



9. CORRIDOR TRAFFIC OPERATIONS AND PHASED BOULEVARD IMPLEMENTATION

Build out of the Western Waterfront is anticipated to occur incrementally over the next four decades through year 2050. The transportation environment and the travel demands placed upon the internal roadway network will vary over time as new development and new external and internal transportation infrastructure come on line. Additional development throughout the region, particularly the planned expansion of the area ports, will increase travel demand on the regional roadway network, including the Route 440/Routes 1&9T corridor. Implementation of public transit improvements like the HBLR extension and the anticipated BRT service will reduce the volume of vehicular traffic on the internal roadway system. Because the 2003 Bayside Development Plan and 2009 Circulation Element of the Master Plan envision the study corridor as a new main street with new, mixed-use neighborhoods abutting the street, it was necessary for this study to select a horizon year based upon build out in order to determine how much land to reserve for future transportation infrastructure along the study corridor. In keeping with the Circulation Element of the Jersey City Master Plan, year 2050 was selected as the build out horizon year.

Typical New Jersey Department of Transportation roadway investment life cycle planning considers a period of 20 years beyond the anticipated completion year of the improvements. The LPA was identified in part by analysis of traffic operating conditions in the year 2050. In addition, two (2) interim time periods of 2020 and 2035 were selected for evaluation to determine which portions of the overall Locally Preferred Alternative (LPA) would be needed based upon travel demand within near term 10 year and mid term 25 year time frames of the concept development study to efficiently accommodate traffic flow and livability as development continues. The mid term 25 year time frame (year 2035) is the closest time horizon of this study to the 20 year NJ DOT life cycle planning horizon.

This evaluation of interim year conditions addresses stages of completion of the boulevard improvements, not construction phasing which will be addressed in the future as part of Preliminary Engineering and Final Design.



9.1 Corridor Traffic Operations - 2050

A Paramics microsimulation model was created to test the operational efficiency of the various corridor alternatives developed by this study (Chapter 5). Traffic operational efficiency is highly variable along the corridor. This is typical of any roadway network, where variations exist in the geometric configuration and in the number of vehicles traveling on specific sections of the corridor. While the Paramics model allows for the testing and refinement of specific roadway links, intersections and individual traffic movements, the process by which traffic is assigned in the model is dynamic, with variations in traffic flow rates and efficiencies adjusted continuously. These phenomena can readily be seen in the continuous fluctuation of real-world traffic conditions on any urban roadway network.

All modeling assumed that there was no implementation of any of the through truck diversion alternatives. Implementation of one or more of the through truck diversion alternatives that reduce heavy truck VMT on the corridor would result in improved levels of service and decrease in travel times along the corridor.

9.1.1 Macroscale Operational Assessment

The Paramics model allows for the extraction of various Measures of Efficiencies (MOE) on a macroscale level as a means of quantifying overall corridor operations. In the testing and refinement of the LPA, a series of locations on the roadway network were identified representing the outer boundaries of the roadway improvements recommended in the LPA. Operational statistics were extracted from the model to assess how well the corridor would function for vehicles traveling between any two of these defined points. The points (Figure 9.1) represent the boundaries of the roadway improvements to be advanced along the corridor and include:

- A. Lincoln Highway – 700 feet west of Route 440
- B. Communipaw Avenue – 800 feet east of Route 440
- C. Route 440 – 300 feet south of 63rd Street
- D. Routes 1&9T – At Newark Avenue



Average vehicle travel distances and average travel times were extracted from the model for vehicle trips from each origin point (A through D) to the other defined points. The average travel speed includes time in motion as well as all stopped delay time experienced by vehicles traveling between the two points. These data were used to calculate the average vehicle travel speed for vehicle trips utilizing the corridor (Figure 9.1).

During the AM peak hour, average vehicle travel speeds ranged from 12.0 mph to 25.6 mph. The lowest recorded travel speed is for travel northbound along Route 440 to points west on Lincoln Highway / Routes 1&9T. This path is characterized by multiple traffic signals that contribute to slower travel speeds, reduced noise at the outer edges of the boulevard and complete street and safer pedestrian and bicycle crossings of the corridor. The highest recorded travel speed is for travel from Route 7 southbound on Routes 1&9T to points west on Lincoln Highway / Routes 1&9T. The roadway along this northern section is characterized by widely spaced traffic signals and a free-flow southbound right turn movement at the traffic signal at the Gateway Intersection.

Figure 9.1: Corridor Travel Time / Speed Points - 2050

Origin - Destination	Distance (mi)	Travel Time (min)	Travel Speed (mph)
AM Peak Hour			
B-A	0.26	1.07	14.3
B-D	1.49	5.55	16.1
B-C	2.29	11.38	12.1
A-B	0.26	1.18	13.0
A-C	2.31	9.96	13.9
A-D	1.51	7.05	12.9
C-D	3.45	15.01	13.8
C-B	2.29	11.19	12.3
C-A	2.31	11.51	12.0
D-C	3.45	12.64	16.4
D-A	1.51	3.54	25.6
D-B	1.49	4.13	21.6
PM Peak Hour			
Origin - Destination	Distance (mi)	Travel Time (min)	Travel Speed (mph)
PM Peak Hour			
B-A	0.26	1.23	12.5
B-D	1.49	4.29	20.8
B-C	2.29	11.07	12.4
A-B	0.26	1.15	13.3
A-C	2.31	11.49	12.1
A-D	1.51	6.74	13.4
C-D	3.45	13.56	15.3
C-B	2.29	10.38	13.2
C-A	2.31	10.13	13.7
D-C	3.45	15.79	13.1
D-A	1.51	4.15	21.8
D-B	1.49	4.89	18.2





During the PM peak hour, average trip travel speeds ranged from 12.1 mph to 21.8 mph. The lowest recorded travel speed is for travel eastbound along Lincoln Highway / Communipaw Avenue to points south along Route 440. As during the AM peak hour, the highest recorded travel speed is for travel from Route 7 southbound on Routes 1&9T to points west on Lincoln Highway / Routes 1&9T. However, there is a lower travel speed on this path compared to the AM peak hour due primarily to the increase in traffic volumes along the corridor that would be generated under the big box retail development scenario within the Hackensack River Edge growth area.

The length of the corridor has been designed for a posted speed limit of 30 mph. If a vehicle were to travel the approximately 3.45 mile length of the corridor from Point C to Point D at a constant 30 mph without stopping for any traffic signals, it would take approximately 6.9 minutes to complete the trip, or a little less than one-half of the time that will be required to complete the trip assuming that vehicles will stop at several traffic signals along the corridor.

Travel times and speeds were extracted from the Paramics model for the central section of the corridor. Year 2050 travel times and distance were determined for the portion of the corridor between Danforth Avenue and Williams Avenue (Table 9.1). During the AM peak hour, vehicles traveling along this section experience an average travel speed (including time stopped at traffic signals and stop signs) of 13.2 mph in the northbound direction and 18.2 mph in the southbound direction. Similar conditions exist during the PM peak hour, with average travel speeds of 14.6 mph in the northbound direction and 16.2 mph in the southbound direction.

Table 9.1: Central Section Travel Time * - 2050

Direction	Distance (mi)	Travel Time (min)	Average Speed (mph)
AM Peak Hour			
Northbound	1.17	6.75	10.4
Southbound	1.17	5.46	12.9
PM Peak Hour			
Northbound	1.17	7.45	9.4
Southbound	1.17	6.42	10.9

* Travel times along the general purpose through travel lanes, excluding the BRT lanes

With the exception of the northbound direction during the AM peak travel period, these travel times and speeds for 2050 at build out are consistent with the average travel speeds experienced along the central section of the corridor today. Today, a number of intersections



along the corridor are characterized by excessive delays and congested conditions. Table 1.1 (Section 1 – Purpose and Need) summarized the findings of the operational analysis results of key intersections along the corridor as originally developed in the Route 440 Mixed Use Development Access Management Traffic Study, June 15, 2007, prepared by El Taller Colaborativo, PC. A traffic operations model was developed as part of the 2007 study that allowed estimation of the average travel times and speeds along roadways within the study area. Based upon that model, travel speeds in the central section of Route 440 between Danforth Avenue and Virginia Avenue were determined to be approximately 14.2 mph in the northbound direction and 9.4 mph in the southbound direction during the AM peak hour. During the PM peak hour, average travel speeds along the central section of the corridor were determined to be approximately 9.3 mph in the northbound direction and 11.8 mph in the southbound direction.

Table 9.2 presents a comparison of the average vehicle travel speeds along the central section of the corridor between existing conditions and year 2050 inclusive of full development of the Western Waterfront and completion of the LPA improvements. As shown, with the exception of northbound travel during the AM peak hour, future average speeds to travel along the length of the central section of the corridor will be generally equivalent to what they are today, even though there will be additional intersections with traffic signals and pedestrian crossings, extensive redevelopment, and significant increases in travel demand from internal and external trip generators. The slower northbound speeds during the AM peak hour are primarily attributable to the increased traffic volumes leaving the new residential development along both sides of the roadway south of Communipaw Avenue.

Table 9.2: Central Section Average Travel Speed Comparison

AM Peak Hour	Existing**	2050
Northbound	14.2	10.4
Southbound	9.4	12.9
PM Peak Hour	Existing	2050
Northbound	9.3	9.4
Southbound	11.8	10.9

** Based on Route 440 Mixed Use Development Access Management Traffic Study, June 15, 2007, prepared by El Taller Colaborativo, PC

9.1.2 Microscale Operational Assessment

While the macroscale analysis found that in the aggregate, overall travel speeds on the corridor would be relatively consistent with the existing travel speeds, it was necessary to ensure that all



intersections along the corridor would operate at acceptable levels of service. Traffic operations are typically expressed in terms of Level of Service (LOS) as defined in the Highway Capacity Manual.

LOS represents overall operating conditions confronting a motorist, based on traffic stream densities, interruptions in traffic flow, and travel speed. In the Highway Capacity Manual, LOS is defined in terms of total delay. Total delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, LOS criteria are stated in terms of the average total delay per vehicle (Table 9.3).

Table 9.3: Intersection Level of Service Definitions

Average Stopped Delay (sec)		
LOS	Signalized Intersection	Unsignalized Intersection
A	<10 sec	<10 sec
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	>80 sec	>50 sec

LOS is not one of the MOEs that may be extracted directly from a Paramics model. However, extracting the average delay time per vehicle on the individual links in the model that represent the approaches to the signalized intersections, the equivalent LOS may be determined. This process was applied to the approaches to each signalized intersection along the corridor, with the equivalent LOS identified at each approach (Table 9.4) based upon the ranges defined for individual levels of service in the Highway Capacity Manual. As shown, all approaches to all signalized intersections will operate at a LOS E or better during both the AM and PM peak hours in the year 2050. LOS E represents the limit of acceptable traffic operations, particularly in urban areas.



**Route 440/Routes 1&9T Multi-Use Urban Boulevard and Through Truck Diversion
Concept Development Study**

Table 9.4: Intersection Levels of Service – 2050

Intersection of Route 440/ Routes 1&9T with...	Approach	2050 AM			2050 PM		
		Flow (Veh/Hr)	Delay (Sec)	LOS	Flow (Veh/Hr)	Delay (Sec)	LOS
Society Hill Drive	NB	1108	12.9	B	1234	21.4	C
	SB	1308	58.2	E	1625	45.9	D
	EB	124	66.2	E	141	71.1	E
Danforth Ave	NB	1030	6.6	A	1003	22.5	C
	SB	1075	19.8	B	1343	44.7	D
	EB	69	66.1	E	265	43.1	D
	WB	138	60.2	E	234	42.3	D
New Intersection 1	NB	1097	25.9	C	1106	36.3	D
	SB	923	15.7	B	986	34.9	C
	EB	164	37.4	D	305	26.6	C
	WB	207	54.6	D	384	74.6	E
Kellogg Street	NB	1085	26.3	C	1103	26.1	C
	SB	742	16.0	B	758	27.0	C
	EB	219	34.0	C	374	35.2	D
	WB	225	36.7	D	373	41.9	D
New Intersection 2 (Bayfront) 4th Avenue)	NB	1146	7.8	A	1210	7.2	A
	SB	753	7.5	A	784	10.8	B
	EB	84	36.3	D	94	29.9	C
	WB	244	33.1	C	247	29.5	C
Stegman Blvd	NB	945	15.5	B	991	18.3	B
	SB	1110	50.7	D	1168	57.3	E
	EB	38	60.0	E	46	52.2	D
	WB	272	46.3	D	305	45.5	D
Culver Avenue	NB	1053	19.1	B	1091	16.8	B
	SB	1191	28.0	C	1293	35.2	D
	EB	95	32.2	C	151	43.8	D
	WB	129	33.1	C	311	38.0	D
Claremont Avenue	NB	1126	62.7	E	1202	56.9	E
	SB	1275	17.1	B	1365	19.5	B
	EB	103	29.9	C	222	29.1	C
	WB	93	44.2	D	195	48.1	D
Ege Avenue	NB	1212	56.6	E	1347	41.9	D
	SB	1334	18.0	B	1411	17.8	B
	EB	78	53.3	D	127	42.8	D
	WB	112	44.5	D	85	29.9	C
Williams Avenue	NB	1339	13.7	B	1414	14.6	B
	SB	1284	39.2	D	1396	54.2	D
	EB	212	39.2	D	322	44.8	D
	WB	140	39.9	D	215	40.5	D
Circle NB Approach	NB	1566	8.3	A	1347	5.3	A
	WB	129	54.4	D	237	36.3	D
Circle SB Approach	SB	114	31.3	C	312	26.7	C
	EB	451	9.0	A	319	10.6	B
Circle EB Approach	EB	452	38.7	D	321	60.2	E
	NB	1561	12.9	B	1426	5.9	A
Circle WB Approach	WB	45	23.0	C	104	43.6	D
	SB	116	1.7	A	315	1.4	A
Duncan Avenue	NB	1260	3.5	A	1310	6.3	A
	SB	646	5.2	A	1368	17.7	B
	EB	103	29.8	C	491	27.9	C
	WB	492	57.8	E	541	55.8	E
Sip Avenue	NB	1176	31.2	C	1248	27.7	C
	SB	575	24.2	C	1289	27.3	C
	EB	280	29.5	C	475	39.2	D
	WB	311	31.1	C	535	60.8	E
Broadway Jughandle	NB	842	18.8	B	957	11.8	B
	SB	806	10.6	B	1289	12.8	B
	EB	525	31.9	C	279	13.8	B
	WB	66	8.8	A	31	5.8	A
Broadway	NB	1124	25.3	C	886	15.5	B
	SB	821	5.1	A	1605	10.4	B
	WB	136	35.6	D	100	48.3	D
Communipaw Avenue	NB	548	11.6	B	774	15.6	B
	SB	428	13.5	B	625	13.4	B
	EB	1204	17.0	B	905	21.0	C
	WB	577	16.4	B	467	17.4	B



9.2 Near-Term Needs – Year 2020

9.2.1 Interim Year 2020 Improvement Plan

By the year 2020, the initial phase of the Bayfront Development along the western side of Route 440 is anticipated to be complete. Based on assumptions available at the time of study, this phase is to include construction of a portion of the proposed local roadway network within the development, with approximately 25 percent of the anticipated full vertical development. This level of development will include approximately:

- 2,160 residential dwelling units
- 87,500 square feet of retail and restaurant space
- 175,000 square feet of commercial office space

Along the eastern side of Route 440, the NJCU West Campus redevelopment is expected to be complete by the year 2020. This mixed use development is to include approximately 200,000 square feet of retail space, 142 market rate residential dwelling units, 90 units of student housing, new academic buildings and 15,600 square feet of facility space.

The NJCU West Campus Redevelopment Plan includes modification of the existing local street grid. Stegman Boulevard is to be extended west from its current terminus at West Side Avenue to cross Route 440 at grade at a new traffic signal controlled intersection. Stegman Boulevard will become the central spine of the NJCU West Campus Redevelopment area as well as one of the four signalized entrance roadways providing left turn access to the Bayfront development from Northbound Route 440.

Modeling of the 2020 interim conditions assumed that all of the local street intersections along the eastern and western sides of the central section would be constructed from Society Hill Drive to Culver Avenue. No redevelopment of local street construction within the Hudson Mall Growth Area was assumed.

Demographic projections developed by the NJTPA (Table 9.1) predict the construction of 16,058 new residential dwelling units throughout Jersey City by the year 2020. As detailed in Chapter 5, this study anticipates that approximately 3,798 of these units are expected to be constructed in the Western Waterfront. This total is inclusive of the 2,392 new units to be constructed as part of the Bayfront redevelopment and the NJCU West Campus Redevelopment projects. The remaining 12,260 units will be constructed in various locations throughout Jersey City.



Table 9.5: NJTPA Demographic Projections – Jersey City Household Growth

Year	Households						
	City-Wide Households	City-Wide Growth (from 2010)	Western Waterfront (23.65%)	Balance to be Distributed in Jersey City	Bayfront	NJCU	Balance to be Distributed in Western Waterfront
2010	100,665	0	0	0	0	0	0
2020	116,723	16,058	3,798	12,260	2,163	232	1,403
2035	135,810	35,145	8,312	26,833	6,055	232	2,025
2050 *	181,639	80,974	19,150	61,824	8,650	232	10,268

* Source: Jersey City Master Plan - Circulation Element

Also, as detailed in Section 5 of this report, in addition to the residential growth, over 800,000 square feet of new retail space is anticipated to be constructed throughout Jersey City by the year 2020. This study anticipates that nearly 500,000 square feet of this total is to be constructed within the Western Waterfront. Similarly, over 1.6 million square feet of commercial office space is expected to be constructed throughout Jersey City, with 170,000 square feet to be constructed within the Western Waterfront by the year 2020. This residential and commercial growth, coupled with growth in activity within the area maritime ports, will increase the volume of vehicular traffic on the Route 440/Routes 1&9T corridor. Within the Western Waterfront, this growth will be tempered to some degree for this time period by extension of the HBLR across Route 440, implementation of Bus Rapid Transit service to Journal Square and by the anticipated increases in the proportion of containers moved to and from the area ports by rail as opposed to truck. The net change, however, is expected to be an increase in the total volume of traffic on the area roadways.

9.2.2 2020 No-build Scenario

A significant number of intersections along the corridor currently operate at a LOS F during one or more peak travel demand periods (See Table 1.1). Within the central Section of the corridor, locations operating at a LOS F during one or more hours of the day include the intersections of Route 440 with:

- Communipaw Avenue
- Virginia Avenue
- Culver Avenue
- Kellogg Street



Increased travel demand along the corridor generated by local and regional development as well as expansion and growth in activity in the area ports. With this understanding, it was determined that improvements would be required by the year 2020 to support the initial phases of the Western Waterfront development and growth envisioned in the Jersey City Master

Localized, low-cost intersection improvements were considered as a near term solution to improve existing traffic operations and allow the initial phases of redevelopment to advance. However, a review of the existing traffic operations on conflicting movements at key intersections revealed that easily implementable solutions such as traffic signal upgrades and retiming would be ineffective. For example, during the AM peak hour, the eastbound, northbound and southbound approaches of the intersection of Route 440 with Communipaw Avenue operate a LOS F. Reallocating green time at the traffic signal to improve operations on one approach would degrade operations on the other already failing approaches. Installation of fully demand responsive traffic signals would likely result in improvements during non-peak travel periods, but would provide little, if any, benefit during the peak travel demand periods.

9.2.3 2020 Build Scenario

Since traffic control system improvements would be ineffective, it was determined that physical geometric improvements would be required to achieve any meaningful improvement in near term traffic conditions. Physical expansion of an intersection through widening of the travelway and adding travel lanes would provide additional capacity to that location. However, improvements to a single intersection along a corridor often result in releasing of a bottleneck and simply relocating the congestion to a new location along the corridor. Accordingly, near-term improvements to contiguous sections of the corridor spanning multiple intersections were considered.

The 2020 plan is based the need to support anticipated levels of development completion at Bayfront, NJCU and elsewhere within the Western Waterfront (Table 9.6) , as well as the need to address currently failing intersections.



Table 9.6: Western Waterfront Growth Area Build-Out Assumptions

Growth Area	Build Out Assumptions*		
	Sub-Area	2020	2035
Hackensack River Edge	N/A	Complete	Complete
Hudson Mall	N/A	None	Partial (10%)
Bayfront	N/A	Partial (25%)	Partial (70%)
K-Mart Site	N/A	None	Partial (10%)
Route 440 Northeast	NJCU West Campus Redevelopment Plan	Complete	Complete
	Water Street Redevelopment Plan	Partial (10%)	Complete
	Westside Avenue Redevelopment Plan	Partial (10%)	Complete
	Route 440-Culver Study Area	None	Partial (10%)
Route 440 Southeast	N/A	None	Partial (10%)

*Excluding development that was completed prior to this study and for which trip generation was accounted for by the data collection phase.

The 2020 interim year improvement plan was developed and modeled to include the full boulevard from the intersection of Society Hill Drive to the intersection of Culver Avenue, and from the intersection with Williams Avenue to the intersection with Sip Avenue. From the intersection of Culver Avenue to Williams Avenue, the 2020 improvements include the through travel lanes, but excludes construction of the local lanes. Construction of the local lanes along this section will be incorporated in subsequent phase as redevelopment plans for the properties adjacent to this section are developed. Broadly, the recommended interim year 2020 improvements may be divided into three segments as follows:

- Segment A:** Full LPA Boulevard from Society Hill Drive to north side of Culver Avenue (Figure 9.2).
- Segment B:** Center median, through lanes and BRT lanes between Culver Avenue and south side of Williams Avenue (Figure 9.3).



Segment C: Full LPA Boulevard from south side of Williams Avenue to south side of Duncan Avenue , inclusive of Gateway Circle (Figure 9.4).

Segment D: Full LPA Boulevard from south side of Duncan Avenue to north side of Sip Avenue (Figure 9.5)

9.2.3.1 Segment A – Society Hill Drive to Culver Avenue

In the interim year 2020 plan, the section of the corridor from south of Society Hill Drive to Culver Avenue (Figure 9.2) is constructed in conformance with the full development improvement plan (Section 8 – Locally Preferred Alternative). This section functions as the Main Street for the bulk of the planned new development expected to occur along the Western Waterfront by 2020, and includes intersections that are currently operating at LOS F. These intersections include Route 440 with Kellogg Street and with Culver Avenue. The significant portions of the redevelopment along this section expected to be complete by 2020 will generate additional traffic volumes, exacerbating the already failed conditions. Accordingly, construction of this section is recommended as part of the interim year 2020 plan.

Figure 9.2: Interim Year 2020 Improvements - Segment A



South of Society Hill Drive, the improvements transition back to meet the existing cross section. Redevelopment activities are assumed not to be completed by the year 2020 on the properties between Danforth Avenue and Kellogg Street. Driveways serving the existing developments along this section are to be relocated to the right of way reserved for the local street grid.

North of Kellogg Street, the NJCU West Campus Redevelopment is expected to be complete by the year 2020, including the extension of Stegman Boulevard to intersect with and cross Route 440. The local street grid serving the NJCU West campus is incorporated into the interim year



2020 plan. Along the southbound side of Route 440 between Culver Avenue and Kellogg Street, the initial phase of the Bayfront redevelopment is expected to be complete, inclusive of some of the internal roadway infrastructure and intersections with Route 440. The roadway along this section is constructed in conformance with the full boulevard LPA.

9.2.3.2 Segment B – Culver Avenue to Williams Avenue

In the interim year 2020 plan, the section of the corridor from the northern side of the Culver Avenue intersection to the southern side of the Williams Avenue intersection (Figure 9.3) is partially constructed in conformance with the full development improvement plan (Section 8 – Locally Preferred Alternative). Like Segment A, this segment also functions as the Main Street for significant planned new development expected to occur along the Western Waterfront, and includes the intersection of Route 440 with Virginia Avenue that currently operate at LOS F.

Figure 9.3: Interim Year 2020 Improvements - Segment B



This segment of the corridor is abutted by both the Hudson Mall and the Route 440 Northeast Growth Areas. Significant new development is not expected to occur along this section prior to 2020; however, this section of roadway is critical in the ability to maintain efficient traffic flows along the corridor, particularly as the central section transitions to meet the elevated Gateway Circle. Accordingly, construction of this section is recommended as part of the interim year 2020 plan.



In the section from Culver Avenue to just south of Williams Avenue the interim roadway consists of construction of the center median, through travel lanes and the BRT lane within the existing NJ DOT right-of-way in conformance with the full LPA improvements. The network of local streets (see Figure 6.2) incorporated the right of way of existing east/west streets as well as land access driveways along both sides of Route 440. The existing public streets and land access driveways along Route 440 between Culver Avenue and Williams Avenue are extended to intersect with the through travel lanes constructed as part of the 2020 interim improvements, maintaining local circulation and land access until redevelopment of the properties along within the Hudson Mall and the Route 440 Northeast growth areas advances requiring completion of the LPA improvements outside of the existing NJDOT right of way. The maintenance and extension of the local street and driveway intersections along this section includes the southbound jughandle that diverges from Route 440 south of Williams Avenue reconnecting with Route 440 just north of Virginia Avenue. Maintenance of this jughandle is necessary under the 2020 interim improvement condition to accommodate southbound to northbound u-turns for southbound Route 440 vehicles destined for neighborhoods along the northbound side of Route 440 north of Williams Avenue.

While the sanitary sewer force main is located outside of the existing ROW along this segment, construction of the interim improvement south of Culver Avenue requires reconstruction of the force main between Danforth Avenue and Culver Avenue. The 2020 interim improvement between Culver Avenue and Williams Avenue includes reconstruction of the force main concurrent with the force main reconstruction south of Culver Avenue.

Until such time as redevelopment of adjacent properties is advanced, the construction of the local lanes and other elements of the boulevard edge are not necessary to the maintenance of acceptable traffic operations. While construction of the local lanes, sidewalks, on-street parking and landscaping prior to the onset of redevelopment in this area would provide some benefits, construction of these portions of the full LPA improvement would require significant property acquisition and disruption to existing businesses. As redevelopment advances incrementally, construction of the boulevard edge may advance incrementally.

Construction of the center median, through travel lanes and the BRT lanes requires a width of 106feet. This 106-foot wide section is centered along and will fit within the existing 112-foot wide NJDOT right-of-way, leaving three feet of space between the roadway edge and the edge of the right-of-way along either side of Route 440. Acquisition of five additional feet of property along each side of the roadway will be required for the construction of sidewalks to



accommodate pedestrian activity prior to construction of the full frontage road elements along this section. This will allow construction of a six-foot wide sidewalk and a two-foot wide buffer between the sidewalk and the BRT lane along each side of the corridor to accommodate pedestrian traffic in the interim condition.

9.2.3.3 Segment C – Williams Avenue to Duncan Avenue

In the interim year 2020 plan, the section of the corridor from the southern side of the Williams Avenue intersection to the southern side of the Duncan Avenue intersection (Figure 9.4) is fully constructed in conformance with the full development improvement plan (Section 8 – Locally Preferred Alternative) inclusive of the elevated Gateway Circle and local lane ramps to the circle. The intersection of Route 440 with Communipaw Avenue currently operates at a LOS F. Absent these improvements, increased traffic volumes due to local and regional development, as well as growth in the area ports, will exacerbate existing failing operating conditions at this location.

Figure 9.4: Interim Year 2020 Improvements - Segment C



9.2.3.4 Segment D – Williams Avenue to Sip Avenue

In the interim year 2020 plan, the section of the corridor from south of Duncan Avenue to a point 350 feet north of Sip Avenue (Figure 9.5) is constructed in conformance with the full development improvement plan (Section 8 – Locally Preferred Alternative). Within the



Hackensack River Edge Growth Area, potential development scenarios include an 880,000 square foot high cube warehouse or approximately 327,000 square feet of big box retail by 2020. Absent improvements, the traffic volumes generated by either development scenario will further degrade operations along the corridor, resulting in failed conditions at the intersections of Routes 1&9T with Duncan Avenue and Sip Avenue. Because the retail scenario generates greater travel demand than the warehouse scenario, the LPA is designed to accommodate the retail scenario. Accordingly, construction of the full LPA for the portion of this section that is between and inclusive of Duncan and Sip Avenues by the developer under the retail scenario is recommended as part of the interim year 2020 plan.

It is recommended that under the warehouse scenario, for which fewer travel lanes would be required, that the 2020 plan should still incorporate a dedicated BRT lane on the northbound side, as well as BRT stations, bike paths, sidewalks and landscaping strips to the design and dimensions of the LPA under the retail scenario. North of Sip Avenue, the roadway travel lanes transition back to meet the existing cross section 350 feet north of the intersection.

Figure 9.5: Interim Year 2020 Improvements - Segment D





9.2.3.4 Macroscale Operational Analysis - 2020 Build Conditions

As with the analysis of the 2050 LPA, operational statistics were extracted from the Paramics model for year 2020 to assess how well the 2020 interim improvements would function for vehicles traveling between the previously defined points representing the outer limits of the roadway improvements. Average vehicle travel distances and travel times were extracted from the model for each origin-destination pair. The travel speeds include stopped delay at the signalized intersections along the routes. These data were used to calculate the average speed for travel along the corridor between the origin-destination points (Figure 9.6).

Under the 2020 interim improvement scenario during the AM peak hour, average vehicle travel speeds ranged from 15.8 mph to 26.6 mph. The lowest recorded travel speed is for travel westbound along Communipaw Avenue to points west on Lincoln Highway / Routes 1&9T. This route is relatively short (0.26 miles) and includes the traffic signal at the intersection of Communipaw Avenue with Route 440. All of the delay faced by vehicles along this path is related to the operation of the traffic signal. If a longer length of roadway were evaluated for this trip, the average travel speed along the route would be somewhat higher than the speed recorded in this analysis. The highest recorded travel speed is for travel from Route 7 southbound on Routes 1&9T to points west on Lincoln Highway / Routes 1&9T. The roadway along this northern section is characterized by widely-spaced traffic signals and a free-flow southbound right turn movement at the traffic signal at the Gateway Intersection.

Under the 2020 interim improvement scenario during the PM peak hour average trip travel speeds ranged from 13.1 mph to 25.4 mph. As with the AM peak hour, the lowest recorded travel speed is for travel westbound along Communipaw Avenue to points west on Lincoln Highway / Routes 1&9T. The highest recorded travel speed is for travel from Route 7 southbound on Routes 1&9T to points west on Lincoln Highway / Routes 1&9T. The lower travel speed on this path as compared to the AM peak hour is due primarily to the increase in traffic volumes along the corridor generated under the big box retail development scenario within the Hackensack River Edge growth area.



Figure 9.6: Corridor Travel Time / Speed Points - 2020

Origin - Destination	Distance (mi)	Travel Time (min)	Travel Speed (mph)
AM Peak Hour			
B-A	0.26	0.97	15.8
B-D	1.49	3.63	24.6
B-C	2.29	7.76	17.7
A-B	0.26	0.84	18.3
A-C	2.31	6.92	20.0
A-D	1.51	4.44	20.4
C-D	3.45	10.36	20.0
C-B	2.29	7.41	18.5
C-A	2.31	7.59	18.3
D-C	3.45	9.84	21.0
D-A	1.51	3.41	26.6
D-B	1.49	3.95	22.6
Origin - Destination	Distance (mi)	Travel Time (min)	Travel Speed (mph)
PM Peak Hour			
B-A	0.26	1.17	13.1
B-D	1.49	4.10	21.7
B-C	2.29	8.50	16.1
A-B	0.26	0.85	18.1
A-C	2.31	7.92	17.5
A-D	1.51	5.92	15.3
C-D	3.45	11.77	17.6
C-B	2.29	8.54	16.1
C-A	2.31	8.47	16.4
D-C	3.45	11.12	18.6
D-A	1.51	3.57	25.4
D-B	1.49	4.38	20.4



Travel times and speeds were extracted from the Paramics model for the central section of the corridor between Danforth Avenue and Williams Avenue and compared with the existing travel speeds (Table 9.7). During the AM peak hour vehicles traveling along this section experience an average travel speed (including time stopped at traffic signals and stop signs) of 15.1 mph in the northbound direction and 16.4 mph in the southbound direction. Similar conditions exist during the PM peak hour, with average travel speeds of 15.1 mph in the northbound direction and 14.1 mph in the southbound direction. These future speeds are higher than the existing speeds along the central section of the corridor even though there will be additional intersections with traffic signals and pedestrian crossings, redevelopment, and increases in travel demand from internal and external trip generators.



Table 9.7: Central Section Average Travel Speed Comparison

AM Peak Hour	Existing**	2020
Northbound	14.2	15.1
Southbound	9.4	16.4
PM Peak Hour	Existing	2050
Northbound	9.3	15.1
Southbound	11.8	14.1

** Based on Route 440 Mixed Use Development Access Management Traffic Study, June 15, 2007, prepared by El Taller Colaborativo, PC

While the macroscale analysis found that in the aggregate, overall traffic operations on the corridor would be improved as compared to existing conditions, it was necessary to ensure that all intersections along the corridor would operate at acceptable levels of service under the 2020 interim condition.

As with the analysis of the 2050 traffic operating conditions, average delay time per vehicle on the individual links in the model for 2020 that represent the approaches to the signalized intersections were extracted and applied for determination of the equivalent LOS. This process was applied to the approaches to each signalized intersection along the corridor, with the equivalent LOS identified at each approach (Table 9.8) based upon the ranges defined for individual levels of service in the Highway Capacity Manual. As shown, all approaches to all signalized intersections will operate at a LOS E or better during both the AM and PM peak hours in the year 2020. This represents a significant improvement over existing conditions under which multiple intersections along the corridor operate at a LOS F.



Table 9.8: Intersection Levels of Service – 2020

Intersection of Route 440/ Routes 1&9T with...	Approach	2020 AM			2020 PM		
		Flow (Veh/Hr)	Delay (Sec)	LOS	Flow (Veh/Hr)	Delay (Sec)	LOS
Society Hill Drive	NB	1028	15.4	B	1111	22.1	C
	SB	935	9.8	A	1386	18.5	B
	EB	161	17.8	B	230	22.0	C
Danforth Ave	NB	1041	26.8	C	1136	28.2	C
	SB	869	18.0	B	1348	26.1	C
	EB	305	46.1	D	446	45.6	D
	WB	167	45.0	D	194	43.6	D
New Intersection 1	NB	865	15.8	B	961	23.1	C
	SB	774	8.6	A	896	28.4	C
	EB	85	26.9	C	189	19.0	B
	WB	276	53.4	D	516	29.7	C
Kellogg Street	NB	855	51.4	D	1161	51.9	D
	SB	710	30.4	C	696	24.6	C
	EB	184	14.5	B	282	9.2	A
	WB	186	45.9	D	183	48.8	D
New Intersection 2 (Bayfront - 4th Avenue)	NB	676	19.9	B	957	5.1	A
	SB	744	3.6	A	724	3.4	A
	EB	118	27.1	C	124	28.1	C
	WB	0	0.0	0	0	0.0	0
Stegman Blvd	NB	756	7.7	A	1006	5.7	A
	SB	852	31.1	C	970	32.5	C
	EB	16	38.5	D	25	44.9	D
	WB	255	38.2	D	224	36.6	D
Culver Avenue	NB	888	5.8	A	1121	2.5	A
	SB	913	2.0	A	1120	8.2	A
	EB	27	32.7	C	47	28.0	C
	WB	79	40.8	D	153	37.8	D
Claremont Avenue	NB	914	33.6	C	1236	16.9	B
	SB	965	20.5	C	1140	14.3	B
	EB	18	29.9	C	81	34.3	C
	WB	201	33.6	C	231	35.6	D
Ege Avenue	NB	1068	11.0	B	1340	25.6	C
	SB	1001	14.1	B	1195	19.4	B
	EB	66	53.4	D	237	72.4	E
	WB	48	40.9	D	80	36.2	D
Williams Avenue	NB	1176	11.2	B	1394	6.5	A
	SB	1003	17.2	B	1265	16.2	B
	EB	70	44.8	D	68	45.6	D
	WB	24	31.8	C	136	38.0	D
Circle NB Approach	NB	833	4.5	A	725	4.3	A
	WB	146	32.6	C	58	16.0	B
Circle SB Approach	SB	63	27.1	C	124	26.1	C
	EB	273	7.2	A	290	9.5	A
Circle EB Approach	EB	272	25.4	C	292	41.0	D
	NB	939	8.4	A	766	5.6	A
Circle WB Approach	WB	113	33.1	C	61	30.4	C
	SB	66	1.9	A	124	1.4	A
Duncan Avenue	NB	767	2.5	A	1162	4.2	A
	SB	497	5.8	A	662	2.2	A
	EB	108	28.2	C	447	61.6	E
	WB	570	45.5	D	537	68.5	E
Sip Avenue	NB	769	14.6	B	1104	33.2	C
	SB	484	23.6	C	601	29.4	C
	EB	197	26.1	C	576	36.4	D
	WB	178	29.9	C	434	32.5	C
Communipaw Avenue (Beneath Gateway Circle)	NB	362	9.1	A	659	12.1	B
	SB	381	15.2	B	607	12.2	B
	EB	739	19.0	B	658	18.1	B
	WB	622	14.7	B	647	12.8	B



9.2.3.5 Stegman Boulevard 2016 Improvement

Redevelopment of the Western Waterfront is expected to occur in stages over the next 40 years. The NJCU West Campus Redevelopment Plan, including the extension of Stegman Boulevard west from its current terminus at West Side Avenue to intersect with Route 440 is expected to be completed by the year 2016. Completion of the western leg of this intersection serving the Bayfront development is not expected to be completed prior to 2020. NJCU developed an improvement plan to be constructed prior to the construction of the year 2020 interim plan to allow the NJCU West campus development to advance to completion. Improvements along the Route 440 corridor to be constructed as part of the NJCU West Campus development include:

- Reconstruction of southbound Route 440 to provide two through travel lanes and two left turn lanes at the newly created signalized intersection with Stegman Boulevard.
- Addition of a third travel lane along northbound Route 440 beginning at Danforth Avenue extending to the intersection with Virginia Avenue. This third lane will accommodate northbound through travel as well as right turns into the newly constructed eastern leg of Stegman Boulevard.
- Addition of left turn lanes on the eastbound and westbound approaches of Culver Avenue and the Culver Avenue jug handle at Route 440.
- The existing driveway at the northern end of the Home Depot will be connected into South Road, providing access to both the Home Depot and the southern edge of the NJCU West Campus development.

These improvements have been designed to align the southbound left turn lanes along Route 440 with the location of the center median to be constructed as part of the 2020 interim improvements. The design minimizes the amount of reconstruction at this location that will be required in the implementation of the 2020 interim improvements, while efficiently accommodating the additional traffic volumes that will be generated by the NJCU West Campus redevelopment.



9.3 Mid-Term Needs – Year 2035

By the year 2035, significant additional development is expected to be complete throughout Jersey City, and in particular within the Western Waterfront area beyond the development expected to occur by 2020 (Table 9.6).

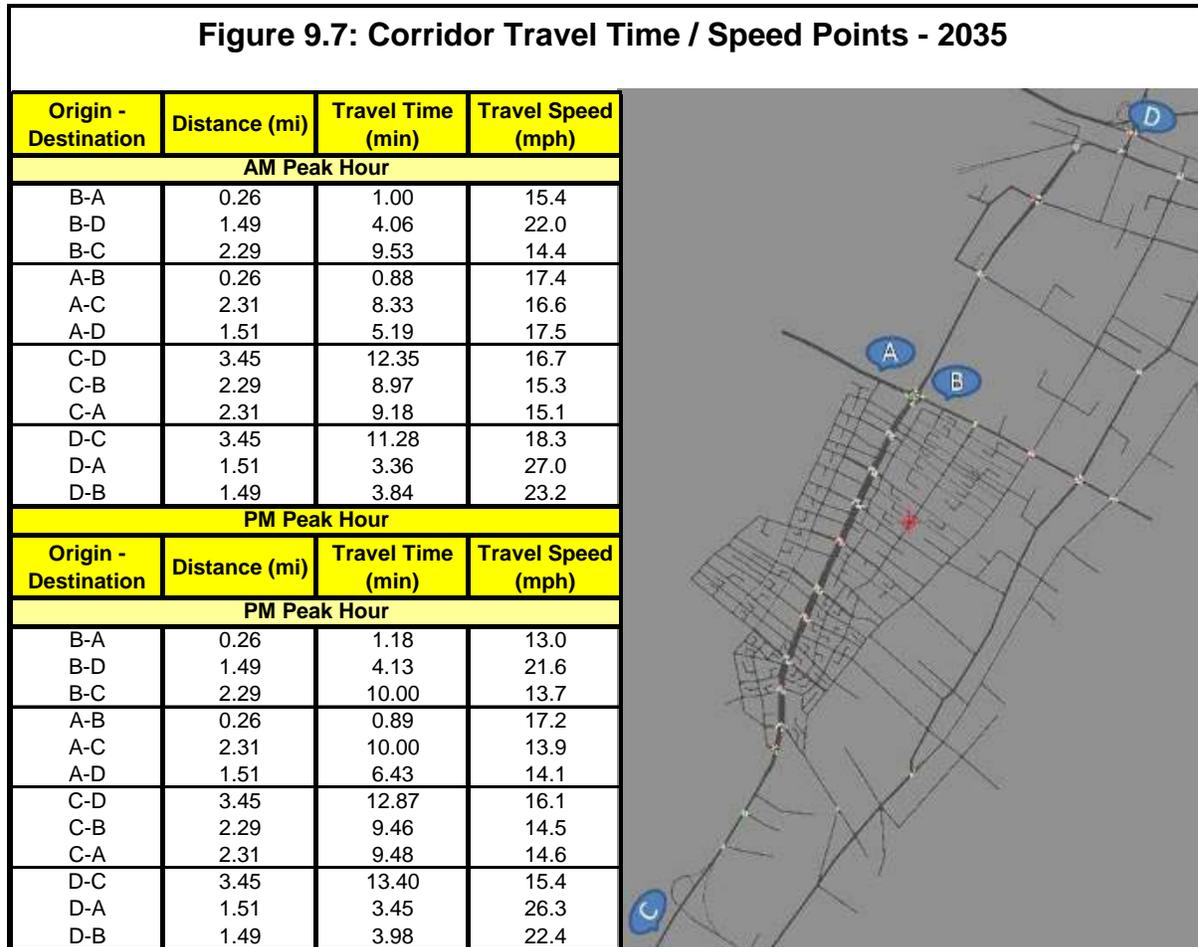
Demographic projections developed by the NJTPA (Table 9.1) predict the construction of 35,145 new residential dwelling units throughout Jersey City by the year 2035. This study anticipates that approximately 8,312 of these units are to be constructed in the Western Waterfront (Chapter 5). This total is inclusive of the new units to be constructed as part of the Bayfront Redevelopment and the NJCU West Campus Redevelopment projects. In addition, over 1.8 million square feet of new retail space is anticipated to be constructed throughout Jersey City by the year 2035, of which approximately 700,000 square feet is to be constructed within the Western Waterfront (Chapter 5). Similarly, over 4.1 million square feet of commercial office space is expected to be constructed throughout Jersey City by 2035, of which 490,000 square feet is anticipated to be constructed within the Western Waterfront. This residential and commercial growth, coupled with regional growth and expansion of activity within the area maritime ports will increase the volume of vehicular traffic on the Route 440/Routes 1&9T corridor. While the traffic volume on area roadways generated by this growth will be tempered by extension of the HBLR across Route 440, BRT along Route 440 and Routes 1&9T to Journal Square, and the anticipated increases in the proportion of containers moved to and from the area ports by rail as opposed to truck, a net increase in the total volume of traffic on the area roadways is expected.

Within the central boulevard section, the LPA improvements will have been constructed as part of the 2020 interim improvements with the exception of the local lanes and public areas between Culver Avenue and Williams Avenue. In anticipation of redevelopment activities commencing along this section, construction of the remainder of the boulevard outside the through lanes between Culver Avenue and Williams Avenue will be required to ensure access to the adjacent properties and continuity of the bicycle paths, sidewalks and public spaces. It is therefore recommended that the full boulevard and complete street LPA be constructed in conformance with the LPA by the year 2035.

Average vehicle travel distances and travel times were extracted from the model for each origin-destination pair. The travel speeds include stopped delay at the signalized intersections



along the routes. These data were used to calculate the average travel speed for travel along the corridor between the origin-destination points (Figure 9.7).



During the AM peak hour, average vehicle travel speeds ranged from 14.4 mph to 27.0 mph. The lowest recorded travel speed is for travel westbound along Communipaw Avenue to points south along Route 440. This route is characterized by multiple traffic signal controlled intersections incorporated to reduce travel speeds and support a calm traffic environment. The highest recorded travel speed is for travel from Route 7 southbound on Routes 1&9T to points west on Lincoln Highway / Routes 1&9T. The roadway along this northern section is characterized by widely spaced traffic signals and a free-flow southbound right turn movement at the traffic signal at the Gateway Intersection.



During the PM peak hour, average trip travel speeds ranged from 13.0 mph to 26.3 mph. The lowest recorded travel speed is for travel westbound along Communipaw Avenue to points west on Lincoln Highway / Routes 1&9T. The highest recorded travel speed is for travel from Route 7 southbound on Routes 1&9T to points west on Lincoln Highway / Routes 1&9T. The lower travel speed on this path as compared to the AM peak hour is due primarily to the increase in traffic volumes along the corridor generated under the big box retail scenario within the Hackensack River Edge growth area.

Future year 2935 travel times and speeds were extracted from the Paramics model for the central section of the corridor between Danforth Avenue and Williams Avenue and compared with the existing travel speeds (Table 9.9). During the AM peak hour vehicles traveling along this section experience an average travel speed (including time stopped at traffic signals and stop signs) of 12.0 mph in the northbound direction and 13.8 mph in the southbound direction. Similar conditions exist during the PM peak hour, with average travel speeds of 11.1 mph in the northbound direction and 12.5 mph in the southbound direction. With the exception of northbound travel during the AM peak hour, the future speeds are moderately higher than the existing speeds along the central section of the corridor even though there will be additional intersections with traffic signals and pedestrian crossings, redevelopment, and increases in travel demand from internal and external trip generators.

Table 9.9: Central Section Average Travel Speed Comparison

AM Peak Hour	Existing**	2035
Northbound	14.2	12.0
Southbound	9.4	13.8
PM Peak Hour	Existing	2050
Northbound	9.3	11.1
Southbound	11.8	12.5

** Based on Route 440 Mixed Use Development Access Management Traffic Study, June 15, 2007, prepared by El Taller Colaborativo, PC

While the macroscale analysis found that, in the aggregate, overall traffic operations on the corridor in the year 2035 would be significantly improved as compared to existing conditions, it was necessary to ensure that all intersections along the corridor would operate at acceptable levels of service under.



As with the analysis of the 2050 and 2020 traffic operating conditions, average delay time per vehicle on the individual links in the model that represent the approaches to the signalized intersections were extracted and applied for determination of the equivalent LOS. This process was applied to the approaches to each signalized intersection along the corridor, with the equivalent LOS identified at each approach (Table 9.10) based upon the ranges defined for individual levels of service in the Highway Capacity Manual. As shown, all approaches to all signalized intersections will operate at a LOS E or better during both the AM and PM peak hours in the year 2035. This represents a significant improvement over existing conditions under which multiple intersections along the corridor operate at a LOS F.



**Route 440/Routes 1&9T Multi-Use Urban Boulevard and Through Truck Diversion
Concept Development Study**

Table 9.10: Intersection Levels of Service – 2035

Intersection of Route 440/ Routes 1&9T with...	Approach	2035 AM			2035 PM		
		Flow (Veh/Hr)	Delay (Sec)	LOS	Flow (Veh/Hr)	Delay (Sec)	LOS
Society Hill Drive	NB	959	11.1	B	1077	13.4	B
	SB	1187	24.1	C	1581	38.3	D
	EB	83	46.1	D	171	63.0	E
Danforth Ave	NB	918	3.8	A	956	11.4	B
	SB	998	6.8	A	1223	30.3	C
	EB	64	42.4	D	284	40.4	D
	WB	91	37.2	D	90	51.6	D
New Intersection 1	NB	974	20.2	C	1031	29.0	C
	SB	845	11.6	B	940	31.5	C
	EB	118	31.7	C	240	22.5	C
	WB	239	54.0	D	445	47.0	D
Kellogg Street	NB	976	28.9	C	1017	27.2	C
	SB	672	15.4	B	732	25.0	C
	EB	186	32.7	C	311	25.0	C
	WB	203	41.1	D	257	29.4	C
New Intersection 2 (Bayfront) 4th Avenue)	NB	1031	4.8	A	1062	5.7	A
	SB	716	8.4	A	806	10.2	B
	EB	33	22.8	C	50	31.4	C
	WB	196	27.9	C	185	28.6	C
Stegman Blvd	NB	901	16.8	B	926	16.7	B
	SB	942	52.1	D	1155	51.6	D
	EB	29	45.0	D	19	29.6	C
	WB	348	43.6	D	282	35.6	D
Culver Avenue	NB	1080	17.3	B	1060	17.4	B
	SB	1005	30.7	C	1285	33.8	C
	EB	59	18.0	B	143	24.1	C
	WB	124	39.5	D	113	34.5	C
Claremont Avenue	NB	1179	50.2	D	1175	55.6	E
	SB	1064	16.8	B	1352	17.7	B
	EB	38	23.4	C	99	26.6	C
	WB	65	39.0	D	137	40.9	D
Ege Avenue	NB	1288	28.4	C	1330	41.9	D
	SB	1125	15.1	B	1379	16.6	B
	EB	21	46.6	D	47	43.7	D
	WB	11	37.8	D	52	28.2	C
Williams Avenue	NB	1298	12.9	B	1385	12.5	B
	SB	1136	28.1	C	1362	57.8	E
	EB	45	26.2	C	71	39.8	D
	WB	73	25.6	C	148	35.8	D
Circle NB Approach	NB	1282	5.1	A	973	4.8	A
	WB	63	52.9	D	72	33.7	C
Circle SB Approach	SB	64	28.9	C	231	30.3	C
	EB	374	8.4	A	316	10.7	B
Circle EB Approach	EB	377	30.6	C	318	58.5	E
	NB	1280	10.3	B	975	5.4	A
Circle WB Approach	WB	20	27.1	C	29	30.5	C
	SB	65	1.6	A	231	1.4	A
Duncan Avenue	NB	908	1.1	A	1221	6.2	A
	SB	578	4.8	A	1073	13.5	B
	EB	96	25.0	C	563	34.4	C
	WB	452	40.7	D	522	42.6	D
Sip Avenue	NB	926	23.5	C	1104	36.5	D
	SB	578	23.9	C	968	27.5	C
	EB	320	33.3	C	529	54.4	D
	WB	168	26.0	C	537	59.8	E
Broadway Jughandle	NB	850	7.7	A	919	8.5	A
	SB	778	10.8	B	989	10.6	B
	EB	453	13.8	B	238	12.3	B
	WB	23	12.3	B	59	10.3	B
Broadway	NB	1054	17.2	B	902	19.9	B
	SB	1001	9.1	A	1273	7.7	A
	WB	91	32.8	C	23	32.9	C
Communipaw Avenue	NB	413	9.1	A	654	10.2	B
	SB	447	14.1	B	566	12.4	B
	EB	965	18.6	B	922	19.0	B
	WB	526	14.4	B	566	13.4	B



9.4 Summary of Analysis Findings

As detailed above, the Route 440/Routes 1&9T Multi-Use Urban Boulevard and Complete Street will provide significant improvement to mobility and traffic flow within the Western Waterfront. In the interim years 2020 and 2035, travel speeds will be moderately higher along the central section than existing speeds. In the year 2050 upon build-out of the Western Waterfront, with the exception of northbound travel during the AM peak hour and southbound travel during the PM peak hour the future speeds are moderately higher than the existing speeds along the central section of the corridor. These slower speeds are primarily attributable to the increased traffic volumes generated by the new residential development along both sides of the roadway south of Communipaw Avenue leaving the Western Waterfront in the morning and returning in the evening. Travel speeds are maintained even though there will be additional intersections with traffic signals and pedestrian crossings along the central section, redevelopment, and increased travel demand from internal and external trip generators.

Upon completion of the LPA improvements and full development / redevelopment of the Western Waterfront by 2050, all of the intersections along the corridor will operate at a Level of Service E or better during the peak travel demand periods. LOS E is considered to be an acceptable level of service, particularly in an urban environment, and represents a significant improvement over existing conditions where multiple intersections operate at LOS F during the AM and PM peak hours.

Significant improvements are needed by 2020 to address existing deficiencies and prepare for completion of significant amounts of redevelopment within the western waterfront, as well as growth in externally generated travel demand that is anticipated to occur by 2020. As the anticipated redevelopment of the Western Waterfront is expected to occur over decades, implementation of the remainder of the LPA improvements may be staged to address corridor improvement needs as they arise. Full implementation of the LPA improvements is recommended for completion by the year 2035, or sooner if market conditions generate an unanticipated rate of redevelopment within the Western Waterfront. A summary of the recommended interim improvement phasing is presented in Table 9.11



Table 9.11: Improvement Phasing Summary

Segment	Description	Timing
A	Society Hill Drive to North side of Culver Avenue – Full Boulevard consistent with the LPA Improvement	By 2020
B	Culver Avenue to south side of Williams Avenue - Center median, through lanes and BRT lanes only	By 2020
C	Full LPA Boulevard from south side of Williams Avenue to north of Sip Avenue, inclusive of Gateway Circle	By 2020
D	Culver Avenue to south side of Williams Avenue – Minor medians, local travel lane and sidewalks	By 2035
E	North of Sip Avenue to Route 7 – Full LPA Boulevard Improvements	By 2035
F	Bayonne Municipal Border to south of Society Hill Drive - Full LPA Boulevard Improvements	By 2035