Route 79 / Davol Street Corridor Study

Chapter 2

Existing Conditions

Future No-Build Conditions

Issues Evaluation

2.1 Existing Environmental Conditions

The following section documents an inventory of the existing land use and environmental conditions, which was used during the alternatives development and analysis tasks. More specifically, the product of this inventory was a list of issues and constraints used during the development and analysis of the improvements and alternatives to avoid significant impacts and determine the extent of impacts where they could not be avoided. Additionally, opportunities were also identified that would serve to benefit the overall goals and objectives of the study.

To assess existing environmental conditions for the study area, data from the MassGIS database were acquired and superimposed onto aerial photographs of the project study area. In addition to this mapping, information gleaned from reviewing a variety of natural resource web sites was also used to document existing conditions in the study area. As this was a planning study, conceptual level coordination with resource agencies was undertaken to ascertain the presence and/or absence of federally threatened and endangered species. Coordination with natural resource agencies, including the National Park Service (NPS), will become more important as any alternatives move forward into the environmental documentation phase that may be required by both the National Environmental Policy Act (NEPA) and Massachusetts Environmental Policy Act (MEPA).

Route 79 is located along the western side of the City of Fall River, an urban area. MassGIS land use and land cover GIS data depicted in Figure 2.1 shows that the land use directly east of the existing roadway is predominantly high-density residential with some commercial and industrial properties interspersed. The northeast quadrant between Route 79 and the rail line accommodates numerous single family homes along with some apartment buildings. The North Burial Ground, a cemetery listed on the National Register of Historic Places (NR), is located just east of the railroad tracks off of North Main Street.

Much of the central sections of the area east of Route 79 are dominated by commercial and industrial uses along both sides of the railroad. To the south and east, the dominant land use is densely populated residential and includes two historic districts, Highlands and Lower Highlands. The Highlands neighborhood is a triangular shaped area bounded by Highland Avenue, Elsbree Street and President Avenue. The Lower Highlands neighborhood is located east of Route 79, south of Prospect Street, north of I-195 and west of High Street. There is little open space other than the North Burial Ground. However, there are two town parks. North Park is located just east of North Main Street and north of President Avenue. Bicentennial Park is located west of Davol Street West at President Avenue.

The land to the west of Route 79 varies widely and includes commercial properties, apartments and condominiums, industrial sites including an electric utility substation, parkland and a boardwalk along the edge of the Taunton River.

The most prominent natural resource within the project study area is the Taunton River, which lies just to the west of Route 79. In 2009, the entire 40-mile stretch of the Taunton River from the Town of

Bridgewater, south to its confluence with Mt. Hope Bay, was officially designated as part of the National Wild and Scenic Rivers System, discussed further under the Existing Surface Water Resources section.

The studies that led to this designation recognized the Taunton River for its remarkable natural, historic and scenic attributes. Also noted was that a limited number of parcels along the river are under any type of protection by local, state or federal governments, suggesting that the Taunton River is extremely vulnerable to development. Since the Route 79 / Davol Street Corridor Study includes the promotion of economic development, any proposed impacts to the Taunton River would require an increased level of scrutiny. However, the Wild and Scenic Rivers Act also encourages residents and visitors to learn more about the attributes of the river, to enjoy its scenic beauty and encourages recreational uses both on and near the river. These uses can extend to walking and biking paths along the river's edge, and is a major focus of this study.

Within the project Study Area, the City of Fall River maintains a water main that runs east-west near Cory Street. This water main crosses underneath Davol Street East, Route 79, Davol Street West and the Taunton River. The City of Fall River also maintains combined sewers (storm water and sanitary sewer) along Davol Street West and President Avenue. Combined sewer outlets into the Taunton River are located near Bicentennial Park where a screening and disinfection facility was recently constructed and near City Pier where a sewer separator facility is planned for construction. No pump stations are present in the Focus Area between Davol Street West and Davol Street East. It is not anticipated that any existing water mains will act as constraints during the development of alternatives.

2.1.1 Existing Surface Water Resources

The Taunton River is the only surface water resource within the project study area, and is located just west of Route 79 and Davol Street West. Within the vicinity of the project Focus Area, the Taunton River has three bridge crossings: the Braga Bridge along I-195, the former Brightman Street Bridge that is now closed to traffic, and the Veterans Memorial Bridge which was completed in 2011 to replace the Brightman Street Bridge.

The Taunton River forms at the confluence of the Town River and the Matfield River in the Town of Bridgewater. From there it meanders in a southerly direction through the towns of Halifax, Middleborough and Raynham, through the City of Taunton for which it is named, the towns of Berkley, Dighton, Somerset, and the Assonet section of Freetown, to Fall River where it joins Mount Hope Bay, an arm of Narragansett Bay. The total length is approximately 40 miles from its beginning in Bridgewater to the mouth of the Quequechan River in Fall River.

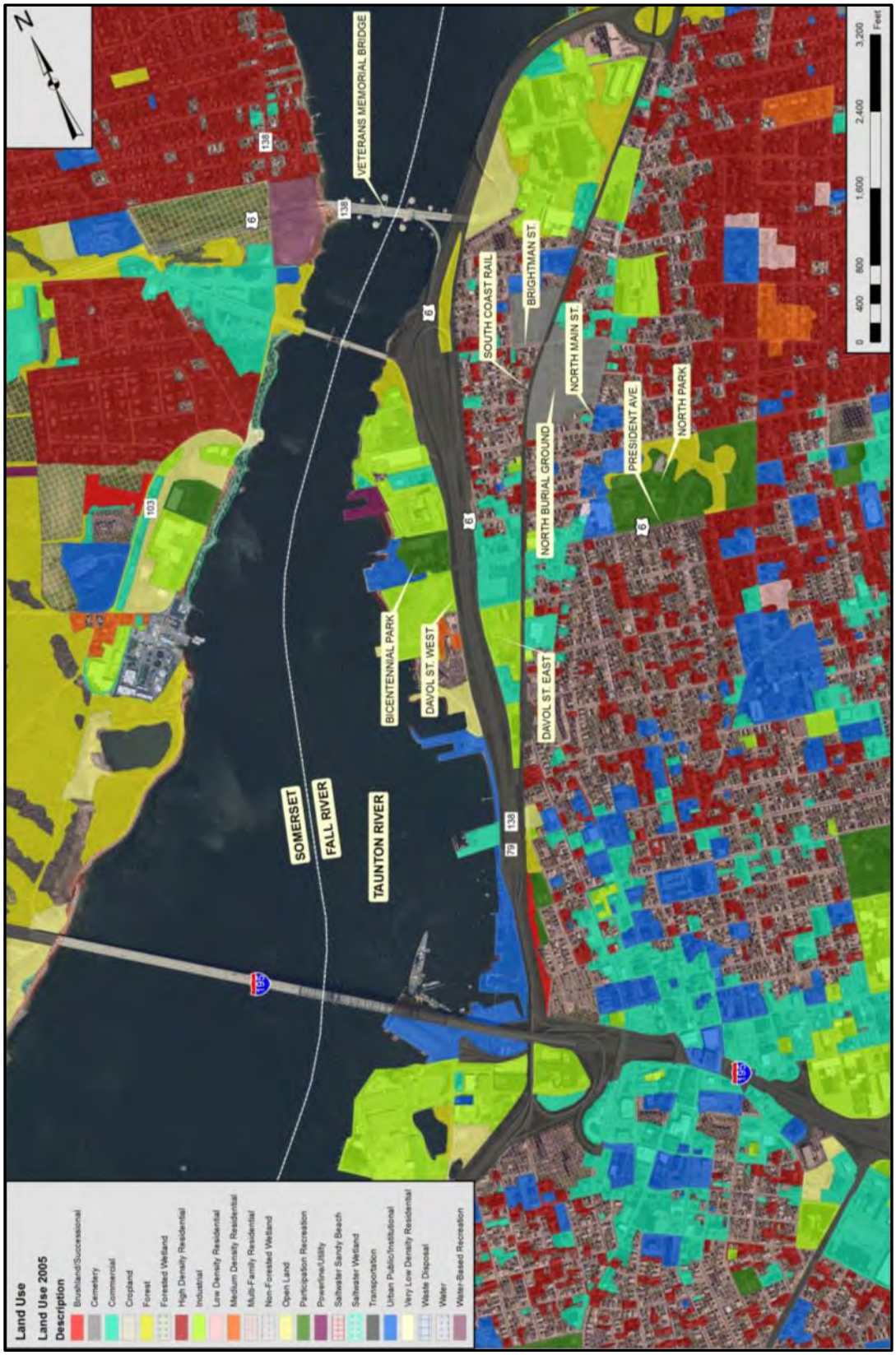


Figure 2.1: Land Use Classification

The Taunton River watershed encompasses approximately 562 square miles and includes the Hockomock Swamp, the largest freshwater wetland in the state. The Taunton River, designated as a Wild and Scenic River, is one of the flattest rivers in New England, dropping only about twenty feet in elevation over its length. The river is tidal as far north as Taunton and is the longest undammed coastal river in New England.

The federal Wild and Scenic Rivers Act protects the river's values, character and existing uses while preventing any federally licensed or assisted projects that would negatively impact the river's values or character. River values include hydrology, fish, ecological and biological diversity, scenery, recreation, history and archaeology. The US NPS is required to review all federal decisions associated with the river to ensure protection of the river and supports the Taunton River Stewardship Council to ensure implementation of the Taunton River Stewardship Plan. Like most major rivers, the Taunton River is a vital natural resource that sustains a wide variety of plants, fish, and wildlife, while offering scenic beauty to the landscape and offering a wide range of recreational opportunities to tourists and the local population.

2.1.2 Existing Floodplains

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps and GIS data obtained from MassGIS were reviewed to identify floodways and 100-year and 500-year floodplains within the project study area. The only floodplain resources located within the study area are associated with the Taunton River and are depicted in Figure 2.2. A floodway is an area located within the floodplain that must remain undeveloped in order to allow the base flood, or 100-year flood, to discharge. The water within the floodway is typically the deepest and fastest, and as such, the land within the floodway is at the greatest risk during flooding events. The Taunton River does not have a designated floodway.

Flood Insurance Studies (FIS) are conducted under standards set by FEMA in order to determine areas at risk during 100-year and 500-year storms. The FIS completed in the vicinity of the Focus Area developed flood profiles for the Taunton River while modeling 100-year and 500-year storms in order to determine base flood elevations for these events at different locations along the river. These floodplains and elevations are presented on Flood Insurance Rate Maps, and are broken down into different zones based on the different hazards faced within that area. Zone A areas are located within the 100-year floodplain. Zone B includes areas within the 500-year floodplain and beyond the 100-year floodplain. If an area is subject to inundation during the 100-year flood and also faces dangers due to storm-induced velocity wave action, this area is included within Zone V. If base flood elevations are known, as is the case for the Taunton River, Zones A and V are renamed to Zone AE and Zone VE.

The 100-year floodplain associated with the Taunton River covers much of the land west of Route 79 and Davol Street West but also extends further to the east as far as the railroad tracks at the southern limits of the Focus Area. The 500-year floodplain extends further inland than the 100-year floodplain in a few isolated areas and encroaches onto Route 79 near

President Avenue. Figure 2.2 shows Flood Zone AE (100-year floodplain) in yellow, Flood Zone VE (100-year floodplain with risks due to storm-induced velocity wave action) in green, and Flood Zone B (500-year floodplain) in red.

2.1.3 Existing Groundwater Resources

Aquifer and groundwater information was obtained from the United States Geological Survey (USGS) Hydrologic Atlas produced by the USGS Water Resource Discipline (WRD) via MassGIS (1960s to the present). Groundwater resources in the Commonwealth of Massachusetts are not assigned a water quality classification but instead are designated as either "high" or "medium" output water supply aquifers.

The principal aquifers of the Taunton River basin are sand and gravel deposits within stratified drift. Stratified-drift deposits are exposed at land surface over about 62 percent of the basin. They are primarily ice-contact (kame), outwash, and lake-bottom sediments, which were deposited in preglacial bedrock valleys and in water-filled depressions in the till surface during retreat of the last glacier. Stratified drift is more abundant in the central and southern parts of the basin than in the northern part. In the northern one-third of the basin, stratified drift fills narrow, north-south trending valleys, which are bounded by till-bedrock uplands. The surficial geology of the project area is shown in Figure 2.3.

2.1.4 Existing Aquifers and Public Water Supplies

Drinking water for the City of Fall River is obtained from the North Watuppa Pond. When needed, supplementary water is pumped from Copicut Reservoir into the watershed of the North Watuppa, from which it flows into the North Watuppa Pond via King Phillip and Blossom Brooks. Fall River also has additional water resources not currently used for drinking water. These include the South Watuppa Pond, Terry Brook Reservoir, Sawdy and Devol Ponds, and Lake Noquochoke.

About 10,000,000 gallons of water are delivered per day to the City. This includes water supplied to residential, commercial, municipal, and industrial customers; and for fire protection. In addition, about 600,000 gallons per day is sold to the neighboring communities of Tiverton, Westport and Freetown.

The maximum capacity of the water treatment facility at the North Watuppa Pond is 24,000,000 gallons per day of finished water. The processes carried out there include disinfection by chlorination, removal of solids contaminants by flocculation and sedimentation, and filtration through sand and carbon for "polishing" and taste and odor removal. The water distribution system contains seven storage tanks, and over 250 miles of distribution pipeline.

Residents and businesses within the study area receive public drinking water from this distribution system, which is maintained by the Fall River Water Department. An existing water

main crosses under Route 79 and Davol Streets West and East near Cory Street. The exact locations of the drinking water distribution system within the project study area will need to be determined by project engineers during project design development and through coordination with the City of Fall River Water Department.

2.1.5 Existing Wetlands

The MassGIS database entitled DEP Wetlands (1:12,000) was used to identify wetland resources within the project study area. Figure 2.2 depicts the wetland resource areas within the study area limits. The primary wetland resource area is the Taunton River. The only other proximate wetland resource area is the Quequechan River, which is located south of the Focus Area limits. There are no emergent, scrub-shrub or forested wetland areas within the study area.

If this conceptual planning study were to recommend a long-term build alternative, which would then transition into any formal environmental documentation phase required by both the National Environmental Policy Act (NEPA) and Massachusetts Environmental Policy Act (MEPA), a more detailed assessment of wetland functions and values, vegetative species composition, and overall quality would need to be undertaken.

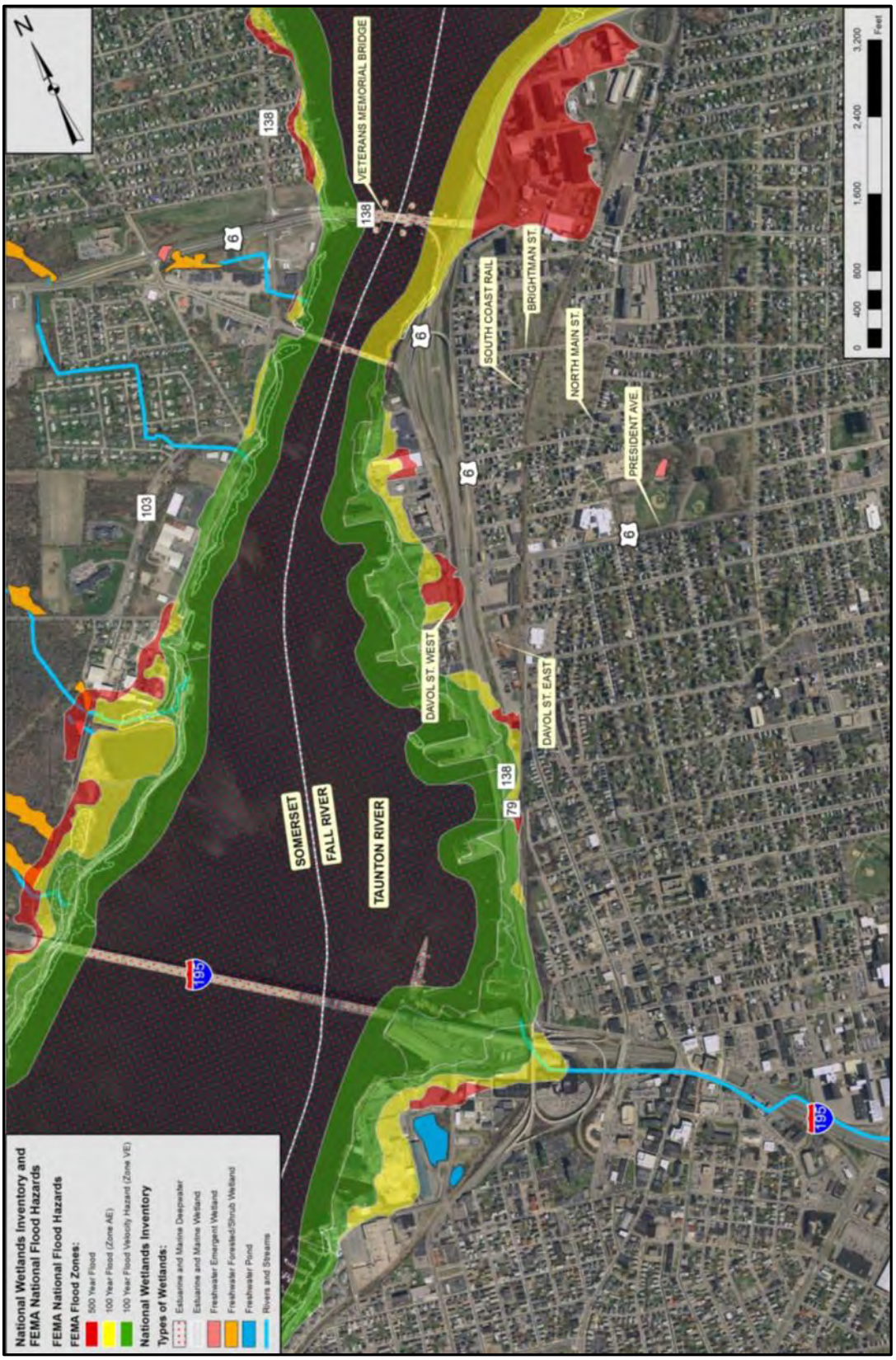


Figure 2.2: 100-Year and 500-Year Floodplains and Wetland Resource Areas

Figure 2.3: Surficial Geology

2.1.6 Existing Fish and Wildlife Habitat

The Taunton River varies from the clear headwaters to the sluggish, fertile stretches, lush with vegetation, to brackish and, finally saltwater environments. A fisheries report of the Taunton River, reported a list of over 70 species of fish that turned up with the aid of surveys by seven fisheries experts who sampled the river from the smaller up-stream flow to the saltwater areas.

The watershed supports 29 species of native fish. Tributaries of the Taunton River including the Nemasket River have been noted as one of the most productive warmwater fisheries in eastern Massachusetts. It is also the state's largest and most important Alewife fish run. Another tributary of the Taunton River, the Winnetuxet River, is smaller but has similar characteristics as the Nemasket River with a similar abundance of warmwater fish. Most of the Taunton River is slow moving and silty. However, there are several "riffle" sections with higher velocity, coarse gravel and sand bottom with moderate to dense aquatic vegetation. These areas are a favorable habitat for feeding and reproducing warmwater fish. The most abundant species include: Bluegill, Redfin, Pickerel, American Eel, Pumkinseed, Largemouth Bass and the Golden Shiner.

The existing wildlife habitat within the study area is predominantly a developed urban environment, with natural vegetated habitat essentially limited to relatively small, fragmented forest and grassy areas adjacent to paved roadways, parking lots and buildings. Local public parks include North Park and Bicentennial Park (shown in Figure 2.1) and are of limited size. Wildlife expected to use these patches of natural vegetated habitat include rabbits, chipmunks, squirrels, shrews, moles, raccoons, skunks, fox, coyote and deer as well as various common songbirds, amphibians, and reptiles. Neither the high density residential areas, nor the commercial and industrial zones within the study area are likely to provide significant habitat for wildlife, but still may provide cover and some food sources for more urban-tolerant species.

2.1.7 Existing Threatened and Endangered Species

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) digital data contained on the MassGIS web site were reviewed to identify the potential for threatened and endangered species, as well as critical habitats within the study area. NHESP GIS coverages that were examined include the Priority Resource (21E) Map, the Priority and Estimated Habitats Map, and the NHESP Biomap.

The mapping depicts a contiguous linear zone along the entire length of the Taunton River to the south of the study area that is identified as a rare species priority habitat. There are no other such designations within the study area. The mapped data also indicates general areas where threatened and endangered species and significant habitats could occur, but does not accurately reflect the size and shape of potential or confirmed habitats or populations. Any NHESP sites identified in close proximity to the study area would require coordination with the Massachusetts Department of Environmental Management (DEM) for further assessment of possible project effects during any NEPA or MEPA environmental documentation phase.

Coordination with the U. S. Fish and Wildlife Service (FWS) would also be required. Consultation in accordance with Section 7 of the Endangered Species Act was initiated. A copy of the correspondence is provided in the Appendix.

2.1.8 Existing Areas of Critical Environmental Concern

A review of the Massachusetts Department of Conservation and Recreation's (DCR) digital Areas of Critical Environmental Concern (ACEC) map contained on the MassGIS web site revealed that there are no ACECs within the project study area.

2.1.9 Existing Hazardous Waste Sites

A review of hazardous materials GIS data for the project area identified the locations of two Activity and Use Limitations (AUL) sites. However, no field verification or visual inspection of these locations has been conducted at this conceptual planning stage. AULs are restrictions on the usage of or access to a site in order to prevent or limit potential exposures to chemicals of concern. The sites are located at 1082 Davol Street (former Mechanics Mill site) and Hathaway Street (electric power substation). Figure 2.4 shows local AUL sites overlaid on top of watersheds and water resources. The former Mechanics Mills site recorded a small spill of fuel oil in 1995. The electric power substation reported a release of aromatic hydrocarbons in 2003.

Another site, known as City Pier, located off of Davol Street, was listed as a potential release or threat of a release for aliphatic hydrocarbons and for PCB. Since then the site has been capped, remediated, and the City of Fall River has issued procurement for construction of a Marina.

2.1.10 Existing Cultural, Historical and Archaeological Resources

Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f) states that any federally funded project must "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register."

The first step in evaluating potential impacts to historic resources is establishing an Area of Potential Effect (APE) for a project. For this study, the APE was defined as the same area as the Focus Area, because it was assumed that the developed alternatives for Route 79 and Davol Street improvements would more than likely not incur any potential impacts beyond this range. This APE has not been reviewed by the Massachusetts State Historic Preservation Office (SHPO), and is only being used as a planning tool to identify potential historic resources that might be affected by any changes to the infrastructure or resulting impacts. The size of the APE would be determined during cultural resources analyses, which would take place during any NEPA or MEPA environmental documentation phases and formal coordination with the SHPO.

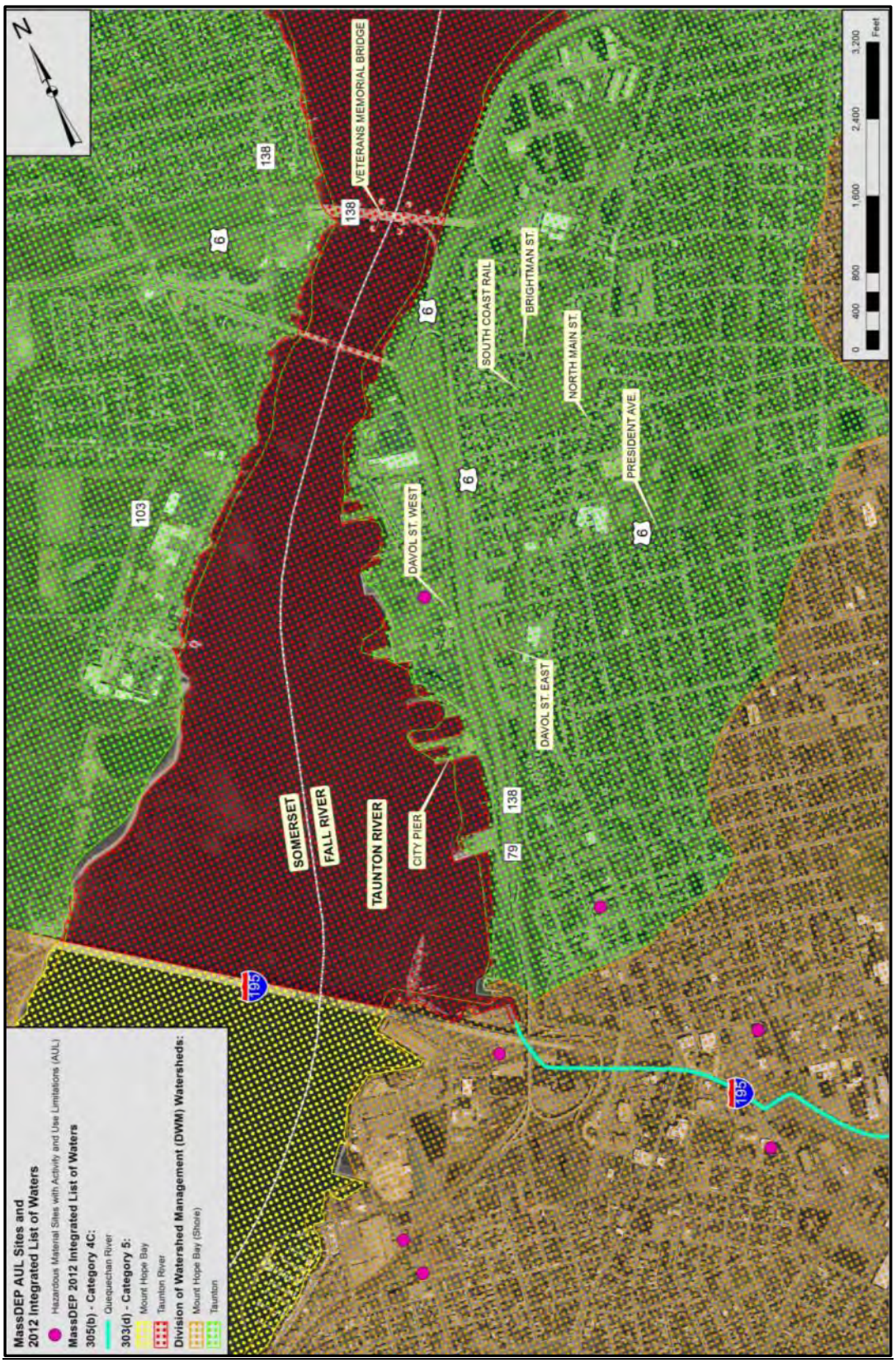


Figure 2.4: Activity and Use Limitations Sites and 2010 Integrated List of Waters

The National Park Service's National Register of Historic Places database was then consulted to determine the presence of any recognized historic sites or districts within the APE. This revealed that no recognized historic sites or districts exist in the vicinity of the study's Focus Area. It should be noted that there may be several resources within the APE that are not "listed on the National Register," but could potentially be eligible. Further field reconnaissance, research, and coordination with the Massachusetts SHPO would be necessary to determine their eligibility as any alternative progresses into the environmental documentation phase required by both NEPA and MEPA. This is particularly true for archaeological resources, which have yet to be defined at this planning stage.

2.1.11 Existing Air Quality

The Clean Air Act of 1970 and subsequent amendments (1990) established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants including carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), lead (Pb), ozone, and particulate matter (PM). The Clean Air Act required states to monitor regional air quality to determine if regions meet the NAAQS. If a region exceeds of any of the NAAQS, that part of the state is classified as nonattainment for that pollutant, and the state must develop an air quality plan, called a State Implementation Plan (SIP), that will bring that region into compliance. Until recently, Eastern Massachusetts, which includes Bristol County and Fall River, was classified as serious nonattainment for ozone. On May 21, 2012, the United States Environmental Protection Agency (EPA) designated almost all of Massachusetts including Bristol County as "unclassifiable/attainment" as these areas no longer exceed of the most current ozone standard (2012). The state is considered to be a maintenance area for CO, as it has a history of nonattainment.

Exhaust products of fuel combustion from motor vehicles can contribute to a region's air quality pollutant burden. Emissions vary greatly depending on vehicle type, distance traveled, operating speed, and ambient conditions. For this study, no quantitative air quality analyses were conducted with regard to placing measurement sensors in or around the study's Focus Area. However, a travel demand model was employed to calculate the existing conditions, congestion and delays which increase idling and decrease combustion efficiency, leading to higher emissions. Therefore, any excessive congestion or delay within the study area can be assumed to be a major contributor of poor air quality levels in the study area.

2.1.12 Existing Noise

Noise sensitive land uses include:

- Residences, hotels, and other buildings where people sleep
- Institutional resources such as churches, schools, hospitals, and libraries
- Various tracts of land where quiet is an essential element of the land's intended purpose, such as a National Historic Landmark where outdoor recreation routinely takes place.

Aerial photographs of the study area were reviewed to identify noise sensitive land uses and to obtain a better understanding of the existing noise environment. The Focus Area is in an urban section of Fall River amidst primarily medium and high-density residential neighborhoods that are bisected by Route 79 and Davol Street with many other streets nearby. Residences located to the east of Route 79 and Davol Street in the Lower Highlands neighborhood as well as some on the west side of Route 79 and Davol Street are considered to be the most sensitive receptors to potential noise impacts. Residences further to the east and south of the project study area may also be affected depending on the extent of the alternatives developed, and should be documented as part of the identification of potential issues and constraints.

MassDOT has developed a noise barrier program based on FHWA noise abatement criteria and policies and on MassDOT's noise abatement guidelines. There are essentially two programs; Type I and Type II.

The Type I program covers noise barrier construction coincidental with construction of major highways on new locations, or physical alteration of an existing highway, including widening or realignment. Such major projects usually require an Environmental Impact Statement (EIS) or Environmental Assessment (EA) and/or an Environmental Impact Report (EIR) to comply with the National Environmental Policy Act (NEPA) and the Massachusetts Environmental Policy Act (MEPA). As part of this analysis, the need for a noise barrier is evaluated and if determined to be reasonable and feasible is constructed as part of the project.

The Type II Program is a voluntary effort undertaken by MassDOT to construct noise barriers along existing Interstate roadways where reasonable and feasible and as funding priorities allow. Under this program, MassDOT has identified 53 locations that meet the criteria for consideration of a noise barrier. To-date MassDOT has constructed four of those, has determined that two are not feasible, three are currently being designed, and one other location is being reviewed. The remaining 43 locations will continue to be reviewed to determine if they are feasible and reasonable for construction. Of the 53 locations, there is one located in Fall River but it is not located near the study's Focus Area. Priority Location 11 is focused on the residential areas north of I-195 and west of Route 24 including McGowan Street and East Warren Street. However, depending on the extent of diverted traffic volumes occurring regionally as part of the alternatives analysis, this location will be considered to be a potential constraint. Any noise impacts coincidental with the Route 79 / Davol Street Study would be evaluated under the Type I Program.

2.1.13 Existing Protected and Recreational Open Space

Section 4(f) of the Department of Transportation Act of 1966 (49 USC 303) protects historic resources eligible for listing or listed on the National Register of Historic Places, as well as significant publicly owned parks, recreation areas, and wildlife/waterfowl preserves. Section 4(f) properties may only be impacted if there is no feasible and prudent alternative to their use and if the project includes all possible planning to minimize harm resulting from such use. There is a public park known as Veterans Bicentennial Park located within the study area, between Davol Street and the Taunton River.

2.1.14 Existing Environmental Justice Populations

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, signed by the President on February 11, 1994 directs Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

Environmental Justice is grounded in the practice of ensuring that both benefits and burdens of transportation investments are shared as equitably as possible among all affected communities. Historically, low-income and minority communities have borne many negative effects of transportation projects and have gained few direct benefits. As a result, efforts to promote Environmental Justice in transportation focus on engaging these communities in transportation decisions. With an awareness and active promotion of the principles of environmental justice in transportation decision-making, practitioners can better avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.

For the purposes of this planning study, census data was reviewed to determine the likely presence or absence of any population centers that meet the definition of minority or low-income populations that would be subject to EO 12898. (These population centers are commonly referred to as "Environmental Justice populations" in the context of EO 12898 and other Federal and State regulations.) This review indicated that both low-income and minority populations live in or near the project study area. Figure 2.5 shows the presence of Environmental Justice populations, including minority populations, low income households and limited-English proficiency households within the project area. Further review of census data indicated a large percentage of the population, approximately one-quarter, considered Portuguese as their primary language.

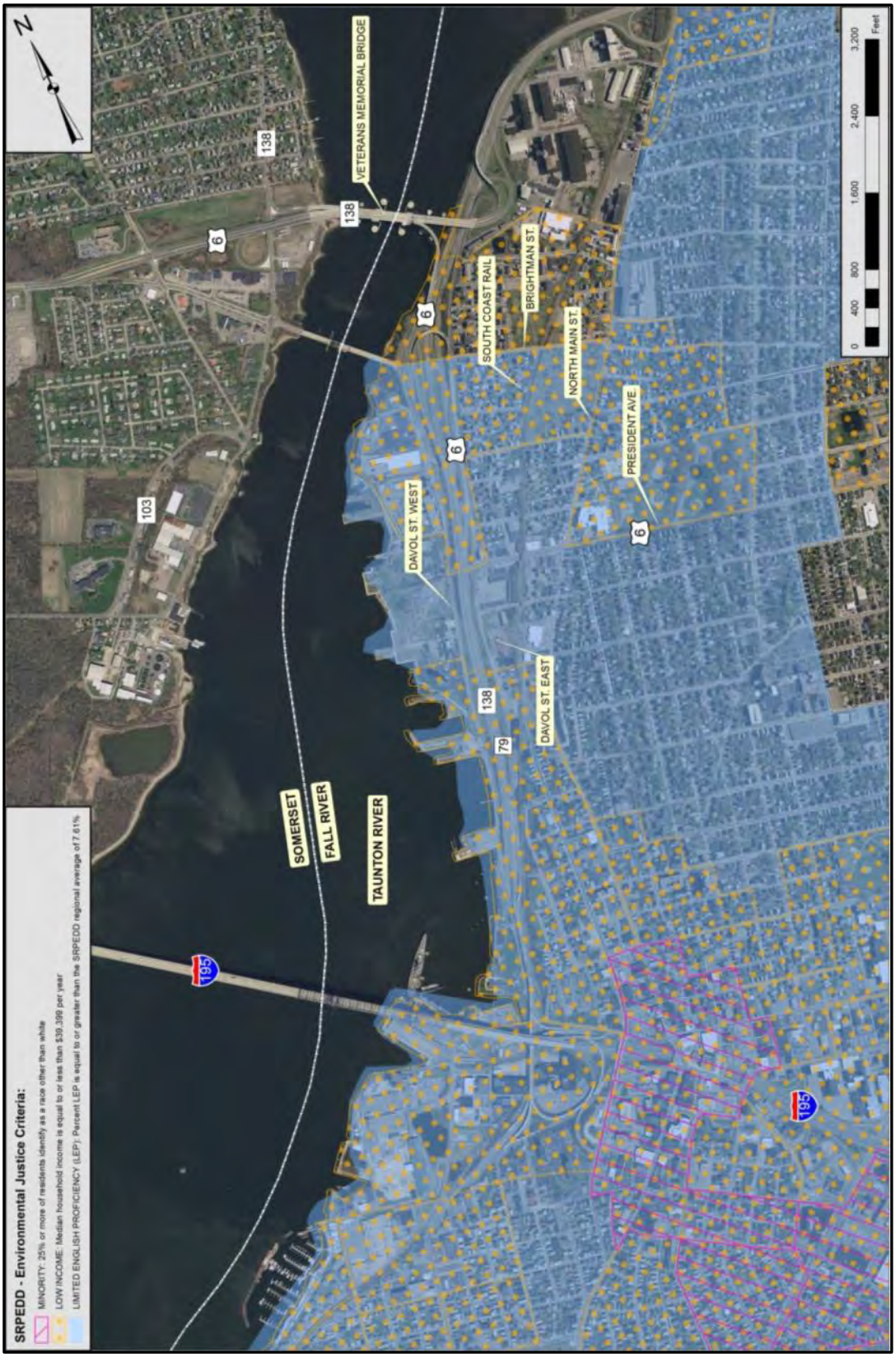


Figure 2.5: Environmental Justice Populations

2.2 Existing Economic Conditions and Analysis

Within the city and metropolitan area of Fall River and Bristol County, demographic and economic trends were analyzed as well as real estate market trends, examining housing, industrial, office and retail markets. The analysis was completed using information from the US Census Bureau, the Bureau of Economic Analysis, assessor's records, LoopNet, Zillow and field survey. Existing land use patterns within the study area were examined and their contribution to the City's tax base was also assessed. This information will primarily be used to project the future supply of sites under the Future No-Build conditions, but also to identify any issues, constraints or opportunities that will guide the alternatives development and analysis.

2.2.1 Demographic Trends

Within the 1.2 mile study corridor, there are few residential areas. The population of the study area is estimated to be 200 people. Nearly 90% of residents live in the waterfront Point Gloria Condominiums, a development of 118 units with many long-term owners. The Hathaway Street neighborhood, with just six houses, contains most of the rest. The population of the study area is anticipated to increase when the upper three floors of Commonwealth Landing Mill on the waterfront are developed into 70 to 80 new apartments.

Table 2.1 shows demographic, social, economic trends within the City of Fall River over the past decade in comparison to statewide averages. Fall River's population has fallen from nearly 92,000 in 2000 to its present level of 88,900, a reduction of 3% compared to a 1% loss statewide. Despite the 3% drop in population, the number of households and families has decreased by just 1%, highlighting a trend toward smaller households. Roughly one-fifth of Fall River's population is foreign-born, higher than the state average of 17% and one-third speak a language other than English at home. The mean travel time to work is 22 minutes, suggesting that the typical worker commutes from Fall River to work. In addition, there are more employed people in Fall River than there are jobs in Fall River.

2.2.2 Economic Characteristics

As shown in Table 2.1, Fall River's civilian labor force has dropped by 3% during the past decade while the number of unemployed workers rose by nearly 3,000 to 5,889. In 2010, the unemployment rate in the City stood at 13.2%, almost double the State average rate, but by August 2012, it had been reduced to 12.4%. The median household income in the City rose by 18% but at $34,236 is roughly half of the State average of $65,500. The percentage of households below poverty level (with incomes of less than $23,050 for a family of four) rose from 16% to 20% over this timeframe and is significantly higher than the Massachusetts average 11% poverty rate.

Table 2.1: Fall River Demographic, Social and Economic Statistics from 2000 to 2010

Fall River Compared with State Averages					
Demographics		2000	2010	% Change	State Avg. 2010
	Population	91,938	88,857	-3%	3.1%
	Median Age	36	38	6%	39
	% White	91%	87%	-4%	82%
	% Black	3%	4%	33%	7%
	% Asian	2%	3%	50%	5%
	% Latino	3%	7%	133%	9%
	Households	38,759	38,457	-1%	-
	Families	23,558	23,391	-1%	-
Social Characteristics					
	High School Graduate or more	57%	68%	19%	89%
	B.A. or higher	11%	14%	27%	38%
	Foreign Born	20%	21%	5%	17%
	Speak English at home	65%	67%	3%	79%
Economic					
	Employed Civilian Labor Force	39,647	38,613	-3%	-1%
	Mean Travel Time to Work	22 min	22 min	0%	27%
	Number unemployed	2,973	5,889	98%	72%
	% Unemployed	7.0%	13.2%	89%	7%
	Median Household Income	$ 29,014	$ 34,236	18%	$ 65,509
	Median Family Income	$ 37,671	$ 44,498	18%	$ 811,165
	Per capita Income	$ 16,118	$ 20,337	26%	$ 33,966
	Median salary - males	$ 31,330	$ 41,726	33%	$ 57,045
	Median Salary - females	$ 22,883	$ 31,300	37%	$ 44,522
	Percent below poverty	16.0%	20.0%	25%	11%
	% Receiving Food Stamps	-	20.0%	-	8%

Source: US Census Bureau, American Factfinder

2.2.3 Labor Force Employment Structure

Table 2.2 shows trends in the occupational and industrial structure of the labor force of Fall River, comprised entirely of residents of Fall River who work both in the City and in other areas. In comparison with the State averages, a low proportion of Fall River's labor force are in professional and managerial jobs, while a large proportion of workers are in construction, production, and transportation jobs. Except for a 25% drop in production and transportation jobs, Fall River's occupational structure saw little change from 2000 to 2010.

Between 2000 and 2010, the biggest change in the industrial sector was in manufacturing. It was Fall River's biggest employer in 2000, employing 24% of the labor force. By the end of the decade, only 15% of Fall River's residents were employed in manufacturing industries. Outside of manufacturing, Fall River's biggest employers are Retail, Education, Health and Social Services.

Table 2.2: Fall River Occupation Statistics from 2000 to 2010

Employment Structure of Fall River by Occupation and Industry Compared to State Averages				
Occupation	2000	2010	% Change	State Avg 2010
Management & Professional	22%	24%	9%	43%
Services	19%	21%	11%	17%
Sales & Office	25%	27%	8%	24%
Construction	10%	11%	10%	7%
Production & Transportation	24%	18%	-25%	9%
Industry				
Construction	6%	8%	33%	6%
Manufacturing	24%	15%	-38%	10%
Wholesale Trade	4%	3%	-25%	3%
Retail	13%	14%	8%	11%
Transportation & Utilities	3%	4%	33%	4%
Information	2%	1%	-50%	3%
FIRE	5%	5%	0%	8%
Professional & Scientific	6%	8%	33%	13%
Education, Health, & Social Services	21%	25%	19%	27%
Arts, Entertainment, Hotels, Restaurants	7%	7%	0%	8%
Public Administration	4%	4%	0%	5%

Source: US Census Bureau, American Factfinder, Selected Economic Characteristics of the Population

2.2.4 Workforce Data – Companies in Fall River

The workforce is comprised of those working at firms located in Fall River who live throughout the commuter shed. Table 2.3 shows trends in sales and jobs at firms located in Fall River. The number of firms in Fall River has decreased by 5% and the number of jobs has dropped by 1,400, which is an 11% loss. However, sales grew by 7%, indicating significant productivity gains. Statewide, the manufacturing sector performed worse, losing 17% of jobs and 12% of factories. Similar to the trend observed in Fall River, statewide sales of manufacturing firms actually increased by 10% despite the heavy losses of firms and jobs.

Table 2.3: Company Trends in Fall River 2002 to 2007

Employment, Firms, & Sales in the City of Fall River 2002-2007									
	2002			2007			% Change		
	Firms	Sales ($1000)	Jobs	Firms	Sales ($1000)	Jobs	Firms	Sales	Jobs
Manufacturing	195	1,706,441	11,707	164	1,060,134	6,067	-16%	-38%	-48%
Wholesale Trade	84	359,035	1,346	76	727,764	1,642	-10%	103%	22%
Retail Trade	330	754,439	3,436	298	931,222	3,488	-10%	23%	2%
Information	11	N/A	511	16	N/A	641	45%	N/A	25%
Real Estate, Rental & Leasing	92	54,179	338	87	61,792	339	-5%	14%	0%
Professional, Scientific & Technological	163	59,721	651	170	72,904	728	4%	22%	12%
Waste Management & Removal Services	79	123,733	1,517	73	109,489	1,103	-8%	-12%	-27%
Educational Services	10	12,819	167	9	N/A	99	-10%	N/A	-41%
Health Care and Social Assistance	289	648,108	9,687	290	920,287	11,078	0%	42%	14%
Arts, Entertainment, & Recreation	18	12,593	297	17	13,847	192	-6%	10%	-35%
Accommodation and Food Services	173	N/A	1,750	181	105,514	2,574	5%	N/A	47%
Other Services (except public admin.)	196	60,594	881	174	62,010	925	-11%	2%	5%
Totals	1,640	3,791,662	32,288	1,555	4,064,963	28,876	-5%	7%	-11%

Source: 2002 and 2007 Economic Census (US Census Bureau)

2.2.5 Employment Trends in Bristol County

Table 2.4 compares changes in employment within the larger Bristol County area over the past decade with state average trends. Unlike the Census data, these data include self-employed individuals. From 2001 to 2010, salaried jobs fell by over 13,000 in Bristol County, but this was offset to some extent by a gain of over 9,000 self-employed workers. This trend has occurred throughout the state and the nation during the recession of the past five years.

Mirroring the city data, the heaviest losses were sustained in the manufacturing sector. The second hardest-hit sector by the recent recession has been construction. Significant job gains were recorded in financial services, insurance, and real estate, which posted increases of nearly 40%, exceeding statewide gains and creating over 5,300 new jobs for Bristol County residents. Health care saw a 20% increase, equaling the state average growth in healthcare occupations. Jobs in education grew by 37%, which is twice the statewide average growth rate of 15%.

Table 2.4: Employment Trends in Bristol County

	2001	2010	Bristol Co. Change in Jobs	Bristol Co. % Change	State % Change
Total employment	270,156	266,000	-4,156	-2%	1%
By type					
Wage and salary employment	229,940	216,479	-13,461	-6%	-4%
Proprietors employment	40,216	49,521	9,305	23%	28%
Farm proprietors employment	603	680	77	13%	13%
Nonfarm proprietors employment	39,613	48,841	9,928	23%	28%
By Industry					
Farm employment	1,222	1,049	-173	-14%	-4%
Nonfarm employment	268,934	264,951	-3,983	-1%	1%
Private employment	239,719	236,305	-3,414	-1%	1%
Forestry, fishing, and related activities	3,100	3,324	224	7%	-1%
Mining	130	57	-73	-56%	15%
Utilities	838	854	16	2%	-11%
Construction	15,504	14,251	-1,253	-8%	-11%
Manufacturing	43,139	25,253	-17,886	-41%	-33%
Wholesale trade	12,098	12,361	263	2%	-11%
Retail trade	40,079	37,888	-2,191	-5%	-4%
Transportation and Warehousing.	6,114	7,457	1,343	22%	-7%
Information	4,649	3,957	-692	-15%	-20%
Finance and insurance	7,420	10,140	2,720	37%	15%
Real Estate	6,883	9,490	2,607	38%	29%
Professional, scientific, and technical services	11,337	11,839	502	4%	6%
Management of companies and enterprises	3,150	3,554	404	13%	-16%
Administrative and waste management services	11,430	11,731	301	3%	3%
Educational services	3,913	5,370	1,457	37%	15%
Health care and social assistance	32,875	39,381	6,506	20%	20%
Arts, entertainment, and recreation	4,326	4,929	603	14%	21%
Accommodation and food services	18,655	20,218	1,563	8%	10%
Other services, except public administration	14,079	14,251	172	1%	2%
Government and government enterprises	29,215	28,646	-569	-2%	-1%
Federal, civilian	1,195	1,376	181	15%	-4%
Military	1,772	1,416	-356	-20%	-8%
State and local	26,248	25,854	-394	-2%	0%
State government	5,219	6,604	1,385	27%	1%
Local government	21,029	19,250	-1,779	-8%	0%

Source: Bureau of Economic Analysis, REIS Data

2.2.6 Unemployment in Fall River Metro Area

The most current count available from August 2012 shows that there are approximately 71,800 unemployed people living in the Fall River Metro Area. This is a 10% decrease in the rate compared with the peak levels of unemployment that were reached in 2010. Unemployment in the area now stands at 10.4%, the same as Rhode Island's rate. This is above the Massachusetts state average rate of 6.3%, but closer to the national average of 8.1%.

2.2.7 Housing Stock

Table 2.5 examines characteristics of the housing stock within the City of Fall River from 2000 to 2010. While total housing units in Fall River have slightly increased over the decade, the portion of owner occupied housing has decreased. A larger portion of housing units are now renter occupied as a result of poor housing market conditions. Average housing values in the City climbed by 36% to approximately half the statewide average. Over the same timeframe, average rents in Fall River have risen and roughly match the state average rent. Just 2% of owner-occupied housing is vacant, compared with 10% of rental housing. A good supply of rental housing is a positive condition for economic growth as it means that there are ample affordable housing choices for new workers entering the community.

Table 2.5: Fall River Housing

Fall River Housing Stock 2000-2010 Compared with State Averages				
	2000	2010	% Change	Mass Avg. 2010
Total Housing Units	41,857	42,750	2%	0%
Median House Value	$132,900	$181,000	36%	$352,300
Median Rent	$428	$649	52%	$670
% Owner-occupied Housing	65%	64%	-2%	64%
% Renter-occupied Housing	35%	36%	3%	36%
% Homeownership Vacancy	1%	2%	NA	1%
% Rental Vacancy	7%	10%	43%	6%

Source: US Census Bureau, 2010 housing values from Zillow

2.2.8 Commercial Real Estate Market Trends

Figures 2.6 through 2.8 compare trends in industrial, office, and retail real estate prices in the Fall River area with those in the state since 2006, which should be noted is before the onset of the last recession. In both Massachusetts and the City of Fall River, sale prices for industrial properties, as seen in Figure 2.6, peaked in late 2007 and have since decreased for both the state and the metropolitan area. Asking prices for industrial buildings are averaging $53 per square foot in the Fall River metro area, about 15% below the statewide average.

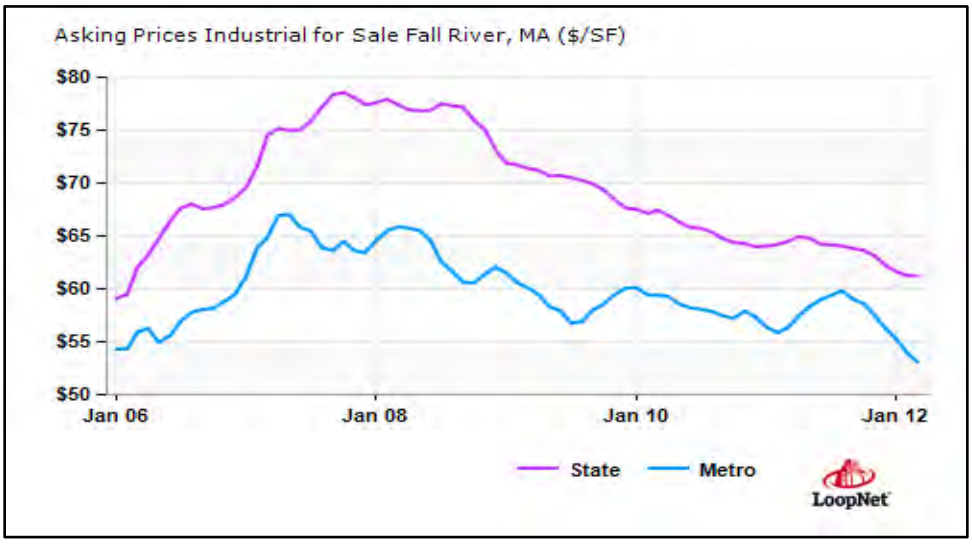


Figure 2.6: Commercial Real Estate Trends

Within the Davol Street Study area, there are currently two commercial properties listed for sale. These include a one-half acre waterfront industrial site on Remington Avenue behind Performance Auto Center and a 53,400 sq. ft. industrial building with Class C space at 609 Davol Street. This site is currently occupied by a U-Haul rental dealer and a storage business, and is constrained by access and circulation limitations as the building is located immediately behind the sidewalk and has limited parking opportunities.

Figure 2.7 shows asking prices for office space in the Fall River metro area and in the state. In 2006, office prices in the Fall River metro were about the same as the state average office sale prices at about $140 per square foot. Since then, office prices have since fallen by 25% in Fall River. At the state level, prices slumped by roughly 15%. Due to the newly converted Commonwealth Landing Mill, there is an excellent supply of office space for rent in the study area. Class A+ space is provided in the newly converted Commonwealth Landing Mill and Class B space is available in the Hague Sahady building at the Northeast corner of President Avenue and Davol Street.

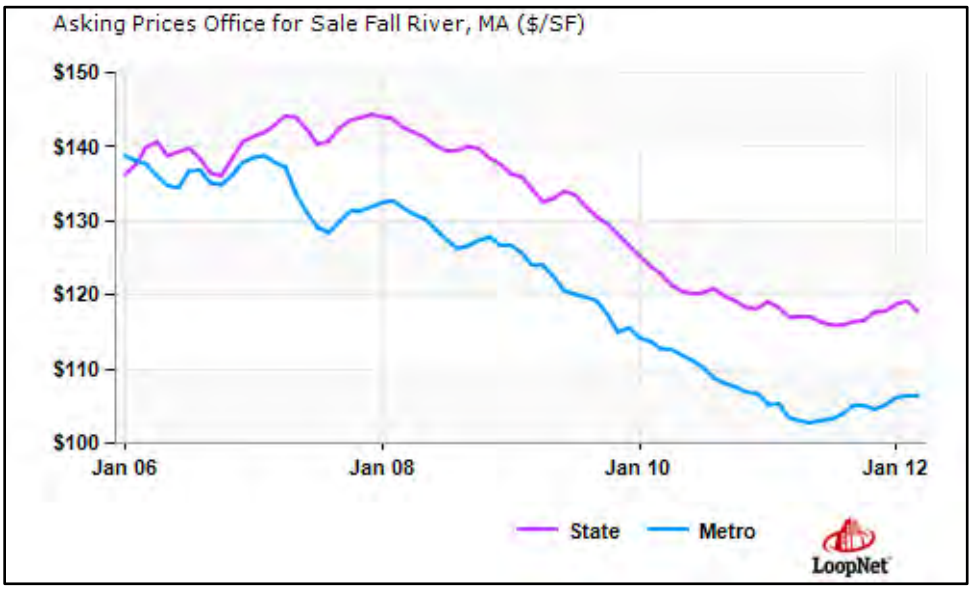


Figure 2.7: Trends for Office Space Asking Sale Price

Figure 2.8 shows trends in sales prices for retail properties in Fall River over the past six years. Retail prices in Metro Fall River have been relatively stable over this period. Those in Bristol County, however, peaked during the first half of 2008, which in most places was a very tough period for commercial real estate. Retail sales prices in Bristol County boomed again during 2011, increasing from $122 per square foot to $160 per square foot, but these data are likely based on a small number of property sales.

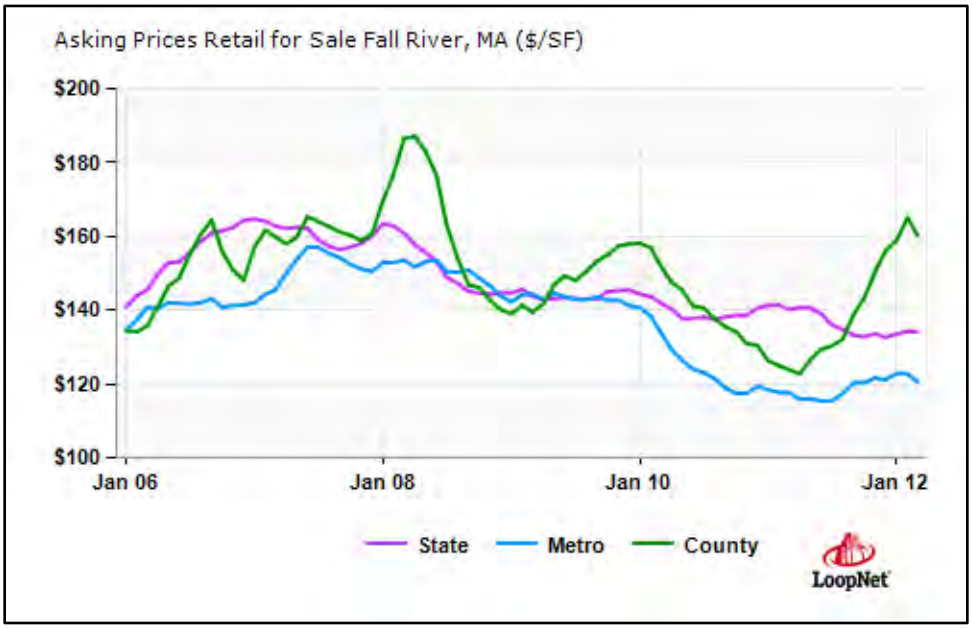


Figure 2.8: Trends for Retail Space Asking Sale Price

2.2.8.1 Existing Commercial Real Estate Locations

Within the study area, existing retail space is clustered around the intersection of President & Davol Street. The 40,000 square foot Executive Plaza strip mall has 12 tenants. Vacancy at the Plaza is just over 15%. There are 4,000 square feet of retail space on the north side of President Avenue in four units that are owned by the J&B Hockey and Sporting Goods store's proprietor.

The Commonwealth Landing complex consists of multiple buildings between Davol Street West and the waterfront and supports restaurant and office space as well as residential units. Jerry Remy's Sports Bar and Grill recently opened in a 4,700-square-foot waterfront building within the complex. Red Cedar, a federal hill-style Italian Restaurant with indoor and outdoor courtyard seating also opened this fall in Commonwealth Landing.

2.2.9 Land Uses in the Study Area

Industrial uses are the most dominant in the study area, occupying over 35% of study area acreage. Retail represents 22% of land uses, is the second most dominant, and is concentrated in and around Executive Plaza at the corner of Davol St. and President Ave. Office, with 9% of the total acreage and residential, with 7%, are the least-intensive land uses in the study area but are likely to offer the best prospects for future redevelopment of the waterfront.

Table 2.6 provides a parcel-by-parcel listing of existing properties within the study's Focus Area with information on occupancy and use. It shows that there are a total of nearly 50 acres on the waterfront side of Davol Street West. Major land uses include the National Grid Substation and Bicentennial Park. The largest private user is AIRTEC, which occupies nearly seven acres. Due to the very shallow configuration of sites on the east side of Davol Street East, just 16 acres of sites are located on the side where the South Coast Rail Station is planned. Most of this area – 10.3 acres – is occupied by Executive Plaza Shopping Center.

Table 2.6: Land Uses within the Davol Street Corridor

Land Uses in the Study Area			
Site	Address	Acres	Use
Davol Street – Waterfront Side			
Seaboats	1338 Davol St.	4.4	Industrial
AIRTEC/Rectoseal	1244 Davol St.	6.9	Industrial
Performance Auto	1190 Davol St.	2.1	Auto Repair
Vacant shop/Office	204 Remington St.	0.6	Auto Repair
3 Family - For Sale	223 Remington St.	0.2	Residential-MF
Commonwealth Landing Mill	1082 Davol St.	5.6	Office
Bicentennial Park	Davol Street	7.7	Recreation
National Grid Substation	1 Hathaway St.	10.8	Utility
Patenaude Office Building	800 Davol St.	0.3	Office
6 Houses in Hathaway Neighborhood	28-61 Hathaway St.	1.3	Residential-MF
Point Gloria Condo	750 Davol St.	2.7	Residential-MF
City Pier	600 Davol St.	5.0	Vacant
Regatta Club	392 Davol St.	2.2	Vacant – Nightclub
	Subtotal - Waterfront Side	49.8	Acres
Davol Street – Station Side			
Mobile Station	431 Davol St.	0.3	Retail
Shallow Lot	535 Davol St.	0.2	Vacant
Class C Mill Space	577 & 609 Davol St.	0.6	Industrial-Storage
Davol Station Café	697 Davol St.	0.1	Retail-Bar
4 Unit Apartment Building	713 Davol St.	0.1	Residential-MF
Jimmy's Used Tires	729 Davol St.	0.2	Auto Repair
Teknikor	753 Davol St.	0.4	Industrial
Station Site	775 Davol St.	1.5	Vacant -Ind.
Pawnbroker Storage Bldg.	825 Davol St.	0.8	Industrial-Storage
Executive Plaza	1696 President Ave.	10.3	Retail
Fruit & Flowers Store	179 President Ave	0.3	Retail-Vacant
Abrite Cleaners	181 President Ave.	0.3	Retail
Hague Sahady Building	1741 President Ave.	0.3	Office
Globe Liquors	180 President Ave.	0.9	Retail
	Subtotal Station Side	16.3	Acres
	Total Study Area	66.0	Acres

Source: Field Survey conducted by Cambridge Economic Research

2.2.10 Assessed Values and Property Taxes

Values of properties in the Study Corridor total $42.8 million, averaging $138,062 per acre. The waterfront side of Davol Street comprises over 70% of the total assessed values since it has more buildings and land area. However, assessed values per acre on the east side of Davol Street East are almost double those on the waterfront side of Davol Street West. This is partly

because the sites along Davol Street East are very small – most are under an acre. Small sites generally have higher values per acre than do large sites. Over 40% of the total assessed value, nearly $18 million is accounted for by Point Gloria Condominiums. Executive Plaza, assessed at $7.6 million, represents another 20% of the Davol Street Study Area's total assessed valuation.

Table 2.7 shows the study area is a net contributor to the city's tax base. Property taxes generated by parcels in the study area generate over $900,000 in annual revenues to the city. This is 1.3% of the city's property tax base in an area that occupies just 0.3% of the city's land area. Ninety percent of property taxes are from commercial properties. The only properties taxed at the residential rate are the six single family houses on Hathaway Street and 40% of the units in Point Gloria.

Table 2.7: Study Area Tax Generation

Property Taxes Generated within the Study Area	
No. of Commercial Parcels	23
Assessed Value	$34,560,240
Commercial Tax Rate (per $1000)	23.54
Subtotal - Commercial Tax	$813,548
Total Residential Parcels	7
Assessed Value	$8,286,160
Residential Tax Rate (per 1000)	10.98
Subtotal - Residential Tax	$90,982
Total Residential & Commercial Taxes	$904,530
% of Fall River Property Tax Base	1.3%
% of City's Land Area	0.3%
Note: Point Gloria is classed as 40% residential & 60% commercial due to the mix of owner/renter units.	

Source: Field Survey and Fall River Assessors Records

2.2.11 Existing Businesses in the Study Area

To gather baseline information for projections of the land use and economic impacts of alternatives for improving Route 79, a survey of firms in the study area was conducted. The focus of the survey was to gauge the likely future of the firms in the area in order to estimate the future supply of sites that might be expected to become available for redevelopment in the coming years. The survey includes firms in the immediate study area as well as tourist-serving businesses on the fringes of the study area that are likely to be affected by the alternatives for improvements on Route 79. The latter include Battleship Cove Community Boating, Fall River Heritage State Park, the USS Battleship Massachusetts, the Tilotsen Complex, the Marine Museum, and the Borden Light Marina on the Riverfront side of Davol Street. On the east side of Davol Street, Michael's Provisions, a popular Portuguese grocer that draws customers from throughout the region, is included.

Table 2.8: Study Area Business Survey

Survey of Businesses in the Wider Study Area			
Firm	Person interviewed	Sector	Jobs
Davol Street West			
Seaboats	Scott Church	Boat Builders	15
Rectoseal (AIRTECH)	Scott Barboza	HVAC Mfg.	50
Performance Auto	Mike Camera	Towing & Repairs	1
Commonwealth Landing Mill	Alan Macomber	Mixed Use	200*
Hathaway St. Office Bldg.	Roland Patenaud	Realtor	3
Point Gloria Condominiums	Cheryl Darnboro	Residential Condos	2
Battleship Cove Community Boating	Doug Young	Recreation	6
Fall River Heritage State Park	Robert Horton	Recreation	3
USS Battleship Massachusetts	Brad King	Recreation	6
Borden & Remington (Tilotson)	Robert Bogan	Large, underused site	45
Marine Museum	Paul Sinister	Recreation	2
Borden Light Marina	Mike Lund	Recreation	4
Subtotal Davol Street West			337
Davol Street East			
609 Davol St. - 3 vacant mill bldgs.	Vasco Cabral	Class C com'l. space	3
Davol Station Café	Steve Tagee	Bar	6
Jimmy's Used Tires	Jimmy Raposa	Auto service	3
TekniKor (at Davol Station Site)	Cliff Gillette	Electrical Mfg.	60
Spindle City Precious Metals	NA	Gold Merchant	NA
Executive Plaza - Kale Realty (owner)	Faith Kaplan	Strip Mall	70
Battleship Brewhouse	Cornell Leigh	Restaurant	12
Appliance World	Manuel DiMello	Retail	7
South Baptist Thrift Shop	Kristina Costa	Retail	8
Al Mac's	Dawn Gauthier	Restaurant	20
JB Hockey & Sports Store	Bruce Morrow	Retail	3
Irish Specialty Shoppe	Joseph Reilly	Retail	1
Hague Sahady & Co., CPA & Tenants	Mr. Hague	CPA's	29*
Michael's Provisions	Ronnie Miranda	Retail	16
Subtotal Davol Street East			238
Total Jobs in Wider Study Area * Includes tenant jobs within these office buildings			575

Our survey showed that there are a total of 575 jobs within the wider study area. This represents about 2% of city's total employment (32,300). About 60% of jobs are on the waterfront side of Davol Street. The largest employer is Teknikor, with 60 workers. Two-thirds of businesses in the study corridor employ fewer than 20 staff.

Businesses encompass a wide spectrum of industries. The most-dominant are recreation and tourism. Tourist-serving businesses are located just south of the study area and include the Heritage State Park, Battleship Cove, and Borden Light Marina. They were included in the survey because they are likely to affect and be affected by any redevelopment activity that occurs within the study area. The second most-common type of businesses is retail. Shops and restaurants are clustered around Executive Plaza and Commonwealth Landing Mill.

The study area's two largest employers are successful manufacturing firms whose markets are growing. These include AIRTEC/Rectoseal, a manufacturer of HVAC equipment who has been at the site since 2001. It also includes Teknikor, an electrical engineering systems contractor who occupies part of the site on the east side of Davol Street that is proposed for the South Coast Rail Station. Both firms are growing and could potentially benefit by being in buildings on larger sites. Professional service firms are a conspicuously small proportion of the total but offer the best prospects for future job growth in Fall River. Six professional services firms employing a total of 29 people are clustered in the Hague-Sahady Building at the corner of President and Davol Street across from Executive Plaza. The tenants in the office space at Commonwealth Mill are in the education and healthcare industries.

Businesses were asked about their financial performance and if they were growing, stable, or declining. The results are summarized in Figure 2.9, which shows business outlook by proportion of study area jobs. Firms providing nearly 90% of jobs in the wider study area report that their businesses are performing well and that they expect to grow. Firms providing 5% of jobs in the area say their employment is stable to declining slightly, which corresponds to the "fair" category. Only 8% of the study area's jobs are in firms whose business is declining and who are pessimistic about the outlook for the future of their businesses in Fall River.

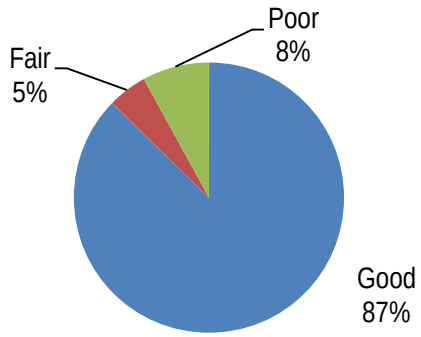


Figure 2.9: Outlook for Businesses in the Study Area
(% of Jobs Based on Business Reported Future Outlook.

2.3 Existing Transportation Conditions

The existing transportation conditions for this study were defined for two areas: the Regional Transportation Impact Area and the Focus Area. The Regional Transportation Impact Area encompasses a triangle shaped area in Fall River bounded by Route 79, Route 24 and I-195. The Focus Area, located within the Regional Transportation Impact Area, includes Route 79 and the Davol Street corridors from Cedar Street to the interchange of Route 79 with U.S. Route 6.

2.3.1 Existing Roadway Geometry and Conditions – Focus Area

The Focus Area of the Route 79 / Davol Street Corridor Study extends from the Cedar Street U-turn underneath Route 79 to the interchange between Route 79 and U.S. Route 6 near the Veterans Memorial Bridge. Along this length, Route 79 provides two lanes in each direction separated by a grass median. Northbound Route 79 has an exit ramp to Davol Street East just north of President Avenue that provides access to Brightman Street, Davol Street West and Southbound Route 79. Davol Street East merges with Northbound Route 79 north of the U.S. Route 6 interchange and north of the Focus Area. Southbound Route 79 has an exit ramp to Davol Street West just south of the U.S. Route 6 interchange. Eastbound U.S. Route 6 splits into two ramps to travel northbound and southbound. The southbound ramp provides access to both Southbound Route 79 and Davol Street West. Route 79 is part of the National Highway System.

Davol Street West is located along the western side of Route 79 and is formed by two ramps coming from the Veterans Memorial Bridge and an off-ramp from Route 79. Davol Street West carries two lanes with parking along the west edge of pavement. A sidewalk is also provided along the western edge of pavement. Davol Street West is entirely located within the project Focus Area and provides access to Commonwealth Landing, Bicentennial Park, Point Gloria, Heritage State Park and Battleship Cove. U.S. Route 6 follows Davol Street West from the Veterans Memorial Bridge to President Avenue. The speed limit along Davol Street West is 40 miles per hour.

Davol Street East carries two lanes from its beginning at Central Street to its end north of Brightman Street where it provides access from Fall River to Route 79 and U.S. Route 6 in Somerset. No parking is provided along Davol Street East. A sidewalk is provided along the roadway from the Cedar Street U-turn to Brownell Street. U-turns connecting Southbound and Davol Street East are provided near Cedar Street and Brightman Street. The speed limit along Davol Street East is 40 miles per hour.

There are two Taunton River crossings within the project Focus Area. The first is the former Brightman Street Bridge, which is now closed to traffic. Further north is the Veterans Memorial Bridge which was completed in 2011 and was built to replace the Brightman Street Bridge. The Veteran's Memorial Bridge carries U.S. Route 6 and Route 138, with connecting ramps to Route 79, and also includes a wider walkway and bikeway and includes a fishing pier.

2.3.2 Existing Roadway Geometry and Conditions – Regional Transportation Impact Area

The National Highway System (NHS) consists of roadways essential to national economics, defense and mobility. The NHS includes interstates, principal arterials, and intermodal connectors. Within the Regional Transportation Impact Area, Route 24, Route 79 and President Avenue are classified on the NHS as Other Roads, as seen in Figure 2.10. I-195 is considered part of the Interstate System within the NHS. U.S. Route 6 and President Avenue between Davol Street West and Davol Street East were included in the NHS as part of MAP-21, the federal comprehensive surface transportation program, as it is considered an Urban Principal Arterial. South of I-195, the roads surrounding the Fall River Southeastern Regional Transit Authority (SRTA) Bus Terminal. I-195 is classified as an Interstate while Route 24 and Route 79 have the functional classification of Principal Arterial. The Veterans Memorial Bridge and President Avenue are Urban Principal Arterial roadways. Davol Street East, Davol Street West, Turner Street and Brightman Street are considered Urban Minor Arterials. All other roadways are local roadways.

Figure 2.10: NHS Roadways within the Regional Transportation Impact Area

I-195 is an east-west interstate that provides three lanes in each direction with a barrier median and a speed limit of 55 miles per hour. Route 24 is a divided highway that carries two lanes in the northbound and southbound directions with a grass median and a speed limit of 65 miles per

hour. Route 79 is a divided highway with two lanes in the northbound and southbound directions. The highway is divided by a grass median north of Cory Street and a barrier median south of Cory Street. The speed limit along Route 79 between I-195 and Route 24 is 55 miles per hour.

President Avenue begins at Davol Street West and continues east to its terminus at the rotary with North Eastern Avenue. U.S. Route 6 follows President Avenue along its entire length and continues southward along North Eastern Avenue. West of North Main Street, President Avenue provides two lanes in each direction. East of North Main Street, President Avenue provides one lane in each direction with parking along each side of the road. Sidewalks are provided along each side of the road. The speed limit along President Avenue is 30 miles per hour.

2.3.3 Existing Intersection Geometry

Within the Focus Area and Regional Transportation Impact Area, the intersections along Davol Street West, Davol Street East and President Avenue provide local and regional access and interconnectivity. This section serves to further detail existing conditions at each intersection along these roadways, in order to better identify existing issues, opportunities and constraints.

2.3.3.1 Intersection Geometry – Davol Street West

Davol Street West has only one signalized intersection throughout its length, which is at President Avenue. All other intersections with driveways and sidestreets are unsignalized. The sidestreet or driveway is stop controlled while Davol Street West has free movement. At each intersection, Davol Street West has two 11-foot wide lanes in the southbound direction and no exclusive turning lanes. Wheelchair ramps are provided along the western side of Davol Street West at each intersection, but none of the ramps meet current MassDOT and Americans with Disabilities Act (ADA) design standards. More detailed information is provided below regarding the intersections of Davol Street West with the Brightman Street U-turn, Brownell Street, Taylor Street, Baylies Street and the Cedar Street U-turn. Information for the intersection with President Avenue is provided in Section2.3.3.3, Intersection Geometry – President Avenue.

Davol Street West at Brightman Street U-turn

The Brightman Street U-turn is located at the beginning of Davol Street West. The U-turn is located roughly 200 feet after the end of the ramps from U.S. Route 6 and Southbound Route 79. Each ramp forms one lane of Davol Street West. The U-turn provides access to Northbound Route 79, U.S. Route 6 in Somerset and Brightman Street. No deceleration lane is provided for the U-turn ramp. See Figure 2.11 for a graphic of this location.

Figure 2.11: Davol Street West at Brightman Street U-turn

Davol Street West at Brownell Street

Brownell Street, as seen in Figure 2.12, is a two-way road with one lane in each direction and parking on each side. Commonwealth Landing is located on the north side of Brownell Street and the roadway also provides access to a parking lot for Bicentennial Park and the Iwo Jima Memorial. Brownell Street is stop controlled and while sidewalks are present along the west side of Davol Street West, no crosswalk is painted across Brownell Street.

Figure 2.12: Davol Street West at Brownell Street

Davol Street West at Taylor Street

Taylor Street, as seen in Figure 2.13, is a narrow two-way road, roughly 25 feet wide, that provides access to the Point Gloria Condominiums and a small number of homes. Taylor Street is stop controlled and no crosswalk is present.

Figure 2.13: Davol Street West at Taylor Street and Baylies Street

Davol Street West at Baylies Street

Baylies Street, as seen in Figure 2.13, functions as the driveway for the Point Gloria Condominiums and is a private roadway. It has two-way access and stop controlled, but has no crosswalk present for pedestrians on the Davol Street West sidewalk.

Davol Street West at Cedar Street U-turn

This U-turn, seen in Figure 2.14, provides access both to and from Davol Street East. No deceleration lane or acceleration lanes are present for the U-turns. There are sidewalks along the U-turns, but no crosswalks are provided. Visibility between the U-turns and Davol Street West is limited due to vegetation. There is limited stopping sight distance along the U-turn roadways due to the berm supporting the elevated Route 79. In addition, no signs are present regarding the U-turn merge.

Figure 2.14: Cedar Street U-turn

2.3.3.2 Intersection Geometry – Davol Street East

Davol Street East has only one signalized intersection throughout its length, which is located at President Avenue. All other intersections with driveways and sidestreets are unsignalized. At each intersection, Davol Street East has two 12-foot wide lanes in the southbound direction and no exclusive turning lanes. Wheelchair ramps are provided along the eastern side of Davol Street West at each intersection, but none of the ramps appear to meet current design and ADA standards. More detailed information is provided in the following section regarding the intersections of Davol Street East with the Cedar Street U-turn, Turner Street, Pearce Street, Brownell Street, the on-ramp from Northbound Route 79, the Cory Street U-turn and Brightman Street. Information for the intersection with President Avenue is provided in a following section titled, *Intersection Geometry – President Avenue*.

Davol Street East at Cedar Street U-turn

The Cedar Street U-turn, seen in Figure 2.14, provides access both to and from Davol Street West. Davol Street East has two through lanes at this location. As in the southbound direction, no deceleration or acceleration lanes are provided along Davol Street East and visibility is limited along the U-turn roadways. No crosswalks are provided for the sidewalks along the U-turn roadways.

Davol Street East at Turner Street

At Turner Street, Davol Street East has two through lanes and no exclusive turning lanes. Turner Street is a two-way roadway that is stop controlled. No crosswalk for pedestrians on the sidewalk is present across Turner Street. See Figure 2.15 for a graphic of this intersection.

Figure 2.15: Davol Street East at Turner Street

Davol Street East at Pearce Street

Pearce Street, seen in Figure 2.16, provides one lane in the westbound direction with parking along each side. It is stop controlled with no crosswalk present at the intersection. Davol Street East has two lanes at this location.

Figure 2.16: Davol Street East at Pearce Street

Davol Street East at Brownell Street

Brownell Street is a two-way roadway with a right-in and right-out only intersection at Davol Street East. Davol Street East has two lanes in the northbound direction and no turning lanes for Brownell Street. At this location, the distance along Brownell Street between Davol Street East and Lindsey Street is very short, approximately 50 feet. As the sidewalk along Davol Street East ends and follows Brownell Street, no crosswalk is necessary at this intersection. See Figure 2.17 for a graphic of this intersection.

Figure 2.17: Davol Street East at Brownell Street

Davol Street East at Northbound Route 79 On-Ramp

The on-ramp from Northbound Route 79 merges with the left of two Davol Street East lanes over approximately 225 feet. There is sufficient sight distance at this location, roughly 300 feet. However, there is a merge sign that is located too close to the merge point to provide sufficient advance notice to drivers. This sign does not apply to any upcoming merging segments. See Figure 2.18 for a graphic of this location.

Figure 2.18: Davol Street East at On-Ramp from Route 79

Davol Street East at Cory Street U-turn

The Cory Street U-turn comes from Davol Street West and forms a third lane along Davol Street East. This third lane becomes an exit-only lane for another U-turn ramp located near Brightman Street that provides access back to Davol Street West. This weaving segment is approximately 900 feet long. As detailed

in Section 2.3.5, Existing Traffic Analysis, this weaving segment operates with an acceptable Level of Service. See Figure 2.19 for a graphic of this location.

Figure 2.19: Davol Street East at Cory Street U-turn

Davol Street East at Brightman Street

Near Brightman Street, Davol Street East carries three lanes, as seen in Figure 2.20. The left lane becomes an exit-only lane to the U-turn to Davol Street West. The other two lanes continue to the north and provide access to U.S. Route 6 and Northbound Route 79. Vehicles from Davol Street East are allowed to turn right onto Brightman Street, but no exclusive turning lane is provided. Brightman Street is a one-way eastbound roadway. Prior to construction of the Veterans Memorial Bridge, Brightman Street was a two-way roadway with full access to Northbound and Southbound Route 79 and Davol Street East via two signalized intersections. Redesign of this area associated with the new bridge construction resulted in eliminating this access and restricting Brightman Street to a one-way eastbound road, away from Route 79. This modification was necessitated by the proximity of the Brightman Street/Davol Street East intersection to the newly constructed U-turn between Davol Street East and Davol Street West. Constraining Brightman Street to one-way operation also forced reversal of McDonald Street and Morton Street. As a result, vehicles previously using Brightman Street for access to Route 79 and Davol Street now use circuitous routes through the neighborhood roadways.

The intersection of Brightman Street with Lindsey Street is 40 feet east of Davol Street East. Lindsey Street is one-way northbound north of Brightman Street. Traffic coming from Davol Street East has a free movement through the intersection with Lindsey Street. Lindsey Street is stop controlled. There are sidewalks along Brightman Street and Lindsey Street, but no crosswalks are provided at the intersection.

Figure 2.20: Davol Street East at Brightman Street U-turn

2.3.3.3 Intersection Geometry – President Avenue

President Avenue intersects many sidestreets and driveways. For this study, only a select number of intersections were included. These intersections are at Davol Street West and Davol Street East, Lindsey Street, North Main Street, Highland Avenue, Robeson Street, Elsbree Street and the rotary with North Eastern Avenue.

President Avenue at Davol Street West

This intersection, seen in Figure 2.21, is controlled by a fully actuated traffic signal with crosswalks and pedestrian signals across all four legs of the intersection. No countdown timers are provided for the exclusive pedestrian phase and while wheelchair ramps are provided at all crosswalks, they do not meet ADA standards. The traffic signal at this intersection provides one phase for each roadway. Davol Street West has two shared lanes that are 11 feet wide at the intersection. No exclusive turning lanes are provided along Davol Street West. Along westbound President Avenue, there are two lanes that are 11 feet wide at the intersection. One is a through lane providing access to Bicentennial Park and the other lane is a through lane that becomes a left-turn only lane onto Davol Street West. The eastbound leg of this intersection provides access to and from Bicentennial Park with one lane in each direction.

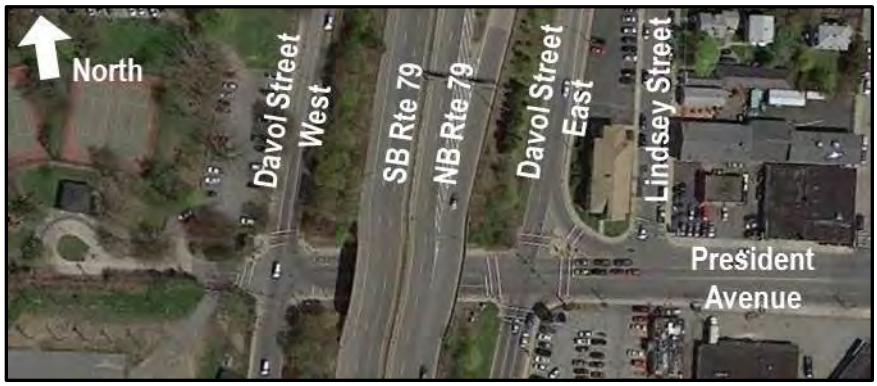


Figure 2.21: President Avenue at Davol Street West and Davol Street East

President Avenue at Davol Street East and Lindsey Street

The intersection with Davol Street East, seen in Figure 2.21, is controlled by a fully actuated traffic signal with crosswalks across all roadways. Pedestrian signals are provided for each crosswalk except the crosswalk across the westbound President Avenue right-turn lane. An exclusive pedestrian phase is provided at the traffic signal and wheelchair ramps are provided at all crosswalks although they do not meet ADA standards. Eastbound President Avenue has an exclusive traffic signal phase allowing through and left turn movement followed by a phase allowing east-west movement along President Avenue with permitted left turns. A yield sign is present along the right-turn lane. Davol Street East has three lanes at the intersection, a shared through and left-turn lane, a through lane, and an exclusive right-turn lane. Along eastbound President Avenue, two shared lanes are present. Along westbound President Avenue, there are three lanes that cross Lindsey Street and approach Davol Street East. These include two through lanes and an exclusive, channelized right-turn lane that yields to Davol Street East traffic. All lanes along President Avenue are 11 feet wide and all lanes along Davol Street East are 12 feet wide.

Lindsey Street is stop controlled at its intersection with President Avenue. There is a crosswalk across Lindsey Street but none across President Avenue. There are no exclusive turning lanes along either roadway.

President Avenue at North Main Street

This intersection, seen in Figure 2.22, is controlled by a fully actuated signal with crosswalks and pedestrian signals across all intersection legs. Radial wheelchair ramps that do not meet ADA standards are provided in each corner of the intersection. Pedestrian signals are provided for all crosswalks but do not provide countdown timers. Pedestrians have an exclusive phase programmed into this intersection's traffic signal. North Main Street provides one lane in each direction with no exclusive turning lanes at the intersection. Eastbound President Avenue has two lanes that become a shared through and right-turn

lane and an exclusive left-turn lane at the intersection. The westbound approach has a shared through and right-turn lane and an exclusive left-turn lane. The traffic signal has only two phases, one for each roadway. All lanes along President Avenue are 12 feet wide. No pavement markings are present along North Main Street to delineate lane widths.

Figure 2.22: President Avenue at North Main Street

President Avenue at Highland Avenue

The intersection of President and Highland Avenues is unsignalized. There are crosswalks across all legs of this intersection, but no pedestrian signals are provided. Non-compliant wheelchair ramps are present in each corner of the intersection. Highland Avenue is a two-way road north of President Avenue and is one-way southbound south of President Avenue. Each roadway has one lane approaching the intersection. Highland Avenue is approximately 40 feet wide and allows parking on each side of the roadway. Travel lanes along President Avenue are roughly 11 feet wide with parking allowed on the north side of the road.

Due to insufficient sight distance along President Avenue, no left turns are allowed onto Highland Avenue. In order to travel southbound on Highland Avenue, westbound President Avenue vehicles must turn left one block earlier at Hanover Street and then make a right turn onto Pearce Street. Left turns are also prohibited from Highland Avenue onto Eastbound President Avenue. In order to turn left and travel east along President Avenue, southbound Highland Avenue motorists must travel one block to the east to Hanover Street where they are able to make a left turn. A flashing yellow light is provided at the intersection for the eastbound and westbound President Avenue approaches as well as the southbound Highland Avenue approach. See Figure 2.23 for a graphic of this intersection.

Figure 2.23: President Avenue at Highland Avenue

President Avenue at Robeson Street

President Avenue at Robeson Street, as seen in Figure 2.24, is controlled by a fully actuated traffic signal with crosswalks and pedestrian signals across each intersection leg. Wheelchair ramps are provided at each crosswalk, but they do not comply with the latest ADA standards. Pedestrians are provided with an exclusive phase at the traffic signal, but the pedestrian signals are not equipped with countdown timers. The traffic signal provides one signal phase for each roadway. One 11-foot wide shared lane is provided on all approaches. No exclusive turning lanes are present.

Figure 2.24: President Avenue at Robeson Street

President Avenue at Elsbree Street

President Avenue's intersection with Elsbree Street is partially signalized. Approaching the intersection with Elsbree Street, eastbound President Avenue is split by a triangular landscaped median approximately 200 feet west of the

intersection to create a channelized, stop-controlled right turn lane onto Southbound Elsbree Street. This channelized lane also provides access to Moore Street, but prevents Moore Street traffic from turning left onto westbound President Avenue or Elsbree Street north of the intersection. In addition, south of the intersection, Elsbree Street is one-way southbound. Traffic on Moore Street must travel west to Charlotte Street or Chestnut Street in order to travel west along President Avenue.

Elsbree Street is a two lane two-way road north of President Avenue. The southbound approach of Elsbree Street consists of a single shared through and right-turn lane and an exclusive left-turn only lane. Each lane is 11 feet wide. The eastbound approach to the signalized intersection provides two through lanes and an exclusive left-turn lane. Along the westbound approach, two through lanes and exclusive right and left-turn lanes are provided at the intersection. All lanes along President Avenue are 11 feet wide. West of the intersection, two westbound through lanes merge into one lane roughly 200 feet after exiting the intersection. At the traffic signal, an exclusive left turn phase is provided along President Avenue followed by a phase allowing through movement along President Avenue. A third phase allows movement along Elsbree Street.

Crosswalks are provided across all intersection legs and pedestrian signals are provided at all signalized intersection legs. Wheelchair ramps are provided at all crosswalks but are not ADA compliant. Pedestrians have an exclusive phase at this traffic signal, but no countdown timers are provided with the pedestrian signals. See Figure 2.25 for a graphic of this intersection.

Figure 2.25: President Avenue at Elsbree Street

President Avenue at North Eastern Avenue Rotary

This rotary has three legs, the President Avenue approach from the west, the North Eastern Avenue approach from the south, and the eastern approach from the Route 24 ramps. The President Avenue approach has one-lane entry and exit. The other two approaches have both two-lane entries and exits. The rotary is approximately 400 feet in diameter and the circulating roadway width within the rotary is roughly 40 feet. No pavement markings are provided within the rotary to delineate travel lanes. All traffic entering the rotary must yield to traffic circulating within the rotary.

A sidewalk is present along eastbound President Avenue and continues along the southbound lanes of North Eastern Avenue. No crosswalks are present at the rotary and no crosswalks are required at the rotary as no sidewalks cross the entrances or exits of the rotary. See Figure 2.26 for a graphic of the rotary.

Figure 2.26: President Avenue at North Eastern Avenue Rotary

2.3.4 Existing Traffic Volumes

Traffic volumes were collected for the Regional Transportation Impact Area in July and November of 2012. Within the Focus Area, the roadway network is comprised of Route 79, Davol Street Northbound and Southbound, President Avenue and several other sidestreets. Automatic traffic recorder (ATR) counts were completed along I-195, Route 24, Route 79, the rotary along President Avenue and along all ramps in order to determine traffic volumes along all freeway segments. Turning Movement Counts (TMCs) were completed at individual intersections along President Avenue, Davol Street West and Davol Street East. The intersections where traffic counts were collected were described in Section 2.3.3, Existing Intersection Geometry.

Traffic volumes and turning movement counts were also collected for I-195, U.S. Route 6, Lee's River Avenue, Brayton Point Road and Brayton Avenue within Somerset and Swansea. This data was collected for use in traffic modeling for alternatives analysis to determine whether traffic would be diverted through Somerset and Swansea.

Existing turning movement counts and traffic volume exhibits are shown in Figures 2.27 through 2.30.

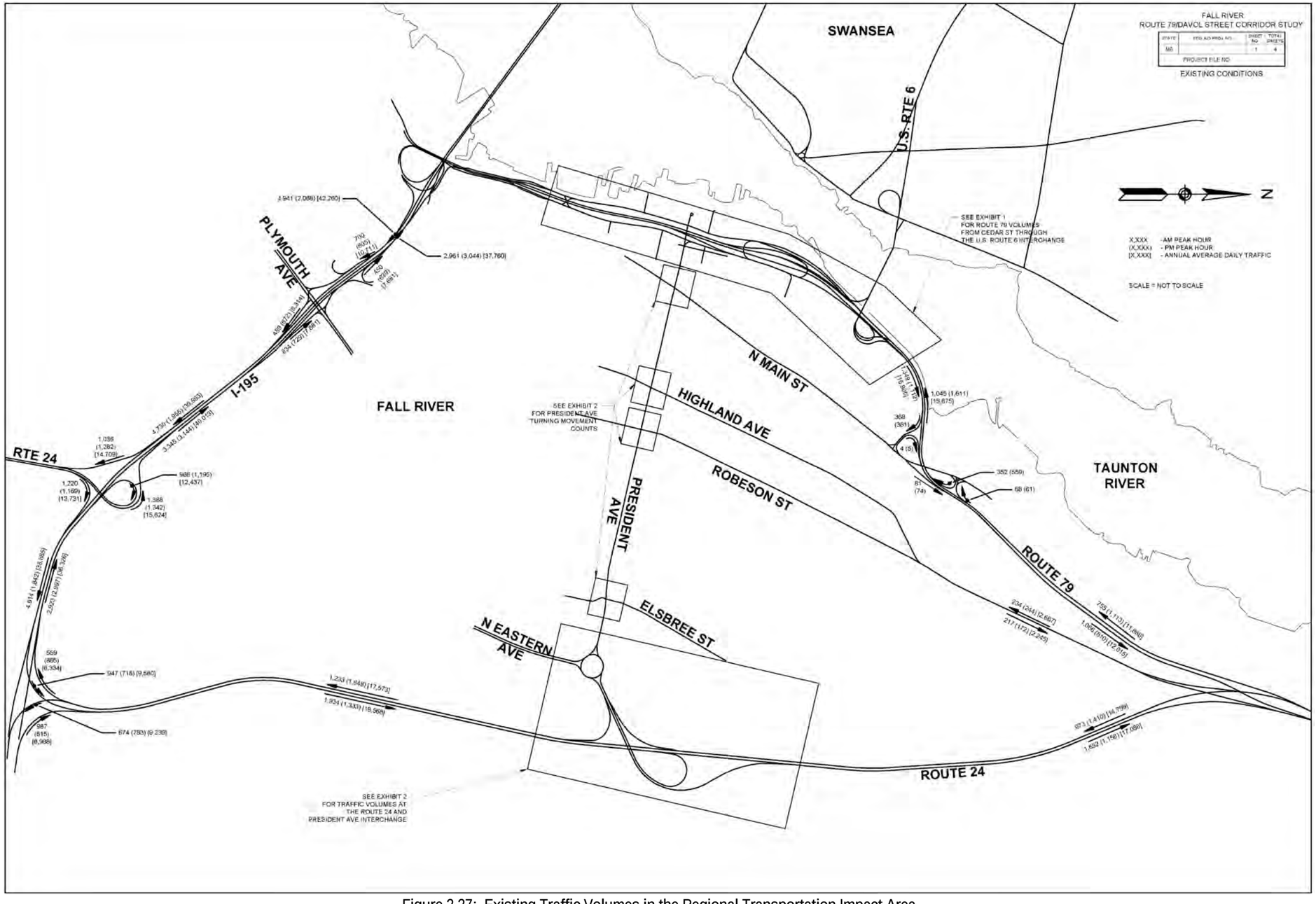


Figure 2.27: Existing Traffic Volumes in the Regional Transportation Impact Area

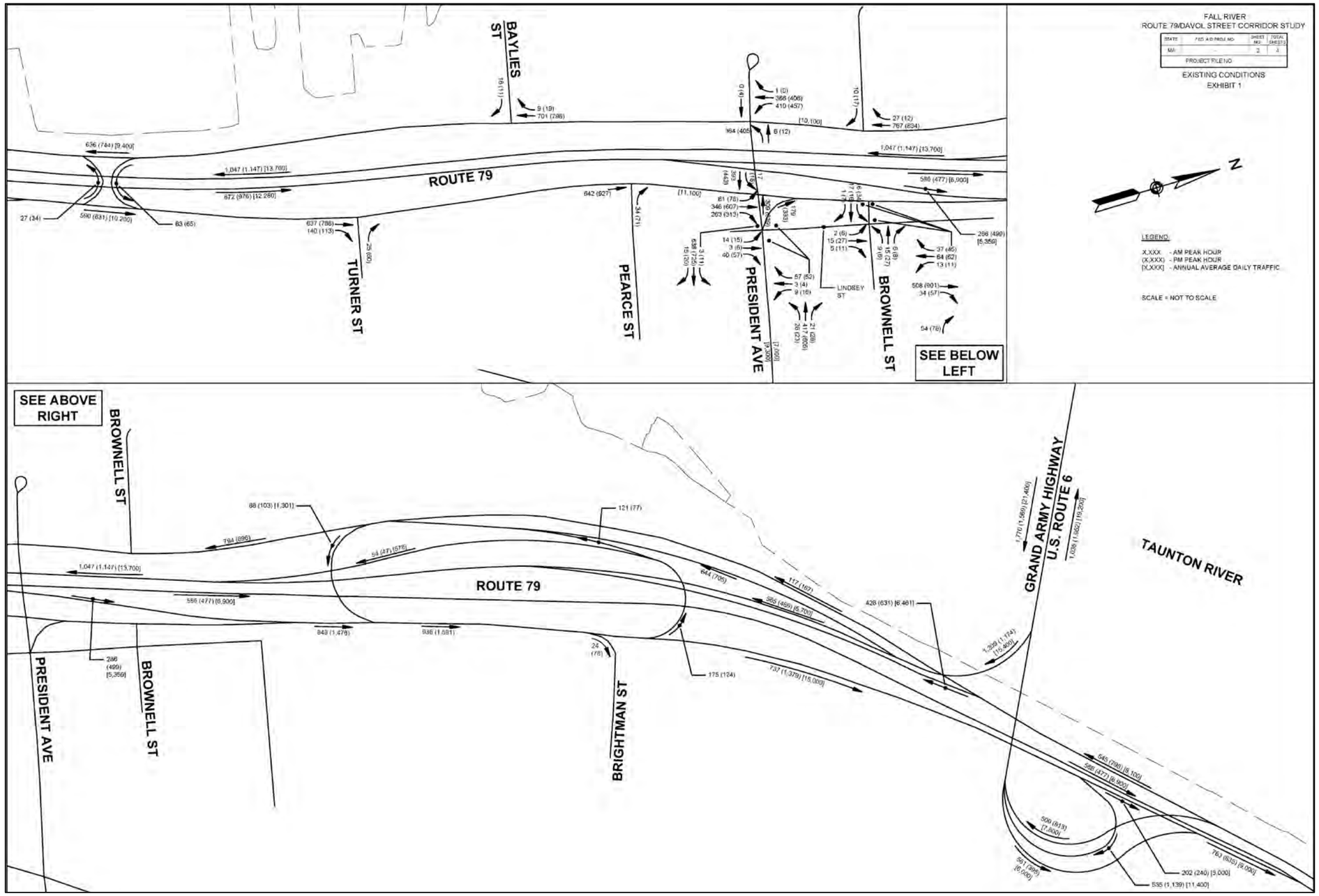


Figure 2.28: Existing Traffic Volumes in the Focus Area

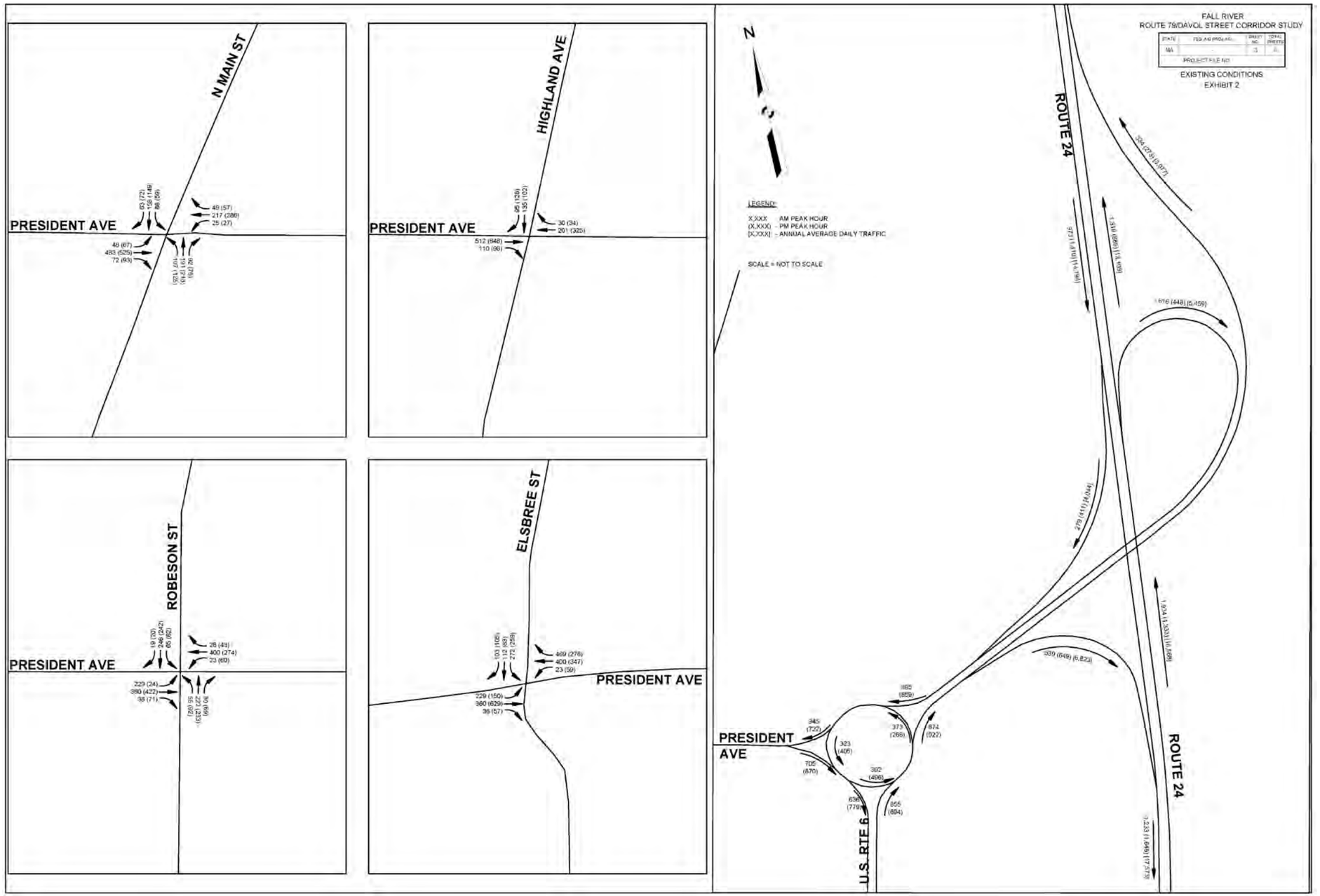


Figure 2.29: Existing Traffic Volumes along President Avenue

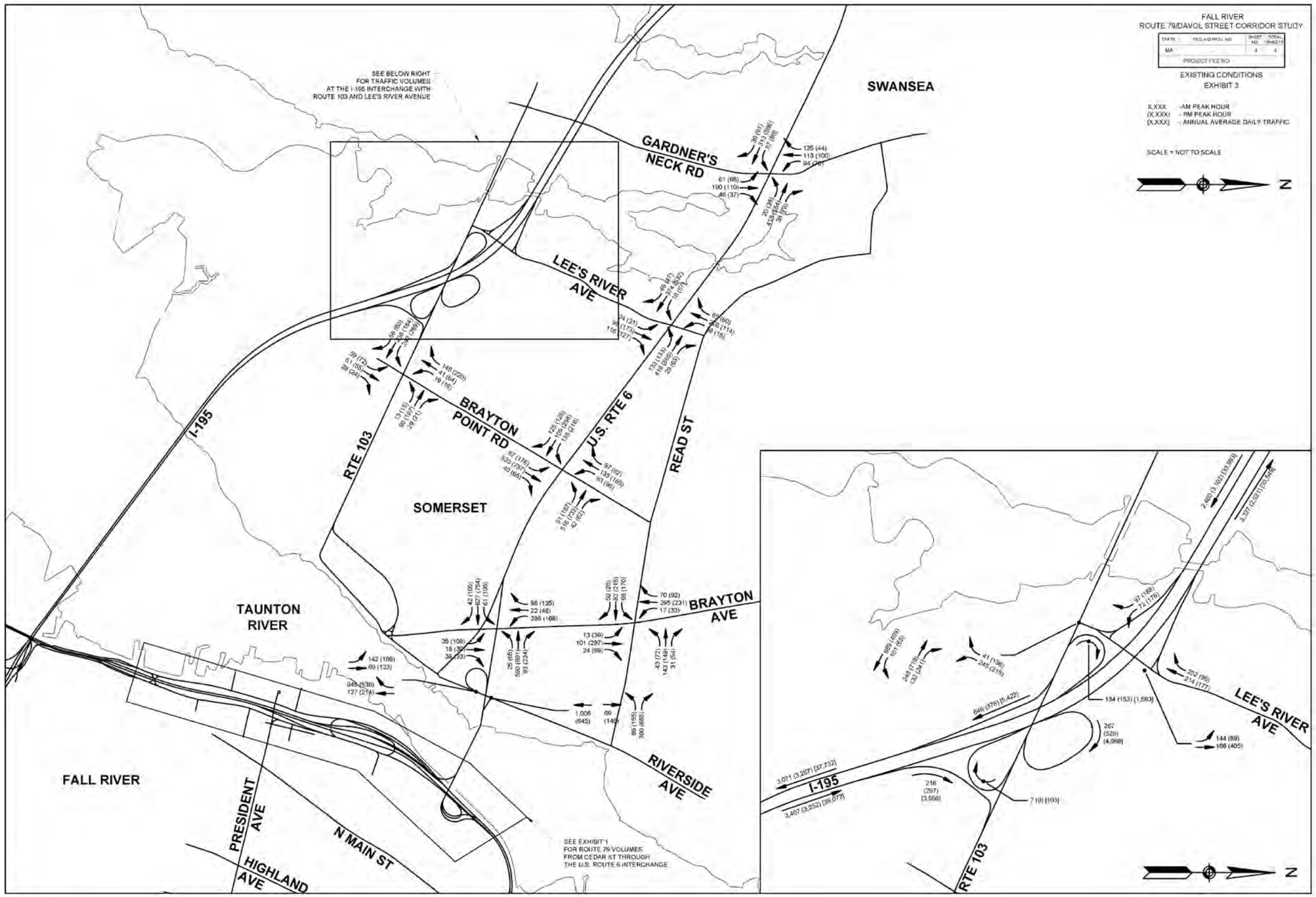


Figure 2.30: Existing Traffic Volumes in Somerset and Swansea

In the Focus Area, traffic volumes are provided for all turning movements along Route 79, Davol Street and all side streets connecting with Davol Street. Volumes are also provided along President Avenue (U.S. Route 6), and at its intersections with Davol Street, Lindsey Street, North Main Street, Highland Avenue, Robeson Street, Elsbree Street and at the rotary just west of the interchange with Route 24.

Within the Regional Transportation Impact Area, I-195 carries an Average Daily Traffic (ADT) volume of approximately 40,000 vehicles in each direction. I-195 is an east-west interstate highway that begins in Providence, Rhode Island and ends in West Wareham, Massachusetts. Route 79, a north-south roadway connecting Route 24 with I-195 along the Taunton River typically has two travel lanes in each direction and carries roughly 15,000 vehicles per day in each direction. Route 24 extends from I-93 in the north to Portsmouth, Rhode Island. It provides two lanes in each direction and carries roughly 17,000 vehicles per day in each direction.

Within the Focus Area, the existing roadway network provides connections between Route 79, U.S. Route 6 and local roadways. U.S. Route 6 spans the Taunton River across the Veterans Memorial Bridge and then follows along President Avenue through Fall River. Along northbound Route 79, roughly 33% of the traffic in the morning and 50% of traffic in the afternoon exit northbound Route 79 to go west on U.S. Route 6 via Davol Street East. As this exit ramp is north of President Avenue, access to eastbound U.S. Route 6 (eastbound President Avenue) is provided via an exit ramp to Davol Street East located south of the Cedar Street U-turn. Along southbound Route 79, roughly half of all vehicles exit Route 79 to continue west along U.S. Route 6. Of the remaining vehicles, about 20% exit to travel south on Davol Street towards eastbound U.S. Route 6. Of the traffic headed westbound on President Avenue, over half of the traffic heads southbound onto Davol Street West towards southbound Route 79. Approximately 25% of traffic going eastbound on U.S. Route 6 continues onto Northbound Route 79. Of the remaining 75% of traffic from Eastbound U.S. Route 6, approximately 40% continue onto Southbound Route 79. The remainder travels southbound on Davol Street towards President Avenue and local streets.

2.3.5 Existing Traffic Analysis

Roadway operating levels of service are calculated following procedures defined in the Highway Capacity Manual (2010), published by the Transportation Research Board. The key performance indicators obtained through the analysis are delay, Level of Service (LOS), volume to capacity ratio, and queue length. LOS is the term used to describe the quality of traffic flow on a roadway facility at a particular point in time. Operating levels of service are reported on a scale of A to F, with LOS A representing free-flow or uncongested conditions with little or no delay to motorists, and LOS F representing a forced-flow condition with long delays and traffic demands exceeding roadway capacity. For intersections, the operating LOS is a function of vehicle delay. For freeway facilities, the operating LOS is a function of density (passenger cars per mile per lane). The LOS is calculated according to the criteria shown in Table 2.9.

Table 2.9: Level of Service Criteria

Level of Service	Intersections Delay per Vehicle, sec. (v/c ≤ 1.0)		Freeway Facilities Density (pc/mi/ln)
	Unsignalized	Signalized	
A	≤ 10.0	≤ 10.0	≤ 11
B	10.1 to 15.0	10.1 to 20.0	> 11 – 18
C	15.1 to 25.0	20.1 to 35.0	> 18 – 26
D	25.1 to 35.0	35.1 to 55.0	> 26 – 35
E	35.1 to 50.0	55.1 to 80.0	> 35 – 45
F	> 50.0	> 80.0	> 45 or v/c > 1

Source: Highway Capacity Manual, Fifth Edition, Transportation Research Board, National Research Council, Washington, DC, 2010.

The existing traffic conditions were analyzed for intersections and freeway facilities within the Regional and Focus Areas using Synchro and Highway Capacity Software. The analysis showed that overall, the freeway facilities and intersections within the Regional and Focus Areas generally operate at LOS C or better.

At the intersection of Lindsey Street with President Avenue, the 95th percentile queues back up along Lindsey Street approximately 170 feet in the AM peak hour and 340 feet in the PM peak hour. The queues along westbound President Avenue for the intersection with Davol Street East are not excessively long during the peak hours, roughly 170 to 220 feet, but they are long enough to block Lindsey Street. At the intersection of North Main Street with President Avenue, queues in the northbound and southbound directions are over 230 feet long (up to 410 feet in the northbound direction during the PM peak hour). This is likely due to the lack of turning lanes and an exclusive turning phase at the intersection. In the eastbound direction along President Avenue, the AM peak hour queue is 350 feet long which extends just past Dyer Street. In the PM peak hour, the queue of vehicles is 500 feet long, extending past the railroad bridge. At the intersection of President Avenue with Robeson Street, queues in all four directions are long as there is a high volume of turning vehicles at the intersection with no exclusive turning lanes or exclusive turning signal phases. In the northbound and southbound directions, the queues do not extend to the next intersection, but in the eastbound and westbound directions, the queues do extend far enough to block neighboring intersections. At the eastbound approach to the President Avenue Rotary, the queue backs up approximately 800 feet in the afternoon peak hour, almost to the intersection with Elsbree Street. No other extensive queuing was seen at intersections within the study area.

I-195 Eastbound sees some congestion in the morning peak hour when it operates with LOS D, but operates much better in the afternoon when the LOS improves to A. U.S. Route 6 sees some operational issues, particularly at Robeson Street and at the President Avenue Rotary. However, these locations are outside of the Focus Area, and were analyzed for the purpose of estimating regional traffic operations and will be used primarily in the alternatives analysis

Traffic operations data for freeway segments, weaving segments and ramp segments within the Regional Transportation Impact Area are provided in Tables 2.10 through 2.12. Traffic operations data for all intersections studied are provided in Table 2.13. It should be noted that traffic counts were collected prior to the opening of Morton Middle School, located at the intersection of President Avenue and North Main Street. The school opened in the fall of 2013.

Table 2.10: Existing Conditions (2012) along all Freeway Segments

FREEWAY SEGMENTS	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
Route 24 - Northbound				
North of I-195	B	15.1	A	10.4
North of President Avenue Off-Ramp	A	10.3	A	6.9
North of President Avenue On-Ramp	B	12.9	A	9.0
North of Highland Avenue	B	14.6	A	10.4
North of Route 79	C	23.5	B	16.7
Route 24 - Southbound				
North of Route 79	B	15.3	C	21.9
South of Route 79	A	9.4	B	12.9
South of Highland Avenue	A	7.6	A	11.0
South of President Avenue Off-Ramp	A	5.4	A	7.8
South of President Avenue On-Ramp	A	9.6	B	12.8
I-195 - Eastbound				
West of Plymouth Avenue Off-Ramp	D	27.3	A	10.8
Between Plymouth Avenue Ramps	C	22.4	A	6.7
East of Plymouth Avenue On-Ramp	C	25.7	A	10.2
East of SB Route 24 Off-Ramp	C	19.3	A	3.5
East of NB Route 24 On-Ramp	D	27.1	A	9.6
East of NB Route 24 Off-Ramp	C	20.8	A	5.8
East of SB Route 24 On-Ramp	C	24.9	A	9.9
I-195 - Westbound				
East of NB Route 24 Off-Ramp	B	17.4	B	14.3
West of NB Route 24 Off-Ramp	B	12.3	B	11.1
West of SB Route 24 On-Ramp	B	15.2	B	15.6
West of SB Route 24 Off-Ramp	A	10.2	A	9.4
West of NB Route 24 On-Ramp	B	17.4	B	16.3
Between Plymouth Avenue Ramps	B	13.0	B	12.5
West of Plymouth Avenue On-Ramp	B	15.4	B	12.5

Table 2.10: Existing Conditions (2012) along all Freeway Segments (Continued)

FREEWAY SEGMENTS	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
Route 79 - Northbound				
South of Davol Street Off-Ramp	A	6.8	A	7.6
North of Davol Street Off-Ramp	A	4.6	A	3.7
North of North Main Street Off-Ramp	A	7.6	A	5.7
North of SB North Main Street On-Ramp	A	8.3	A	5.7
South of Route 24	A	8.3	A	6.3
Route 79 - Southbound				
South of Route 24	A	5.9	A	8.7
South of North Main Street Off-Ramp	A	5.4	A	8.2
South of North Main Street On-Ramp	B	12.5	A	8.1
South of U.S. Route 6 Off-Ramp	A	4.2	A	4.2
South of Davol Street Off-Ramp	A	3.3	A	4.9
South of U.S. Route 6 On-Ramp	A	7.7	A	8.6
South of Davol Street On-Ramp	A	8.2	A	8.9

Table 2.11: Existing Conditions (2012) along all Weaving Segments

WEAVING SEGMENTS	AM Peak Hour			PM Peak Hour		
	LOS	v/c	Density (pc/mi/ln)	LOS	v/c	Density (pc/mi/ln)
NB Route 79 between U.S. Route 6 frontage road and North Main Street Off-Ramp	A	0.33	8.8	A	0.27	7.1
Davol Street East between Cory Street U-turn and Brightman Street U-Turn	A	0.18	8.4	B	0.29	14.5
Davol Street West between Brightman Street U-turn and Cory Street U-turn	B	0.35	14.7	B	0.37	15.8

Table 2.12: Existing Conditions (2012) along all Ramp Segments

RAMP LOCATIONS	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
Route 24 & Route 79				
SB Route 24 Off-Ramp to Route 79	B	19.6	C	27.3
SB Route 24 Off-Ramp to Highland Avenue	B	12.5	B	16.8
NB Route 24 On-Ramp from Highland Avenue	B	19.3	B	14.7
NB Route 24 On-Ramp from Route 79	C	27.5	C	20.8
Route 24 & U.S. Route 6 (President Avenue)				
SB Route 24 Off-Ramp to U.S. Route 6	A	1.2	A	5.4
SB Route 24 On-Ramp from U.S. Route 6	B	10.2	B	13.8
NB Route 24 Off-Ramp to U.S. Route 6	B	12.7	A	8.5
NB Route 24 On-Ramp from U.S. Route 6	B	13.4	A	7.6
Route 24 & I-195 (North of I-195)				
WB I-195 Off-Ramp to Route 24 NB	C	24.9	C	20.7
WB I-195 On-Ramp from Route 24 SB	B	17.5	B	18.8
EB I-195 Off-Ramp to Route 24 NB	D	32.0	B	15.3
EB I-195 On-Ramp from Route 24 SB	C	22.8	A	8.5
Route 24 & I-195 (South of I-195)				
WB I-195 Off-Ramp to Route 24 SB	C	21.7	C	22.8
WB I-195 On-Ramp from Route 24 NB	C	24.2	C	23.0
EB I-195 Off-Ramp to Route 24 SB	D	28.6	B	14.8
EB I-195 On-Ramp from Route 24 NB	D	30.3	B	14.3
I-195 & Plymouth Avenue				
WB I-195 Off-Ramp to Plymouth Avenue	C	22.2	C	20.8
WB I-195 On-Ramp from Plymouth Avenue	B	18.3	B	19.3
EB I-195 Off-Ramp to Plymouth Avenue	D	29.3	B	14.6
EB I-195 On-Ramp from Plymouth Avenue	C	27.7	B	14.0
Route 79 & Main Street				
SB Route 79 Off-Ramp to Main Street	A	6.7	B	10.1
SB Route 79 On-Ramp from Main Street	A	8.0	B	12.9
NB Route 79 On-Ramp from SB Main Street	B	10.9	A	8.7
NB Route 79 On-Ramp from NB Main Street	B	11.8	A	9.5
Route 79 & Route 6				
SB Route 79 Off-Ramp to U.S. Route 6	B	11.4	B	16.8
SB Route 79 Off-ramp to Davol Street West	A	7.1	A	9.5
SB Route 79 On-Ramp from U.S. Route 6	B	11.1	B	12.0
SB Route 79 On-Ramp from Davol Street East	A	3.5	A	4.4
NB Route 79 Off-Ramp to Davol Street East	A	5.7	A	6.7

Table 2.13: Existing Conditions (2012) at all Intersections

Location	AM Peak Hour					PM Peak Hour				
	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue
Davol Street East at Turner Street	A	0.4				A	0.9			
NB Through/Right	A	0.0	0.27	0	4	A	0.0	0.30	0	0
WB Right	B	11.5	0.05	20	48	B	13.3	0.15	31	61
Davol Street East at Pearce Street	A	0.5				A	0.8			
NB Through/Right	A	0.0	0.21	0	4	A	0.0	0.34	1	17
WB Right	B	10.9	0.06	20	43	B	12.8	0.12	33	59
Davol Street East at President Avenue	B	18.3	0.56			B	19.7	0.61		
NB Left/Through	B	19.5	0.57	79	128	C	21.9	0.75	142	233
NB Right	C	33.7	0.82	125	215	C	26.0	0.76	147	242
EB Left/Through	A	8.1	0.28	61	122	B	10.6	0.34	70	141
WB Through	B	18.3	0.46	91	112	C	21.7	0.55	94	109
WB Right	B	16.6	0.13	1	14	B	19.8	0.24	30	97
Davol Street East at Brownell Street	A	1.0				A	1.0			
NB Through/Right	A	0.0	0.22	3	63	A	0.0	0.38	5	72
WB Right	B	10.6	0.08	28	50	B	13.7	0.17	34	54
Davol Street West at Brownell Street	A	0.1				A	0.2			
SB Through/Right	A	0.0	0.33	1	12	A	0.0	0.36	1	14
EB Right	B	11.4	0.02	8	28	B	11.8	0.03	13	36
Davol Street West at President Avenue	B	18.6	0.72			C	21.8	0.76		
SB Left/Through/Right	B	17.4	0.69	163	253	C	20.9	0.74	177	274
EB Through/Right	A	0.0	0.00	0	0	B	11.5	0.01	3	19
WB Through	B	10.8	0.01	4	22	B	11.6	0.02	8	31
WB Left	C	21.3	0.75	133	214	C	24.0	0.78	156	233
Davol Street West at Baylies Street	A	0.3				A	0.2			
SB Through/Right	A	0.0	0.30	0	0	A	0.0	0.34	0	0
EB Right	B	11.1	0.03	14	40	B	11.6	0.02	8	30
Lindsey Street at Brownell Street	A	7.6				A	7.5			
NB Left/Through/Right	A	9.5	0.03	16	41	A	10.0	0.06	20	46
SB Left/Through/Right	A	9.9	0.14	36	57	B	10.2	0.16	53	124
EB Left/Through/Right	A	3.5	0.01	1	9	A	4.5	0.02	4	24
WB Left/Through/Right	A	2.2	0.01	0	4	A	1.1	0.00	1	12

Table 2.13: Existing Conditions (2012) at all Intersections (Continued)

Location	AM Peak Hour					PM Peak Hour				
	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue
Lindsey Street at President Avenue	A	1.6				A	2.0			
NB Left/Through/Right	B	14.8	0.14	35	70	C	17.9	0.23	50	83
SB Left/Through/Right	B	12.2	0.13	62	168	C	18.7	0.23	146	341
EB Left/Through/Right	A	0.1	0.21	4	26	A	0.4	0.24	10	47
WB Left/Through/Right	A	2.1	0.13	83	171	A	1.5	0.19	126	218
President Avenue at North Main Street	C	22.4	0.79			C	27.2	0.83		
NB Left/Through/Right	C	24.7	0.75	158	271	C	33.3	0.81	236	414
SB Left/Through/Right	B	19.8	0.62	127	238	C	21.3	0.49	134	237
EB Left	B	13.8	0.14	32	125	B	16.6	0.22	78	306
EB Through/Right	C	26.6	0.82	211	347	C	31.9	0.85	283	501
WB Left	B	14.8	0.20	16	42	B	17.9	0.26	18	58
WB Through/Right	B	15.6	0.39	92	168	B	19.0	0.47	135	241
President Avenue at Highland Avenue	A	6.7				B	8.3			
SB Left/Through/Right	D	31.5	0.66	71	124	E	48.3	0.79	75	139
EB Left/Through/Right	A	0.0	0.40	10	58	A	0.0	0.48	3	20
WB Left/Through/Right	A	0.0	0.15	0	0	A	0.0	0.23	0	3
President Avenue at Robeson Street	C	32.1	0.84			B	16.2	0.68		
NB Left/Through/Right	D	48.0	0.81	292	411	B	17.2	0.66	160	279
SB Left/Through/Right	D	50.0	0.82	261	318	B	15.4	0.58	151	258
EB Left/Through/Right	C	27.6	0.85	494	770	B	17.2	0.70	226	437
WB Left/Through/Right	B	12.7	0.41	158	275	B	14.7	0.58	245	462
President Avenue at Elsbree Street	C	20.4	0.64			B	17.3	0.70		
SB Left	C	29.8	0.77	114	196	C	21.6	0.69	96	161
SB Through/Right	C	20.2	0.47	70	129	B	15.7	0.33	54	101
EB Left	C	29.8	0.73	89	154	C	29.2	0.70	65	123
EB Through/Right	A	9.9	0.27	54	91	B	15.3	0.65	91	145
WB Left	F	103.2	0.78	14	38	C	24.9	0.49	31	60
WB Through	B	17.9	0.46	90	148	B	14.9	0.40	62	99
WB Right	B	17.2	0.32	87	152	B	14.0	0.19	53	96
President Avenue Rotary	C	16.8				F	52.9			
NB Left	A	7.6	0.32	N/A	35	A	6.5	0.21	N/A	20
NB Right	C	18.0	0.73	N/A	168	C	16.8	0.69	N/A	145
EB Through/Right	C	24.4	0.84	N/A	250	F	129.3	1.22	N/A	805
WB Left	A	4.4	0.00	N/A	0	A	3.9	0.00	N/A	0
WB Through	B	10.5	0.47	N/A	63	A	7.7	0.34	N/A	38

2.3.6 Safety

Existing Crash Data was obtained from MassDOT for the Focus Area from 2008 to 2010. Crash rates, the number of collisions per one million vehicles entering the intersection, were determined for each intersection shown in Table 2.14. For District 5 the Signalized Intersection Average Crash Rate is 0.77 and the Unsignalized Intersection Average Crash Rate is 0.60. The Statewide Signalized Intersection Average Crash Rate is 0.81 and the Statewide Unsignalized Intersection Average Crash Rate is 0.61.

Table 2.14: 2008 – 2010 Crash Data within Focus Area

Location	Signalized	Year			3 – Year		Crash Rate	Higher than	
		2008	2009	2010	Total	Avg.		State	Dist. 5
Southbound Davol at Brownell Street	No	0	2	0	2	0.67	0.18		
Southbound Davol at President Avenue	Yes	2	7	0	9	3.0	0.54		
Southbound Davol at Baylies Avenue	No	1	1	1	3	1.0	0.28		
Southbound Davol at U-turn from Northbound Davol	No	3	6	1	10	3.33	1.0	X	X
Northbound Davol at U-turn from Southbound Davol	No	7	1	6	14	4.67	1.21	X	X
Northbound Davol at Turner Street	No	3	2	1	6	2.0	0.48		
Northbound Davol at President Avenue	Yes	16	10	22	48	16.0	1.75	X	X
President Avenue at Lindsey Street	No	8	4	4	16	5.33	0.84	X	X
President Avenue at North Main Street	Yes	13	15	17	45	15.0	2.0	X	X
Lindsey Street at Brownell Street	No	3	2	2	7	2.33	2.09	X	X

There are four intersections within the Focus Area that have a crash rate lower than both the Statewide and District 5 averages. These intersections are Davol Street West at Brownell Street, President Avenue and Baylies Avenue and Davol Street East at Turner Street. All other intersections within the Focus Area have a crash rate higher than both the Statewide and District 5 averages. Intersection Crash Rate Worksheets and more detailed summaries of the crash data can be found in the Appendix.

At the U-turn with Davol Street East and Davol Street West, the crash types were a mix of sideswipes, rear end, angle and fixed object collisions. These crashes are likely due to speeds that are too high and poor visibility between oncoming traffic and traffic that is ahead along the U-turn path.

Along President Avenue, a four-lane road with parking along the westbound direction, the intersections with Northbound Davol and Lindsey Street are less than 150 feet apart. Vehicles on Lindsey Street turning onto westbound or eastbound President Avenue must cross through the queue of vehicles at the Davol Street intersection or wait for a gap between vehicles approaching and exiting the Davol Street intersection. The vast majority of crashes at these intersections are rear-end and angle collisions, likely caused by congestion at the intersections and poor visibility of oncoming traffic due to stopped traffic and parked vehicles. There have also been three crashes involving pedestrians at these intersections, two of them at the Lindsey Street intersection. In order to cross President Avenue, pedestrians must use the Davol Street intersection, where pedestrians must cross the westbound President Avenue right-turn lane which does not have a pedestrian signal associated with it.

At the intersection of North Main Street and President Avenue, exclusive left-turn lanes are provided along President Avenue but no protected signal phase is provided. Along North Main Street, northbound and southbound traffic operate at the same time with no protected phases. Of 45 crashes over three years, 21 were angle collisions and 17 were rear-end collisions. Most of the angle collisions involved eastbound traffic turning left onto North Main Street. Most of the rear end collisions were along North Main Street, which is one lane in each direction with no exclusive turn lanes. The causes of these crashes are likely due to lack of an exclusive turning phase and turning lanes.

At the intersection of Lindsey Street with Brownell Street, only Lindsey Street is stop-controlled. Brownell Street has a free-flowing east-west movement traveling to and from Davol Street East. Of the seven crashes at this intersection over three years, five were angle collisions between vehicles on Brownell Street and southbound Lindsey Street traffic. These crashes could be caused by Lindsey Street traffic expecting vehicles on Brownell Street to stop.

2.3.7 Multi-Modal Transportation

Multi-modal transportation is provided throughout the Regional Transportation Impact Area and Focus Area by means of sidewalks, bike paths, bicycle access on local roadways, and bus routes. However, there are gaps and missing links in the network that have been identified in the following section as part of the existing conditions assessment and identification of issues.

2.3.7.1 Walking Conditions

The Route 79 and Davol Street corridor creates a barrier that makes it difficult for pedestrians to access the waterfront. There are only two east-west pedestrian

accessible connections across the Route 79 corridor between Fall River and the waterfront. One is located near I-195 at Central Street and provides access to Heritage State Park. The next crossing is roughly one mile to the north at President Avenue.

There are sidewalks along much of Davol Street, including at the Cedar Street U-turn. However, as shown in Figure 2.31, there are no crosswalks, signals or ramps at this location. In addition, there are two travel lanes on each side of Davol Street. For these reasons, this location is not a safe or legal crossing location for pedestrians. As discussed previously in the section on safety, the Cedar Street U-turn has a high rate of traffic collisions. The next location where pedestrians are able to cross under Route 79, and the only legal pedestrian crossing within the Focus Area, is roughly one mile away at President Avenue. This leaves a large number of residential blocks that are adjacent to the waterfront but not within easy walking distance. The infrequent east-west pedestrian crossings may encourage local residents to drive to the waterfront, rather than walk.

Figure 2.31: Cedar Street U-turn Under Route 79

There is a sidewalk on at least one side of most streets in the study area, as shown in pink on Figure 2.32. There is also a wooden boardwalk along the waterfront shown in blue in Figure 2.32, which starts at Fall River Heritage State Park and continues for 1/2 mile to the north. At this point is becomes a paved path, shown in yellow in Figure 2.32, which connects to and through Bicentennial Park. There are currently no accommodations to walk further north along the waterfront.

Figure 2.32: Sidewalks and Paths in the Project Area

At President Avenue there are crosswalks, ramps, and pedestrian signals as seen in Figure 2.33. However, the sidewalk underneath the elevated roadway is five feet wide and unlit as seen in Figure 2.34.

Figure 2.33: President Avenue Crossing Under Route 79

Figure 2.34: Detail of Sidewalks Along President Avenue Under Route 79

2.3.7.2 Bicycling Conditions

Many Fall River streets are generally suitable for bicycling given typically slow urban traffic speeds on narrow rights-of-way with on-street parking and frequent traffic signals. Bicyclists are prohibited from limited-access highways including I-195, Route 79 and

Route 24, but may use Davol Street and all other local streets. The steep grades in various locations in Fall River can make bicycling challenging, both in terms of the strength needed to ascend and skills needed to safely descend.

By state law, bicyclists may not ride on sidewalks in a business district, but can otherwise bicycle on sidewalks, provided they yield to pedestrians. Local governments are permitted to further restrict sidewalk bicycling, but Fall River has not adopted any restrictions. Although it is currently used by bicyclists, the Department of Conservation and Recreation (DCR) prohibits bicycling on the boardwalk that begins at Fall River Heritage State Park because the boardwalk does not meet bicycling design standards, including alignment and width deficiencies. There are multiple locations along the path where 90-degree turns are required and the path is not wide enough to provide sufficient clear distance between bicyclists and railings.

The previous Brightman Street Bridge was replaced in September 2011 by the Veterans Memorial Bridge, located 1/2 mile upstream of the old bridge. The new bridge has a separated bike path on the north side. On the Somerset side, there is a signalized crosswalk connecting to another section of the path that continues to Brayton Avenue. On the Fall River side, the path makes a 270° loop to cross underneath the bridge along the northbound lanes of Route 79, ending at Wellington Street (see Figure 2.35). The ramp connects with the street system at the dead end of Wellington Street. The City has provided signs for an on-street bike route between Wellington Street and President Avenue via Fulton Street and Lindsey Street. Once at President Avenue, the bike route does not connect to any other bike routes, requiring bicyclists to ride in the roadway or dismount and walk with their bike along the sidewalk.

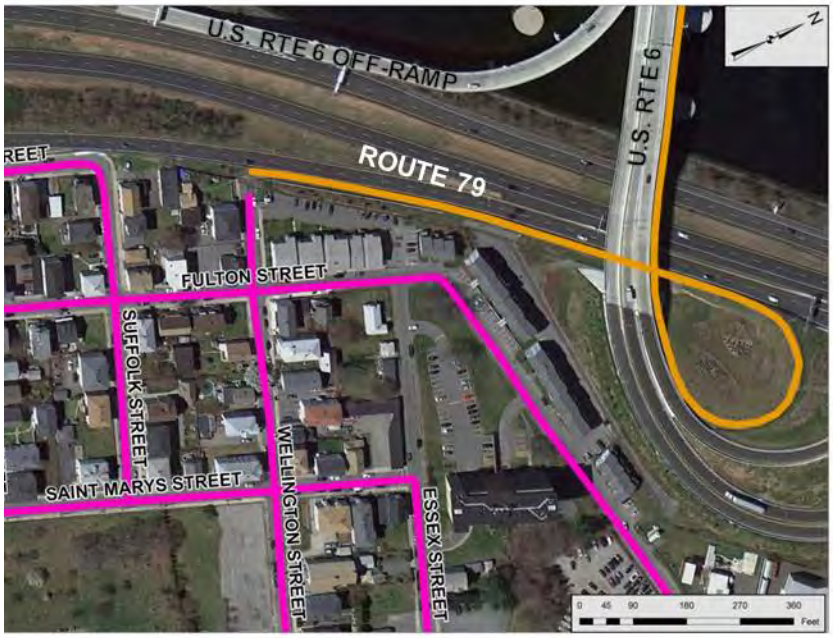


Figure 2.35: Access Ramp for Bicycle and Pedestrian Path on Veterans Memorial Bridge

2.3.7.3 Transit

Local transit service in the Fall River area is provided by the Southeastern Regional Transit Authority (SRTA). The SRTA Fall River Bus Terminal is located on Borden Street between Fourth and Fifth. The Fall River terminal is served by all of the 12 SRTA Fall River routes. Two of these routes operate in the vicinity of the project area:

- Route 2: Operates between the downtown bus terminal and North Fall River, mostly on North Main Street. The route is shown in yellow on Figure 2.10, with its stops shown in red.
- Route 14: Shown in pink on Figure 6, operates between the downtown bus terminal and the Swansea Mall, via the Braga Bridge.

In 2012 a stop was added on Route 2 to serve Commonwealth Landing. In order to serve this stop, buses in both directions must turn off of North Main Street on to President Avenue, travel north on Davol Street to the U-turn north of Brightman Street, stop at 1080 Davol Street, then return via Davol Street and President Avenue, as shown in Figure 2.36. This single stop adds 1.4 miles and approximately five minutes of travel time to Route 2 in each direction. SRTA has considered serving this stop with Route 14, which formerly crossed the Taunton River on the Brightman Street Bridge (now replaced by the Veterans Memorial Bridge). However, Route 14 has hourly service and SRTA believes that it is important to provide service every 30 minutes to Commonwealth Landing. Reconfiguring these routes is possible, particularly if changes to Route 79 and Davol Street facilitate bus travel from downtown to Somerset via the Veterans Memorial Bridge while being able to make local stops.

As of Monday, April 22, 2013, service was extended beyond 6 PM on weekend evenings on Routes 2 and 14, resulting in the following operating plan:

- Route 2: Weekdays, 6:00 AM to 8:30 PM, every 30 min. Saturdays, 7:00 AM to 6:00 PM, every 60 min. No Sunday service.
- Route 14: Weekdays, 8:30 AM to 9:00 PM, every 60 min. Saturdays, 8:30 AM to 6:00 PM, every 60 min. No Sunday service.

Figure 2.36: SRTA Bus Routes 2 and 14

2.4 Future No-Build Conditions

Future No-Build Conditions were developed for the Regional Transportation Impact Area and the Focus Area for the year 2035. The overall purpose and need for this step in the study process is to ensure that any developed and analyzed alternatives will function effectively in the future. It is also intended to identify any traffic operations issues that may not be present under the existing conditions, but given any growth or trip distribution changes may result as an issue in the near, mid, or long-term timeframe.

This step is accomplished by utilizing a travel demand forecasting model to project traffic volumes for the year of 2035 and is discussed in more detail below in the section on CTPS Demand Modeling. The Future No-Build analysis assumes that no infrastructural modifications beyond currently planned projects are completed within the study area. Additionally, economic development changes that are anticipated regionally and within the study area are also included. Specifically, the development of South Coast Rail, the Regatta Club, Marina at City Pier, Commonwealth Landing Mill, and a restaurant on Remington Avenue. The Future No-Build Conditions also includes completion of the I-195/Route 79 Interchange Project.

2.5 Future No-Build Land Use and Environmental Conditions

The Future No-Build Conditions assumed no changes to the existing local roadways, intersections and ramps in the project area. Consequently, it is assumed that there would be no adverse effects on natural or cultural environmental resources in or near the project study area. However, if planned developments within the project Focus Area do come to fruition there may be some impacts to traffic operations which could in turn affect quality of life (socioeconomic environmental resources) for those accessing the area.

2.6 Future No-Build Economic Conditions and Analysis

Within the regional area of Fall River, Somerset and Swansea, as well as statewide, there is expected to be an increase in population, households and jobs between 2010 and 2035. The regional growth in these categories is anticipated to outpace the statewide growth. Table 2.15 provides the Future No-Build anticipated background growth for the region and for the state.

Table 2.15: Future No-Build – 2035 Background Growth

Category	Regional % Change	Statewide % Change
Population	15%	8%
Households	19%	13%
Jobs	14%	8%

Regional data includes Fall River, Somerset and Swansea

Within the Focus Area, the Future No-Build Scenario includes the following planned developments:

- Redevelopment of first three floors of the Commonwealth Landing Mill, which began in 2011, to retail, office, and entertainment space. When it is completed, the Mill is expected to house some 650 new jobs on the Riverfront.
- Conversion of the upper two floors of Commonwealth Landing Mill to 56 new one-to-three-bedroom apartment units. Construction is expected to start in the spring of 2014.
- The planned redevelopment of the Regatta Club as a restaurant.
- The development of City Pier as a marina that is planned by the City of Fall River.

The location of these developments is illustrated in Figure 2.37. Trips that are forecast to be generated by these developments have been included in projections for the Future No-Build Conditions.

Figure 2.37: Proposed Developments along the Waterfront

2.6.1 Travel Demand Modeling

The travel demand model of the Central Transportation Planning Staff (CTPS) of the Boston Metropolitan Planning Organization was used to allocate the impacts of planned developments on the distribution of population and jobs within the study area under the No Build Scenario. While Fall River is located in the Southeastern Massachusetts Metropolitan Planning Organization's region, CTPS has been performing travel demand modeling activities for the South Coast Rail project, so it was deemed beneficial to use the CTPS model for the Route 79 / Davol Street Corridor Study.

This model follows the four step travel-modeling process of trip generation, trip distribution, mode choice, and trip assignment to estimate present and future daily transit ridership and daily highway traffic volumes, primarily on the basis of demographics and the characteristics of the transportation network. One of the key travel demand inputs is land use information, a process call trip generation.

All calculations are performed at the Transportation Analysis Zone (TAZ) level. The TAZ is a unit of geography the model uses to produce and attract person trips. The TAZ is similar in size to Census block groups, but may not always match them precisely, since they were developed with a transportation focus. Figure 2.38, identifies the number and boundaries of the TAZ's used in the Fall River area.

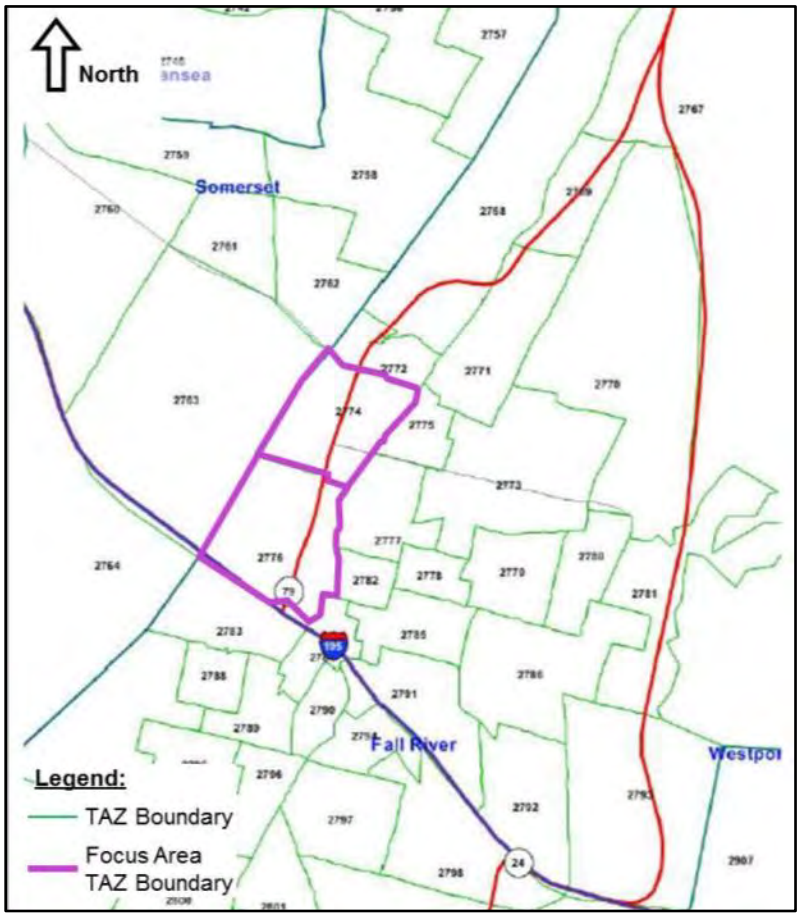


Figure 2.38: Transportation Analysis Zones within the Study Area

As shown in Figure 2.38, the Focus Area is defined by two distinct TAZs (No. 2774 and No. 2776). They are bounded on the east and west by North Main Street and the Taunton River, respectively, and are bounded on the north and south by Brightman Street and I-195, respectively. Baylies Street, an east-west roadway, divides TAZ 2774 to the north from TAZ 2776 to the south.

In order to measure the impacts of specific planned developments on vehicle and transit trips in the Focus Area, TAZ 2774 and TAZ 2776 were divided into subzones, as seen in Figure 2.39. Each TAZ was further divided based on their likely transportation usage in order to refine the analysis of the travel demand model within the Focus Area. Route 79 splits the riverfront area from the rest of Fall River. The only local access that crosses Route 79 is provided via President Avenue and at the U-turn south of Baylies Street.

For the Future No-Build Condition, CTPS utilized the travel demand model developed for the South Coast Rail project. Refinements were made for recent transportation projects and all transportation projects included in the Long Range Transportation Plans of the Boston region Metropolitan Planning Organization and the Southeastern Regional Planning and Economic Development District. The demographics within the No-Build model are based on officially adopted transportation plans as well as anticipated developments (residential and commercial) that are currently planned.

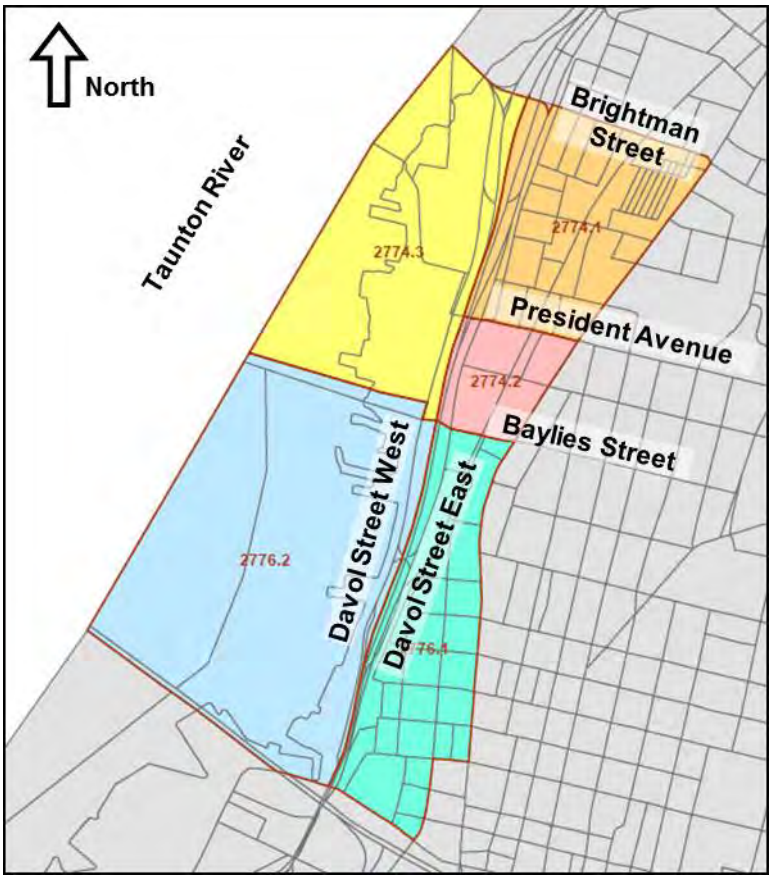


Figure 2.39: Split Transportation Analysis Zones within the Focus Area

Based on Cambridge Economic Research's land use survey fieldwork, CTPS's allocation of 2010 data among the study area TAZ subzones was confirmed as representative of ground data. In allocating 2035 growth to the subzones, all development projects built since 2010 as well as those that are currently planned were included. Table 2.16 shows how the data on population and households have been allocated among the TAZ subzones.

Table 2.16: Estimates and Forecasts of Population and Households within TAZ 2774 and 2776

TAZ	2010		2035	
	Population	Households	Population	Households
2774				
2774.1	1,343	601	1,448	668
2774.2	127	53	127	56
2774.3	43	16	160	71
Total TAZ 2774	1,513	670	1,735	795
2776				
2776.1	1,605	605	1,834	719
2776.2	156	116	178	138
Total TAZ 2776	1,761	721	2,012	857

Source: CTPS and Cambridge Economic Research

For projecting the year 2035 population distribution, all projects currently planned and under construction in the study area have been included. The conversion of the upper two floors of the Commonwealth Landing Mill will result in population growth in TAZ 2774.3. An average of two people per household was assumed. The new apartments will affect the distribution of population in the three TAZ sub-zones in the north of the Study Area. In TAZ 2774.3, which includes the North Riverfront, the proportion of population is expected to increase from 3% in 2010 to 9% in 2013. No changes are expected in the distribution of population and households in TAZ 2776 by the year 2035 since no future development projects are located there.

2.6.2 CTPS Travel Demand Model

Field survey work conducted by Cambridge Economic Research shows that there are significantly more jobs in TAZ 2774.2 than in 2774.1. TAZ 2774.2 contains Executive Plaza, the businesses on the south side of President Avenue, and box retail outlets on the west side of Main Street. TAZ 2774.1 is mainly residential. As is shown in Table 2.17, it was recommended that the CTPS percentage jobs distribution estimates for these two sub-zones be reversed and that the overall CTPS 2010 data for jobs in TAZ 2774 be kept at 454 jobs.

Table 2.17: 2010 Estimated Jobs within TAZ 2774 and 2776

TAZ	2010 CTPS Jobs	CER 2010 Jobs
2774		
2774.1	227	186
2774.2	186	227
2774.3	41	41
Total 2774	454	454
2776		
2776.1	214	214
2776.2	29	29
Total 2776	243	243
Total Study Area	697	697

Source: CTPS and Cambridge Economic Research

The fieldwork done to complete business interviews and land use surveys has been incorporated into the 2035 growth forecasts for the TAZ subzones. Table 2.18 shows the development projects that are currently planned in the study area. The redevelopment of Commonwealth Landing Mill and the surrounding area is expected to produce 650 new jobs in TAZ 2774.3 by 2035. In TAZ 2776.2, the redevelopment of both the Regatta Club site as a restaurant and City Pier as a marina are forecast to produce a total of around 76 jobs.

Table 2.18: Future No-Build – 2035 Planned Projects and Jobs Projections

Planned Developments	Estimated Jobs
TAZ 2774.3	
Commonwealth Landing	525
Restaurant on Remington	125
Total TAZ 2774.3	650
TAZ 2776.2	
Regatta Club	70
Marina at City Pier	6
Total TAZ 2776.2	76

Source: CTPS and Cambridge Economic Research

In order to incorporate these planned projects into the year 2035 forecasts for the Future No-Build scenario, the new jobs in planned projects were added to the 2010 jobs distribution estimates. Table 2.19 shows the results of this analysis. Since the increases in jobs in planned projects under the Future No-Build scenario are so significant, they could not be accommodated within the original CTPS 2035 forecasts for the two TAZ. It was recommended that the CTPS forecasts for TAZ 2774 be increased by a net of 569 jobs to match the CER forecast. Forecasts for TAZ 2776 were increased by 39 jobs. This results in a redistribution of jobs as a greater portion of Fall River jobs will be located in the Focus Area TAZ than was originally anticipated in the CTPS forecast.

Table 2.19: Future No-Build – 2035 Jobs Projections for Transportation Analysis Subzones

TAZ	CTPS Jobs Estimate	Net CER Forecast	% Jobs
TAZ 2774			
2774.1	N/A	204	18%
2774.2	N/A	249	23%
2774.3	N/A	651	59%
Total TAZ 2774	535	1,104	100%
TAZ 2776			
2776.1	N/A	221	69%
2776.2	N/A	98	31%
Total TAZ 2776	280	319	100%

Source: CTPS and Cambridge Economic Research

Table 2.20 compares the changes in population, households, and jobs in the TAZ that encompass the Focus Area with overall changes in the region that includes the cities of Fall River, Swansea, and Somerset. Forecast growth of population within the Study Corridor is expected to be in line with regional averages. Growth in jobs in the Focus Area is, however, expected to far exceed that of the region.

Table 2.20: Future No-Build – 2035 Change in Population and Jobs

	2010	2035	Study Area Change	Study Area % Change	Regional % Change
Population	3,274	3,747	473	14%	15%
Households	1,391	1,652	261	19%	19%
Jobs	697	1,423	727	104%	14%

Regional data includes Fall River, Somerset and Swansea

2.7 Future No-Build Traffic Volumes and Analysis

The anticipated changes in population, households and employment were incorporated into the CTPS model along with anticipated growth rates within the region in order to determine projected traffic volumes for the year 2035.

Traffic volume exhibits showing peak hour volumes throughout the Regional Transportation Impact Area and Focus Area, are provided in Figures 2.40 through 2.42.

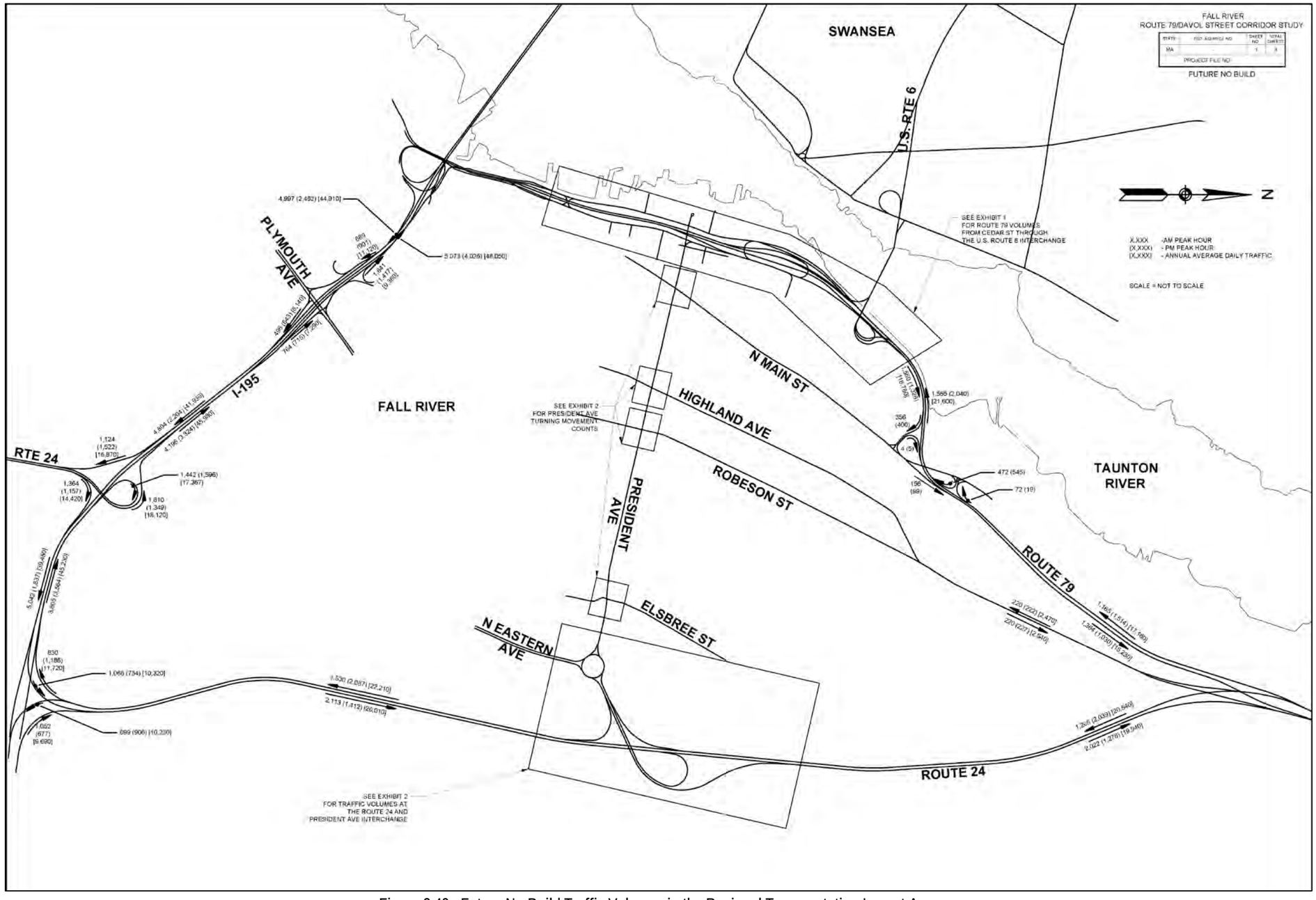


Figure 2.40: Future No-Build Traffic Volumes in the Regional Transportation Impact Area

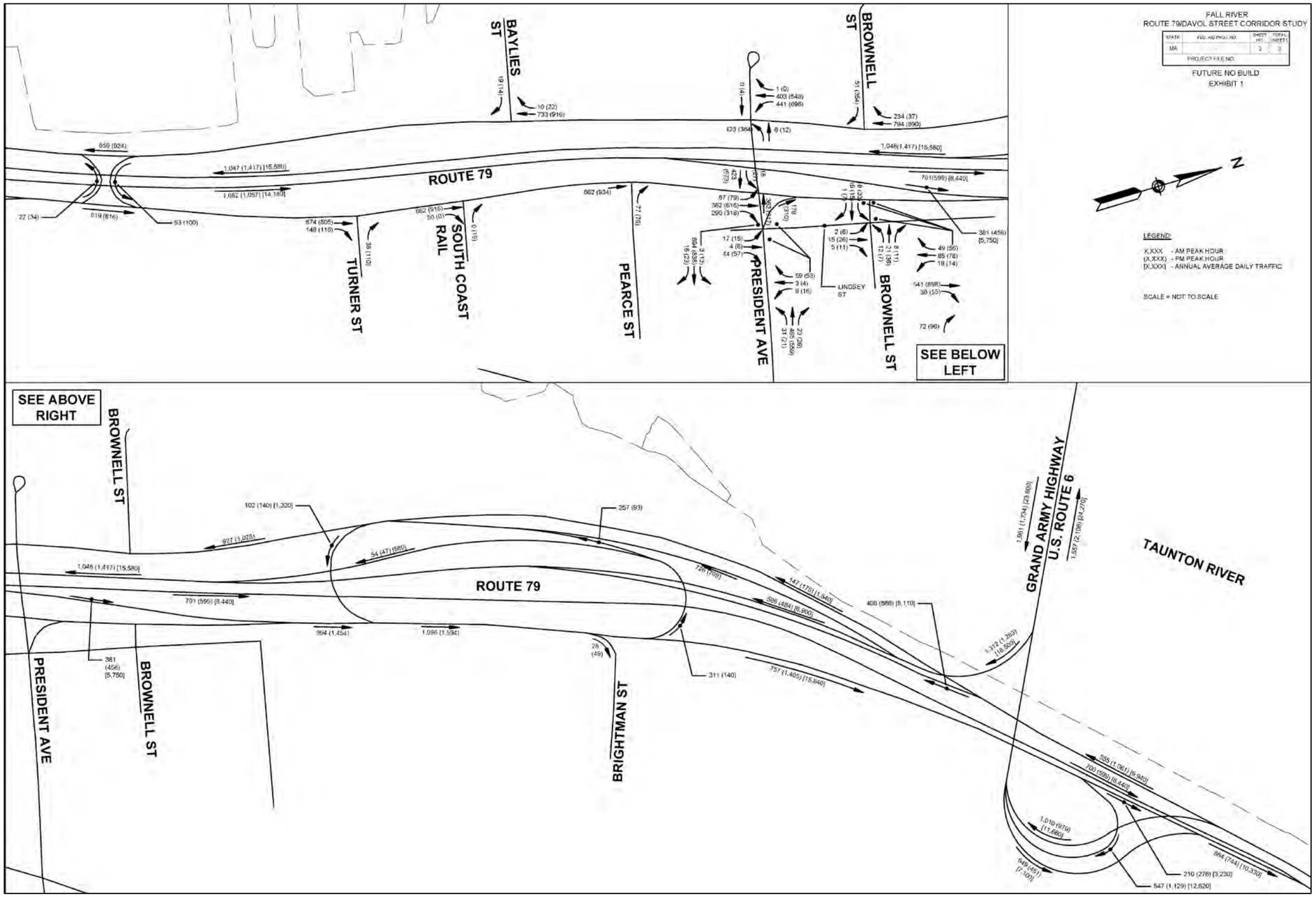


Figure 2.41: Future No-Build Traffic Volumes in the Focus Area

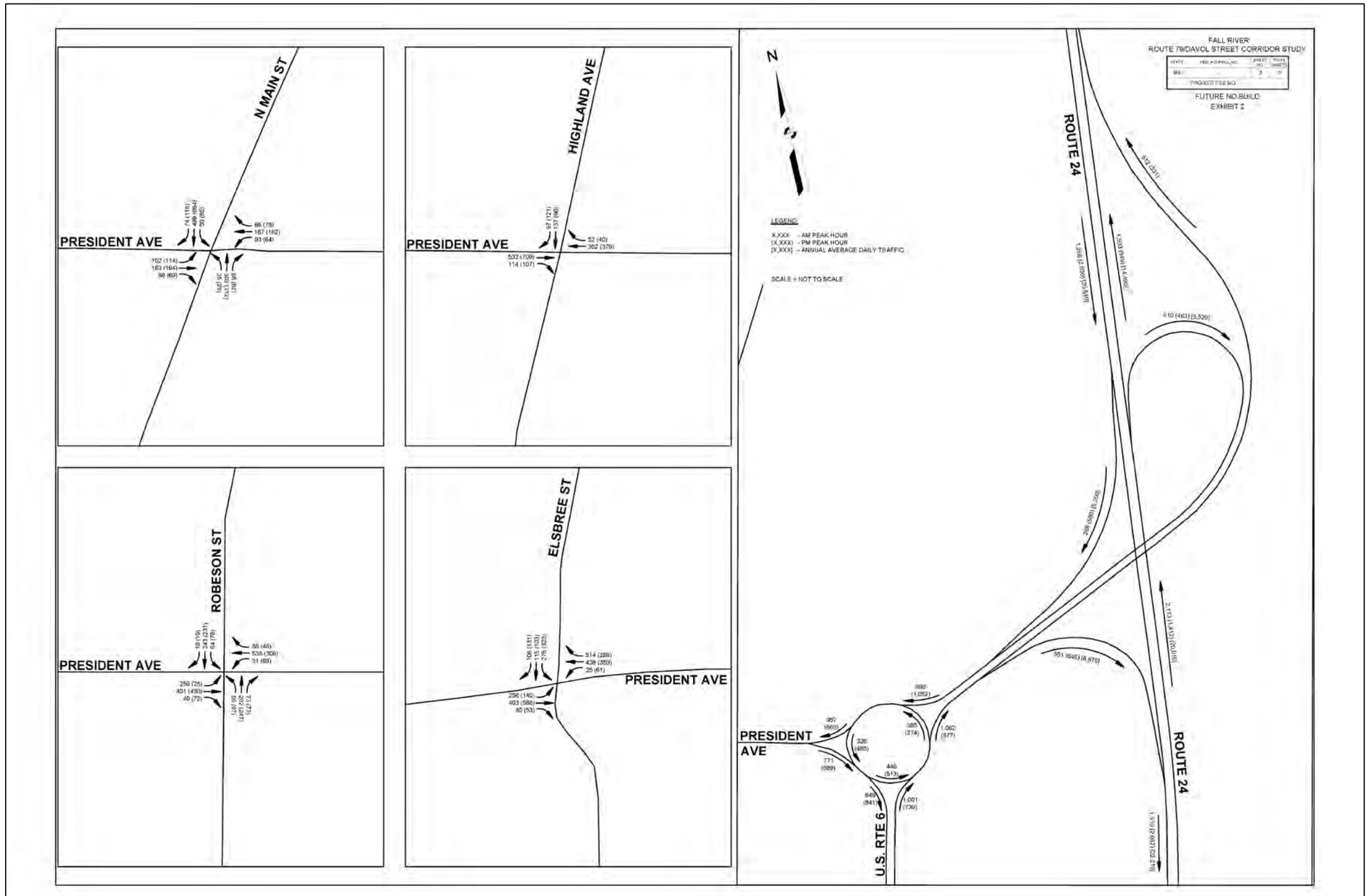


Figure 2.42: Future No-Build Traffic Volumes along President Avenue

Throughout the Regional Transportation Impact Area, the No-Build Travel Demand Model showed varying increases in traffic volumes during the peak travel hours. Traffic along side streets and minor interchanges within the regional area is expected to remain mostly unchanged between 2012 and 2035 since little development is anticipated in those areas. Along more major routes, such as Route 24, Route 79, I-195, U.S. Route 6 and President Avenue, the peak hour traffic volumes are anticipated to increase by an average annual rate of 0.75%.

Within the project Focus Area, the future No-Build traffic volume changes are driven by the planned developments along the riverfront. The currently planned developments of the Regatta Club, the Marina at City Pier, South Coast Rail, Commonwealth Landing Mill and the Restaurant on Remington Avenue are expected to increase the population within the Focus Area by 112 and provide 726 new jobs. The new jobs provided by the developments will increase the morning peak hour traffic going towards the riverfront along westbound President Avenue, Davol Street East and along the northbound to southbound Brightman Street U-turn. In the afternoon peak hour traffic leaving the waterfront will increase, particularly along Davol Street West, the southbound to northbound Cedar Street U-turn and eastbound President Avenue.

Overall, throughout the Regional Transportation Impact Area and the Focus Area, while traffic operations do worsen due to added traffic, there are limited locations throughout the region that do not operate well.

As shown in Tables 2.21 through 2.24, I-195 generally operates at LOS D in the morning hours, but operates at LOS C or better in the afternoon peak hour. This shows only a slight reduction in operations versus the existing conditions.

Conditions along President Avenue are worsened compared to existing due to increased traffic volumes and no geometric roadway improvements. At the intersection with Davol Street West, the LOS of the southbound movement is worsened from B to C during the morning and to LOS E during the afternoon peak hour. At the intersection with Davol Street East, the northbound movement along Davol Street East is worsened for all turning movements. Queuing lengths are between 200 and 300 feet along Davol Street at these intersections. To the east, the southbound movement at Highland Avenue worsens from a LOS D to LOS F in the morning peak hour with a queue length of roughly 150 feet as this intersection does not require President Avenue traffic to stop. At the intersection with Robeson Street, the overall LOS during the morning peak hour worsens from C to E with long queue lengths in all directions. At the rotary with North Eastern Avenue, the intersection delay and queues are roughly the same in the PM peak hour as in the existing conditions. In the AM peak hour, the LOS is worsened to E with an eastbound queue of vehicles approximately 580 feet long.

At the interchange between Route 24 and Route 79, the northbound on-ramp from Route 79 to Route 24 operates at LOS D in the morning peak hour but operates at LOS C in the afternoon peak hour. Conversely, the southbound off-ramp from Route 24 to Route 79 operates at LOS C in the morning peak hour, but conditions worsen to LOS E in the afternoon. In the existing conditions, these ramps operate at LOS C or better at all times.

Table 2.21: Future No-Build (2035) Conditions along All Freeway Segments versus Existing (2012) Conditions

FREEWAY SEGMENTS	Existing Conditions				Future No-Build Conditions			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
Route 24 - Northbound								
North of I-195	B	15.1	A	10.4	B	16.5	A	11.0
North of President Avenue Off-Ramp	A	10.3	A	6.9	B	11.7	A	7.4
North of President Avenue On-Ramp	B	12.9	A	9.0	B	15.7	A	10.0
North of Highland Avenue	B	14.6	A	10.4	B	17.5	B	11.7
North of Route 79	C	23.5	B	16.7	D	31.1	C	19.9
Route 24 - Southbound								
North of Route 79	B	15.3	C	21.9	C	20.9	D	33.5
South of Route 79	A	9.4	B	12.9	B	11.6	B	17.6
South of Highland Avenue	A	7.6	A	11.0	A	9.9	B	15.9
South of President Avenue Off-Ramp	A	5.4	A	7.8	A	7.6	B	11.2
South of President Avenue On-Ramp	A	9.6	B	12.8	B	11.9	B	16.3
I-195 - Eastbound								
West of Plymouth Avenue Off-Ramp	D	27.3	A	10.8	D	27.7	B	12.6
Between Plymouth Avenue Ramps	C	22.4	A	6.7	C	22.9	A	7.9
East of Plymouth Avenue On-Ramp	C	25.7	A	10.2	D	26.2	B	11.4
East of SB Route 24 Off-Ramp	C	19.3	A	3.5	C	19.2	A	3.5
East of NB Route 24 On-Ramp	D	27.1	A	9.6	D	28.0	A	9.5
East of NB Route 24 Off-Ramp	C	20.8	A	5.8	C	20.8	A	5.7
East of SB Route 24 On-Ramp	C	24.9	A	9.9	C	25.3	A	10.4
I-195 - Westbound								
East of NB Route 24 Off-Ramp	B	17.4	B	14.3	C	21.2	B	15.9
West of NB Route 24 Off-Ramp	B	12.3	B	11.1	B	15.4	B	12.3
West of SB Route 24 On-Ramp	B	15.2	B	15.6	C	19.9	C	18.5
West of SB Route 24 Off-Ramp	A	10.2	A	9.4	B	12.3	A	10.3
West of NB Route 24 On-Ramp	B	17.4	B	16.3	C	22.2	B	17.3
Between Plymouth Avenue Ramps	B	13.0	B	12.5	B	17.8	B	13.5
West of Plymouth Avenue On-Ramp	B	15.4	B	12.5	C	20.9	B	17.4

Table 2.21: Future No-Build (2035) Conditions along All Freeway Segments versus Existing (2012) Conditions (Continued)

FREEWAY SEGMENTS	Existing Conditions				Future No-Build Conditions			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
Route 79 - Northbound								
South of Davol Street Off-Ramp	A	6.8	A	7.6	A	8.4	A	8.2
North of Davol Street Off-Ramp	A	4.6	A	3.7	A	5.5	A	4.7
North of North Main Street Off-Ramp	A	7.6	A	5.7	A	9.4	A	7.2
North of SB North Main Street On-Ramp	A	8.3	A	5.7	A	9.4	A	7.3
South of Route 24	A	8.3	A	6.3	A	10.6	A	8.0
Route 79 - Southbound								
South of Route 24	A	5.9	A	8.7	A	9.1	B	11.8
South of North Main Street Off-Ramp	A	5.4	A	8.2	A	8.5	B	11.6
South of North Main Street On-Ramp	B	12.5	A	8.1	B	12.2	B	15.9
South of U.S. Route 6 Off-Ramp	A	4.2	A	4.2	A	4.3	A	8.3
South of Davol Street Off-Ramp	A	3.3	A	4.9	A	3.2	A	6.9
South of U.S. Route 6 On-Ramp	A	7.7	A	8.6	A	7.7	A	10.7
South of Davol Street On-Ramp	A	8.2	A	8.9	A	8.2	B	11.0

Table 2.22: Future No-Build (2035) Conditions along All Weaving Segments versus Existing (2012) Conditions

WEAVING SEGMENTS	Existing Conditions						Future No-Build Conditions					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	LOS	v/c	Density (pc/mi/ln)	LOS	v/c	Density (pc/mi/ln)	LOS	v/c	Density (pc/mi/ln)	LOS	v/c	Density (pc/mi/ln)
NB Route 79 between U.S. Route 6 frontage road and North Main Street Off-Ramp	A	0.33	8.8	A	0.27	7.1	B	0.38	10.3	A	0.33	8.7
Davol Street East between Cory Street U-turn and Brightman Street U-Turn	A	0.18	8.4	B	0.29	14.5	A	0.22	9.5	B	0.3	14.8
Davol Street West between Brightman Street U-turn and Cory Street U-turn	B	0.35	14.7	B	0.37	15.8	B	0.45	19.7	B	0.42	18.1

Table 2.23: Future No-Build (2035) Conditions along All Ramp Segments versus Existing (2012) Conditions

	Existing Conditions				Future No-Build Conditions			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
RAMP LOCATIONS	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
Route 24 & Route 79								
SB Route 24 Off-Ramp to Route 79	B	19.6	C	27.3	C	26.2	E	36.9
SB Route 24 Off-Ramp to Highland Avenue	B	12.5	B	16.8	B	15.2	C	22.6
NB Route 24 On-Ramp from Highland Avenue	B	19.3	B	14.7	C	22.5	B	16.1
NB Route 24 On-Ramp from Route 79	C	27.5	C	20.8	D	33.2	C	24.1
Route 24 & U.S. Route 6 (President Avenue)								
SB Route 24 Off-Ramp to U.S. Route 6	A	1.2	A	5.4	A	4.0	B	11.3
SB Route 24 On-Ramp from U.S. Route 6	B	10.2	B	13.8	B	12.8	B	17.6
NB Route 24 Off-Ramp to U.S. Route 6	B	12.7	A	8.5	B	15.1	A	8.4
NB Route 24 On-Ramp from U.S. Route 6	B	13.4	A	7.6	B	15.8	A	9.5
Route 24 & I-195 (North of I-195)								
WB I-195 Off-Ramp to Route 24 NB	C	24.9	C	20.7	D	28.5	C	22.6
WB I-195 On-Ramp from Route 24 SB	B	17.5	B	18.8	C	22.9	C	22.7
EB I-195 Off-Ramp to Route 24 NB	D	32.0	B	15.3	D	32.9	B	15.3
EB I-195 On-Ramp from Route 24 SB	C	22.8	A	8.5	C	23.0	A	9.4
Route 24 & I-195 (South of I-195)								
WB I-195 Off-Ramp to Route 24 SB	C	21.7	C	22.8	C	27.6	C	26.9
WB I-195 On-Ramp from Route 24 NB	C	24.2	C	23.0	D	29.7	C	24.0
EB I-195 Off-Ramp to Route 24 SB	D	28.6	B	14.8	D	29.2	B	17.0
EB I-195 On-Ramp from Route 24 NB	D	30.3	B	14.3	D	31.4	B	14.2
I-195 & Plymouth Avenue								
WB I-195 Off-Ramp to Plymouth Avenue	C	22.2	C	20.8	C	26.3	C	21.8
WB I-195 On-Ramp from Plymouth Avenue	B	18.3	B	19.3	D	32.8	C	26.7
EB I-195 Off-Ramp to Plymouth Avenue	D	29.3	B	14.6	D	29.6	B	16.9
EB I-195 On-Ramp from Plymouth Avenue	C	27.7	B	14.0	D	28.1	B	15.0
Route 79 & Main Street								
SB Route 79 Off-Ramp to Main Street	A	6.7	B	10.1	B	10.6	B	13.9
SB Route 79 On-Ramp from Main Street	A	8.0	B	12.9	B	12.5	B	16.6
NB Route 79 On-Ramp from SB Main Street	B	10.9	A	8.7	B	12.8	B	10.4
NB Route 79 On-Ramp from NB Main Street	B	11.8	A	9.5	B	14.4	B	11.5
Route 79 & U.S. Route 6								
SB Route 79 Off-Ramp to U.S. Route 6	B	11.4	B	16.8	B	16.4	C	20.9
SB Route 79 Off-ramp to Davol Street West	A	7.1	A	9.5	A	7.2	B	12.1
SB Route 79 On-Ramp from U.S. Route 6	B	11.1	B	12.0	B	11.1	B	14.1
SB Route 79 On-Ramp from Davol Street East	A	3.5	A	4.4	A	3.6	A	6.8
NB Route 79 Off-Ramp to Davol Street East	A	5.7	A	6.7	A	7.7	A	7.5

Table 2.24: Future No-Build (2035) Conditions at All Intersections versus Existing (2012) Conditions

Location	Existing Conditions										Future No-Build Conditions									
	AM Peak Hour					PM Peak Hour					AM Peak Hour					PM Peak Hour				
	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue
Davol Street East at Turner Street	A	0.4				A	0.9				A	0.6				A	2.2			
NB Through/Right	A	0.0	0.27	0	4	A	0.0	0.30	0	0	A	0.0	0.28	0	4	A	0.0	0.34	1	8
WB Right	B	11.5	0.05	20	48	B	13.3	0.15	31	61	B	11.8	0.08	23	45	C	15.1	0.32	42	69
Davol Street East at South Coast Rail	N/A	N/A	N/A			N/A	N/A	N/A			A	0.0				A	0.2			
NB Through/Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A	0.0	0.28	0	0	A	0.0	0.39	0	0
WB Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A	0.0	0.00	0	0	B	12.2	0.04	11	34
Davol Street East at Pearce Street	A	0.5				A	0.8				A	2.1				A	1.3			
NB Through	A	0.0	0.21	0	4	A	0.0	0.34	1	17	A	0.0	0.21	1	21	A	0.0	0.31	0	8
WB Right	B	10.9	0.06	20	43	B	12.8	0.12	33	59	B	12.4	0.23	31	53	B	14.1	0.21	34	58
Davol Street East at President Avenue	B	18.3	0.56			B	19.7	0.61			A	20.1	.62			B	19.4	0.63		
NB Left/Through	B	19.5	0.57	79	128	C	21.9	0.75	142	233	C	20.4	0.63	89	148	C	22.8	0.77	131	199
NB Right	C	33.7	0.82	125	215	C	26.0	0.76	147	242	D	12.2	0.88	165	279	C	26.6	0.77	136	231
EB Left/Through	A	8.1	0.28	61	122	B	10.6	0.34	70	141	A	8.2	0.30	71	126	B	12.2	0.54	108	188
WB Through	B	18.3	0.46	91	112	C	21.7	0.55	94	109	B	19.0	0.54	94	107	C	21.3	0.51	89	110
WB Right	B	16.6	0.13	1	14	B	19.8	0.24	30	97	B	16.6	0.13	7	40	B	19.7	0.22	26	87
Davol Street East at Brownell Street	A	1.0				A	1.0				A	1.1				A	1.2			
NB Through/Right	A	0.0	0.22	3	63	A	0.0	0.38	5	72	A	0.0	0.24	3	32	A	0.0	0.40	3	63
WB Right	B	10.6	0.08	28	50	B	13.7	0.17	34	54	A	9.9	0.10	28	55	B	12.7	0.20	35	54
Davol Street West at Brownell Street	A	0.1				A	0.2				A	0.9				A	18.0			
SB Through/Right	A	0.0	0.33	1	12	A	0.0	0.36	1	14	A	0.0	0.35	1	13	A	0.0	0.41	74	222
EB Right	B	11.4	0.02	8	28	B	11.8	0.03	13	36	B	14.2	0.15	24	58	F	61.9	0.96	295	442
Davol Street West at President Avenue	B	18.6	0.72			C	21.8	0.76			C	24.0	0.81			E	59.5	0.95		
SB Left/Through/Right	B	17.4	0.69	163	253	C	20.9	0.74	177	274	C	24.5	0.81	196	295	E	69.5	1.14	264	289
EB Through/Right	A	0.0	0.00	0	0	B	11.5	0.01	3	19	A	N/A	N/A	N/A	N/A	B	12.8	0.01	2	15
WB Through	B	10.8	0.01	4	22	B	11.6	0.02	8	31	A	9.8	0.01	2	14	C	27.9	0.81	7	28
WB Left	C	21.3	0.75	133	214	C	24.0	0.78	156	233	C	23.5	0.81	141	223	B	12.9	0.02	149	224
Davol Street West at Baylies Street	A	0.3				A	0.2				A	0.4				A	0.4			
SB Through/Right	A	0.0	0.30	0	0	A	0.0	0.34	0	0	A	0.0	0.35	0	0	A	0.0	0.41	0	2
EB Right	B	11.1	0.03	14	40	B	11.6	0.02	8	30	B	11.9	0.06	12	37	B	12.8	0.06	11	34
Lindsey Street at Brownell Street	A	7.6				A	7.5				A	8.0				A	7.7			
NB Left/Through/Right	A	9.5	0.03	16	41	A	10.0	0.06	20	46	A	9.9	0.04	16	42	B	10.5	0.07	23	47
SB Left/Through/Right	A	9.9	0.14	36	57	B	10.2	0.16	53	124	B	10.6	0.21	67	152	B	11.1	0.23	40	73
EB Left/Through/Right	A	3.5	0.01	1	9	A	4.5	0.02	4	24	A	3.5	0.02	2	15	A	4.6	0.03	3	18
WB Left/Through/Right	A	2.2	0.01	0	4	A	1.1	0.00	1	12	A	2.2	0.01	16	84	A	1.0	0.01	2	16

Table 2.24: Existing Conditions (2012) at all Intersections versus Existing (2012) Conditions (Continued)

Location	Existing Conditions										Future No-Build Conditions									
	AM Peak Hour					PM Peak Hour					AM Peak Hour					PM Peak Hour				
	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue	Level of Service	Delay	v/c	50th Percentile Queue	95th Percentile Queue
Lindsey Street at President Avenue	A	1.6				A	2.0				A	1.9				A	2.3			
NB Left/Through/Right	B	14.8	0.14	35	70	C	17.9	0.23	50	83	C	18.7	0.23	57	91	C	21.2	0.31	48	83
SB Left/Through/Right	B	12.2	0.13	62	168	C	18.7	0.23	146	341	B	13.4	0.17	162	383	C	20.5	0.27	64	184
EB Left/Through/Right	A	0.1	0.21	4	26	A	0.4	0.24	10	47	A	0.1	0.24	3	22	A	0.5	0.30	9	43
WB Left/Through/Right	A	2.1	0.13	83	171	A	1.5	0.19	126	218	A	2.2	0.15	109	191	A	1.5	0.20	70	133
President Avenue at North Main Street	C	22.4	0.79			C	27.2	0.83			C	23.8	0.82			D	40.6	0.93		
NB Left/Through/Right	C	24.7	0.75	158	271	C	33.3	0.81	236	414	B	11.3	0.54	203	396	B	10.9	0.50	212	428
SB Left/Through/Right	B	19.8	0.62	127	238	C	21.3	0.49	134	237	C	33.7	0.95	353	483	E	64.3	1.06	399	409
EB Left	B	13.8	0.14	32	125	B	16.6	0.22	78	306	C	20.2	0.47	50	95	C	30.9	0.62	67	129
EB Through/Right	C	26.6	0.82	211	347	C	31.9	0.85	283	501	C	20.7	0.56	105	170	C	28.8	0.64	112	203
WB Left	B	14.8	0.20	16	42	B	17.9	0.26	18	58	C	20.4	0.49	51	100	C	25.3	0.38	35	75
WB Through/Right	B	15.6	0.39	92	168	B	19.0	0.47	135	241	C	21.0	0.57	89	172	C	26.4	0.54	104	192
President Avenue at Highland Avenue	A	6.7				B	8.3				A	33.2				B	17.3			
SB Left/Through/Right	D	31.5	0.66	71	124	E	48.3	0.79	75	139	F	192.0	1.25	75	146	F	113.4	1.04	90	191
EB Left/Through/Right	A	0.0	0.40	10	58	A	0.0	0.48	3	20	A	0.0	0.41	0	0	A	0.0	0.52	12	88
WB Left/Through/Right	A	0.0	0.15	0	0	A	0.0	0.23	0	3	A	0.0	0.35	0	0	A	0.0	0.30	0	0
President Avenue at Robeson Street	C	32.1	0.84			B	16.2	0.68			E	71.9	1.13			C	21.9	0.76		
NB Left/Through/Right	D	48.0	0.81	292	411	B	17.2	0.66	160	279	D	43.0	0.75	193	317	C	26.5	0.80	255	389
SB Left/Through/Right	D	50.0	0.82	261	318	B	15.4	0.58	151	258	E	56.0	0.88	201	301	B	19.3	0.61	175	280
EB Left/Through/Right	C	27.6	0.85	494	770	B	17.2	0.70	226	437	F	151.5	1.25	797	809	B	19.7	0.69	358	701
WB Left/Through/Right	B	12.7	0.41	158	275	B	14.7	0.58	245	462	B	19.3	0.69	309	466	C	21.6	0.73	417	525
President Avenue at Elsbree Street	C	20.4	0.64			B	17.3	0.70			C	30.3	0.79			B	19.8	0.67		
SB Left	C	29.8	0.77	114	196	C	21.6	0.69	96	161	D	42.8	0.88	125	212	C	26.1	0.78	138	230
SB Through/Right	C	20.2	0.47	70	129	B	15.7	0.33	54	101	C	25.8	0.59	71	131	B	16.5	0.44	70	136
EB Left	C	29.8	0.73	89	154	C	29.2	0.70	65	123	E	56.2	0.89	91	167	C	30.6	0.67	65	115
EB Through/Right	A	9.9	0.27	54	91	B	15.3	0.65	91	145	B	15.8	0.34	58	105	B	16.9	0.63	77	94
WB Left	F	103.2	0.78	14	38	C	24.9	0.49	31	60	E	55.8	0.60	15	41	C	31.9	0.56	30	55
WB Through	B	17.9	0.46	90	148	B	14.9	0.40	62	99	C	27.3	0.61	121	215	B	17.5	0.42	70	117
WB Right	B	17.2	0.32	87	152	B	14.0	0.19	53	96	C	25.2	0.41	101	184	B	16.3	0.19	51	89
President Avenue Rotary	C	16.8				F	52.9				E	38.7				F	52.9			
NB Left	A	7.6	0.32	N/A	35	A	6.5	0.21	N/A	20	B	13.4	0.56	N/A	88	A	6.5	0.21	N/A	20
NB Right	C	18.0	0.73	N/A	168	C	16.8	0.69	N/A	145	D	31.3	0.87	N/A	268	C	16.8	0.69	N/A	145
EB Through/Right	C	24.4	0.84	N/A	250	F	129.3	1.22	N/A	805	F	86.4	1.10	N/A	583	F	129.3	1.22	N/A	805
WB Left	A	4.4	0.00	N/A	0	A	3.9	0.00	N/A	0	A	5.0	0.00	N/A	0	A	3.9	0.00	N/A	0
WB Through	B	10.5	0.47	N/A	63	A	7.7	0.34	N/A	38	B	11.6	0.46	N/A	60	A	7.7	0.34	N/A	38

2.8 Multi-Modal Transportation

In the Future No-Build Condition, it is assumed that none of the pedestrian, bicycle or public transit accommodations will be changed with the exception of the South Coast Bikeway and its connections, and the South Coast Rail project.

2.8.1 Proposed Bicycling Improvements

The 2012 Regional Transportation Plan issued by the Southeastern Regional Planning & Economic Development District (SRPEDD) proposes the creation of the South Coast Bikeway. This bikeway will be located between Wareham, Massachusetts and the Swansea/Warren, Rhode Island border. As seen in Figure 2.43, the regional route would connect a number of existing and proposed bicycle paths and on-road bike routes. This route would include the existing bicycle path on the Veterans Memorial Bridge, the existing Quequechan River Greenway and its planned extension, and a future connection between the two. Chapter 12 of the Regional Transportation Plan states that "the proposed South Coast Bikeway remains the priority in this region for bikeway construction. It offers the best opportunity to connect existing bikeways and serve as a viable recreational and commuting facility."

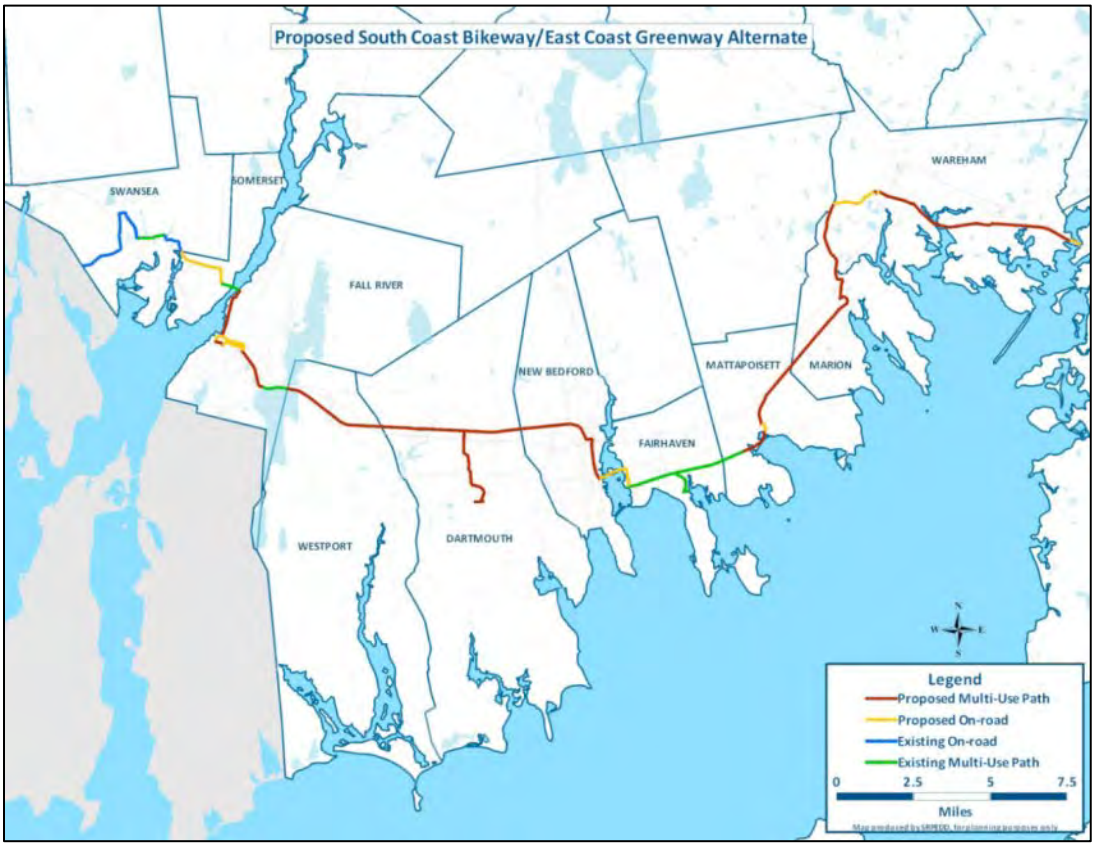


Figure 2.43: Proposed South Coast Bikeway

The Regional Transportation Plan also proposes the creation of a Fall River Bike Path. As proposed, the project includes an existing segment from the Westport town line to the Brayton Avenue extension along the abandoned Fall River Branch of the Old Colony Railroad and a planned segment from Brayton Avenue to Quequechan Street along the same railroad right-of-way.

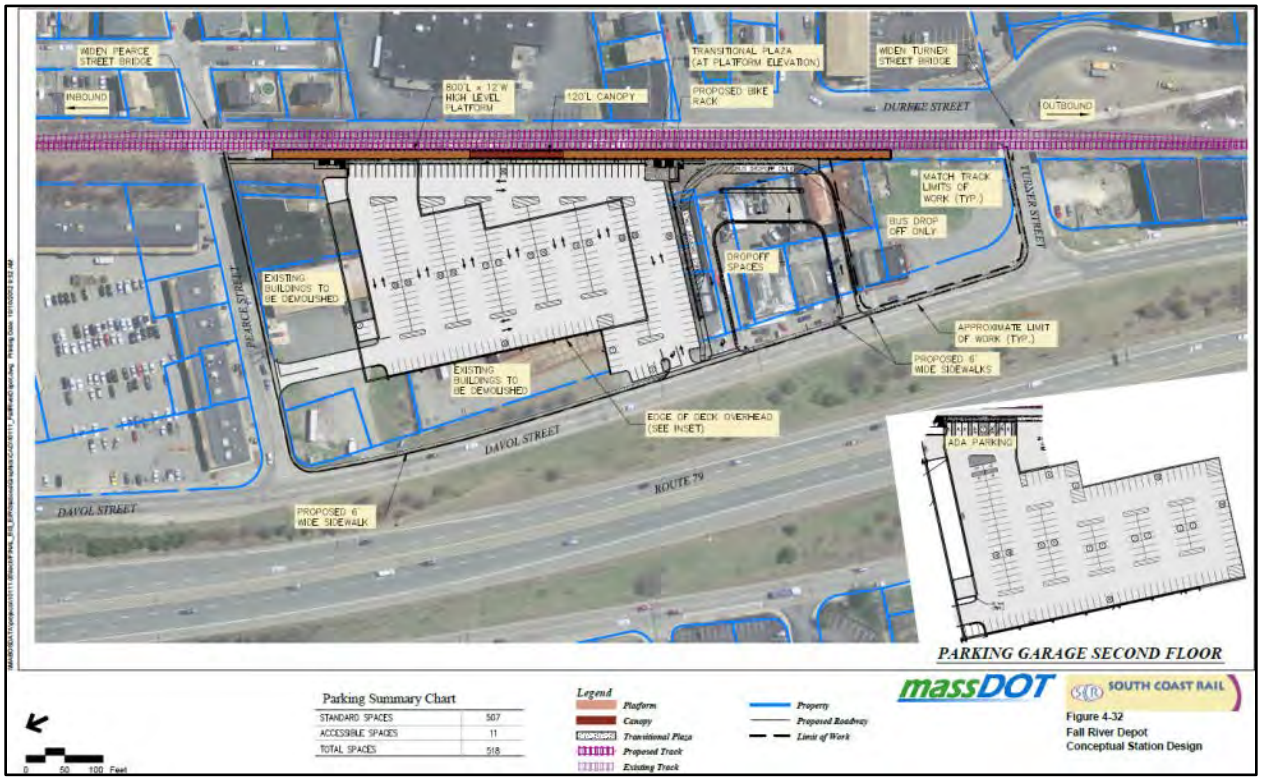
The RTP proposes that the bike path eventually continue along the northern side of the Quequechan River, connect via Plymouth Avenue, Bedford Street and Central Street to the waterfront, and then continue as an off-road bikeway connecting to the bike path on the Veterans Memorial Bridge.

The Phase II extension of the existing Quequechan River Path received a $785,000 planning grant in January 2012 to produce design and construction documents. A public hearing for the project was held in June 2013.

2.8.2 Proposed Public Transit Improvements

As noted in the Existing Conditions section, SRTA recently expanded the evening service hours of Routes 2 and 14, and is also considering changes to the routes to more efficiently serve Commonwealth Landing. The South Coast Rail project will extend the Massachusetts Bay Transportation Authority (MBTA) commuter rail service to Fall River and New Bedford. The Fall River Depot is proposed to be located east of East Davol Street and between Pearce Street and Turner Street. This station will serve as the primary station for Fall River and will have a 518-space parking garage. A Battleship Cove station is proposed at the end of the line, near Water Street. This station would have no automobile parking and might have limited frequency.

The proposed location of the Fall River Depot is between the railroad tracks and Davol Street East (see Figure 2.44, noting that north is to the left in this diagram). With Davol Street East acting as a one-way frontage road and the rail tracks preventing access to the site directly from the east, the primary access to the station from the large residential areas to the east will be through Pearce Street. The conceptual design for the station includes a bus drop-off area adjacent to the train platform. Local bus route additions and modifications were proposed in a Feeder Bus Plan released as part of the Final Environmental Impact Report (FEIR) for South Coast Rail in 2013. The plan calls for the SRTA Route 2 to be routed close enough to the proposed Fall River Depot that no bus rerouting is necessary, provided that an adequate pedestrian path were provided between the station and North Main Street. There is an existing sidewalk along the eastern side of Davol Street East. The plan further states that in the event an adequate pedestrian pathway between North Main Street and Fall River Depot cannot be provided, the recommended alternative is to divert SRTA Route 2 at Odd Street (just north of Cedar Street) to Durfee Street to Turner Street to Davol Street East, and then via President Avenue to return to North Main Street. However, the plan adds that "the need for a route deviation is not confirmed" because the pedestrian path alternative is preferable.



Source: South Coast Rail Final Environmental Impact Statement and Environmental Impact Report

Figure 2.44: Fall River Depot Conceptual Station Design

2.9 Issues, Constraints and Opportunities

Throughout the study of the existing and no-build conditions of the Regional Transportation Impact Area and Focus Area, it can be seen that there are a number of issues, constraints and opportunities that will guide the development of alternatives in the following chapter.

2.9.1 Issues

The existing conditions within the Focus Area present a number of issues that can be linked to the Evaluation Criteria discussed in Chapter 1. These criteria are Mobility, Safety, Land Use and Economic Development, Health and Environmental Effects, and Community Effects.

2.9.1.1 Mobility

Local mobility within the Focus Area and Regional Transportation Impact Area sees some issues due to limited connectivity. Within the Focus Area, local connectivity between Fall River and the waterfront is limited by Route 79. The only east-west crossing is at President Avenue. Previously, Brightman Street had full access to Davol Street West, Route 79, Davol Street East and the Brightman Street Bridge which

crossed the Taunton River to Somerset. The construction of the Veterans Memorial Bridge removed this connectivity and reconfigured Brightman Street to one-way eastbound, away from the waterfront.

2.9.1.2 Safety

Six intersections within the Focus Area have crash rates higher than both the State and District 5 averages. These intersections are Davol Street West at the Cedar Street U-turn, Davol Street East at the Cedar Street U-turn, Davol Street East at President Avenue, President Avenue at Lindsey Street, President Avenue at North Main Street and Lindsey Street at Brownell Street.

The crashes at the Cedar Street U-turn are related to poor sight distance along Davol Street due to vegetation and the berm supporting Route 79. No deceleration or acceleration lanes are present for the U-turn and no signs are present along Davol Street West alerting drivers to the likelihood of merging traffic.

The crashes along President Avenue at Davol Street East and Lindsey Street are due to congestion at the intersection and poor sight distance for Lindsey Street traffic. Vehicles turning onto President Avenue from Lindsey Street must cross through the queue of westbound President Avenue vehicles. There is also no crosswalk at Lindsey Street, requiring pedestrians to use the crosswalks at Davol Street East. However, pedestrians still cross at Lindsey Street. Three collisions involving pedestrians have been reported at these intersections.

The intersection of President Avenue and North Main Street sees a high number of collisions due to congestion, a lack of an exclusive left-turn phase, and a lack of exclusive left-turn lanes along North Main Street.

The intersection of Brownell Street and Lindsey Street has poor sight distance of eastbound Brownell Street traffic, as this traffic is turning onto Brownell Street from Davol Street East. Brownell Street traffic is not required to stop at the intersection, which is likely unanticipated by Lindsey Street traffic.

2.9.1.3 Land Use and Economic Development

Economically, Fall River is currently experiencing low income with high unemployment and poverty. Real estate prices have remained low in the area, indicating weak demand. On the west side of Davol Street West, existing sites are underutilized. Along the eastern side of Davol Street East, parcels are shallow as they are bound by Davol Street East and the railroad.

2.9.1.4 Health and Environmental Effects

Currently, the City of Fall River maintains a combined sewer system (storm water and sanitary sewer) that outlets into the Taunton River at Bicentennial Park and at City Pier, which is considered a wild and scenic river and a rare species priority habitat. There is a screening and disinfection facility at the Bicentennial Park outlet, but no such facility at the City Pier outlet.

2.9.1.5 Community Effects

Route 79 currently acts as a visual barrier between Fall River and the waterfront. It is also a physical barrier, as it limits the number of east-west crossings between the waterfront and communities within Fall River. Currently, there is only one roadway and pedestrian east-west crossing within the Focus Area at President Avenue.

Pedestrians and Bicyclists within the Focus Area have limited options when traveling between Fall River and the waterfront. There are only two east-west crossings south of the Veterans Memorial Bridge. Pedestrians are able to cross under Route 79 at Central Street near I-195 and at President Avenue, nearly one mile to the north.

The existing shared-use path that crosses the Veterans Memorial Bridge ends at Wellington Street. Bicyclists then must travel through small local roads in order to reach President Avenue. No designated bicycle facilities are provided elsewhere within the Focus Area. While sidewalks are provided along all roadways, no ADA-compliant wheelchair ramps are present at any of the intersections studied. Most wheelchair ramps are located at the curb's apex, which can direct pedestrians into the intersection rather than along the crosswalk.

At signalized intersections, where pedestrian signals are provided, no countdown timers are present. Pedestrians are not permitted to cross at the intersection of President Avenue and Lindsey Street, requiring that pedestrians and bicyclists use an unsignalized crosswalk across the westbound President Avenue right-turn lane.

2.9.2 Constraints

Within the Regional and Focus Areas, there are a number of constraints that will help to guide the development of alternatives within the Focus Area and Regional Transportation Impact Area. In addition to those constraints listed below, any alternatives developed should avoid any adverse impacts to the environment, existing businesses and homes, including increases in noise.

2.9.2.1 Mobility

Local connectivity east of Davol Street East is limited by the railroad that runs north-south and will support South Coast Rail. There are existing roadway crossings of the railroad at Brightman Street, Brownell Street, President Avenue, Pearce Street and Turner Street. Alternatives should line up proposed east-west connections with these existing railroad connections if feasible.

2.9.2.2 Safety

All alternatives developed shall comply with ADA, AASHTO and MassDOT standards and regulations. In addition, emergency vehicle access should be a consideration in alternatives development.

2.9.2.3 Land Use and Economic Development

East of Davol Street East, there is limited area for redevelopment. The location of the railroad creates shallow parcels. The largest area between the railroad and Davol Street East is currently occupied by Executive Plaza Shopping Center.

Bicentennial Park is 4(f) land and any impacts to this area should be avoided. Adverse impacts to existing homes and businesses should also be avoided.

2.9.2.4 Health and Environmental Effects

All alternatives developed as part of the project development process will be studied to determine if there are noise impacts associated with them in accordance with FHWA's Type I program. There is an existing Priority Location near the I-195 and Route 24 interchange that is included in MassDOT's Type II program. Any diversions created by the developed alternatives may worsen conditions at this Priority Location.

The Taunton River is designated as wild and scenic, requiring additional reviews by the US NPS. In addition, it is a rare species priority habitat, so impacts to the river must be avoided. There are two hazardous waste sites within the Focus Area at the electric power substation and at the old Mechanics Mill site.

The existing 100-year and 500-year floodplain is located along the Taunton River and across the area near the southern limits of the Focus Area. These areas are susceptible to flooding. The impacts of climate change should be evaluated during the design and permitting phases of the project, including any adaptation of the alternative required by climate change.

2.9.2.5 Community Effects

Fall River Depot is proposed to be constructed at Taylor Street and Davol Street East as part of the South Coast Rail project. Developed alternatives should be compatible with the I-195/Route 79 Interchange Project, the 2012 Regional Transportation Plan, and South Coast Rail.

2.9.3 Opportunities

The Focus Area offers many opportunities within its existing conditions and through redevelopments that are planned or are ongoing. The waterfront is becoming a regional draw for commercial and residential developments, and the opportunity to reconfigure the Route 79 and Davol Street Corridor will improve safety and circulation for all modes of transportation and will encourage further development along the waterfront and in Fall River. Completion of the South Coast Rail will provide transit oriented development opportunities

2.9.3.1 Mobility

Route 79 has excess capacity which will allow some flexibility in the development of alternatives. Capacity issues anticipated in the No-Build Conditions could be remedied through developed alternatives. Reconfiguration of Route 79, Davol Street West and Davol Street East would provide opportunities to restore Brightman Street access, improve local connectivity between Fall River and the waterfront, and improve access to South Coast Rail.

2.9.3.2 Safety

Alternatives developed for the Focus Area and Regional Transportation Impact Area have the opportunity to introduce ADA compliant crossings for pedestrians at all intersections as well as introduce designated facilities for bicyclists. All alternatives will be developed based on the latest AASHTO and MassDOT standards and regulations.

There are a number of intersections listed in Issues Section 2.9.1 that have safety issues that can be improved through reconfiguration of Route 79, Davol Street West and Davol Street East. The Cedar Street U-turn, President Avenue at Davol Street East and Lindsey Street, and Lindsey Street at Brownell Street could all be reconfigured through developed alternatives.

2.9.3.3 Land Use and Economic Development

Within Fall River, there is a good supply of rental housing which provides ample affordable housing choices for new workers entering the community. There is also a good supply of rental office space within Fall River that can act as a draw for regional businesses. Commonwealth Landing has successful restaurants and offers office space and residential space. This development could act as a catalyst for other developments along the waterfront.

Existing businesses within the Focus Area are net contributors to the local tax base, suggesting that new developments will likely be net contributors as well. Specifically within the Focus Area, there is a lack of existing office space and residential space that provides for future developments.

2.9.3.4 Health and Environmental Effects

The Taunton River is a wild and scenic river and provides habitat for rare species. This encourages the public to learn about the river and also promotes recreational use of the river. Reconfiguration of Route 79, Davol Street West and Davol Street East provides an opportunity to introduce Low Impact Design (LID) standards and Best Management Practices (BMP) for drainage. The addition of shared-use paths and accessible sidewalks will promote better health, as a reconfigured roadway network accommodates and encourages the community to use alternatives modes of transportation including walking, bicycling, and using public transit.

2.9.3.5 Community Effects

Completion of South Coast Rail and Fall River Depot will promote transit oriented development opportunities within the Focus Area. Public transit routes on the SRTA could be expanded or modified to provide better service to South Coast Rail and developments within the Focus Area. The public transit routes could also be modified to provide service on Sundays.

There are existing and proposed shared-use paths north and south of the Focus Area that could be connected and would provide access to South Coast Rail and future developments within the Focus Area.

Reconfiguration of Route 79, Davol Street West and Davol Street East will provide opportunities for landscaping and making the waterfront more pedestrian friendly.