Submitted to:

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150 Mount Vernon Street
Boston, MA 02125

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COBBLE HILL CENTER REDEVELOPMENT

PREPARED BY:

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1 EXECUTIVE SUMMARY

This report documents the findings of the traffic impact and access study conducted for the proposed 159 unit Cobble Hill Center. The study includes an evaluation of the existing conditions, as well as projected future traffic volumes without the proposed project (No-Build) and future traffic volumes with the proposed project (Build). Potential traffic impacts associated with the development were analyzed and recommendations for mitigation have been identified.

1.1 PROJECT OVERVIEW

The proposed project site is located at the southeast corner of the intersection of Washington Street and New Washington Street in Somerville, Massachusetts (Figure 1). The project proponent, Corcoran Jennison Companies, wishes to demolish the small single-story retail plaza that currently exists on the site and replace it with a multi-story brick building containing 159 residential rental units and 13,217 square feet of ground level retail space. The residential portion of the development is proposed to consist of 25 studio apartments and 134 1- and 2- bedroom apartments for rent. 179 onsite parking spaces are proposed, along with various other site improvements. An additional 55 parking spaces are shown on the Overall Site Plan, for a total of 234 parking spaces. The Overall Site Plan designed by DeMella Shaffer is enclosed in Appendix A. The Applicant is seeking a parking variance for the currently proposed 179 parking spaces in order to not build the additional land banked parking spaces.

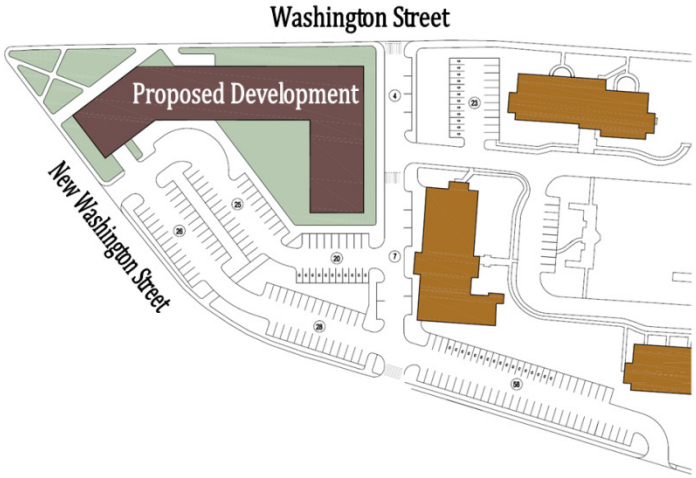


Figure 1 – Proposed Development Site Plan

1.2 STUDY METHODOLOGY

This study was conducted using a widely accepted mythology for traffic studies. The first in the study process involves the study of existing traffic conditions in the vicinity of the proposed project. The existing conditions assessment includes an inventory of roadway geometry, on- and off-street parking utilization trends, assessment of recent crash trends, observation of traffic flow, and collection of peak hour traffic counts. The second step in the study process is to analyze the projected future conditions, without the proposed project. The final step in the study process is to analyze the future conditions with the proposed project and address any projected traffic and safety issues that may need to be mitigated.

2 EXISTING CONDITIONS

In order to predict the transportation impacts of a proposed project on a roadway network, understanding the existing conditions of the study area is required. Existing conditions described below include roadway and intersection geometry, a traffic control inventory, daily and peak period traffic volumes, and vehicular crash data information.

2.1 STUDY AREA

After consulting with the City of Somerville's Traffic Engineer, a comprehensive study area which includes all intersections along the Washington Street corridor was created. Accordingly, the project study area includes the following intersections:

- Washington Street at McGrath Highway (Route 28)
- Washington Street at Tufts Street and Knowlton Street
- Washington Street at New Washington Street
- Washington Street at Franklin Street
- Washington Street at Franklin Avenue
- Washington Street at Myrtle Street and Cobble Hill Driveway
- Washington Street at Florence Street
- Washington Street at Pinckney Street
- Washington Street at Mount Vernon Street
- Washington Street at Inner Belt Road
- Washington Street at Existing Site Driveway (East)
- Washington Street at Existing Site Driveway (West)
- New Washington Street at Inner Belt Road

Study area intersections were evaluated taking into consideration the traffic control inventory, roadway geometry, peak period traffic volumes, and vehicular crash history. Daily traffic volumes were also collected along Washington Street and New Washington Street.

Due to the current Green Line Extension (GLX) project, areas of Somerville have already been studied quite extensively. Traffic studies for GLX have been conducted in close proximity to the newly proposed Washington Street residential project; the intersections of Washington Street at McGrath Highway, Washington Street at Tufts Street/Knowlton Street, Washington Street at Joy Street, and Washington Street at New Washington Street have all been studied.

2.2 ROADWAY GEOMETRY

2.2.1 ROADWAYS

The study area includes the following major roadways:

McGrath-O'Brien Highway/Route 28

McGrath Highway/Route 28 is a major multilane arterial that provides alternative connections from I-93 to Cambridge and downtown Boston. To the north of the study area, Route 28 is known as the Fellsway, where it traverses Medford. To the south of the study area, Route 28 travels through Leverett Circle where connections are possible to the interstate system and Storrow Drive. Route 28 carries 65,000 vehicles per day between Medford Street/Highland Avenue and Washington Street.

Washington Street

Washington Street runs in an east-west direction across the middle of the study area between McGrath Highway and the City of Boston line. There are 11,000 vehicles per day on the segment of Washington Street East of Route 28. The paved travelled way is about 2,400 feet in length within the study area, with one 21 foot wide travel lane in each direction. The pavement is in fair condition, with a double yellow lane marking running along Washington Street through the study area, however is faded in various areas. Within the study area, Washington Street has a posted speed limit of 30 mph. Land uses along this roadway consist primarily of retail and residential properties.

2.2.2 INTERSECTIONS

The study area includes 2 signalized and 11 unsignalized intersections. They are as follows:

- Washington Street at McGrath Highway (Route 28) (signalized)
- Washington Street at Tufts Street and Knowlton Street (unsignalized)
- Washington Street at New Washington Street (unsignalized)
- Washington Street at Franklin Street (unsignalized)
- Washington Street at Franklin Avenue (unsignalized)
- Washington Street at Myrtle Street and Cobble Hill Driveway (unsignalized)
- Washington Street at Florence Street (unsignalized)
- Washington Street at Pinckney Street (unsignalized)
- Washington Street at Mount Vernon Street (unsignalized)
- Washington Street at Inner Belt Road (signalized)
- Washington Street at Existing Site Driveway (East) (unsignalized)
- Washington Street at Existing Site Driveway (West) (unsignalized)
- New Washington Street at Inner Belt Road (unsignalized)

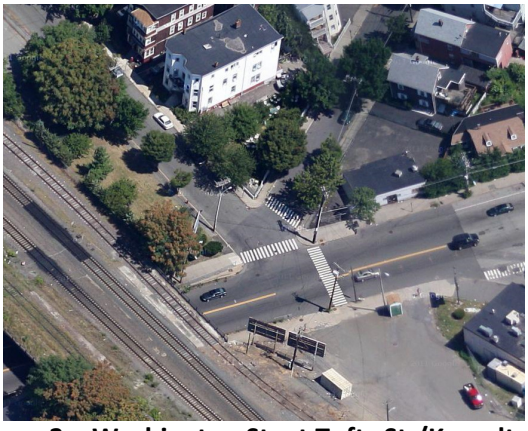
Washington Street at McGrath Highway (Route 28) (signalized)

The intersection of McGrath Highway at Washington Street forms a four-legged signalized intersection. Washington Street runs in an east-west direction while McGrath Highway runs north-south. The Washington Street eastbound approach consists of two channelized left-turn lanes, two through lanes and a shared through/right-turn lane. The Washington Street westbound approach consists of a left/through, a through, and a through/right lane. The McGrath Highway southbound approach is divided into two approach areas separated by bridge columns. It consists of two un-striped general purpose lanes west of the divider and one through lane east of the divider that is restricted for MBTA use only. The McGrath Highway northbound approach consists of two general purpose lanes.

Figure 2 – Washington St. at McGrath Hwy.

Sidewalks and crosswalks are present on all approaches. The intersection operates as a five phase pre-timed signal with two signalized concurrent pedestrian movements, the Washington Street eastbound crosswalks and the Route 28 southbound crosswalks. There are several unsignalized pedestrian movements as well. Land uses in the area consist of residential, retail and commercial properties.

Washington at Tufts Street and Knowlton Street (unsignalized)



The intersection of Washington Street and Tufts Street forms a three-way unsignalized intersection. Washington Street runs in an east-west direction while Tufts Street intersects from the north. Tufts Street is also intersected by Knowlton Street, which enters from the east. A seldom used, MBTA owned, driveway exists on the south side of the intersection. Tufts and Knowlton Streets are un-striped two-way roadways while Washington Street is striped for one wide lane in each direction.

Figure 3 – Washington St. at Tufts St./Knowlton St.

Sidewalks are present on all approaches, while crosswalks are present across Washington Street at the east side of the intersection, across Knowlton Street and across Tufts Street. Tufts Street also includes a sharrow. Land uses in the area consist of residential, restaurant, retail, and commercial properties.

Washington Street at New Washington Street (unsignalized)

The intersection of Washington Street and New Washington Street forms a three-way, unsignalized T-intersection. Washington Street runs in an east-west direction while New Washington Street intersects from the south. Washington Street is striped such that there is one lane for the eastbound approach and two lanes, one through lane and one left turn lane, for the westbound approach. New Washington Street is a stop controlled, un-striped, two- way roadway.

Sidewalks are present on all approaches and crosswalks are present across New Washington Street. Washington Street also includes sharrows on both the north and south sides of the street. Land uses in the area consist of residential, retail and commercial properties.

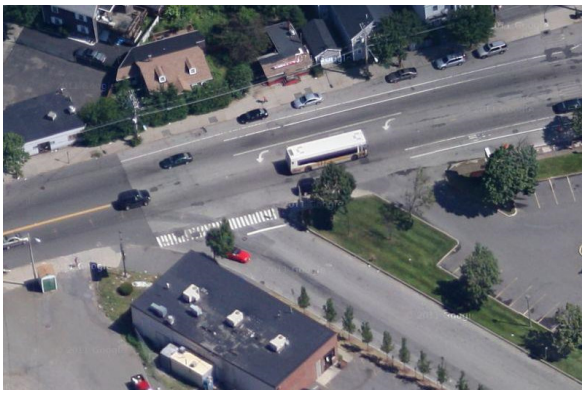


Figure 4 – Washington St. at New Washington St. and Existing West Site Driveway

Washington Street at Existing Site Driveways (unsignalized)

The project site currently has two driveways intersecting Washington Street from the south, referred to as the east driveway and the west driveway. The existing site driveways form two three-way, unsignalized, T-intersections. Washington Street runs in an east-west direction while each driveway intersects from the south. Washington Street is striped such that there is one lane in each direction. The intersection of Washington Street and Franklin Street, which is located on the north side of Washington Street, aligns almost directly opposite the east site driveway.

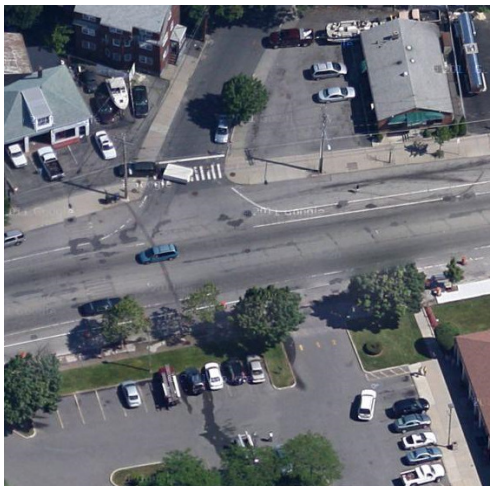


Figure 5 – Washington St. at Franklin St. and Existing East Site Driveway

Sidewalks are present on all approaches and sharrows are present on both the north and south sides of Washington Street. Land uses in the area consist of residential, retail and commercial properties.

Washington Street at Franklin Street (unsignalized)

The intersection of Washington Street and Franklin Street forms a three-legged T-intersection. Washington Street runs in an east-west direction while Franklin Street intersects from the north. Washington Street is striped with one lane in each direction while Franklin Street is a one-way roadway allowing traffic to travel in the southbound direction entering the intersection. The existing east site driveway located on the south side of the intersection, aligns almost directly opposite Franklin Street.

Sidewalks are present on all approaches and crosswalks are present across Franklin Street. Washington Street also includes sharrows on both the north and south sides of the street. Land uses in the area consist of residential, retail and commercial properties.

Washington Street at Franklin Avenue (unsignalized)

The intersection of Washington Street and Franklin Avenue forms a three-way, unsignalized, T-intersection. Washington Street runs in an east-west direction while Franklin Avenue intersects from the north. Washington Street is striped with one lane in each direction while Franklin Avenue is a one-way roadway allowing traffic to travel in the northbound direction away from the intersection.

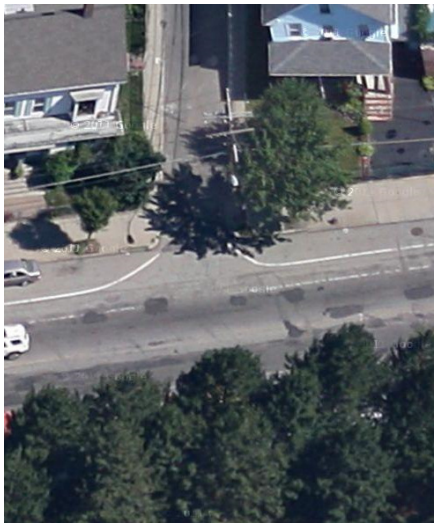


Figure 6 – Washington St. at Franklin Ave.

Sidewalks are present on all approaches and crosswalks are present across Franklin Avenue. Washington Street also includes sharrows on both the north and south sides of the street. Land uses in the area consist of residential, retail and commercial properties.

Washington Street at Myrtle Street and Cobble Hill Driveway (unsignalized)

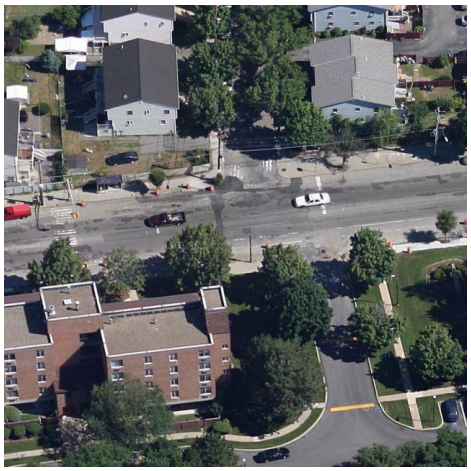


Figure 7 – Washington St. at Myrtle St. and Cobble Hill Driveway

The intersection of Washington Street and Myrtle Street forms a four-legged, unsignalized, intersection. Washington Street runs in an east-west direction while Myrtle Street intersects from the north with the driveway of the existing Cobble Hill residential development intersecting from the south. Washington Street is striped with one lane in each direction while Myrtle Street is a one-way roadway allowing traffic to travel in the northbound direction away from the intersection.

Sidewalks are present on all approaches and crosswalks are present across Myrtle Street. Washington Street also includes sharrows on both the north and south sides of the street. Land uses in the area consist of residential, retail and commercial properties.

Washington Street at Florence Street (unsignalized)

The intersection of Washington Street and Florence Street forms a three-legged, unsignalized, T-intersection. Washington Street runs in an east-west direction while Florence Street intersects from the north. Washington Street is striped with one lane in each direction while Florence Street is a one-way roadway allowing traffic to travel in the southbound direction entering the intersection.

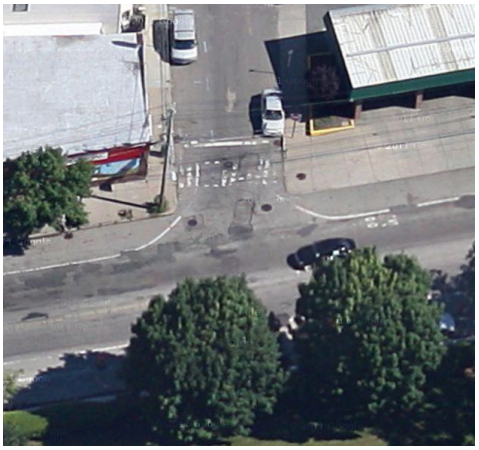


Figure 8 – Washington St. at Florence St.

Sidewalks are present on all approaches and crosswalks are present across Florence Street. Washington Street also includes sharrows on both the north and south sides of the street. Land uses in the area consist of residential, retail and commercial properties.

Washington Street at Pinckney Street (unsignalized)

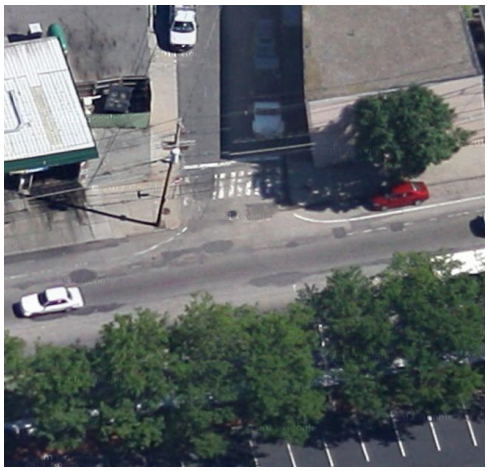


Figure 9 – Washington St. at Pinckney St.

The intersection of Washington Street and Pinckney Street forms a three-legged, unsignalized, T-intersection. Washington Street runs in an east-west direction while Pinckney Street intersects from the north. Washington Street is striped with one lane in each direction while Pinckney Street is a one-way roadway allowing traffic to travel in the southbound direction entering the intersection.

Sidewalks are present on all approaches and crosswalks are present across Pinckney Street. Washington Street also includes sharrows on both the north and south sides of the street. Land uses in the area consist of residential, retail and commercial uses in the immediate vicinity of the intersection.

Washington Street at Mount Vernon Street (unsignalized)

The intersection of Washington Street and Mount Vernon Street forms a three-legged, unsignalized, T-intersection. Washington Street runs in an east-west direction while Mount Vernon Street intersects from the north. Washington Street is striped with one lane in the westbound direction and two lanes in the eastbound direction. The second lane in the eastbound direction acts as a right turn lane for the intersection of Washington Street and Inner Belt Road, located approximately twenty (20) feet east. Mount Vernon Street is a one-way roadway allowing traffic to travel in the southbound direction entering the intersection.

Sidewalks are present on all approaches and crosswalks are present across Mount Vernon Street. Washington Street also includes sharrows on both the north and south sides of the street. Land uses in the area consist of residential, retail and commercial properties.

Figure 10 – Washington St. Mount Vernon St. and Inner Belt Rd.

Washington Street at Inner Belt Road (signalized)

The intersection of Washington Street and Inner Belt Road forms a three-way signalized T-intersection. Washington Street runs in an east-west direction while Inner Belt Road intersects from the south. The Washington Street eastbound consists of a through lane and an exclusive right-turn lane and the westbound approach consists of an exclusive left-turn lane and a through lane. The Inner Belt Road northbound approach consists of two un-striped lanes.

Sidewalks are present on all approaches. Crosswalks are present on the Washington Street eastbound approach and the Inner Belt Road approach. The intersection operates as a three phase fully-actuated signal which includes an exclusive pedestrian phase. Land uses in the area consist of residential, restaurant, retail, and commercial uses, including a hotel directly adjacent to the intersection.

New Washington Street at Inner Belt Road (unsignalized)

The intersection of New Washington Street and Inner Belt Road forms a three-legged, unsignalized, T-intersection. Inner Belt Road runs in the north-south direction while New Washington Street intersections from the west. Inner Belt Road is striped such that there is one lane in each direction while New Washington Street is an un-striped, two-way, roadway.

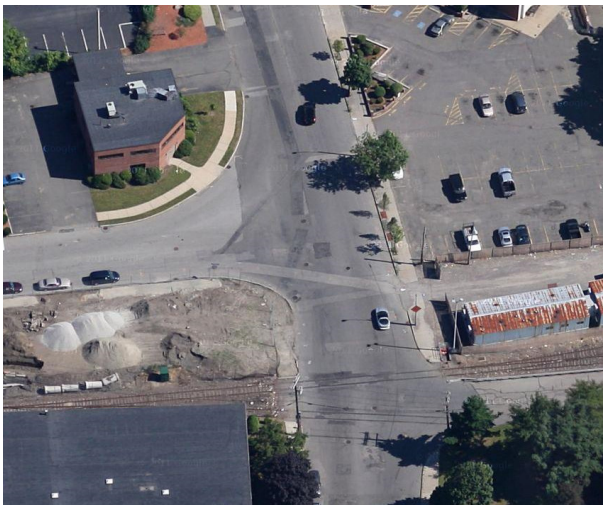


Figure 11 – New Washington St. at Inner Belt Rd.

Sidewalks are present on the south side of New Washington Street, the east side of Inner Belt Road south of the intersection, and both sides of Inner Belt Road north of the intersection. Land uses in the area are primarily of commercial and industrial in nature.

2.3 TRAFFIC VOLUME DATA

Daily and peak hour traffic volume data were collected to establish baseline traffic conditions within the study area. Traffic fluctuations over a typical day provide insight into when peak periods occur and the intensity of traffic occurring during the peak period. Manual peak hour turning movements and vehicle classification counts were conducted at each of the study area intersections.

Daily traffic volumes for a typical weekday were obtained by Automatic Traffic Recorders (ATRs) that were temporarily installed across two study area roadways:

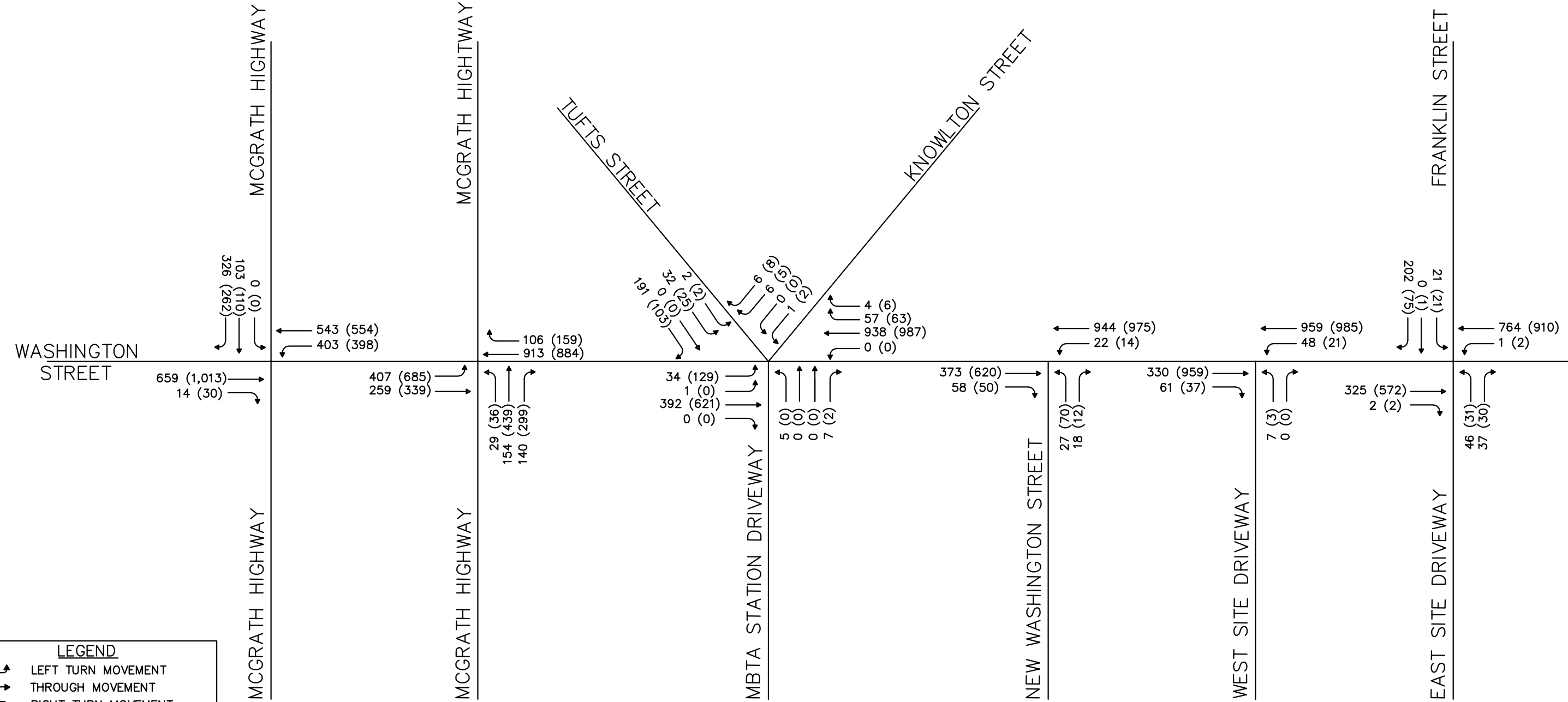
- Washington Street – at the existing site driveway (east)/Franklin Street and Franklin Avenue
- New Washington Street – at the existing site truck deliveries driveway and Cobble Hill Road

The ATRs collected traffic data for a 24-hour period for each eastbound and westbound direction along the roadways; including volume, speed and vehicle classification. Raw data collected for the project is found in Appendix B of this study.

While individual intersections may experience different peak periods, the weekday morning peak period was determined to be from 7:00 AM to 9:00 AM while the weekday evening peak period was determined to be from 4:00 PM to 6:00 PM. The peak periods occur due to the large amount of residents in the area traveling to and from work during those hours. Turning Movement Counts (TMCs) were collected during the morning and evening peak periods on May 3, 2012 at the study area intersections listed below:

- Washington Street at McGrath Highway (Route 28)
- Washington Street at Tufts Street and Knowlton Street
- Washington Street at New Washington Street
- Washington Street at Franklin Street
- Washington Street at Franklin Avenue
- Washington Street at Myrtle Street and Cobble Hill Driveway
- Washington Street at Florence Street
- Washington Street at Pinckney Street
- Washington Street at Mount Vernon Street
- Washington Street at Inner Belt Road
- Washington Street at Existing Site Driveway (East)
- Washington Street at Existing Site Driveway (West)
- New Washington Street at Inner Belt Road

The peak hour existing traffic volume network used for traffic operation analysis is found in Figure 12.



LEGEND

- LEFT TURN MOVEMENT
- THROUGH MOVEMENT
- RIGHT TURN MOVEMENT

XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

NOTE:

AM PEAK HOUR = 7:00 AM – 8:00 AM
PM PEAK HOUR = 3:30 PM – 4:30 PM

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Strategic Perspective, Exceptional Results

54 CANAL STREET
BOSTON, MASSACHUSETTS 02114
(877) 305-4163

PROJECT:

REDEVELOPMENT OF COBBLE HILL CENTER

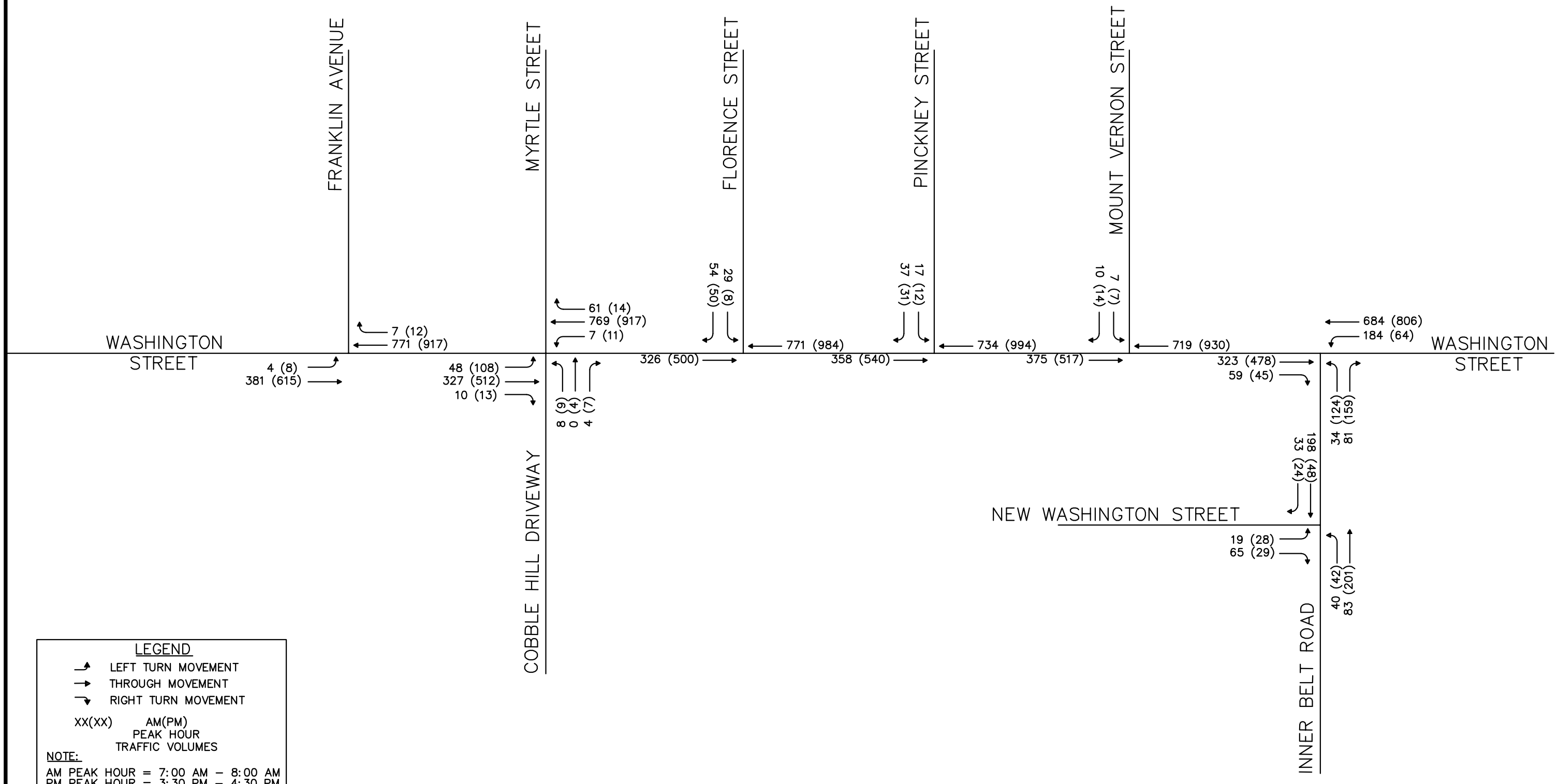
WASHINGTON STREET AT NEW WASHINGTON STREET
IN
SOMERVILLE, MA

Job Number	16120002
Designed by:	HG
Date:	11/06/12
Scale:	NTS
Page:	10

FIGURE TITLE:

2012 EXISTING CONDITION TRAFFIC VOLUME NETWORK

1 OF 2



LEGEND

- LEFT TURN MOVEMENT
- THROUGH MOVEMENT
- RIGHT TURN MOVEMENT

XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

NOTE:

AM PEAK HOUR = 7:00 AM – 8:00 AM
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FORT HILL INFRASTRUCTURE SERVICES, LLC

Strategic Perspective, Exceptional Results

54 CANAL STREET
BOSTON, MASSACHUSETTS 02114
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PROJECT:

REDEVELOPMENT OF COBBLE HILL CENTER

WASHINGTON STREET AT NEW WASHINGTON STREET
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FIGURE TITLE:

2012 EXISTING CONDITION TRAFFIC VOLUME NETWORK

2 OF 2

2.4 SAFETY ANALYSIS

2.4.1 VEHICULAR CRASH DATA

Vehicular crash data was obtained from MassHighway for the most recent three years available for the City of Somerville, 2007 through 2009. The data includes all reported crashes with a property damage value greater than $1,000 or crashes that involved personal injuries or fatalities. The crash data for the City were reviewed to obtain the crashes that occurred within the study area. By analyzing crash data, potential vehicular crash trends can be identified and mitigation measures suggested improving vehicular, bicyclist, and pedestrian safety. MassHighway crash data are summarized in Table 1.

Table 1 – Vehicular Crash Summary (2007-2009)

	Washington Street at										
	McGrath Highway	Tufts Street / Knolton Street	New Washington Street	Franklin Street	Franklin Avenue	Myrtle Street/ Cobble Hill Driveway	Florence Street	Pinckney Street	Mount Vernon Street	Inner Belt Road	New Washington Street at Inner Belt Road
Currently Signalized	Y	N	N	N	N	N	N	N	N	Y	N
MassHighway ACR	0.78	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.78	0.59
MassHighway CCR	1.75	0.33	0.12	0.26	0.19	0.26	0.19	0.23	0.05	0.43	0.33
Exceeds?	Yes	No	No	No	No	No	No	No	No	No	No
Year											
2007	27	0	0	4	1	2	0	2	0	4	0
2008	25	3	2	0	1	3	1	2	0	4	2
2009	18	6	1	2	2	1	3	1	1	2	0
Total	70	9	3	6	4	6	4	5	1	10	2
Collision Type											
Angle	15	1	1	2	1	2	0	2	1	1	1
Head-on	0	1	0	1	0	2	0	0	0	1	0
Rear-end	22	2	1	1	2	0	4	3	0	5	0
Sideswipe	15	2	0	1	0	2	0	0	0	1	0
Single-vehicle crash	11	3	0	1	0	0	0	0	0	2	1
Unknown	7	0	1	0	1	0	0	0	0	0	0
Total	70	9	3	6	4	6	4	5	1	10	2
Severity											
Fatal											
Injury	22	3	1	1	2	3	0	3	0	5	0
Property-related	36	5	0	4	1	3	2	2	1	4	2
Unknown	12	1	2	1	1	0	2	0	0	1	0
Total	70	9	3	6	4	6	4	5	1	10	2
Time of day											
Weekday, Morning	5	0	1	0	0	0	1	0	0	0	0
Saturday, Midday	2	0	0	0	0	0	0	0	0	1	0
Weekday, other time	48	5	2	5	3	4	2	4	1	7	1
Weekend, other time	15	4	0	1	1	2	1	1	0	2	1
Total	70	9	3	6	4	6	4	5	1	10	2
Pavement Condition											
Dry	45	8	3	6	4	6	4	5	0	5	0
Wet	19	1	0	0	0	0	0	0	1	3	2
Snow	2	0	0	0	0	0	0	0	0	2	0
Other	1	0	0	0	0	0	0	0	0	0	0
Unknown	3	0	0	0	0	0	0	0	0	0	0
Total	70	9	3	6	4	6	4	5	1	10	2

ACR average crash rate
CCR calculated crash rate
Source: MassHighway vehicle crash data

The MassDOT raw data and crash rate worksheets are enclosed in Appendix C of this study.

2.4.2 INTERSECTION SAFETY

As part of the safety assessment, crash rates were calculated for each of the study area intersections. A crash rate is the representative number of crashes that occur at a particular intersection for every 1,000,000 vehicles that enter that intersection. For example, a crash rate of 1.0 indicates that one crash occurs at an intersection for every 1,000,000 vehicles that enter it. The calculated crash rate for each intersection was then compared to the current statewide average crash rate (0.78 for signalized intersections and 0.59 for unsignalized intersections) and the MassDOT District 4 average crash rate (0.78 for signalized intersections and 0.59 for unsignalized intersections) to determine whether each intersection in the study area experiences a greater than average crash rate.

One intersection in the study area exceeds the District 4 average crash rate:

- Washington Street at McGrath Highway (Route 28)

This safety assessment also included a review of the statewide High Crash Location list[1]. This annually published list includes the top 200 crash locations within the Commonwealth. None of the intersections within the study area are on this list.

2.4.3 PEDESTRIAN SAFETY

As part of this safety assessment, the MassDOT Crash database was reviewed for any crashes specific to pedestrians. The review in this study included a three-year period between January 2007 and December 2009. Within the study area, there were no reported crashes involving a pedestrian within the three-year period.

It is important to note that the MassDOT database has been created to provide information on vehicular crashes in cities and towns. Therefore, the pedestrian incidents reported are a result of vehicular conflict. Pedestrian incidents resulting from a conflict with a bicycle or other non-motorized source are not reported. No database quantifying these types of incidents currently exists.

2.4.4 BICYCLE SAFETY

The MassDOT Crash database was reviewed for any crashes specific to bicycles. In the three-year period between January 2007 and December 2009, six crashes involving bicycles were reported at study area intersections. No fatalities were reported, however, there were four crashes resulting in personal injuries. Only two cases reported wet roadway conditions and half the crashes occurred during darkness. The intersections that experienced crashes involving bicycles are listed below:

[1] 2009 Top 200 Crash Locations Report (2007-2009), Massachusetts Department of Transportation, 2011.

- Washington Street at McGrath Highway (3 crashes)
- Washington Street at Inner Belt Road (1 crashes)
- Washington Street at Tufts Street/Knowlton Street (2 crashes)

It is important to note that the MassDOT database has been created to provide information on vehicular crashes in cities and towns. Therefore, the reported bicycle incidents are all a result of vehicular conflict. Bicycle incidents resulting from a conflict with another bicycle, pedestrian, or fixed object are not reported. No database quantifying these types of incidents currently exists.

2.5 TRAFFIC OPERATIONS ANALYSIS

2.5.1 VEHICULAR TRAFFIC OPERATIONS

Intersection capacity analyses were conducted for the study area intersections based on the existing traffic volumes, intersection geometry and traffic control. Measuring existing traffic volumes quantifies traffic flow within the study area. Capacity analyses provide an indication of how well the intersections accommodate the traffic demands placed upon them. A computer software package, *SYNCHRO*, was used to model traffic conditions at the project area intersections. This software package is based on procedures outlined in the *2010 Highway Capacity Manual (HCM).*[2]

Level of Service (LOS) is the letter designation used to denote the different operating conditions that occur at a given intersection under various traffic conditions. It is a qualitative measure of the effect of a number of factors including roadway geometry, speed, travel delay, freedom to maneuver, and safety. LOS provides an index to the operational qualities of an intersection. LOS designations range from A to F, with LOS A representing the optimal operating conditions with little or no delay and LOS F representing the worst operating conditions with high congestion and long delays. LOS D or better is generally considered an acceptable operating condition. In practice, any intersection or roadway segment may operate at a wide LOS range depending upon the time of day, day of week, or time of year. LOS is based on the control delay ranges they fall under. The control delay thresholds for determining the vehicular LOS values for signalized and unsignalized intersections are shown below in Table 2.

Table 2 - Vehicular Level of Service Thresholds

Level of Service	Unsignalized Intersection Control Delay Range (seconds)	Signalized Intersection Control Delay Range (seconds)
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50	>80

Source: 2010 Highway Capacity Manual

[2] *2010 Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2010.

Control delay is the primary performance measure for signalized intersections. Control delay is a portion of total delay credited to traffic signals; vehicles decelerating and stopping once a signal turns red then accelerating once the signal turns green. For signalized intersections, the analysis considers the operation of each lane group entering the intersection and the overall conditions at the intersection.

Unlike signalized intersections, unsignalized intersections are analyzed by the critical movement of the intersection. It is assumed that through movements on the main street have the right of way and are not delayed due to the side street traffic. Consequently, delay values apply only to the minor street intersection approaches or the left turns from the major street onto a minor street, which must yield to the on-coming traffic on the major street in the opposite direction.

Control delay coupled with the respective volume-to-capacity ratio characterizes the LOS of that lane group entering the intersection. Volume to capacity ratio quantifies the degree to which a phase's capacity is utilized by the lane group. The results of the existing conditions traffic operations analysis are presented in Tables 3 and 4.

SYNCHRO traffic analysis output sheets are enclosed in Appendix D of this study.

Table 3 - Existing Condition Signalized Intersection Traffic Operations

Location	Movement	Morning Peak Hour			Evening Peak Hour		
		v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Washington Street at McGrath Highway (West side)	EB Th/R	0.37	39.9	D	0.58	43.3	D
	WB L	0.50	3.5	A	0.49	3.3	A
	WB Th	0.39	1.6	A	0.40	2.1	A
	SB L/Th/R	0.78	81.9	F	0.86	90.7	F
	Overall	**0.48**	**31.7**	**C**	**0.55**	**34.5**	**C**
Washington Street at McGrath Highway (East side)	EB L	0.37	4.0	A	0.62	8.1	A
	EB Th	0.17	1.5	A	0.22	1.7	A
	WB Th/R	0.64	35.2	D	0.67	35.8	D
	NB L	0.23	56.6	E	0.29	57.9	E
	NB Th	1.08	146.1	F	3.08	1008.6	F
	NB R	0.12	0.2	A	0.26	0.4	A
	Overall	**0.58**	**33.0**	**C**	**0.96**	**193.0**	**F**
Washington Street at Inner Belt Road	EB Th	0.32	5.1	A	0.52	7.7	A
	EB R	0.06	4.2	A	0.05	5.4	A
	WB L	0.33	5.2	A	0.17	5.9	A
	WB Th	0.75	10.3	B	0.96	31.6	C
	NB L	0.23	25.4	C	0.59	27.8	C
	NB R	0.09	24.4	C	0.17	22.2	C
	Overall	**0.66**	**9.6**	**A**	**0.87**	**22.0**	**C**

1 Volume-to-capacity ratio
2 Average delay expressed in seconds per vehicle
3 Level-of-Service
Note: Using Synchro 7 software.

The following signalized intersection currently operates at LOS F during one or both peak hours:

- Washington Street at McGrath Highway/Route 28 (East Side)

Table 4 - Existing Condition Unsignalized Intersection Traffic Operations

Location	Critical Movement	Morning Peak Hour			Evening Peak Hour		
		v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Washington Street at Tufts Street	Northbound	2.98	2410.0	F	0.01	13.4	B
	Southbound	1.78	426.1	F	3.31	*	F
Washington Street at New Washington Street	Northbound	0.48	55.2	F	1.94	592.7	F
Washington Street at Existing West Site Driveway	Northbound	0.09	48.5	E	0.06	68.9	F
Washington Street at Franklin Street / Existing East Site Driveway	Northbound	3.65	*	F	2	682.4	F
	Southbound	1.05	106.6	F	1.2	220.1	F
Washington Street at Franklin Avenue	Eastbound	0.01	0.3	A	0.03	0.9	A
Washington Street at Myrtle Street / Cobble Hill Driveway	Northbound	0.27	58.9	F	3.65	*	F
Washington Street at Florence Street	Southbound	0.39	28.9	D	0.52	60.4	F
Washington Street at Pickney Street	Southbound	0.34	26.9	D	1	217.6	F
Washington Street at Mount Vernon Street	Southbound	0.07	18.2	C	0.16	32.9	D
New Washington Street at Inner Belt Road	Eastbound	0.20	11.7	B	0.14	11.3	B

1 Volume-to-capacity ratio
2 Average delay expressed in seconds per vehicle
3 Level-of-Service
Note: Using Synchro 7 software.

Seven unsignalized intersections currently operate at LOS F during one or both peak hours:

- Washington Street at Tufts Street/Knowlton Street
- Washington Street at New Washington Street
- Washington Street at Existing west site driveway
- Washington Street at Franklin Street/Existing east site driveway
- Washington Street at Myrtle Street/Cobble Hill Driveway
- Washington Street at Florence Street
- Washington Street at Pinckney Street

The LOS for an unsignalized intersection does not represent the entire intersection, but rather the worst minor movement, for example, the left turn of the side street. The major movement generally operates at a LOS A unless otherwise noted.

2.5.2 BICYCLE OPERATIONS

As part of the data collection effort, bicycle turning movements were observed at each of the project area intersections during the morning and evening weekday peak hours. The largest bicycle volumes were observed along Washington Street. Bicycle volume observations can be found in Appendix B of this study.

2.6 PARKING

A parking inventory was conducted in the immediate vicinity of the project site. Parking inventory data were collected on Thursday, May 3rd, 2012 between the hours of 1:00 PM and 2:00 PM, and again between 8:00 PM and 9:00 PM, reflective of the time of day when residents have presumably returned home for the evening. To further ensure an accurate reflection of the typical neighborhood parking supply, additional data was collected on the evening of May 10th, again between the hours of 8:00 PM and 9:00 PM. The parking data collected on the 10th were consistent with the counts collected on the 3rd. In order to incorporate both evening parking counts, the average of the two evenings was calculated. The inventory includes total parking supply, along with mid-day and evening parking utilization counts (the number of parking spaces occupied) within the study area.

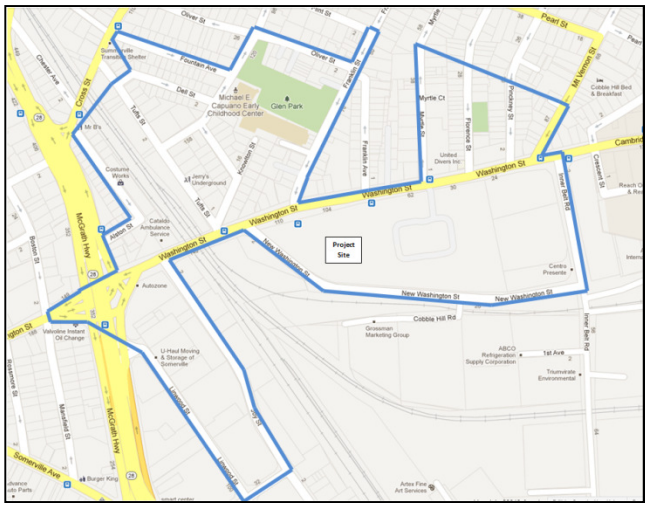


Figure 4 – Existing On-Street Parking Utilization Study Area

Table 5 – Existing On-Street Parking Utilization Summary

Street	Section	Total Number of Parking Spaces	Percent of Parking Spaces Occupied	
			Afternoon	Evening
Washington Street	Inner Belt Road to Boston Street	64	52%	31%
McGrath Highway Carriage Road	Washington Street to House #374	10	90%	40%
Alston Street	McGrath Highway to Cross Street	52	56%	62%
Linwood Street	McGrath Highway to NSTAR Property	19	68%	0%
Joy Street	Washington Street to Poplar Street	75	56%	39%
Tufts Street	Washington Street to Dell Street	25	40%	32%
Dell Street	Tufts Street to Glen Street	31	68%	58%
Glen Street	Tufts Street to Oliver Street	41	88%	49%
Morton Street	Glen Street to Knowlton Street	19	53%	53%
Fountain Avenue	Cross Street to Glen Street	23	65%	83%
Knowlton Street	Washington Street to End	21	43%	67%
Oliver Street	Glen Street to Franklin Street	31	39%	23%
Franklin Street	Flint Street to Washington Street	55	38%	20%
Myrtle Street	Washington Street to House #54	43	9%	33%
Florence Street	Washington Street to House #32	28	50%	68%
Pinckney Street	Washington Street to Un-named Private Way	21	57%	62%
Mount Vernon Street	Washington Street to Un-named Private Way	17	59%	65%
New Washington Street	Washington Street to Inner Belt Road	126	9%	12%
Inner Belt Road	Washington Street to New Washington Street	44	0%	25%
Overall On-Street Total		**745**	**42%**	**37%**

Note: Afternoon data collected 5-3-12 between 1:00 to 2:00 PM.
Note: Evening data collected both 5-3-12 and 5-10-12 between 8:00 to 9:00 PM; the average of the two evenings are depicted above.

Off-street parking currently available at the existing project site was also included (Table 5 and Table 6). Understanding the existing off-street parking supply and utilization of the existing retail space, helps to determine the available parking supply that the future proposed redevelopment may experience.

Figure 5 – Existing Off-Street Parking Utilization Study Area

Table 6 – Existing Off-Street Parking Utilization Summary

Cobble Hill Parking Lots	Total Number of Parking Spaces	Percent of Parking Spaces Occupied	
		Afternoon	Evening
Retail Plaza	55	58%	25%
Residential 1 - West Lot	35	83%	80%
Residential 2 - Handicap Spaces in Driveway	22	68%	91%
Residential 3 - East Lot	63	35%	52%
Overall Total	**175**	**56%**	**54%**

Note: Afternoon data collected 5-3-12 between 1:00 to 2:00 PM.
Note: Evening data collected both 5-3-12 and 5-10-12 between 8:00 to 9:00 PM; the average of the two evenings are depicted above.

2.7 SUMMARY

The existing conditions assessment for the study area evaluated traffic, bicycle and pedestrian operations, and safety statistics. The existing conditions assessment for the study area indicated the following:

- One project area intersection currently exceeds the statewide and District 4 average crash rates.
- None of the project area intersections are currently ranked on the MassDOT Top 200 High Crash Location list.
- One signalized intersection currently operates at LOS F during at least one peak hour.
- Seven unsignalized intersections currently operate at LOS F during at least one peak hour.
- On-street parking is available to the public in close vicinity to the project area 42% of on-street spaces are observed to be full during the midday period while 37% of these are spaces observed to be full during the evening period.
- Off-street parking is available to the public in close vicinity to the project area 56% of off-street spaces are observed to be full during the midday period while 54% of these spaces are observed to be full during the evening period.

3 FUTURE CONDITIONS (2017)

This section discusses future conditions with and without the proposed redevelopment. The future No-Build condition assumes that the proposed project is not built. The No-Build condition does, however, assume that other planned developments in the area have occurred. An estimated annual percentage increase has been applied to the study area traffic volumes for the future condition projected year of 2017, a 5-year horizon. The future Build condition adds the estimated traffic generated from the proposed project to the No-Build condition. The No-Build and Build conditions were analyzed for various transportation components including: traffic forecasting, vehicular traffic, pedestrians, bicycles, parking, and public transportation.

3.1 FUTURE NO-BUILD CONDITIONS (2017)

3.1.1 NO-BUILD TRAFFIC VOLUMES

In accordance with City of Somerville requirements and the City's Traffic Engineer, the No-Build traffic volumes were developed by applying a 0.5 percent annual growth rate over the five-year study horizon to the Existing traffic volumes. The future No-Build condition traffic volumes network can be found in Figure 13.

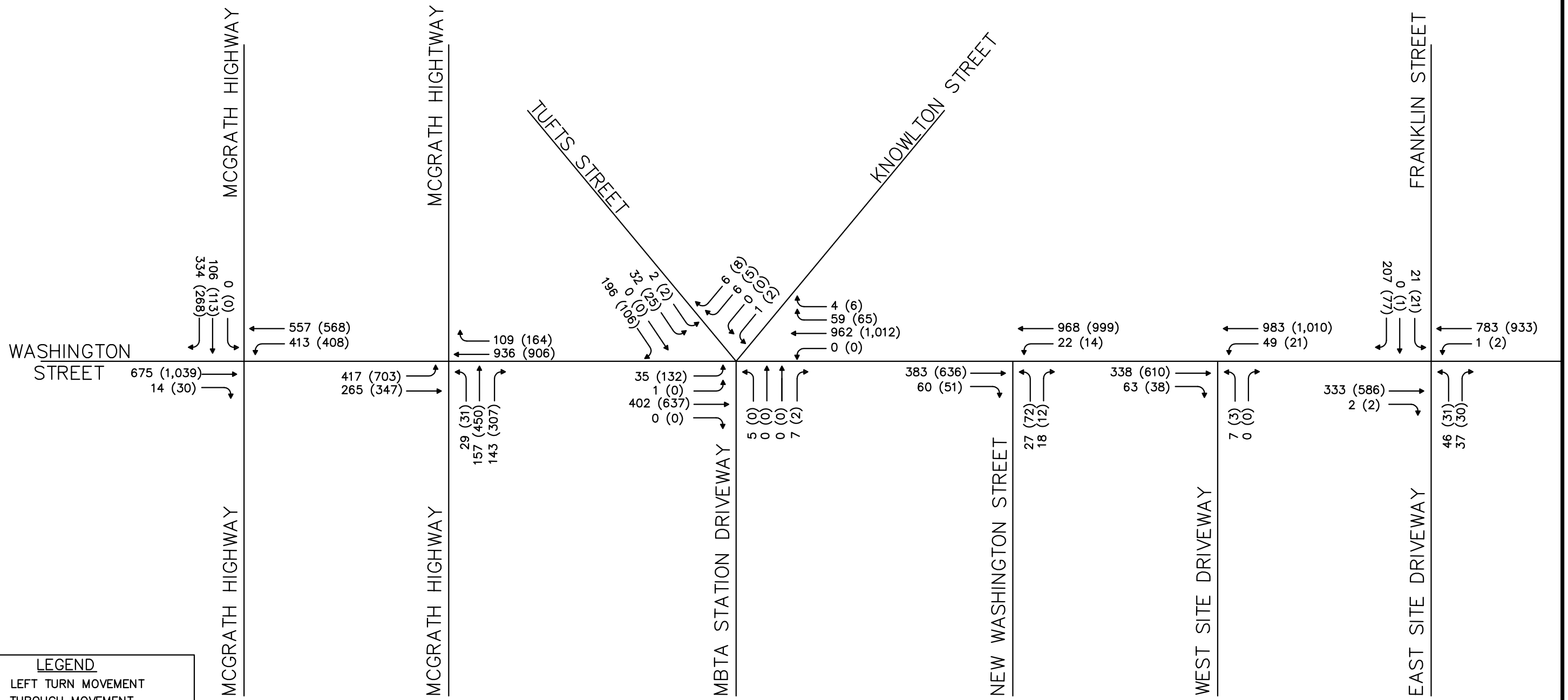
3.1.2 NO-BUILD VEHICULAR TRAFFIC OPERATIONS

A traffic operation analysis was conducted for each of the study area intersections under the future No-Build condition.

As presented in Table 7, one signalized intersection in the study area would continue to operate at LOS F under the proposed No-Build (2017) condition during at least one peak hour.

- Washington Street at McGrath Highway (East)

Level of service would decrease from a LOS C to LOS D during the evening peak hour period at the intersection of Washington Street at McGrath Highway (West).



LEGEND

- LEFT TURN MOVEMENT
- THROUGH MOVEMENT
- RIGHT TURN MOVEMENT

XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

NOTE:

AM PEAK HOUR = 7:00 AM – 8:00 AM
PM PEAK HOUR = 3:30 PM – 4:30 PM

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REDEVELOPMENT OF COBBLE HILL CENTER

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IN
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Job Number	16120002
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FIGURE TITLE:

2017 NO-BUILD CONDITION TRAFFIC VOLUME NETWORK

1 OF 2

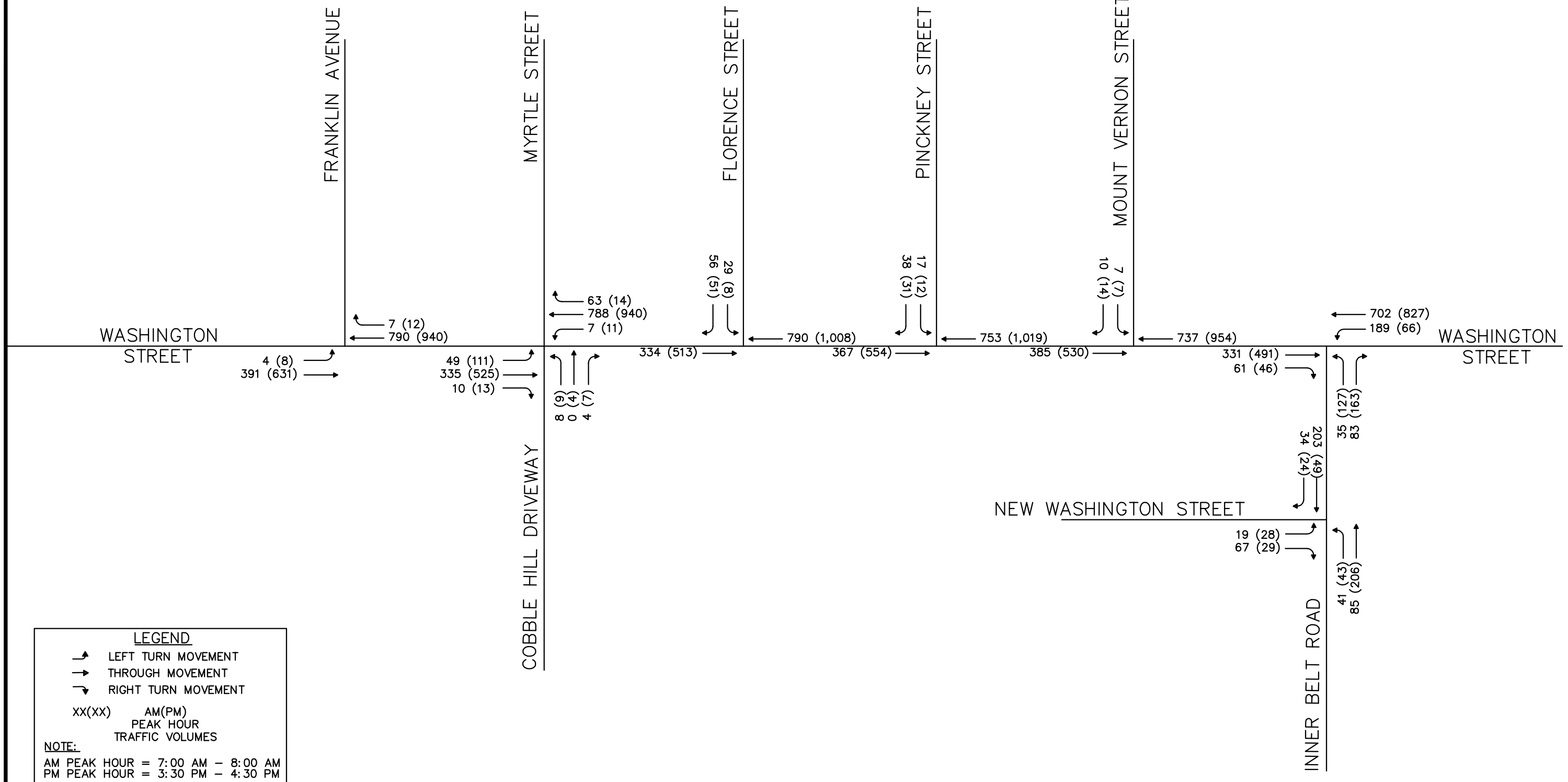

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FIGURE TITLE:

2017 NO-BUILD CONDITION TRAFFIC VOLUME NETWORK

2 OF 2

Table 7 - Future No-Build Condition Signalized Intersection Traffic Operations

Location	Movement	Morning Peak Hour			Evening Peak Hour		
		v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Washington Street at McGrath Highway (West side)	EB Th/R	0.38	40.0	D	0.69	43.6	D
	WB L	0.51	3.6	A	0.50	3.3	A
	WB Th	0.40	1.6	A	0.41	2.1	A
	SB L/Th/R	0.85	90.2	F	0.91	99.5	F
	Overall	**0.50**	**33.6**	**C**	**0.57**	**36.2**	**D**
Washington Street at McGrath Highway (East side)	EB L	0.38	4.1	A	0.64	8.4	A
	EB Th	0.17	1.5	A	0.22	1.7	A
	WB Th/R	0.66	35.6	D	0.68	36.2	D
	NB L	0.23	56.6	E	0.29	58.1	E
	NB Th	1.10	152.6	F	3.16	1042.6	F
	NB R	0.12	0.2	A	0.26	0.4	A
	Overall	**0.60**	**33.8**	**C**	**0.99**	**199.0**	**F**
Washington Street at Inner Belt Road	EB Th	0.33	5.1	A	0.53	7.9	A
	EB R	0.06	4.2	A	0.05	5.4	A
	WB L	0.34	5.2	A	0.18	5.9	A
	WB Th	0.77	11.0	B	0.98	37.4	D
	NB L	0.24	25.5	C	0.61	28.3	C
	NB R	0.09	24.4	C	0.17	22.2	C
	Overall	**0.68**	**9.9**	**A**	**0.90**	**24.8**	**C**

1 Volume-to-capacity ratio
2 Average delay expressed in seconds per vehicle
3 Level-of-Service
Note: Using Synchro 7 software.

As presented in Table 8, seven unsignalized intersections located within the study area would continue to operate at LOS F under the proposed No-Build (2017) condition during at least one peak hour.

- Washington Street at Tufts Street/Knowlton Street
- Washington Street at New Washington Street
- Washington Street at Existing west site driveway
- Washington Street at Franklin Street/Existing east site driveway
- Washington Street at Myrtle Street/Cobble Hill Driveway
- Washington Street at Florence Street
- Washington Street at Pinckney Street

Level of service would decrease from a desirable LOS D to an undesirable LOS E during the evening peak hour period at the intersection of Washington Street at Mount Vernon Street.

Table 8 - Future No-Build Condition Unsignalized Intersection Traffic Operations

Location	Critical Movement	Morning Peak Hour			Evening Peak Hour		
		v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Washington Street at Tufts Street	Northbound	*	*	F	0.01	13.6	B
	Southbound	1.92	488.5	F	3.75	*	F
Washington Street at New Washington Street	Northbound	0.52	61.2	F	2.16	702.0	F
Washington Street at Existing West Site Driveway	Northbound	0.09	51.8	F	0.03	40.1	E
Washington Street at Franklin Street / Existing East Site Driveway	Northbound	5.20	*	F	4.3	*	F
	Southbound	1.12	130.5	F	1.96	579.0	F
Washington Street at Franklin Avenue	Eastbound	0.01	0.4	A	0.03	1.0	A
Washington Street at Myrtle Street / Cobble Hill Driveway	Northbound	0.30	68.5	F	4.64	*	F
Washington Street at Florence Street	Southbound	0.42	31.4	D	0.6	74.7	F
Washington Street at Pickney Street	Southbound	0.36	29.0	D	1.17	295.4	F
Washington Street at Mount Vernon Street	Southbound	0.07	18.9	C	0.18	36.8	E
New Washington Street at Inner Belt Road	Eastbound	0.20	11.8	B	0.14	11.3	B

1 Volume-to-capacity ratio
2 Average delay expressed in seconds per vehicle
3 Level-of-Service
Note: Using Synchro 7 software.

As previously mentioned, the LOS for an unsignalized intersection does not represent the entire intersection, but rather the worst minor movement, for example, the left turn of the side street. The major movement generally operates at a LOS A unless otherwise noted.

3.2 FUTURE BUILD CONDITION (2017)

3.2.1 BUILD TRAFFIC VOLUMES

From the future No-Build condition traffic volumes, the project-generated trips were estimated and distributed based on the proposed development program and existing travel patterns.

3.2.1.1 TRIP GENERATION

To evaluate the traffic impacts of the proposed redevelopment it is necessary to determine the amount of traffic expected to be generated. The trip generation calculations are based on data compiled in Trip Generation[3], a standard reference guide used as a tool for planners, transportation professionals, and others who are interested in estimating the number of vehicle trips generated by a proposed development or land use once constructed and occupied. This document is based on more than 4,250 trip generation studies submitted to the Institute of Transportation Engineers (ITE) by public agencies, owners, consulting firms, and associations.

The proposed redevelopment consists of five levels of residential units with retail space on the ground level. The most similar Land Use Codes (LUC), LUC 223 for Mid-Rise Apartments and LUC 852 for Convenience Markets (open for 15-16 hours) were utilized. A mid-rise apartment qualifies as an apartment building containing between 3 and 10 levels. Although it is likely that the redevelopment for this site would include a mix of retail uses on the ground level, the convenience market land use code typically generates more trips then other types of retail uses, and therefore, allows for conservative trip generation projections. This conservative analysis was completed to provide the "worst-case" scenario. Table 9 presents the expected number of trips generated by the 159 mid-rise apartment units and 14,000 square feet of ground level retail space.

Table 9 - Trip Generation Projections

	Mid-Rise Apartment (LUC 223)	Convenience Market (Open 15-16 Hours) (LUC 852)	Total
Morning Peak Hour			
Entering	15	205	220
Exiting	33	205	238
Total	48	410	458
Evening Peak Hour			
Entering	36	224	260
Exiting	26	233	259
Total	62	457	519

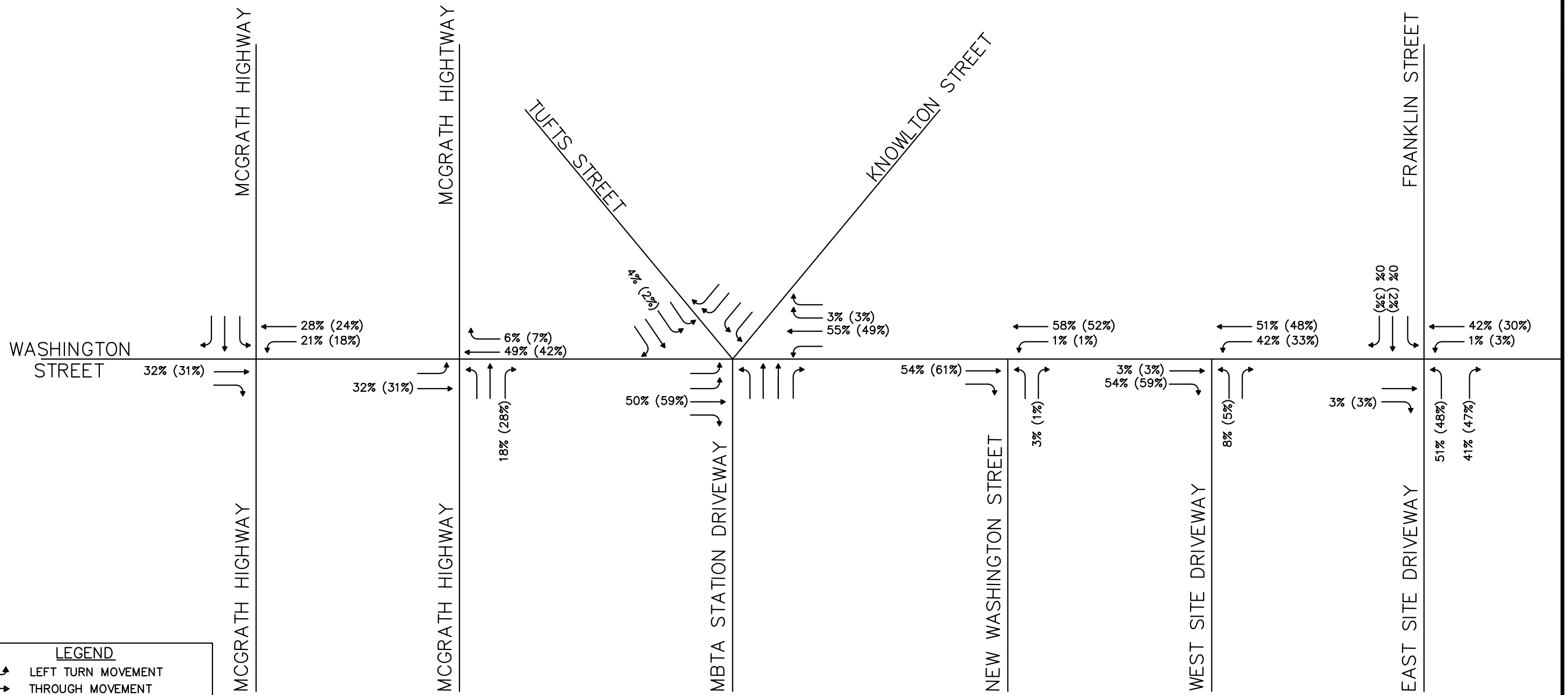
[3] Trip Generation, 8th Edition, Institute of Transportation Engineers, 2008

It should be noted that the number of trips generated was calculated using the average growth rate given for ITE Codes 223 and 852, rather than the fitted curve. The peak hours of the site generated traffic of a housing development generally coincides with the peak hours of the adjacent street traffic. It should be noted however that the trip generation rates provided in Table 9 are for the single highest peak hour anticipated for a typical weekday. During all other weekday "non-peak" hours of operation, trip generation will be lower than the peak hour trip generation outlined in Table 9.

3.2.1.2 TRIP DISTRIBUTION AND ASSIGNMENT

Upon determining the number of trips projected to be generated by the proposed redevelopment, these trips were then assigned to the study area intersections based on the existing trip distribution patterns. The directional distribution of site generated traffic is a function of population, density, existing travel patterns, and traffic conditions on area roadways. It is expected that most of the site generated traffic will arrive and depart via Washington Street. Directional distribution of the site generated trips along Washington Street are assumed to be split in a similar proportion as they exist today, 59% to and from the west and 41% to and from the east (Figure 14). As such, site generated trips were assigned to the study area intersections based on this directional distribution (Figure 15).

The site generated traffic was added to the No-Build peak hour traffic volumes to develop the Build peak hour traffic volumes (Figure 16).



LEGEND

- LEFT TURN MOVEMENT
- THROUGH MOVEMENT
- RIGHT TURN MOVEMENT

XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

NOTE:

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PM PEAK HOUR = 3:30 PM – 4:30 PM

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FIGURE TITLE:

SITE TRIP DISTRIBUTION TRAFFIC VOLUME NETWORK

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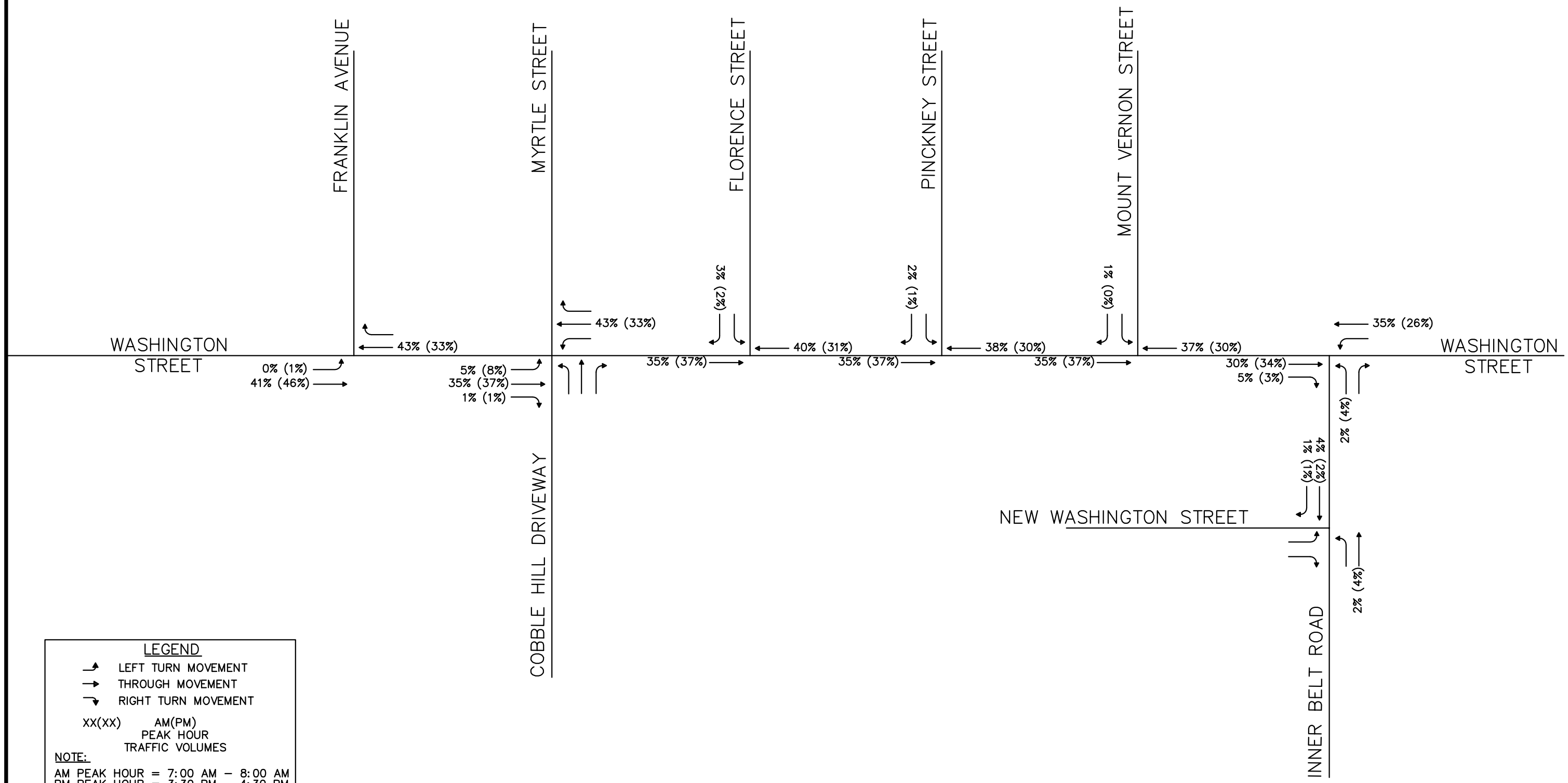

LEGEND

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- THROUGH MOVEMENT
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XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

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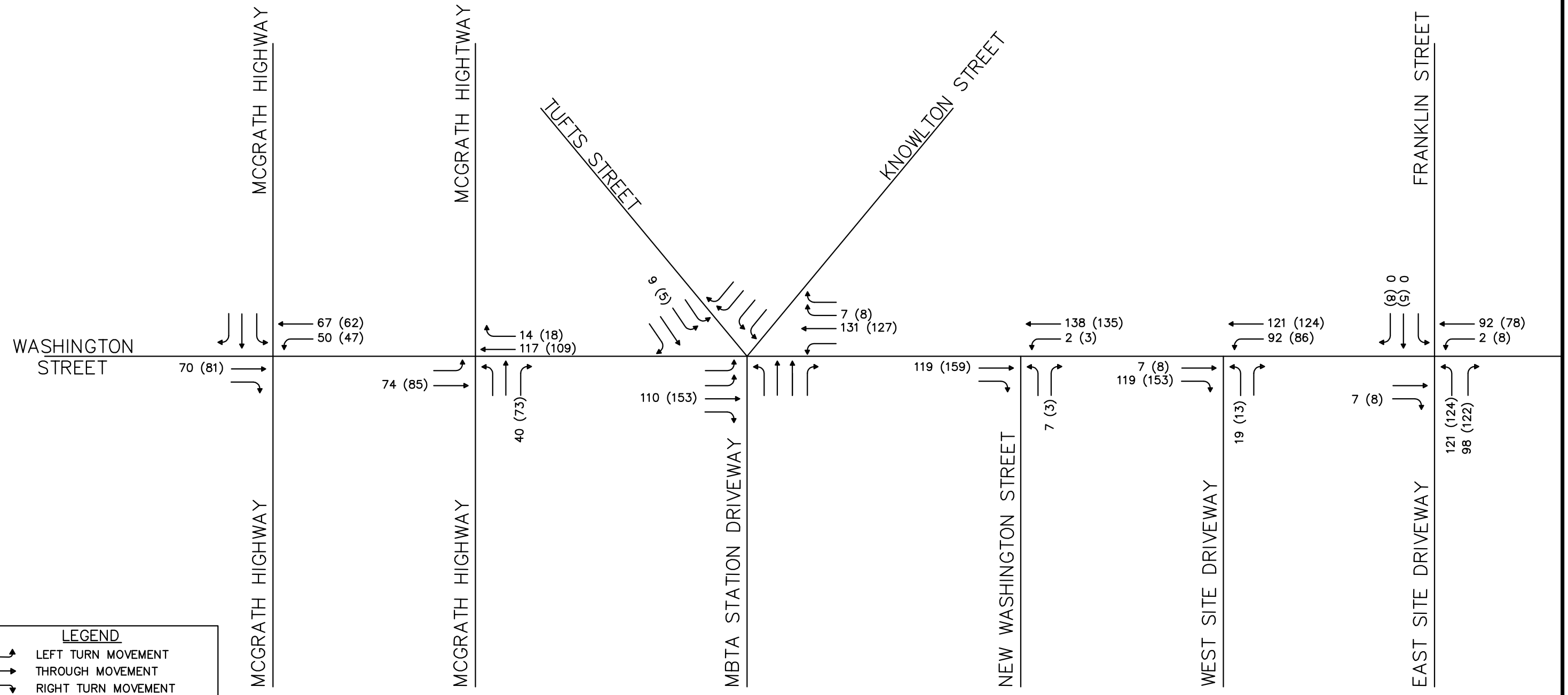
FIGURE TITLE:

SITE TRIP DISTRIBUTION TRAFFIC VOLUME NETWORK

2 OF 2



LEGEND

- LEFT TURN MOVEMENT
- THROUGH MOVEMENT
- RIGHT TURN MOVEMENT

XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

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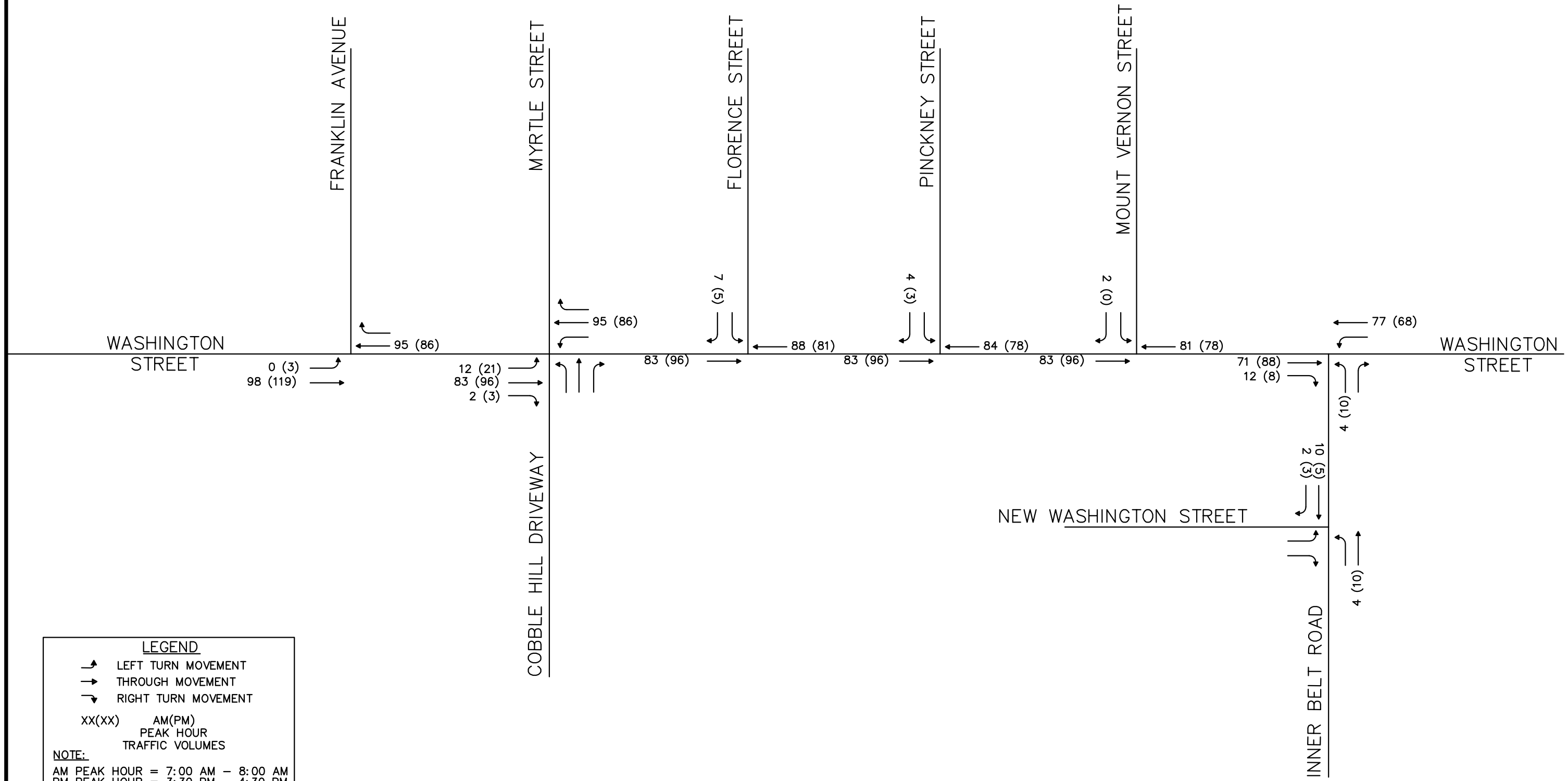
FIGURE TITLE:

SITE TRIP GENERATION TRAFFIC VOLUME NETWORK

1 OF 2



LEGEND

- LEFT TURN MOVEMENT
- THROUGH MOVEMENT
- RIGHT TURN MOVEMENT

XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

NOTE:

AM PEAK HOUR = 7:00 AM – 8:00 AM
PM PEAK HOUR = 3:30 PM – 4:30 PM

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BOSTON, MASSACHUSETTS 02114
(877) 305-4163

PROJECT:

REDEVELOPMENT OF COBBLE HILL CENTER

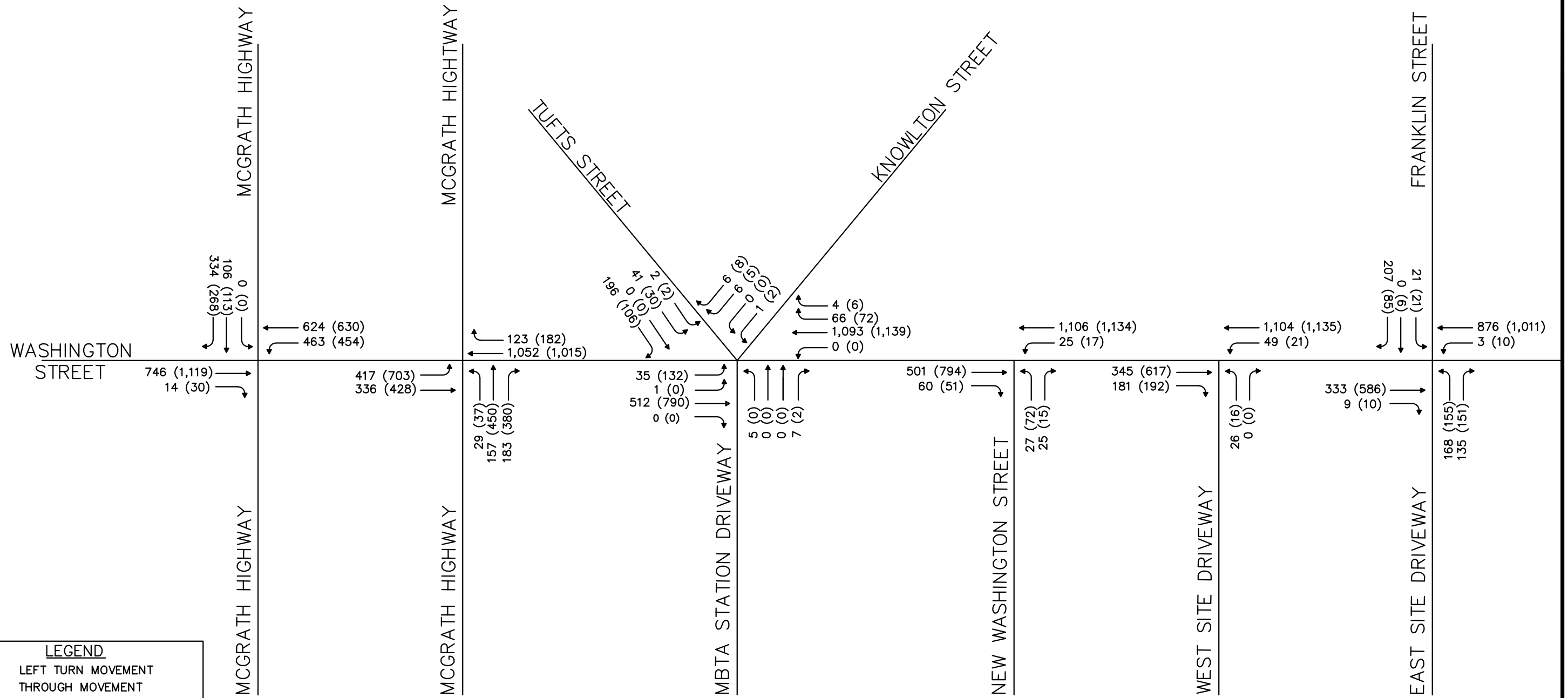
WASHINGTON STREET AT NEW WASHINGTON STREET
IN
SOMERVILLE, MA

Job Number	16120002
Designed by:	HG
Date:	11/06/12
Scale:	NTS
Page:	32

FIGURE TITLE:

SITE TRIP GENERATION TRAFFIC VOLUME NETWORK

2 OF 2



LEGEND

- LEFT TURN MOVEMENT
- THROUGH MOVEMENT
- RIGHT TURN MOVEMENT

XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

NOTE:

AM PEAK HOUR = 7:00 AM – 8:00 AM
PM PEAK HOUR = 3:30 PM – 4:30 PM

PREPARED BY:

FORT HILL INFRASTRUCTURE SERVICES, *LLC*

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FIGURE TITLE:

2017 BUILD CONDITION TRAFFIC VOLUME NETWORK

1 OF 2

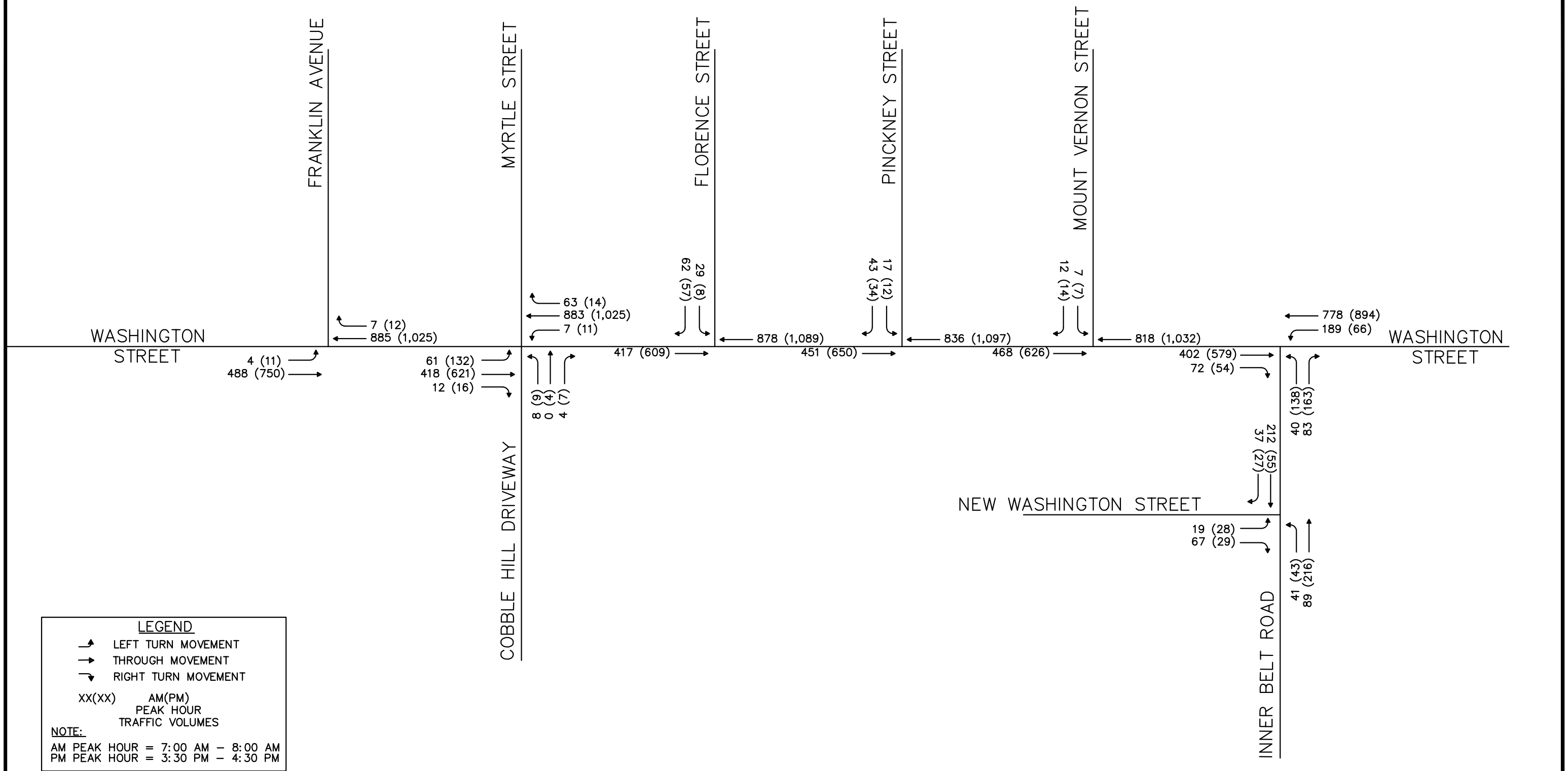

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FIGURE TITLE:

2017 BUILD CONDITION TRAFFIC VOLUME NETWORK

2 OF 2

3.3 VEHICULAR TRAFFIC OPERATIONS

As presented in Table 10, one signalized intersection located within the study area would continue to operate at LOS F under the proposed Build (2017) condition during at least one (AM or PM) peak hour.

- Washington Street at McGrath Highway (East Side)

Level of service would decrease during at least one peak hour period at two locations:

- Washington Street at McGrath Highway (West Side)
- Washington Street at Inner Belt Road

Though the two intersections noted above did experience a decrease in LOS, they are both expected to still operate at an acceptable level of service overall.

As presented in Table 11, eight unsignalized intersections located within the study area would continue to operate at LOS F under the proposed Build (2017) condition during at least one peak hour:

- Washington Street at Tufts Street/Knowlton Street
- Washington Street at New Washington Street
- Washington Street at Existing west site driveway
- Washington Street at Franklin Street/Existing east site driveway
- Washington Street at Myrtle Street/Cobble Hill Driveway
- Washington Street at Florence Street
- Washington Street at Pinckney Street
- Washington Street at Mount Vernon Street

Level of service would decrease from a LOS D to LOS F at two locations during the morning peak hour period:

- Washington Street at Pinckney Street
- Washington Street at Florence Street

Table 10 - Future Build Condition Signalized Intersection Traffic Operations

Location	Movement	Morning Peak Hour			Evening Peak Hour		
		v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Washington Street at McGrath Highway (West side)	EB Th/R	0.42	40.6	D	0.64	44.4	D
	WB L	0.57	4.2	A	0.56	3.5	A
	WB Th	0.45	1.6	A	0.46	2.0	A
	SB L/Th/R	0.85	90.2	F	0.91	99.5	F
	Overall	**0.55**	**32.4**	**C**	**0.62**	**35.3**	**D**
Washington Street at McGrath Highway (East side)	EB L	0.38	3.2	A	0.64	7.3	A
	EB Th	0.22	1.4	A	0.28	1.6	A
	WB Th/R	0.74	37.9	D	0.76	38.7	D
	NB L	0.23	56.6	E	0.29	58.1	E
	NB Th	1.10	152.6	F	3.16	1042.6	F
	NB R	0.16	0.2	A	0.33	0.6	A
	Overall	**0.63**	**33.4**	**C**	**1.02**	**184.0**	**F**
Washington Street at Inner Belt Road	EB Th	0.40	5.4	A	0.63	9.2	A
	EB R	0.08	4.2	A	0.06	5.4	A
	WB L	0.38	5.3	A	0.22	6.1	A
	WB Th	0.85	8.8	B	1.07	61.3	E
	NB L	0.27	24.7	C	0.65	30.1	C
	NB R	0.09	24.1	C	0.17	22.1	C
	Overall	**0.75**	**12.1**	**B**	**0.97**	**35.9**	**D**

1 Volume-to-capacity ratio
2 Average delay expressed in seconds per vehicle
3 Level-of-Service
Note: Using Synchro 7 software.

Table 11 - Future Build Condition Unsignalized Intersection Traffic Operations

Location	Critical Movement	Morning Peak Hour			Evening Peak Hour		
		v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Washington Street at Tufts Street	Northbound	*	*	F	0.01	16.3	C
	Southbound	3.30	*	F	8.87	*	F
Washington Street at New Washington Street	Northbound	0.90	159.0	F	4.26	*	F
Washington Street at Existing West Site Driveway	Northbound	0.89	297.0	F	0.94	457.6	F
Washington Street at Franklin Street / Existing East Site Driveway	Northbound	*	*	F	78.75	*	F
	Southbound	1.81	435.3	F	5.21	*	F
Washington Street at Franklin Avenue	Eastbound	0.01	0.4	A	0.06	2.0	A
Washington Street at Myrtle Street / Cobble Hill Driveway	Northbound	0.84	315.5	F	16.57	*	F
Washington Street at Florence Street	Southbound	0.67	66.6	F	1.05	221.8	F
Washington Street at Pickney Street	Southbound	0.57	54.1	F	2.24	843.9	F
Washington Street at Mount Vernon Street	Southbound	0.10	22.9	C	0.28	60.4	F
New Washington Street at Inner Belt Road	Eastbound	0.21	12.0	B	0.14	11.5	B

1 Volume-to-capacity ratio
2 Average delay expressed in seconds per vehicle
3 Level-of-Service
Note: Using Synchro 7 software.

Once again, the LOS for an unsignalized intersection does not represent then entire intersection, but rather the worst minor movement, for example, the left turn of the side street. The major movement generally operates at a LOS A unless otherwise noted.

3.4 WORK BY OTHERS

The City of Somerville is pursuing a number of transportation and development projects that are of importance to the proposed redevelopment project area. Descriptions of the key features of these projects and developments are provided in this section, including descriptions of their relationship to the proposed redevelopment project.

Inner Belt/Brickbottom Redevelopment Plan

Due to the proximity of these two districts to the proposed development, as well as economic development opportunities within each district, the City of Somerville has on-going efforts into the possibility of re-zoning these two districts. At this time, however, there are no definitive changes that would directly affect the design of the proposed redevelopment.

Green Line Extension (GLX)

The GLX Project is envisioned to provide Green Line service to College Avenue in Medford and Union Square in Somerville using a two-branch operation. The 3.4-mile Medford Branch would operate from relocated Lechmere Station to College Avenue in Medford along the MBTA Lowell Line commuter rail right-of-way, while the 0.9-mile Union Square Branch would operate along the MBTA Fitchburg Line commuter rail right-of-way to Union Square in Somerville.

One of the GLX stations will be located on Washington Street across from Tufts Street and Knowlton Street, a short 240 feet from the project driveway. Along with providing light rail transportation into Boston, the GLX project will also provide roadway improvements at two intersections within the proposed redevelopment study area; Washington Street at McGrath Highway and Washington Street at Tufts Street/Knowlton Street.

A new signal phasing sequence is proposed at the intersection of Washington Street and McGrath Highway to incorporate pedestrian accommodations into the traffic signal. Although this is a signalized intersection, several pedestrian crossings at this location are currently not part of the traffic signal.

The proposed station layout for Washington Street includes a small parking area immediately adjacent to the Washington Street Station on the east side. The driveway to this accessible pick-up/drop-off area would be located along on Washington Street, directly opposite Tufts Street. A new traffic signal is proposed for the intersection of Washington Street and Tufts Street/Knowlton Street/MBTA Driveway. Washington Street is proposed to be widened to provide four lanes between McGrath Highway and Tufts Street (i.e., two lanes in each direction). The widening of Washington Street to four lanes extends to the westbound approach to the Washington Street/Joy Street intersection as well. The proposed lane structure will provide increased roadway capacity and is expected to improve the traffic operations and safety, particularly for pedestrians, at this location.

Somerville Community Path (between Lowell Street and Inner Belt Road)

The Somerville Community Path currently travels through the Davis Square area of Somerville to Cedar Street, and connects with other elements of the regional multi-use path system in Cambridge, Belmont, and Arlington. A proposed extension of the Somerville Community Path would create a new connection of the Path from its future endpoint at Lowell Street to the Inner Belt area, with potential connections beyond to East Cambridge and Boston.

The MBTA has been working closely with the City of Somerville and community organizations, and have incorporated some of the City's proposed Path program into the GLX project. One such example would be providing bike lanes on Washington Street that allows for connections to the proposed Washington Street Station main entrance, the Station's accessible emergency egress, and the existing local bike network. The accessible emergency egress at this station was designed such that it could also be used for the City of Somerville's proposed community path in the future. In addition, the GLX project has included a portion of the future Somerville Community Path in its Gilman Square Station design for additional station access. These types of collaborative efforts will be continued throughout the course of the GLX project.

3.5 PROXIMITY TO RAPID TRANSIT

The proposed redevelopment is served by several modes of public transportation. It is located only ½ of a mile from the Sullivan Square MBTA rapid transit station. The future GLX project will have two stations located in close walking proximity of the proposed redevelopment project. The Union Square Station will be located only ½ of a mile from the proposed project. The Washington Street Station will be located the closest, a mere 200 feet from the proposed project driveway. Furthermore, local bus service is provided along Washington Street in front of the proposed project (Route 86, 91, and CT2). The existing bus stops will be relocated due to the construction of the Washington Street Station.

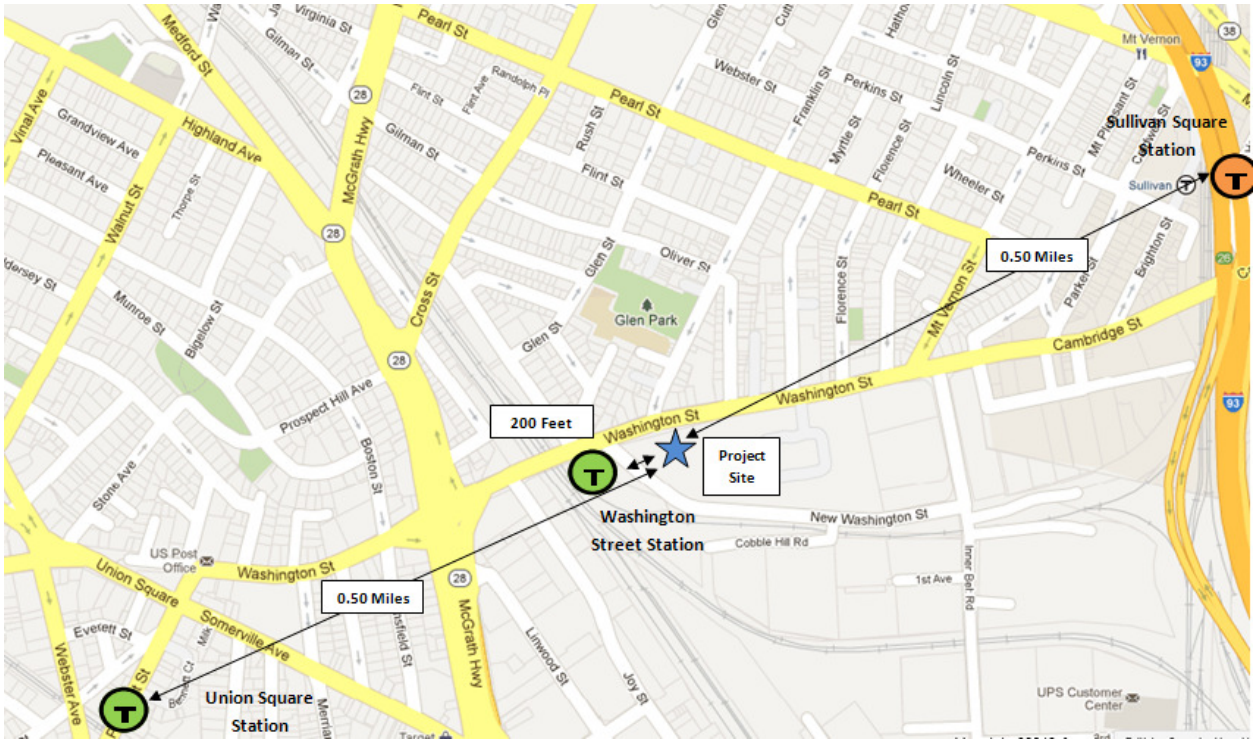

Figure 10 – Proximity to Rapid Transit Stations (Existing and Future)

Along the eastbound side of Washington Street, two bus stop locations will possibly be consolidated to one; one just east of the McGrath Highway Northbound Surface Road, and the second located across from Franklin Street. The likely consolidated bus stop location would be located across from Tufts Street and Knowlton Street, to the east and adjacent to the Washington Street Station driveway. The MBTA would provide emergency shuttle bus staging areas on both the southbound and northbound sides of New Washington Street. Emergency shuttle buses will provide transportation to passengers should there be any transportation problems along the rail line.

3.6 PROPOSED PARKING SUPPLY

A parking inventory was conducted in the immediate vicinity of the project site. This inventory includes total parking supply, along with mid-day and evening parking utilization counts (the number of parking spaces occupied) within the close vicinity of the project site. On-street parking available to the public in close vicinity to the project area includes approximately 745 parking spaces; 42% of these spaces observed to be full during the midday period while 37% of these spaces observed to be full during the evening period.

Off-street parking currently available at the existing project site was also included. Between the four parking lots (retail plaza, west residential lot, east residential lot, and the residential handicap spaces), there are 175 spaces. 56% of these spaces observed to be full during the midday period while 54% of these spaces observed to be full during the evening period.

Parking requirements under Article 9 of the Somerville Zoning Ordinance (SZO) necessitates 1 off-street parking space per studio unit and 1.5 off-street parking spaces for each 1- or 2- bedroom units. In addition, one visitor parking space must be provided for every six residential units proposed in the redevelopment. The SZO also requires 1 off-street parking space per 250 square feet of street level retail space.

The proposed redevelopment consists of 25 studio units, 134 1- and 2- bedroom units, and 13,217 square feet of street level retail space. The proposed project therefore requires 306 off-street parking spaces; 226 spaces for the 159 residential units, 27 spaces for visitor parking, and 53 spaces for retail parking. The proposed site design includes 179 surface parking spaces; therefore a parking variance is currently being sought.

The parking variance memo, dated November 7, 2012, is enclosed in Appendix E of this study.

3.7 SUMMARY

The future conditions assessment for the study area evaluated traffic, bicycle and pedestrian operations, and safety statistics. The future conditions assessment for the study area indicated the following:

- One project area intersection currently exceeds the statewide and District 4 average crash rates.
- One signalized intersection is expected to operate at LOS F during at least one peak hour.
- Eight unsignalized intersections are expected to operate at LOS F during at least one peak hour.
- The proposed redevelopment is estimated to generate approximately 482 total vehicle trips during the weekday morning hour peak period and approximately 546 total vehicle trips during the evening peak hour period.

STRATEGIC PERSPECTIVE. EXCEPTIONAL RESULTS.

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