Route 79 / Davol Street Corridor Study

Chapter 4

Alternatives Analysis

4.1 Analysis of Alternatives

In Chapter 3, multiple alternatives were discussed for implementation within the Focus Area. Some alternatives focused on specific intersections within the Focus Area while others presented a corridor-wide alternative. Of the individual intersection alternatives, some required that additional analysis be completed in order to determine how the safety improvements might impact the operation of the intersections. These intersections include:

- President Avenue at Davol Street East
- President Avenue at North Main Street

Analyses of the corridor-wide alternatives are also provided in this chapter. These analyses take into account the reconfiguration of Route 79, Davol Street West, and Davol Street East as well as future traffic volumes and development that may occur within newly created parcels in the Focus Area as a result of the roadway reconfigurations.

4.2 Intersection Analysis – President Avenue at Davol Street East

At this intersection, while there are no existing issues related to capacity or congestion, there are issues related to safety. In Chapter 3, it was discussed that a pedestrian signal should be installed across the right-turn lane of westbound President Avenue. Table 4.1 provides the operational analysis for this intersection. Current (2012) traffic and pedestrian volumes were used for this analysis because this safety improvement could be implemented in the short-term as it required limited funding and design.

Table 4.1: Operations Analysis at the Intersection of President Avenue and Davol Street East

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
Existing Conditions										
Intersection	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
Intersection Improvement – Addition of Signalized Pedestrian Crossing										
Intersection	B	18.3	0.56			B	19.7	0.61		
NB Left/Through	B	19.5	0.57	75	125	C	21.9	0.75	127	207
NB Right	C	33.7	0.82	114	204	C	26.0	0.76	133	232
EB Left/Through	A	8.1	0.28	56	94	B	10.6	0.34	69	119
WB Through	B	18.3	0.46	67	94	C	21.7	0.55	73	95
WB Right	B	16.6	0.13	47	77	B	19.8	0.24	68	97

As can be seen in Table 4.1, it is not anticipated that the addition of a signalized pedestrian crossing across the westbound President Avenue right-turn lane will impact the operations of the intersection. The queue in the westbound right-turn only lane is only expected to get a few car lengths longer.

4.3 Intersection Analysis – President Avenue at North Main Street

Similar to the previous intersection, President Avenue at North Main Street does not experience any existing issues related to capacity or congestion. However, there are issues related to safety. In Chapter 3, it was discussed that in order to reduce the number of angle collisions occurring at this location, exclusive left-turn lanes should be striped along North Main Street and the traffic signal controller should be upgraded to provide exclusive left-turn phases for both roadways. Table 4.2 provides the operational analysis for this intersection. Current (2012) traffic and pedestrian volumes were used for this analysis because this safety improvement could be implemented in the short-term as it requires limited funding and design.

Table 4.2: Operations Analysis at the Intersection of President Avenue and North Main Street

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
Existing Conditions										
Intersection	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
Intersection Improvement – Addition of Signalized Pedestrian Crossing										
Intersection	C	21.0	0.69			C	23.8	0.76		
NB Left	B	19.3	0.39	59	138	C	20.6	0.48	92	200
NB Through/Right	C	34.1	0.78	150	298	D	43.1	0.86	195	385
SB Left	B	19.5	0.39	59	120	B	19.4	0.29	39	87
SB Through/Right	C	25.7	0.60	106	206	C	27.6	0.64	112	212
EB Left	A	9.2	0.10	58	278	A	9.0	0.16	223	654
EB Through/Right	B	18.8	0.74	270	490	C	22.7	0.83	419	697
WB Left	B	10.6	0.10	15	41	B	10.9	0.13	15	41
WB Through/Right	B	12.3	0.35	98	188	B	13.0	0.46	132	243

As can be seen in Table 4.2, it is not anticipated that the addition of exclusive left-turn phases will significantly impact intersection operations. Queue lengths will increase on almost all approaches, but overall, the traffic signal would operate at an acceptable level of service for all approaches.

4.4 Final Alternatives for Analysis

Four final alternatives were developed and refined based on preliminary planning, engineering, and Working Group input. In order to determine how each alternative meets the study goals and objectives, the following process was completed for during analysis:

- Determine development mix for parcel redevelopment
- Determine maximum allowable development size for each alternative
- Determine number of trips generated for each parcel based on maximized redevelopment
- Perform initial sensitivity analysis to identify development thresholds
- Forecast travel demand for the Regional Transportation Impact Area based on development thresholds
- Perform Regional Transportation Impact Area and Focus Area operational analysis
- Develop Evaluation Matrix for all alternatives

An additional alternative, Alternative 2 – Modified was developed based on FHWA input and review. This review and the subsequent development of Alternative 2 – Modified did not occur until December 2013, after analyses of Alternatives 1, 2 and 3 were completed. In order to provide analysis, it is assumed that the process completed for Alternative 2 is valid for Alternative 2 – Modified with the exception of the Focus Area operational analysis and the evaluation matrix. These assumptions are discussed in greater detail further in this chapter.

4.5 Proposed Development Mix and Maximum Build-Out Potential

All of the corridor-wide alternatives will create five or six parcels for redevelopment along the west side of Route 79. To determine the maximum build-out for each alternative, the development mix was based on the Waterfront and Transit Oriented District (WTOD) zoning regulations that govern the Waterfront District as well as the existing character and density of the surrounding area. The concept for the newly created parcels was agreed upon by the City of Fall River and conforms to the 2009 Fall River Master Plan and the 2002 Harbor Plan. The Harbor Plan calls for the waterfront development to be a vibrant entertainment, restaurant, hotel and retail district serving increased vehicular and pedestrian traffic that would be facilitated by the Route 79 / Davol Street Corridor Study. The initial development scenario, the Maximum Potential Build-Out, is calculated based on the maximums allowed by the District's Transit Oriented Development zoning, as follows:

- Maximum Building Height: 6 stories or 80 feet (12 stories or 150 feet by special permit)
- Maximum Lot Coverage: 80%
- Minimum Parking Requirements:
  - Retail: No dedicated parking
  - Office: 1 space per 200 square feet (< 10,000 square feet); 1 space per 1,000 square feet (> 10,000 square feet)
  - Residential: 1.5 spaces per unit (< 50 units); 1.25 spaces per unit (> 50 units)
- Mixed Use Developments: 30% reduction in parking if over 200 spaces

It was assumed that the maximum building height would be five stories, matching that of Commonwealth Landing. Within each building, it is assumed that the first floor would be used for retail, restaurant and entertainment uses, while the second floor would be office space. The remaining three floors would be devoted to residential units, with a mix of apartments and condominium units. Parking would be provided in structures or in surface lots. Remaining open space would be used for parks, stormwater management and environmental mitigation.

These assumptions conform to the Fall River Master Plan and the vision presented in the Harbor Plan, which called for 200,000 to 300,000 square feet of office space and a 150 to 200 room hotel.

The Maximum Physical Build-Out that is permitted by the WTOD zoning varies for each of the alternatives with the size of the parcels created by each alternative. Table 4.3 shows the number and size of development parcels for each alternative. Alternative 2 – Modified is included in this table for reference. Because the cross section of Route 79 is reduced to two lanes in each direction in this alternative, parcel sizes created by Alternative 2 – Modified are comparable to those created by Alternative 3.

Table 4.3: Parcel Sizes by Alternative

Alternative	Parcel Areas (acres)						
	1	2	3	4	5	6	Total
Alternative 1 – Elevated Route 79	2.2	1.8	1.4	0.6	4.1	N/A	10.1
Alternative 2 – At Grade Route 79	1.4	1.4	1.3	2.3	4.2	N/A	10.6
Alternative 2 – Modified	3.3	1.9	2.2	2.6	4.6	N/A	14.6
Alternative 3 – At Grade Route 79 with Frontage Roads	2.2	2.1	2.1	3.0	2.2	3.5	15.0

Table 4.4 shows the maximum development potential for each alternative assuming the previously described 5-story mixed use development. The values provided in the table account for the maximum lot coverage and parking requirements of each land use type. As can be seen in the table, Alternative 1 has the lowest maximum development potential while Alternative 3 has the greatest maximum development potential. This is due to the roadway network and number of lanes provided in each alternative.

Table 4.4: Maximum Development Potential

Type of Area		Maximum Physical Build-Out	
	Alternative 1	Alternative 2	Alternative 3
Total Parcel Area	10.1 acres	10.6 acres	15.0 acres
Land Use			
Retail	265,900 SF	280,000 SF	398,200 SF
Residential	797,700 SF	840,100 SF	1,194,600 SF
Office	265,900 SF	280,000 SF	398,200 SF
Total Developable Area	1,329,500 SF	1,400,100 SF	1,991,000 SF

The Maximum Development Potential must be adjusted such that it does not exceed the capacity of Fall River to absorb the assumed volume of floor space. This is referred to as the Maximum Build-Out Allowable by Regional Market Conditions. The ability of the regional property market to absorb the potential volume of uses was estimated based on the growth forecasts for population, households, and employment that are contained in the Central Transportation Planning Staff (CTPS) Travel Demand Model for the time period between 2010 and 2035. The estimate of the maximum development supportable within the region based on its anticipated growth over the next 20 years is shown in Table 4.5.

Table 4.5: Maximum Regional Build-Out Allowable by Regional Market Conditions

Land Use	Maximum Development Supportable by 2035 Metropolitan Planning Organization Forecast
Retail	268,000 SF
Residential	9,719,000 SF
Office	442,000 SF
Total Developable Area	10,428,000 SF

Residential development has the highest potential within the region given the economic and demographic growth forecasts, and it far exceeds the amount of residential space that any of the alternatives can provide. Retail development is the most constrained, with the region anticipated only to be able to absorb 268,000 square feet over the 25 year forecast period. The future demand for office space is expected to be sufficient to support the levels of office space allowable by zoning under each alternative.

4.6 Trip Generation and Initial Sensitivity Analysis

While the proposed development area must not exceed anticipated regional development levels, it must also be able to be supported by each alternative's proposed roadway network. In order to determine the approximate number of lanes along Route 79, frontage roads and east-west connections, the trips generated to and from each new parcel must be approximated. Trip generation was determined per

parcel for all alternatives using the Institute of Transportation Engineers' (ITE) Trip Generation Manual (9th Edition).

The Trip Generation Manual generates trips entering and exiting parcels based on specific land use types. The parcels developed by each alternative are considered multi-use developments. Multi-use developments have at least two specific land use types that can be accessed without using external roadways such as Davol Street or Route 79. Trips were generated for each parcel based on the square footage of retail and office space and on the number of residential units. These total trips were then reduced by an estimated number of internal trips.

Residential units are classified under Land Use 220 of the Trip Generation Manual. This land use, Apartment, includes buildings with at least four dwelling units. Office space is classified under Land Use 710 – General Office Building and includes all buildings with a mixture of tenants. Retail space is classified under Land Use 814 – Specialty Retail Center. This land use pertains to small shopping centers providing a variety small retail shops, services and small restaurants.

Trips were generated using the maximum developable area for each alternative, providing the maximum number of trips that could enter and exit each parcel. For the initial sensitivity analysis, the most critical intersections were studied using generated trips, Future No-Build traffic volumes and an assumed roadway configuration. These intersections were along U.S. Route 6 (President Avenue) between Davol Street West and Davol Street East. The Future No-Build traffic volumes were applied to each alternative and redistributed as necessary based on the roadway configuration of each alternative. For the sensitivity analysis, it was assumed that some through traffic currently on Route 79 between I-195 and U.S. Route 6 would divert from Route 79 to Route 24. An iterative process was completed at the U.S Route 6 intersections that involved adjusting the number of lanes on Route 79 and Davol Streets, varying the level of through trips diverted from Route 79 to Route 24 and by adjusting the trips traveling to and from the parcels. This was done by applying a percentage to the through traffic volumes and to the trips generated under maximum development which would reduce the overall trips traveling to and from the parcels and, as a result, the intersections. This process continued until a roadway configuration, percentage of through traffic and percentage of trips from maximum development would result in an acceptable level of service at each critical intersection.

Once the final percentage of trips from maximum development was known, this percentage was applied to the development at all parcels for that alternative, providing approximate volumes of traffic entering and exiting the parcels and ballpark development areas for each alternative. After completion of the sensitivity analysis and final revision of the alternatives, trip generation numbers and roadway network information was provided to CTPS for use in generation of the build models for Alternatives 1, 2 and 3. Table 4.6 provides the development data supportable by each alternative. The final alternatives provided to CTPS for modeling are shown in Figures 4.1 through 4.3. For reference, Alternative 2 - Modified is included as Figure 4.4.

Table 4.6: Maximum Development Supportable by Route 79 Alternatives

	Alternative 1	Alternative 2	Alternative 3
Total Parcel Area	10.1 acres	10.6 acres	15.0 acres
Development Area (assumes 5 story buildings)	1.3 Million SF	1.2 Million SF	0.3 Million SF
Parking Requirements	960 spaces	877 spaces	296 spaces
Open Space within Parcels	2.5 acres	3.7 acres	13.4 acres

The sensitivity analysis showed that Alternative 1 required only minor changes along Northbound and Davol Street Wests in order to accommodate the maximum level of development. It requires that two lanes be provided in each direction along Route 79.

Alternative 2 was assumed to provide 3 lanes in each direction along Route 79 with exclusive left-turn lanes at all intersections and exclusive right turn lanes at Fall River Depot and President Avenue. One lane in each direction is provided along the two-way Davol Street West. The sensitivity analysis showed that with this configuration, Alternative 2 could provide slightly less than the maximum level of development but would likely cause some diversions across the Veterans Memorial Bridge through Somerset.

Alternative 3 was assumed to provide 2 lanes in each direction along Route 79 with right turns only allowed from Route 79. Davol Street East and Davol Street West each provide one lane. Restricting turning movements from Route 79 creates complicated traffic signal phasing along Route 79 and the Davol Street East frontage road, leading to poor capacity at these intersections. The sensitivity analysis showed that Alternative 3 could not support the maximum level of development. Development levels for this alternative were significantly reduced to provide some development while avoiding substantial diversions through Somerset. An alternative to this was to increase the number of lanes along Route 79 to three lanes in each direction. This was determined to not be a feasible option as it would reduce the overall developable area by introducing a large amount of new pavement, greatly increase pedestrian crossing times and would not provide a meaningful improvement to local and regional traffic operations.

It is assumed that the trip generation numbers and maximum development determined for Alternative 2 is applicable to Alternative 2 – Modified. While Alternative 2 – Modified provides a greater total parcel area, the reduced cross section of this alternative limits the amount of additional traffic that the intersections can process. Alternative 2 – Modified does not have the complicated traffic signal phasing that Alternative 3 has, so the intersections of Alternative 2 – Modified are anticipated to operate similar to those of Alternative 2 but with slightly higher delays, longer queues and worse levels of service.

Figure 4.1: Final Alternative 1 Used for Analysis

Figure 4.2: Final Alternative 2 Used for Analysis

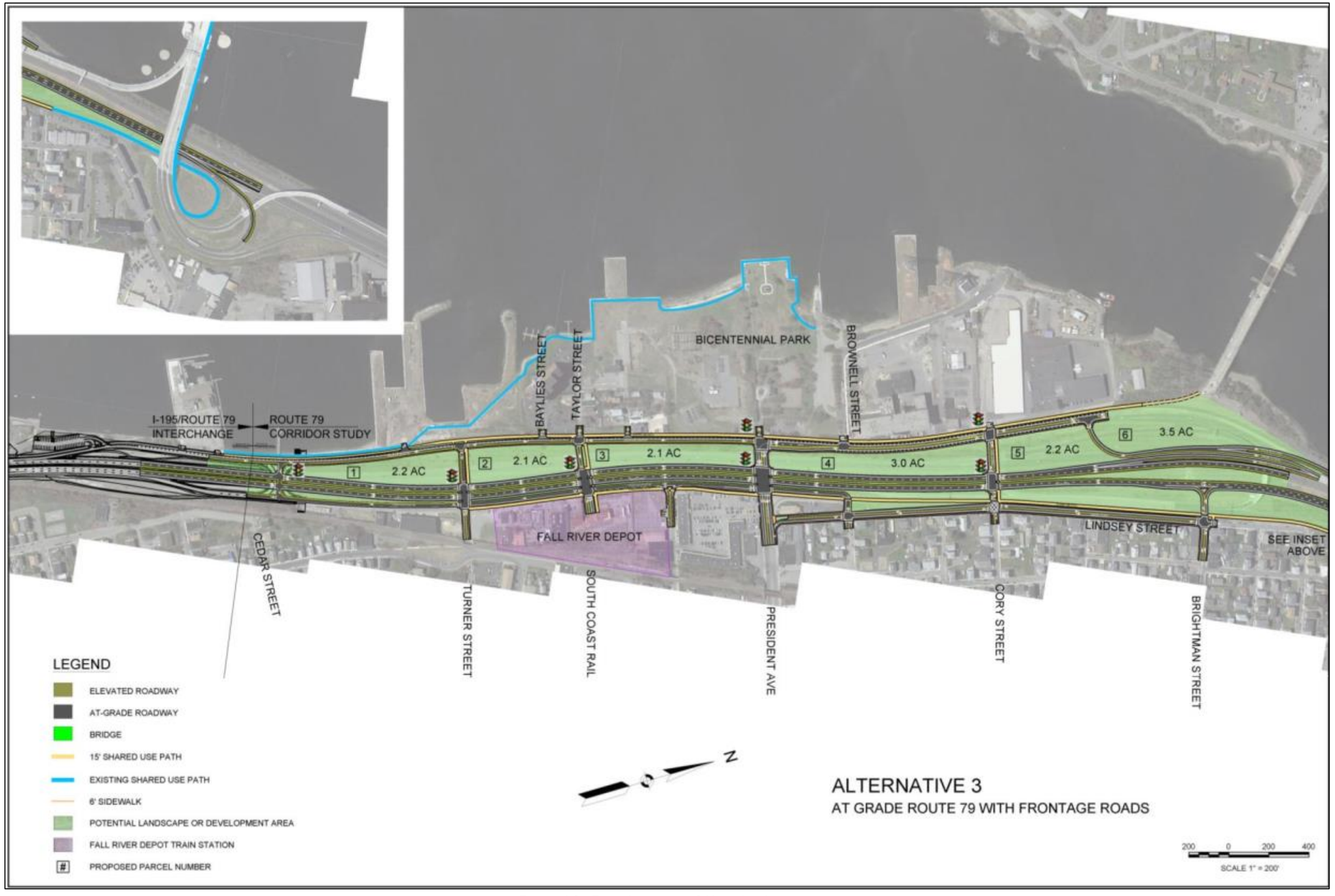

Figure 4.3: Final Alternative 3 Used for Analysis

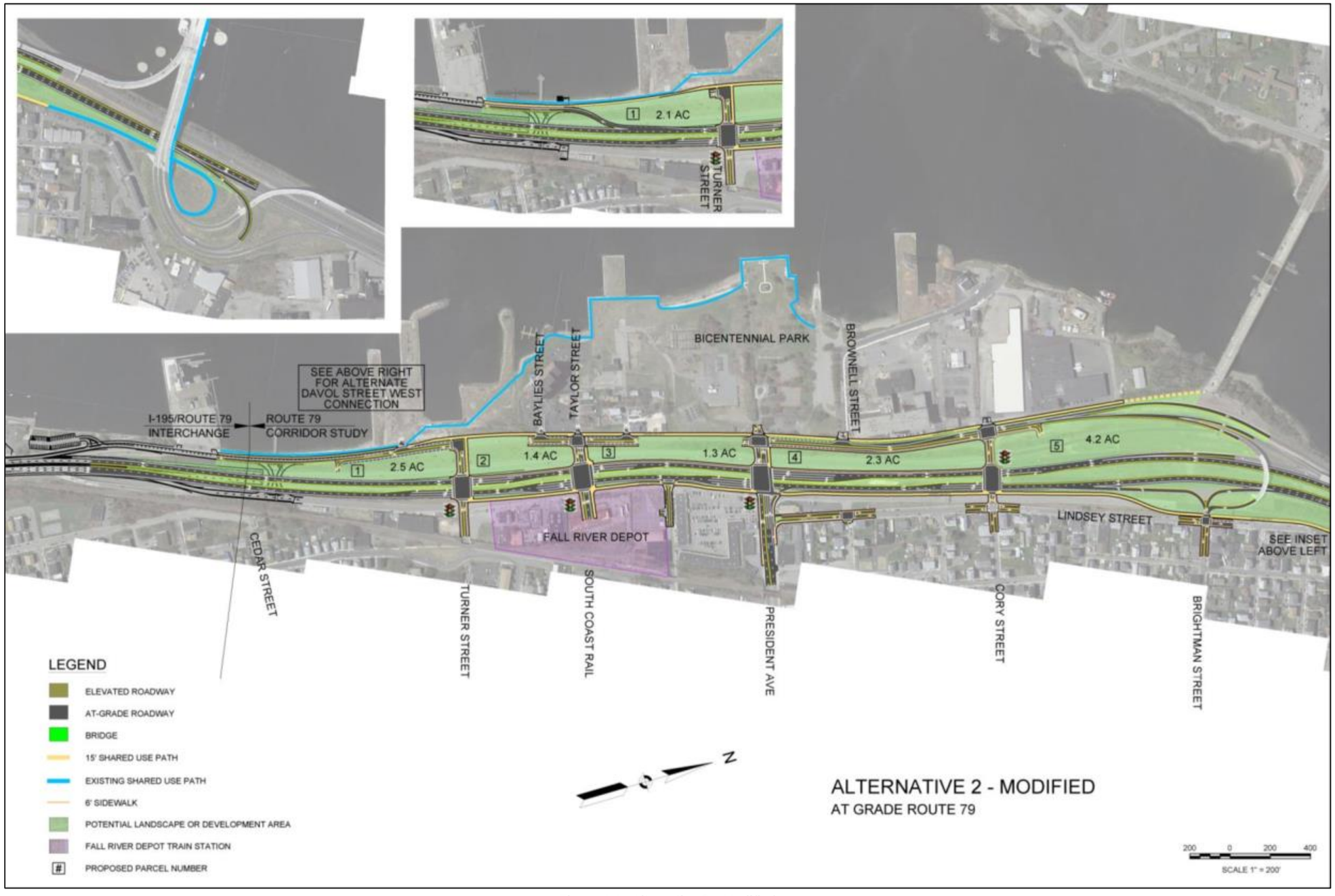

Figure 4.4: Alternative 2 – Modified

4.7 Forecast Travel Demand and Operational Analysis

CTPS incorporated the trip generation numbers developed during the sensitivity analysis into their 2035 regional model for Alternatives 1, 2 and 3, dividing the number of trips into the appropriate Transportation Analysis Zone (TAZ) depending on the location of the parcel within the corridor. The regional model determines the volume of traffic traveling through the Focus Area and Regional Traffic Impact Area during three hour long AM and PM peak periods. The trips traveling to and from individual TAZs were broken down and redistributed to the appropriate parcels. The volumes throughout the Focus Area and Regional Transportation Impact Area were converted to peak hour volumes and underwent a final refinement to account for turning movements and local roads that are not included in the CTPS model but are necessary for analysis of the alternatives. The traffic volumes were analyzed and compared to the Future No-Build Alternative in Chapter 2. Table 4.7 on the next page provides a summary of traffic volumes within the Focus Area just south of President Avenue for the Future No-Build Conditions and for three Route 79 Alternatives.

4.7.1 2035 Alternative 1 Traffic Volumes

Figures 4.5 through 4.7 show the Traffic Volume Exhibits for Alternative 1. This alternative allows for greater amounts of east-west traffic between Fall River and the waterfront and a high amount of north-south traffic along Route 79. Traffic volumes within the Regional Transportation Impact Area and along Route 79 through the corridor remain essentially unchanged versus the Future No-Build condition in both the AM and PM Peak Hours. Traffic along Davol Street West is significantly increased by roughly 500 vehicles due to the new developments; however east-west traffic is now distributed across the four connecting roads. No diversions are anticipated with this alternative.

4.7.2 2035 Alternative 2 Traffic Volumes

Figures 4.8 through 4.10 show the Traffic Volume Exhibits for Alternative 2. Similar to Alternative 1, this alternative allows for greater amounts of east-west traffic between Fall River and the waterfront. This alternative eliminates Davol Street East, providing direct access between Route 79 and the Fall River neighborhoods along North Main Street at 4 locations. This shifts traffic whose destination is Fall River onto Route 79. Traffic along the two-way Davol Street West is limited to traffic accessing the existing and future developments along the waterfront and traffic from U.S. Route 6. Diversions are anticipated through Somerset between I-195 and Route 79, generally following a path along Lee's River Avenue and U.S. Route 6 across the Veterans Memorial Bridge. Approximately 300 vehicles are diverted in the eastbound direction and 200 vehicles in the westbound direction. Within the Regional Transportation Impact Area, but outside of the corridor and the diversion path, no changes to traffic volumes versus the Future No-Build are anticipated.

As previously discussed, it was determined that the trip generation numbers developed for Alternative 2 will apply for Alternative 2 – Modified. Similarly, the Alternative 2 traffic volumes

generated in the CTPS travel demand model in the Regional Transportation Impact Area are considered to be accurate for those occurring under Alternative 2 – Modified, as it was assumed that the two alternatives will experience similar levels of development, diverting similar levels of traffic through Somerset. Within the Focus Area, traffic volumes generated in the travel demand model were redistributed based on the proposed roadway network of Alternative 2 - Modified. Figure 4.11 shows the Alternative 2 – Modified Traffic Volume Exhibit within the Focus Area.

4.7.3 2035 Alternative 3 Traffic Volumes

Figures 4.12 through 4.14 show the Traffic Volume Exhibits for Alternative 3. Similar to the previous alternatives, Alternative 3 allows for greater amounts of east-west traffic between Fall River and the waterfront. This alternative provides a mix of Alternatives 1 and 2. Northbound and Davol Street Wests are maintained. Local access is greatly improved as direct access to Northbound and Southbound Route 79 is provided at Turner Street, South Coast Rail, President Avenue and Cory Street. Route 79 is able to turn right onto local roads, but no left turns are allowed. Traffic on Route 79 wishing to access an east-west roadway or Davol Street on the left side of the road must exit Route 79 near Cedar Street or near the U.S. Route 6 interchange. As Route 79 now has multiple access points to the waterfront and Fall River, some traffic has shifted from traveling on Northbound or Davol Street West to traveling on Route 79. This alternative will cause diversions in Somerset along the same path as in Alternative 2. Approximately 200 vehicles are diverted in the eastbound direction and roughly 100 vehicles are diverted in the westbound direction. Outside of the corridor and the diversion path, no changes to traffic volumes versus the Future No-Build are anticipated.

Table 4.7: Traffic Volumes within the Focus Area Just South of President Avenue

Traffic Location	Future No-Build	Alternative 1	Alternative 2	Alternative 2 Modified	Alternative 3
AM Peak Hour					
Northbound Route 79	1,082	1,134	972	994	1,366
Southbound Route 79	1,047	1,081	1,774	1,818	1,431
Davol Street East	739	716	22	N/A	175
Davol Street West	743	1,239	44	N/A	169
PM Peak Hour					
Northbound Route 79	1,057	1,079	1,703	1,785	1,646
Southbound Route 79	1,417	1,410	2,030	2,070	1,740
Davol Street East	1,013	1,164	82	N/A	167
Davol Street West	938	1,239	39	N/A	136

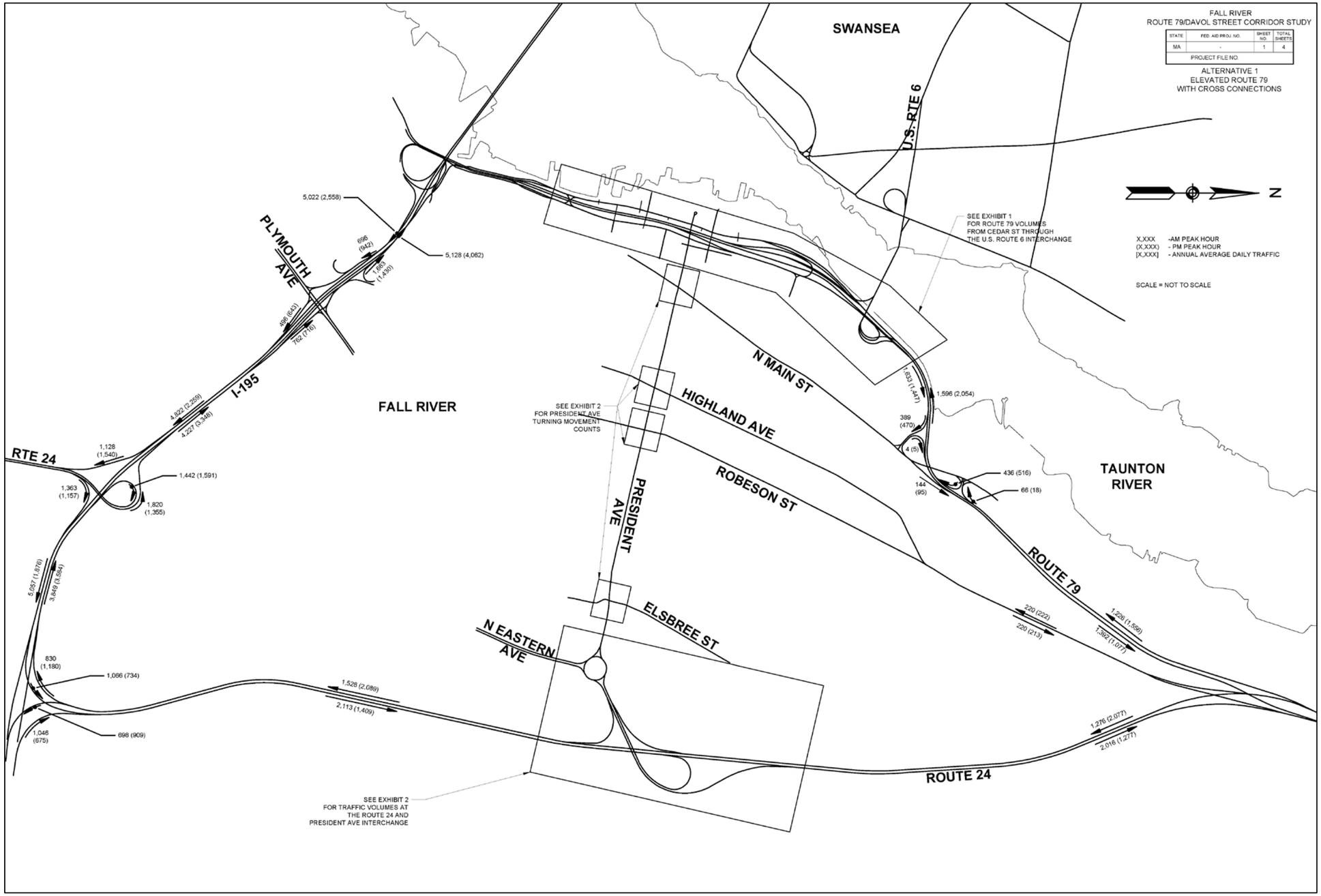

Figure 4.5: Alternative 1 – Traffic Volumes Map

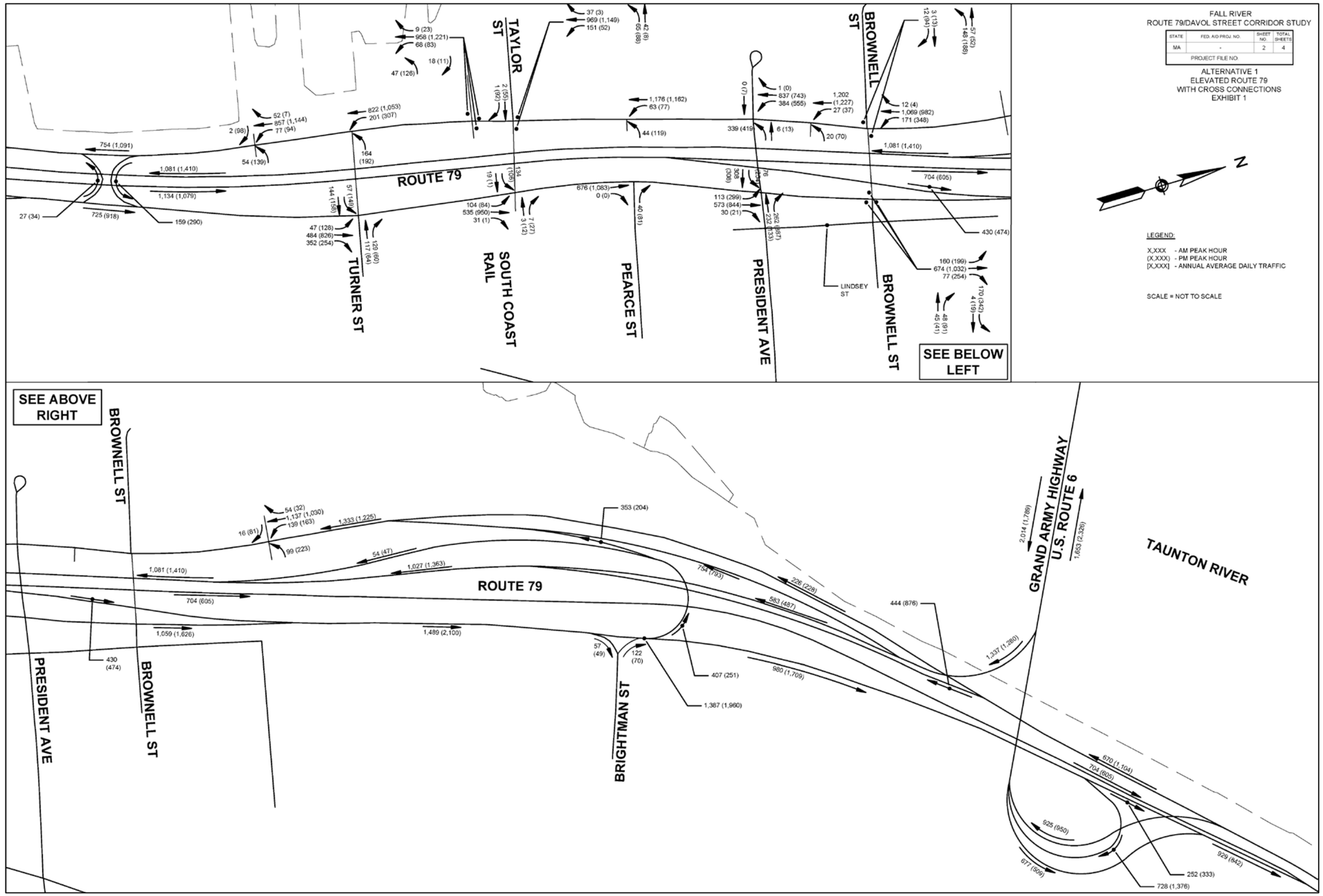

Figure 4.6: Alternative 1 – Traffic Volumes Map Exhibit 1

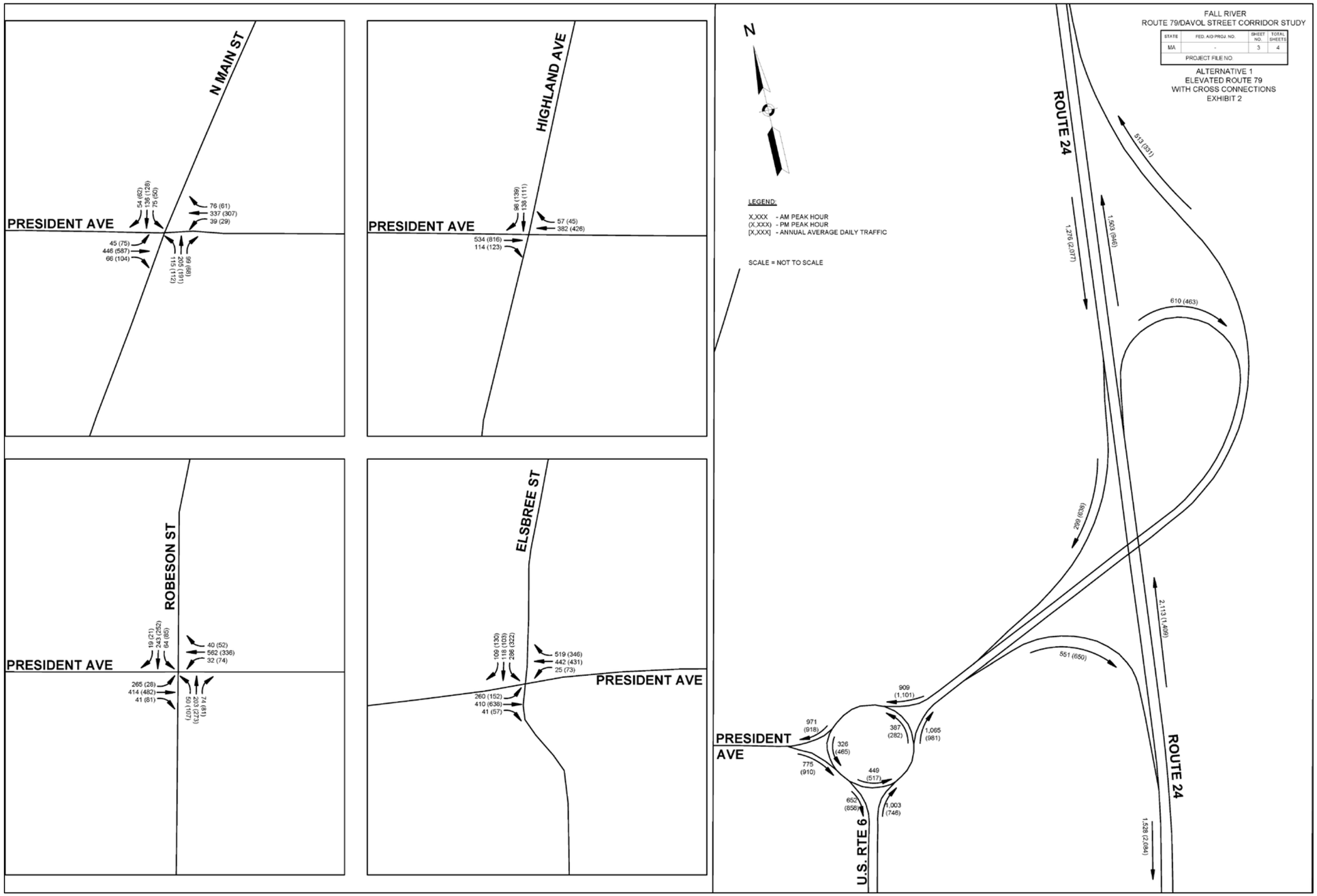

Figure 4.7: Alternative 1 – Traffic Volumes Map Exhibit 2

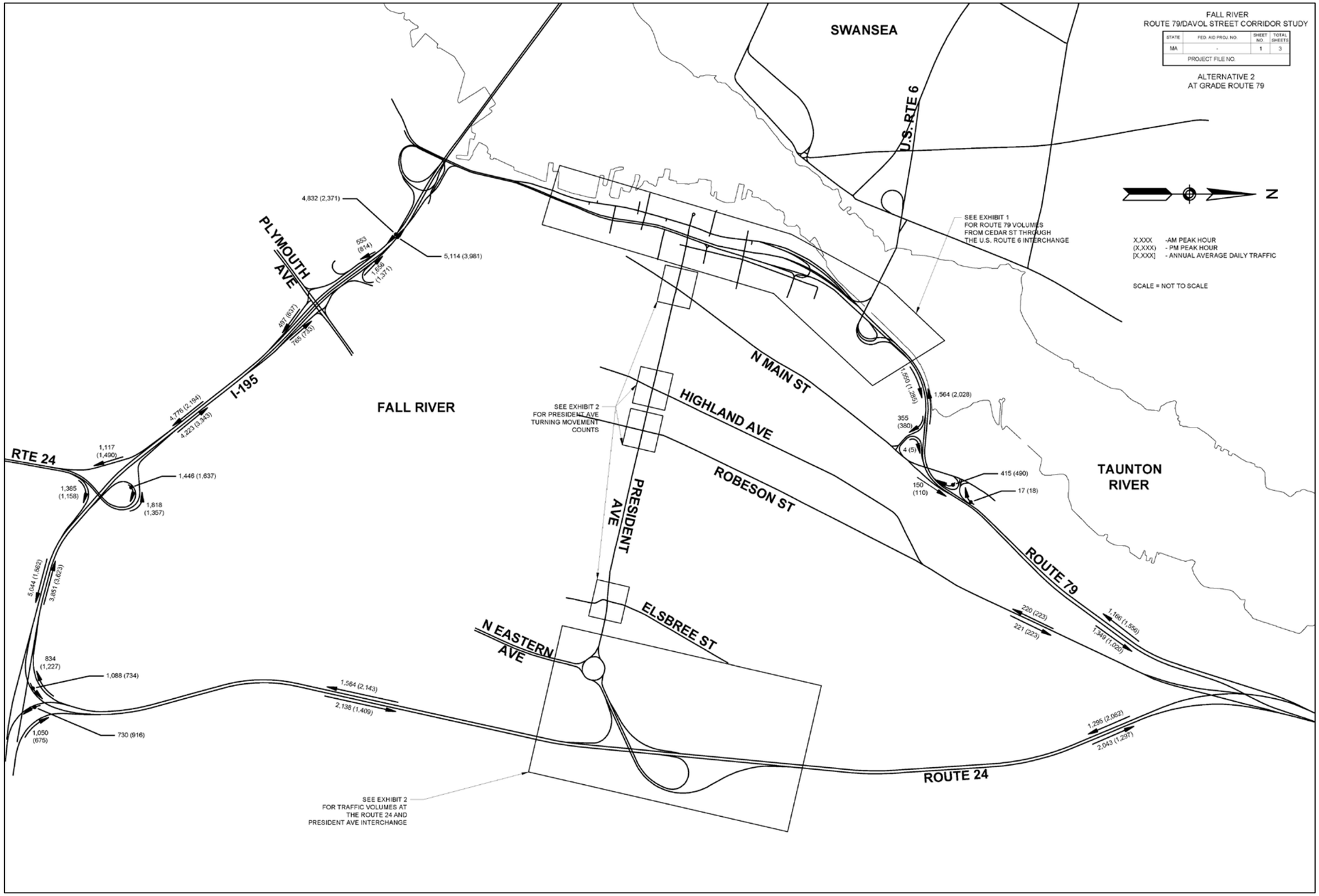

Figure 4.8: Alternative 2 – Traffic Volumes Map

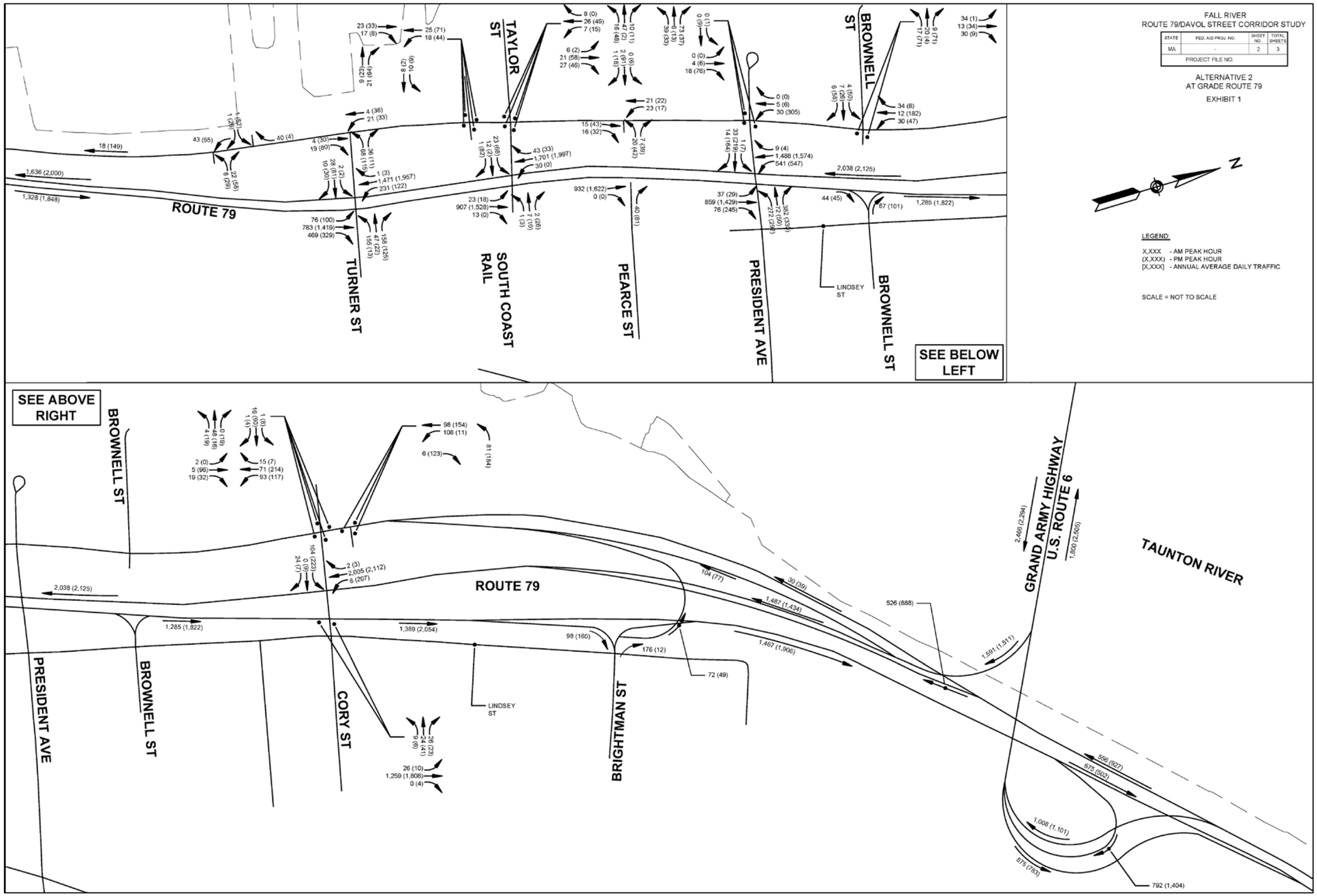

Figure 4.9: Alternative 2 – Traffic Volumes Map Exhibit 1

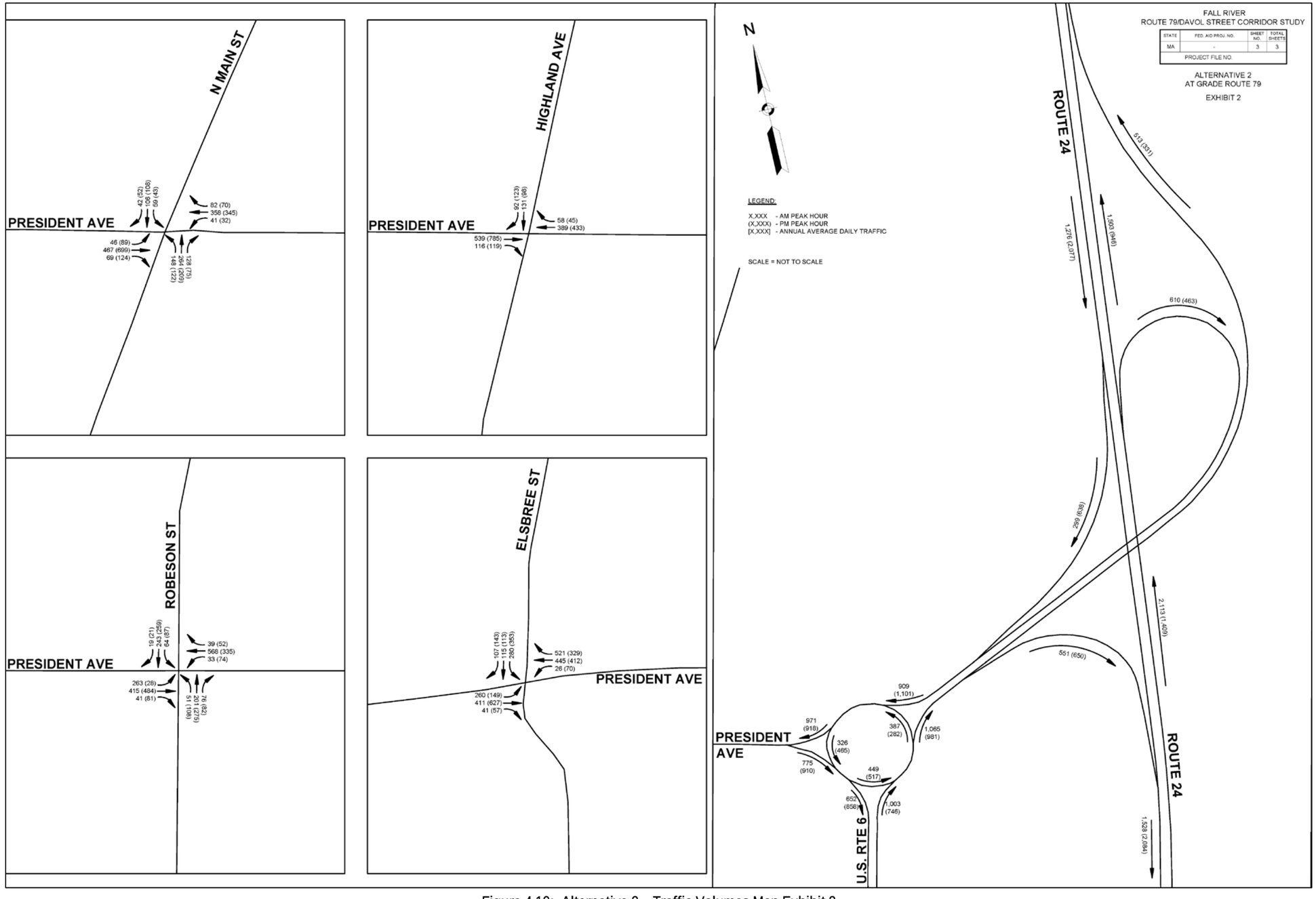

Figure 4.10: Alternative 2 – Traffic Volumes Map Exhibit 2

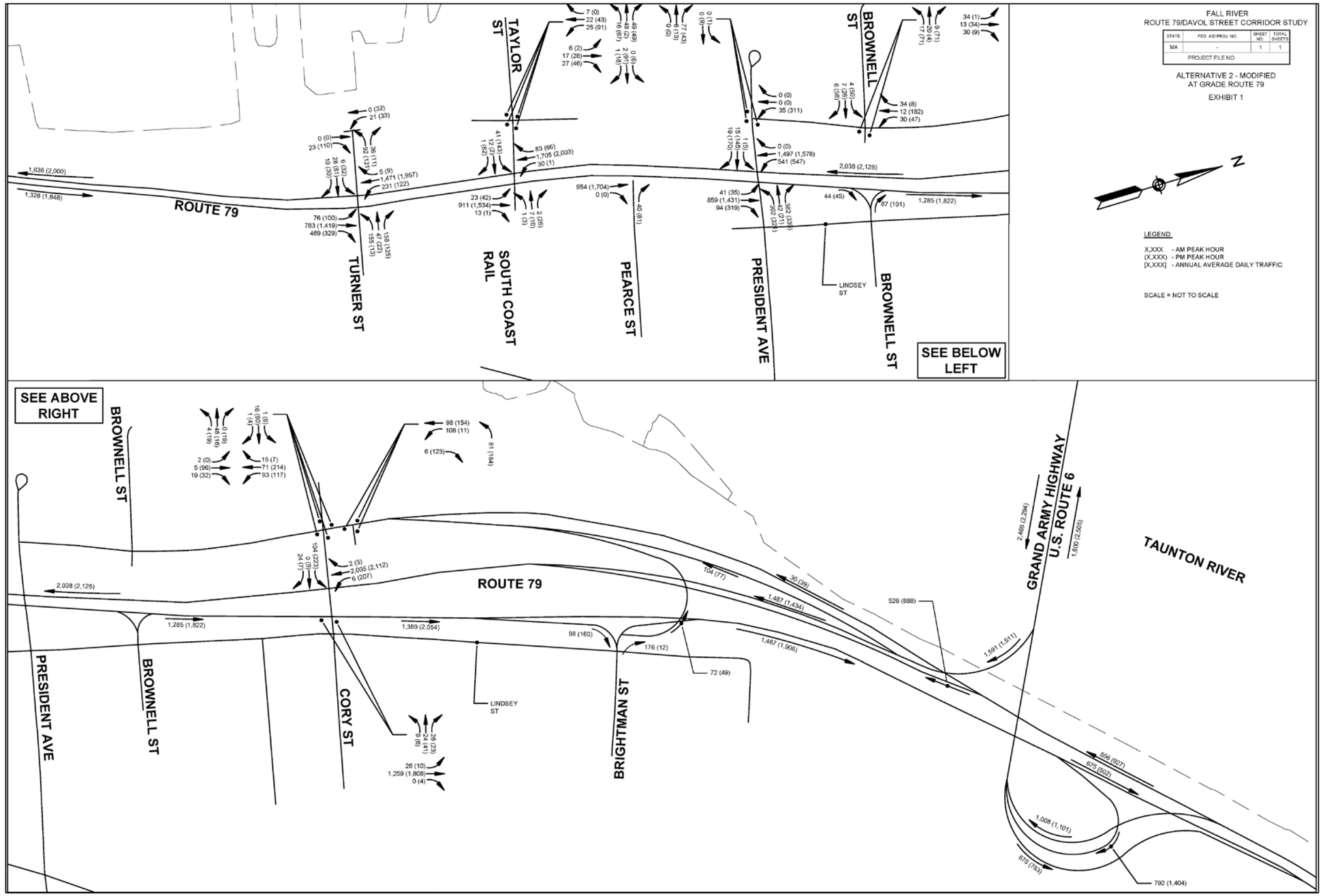

Figure 4.11: Alternative 2 – Modified – Traffic Volumes Map Exhibit 1

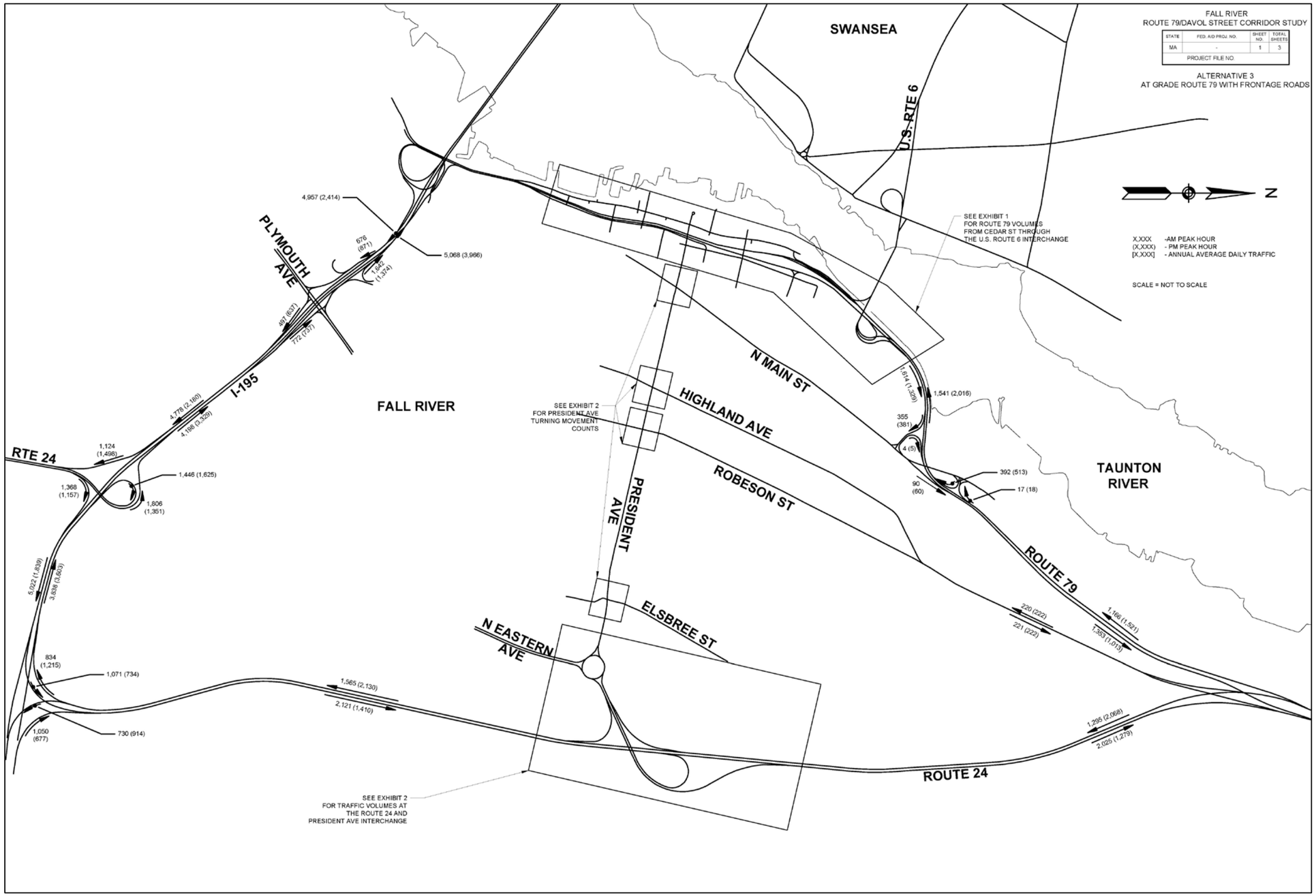

Figure 4.12: Alternative 3 – Traffic Volumes Map

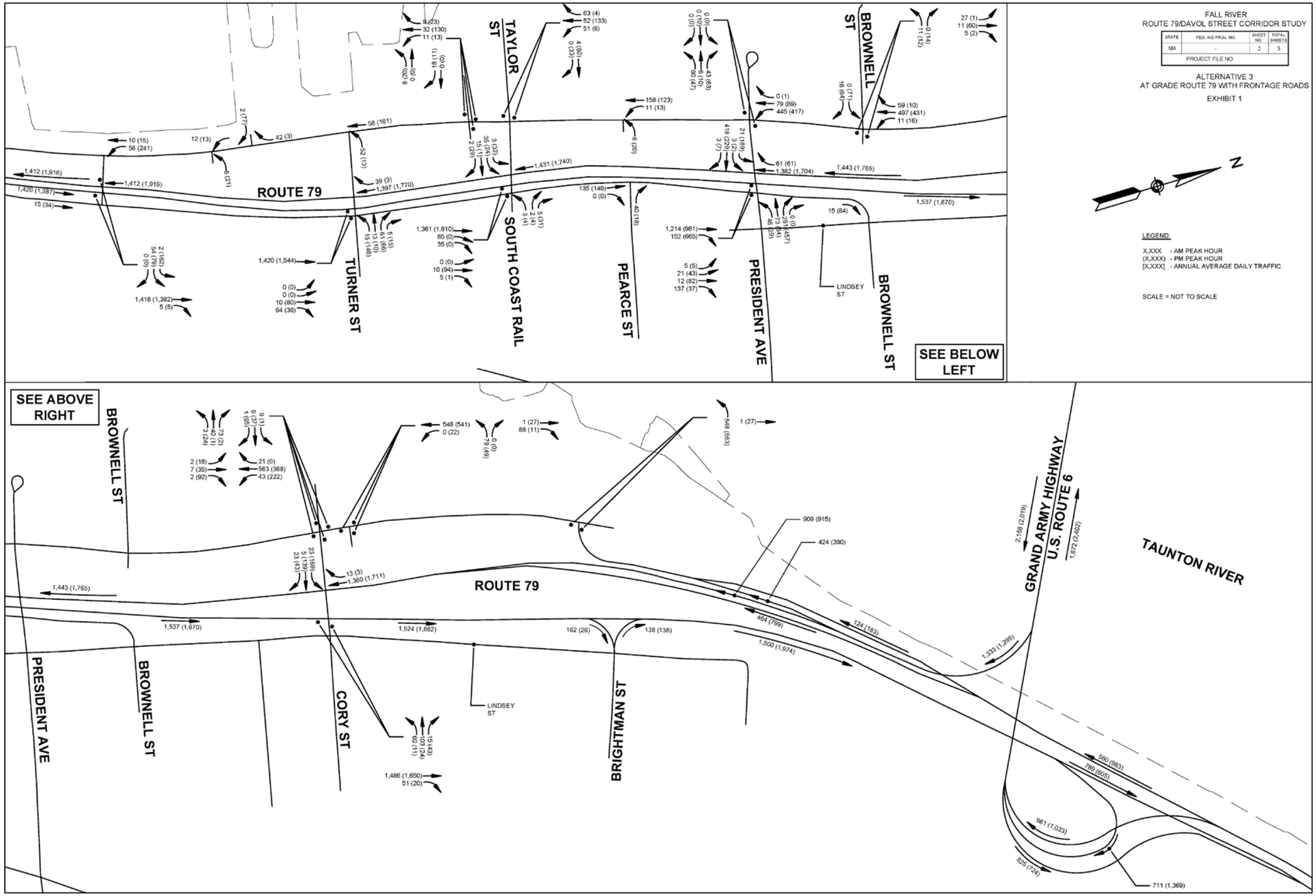

Figure 4.13: Alternative 3 – Traffic Volumes Map Exhibit 1

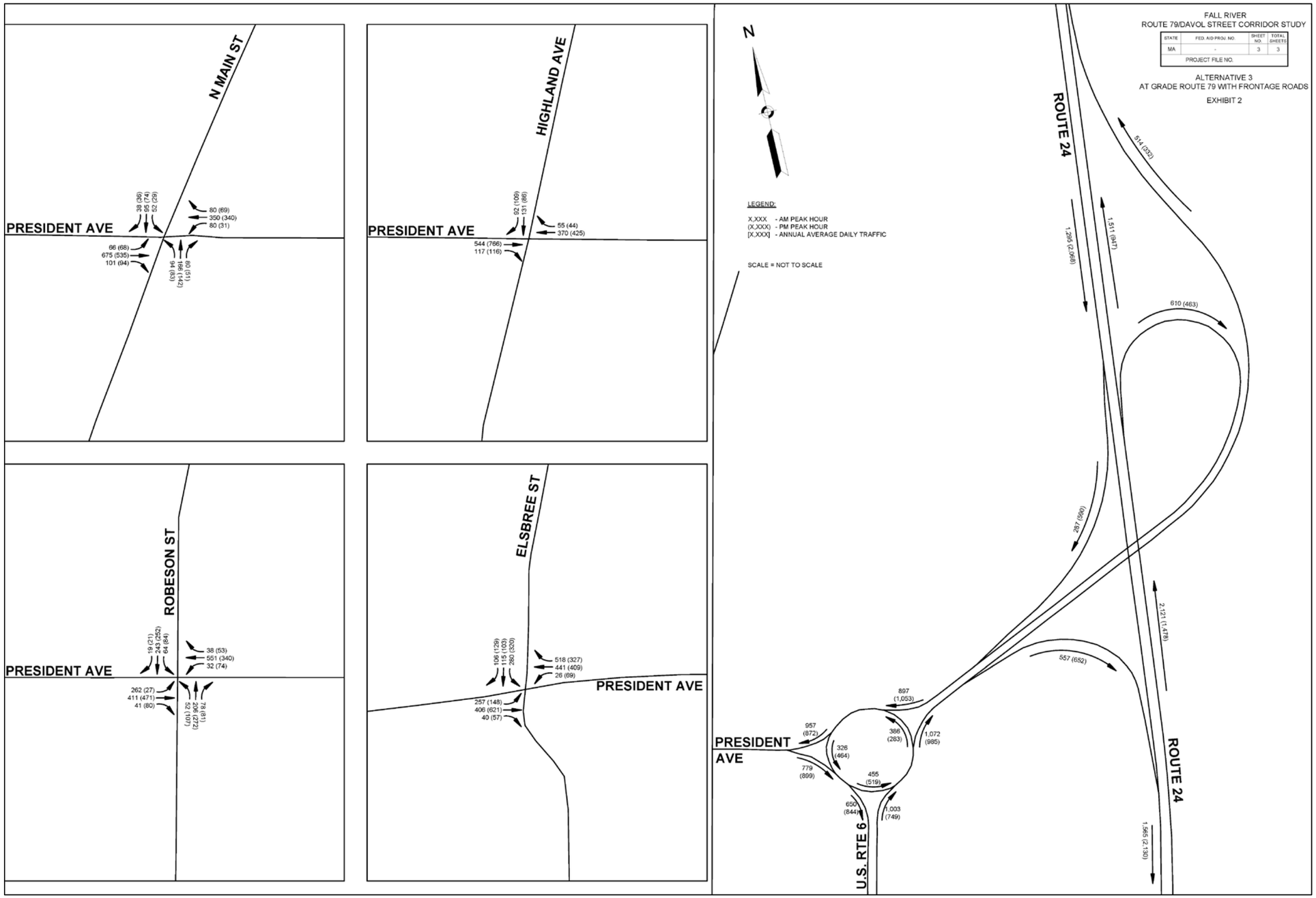

Figure 4.14: Alternative 3 – Traffic Volumes Map Exhibit 2

4.7.4 Traffic Operations Analysis for 2035 Build Alternatives

After compiling the traffic volume information from CTPS for the Focus Area and Regional Transportation Impact Area and determining turning movement numbers at all intersections, traffic operations were analyzed at all intersections and freeway facilities. Just as for the Existing and Future No-Build Scenario analyses, Synchro and the Highway Capacity Manual were used to determine delays, densities and Levels of Service. 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 4.8.

Table 4.8: 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.

Figures 4.15 through 4.19 show the Levels of Service (LOS) for all intersections within the Focus Area for the Future No-Build Condition and all alternatives, including Alternative 2 - Modified. In these figures, circles are provided at all intersections, signifying the LOS in the AM peak hour (left half of each circle) and the LOS in the PM peak hour (right half of each circle). Green is used for LOS A, B and C. Yellow is used for LOS D, while orange and red are used for LOS E and F, respectively.

Under Future No-Build conditions within the Davol Street Corridor, LOS during the AM Peak Hour are at C or better. During the PM Peak Hour, conditions along President Avenue at Davol Street Southbound and at Lindsey Street worsen to LOS D. At Brownell Street and Davol Street West, the LOS worsens to F.

Intersections in Alternatives 1 and 2 operate with a LOS C or better during the AM and PM peak hours with the exception of Brownell Street at Davol Street East in Alternative 1. Its LOS worsens to D in the PM Peak Hour. Alternative 2 – Modified has worse operations than Alternative 2. In the AM Peak Hour, all intersections operate with a LOS of C or better, but in the PM Peak Hour, a number of intersections worsen to LOS D. In both peak hours, there are a number of approaches whose individual LOS is E or F. In Alternative 3, there are three

intersections along Route 79 that see capacity issues during both peak hours. Turner Street and South Coast Rail operate at LOS D while President Avenue operates at LOS E.

Throughout the Regional Transportation Impact Area, Alternatives 1, 2 and 3 generally do not negatively impact traffic operations as compared to the Future No-Build conditions. Along I-195, the interchanges with Plymouth Avenue and Route 24 operate at LOS D during the morning and at LOS C or better during the afternoon. The interchange of Route 24 with U.S. Route 6 has a LOS C or better at all times. The interchanges along Route 79 with U.S. Route 6 and Main Street also maintain a LOS C or better at all times. The interchange at Route 24 and Route 79 in the northbound direction operates at LOS D and at C or better in the AM and PM, respectively. In the southbound direction, the interchange has a LOS C or better in the morning and at E in the afternoon. In Alternative 2, diversions through Somerset cause the LOS along the Veterans Memorial Bridge to worsen to D. In all other alternatives, the LOS is C or better.

Figure 4.15: Level of Service within Focus Area in Future No-Build Conditions

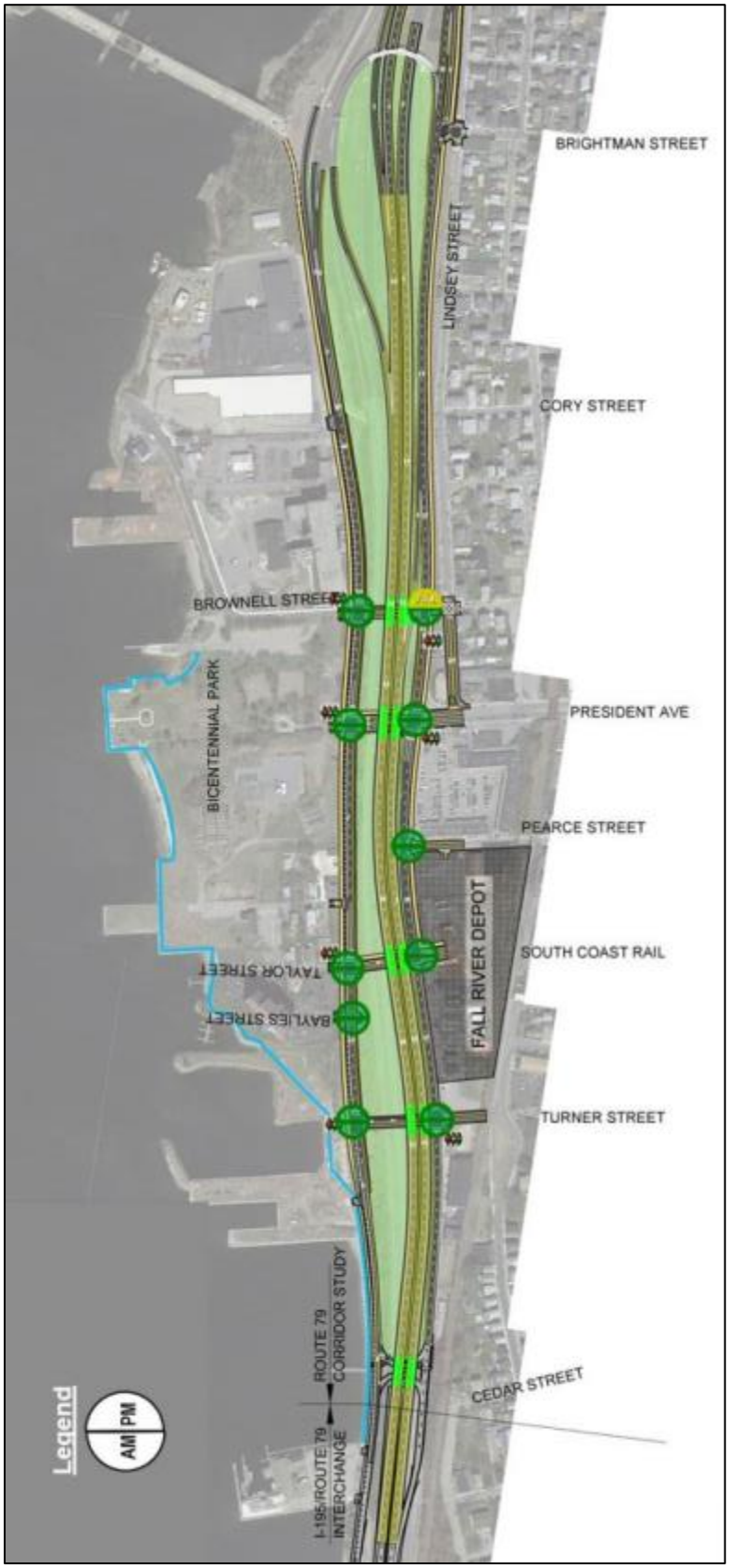

Figure 4.16: Level of Service within Focus Area in Alternative 1

Figure 4.17: Level of Service within Focus Area in Alternative 2

Figure 4.18: Level of Service within Focus Area in Alternative 2 – Modified

Figure 4.19: Level of Service within Focus Area in Alternative 3

4.7.4.1 Alternative 1 – 2035 Traffic Analysis

Alternative 1 requires the addition of several traffic signals along Northbound and Davol Street Wests to accommodate new traffic due to development and new east-west roadways. Currently, traffic signals are only located at the intersections with President Avenue. Under Alternative 1, new signals are located along Davol Street West at Brownell Street, Taylor Street and Turner Street and along Davol Street East at Turner Street and Brownell Street.

With the addition and optimization of these traffic signals, the additional traffic seen within the corridor due to development does not impair traffic operations versus the Future No-Build condition. During the AM Peak Hour, traffic operations are at LOS C or better. In the PM Peak Hour, conditions only worsen at the intersection of Davol Street East at Brownell Street which has a LOS of D. Traffic operations data for freeway segments, weaving segments and ramp segments within the Regional Transportation Impact Area are provided in Tables 4.9 through 4.11. Traffic operations data for all intersections studied are provided in Table 4.12.

Table 4.9: Alternative 1 (2035) 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	16.5	A	11.0
North of President Avenue Off-Ramp	B	11.7	A	7.4
North of President Avenue On-Ramp	B	15.7	A	9.9
North of Highland Avenue	B	17.4	B	11.6
North of Route 79	D	31.4	C	20.1
Route 24 - Southbound				
North of Route 79	C	21.5	D	34.7
South of Route 79	B	11.7	B	17.9
South of Highland Avenue	A	9.9	B	16.2
South of President Avenue Off-Ramp	A	7.6	B	11.2
South of President Avenue On-Ramp	B	11.9	B	16.3
I-195 - Eastbound				
West of Plymouth Avenue Off-Ramp	D	27.9	B	13.3
Between Plymouth Avenue Ramps	C	23.0	A	8.4
East of Plymouth Avenue On-Ramp	D	26.4	B	11.7
East of SB Route 24 Off-Ramp	C	19.3	A	3.7
East of NB Route 24 On-Ramp	D	28.2	A	9.7
East of NB Route 24 Off-Ramp	C	20.9	A	5.9
East of SB Route 24 On-Ramp	C	25.4	A	10.6

Table 4.9: Alternative 1 (2035) along all Freeway Segments (Continued)

FREEWAY SEGMENTS	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
I-195 – Westbound				
East of NB Route 24 Off-Ramp	C	21.4	B	16.0
West of NB Route 24 Off-Ramp	B	15.7	B	12.5
West of SB Route 24 On-Ramp	C	20.1	C	18.6
West of SB Route 24 Off-Ramp	B	12.5	A	10.3
West of NB Route 24 On-Ramp	C	22.4	B	17.4
Between Plymouth Avenue Ramps	B	18.0	B	13.7
West of Plymouth Avenue On-Ramp	D	28.7	C	21.4
Route 79 - Northbound				
South of Davol Street East Off-Ramp	A	8.8	A	8.4
North of Davol Street East Off-Ramp	A	5.5	A	4.7
North of North Main Street Off-Ramp	A	9.7	A	7.6
North of SB North Main Street On-Ramp	A	9.7	A	7.6
South of Route 24	A	10.8	A	8.7
Route 79 - Southbound				
South of Route 24	A	9.5	B	12.1
South of North Main Street Off-Ramp	A	9.0	B	12.0
South of North Main Street On-Ramp	B	12.4	B	16.0
South of U.S. Route 6 Off-Ramp	A	5.2	A	8.6
South of Davol Street West Off-Ramp	A	3.5	A	6.8
South of U.S. Route 6 On-Ramp	A	8.0	A	10.6
South of Davol Street West On-Ramp	A	8.4	A	11.0

Table 4.10: Alternative 1 (2035) 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	B	0.42	11.1	A	0.35	9.3

Table 4.11: Alternative 1 (2035) 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	C	27.5	E	38.6
SB Route 24 Off-Ramp to Highland Avenue	B	15.6	C	23.5
NB Route 24 On-Ramp from Highland Avenue	C	23.0	B	16.3
NB Route 24 On-Ramp from Route 79	D	34.2	C	24.9
Route 24 & U.S. Route 6 (President Avenue)				
SB Route 24 Off-Ramp to U.S. Route 6	A	4.4	B	12.3
SB Route 24 On-Ramp from U.S. Route 6	B	13.1	B	18.0
NB Route 24 Off-Ramp to U.S. Route 6	B	15.6	A	8.7
NB Route 24 On-Ramp from U.S. Route 6	B	16.2	A	9.7
Route 24 & I-195 (North of I-195)				
WB I-195 Off-Ramp to Route 24 NB	D	29.2	C	23.2
WB I-195 On-Ramp from Route 24 SB	C	23.7	C	23.3
EB I-195 Off-Ramp to Route 24 NB	D	33.5	B	15.9
EB I-195 On-Ramp from Route 24 SB	C	23.7	A	10.0
Route 24 & I-195 (South of I-195)				
WB I-195 Off-Ramp to Route 24 SB	D	28.4	C	27.5
WB I-195 On-Ramp from Route 24 NB	D	30.7	C	24.7
EB I-195 Off-Ramp to Route 24 SB	D	29.8	B	17.8
EB I-195 On-Ramp from Route 24 NB	D	32.2	B	14.8
I-195 & Plymouth Avenue				
WB I-195 Off-Ramp to Plymouth Avenue	C	27.0	C	22.4
WB I-195 On-Ramp from Plymouth Avenue	D	33.9	C	27.6
EB I-195 Off-Ramp to Plymouth Avenue	D	30.3	B	18.2
EB I-195 On-Ramp from Plymouth Avenue	D	28.9	B	15.8
Route 79 & Main Street				
SB Route 79 Off-Ramp to Main Street	B	11.5	B	14.7
SB Route 79 On-Ramp from Main Street	B	13.2	B	17.2
NB Route 79 On-Ramp from SB Main Street	B	13.1	B	10.9
NB Route 79 On-Ramp from NB Main Street	B	14.9	B	12.2
Route 79 & U.S. Route 6				
SB Route 79 Off-Ramp to U.S. Route 6	B	17.1	C	21.5
SB Route 79 Off-ramp to Davol Street West	A	8.5	B	12.7
SB Route 79 On-Ramp from U.S. Route 6	B	11.6	B	14.6
SB Route 79 On-Ramp from Davol Street East	A	4.1	A	7.0
NB Route 79 Off-Ramp to Davol Street East	A	8.5	A	7.9

Table 4.12: Alternative 1 (2035) 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	7.9	0.48			B	12.9	0.72		
NB Through/Right	A	6.6	0.49	29	80	B	10.9	0.72	137	243
EB Through/Left	B	10.5	0.47	30	95	C	20.9	0.72	97	176
WB Through/Right	A	10.0	0.39	22	83	B	12.7	0.17	16	48
Davol Street East at South Coast Rail	A	5.2				A	3.2			
NB Left/Through/Right	A	2.5	0.19		6	A	1.6	0.06		4
EB Through/Left	C	21.5	0.40		54	C	21.2	0.35		38
WB Through	C	17.8	0.01		1	D	25.0	0.07		5
WB Right	B	10.3	0.01		1	B	10.9	0.05		4
Davol Street East at Pearce Street	A	1.1				A	2.0			
NB Through	A	0.0	0.29		0	A	0.0	0.46		0
WB Right	B	11.5	0.12		10	C	17.1	0.34		37
Davol Street East at President Avenue	B	11.9	0.54			B	17.7	0.78		
NB Left	B	10.4	0.21	15	82	B	16.5	0.57	66	354
NB Through/Right	B	12.5	0.57	46	212	C	22.4	0.83	113	505
EB Left/Through	B	12.3	0.51	35	120	B	17.5	0.97	68	204
WB Through/Right	B	11.4	0.37	19	84	B	11.1	0.28	12	55
Davol Street East at Brownell Street	A	8.5	0.57			D	43.9	0.97		
NB Through/Right	A	5.9	0.54	73	164	D	48.8	1.04	407	507
EB Through/Left	B	19.9	0.65	36	103	C	34.8	0.88	131	278
WB Through/Right	B	13.3	0.15	8	39	B	13.0	0.20	28	61
Davol Street West at Brownell Street	A	9.9	0.66			B	14.3	0.78		
SB Through/Right	A	7.7	0.66	132	226	B	11.5	0.77	197	279
EB Through/Right	B	15.9	0.07	7	23	B	16.6	0.46	57	109
WB Through/Left	C	22.4	0.64	62	129	C	28.7	0.78	82	187
Davol Street West at President Avenue	B	16.7	0.73			C	20.5	0.77		
SB Left/Through/Right	B	14.3	0.76	132	437	B	17.4	0.80	195	524
EB Through/Right	B	16.5	0.00	1	6	B	18.1	0.02	2	15
WB Through	C	24.1	0.65	57	201	C	29.9	0.73	94	280
WB Left	C	25.0	0.66	57	200	C	28.0	0.69	91	266
Davol Street West at Baylies Street	A	0.2				A	0.1			
SB Through/Right	A	0.0	0.50		0	A	0.0	0.63		0
EB Right	B	10.7	0.05		4	B	10.8	0.03		2
Davol Street West at Taylor Street	A	5.5	0.52			A	7.8	0.55		
SB Left/Through/Right	A	3.9	0.52	81	157	A	5.8	0.59	91	191
EB Through/Right	B	18.3	0.01	1	6	B	17.4	0.32	22	79
WB Through/Left	C	21.8	0.52	33	78	B	18.5	0.43	23	76

Table 4.12: Alternative 1 (2035) 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
Davol Street West at Turner Street	A	6.5	0.51			A	8.6	0.63		
SB Left/Through	A	4.4	0.49	71	142	A	6.4	0.65	132	236
WB Left	B	19.1	0.55	39	97	C	21.6	0.56	64	117
President Avenue at North Main Street	C	26.2	0.77			C	30.5	0.86		
NB Left/Through/Right	C	25.0	0.72	198	538	D	35.6	0.80	197	464
SB Left/Through Right	B	18.6	0.48	105	278	C	23.5	0.47	103	238
EB Left	B	19.8	0.22	17	59	B	15.9	0.23	29	88
EB Through/Right	C	32.8	0.81	262	574	D	38.4	0.92	410	917
WB Left	C	21.8	0.33	15	59	C	20.1	0.39	12	67
WB Through/Right	C	24.9	0.62	177	387	B	18.0	0.46	147	337
President Avenue at Highland Avenue	C	24.7				F	53.5			
SB Left/Through/Right	F	136.0	1.12		300	F	347.2	1.61		482
EB Left/Through/Right	A	0.0	0.41		0	A	0.0	0.59		0
WB Left/Through/Right	A	0.0	0.31		0	A	0.0	0.33		0
President Avenue at Robeson Street	F	81.3	1.13			C	28.9	0.88		
NB Left/Through/Right	F	104.7	1.03	386	550	C	30.4	0.85	162	430
SB Left/Through/Right	F	130.8	1.10	384	585	B	19.9	0.64	106	302
EB Left/Through/Right	F	108.8	1.15	839	1,087	C	25.4	0.81	184	499
WB Left/Through/Right	B	16.9	0.61	428	520	D	37.8	0.90	166	450
President Avenue at Elsbree Street	C	24.8	0.71			C	21.6	0.67		
SB Left	C	33.8	0.81	104	284	C	34.4	0.85	117	330
SB Through/Right	C	21.3	0.51	59	151	B	18.8	0.47	53	147
EB Left	D	51.8	0.90	97	291	C	26.5	0.60	52	156
EB Through/Right	B	11.0	0.32	39	143	B	16.0	0.61	108	235
WB Left	F	139.3	0.87	8	34	D	42.1	0.68	24	75
WB Through	B	19.2	0.48	67	151	B	18.6	0.49	64	144
WB Right	B	18.5	0.34	0	84	B	17.1	0.23	0	63
President Avenue Rotary	F	80.2				F	329.6			
NB Left	B	13.6	0.56		93	B	11.0	0.43		58
NB Right	E	36.4	0.87		380	C	19.1	0.69		158
EB Through/Right	F	243.4	1.11		1,535	F	961.9	1.52		4,438
WB Left	A	5.0	0.00		0	A	4.5	0.00		0
WB Through	B	11.9	0.47		65	B	10.6	0.46		63

4.7.4.2 Alternative 2 – 2035 Traffic Analysis

Alternative 2 requires four traffic signals along Route 79 at Turner Street, the South Coast Rail station driveway, President Avenue, and Cory Street. With the addition and optimization of these traffic signals, traffic operations are at LOS C or better at all times within the Focus Area. No traffic signals are required along Davol Street West to accommodate traffic due to development. The majority of traffic is located along Route 79, with only traffic related to developments along Davol Street West.

With three lanes in each direction and the presence of exclusive turning lanes, Route 79 is able to accommodate the addition of local traffic to the regional traffic already using Route 79. Traffic operations data for freeway segments, weaving segments and ramp segments within the Regional Transportation Impact Area are provided in Tables 4.13 through 4.15. Traffic operations data for all intersections studied are provided in Table 4.16.

Table 4.13: Alternative 2 (2035) 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	16.7	A	11.0
North of President Avenue Off-Ramp	B	11.9	A	7.4
North of President Avenue On-Ramp	B	15.9	A	10.1
North of Highland Avenue	B	17.6	B	11.8
North of Route 79	D	31.2	C	19.9
Route 24 - Southbound				
North of Route 79	C	21.1	D	34.8
South of Route 79	B	11.8	B	18.0
South of Highland Avenue	A	10.1	B	16.2
South of President Avenue Off-Ramp	A	7.8	B	11.6
South of President Avenue On-Ramp	B	12.2	B	16.7
I-195 - Eastbound				
West of Plymouth Avenue Off-Ramp	D	26.4	B	12.3
Between Plymouth Avenue Ramps	C	22.7	A	8.1
East of Plymouth Avenue On-Ramp	D	26.0	B	11.4
East of SB Route 24 Off-Ramp	C	19.1	A	3.7
East of NB Route 24 On-Ramp	D	28.0	A	9.7
East of NB Route 24 Off-Ramp	C	20.7	A	5.9
East of SB Route 24 On-Ramp	C	25.4	A	10.6

Table 4.13: Alternative 2 (2035) along all Freeway Segments (Continued)

FREEWAY SEGMENTS	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
I-195 - Westbound				
East of NB Route 24 Off-Ramp	C	21.4	B	15.9
West of NB Route 24 Off-Ramp	B	15.7	B	12.4
West of SB Route 24 On-Ramp	C	20.1	C	18.9
West of SB Route 24 Off-Ramp	B	12.5	A	10.3
West of NB Route 24 On-Ramp	C	22.3	B	17.4
Between Plymouth Avenue Ramps	B	18.0	B	13.6
West of Plymouth Avenue On-Ramp	D	28.6	C	20.9
Route 79 - Northbound				
South of Davol Street East Off-Ramp	B	11.4	B	14.8
North of Davol Street East Off-Ramp	A	5.3	A	3.9
North of North Main Street Off-Ramp	A	9.3	A	7.0
North of SB North Main Street On-Ramp	A	9.3	A	7.1
South of Route 24	A	10.5	A	7.9
Route 79 - Southbound				
South of Route 24	A	9.1	B	12.1
South of North Main Street Off-Ramp	A	8.9	B	12.0
South of North Main Street On-Ramp	B	12.2	B	15.8
South of U.S. Route 6 Off-Ramp	A	4.3	A	7.2
South of Davol Street West Off-Ramp	A	4.1	A	6.9
South of Davol Street West On-Ramp	B	15.7	C	18.1

Table 4.14: Alternative 2 (2035) 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	B	0.40	10.7	B	0.43	10.8

Table 4.15: Alternative 2 (2035) 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	C	27.1	E	38.6
SB Route 24 Off-Ramp to Highland Avenue	B	15.8	C	23.5
NB Route 24 On-Ramp from Highland Avenue	C	23.2	B	16.6
NB Route 24 On-Ramp from Route 79	D	34.0	C	24.7
Route 24 & U.S. Route 6 (President Avenue)				
SB Route 24 Off-Ramp to U.S. Route 6	A	4.6	B	12.3
SB Route 24 On-Ramp from U.S. Route 6	B	13.4	B	18.5
NB Route 24 Off-Ramp to U.S. Route 6	B	15.8	A	8.7
NB Route 24 On-Ramp from U.S. Route 6	B	16.5	A	9.9
Route 24 & I-195 (North of I-195)				
WB I-195 Off-Ramp to Route 24 NB	D	29.2	C	23.1
WB I-195 On-Ramp from Route 24 SB	C	23.7	C	23.7
EB I-195 Off-Ramp to Route 24 NB	D	33.5	B	15.8
EB I-195 On-Ramp from Route 24 SB	C	23.8	A	9.9
Route 24 & I-195 (South of I-195)				
WB I-195 Off-Ramp to Route 24 SB	D	28.4	C	27.9
WB I-195 On-Ramp from Route 24 NB	D	30.7	C	24.6
EB I-195 Off-Ramp to Route 24 SB	D	29.6	B	17.3
EB I-195 On-Ramp from Route 24 NB	D	32.2	B	14.7
I-195 & Plymouth Avenue				
WB I-195 Off-Ramp to Plymouth Avenue	C	27.0	C	22.4
WB I-195 On-Ramp from Plymouth Avenue	D	33.8	C	27.0
EB I-195 Off-Ramp to Plymouth Avenue	D	29.1	B	16.7
EB I-195 On-Ramp from Plymouth Avenue	D	28.6	B	15.5
Route 79 & Main Street				
SB Route 79 Off-Ramp to Main Street	B	10.9	B	14.7
SB Route 79 On-Ramp from Main Street	B	12.9	B	17.0
NB Route 79 On-Ramp from SB Main Street	B	13.0	B	10.4
NB Route 79 On-Ramp from NB Main Street	B	14.6	B	11.7
Route 79 & U.S. Route 6				
SB Route 79 Off-Ramp to U.S. Route 6	B	16.7	C	21.3
SB Route 79 Off-ramp to Davol Street West	A	7.4	B	11.0
SB Route 79 On-Ramp from U.S. Route 6	B	19.9	C	22.6
NB Route 79 Off-Ramp to U.S. Route 6	B	11.7	B	16.0

Table 4.16: Alternative 2 (2035) 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
Route 79 at Turner Street	C	31.6	0.83			C	25.9	0.65		
NB Left	C	25.7	0.22	32	68	C	29.5	0.31	47	92
NB Through/Right	C	24.5	0.76	174	228	C	22.2	0.83	282	349
SB Left	D	35.9	0.66	108	198	C	30.7	0.38	58	109
SB Through/Right	D	35.5	0.94	261	362	C	28.4	0.93	354	476
EB Left/Through/Right	B	19.4	0.07	11	33	C	29.3	0.30	44	91
WB Left/Through/Right	D	40.4	0.82	147	298	C	28.1	0.20	16	68
Route 79 at South Coast Rail	B	12.9	0.48			C	23.8	0.70		
NB Left	D	40.2	0.54	7	29	C	33.7	0.49	5	22
NB Through	A	9.7	0.40	56	113	A	8.8	0.61	113	147
NB Right	A	7.8	0.01	0	8	A	0.0	0.00	0	0
SB Left	D	43.9	0.60	10	34	A	0.0	0.00	0	0
SB Through/Right	B	13.6	0.77	138	257	D	35.9	1.01	178	430
EB Left/Through/Right	B	15.7	0.08	8	30	B	14.2	0.22	13	60
WB Left/Through/Right	B	15.0	0.01	1	6	B	12.3	0.02	1	11
Route 79 at Pearce Street	A	0.1				A	0.2			
NB Through	A	0.0	0.24	N/A	0	A	0.0	0.41	N/A	0
WB Right	A	8.9	0.38	N/A	3	A	9.8	0.10	N/A	9
Route 79 at President Avenue	C	25.9	0.62			C	34.2	0.81		
NB Left	D	51.0	0.63	15	41	D	43.2	0.45	15	40
NB Through	C	23.2	0.38	125	167	C	34.8	0.92	278	384
NB Right	B	18.2	0.05	0	30	C	20.1	0.23	18	74
SB Left	D	53.5	0.96	119	209	E	76.8	1.02	154	259
SB Through/Right	B	18.8	0.77	164	327	B	19.1	0.73	204	370
EB Left/Through/Right	C	30.4	0.15	7	22	D	47.9	0.73	63	132
WB Left	C	22.6	0.36	50	80	C	31.9	0.48	72	110
WB Through	C	21.2	0.18	24	55	C	28.4	0.15	22	53
WB Right	C	22.5	0.26	0	62	C	29.7	0.23	0	68
Route 79 at Cory Street	B	14.6	0.68			C	22.5	0.85		
NB Left	D	52.0	0.62	8	31	D	36.7	0.30	4	17
NB Through/Right	A	9.9	0.53	85	162	C	29.2	0.95	320	410
SB Left	D	37.8	0.33	2	13	C	34.9	0.73	82	162
SB Through/Right	B	16.6	0.87	175	373	B	13.5	0.81	192	442
EB Left/Through/Right	B	19.4	0.34	28	78	D	39.1	0.77	94	202
WB Left/Through/Right	B	16.1	0.09	8	34	C	20.7	0.14	16	46
Davol Street West at Cory Street	A	5.7				A	6.0			
NB Left/Through/Right	A	0.6	0.00	N/A	0	A	0.0	0.00	N/A	0
SB Left/Through/Right	A	5.5	0.06	N/A	5	A	4.4	0.09	N/A	7
EB Left/Through/Right	B	11.5	0.03	N/A	3	C	19.0	0.30	N/A	31
WB Left/Through/Right	B	12.1	0.10	N/A	8	B	14.7	0.14	N/A	12

Table 4.16: Alternative 2 (2035) 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
Davol Street West at President Avenue	A	7.3				A	8.0			
NB Left/Through/Right	A	0.0	0.00	N/A	0	A	0.0	0.00	N/A	0
SB Left/Through/Right	A	6.3	0.02	N/A	2	A	7.9	0.22	N/A	21
EB Through/Right	A	0.0	0.00	N/A	0	C	19.4	0.04	N/A	3
WB Through	A	8.8	0.08	N/A	7	C	20.0	0.13	N/A	11
WB Left	A	9.3	0.05	N/A	4	B	11.6	0.09	N/A	7
Davol Street West at Taylor Street	A	4.8				A	6.0			
NB Left/Through/Right	A	0.8	0.00	N/A	0	A	0.1	0.00	N/A	0
SB Left/Through/Right	A	1.3	0.00	N/A	0	A	1.8	0.01	N/A	1
EB Left/Through/Right	A	9.3	0.00	N/A	0	B	11.0	0.17	N/A	16
WB Left/Through/Right	A	9.7	0.05	N/A	4	B	11.4	0.09	N/A	7
Davol Street West at Turner Street	A	7.6				A	5.1			
NB Through/Right	A	0.0	0.01	N/A	0	A	0.0	0.07	N/A	0
SB Left/Through	A	6.1	0.01	N/A	1	A	3.6	0.02	N/A	2
WB Left/Right	A	9.3	0.14	N/A	12	B	10.5	0.17	N/A	15
President Avenue at North Main St.	C	33.8	0.88			D	52.4	0.99		
NB Left/Through/Right	D	36.0	0.87	299	703	E	74.0	0.96	343	686
SB Left/Through/Right	B	17.5	0.36	77	191	C	34.7	0.44	127	255
EB Left	C	23.2	0.28	21	69	B	19.8	0.28	42	108
EB Through/Right	D	42.1	0.88	325	705	E	64.2	1.00	669	1,248
WB Left	C	30.1	0.52	20	94	D	41.2	0.61	17	97
WB Through/Right	C	29.8	0.68	222	489	C	22.3	0.48	202	404
President Avenue at Highland Ave.	C	21.9				E	36.0			
SB Left/Through/Right	F	128.4	1.09	N/A	279	F	255.6	1.39	N/A	381
EB Left/Through/Right	A	0.0	0.41	N/A	0	A	0.0	0.57	N/A	0
WB Left/Through/Right	A	0.0	0.32	N/A	0	A	0.0	0.34	N/A	0
President Avenue at Robeson Street	F	81.6	1.13			C	34.9	0.89		
NB Left/Through/Right	F	107.1	1.04	389	554	D	43.8	0.90	335	513
SB Left/Through/Right	F	130.8	1.10	384	584	C	27.6	0.69	223	344
EB Left/Through/Right	F	108.9	1.15	838	1,086	C	28.3	0.77	354	540
WB Left/Through/Right	B	17.0	0.62	434	527	D	39.0	0.88	323	499
President Avenue at Elsbree Street	C	22.5	0.69			C	22.3	0.67		
SB Left	C	32.3	0.79	110	280	C	27.2	0.79	134	336
SB Through/Right	C	21.9	0.50	63	155	B	17.8	0.45	62	158
EB Left	C	34.2	0.78	102	282	C	29.5	0.62	59	166
EB Through/Right	B	12.1	0.33	44	147	B	18.8	0.65	128	286
WB Left	D	35.7	0.42	9	37	D	51.0	0.72	26	77
WB Through	C	21.5	0.52	78	164	C	21.3	0.51	71	152
WB Right	C	20.4	0.35	0	88	B	19.5	0.22	0	66

Table 4.16: Alternative 2 (2035) 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
President Avenue Rotary	F	85.3				F	324.3			
NB Left	B	13.8	0.59	N/A	95	B	11.1	0.43	N/A	58
NB Right	E	37.8	0.87	N/A	393	C	21.0	0.72	N/A	180
EB Through/Right	F	259.0	1.12	N/A	1,613	F	950.5	1.51	N/A	4,415
WB Left	A	5.0	0.00	N/A	0	A	4.5	0.00	N/A	0
WB Through	B	11.7	0.46	N/A	65	B	10.0	0.43	N/A	55

4.7.4.3 Alternative 2 – Modified – 2035 Traffic Analysis

Alternative 2 – Modified provides traffic signals in the same locations as Alternative 2. They are along Route 79 at the intersections with Turner Street, South Coast Rail, President Avenue, and Cory Street. No traffic signals are required along Davol Street West to accommodate traffic due to development. The majority of traffic is located along Route 79, with only traffic related to developments along Davol Street West.

During the AM Peak Hour, all intersections within the Focus Area have a LOS of C or better, but in the PM Peak Hour, some intersection operations along Route 79 worsen to LOS D. In both peak hours, many approaches at these intersections operate poorly, with LOS E or F. With only two through lanes in each direction along Route 79, the signalized intersections develop long queues of traffic that impact other intersections, particularly in the PM Peak Hour. Along Southbound Route 79, the average and 95th percentile queues extend almost to but not through any neighboring intersections, but the queue from the Cory Street intersection extends to the merge with the on-ramp from U.S. Route 6. While these results do show degradation in operations at the intersections within the Focus Area, these levels of service and delays are during peak traffic hours and are not expected to last for long periods of time. Traffic operations data for all intersections along Route 79 and Davol Street West are provided in Table 4.17.

Table 4.17: Alternative 2 – Modified (2035) 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
Route 79 at Turner Street	C	23.5	0.79			D	46.4	0.88		
NB Left	C	33.9	0.26	65	157	D	41.5	0.39	97	185
NB Through/Right	C	20.2	0.74	285	399	D	36.9	0.98	350	389
SB Left	E	58.2	0.80	144	195	D	39.5	0.47	91	168
SB Through/Right	B	16.7	0.89	252	376	E	56.3	1.08	326	442
EB Left/Through/Right	C	32.0	0.13	41	81	D	47.5	0.57	107	152
WB Left/Through/Right	D	37.0	0.50	86	154	D	36.6	0.13	73	148
Route 79 at South Coast Rail	B	13.9	0.67			B	15.9	0.93		
NB Left	F	100.8	0.81	17	48	E	77.8	0.81	44	111
NB Through	A	7.6	0.43	104	163	A	3.4	0.68	216	311
NB Right	A	7.2	0.01	2	13	A	2.6	0.00	2	31
SB Left	D	36.9	0.46	23	51	D	50.6	0.07	1	10
SB Through/Right	B	14.9	0.82	284	386	B	16.8	0.95	299	498
EB Left/Through/Right	C	33.6	0.22	48	89	E	77.2	0.91	95	107
WB Left/Through/Right	C	30.6	0.02	5	23	C	34.0	0.04	22	58
Route 79 at Pearce Street	A	0.1				B	0.2			
NB Through	A	0.0	0.41	N/A	0	A	0.0	0.73	N/A	0
WB Right	A	9.9	0.06	N/A	4	B	10.5	0.12	N/A	10
Route 79 at President Avenue	C	28.1	0.71			D	50.3	0.95		
NB Left	E	61.6	0.63	35	106	F	124.1	0.90	45	135
NB Through	C	27.9	0.68	218	309	E	56.7	1.00	325	334
NB Right	C	22.6	0.07	84	209	D	37.0	0.34	119	227
SB Left	D	51.6	0.84	173	179	E	72.3	1.02	173	176
SB Through/Right	B	15.3	0.84	344	409	B	18.8	0.83	407	454
EB Left/Through/Right	D	41.5	0.10	18	46	F	161.7	1.18	92	111
WB Left	D	37.0	0.54	87	128	D	44.8	0.64	106	161
WB Through	C	32.1	0.14	23	58	D	36.2	0.08	16	45
WB Right	C	34.2	0.26	52	128	D	40.1	0.30	90	190
Route 79 at Cory Street	C	21.5	0.84			D	35.9	0.97		
NB Left	F	132.8	0.90	27	85	F	115.4	0.79	10	49
NB Through/Right	B	19.1	0.57	254	326	C	30.9	0.99	284	317
SB Left	E	62.3	0.44	10	352	F	95.9	0.98	149	204
SB Through/Right	B	19.8	0.92	352	547	C	24.6	0.95	430	530
EB Left/Through/Right	D	41.4	0.53	80	126	F	118.5	1.07	116	134
WB Left/Through/Right	C	32.2	0.14	42	82	D	35.2	0.18	44	88
Davol Street West at Cory Street	A	5.7				A	6.0			
NB Left/Through/Right	A	0.6	0.00	N/A	0	A	0.0	0.00	N/A	0
SB Left/Through/Right	A	5.5	0.06	N/A	5	A	4.4	0.09	N/A	7
EB Left/Through/Right	B	11.5	0.03	N/A	3	C	19.0	0.30	N/A	31
WB Left/Through/Right	B	12.1	0.10	N/A	8	B	14.7	0.14	N/A	12

Table 4.17: Alternative 2 – Modified (2035) 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
Davol Street West at President Avenue	A	8.3				A	8.5			
NB Left/Through/Right	A	0.0	0.00	N/A	0	A	0.0	0.00	N/A	0
SB Left/Through/Right	A	7.3	0.02	N/A	2	A	7.8	0.21	N/A	20
EB Through/Right	A	0.0	0.00	N/A	0	C	17.8	0.04	N/A	3
WB Through/Right	A	8.7	0.08	N/A	7	C	17.4	0.02	N/A	2
WB Left	A	9.5	0.00	N/A	4	A	9.8	0.07	N/A	5
Davol Street West at Taylor Street	A	6.1				A	8.1			
NB Left/Through/Right	A	0.9	0.00	N/A	0	A	0.2	0.00	N/A	0
SB Left/Through/Right	A	3.5	0.00	N/A	1	A	5.3	0.07	N/A	5
EB Left/Through/Right	A	9.4	0.00	N/A	0	B	12.7	0.21	N/A	20
WB Through/Right	A	9.3	0.09	N/A	7	A	8.8	0.05	N/A	4
WB Left	A	9.9	0.06	N/A	4	B	14.1	0.16	N/A	14
Davol Street West at Turner Street	A	7.8				A	5.3			
NB Through/Right	A	0.0	0.01	N/A	0	A	0.0	0.07	N/A	0
SB Left/Through	A	7.3	0.01	N/A	1	A	3.9	0.02	N/A	2
WB Left/Right	A	9.3	0.14	N/A	13	B	10.3	.018	N/A	16

4.7.4.4 Alternative 3 – 2035 Traffic Analysis

The traffic signals along Route 79 in Alternative 3 are set up so that the frontage road (Davol Street East) is part of the same traffic signal as Route 79. These signals, located at Cedar Street, Turner Street, South Coast Rail and President Avenue allow Route 79 traffic movement in the first phase followed by the frontage road in the second phase and the east-west roadway in the third phase. This signal phasing, combined with only providing two lanes in each direction on Route 79, limits capacity at these intersections. Traffic signals are required at the intersection of Route 79 and Cory Street and along Davol Street West at Cory Street and President Avenue as this section is two-way.

Within the Focus Area, all Davol Street West intersections maintain a LOS C or better at all times. Along Route 79 and Davol Street East, the intersections at Turner Street and South Coast Rail operate at LOS D during both the AM and PM Peak Hours. The intersection of President Avenue and Route 79 operates at Level of Service E in the AM and PM Peak Hours. While diversions are created due to Alternative 3, the Veterans Memorial Bridge operates Traffic operations data for freeway segments, weaving segments and ramp segments within the Regional Transportation Impact Area are provided in Tables 4.18 through 4.20. Traffic operations data for all intersections studied are provided in Table 4.21.

Table 4.18: Alternative 3 (2035) 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	16.5	A	11.0
North of President Avenue Off-Ramp	B	11.8	A	7.4
North of President Avenue On-Ramp	B	15.8	A	10.0
North of Highland Avenue	B	17.6	B	11.7
North of Route 79	D	31.0	C	19.7
Route 24 – Southbound				
North of Route 79	C	21.1	D	34.0
South of Route 79	B	11.8	B	17.8
South of Highland Avenue	A	10.1	B	16.1
South of President Avenue Off-Ramp	A	7.9	B	11.5
South of President Avenue On-Ramp	B	12.2	B	16.6
I-195 - Eastbound				
West of Plymouth Avenue Off-Ramp	D	27.4	B	12.5
Between Plymouth Avenue Ramps	C	22.7	A	8.0
East of Plymouth Avenue On-Ramp	D	26.1	B	11.3
East of SB Route 24 Off-Ramp	C	19.0	A	3.5
East of NB Route 24 On-Ramp	D	27.9	A	9.5
East of NB Route 24 Off-Ramp	C	20.7	A	5.7
East of SB Route 24 On-Ramp	C	25.4	A	10.5
I-195 - Westbound				
East of NB Route 24 Off-Ramp	C	21.3	B	15.9
West of NB Route 24 Off-Ramp	B	15.6	B	12.4
West of SB Route 24 On-Ramp	C	20.1	C	18.8
West of SB Route 24 Off-Ramp	B	12.4	A	10.3
West of NB Route 24 On-Ramp	C	22.2	B	17.3
Between Plymouth Avenue Ramps	B	17.8	B	13.5
West of Plymouth Avenue On-Ramp	D	28.2	C	20.8
Route 79 - Northbound				
South of Davol Street East Off-Ramp	B	12.1	B	15.4
North of Davol Street East Off-Ramp	A	6.1	A	4.7
North of North Main Street Off-Ramp	A	9.8	A	7.4
North of SB North Main Street On-Ramp	A	9.8	A	7.4
South of Route 24	A	10.5	A	7.9

Table 4.18: Alternative 3 (2035) 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 - Southbound				
South of Route 24	A	9.1	B	11.8
South of North Main Street Off-Ramp	A	8.9	B	11.7
South of North Main Street On-Ramp	B	12.0	B	15.7
South of U.S. Route 6 Off-Ramp	A	4.5	A	7.7
South of Davol Street West Off-Ramp	A	3.6	A	6.2
South of Davol Street West On-Ramp	A	10.7	B	13.3

Table 4.19: Alternative 3 (2035) 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	B	0.39	10.9	A	0.33	8.8

Table 4.20: Alternative 3 (2035) 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	C	27.1	E	38.2
SB Route 24 Off-Ramp to Highland Avenue	B	15.8	C	23.4
NB Route 24 On-Ramp from Highland Avenue	C	23.1	B	16.4
NB Route 24 On-Ramp from Route 79	D	33.9	C	24.5
Route 24 & U.S. Route 6 (President Avenue)				
SB Route 24 Off-Ramp to U.S. Route 6	A	4.6	B	12.2
SB Route 24 On-Ramp from U.S. Route 6	B	13.4	B	18.4
NB Route 24 Off-Ramp to U.S. Route 6	B	15.7	A	8.7
NB Route 24 On-Ramp from U.S. Route 6	B	16.3	A	9.8
Route 24 & I-195 (North of I-195)				
WB I-195 Off-Ramp to Route 24 NB	D	29.2	C	23.1
WB I-195 On-Ramp from Route 24 SB	C	23.6	C	23.5
EB I-195 Off-Ramp to Route 24 NB	D	33.4	B	15.6
EB I-195 On-Ramp from Route 24 SB	C	23.8	A	9.8
Route 24 & I-195 (South of I-195)				
WB I-195 Off-Ramp to Route 24 SB	D	28.4	C	27.7
WB I-195 On-Ramp from Route 24 NB	D	30.5	C	24.6
EB I-195 Off-Ramp to Route 24 SB	D	29.6	B	17.2
EB I-195 On-Ramp from Route 24 NB	D	32.1	B	14.6

Table 4.20: Alternative 3 (2035) along all Ramp Segments (Continued)

RAMP LOCATIONS	AM Peak Hour		PM Peak Hour	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
I-195 & Plymouth Avenue				
WB I-195 Off-Ramp to Plymouth Avenue	C	26.9	C	22.3
WB I-195 On-Ramp from Plymouth Avenue	D	33.5	C	26.9
EB I-195 Off-Ramp to Plymouth Avenue	D	29.9	B	17.1
EB I-195 On-Ramp from Plymouth Avenue	D	28.7	B	15.4
Route 79 & Main Street				
SB Route 79 Off-Ramp to Main Street	B	10.9	B	14.4
SB Route 79 On-Ramp from Main Street	B	12.7	B	16.8
NB Route 79 On-Ramp from SB Main Street	B	13.6	B	10.8
NB Route 79 On-Ramp from NB Main Street	B	14.6	B	11.6
Route 79 & U.S. Route 6				
SB Route 79 Off-Ramp to U.S. Route 6	B	16.5	C	21.2
SB Route 79 Off-ramp to Davol Street West	A	7.6	B	11.5
SB Route 79 On-Ramp from U.S. Route 6	B	14.5	B	17.5
NB Route 79 Off-Ramp to Davol Street East	B	12.1	B	16.7

Table 4.21: Alternative 3 (2035) 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
Route 79 at Turner Street	D	38.0	0.65			D	47.8	0.89		
NB Through/Right	D	37.0	0.97	380	545	C	29.2	0.93	443	622
NB Frontage Left/Through/Right	C	28.8	0.25	34	73	D	38.1	0.45	66	121
SB Through/Right	D	40.1	0.98	387	559	E	63.2	1.07	643	781
WB Left/Through/Right	C	29.4	0.29	42	85	E	58.5	0.84	142	274
Route 79 at South Coast Rail	D	44.3	0.59			D	35.0	0.73		
NB Through/Right	D	50.7	1.02	431	589	C	28.0	0.92	481	670
NB Frontage Left/Through/Right	C	26.1	0.05	7	23	D	39.1	0.38	56	106
SB Through/Right	D	38.6	0.98	385	553	D	41.3	1.00	564	764
EB Left/Through/Right	C	27.4	0.16	24	56	D	36.4	0.26	37	83
WB Left	C	25.7	0.01	1	8	C	33.1	0.02	2	11
WB Right	C	25.7	0.01	1	11	C	33.3	0.04	2	29
Davol Street East at Pearce Street	A	2.1				A	1.0			
NB Through	A	0.0	0.09	N/A	0	A	0.0	0.10	N/A	0
WB Right	A	9.2	0.05	N/A	4	A	9.2	0.02	N/A	2

Table 4.21: Alternative 3 (2035) 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
Route 79 at President Avenue	C	31.3	0.88			E	64.0	1.04		
NB Through/Right	C	26.8	0.91	321	476	E	58.3	1.03	780	918
NB Frontage Left/Through	C	29.6	0.12	12	34	E	58.4	0.35	39	81
NB Frontage Right	D	54.5	0.77	74	168	F	127.4	0.98	101	229
SB Through/Right	C	32.0	0.95	350	517	E	65.8	1.05	854	996
EB Left/Through/Right	C	28.6	0.60	104	152	D	37.8	0.56	183	241
WB Through	C	29.0	0.44	51	101	C	32.6	0.07	53	97
WB Right	D	43.1	0.80	134	261	F	95.9	1.05	418	630
Route 79 at Cory Street	B	11.4	0.68			C	20.4	0.89		
NB Through/Right	B	11.7	0.80	208	293	B	17.9	0.91	272	460
SB Through/Right	A	9.7	0.72	169	237	C	20.1	0.93	288	478
EB Left/Through/Right	B	16.2	0.42	8	31	D	35.3	0.83	123	263
WB Left/Through/Right	C	20.3	0.1	55	108	B	16.1	0.15	19	47
Davol Street West at Cory Street	A	7.9	0.5			A	8.3	0.6		
NB Left/Through/Right	A	3.5	0.01	1	5	A	3.5	0.13	4	19
SB Left/Through/Right	A	7.3	0.68	64	165	A	8.7	0.73	65	176
EB Left/Through/Right	B	10.6	0.05	2	17	B	12.1	0.16	6	46
WB Left/Through/Right	B	11.1	0.17	7	45	B	11.9	0.10	4	25
Davol Street West at President Avenue	A	6.3	0.34			A	5.9	0.29		
SB Left	A	6.0	0.41	23	64	A	5.7	0.40	20	50
SB Through/Right	A	6.1	0.42	23	65	A	5.7	0.40	20	51
EB Through/Right	A	0.0	0.00	0	0	A	6.6	0.02	1	7
WB Through	A	6.8	0.04	1	15	A	6.8	0.07	1	17
WB Left	A	7.4	0.24	9	37	A	7.0	0.13	4	20
Davol Street West at Taylor Street	A	2.6				A	4.8			
SB Left/Through/Right	A	2.4	0.03	N/A	3	A	0.3	0.00	N/A	0
EB Through/Right	B	10.4	0.01	N/A	0	B	10.5	0.16	N/A	14
Davol Street West at Turner Street	A	4.3				A	0.7			
SB Through	A	0.0	0.04	N/A	0	A	0.0	0.10	N/A	0
WB Left	A	9.1	0.06	N/A	5	A	9.5	0.02	N/A	1
President Avenue at North Main Street	C	29.8	0.86			B	18.1	0.75		
NB Left/Through/Right	D	52.0	0.86	232	513	C	27.7	0.70	102	303
SB Left/Through/Right	C	32.3	0.49	105	226	C	20.4	0.32	41	123
EB Left	B	12.6	0.18	22	69	A	9.9	0.20	14	61
EB Through/Right	C	29.2	0.86	443	982	B	18.3	0.77	191	603
WB Left	B	16.9	0.41	15	73	B	10.1	0.18	6	36
WB Through/Right	B	15.2	0.45	156	358	B	11.8	0.47	92	282

Table 4.21: Alternative 3 (2035) 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
President Avenue at Highland Avenue	C	19.8				C	21.7			
SB Left/Through/Right	F	114.5	1.05	N/A	264	F	168.0	1.17	N/A	285
EB Left/Through/Right	A	0.0	0.42	N/A	0	A	0.0	0.56	N/A	0
WB Left/Through/Right	A	0.0	0.00	N/A	0	A	0.0	0.33	N/A	0
President Avenue at Robeson Street	E	78.5	1.12			C	33.5	0.88		
NB Left/Through/Right	F	100.9	1.02	394	558	D	42.5	0.89	327	500
SB Left/Through/Right	F	115.7	1.06	373	573	C	26.9	0.67	213	327
EB Left/Through/Right	F	107.8	1.14	832	1,079	C	26.8	0.74	342	498
WB Left/Through/Right	B	17.3	0.61	422	515	D	36.8	0.86	325	501
President Avenue at Elsbree Street	C	22.4	0.69			C	21.1	0.64		
SB Left	C	32.2	0.79	110	280	C	26.3	0.76	118	302
SB Through/Right	C	21.9	0.50	63	155	B	18.0	0.43	54	144
EB Left	C	34.0	0.77	100	277	C	28.2	0.60	57	165
EB Through/Right	B	12.0	0.33	43	146	B	17.4	0.62	123	270
WB Left	D	35.6	0.42	9	37	D	47.2	0.70	26	76
WB Through	C	21.4	0.52	77	163	C	20.1	0.48	69	148
WB Right	C	20.3	0.34	0	89	B	18.5	0.22	0	65
President Avenue Rotary	F	83.1				F	316.3			
NB Left	B	3.7	0.56	N/A	93	B	11.1	0.43	N/A	58
NB Right	E	15.7	0.87	N/A	393	C	19.4	0.69	N/A	160
EB Through/Right	F	63.0	1.11	N/A	1,575	F	923.2	1.50	N/A	4,273
WB Left	A	0.0	0.00	N/A	0	A	4.5	0.00	N/A	0
WB Through	B	2.5	0.46	N/A	63	A	9.9	0.42	N/A	55

4.8 Geometric Analysis

Each Route 79 alternative was analyzed to initially determine the extent of impacts that each alternative would have on adjacent and connecting roadways within the Focus Area. A preliminary level of design was completed to lay out each alternative according to AASHTO and MassDOT design criteria, using aerial photography, GIS mapping and construction plans from previously constructed projects. The criteria include, but are not limited to, roadway alignment, lane widths, shoulder widths, curve radii, and sidewalk and shared-use path widths.

4.8.1 Alternative 1

Alternative 1 would maintain the existing character of Route 79 and Davol Streets East and West, but shift Route 79 to be adjacent to Davol Street East. As Route 79 would be an elevated roadway in this alternative, it would not require extensive alignment or profile

modifications to the east-west roadways or to Davol Street East or West as proposed ramps would be similar to existing and any elevation differences between the elevated Route 79 and at-grade roadways would be achieved through the use of retaining walls.

4.8.2 Alternative 2

Alternative 2 would involve lowering Route 79 to the elevations of Davol Street West and Davol Street East. By doing this, Route 79 would be lowered into the 100-year floodplain, but Route 79 would be lowered to elevations that will facilitate intersections with east-west roadways and would not require the construction of retaining walls along Route 79 or the east-west roadways.

Existing terrain and roadway profiles would require steep grades and retaining walls to be used along the ramps between Northbound Route 79 and Brightman Street. Currently, Brightman Street is roughly the same elevation as the Brightman Street U-turn ramp that crosses over Route 79. To maintain vertical clearance underneath this structure, Route 79 must stay at its existing elevation under the ramp, creating an elevation difference between Northbound Route 79 and Brightman Street of over 20 feet. This would force the ramps providing Brightman Street access to follow steep grades of roughly 9% to make up the significant elevation difference between the two roadways. This slope is within the maximum allowable grades for Urban Minor Arterials, such as Brightman Street. The functional classification of Urban Minor Arterial was applied to Brightman Street prior to the construction of Veterans Memorial Bridge, when the roadway had a direct connection to the Brightman Street Bridge. Based on the current use of this road, Brightman Street functions more as a Collector or Local Road. The maximum allowable grades are higher for both of these roadway classifications. This profile requires further refinement based on topographic survey to determine the precise profile required to maintain vertical clearance under the Brightman Street U-turn bridge or whether a design exception is required for this location.

4.8.3 Alternative 2 – Modified

Alternative 2 – Modified would have the same profile as Alternative 2. This alternative would lower Route 79 to the elevations of Davol Street West and Davol Street East. While Route 79 would be lowered into the 100-year floodplain at the southern limits of the Focus Area, the profile of the roadway would facilitate intersections with east-west roadways without requiring retaining wall construction.

Existing terrain and roadway profiles would require steep grades and retaining walls to be used along the ramps between Northbound Route 79 and Brightman Street. Currently, Brightman Street is roughly the same elevation as the Brightman Street U-turn ramp that crosses over Route 79. To maintain vertical clearance underneath this structure, Route 79 must stay at its existing elevation under the ramp, creating an elevation difference between Northbound Route 79 and Brightman Street of over 20 feet. This would force the ramps providing

Brightman Street access to follow steep grades to make up the significant elevation difference between the two roadways.

4.8.4 Alternative 3

Alternative 3 would have the same profile as Alternatives 2 and 2 – Modified south of Cory Street. North of Cory Street, because the Brightman Street U-turn is removed in this alternative, the profile of Route 79 can be raised to match the existing elevation of Brightman Street. The turning lanes to and from Brightman Street along Northbound Route 79 would not require the construction of retaining walls or steep grades as seen in Alternatives 2 and 2 – Modified.

4.9 Multi-Modal Analysis

As the Route 79 alternatives involve the reconfiguration of Route 79 and modification of access to Davol Street West and Davol Street East, the impacts of each alignment on multimodal operations within the Focus Area were analyzed. Each alternative would improve access to South Coast Rail because an east-west connection with a shared-use path and sidewalk provides vehicular, bicycle and pedestrian access to Fall River Depot. Throughout the corridor, sidewalks or shared-use paths are provided along each side of all at-grade roadways in each alternative. This provision makes the waterfront and developments accessible for pedestrians and bicyclists by providing new facilities and creating new east-west connections between existing Fall River neighborhoods and the waterfront. The inclusion of shared-use paths through the corridor also extends the existing bike path that crosses the Veterans Memorial Bridge and ends at Wellington Street.

Each alternative would have different impacts on the Southeastern Regional Transportation Authority (SRTA) Bus Routes 2 and 14. As discussed in Chapter 2, Bus Route 2 operates between the downtown bus terminal and northern Fall River, primarily along North Main Street with a stop at Commonwealth Landing. Bus Route 14 provides service between the downtown bus terminal and the Swansea Mall via the Braga Bridge. According to the Bus Feeder Memo released as part of the Final Environmental Impact Report (FEIR) for South Coast Rail in 2013, SRTA Bus Route 2 would likely be modified to reroute North Main Street to Davol Street East between Odd Street and President Avenue to provide service to Fall River Depot.

Each alternative requires some modifications to Bus Route 2 and suggest an alternate route to the Fall River Depot bus stop. Because inclusion of a bus stop at Fall River Depot already requires modifications to Bus Route 2, it is not anticipated that the diversions discussed below will cause any significant change in bus travel times versus the route described in the Bus Feeder Memo. Further, as developments are constructed within the Focus area, it should be reevaluated whether bus stops should be added within the Focus Area or if existing Bus Routes should be modified.

4.9.1 Alternative 1

Along Bus Route 2, the Commonwealth Landing stop could be maintained in its current position in front of the building and be reached via the Brightman Street U-turn ramp, or the stop could be relocated to be just south of Brownell Street and reached via Brownell Street. After the Commonwealth Landing stop, the bus could continue south and turn left onto Turner Street to continue to Fall River Depot. After serving the station, the bus could exit onto Pearce Street, turn right onto Davol Street East and turn right onto President Avenue to continue on the remainder of Bus Route 2. Another option to serve the corridor area could be to reroute Bus Route 14 from Somerset across the Veterans Memorial Bridge. It would provide 2 stops: Commonwealth Landing at Brownell Street and Davol Street West and Fall River Depot at Davol Street East and Turner Street.

4.9.2 Alternative 2

The existing SRTA Bus Route 2 would require modifications with implementation of Alternative 2. The existing Brightman Street U-turn ramp is only accessible from Brightman Street. For the Commonwealth Landing stop, buses could turn left onto Cory Street and turn left again onto Davol Street West where it could access the Commonwealth Landing stop in its existing location. To provide service to Fall River Depot, buses could continue south along Davol Street West and turn left onto Turner Street to continue to Fall River Depot. After serving this station, the bus could exit onto Pearce Street, turn right onto Davol Street East and turn right onto President Avenue to continue on the remainder of Bus Route 2. Another option to serve the corridor area would be to reroute Bus Route 14 from Somerset across the Veterans Memorial Bridge. It could provide 2 stops: Commonwealth Landing at Cory Street and Davol Street West and Fall River Depot at Davol Street East and Turner Street.

4.9.3 Alternative 2 – Modified

The existing SRTA Bus Route 2 would require modifications with implementation of Alternative 2 – Modified. The existing Brightman Street U-turn ramp is only accessible from Brightman Street. For the Commonwealth Landing stop, buses could turn left onto Cory Street and turn left again onto Davol Street West where it could access the Commonwealth Landing stop in its existing location. To provide service to Fall River Depot, buses could continue south along Davol Street West and turn left onto Turner Street to continue to Fall River Depot. After serving this station, the bus could exit onto Pearce Street, turn right onto Davol Street East and turn right onto President Avenue to continue on the remainder of Bus Route 2. Another option to serve the corridor area could be to reroute Bus Route 14 from Somerset across the Veterans Memorial Bridge. It could provide 2 stops: Commonwealth Landing at Cory Street and Davol Street West and Fall River Depot at Davol Street East and Turner Street.

4.9.4 Alternative 3

The existing SRTA Bus Route 2 would require modifications with implementation of Alternative 3. The existing Brightman Street U-turn ramp is removed in this alternative. For the Commonwealth Landing stop, buses could turn right onto Lindsey Street from President Avenue. From here, buses could turn left onto Cory Street and turn left onto Davol Street West to reach the Commonwealth Landing stop in its existing location. To provide service to Fall River Depot, buses could continue south along Davol Street West and turn left onto Turner Street to continue to Fall River Depot. After serving this station, the bus could exit onto Pearce Street, turn right onto Davol Street East and turn right onto President Avenue to continue on the remainder of Bus Route 2. Another option to serve the corridor area could be to reroute Bus Route 14 from Somerset across the Veterans Memorial Bridge. It could provide 2 stops: Commonwealth Landing at Cory Street and Davol Street West and Fall River Depot at Davol Street East and Turner Street.

4.10 Environmental Analysis

An air quality analysis was completed at the regional level to determine the impacts of each Route 79 alternative on regional emissions. The Transportation Demand Models created by CTPS for the Future No-Build conditions and for the Alternatives 1, 2 and 3 were used to collect estimates of traffic volumes, average highway speeds, vehicle-miles traveled and vehicle-hours traveled. Emission rates developed by the Environmental Protection Agency (EPA) were applied to these data to develop emissions profiles for each alternative. Table 4.22 shows the emissions profiles of the Future No-Build and Route 79 alternatives. The air quality analysis estimated emissions from cars and trucks of carbon monoxide (CO), carbon dioxide (CO_2), nitrogen oxides (NOx) and volatile organic compounds (VOCs). The emissions profiles for all alternatives are very similar. Alternatives 1, 2 and 3 have slightly higher emissions than the Future No-Build due to additional population and employment in the study area and a reduction in average travel speeds within the study area. Alternative 2 – Modified is expected to experience regional emissions levels similar to the other alternatives.

Table 4.22: Regional Air Quality within the Combined AM and PM Peak Periods

Scenario	Regional CO – Winter (kg)	Regional NOx (kg)	Regional VOC (kg)	Regional CO_2 (kg)
Future No-Build	491,200	8,984	10,746	31,911,100
Alternative 1	491,500	8,992	10,756	31,938,300
Alternative 2	491,600	8,990	10,754	31,934,200
Alternative 3	491,500	8,990	10,753	31,932,800

4.11 Environmental Justice Analysis

Environmental Justice serves to ensure that all populations are treated fairly in decisions that will impact their environment. Analysis is completed to verify that groups defined as Environmental Justice

populations are not overly burdened in comparison to those groups not defined as Environmental Justice populations. In order to determine whether any proposed Route 79 alternative disproportionately impacted or burdened any populations, the Transportation Demand Model created by CTPS was used for analysis of environmental, mobility and accessibility impacts. Each build alternative is compared to the Future No-Build condition for both Environmental Justice populations and non-Environmental Justice populations. CTPS uses a paired *t* test with 95% confidence to determine whether the difference experienced by an Environmental Justice population versus a non-Environmental Justice population is statistically significant.

Environmental Justice populations are identified by the demographics of each Transportation Analysis Zone (TAZ). An Environmental Justice population is defined as any TAZ meeting these criteria:

- Low Income Population: Median Household Income at or below $39,399
- Minority Population: 25% or greater minority population
- Limited English Proficiency (LEP): LEP at or greater than 7.61%.

Based on these criteria, of the 44 TAZ in the study area, 32 TAZ are identified as Environmental Justice populations. In Chapter 2, Figure 2.5 presents these three Environmental Justice criteria. Three performance measures are used to evaluate the benefits and burdens on Environmental Justice and Non-Environmental Justice populations. These are accessibility to jobs and needed services, mobility and congestion and environmental impacts.

Accessibility is measured as the ability and the ease of reaching certain destinations within 20 minutes. These destinations include places of employment, health care facilities and higher education facilities.

Mobility and congestion analyses look at auto travel times under congested conditions for trips traveling to and from Environmental Justice zones. Two measures are included within the mobility and congestion metric. These are Highway Production Time, or the average travel time of all automobile trips leaving a TAZ, and Highway Attraction Times, or the average travel time of all automobile trips traveling to a TAZ.

Environmental impacts focus on how the Route 79 alternatives will change the regional and local air quality. The air quality analysis looks at quantities of carbon monoxide (CO), fine particulate matter ($PM_{2.5}$) emitted per square mile, and the average vehicle-miles traveled under congested traffic conditions.

For all three criteria, it is expected that Alternative 2 – Modified will have similar results to those of Alternative 2 because the reduction of the Route 79 cross section in Alternative 2 – Modified is not expected to impact regional and local mobility and access differently than in Alternative 2.

4.11.1 Accessibility Analysis

To measure accessibility, the number of basic, service and retail jobs available within a 20 minute drive is examined. It also takes into account how many hospital beds and college enrollment

slots are available within a 20 minute drive. The job, medical and education information is geocoded into CTPS' base travel demand model for analysis. Results are summarized in Tables 4.23 and 4.24. As can be seen in these tables, there will be very little change in the quantity of accessible jobs due to the Route 79 alternatives. All alternatives show a small decrease in accessible employment and healthcare. Access to education will remain essentially unchanged. These changes are due to a decrease in average travel speed within the study area. It can also be seen that these small reductions in accessibility are similar between the Environmental Justice and Non-Environmental Justice populations and were determined to be statistically insignificant.

Table 4.23: Accessibility Analysis – Employment Opportunities and Services

Scenario	Basic Employment				Retail Employment				Service Employment			
	Available Jobs		Average Travel Time (min)		Available Jobs		Average Travel Time (min)		Available Jobs		Average Travel Time (min)	
	EJ	Non-EJ	EJ	Non-EJ	EJ	Non-EJ	EJ	Non-EJ	EJ	Non-EJ	EJ	Non-EJ
Future No-Build	39,936	37,512	11.9	12.3	25,591	24,273	12.3	13.2	38,115	35,768	11.1	11.4
Alternative 1	39,096	36,596	11.9	12.3	24,723	22,594	12.3	12.9	36,969	35,077	11.0	11.4
Alternative 2	38,998	36,629	11.9	12.3	24,690	22,589	12.4	12.9	36,866	35,057	11.0	11.3
Alternative 3	39,099	36,602	11.9	12.2	24,703	22,613	12.3	12.9	36,936	35,113	11.0	11.3
Comparison of Route 79 Alternatives to Future No-Build Alternative												
Alternative 1	-2.1%	-2.4%	0.0%	0.0%	-3.4%	-6.9%	0.0%	-1.9%	-3.0%	-1.9%	-0.8%	0.0%
Alternative 2	-2.3%	-2.4%	0.0%	0.0%	-3.5%	-6.9%	0.3%	-1.9%	-3.3%	-2.0%	-0.8%	-0.4%
Alternative 3	-2.1%	-2.4%	0.0%	-0.5%	-3.5%	-6.8%	0.0%	-1.9%	-3.1%	-1.8%	-0.8%	-0.4%

Table 4.24: Accessibility Analysis – Higher Education and Healthcare Facilities

Scenario	Education Facilities				Healthcare Facilities			
	Available College Enrollment		Average Travel Time (min)		Available Hospital Beds		Average Travel Time (min)	
	EJ	Non-EJ	EJ	Non-EJ	EJ	Non-EJ	EJ	Non-EJ
Future No-Build	13,948	12,152	12.0	11.1	747	668	9.6	9.8
Alternative 1	13,942	12,152	12.1	11.1	725	668	9.4	9.9
Alternative 2	13,942	12,152	12.1	11.1	725	668	9.3	9.9
Alternative 3	13,943	12,152	12.1	11.1	725	668	9.3	9.8
Comparison of Route 79 Alternatives to Future No-Build Alternative								
Alternative 1	0.0%	0.0%	0.9%	0.0%	-2.9%	0.0%	-2.8%	0.6%
Alternative 2	0.0%	0.0%	0.9%	0.0%	-2.9%	0.0%	-3.0%	0.6%
Alternative 3	0.0%	0.0%	0.9%	0.0%	-2.9%	0.0%	-3.0%	0.4%

4.11.2 Mobility and Congestion Analysis

Table 4.25 provides the results of the mobility and congestion analysis. Alternatives 1, 2 and 3 increase Average Highway Production Time in comparison to the Future No-Build; however there is no change in Average Highway Attraction Time. As in the accessibility analysis, the increase in production time is due to a decrease in overall study area speeds. The changes in times and the changes amongst the Route 79 alternatives between Environmental Justice and Non-Environmental Justice populations are statistically insignificant.

Table 4.25: Mobility and Congestion Analysis

Scenario	Average Highway Production Time (min)		Average Highway Attraction Time (min)	
	EJ	Non-EJ	EJ	Non-EJ
Future No-Build	13.9	15.3	5.8	7.8
Alternative 1	15.0	16.4	5.9	7.9
Alternative 2	15.0	16.4	5.9	7.9
Alternative 3	15.0	16.4	5.9	7.9
Comparison of Route 79 Alternatives to Future No-Build Alternative				
Alternative 1	8.3%	7.0%	1.3%	1.2%
Alternative 2	8.3%	7.0%	1.3%	1.2%
Alternative 3	8.3%	7.0%	1.3%	1.2%

4.11.3 Environmental Analysis

The Environmental Impact Analysis measured changes in air quality due to congested roadway conditions. This analysis was completed for the combined AM and PM 3-hour peak periods. Air quality is worse for all alternatives than in the Future No-Build conditions for both Environmental Justice and Non-Environmental Justice populations. These changes are more pronounced than the air quality results presented in the Environmental Analysis section, as they are localized numbers. The air quality numbers are worsening primarily due to the reduction in average travel speeds. Table 4.26 provides the results of the environmental analysis. The changes between Environmental Justice and Non-Environmental Justice populations are statistically insignificant.

Table 4.26: Environmental Analysis

Scenario	Vehicle-Miles Traveled per Square Mile		CO per Square Mile (g/square mile)		PM2.5 per Square Mile (g/square mile)	
	EJ	Non-EJ	EJ	Non-EJ	EJ	Non-EJ
Future No-Build	40,961	21,443	365,306	189,270	518	271
Alternative 1	42,829	22,251	381,170	196,223	542	281
Alternative 2	41,180	22,111	366,089	195,075	522	279
Alternative 3	40,149	21,568	357,878	190,499	509	272
Comparison of Route 79 Alternatives to Future No-Build Alternative						
Alternative 1	4.6%	3.8%	4.3%	3.7%	4.6%	3.7%
Alternative 2	0.5%	3.1%	0.2%	3.1%	0.7%	3.0%
Alternative 3	-2.0%	0.6%	-2.0%	0.6%	-1.7%	0.6%

4.12 Economic Impact Analysis

The economic impacts of each alternative were evaluated for comparison in two timeframes: the short-term, or construction period impacts, and long-term impacts. Fiscal impacts for the City Fall River were also determined. Alternative 2 – Modified is included in the following discussions but is not included in the economic impact analysis tables as it was developed as a response to comments after the economic impact analysis was completed. The development and associated jobs, residents, tax revenue and other economic impacts were based on the maximum development potential within Fall River for retail, residential and office space.

4.12.1 Construction Period Impacts

The economic impacts of the construction of the three alternatives vary primarily due to the differences in cost and scope of work of the alternatives. It is anticipated that access will be maintained to all businesses within the Focus Area during construction. Alternative 1 requires construction of several bridges in addition to considerable grading and roadway construction. The approximate estimated cost of Alternative 1 is $100 Million. Alternatives 2, 2 – Modified and 3 do not require the same bridge construction, but will require extensive grading and roadway construction. The approximate estimated costs of these alternatives are $55 Million. Due to the increased labor and materials spending of Alternative 1, the total construction period impacts of Alternative 1 are twice that of Alternatives 2, 2 – Modified and 3. See Table 4.27 for the Construction Period Impacts of the alternatives.

Table 4.27: Short-Term Construction Period Impacts of Route 79 Alternatives

Impact	Alternative 1 Elevated Route 79	Alternative 2 At Grade Route 79	Alternative 3 At Grade Route 79 with Frontage Roads
Direct Impacts			
Estimated Construction Cost	$100,000,000	$55,000,000	$55,000,000
Labor Spending (67%)	$66,666,667	$36,666,667	$36,666,667
Construction Wages (50%)	$33,333,333	$18,333,333	$18,333,333
Construction Jobs	527	290	290
State Income/Payroll Tax	$1,402,009	$771,105	$771,105
Indirect/Induced Impacts			
Wages	$29,240,000	$16,082,000	$16,082,000
Jobs	497	274	274
State Income/Payroll Tax	$1,229,842	$676,413	$676,413
Materials Spending			
Estimated Materials Budget (33%)	$33,000,000	$18,150,000	$18,150,000
Percent Tax Exempt	80%		
Taxable Materials	$6,600,000	$3,630,000	$3,630,000
Percent Sourced In-State	75%		
Sales Tax from Materials	$309,375	$170,156	$170,156
Total Economic Impacts			
Wages	$62,573,333	$34,415,333	$34,415,333
Jobs	1,024	563	563
State Income & Sales Taxes	$2,631,851	$1,447,518	$1,447,518

Sources: Bureau of Economic Analysis, RIMSII Multipliers & Cambridge Economic Research

4.12.2 Long-Term Economic Impacts

The proposed development of the alternatives will shift anticipated spending, income, residents and jobs to the Fall River Waterfront. Based on averages recommended by the ITE, it is estimated that there will be one job for every 250 square feet of newly constructed office space. For newly constructed retail space, one job per 400 square feet is assumed. Two residents are assumed for each newly constructed unit. As Alternatives 1, 2 and 2 - Modified can accommodate the most development, these alternatives also bring the most Fall River jobs and residents to the waterfront. Alternative 3, due to transportation system capacity limits, attracts significantly fewer Fall River jobs and residents to the waterfront area. Table 4.28 provides information on Fall River jobs and residents focused along the waterfront due to new development.

Table 4.28: Jobs & Residents Shifted to the Focus Area due to Route 79 Alternatives

Alternative	Land Use			Total Jobs & Residents
	Retail (SF)	Office (SF)	Residential (Units)	
Alternative 1 – Elevated Route 79				
Development	266,500	266,500	724	
Total New Jobs or Residents	666	1,066	1,448	3,180
Alternative 2 – At Grade Route 79				
Development	238,500	238,500	649	
Total New Jobs or Residents	596	954	1,298	2,848
Alternative 3 – At Grade Route 79 with Frontage Roads				
Development	51,000	51,000	137	
Total New Jobs or Residents	128	204	274	606

The jobs and housing generated under the alternatives will generate new household income and state and local taxes. Development within the parcels will attract new residents to Fall River, some living within the new developments. It is assumed that 25% of the residents that live within the new development parcels will also work within the parcels. It is also assumed that 40% of the new jobs will be held by existing Fall River residents.

The economic impact of Alternatives 1 and 2 are the greatest, generating roughly $50 Million in disposable income and producing over $20 Million in state and local taxes. Alternative 3 is projected to produce $14.6 Million in spending by new residents and workers and more than $4 Million in state and local taxes. Alternative 2 – Modified will likely generate disposable income and taxes similar to Alternatives 1 and 2. Table 4.29 provides the economic impacts of the new jobs and residents that could be expected to be produced by each of the Route 79 alternatives.

Table 4.29: Economic Impact of New Jobs & Housing Units in the Route 79 Study Area

Economic Impact	Alternative 1 Elevated Route 79	Alternative 2 At Grade Route 79	Alternative 3 At Grade Route 79 with Frontage Roads
Income from New Households in Development Parcels			
New Housing Units	724	649	137
Number of Occupied Units (95%)	689	618	130
Total Household Income in New Units	$38,458,000	$34,474,000	$7,277,000
Income from New Jobs in Development Parcels			
Total New Jobs	1,732	1,550	332
Number of New Jobs for New Residents (60%)	1,046	930	199
Net New Workers in Fall River (75%)	785	698	149
Total Income Generated by New Workers in Fall River	$38,773,000	$34,476,000	$7,359,000
Total Gross Income from Housing and Jobs in Study Area	$77,231,000	$68,950,000	$14,636,000
Minus State & Local Taxes	$23,169,000	$20,685,000	$4,391,000
Total Disposable Income	$54,062,000	$48,265,000	$10,245,000

Note: Median Household Income of Bristol County is $55,813. There are on average 1.13 wage earners per household, yielding an average wage per worker of $49,392.

Sources: Table E-1, 2000 U.S. Census and Fall River Office of the Assessor

4.12.3 Fiscal Impacts on Fall River

The City of Fall River would also receive tax dollars from the developments under each Route 79 alternative. Table 4.30 presents the projections of property tax revenues resulting from the development supported by the alternatives. Assumptions regarding residential and commercial property values for the new developments were estimated based on conversations with the Fall River Assessor and supplemented by searches of real estate databases. Alternatives 1 and 2 produce the most in property tax revenues, at over $3 Million per year while Alternative 3 provides roughly 20% as much annually. Alternative 2 – Modified will likely provide property tax revenues similar to Alternatives 1 and 2.

Table 4.30: Impact of Alternatives on Local Property Taxes

Alternative	Land Use			Totals
	Retail (SF)	Office (SF)	Residential (Units)	
Average Assessed Value	$110	$100	$240,000	
Tax Rate	0.0254	0.0254	0.0119	
Alternative 1 – Elevated Route 79				
Development	266,500	266,500	724	
Increase in Assessed Value	$29,315,000	$26,650,000	$173,760,000	$229,725,000
New Property Taxes	$745,000	$677,000	$2,068,000	$3,490,000
Alternative 2 – At Grade Route 79				
Development	238,500	238,500	649	
Increase in Assessed Value	$26,235,000	$23,850,000	$155,760,000	$205,845,000
New Property Taxes	$666,000	$606,000	$1,854,000	$3,126,000
Alternative 3 – At Grade Route 79 with Frontage Roads				
Development	51,000	51,000	137	
Increase in Assessed Value	$5,610,000	$5,100,000	$32,880,000	$43,590,000
New Property Taxes	$142,000	$130,000	$391,000	$663,000

Note: The above revenues are also contained in the estimates of state and local taxes in Table 4.26

Sources: Fall River Assessor's Database and internet real estate listings

4.13 Analysis of Additional Community and Working Group Input

During coordination with the Working Group, Federal Highway Administration (FHWA) and at Public Informational Meetings, additional considerations and concerns were presented regarding the analyzed alternatives. The concerns presented by the Working Group and the community at the Public Information Meetings regard the provision of pedestrian bridges. The FHWA presented concerns regarding the existing floodplains and climate change, as well as the elimination of Davol Street West north of President Avenue and the reclamation of right-of-way for land converted to developable parcels.

4.13.1 Provide a Pedestrian Bridge over Route 79

During the Working Group and Public Information Meetings, it was questioned whether it would be feasible or not to provide a pedestrian bridge over Route 79, connecting the existing Fall River neighborhoods to the waterfront. In order to do this, the pedestrian bridge would span Davol Street East, Route 79, and potentially Davol Street West. Providing ADA accessible

walkways would require that switchback ramps be provided if no elevators are present. The ramp would have a total length of roughly 300 feet.

Ideally, a pedestrian bridge would be located where most pedestrians would want to cross the corridor. However, much of the eastern side of Davol Street East is developed with limited space available for construction of a pedestrian bridge structure. If a pedestrian bridge were to be constructed, it would likely be located between Brownell Street and Cory Street. In this area, between Davol Street East and Lindsey Street, there would be room available to construct the ramps required for a bridge.

At this time, it is not known where developments might occur within the Focus Area and where pedestrian desire paths will be located. As developments within the Focus Area are proposed, the necessity and feasibility of a pedestrian bridge should be reviewed and reevaluated. In addition, providing a pedestrian bridge may present a visual barrier to the waterfront and a duplication of existing infrastructure with the at-grade alternatives, as it would construct an elevated structure within the Focus Area.

4.13.2 Convert the Brightman Street U-Turn Ramp to a Pedestrian Bridge

During the Working Group and Public Information Meeting, it was questioned whether it would be feasible to convert the existing Brightman Street U-turn ramp bridge into a pedestrian bridge over Route 79, providing pedestrian and bicyclist access to the Old Brightman Street Bridge and the waterfront.

Maintaining this ramp as a pedestrian and bicycle bridge, with access from Brightman Street, would require that the ramps from Route 79 and U.S. Route 6 maintain their current alignment between the Brightman Street U-turn Bridge and the Old Brightman Street Bridge. In order for pedestrians to access the western side of Davol Street West and the waterfront, there are two options, as seen in Figures 4.20 and 4.21. The first option is constructing a second pedestrian bridge to cross the ramps and access the waterfront near the Old Brightman Street Bridge. The second option requires that pedestrians and bicyclists travel along Davol Street West to Cory Street or Brownell Street where a crosswalk is provided across Davol Street West. The second option would require traveling approximately the same distance as traveling down Lindsey Street to Cory Street or Brownell Street where an east-west connection is provided.

In addition, this alternative would require that the northern project end of Alternative 3 be substituted with the layout of Alternative 2. In Alternative 1, the U-turn ramp originally provides access to the parcel north of Brownell Street. Converting the ramp to a pedestrian bridge requires that Davol Street West north of Brownell Street be a two-way road. In Alternatives 2 and 3, the U-turn ramp provides access from Brightman Street to Davol Street West. Converting the ramp would modify the access to Davol Street West to be from Cory Street.

Figure 4.20: Convert Brightman Street U-turn Bridge to Pedestrian Bridge With Second Bridge to Cross Ramps

Figure 4.21: Convert Brightman Street U-turn Bridge to Pedestrian Bridge With Shared-Use Path to Cory Street

This concept is not carried forward in the alternatives as it would negatively impact the potential for improved Brightman Street access and does not provide an obvious benefit to pedestrians and bicyclists traveling within and through the Focus Area.

4.14 Evaluation Matrix

After completing all analyses, an Evaluation Matrix was assembled in order to assemble and compare the evaluation criteria for the Future No-Build Alternative and the Route 79 Alternatives. The evaluation matrix compares the alternatives based on the following categories:

- Mobility
- Safety
- Health and Environmental Effects
- Land Use and Economic Development
- Community Effects
- Cost

The detailed Evaluation Matrix is included as Table 4.33.

4.14.1 Mobility

Mobility measures the ability of local and regional traffic, as well as pedestrians and bicyclists, to travel through the corridor and access sites and streets within the Focus Area. It also looks at what impacts each of the Route 79 may or may not have on the Regional Transportation Impact Area.

4.14.1.1 Diversions

As discussed previously, outside of diversions, the alternatives have very little impact on the operations of intersections and freeway facilities outside of the corridor. No diversions are anticipated with Alternative 1, but Alternatives 2, 2 – Modified and 3 will create diversions through Somerset. Alternatives 2 and 2 – Modified will create approximately 500 vehicle diversions while Alternative 3 will create approximately 300 vehicle diversions.

4.14.1.2 Traffic Signals and Operation

Traffic signals have different effects on roadways, depending on what the purpose of the roadway is and on the operations of those traffic signals. Traffic signals on Davol Street can help to slow and control traffic, but can also create a stop-and-go effect along the main road. Along Route 79, meant to carry regional through traffic, traffic signals slow traffic and degrade mobility. All alternatives require the installation of new traffic signals. Alternative 1 requires the addition of seven traffic signals on Northbound and Davol Street Wests in order to accommodate crossing and turning movements. Alternatives 2 and 2 - Modified introduce four traffic signals on Route 79 and do not require any traffic signals on Davol Street West. Alternative 3 requires seven traffic

signals, five of them along Route 79. Alternatives 1, 2 and 2 – Modified provide overall improvements over Future No-Build traffic signal operations. In the Future No-Build, one intersection will operate at LOS D while another operates at LOS F. In Alternative 1, only one intersection will operate at a LOS worse than C. In Alternative 2, all intersections will operate at LOS C or better. In Alternative 2 – Modified, three intersections operate at LOS D in the PM Peak Hour. Alternative 3, however, has two intersections that perform at LOS D and another at LOS E, all along Route 79.

4.14.1.3 Vehicular Travel Time

Travel times along Route 79 and Davol Street were determined between Cedar Street and the Veterans Memorial Bridge, a distance of roughly 1 mile. Along Route 79, in both the northbound and southbound directions, this trip takes roughly 1 minute 20 seconds in the Future No-Build conditions and Alternative 1. The introduction of traffic signals along Route 79 in Alternative 2 lengthens this trip by approximately 90 seconds. The intersections in Alternative 3 extend the trip by 2 to 3 minutes.

Along Davol Street, the trip in the northbound direction takes under 3 minutes in the Future No-Build Condition. In Alternative 1, with 2 traffic signals along Davol Street East, this trip worsens by about 1 minute in the PM Peak Hour. In Alternatives 2 and 2 - Modified, the travel time is slightly lower than Future No-Build, at less than 2.5 minutes. Alternative 3 lengthens the northbound trip, by over 1 minute in the morning and by 2 minutes in the afternoon. The alternatives do not have as great an impact on Davol Street West. In Future No-Build Conditions, the travel time is under 2 minutes in the morning and over 2.5 minutes in the afternoon. Alternative 1 requires a travel time 2 minutes in the morning and roughly 2 minutes 20 seconds in the afternoon. Alternatives 2, 2 - Modified and 3 improve the travel times to closer to 1.5 minutes.

4.14.1.4 Pedestrian Travel Time

Pedestrian travel times and delay were calculated to determine how the introduction of intersections along Route 79 in Alternatives 2, 2 – Modified and 3 slow pedestrians but also how the introduction of east-west roadways improve pedestrian travel times and accessibility.

It takes roughly 1 minute 24 seconds for a pedestrian to travel 450 feet along President Avenue between Lindsey Street and Bicentennial Park in the Future No-Build Condition. Alternative 1 sees no change to this travel time. Alternatives 2, 2 – Modified and 3 bring Route 79 to grade and introduce a large intersection for pedestrians to cross. This large intersection between Route 79 and President Avenue adds approximately 20 seconds to the travel time in Alternatives 2 and 2 – Modified and nearly 90 seconds for Alternative 3. The increase in delay between Alternatives 2 and 3 is due to complicated signal phasing of Alternative 3.

To evaluate the impact that the new east-west roadways will have on pedestrian travel, pedestrian time savings were measured along the pedestrian's travel path from Turner Street at Davol Street East to City Pier. In the Future No-Build condition, the path is 3,400 feet long and takes 17.5 minutes to walk. In the 3 Route 79 alternatives, the distance is cut to 560 feet by the addition of the cross street at Turner Street. This new roadway saves pedestrians over 13 minutes in Alternatives 1, 2 and 2 – Modified and nearly 12 minutes in Alternative 3.

4.14.2 Safety

All alternatives provide great improvements in safety for vehicles, pedestrians and bicyclists. Emergency access is improved between Fall River and the waterfront due to the addition of east-west roadways. For bicycles and pedestrians, all alternatives would provide ADA compliant crossings at all intersections and driveways and provide sidewalks and designated bicycle facilities throughout the project limits. For vehicles, all roadways will be designed to the most current AASHTO and MassDOT standards and the high crash locations identified within the Focus Area would be removed or improved. All alternatives remove the southbound Lindsey Street approach to President Avenue, eliminating dangerous turning conflicts. Short-term improvements are made to the intersection of North Main Street at President Avenue, improving conditions for turning vehicles.

4.14.2.1 Pedestrian and Bicycle Safety

In Alternative 1, pedestrians are able to cross underneath Route 79 and do not conflict with regional traffic. In Alternatives 2 and 3, the at-grade Route 79 intersections require that pedestrians and bicyclists cross multiple lanes of traffic, creating long crossings and conflicts at each of these intersections. In Alternative 2 – Modified, the cross section of Route 79 is reduced to two lanes in each direction. Pedestrians will have conflicts at the Route 79 intersections, but crossing times will be shorter than in Alternatives 2 and 3 as the intersections are smaller.

4.14.2.2 Vehicular Safety

Alternative 1 maintains Route 79 as an elevated roadway, isolating regional traffic from local traffic. This reduces the volume of traffic passing through local intersections within the corridor. In Alternative 2 and 2 – Modified, Brownell Street does not intersect with Northbound Route 79 in order to improve sight distance for vehicles and pedestrians at the intersection of Lindsey Street and Brownell Street. In Alternative 3, Davol Street East is realigned at Brownell Street to create a four-leg, stop controlled intersection. All alternatives remove the Cedar Street U-turn, an existing High Crash Location.

4.14.3 Health and Environmental Effects

Health and environmental effects are measured by the Route 79 alternatives' abilities to implement sustainable design, improve water quality and how they impact air quality.

The existing roadway is roughly 57% impervious. No stormwater best management practices or treatment is in place to remove pollutants from stormwater prior to their discharge into the Taunton River which is classified as both impaired and wild and scenic. All alternatives will implement best management practices and treat stormwater prior to discharge. Alternatives 1 and 2 will increase the impervious area within the corridor, but shifting Route 79 will create new area where landscaping and best management practices can be implemented. Alternative 2 - Modified maintains the existing amount of impervious area, but shifts Route 79, creating areas for landscaping and best management practices. Alternative 3 reduces the impervious area within the corridor and provides the greatest amount of open space for stormwater treatment, best management practices and landscaping, as it cannot support the same levels of development as Alternatives 1 and 2.

Emissions are not expected to experience significant changes due to any of the alternatives. The Future No-Build condition has the lowest emissions because the build alternatives shift population and traffic to the developments within the Focus Area. In addition, the build alternatives show traffic through the corridor. Increases in emissions due to implementation of any of the build alternatives are not significant.

4.14.4 Land Use and Economic Development

This metric is measured by the economic development potential of the alternatives and by the socio-economic and fiscal impacts on the community due to the alternatives. The Future No-Build does not create new parcels for development and maintains the "visual barrier" between Fall River and the waterfront. The waterfront can be accessed by one east-west roadway at President Avenue. All alternatives provide new east-west connections, improving access to the waterfront and the development occurring there. Alternatives 1, 2 and 2 – Modified can support the highest levels of new development and Alternative 3 can support some new development. Alternative 3 also creates a 6th parcel for redevelopment, at the Old Brightman Street Bridge.

The socio-economic and fiscal impacts of the Future No-Build conditions are limited to developments that could occur on existing parcels along the west side of the corridor. Development supported by the build alternatives would shift jobs, residents and income to the Fall River waterfront within the Focus Area. Development supported by Alternatives 1, 2 and 2 – Modified could bring to the Focus Area over 1,500 jobs, over 1,300 new housing units, roughly $50 Million in disposable income and over $3 Million annually in property taxes. Alternative 3 can bring the Focus Area over 300 new jobs, 275 new housing units, over $10 Million in disposable income and over $600,000 annually in property taxes. All alternatives provide a net benefit to the City of Fall River.

4.14.5 Community Effects

Impacts to the community are measured among several categories, including pedestrian and bicycle accommodations, local connectivity, visual impacts, construction impacts and Environmental Justice.

4.14.5.1 Pedestrian and Bicycle Accommodations

In the Future No-Build condition, no provisions are provided for bicyclists along existing roadways and the only east-west connection is at President Avenue. While there is nearly 5,000 linear feet of sidewalk within the corridor, the crossings at intersections and driveways are not ADA compliant.

All alternatives extend the existing shared-use path from its current terminus near Wellington Street to beyond South Coast Rail at Turner Street. The shared-use path also crosses Route 79 at three locations in each alternative, improving access between Fall River and the waterfront. An additional shared-use path is provided along the west side of Davol Street West between City Pier and the Old Brightman Street Bridge. Sidewalk is provided along all at-grade roadways within the corridor where shared-use paths are not provided.

4.14.5.2 Local Connectivity

Local connectivity of the Future No-Build and the alternatives is linked to the ability of Fall River to access the waterfront and how access is provided between Brightman Street and Route 79. In the Future No-Build, connectivity to the waterfront is provided only via President Avenue and the Cedar Street Brightman Street U-turns. Brightman Street has been converted to a one-way eastbound roadway and no longer has access to Route 79. Davol Street East is able to turn right onto Brightman Street.

All alternatives improve access between Fall River and the waterfront by providing east-west connecting roads at Turner Street, South Coast Rail, President Avenue and at either Brownell Street or Cory Street. All alternatives return Brightman Street to a two-way roadway. Alternative 1 provides access to and from Davol Street East. Alternatives 2, 2 – Modified and 3 provide direct access for Brightman Street to and from Northbound Route 79.

4.14.5.3 Visual Impacts

The Future No-Build and Alternative 1 both maintain Route 79 as an elevated roadway, seen as a "visual barrier" between Fall River and the waterfront. The Future No-Build

does not provide any open land for new green space, landscaping or redevelopment while all alternatives will create new land for green space, landscaping and redevelopment. Alternative 3 by far creates the most open space, while Alternatives 1, 2 and 2 - Modified can provide for the most redevelopment and businesses along the corridor. Alternatives 2, 2 – Modified and 3 remove the "visual barrier" by bringing Route 79 to grade and also provide medians along Route 79 for additional landscaping.

4.14.5.4 Construction Impacts

All alternatives will require 3 or 4 construction seasons to be built. During construction, access will be maintained to all existing homes and businesses. Alternative 1, while requiring the construction of several bridges, can also be largely constructed off-line from existing roadway alignments, easing construction impacts to traffic and businesses. Alternatives 2, 2 – Modified and 3 will have more complicated construction as the roadway is being brought down to grade, requiring temporary earth supports and significant grading. The construction of all alternatives will bring jobs and income to the Fall River area.

4.14.5.5 Environmental Justice

The Environmental Justice analysis completed for this study looks at how Environmental Justice communities are impacted by the alternatives in comparison to non-Environmental Justice communities. The analysis focused on accessibility to employment, higher education and healthcare, on mobility between transportation analysis zones and on environmental impacts. This study showed that accessibility is slightly reduced, travel times are increased and that emissions will increase. These changes are all due to slower regional speeds, and increased population and jobs within the Focus Area. None of these changes were seen to disproportionately impact one community over another.

4.14.6 Cost

A preliminary construction costs estimate was compiled for each of the alternatives. The costs were based on the preliminary design completed for each alternative and include, but are not limited to, major items such as earthwork, drainage, pavement, maintenance of traffic, structures, erosion control and traffic signals.

Of the alternatives, Alternative 1 is by far the most expensive at an approximate cost of $100 Million. Alternatives 2, 2 – Modified and 3 are estimated to cost roughly $55 Million. All alternatives require extensive earthwork and grading as they all involve shifting the roadway and grading the road to either maintain an elevated highway or lowering the road to the elevation of Davol Street and President Avenue. Alternative 1 is more expensive because of the required

construction of 5 new bridges at each east-west roadway and at the existing Cedar Street U-turn. These approximate construction costs do not include costs for right-of-way reclamation by the Federal Highway Administration (FHWA). When the new parcels are released for redevelopment, the FHWA must be compensated for the land. The right-of-way reclamation costs for Alternatives 1 and 2 are approximately $2.7 Million. Alternatives 2 – Modified and 3 have larger parcels due to a narrower Route 79 cross section and as such, have higher reclamation costs. The cost for Alternative 2 – Modified is roughly $3.5 Million and the cost for Alternative 3 is roughly $4.2 Million. These costs are discussed in greater detail in Section 4.15.2, Valuation of Parcels within the State Highway Layout. In addition, all alternatives will require additional funding for environmental permitting and engineering. Table 4.31 provides a summary of individual and grand total costs for each alternative.

Table 4.31: Estimated Grand Total Costs per Alternative

Cost	Alternative 1	Alternative 2	Alternative 2 – Modified	Alternative 3
Construction Cost	$100 Million	$55 Million	$55 Million	$55 Million
Environmental Permitting and Design	$15 Million	$8 Million	$8 Million	$8 Million
Right-of-Way Reclamation	$2.7 Million	$2.7 Million	$3.5 Million	$4.2 Million
Grand Total Cost	$117.7 Million	$65.7 Million	$66.5 Million	$67.2 Million

4.14.7 Evaluation Matrix

The categories of the Evaluation Matrix (Table 4.33) were compared based on the levels of benefits or impacts that the Future No-Build and the 3 Route 79 alternatives would provide. Table 4.32 provides the legend for the Evaluation Matrix.

Table 4.32: Evaluation Matrix Legend

	Some	Moderate	Substantial
Benefits	○	◒	●
Impacts	□	▬	■
Neutral		◇	

Table 4.33: Evaluation Matrix

Category	Alternatives											
	Future No-Build		1 – Elevated Route 79 with Cross Connections		2 – At Grade Route 79 Boulevard		2 – Modified At Grade Route 79 Boulevard		3 – At Grade Route 79 with Frontage Roads	
	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion
MOBILITY										
Diversions	◇	No Diversions	◇	No Diversions	□	500 Vehicles Diverted	□ [2]	500 Vehicles Diverted	□	300 Vehicles Diverted
Number of Traffic Signals	◇	2 Traffic Signals On Davol Street	□	7 Traffic Signals On Davol Street	▬	4 Traffic Signals On Davol Street	▬	4 Traffic Signals On Davol Street	▬	7 Traffic Signals On Route 79 and Davol Street
Operation	□	• 1 Intersection Operates at LOS D • 1 Intersection Operates at LOS F	◒	• 1 Intersection Operates at LOS D	●	• All Intersections Operate at LOS C or better	●	• 3 Intersections Operate at LOS D	◇	• 2 Intersections Operate at LOS D • 1 Intersection Operates at LOS E
Travel Time Route 79[1] (minutes)	◇	Northbound / Southbound — AM: 1.3 / 1.3 — PM: 1.3 / 1.3	◇	Northbound / Southbound — AM: 1.3 / 1.3 — PM: 1.3 / 1.3	□	Northbound / Southbound — AM: 2.4 / 2.7 — PM: 2.9 / 2.9	□	Northbound / Southbound — AM: 2.5 / 2.4 — PM: 3.0 / 3.3	▬	Northbound / Southbound — AM: 3.4 / 3.3 — PM: 3.5 / 4.5
Travel Time Davol Street[1] (minutes)	◇ ◇	East / West — AM: 2.7 / 1.8 — PM: 2.7 / 2.6	◇ ◇	East / West — AM: 2.8 / 2.0 — PM: 3.7 / 2.3	○ ○	East / West — AM: 2.4 / 1.4 — PM: 2.4 / 1.4	○ ○	East / West — AM: 2.4 / 1.4 — PM: 2.4 / 1.4	□ ○	East / West — AM: 3.9 / 1.6 — PM: 4.7 / 1.7
Pedestrian Delay (along President Ave from Lindsey Street to Bicentennial Park)	◇	Distance: 450 feet PM Peak Hour: 1min 24sec	◇	Distance: 450 feet PM Peak Hour: 1min 24sec	◇	Distance: 450 feet PM Peak Hour: 1min 46sec	◇	Distance: 450 feet PM Peak Hour: 1min 46sec	▬	Distance: 450 feet PM Peak Hour: 2min 55sec
Pedestrian Time Savings (Turner St to City Pier) (Existing travel time is 17min 34sec)	■	Distance: 3,400 feet PM Peak Hour: 0min 0sec	●	Distance: 560 feet PM Peak Hour: 13min 30sec	●	Distance: 560 feet PM Peak Hour: 13min 8sec	●	Distance: 560 feet PM Peak Hour: 13min 8sec	●	Distance: 560 feet PM Peak Hour: 11min 59sec
SAFETY										
Pedestrian and Bicycle Safety	▬	• Existing wheelchair ramps and sidewalks do not meet current design standards and ADA requirements • No designated bicycle facilities are provided within the corridor • Sidewalks provided along one side of NB and SB Davol Streets	●	• ADA compliant crossings at all intersections and driveways. • Designated sidewalks and bike facilities provided throughout project limits. • East-west access provided for bicycles and pedestrians along 4 cross streets without conflict from vehicular traffic	○	• ADA compliant crossings at all intersections and driveways. • Designated sidewalks and bike facilities provided throughout project limits. • Pedestrians and bicyclists have long crossing distances and conflicts at Route 79 intersections.	◒	• ADA compliant crossings at all intersections and driveways. • Designated sidewalks and bike facilities provided throughout project limits. • Pedestrians and bicyclists have conflicts at Route 79 intersections.	○	• ADA compliant crossings at all intersections and driveways. • Designated sidewalks and bike facilities provided throughout project limits. • Pedestrians and bicyclists have long crossing distances and conflicts at Route 79 intersections.

[1] Travel times along Route 79 and Davol Street are measured between the Cedar Street U-turn and the Veterans Memorial Bridge. Travel times are not provided along Davol Street for Alternative 2 – Modified as the roadway length is significantly shorter than the other alternatives.

[2] For analysis purposes, the number of diversions for Alternative 2 – Modified was assumed to be equivalent to those modeled in Alternative 2.

Table 4.33: Evaluation Matrix (Continued)

Category	Alternatives									
	Future No-Build		1 – Elevated Route 79 with Cross Connections		2 – At Grade Route 79 Boulevard		2 – Modified At Grade Route 79 Boulevard		3 – At Grade Route 79 with Frontage Roads	
	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion
SAFETY										
Vehicular Safety	⬒	• High crash locations at President Avenue at Lindsey Street, President Avenue at North Main Street, Cedar Street U-turn, and Lindsey Street at Brownell Street • One east-west crossing limits emergency response	●	• Eliminated approach at high crash location of President Avenue and Lindsey Street • North Main Street intersection improved by adding protected left-turn phase (short-term) • Cedar Street U-turn visibility and signage improved (short-term) • Additional crossings provide improved emergency response times	●	• Eliminated approach at high crash location of President Avenue and Lindsey StreetNorth Main Street intersection improved by adding protected left-turn phase (short-term) • Unsafe access to Brownell eliminated • Cedar Street U-turn is eliminated • Additional crossings provide improved emergency response times	●	• Eliminated approach at high crash location of President Avenue and Lindsey StreetNorth Main Street intersection improved by adding protected left-turn phase (short-term) • Unsafe access to Brownell eliminated • Cedar Street U-turn is eliminated • Additional crossings provide improved emergency response times	●	• Eliminated approach at high crash location of President Avenue and Lindsey StreetNorth Main Street intersection improved by adding protected left-turn phase (short-term) • Unsafe access to Brownell eliminated • Cedar Street U-turn is eliminated • Additional crossings provide improved emergency response times
HEALTH AND ENVIRONMENTAL EFFECTS										
Sustainable Design	□	• Existing corridor has 35.0 acres of impervious area (57% impervious) • No treatment or Best Management Practices are in place for existing stormwater prior to discharge into the impaired, wild & scenic Taunton River	○	• Alternative is 72% impervious area, increased over existing impervious area by 9.1 acres. • Shifted roadway allows for more effective area for implementation of best management practices. • Stormwater treated through BMPs prior to discharge will help improve the Taunton River's condition	◒	• Alternative is 64% impervious area, increased over existing impervious area by 4.3 acres. • Shifted roadway allows for more effective area for implementation of best management practices. • Stormwater treated through BMPs prior to discharge will help improve the Taunton River's condition	◒	• Alternative is 57% impervious area, the same as the existing impervious area. • Shifted roadway allows for more effective area for implementation of best management practices. • Stormwater treated through BMPs prior to discharge will help improve the Taunton River's condition	●	• Alternative is 51% impervious area, decreased over existing impervious area by 3.9 acres. • Shifted roadway allows for more effective area for implementation of best management practices. • Stormwater treated through BMPs prior to discharge will help improve the Taunton River's condition
Emissions[3]	◇	Total Corridor Emissions CO - 6.55 kg NOx - 1.27 kg VOC - 1.52 kg Total Regional Emissions CO - 491,200 kg NOx - 8,984 kg VOC - 10,746 kg	◇	Total Corridor Emissions CO - 11.91 kg NOx - 2.31 kg VOC - 2.77 kg Total Regional Emissions CO - 491,500 kg NOx - 8,992 kg VOC - 10,756 kg	◇	Total Corridor Emissions CO - 21.19 kg NOx - 4.13 kg VOC - 4.91 kg Total Regional Emissions CO - 491,600 kg NOx - 8,990 kg VOC - 10,754 kg	◇	Total Corridor Emissions CO - 21.59 kg NOx - 4.21 kg VOC - 5.00 kg Total Regional Emissions[4] CO - 491,600 kg NOx - 8,990 kg VOC - 10,754 kg	◇	Total Corridor Emissions CO - 24.70 kg NOx - 4.79 kg VOC - 5.72 kg Total Regional Emissions CO - 491,500 kg NOx - 8,990 kg VOC - 10,753 kg

[3] PM Peak Hour emissions levels are provided
[4] Total Regional Emissions for Alternative 2 – Modified are assumed to be equivalent to those modeled for Alternative 2.

Table 4.33: Evaluation Matrix (Continued)

Category	Alternatives									
	Future No-Build		1 – Elevated Route 79 with Cross Connections		2 – At Grade Route 79 Boulevard		2 – Modified At Grade Route 79 Boulevard		3 – At Grade Route 79 with Frontage Roads	
	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion
LAND USE AND ECONOMIC DEVELOPMENT										
Economic Development Potential	◇	• Development potential is limited to existing parcels along Davol Street • Perpetuates riverfront barrier • Only east-west connection is at President Avenue	●	• Highest development potential • Complicated access to businesses for regional traffic • 3 new east-west connections improve access to businesses	●	• High development potential • Better local business access • 3 new east-west connections improve access to businesses	●	• High development potential • Better local business access • 3 new east-west connections improve access to businesses	○	• Low development potential • Creates the most open space, including parcel near Old Brightman Street Bridge • Parcels can be used for riverfront parking • 4 new east-west connections improve access to businesses
Socio-Economic and Fiscal Impacts[5]	◇	• Limited to developments on existing parcels along Davol Street	●	• 1,730 Jobs • 1,450 Housing Units • $54 Million Disposable Income • $3.5 Million Annual Property Taxes	●	• 1,550 Jobs • 1,300 Housing Units • $48 Million Disposable Income • $3.1 Million Annual Property Taxes	● [6]	• 1,550 Jobs • 1,300 Housing Units • $48 Million Disposable Income • $3.1 Million Annual Property Taxes	○	• 330 Jobs • 275 Housing Units • $10.3 Million Disposable Income • $665,000 Annual Property Taxes
COMMUNITY EFFECTS										
Pedestrian and Bicycle Accommodations	▬	• No provisions for bicyclists • Only east-west connection for pedestrians is at President Avenue • 4,900' of sidewalk • Pedestrian travel time from Lindsey Street to Bicentennial Park along President Avenue: 3.5 min	●	• Sidewalk or shared-use path is provided along Davol Streets and 4 east-west connecting roads providing access to the waterfront and South Coast Rail • Bicycle accommodations provided throughout the project limits • Extends shared-use path from Veterans Memorial Bridge to the waterfront and Turner Street • 5,300' of sidewalk • 8,100' of shared-use path • Pedestrian travel time from Lindsey Street to Bicentennial Park along President Avenue: 3.5 min	●	• Sidewalk or shared-use path is provided along Davol Streets and 4 east-west connecting roads providing access to the waterfront and South Coast Rail • Waiting to cross large Route 79 intersections increases pedestrian and bicycle delay • Bicycle accommodations provided throughout the project limits • Extends shared-use path from Veterans Memorial Bridge to the waterfront and Turner Street • 6,800' of sidewalk • 8,000' of shared-use path • Pedestrian travel time from Lindsey Street to Bicentennial Park along President Avenue: 4 min	●	• Sidewalk or shared-use path is provided along Davol Streets and 4 east-west connecting roads providing access to the waterfront and South Coast Rail • Bicycle accommodations provided throughout the project limits • Extends shared-use path from Veterans Memorial Bridge to the waterfront and Turner Street • 6,800' of sidewalk • 8,000' of shared-use path • Pedestrian travel time from Lindsey Street to Bicentennial Park along President Avenue: 4 min	●	• Sidewalk or shared-use path is provided along Davol Streets and 5 east-west connecting roads providing access to the waterfront and South Coast Rail • Waiting to cross large Route 79 intersections increases pedestrian and bicycle delay • Bicycle accommodations provided throughout the project limits • Extends shared-use path from Veterans Memorial Bridge to the waterfront and Turner Street • 5,800' of sidewalk • 8,200' of shared-use path • Pedestrian travel time from Lindsey Street to Bicentennial Park along President Avenue: 5 min

[5] All numbers are approximate
[6] Socio-Economic and Fiscal Impacts for Alternative 2 – Modified are assumed to be equivalent to those modeled for Alternative 2.

Table 4.33: Evaluation Matrix (Continued)

Category	Alternatives									
	Future No-Build		1 – Elevated Route 79 with Cross Connections		2 – At Grade Route 79 Boulevard		2 – Modified At Grade Route 79 Boulevard		3 – At Grade Route 79 with Frontage Roads	
	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion
COMMUNITY EFFECTS										
Local Connectivity	🟥	• No access provided from Brightman Street to Route 79 • Only east-west connection is at President Avenue	🟢	• 3 new two-way cross streets are constructed providing access to the waterfront and direct access to South Coast Rail • Converts Brightman Street to two-way road with access to NB Route 79 • Access from Brightman Street to SB Route 79 on-ramp via Lindsey Street and NB Davol Street	🟢	• 3 new two-way cross streets are constructed for access to the waterfront, NB and SB Route 79 and direct access to South Coast Rail • Converts Brightman Street to two-way road with direct access to and from NB Route 79 and access to SB Davol Street and SB Route 79	🟢	• 3 new two-way cross streets are constructed for access to the waterfront, NB and SB Route 79 and direct access to South Coast Rail • Converts Brightman Street to two-way road with direct access to and from NB Route 79 and access to SB Davol Street and SB Route 79	🟢	• 4 new cross streets are constructed for access to the waterfront, NB and SB Route 79 and direct access to South Coast Rail • Converts Brightman Street to two-way road with direct access to and from NB Route 79 and access to SB Davol Street and SB Route 79
Visual Impacts	🟥	• "Visual barrier" of Route 79 remains • No open land available for green space, landscaping, or redevelopment	⭕	• "Visual barrier" created by Route 79 is worsened by raised elevations • Roadway shift creates 10.1 acres for green space and redevelopment	🟢	• At-grade Route 79 removes "visual barrier" between Fall River and the waterfront • Roadway shift creates 10.6 acres for green space and redevelopment • Large median allows for boulevard type landscaping	🟢	• At-grade Route 79 removes "visual barrier" between Fall River and the waterfront • Roadway shift creates 14.6 acres for green space and redevelopment • Large median allows for boulevard type landscaping	🟢	• At-grade Route 79 removes "visual barrier" between Fall River and the waterfront • Roadway shift creates 15.0 acres for green space and minor redevelopment • Median between NB and SB Route 79 allows for landscaping
Construction Impacts	🟢	• No construction impacts	⬜	• Construction will likely require 3 major construction stages (Davol Street Construction, NB Route 79 Construction and SB Route 79 Construction) and 4 construction seasons due to construction of 10 bridges	⬜	• Construction will likely require 3 major construction stages and 3 seasons (Davol Street Construction, NB Route 79 Construction and SB Route 79 Construction) • Proposed Route 79 NB construction must occur under traffic and while maintaining all existing access to businesses, intersections and roadways	⬜	• Construction will likely require 3 major construction stages and 3 seasons (Davol Street Construction, NB Route 79 Construction and SB Route 79 Construction) • Proposed Route 79 NB construction must occur under traffic and while maintaining all existing access to businesses, intersections and roadways	⬜	• Construction will likely require 4 major construction stages (Davol Street Construction, NB Route 79 Construction, SB Route 79 Construction, and Ramp Construction) over 3 construction seasons • NB Route 79 must be constructed prior to NB Davol Street construction to maintain access to all roadways • Reconstruction of the southbound ramps along Route 79 and U.S. Route 6 will require complicated staging and potential detours

Table 4.33: Evaluation Matrix (Continued)

Category	Alternatives									
	Future No-Build		1 – Elevated Route 79 with Cross Connections		2 – At Grade Route 79 Boulevard		2 – Modified At Grade Route 79 Boulevard		3 – At Grade Route 79 with Frontage Roads	
	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion	Rating	Discussion
COMMUNITY EFFECTS										
Environmental Justice - Job Accessibility versus Future No-Build	◇	• No impacts	◇	Number of Basic Jobs: EJ: -2.1% Non-EJ: -2.4% Number of Retail Jobs: EJ: -3.4% Non-EJ: -6.9% Number of Service Jobs: EJ: -3.0% Non-EJ: -1.9% Average Highway Time: EJ: -0.8% Non-EJ: 0.0%	◇	Number of Basic Jobs: EJ: -2.3% Non-EJ: -2.4% Number of Retail Jobs: EJ: -3.5% Non-EJ: -6.9% Number of Service Jobs: EJ: -3.3% Non-EJ: -2.0% Average Highway Time: EJ: -0.8% Non-EJ: -0.4%	◇ [7]	Number of Basic Jobs: EJ: -2.3% Non-EJ: -2.4% Number of Retail Jobs: EJ: -3.5% Non-EJ: -6.9% Number of Service Jobs: EJ: -3.3% Non-EJ: -2.0% Average Highway Time: EJ: -0.8% Non-EJ: -0.4%	◇	Number of Basic Jobs: EJ: -2.1% Non-EJ: -2.4% Number of Retail Jobs: EJ: -3.5% Non-EJ: -6.8% Number of Service Jobs: EJ: -3.1% Non-EJ: -1.8% Average Highway Time: EJ: -0.8% Non-EJ: -0.4%
Environmental Justice - Education and Healthcare Accessibility versus Future No-Build	◇	• No imapcts	◇	Number of College Enrollment Slots: EJ: 0.0% Non-EJ: 0.0% Number of Hospital Beds: EJ: -2.9% Non-EJ: -0.0%	◇	Number of College Enrollment Slots: EJ: 0.0% Non-EJ: 0.0% Number of Hospital Beds: EJ: -2.9% Non-EJ: -0.0%	◇ [7]	Number of College Enrollment Slots: EJ: 0.0% Non-EJ: 0.0% Number of Hospital Beds: EJ: -2.9% Non-EJ: -0.0%	◇	Number of College Enrollment Slots: EJ: 0.0% Non-EJ: 0.0% Number of Hospital Beds: EJ: -2.9% Non-EJ: -0.0%
Environmental Justice – Mobility versus Future No-Build	◇	• No imapcts	◇	Highway Production Time: EJ: 8.3% Non-EJ: 7.0% Highway Attraction Time: EJ: 1.3% Non-EJ: 1.2%	◇	Highway Production Time: EJ: 8.3% Non-EJ: 7.0% Highway Attraction Time: EJ: 1.3% Non-EJ: 1.2%	◇ [7]	Highway Production Time: EJ: 8.3% Non-EJ: 7.0% Highway Attraction Time: EJ: 1.3% Non-EJ: 1.2%	◇	Highway Production Time: EJ: 8.3% Non-EJ: 7.0% Highway Attraction Time: EJ: 1.3% Non-EJ: 1.2%
Environmental Justice - Environmental Impacts versus Future No-Build	◇	• No imapcts	◇	Vehicle-Miles Traveled: EJ: 4.6% Non-EJ: 3.8% CO per square mile: EJ: 4.3% Non-EJ: 3.7% $PM_{2.5}$ per square mile: EJ: 4.6% Non-EJ: 3.7%	◇	Vehicle-Miles Traveled: EJ: 0.5% Non-EJ: 3.1% CO per square mile: EJ: 0.2% Non-EJ: 3.1% $PM_{2.5}$ per square mile: EJ: 0.7% Non-EJ: 3.0%	◇ [7]	Vehicle-Miles Traveled: EJ: 0.5% Non-EJ: 3.1% CO per square mile: EJ: 0.2% Non-EJ: 3.1% $PM_{2.5}$ per square mile: EJ: 0.7% Non-EJ: 3.0%	◇	Vehicle-Miles Traveled: EJ: -2.0% Non-EJ: 0.6% CO per square mile: EJ: -2.0% Non-EJ: 0.6% $PM_{2.5}$ per square mile: EJ: -1.7% Non-EJ: 0.6%
COST										
Construction Cost	●	$0	■	$100 Million	▬	$55 Million	▬	$55 Million	▬	$55 Million

[7] Environmental Justice evaluations for Alternative 2 – Modified are assumed to be equivalent to those modeled for Alternative 2.

4.14.8 Alternatives versus Study Objectives

This transportation study began with particular objectives in mind. The alternatives are to meet the following criteria:

- Provide better multimodal connectivity between Fall River neighborhoods and the waterfront
- Enhance multimodal access to the future South Coast Rail station
- Balance local and regional mobility
- Improve and enhance safety conditions
- Increase opportunities for economic development and land use
- Minimize potential impacts to the environment and community

Table 4.34 provides an overall evaluation of how the Future No-Build and alternatives meet each of the study objectives. All alternatives were designed so that they would meet all objectives; however some alternatives meet the objectives better than others.

Table 4.34: Evaluation of Alternatives versus Study Objectives

Study Objective	Future No-Build	Alternative 1	Alternative 2	Alternative 2 Modified	Alternative 3
Provide better multimodal connectivity between Fall River and the waterfront	■	●	●	●	●
Enhance multimodal access to South Coast Rail	▬	●	●	●	●
Balance local and regional mobility	□	●	○	○	○
Improve and enhance safety conditions	□	●	●	●	●
Increase opportunities for economic development and land use	◇	◒	●	●	○
Minimize potential impacts to the environment and community	□	○	●	●	●

4.15 Federal Highway Administration Review

MassDOT and FHWA met in December 2013 and April 2014 to discuss the Route 79 / Davol Street Corridor Study. As a result of those meetings, the FHWA requested that a detailed assessment of the impacts of climate change, and in particular, rising sea levels within the project area; and to estimate the order of magnitude values of land currently within the State Highway Layout that would be transferred to the City of Fall River or private entities upon implementation of the various study alternatives. In

addition, FHWA requested that the elimination of Davol Street West north of President Avenue be considered for Alternative 2 - Modified.

4.15.1 Impact of Climate Change and Rising Sea Levels

Initially, the current Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) was examined. The GIS-generated FIRM for the project area is shown in Figure 4.22. This map has been adjusted to take into account the revised I-195/Route 79 Interchange Project which is currently under construction. The map has also been adjusted to indicate the areas of the existing Route 79 that are above the floodplain level. The current FIRM inaccurately shows the 100-year floodplain extending over Route 79 south of City Pier. Rather, the floodplain extends through the Cedar Street U-turn to Davol Street East while Route 79 itself remains elevated above the floodplain. This analysis also determined that Route 79 does not act as a flood barrier but rather channels floodwater to the openings under the embankment.

To assess the potential impacts of the rising sea levels, it was assumed that the future 100-year floodplain elevation will rise by 5 feet. It should be noted that this is a simple estimate based on studies done by others and the current available scientific data. For example, a study undertaken by National Oceanic and Atmospheric Administration (NOAA) as part of the 2012 National Climate Assessment Report estimated that a sea level rise between 0.2 and 2.0 meters (0.6 and 6.5 feet) could occur between the years 2000 and 2100. The scenarios developed by such studies do not necessarily predict future changes, but describe future potential conditions to help make rational decisions regarding design. The contours on the GIS map were interpolated to plot the potential revised floodplain levels with the potential 5-foot sea level rise, and these are also shown on the revised FIRM in Figure 4.22. As is evident from the map, the extent of this change is relatively insignificant due to the local topography. The map also shows three main land uses that are prevalent in the area: residential, commercial, and industrial. The areas that are within the current 100-year floodplain are primarily commercial and industrial zones along the waterfront. Residential areas are above this floodplain and would remain such even with the floodplain elevation raised by 5 feet.

The last step in this exercise was to evaluate the impacts of lowering Route 79 on the extents of the floodplain. The FIRM exhibit showing the revised floodplain while taking into account the adjusted Route 79 elevations proposed under Alternatives 2, 2 - Modified and 3 is shown in Figure 4.23. It shows that while a portion of Route 79 near and south of the City Pier would fall within the 100-year floodplain, a 5-foot rise in the sea level would have little impact.

Figure 4.22: Revised FIRM

Figure 4.22: Revised FIRM for Alternatives 2, 2 – Modified and 3

It should be noted that this analysis was conducted using topographic information from the GIS maps, based on interpolation between 10-foot contours. A more accurate examination may be warranted during the environmental analysis phase.

4.15.2 Valuation of Parcels within the State Highway Layout

As the City of Fall River has expressed a desire to redesign the Route 79 and Davol Street Corridor in a way that consolidates the existing transportation infrastructure while creating new developable parcels within the study corridor. This study has therefore made the promotion of economic development, both regionally and within the Focus Area a project objective. Each alternative creates five or six open parcels of land that are located wholly or partially within the right-of-way currently owned by MassDOT and referred to as the State Highway Layout (SHLO). The land within the SHLO that Route 79 currently occupies was funded by the federal government and federal guidelines require that the value of this land be reimbursed to the federal government if the land is repurposed or sold for non-transportation purposes.

In order to determine a conceptual value of this land, a price per acre of land was developed based on a synthesis of existing assessed values, recent waterfront sales comparisons and local and regional benchmark commercial properties. Lower and upper price ranges were established and applied to narrow (assumed to be less than 75 feet in width) and upper values were applied to wider, more desirable sites (over 75 feet in width) which are considered to have higher development potential. The estimated values are $200,000 per acre for narrow sites and $300,000 per acre for wide sites. Applying these rates to parcels under the various Route 79 alternatives yields the parcel values summarized in Table 4.35.

Table 4.35: Estimated Parcel Valuation

Alternative	Parcel Number	Parcel Type	Parcel Size (ac)	Estimated Value
Alternative 1	1	Wide	1.9	$570,000
	2	Wide	1.8	$540,000
	3	Narrow	1.2	$240,000
	4	Narrow	0.5	$100,000
	5	Wide	4.1	$1,230,000
	Alternative 1 Totals		9.5	$2,680,000
Alternative 2	1	Wide	1.2	$360,000
	2	Wide	1.4	$420,000
	3	Narrow	1.0	$200,000
	4	Narrow	2.1	$420,000
	5	Wide	4.2	$1,260,000
	Alternative 2 Totals		9.9	$2,660,000
Alternative 2 - Modified	1	Wide	2.2	$660,000
	2	Wide	1.6	$480,000
	3	Narrow	1.4	$280,000
	4	Wide	2.5	$750,000
	5	Wide	4.5	$1,350,000
	Alternative 2 - Modified Totals		12.2	$3,520,000
Alternative 3	1	Wide	1.9	$570,000
	2	Wide	2.1	$630,000
	3	Wide	1.5	$450,000
	4	Wide	2.9	$870,000
	5	Wide	2.2	$660,000
	6	Wide	3.5	$1,050,000
	Alternative 3 Totals		14.1	$4,230,000

4.15.3 Elimination of Davol Street West North of President Avenue

At the request of the FHWA, consideration was given to further revising Alternative 2 - Modified to eliminate Davol Street West north of President Avenue, which would in turn result in eliminating the ramps from Route 79 and Veterans Memorial Bridge to Davol Street West. The Davol Street West right-of-way would still be used for a shared-use path connecting Veterans Memorial Bridge and the neighborhoods to the waterfront. The issues associated with these modifications are discussed below.

4.15.3.1 Access from Veterans Memorial Bridge to Local Destinations

Elimination of the ramp from Veterans Memorial Bridge to Davol Street West would necessitate all traffic crossing the Taunton River from Somerset to use Route 79. Because of the proximity of this ramp merge with Route 79 to the proposed intersection with Cory Street, a left turn movement from the ramp onto Cory Street

would be prohibited in order to avoid a dangerous short weaving maneuver. As a result, traffic from Veterans Memorial Bridge would be forced to use the President Avenue intersection for access to the areas east of Route 79 adjacent to Brightman Street, a path similar to the current condition. This would put further strain on the intersection of Route 79 with President Avenue, which already has several movements forecasted to operate at LOS E or F under Alternative 2 – Modified.

4.15.3.2 Access to Brownell Street

Elimination of Davol Street West north of President Avenue would somewhat constrain access to Brownell Street, the only public street north of Battleship Cove connecting directly to the Taunton River waterfront. All Veterans Memorial Bridge and Route 79 traffic could only access Brownell Street via the intersection of Route 79 with President Avenue, again contributing to its congestion. The portion of Davol Street West between President Avenue and Brownell Street would still have to be maintained and be designated as a two-way roadway in order to maintain access.

4.15.3.3 Cory Street Access

As currently configured in Alternative 2 – Modified, Cory Street extends to Davol Street West, serving as one of the new east-west roadways connecting Fall River neighborhoods east of Route 79 to the waterfront. Eliminating Davol Street West would remove this connection, making westbound Cory Street only able to access the industrial complex driveway currently on the west side of Davol Street West. Unless this complex is acquired and rezoned in the future, the waterfront connectivity proposed via Cory Street would be lost.

4.15.3.4 Brightman Street Access

The current configuration of Alternative 2 – Modified provides for a direct connection from Brightman Street to Davol Street West and ultimately Route 79 via the U-turn structure presently connecting Davol Street East to Davol Street West. Removal of Davol Street West would eliminate this option. Access from Brightman Street to the south would be accomplished via local streets connecting to President Avenue, identically to the existing travel patterns. This could further exacerbate congestion at the intersection of Route 79 and President Avenue and would negate the benefits of restoring Brightman Street to two-way operation.

4.15.3.5 U-Turn Bridge From Davol Street East to Davol Street West

The curved bridge over Route 79 connecting Davol Street East to Davol Street West was recently constructed as part of the Veterans Memorial Bridge project. Alternative 2 – Modified eliminates the need for this connection between Davol Street East and Davol Street West; however, this bridge would carry Brightman Street traffic destined to the waterfront or points south. Elimination of Davol Street West would render this structure inaccessible to any vehicular traffic. It could, however, be retained for pedestrian or bicycle use.

4.15.3.6 Veterans Memorial Bridge Ramp Configuration

The current ramp from Veterans Memorial Bridge to Eastbound U.S. Route 6 and Southbound Route 79 is configured as a two-lane exit with the right lane providing access to Davol Street West and the left lane merging with Southbound Route 79. If the ramp to Davol Street were eliminated, these two lanes would be required to merge into a single lane prior to merging with Route 79 as the existing supports for the U-turn bridge connecting Davol Street East to Davol Street West do not provide enough width to accommodate a two-lane ramp from U.S. Route 6 alongside Southbound Route 79. This merge may become a hindrance to the eastbound Veterans Memorial Bridge traffic. However, the U-turn bridge would not be carrying any vehicular traffic under this scenario. If a decision were made to demolish the bridge, the ramp from the Veterans Memorial Bridge to Southbound Route 79 could be modified to maintain a two-lane ramp.

Finally, it is recognized that the suggested removal of a portion of Davol Street West is meant to reduce the overall amount of pavement and impervious area. However, this roadway would likely be replaced by internal circulation roads within developments, thus reducing or negating the benefits of this modification.

In summary, the elimination of Davol Street West would have a negative effect on the circulation and connectivity provided in Alternative 2 – Modified and would diminish the alternative's conformity to the study goals and objectives. Accordingly, it is recommended that Davol Street West be retained as currently proposed.