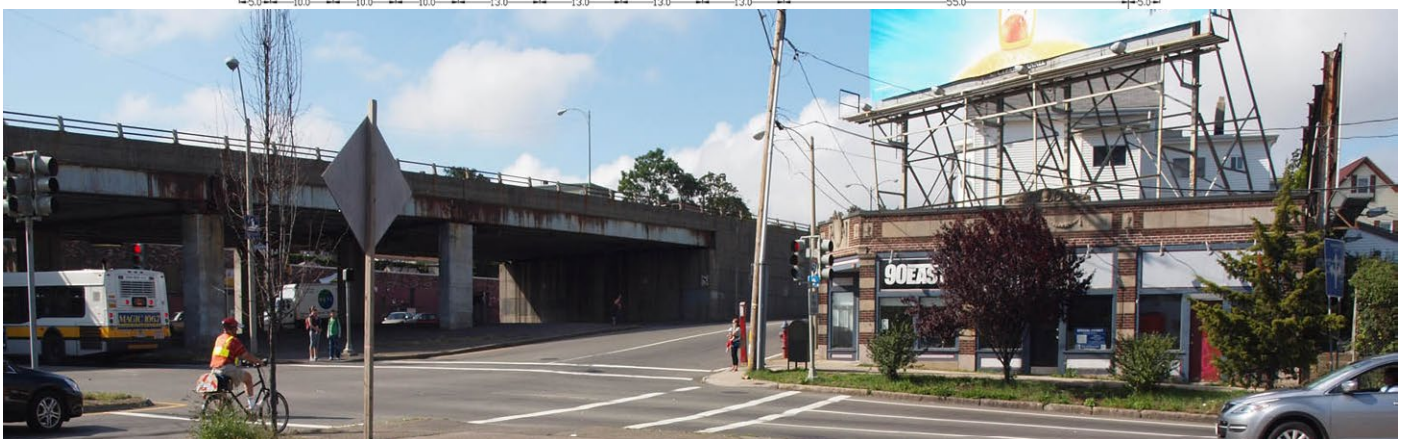
The fourth part, from Washington Street to Highland Avenue intersection, has linear green space on the east side of the McGrath based on an existing bike lane. This strengthens the connection to open space in the Innerbelt district and separates traffic on McGrath form neighbourhood to the east. Additionally, it narrows the McGrath Highway so that crossings between Union Square and the Brickbottom and Innerbelt Districts are made easier.

Section D-D' Existing



Section D-D' Proposed





Before and After: A proposed view of the McGrath Highway at Washington Street shows how the area could be planted and create a park like atmosphere (perspective 3).

Introduction

Central Focus Plan

0 100' 200' 400' 800'

Green Scenario central McGrath: McGrath and a section of Broadway are boulevarded, reducing the number of travel lanes and using the space to create frontage roads, multiuse paths, and green space.

The key goal for the central portion of the Green Scenario is to improve connections, both social and ecological, within the focus area. For people, this includes pedestrian and cyclist connections to the proposed Community Path at the south end of the area and to Foss Park and I-93 underpasses at the north, while also extending bike lanes east and west from the McGrath into the surrounding communities, and making road crossings safer. Ecological connections are supported through an aggressive greening program of narrowing the McGrath Highway (and, to a lesser extent, Broadway), and using the space to create linear greenways that provide opportunities for tree planting and stormwater infiltration, and which connect, wherever possible, Somerville's isolated open spaces.

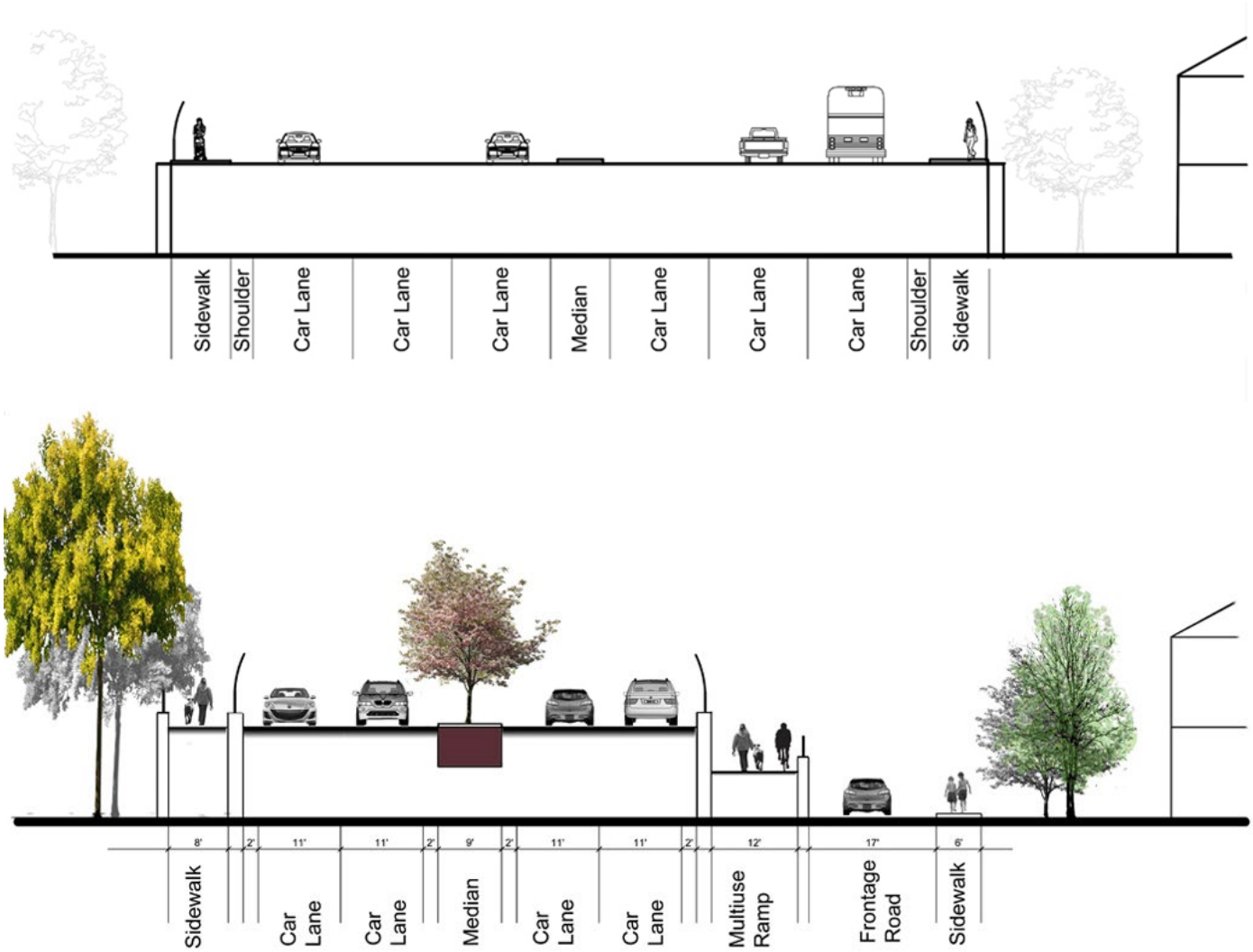
Boulevarding the McGrath Highway (the process of reducing its current width from three travel lanes in each direction to two with frontage roads for local access) is supported by existing frontage roads (Dana, Edmands, and Auburn Streets) along the western edge of much of its length in this focus area. Thus significant space can be freed for linear green space and multiuse paths.
This plan incorporates nearly 8 miles of bike lanes (of which nearly 1 mile is a multiuse path), over five acres of newly created green space, and, as shown, over 400 trees.

Due to narrow road widths, most bike routes off McGrath/Broadway are on street but painted and signposted.

Green Scenario southern central McGrath: Closure of some smaller roads to McGrath simplify intersections and allow a multiuse path to connect to the Community Path and, north, towards Foss Park. Section lines refer to the following pages.

Starting at the south the Medford and McGrath intersection is reconfigured, closing it to some smaller roads, reducing turning lanes, and using green space to make crosswalks (themselves raised and twenty feet wide to improve safety) shorter. A multiuse path parallels McGrath on the eastern side, separated from traffic by a buffer of trees and planting.

Moving north, across the bridge that spans the Green Line/Community Path, space freed by boulevarding the McGrath Highway is used to create a ramp down to the Gilman Street underpass so that pedestrians and cyclists can access the Community Path. A frontage road on the east side is also created to reconnect streets once cut off by the McGrath Highway.

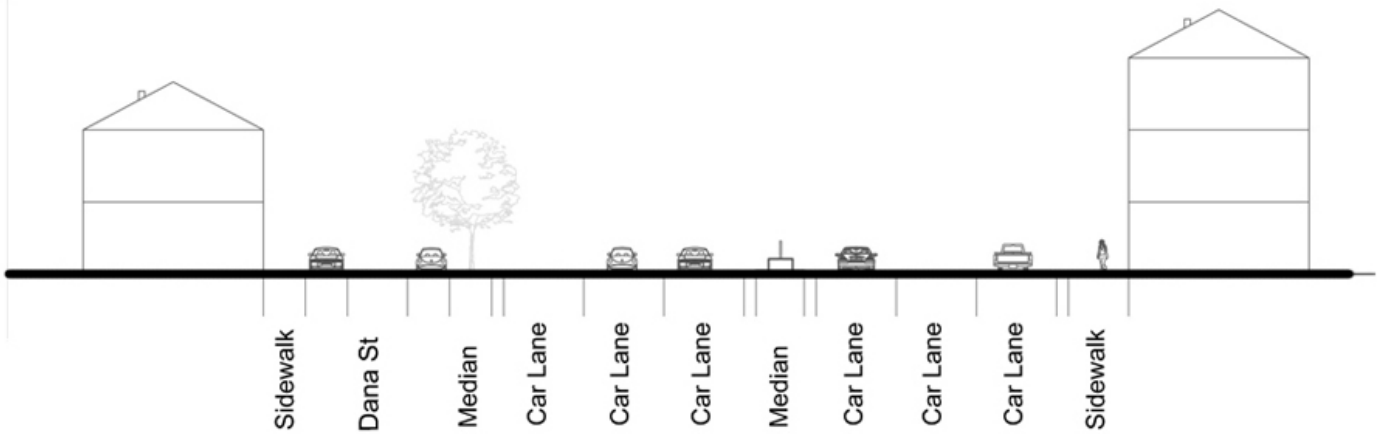


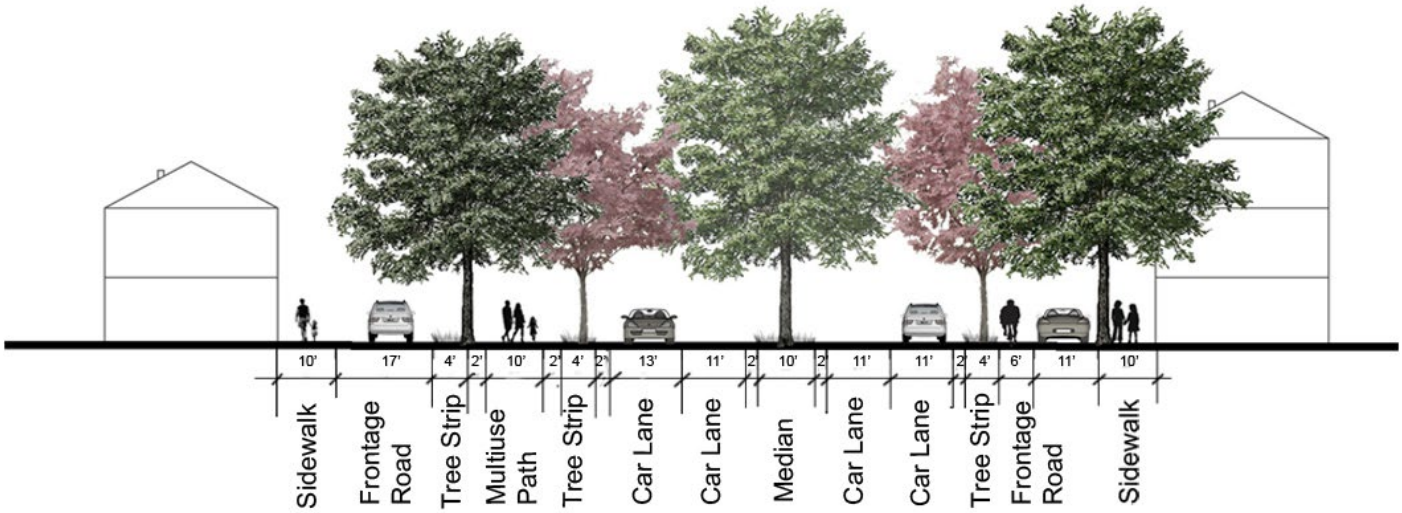
Existing and proposed sections AA': A ramp and frontage road are created within the existing McGrath footprint.

Before (top) and after (bottom) photos of ramp to Gilman Street: After reconstruction, a wide ramp connects the multiuse path along McGrath to the Gilman Street underpass. Image source: Google Maps.

McGrath Corridor: Green Scenario

After McGrath returns to grade, existing frontage roads along the western side (Dana and Edmonds Streets) are used. This allows more of the square footage liberated by narrowing McGrath to four lanes to be used for a linear green space. This profile is then maintained to the Broadway intersection.





Existing and proposed sections BB': Frontage roads, green space, multiuse paths, and a treed median all enhance the user experience along the McGrath corridor. Green space also acts to infiltrate stormwater.

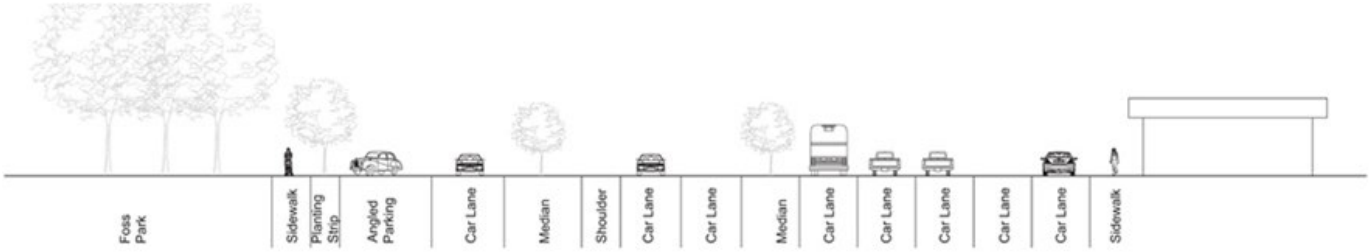
Before (top) and after (bottom) photos of the McGrath Highway and Dana Streets: Linear green space allows for trees, infiltration, and a multiuse path separated from traffic.

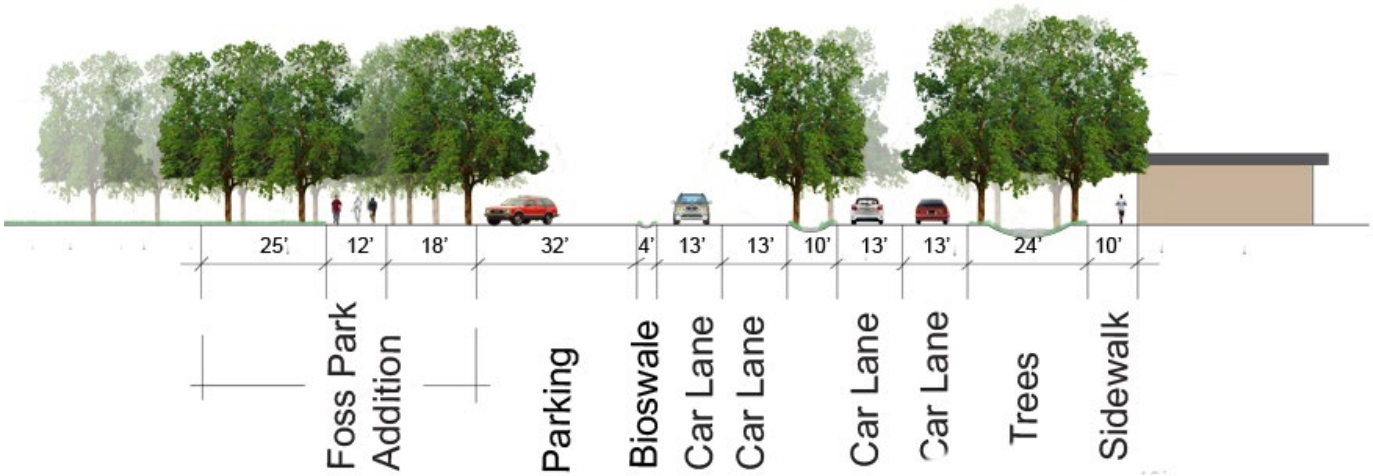
Green Scenario northern central McGrath: Boulevarding the McGrath Highway and narrowing Broadway allow for significant expansion of Foss Park as well as bike lanes separated from traffic. Bike routes connect to I-93 underpasses at Temple Street to the west and to the north-west. Section lines refer to the following pages.

In addition to boulevarding the McGrath Highway, this scenario also significantly narrows Broadway for several blocks on either side of McGrath. Some parking for Foss Park is preserved (porous paving is used to promote infiltration). Separated bike routes run along Broadway to the east and a multi-use trail skirting the edge of Foss Park runs to Temple Street to the west where it can pass under I-93.

McGrath Corridor: Green Scenario

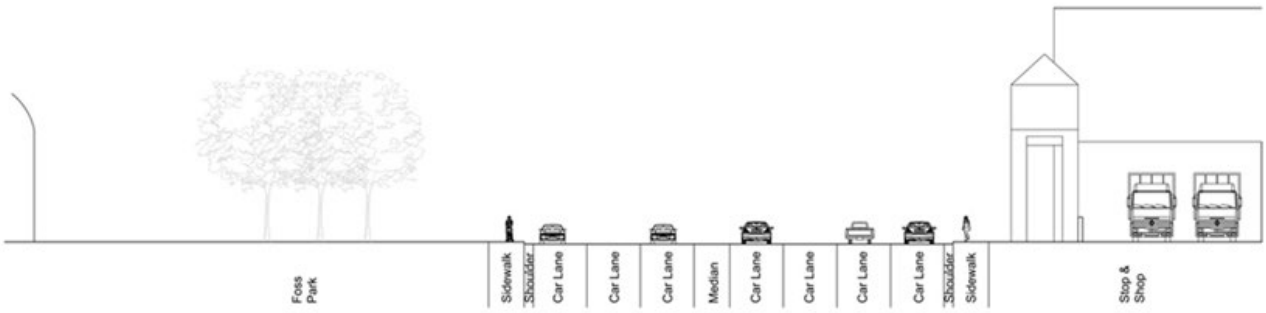
Green space is extended along Broadway, widening Foss Park and providing the seperation of pedestrians from traffic. Significant infiltration opportunities exist. Porous paving is used for parking with an additional infiltration strip seperating the parking area from the road. trees planted across from Foss park serve to provide habitat connection across the highway.

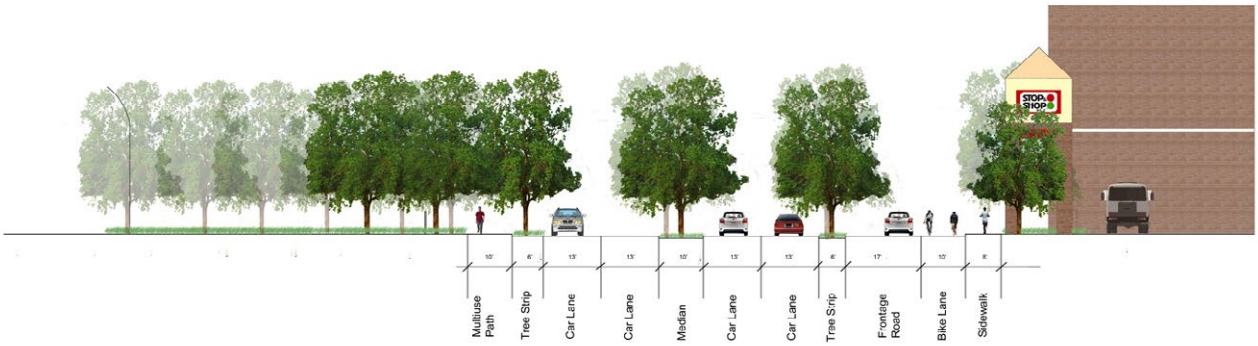




Existing and proposed sections CC': Narrowing Broadway adds significant opportunities for green space, especially along the edge of Foss Park where an additional forty-five feet is gained.

North of Broadway a frontage road is not needed along Foss Park. Instead a wide multiuse pathway connects to the existing Stop and Shop grocery store. A treed median separates traffic directions while trees green infiltration strips separate pedestrians and multiuse path users from most traffic.





Existing and proposed sections DD': Along McGrath north of Broadway a wide multiuse path connects neighborhoods to a large grocery store and north to an I-93 underpass.

Introduction

North Focus Plan

The McGrath Highway transitions to the Fellsway as it continues north into Medford linking to the Mystic Valley Parkway. Currently this section of Route 28 is at grade, but only offers two cross walks. However, with the mixed-use development of Assembly Square, the potential for an urban green scenario connecting Cross St. can be accomplished with lighting, wayfinding, speed tables and other improvements.

A bird's eye view of the I-93 overpass with existing on-ramps from Route 38, 28, Mystic Ave, northern section of McGrath.

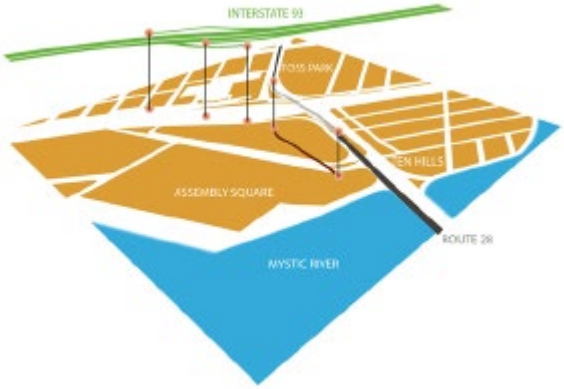
McGrath Corridor: Green Scenario

Looking East Under I-93 near Cross St.

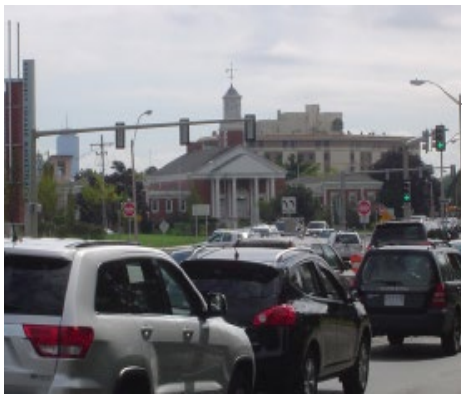
Well marked bikeways and speed tables under I-93 will help to connect Assembly Sq. to Cross St.

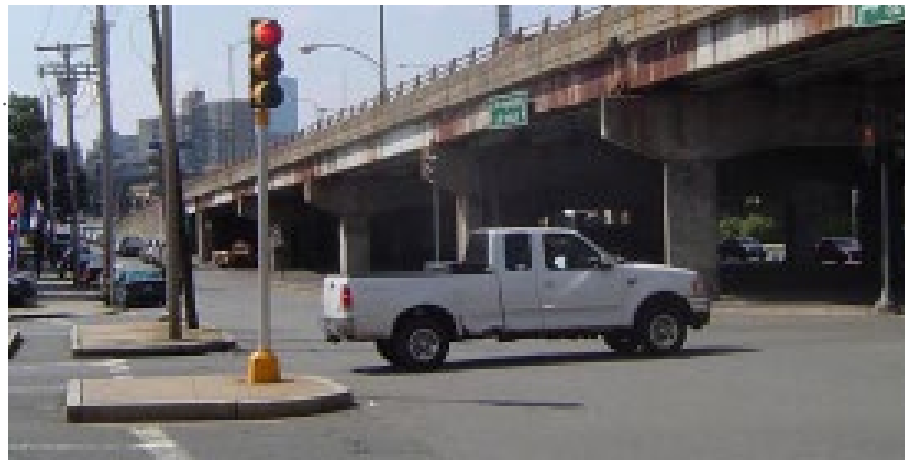
Further traffic analysis will be required to understand the specific feasibility of where these connections can take place. However, for this report we can offer a guideline for the future development of the area. Considering the slim chance that the I-93 overpass will be taken down in the next twenty to thirty years, it is important to envision a multi-modal and mixe-use plan that connects through the complex series of on/off ramps, material storage and vacant lots that make up the existing land-use of the I-93 Corridor. These lots can create a green connection with hardscape recreational uses such as racket ball, basketball and even bocce courts.

A bird's eye view of the I-93 overpass with existing on-ramps from Route 38, 28, Mystic Ave, northern section of McGrath.



McGrath Corridor: Green Scenario





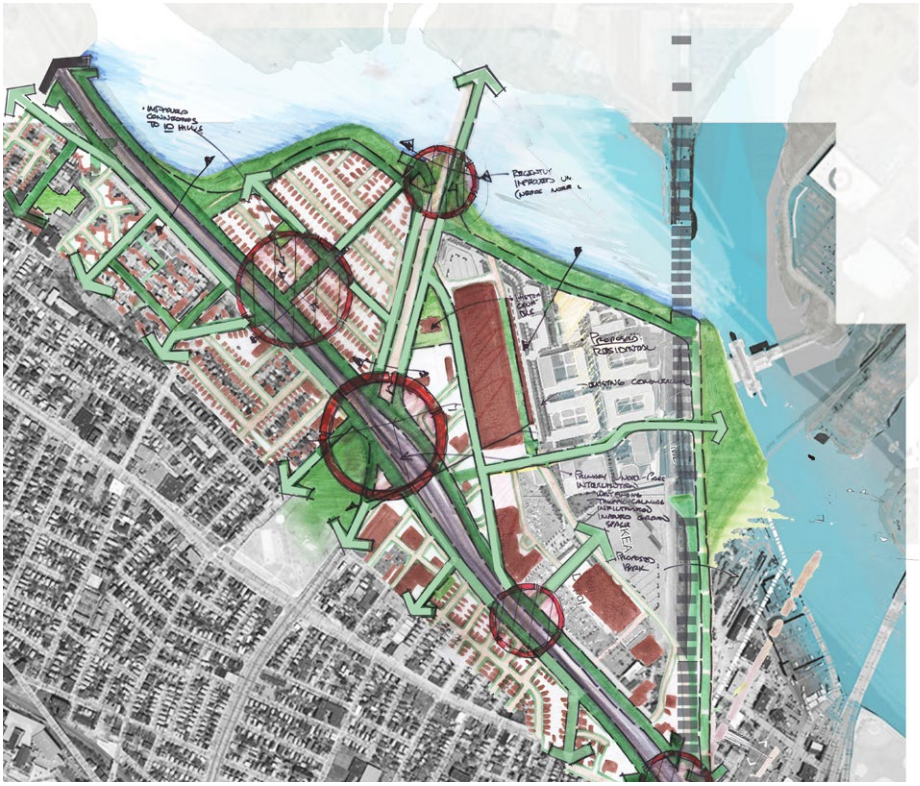
Mystic Ave along the I-93 overpass could have small retail shops and kiosks that attract people from Assembly Sq.

There is great potential for a vibrant urban core along the perimeter of the proposed Assembly Square Masterplan at Mystic Ave and McGrath that could create a commercial / retail corridor that is framed on both sides of the existing Mystic Ave frontage road. Similar to previous examples, this potential green street could also function as a unique linear urban core connecting south to Sullivan Square and the Science Museum.
Advertisements, street vendors and small retail shops and kiosks can operate under and along the I-93 overpass and create a comfortable pedestrian experience.

McGrath Corridor: Green Scenario

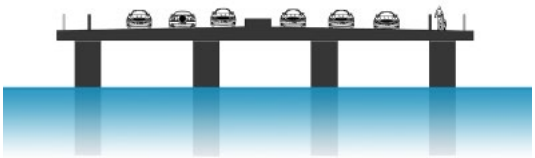
The existing overpass is flanked by frontage roads and offers limited sidewalks and almost no street trees. Since there are so many roads, it may be difficult to find ample space for large tree medians. However, large raised planting beds surrounded by permeable pavers can also act as gathering spaces for pedestrian when planters are placed at comfortable heights for seating.

McGrath Corridor: Green Scenario

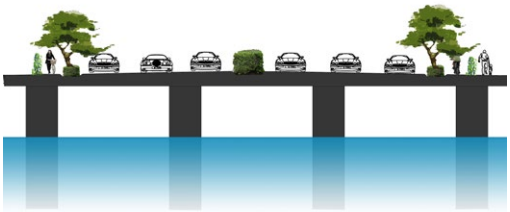


Primary connections along the I-93 can divert pedestrian and bike traffic to the Cross St, connection located south of Foss Park and north to Temple St.

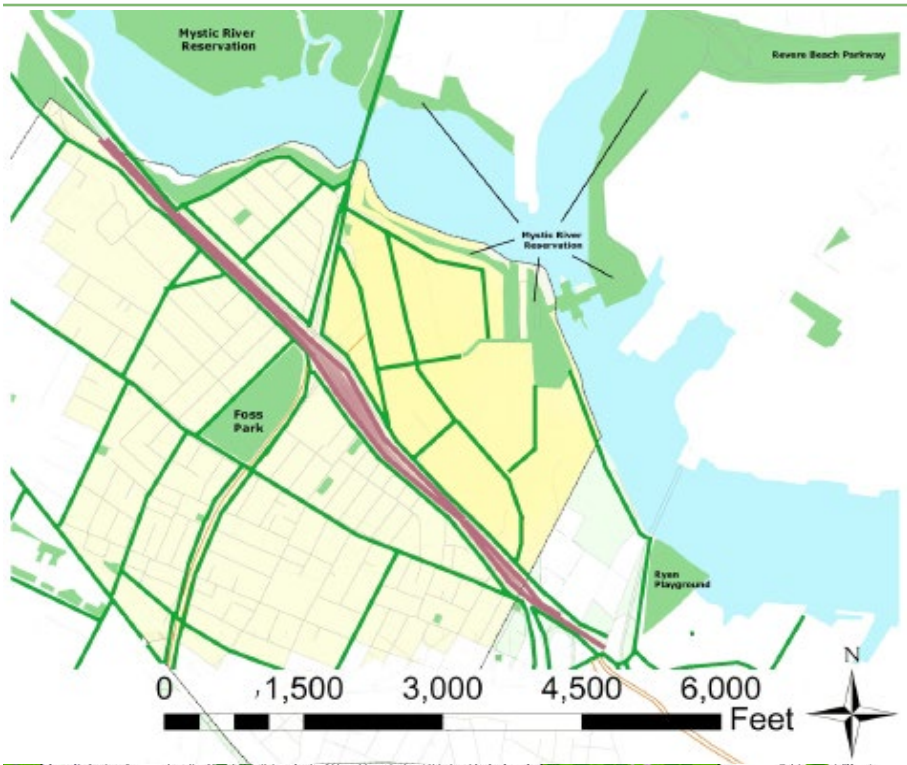
The Green Scenario builds on the existing green network and offers further infrastructure improvements. The Mystic River already offers boating, bikeways and connections to the Amelia Earhart Dam. However, green street improvements that integrate the existing medians along Route 28 and shore drive could better serve East Somerville residents.



Fellsway north approaching the Mystic River. Currently the bridge offers minimal buffering from traffic noise and high speeds.



McGrath Corridor: Green Scenario



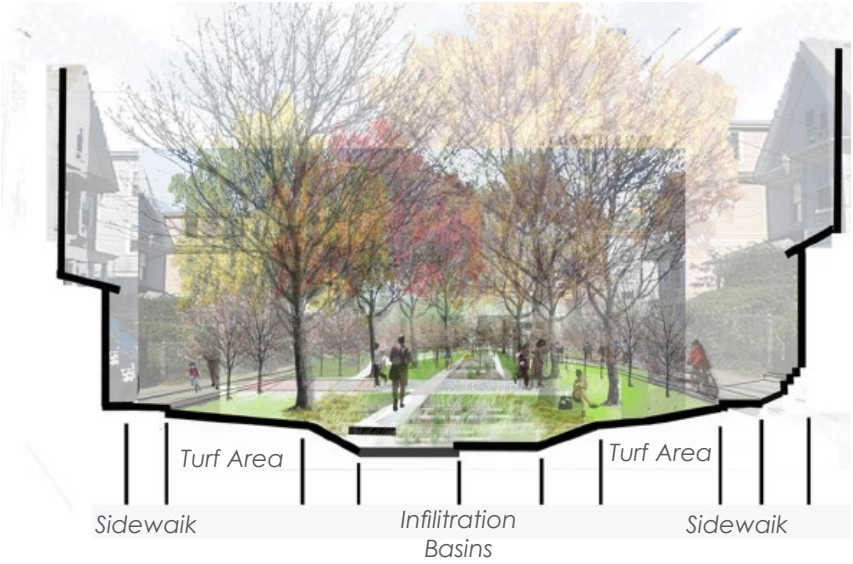
There are improved green connections located on Temple Street. This can create a stronger connection to the Mystic River with a linear park and Green Streets along Puritan, Putnam, Winthrop and Ten Hills. This would strengthen connections to Ryan Playground, Revere Beach Parkway, Bunker HIll, and the entire Mystic River Reservation.

Ten Hills Road and Shore Drive are separated by medians that have limited accessiblity and are not well maintained. Also, the tree canopy along the Mystic River can be opened to the water for increased visibility and safety.

McGrath Corridor: Green Scenario

The Green Alternative mainly proposes a mixed-used network with biking, green space and storm-water BMP's that allow for a more pedestrian and multi-modal urban environment. The green network hopes to use the existing open space at the East Somerville District Court as a central gathering space. Currently it is severely under utilized due the fact that it is surrounded by the Kensington and Middlesex Avenue, with only one crosswalk that leads out to Route 28.

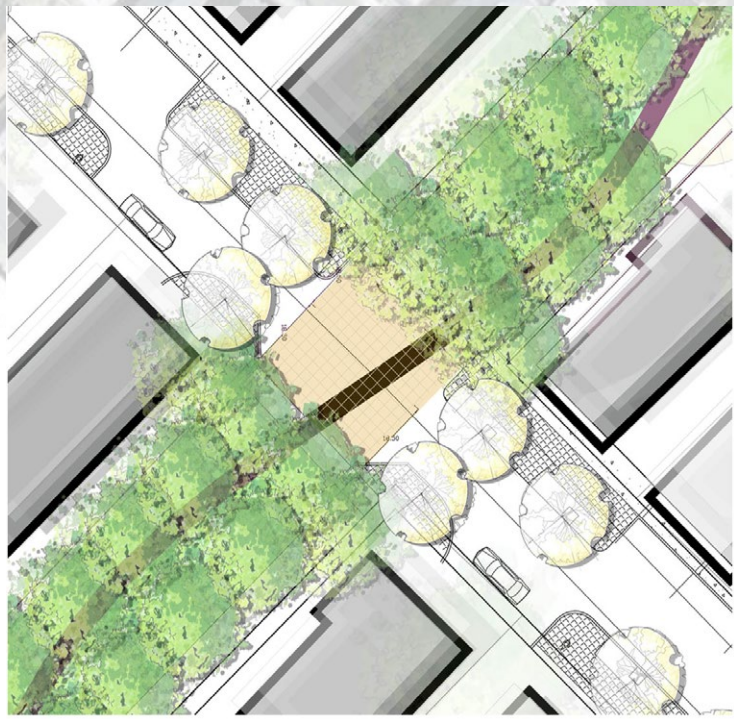
Temple can be turned into a linear park from the I-93 northeast to Ten Hills Road, where it can transition into a multi-modal street known as a woon-erf. Streets perpindicular to Temple could also be converted to woon-erfs to both accomodate the existing driveways and increase tree canopy and walkability. The linear park could also be used for stormwater reme-diation with a series of retention and detention basins, while still providing long turf areas for residents to gather.



McGrath Corridor: Green Scenario

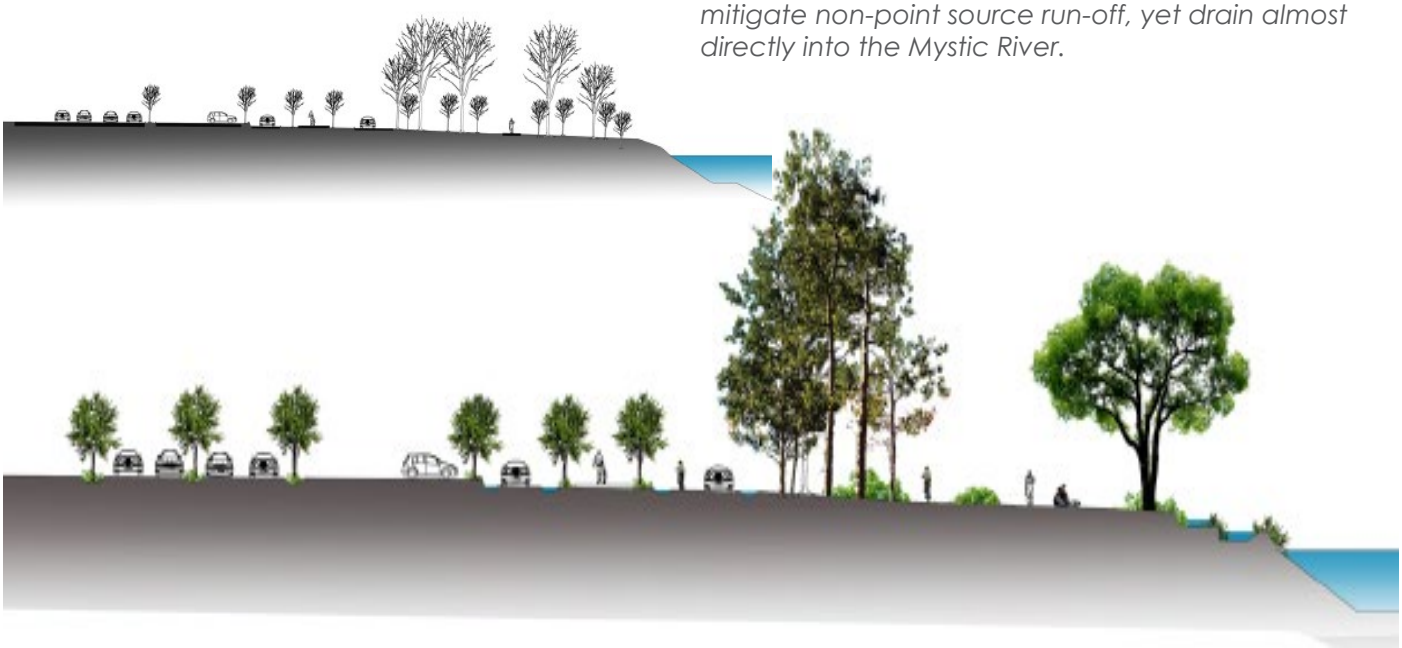
Ten Hills north of the I-93, with Temple as the new green corridor.

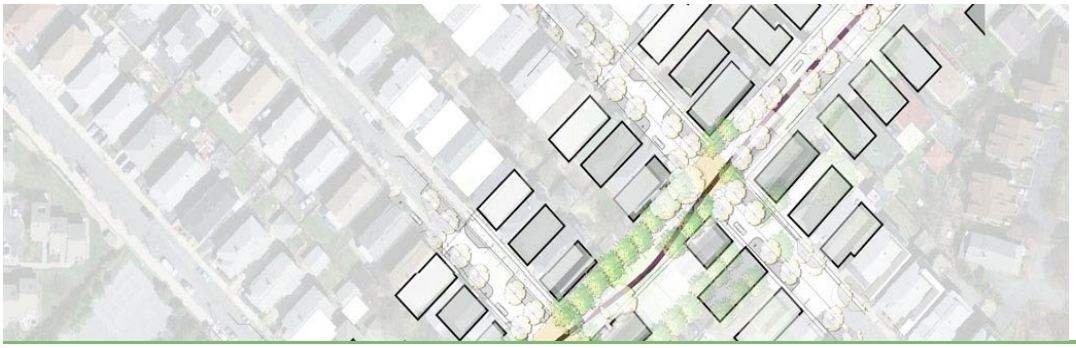
A large muti-modal path will create a strong connection to the East Somerville neighborhoods adjacent to the I-93. The park will also help to slow stormwater run-off due to the steep topography of Temple. A series of woonerfs can also provide bio-swales and rain gardens that can infiltrate and temporarily store water and infiltrate water, and be directed towards larger infiltration basins located in the Temple Street linear park.



Parking Considerations: Increasing Infiltration

The existing commercial parking lots do little to mitigate non-point source run-off, yet drain almost directly into the Mystic River.





The existing commercial parking lots can better infiltrate run-off through the implementation of bio-swales and permeable pavement that allows for immediate infiltration as wells as removing suspended solids. The islands can also contribute to increased tree canopy thus leading to mitigation of urban heat island. With increased T stops in, it may also be possible to require less parking stalls per commercial square footage.

7.00 Super Green Scenario

Nathan Frazee, Jennifer Masters, Kathryn Ostermier, Fangfang Wang

The Super Green alternative proposes to re-knit the neighborhood of East Somerville to the rest of the city. By incorporating ideas that can be completed in the future (20+ years down the road), the Super Green proposes a significant increase in infiltration areas, tree canopy, cycling, and pedestrian circulation. The big idea behind this proposals is the prioritization of people - Somerville residents and visitors - and not those passing through in their cars. By creating a new purpose for the elevated section and creating a park, incorporating woonerf streets and a linear park, de-elevating a portion of the McGrath Highway and incorporating a green lid, and reclamation of the area under I-93 for people, the Super Green alternative looks boldly to the future.

Introduction

South Focus Plan

The southern portion of the Super Green Scenario has a variety of elements that address social, environmental and economic issues. These issues are addressed through enhanced pedestrian and bicycle networks, commercial opportunities, and infiltration and tree canopy increases.

The environmental improvements throughout the corridor are primarily addressed through infiltration elements and increased tree canopy. City officials had informed the study group that combined stormwater sewer outflows, air quality, and water quality were important environmental issues for the city. This design includes 1,150 new trees and 1,650 square feet of infiltration areas to be added to the southern corridor as well as secondary streets. The increase to the tree canopy and implementation of infiltration areas will help to address these environmental issues for the city.

The creation of a liveable streets network will serve to solve the social issues for the area. Livable streets integrate public spaces where people are encouraged to have interactions, physical activity and form a community. The layout is conducive to multiple modes of transportation including pedestrians, bicycles, transit riders and motorists. Within this design, wider sidewalk widths and added bicycle lanes helps to encourage these activities.

Site Plan: This site plans shows the adjacent neighborhoods and cities and how the corridor splits through them. Networks can be created by connecting design elements from the corridor throughout the neighborhoods to help encourage connectivity throughout the area.

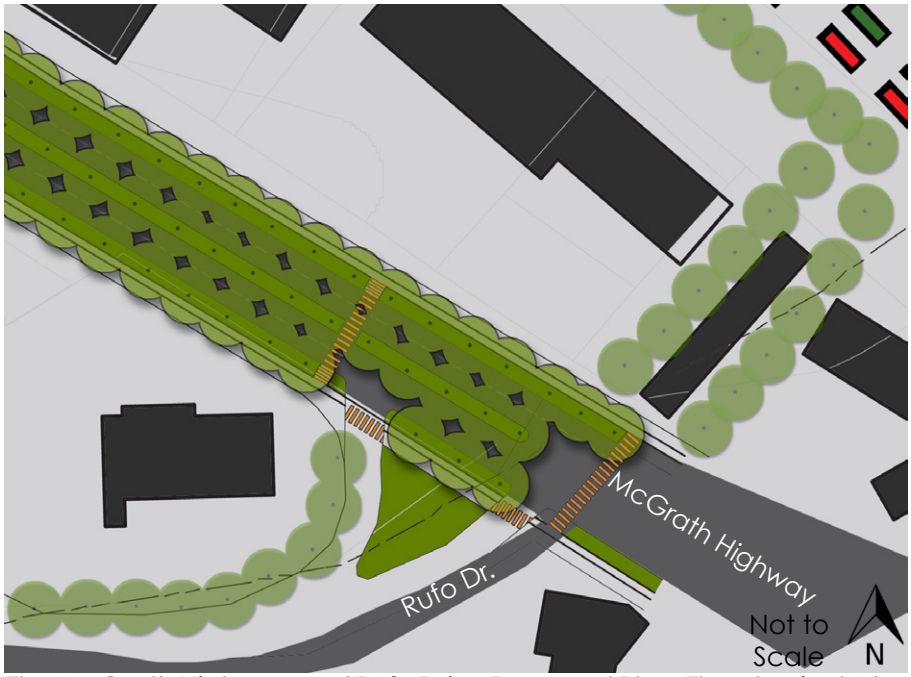
To address the cities need for commercial and industrial development to alleviate the tax burden additional commercial space has been incorporated beneath the elevated park. These would be small shops that could serve as incentive programs to help establish more local business. Parking was removed from the street and brought under the elevated park to clean the streets and views and allow for a much more pleasant experience.

McGrath Highway and Rufo Drive

The intersection of the McGrath Highway and Rufo Drive serves as the primary gateway into Somerville from Cambridge. Currently the intersection lacks function and serves the automobile and ignores the basic needs of the pedestrians. A lack of tree canopy and infiltration elements means the majority of stormwater runoff enters into the sewer systems and can overwhelm the combined stormwater and sewer outflows.

The photomontage shows how the proposed design would improve this intersection. The design elements for the rest of the corridor can be introduced and a sense of arrival can be created. To strongly convey the sense of arrival into a Somerville a gateway was proposed which could be heavily planted to indicate the city's goals to increase green infrastructure. The narrowing of the streets and the removal of a traffic lane would slow traffic and create a much safer experience for pedestrians. The narrowing of the streets could also serve to increase the amount of stormwater devices incorporated. Three bioretention areas are included in this area which serve as buffers for pedestrians and bicyclists on each side as well as a median between the traffic lanes. These stormwater treatment devices can be used to help alleviate combined stormwater and sewer outflows as well as improve air and water quality.

The McGrath Highway and Rufo Drive Existing Pan View: There is a lack of pedestrian infrastructure. Tree canopy and infiltration areas are underutlized and no sense of a gateway into Somerville is present.



The McGrath Highway and Rufo Drive Proposed Plan: The plan includes an increase in tree canopy, infiltration areas and pedestrian network. The addition of these elements help connect the area to adjacent streets and serves as a physical gateway into Somerville.

The McGrath Highway and Rufo Drive Existing Street View: From the street view it is evident that the median is a barrier difficult for pedestrians to cross. The high level of lanes and lack of pedestrian network make it dangerous. The lack of trees and large amounts of asphalt and concrete are unwelcoming and increases the urban heat island effect.

The McGrath Highway and Rufo Drive Proposed Street View: This proposed photomontage shows how various elements would work together. A gateway would indicate to motorists that they are entering a different area and heavy tree canopy and infiltration areas would help reduce stormwater runoff and improve air quality. Pedestrian and cyclists would have proper amenities to help connect with adjacent neighborhoods as well as the East Coast Greenway.

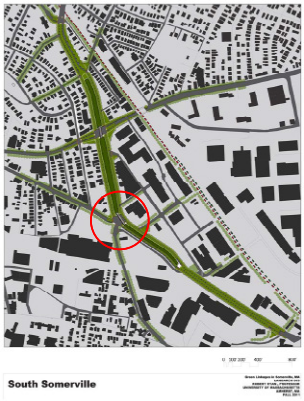
McGrath Highway and Somerville Avenue

The automobiles diverge down to street level once they cross over the bridge. The existing elevated portion of the McGrath Highway is proposed to become an elevated park that allows pedestrians to enter and remain above street level throughout the corridor.

Within this design, pedestrian bridges are incorporated on the elevated park to alleviate congestion at intersections and reduce the amount of pillars for structure support.

Commercial and parking proposed to be constructed under the elevated park. This will serve to boost economic development and create destination points along the corridor. By placing parking under the elevated park the streets are allowed to be more pedestrian and bicycle friendly with a heavy emphasis on infiltration and tree canopy.

The photomontage for this area shows how the increased infrastructure for pedestrians can create a much safer experience and create a more livable streets network. The relationship of the pedestrian bridge and commercial development shows how these elements would create a destination points.



The McGrath Highway and Somerville Avenue Existing Plan View: The existing conditions shows how the elevated highway divides the area. Large amounts of asphalt are present and very little tree canopy.

The McGrath and Somerville Avenue Proposed Plan: The plan includes an elevated park, a pedestrian bridge and commercial development. These elements along with an increase in tree canopy and infiltration areas help to create a much more sustainable corridor.

The McGrath Highway and Somerville Avenue Existing Photo: This area of the corridor includes the elevated McGrath Highway which is empty below. A lack of tree canopy and pedestrian network is evident. Pedestrians are forced to cross many lanes of traffic to reach a bus stop on the other side of the highway.

The McGrath Highway and Somerville Avenue Proposed Photomontage: The elevated portion of McGrath is converted into an elevated park with commercial areas below. A pedestrian bridge and increased pedestrian elements are incorporated to create a much safer crossing. Increased tree canopy and infiltration areas helps reduce the amount of stormwater entering the CSOs.

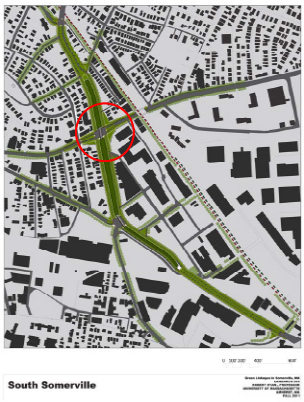
McGrath Highway and Washington Street

The current conditions for the intersection of McGrath Highway and Washington Street are oriented primarily for the automobile. The intersection is congested because of the supports for the elevated highway. This congestion makes it difficult for pedestrians to navigate through this corridor and is very unsafe. There is a lack of tree canopy and infiltration areas which leads to stormwater issues and poor air quality.

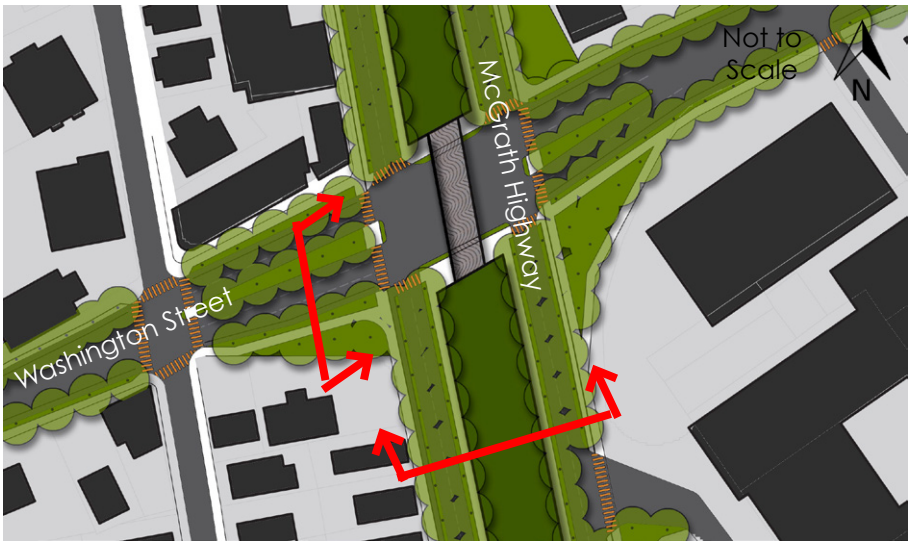
The proposed plan for this area eliminates the elevated portion of McGrath and replaces it with a pedestrian bridge which allows for a much cleaner intersection. Pedestrian crossings and traffic calming devices are used to create a safer intersection.

Increased tree canopy and infiltration areas are prominent in this area. Medians are included on the adjacent streets to help carry the design strategies through the neighboring streets. These connects are vital to creating a complete network throughout all of Somerville and especially reconnecting East Somerville with the rest of the city.

Additional commercial opportunities are possible under McGrath in this area. The presence of these shops will help create a destination point and could provide additional services to this area.

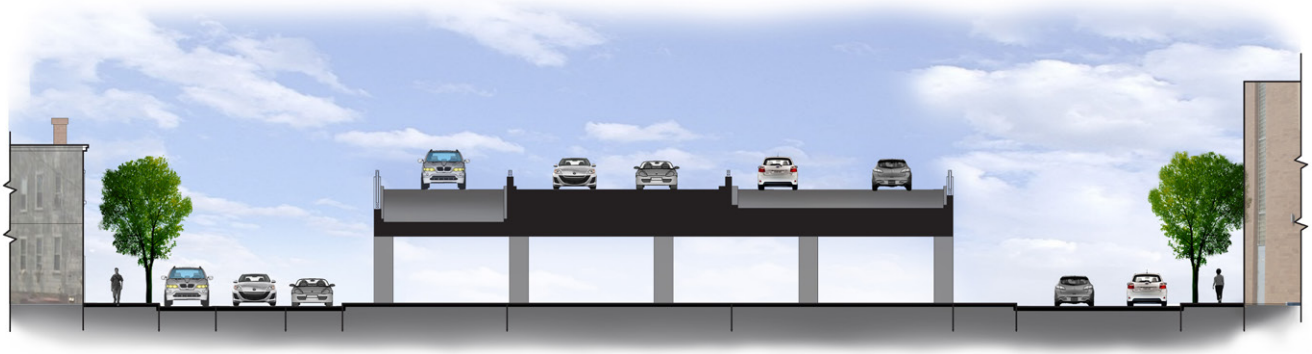


The McGrath Highway and Washington Street: The existing conditions are heavily dominated by the elevated portion of McGrath. The traffic lanes make it difficult for pedestrians to navigate this area.



The McGrath and Washington Street: The proposed design replaces the elevated portion of McGrath with a pedestrian bridge to decongest the intersection that allows for a safer experience for pedestrians, bicyclists and motorists.

McGrath Corridor: Super Green Scenario



The McGrath Highway Existing Section A-A': This section shows how the automobile is the primary feature. A void space is created below the highway and there is a lack of pedestrian network.

The McGrath Highway Proposed Section A-A': This proposed section shows how the varies elements work together and how a livable street can be created. Shops are located beneath the elevated park and infiltration areas as well as pedestrian and bicycle networks are incorporated.

The McGrath Highway and Washington Street Existing Photo: The intersection is congested by the large amount of supports required for the automobiles on the McGrath Highway. The current conditions create a barrier and divide Somerville.

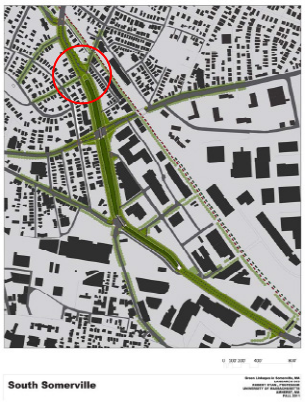
The McGrath Highway and Washington Street Proposed Section B-B': This proposed photomontage shows how a pedestrian bridge could decongest the intersection and improve pedestrian circulation.

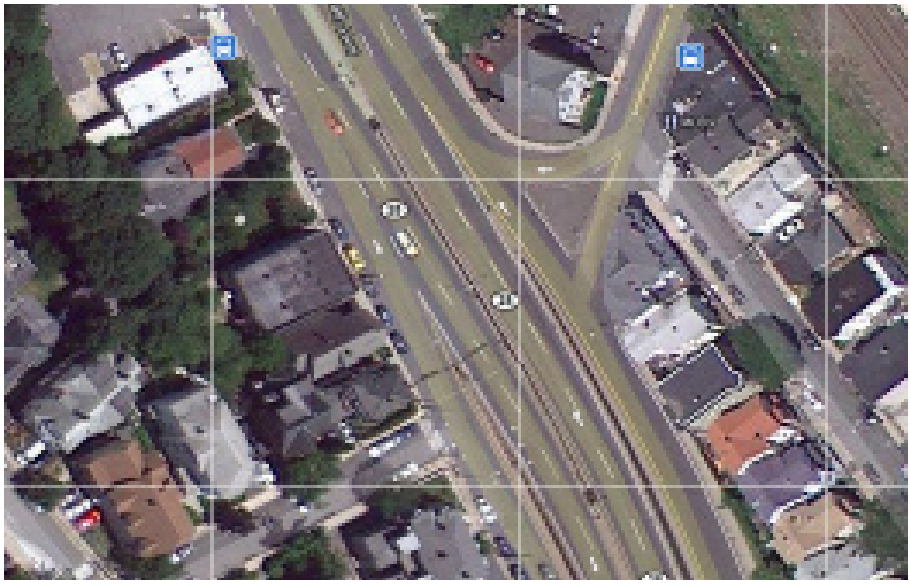
McGrath Highway, Prospect Hill Avenue, and Cross Street

The elevated portion of McGrath ends at the intersection of Prospect Hill Avenue and Cross Street. The existing conditions does not allow pedestrians to cross McGrath and enter East Somerville. McGrath Highway is essentially a divide between Prospect Hill neighborhood and East Somerville. This deprives the East Somerville residents the ability to easily travel to Prospect Hill Park.

The proposed plan creates a pedestrian intersection where it is possible to cross the street safely and easily travel between East Somerville and Prospect Hills. This redesign also serves as an entrance to the elevated park which travels through the corridor and brings residents to the proposed commercial additions. The park will serve as passive recreational opportunities as well as infiltration areas to reduce stormwater issues.

Connections down both Prospect Hill Avenue and Cross Street are proposed to draw residents from those areas into the park as well as connect people travelling through Somerville with additional parts of the city. Prospect Hill Park and the commercial areas at Cross Street and Broadway will be much more accessible.





The McGrath Highway, Prospect Hill Avenue , and Cross Street: The existing highway does not allow for pedestrians to cross this area and is orientated towards automobile circulation.

The McGrath Highway, Prospect Hill Avenue, and Cross Street Proposed Plan: The redesigned intersection allows for pedestrians to cross and enter East Somerville. The design also increases the tree canopy and allows the elevated park to return to a boulevards street.

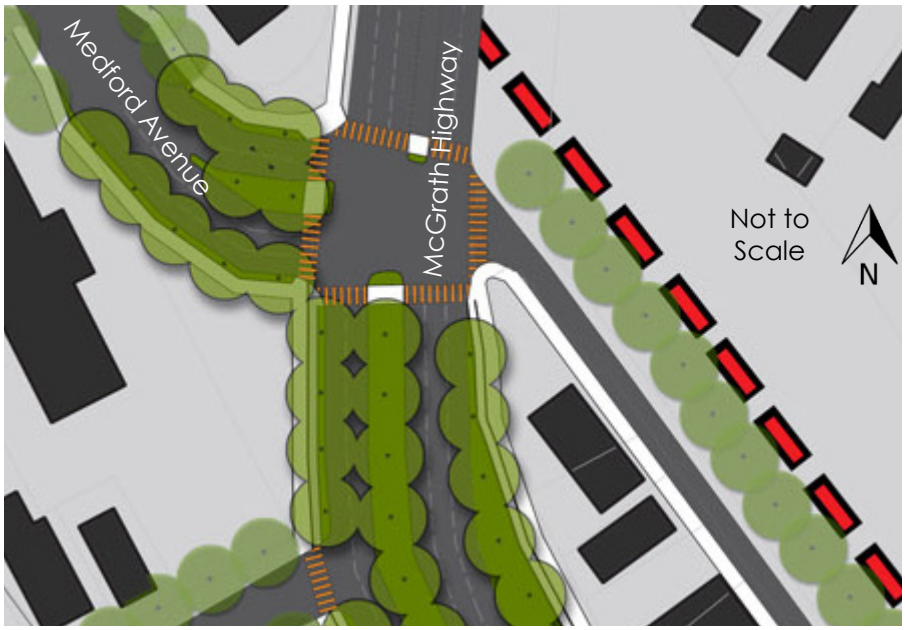
McGrath Highway and Medford Street

The intersection of the McGrath Highway and Medford serves as the final segment of the southern portion of the study area. The existing conditions has 8 lanes of north/south travel which include turning lanes. This layout makes it very dangerous for pedestrians especially with the lack of medians.

The proposed redesign of this area includes medians, smaller and fewer lanes which make it much more pedestrian friendly. It also includes a better connection into the Prospect Hills neighborhood by creating a median at the intersection on Medford and including more street tree plantings along Medford.

Due to the restructuring of lanes a wider median is possible on the east portion of McGrath would could serve as passive recreation areas for East Somerville residence and help transition into the designed park throughout the central portion of McGrath.

The McGrath Highway and Medford Street: The intersection is designed primarily for flow and does not draw people into the rest of the city.



The McGrath and Medford Street: Reducing the lane widths allows for a wider infiltration area to be created on the east side of the highway. This will serve as the beginning of a park system that carries throughout the remaining corridor and includes connections to the Community Path.

Central Focus Area

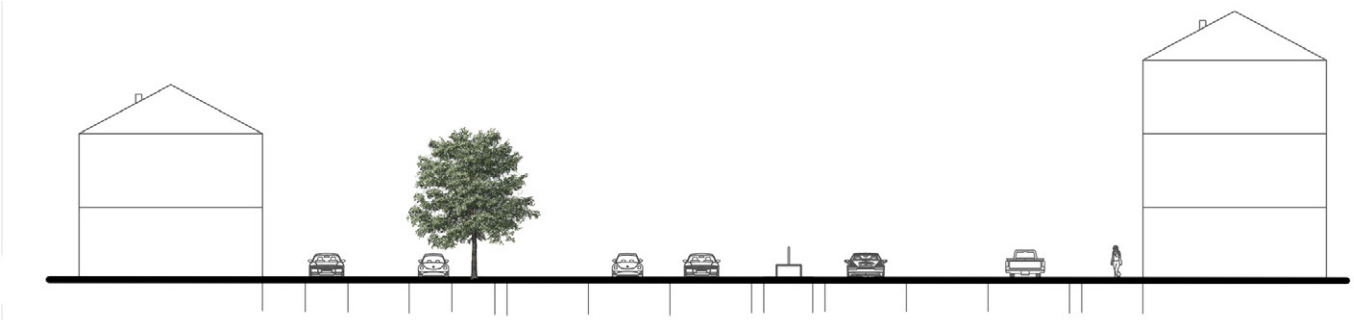
Site Locator

East Somerville Linear Park and Shared Street

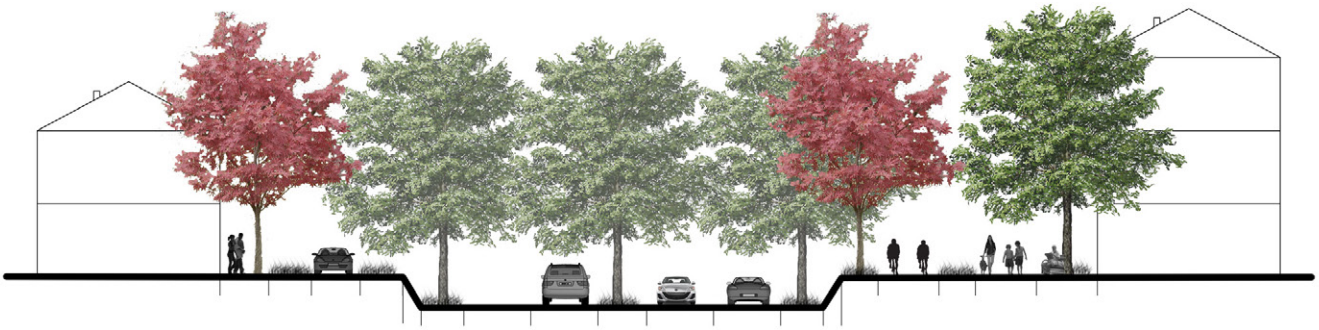
By depressing McGrath from Pearl Street to Broadway, this proposal creates the opportunity for an uninterrupted quarter-mile linear park that offers residents of East Somerville an amenity that can connect them to green space throughout the city, as well as a respite right in their neighborhood. The linear park is made possible when the highway is depressed, thus creating a buffer along the east side of McGrath. Components of the park, which will vary in width from 23 – 35' depending on existing rights of way, include:

Site plan: Mid-McGrath corridor, showing linear park to the east and shared street to the west of McGrath.

- A generous 10 foot pedestrian path with a pea-stone aggregate surface, allowing for stormwater infiltration
- Ample seating along the path under the canopy
- A two-way bike path, also 10 feet, that connects to the Community Path, Foss Park, the Mystic River, and Cross Street, via green network
- Tree canopy consisting of a double row of trees along entire length of park
- Safe access to new Otis Street pedestrian bridge and redesigned parks on both sides of the new bridge
- Stormwater infiltration along entire length of park, a total of more than ¾ acre
- A fence buffers noise from the highway and provides space for community / school art
- Cul-de-sacs at the ends of abutting streets provide emergency access. Constructed of grass pavers, they do not interrupt the pedestrian system in the park
- Home values increase due to adjacency to new park
- Pearl Street intersection redesigned to incorporate the park, thus decreasing the distance across McGrath by nearly half and including raised crosswalks, all for the benefit of pedestrians



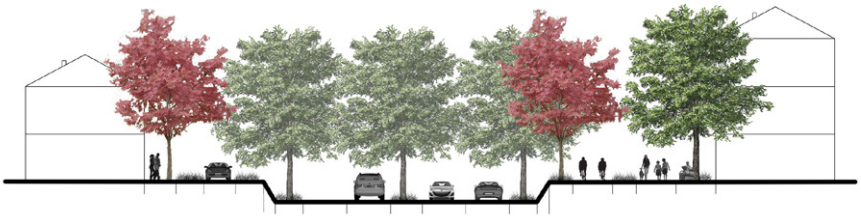
Existing section at Everett Street: Existing conditions show Dana Street with tree strip as frontage road to the six lanes of McGrath with concrete median.



Proposed section at Everett Street: The McGrath Highway travel lanes have been narrowed to 12'. A Boulevard has been depressed 6' with tree plantings and infiltration basins to aid in air and water quality, as well as to buffer highway noise. A Linear park with pedestrian and bike paths shown to the east. Shared street shown to the left with infiltration basins and narrowed travel lane.

Proposed plan (left, trees not shown for graphic clarity) highlights changes in configuration of existing highway (right).

East Somerville Linear Park



Plan and section of linear park (above and left): Edges of linear park at Pearl Street link to raised crosswalks, significantly reducing crossing distance. Extended medians create safe place for pedestrians to pause while crossing.

Existing conditions at Everett Street: The McGrath Highway is three lanes. Residential properties with sidewalk directly abut highway. Concrete median with fence separates traffic in two directions. Planted median at frontage road can be seen at far left.

Proposed linear park at Everett Street: Pedestrian path with seating, two-way bike lane, colorful fence, double row of trees, and infiltration areas comprise park for residents leading to open spaces throughout the city, as well as space for passive recreation right in their neighborhood.

Shared Street

http://bikeportland.org/2010/05/06/first-look-at-new-bike-lanes-through-cobblestones-on-nw-marshall-33121

http://www.walkable.org/assets/raw/raw%20images/dan%20photos/

http://rockinontheblog.blogspot.com/2011/08/woonerf-court.html

Shared Streets: Images above and left depict shared streets modelled after Dutch Woonerf. Paving treatments delineate pedestrian/bicycle zones from vehicular traffic. Parking spaces integrated with infiltration/rain gardens. Narrow travel lanes slow traffic, creating a safe environment for residents of all ages.

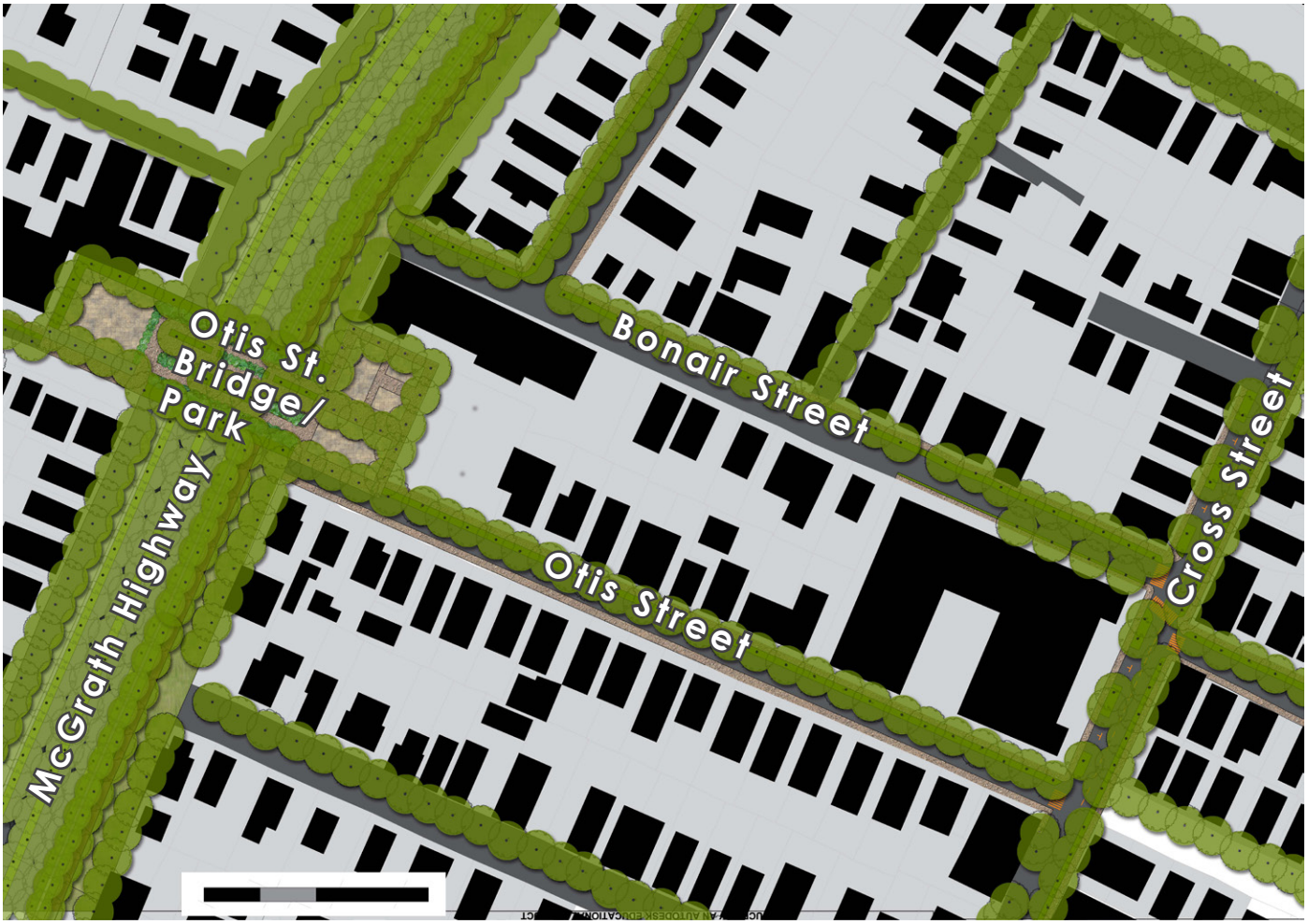
The two frontage roads (Dana and Edmands) on the west side of McGrath are suited to be redesigned as a shared street, or "Woonerf," in the Dutch tradition. The new shared street will mirror the new linear park system on the east side, and will also provide a gateway for residents to the Otis Street parks and new pedestrian bridge. Advantages and features of such a shared street include:

- Lowered vehicle speeds due to narrowed travel lanes and "slalom" street design
- Safe pedestrian and bicycle activities along street
- Stormwater infiltration provided by permeable paving surface, as well as rain gardens and tree plantings along both sides of the street
- Parallel parking on both sides of the street
- Paving treatment for pedestrian zone will be distinct and complementary to cyclist/vehicular zones.
- Pedestrian-scale lighting to enhance safety and identity of street
- Gateways to the Woonerf at Pearl and Broadway will "announce" the street and create a unique environment for residents living on the street, as well as those using it for access to the neighborhood's green network

Otis Street Pedestrian Bridge & Cross Street

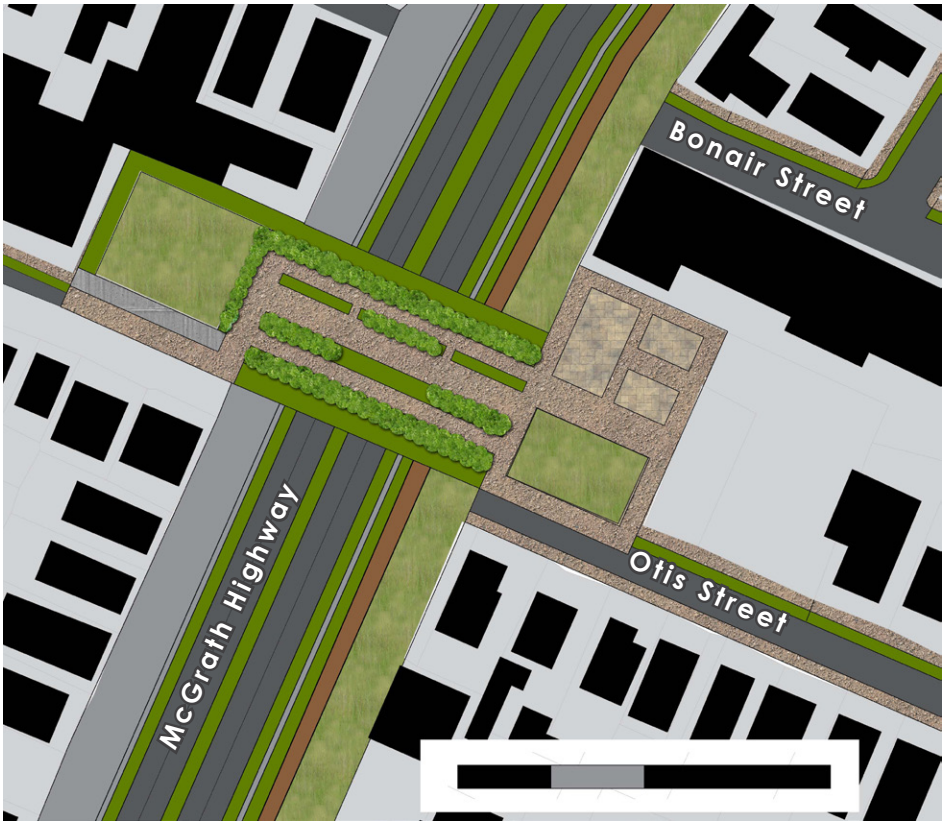
In mid-McGrath, pedestrian access across McGrath is a serious issue. There is only one crossing for pedestrians between Broadway and Peark Street: a narrow chain-link enclosed pedestrian bridge that spans McGrath. On either side of the bridge, there are two plaza-like areas that contain the ramps leading up to the pedestrian bridge. Within those plazas and along the bridge itself, there is little tree cover and no areas for stormwater detention or infiltration: the pedestrian access, lack of canopy, and deficits in on-site stormwater management are all challenges to be addressed.

In addition to the crossing challenges, there is a need for green infrastructure and connections within the East Somerville neighborhood. Cross Street runs parallel to McGrath, and although currently vehicular traffic is prioritized, has the potential to be a cycling and pedestrian-friendly street with opportunities for infiltration and the potential to connect with Safe Routes to School.

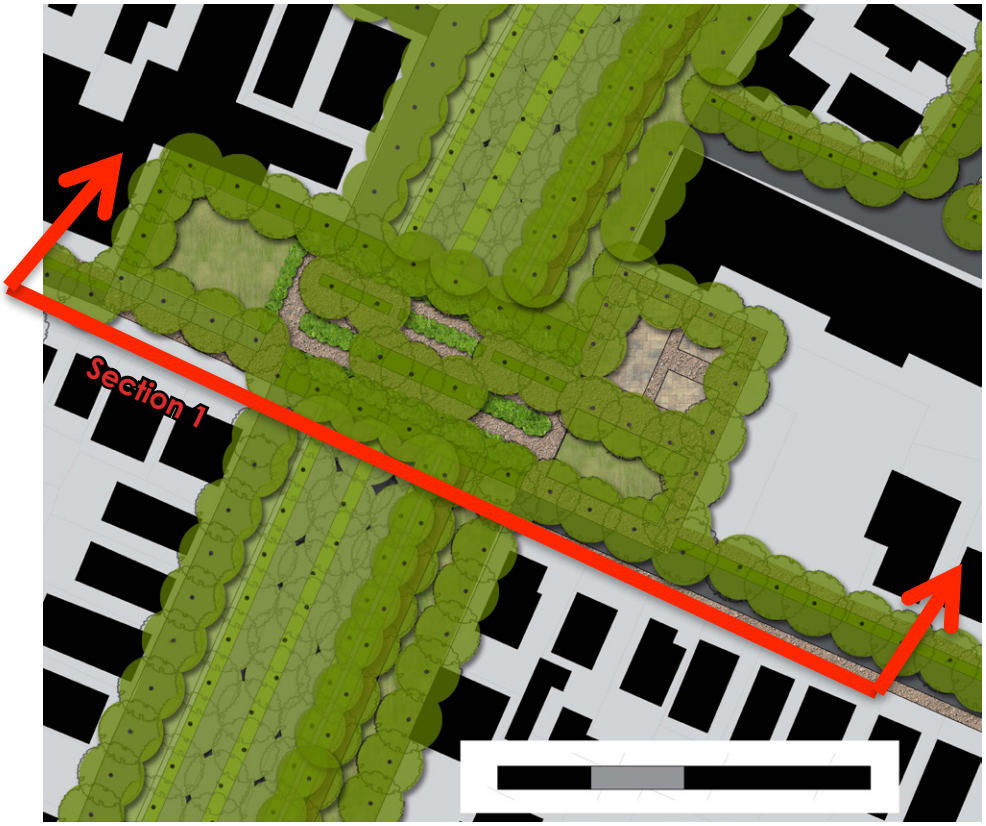


Otis Street Bridge / Cross Street Master Plan: A conceptual plan including a broad park-like bridge across a recessed McGrath, with connections along Otis to a re-designed Cross Street.

Otis Street Bridge Park



Otis Street Bridge Park: The concept includes increased open space for residents on either side of a broad, park-like bridge.



Otis Street Bridge Park: The park links into the linear park and woonerf proposed along McGrath, significantly increasing tree cover

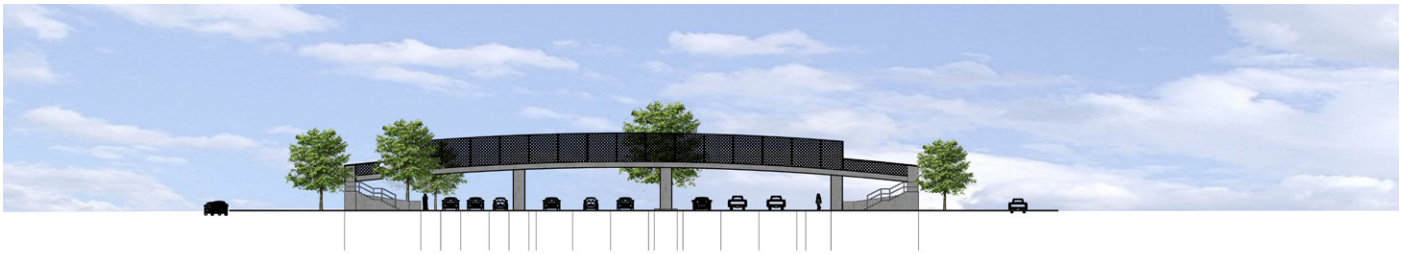
There are three proposed solutions for the Otis Street Bridge: all work together in a system to address the challenges of the crossing.

1. In addition to the linear park and woonerf previously described, the four lanes of McGrath can be: depressed 6' below present grade. This will separate pedestrian and cycling traffic from vehicles, re-prioritizing the experience of the person over that of the vehicle.

2. By significantly widening the pedestrian bridge across McGrath, the City of Somerville has a wonderful opportunity to create a bridge for people - populations - to cross over and begin to knit the neighborhoods back together. Instead of one or two individuals crossing at once, many people can filter across at the same time.

3. Because the bridge can be lowered by 6' (with the lowering of McGrath 6' below grade), the ramps will no longer need to address 14' of grade change. The new grade change of 8' from the ground to the bridge can be addressed in a much smaller area. WIth this reduced need for ramping comes the opportunity to create additional open space for the people of East Somerville. The present day concrete ramps will become bookending parks for neighbors and visitors to enjoy.

Otis Street Bridge Park



Section 1 Before: 9 lanes of traffic underneath a chain-link fence enclosed pedestrian bridge. Sparse trees offer few benefits, and the connection between neighborhoods is minimal and unpleasant.

Section 1 After: McGrath has been reduced to 4 lanes, which are recessed 6' into the earth. A lower, broad people bridge is anchored on both sides by additional open space, while allowing cyclists and pedestrians to filter across the bridge and intermingle.

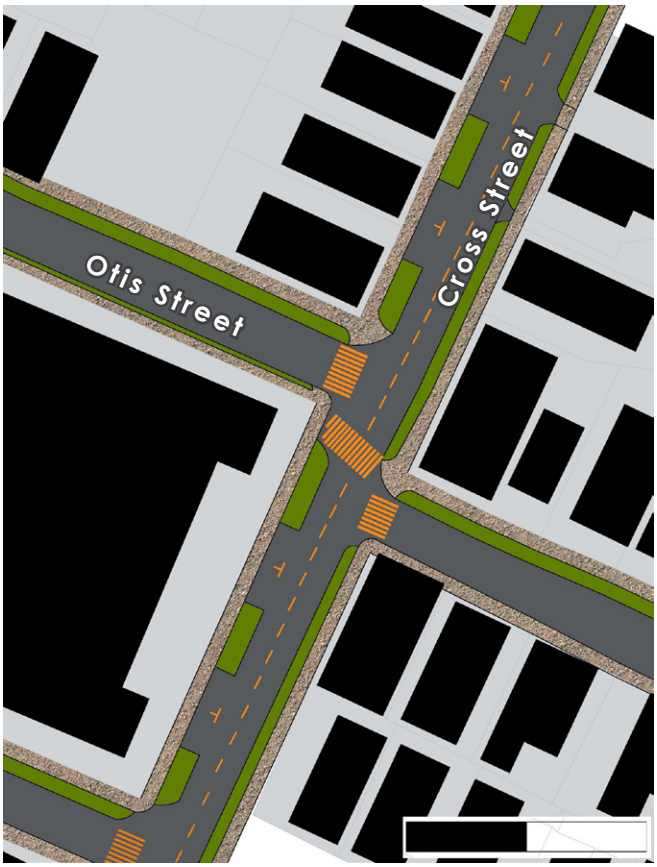
Section 1 detail: McGrath's 4 lanes are recessed 6' into the ground. In addition to removing vehicles from the pedestrian line of sight, median plantings form a 'green lid' over traffic. Exhaust travels upwards rather than laterally, allowing tree canopies to begin cleansing particulates out of the air before they enter the surrounding neighborhoods.

Otis Street Bridge before: A narrow pedestrian bridge crosses a sea of asphalt and 9 lanes of traffic, with no shelter from the elements.

Otis Street After: The new cycling lanes run alongside the linear park, with the pedestrian bridge and its trees rising in the background. Robust median plantings in the newly lowered McGrath Highway provide a canopy buffer to traffic below.

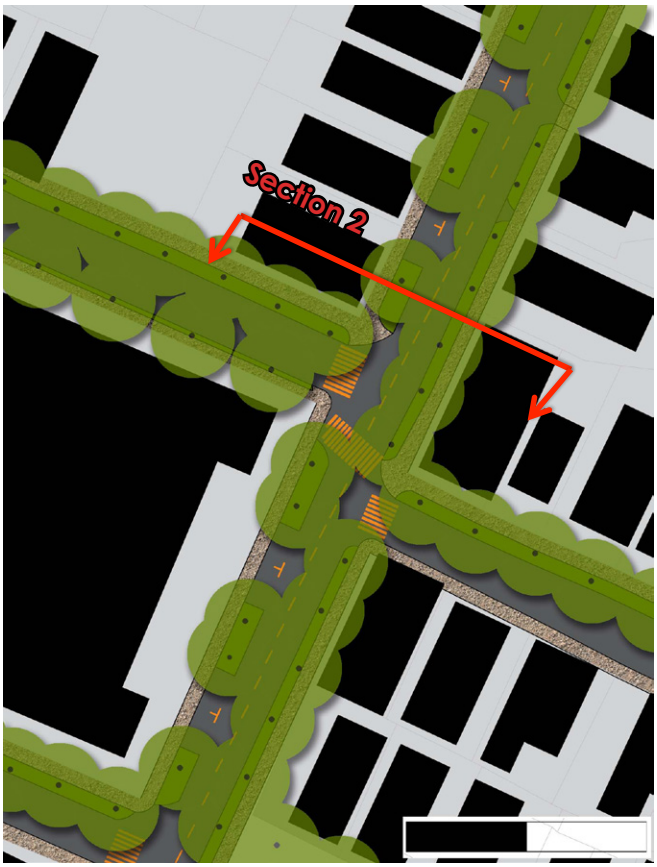
Cross Street

Running parallel to the McGrath Highway, through the neighborhood of East Somerville, Cross Street is an important connection between Assembly Square to the north and Brickbottom to the south. In addition to connecting these two commercial and employment centers, Cross Street runs alongside several schools in the neighborhood. It is an important secondary connector, but lacks significant street tree cover and bike lanes, as well as any sort of municipal infiltration or 'on-site' stormwater treatment and detention.



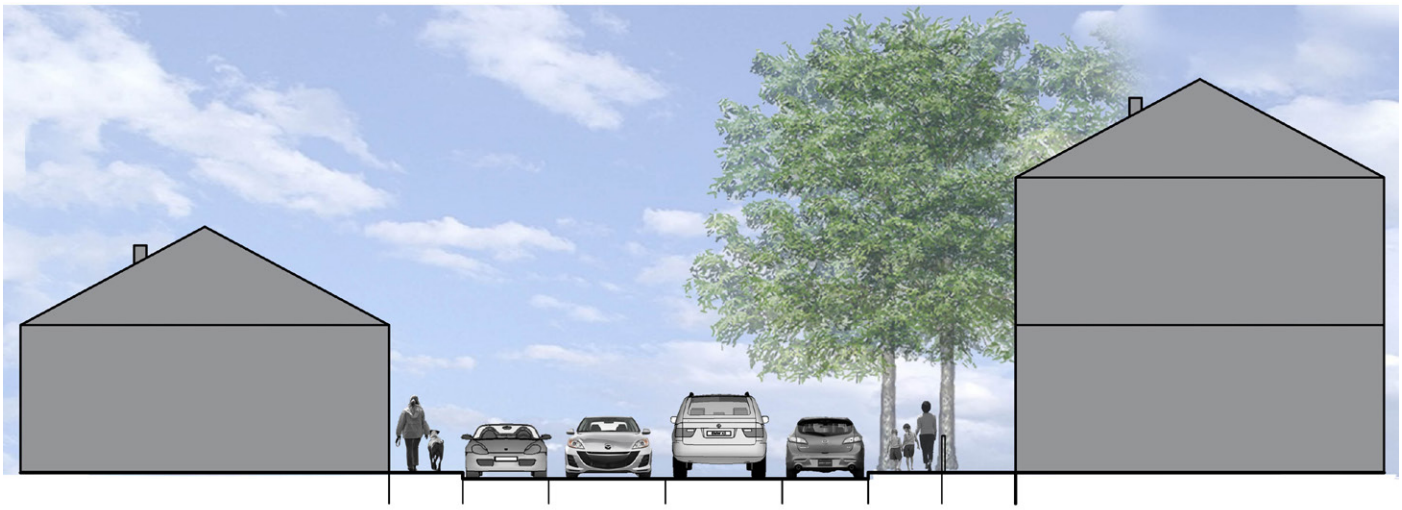
Cross Street Plan: In the above diagram, the pedestrian experience is prioritized, as are ecological services, including infiltration, in the neighborhood. Parallel parking is eliminated from the east side of the street and replaced with a continuous tree strip and infiltration area (with breaks for driveways).

Parallel parking on the west side of the street is established in a pattern, with two parallel parking space in between infiltration areas. This pattern allows for driveways without losing the rhythm of the pattern, creating a character defining flexible street typology that connects Assembly Square and Brickbottom via Cross Street.



Cross Street Plan: The proposed street typology allows for a significant increase in tree canopy. In addition, stormwater can be slowed and infiltrated with the addition of these planting areas.

By incorporating curb cuts along those strips, water that would otherwise flood into the city sewers during a rain event can be slowed by using the planting strips / swales as temporary storage. This will reduce the period of concentration for city sewers, therefore reducing the potential for a combined sewer overflows.



Section 2 Existing: Cross street as it exists has a 45' width, with two 6' sidewalks and a 33' wide roadbed. There is parallel parking on either side, with traffic moving in both directions. Few if any trees line the street, and the entire area is paved.

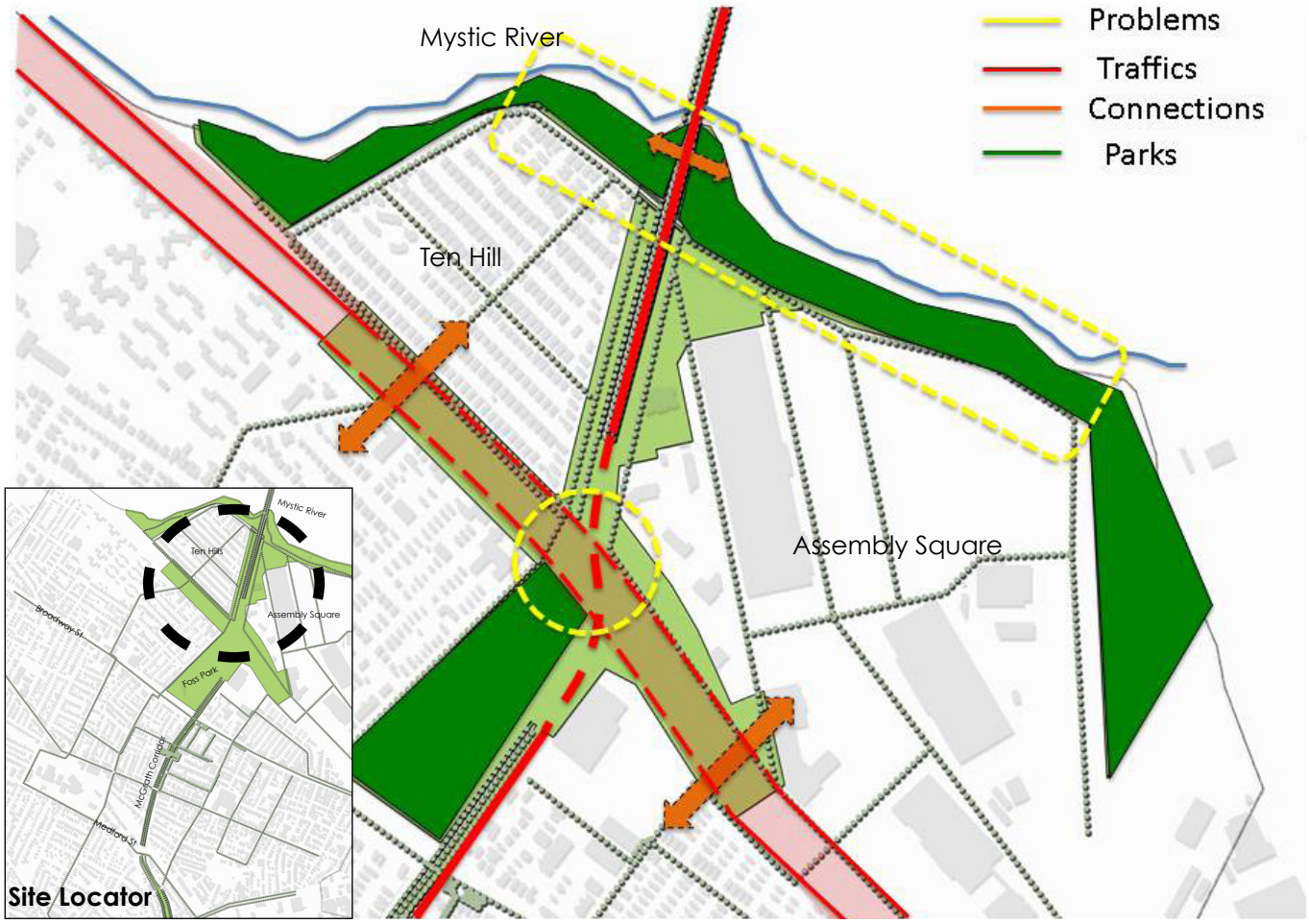
Section 2 Proposed: By removing parking from one side of the street and creating a parking / swale pattern on the other side, infiltration opportunities and tree canopy increase contribute to a cohesive character for the road. Additionally this pattern narrows the roadbed and slows traffic, making Cross Street safer for everyone. The vehicular lanes are shared with bikes using the sharrows found in other parts of the city, and increased tree plantings provide for a better and healthier pedestrian experience.

Cross Street Existing: Looking towards the Edgerly School, sidewalks are right against the road and there is no shelter from the elements. It is clear that the vehicular traffic is prioritized.

Cross Street Proposed: By separating pedestrian traffic from the road and increasing tree canopy, Cross Street becomes a safer artery connecting the neighborhood. Traffic is slowed with sharrows, tree cover, and a narrower roadbed.

Northern Focus Area

Big Idea



In general, the super green scenario maximizes the green open space throughout Somerville. By doing this there could be a higher quality of life for the people of Somerville.

As it is shown in the diagram, this scenario emphasizes the connections across the McGrath Highway and I-93 in order to solve the connectivity problem. This provides green open spaces to connect Foss Park to the Mystic River waterfront, open the view of the Mystic River and encourage more accessibility to the linear park along the river.

Three connections are redesigned for the neighborhoods adjacent to the interstate and highway existing underpasses. One is the underpass to connect the neighborhood of Ten Hills to the south neighborhood across the I-93. One is between the assembly square and Cross Steet. Another is an underpass under the bridge of the McGrath Highway to connect the divided parts of Mystic River waterfront.

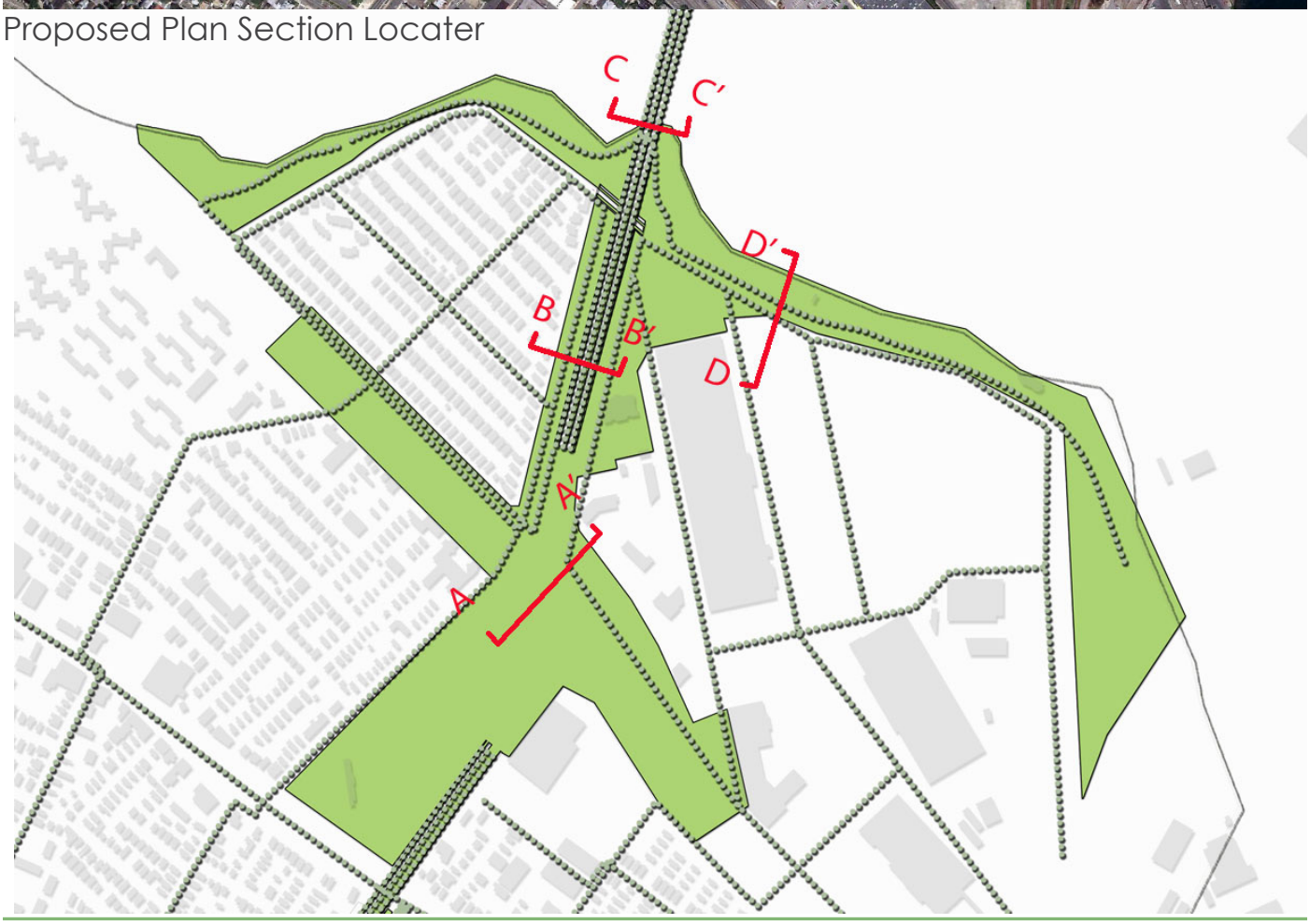
To solve the problem of the confusing intersection under I-93, a Mini Dig idea is applied to separate traffic lanes and pedestrians beneath I-93. The proposal rearranges the traffic lanes underground and allows for green space on the top of it.

At the same time, problems at the Mystic River Waterfront are addressed where people are unable to view the water. Trees are trimmed down to open the view of the Mystic River and it is also made as a safer place to engage people there. A bike lane is proposed through the linear waterfront park as well as opportunity for additional passive recreational activities.

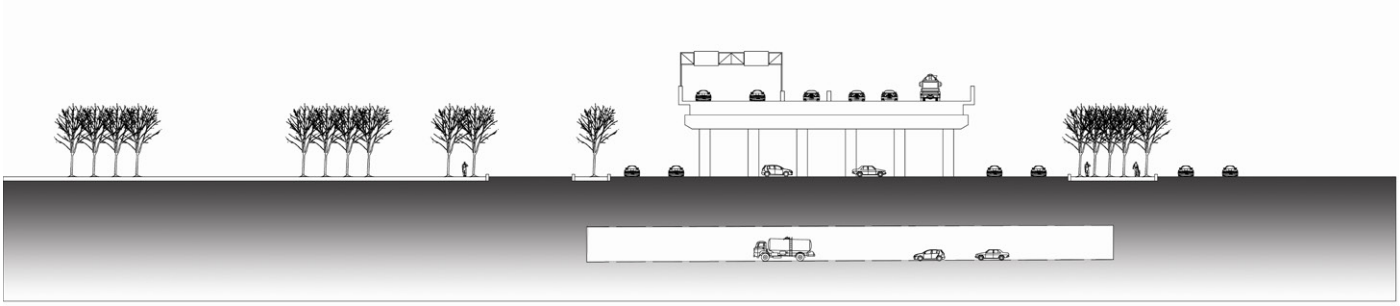
McGrath Corridor: Super Green Scenario

Existing Map Section Locater

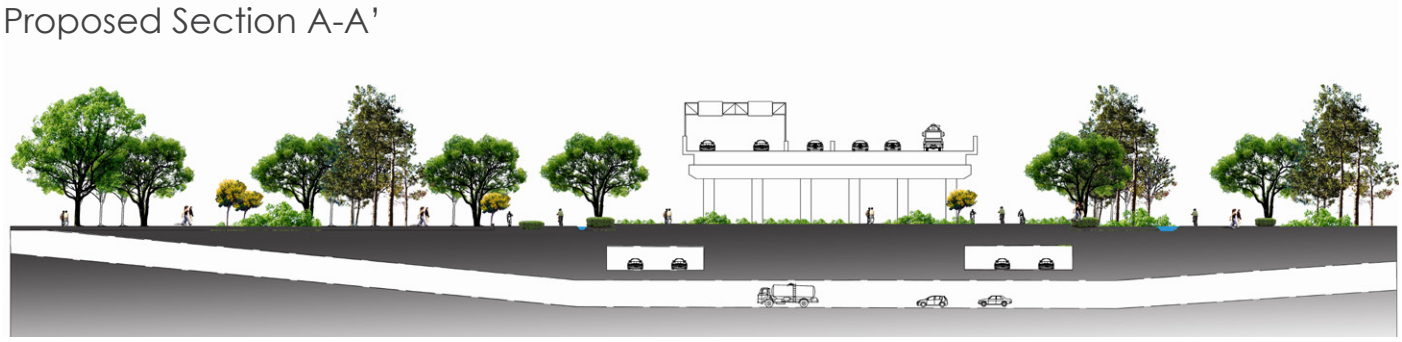
Proposed Plan Section Locater



Existing Section A-A'



Proposed Section A-A'

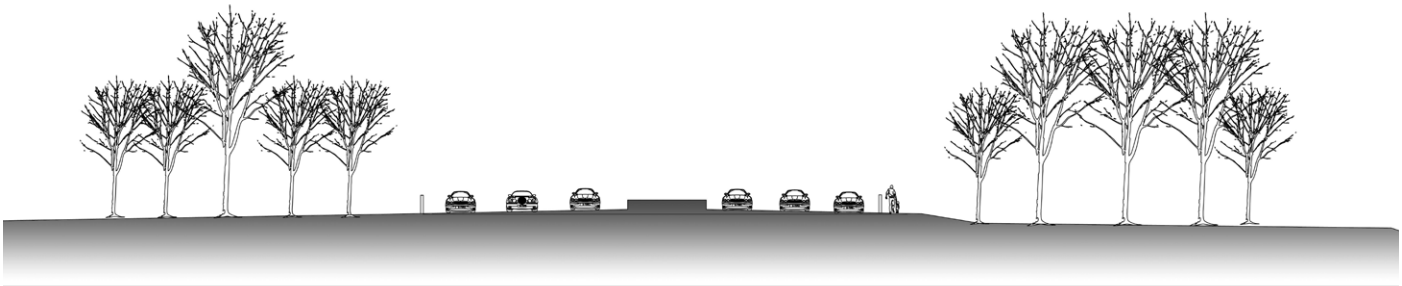


This cross section shows how a Mini Dig solution is applied to separate traffic lanes and pedestrians beneath I-93. As shown, green open space could be possible above the Mini Dig to allow safe and aesthtically pleasing movement throughout this area.

Green parks with playground and basketball court are proposed under I-93 to provide people place for daily activities.

Proposed bike lanes and pedestrian paths are continued in the green space, which extend from southern portion of the McGrath Highway to the north end connecting Foss Park to Mystic River waterfront as a whole greenway system.

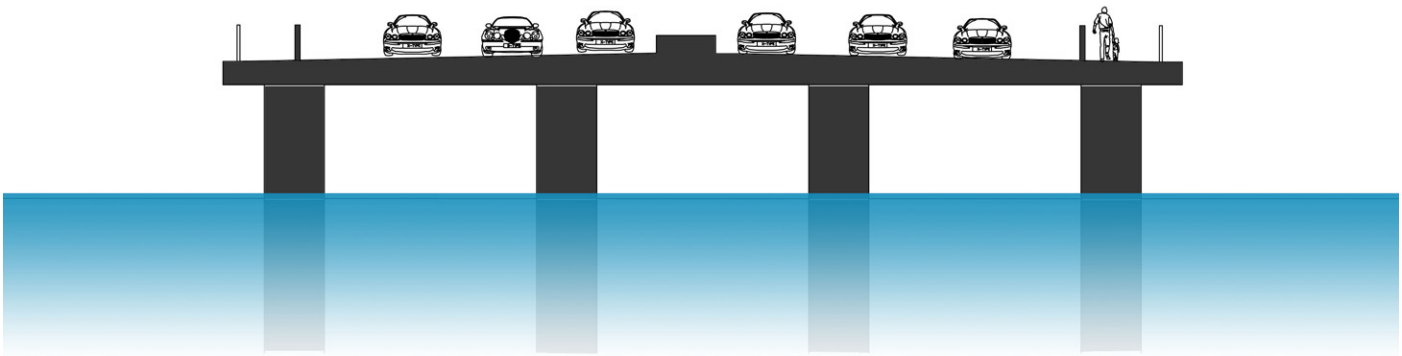
Existing Section B-B'



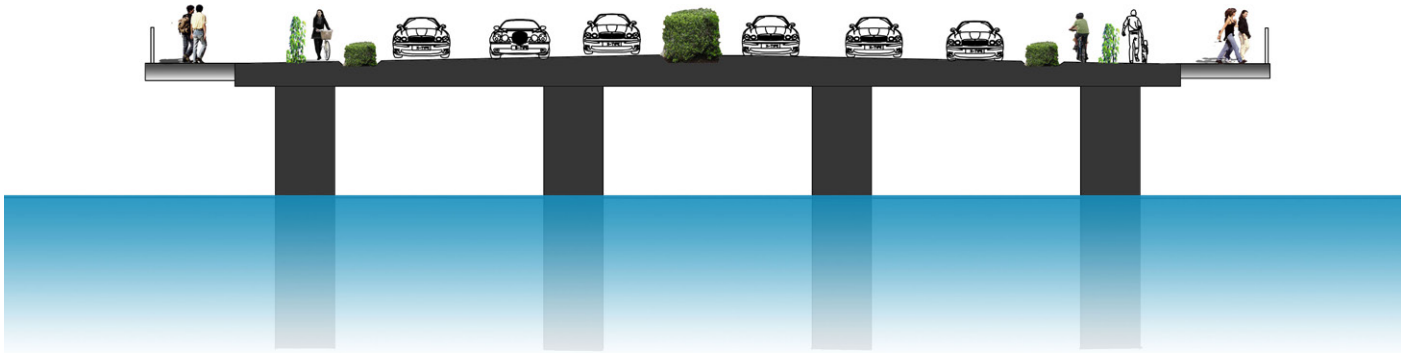
Proposed Section B-B'

Traffic is brought back to grade with reduced 2 traffic lanes each direction. Medians with trees are extended to provide buffers between traffic lanes and bike lanes to provide safer travel for bicyclists and pedestrians.

Existing Section C-C'



Proposed Section C-C'



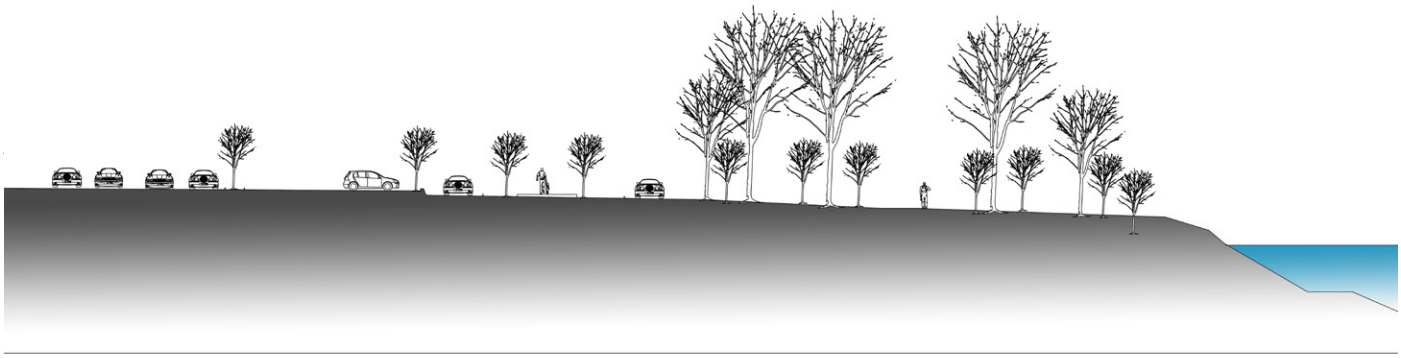
Using the structure of the bridge on the north end of the McGrath Highway, vegetated medium with small shrubs and vines are planted in thin layers of soil on the bridge.

Cantilever structures for outlooks are proposed along both side of the bridge to allow people to stop and take a view of the Mystic River.

Perspective of Section C-C'

The before (left) and after (right) pictures show how pedestrians and bike lanes are proposed and how buffer strips are integrated to separated traffic lanes.

Existing Section D-D'



Proposed Section D-D'

Green infrastructure such as trees, bio-swales, and retention ponds are added for stormwater management in the Assembly Square area and also along the Mystic River so that any stormwater overflow can be treated for sediment and pollutants before it flows into the Mystic River.

Trees are trimmed down along the Mystic River waterfront park to open the view and make the park a safer place for the public.

Perspective of Section D-D'

The before(left) and after (right) pictures show how the park along the Mystic River could engage more people to have a relationship with the physical environment and increase a sense of community.

8.00 Conclusion

Gray

Green

Super Green

To summarize the three scenarios:

The Gray Scenario is considered as the most practical solution with bike lanes and pedestrians proposed which can be implemented quickly. The only major adjustments to existing conditions are widths of the road. The additional space gained by narrowing roads and eleminating a road lane allow for the proposed infrastructure to be constructed.

The Green Scenario proposes making the McGrath Highway into a boulevard by adding significant linear green space including multi-use pathways, tree canopy and infiltration structures. The spacing for this boulevard is created by eliminating traffic lanes and narrowing lanes. Additional networking is proposed through the neighborhoods of Somerville. Increaed attention is given to the Mystic River waterfront and community path.

The Super Green Scenario maximizes the green open space along the corridor to form a greenway network for adjacent neighborhood across the the McGrath Highway and I-93. These connections carry throughout the nighborhoods in Somerville and establish a network of greenways for secondary travel. The Mystic River waterfront is redesigned and proposed as a major park area. The McGrath Highway is brought down to grade with elevated park space to reduce the conflict of pedestrians and automobiles. Portions of the McGrath Highway are lowered to reduce the intrusion on residential neighborhoods and provide a more aesthetic experience for the residents. This scenario includes to highest amount of tree canopy coverage and infiltration opportunities to eleviate growing pressure on the ageing stormwater system.

These scenarios are three alternatives that allow potential changes to McGrath Corridor, which can be implemented in phases. They offer broad vision and immediate solutions for a city grappling with competing priorities as it looks to the future.

9.00 References

Ahern, J. (1995). Greenways as a planning strategy. *Landscape and Urban Planning*, 33, 131-155.

Hellmund, P. C., & Smith, D. S. (2006). *Designing greenways: sustainable landscapes for nature and people*. Washington, D.C.: Island Press.

Office of Strategic Planning and Community Development. (2009). *Somerville open space and recreation plan 2008-2013*. Retrieved from http://www.somervillema.gov/sites/default/files/documents/2008-2013-OSRP-NarrativeAndAppendicesFINAL.pdf.

Office of Strategic Planning and Community Development. , & Bokov, A. *Edge as center: envisioning the post-industrial landscape Somerville, Massachusetts*. Retrieved from http://www.somervillema.gov/sites/default/files/documents/EdgeAsCenter.pdf.

Sarte, S. B. (2010). *Sustainable infrastructure: the guide to green engineering and design*. Hoboken, N.J.: Wiley. Retrieved from http://site.ebrary.com/lib/umassa/Doc?id=10419195&ppg=207.

Spicer, S. J. (2011). *From marginalized to optimized: re-envisioning urban highway corridors*. (Master's thesis).

ULTRA. (2011, May). Boston urban greening scenarios workshop. Retrieved from http://www.umass.edu/urbaneco/newsletter/ULTRANewsMay2011.pdf.

U.S. Department of Transportation. *Livability in transportation guidebook planning approaches that promote livability*. Durham, NC: IFC International.

Images:

Cieplinsky, A. (Photographer). (2007). *Removing freeways - restoring cities*. [Web Photo]. Retrieved from http://www.preservenet.com/freeways/FreewaysCentral.html.

City of Milwaukee Planning Dept. (Photographer). (2007). *Park east*. [Web Photo]. Retrieved from http://www.preservenet.com/freeways/FreewaysParkEast.html.

Ger-Nis International, LLC. (Photographer). (2010). *San Francisco & the bay area*. [Web Photo]. Retrieved from http://nissa.ger-nis.com/2010/11/10/san-francisco-the-bay-area/

Glatting Jackson Kercher Anglin. (Photographer). (2010). *Chattanooga riverfront parkway*. [Web Photo]. Retrieved from http://www.fhwa.dot.gov/livability/case_studies/guidebook/chap06.cfm.

Lost SF. (Photographer). (2010). *The elephant obstructing beauty: the embarcadero freeway* . [Web Photo]. Retrieved from http://lostsf.wordpress.com/2010/11/07/the-elephant-obstructing-beauty-the-embarcadero-freeway/.

Lueck, J. (Photographer). (2009). *West side highway bike path*. [Web Photo]. Retrieved from http://www.revelinnewyork.com/takeaways/west-side-highway-bike-path.

Museum of the City. (Photographer). (2010). *Park east freeway demolition.* [Web Photo]. Retrieved from http://www.museumofthecity.org/topics/streets?page=3.

PlanetWare Inc. (Photographer). (2012). *Embarcadero*. [Web Photo]. Retrieved from http://www.planetware.com/picture/san-francisco-embarcadero-center-us-ca611.htm.

Removing Freeways - Restoring Cities. (Photographer). (2007). *Westside highway postcard.* [Web Photo]. Retrieved from http://www.preservenet.com/freeways/FreewaysWestSide.html.

Siegel, C. (Photographer). (2007). *Removing freeways - restoring cities*. [Web Photo]. Retrieved from http://www.preservenet.com/freeways/FreewaysCentral.html.

SouthernTravelNews.com. (Photographer). (2012). *Chattanooga convention & visitors bureau.* [Web Photo]. Retrieved from http://www.southerntravelnews.com/NewsRelease.aspx?NewsId=526.

Thomas Balsley Associates. (Photographer). (2010). *Westside highway*. [Web Photo]. Retrieved from http://archpaper.com/news/articles.asp?id=4795.

TNVacation. (Photographer). (2012). *Southern Belle Riverboat.* [Web Photo]. Retrieved from http://www.tnvacation.com/vendors/southern_belle_riverboat/.

Tysons, E. (Photographer). (2012). *Park East Freeway, Milwaukee*. [Web Photo]. Retrieved from http://thetysonscorner.com/before-its-a-crisis-a-petition-for-route-123/.