

# Toward a Route 28 Corridor Transportation Plan: An Emerging Vision

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# 1 INTRODUCTION

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This report, funded by the Boston Region Metropolitan Planning Organization (MPO), is a conceptual plan for the Route 28 corridor centering in the city of Somerville. It is a guide to transportation concerns along it and how to address them. The plan is conceptual, to provide flexibility in its possible application, for two reasons. The first is that specific plans for the vast majority of the potentially developable areas in Somerville either have not yet been fully executed, are themselves in the early, conceptual stages, or are still quite undefined. The second is that there are important preexisting transportation projects in the area for which the planning is not yet complete: for example, it would have been premature for the present study to develop detailed plans for the vicinity of the I-93/Route 28 interchange, given that certain details of that project have not yet been determined.

East Somerville and other areas adjacent to or near Route 28 are the location of a great deal of existing and future residential, commercial, and industrial development that is important in the development of the Boston metropolitan region. Major pockets of existing and potential development include Assembly Square, Brick Bottom, Inner Belt, North Point, and Union Square, all adjacent to or near Route 28. Many of these sites are environmentally sensitive areas, such as the banks of the Mystic and Malden rivers, and several contain brownfields, prime candidates for cleanup and redevelopment for recreation and mixed land uses. Accessibility to/from and between these sites, including access to open space and connections to the Boston core, is very important for the development of these sites and the quality of life of residents along the Route 28 corridor.

Accessibility was the City of Somerville's foremost concern when its officials wrote to the MPO to request funding for this study. Other major concerns included safe bicycle and pedestrian connections, physical and aesthetic characteristics, and ensuring that development along the corridor will have positive impacts on residents' quality of life.

The study was performed under the guidance of the Route 28 Corridor Advisory Committee, whose members represented the state, regional, and local points of view on economic development, transportation, urban design and architecture, air quality, and aesthetics. This report does not represent the point of view of any one individual or entity from the committee.

The body of this report comprises the following chapters: Chapter 2 - Concerns of the Stakeholders; Chapter 3 - Socioeconomic Profile; Chapter 4 - Route 28 Origin-Destination Travel Patterns; Chapter 5 - Roadway and Public Transportation; Chapter 6 - Bicycle and Pedestrian Transportation, and Open Space; Chapter 7 - Future Roadway and Public Transportation Projects; Chapter 8 - Urban Design Visions; Chapter 9 - Summary, Findings, and Discussion; and Chapter 10 - Toward a Route 28 Corridor Transportation Plan: An Emerging Vision. Included in the appendices are: existing traffic volume and crash data, information on developments and mitigation, Urban Ring information, a technical memorandum presenting an Assembly Square access analysis, Route 28 Advisory Committee meeting agendas, and the study's scope of work.

## **1.1 STUDY AREA AND BRIEF PROFILE OF ROUTE 28 CORRIDOR**

Route 28 (McGrath/O'Brien Highway) runs from the MPO region's northern boundary at North Reading to the city of Boston. The portion of the Route 28 corridor included in the present study is the segment from the Mystic River (between Medford and Somerville) to Museum Way (across from the Museum of Science) in Cambridge.

Route 28 is a heavily traveled roadway, which is reflected by its classification as "other freeway," a higher classification<sup>1</sup> than urban principal arterial, and provides both regional mobility and land access to neighborhoods adjacent to the roadway. Route 28 in the study area is owned by the Department of Conservation and Recreation (DCR).

Most of Route 28 in Somerville is congested during peak hours, and motorists are experiencing low speeds and delays. Two segments are particularly congested during the AM and PM peak hours: from Highland Avenue to Broadway, and from the Assembly Square entrance to Wellington Circle.

As reflected in its designation as "other freeway," Route 28 is a major commuter corridor carrying traffic from the north of the region to a multitude of destinations, including points in and through the city of Boston. It also serves as an alternative to I-93 when traffic on I-93 is backed up due to traffic incidents (see analysis in Chapter 4). The main connections between Route 28 and I-93 include Interchanges 29 (I-93 at Route 28) and 30 (I-93 at Route 38, Mystic Avenue). Average daily traffic (ADT) varies by segment between 40,000 and 65,000 vehicles.<sup>2</sup>

The corridor has been under considerable redevelopment in recent years, and additional projects are anticipated. Examples of recent, ongoing, and anticipated developments impacting Route 28 are: in Medford, Telecom City; in Somerville, the redevelopment of Assembly Square, the Stop and Shop supermarket at the old Somerville Lumber site, Internet Center at Inner Belt Road, and Twin City Plaza expansion; in Cambridge, North Point development near the Gilmore Bridge and a proposed hotel near Water Street.

Mitigation from these developments and other transportation improvements planned or under study include access and traffic operational improvements, a new Orange Line station at Assembly Square, intersection improvements at Pearl Street, improvements along Broadway, the Community Path (bicycle and pedestrian path), and others. Other ongoing and potential studies related to this corridor that are considered in this study include the MBTA's Urban Ring project, the Green Line extension to Medford Hillside and Union Square, and the relocation of Lechmere Station.

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<sup>1</sup> MassHighway classifies roadways as interstate, other freeway, urban principal arterial, urban minor arterial, urban collector, or local. The classifications reflect the character of the service the roadways are intended to provide. Classification is a tool in the effort to ensure that the roadway system adequately provides for mobility and land access.

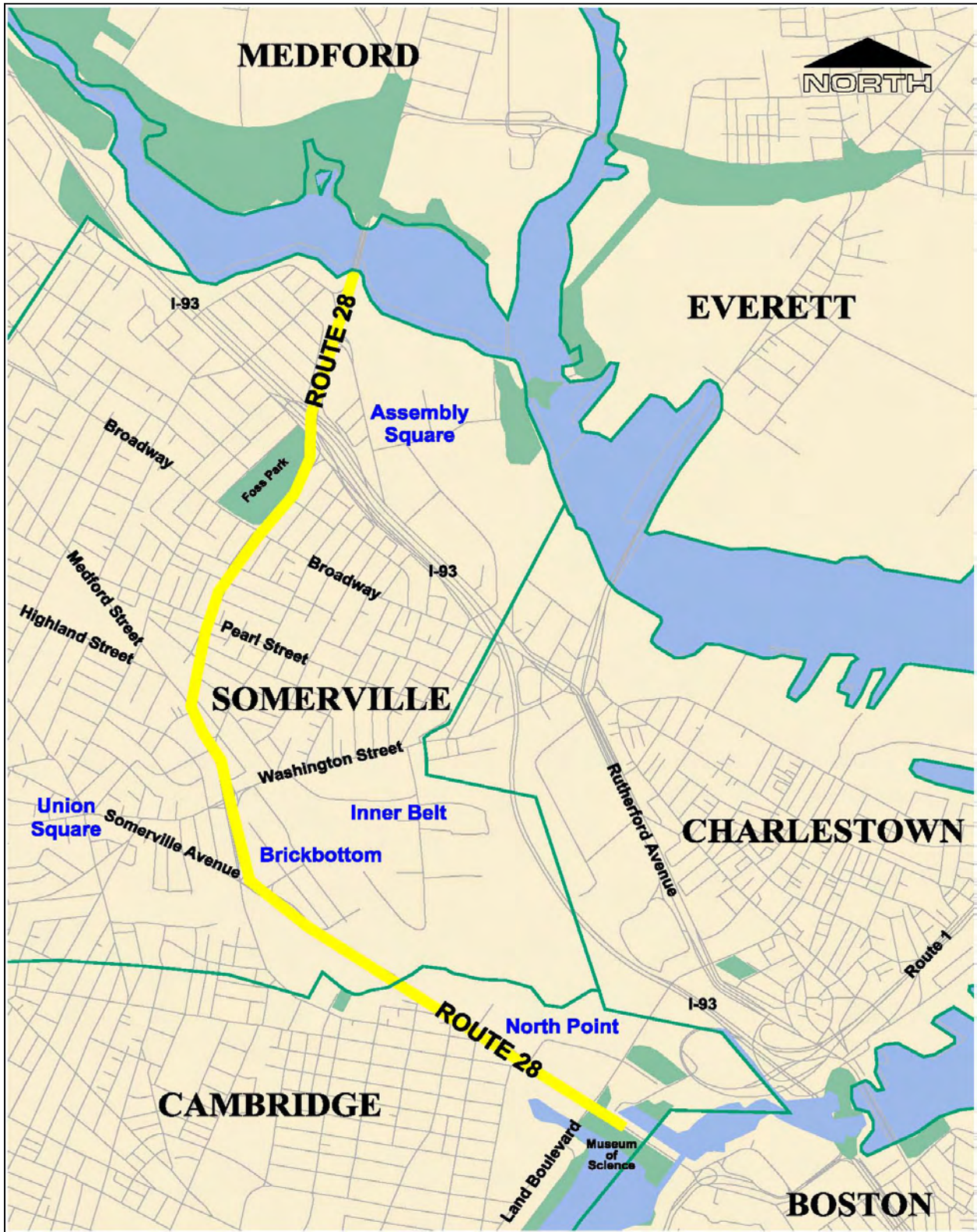
<sup>2</sup> MassHighway, *2001 Massachusetts Traffic Volumes*.

## 1.2 ROUTE 28 ADVISORY COMMITTEE

The study advisory committee was formed when the study began in mid-2002. Somerville, Medford, and Cambridge city planners, engineers, and community-development and economic-development officials, as well as DCR and MassHighway staff, were invited to participate. At the recommendation of city officials, appropriate state senators and representatives were notified of the study, as well as neighborhood, business, and advocacy groups. Eventually, a core group was formed that provided direction and feedback on the study's progress, findings and conclusions, and recommendations. Committee members provided important input related to key aspects of the study. These aspects included the location of observation points for the origin-destination travel survey, bicycle plan information, development and transportation project updates, the visions provided for the urban design workshop, the public meeting related to concerns for the corridor, and eventually, the findings, conclusions, and recommendations. The committee met eleven times, mostly in the City of Somerville planning offices.

The following individuals guided the study, either as part of their work or on a volunteer basis:

<i>Name</i>	<i>Affiliation</i>
Susan Clippinger	City of Cambridge
Jeff Parenti	City of Cambridge
Susanne Rasmussen	City of Cambridge
Monica Lamboy	City of Somerville
Sergiu Luchian, P.E.	City of Somerville
Rob May	City of Somerville
Julia O'Brien	DCR
Ken Kirwin	DCR
Bhupesh Patel	Design Tank
Barbara Brouard	East Cambridge Planning Team
Ellin Reisner	East Somerville Neighbors for Change
Adriel Edwards	EOTPW
Ethan Britland	EOTPW
Jim Gallagher	Metropolitan Area Planning Council
Wig Zamore	Mystic View Task Force
David Jordon	Senator Patricia D. Jehlen's office
Stephen Mackey	Somerville Chamber of Commerce
Natasha Perez	The Sturtevant Partnership
Lisa Lepore, P.E.	Formerly with City of Somerville
Stephen Post	Formerly with City of Somerville
Jeff Levine	Formerly with City of Somerville
Tuck O'Brien	Formerly with City of Somerville
Ron Farrar	Formerly with City of Somerville
Bill Lyons	Formerly with City of Somerville
Todd Blake	Formerly with City of Somerville



**FIGURE 1.1**  
**Route 28 Segment**  
**Studied**

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## **2 CONCERNS OF THE STAKEHOLDERS**

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Public outreach and stakeholder involvement are two very important elements in the successful development and implementation of any transportation plan. For this study, staff developed an inventory of concerns pertaining to the present and future of the corridor using three major sources: meetings and communications with members of the Advisory Committee, transportation literature and news media,, and input from the public received at an informational meeting held at the start of the study.

Concerns range from general to specific ones. General concerns are often communitywide; some of these relate to Route 28 directly, some indirectly. These concerns are about the character of the physical space and aesthetics along Route 28, urban design, open space, the quality of life of residents living along the corridor, including air quality, and the development of land in relation to smart growth and sustainability. Other, more specific concerns relate to pedestrian and bicycle access along and across Route 28, pedestrian and bicycle access to the waterfront at Assembly Square, access to a potential new Orange Line station at Assembly Square, roadway and transit connections between Assembly Square, Union Square, and Lechmere Station, safety at specific intersection locations, such as Broadway, Pearl Street, and Medford Street, and the Route 28 viaduct over Washington Street (including potential removal or reconstruction).

Key areas of concern are summarized below in 10 broad categories.

### **2.1 CORRIDOR URBAN DESIGN**

Advisory Committee members and the public feel strongly that the corridor should be renewed and redeveloped to achieve a visual and functional continuity through a corridorwide urban redesign that respects and integrates with existing neighborhoods. A human scale should be brought to the corridor. It should be changed from “simply a series of destinations” to “a fun place to live and work.” The current roadway, which is designated as “other freeway,” is designed to serve as a major thoroughfare, often as an alternative to I-93 travel, that allows some local access. The committee members and citizens would like Route 28, especially in its middle section between Mystic Avenue and Medford Street, to eventually be downscaled to a boulevard, including allowing for a transitway. It is the committee’s and the public’s belief that the Urban Ring, the Green Line extension to Medford Hillside/Union Square, the potential Orange Line station at Assembly Square, the completed CA/T project, the Rutherford Avenue Bypass Road, and the potential replacement of the Route 28 viaduct over Washington Street are all projects that can help lessen Route 28 traffic volumes, therefore allowing for enhanced urban design opportunities.

## **2.2 THE “BIG PICTURE” VS. MITIGATION OF DEVELOPMENT IMPACTS**

The committee and citizens are concerned about development mitigation in the area being “too narrow, limited, and self-serving.” These concerns are really about how individual and localized improvements will eventually fit into the “big picture,” which is presently a vision of renewal in which many elements remain to be defined. The “big picture” relates to urban design and redevelopment and the integration of appropriate transportation infrastructure to support the urban renewal process, which is complex, requires careful timing, involves many actors, depends on political and economic market forces, and demands innovative private and public funding.

The scope of this study includes listing the known mitigation measures of developers and also bringing forward the “big picture,” hopefully providing an improved sense of direction to follow in addressing issues along the corridor. For example, exploring urban design issues in Chapter 8, identifying travel patterns in Chapter 4, and analyzing Assembly Square access issues in Appendix D help us to understand the nature of the concerns, verify them, and finally decide how to address them. From conceptual recommendations about general direction in the corridor and the study area, improvement projects can be defined. These improvements then can be undertaken for implementation by a variety of entities which include the Cities of Somerville and Cambridge, state agencies, and the private sector (developers).

## **2.3 LAND USE, SMART GROWTH, AND SUSTAINABLE TRANSPORTATION**

Sustainable or smart growth consists of land use and transportation decisions that lead to fiscally, economically, and environmentally responsible development.

Careful land use planning, strategic zoning, smart growth, and sustainable transportation are very important to committee members and citizens. They believe that Boston, Cambridge, Somerville, and state agencies must engage in planning strategies such as zoning, master plans, design guidelines, preservation or creation of open spaces, parking management, programs for bicycling, for sidewalks, and for recreational paths, transportation demand management programs, and traffic calming to promote effective and functional urban design plans along the corridor that preserve the human scale in its neighborhoods and commercial districts. Committee members and citizens asked that these concepts be emphasized in the study.

## **2.4 PUBLIC TRANSPORTATION**

The Advisory Committee is unanimous on the importance of public transit along and across the corridor. Its importance was also expressed at the public meeting. While East Somerville is crossed by two commuter rail lines and the Orange Line, residents do not have direct access to them. Better rapid transit and light rail connections would improve residents’ travel times and connections with downtown Boston and other parts of the region, intercept traffic passing through East Somerville and East Cambridge along Route 28, reduce the need for MBTA feeder buses along the roadway, and improve air quality for residents adjacent to the roadway. The desire is strong for better connections via a Green Line extension from Lechmere Station to Union Square and/or Medford

Hillside. Also, a new Orange Line station at Assembly Square is seen as extremely important to achieving sustainable growth in the Assembly Square district and to reducing vehicle use to/from that area.

Finally, the Advisory Committee and the public strongly feel that an integral part of any transportation plan to reduce Route 28 traffic is the Urban Ring. Concerns and questions center on how that project might improve traffic congestion and delays along the corridor and how it will account for public transit that currently utilizes Route 28 and other roads in East Somerville and East Cambridge. The Urban Ring is currently in Phase 2 of the Draft Environmental Impact Report/Draft Environmental Impact Statement (DEIR/DEIS), which will determine the impacts and benefits of the chosen improvements.

## **2.5 SAFETY**

Improving the safety of motorists, pedestrians, and bicyclists is very important to committee members and the public. They are specifically concerned about certain high-crash locations along Route 28, including the roadway area under I-93, the intersections with Broadway, Pearl Street, and Medford Street, and the roadway area under the Route 28 viaduct at Washington Street. This study will address the crossing at Foss Park. Safety at roadways at I-93 will be part of the I-93/Route 28 interchange project. Recent intersection improvements at Broadway, Pearl Street, and Medford Street have already addressed improvement needs at those locations. Safe pedestrian circulation at Washington Street would be part of a Washington Street/Route 28 viaduct study, which in turn would probably be included in the potential redevelopment study for Lower Brick Bottom and Inner Belt.

## **2.6 BICYCLE AND PEDESTRIAN TRANSPORTATION**

As the land use in and surrounding the corridor is mixed, pedestrian activity needs to be accommodated and encouraged. Improved, safe opportunities for walking along roadways and crossing roadways ought to be examined in all studies and plans as part of the corridor's urban design. All pedestrians should be accommodated, especially nursing home residents along the corridor and students walking to school. Direct and safe access to shopping, entertainment, and open space should be ensured. Specific pedestrian movements along the corridor that are difficult include Mystic View residents' access to Assembly Square; pedestrian access under and within the ramp system of the I-93 interchange at Route 28 and Mystic Avenue/Route 38; crossing Route 28 at Broadway, Pearl Street, and Medford Street; crossing the roadway at Foss Park near the new Stop and Shop grocery store; crossings in the vicinity of Washington Street, under the Route 28 viaduct; and access to the waterfront. Good pedestrian connections in the future to the relocated Lechmere Station (which will move from its present location between Cambridge Street and O'Brien Highway [Route 28] to a location within the property of the North Point development on O'Brien Highway) must also be provided.

Committee members and residents are concerned about the types and characteristics of present and future pedestrian crossings in the area. With regard to at-grade versus grade-separated (pedestrian

bridges), concerns were expressed about pedestrian bridges and the false sense of safety they tend to provide as they are most times underutilized. Other similar concerns include the duration of pedestrian phases, upkeep of pedestrian traffic signal equipment, and exclusive pedestrian phases as part of traffic signal designs.

At present, bicycle travel is not safe on Route 28 in the study area, because of adverse traffic conditions. Crossing Route 28 on a bicycle is equally tough, largely due to turning vehicles, and bicyclists resort to using circuitous paths. Major bicyclist travel paths include connections from areas to the north and northwest to the Charles River basin. For improved nonmotorized travel, bicycle and pedestrian trails and on-road bicycle lanes must be constructed. They would provide more numerous, safe connections between neighborhoods and various recreational areas in East Somerville, Charlestown, and Cambridge, and also between recreational areas. Somerville has an active bicycle committee that offers input in the public participation process for bicycle transportation projects.

## **2.7 OPEN SPACE**

Related to urban design and urban renewal issues is the concept of open space. Some members of the Advisory Committee and the public held that this and other studies should emphasize the importance of preserving and enhancing the existing open space along and near the corridor, including creating or improving access to these recreational spaces. This is tied to the quality of life of residents of East Somerville, East Cambridge, and Charlestown. Current open spaces on or near Route 28 include Foss Park, Mystic River Reservation, Charles River Basin, Amelia Earhart Dam, Draw Seven Park, and Charlestown's Ryan Park.

## **2.8 AIR QUALITY**

Committee members and many East Somerville residents living along the Route 28 corridor have serious concerns about the quality of the air they and their families breathe. In addition to concerns about air quality in the vicinity of Route 28, there are concerns about air quality impacts from I-93 on the adjacent neighborhoods. East Somerville quality-of-life activists have initiated studies to monitor air quality levels.

Air quality concerns along Route 28 relate to the heavy congestion along it, especially during peak periods in the summer, and emissions from MBTA diesel buses. As additional public transit becomes available and traffic delays at intersections and on I-93 are mitigated, air quality should improve. Also the MBTA is steadily upgrading its bus fleet by retiring older diesel buses and replacing them with environmentally friendly condensed natural gas (CNG) buses and low-sulfur diesel buses. By continuing to replace the older diesel buses, the MBTA is reducing the average age of their buses from 14 years to 4 years.



## **2.9 ACCESS ACROSS THE CORRIDOR**

It is just as important for all modes to be able to safely and efficiently cross Route 28 as it is for vehicles to safely and efficiently travel on it. This study reviews the recent improvements at Broadway, Pearl Street, and Medford Street, the exploration of an at-grade crossing of Route 28 at Washington Street, and the pedestrian crossings analysis at Foss Park across from the Stop and Shop supermarket. It also endorses urban design projects such as the East Broadway Streetscape Project, which runs from Route 28 to Mt. Vernon Street.

## **2.10 PUBLIC PARTICIPATION**

Various members of the Advisory Committee and various citizens, particularly East Somerville residents, stressed the importance of public participation, of opportunities to be heard and to influence the direction and pace of planning. The point was expressed that it is important for participation to begin during the early, conceptual stages of planning, when there is still flexibility regarding outcomes. Public participation is felt to be important in all types of studies and planning, especially those led by the MBTA.



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## 3 SOCIOECONOMIC PROFILE

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This chapter discusses socioeconomic data on the study area. The data—on population, employment, land use, and zoning—are also presented on maps.

Population and employment are the most basic data used in transportation planning. Trips are generated at the level of individual households and are distributed across the region based on the locations of major attractions, such as large employment centers, shopping and recreational areas, and service areas like hospitals and airports. Population and employment data are the major proxies used to forecast the quantities and types of trip-making. The data are summarized by census block group in terms of number and density.

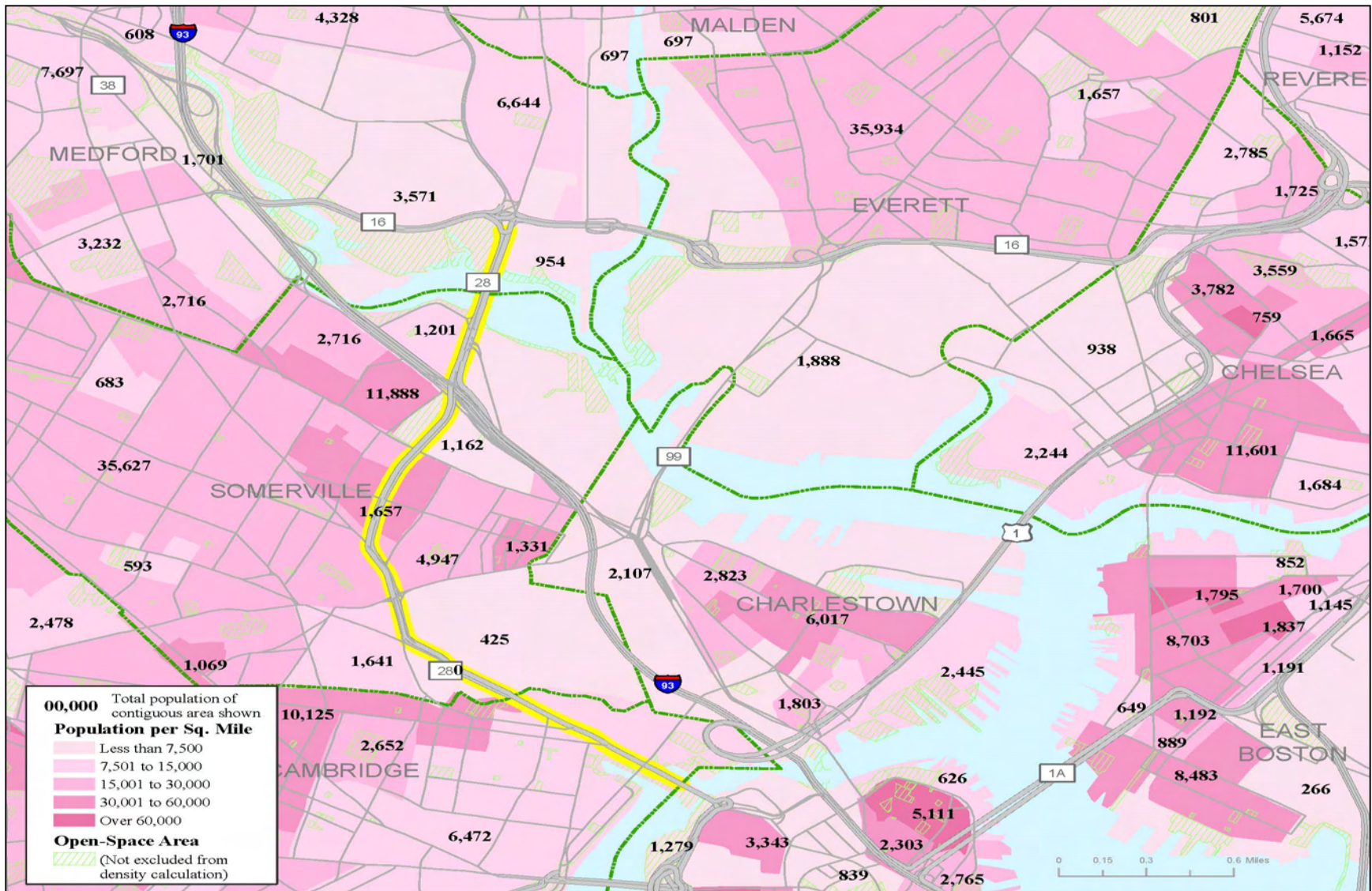
Types and intensities of land use are additional indicators of the quantities and types of trip-making. The use of private and public land is usually regulated by municipalities' zoning ordinances.

### 3.1 POPULATION DENSITY

The residential densities were calculated by 2000 census block group, and adjacent block groups with similar densities were aggregated, with the total population for the aggregated areas summed and displayed. Included in the density calculations were water, open space, and similar uses. However both water and open space are included in the figure, so that a sense of how the reservation of large areas of space for such uses might be expected to affect the density calculation.

As shown in Figure 3.1, the densest areas of residential population in the Route 28 study area are in East Cambridge, in Charlestown, and along Route 28 between Highland Avenue and Broadway. Most of these areas are assumed to have predominantly multifamily housing. Two areas that are targeted for future redevelopment, Assembly Square and Brickbottom/Inner Belt, currently have low densities. However, these areas are expected to increase in population density because the redevelopments are planned to be mixed-use.

A comparison of the city/town-wide populations for the study area and the surrounding communities, as tabulated by the U.S. Census Bureau for 1990 and 2000, is shown in Table 3.1.



Source: 2000 Census population by block group, mapped using TIGER file block-group boundaries.

**FIGURE 3.1**  
**Population Density**  
**(2000 Census)**

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**Table 3.1 Population Totals (Comparison)**

<b>City/Town</b>	<b>1990</b>	<b>2000</b>	<b>Change</b>
<b>Somerville</b>	<b>76,210</b>	<b>77,478</b>	<b>1.7%</b>
Boston	574,283	589,141	2.6%
Cambridge	95,802	101,355	5.8%
Chelsea	28,710	35,080	22.2%
Everett	35,701	38,037	6.5%
Malden	53,884	56,340	4.6%
Medford	57,407	55,765	-2.9%
Revere	42,786	47,283	10.5%

### 3.2 EMPLOYMENT DENSITY

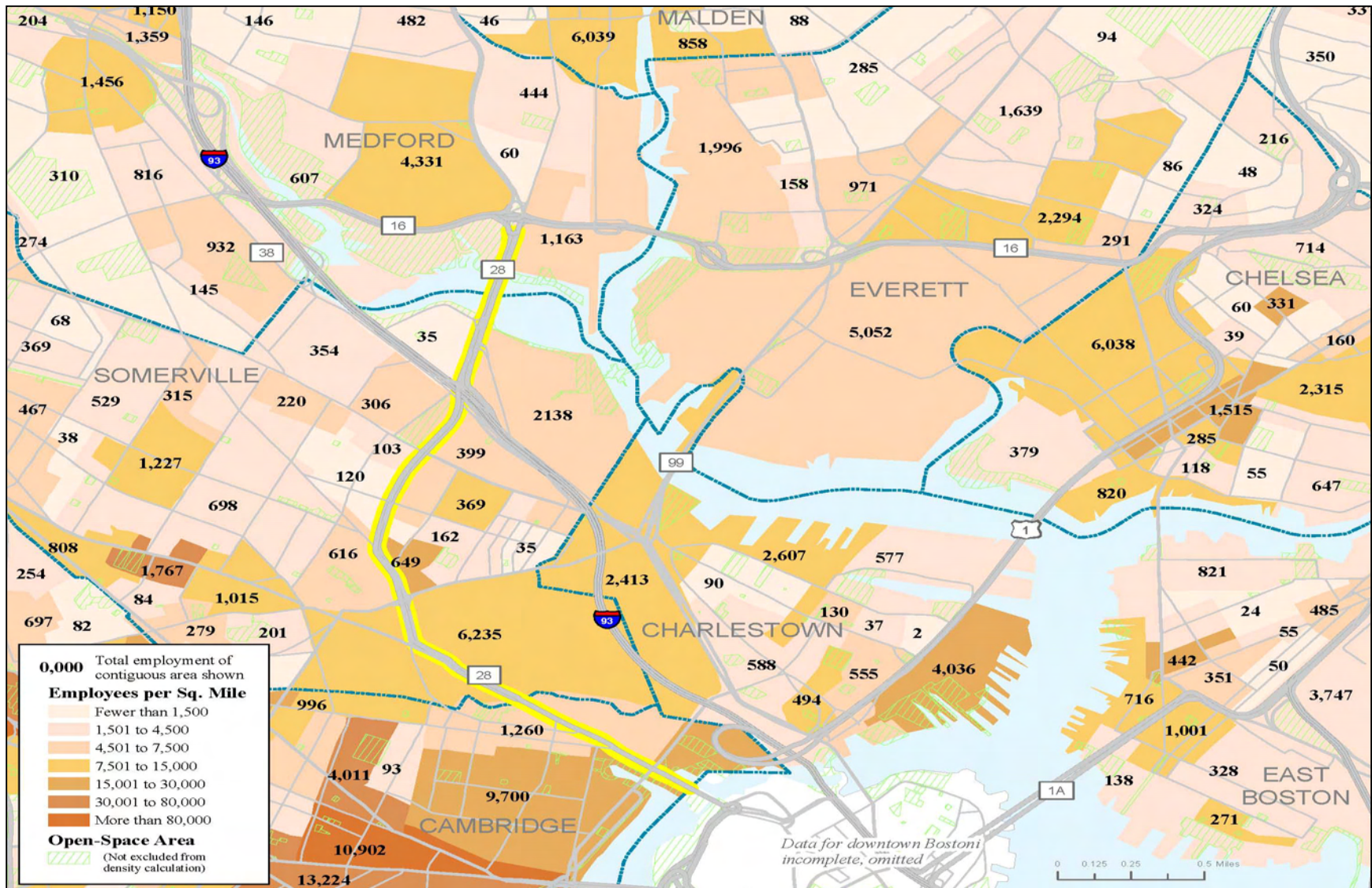
Absolute employment levels and employment density within an area are important factors in the success of transit services. However, reliable data on employment levels and densities for geographic areas below the town level are difficult to obtain. So in calculating the densities for this study, census block groups were used for those areas; they included open-space and water areas, as the population density calculations did.

Figure 3.2 provides a look at the employment densities in the study area. The highest density of employees is located in East Cambridge (Tech Square area), as expected. The redevelopment areas of Assembly Square, Brickbottom/Inner Belt, and North Point currently have rather low densities compared to their expected use in the future.

Employment totals for 2001 in the study area are summarized in Table 3.2. The information was obtained from the Massachusetts Division of Employment and Training.

**Table 3.2 Employment Totals**

<b>City/Town</b>	<b>2001 Total Employment</b>
<b>Somerville</b>	<b>22,950</b>
Boston	578,462
Cambridge	113,468
Chelsea	13,613
Everett	12,838
Malden	17,484
Medford	18,934
Revere	8,604



Source: Reference USA (May 2003). Totals estimated from ranges and validated against Dun & Bradstreet Regional Business Directory for Boston (2003).

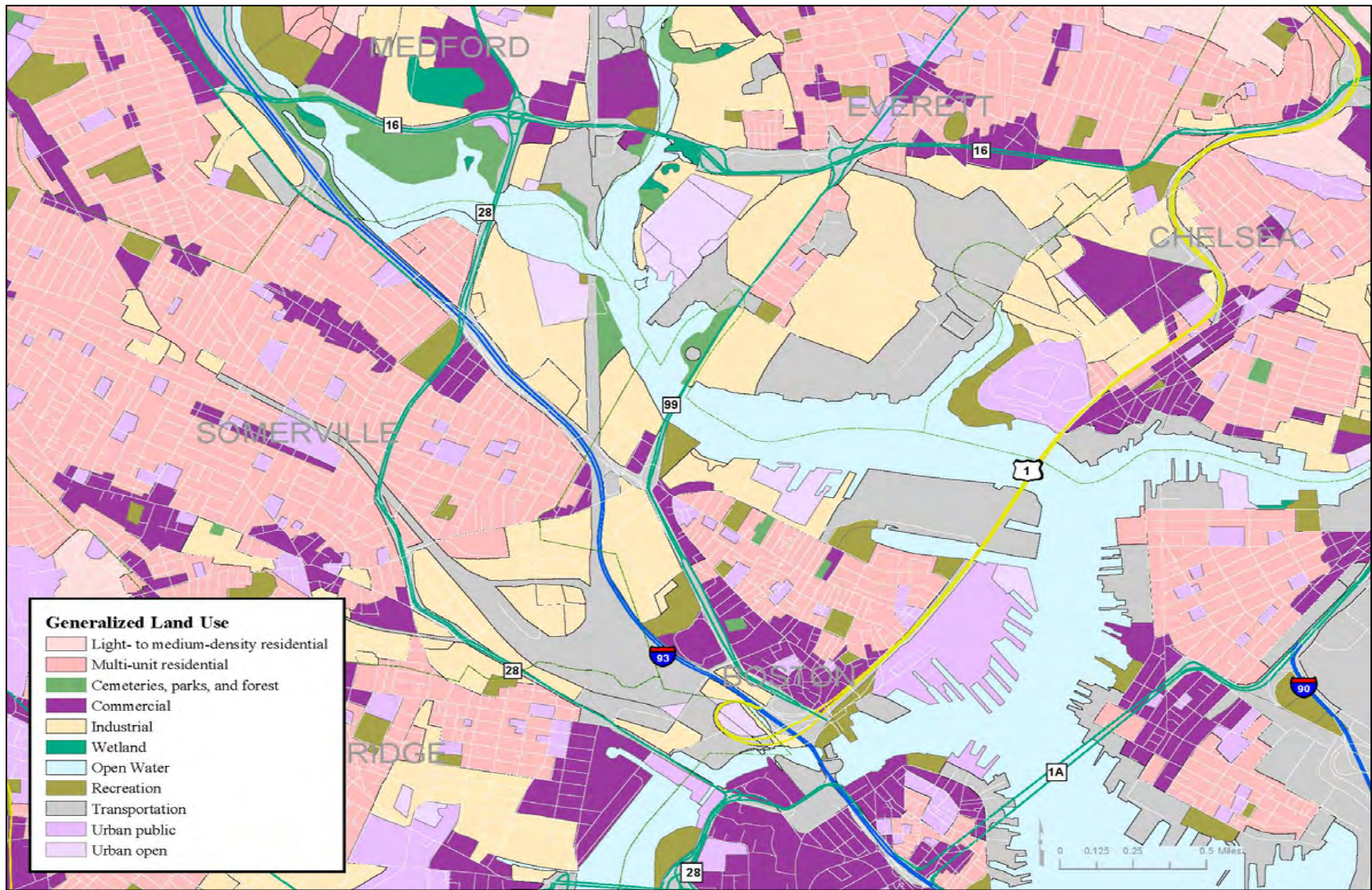
**CTPS**

**FIGURE 3.2**  
**Employment Density**  
**(Estimated)**

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### **3.3 LAND USE AND ZONING**

Land use and zoning surrounding Route 28 are each mixed. Along the corridor, the land use is predominantly residential, with industrial uses at Assembly Square and in the Brickbottom area. This matches the permitted zoning as well. Figure 3.3 shows land use and Figure 3.4 zoning.



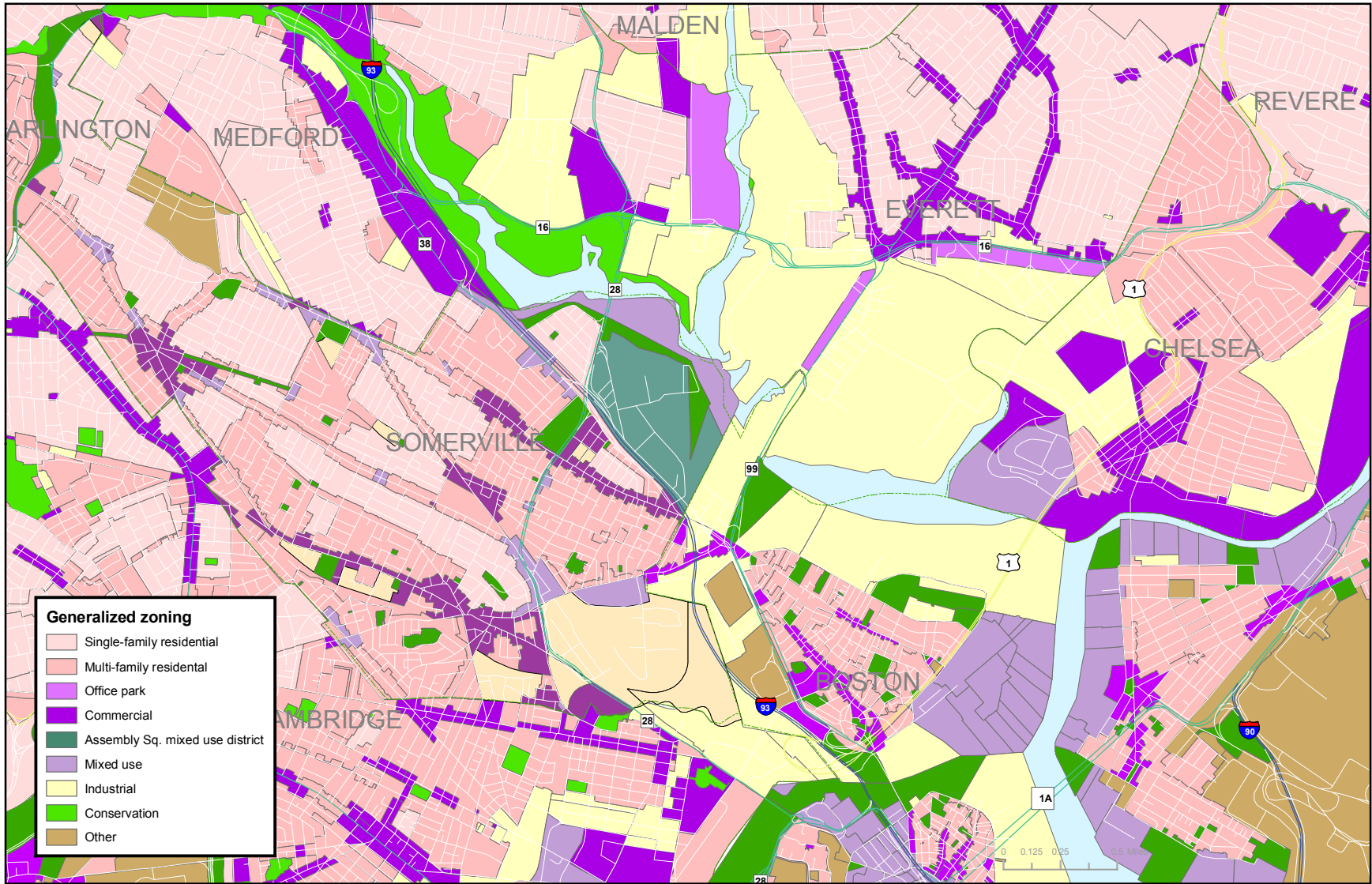
Source: MassGIS land use datalayer, updated 1999. Photo-interpretation completed by UMass Amherst Department of Forest Resource Mapping Projects.

**CTPS**

**FIGURE 3.3**  
**Land Use**

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Sources: Somerville zoning from the City, December 2007.  
 Boston zoning from Boston Redevelopment Authority, 2003.  
 Remainder of zoning from MassGIS datalayer, 2000.

**CTPS**

**FIGURE 3.4**  
**Zoning**

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## **4 ROUTE 28 ORIGIN-DESTINATION TRAVEL PATTERNS**

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One of the concerns discussed early on by the Advisory Committee was the role of Route 28 as a facility serving both regional travel needs and those of area residents. It was felt that Route 28 is used as a “release valve” for traffic diverting off of I-93 at times of incidents on that freeway or at times of extreme congestion during special events in the Boston core. In addition, committee members and citizens expressed concern about the modification of use and redesign of Rutherford Avenue and the impacts of that Charlestown improvement on Route 28. Furthermore, committee members favored a vision of Route 28 being transformed from a higher-volume, higher-speed, “other freeway”-class roadway into a boulevard with enhanced urban design and aesthetic improvements.

In order to be able to assess these concerns and this vision in the context of actual travel pattern data, the Advisory Committee and staff designed an origin-destination study based on a vehicle license plate survey. More specifically, the purpose of the survey was twofold: it would identify the origin town of drivers observed on Route 28 at selected locations, and it would match vehicles observed at selected locations. The objective of the first task would be to identify the Route 28 market area; the objective of the second task would be to find the extent to which the roadway is used for long-distance travel that may actually “belong” on I-93.

Staff conducted the survey at two roadway locations along Route 28 southbound, on June 3, 2003, between 7:00 AM and 9:00 AM. Note that the survey was taken after demolition of the Rutherford Avenue viaduct at Sullivan Square and before the opening of the Central Artery tunnel. Patterns were likely different from what they had been before the demolition and were likely worse than they have been since the opening of the tunnel.

The two data collection locations were the pedestrian bridge over Route 28 (located west of Broadway) and in front of the Museum of Science building (between Gilmore Bridge and Museum Way). Images of the license plates of vehicles passing the survey locations were recorded on videotape and then later transcribed and analyzed.

### **4.1 DATA COLLECTION**

Staff used special-purpose video camcorders to record images of license plates of vehicles passing the two survey locations. The survey was conducted simultaneously at the two locations to capture southbound commuter traffic on Route 28 headed towards Cambridge, Boston, and other points south. Three cameras were used at each location, one for each lane of traffic. Each camera was aimed and focused to record images of license plates. Twelve hours of license plate data was captured on video by the six cameras (two hours on each camera). The survey took place during

the morning peak period, when travel is more concentrated in time and space and, therefore, patterns are easier to identify.

Each legible license plate number on the videotapes was transcribed. In addition, the videotapes were used to count the total number of vehicles on the roadway. The license plate numbers were entered into an Excel computer file.

## 4.2 SURVEY RESULTS AND ANALYSIS

Table 4.1 shows the statistical significance of the data. The table lists the total number of vehicles observed, the number of plates read, the number of plates matched for each survey location, and the margin of error for the 95 percent confidence level for the origin data. The 95 percent confidence level means that for any location, the estimate of the proportion of vehicles originating in any given community falls within the range of plus or minus the margin of error 95 percent of the time.

**Table 4.1 Traffic and License Plate Statistics**

<b>Route 28 Location</b>	<b>Observed Vehicles</b>	<b>Vehicle Plates Read</b>	<b>Read Rate</b>	<b>Vehicle Plates Matched</b>	<b>Match Rate</b>	<b>Margin of Error</b>
Pedestrian bridge (Between Broadway and Pearl Street)	5,777	5,540	96%	4,782	83%	±0.6%
Museum of Science (Between Land Boulevard and Museum Way)	3,645	3,124	86%	2,801	77%	±0.9%

At the pedestrian bridge location 96 percent of the license plates were readable; at the Museum of Science location 86 percent of the plates were readable.

The readable license plate data were matched with Registry of Motor Vehicles (RMV) files to determine the community in which each vehicle is garaged. These data are used as way of determining the origin of the vehicle trip. The pedestrian bridge location had a match rate of 83 percent of the total observed traffic, and the Museum of Science location had a match rate of 77 percent. The lower match rate at the Museum of Science is due to the lower percentage of readable plates. At this location the pavement markings for the lanes were not well defined, so vehicles did not stay within a defined lane, and focusing the cameras on the license plates was difficult.

Matching between the counting stations indicated that there were 520 vehicles that passed by the pedestrian bridge location and continued through the Museum of Science location. Table 4.2 shows the origin communities of the vehicles observed at both survey locations.

**Table 4.2 Vehicles Matched between  
the Two Survey Locations**

<b>Community</b>	<b>Vehicles</b>	<b>Percent</b>
Medford	85	16%
Malden	75	14%
Somerville	72	14%
Melrose	31	6%
Everett	22	4%
Boston	20	4%
Stoneham	15	3%
Wakefield	11	2%
Woburn	8	2%
Reading	8	2%
Revere	7	1%
Winchester	6	1%
North Reading	6	1%
Cambridge	6	1%
Other Mass. communities	101	20%
Non-matched plates to RMV*	47	9%
<b>Total:</b>	<b>520</b>	<b>100%</b>

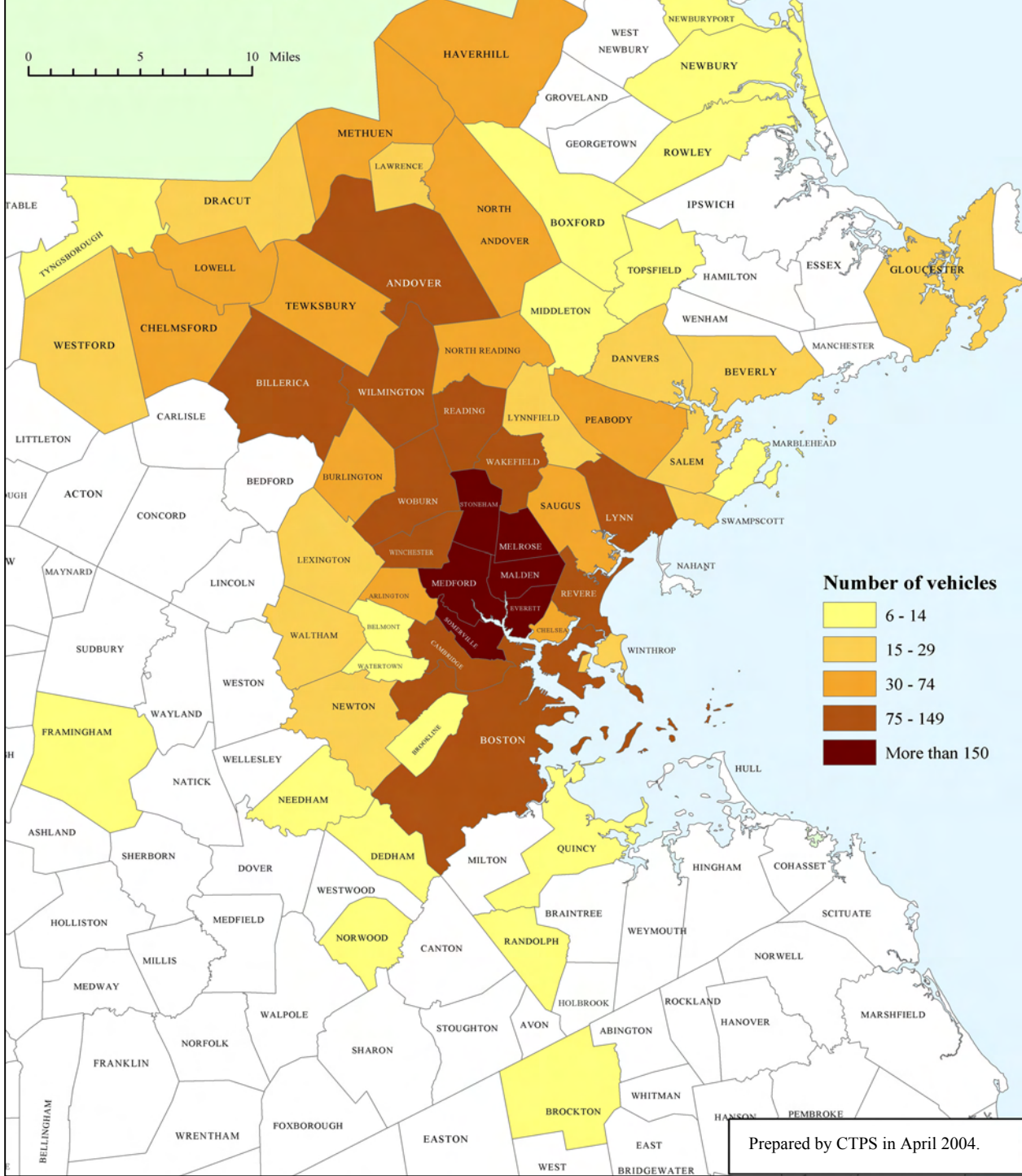
\* These plates, while matched at both locations, could not be matched with RMV data.

Tables 4.3 and 4.4 show the origin communities of vehicles observed at each location, based on the September 2003 RMV file for vehicle garaging. The origins for each city and town are listed by total number and percentage. Tables 4.5 and 4.6 contain Boston-neighborhood-specific information based on the origin-community zip codes from the same RMV file. Figures 4.1 and 4.2 are graphical representations of the origins of vehicles.

**Table 4.3 Origins of Vehicles at Pedestrian Bridge**

<b>Community</b>	<b>Vehicles</b>	<b>Percent</b>
Malden	618	13%
Medford	529	11%
Somerville	490	10%
Melrose	272	6%
Everett	259	5%
Stoneham	173	4%
Woburn	149	3%
Boston	135	3%
Cambridge	127	3%
Revere	105	2%
Reading	104	2%
Wakefield	104	2%
Wilmington	99	2%
Andover	95	2%
Winchester	90	2%
Lynn	82	2%
Billerica	79	2%
Saugus	71	1%
Chelsea	68	1%
Tewksbury	68	1%
Burlington	67	1%
North Andover	60	1%
North Reading	59	1%
Haverhill	50	1%
Peabody	48	1%
Methuen	47	1%
Arlington	42	1%
Lowell	42	1%
Chelmsford	34	1%
Dunstable	29	1%
Salem	29	1%
Danvers	25	1%
Other Mass. communities	511	11%
<b>Total:</b>	<b>4,782</b>	<b>100%</b>

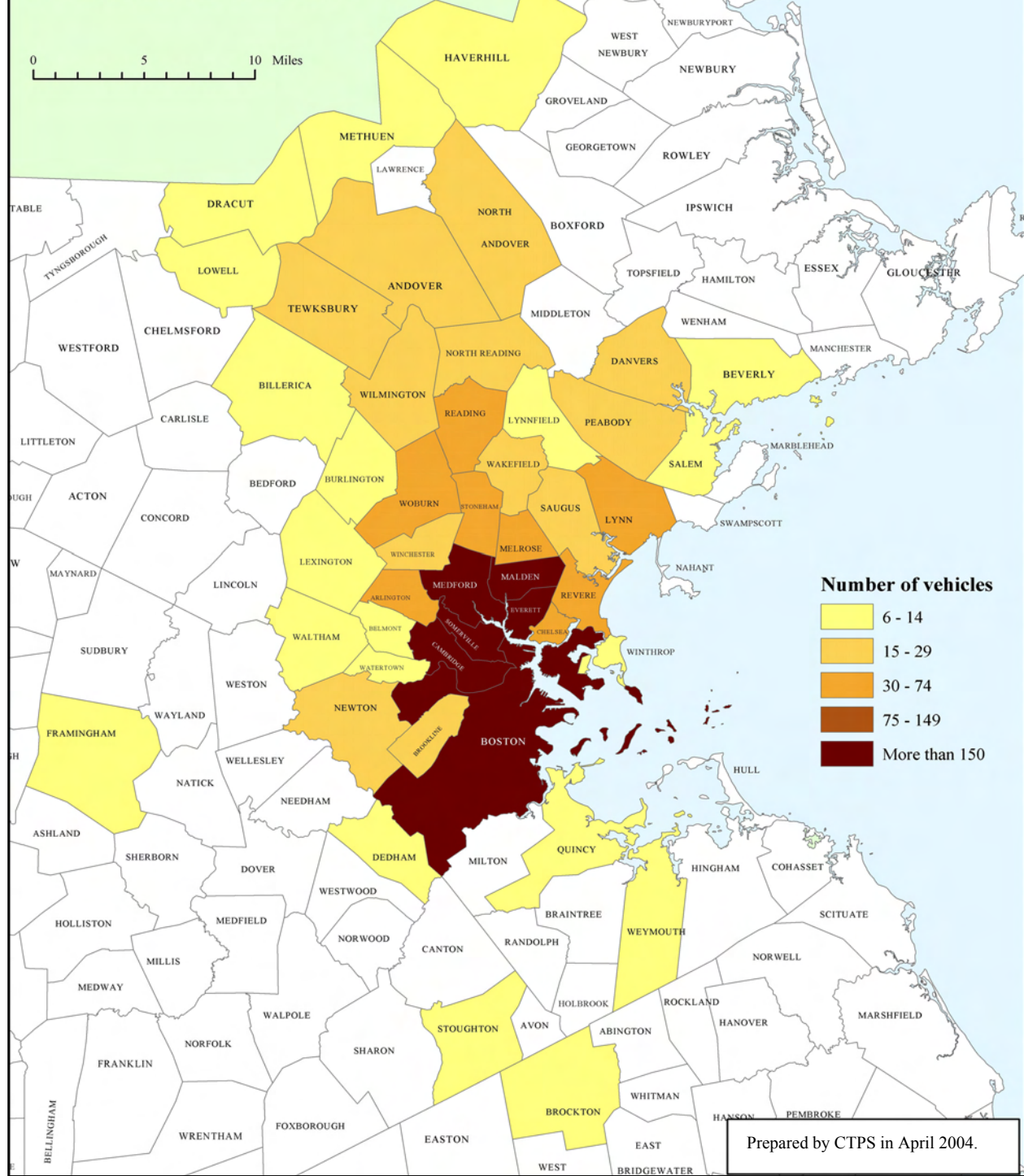
# Route 28 Vehicle Origins Pedestrian Bridge



**FIGURE 4.1**  
Route 28 Vehicle Origins:  
Pedestrian Bridge Survey Station

*Toward a Route 28 Corridor  
Transportation Plan:  
An Emerging Vision*

# Route 28 Vehicle Origins Museum of Science



**FIGURE 4.2**  
Route 28 Vehicle Origins:  
Museum of Science Survey Station

*Toward a Route 28 Corridor  
Transportation Plan:  
An Emerging Vision*



**Table 4.4 Origins of Vehicles at Museum of Science**

<b>Community</b>	<b>Vehicles</b>	<b>Percent</b>
Somerville	536	19%
Boston	395	14%
Cambridge	256	9%
Medford	197	7%
Everett	185	7%
Malden	182	6%
Revere	74	3%
Melrose	62	2%
Chelsea	52	2%
Lynn	46	2%
Woburn	38	1%
Arlington	35	1%
Reading	35	1%
Stoneham	35	1%
Wakefield	27	1%
Brookline	26	1%
Newton	25	1%
Andover	21	1%
Winchester	21	1%
Saugus	20	1%
Peabody	17	1%
Tewksbury	17	1%
North Andover	16	1%
Wilmington	16	1%
Other Mass. communities	467	17%
<b>Total:</b>	<b>2,801</b>	<b>100%</b>

**Table 4.5 Origins of Vehicles at Pedestrian Bridge:  
Boston Neighborhoods**

<b>Neighborhood</b>	<b>Vehicles</b>	<b>Percent</b>
Allston	8	0.17%
Back Bay	4	0.08%
Beacon Hill	4	0.08%
Brighton	3	0.06%
Charlestown	16	0.33%
Dorchester	16	0.33%
Downtown Boston	6	0.13%
East Boston	18	0.38%
Fenway/Longwood	6	0.13%
Hyde Park	4	0.08%
Jamaica Plain	1	0.02%
Mattapan	4	0.08%
Roslindale	7	0.15%
Roxbury	1	0.02%
South Boston	4	0.08%
South End	6	0.13%
West Roxbury	4	0.08%
Non-Boston address	23	0.48%
<b>Boston Total:</b>	<b>135</b>	<b>2.82%</b>

**Table 4.6 Origins of Vehicles at Museum of Science:  
Boston Neighborhoods**

<b>Neighborhood</b>	<b>Vehicles</b>	<b>Percent</b>
Allston	18	0.64%
Back Bay	7	0.25%
Beacon Hill	7	0.25%
Brighton	26	0.93%
Charlestown	136	4.86%
Dorchester	22	0.79%
Downtown Boston	7	0.25%
East Boston	19	0.68%
Fenway/Longwood	25	0.89%
Hyde Park	9	0.32%
Jamaica Plain	9	0.32%
Mattapan	6	0.21%
Roslindale	9	0.32%
Roxbury	10	0.36%
South Boston	17	0.61%
South End	6	0.21%
West Roxbury	8	0.29%
Non-Boston address	54	1.93%
<b>Boston Total:</b>	<b>395</b>	<b>14.10%</b>

### **4.3 DISCUSSION OF RESULTS**

At the pedestrian bridge (see Table 4.3), a total of 4,800 vehicles were surveyed; 58 percent of them originated in communities within, or in the immediate vicinity of, the study area. This includes communities that contributed 3 percent or more of the southbound traffic. The majority of these travelers appear to reach this location through study area collector or local roads that connect with Route 28 (travelers from Somerville and Cambridge) or by entering the study area via Route 28 itself (travelers from Malden, Medford, Melrose). Forty-two percent originated in communities in the northern and northwestern parts of the region, specifically communities with good access to southbound I-93. These drivers seem to leave I-93 at Exit 31 (Route 16) and Exit 30 (Mystic Avenue).

At the Museum of Science survey location (see Table 4.4), a total of 2,800 vehicles were surveyed. The first observation is the traffic volume difference between the two locations, about 2,000 vehicles. This implies that over 2,000 vehicles left Route 28 between the two survey locations, likely far more than 2,000, as significant additional traffic entered Route 28 southbound from the Gilmore Bridge and Cambridge Street eastbound. Significant loss of traffic likely occurred at Third Street, Gore Street, First Street, and Land Boulevard, roadways leading to additional East Cambridge locations and others in the region served well by Memorial Drive and other principal arterials. In fact, a community-to-community comparison between the two tables shows that the traffic volume contribution from the majority of the communities dropped at the Museum survey location by 70 to 80 percent. Communities for which contributions increased at the Museum location were Somerville, Boston, and Cambridge, clearly downstream additions from the Gilmore Bridge (Boston and Somerville) and from Cambridge Street (Cambridge and Somerville).

### **4.4 CONCLUSIONS**

The survey results indicate that, in the AM peak period, southbound Route 28 through the study area is used in two ways. It is used by local Somerville and Cambridge traffic or by communities such as Medford, Everett, and Malden that are in the immediate vicinity. It is also used as a collector/distributor carrying regional traffic, largely from I-93, to destinations in Cambridge and onto other facilities (likely Memorial Drive and Soldiers Field Road) to reach communities south of the study area.

The survey showed that on a typical commuter morning, the roadway is used far less as a through facility to Boston than as a collector/distributor facility between origin and destination towns that are not served well by I-93. Less than 11 percent of the Route 28 traffic observed at the pedestrian bridge was also observed at the Museum of Science. Also, it did not show that Route 28, in the study area, is used on a regular basis as an alternative to I-93 southbound by traffic destined to the various neighborhoods in Boston, although this is probably the case on days that there are incidents on I-93.

In closing, Route 28 is used for local and regional traffic, consistent with its designation as “other freeway”; however, it still provides local access to business/residences, as a principal arterial does.



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## 5 PUBLIC AND ROADWAY TRANSPORTATION

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Information on existing conditions in the Route 28 corridor was gathered from various sources and via field reconnaissance as a basis for understanding the present performance, operations, level of service, and other conditions. The information gathered included roadway functional classification, roadway administration, public transit service, roadway operations, and roadway speeds. The following are brief descriptions of the information collected. Detailed traffic volume and crash data are presented in Appendix B.

### 5.1 PUBLIC TRANSPORTATION

As Figure 5.1 shows, the MBTA provides public transit services in the vicinity of Route 28 through buses, the Orange Line, and the Green Line. Access to the Orange Line is at Wellington and Sullivan Square stations, and Lechmere Station provides access to the Green Line. The area's main bus lines feed into Sullivan Square and Lechmere. The MBTA's Lowell and Fitchburg commuter rail lines run through the area with no stops in Somerville. The nearest stop for Somerville is at Porter Square on the Cambridge/Somerville border.

MBTA buses are the main feeder service into the Orange and Green lines for Route 28 corridor and East Somerville residents. Often during the peak periods, bus schedule adherence is poor due to delays on congested segments of Route 28 and local roadways.

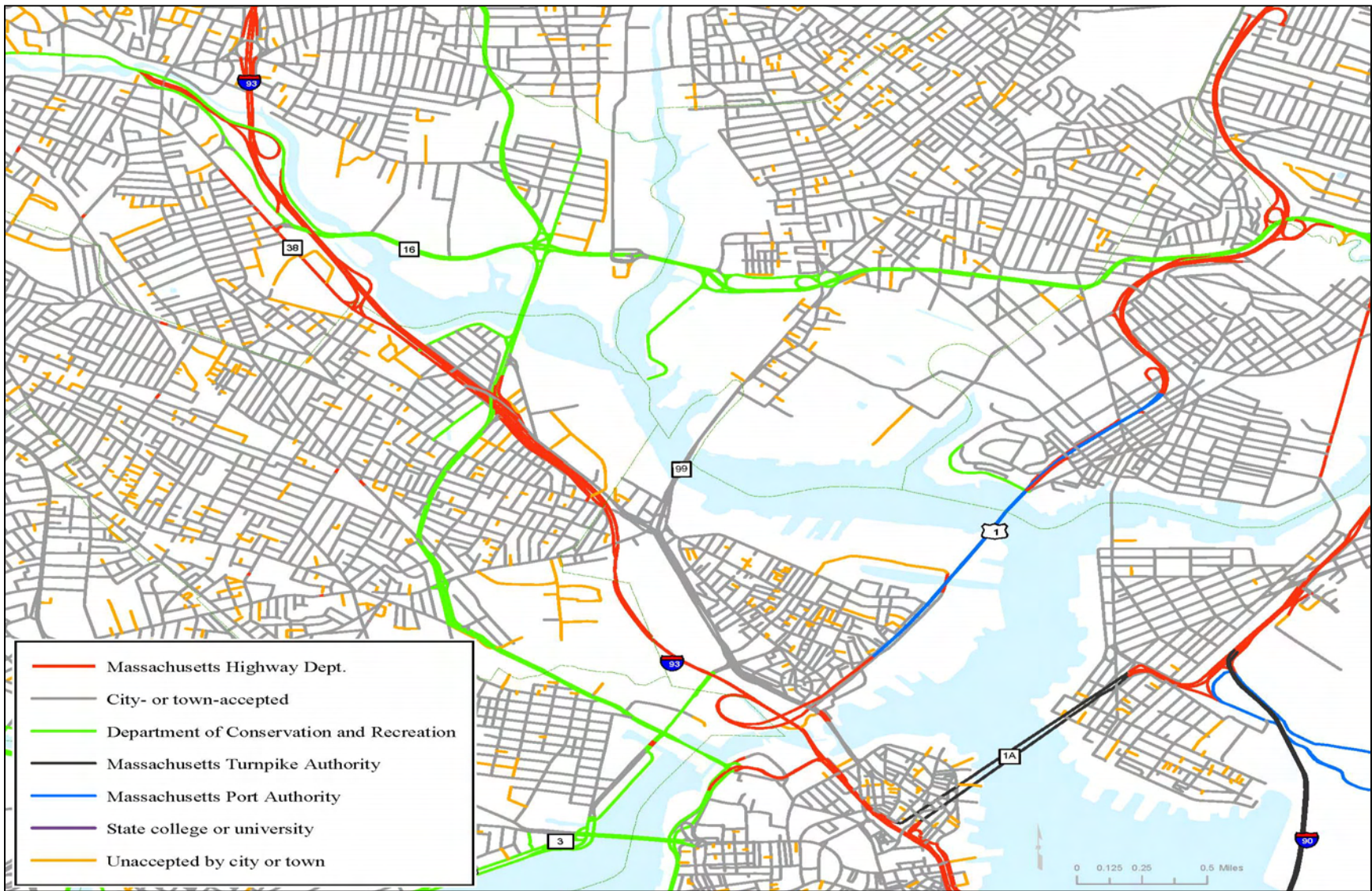
### 5.2 ROADWAY TRANSPORTATION

#### Roadway Administration

Figure 5.2 provides information on the ownership or jurisdictional control (which includes responsibility for maintenance) of Route 28 and other roadways in the surrounding area. As the figure shows, the area's main roadways, i.e., I-93, Route 28, Route 38 (Mystic Avenue), and Route 1, are under the control of state agencies. The rest of the roadways are under city or town jurisdiction. Route 28 in the study area is owned by the Department of Conservation and Recreation (DCR).

#### Roadway Functional Classification

Roadway functional classification is the grouping of roadways and streets into classes according to their intended use. It aids in designing a system of roadways and streets that will provide for both mobility and land access. Massachusetts groups roadways into seven categories:

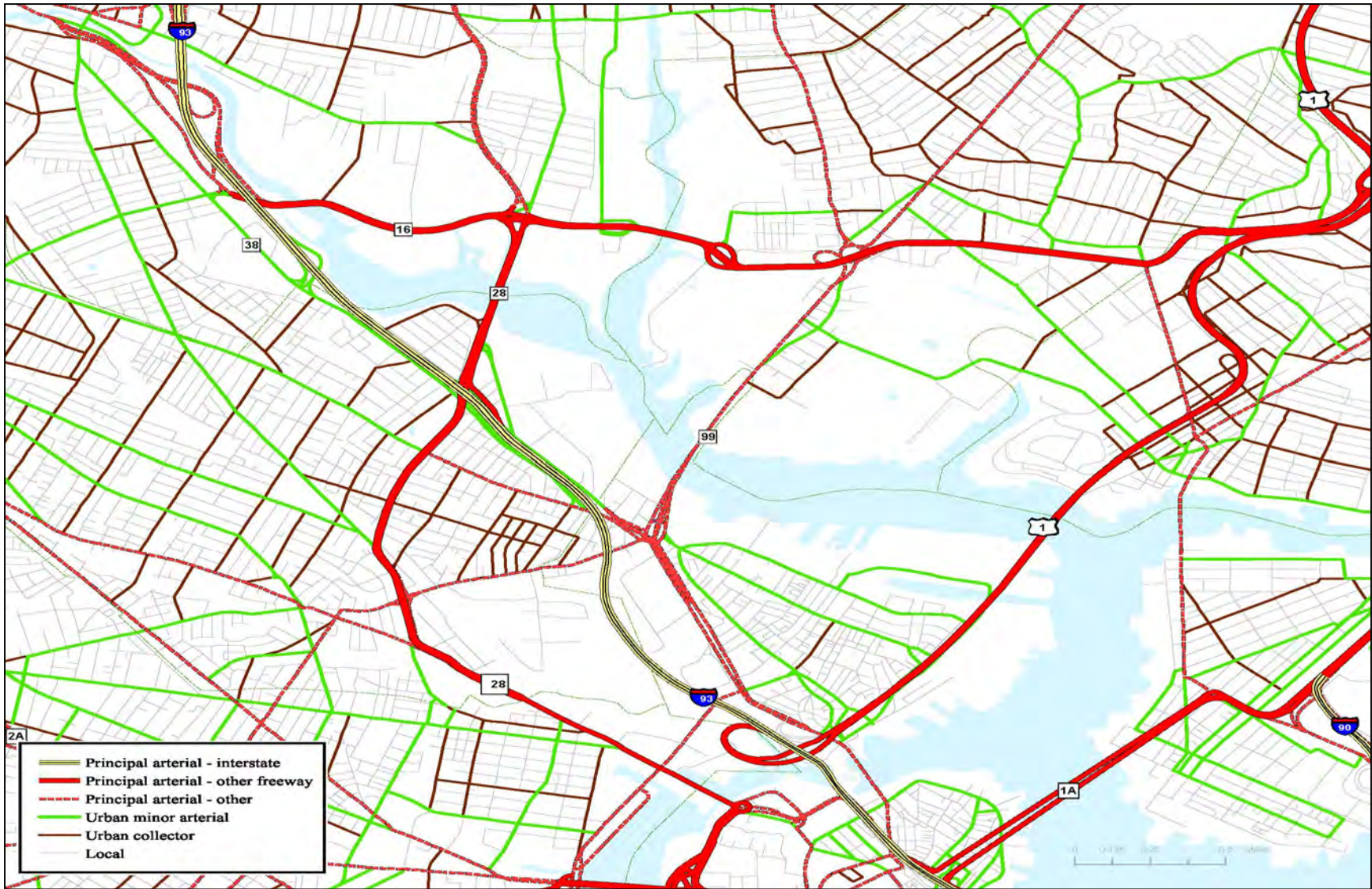


Source: Massachusetts Road Inventory File, MassHighway Planning.

**CTPS**

**FIGURE 5.1**  
**Roadway Administration**

*Toward a Route 28 Corridor  
Transportation Plan:  
An Emerging Vision*



Source: MassHighway Planning using a process mandated by ISTEPA legislation in 1993.

**CTPS**

**FIGURE 5.2**  
**Roadway Functional Classification**

*Toward a Route 28 Corridor  
Transportation Plan:  
An Emerging Vision*

- Interstate
- Other freeway
- Rural minor arterial
- Other urban principal arterial
- Urban minor arterial or rural major collector
- Urban collector or rural minor collector
- Local

As Figure 5.3 shows, Route 28 is classified as an “other freeway,” and the main roadways in the study area and vicinity available to commuter travel are I-93, Route 28, Route 16, and Route 1.

### **Roadway Level of Service**

Existing and future roadway operational data were compiled from recent studies and reports. The quality of traffic flow on a roadway facility or at an intersection at a specific time may be quantified and graded in terms of level of service (LOS). There are six levels of service, A through F. LOS A is free-flow conditions (no congestion), and F is failing conditions (heavy congestion).

Figure 5.4 presents the levels of service for intersections in the study area during the AM and PM peak hours (and in some cases the Saturday peak hour). Generally poor intersection operations occur in the I-93/Mystic Avenue/Route 28 interchange area that are not properly reflected by just LOS. Extensive queuing occurs on the roadways, especially to the local side streets which intersect with Route 28. These poor conditions extend south through the Medford Street intersection. Continuing southward, conditions generally improve until one reaches the Route 28/Land Boulevard/Charlestown Avenue intersection, where operations are LOS F for both peak hours.

### **Roadway Speeds**

The Boston Region MPO funds the monitoring of roadway speeds throughout the region as part of the Mobility Management Program. This monitoring captures typical roadway traffic conditions during the weekday AM peak and PM peak commuter periods.

Figures 5.5 and 5.6 are roadway speed index maps for the AM and PM peak periods, respectively. The speed index of a roadway segment is the ratio of the average observed speed to the posted speed limit. Figures 5.5 and 5.6 do not give the specific speed index of each roadway segment, but rather a range of values within which each segment’s speed index falls. The following three ranges are used:

- **Severe delays** – Travel speed is less than 70 percent of the posted speed limit.
- **Some delays** – Travel speed is 70 percent to 90 percent of the posted speed limit.
- **Free flow** – Travel speed is greater than 90 percent of the posted speed limit.

The speed indexes on Route 28 indicate that there are severe delays from the I-93/Mystic Avenue/Route 28 interchange area to the Medford Street intersection and also near the Route



28/Land Boulevard/Charlestown Avenue intersection. These data are in agreement with the LOS data presented above.



**FIGURE 5.3**  
**MBTA Services for Route 28**  
**Area**

**Sullivan Square Station Bus Routes**

- 86 - Sullivan Square to Cleveland Circle
- 89 - Clarendon Hill to Sullivan Square
- 90 - Davis Square to Wellington
- 91 - Sullivan Square to Central Square
- 92 - Assembly Square to Downtown
- 93 - Sullivan Square to Downtown
- 95 - West Medford to Sullivan Square
- 101 - Malden Station to Sullivan Square
- 104 - Malden Station to Sullivan Square
- 105 - Malden Station to Sullivan Square
- 109 - Linden Square to Sullivan Square
- CT2 - Sullivan Square to Ruggles

**Lechmere Station Bus Routes**

- 69 - Harvard to Lechmere
- 89 - Arlington Center to Lechmere
- 90 - Arlington Center/Clarendon Hill to Lechmere
- 91 - Clarendon Hill to Lechmere

**LEGEND**

- Red Line and station
- Orange Line and station
- Blue Line and station
- Green Line and station
- Street intersection stop
- Silver Line and station
- Commuter Rail and station
- Accessible station
- Parking available at station

**Bus Routes**

- Express route
- Non-MBTA route/shuttle

Colors are randomly assigned  
 Dashed lines are route variations

**TOWN**

For specific times and schedules call  
 617-222-3200, (TTY) 617-222-6146

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Source: MBTA System Map, 2006.

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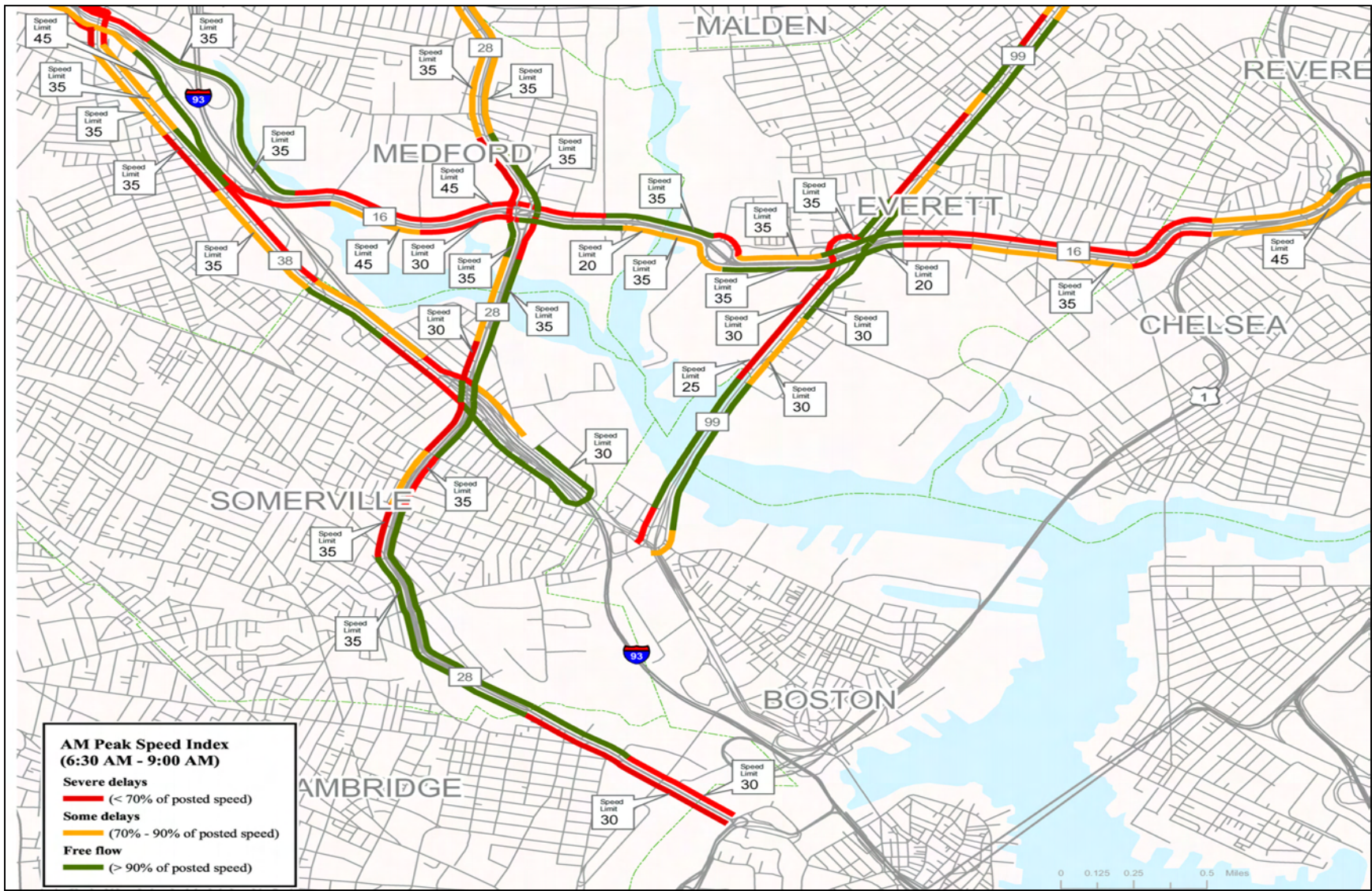


Source: "Existing Conditions" sections from various traffic impact studies. See Appendix A.

**FIGURE 5.4**  
**Roadway Operations**

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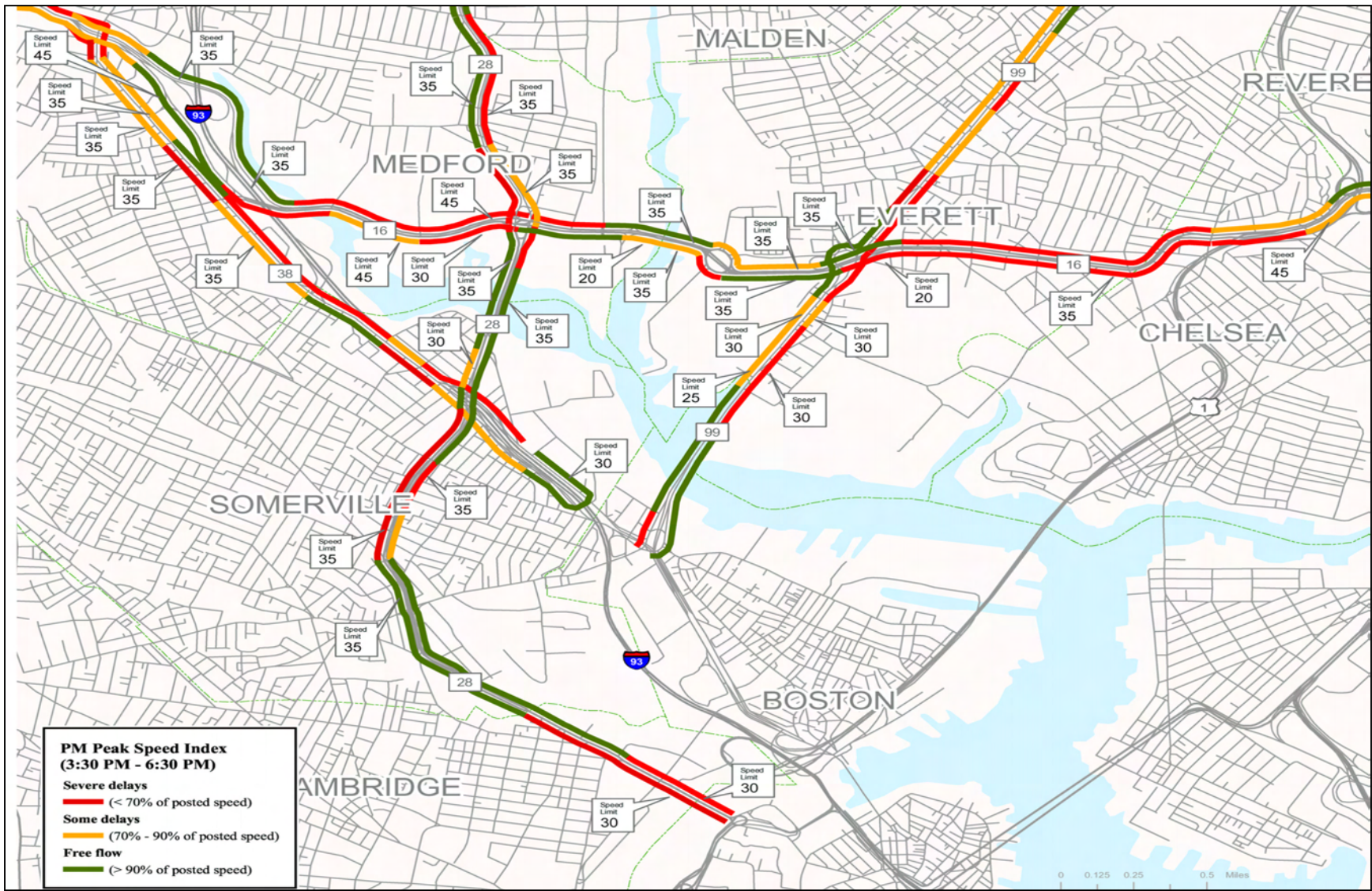


Source: Boston Region MPO Congestion Management System database, spring 2003.

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**FIGURE 5.5**  
**Roadway Speed Index:**  
**AM Peak Period**

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Source: Boston Region MPO Congestion Management System database, spring 2003.

**CTPS**

**FIGURE 5.6**  
**Roadway Speed Index:**  
**PM Peak Period**

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## 6 BICYCLE AND PEDESTRIAN TRANSPORTATION, AND OPEN SPACE

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The ability to walk or bicycle throughout the metropolitan region is achieved through the sharing of facilities with autos. The street system is the primary component of the bicycle network, and the requirement that bicycles and cars successfully share the non-expressway road system is fundamental to bicycle use regardless of the expansion of the recreational trail system.

Sidewalks serve as the primary component of the pedestrian network. Though the sidewalk physically separates pedestrians from cars, sidewalks are generally built or reconstructed in conjunction with roadway construction. Consequently, though autos and pedestrians do not share the same physical space, their facilities largely share the same capital budget and planning horizon.

Much as the auto network has been augmented with limited-access expressways, the pedestrian and bicycle transportation systems are being augmented with expanding subsystems of multi-use off-road trails (usually referred to as “bike trails”), pedestrian-only paths, designated on-road bike routes, and striped on-road bike lanes.

Figure 6.1<sup>1</sup> depicts the major components of the pedestrian transportation system: sidewalks, multi-use and pedestrian-only trails, open space, and rapid transit stations. The data were compiled from several different sources, including MassGIS for open space and the Massachusetts Department of Environmental Management, the Metropolitan Area Planning Council, CTPS, and MassHighway for information on trails.

The MassHighway Road Inventory file was used to identify the presence of sidewalks and other pedestrian facilities adjacent to roadways. Though all of these facilities are shown on the map, the general public cannot use a few of them. For instance, there is a set of catwalks along the walls of the Sumner and Callahan Tunnels that can only be used by MassPike employees.

Figure 6.2 shows a variety of trails and open space resources. It is increasingly common to create a facility specifically designed and optimized for nonmotorized travel in areas of high recreational value, adverse traffic conditions, or existing heavy bicycle or pedestrian activity. This map shows three classes of specialized facilities, both existing and proposed:

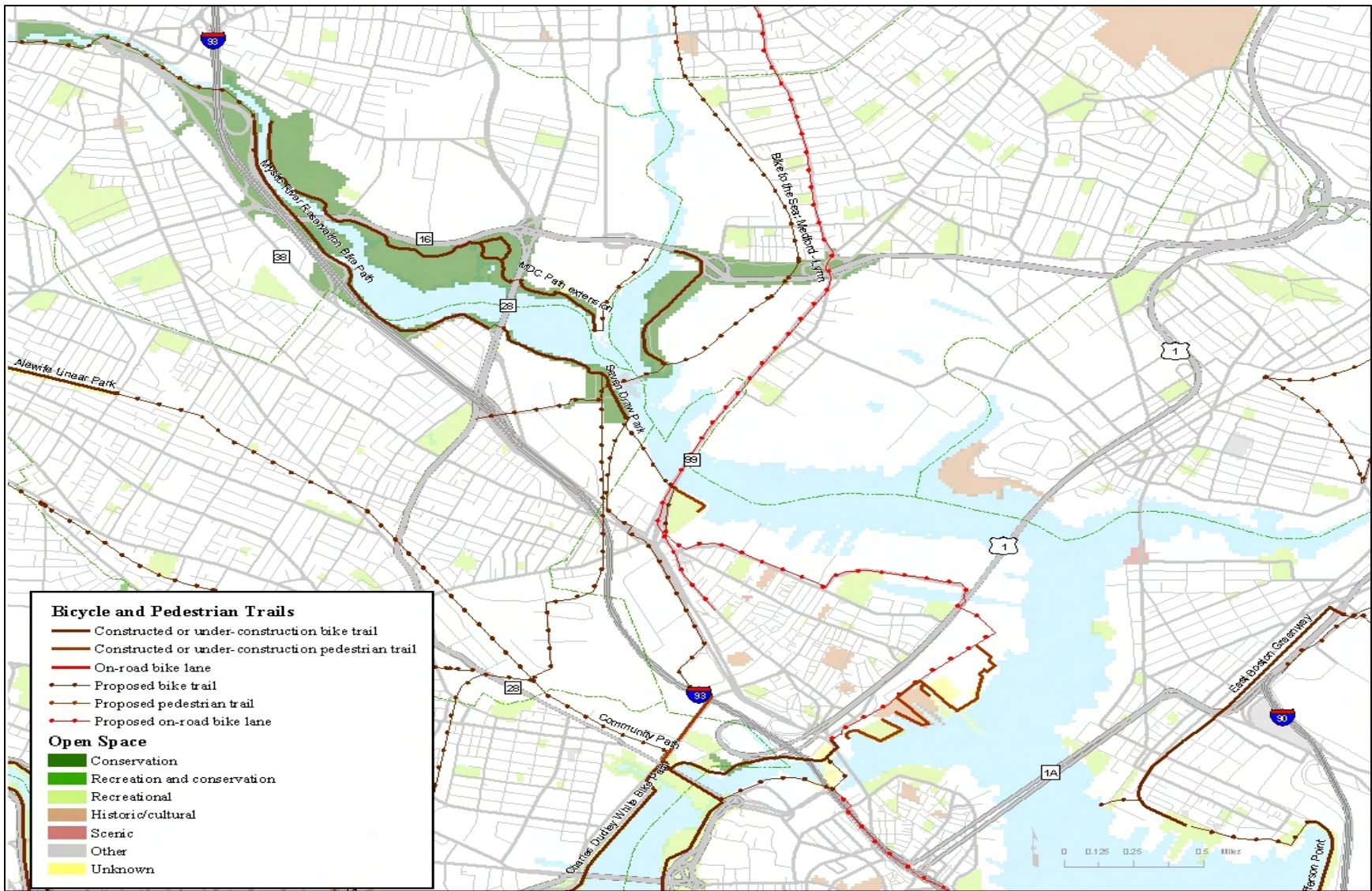
**Bicycle trails** – These off-road paths are actually multi-use and often attract large numbers of walkers, joggers, roller-bladers, and baby carriages. Even when a separate running path has been built, the paved surface is shared by a variety of nonmotorized users.

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<sup>1</sup> Figures 6.1 and 6.2 and much of this chapter are based on information collected for *Assembly Square and Vicinity: An Inventory of Transportation-Related Data*, a report produced by the Central Transportation Planning staff for the Massachusetts Highway Department.







Source: DEM, MassHighway, MAPC, CTPS, municipalities, and other organizations.

**CTPS**

**FIGURE 6.2**  
**Trails and Bicycle Lanes**

*Toward a Route 28 Corridor  
 Transportation Plan:  
 An Emerging Vision*

**Pedestrian trails** – These function like sidewalks but are not adjacent to a street. As with sidewalks, bicycles are either discouraged or forbidden. These paths are often built for their scenic value (such as HarborWalk) or to provide a convenient pedestrian shortcut. The locks of the new Charles River Dam are an example of a pedestrian shortcut, since bicyclists are required to dismount and walk their bikes.

**On-road bicycle lanes** – The place of bicycles on a roadway can also be enhanced. Bicycle lanes can be striped on a roadway to indicate a corridor not to be used for general auto travel. The bicycle lane still must be used by autos to maneuver into parking spaces or turn into driveways, but the striping formalizes the sharing of the roadway by cars and bicycles.

As shown, most of the existing trails are in the waterfront area and some are fragmentary. The proposed trails provide some connection to the existing trails and make some of the open space more accessible.

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## 7 FUTURE TRANSPORTATION PROJECTS

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### 7.1 URBAN RING

The MBTA's proposed Urban Ring project would improve circumferential transit service in Boston and the surrounding communities of Chelsea, Everett, Medford, Somerville, Cambridge, and Brookline. It would provide direct transit connections between many of the MBTA's existing radial transit lines, improving transit access and mobility for people in the Urban Ring corridor and throughout the region.

By providing new and improved intermodal connections between bus, rapid transit, and commuter rail, it would relieve transit congestion in the central subway as well as traffic congestion on congested roads in the Urban Ring corridor.

The Urban Ring is proposed for implementation in three phases: Phase 1 improved bus service in the Urban Ring corridor; Phase 2 would principally consist of bus rapid transit (BRT) service in the corridor; and Phase 3 would add rail rapid transit in a portion of the corridor.

### 7.2 TIP/RTP/PMT PROJECTS IN STUDY AREA

There are many transportation projects and studies located either along Route 28 or in the vicinity. Table 8.1 lists those that have been programmed for fiscal years 2007 to 2010 in the Transportation Improvement Program (TIP),<sup>1</sup> included in the February 26, 2007, draft of the Regional Transportation Plan (RTP),<sup>2</sup> or screened in the 2003 Program for Mass Transportation (PMT).<sup>3</sup> Table 7.2 provides descriptions of transportation projects that have been identified but not funded or programmed.

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<sup>1</sup> Boston Region Metropolitan Planning Organization, *Transportation Improvement Program and Air Quality Conformity Determination: Fiscal Years 2007–2010*, August 17, 2006.

<sup>2</sup> Draft *JOURNEY TO 2030: Transportation Plan of the Boston Region Metropolitan Planning Organization*, February 26, 2007.

<sup>3</sup> MBTA, *Program for Mass Transportation*, 2003.

**Table 7.1 Programmed Transportation Projects in Vicinity of Route 28**

Project	Source	Fiscal		Description
		Year	Funding	
I-93 Mystic Avenue Interchange (study and design)	TIP	2007	\$258,130	Fund the design and study of the Interstate 93/Route 28/Mystic Avenue interchange (Fells–McGrath Highway).
	TIP	2008	\$87,000	
	TIP	2009	\$87,000	
	RTP	2007		
I-93 Mystic Avenue Interchange (construction)	RTP	2021 to 2030	\$118,510,000	Construct interchange improvements.
Assembly Square Multimodal Access Improvements	TIP	2007	\$3,226,625	Fund the construction of multimodal improvements at Assembly Square.
	TIP	2008	\$1,087,500	
	TIP	2009	\$1,087,500	
Rutherford Avenue/Sullivan Square (Boston)	RTP	2007 to 2010	\$21,252,500	Reconstruction of Rutherford Avenue, consisting of two components: • A new four-lane bypass road adjacent to the Interstate 93 viaduct from City Square to Sullivan Square. • A four-lane roadway for local Charlestown traffic.
		2011 to 2020	\$79,443,000	
Orange Line Station at Assembly Square	TIP	2010	\$31,250,000	Fund the construction of an Orange Line station at Assembly Square. This is a discretionary earmark that if appropriated prior to fiscal year 2010 will be made available.
	RTP	2007		
	PMT	2003		
Green Line to Ball Square (Boston, Medford, and Somerville)	RTP		*	Extend the Green Line from Lechmere Station in Cambridge to Medford Hillside.
Union Square Improvements (study)	TIP	2007	\$258,130	Fund a study of Union Square in Somerville.
	TIP	2008	\$87,000	
	TIP	2009	\$87,000	
Somerville Community Path, Phase I	TIP	2008	\$776,543	Construct Phase I of the Somerville Community Path from Cedar Street to Central Street. Funds for this project include \$2,431,038 in Congestion Management and Air Quality Improvement funds and High-Priority Project funds in the amount of \$621,234 in federal fiscal year 2008 and \$156,600 in federal fiscal year 2009.
	TIP	2008	\$2,431,038	
	TIP	2009	\$195,750	
Cross Street Bridge	TIP	2007	\$2,200,877	Rehabilitate the Cross Street Bridge (S-17-5) over the B&M Railroad.
Beacon Street	TIP	2010	\$2,887,191	Reconstruct Beacon Street from Oxford Street to the Cambridge city line. The High-Priority Project federal portion of this project is \$2,309,753, and the Surface Transportation Program portion is \$1,012,809.
Lechmere Intermodal	TIP	Carryover	\$4,383,056	Provide funds for design of Lechmere Station relocation and intermodal expansion.
	TIP	2007	\$4,516,944	
Belmont, Cambridge, and Somerville Bicycle Facility	TIP	2007	\$3,000,000	Improve the bicycle facility connecting existing paths in Somerville and Cambridge to link the communities of Belmont, Cambridge, and Somerville.

\* SIP Commitment project currently being reevaluated by EOTPW and DEP. The cost for this project is included in the total cost of \$743,130,000 that has been included in the RTP for the SIP projects to be constructed in the future.

**Table 7.2 Not-Programmed Public Transportation Projects**

<b>Project</b>	<b>Source</b>	<b>Cost or Year Estimate</b>	<b>Description</b>
Magoun Square	Somerville	\$3,100,000	Project reconstructs the square to replace outdated traffic control equipment and provide ADA-compliant ramps, much-needed pedestrian and bicycle amenities, and other traffic modifications to improve safety.
Somerville Streetscape and Adaptive Re-use Plan	Somerville	\$983,928	This is a federal appropriation for the City to implement, study, design, and/or construct transportation improvements and enhancements.
Temple Street	TIP Universe of Projects	No estimate	Reconstruct Temple Street from Broadway to Mystic Avenue.
Reconstruction of Washington Street	TIP Universe of Projects	No estimate	Reconstruct Washington Street from Boston city line to Route 28.
Telecom Boulevard, Phase I	TIP RTP	\$3,600,000 2007	Construct Phase I of Telecom Boulevard from Santilli Circle in Everett to the approach for the Malden River Bridge.
Telecom Boulevard, Phase II	TIP RTP	\$10,000,000 2007	Construct half-mile roadway from Malden River Bridge and Corporation Way in Medford to Route 16.



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## 8 URBAN DESIGN VISIONS

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One of today's challenges for state and community officials, developers, and urban, transportation, and environmental planners is how to transform older roadway corridors with mixed land use, usually industrial, commercial, and residential, into attractive places to live, work, and play. Residents wish for a welcoming, aesthetically pleasing place that feels like a neighborhood they "belong to." Business owners wish to ensure economic stability and growth within a walkable, accessible, and also aesthetically pleasing environment—a "destination" for neighbors, other community residents, and those passing through. Planners and government officials wish to promote healthy economic development for the corridor, while preserving and if necessary restoring sensitive environmental areas for recreational or commercial purposes. Often these wishes or goals are in conflict, and the urban design challenge/opportunity is to rehabilitate a corridor so as to create an attractive area in which to live and work without jeopardizing economic development.

Certainly the study corridor is an area that would benefit from enhanced urban design and that presents many of the challenges that can pertain to achieving that objective.

As part of this study, an urban design workshop for the corridor was held (on February 2, 2004) to explore issues, challenges, and possibilities. The participants included members of the Advisory Committee, MPO staff, and invited urban design professionals familiar with Somerville, Cambridge, and Route 28, who offered their services pro bono. The invited professionals were:

Steven A. Heiken, AIA  
*Vice President of ICON Architecture, Inc.*

Gretchen J. Von Grossmann, RA AICP  
*Principal of Von Grossman & Company*

Bhupesh D. Patel  
*Design Tank*  
*Route 28 Study Advisory Committee*

Anne Tate  
*Former Special Assistant for Sustainable Development, former Office for  
Commonwealth Development*

The workshop, in large part a brainstorming session, was successful in that it summarized the urban design concerns and existing "ingredients" in the corridor and identified a number of long-range concepts for the corridor—visions for Somerville's and Cambridge's consideration. These

summaries and concepts are presented below, beginning with an overview of the corridor's characteristics.<sup>1</sup>

## **8.1 CORRIDOR OVERVIEW: THREE DISTINCT SEGMENTS**

The corridor is a high-volume arterial that is used by local traffic and as a collector/distributor facility for regional traffic. For many commuters and other users, Route 28 is used as the primary (line-haul) route. Others use it as an arterial collector to/from I-93. East Cambridge and points southwest were noted as significant destinations. East Cambridge is an example of a major destination that cannot be served well directly via I-93; Route 28 serves as a collector arterial for traffic to access/egress East Cambridge.

The roadway divides the city of Somerville and parts of East Cambridge. It was noted that the operational characteristics of the roadway, the land use, and development potential of the corridor vary along its length. This presents opportunities for a variety of improvement treatments that include urban design features, parcel access/egress, and transportation infrastructure.

The northern third of the roadway (from the Mystic River Bridge to Mystic Avenue) is an undivided facility (it has no median) and proceeds at-grade through an environmentally sensitive area, between the Ten Hills neighborhood and Assembly Square, and under I-93.

The middle third (from Mystic Avenue to Medford Street) is a divided principal arterial that includes three major intersections and the bridge over the MBTA's Lowell commuter rail line. Land use is mixed, but mostly residential.

After the Medford Street intersection, the roadway is elevated southbound to the Twin City Plaza traffic light. The northbound direction is grade-separated over the MBTA's Fitchburg commuter rail line and over Washington Street. The roadway is at-grade in both directions beginning at the Twin City Plaza traffic light to the end of the corridor at Museum Way. Land is primarily zoned as business, but it also includes a residential neighborhood in the northern part of the last segment in the vicinity of Washington Street. The area in Somerville on the east side of Route 28 from just south of Washington Street and up to Twin City Plaza, a total of over 135 acres, is zoned business and industrial and consists of old industrial complexes. The businesses in this area, the Inner Belt District, other than those abutting Route 28, have access from Washington Street only. North Point, a large mixed-use development site located in the southern part of the southern third of the study corridor, on the eastern side of the roadway, in Cambridge (about 40 acres), Somerville (about 5 acres), and Boston (about 1 acre), will be developed over several phases.

Figure 8.1 shows the corridor divided in the three segments. It also lists key characteristics and issues for each segment. These issues and others are included in the discussions in one or more of the following sections of this chapter.

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<sup>1</sup> Many of the Route 28 urban design vision elements discussed during the brainstorming session are already included in transportation plans and other studies by the City of Cambridge, the City of Somerville, and their consultants, and in various development proposals.





**FIGURE 8.1**  
**Corridor Segments**  
**and Key Characteristics and**  
**Issues**

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## 8.2 MAJOR AND MINOR TRAFFIC NODES

In the view of workshop participants, there are five major existing “traffic exchange” points along the corridor: the I-93 interchange at Assembly Square, Washington Street, Somerville Avenue, Third Street, and First Street. These are locations where major streams of traffic cross and/or change direction to/from major origins/destinations. Minor intersections include Broadway, Pearl Street, and Medford Street. Figure 8.2 shows the major and minor nodes and potential access/egress opportunities.

## 8.3 MAJOR DEVELOPMENT AREAS

Along the corridor, there are several large land parcels with great development or redevelopment potential. These include Assembly Square, the McGrath Corridor, the Inner Belt District, and North Point (see Figure 8.3).

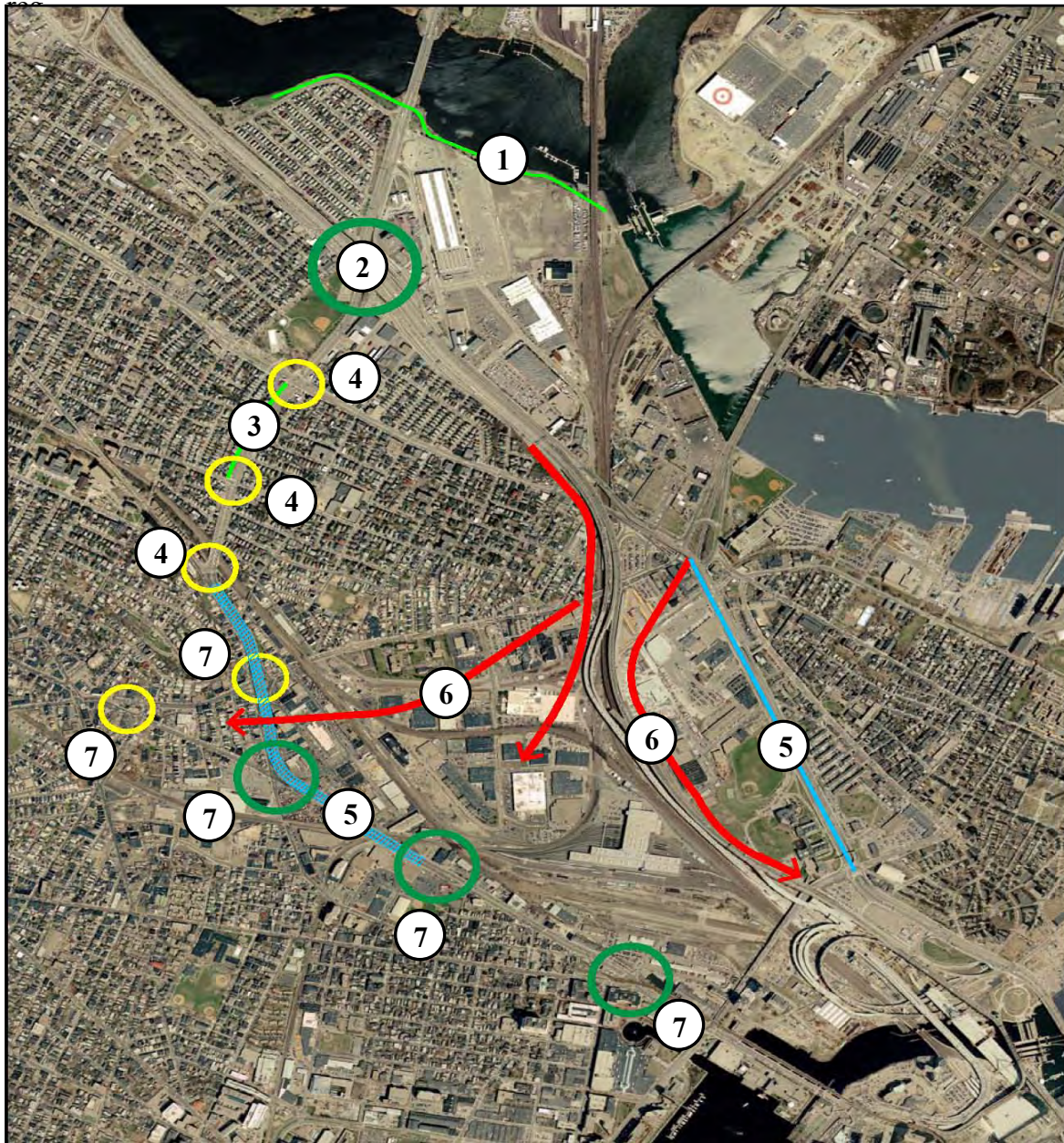
*Assembly Square* has been studied for a variety of development schemes, including associated roadway and transit improvements. Zoning, development, and transportation improvement recommendations have been documented in numerous studies over the years. Most recently, Federal Realty Investment Trust proposed a planned unit development (PUD) for Assembly Square that includes the redevelopment of approximately 66.5 acres of land into a transit-oriented, mixed-use development. The plan includes the relocation of the permitted IKEA store adjacent to Home Depot along I-93.

The *McGrath Highway Corridor* includes the land on either side of Route 28 in the vicinity of Somerville Avenue and Washington Street. These parcels, many of which are underutilized, are “locked” on either side of the elevated structure and have limited visibility and access to Route 28 under the current configuration. The feasibility of demolishing the Route 28 viaduct at this location is key to the redevelopment of this segment of Route 28, including the improvement of the roadway’s aesthetics.

Adjacent to this area is the *Inner Belt District*, located within the space enclosed by the MBTA’s Fitchburg commuter rail line, Washington Street, and the MBTA maintenance facility. The Lowell/New Hampshire Line embankment bisects the district, with only a “temporary” culvert bridge for the Inner Belt Road to link the northern and southern areas. This district currently has no direct access to Route 28; however, the City of Somerville has conducted a study on access to the site.


Within the McGrath Highway Corridor and Inner Belt District areas is a smaller *Development Triangle* that has potential to be redeveloped separately from the other, larger areas. It is bounded by Somerville Avenue, Washington Street, and Route 28 and includes Union Square.


The *North Point* development is largely located behind several small business parcels lining the eastern side of Route 28, but it also has some frontage along the roadway. The North Point development plans provide for direct access to Route 28.



**FIGURE 8.2**  
**Access/Egress Opportunities**

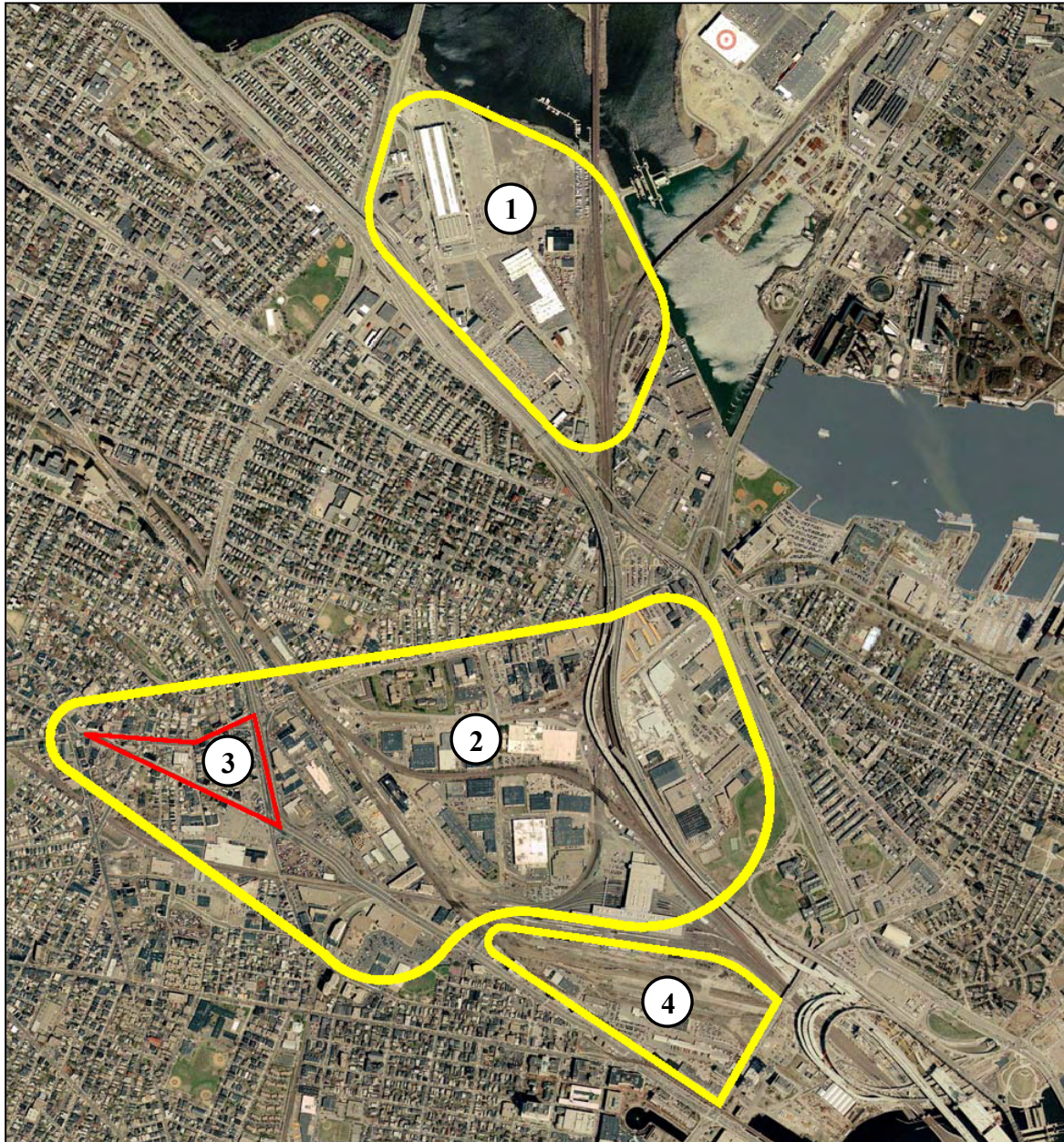
1. **Waterfront Access** – Improved access to the waterfront and improved crossing at Route 28, Amelia Earhart Dam, and Route 99.
2. **Key Interchange: I-93/Route 28** – Interchange is important access point for the Assembly Square development.
3. **Pedestrian/Bike Path** – Utilize existing streets between Pearl and Broadway for multi-use path.
4. **Local Intersections: Broadway, Pearl, and Medford** – These three intersections provide local access across Route 28. They should be improved for pedestrian and bicycle access.
5. **Development Corridors** – These roadways (shown in blue) have significant developable land adjacent to them.
6. **Alternative Routes** – Possible bypass routes (shown in red) to provide additional access to the Inner Belt and North Point areas. Rutherford Avenue bypass is shown.
7. **Access Points** – These access points are key to the successful development of this area. Existing access routes cannot support the full development of the area.

Major Node – 

Minor Node – 

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**FIGURE 8.3**  
**Major Development Areas**

1. **Assembly Square** – Federal Realty Trust submitted a new planned urban development (PUD) proposal for the site on 10/26/06.
2. **Inner Belt/McGrath Highway District** – Preliminary studies have identified this area for possible major redevelopment. The area would include properties west of McGrath Highway to Union Square and east to the Rutherford Avenue redevelopment of the Hood Plant. The total Inner Belt/McGrath Highway District area, not including Union Square and the Rutherford area, is approximately 135 acres, three times as large as the North Point development.
3. **Development Triangle** – A smaller area within the Inner Belt/McGrath Highway District that has potential for redevelopment is the Union Square triangle area, bordered by Somerville Avenue, Washington Street, and Route 28.
4. **North Point** – Approximately 45 acres of mixed-use, transit-oriented development currently under the first phase of construction.

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**CTPS**

The total development potential of the parcels is enormous, and, therefore, comprehensive, proactive planning is underway.

#### **8.4 ACCESS AND VISIBILITY FROM WASHINGTON STREET, ROUTE 28, AND I-93**

To unlock the development potential of the above districts, accessibility and visibility are key. Existing access points to Lower Brickbottom and Inner Belt are by roadway only and limited to connections with Washington Street. Roadways at which there is potential for adding or improving connections to or across Route 28 include Somerville Avenue, Medford Street, the Twin City Plaza entrance, Third Street, and First Street.

Three alternative access points for major development districts were discussed at the workshop:

- A direct connection with I-93; for example, from southbound I-93 via an off-ramp from the Leverett Connector that would terminate at a point inside the internal circulation roadway system in the Inner Belt District. In addition to providing a direct I-93 connection to employees and customers associated with North Point, Inner Belt, and McGrath Corridor businesses, the ramp would reduce traffic, noise, and pollution for residents and small businesses along the midsegment of Route 28.
- A bypass road that would run from Sullivan Square through the Inner Belt District to Route 28 in East Cambridge. The bypass road would provide an alternative route for people traveling between I-93 and East Cambridge.
- A possible third connection comes from the Rutherford Avenue Corridor Transportation Study<sup>2</sup> “Bypass Alternative”: a roadway that connects to Sullivan Square and runs parallel to Rutherford Avenue just east of I-93.

#### **8.5 THREE-POINT DEVELOPMENT TRIANGLE: UNION SQUARE, SOMERVILLE AVENUE, AND WASHINGTON STREET**

Along the third (lower) segment of Route 28, in addition to access and visibility for the three major development districts, there may be additional accessibility opportunities related to Union Square, Washington Street, and Somerville Avenue. Presently, for someone traveling along Route 28, it is not immediately clear how to access Union Square and what the destination opportunities are along Somerville Avenue. As a result, today Union Square is less of a destination than a cut-through location for destinations in mid-Cambridge.

One option would be for Somerville Avenue to split off from Route 28 in an obvious and aesthetically pleasing manner that would include a “gateway” treatment and indicate to the driver that Union Square and Somerville Avenue destinations are additional options in Somerville for

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<sup>2</sup> Rutherford Avenue Corridor Transportation Study, Boston Transportation Department, March 1999.

shopping and dining. This treatment would create a Somerville Avenue–Union Square–Washington Street triangle with associated furniture, facilities, and interconnections of roadway, pedestrian, and other modes of transportation.

## **8.6 INTERNAL CIRCULATION**

As with the Assembly Square District, where an internal circulation system was also studied, an internal roadway system will have to be planned for the McGrath Corridor District, the Inner Belt District, and possibly the North Point development, including interconnections among them. For example, a “Brickbottom Boulevard” could be created in the largely abandoned MBTA right-of-way that formerly was used by the Lowell/New Hampshire Line. This could form part of a connector road system parallel to Route 28 that would connect Charleston Avenue (Gilmore Bridge) to Washington Street behind North Point and between the McGrath Corridor and the Inner Belt District.

## **8.7 GREEN LINE EXTENSION TO MEDFORD HILLSIDE AND UNION SQUARE**

In the North Point development in Boston, Cambridge, and Somerville, the MBTA and North Point developers are currently in discussions to relocate the MBTA’s Lechmere Station to the eastern side of Route 28, onto property currently owned by the North Point developers. Access to the new station is currently being studied. In addition, the MBTA has begun the environmental review process for extending the Green Line from the relocated Lechmere Station to Medford Hillside and Union Square. An Expanded Environmental Notification Form was filed with the MEPA Office on October 16, 2006. The decision of the Secretary of Environmental Affairs on the filing requires that draft and final environment impact reports be completed. This project is in the State Implementation Plan (SIP) and is a transit mitigation project in the Administrative Consent Order (ACO) from the Central Artery project. Figure 8.4 shows transit opportunities that are planned or possible, including the relocated Lechmere Station and Green Line extension. The relocation and extension provide the potential for transit access to the Lower Brickbottom and Inner Belt areas.

## **8.8 ROUTE 28 REDESIGNED AS A BOULEVARD**

One possibility is to redesign Route 28 as a boulevard type of roadway similar to the segment of Massachusetts Avenue between Harvard Square and Porter Square. The design would include a median with green landscaping and wider sidewalks with street furniture for pedestrians. Preliminary analysis for such a plan would need to examine the question of whether a more traffic-oriented design is required.

## **8.9 ROUTE 28 AT WASHINGTON STREET**

Potential options for redesign of this location that could be evaluated include:



**FIGURE 8.4**  
**Transit Opportunities**

1. **Assembly Square Orange Line Station** – Proposed transit-oriented development includes a stop at Assembly Square on the existing Orange Line.
2. **Green Line Extension** – The project is currently in the environmental review process, with possible destinations of Medford Hillside and Union Square.
3. **Multimodal Center** – Potential exists for a new transportation center, much like South and North Stations, providing access to both the proposed Green Line extension and commuter rail. Distance to North Station would be approximately same as from Back Bay Station to South Station.
4. **Lechmere Station Relocation** – North Point developers and the MBTA are in discussions to relocate the existing station to the east of Route 28, onto North Point property. Access issues are currently being studied.

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- In conjunction with the boulevard concept, an at-grade intersection design.
- If the grade separation needs to be maintained, a design with Washington Street at grade and Route 28 passing under it. However, one of the constraints would be the existing rail line that Route 28 crosses.

#### **8.10 CONNECT MEDFORD STREET WITH ROUTE 38 (MYSTIC AVENUE) IN SOMERVILLE**

A boulevard connection (via Fellsway West and Walnut Street) could be created between Mystic Avenue and Medford Street. The new boulevard would be landscaped and include pedestrian and bicycle accommodations.

#### **8.11 NORTH–SOUTH BICYCLE CONNECTIONS WITHIN SOMERVILLE**

A direct north–south bicycle connection does not exist today. As data in this report suggest, such connections could include various branches and alignments of the Somerville Community Path through Somerville that would connect the Alewife Linear Park to the Charles Dudley White Bike Path and the Seven Draw Park on Mystic River (at Assembly Square). If making Route 28 an at-grade urban boulevard were to be found feasible and to become the desired option, then that roadway would become the north–south bicycle connection in Somerville, thus avoiding the hills and narrow streets that plague all of the current attempts to define a north–south route.

#### **8.12 PEDESTRIAN CONNECTIONS ACROSS MYSTIC RIVER**

It would be desirable to create safe and comfortable pedestrian crossings of the Mystic River. Possible crossing locations in Somerville that could be enhanced are at:

- Wellington Fellsway Bridge (Route 28)
- Amelia Earhart Dam
- Alford Street (Route 99)



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## 9 SUMMARY, FINDINGS, AND DISCUSSION

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### 9.1 CORRIDOR SOCIOECONOMIC PROFILE, LAND USE, AND ZONING

The study corridor's high population and employment densities, when they are supported by the right land use, zoning, and transportation infrastructure, can form an excellent basis for smart growth, transit-oriented development, and urban rejuvenation.

Existing population density is very high in Somerville, where approximately 75,000 residents live in an area of four square miles, and also high along Route 28's middle section. Population density along the study corridor is lowest in the northern segment, from the Mystic River Bridge to Mystic Avenue; it is 1,200 people per square mile in the Mystic View neighborhood. In the middle section, between Mystic Avenue and Medford Street, it ranges from 1,200 to 12,000 people per square mile. Along its lower segment, from Medford Street to Museum Way, population density in East Cambridge is about 6,500 people per square mile. The densest areas of residential population contain multifamily residential buildings, including high-rise apartments.

Employment density along the study corridor exhibits a different pattern from that of population density. The middle segment of the corridor has low employment densities, while the northern and southern segments contain areas with high employment densities, around 2,100 employees per square mile at Assembly Square and between 1,250 and 9,700 in Somerville and East Cambridge areas along the southern segment.

Land use along the northern segment is light-to-medium-density residential (Mystic View), industrial (Assembly Square), and urban open (public and institutional open space, vacant undeveloped land along Mystic River at Assembly Square). The middle segment is characterized by multi-unit residential, commercial, and recreational (Foss Park) land use. Land use along the southern segment includes residential and commercial, but is mostly industrial and transportation.

Zoning along the northern segment of the study corridor is single-family residential, commercial, industrial, mixed use, and conservation. This type of zoning is intended to preserve the single-family residential character of Mystic View, allow for mixed use, smart-growth types of development in Assembly Square, and conserve open space for recreational uses. The zoning for the middle segment is consistent with present uses, residential and commercial. Finally, zoning along the southern segment includes residential and commercial, but is primarily industrial and mixed use along the northern side of the roadway (North Point, Inner Belt, and Brickbottom, the latter being the area bordered by Washington Street, Route 28, and Somerville Avenue).

## **9.2 ROADWAY CHARACTERISTICS**

Route 28 is heavily used and is a very important roadway not only to Somerville but also regionally, as it provides for mobility between origins and destinations beyond it and land access along it. Consistently with the character of the service it is intended to provide, it is classified as “Other Freeway,” a higher level of principal arterial.

The results from this study’s morning peak period license plate survey shed light on Route 28’s function in the southbound direction:

- Commuters from cities and towns with direct access onto Route 28 use the roadway to access points along it, East Cambridge, Cambridge, and points in Boston.
- Commuters from north of Somerville who take I-93 for the major portion of their trip use Route 28 as a collector to reach the same types of destinations as those just listed for commuters from cities and towns with direct access onto Route 28.
- On a typical commuter morning, the roadway is used far less as a through facility to Boston than as a collector/distributor facility between origin and destination towns that are not served well by I-93 more directly. Less than 11 percent of the Route 28 traffic observed just west of Broadway was also observed at the Museum of Science.

The survey results are for a typical weekday morning. However, when there is an emergency on I-93 or the CA/T, Route 28 serves as the alternative to I-93 for points in downtown Boston and south of it. This function is also consistent with its designation and intended use, as contingency planning dictates that reroutings to lower-level facilities are necessary in emergency situations.

### **Route 28’s Traffic Pattern: A Collector-Distributor Road**

Consistently with the results of the origin/destination survey, the roadway’s general traffic flow pattern is one where its weekday traffic rises from north to south, with the highest point in the vicinity of Washington Street.

The roadway collects traffic from major crossing roads beginning with Route 16, just north of the Mystic River Bridge, and then from I-93, Route 38, Broadway, Pearl Street, and Medford Street. After Medford Street, the roadway’s traffic begins to drop as drivers seek destinations served by Washington Street, Somerville Avenue, Third Street, and Land Boulevard. Towards the end of the study area, Cambridge Street’s and Charlestown Avenue’s traffic contributions are significant, and Route 28 traffic rises again, but at lower levels than those in the midsection.

For comparison, at its highest traffic point, between Medford Street and Washington Street, Route 28 carries as much traffic as Route 3A’s Neponset River Bridge south of Gallivan Boulevard or the Leverett Connector south of the Route 1 off-ramp. At its midrange traffic point, it carries about as much traffic as Route 9 in Newton just east of I-95/Route 128, New Rutherford Avenue north of Austin Street, or Route 1A at the Boston/Revere city line. Some of these roads do not intersect with roadways as high in traffic volumes as some roadways that

Route 28 intersects, and some have grade-separated connections to other roads. Route 28's lowest traffic volume, which is in the southern segment, is comparable to the volume on Massachusetts Avenue in the vicinity of Commonwealth Avenue.

The traffic volume pattern and intensity of the roadway would of course be important factors in determining the feasibility of reconstructing it as a boulevard that intersects Washington Street at grade. In order to bring about significant traffic volume reductions, a variety of measures would be required that could include improved public transportation, improved incident management on I-93, a direct I-93 connection to Brickbottom and East Cambridge, and policies promoting trip reduction, growth management, and parking limitation. Some of these ideas are already under study in the form of the Urban Ring, the Green Line extension, and the Orange Line station at Assembly Square.

### **Roadway Traffic Conditions: Present and Future**

Major nodes of traffic exchange along Route 28 are at Wellington Circle (Route 16), Mystic Avenue (Route 38), Broadway, Pearl Street, Medford Street, Washington Street and Somerville Avenue ramps, Third Street, First Street, Cambridge Street, and Land Boulevard, all high-volume crossing roads with average weekday traffic in the high to low 30,000s.

Delays and queues are common at most of these locations, especially during peak hours and midday Saturday, with operations at level of service C or worse. Because of these delays at the intersections, peak period speeds in the corridor are below the 35 mph speed limit. In the off-peak hours, speeds often exceed the limit, raising resident concerns, especially in the mid-McGrath section.

Route 28 at I-93 and Mystic Avenue is the highest-crash location along the roadway (it is among the highest in the Boston region), followed by the intersections at Washington Street and at Broadway. Bicycle and pedestrian crashes are also at the corridor's highest levels at these three locations.

The intersections at Medford Street, Pearl Street, and Broadway were recently improved. Improvements included new or repaired pedestrian traffic signals with appropriate phases and phase durations. Additional intersections have been improved or soon will be as part of development mitigation (details on mitigation improvements can be reviewed in Appendix B).

In the future, without significant traffic reduction measures, congestion is expected to grow progressively worse along Route 28. In most cases, level-of-service calculations from area development studies show development impacts to be mitigated by their proposed improvements. However, intersections that are currently problematic continue to have poor operations under future conditions even assuming implementation of the proposed mitigation strategies.

### **9.3 PUBLIC SAFETY AND URBAN DESIGN OPPORTUNITIES**

Safety for drivers, pedestrians, and bicyclists is of great concern to task force members and citizens. The focus of their concerns is certain accident-prone locations along Route 28.

#### **Route 28 at Mystic Avenue (Route 38)/I-93 Ramps**

This is a rather broad geographic area to which safety monitoring has attributed high levels of crashes over the years. The area, sometimes referred to as the “area of Route 28 and Route 38 under I-93,” consists of several locations where conflicts between vehicles, pedestrians, and bicycles may arise, including:

- The signalized intersection of Route 28 northbound at Mystic Avenue
- The signalized intersection of Route 28 southbound at Mystic Avenue
- All I-93 ramp termini at either I-93, Route 28, or Route 38

Most recently, this location ranked 66th in the top 200 arterial crash locations statewide. Almost half of the crashes are of the angle type involving conflicts with left-turning and merging/diverging vehicles at the I-93 ramps.

In the past, MassHighway, its consultants, and the City of Somerville have studied this location to improve vehicle and pedestrian mobility to the neighborhoods, Foss Park, Assembly Square, Mystic Avenue, and I-93. The current Transportation Improvement Program has \$432,130 programmed in the years 2007 through 2009 for the study and design of the interchange. Also, the Regional Transportation Plan has provided \$58,500,500, scheduled for the years 2021 to 2030, for construction.

In addition to safety improvements, important contributions of ongoing study should be neighborhood accessibility, circulation, and connections across I-93 and Mystic Avenue. As part of the study, it is critical in terms of urban design and neighborhood preservation to explore how the roadway system and the highway’s ramp system in this area may be reconfigured to improve connections for drivers, pedestrians, and bicyclists between Assembly Square and the residential neighborhood at the southeast quadrangle of the I-93/Route 28 interchange, bounded by Broadway, Route 28, and the Mystic Avenue eastbound/I-93 ramps. To this end, several schemes were proposed in the original Assembly Square Transportation Plan Final Report (2003) and most recently in the Planned Development Unit – Assembly Square, Preliminary Master Plan filed with the City of Somerville in October 2006.

#### **Route 28 at Foss Park**

Since the opening of the Stop and Shop supermarket across from Foss Park, there has been a pedestrian accessibility issue for residents using the park or that live north of Route 28. Advisory Committee members reported that people have been climbing over the fence at Foss Park and crossing Route 28 to the Stop and Shop without proper signal control. This is creating a highly unsafe situation at this location.

Constructing a pedestrian crossing at the existing Blakeley Street intersection that was constructed as part of the Stop and Shop mitigation would help alleviate the unsafe situation and improve access across Route 28. This crossing would alleviate the lack of access to Foss Park and provide an additional crossing of Route 28 for area residents. Figure 9.1 provides a conceptual design of the proposed pedestrian crossing.

### **Route 28 at Broadway, at Pearl Street, and at Medford Street**

These three locations were improved recently in their operations and safety. The intersection at Broadway ranked 114th in the state in crashes for MassHighway's monitoring period, 2002 to 2005.<sup>1</sup> The majority of the crashes at these locations are the rear-end type, which is an indication of stop-and-go traffic and congested conditions.

Improvements addressed operational, especially safety, problems related to the condition of the equipment and operation of the pedestrian phases for safe crossing of Route 28, Broadway, Pearl Street, and Medford Street. Past complaints have included "insufficient pedestrian phases to cross Route 28" and "lack of exclusive pedestrian phases."

The reconstructed intersections and new signal equipment have corrected those deficiencies. At Broadway for example, there are concurrent pedestrian phases with long enough "walk/flash don't walk" times to allow pedestrians to fully cross either Broadway or Route 28 without getting caught halfway. The Pearl Street intersection has an exclusive pedestrian phase. Both intersections' signals are pedestrian actuated.

### **Route 28 at Washington Street**

The majority of the crashes at this location are of the angle type, indicative of heavy left turns and merging/diverging activity at the Washington Street ramps.

One safety-related issue of concern for the City of Somerville at this location is the structural condition of the viaduct over Washington Street, which is part of the elevated Route 28 structure, built in 1925. A 2008 bridge condition assessment by the Department of Conservation and Recreation designated its overall condition "fair" with a rating of "5" which indicates that repair or reconstruction is not required immediately. Some members of the Advisory Committee believe this assessment underestimates the deterioration of the viaduct.

The thinking of some members of the Advisory Committee, the City, and many citizens is that when the viaduct deteriorates to the point that it needs reconstruction, it should be demolished and the roadway reconstructed at grade instead. This thinking is in line with the City's urban design vision for the corridor and the conversion of the midsection of the study area highway into a boulevard. Citizens and the City are concerned that the elevated structure deters access, obstructs visibility and economic development, and is an obstacle to neighborhood integration, and that the ramp termini are dangerous for pedestrians.

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<sup>1</sup>Ibid.



**FIGURE 9.1**  
**Proposed Foss Park**  
**Pedestrian Crossing**

If the option of removing the viaduct section is pursued, the planning process for the project would need to explore in detail many related issues of access, traffic, design, and land use. The main focus would be to identify additional access points to Union Square, East Cambridge, and the rest of Cambridge in the context of future development of the Inner Belt, Lower Brickbottom, and Union Square and also in the context of the extension of the Green Line to Union Square and Medford Hillside. With multiple access connections to these destinations via roadways, public transportation, and bicycle/pedestrian paths, Route 28 would cease to be the sole collector/distributor road for people wishing to reach these cultural and economic development neighborhoods in Cambridge and Somerville, and its traffic volumes would be lower.

#### **9.4 PLANNED PUBLIC TRANSPORTATION INFRASTRUCTURE**

The major public transit services for corridor residents are the Orange Line, the Green Line, and all MBTA buses to Lechmere, Sullivan Square, and Wellington Station. MBTA commuter rail lines run through the area, but there is no station near the Route 28 corridor.

Significant for the corridor's future economic development occurring in a transit-oriented fashion are three proposed public transit capital improvements, currently at different planning stages:

- Urban Ring
- New Orange Line station at Assembly Square
- Green Line extension to Medford Hillside/Union Square

The Urban Ring is a circumferential system of transit improvements to provide direct connections between many of the MBTA's existing radial transit lines. Residents in Boston, Chelsea, Everett, Medford, Somerville, Cambridge, and Brookline stand to benefit from this service.

The Urban Ring is proposed for implementation in three phases: Phase 1 improves bus service in the Urban Ring corridor; Phase 2 would consist of bus rapid transit service in the corridor; Phase 3 would add rail rapid transit in portions of the corridor. Elements of the Urban Ring would be integrated with the Green Line extension west of Lechmere.

The Green Line extension would connect Lechmere Station to Medford Hillside (with a spur to Union Square), partly via an existing rail freight line and partly beside the Lowell commuter rail line. The distance from Lechmere to Medford Hillside is 4.2 miles, and approximately six new stations in Somerville and Medford would be built. The project includes the relocated Lechmere Station on the northern side of the O'Brien Highway, across from its existing location.

The new Orange Line station project would add a station on the existing Orange Line at Assembly Square, between Sullivan Station in Charlestown and Wellington Station in Medford. The station would likely be used mostly for travel to and from the planned development at Assembly Square. Recent approval of the Assembly Square Master Plan will help determine the land uses of the development there, making ridership projections easier. The station is presently

listed in the Transportation Improvement Program for construction in 2010, and \$31,250,000 will be appropriated for that purpose.

These potential transit improvements are expected to have a catalytic effect towards sustainable development and enhanced urban design in the corridor, including reduced vehicle trips, improved air quality, improved accessibility, and a safer Route 28.

## **9.5 LOWER ROUTE 28 SEGMENT: LAND ACCESS AND VISIBILITY**

In contrast to Assembly Square, where development and urban design plans are already underway, the lower segment of the corridor abuts many evolving industrial areas with great development potential but largely unformed plans. The referenced area is located south of Washington Street, east of Route 28, and in between the MBTA's Lowell and Fitchburg commuter rail lines and associated rail yards.

The attractiveness of this area, which is in excess of 90 acres, stems from:

- Proximity to I-93 and Route 28
- Urban Ring project
- Proximity to the Orange and Green lines, and two commuter rail lines
- Proximity to financial and educational institutions in Boston, Cambridge, and Somerville
- "Gateway" potential to "cultural pockets" in Somerville and Cambridge (Union Square, Davis Square, Teele Square, Kendall Square, and Harvard Square)
- Proximity to recreational destinations at the Charles River Basin and the Mystic and Malden rivers

However, despite its potential and high interest from the City of Somerville, there are no definitive plans at present (except for the current phase of the North Point project, which is in the early stages of construction) to develop this area, because it is, essentially, "landlocked" between Route 28, Washington Street, active rail lines, and rail yards, with limited visibility and access from these facilities and no access points across them. Potential access/egress opportunities include connections to I-93, Rutherford Avenue bypass, Route 28, Union Square, East Cambridge, North Point, the Green Line extension, and bicycle and pedestrian paths. Addressing the accessibility challenges for this part of Route 28 is fundamental for the future development of the entire corridor, including the potential incorporation of urban design and neighborhood-integration elements into it, and for the improvement of the air quality and of the quality of life of people who live along it.

## **9.6 BICYCLE AND PEDESTRIAN PATHS, AND OPEN SPACE**

The ability to walk or bicycle throughout the metropolitan region is achieved through the sharing of facilities with autos. The street system is the primary component of the bicycle network, and the requirement that bicycles and cars successfully share the non-expressway road system is fundamental to bicycle use regardless of the expansion of the recreational trail system.



Much as the auto network has been augmented with limited-access expressways, the pedestrian and bicycle transportation systems are being augmented by expanding subsystems of multi-use, off-road trails (usually referred to as “bike” trails), pedestrian-only paths, and designated on-road bike routes.

Most of the existing trails in the Route 28 vicinity are in the waterfront area, and some are fragmentary. The proposed trails would provide some connection to the existing trails and make some of the open space more accessible. Also, the Community Path Phase 1 is programmed in the Transportation Improvement Program. However, continued work needs to be completed to ensure that bicycle safety and access are improved throughout the corridor and neighborhoods.

## **9.7 PUBLIC PARTICIPATION**

Public participation is essential to good planning and is required by federal, state, and local project-review laws. The underlying premise of public participation is that, because residents are stakeholders and may be impacted by public and private projects in their community, their concerns and comments need to be heard and addressed.

Route 28 corridor citizens are very active in the public participation process. Some of the most well-known public advocacy groups are the Mystic View Task Force (MVTF), the Somerville Transportation Equity Partners (STEP), and the East Cambridge Planning Team. The geographic focus areas of these groups are different, but they hold goals in common: to advocate transit-based development, promote good urban design, maintain and increase open space, and achieve equitable transportation in order to protect the environment and the community.

MVTF is best known for its advocacy efforts since 1998 to develop Assembly Square as a transit-oriented development: a mixed-use, high-density development around a new Orange Line station, with easy access to open space at the banks of the Mystic River. The group employed various participation tools to enforce existing zoning and environmental legislation, including lawsuits against Assembly Square developers and the City of Somerville. The 2006 approval of an Assembly Square Master Plan and the securing of federal funds (with developer matches) to construct the new Orange Line station have rewarded their efforts.

STEP is largely concerned with air quality and transportation equity in East Somerville. STEP claims that transportation is inequitable in East Somerville, where population—immigrant population in particular—is high, a large segment of the population does not own cars, several MBTA rail lines cross the area but do not have stations, and cancer and respiratory incidents are higher than the state average. The organization’s website contains useful articles to educate people on these issues, and STEP has also advocated for studies to measure air quality levels in East Somerville.

In Charlestown, an active public participation process led to the successful completion of the Rutherford Avenue Corridor Transportation Study, which developed various alternatives for land use and roadway alignment.

The East Cambridge Planning Team was very important in the process of developing the East Cambridge Planning Study (ECAPS). The study recommends a set of zoning actions that aim to fulfill a vision of the future of eastern Cambridge, which includes the areas of East Cambridge, Wellington-Harrington, Area IV, and MIT.

These and other groups have a significant role to play in the creation and implementation of an urban design/transportation vision for the Route 28 corridor. Participation needs to begin during the planning stages and at various levels, including the city level—Boston/Charlestown, Cambridge, and Somerville—and the subregional/tri-city level for coordination among the three communities. For example, the redesign of Rutherford Avenue and the bypass road in Charlestown, accessibility for Brickbottom and Inner Belt, and access across Route 28 to East Cambridge are all related issues, and they must be discussed and understood together by the three affected communities.

## **9.8 ENVISIONING A ROUTE 28 CORRIDOR PROCESS DESIGN: “THE BIG PICTURE”**

The corridor is very attractive for economic development and presents a unique opportunity to transform the existing postindustrial landscape into a visual and functional continuum of urban space with human scale. In addition to the diverse ethnic and economic background of the corridor’s and surrounding area’s population, the presence of the outstanding educational institutions in Boston, Cambridge, and Somerville, the excellent access/egress opportunities between Route 28 and I-93, and Somerville’s proximity to Boston’s economic basis are all strong supporting factors for such a transformation.

The present zoning in Somerville and East Cambridge is designed towards a vision that promotes the integration of land use with transportation and urban design, while respecting and integrating neighborhoods. Examples of City and State efforts in that direction include the planned unit development at Assembly Square, the studies of the Green Line extension and the Orange Line station at Assembly Square, the planned studies of the I-93/Route 28 interchange and the Urban Ring, the redesign/redevelopment of Union Square, and the plans for the Community Path and access to recreational areas along the Mystic, Malden, and Charles rivers.

Most of these initiatives are in their initial stages; much more remains to be done in terms of creative financing, legal commitments, growth management policies, design standards, and project phasing so that these and other initiatives reinforce each other, and an optimum set of development types and sizes, sustainable by the transportation infrastructure envisioned, is arrived at.

In the corridor-wide design context, the redevelopment of the largest part of the developable land in Somerville, Brickbottom, and Inner Belt is still an open topic. Major issues to be addressed there include remediation of environmental contamination, restoration of the natural hydrology of the sites, accessibility from/to and across I-93 and Route 28, connections to the extension of the Green Line, bicycle and pedestrian paths, and the preservation and integration of neighborhoods.

The renewal of the Route 28 corridor, like many such renewal processes, will likely be an ongoing and complex process with many actors, whose goals, strategies, financing potential, and political direction may change frequently. It is natural for this to create public uncertainty related to knowledge and values, intentions and strategies, and the decision-making process. To assist with this uncertainty, the City of Somerville's leadership in open communication, including knowledge-sharing, with the public is very important. This will help people understand how the various individual and localized changes, including development mitigation, fit into the big picture, so that they can participate in the renewal process most effectively.



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## 10 TOWARD A ROUTE 28 TRANSPORTATION PLAN: AN EMERGING VISION

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Many initiatives are presently underway, most of them in their early stages that will contribute to redesigning and modernizing the Route 28 corridor, to making it a more pleasant and lively place to live, work, and play. Issues related to the rejuvenation of the corridor, not unlike in any other corridor, are complex and multifaceted, involve many players, and will span considerable time into the future. It will take strong leadership from the City of Somerville, considerable financial support from public and private sources, expert knowledge, and public support to coordinate the various components of the process.

In discussions with the Advisory Committee, with the public, and at the urban design workshop, two elements stood out as being critical for the successful redevelopment of the Route 28 corridor:

- Land use, zoning, urban design, and open space
- Transportation infrastructure

The text that follows makes mostly general recommendations in these areas to guide current and future public investment and private development projects along the corridor. In other words, the discussion in this section is meant to provide an overall picture of how the Advisory Committee views this corridor and how the various areas of focus relate to one another spatially and chronologically.

Following the format from the urban design workshop, this discussion is presented in four categories: general policy and strategy recommendations, segment 1 recommendations, segment 2 recommendations, and segment 3 recommendations. Figure 10.1 depicts the three segments of the study corridor.

### 10.1 POLICY AND STRATEGY RECOMMENDATIONS

***Growth Management Policies*** To develop the Route 28 corridor in a responsible and sustainable way that protects neighborhoods and promotes economic development in evolving industrial areas, the City of Somerville must conduct careful planning, using strong growth-management policies. Policies are required to guide or enforce zoning and land use patterns, urban design standards and consistency, project review processes, protection and creation of open space, parking limits, transportation demand management, and traffic calming.

***Phasing of Public Projects*** In long-range plans for the Route 28 corridor or nearby areas, the City should include short- or mid-range improvements that address immediate transportation concerns and provide a starting point for other, larger, long-term improvement projects. Often, when transportation concerns or problems are identified and solutions to them are developed, the



**FIGURE 10.1**  
Segments of the  
Study Corridor

solutions are embedded in large and expensive projects that are long-term. Short- and mid-range improvements should be implemented sooner, in areas that affect citizens every day, for example as bicyclists and pedestrians. These smaller-scale improvements can last through and past implementation of the long-range plan or can be grandfathered and rebuilt as part of the long-range plan. An example of an issue to which this concept can be applied is pedestrian and bicyclist access under the I-93 interchange, which is nonexistent, or unfriendly at best. It is the desire and recommendation of the Route 28 Advisory Committee that improvement of pedestrian and bicycle access under I-93 be carried out sooner than future I-93 ramp/local termini improvements.

**Public Participation** East Somerville residents are stakeholders in the planning and implementation of public and private projects along the Route 28 corridor. Their participation is very important and must be encouraged and respected, along with the participation of all other interested stakeholders.

**Bicycle and Pedestrian Plan** The City of Somerville, along with the City of Boston, should develop a vision toward a plan for a bicycle and pedestrian network. One component would seek to connect the Minuteman Bikeway, which ends at the MBTA's Alewife Station, to locations at the Charles River Basin. Another component would provide access along the Mystic River, through the communities of Cambridge, Somerville, and Charlestown. Already planned is Phase 1 of the Community Path between Cedar Street and Central Street in Somerville, which is programmed in the 2007, 2008, and 2009 components of the Transportation Improvement Program.

**Neighborhood Integration Study** Study how Route 28 inhibits neighborhood integration across it and how to promote vehicle, pedestrian, and bicycle movement in the many corridors that connect various activity centers and neighborhoods on either side of the corridor, such as Assembly Square, Sullivan Square, Union Square, Porter Square, and Harvard Square. An example of such a study is the one that will lead to the reconstruction of Somerville Avenue between Union Square and Porter Square.

**Expand Scope of Rutherford Avenue Corridor Study** The existing Rutherford Avenue study needs to be supplemented with a regional one that would examine local and regional impacts collectively in Charlestown and East Somerville. The Rutherford Avenue corridor, along with I-93 and Route 28, is one of the three main gateways into Boston from the north. Changes in any one of the three corridors would inevitably affect the other two. Therefore, East Somerville should be included in the planning process for improvements along Rutherford Avenue. A Regional study needs to be conducted to examine the impacts both locally and regionally on Charlestown and Somerville.

## 10.2 SEGMENT 1 RECOMMENDATIONS

- It is important that an Orange Line station at Assembly Square continue to be the focus of any plans for future large-scale development at Assembly Square.

- Ensure that development proponents at Assembly Square study and mitigate not only local traffic generated by the site, but also the impacts on regional traffic and transportation systems.
- Develop a staged improvement plan for the I-93/Route 28 interchange. Identify mid-range (3- to 8-year), smaller, individual projects for the interchange that can be implemented and are compatible with larger improvements to the interchange. This could include a phased implementation of a fully redesigned interchange and could bring about improvements more quickly. For the past 12 years, different interested parties have studied the interchange. Each study has indicated that major rebuilding is necessary and will require 10 to 15 years for implementation.

### **10.3 SEGMENT 2 RECOMMENDATIONS**

- Ensure that Somerville’s urban design project for Broadway from Route 28 to Mystic Avenue is compatible with other Route 28 corridor projects. Also, consider whether the Broadway urban design features, such as improved pedestrian crossings and wider sidewalks, can be implemented along the Route 28 corridor or other adjacent corridors.
- Install a pedestrian crossing at the Route 28 and Blakeley Street intersection. This crossing would allow access to Foss Park and Stop and Shop. Currently, pedestrians have been crossing at this location by jumping the fence at Foss Park and crossing Route 28 without proper signal control, creating an unsafe crossing situation.

The proposed crossing would use the existing signal at Blakeley Street and its corresponding Route 28 median break. Access to Foss Park would be provided on the north side of the crossing. Additional pedestrian signal equipment would need to be installed, as well as curbs that provide accessibility.

- Although the Route 28 intersections at Medford Street, Pearl Street, and Broadway were recently reconstructed, some improvements could be implemented to make pedestrian travel easier and safer. Inclusion of “countdown” pedestrian signal heads would help alleviate pedestrians’ anxiety that they will be caught in the middle of Route 28.

A school crossing guard at Route 28 and Pearl Street is recommended during school hours to assist children and parents crossing Route 28 on their way to the Capuano Early Childhood Center.

### **10.4 SEGMENT 3 RECOMMENDATIONS**

- Continue planning and implementation of the Community Path, along with improved bicycle and pedestrian accessibility to Assembly Square and in the I-93/Route 28 interchange area.



- Study the regional impacts of the redevelopment of the Inner Belt area. Since the area could be redeveloped into a site similar to North Point, local and regional access issues will need to be examined. This would include the study of transit options, site access from Route 28, and possible direct access from I-93 should be considered.
- The Route 28 Advisory Committee supports extending the Green Line to Union Square and Medford Hillside and recommends that the study of the extension continue and include the planned future development of Brickbottom and the Inner Belt area.
- The Route 28 viaduct section over Washington Street will eventually need rehabilitation or reconstruction. It has been suggested that an alternative is to remove the viaduct section and return Route 28 to an at-grade intersection with Washington Street. A 2008 bridge condition assessment by the Department of Conservation and Recreation designated its overall condition “fair,” with a rating of “5,” which indicates that repair or reconstruction is not required immediately. Some members of the Advisory Committee believe this assessment underestimates the deterioration of the viaduct.

The thinking of some members of the Advisory Committee, the City of Somerville, and many citizens is that when the viaduct deteriorates to the point that it needs reconstruction, it should be demolished and the roadway reconstructed at grade instead. This thinking is in line with the City’s urban design vision for the corridor and the conversion of the midsection of the study area highway into a boulevard. Citizens and the City are concerned that the elevated structure deters access, obstructs visibility and economic development, and is an obstacle to neighborhood integration, and that the ramp termini are dangerous for pedestrians.

If the City pursues the option to remove the viaduct section, a detailed traffic, land use, and access study is recommended. This study would need to not only examine the local operations of the traffic at Route 28 and Washington Street, but also include Somerville Avenue and examine regional traffic impacts and future development of the Inner Belt, Lower Brickbottom, and Union Square, including improved access to I-93 and Route 28, and connections to the Green Line extension.

- The MBTA, North Point developer, and all other relevant parties need to work cooperatively to redesign Lechmere Station to ensure that pedestrian access for East Cambridge residents and other commuters located to the west of Route 28 is maintained. Currently, a majority of the pedestrians accessing Lechmere Station do not need to cross Route 28. Moving the station to the east side of Route 28 will require that these pedestrians cross Route 28.



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## **APPENDIX A      Response to Comments**

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The following memorandum was produced to respond to the comments received on the June 2007 draft of this report.

MEMORANDUM

**TO:** Route 28 Advisory Committee **September 24, 2008**

**FROM:** Mark S. Abbott, PE  
Efi Pagitsas

**RE:** Response to comments for “Toward a Route 28 Corridor Transportation Plan: An Emerging Vision” Draft Report, June 2007

On July 19, 2007 staff presented the draft report “Toward a Route 28 Corridor Transportation Plan: An Emerging Vision” dated June 2007 to the Transportation Planning and Programming Committee (TPPC) for review and comments. The City of Somerville also submitted comments via a letter from Mayor Joseph Curtatone on July 25, 2007. A copy of the City’s letter and notes from the TPPC meeting minutes are attached to this memorandum.

The purpose of this memo is for staff to respond to the comments of the TPPC and the City of Somerville and update the draft report accordingly. Responses to comments will be discussed at the last meeting of the Route 28 Corridor Study Task Force, which is scheduled for September 24, 2008 in the Planning Offices of the City of Somerville. The next step after the meeting would be to submit the final draft to the TPPC in one of its future meetings for review and approval. Responses to comments are presented in ascending page-number order for easy reference to their place in the draft report.

**RESPONSES TO COMMENTS**

- **“intersection improvements at Pearl Street and Broadway” (Page 2)**  
Sentence should have stated “improvements along Broadway”. Correction will be made in final draft report.
- **Where are the benefits of the Urban Ring spelled out specific to relieving Route 28? (Page 7)**  
The Urban Ring project is currently in Phase 2 of a DEIR/DEIS, which will determine impacts and benefits of the chosen improvements.
- **There is deep pink (60,000) from I-93 to Broadway and Broadway to Medford. East Somerville is an EJ community as well. The 2000 census data is old would you consider updating with new MAPC data for TAZ. (Page 11)**  
Figure 3.1 shows population density by block group, based on the 2000 Census. The same or latest information can be easily mapped for TAZs but not within the work program of the present study.

- **Table values need to be verified (Page 13, Table 3.1)**  
The contents of Table 3.1 were verified and updated.
- **Is the Somerville employment number correct? Hence, revisit Figure 3.2. (Page 13, Table 3.2)**
- The employment data is correct based upon information gathered from the Massachusetts Division of Employment and Training in 2001. Figure 3.2 shows employment densities, not total employment.
- **Figure 3.3 Land-Use (Page 16)**  
Figure was not updated; no new data for land-use is available at this time.
- **Figure 3.4 Zoning (Page 17)**  
Figure was updated with new data provided by the City of Somerville.
- **Is data from O/D survey out of date since the CA/T opened after the survey was taken? (Page 19)**  
No, the data is not outdated since the primary focus of the survey was to determine if Route 28 was being used as a diversion route for I-93 traffic. As the survey results indicate, out of the 3,645 vehicles recorded at the Museum of Science station, only 520 vehicles had in fact traveled the length of the corridor through both survey stations. This indicates that the primary use of Route 28 is to locations along Route 28 in Somerville and to East Cambridge that are not easily accessible from I-93.
- **Vehicle origins should not be shown. (Page 21, Table 4.2)**  
This table provides the origin information for the 520 vehicles which passed-by both survey locations. The breakdown by community was determined using Registry of Motor Vehicle data.
- **Figure 5.1 does not show Route 28 viaduct as MassHighway (red), it is shown as DCR (green). (Page 30)**  
The Route 28 viaducts are owned and maintained by the Department of Conservation and Recreation (DCR).
- **Figure 5.4 – shows relatively good LOS (LOS D and above for peak hours) at I-93 Interchange with Route 28 yet on Page 33 it mentions severe delays at this location – severe delays would result in poor LOS. (Page 35)**  
The severe delays mentioned on this page refer to the roadway speeds, mainly southbound, away from Mystic Avenue and at Leveret Circle, and northbound at the Broadway approach. Figures 5.5 and 5.6 show this data in a color-coded scheme to show levels of severity. The level of service “D” designation for the intersection of Route 28 and Mystic Avenue is consistent with the colors associated with speed levels at the approaches to the intersection. In addition, the intersection delay, which associated with the level of service at an intersection, is the overall delay based on all the approaches to the intersection, some of which have higher travel speeds and are less congested.

- **Updates to the TIP, RTP, and PMT in the vicinity of Route 28. (Page 44)**  
Tables 7.1 and 7.2 were updated to include all projects in the 2007-2010 TIP, and latest RTP and PMT.
- **Update DCR inspection findings in the report section “Route 28 at Washington Street” (Page 61)**  
The second and third paragraph of this section will be updated as follows: “One safety-related issue of concern for the City of Somerville at this location is the structural condition of the bridge over Washington Street, which is part of the elevated Route 28 structure, built in 1925. A 2008 bridge condition assessment by DCR designated its overall condition “fair” with a rating of “5”, which indicates that repair or reconstruction of this bridge is not required immediately. The thinking of the Advisory Committee, the City, and many citizens is that when the bridge deteriorates to the point that it needs reconstruction, it should be demolished and the roadway reconstructed at grade instead. This thinking is in line with the City’s urban design vision for the corridor and the conversion of the midsection of the study area highway into a boulevard. Citizens and the City are concerned that the elevated structure deters access, obstructs visibility and economic development, and is an obstacle to neighborhood integration, and that the ramp termini are dangerous for pedestrians.”
- **Remove “possible” from the statement “with a possible spur to Union Square”. (Page 65)**  
We verified with EOT that the spur to Union Square is part of the Green Line Extension to Medford Hillside project. The sentence has been corrected in the report.
- **Verify the TIP information concerning the Orange Line Station at Assembly Square. (Page 66)**  
Based on information provided in the current TIP for Fiscal Years 2007–2010, the project has a discretionary **authorization of \$6,259,219 (\$5,007,375 – Federal, \$1,251,844 – State) for fiscal year 2009.**
- **Clarify the statement “pressures to develop this area are not high”. (Page 66)**  
The statement was made to show that even though the potential of a major development/redevelopment of this area exists, currently there are no definitive plans **except for the current phase of the North Point project.** To date, Somerville has begun the planning process with a series of minor studies of the area, but, to our knowledge, there have been no initiatives for land-use master plans that would determine the development future of this area.
- **Update the text to reflect that development is occurring at North Point. (Page 66)**  
Text has been updated stating that the North Point development is currently in its **early stages of construction.**

- **Verify Phase 1 of the Somerville Community Path. (Page 73)**  
Page 73 in the report now states “Phase 1 of the Community Path between Cedar Street and Central Street”, not “between the Minuteman Path and Cedar Street”.
- **Change the reference to the Bicycle and Pedestrian Plan to indicate that the projects mentioned are two separate projects. (Page 73)**  
The change has been made to the text.
- **Change the recommendations to show that the Community Path project is in Segment 3 of the roadway rather than Segment 1. (Page 74)**  
The recommendation has been moved to Segment 3.
- **The second to last recommendation on Page 75 will be updated as follows:**  
“The Route 28 viaduct section over Washington Street will eventually need rehabilitation or reconstruction. It has been suggested that an alternative is to remove the viaduct section and return Route 28 to an at-grade intersection with Washington Street. Currently, a 2008 bridge condition assessment by DCR designated its overall condition “fair” with a rating of “5”, which indicates that repair or reconstruction of this bridge is not required immediately.

The thinking of the Advisory Committee, the City, and many citizens is that when the bridge deteriorates to the point that it needs reconstruction, it should be demolished and the roadway reconstructed at grade instead. This thinking is in line with the City’s urban design vision for the corridor and the conversion of the midsection of the study area highway into a boulevard. Citizens and the City are concerned that the elevated structure deters access, obstructs visibility and economic development, is an obstacle to neighborhood integration, and that the ramp termini are dangerous for pedestrians.

If the City of Somerville pursues the option to remove the viaduct section, a detailed traffic, land use, and access study is recommended. This study would need to not only examine the local operations of the traffic at Route 28 and Washington Street, but also include Somerville Avenue and examine regional traffic impacts and future development of the Inner Belt, Lower Brickbottom, and Union Square, including improved access to I-93 and Route 28, and connections to the Green Line extension.”

- **Somerville developments (Appendix B, Table B1)**  
Table B1 was updated to include the new development projects in Somerville that were provided by the City of Somerville.
- **What is the impetus for this study, UPWP?**  
From the Scope of Work: “A request for this study from the City of Somerville came to the attention of the Transportation Planning and Programming Committee during the preparation of the Boston MPO Fiscal Year 2002 Unified Planning Work Program (UPWP). In that letter, Somerville officials identified a number of reasons for the MPO to fund a study, including to:

- Improve vehicular, pedestrian, and bicycle safety
- Assess projected travel demand resulting from future growth
- Identify transportation issues and make improvement recommendations
- Ensure that economic development in the corridor has positive impacts on quality of life
- Evaluate potential bicycle and pedestrian connections,
- Improve accessibility across the corridor”

- **What are the goals and objectives?**

The primary objective of the study was to create a Route 28 Corridor Transportation Management Plan. The plan was to coordinate current and planned roadway improvement projects to accommodate expected development and traffic growth, and also to evaluate and recommend improvements for pedestrian and bicycle facilities and for public transportation.

However, after the study began, it became apparent that it was not possible to develop a true corridor transportation management plan as is normally done. This is because much of the background information related to land development or transportation projects in the area that would impact travel along Route 28 was, and still is, largely unavailable. Specifically, along the southern/eastern segments of the Route 28 corridor that was studied, large areas are being discussed for redevelopment. Assembly Square plans changed twice during the study and the proposed redevelopment of approximately 145 acres of land in Lower Brickbottom and Innerbelt will dramatically affect the transportation landscape. In addition, the impacts of the Green Line and the Urban Ring are still being determined through detailed studies with budgets that far exceed the resources allocated for this study. No definitive recommendations or plans could or should be developed without further study of these development projects, particularly in the Brickbottom area, and traffic impact results from the ongoing transportation studies for the Assembly Square Orange Line station, the Green Line extension, and the Urban Ring.

- **What are the next steps?**

The next steps are:

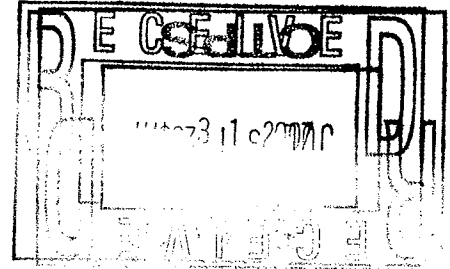
- To ensure that the proposed interchange study incorporates the impacts from the redevelopment of the Assembly Square and Brickbottom/Innerbelt projects, and also takes into account the impacts from the Assembly Square Orange Line station, Green Line Extension, and the Urban Ring.
- Also, once the above transportation project impacts are known, for the City of Somerville to oversee the development of a detailed Land-Use/Transportation Master Plan that would include impacts from the redevelopment of the Brickbottom/Innerbelt land area, considerations for regional access to the site, and associated impacts/redesign of Route 28 in Somerville.





## CITY OF SOMERVILLE, MASSACHUSETTS

JOSEPH A. CURTATONE  
MAYOR



July 25, 2007

Efi Pagitsas, Project Principal  
Boston Region MPO, CTPS  
10 Park Plaza, Suite 2150  
Boston, MA 02116-3968

Re: Comments on Draft report entitled "*Toward a Route 28 Corridor Transportation Plan: An Emerging Vision*", Boston Region Metropolitan Planning Organization, June 28, 2007

Dear Ms. Pagitsas:

Thank you for allowing us to review the Draft report entitled, "*Toward a Route 28 Corridor Transportation Plan: An Emerging Vision*". We recognize a great deal of time and effort went into the preparation of this document, and there are multiple issues to be addressed along this roadway. Route 28 is a high priority roadway for the City of Somerville given its location near Union Square, Inner Belt, Brickbottom, and other areas with significant economic development potential in the future. The purpose of this letter is to provide commentary from the City of Somerville on the draft document.

Overall, we would like to acknowledge the thorough documentation of issues surrounding the Route 28, McGrath Highway corridor. However, it does not appear from the document that a broad vision or plan regarding the future of the corridor has been generated. It is important that the City, Executive Office of Transportation (EOT), and the Boston Region Metropolitan Planning Organization, together with other affected stakeholders, develop a unified vision of this corridor. It will take all combined efforts to realize and implement a vision for this corridor. This is especially true given the complexity of issues that exist in this location and the limited resources presently available for transportation improvements. We hope to work with your office to advance the efforts of this study in order to ensure that a comprehensive vision can be developed.

Our comments are as follows:

- Timeliness of data (overall) – it appears the majority of the traffic is dated. Collection efforts documented in the report are from 2002 and 2003, prior to the completion and opening of the Central Artery. It is likely the traffic demand on Route 28 has changed since then.



- Recommendations (overall) – the document does not make recommendations regarding what type of roadway Route 28 should be. As acknowledged in the report, it is currently classified as “other freeway”. Determining the level of roadway is elemental to setting a framework for the specific improvements recommended in subsequent analyses.
- Segment 1 (Mystic River to Mystic Avenue) Recommendations (page 74) – the funding that is presently available through the TIP is for a study of the I-93 / Mystic Avenue ramps which are adjacent to the I-93 / Route 28 interchange referenced in the report. The City is in the process of preparing the scope of work in coordination with EOT for I-93/Mystic Avenue only. The adjacent and larger interchange of I-93/Route 28 remains to be studied and improved. As noted in the report, this interchange is one of the State’s highest accident rate locations and is in need of safety and capacity improvements. It is our recommendation the I-93/Mystic Avenue study be the first phase in analyzing and designing improvements for the entire interchange, which includes Route 28. We are in agreement a major investment of funds will be required to improve this interchange. Hence, it is of tantamount importance that all agencies work together to pursue all avenues of resources.
- Segment 2 (Mystic Avenue to Medford Street) Recommendations (page 74) – we agree that a pedestrian crossing is needed at Blakeley Street to allow access to Foss Park and Super Stop and Shop, but given that this is the most residential stretch of the study area, additional discussions need to be held regarding how to knit the East Somerville neighborhood back into the fabric of the city. Right now Route 28 is a major dividing factor through this primarily residential area.
- Segment 3 (Medford Street to Museum Way) Recommendations (page 74-75) – we are open to discussion regarding whether to remove or rehabilitate the Washington Street viaduct and acknowledge there are multiple opinions regarding the merits of a viaduct versus an at-grade roadway. We are moving forward with land use planning throughout this area and would like to work expeditiously with the EOT to finalize a plan for this area. Regarding an at-grade roadway, we do want to note that the recommended 5 lanes in each direction at this location seems excessive (page 75).
- Significant maintenance issues exist (page 61) - Despite the fact that the report gives the viaduct a “satisfactory” rating, we believe serious maintenance issues exist and some immediate attention is needed. Not only does the Washington Street viaduct need attention, but also pieces of metal and concrete can be found on the sidewalks below, along the Perkins Street underpass, which is part of Segment 2 for this report. Spalling concrete and other materials cause a safety hazard to vehicles, pedestrians, and bicycles traveling underneath the viaduct. We understand some work is being completed presently; we encourage MassHighway on behalf of DCR to reach out to the City to discuss the repairs occurring and how they will satisfactorily ensure safety to the traveling public.



- (Page 2, Paragraph 6) – this page references “intersection improvements at Pearl Street and Broadway”. Please clarify what improvements this references.
- (Page 3, Route 28 Advisory Committee) – Please correct the spelling of Lisa E. Lepore, P.E.
- (Page 4, Paragraph 1) - Remove second comma after “news media”.
- (Page 4, Paragraph 2) – No reference is made to concerns about noise.
- (Page 7, Paragraph 2) – The stakeholders reference the potential, benefits of the Urban Ring in this section, the study does not analyze how it could relieve vehicle traffic on Route 28 which it should. What about consideration of the impacts of a transit way?
- (Page 7, Paragraph 3) - The project in the TIP is only I-93 / Mystic Avenue. I-93 and Route 28 is neither on the TIP nor RTP but should be part of the Journey 2030 planning efforts of the MPO.
- (Page 11, Paragraph 5) – There is also deep pink (“over 60,000”) from I-93 to Broadway and Broadway to Medford. It is noted East Somerville is an EJ community as well.
- (Page 13, Table 3.2) – this employment data is from 2001. It should be updated.
- (Page 16, Figure 3.3) - Land Use in Assembly Square is mixed use residential, commercial, office and open space, not just industrial.
- (Page 30, Figure 5.1) - Route 28 viaduct should be shown as MassHighway (red). Instead, it is shown as DCR (green).
- (Page 35, Figure 5.4) – This figure shows relatively good LOS (LOS D and above for peak hours) at I-93 Interchange with Route 28, yet on page 33, the report mentions severe delays at this location. Severe delays would result in poor LOS.
- (Page 44, Table 7.1) – Delete reference to Route 28 in first row under Description.
- (Appendix, Table B.2) - IKEA and Assembly Square have the same mitigation; they should be merged together. There is not a commitment to mitigate Lombardi Street / Mount Vernon / Broadway at this time, although we are still in discussions with the developer. Delete reference to “600 ft” in Foley Street bullet. In the bullet referencing the MBTA Orange Line, the developer’s commitment should be noted as \$15 million.

The City of Somerville encourages an open dialogue with all stakeholders to advance a work plan utilizing the evidentiary material presented in the report and that it be updated as required. A realistic work plan and phased improvement program for the area should be developed and planned for implementation in the near future.

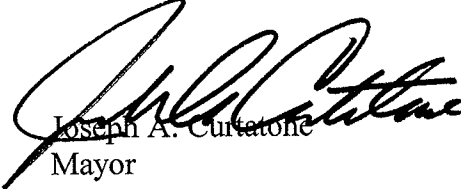


E. Pagitsas  
July 25, 2007  
Page 4

We would like to meet with you or a representative of your office within the next few weeks to discuss how to proceed with the next steps regarding completing the vision for Route 28. Please contact Monica Lamboy, Executive Director of the Office of Strategic Planning and Community Development at 617-625-6600 x 2510 or [mlamboy@somervillema.gov](mailto:mlamboy@somervillema.gov) to set up such a meeting.

I thank you in advance for your consideration of our comments.

Sincerely,



Joseph A. Curtatone  
Mayor



**Studies – Karl Quackenbush and Efi Pagitsas, MPO Staff**

**Toward a Route 28 Corridor Transportation Plan: An Emerging Vision**

Central Transportation Planning Staff (CTPS) conducted the Route 28 study at the request of the City of Somerville. The City was interested in having the study as a planning tool at a time when infrastructure improvements and developments were being planned in the corridor. The study focused on the heavily traveled section of Route 28 that flows through Somerville and East Cambridge. Most of the roadway is controlled by DCR.

The primary source of public input on the study came from a task force, which met eleven times, and a public meeting. Members of the public expressed concern that when incidents occur on I-93, Route 28 functions as a “release valve” and I-93 traffic flows onto Route 28. CTPS conducted a license plate survey that showed that on a typical day (when no incidents were occurring on Route 93) only a small portion of Route 28 traffic was that which could have been on I-93. This finding in no way contradicts the observation that, on bad traffic days, Route 28 does function as a release valve for I-93.

During the course of the study, CTPS also conducted an urban design workshop, and an analysis of the potential impacts of the then-proposed Assembly Square redevelopment plans at the request of the Office for Commonwealth Development (OCD).

Most of the recommendations that came out of the study were general and strategic in nature given that development projects in the corridor were not far enough advanced for staff to provide specific recommendations. There were, however, a couple of specific recommendations; the study recommended that a crosswalk should be provided across Route 28 near Foss Park and the viaduct section over Washington Street should not be removed without first conducting traffic, land use, and access studies.

During a discussion period, members recommended several edits to the study:

- Correct the figures on page 13
- Remove Table 4.2 or summarize the information contained in it
- Update the text on page 65 regarding the Green Line spur to Union Square
- Update the text on page 66 to reflect that development is occurring at North Point
- Change the reference to the Bicycle and Pedestrian Plan on page 73 to indicate that the projects mentioned are two separate projects
- Change the recommendations on page 74 to show that the Community Path project is in Segment 3 of the roadway rather than Segment 1
- Add an appendix that includes the analysis used to develop the recommendation regarding the viaduct over Washington Street and returning that section of Route 28 to an at-grade roadway

Concern was expressed that the study is outdated since most of the work was done before new transportation facilities became operational. The question was raised about whether different conclusions might have been reached if such changes to the transportation system were factored into the study.

Thomas Bent, City of Somerville, thanked the MPO and CTPS for the study and stated that improvements to the Route 28 corridor are a priority for the City of Somerville. The city is preparing written comments that will be submitted to the MPO. T. Bent summarized the comments focusing on each segment of the roadway that was studied:

- Segment 1: The city has funds for an I-93/Mystic Avenue study and is preparing a scope of work for the study. Major investment is needed in the area.
- Segment 2: The city agrees that a pedestrian crossing is needed near Stop & Shop and Foss Park. Since this segment of the roadway is the most residential part of the corridor, more discussion is needed to develop ways to reconnect East Somerville to the rest of the city.
- Segment 3: Mayor Curtatone is open to discussion about removing or rehabilitating the viaduct over Washington Street. However, the city believes that CTPS's assessment, that an at-grade roadway replacing the viaduct would need to be five lanes wide, is excessive. The viaduct needs significant maintenance; pieces of concrete have been falling from it. The city is currently conducting land use planning in that section of the city.

M. Pratt emphasized that developers should be urged to supply mitigation funds for transportation projects. (The City of Somerville has received mitigation funds for the redevelopment of Assembly Square.)

Michael Chong, FHWA, asked whether costs and prioritization had been considered for the proposed mitigation measures listed in Table B-2. K. Quackenbush stated that the information in the table is derived from developer's reports submitted as part of the Massachusetts Environmental Policy Act (MEPA) review process, and that, therefore, it did not represent anyone's priorities

It was noted that the study cost \$200,000 and is over-budget. It was paid for with MassHighway State Planning and Research (SPR) funds. D. Mohler directed CTPS to not spend any more MassHighway SPR funds on the study without MassHighway approval.

Members discussed whether the study should be released as an MPO study or as an EOT or MassHighway study. The MPO is the current client for the study, but the client can be changed. The draft study is being distributed to a limited number of people (City of Somerville planners, for example). Members expressed interest in seeing revisions to the study before a final copy is released, however D. Mohler noted that the draft is a public document and that he is releasing it to certain entities that have expressed interest.

Staff was advised to coordinate with the City of Somerville on recommendations that can be implemented. D. Mohler noted that if high-cost recommendations requiring federal funding are developed out of this process, the MPO will need to discuss the proposed recommendations and consider whether they can be funded. G. Feltman stated that the MPO should not change recommendations based on the MPO's financial bounds. B. Lucas stated that the MPO should develop a list of projects (with full cost estimates) that

would not currently be financially feasible; it is important that the MPO has this information available to convey to the Transportation Finance Commission as it works to address the state's transportation funding crisis. Members agreed that staff should make appropriate recommendations regardless of funding constraints.

G. Feltman noted that he would like information on the implementation status of the recommendations from MPO studies. K. Quackenbush said that staff is preparing a report to the MPO on this topic.

W. Zamore stressed the importance of addressing Route 28 as it has some of the largest traffic volumes in the state (25,000 vehicles per day) and significant amounts of diesel-fueled vehicle traffic. He commented that Somerville residents appreciate the work that CTPS has done focusing on the Green and Orange Lines, but that this focus has meant that the Route 28 study is now dated. He noted that the land use map and costs in the study are out of date, and that, since the study was done, more vehicles have been added to the roads as a result of developments in the area. Congestion on Route 28 is now at level F, worse than represented in this study, he added. He asked that staff emphasize the need for improved transit for Somerville in the revised study. He also noted that the MEPA review for the Assembly Square IKEA development has been waived and that massive traffic back-ups can be expected on I-93 when the store opens if an MBTA subway stop is not incorporated into the development.

**Route 2/Route 16 (Alewife Brook Parkway) Eastbound: Traffic Patterns and Alewife Station Parking Garage Survey**

The results of the Route 2/Route 16 (Alewife Brook Parkway) Eastbound: Traffic Patterns and Alewife Station Parking Garage Survey were distributed. This study is raised for discussion only at this time; action would not be proposed until the August 16 meeting, at the earliest.

Work on this study began in February 2006. At the time, the City of Cambridge was concerned about cut-through traffic from Route 2 going onto local streets, particularly morning in-bound traffic. The objectives of the study were to identify AM peak period origin and destination travel patterns at key locations on the roadways near Alewife Station, and to identify the town of origin of vehicles that park at the station. The study produced data that could be used for further planning work in the Alewife area.

CTPS conducted an origin/destination study of vehicles. Data retrieved from a license plate survey was matched with Registry of Motor Vehicle (RMV) files to determine where vehicles traveling through the area were garaged. The survey data was also matched with model data to approximate where those vehicles were bound. The study revealed that most Boston-bound vehicles traveled on the Alewife Brook Parkway rather than along local roads. Three markets of travelers were identified: cross-town, Cambridge-bound, and Boston-bound travelers. Recognition of these markets will aid in planning for transit strategies.





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## **APPENDIX B      Existing Data**

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### **B.1 TRAFFIC VOLUME DATA**

Traffic volume counts have been collected at many locations along the Route 28 Corridor during the past few years. The counts were collected by various consultants for numerous planning and development studies. Some of these studies and reports were the IKEA EIR, Telecom City EIR, North Point EIR, etc. Traffic counts from the studies were compiled and balanced to provide a 2002 base year for both the AM and PM peak hours. The peak hour volumes are shown in Figures B.1 and B.2.

Along with the peak hour traffic volumes, average weekday daily traffic (AWDT) volumes were summarized for major roadways in the region. The sources for the AWDT volumes were the above mentioned studies. The volumes presented in Figure B.3 are two-way volumes, except for the Tobin Bridge and Sumner/Callahan Tunnels.

Traffic volumes for 2030 are shown in Figures B.4 and B.5. The infrastructure represented in the 2030 regional traffic model is essentially the same in the study area as it is in the 2000/2001 base case. Regionally significant projects recommended in the 2007 Regional Transportation Plan and represented in the 2030 base case regional traffic model include:

- Blue Line-Red Line Connector
- Rutherford Avenue
- Green Line to Medford Hillside
- Urban Ring Phase 1 and 2
- Telecom City Boulevard
- Assembly Square Orange Line Station
- I-93/Mystic Avenue Interchange

### **B.2 VEHICLE CRASH DATA**

Accident statistics for the Route 28 Corridor have been compiled from the Massachusetts Registry of Motor Vehicles crash database. Listed in Table B.1 were the top accident locations for the data that covered a five-year period from 1995 to 1999. Table B.2 summarizes the crash data by year, collision type, severity, day of week, and pavement conditions for Somerville and Cambridge. The nine intersections in Somerville and Cambridge which had 25 or more crashes over the five-year period are summarized. In both cities, there were 1,667 crashes that occurred along Route 28 from the Mystic River through Land Boulevard in Cambridge during the five-year period, averaging approximately 330 crashes per year. The following five locations are on MassHighway's Top 1000 Crash List:

**Table B.1 Top 1000 Crash Locations in Study Area (1995-1999)**

<u>Location</u>	<u>Rank</u>	<u>City</u>
Route 28/Mystic Avenue/I-93	4	Somerville
Route 28/Washington Street	30	Somerville
Route 28/Broadway	107	Somerville
Route 28/Pearl Street	212	Somerville
Route 28/Land Boulevard	196	Cambridge

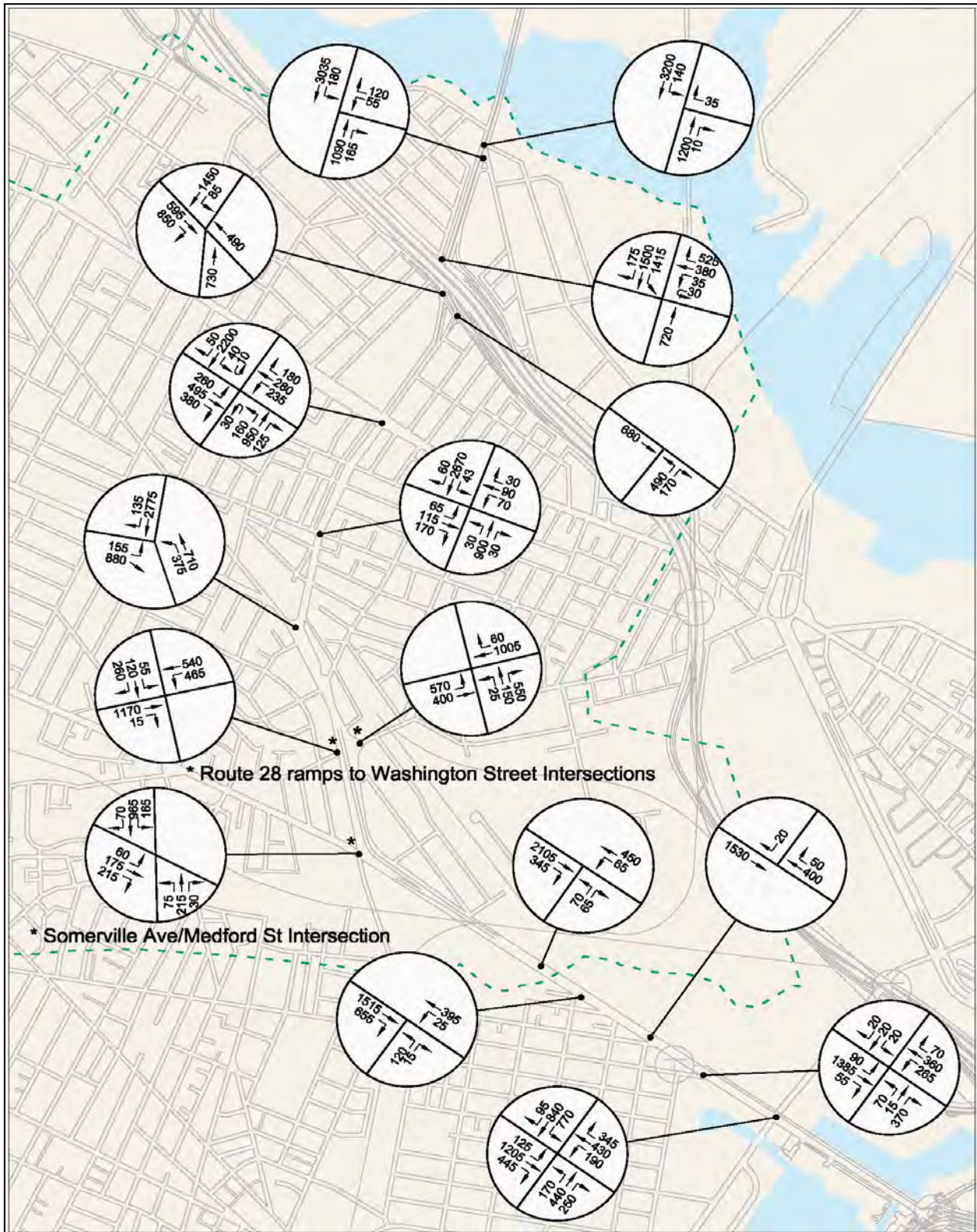
Figure B.6 shows locations where there were 25 or more crashes; nine of these locations are located along Route 28.

The map shown in Figure B.7 provides the locations where bicycle and pedestrian crashes occurred along the Route 28 corridor. As seen in the map, many of the crashes are occurring in the vicinity of busy intersections. Many of the crashes are located at the Route 28/Mystic Avenue/I-93 Interchange area due to the lack of pedestrian and bicycle accommodations across Mystic Avenue under I-93.

A review of the most recent crash data available (2002-2005) indicates that only three locations are highly ranked crash locations and are shown in Table B.3.

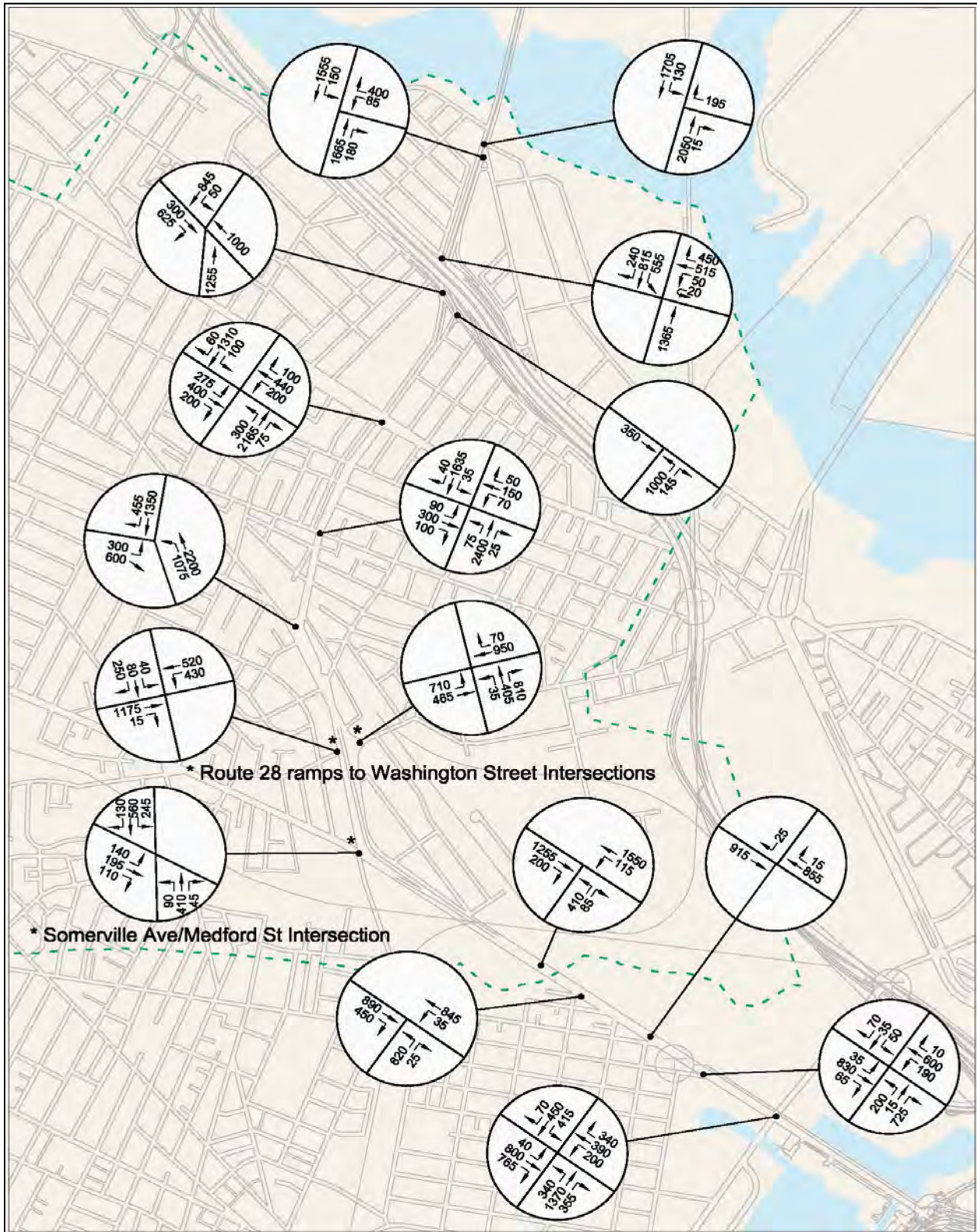
**Table B.3 Crash Locations in Study Area (2002-2005)**

<u>Location</u>	<u>Rank</u>	<u>Total Crashes</u>	<u>City</u>
Route 28/Mystic Avenue/I-93	1	373	Somerville
Route 28/Washington Street	37	156	Somerville
Route 28/Broadway	131	73	Somerville



**FIGURE B.1**  
**2002 AM**  
**Peak Hour Volumes**

*Toward a Route 28 Corridor  
 Transportation Plan:  
 An Emerging Vision*



**FIGURE B.2**  
**2002 PM**  
**Peak Hour Volumes**

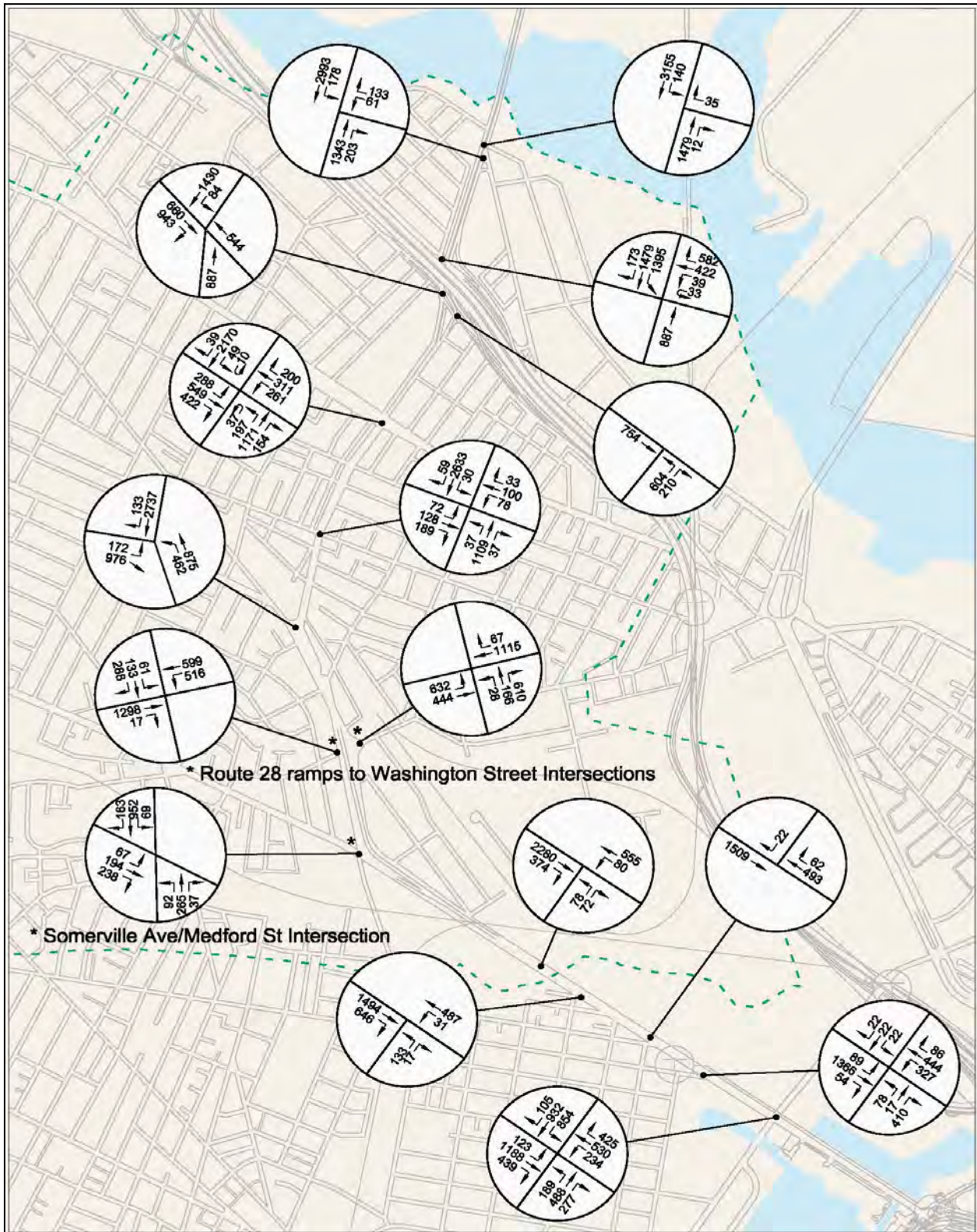


Source: Traffic impact studies: IKEA, Telecom City, North Point, Internet Center, and others

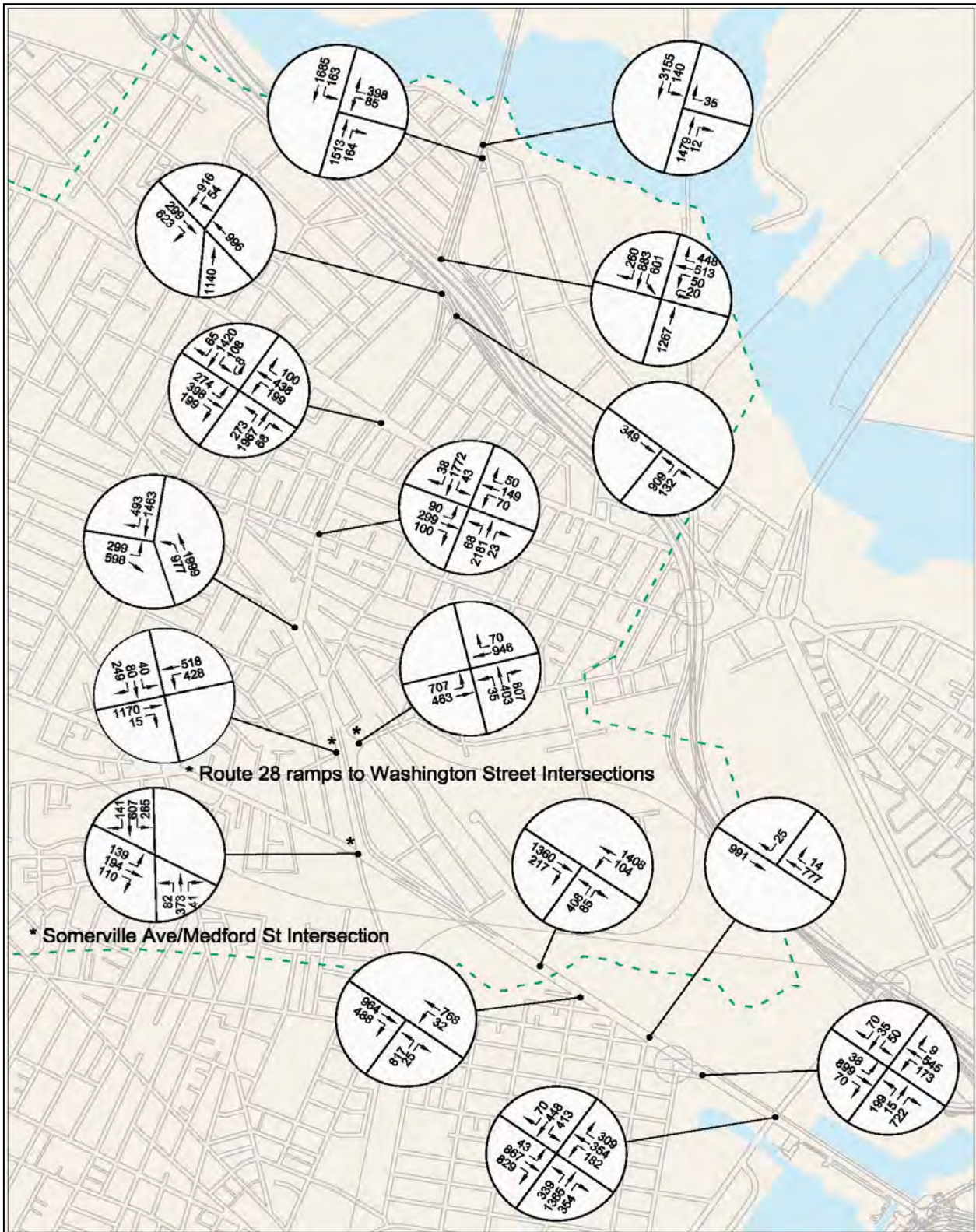
**CTPS**

**FIGURE B.3**  
Average Weekday Daily Traffic

*Toward a Route 28 Corridor  
Transportation Plan:  
An Emerging Vision*



**FIGURE B.4**  
**2030 AM Peak Hour Volumes**  
**Regional Traffic Model**



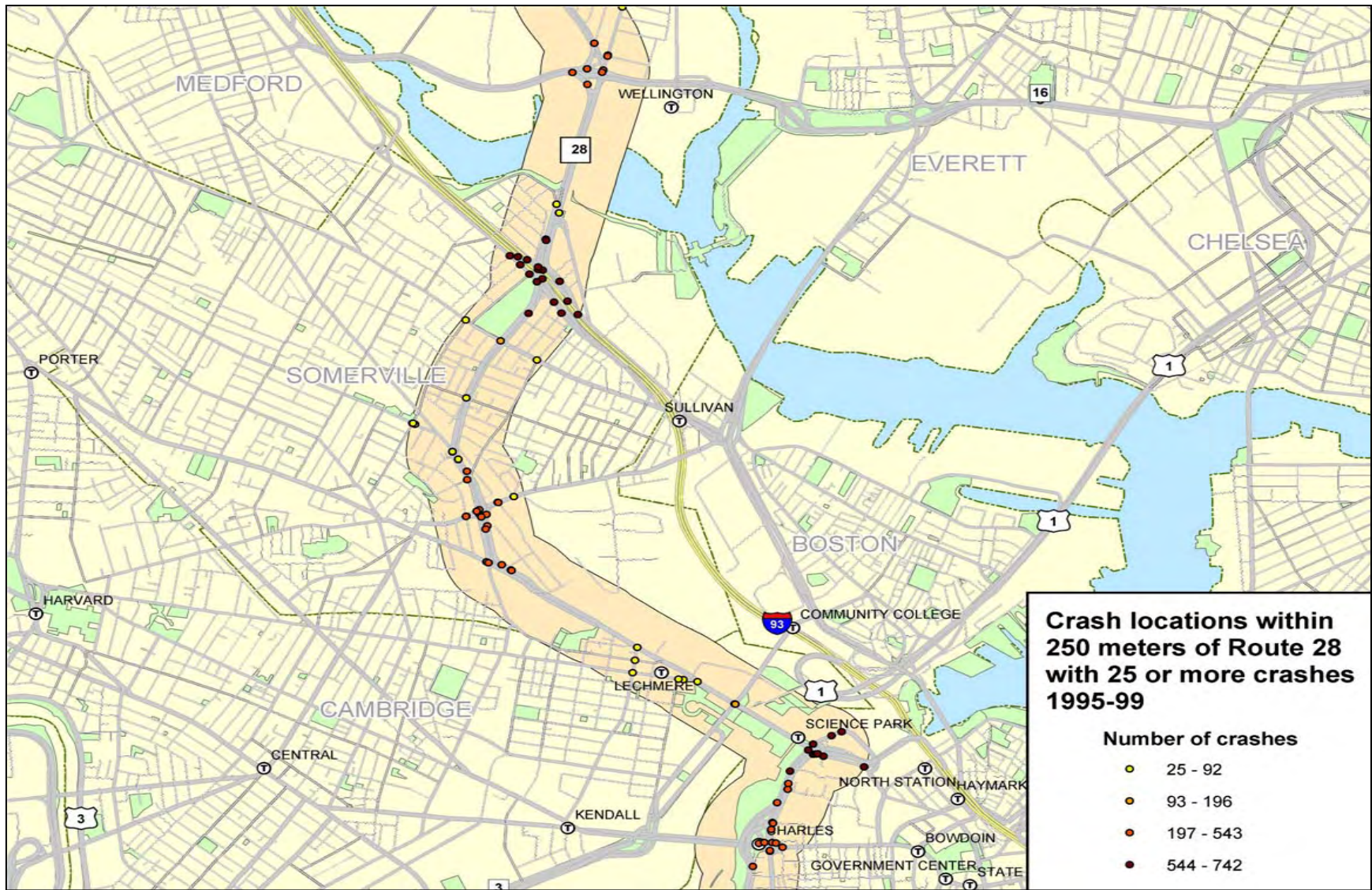
**FIGURE B.5**  
**2030 PM Peak Hour Volumes**  
**Regional Traffic Model**

*Toward a Route 28 Corridor*  
*Transportation Plan:*  
*An Emerging Vision*

**Table B.2 Route 28 Crash Summary (1995-1999)**

	Route 28 Intersection								
	Somerville						Cambridge		
<u>Location:</u>	Mystic Avenue	Washington Street	Broadway	Pearl Street	Highland Avenue	Medford Street	Land Boulevard	Third Street	Cambridge Street
<b>Year</b>									
1995	125	67	49	15	14	5	11	9	8
1996	137	68	41	15	11	6	12	14	5
1997	118	86	21	20	10	8	18	10	6
1998	140	67	44	19	14	7	29	6	4
1999	157	82	41	15	1	5	31	13	6
<b>Total</b>	<b>677</b>	<b>370</b>	<b>196</b>	<b>84</b>	<b>50</b>	<b>31</b>	<b>101</b>	<b>52</b>	<b>29</b>
<b>Collision Type</b>									
Angle	307	194	59	28	17	10	38	20	12
Head-on	7	8	4			1	2	1	
Rear-end	207	88	94	40	23	12	41	22	12
Unknown	156	80	39	16	10	8	20	9	5
<b>Total</b>	<b>677</b>	<b>370</b>	<b>196</b>	<b>84</b>	<b>50</b>	<b>31</b>	<b>101</b>	<b>52</b>	<b>29</b>
<b>Severity</b>									
Property Damage	370	223	108	44	35	23	62	25	18
Personal Injury	288	130	83	39	13	8	32	24	8
Fatality	2								
Other	17	17	5	1	2		7	3	3
<b>Total</b>	<b>677</b>	<b>370</b>	<b>196</b>	<b>84</b>	<b>50</b>	<b>31</b>	<b>101</b>	<b>52</b>	<b>29</b>
<b>Day of Week</b>									
Monday-Friday	497	75	152	59	41	27	76	41	22
Saturday-Sunday	180	295	44	25	9	4	25	11	7
<b>Total</b>	<b>677</b>	<b>370</b>	<b>196</b>	<b>84</b>	<b>50</b>	<b>31</b>	<b>101</b>	<b>52</b>	<b>29</b>
<b>Pavement Conditions</b>									
Dry	451	276	134	56	25	19	75	43	20
Wet	184	70	47	23	21	11	21	7	6
Ice/Snow	24	10	8	4	1		2	2	1
Unknown	18	14	7	1	3	1	3		2
<b>Total</b>	<b>677</b>	<b>370</b>	<b>196</b>	<b>84</b>	<b>50</b>	<b>31</b>	<b>101</b>	<b>52</b>	<b>29</b>



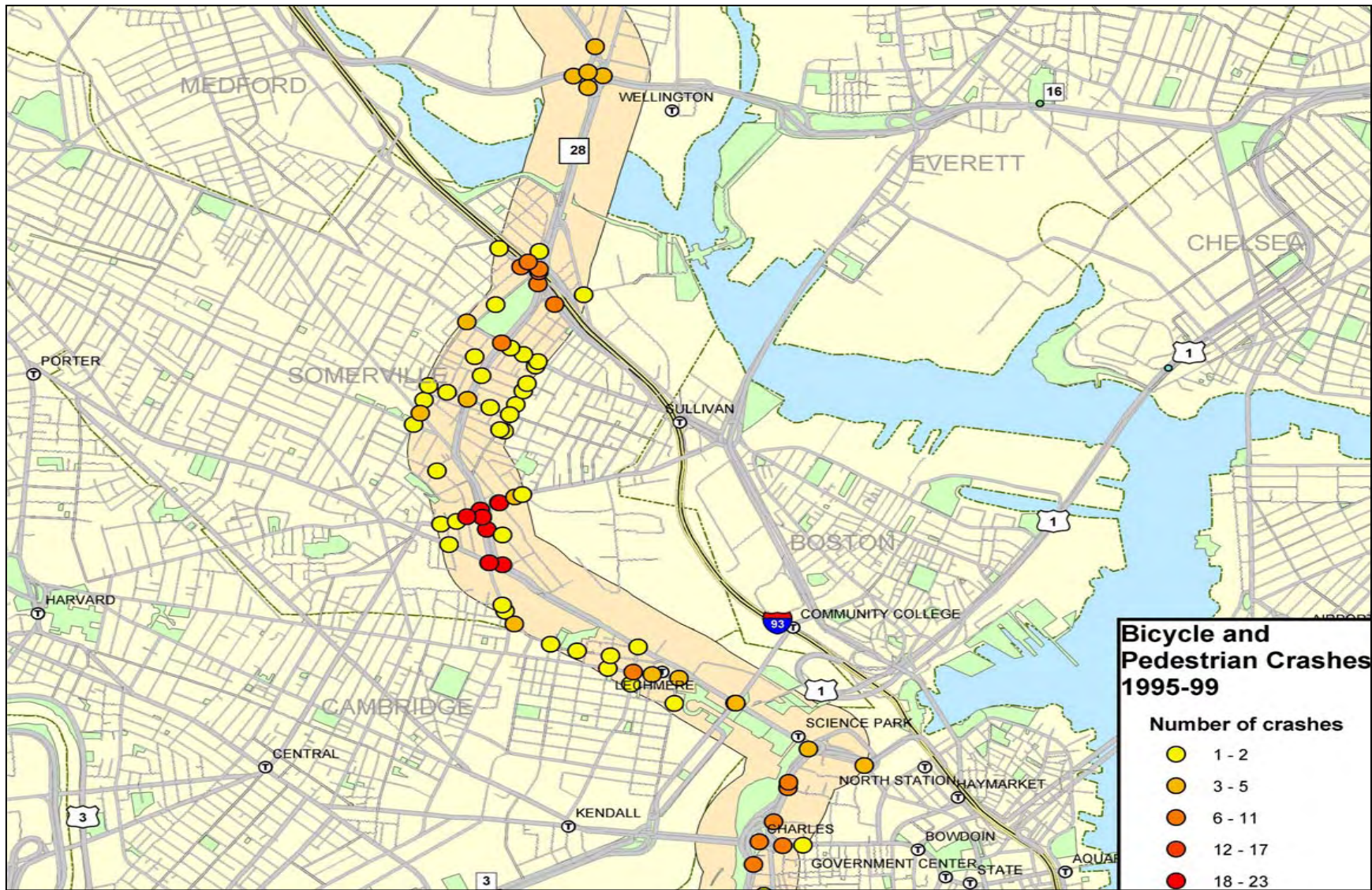


Source: Executive Office of Transportation and Public Works

**CTPS**

**FIGURE B.6**  
**Route 28 Vehicle Crash Locations**

*Toward a Route 28 Corridor  
Transportation Plan:  
An Emerging Vision*



Source: Executive Office of Transportation and Public Works

**CTPS**

**FIGURE B.7**  
**Route 28 Bicycle and Pedestrian**  
**Crash Locations**

*Toward a Route 28 Corridor  
 Transportation Plan:  
 An Emerging Vision*

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## APPENDIX C      Developments and Mitigation

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### C.1 DEVELOPMENT PROJECTS

Along the Route 28 Corridor and the vicinity in Somerville and Cambridge there are a number of development projects that are either proposed or in-progress. Seven major development projects were reviewed:

Proposed:

- TeleCom City
- Mystic Center
- Planned Unit Development at Assembly Square
- IKEA at Assembly Square
- Assembly Square Commons (Yard 21)
- North Point
- Charles E. Smith Residential

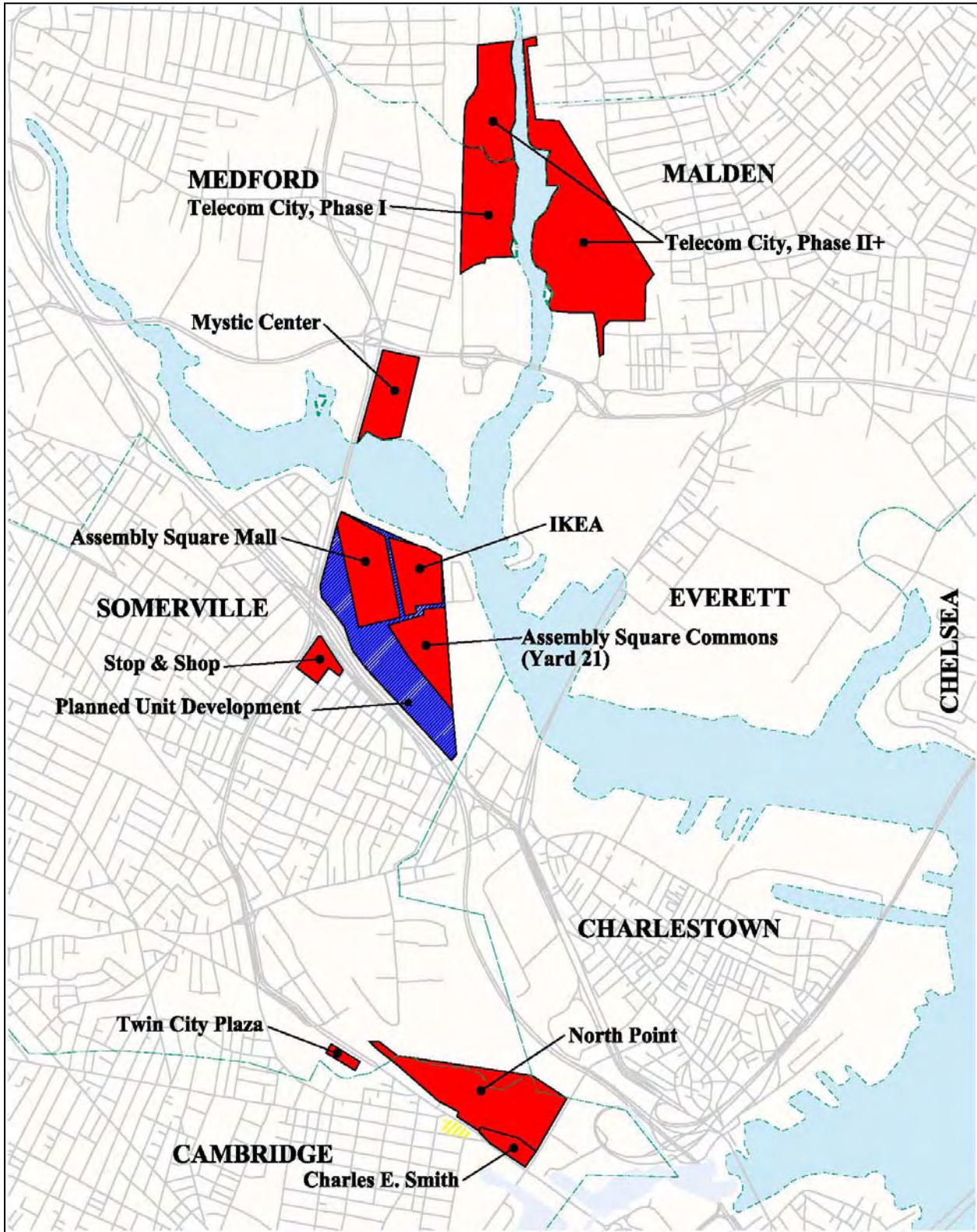
The developments are of various types. The emphasis is on office/research and development (R&D) and housing. Other uses proposed are retail and hotel. Information on these developments is presented here in tables as well as figures.

Figure C.1 shows the locations and approximate boundaries of these developments. Further detail for the Planned Unit Development for Assembly Square is shown in Figure C.2. Table C.1, Development Size and Trip Generation, provides a summary of the size, types of uses, and trip generation of the major proposed developments that have recent filings with the Massachusetts Environmental Policy Act (MEPA) office. Table C.2, Proposed Mitigation Measures, summarizes traffic mitigation measures offered by the proposed developments.

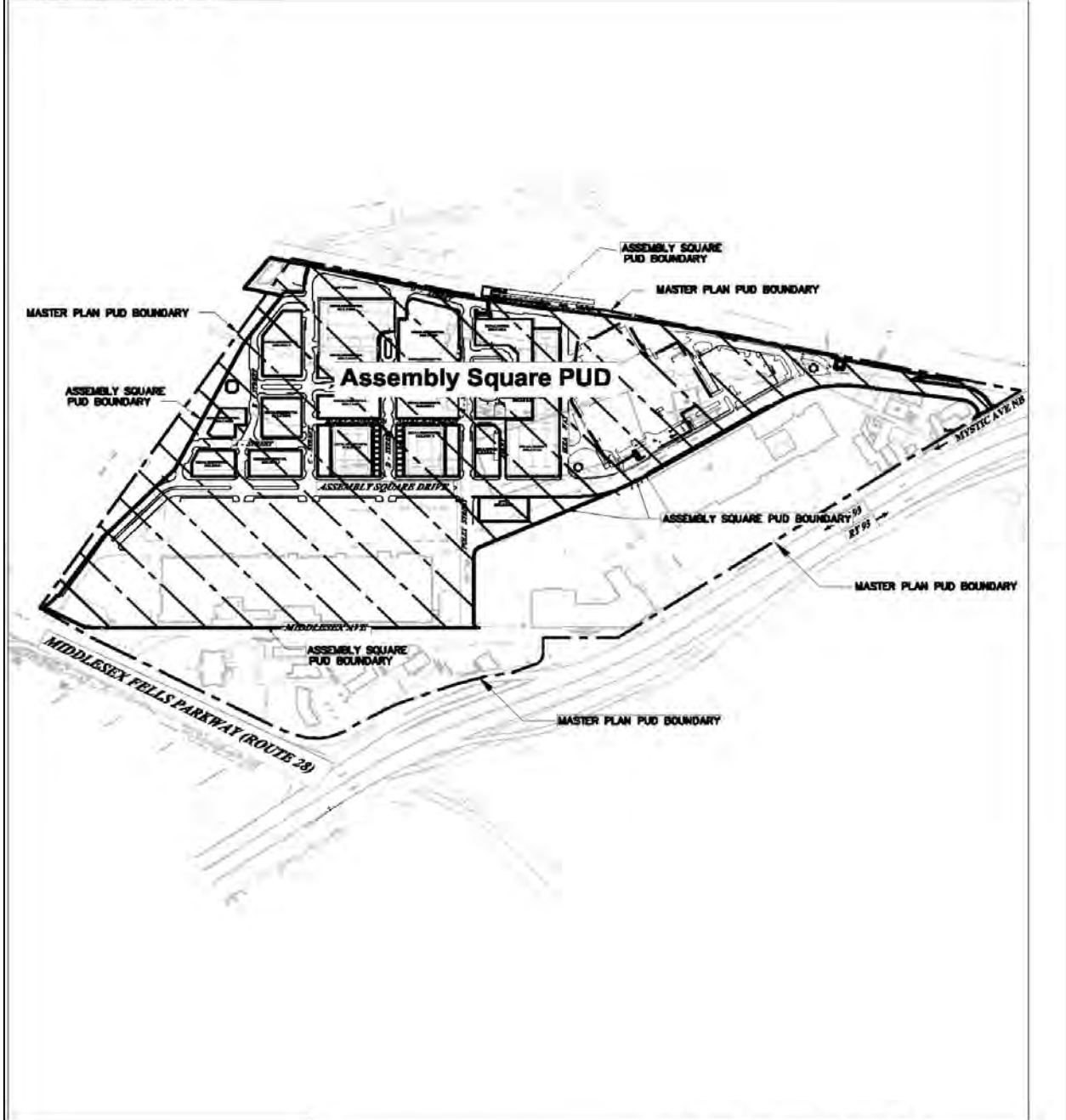
### C.2 TELECOM CITY

Telecom City is a regional technology redevelopment site located partly in Everett, partly in Malden, and partly in Medford. The proposed full-build development seeks to create a modern office/R&D park on a 207-acre brownfield site that contained underutilized and contaminated commercial/industrial properties. The project includes:

- The development of ±1.8 million square feet of new office/R&D space.
- The development of parkland along the Malden River.
- Parkland created in Medford (Phase I) as compensation for the City of Medford’s “Medford Schools Project” (EOEA #11947), which impacted existing parkland.



**FIGURE C.1**  
**Study Area**  
**Developments**



Vanasse Hangen Brustlin, Inc.

Preliminary Master Plan  
Planned Unit Delovement  
Assembly Square Drive

Figure: ASSEMBLY SQUARE MASTER PLAN  
Date: OCTOBER 2006



0 300 600 Feet

**Table C.1 Development Size and Trip Generation**

Project Name/Proponent	EOEA No.	MEPA Action	City/Town	Study Date	Proposed Development		Proposed Development Trips (Daily)			
							Trip Mode	Weekday	Saturday	Forecast Year
<i>Telecom City: Phase I</i> Mystic Valley Development Commission and Preotle, Lane & Associates Ltd.	11818	EIR Adequate 1/24/01	Everett Malden Medford	12/00	Office/R&D	441,600 s.f.	Vehicle Transit <b>Total</b>	1,730 8 <b>2,618</b>	N/A	2005
<i>Telecom City: Phase II+</i> Mystic Valley Development Commission and Preotle, Lane & Associates Ltd.					Office/R&D	1,400,000 s.f.				
<i>Mystic Center</i> ND Mystic Center LLC	3391	Project Change 5/24/03 (Pending)	Medford	Original FEIR 5/15/81	Office (existing) Retail Residential Hotel Parking (new) Parking (existing)	165,000 s.f. 100,000 s.f. 650 units 190 rooms 1550 spaces 1350 spaces	Vehicle Transit <b>Total</b>	8,010 2,730 <b>10,740</b>	7,350 2,640 <b>9,990</b>	2008
<i>Planned Unit Development for Assembly Square</i> Federal Realty Investment Trust	-	-	Somerville	10/26/06	Residential Office Retail/Restaurant Cinema Hotel IKEA Parking	2,100 units 1,750,000 s.f. 778,806 s.f. 14 screens 200 rooms 310,000 s.f. 10,100 spaces	Vehicle Transit Other <b>Total</b>	23,840 9,580 11,470 <b>44,890</b>	23,070 7,410 13,060 <b>9,760</b>	2018
<i>IKEA at Assembly Square</i> IKEA Property, Inc. (As Permitted in Original EIR)	12672	FEIR Adequate 11/29/02	Somerville	10/15/02	Retail Office/R&D Parking	324,000 s.f. 204,000 s.f. 1,580 spaces	Vehicle Transit <b>Total</b>	9,760 0 <b>9,760</b>	12,620 0 <b>12,620</b>	2006
<i>Assembly Square Commons (Yard 21)</i> Sturtevant Partnership			Somerville		Retail Office/R&D Residential Parking	327,800 s.f. 2,039,800 s.f. 1,124,800 s.f. (860 units) 4,180-5,900 spaces				
<i>North Point</i> North Point Land Company, LLC	12650	FEIR Adequate 12/16/02	Cambridge	11/15/01	Retail Office/R&D Residential Hotel Parking	75,000 s.f. 2,025,000 s.f. 3,000,000 s.f. (2300-2700 units) 90,000 s.f. 4,800 spaces	Vehicle Transit Other <b>Total</b>	16,015 12,310 11,915 <b>40,240</b>	N/A	2014
<i>Charles E. Smith Residential Development</i> Charles E. Smith Residential, Division of Archstone-Smith	12651	FEIR Adequate 11/29/02	Cambridge	1/25/02	Residential Parking	767 units 873 spaces	Vehicle Transit Other <b>Total</b>	2,254 1,154 1,204 <b>4,612</b>	N/A	2007
<i>51 McGrath Highway</i>			Somerville	11/7/07	Storage	100,160 s.f.	Vehicle	312	305	2012

**Table C.2 Proposed Mitigation Measures**

Project Name	Mitigation
<p><b>Telecom City: Phase I</b></p>	<p><b>Roadway Improvement</b></p> <ul style="list-style-type: none"> <li>• Signal timing changes at Wellington Circle, Medford Street/Fellsway/Center Street, Medford Street/Highland Avenue, Medford Street/Pearl Street</li> </ul> <p><b>TDM</b></p> <ul style="list-style-type: none"> <li>• Establish a public transportation subsidy program for participating employees.</li> <li>• Provide shuttle service between MBTA Wellington Station and Telecom City.</li> <li>• Promote the use of high-occupancy vehicles by establishing an on-site car/vanpool program, providing ride-matching services, establishing a guaranteed-ride-home program, and providing preferential parking for ride-sharing participants; provide on-site bicycle racks, provide shower facilities, and provide appropriate walkways/bikeways that are safe.</li> <li>• Encourage employers to provide alternative work schedules.</li> <li>• Provide on-site amenities or services like ATMs, dry cleaning services, and cafés.</li> <li>• Designate an on-site TMA program coordinator to oversee the TDM program.</li> </ul>
<p><b>Mystic Center</b></p>	<p><b>Previous Mitigation</b></p> <ul style="list-style-type: none"> <li>• The project has previously spent \$1.35 million on transportation-related mitigation as part of the full buildout of the previous Mystic Center plans.</li> </ul> <p><b>Route 28 Access</b></p> <ul style="list-style-type: none"> <li>• Review the signal timing at the Presidents Landing intersection; ensure that signal timing or phasing changes are coordinated with Wellington Circle.</li> <li>• Modify the geometry at two unsignalized driveways along Route 28.</li> <li>• Restrict the northern driveway to right in/right out only.</li> <li>• Work with the City of Medford and MDC to update signal equipment and repair functions of the signal located at Route 28/Riverside Avenue.</li> </ul> <p><b>Route 16 Access</b></p> <ul style="list-style-type: none"> <li>• Restrict existing driveway access to right in/right out only.</li> </ul> <p><b>TDM</b></p> <ul style="list-style-type: none"> <li>• Assign a transportation coordinator to implement a Mystic Center TDM plan.</li> <li>• Require all retail employers to be subject to the requirements of an employer-based TDM program.</li> <li>• Work with a car-sharing program to provide cars for periodic use by residents.</li> <li>• Require hotel employers to be subject to the requirements of an employer-based TDM program and provide services to hotel guests to reduce auto-related trips.</li> <li>• Designate a TDM coordinator who will work with office employers to evaluate and implement appropriate TDM measures.</li> </ul>
<p><b>Planned Urban Development for Assembly Square</b></p>	<p><b>Roadway Improvements</b></p> <ul style="list-style-type: none"> <li>• Broadway/Mt. Vernon/Lombardi Street– Install loop detectors, pedestrian equipment, and emergency pre-emption equipment. Also restripe existing pavement markings.</li> <li>• Mystic Avenue/Lombardi Street/Assembly Square Drive – Install or upgrade all signal, pedestrian, and pre-emption equipment. Also modify southbound Assembly Square Drive approach to one lane to allow enhanced bicycle accommodations.</li> <li>• Lombardi Street signal interconnection – Install underground conduit between Broadway and Mystic Avenue, along with signal equipment for a coordinated closed-loop signal system.</li> <li>• Mystic Avenue northbound/Mystic Avenue southbound U-turn underpass – Install traffic signal and widen ramp approach to two lanes.</li> <li>• Mystic Avenue/new road – Install new signal equipment and operate as actuated signal.</li> </ul>

**Table C.2 continued Proposed Mitigation Measures**

<b>Project Name</b>	<b>Mitigation</b>
<p align="center"><b>Planned Urban Development for Assembly Square</b> (continued)</p>	<p><b>Roadway Improvements (cont.)</b></p> <ul style="list-style-type: none"> <li>• Foley Street/Middlesex Avenue – Install traffic signal, provide interconnection with Mystic Avenue/New Road controller, modify lane use, minor widening on Foley Street.</li> <li>• Route 28/Assembly Square Drive – Replace signal equipment, modify Route 28 median to allow exiting left turns from Assembly Square Drive, and coordinate with Route 28/Middlesex Avenue intersection.</li> <li>• Route 28/Middlesex Avenue – Replace signal equipment, modify Middlesex Avenue approach to improve acute angle on approach, and coordinate with Route 28/Assembly Square Drive intersection.</li> <li>• Route 28/Mystic Avenue northbound U-turn – construct a northbound U-turn to access I-93 southbound, south of Route 28 on Mystic Avenue.</li> <li>• Route 28/Mystic Avenue northbound – Install new signal equipment and optimize signal phasing and timing.</li> </ul> <p><b>TDM</b></p> <ul style="list-style-type: none"> <li>• Designate a TDM Coordinator.</li> <li>• Provide commuter information.</li> <li>• Facilitate bicycle and pedestrian travel.</li> <li>• Promote alternative transportation</li> </ul>
<p><b>IKEA at Assembly Square</b> (as permitted in original EIR)</p>	<p><b>Roadway Improvements</b></p> <ul style="list-style-type: none"> <li>• Mystic Avenue/Lombardi Street/Assembly Square Drive – Install new signal equipment and interconnect with the Broadway/Lombardi Street intersection.</li> <li>• Route 28/Mystic Avenue northbound – Either fund or install a new mast arm signal support to improve signal visibility. Also review clearance times.</li> <li>• Lombardi Street signal interconnection – Install underground conduit between Broadway and Mystic Avenue, along with signal equipment for a coordinated closed-loop signal system.</li> <li>• Mystic Ave/new road – Install new signal controller and cabinet.</li> <li>• Foley Street/Assembly Square Drive/Kmart Driveway – Install signal at Foley Street/Middlesex Avenue.</li> <li>• Foley Street Restoration – Design and reconstruct 600 feet of Foley Street adjacent to the site.</li> <li>• I-93 “way-finding” signs – Install directional signage on I-93 and nearby state and local roadways.</li> <li>• MBTA Orange Line station – The proponent has committed \$150,000 to the City of Somerville for study of a new Orange Line station at Assembly Square.</li> <li>• Route 28 bicycle/pedestrian underpass – The proponent has committed \$100,000 to the City of Somerville for designing and/or constructing pedestrian access from the surrounding residential neighborhood.</li> </ul> <p><b>TDM</b></p> <ul style="list-style-type: none"> <li>• Designate an Employee Transportation Coordinator.</li> <li>• Provide a guaranteed-ride-home program for all IKEA and tenant employees.</li> <li>• Provide car/vanpool incentives and ridesharing services.</li> <li>• Designate a Zipcar parking space. Enable employees to purchase pretax transit passes.</li> </ul>



**Table C.2 continued Proposed Mitigation Measures**

<b>Project Name</b>	<b>Mitigation</b>
<p align="center"><b>North Point</b></p>	<p><b>Roadway Improvements</b></p> <ul style="list-style-type: none"> <li>• Reconstruct the Route 28/Third Street intersection.</li> <li>• Reconstruct the Route 28/Water Street intersection.</li> <li>• Reconstruct the Route 28/Cambridge Street/East Street/First Street Extension.</li> <li>• Provide an additional left-turn lane from the Gilmore Bridge onto Route 28.</li> <li>• Restripe the Route 28/Industrial Way/Museum Way intersection.</li> <li>• Make signal-timing adjustments at the Rutherford Avenue/Gilmore Bridge intersection.</li> <li>• Make signal-timing adjustments at the Cambridge Street/First Street intersection.</li> </ul> <p><b>Alternative Mode Improvements</b></p> <ul style="list-style-type: none"> <li>• Provide pedestrian access to the Gilmore Bridge via stair, elevator, and/or escalator.</li> <li>• Work with the MDC to identify options for widening the sidewalks along the Gilmore Bridge.</li> <li>• Widen sidewalks along the Gilmore Bridge.</li> <li>• Construct a public realm of sidewalks, trails, landscaped medians, boulevards, parks, and courtyards extending throughout the site as a continuous network.</li> <li>• Provide improvements to pedestrian and bicycle access across the O'Brien Highway at First Street.</li> <li>• Construct a relocated MBTA Lechmere Station.</li> <li>• Provide bicycle lanes on the First Street Extension.</li> </ul> <p><b>TDM</b></p> <ul style="list-style-type: none"> <li>• Join the Charles River Transportation Management Association.</li> <li>• Designate a North Point Transportation Coordinator.</li> <li>• Provide car-sharing parking spaces.</li> <li>• Provide on-site sale of MBTA passes, information on MBTA services, and a 50% subsidy for transit passes of up to \$65 per month.</li> <li>• Provide bike lanes on North Point streets and bicycle parking spaces in garages.</li> <li>• Provide space for a bike station.</li> </ul>
<p align="center"><b>Charles E. Smith Residential</b></p>	<p><b>Roadway Improvements</b></p> <ul style="list-style-type: none"> <li>• Construct a new roadway to service the site from the O'Brien Highway midblock between Charlestown Avenue and East Street, with right in/right out only.</li> <li>• Consult with North Point about a possible revised alignment of East Street.</li> </ul> <p><b>TDM</b></p> <ul style="list-style-type: none"> <li>• Provide public transportation information to residents at centralized locations.</li> <li>• Provide information on MassRIDES to residents.</li> <li>• Investigate joining the Charles River Transportation Management Association.</li> <li>• Provide information on pedestrian and bicycle facilities in the vicinity of the site.</li> <li>• Investigate providing Zipcar service.</li> <li>• Provide on-site amenities such as laundry services, fitness centers, and business centers.</li> <li>• Include a 2,400-square-foot retail store for convenience items.</li> </ul>

- Parkland in Everett that may be used as compensation for a City of Everett school project. This component is contingent upon an agreement being reached with the City of Everett and the Mystic Valley Development Commission, and upon certain land acquisition agreements being reached.
- Remediation of site contamination.
- Improvement and standardization of storm-water management on the site.
- Improvements to regional transportation systems.

The project began in 1994, when a feasibility study was conducted. The State Legislature created the Mystic Valley Development Commission (MVDC) in July 1996 to oversee the project. In 1997, the Malden Redevelopment Authority was hired as project manager and issued a master plan. The master plan was updated and amended in 1999.

MEPA review began in 1998 when the MVDC filed an Environmental Notification Form (ENF) for the project. The ENF requested that a Special Review Procedure be established to review the project and stated that site development would occur over multiple phases. In February 1999, MEPA issued a certificate establishing the Special Review Procedure and a separate certificate on the ENF. The Special Review Procedure included the preparation of a Phase I Environmental Impact Report (EIR) and of Draft and Final Area-Wide EIRs.

The proposed Phase I development, located on parcels in Medford, is approximately 441,000 square feet (s.f.) of new office/R&D space. The Phase I EIR was submitted and reviewed in February 2001. MEPA found it “adequate.”

### **C.3 MYSTIC CENTER**

The Mystic Center development was first proposed in 1979 as approximately 1.1 million s.f. of office/retail space or 900,000 s.f. of office/retail and a 285-room hotel. The site is approximately 15.6 acres located in Medford adjacent to Route 28 and the MBTA Wellington Station.

The first phase of the development, completed in late 1989, was the 165,000 s.f. One Mystic Center office building. In 1996, a Notice of Project Change (NPC) was filed to incorporate the Mystic Transportation Center into the project. The Mystic Transportation Center was completed in 1997 and consists of a parking structure to support Wellington Station. Of the 1,350 parking spaces in the garage, 950 are dedicated to the station; the other 400 spaces are used by One Mystic Center. As part of the transportation center, an overhead people mover over the Orange Line storage yard was constructed to connect the parking structure to the MBTA station.

The current NPC was filed with MEPA on May 15, 2003. The public comment period ended on June 13, 2003. The final MEPA action has not yet been completed. The NPC states that the current plans for Mystic Center will represent “the next generation of mixed-used development projects in Massachusetts, and will be a regional model for smart growth and new urbanism.”

The proposed NPC project replaces the previously proposed 1.1 million s.f. office park with a mixed-use development. The proposed NPC development will include the existing 165,000 s.f.

office building and 1,350 parking space garage, as well as 650 new residential units, 100,000 s.f. of ground floor retail space, a 190-room hotel, and additional parking in primarily below-grade garages.

#### **C.4 PLANNED UNIT DEVELOPMENT FOR ASSEMBLY SQUARE**

The Planned Unit Development (PUD) for Assembly Square as proposed by Federal Realty Investment Trust would redevelop approximately 66.5 acres land. The project would be constructed in six phases over a nine to twelve year time period. The new development would consist of transit-oriented mixed-use development. The project proposes to relocate the permitted IKEA store adjacent to the other big box stores along I-93.

The four key principles of the project as outlined in the PUD application to the City of Somerville are to improve access to the Mystic River, develop uses that are planned around transit-oriented development, develop a true mixed-use program, and provide a series of new pedestrian-oriented public spaces and street.

#### **C.5 IKEA AT ASSEMBLY SQUARE (as permitted in original EIR)**

Since the beginning of the study, the planned IKEA project has both been delayed and changed. As currently proposed, the site for the store is now adjacent to Home Depot, closer to I-93. The original site of the proposed IKEA development was 74–100 Foley Street in Assembly Square. It consisted of two parcels of land that total approximately 16.6 acres. The proposed phased, mixed-use development involves the construction of five buildings totaling 528,000 s.f. and 1,580 parking spaces, of which approximately 1,260 would be in an underground parking garage. One building would be a 277,000 s.f. IKEA store, and the other four buildings would contain 204,000 s.f. of office space, 20,000 s.f. of restaurant space, and 27,000 s.f. of retail space.

An ENF for the project was first submitted to MEPA in January 2002. MEPA found that Draft and Final EIRs were required. The Draft EIR was found “adequate” in July 2002 and the Final EIR was found “adequate” in November 2002. Currently there is no finalized MEPA Section 61 finding outlining the required mitigation for the project.

#### **C.6 ASSEMBLY SQUARE COMMONS – YARD 21 (prior to current PUD proposal)**

This development is still in the preliminary planning stage, with no MEPA filings as of June 2003. It proposes to redevelop the Yard 21 and neighboring parcels into a mix of uses. The proposed development includes 327,800 s.f. of retail space, 2,039,800 s.f. of office/R&D space, 1,124,800 s.f. (860 units) of residential space, and 4,180–5,900 parking spaces. It would be implemented in three phases.

## **C.7 NORTH POINT**

The North Point project will be located partly in Cambridge, partly in Somerville, and partly in Boston. The project will redevelop a nearly 46-acre abandoned industrial site into a mixed-use, transit-oriented neighborhood with over 10 acres of new green open space. The development would be approximately half residential; the rest will be office/R&D with accessory retail uses.

At complete buildout, the North Point project will include, in addition to the open space, twenty buildings, a new Lechmere Station, and approximately one mile of new roadway and utility infrastructure. The project has been divided into three development phases: 1A, 1B, and Full Build. Construction will begin near the Gilmore Bridge to build off of the infrastructure already in place.

Phase 1A of the building program consists of six new buildings comprising approximately 1 million s.f. of commercial development and approximately 300 residential units. Also included are over 4 acres of open space and a bicycle network connecting external bike lanes in East Cambridge to the proposed multi-use paths of the project. Design of the relocated Lechmere Station would begin as part of mitigation and right-of-way for the Urban Ring Phases 2 and 3 would be transferred to the MBTA.

Phase 1B is a continuation of the first phase of development. Seven new buildings are proposed, with approximately 600,000 s.f. of commercial uses and 1,000 new housing units. Another 2 acres of open space will be created. The construction of the relocated Lechmere Station is scheduled to begin in this phase, and it will be completed before any Full Build buildings are occupied.

The Full Build phase of development includes six new buildings with approximately 425,000 s.f. of office/R&D space and 1,275 new housing units. On the site of the former Lechmere Station will be a residential/hotel building of approximately 100,000 s.f. At the new Lechmere Station, a regional bike station will be constructed that could provide space for rental, storage, and repair services. Also, Lechmere Square will be created, a new urban square located at the intersection of O'Brien Highway and First Street.

The project began when the proponent filed an ENF on November 15, 2001. A certificate was issued on January 25, 2002, outlining the requirements of a Draft EIR. On April 30, 2002, the Draft EIR was submitted to MEPA, which found that it adequately and properly complied with MEPA regulations. The Final EIR was submitted on October 31, 2002 and was found "adequate" in December 2002.

## **C.8 CHARLES E. SMITH RESIDENTIAL**

The Charles E. Smith Residential development would be a residential community in the North Point area of Cambridge. The project would redevelop an existing warehouse and retail operation into an apartment complex consisting of 767 units housed in two buildings. A parking structure would provide 873 spaces. An existing office building of 63,210 s.f. (the Maple Leaf Building) would remain; its parking would be relocated into the new parking structure.

The project's ENF was filed on January 25, 2002. The Final EIR was found "adequate" in November 2002.



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## **APPENDIX D      Urban Ring**

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The Urban Ring is a proposed major new transit service that would run in a roughly circular corridor just outside of central Boston. The corridor passes through residential neighborhoods, employment centers and major educational and medical institutions in Boston, Brookline, Cambridge, Chelsea, Everett, Medford and Somerville.

The Urban Ring is designed to provide more direct trips around this “ring” and to improve connections between the corridor and the “spokes” of the MBTA’s existing rapid transit system. In this way, the Urban Ring is intended to improve transit travel times for trips to and from the corridor and to reduce crowding in the central subway system. The Urban Ring also offers opportunities for transit-oriented development and denser “smart growth” development around the many new and improved stations it would provide.

The proposed Urban Ring project provides connections in the Route 28 corridor. Depending upon the phase of the project and the alternative that is ultimately recommended, the Urban Ring may provide transit connections in the corridor connecting Chelsea, Everett, Wellington Station, Assembly Square, Sullivan Square, East Somerville, the new Lechmere station, and the Kendall Square/Massachusetts Institute of Technology (MIT) area in Cambridge.

### **D.1      PROJECT BACKGROUND AND APPROACH**

The Urban Ring would be implemented in three phases:

- Phase 1 includes increased bus service in the Urban Ring corridor.
- Phase 2 would consist of bus rapid transit service in the corridor and improved connections to the existing MBTA radial transit system.
- Phase 3 would add rail rapid transit for a portion of the corridor.

The Commonwealth of Massachusetts Executive Office of Transportation and Public Works (EOT) is currently leading the planning and environmental review for Urban Ring Phase 2, the bus rapid transit phase. Bus rapid transit (BRT) is a transit mode that provides high-quality service using rubber tired vehicles, supplemented by an integrated system of special features to enable service that is like rapid transit. These features include routes with dedicated roadways or reserved lanes; large vehicles with low floors and low emissions; high-frequency service; attractive and substantial stations that are widely spaced to improve travel time; and advanced communications and traffic control systems. In the Boston area, the Silver Line is an example of a BRT system. The Urban Ring Phase 2 planning process is reviewing lessons learned from the Silver Line and other BRT systems throughout the world in order to develop the optimal design and operating plan.

The current stage of Urban Ring planning is the latest in a process that began about 10 years ago. The Urban Ring Major Investment Study (MIS) recommended the basic route for the Urban Ring, as well as a strategy for implementation in three phases. The Phase 2 Draft Environmental Impact Report (DEIR), completed in November 2004, developed a detailed recommendation for Phase 2. The current round of planning addresses comments and issues related to the DEIR recommendations. It will recommend an improved route and plan for Urban Ring Phase 2. It will be described in a report called a Revised Draft Environmental Impact Report /Environmental Impact Statement, or RDEIR/DEIS.

## **D.2 ALTERNATIVES ANALYSIS**

Starting in fall 2006, the project team worked with the Citizens Advisory Committee (CAC), local city and town officials, neighborhood groups, and members of the public to identify more than 50 potential routing options, or variants, for the Urban Ring Phase 2 BRT system. These variants were screened relative to several important evaluation criteria: transportation and mobility; environmental benefits and impacts; land use and economic development; cost and cost-effectiveness; amount of dedicated right-of-way; and feasibility and implementation.

Based on this review, the project team worked with the CAC, members of the public, and other stakeholders to select the best variants to combine into four **build alternatives** (plus five additional sub-options), which represent different routes and approaches for providing Urban Ring BRT service through the corridor. The following is a brief summary of each alternative, as well as a description of the connections in the Route 28 corridor.

**ALTERNATIVE 1** – This is an all-surface route. It was identified in the 2004 DEIR as the **Locally Preferred Alternative**. It has no tunnel segments and a relatively low percentage of routes with restricted access to improve BRT travel times (including special BRT-only roadways called “busways” and special BRT-only lanes on existing roads called “buslanes”). As a result, most of the Alternative 1 route travels on existing roads along with cars, trucks and other vehicles (known as “mixed traffic” operation). The capital cost for Alternative 1 is projected to be \$712 million (2007 dollars). In the northern segment that is relevant to the Route 28 study, Alternative 1 would provide connections through Chelsea principally in a dedicated busway adjacent to the commuter rail alignment, through Everett in mixed traffic on Everett Street, Second Street, and Route 16 to connect to the Orange Line and bus routes at Wellington Station. From there, it would travel in mixed traffic on Route 28 to Assembly Square, at which point two different routes would diverge: one route would connect with the Orange Line, a new commuter rail station, and bus routes at Sullivan Square, and continue in buslane/busway along the Rutherford Avenue corridor to New Lechmere; the other route would traverse East Somerville via Route 28 to Gilman Square, Union Square, and New Lechmere. At this point the routes would converge and travel to Kendall Square/MIT.

**ALTERNATIVE 2** – This is also an all-surface route, with no tunnels and a higher percentage of busways and buslanes than Alternative 1. The capital cost for Alternative 2 is projected to be \$758–\$805 million (2007 dollars). In the northern segment that is relevant to the Route 28 study, Alternative 2 would connect through Chelsea and Everett in a dedicated busway adjacent to the



commuter rail alignment, then cross the Malden River on a new bridge to connect to the Orange Line and bus routes at Wellington Station. From there, it would travel on viaduct over the rail yards through Wellington Station to avoid traffic on Route 16 and at Wellington Circle. It would connect to Route 28, at which point two different routes would diverge: one route would continue along Route 28 in mixed traffic and then along Broadway in bus lanes to Sullivan Square; the other route would pass through Assembly Square in buslane to Sullivan Square. Both routes would connect with the Orange Line, a new commuter rail station, and bus routes at Sullivan Square, and continue in buslane/busway along the Rutherford Avenue corridor to New Lechmere and then travel to Kendall Square/MIT.

**ALTERNATIVE 3** – This route combines busways, buslanes, and mixed-traffic with some tunnel sections and underground stations in the most congested portions of the corridor. The capital cost for Alternative 3 is projected to be \$2.1–\$4.3 billion (2007 dollars), depending on the length of tunnel. In the northern segment that is relevant to the Route 28 study, Alternative 3 would connect through Chelsea and Everett in a dedicated busway adjacent to the commuter rail alignment, then travel in busway north along the Saugus branch rail corridor to connect to the proposed Telecom Boulevard. It would cross the Malden River on a widened Telecom Boulevard bridge to connect to the Orange Line and bus routes at Wellington Station. From there, it would travel on viaduct over the rail yards through Wellington Station to avoid traffic on Route 16 and at Wellington Circle. It would connect to Route 28 and then pass through Assembly Square in buslane to connect with the Orange Line, a new commuter rail station, and bus routes at Sullivan Square. At Sullivan Square, two routes would diverge: one would travel in buslane and mixed traffic to Union Square and then in mixed traffic along Route 28 to New Lechmere; the other route would continue in bus lane/busway along the Rutherford Avenue corridor to New Lechmere. At New Lechmere, the routes would converge and travel to Kendall Square/MIT.

**ALTERNATIVE 4** – This route includes busways, buslanes, mixed-traffic operation, and longer tunnel segments with more underground stations. The capital cost for Alternative 4 is projected to be \$7.2–\$8.1 billion (2007 dollars), depending on the length of tunnel. In the northern segment that is relevant to the Route 28 study, Alternative 4 would connect through Chelsea and Everett in a dedicated busway adjacent to the commuter rail alignment. One route would travel in busway north along the Saugus branch rail corridor to connect to the proposed Telecom Boulevard and then cross the Malden River on a widened Telecom Boulevard bridge to connect to the Orange Line and bus routes at Wellington Station. The other route would continue in busway along the commuter rail alignment, then connect to Route 99 to cross the Mystic River and connect with the Orange Line, a new commuter rail station, and bus routes at Sullivan Square. Alternative 4 would then continue in bus lane/busway along the Rutherford Avenue corridor to New Lechmere and then travel to Kendall Square/MIT.

In addition to these four main alternatives, the project team is also analyzing several additional sub-options that test small refinements to these proposals. These sub-options include several additional concepts for making the important connection between Sullivan Square Station and East Cambridge.

The project team is currently completing a detailed analysis of each Build Alternative to determine the anticipated ridership and travel time benefits; neighborhood and environmental impacts; and

the costs and cost-effectiveness for each segments of every alternative. The project team has worked with the CAC, cities and towns, neighborhood groups, members of the general public, and other stakeholders to review these benefits, impacts and costs.

The alternatives analysis has demonstrating the following key findings:

- Fast, frequent service dramatically increases ridership.
- Dedicated right-of-way (busways, bus lanes, tunnels) improve travel time and reliability, especially in congested areas.
- Tunnels improve ridership, but greatly increase costs.
- Connections to the existing rapid transit, commuter rail, and bus system are essential to building ridership and serving transit needs.

The following are some of the key findings about demand and ridership patterns in the Route 28 corridor.

- Ridership is strong between the Orange Line (at Wellington Station) and the Blue Line (in East Boston) because the Urban Ring Phase 2 offers Chelsea and Everett residents fast, frequent connections to rapid transit service to downtown Boston.
- Ridership is strong between Sullivan Square and East Cambridge (New Lechmere, Kendall Square/MIT) due to the strong attraction between north side transit services (Orange Line, commuter rail, buses) and the jobs in East Cambridge. This transit connection is not currently well served, and the Urban Ring Phase 2 offers the opportunity to provide significant improvements, especially if this connection is fast and frequent.

### **D.3 NEXT STEPS**

The project team is now working with the various stakeholders to identify the most beneficial alternatives and segments. The most advantageous segments will be combined into two principal “hybrid” alternatives, which will then be analyzed to determine the best possible plan for implementing the Urban Ring Phase 2, a recommendation that will be known as the **Locally Preferred Alternative, or LPA**. The LPA is expected to be a combination of the most productive and cost-effective segments, drawn from different Build Alternatives. The LPA will also include possible phases or minimum operating segment options. These segments of the LPA could be built in phases or operate independently. The project team will summarize the LPA and all of the findings from the study in a final report that is expected to be complete in spring 2008.

### **D.4 PUBLIC OUTREACH**

In order to engage all the stakeholders effectively, EOT and the project team are implementing a comprehensive public involvement plan, including:

- Regular meetings of the Citizens Advisory Committee (CAC), subcommittees and working groups.

- Major public meetings, to be held in different areas, at key study milestones. A total of six public meetings have been held to date: three were held in December 2006, and three more were held in April 2007. A final round of three meetings will be held in September 2007.
- Frequent public briefings for neighborhood councils and other groups throughout the corridor. The project team has provided over thirty briefings for neighborhood and advocacy groups. Any group within the corridor is encouraged to host a briefing – please see the contact information below.
- A Public Hearing on the final Locally Preferred Alternative.
- The project website, which includes project information, updates on meetings and events, and opportunities to ask questions and post comments.
- E-mail notification of meetings and publication of new documents. If you would like to receive notification, please sign up at [www.theurbanring.com](http://www.theurbanring.com).



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## **APPENDIX E      Assembly Square Access Analysis**

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The following memorandum was completed at the request of the Office for Commonwealth Development. It investigated the interim year impacts of the proposed redevelopment plan at that time.

**MEMORANDUM**

**TO: Anne Tate**  
**Office for Commonwealth Development**

**May 19, 2004**

**FROM: Mark S. Abbott, P.E.**

**RE: Interim-Year Analysis for Assembly Square Development**

At your request, we have reviewed the Assembly Square Transportation Plan<sup>1</sup> in order to analyze interim-year and 2025 traffic conditions without transportation improvements (that is, no new interchange or intersection improvements). The Assembly Square Transportation Plan does not provide interim-year analyses or no-build (no-roadway-improvements) analyses. The interim-year and 2025 no-build traffic conditions estimated as part of the present short study were meant to provide a preliminary understanding of the effects of incremental development in Assembly Square. The analyses in this memorandum were based solely on the above-mentioned report.

**Background**

The Assembly Square Transportation Plan was prepared by Rizzo Associates for the City of Somerville's Office of Housing and Community Development. It proposes an improvement program to enhance connectivity between all transportation modes and creates a transportation network that will support the future land use vision and serve the needs of the district's employers, employees, and visitors. The report

- identifies the transportation challenges facing Assembly Square;
- evaluates potential improvements in public transportation, pedestrian and bicycle access, and motor vehicle access; and
- recommends a multimodal transportation improvement plan that is designed to help Assembly Square achieve the vision of a vibrant urban village.

The development build out and trip generation outlined in the report are shown in Table 1. The build out information includes the development's proposed land uses and square footage. Trip generation is provided by mode in person trips and vehicle trips.

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<sup>1</sup> Rizzo Associates, for the City of Somerville Office of Housing and Community Development, *Assembly Square Transportation Plan: Final Report*, May 13, 2003.

**Table 1 Development Phases and Trip Generation**

	<b>EXISTING (2002)</b>	<b>PHASE I (2007)</b>	<b>PHASE II: Full Development (2025)</b>
<b><u>Development Build Out</u></b>			
<b>Land Use</b>	<b>Square Feet</b>	<b>Square Feet</b>	<b>Square Feet</b>
Residential	-	1,604,300	1,774,800
Office/R&D	240,000	1,803,800	4,468,000
Retail	668,284	1,077,616	1,142,616
Hotel	86,000	86,000	180,000
Industrial	80,000	42,000	12,000
Institutional	32,000	32,000	32,000
<b>Total</b>	<b>1,106,284</b>	<b>4,645,716</b>	<b>7,609,416</b>
<b><u>Trip Generation</u></b>			
<b>Daily Trip Generation</b>	<b>Person (Vehicle)</b>	<b>Person (Vehicle)</b>	<b>Person (Vehicle)</b>
Transit	650 (n/a)	1,700 (n/a)	34,900 (n/a)
Auto	32,650 (20,950)	87,250 (56,700)	93,550 (61,450)
Walk/Bike/Other	1,200 (n/a)	1,650 (n/a)	3,500 (n/a)
<b>Total</b>	<b>34,500 (20,950)</b>	<b>90,600 (56,700)</b>	<b>132,600 (61,450)</b>
<b>AM Peak Hour Trip Generation</b>	<b>Person (Vehicle)</b>	<b>Person (Vehicle)</b>	<b>Person (Vehicle)</b>
Transit	20 (n/a)	65 (n/a)	1,875 (n/a)
Auto	1,875 (1,205)	5,360 (3,480)	7,760 (5,095)
Walk/Bike/Other	40 (n/a)	75 (n/a)	165 (n/a)
<b>Total</b>	<b>1,935 (1,205)</b>	<b>5,500 (3,480)</b>	<b>9,800 (5,095)</b>
<b>PM Peak Hour Trip Generation</b>	<b>Person (Vehicle)</b>	<b>Person (Vehicle)</b>	<b>Person (Vehicle)</b>
Transit	70 (n/a)	150 (n/a)	3,630 (n/a)
Auto	3,030 (1,950)	8,065 (5,240)	11,430 (7,475)
Walk/Bike/Other	100 (n/a)	135 (n/a)	325 (n/a)
<b>Total</b>	<b>3,200 (1,950)</b>	<b>8,350 (5,240)</b>	<b>16,100 (7,475)</b>

Source: Rizzo Associates, for the City of Somerville Office of Housing and Community Development, *Assembly Square Transportation Plan: Final Report*, May 13, 2003.

Table 2 presents level-of-service data from the Transportation Plan report for four key intersections. These four locations were chosen for evaluation in this memorandum because they process the highest amount of traffic entering/exiting Assembly Square. The table shows the existing operations and the future operations under the proposed full development preferred

alternative. As shown in the table, the only intersection which is failing during both future peak hours with full development is the Route 28/Middlesex Avenue intersection.

**Table 2 Level of Service for 2002 and 2025 at Selected Intersections**

Source: Rizzo Associates, *Assembly Square Transportation Plan: Final Report*, May 13, 2003.

Intersection	Condition	LOS	AM Peak Hour		LOS	PM Peak Hour	
			V/C	Delay		V/C	Delay
Route 28 at Assembly Sq Dr	2002 Existing	A	0.72	3.4	A	0.74	4.7
	2025 Full Development Preferred Alt	A	0.84	3.9	C	1.09	31.3
Route 28 at Middlesex Ave	2002 Existing	D	0.80	40.1	B	0.49	12.2
	2025 Full Development Preferred Alt	F	1.26	107.0	F	1.23	96.3
Route 28 SB at Mystic Ave NB	2002 Existing	D	0.58	35.2	B	0.34	17.7
	2025 Full Development Preferred Alt	D	0.87	49.8	C	0.66	20.7
Route 28 at Mystic Ave SB	2002 Existing	D	1.01	38.0	B	0.63	10.1
	2025 Full Development Preferred Alt	E	1.04	71.4	B	0.66	18.0

## Analysis

The analysis performed for this memorandum was based upon traffic volumes and signal-operations data provided in the Transportation Plan report.

For the purposes of this analysis, interim-year PM peak hour traffic volumes were developed for 2010, 2015, and 2020. These are shown in Table 3, in addition to traffic volumes for 2002 and 2025 from the Transportation Plan report. The PM peak hour was chosen because the vehicle trips associated with Assembly Square are higher in the afternoon than in the AM peak hour. For each of the interim years it was assumed that 25% of the total proposed development would occur. So, in 2010, 25% of the development would occur; in year 2015 there would be 50% of the development; and so on until full build is achieved in 2025. Also, for intersection traffic volumes a background growth rate was applied based on the growth that was assumed in the Transportation Plan report.

In general, the traffic volumes that were developed show growth from 2002 to 2025, although at the Route 28/Mystic Avenue southbound intersection there is a decrease. This decrease is most likely due to the Central Artery project improvements but cannot be exactly determined without access to the planning model that was used for the Transportation Plan report, developed by Rizzo Associates.

The intersection analysis was performed using Synchro, which was also used for the Transportation Plan report. Analysis conditions and settings for 2002 (existing conditions) from the report were used for the interim-year no-build analyses. No-build refers here to the absence



of roadway improvements; that is, future no-build geometric and signal conditions are the same as exist today.

As Table 4 shows, the level of service (LOS) at the two key Route 28 intersections which are used for direct access to Assembly Square, Assembly Square Drive and Middlesex Avenue, begins to deteriorate to failure in 2010, with only 25% of the development occurring. The LOS at Middlesex Avenue is already F in 2010, and both intersections are well above capacity by 2025, when full development occurs.

**Table 3 PM Peak Hour Intersection Volumes**

<b>Intersection</b>	<b>Approach</b>	<b>Movement</b>	<b>2002* (Existing)</b>	<b>2010 (25%)</b>	<b>2015 (50%)</b>	<b>2020 (75%)</b>	<b>2025* (Full Development)</b>
Route 28 at Assembly Square Dr	Route 28 SB	Left	130	223	315	408	500
		Through	1,690	1,781	1,850	1,919	1,990
	Route 28 NB	Through	1,910	2,430	2,845	3,329	3,895
Right		15	74	133	191	250	
Assembly Sq Dr		Right	195	318	440	563	685
Route 28 at Middlesex Ave	Route 28 SB	Through	150	178	205	233	260
		Right	1,555	1,614	1,652	1,690	1,730
	Route 28 NB	Left	1,525	2,060	2,490	2,989	3,570
		Through	180	628	1,075	1,523	1,970
	Middlesex Ave	Left	85	518	950	1,383	1,815
Right	400	444	488	531	575		
Route 28 SB at Mystic Ave NB	Route 28 SB	Left	555	759	957	1,155	1,354
		Through	845	1,158	1,462	1,766	2,071
		Right	240	175	150	132	120
	Mystic Ave NB	Through/Left	585	761	945	1,130	1,320
Route 28 at Mystic Ave SB	Route 28 SB	Left/Through	895	1,185	1,479	1,745	2,071
	Mystic Ave SB	Through	300	382	444	516	600
		Right	625	596	578	561	545
	Mystic Ave NB	Through	1,000	982	971	961	950

Source: Rizzo Associates, *Assembly Square Transportation Plan: Final Report*, May 13, 2003.

**Table 4 Level-of-Service Analysis for Interim Years at Selected Intersections: PM Peak Hour**

Intersection	Movement	<u>2002 (Existing)*</u>			<u>2010 (25%)</u>			<u>2015 (50%)</u>			<u>2020 (75%)</u>			<u>2025 (Full Development)*</u>			
		LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	
Route 28 at Assembly Sq Dr	Route 28 NB	Through	A	0.69	6.0	B	0.87	11.8	C	1.02	33.7	F	1.19	104.3	F	1.40	195.0
		Right	A	0.01	0.0	A	0.05	0.1	A	0.09	0.1	A	0.12	0.2	A	0.16	0.2
	Route 28 SB	Left	D	0.82	50.8	F	1.38	232.3	F	1.94	472.3	F	2.51	722.8	F	3.06	969.9
		Through	A	0.34	0.0	A	0.36	0.0	A	0.38	0.0	A	0.39	0.0	A	0.40	0.1
Assembly Sq Dr	Right	A	0.12	0.2	A	0.20	0.3	A	0.28	0.4	A	0.36	0.6	A	0.44	0.9	
	<b>Overall</b>	<b>A</b>	<b>0.74</b>	<b>4.7</b>	<b>B</b>	<b>1.06</b>	<b>16.9</b>	<b>D</b>	<b>1.37</b>	<b>44.1</b>	<b>F</b>	<b>1.69</b>	<b>100.5</b>	<b>F</b>	<b>2.02</b>	<b>170.2</b>	
Route 28 at Middlesex Ave	Route 28 NB	Through	B	0.58	12.9	B	0.79	16.8	C	0.95	26.3	F	1.14	87.9	F	1.37	185.5
		Right	A	0.12	0.2	A	0.41	0.8	A	0.70	2.6	C	0.99	20.8	F	1.28	174.8
	Route 28 SB	Left	C	0.24	29.5	C	0.28	29.8	C	0.33	30.1	C	0.37	30.5	C	0.41	30.8
		Through	B	0.59	12.9	B	0.62	13.3	B	0.63	13.6	B	0.65	13.8	B	0.66	14.0
Middlesex Ave	Left	D	0.47	37.6	F	2.86	887.6	F	5.24	1,955.0	F	7.63	3,030.3	F	10.00	4,101.0	
	Right	A	0.26	0.4	A	0.29	0.5	A	0.32	0.5	A	0.35	0.6	A	0.37	0.7	
	<b>Overall</b>	<b>B</b>	<b>0.49</b>	<b>12.2</b>	<b>F</b>	<b>0.93</b>	<b>92.5</b>	<b>F</b>	<b>1.39</b>	<b>274.9</b>	<b>F</b>	<b>1.86</b>	<b>523.9</b>	<b>F</b>	<b>2.25</b>	<b>830.4</b>	
Route 28 SB at Mystic Ave NB	Route 28 SB	Left	B	0.39	18.2	B	0.54	19.8	C	0.68	22.4	C	0.82	26.9	D	0.96	41.0
		Through	B	0.42	18.4	C	0.57	20.2	C	0.72	22.8	C	0.88	28.0	D	1.03	52.1
	Mystic Ave NB	Right	B	0.40	18.5	B	0.29	17.4	B	0.25	17.0	B	0.22	16.7	B	0.20	16.5
		Through	B	0.26	15.2	B	0.34	15.9	B	0.43	16.7	B	0.51	17.7	B	0.59	18.9
	<b>Overall</b>	<b>B</b>	<b>0.34</b>	<b>17.5</b>	<b>B</b>	<b>0.45</b>	<b>18.8</b>	<b>C</b>	<b>0.57</b>	<b>20.8</b>	<b>C</b>	<b>0.68</b>	<b>24.5</b>	<b>D</b>	<b>0.79</b>	<b>39.1</b>	
Route 28 at Mystic Ave SB	Route 28 SB	Left/Through	A	0.42	6.0	A	0.56	6.8	A	0.70	7.6	B	0.84	11.2	B	0.98	18.7
		Through	B	0.18	13.1	B	0.22	13.5	B	0.26	13.8	B	0.30	14.2	B	0.35	14.7
	Mystic Ave SB	Right	C	0.82	28.8	C	0.78	26.5	C	0.75	25.8	C	0.73	24.4	C	0.71	23.5
		Through	A	0.58	1.2	A	0.57	1.1	A	0.70	7.6	A	0.56	1.1	A	0.55	1.1
	<b>Overall</b>	<b>B</b>	<b>0.63</b>	<b>10.1</b>	<b>A</b>	<b>0.68</b>	<b>9.6</b>	<b>A</b>	<b>0.73</b>	<b>9.5</b>	<b>B</b>	<b>0.78</b>	<b>11.0</b>	<b>B</b>	<b>0.83</b>	<b>14.7</b>	

\*Source: Rizzo Associates, *Assembly Square Transportation Plan: Final Report*, May 13, 2003.

## Summary

The analysis conducted for this memorandum indicates that without major roadway improvements and alternative access points to Assembly Square, development of Assembly Square could possibly be constrained by the capacities of the existing roadway system. For development to occur as envisioned by the Assembly Square Planning Study<sup>1</sup> and the Assembly Square Transportation Plan, improvements to the I-93 interchange like ones described in the reports would be needed. It is likely that with minor geometric and signal-equipment improvements to the intersections, an increased amount of development can occur, but not the full build development that is proposed.

It should be noted that the CTPS analysis documented in this memorandum was based on work by others, and its results should only be used as an approximation of the traffic operations in the area under interim-year no-build conditions with the proposed development.

MSA/msa

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<sup>1</sup> The Cecil Group, et al., for the City of Somerville Office of Housing and Community Development, *Assembly Square Planning Study: The Vision and Implementation Plan for the Future*, October 2000.



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## **APPENDIX F      Meeting Agendas**

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The following are the meeting agendas for the Route 28 Corridor Advisory Committee. Also included is the notice for the public meeting that was held.

## Route 28 Corridor Advisory Committee

**Date:** 2/28/03

**Time:** 10:00 AM

**Place:** Somerville City Hall

### Meeting Agenda

- I. Discussion of the Approved Scope of Work
- II. Task 2
  1. Improvement Projects along corridor:  
Intersection Improvements, Three Locations
  2. Proposed Development:

Telecom City	Ikea at Assembly Square
Assembly Square Costco Redevelopment	Stop and Shop Supermarket
Tage Inn	Internet Center
Twin City Plaza, Star Market Expansion	North Point
North Point Residential	Proposed Hotel
  3. Committee's specific concerns along corridor
- III. First Public Meeting
  1. Where/When
  2. How to Advertise Meeting
  3. Items to Present:
    - a. Introduction to Study & Purpose
    - b. Proposed Developments/Improvements
    - c. Open up for public concerns/comments
- IV. Next Meeting Date

## **Route 28 Corridor Advisory Committee**

**Date:** 4/04/03

**Time:** 10:00 AM

**Place:** Somerville City Hall

### **Meeting Agenda**

- I. Existing Studies
- II. Discussion on “Visions” of the Corridor
- III. First Public Meeting
  1. Notice
  2. Items to Present public concerns/comments
- IV. Next Meeting Date

## **Route 28 Corridor Advisory Committee**

**Date:** 5/13/03

**Time:** 10:00 AM

**Place:** Somerville City Hall

### **Meeting Agenda**

#### **I. Upcoming Public Meeting**

**Presentation Agenda:** Introduction of Project Staff and Advisory Committee.  
Presentation of Study, Existing Information, and Examples  
of Possible Improvements and Enhancements.

Study Background  
Study Process  
Existing Information:  
Roadway Classification and Ownership  
Route 28 Traffic ADT Volumes  
Area Travel Time  
Crash Data  
Public Transit  
Proposed Projects and Studies  
Improvements and Enhancements

Comments/Statements from Route 28 Advisory Committee.  
Public Questions and Comments.

#### **II. Discussion on any Outstanding Issues**

#### **III. Next Meeting Date**



## **Route 28 Corridor Advisory Committee**

**Date:** 11/12/03

**Time:** 10:00 AM

**Place:** Somerville City Hall

### **Meeting Agenda**

- I. Discussion of Task 2 and Task 3 Memorandums
  - Presentation on License Plate Data
  - Discussion/comment on Task 2 and Task 3 memos
  
- II. Discussion on Next Tasks
  - Discussion of tasks ahead
  - Discussion of what specific “visions” should be planned for corridor.
  
- III. Next Meeting Date

## **Route 28 Corridor Advisory Committee**

**Date:** 2/2/04

**Time:** 2:00 PM

**Place:** CTPS Conference Room

### **Workshop Agenda**

- I. Introductions
- II. Project Overview pertaining to Urban Design
- III. Work session for the Route 28 Corridor.
  - Segment 1
  - Segment 2
  - Segment 3
  - Overall Corridor (river to river)

## **Route 28 Corridor Advisory Committee**

**Date:** 6/04/04

**Time:** 10:00 AM

**Place:** Somerville City Hall

### **Meeting Agenda**

- I. Update of Project Status
- II. Discussion of Updated Origins-Destination Memorandum
- III. Discussion of Urban Design Workshop Results
- IV. Next Steps
- V. Next Meeting Date

## **Route 28 Corridor Advisory Committee**

**Date:** 11/28/04

**Time:** 10:00 AM

**Place:** Somerville City Hall

### **Meeting Agenda**

- I. Update of Project Status
- II. Task 4 Memorandum
- III. Next Steps: Task 5/Final Report  
Committee's Final Recommendations
- IV. Next Meeting Date

## **Route 28 Corridor Advisory Committee**

**Date:** 5/24/06

**Time:** 10:00 AM

**Place:** Somerville City Hall

### **Meeting Agenda**

- I. Review of study to date
- II. Discussion of current Somerville projects and studies
- III. Next Meeting Date

## **Route 28 Corridor Advisory Committee**

**Date:** 9/24/08

**Time:** 10:30 AM

**Place:** Somerville City Hall

### **Meeting Agenda**

- I. Review of response to comments memorandum
- II. Discussion any other comments that should be included in report update.

# **Notice of Public Meeting**

## **Public Informational Meeting**

for the

# **Route 28 (McGrath Highway) Corridor Transportation Management Plan**

The Central Transportation Planning Staff (CTPS), along with the City of Somerville, is holding a public informational meeting to introduce the Route 28 (McGrath Highway) Corridor Transportation Management Plan Study. This study will examine all existing or planned projects adjacent to Route 28 and develop a “vision” of Route 28 from the Mystic River to the Charles River.

## **Help Decide the Future of Route 28 (McGrath Highway)**

Attend the Public Information Meeting

**Tuesday, May 20<sup>th</sup>, 7:00 PM – 9:00 PM**

The public informational meeting will be conducted in the Aldermanic Chambers at City Hall, 93 Highland Avenue, 2<sup>nd</sup> Floor, Somerville.

*City Hall can be accessed by **Get Public Access Directions***

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**If you have questions, contact:**

**Mark Abbott, CTPS, 617 – 973 – 7100 or email [publicinformation@ctps.org](mailto:publicinformation@ctps.org).**

**Mailing address: CTPS, Suite 2150, Attn: Route 28 (McGrath Highway) Corridor,  
10 Park Plaza, Boston, MA 02116.**





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## **APPENDIX G      Scope of Work**

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The following is the project's scope of work.

**MEMORANDUM**

**DATE** February 20, 2003  
**TO** Transportation Planning and Programming Committee  
of the Boston Metropolitan Planning Organization  
**FROM** Arnold J. Soolman, CTPS Director  
**RE** Work Program for: Route 28 (McGrath Highway) Corridor  
Transportation Management Plan, Somerville

**ACTION REQUIRED**

Review and approval

**PROPOSED MOTION**

That the Transportation Planning and Programming Committee of the Boston Metropolitan Planning Organization vote to approve the work program for Route 28 (McGrath Highway) Corridor Transportation Management Plan, Somerville, in the form of the draft dated February 20, 2003.

**PROJECT IDENTIFICATION****Unified Planning Work Program Classification**

Location- and Site-Specific Projects

**CTPS Project Number**

22116

**Client**

Boston Metropolitan Planning Organization

**CTPS Project Supervisors**

*Principal:* Efi Pagitsas

*Manager:* Mark Abbott

**Funding**

MHD SPR Highway Planning Contract #33097

## IMPACT ON MPO WORK

The MPO staff has sufficient resources to complete this work in a capable and timely manner. By undertaking this work the MPO staff will neither delay the completion of nor reduce the quality of other work in the UPWP.

## BACKGROUND

A request for this study from the City of Somerville came to the attention of the Transportation Planning and Programming Committee during the preparation of the Boston MPO Fiscal Year 2002 Unified Planning Work Program (UPWP). In that letter, Somerville officials identified a number of reasons for the MPO to fund a study, including to:

- Improve vehicular, pedestrian, and bicycle safety
- Assess projected travel demand resulting from future growth
- Identify transportation issues and make improvement recommendations
- Ensure that economic development in the corridor has positive impacts on quality of life
- Evaluate potential bicycle and pedestrian connections
- Improve accessibility across the corridor

Route 28 is a principal arterial under the administration of the Metropolitan District Commission. In the northern part of the Boston MPO region, it runs from the region's boundary at North Reading to the City of Boston. The study corridor through Somerville is approximately two miles long, beginning south of Wellington Circle (Route 16) in Medford and ending at the intersection of Land Boulevard/Charlestown Avenue in Cambridge (see Figure 1). In this two-mile segment, the posted speed limit is 30 or 35 miles per hour.

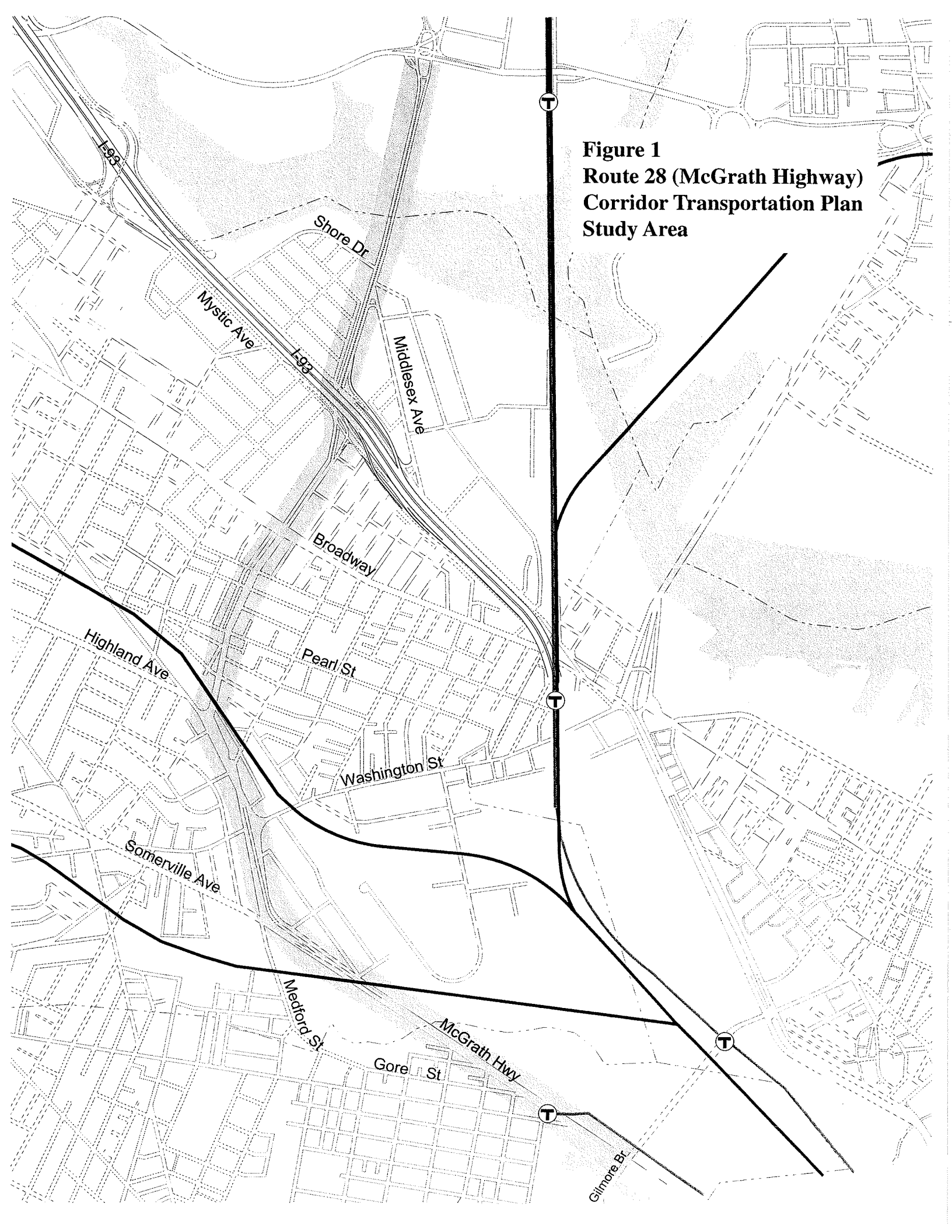
From preliminary reconnaissance and a series of travel time runs performed during the spring of 2001 as part of the ongoing Congestion Management System (CMS) process, most of Route 28 in Somerville was found to be congested during peak hours, and motorists are experiencing slow speeds and delays. Two segments are particularly congested during the AM and PM peak hours: Highland Avenue to Broadway, and Assembly Square entrance to Wellington Circle. These segments showed average peak period speeds between 11 and 15 miles per hour.

Route 28 is a major commuter corridor carrying traffic from the north of the region to a multitude of destinations, including points in and through the City of Boston. It also serves as an alternative to I-93, especially when freeway traffic is backed-up due to traffic incidents. Main connections with I-93 include Interchanges 29 (I-93 at Route 28) and 30 (I-93 at Route 38, Mystic Avenue). Average Daily Traffic (ADT) varies by segment between 40,000 and 65,000 vehicles.<sup>1</sup>

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<sup>1</sup> 2001 Massachusetts Traffic Volumes, MassHighway.

**Figure 1**  
**Route 28 (McGrath Highway)**  
**Corridor Transportation Plan**  
**Study Area**



The corridor has been under considerable redevelopment in recent years. Examples of ongoing and anticipated developments impacting Route 28 are: in Medford, Telecom City; in Somerville, the redevelopment of Assembly Square, Stop and Shop Supermarket at the old Somerville Lumber site, Internet Center at Inner Belt Road, Twin City Plaza expansion; in Cambridge, North Point development near the Gilmore Bridge and a proposed hotel near Water Street. Mitigation from these developments and other transportation improvements planned or under study include access and traffic operational improvements, the feasibility of a new Orange Line station at Assembly Square, intersection improvements at Pearl Street and Broadway, the development of the Somerville Community Path to Lechmere, and others. Other ongoing and potential studies related to this corridor that will be considered in this study include the Executive Order 418 Study for Somerville and the Massachusetts Bay Transportation Authority's Urban Ring project, its Program for Mass Transportation and Green Line Extension.

Through regular meetings with a Route 28 Corridor Advisory Committee, a study advisory committee that will soon be formed, the CTPS study team will add to its knowledge of planned roadway improvements and development projects, and of city officials' and community representatives' vision for the redevelopment and physical characteristics of this corridor. Roadway projects that are currently underway or committed mitigation will be included as "given" improvements. This study will not seek to revise or otherwise delay already committed projects. Expected participants in a Route 28 Corridor Advisory Committee are: Somerville, Medford, and Cambridge city officials, planners, and engineers; staff from MassHighway District 4 and the Metropolitan District Commission (MDC), the Metropolitan Area Planning Council (MAPC), and Chambers of Commerce; and neighborhood, business, and other interested parties.

The purpose of this study is to develop a transportation plan for Route 28 that considers development proposals, including their impacts and their mitigation. The plan would also recommend additional strategies and measures that coordinate seamlessly with improvement opportunities from public and private investment so that safety and mobility are enhanced and negative traffic and other impacts are minimized.

## GOALS & OBJECTIVES

The goals of this study as outlined in the UPWP are to:

- Evaluate the collective impact of proposed developments on the Route 28 Corridor.
- Develop strategies for addressing these impacts in a comprehensive fashion to decrease congestion and improve safety.
- Develop strategies for increasing the attractiveness of this corridor for pedestrian, bicycle, and transit services.
- Identify improvements needed to ensure that responsible development is sustainable in accordance with each affected community's land use plans.

Towards achieving these goals, the primary objective of the study will be to *create a Route 28 Corridor Transportation Management Plan. This plan will coordinate current and planned roadway improvement projects to accommodate expected development and traffic growth. The plan will also evaluate and recommend improvements for pedestrian and bicycle facilities and for public transportation.*

In order to achieve the stated primary objective, the study team and the Advisory Committee will focus on the following areas:

1. Vehicular, pedestrian, and bicycle safety
2. Travel demand resulting from future growth
3. Transportation issues that need to be overcome
4. Economic development impacts on quality of life
5. Bicycle and pedestrian connections
6. Accessibility (connections) across the corridor
7. Urban design/aesthetic improvements and potential landscaping along the corridor

Consideration of these seven focus areas will facilitate the development of a transportation plan which will enable the Route 28 corridor to become appropriately designed to accommodate through and local traffic and the needs of bus, bicycle, and pedestrian modes over its entire length, from south of Wellington Circle in Medford to Land Boulevard/Charlestown Avenue in Cambridge. The objectives may be revised during the ongoing public process, within the limits of the existing budget.

## WORK DESCRIPTION

### **Task 1 Route 28 Corridor Advisory Committee and Other Public Participation**

Establish contacts with the Somerville, Medford, and Cambridge city planners, engineers, and community and economic development officials, as well as Metropolitan District Commission and MassHighway District 4 staff. At the recommendation of the city officials, the appropriate state senator(s) and Representative(s) may be notified of the study, as well as neighborhood, business, and environmental groups. It is expected that these individuals/groups from the three communities will form the core of a Route 28 Corridor Advisory Committee (CAC) that will provide feedback on the study's findings and progress. A meeting will be scheduled even before the study begins to introduce all the parties, to describe the study's purpose, as well as to receive input in order to finalize this work program. Additional meetings with the Committee will be held as needed. This includes instances where CTPS needs comments or input from the Committee on data and analyses issues, when a task is completed and a presentation is due, or when the Committee requests a meeting for study-related reasons.

There will also be two public meetings, the first to introduce the study to the public and solicit citizens concerns, perceptions, and visions of the corridor. The second public

meeting will be held prior to the completion of the draft study report. During this meeting, CTPS will present to the public the study's preliminary findings and recommendations, and will request citizens to comment on the findings and recommendations prior to the issuance of the draft study report.

### ***Product of Task 1***

The formation of, and continuous coordination with, an advisory body comprised of key officials from Somerville, Medford, Cambridge, MassHighway, MDC, MAPC, and other relevant parties. Other products of this task include preparing presentation material for the Committee and the two scheduled public meetings.

## **Task 2 Create an Inventory of Safety and Transportation Concerns, Planned Roadway Improvements, and Land Developments**

### ***Subtask 2.1 Transportation Concerns***

Through meetings with the Advisory Committee, CTPS will develop a full understanding of the transportation concerns in the Route 28 corridor. Included in the list of concerns could be congested intersections (signalized and unsignalized), areas with high collision rates, issues with public transportation service, and segments in need of improved bicycle and pedestrian facilities.

### ***Subtask 2.2 Transportation Improvements***

By coordinating with Somerville, Medford, and Cambridge planners and engineers, and personnel of the Massachusetts Environmental Protection Act (MEPA), MDC, and MassHighway, CTPS will develop an inventory of recent, ongoing, and planned transportation improvements for Route 28 and the vicinity. These improvements include public projects and private development mitigation. Instrumental in providing this information will be developers and their consultants, the Transportation Improvement Program (TIP), and local traffic studies.

### ***Subtask 2.3 Development Projects***

All recent and proposed development projects in the corridor will be considered. It is likely that this information will come from city planners, community development specialists, and environmental impact reports (EIRs).

### ***Product of Task 2***

A technical memorandum summarizing transportation and safety traffic concerns as they relate to Route 28 as well as recent, ongoing, and planned roadway improvements and development projects in the corridor.

## **Task 3 Collect Corridor Transportation-Related Data**

### ***Subtask 3.1 Reconnaissance***

In order to understand traffic conditions in the corridor, CTPS will collect information on intersection geometrics, traffic signal operations, bicycle and

pedestrian facilities (sidewalks, crosswalks, pedestrian signals, disability ramps, etc.), posted speed limits, bus stops, parking restrictions, and desire lines across the corridor. The desire line reconnaissance will include vehicle, bicycle and pedestrian movement across the corridor.

### ***Subtask 3.2 Traffic Counts***

Traffic counts such as peak period manual turning movement counts (TMCs) and 24-hour automatic traffic recorder (ATR) counts on Route 28 will be gathered from recently (within the past two years) completed area traffic studies, EIRs, and local counting programs. Wherever possible, count data will be compared with older information at key locations in order to observe trends in traffic growth. If necessary, additional important locations may have to be counted if data is unavailable. A measure of peak hour queue lengths at some intersections, as well as the proportion of truck traffic, may also be obtained through field work.

### ***Subtask 3.3 Vehicle License Plate Survey***

An origin-destination sample study of the traffic using Route 28 may be undertaken if the Committee finds it to be useful to the overall study. CTPS will perform a license plate study at a key location(s) along the corridor, most likely during the morning peak period. This study, coupled with vehicle destination information from the regional model of the Boston Metropolitan Planning Organization (MPO), will help to determine whether and how a portion of the traffic using the corridor may be served through other routes and/or transportation modes.

### ***Subtask 3.4 Vehicle Crash Data***

Available crash data by frequency, type, and severity are often available from existing traffic studies and EIRs. MassHighway also generates a "High Accident Locations Listing" for the region. That list will shed light on which Route 28 intersections are particularly prone to vehicle collisions. It is hoped that these data, combined with field work, will yield information on locations with particularly unsafe traffic operations in the corridor, as well as some of the causes of the high number of collisions. Investigation of the data will also try to determine if there are locations where there are a number of crashes between vehicles and pedestrians and/or bicycles.

### ***Subtask 3.5 Travel Time Runs***

Travel time runs were performed recently for the Route 28 corridor as part of the Boston MPO's Congestion Management System (CMS) process. These data will be helpful in identifying those sections where traffic flows smoothly as well as those where traffic is congested.

### ***Product of Task 3***

A technical memorandum summarizing all transportation services, pertinent traffic data, and traffic patterns in the corridor, and including traffic flow maps.



#### **Task 4 Review Development Mitigation Projects and Other Planned Roadway and Transit Improvements**

Review the roadway and development projects identified in Task 2 in order to answer the following:

- Where are various planned development mitigation projects located along the corridor, what are they, and how do they fit in relation to each other from a physical, operational, and chronological point of view?
- In addition to the planned projects, what other problematic locations (gaps) exist that need attention, i.e., segments of Route 28 that need to be improved for seamless traffic flow, pedestrian, and bicycle circulation?
- Based on the Advisory Committee's vision for Route 28 regarding safety, mobility, traffic, pedestrian and bicycle flow, economic development, and other roadway characteristics, what types of improvements would be appropriate?
- Identify and coordinate with, if possible, planned transit improvements along corridor and surrounding area. Examples are the Urban Ring, Green Line Extension, and the new Orange Line Station at Assembly Square.

##### ***Product of Task 4***

A technical memorandum discussing how proposed transportation projects in the Route 28 corridor "fit" into each other and what other locations/services exist in the corridor that are in need of attention so that each set of improvements will dovetail with another set of improvements physically, operationally, and chronologically.

#### **Task 5 Develop Traffic Forecasts and a Transportation Plan**

Based on the review in Task 4, a transportation plan of roadway improvements will be developed for the corridor.

##### ***Subtask 5.1 Traffic Forecasts***

In order to test the sufficiency of proposed roadway and other improvements within the plan, future-year traffic projections are required. CTPS will therefore develop traffic volumes for a short-term horizon year and a long-term horizon year (most likely 2025). The short-term horizon year will be defined based on the near-future likely occupancy date for the majority of the developments that are anticipated along the corridor, especially at Assembly Square. The regional transportation model will be utilized to provide the long-term horizon year projections.

##### ***Subtask 5.2 Route 28 Corridor Transportation Plan***

This plan will take into account all transportation and development projects scheduled to be implemented on or near Route 28. There will also be an effort to anticipate possible, but not yet scheduled developments, potentially occurring further into the future. The plan will look at the approximately two-mile corridor as a system, and it will address vehicle, pedestrian, bus, and bicycle circulation. Additionally, potential urban design/aesthetic and landscape improvements will be

investigated and included in plan. The plan will not include determining what potential zoning changes or land uses will be appropriate and beneficial for the corridor.

The end result will be a plan of coordinated transportation improvements that the Advisory Committee will review and comment upon. The plan will identify short-range versus long-range improvements and assign priorities to them. If called for, a phased implementation plan for the improvements will be developed.

***Product of Task 5***

A technical memorandum describing a plan of comprehensive transportation improvements in the Route 28 corridor presented both in written and conceptual design formats. It will be based on a consensus of the Advisory Committee as to the plan's continuity, priorities, and uniformity.

**Task 6 Documentation and Review**

CTPS will document all project tasks in a report which will be reviewed by the Committee.

***Product of Task 6***

A report documenting Tasks 1 through 5.

**ESTIMATED SCHEDULE**

It is estimated that this project would be completed 20 months after the notice to proceed is received. The proposed schedule, by task, is shown in Exhibit 1.

**ESTIMATED COST**

The total cost of this project is estimated to be \$199,777. This includes the cost of 97.0 person-weeks of staff time, overhead at the rate of 94.40 percent and travel. A detailed breakdown of estimated project costs and schedule are presented in Exhibit 2.

AJS/MSAEP/ep

Exhibit 2  
**ESTIMATED COST**  
 Route 28 (McGrath Highway) Corridor Transportation Management Plan

**Direct Salary and Overhead** **\$199,277**

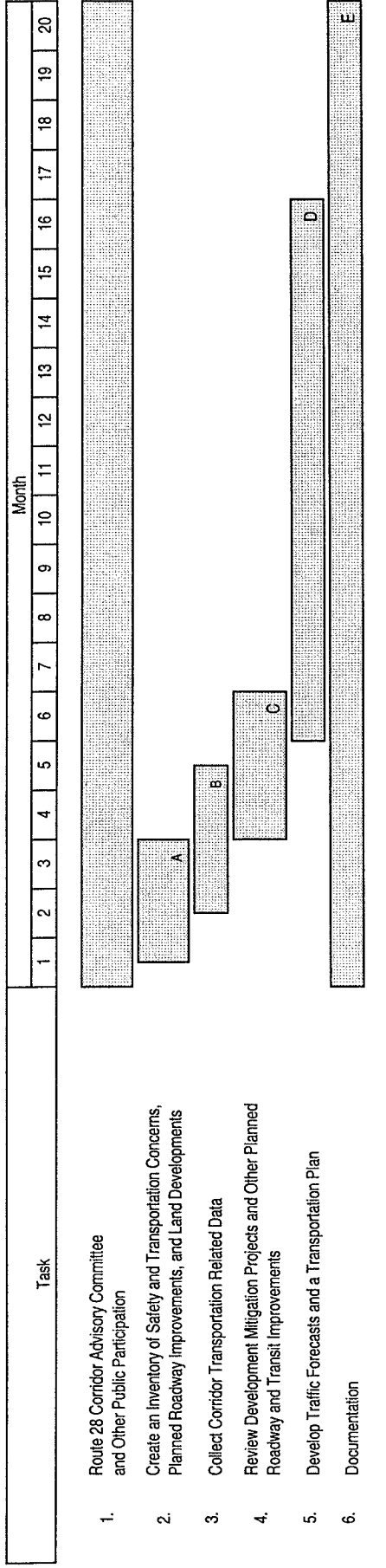
Task	Person-Weeks						Temp	Total	Direct Salary	Overhead (@ 94.40%)	Total Cost
	M-1	P-5	P-4	P-3	SP						
1. Route 28 Corridor Advisory Committee and Other Public Participation	1.0	0.5	6.0	0.0	0.0	0.0	7.5	\$8,563	\$8,083	\$16,646	
2. Create an Inventory of Safety and Transportation Concerns, Planned Roadway Improvements, and Land Developments	1.0	4.0	6.0	3.0	2.0	0.0	16.0	\$17,200	\$16,237	\$33,437	
3. Collect Corridor Transportation Related Data	0.5	2.0	4.0	2.0	0.0	3.5	12.0	\$11,395	\$10,757	\$22,152	
4. Review Development Mitigation Projects and Other Planned Roadway and Transit Improvements	1.0	2.0	8.0	6.0	0.0	0.0	17.0	\$18,021	\$17,012	\$35,033	
5. Develop Traffic Forecasts and a Transportation Plan	2.0	6.0	14.0	5.5	4.0	0.0	31.5	\$33,359	\$31,491	\$64,849	
6. Documentation	1.0	2.0	8.0	0.0	2.0	0.0	13.0	\$13,971	\$13,189	\$27,160	
<b>Total</b>	<b>6.5</b>	<b>16.5</b>	<b>46.0</b>	<b>16.5</b>	<b>8.0</b>	<b>3.5</b>	<b>97.0</b>	<b>\$102,509</b>	<b>\$96,768</b>	<b>\$199,277</b>	

**Other Direct Costs** **\$500**

Travel	\$500
Equipment	\$0
Consultant(s)	\$0
or interesting, however.	

**Total Costs** **\$199,777**

Exhibit 2 cont.  
**ESTIMATED SCHEDULE**  
**Route 28 (McGrath Highway) Corridor Transportation Management Plan**



Products/Milestones

- A: Technical memorandum no. 1
- B: Technical memorandum no. 2
- C: Technical memorandum no. 3
- D: Technical memorandum no. 4
- E: Technical Report