

## **Bicycle Facilities**

DDOT published a draft District of Columbia Bicycle Master Plan in August 2002<sup>2</sup>. That document evaluates existing bicycling facilities, policies, and other bicycle-related matters. It also establishes goals, makes recommendations for achieving those goals, and presents an implementation plan.

Presently, there are no bicycle lanes, routes, or trails in the immediate vicinity of Square 54, according to the Bicycle Master Plan. Bicyclists share the public streets with motor vehicles.

The Bicycle Level of Service (BLOS) on most streets in and around the GWU campus is BLOS "D" or better, according to the Bicycle Master Plan.

The Plan recommends new bicycle lanes in the site vicinity on:

1. 22<sup>nd</sup> Street, between Virginia Avenue and Q Street,
2. 21<sup>st</sup> Street, between Constitution Avenue and R Street,
3. F Street, between Virginia Avenue and 17<sup>th</sup> Street,
4. G Street, between Virginia Avenue and 17<sup>th</sup> Street,
5. Pennsylvania Avenue, between 17<sup>th</sup> Street and M Street,
6. New Hampshire Avenue, between Virginia Avenue and Dupont Circle, and
7. Virginia Avenue, between Constitution Avenue and Rock Creek Parkway.

The Plan also recommends that the District improve bicycle access through complex intersections including, specifically, Washington Circle.

## **U.S. Census Data**

**Overview.** The 2000 U.S. Census reports auto availability and means of transportation to work for workers 16 years and over. Square 54 is located in Census Block 57.01. Adjacent blocks are 54.01, 55, 56, and 57.01.

**Auto Availability.** Home owners have an average of 0.70 available vehicles per household, as shown on Table 2-6. Nearly four out of every ten households own no vehicle and slightly more than half own one vehicle. Fewer than one out of every ten owner-occupied households have two or more available vehicles.

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<sup>2</sup> District Department of Transportation, District of Columbia Bicycle Master Plan, August 2002.

Renters have an average of only 0.43 available vehicles per household. Nearly two out of every three renter-occupied households have no available vehicle, and less than a third own one vehicle. About one of every 20 renter-occupied households have two or more available vehicles.

**Journey To Work Mode Split.** Few neighborhood residents commute to work by automobile. Most walk or take Metro. Approximately 14 percent of all local residents drive or are passengers in private automobiles, as shown in Table 2-7. More than half walk and about a quarter take some form of public transportation.

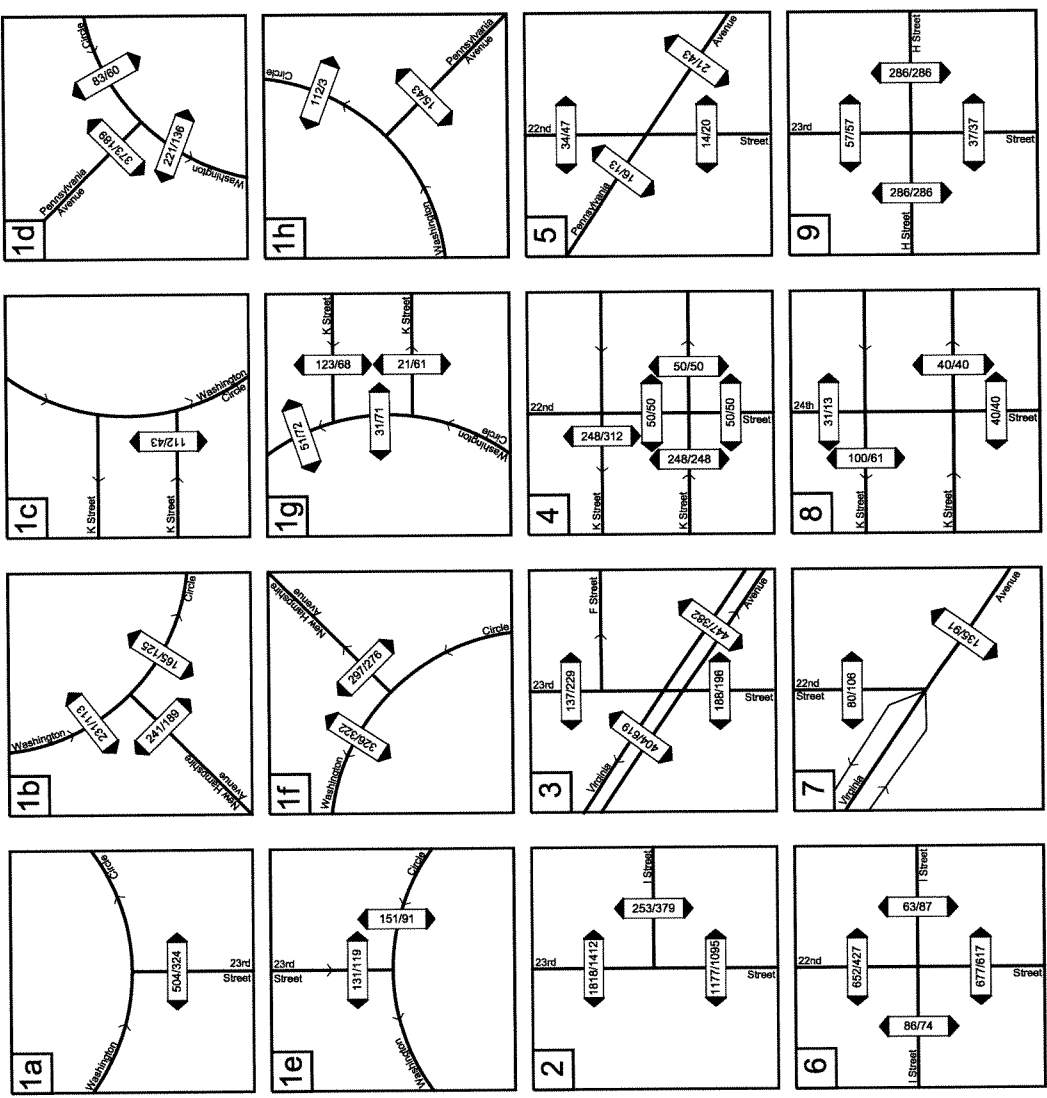
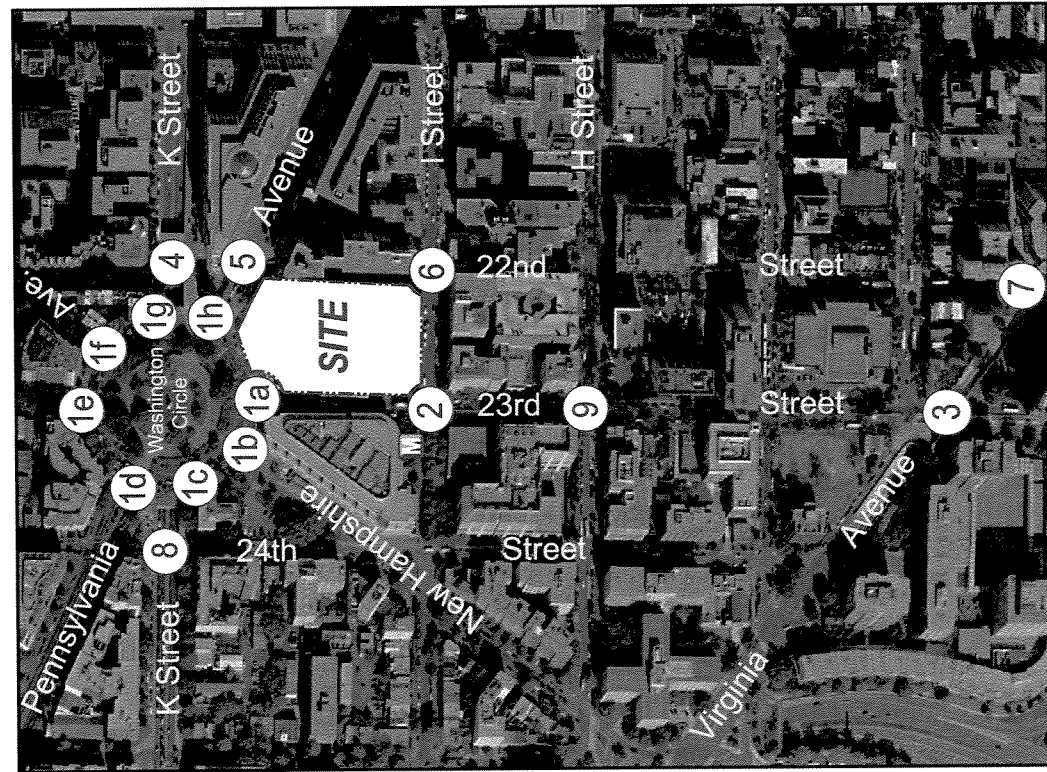


Figure 2-3  
Existing Peak Hour Pedestrian Traffic Counts

North  
Schematic  
000/000  
per peak hour

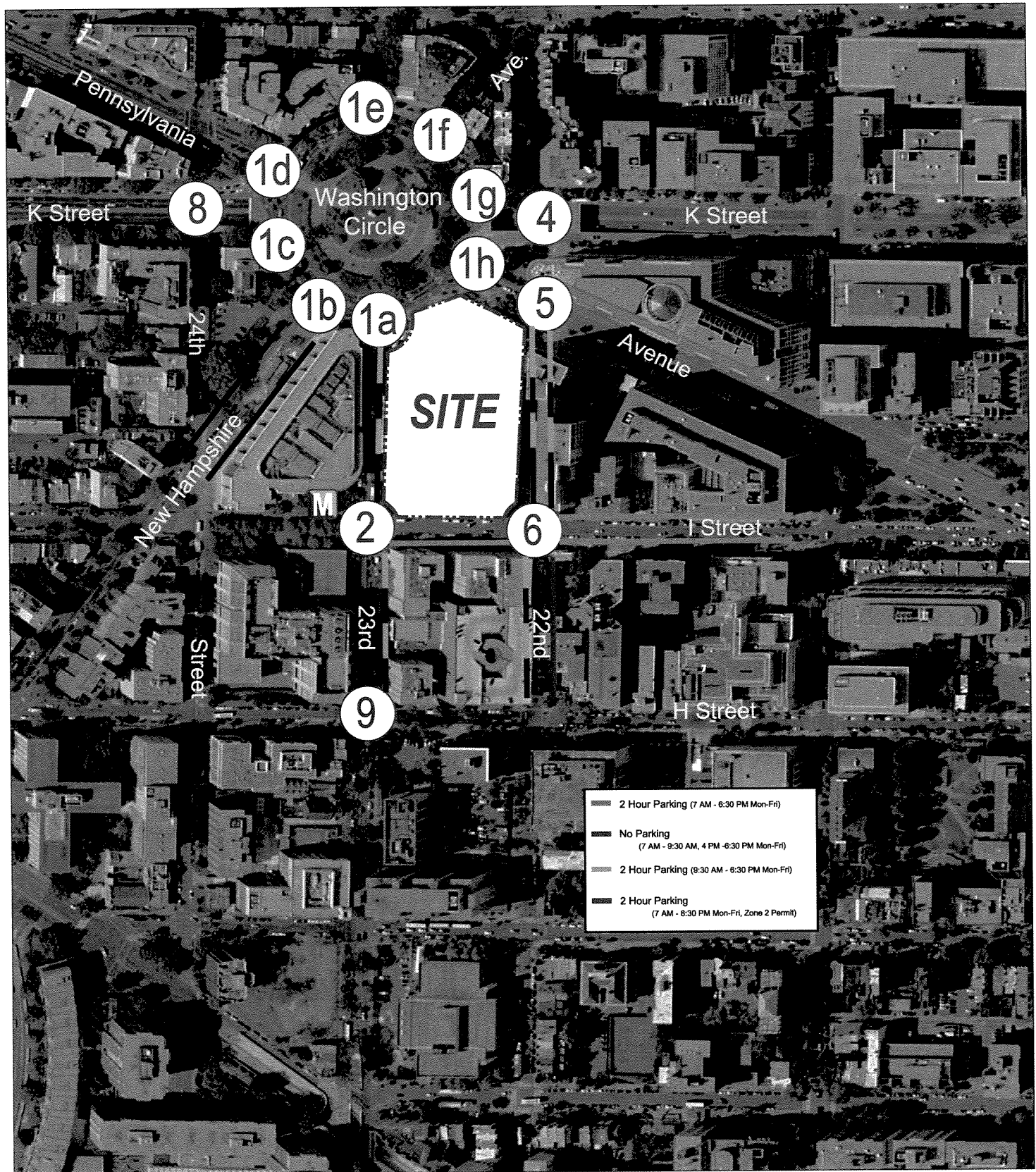
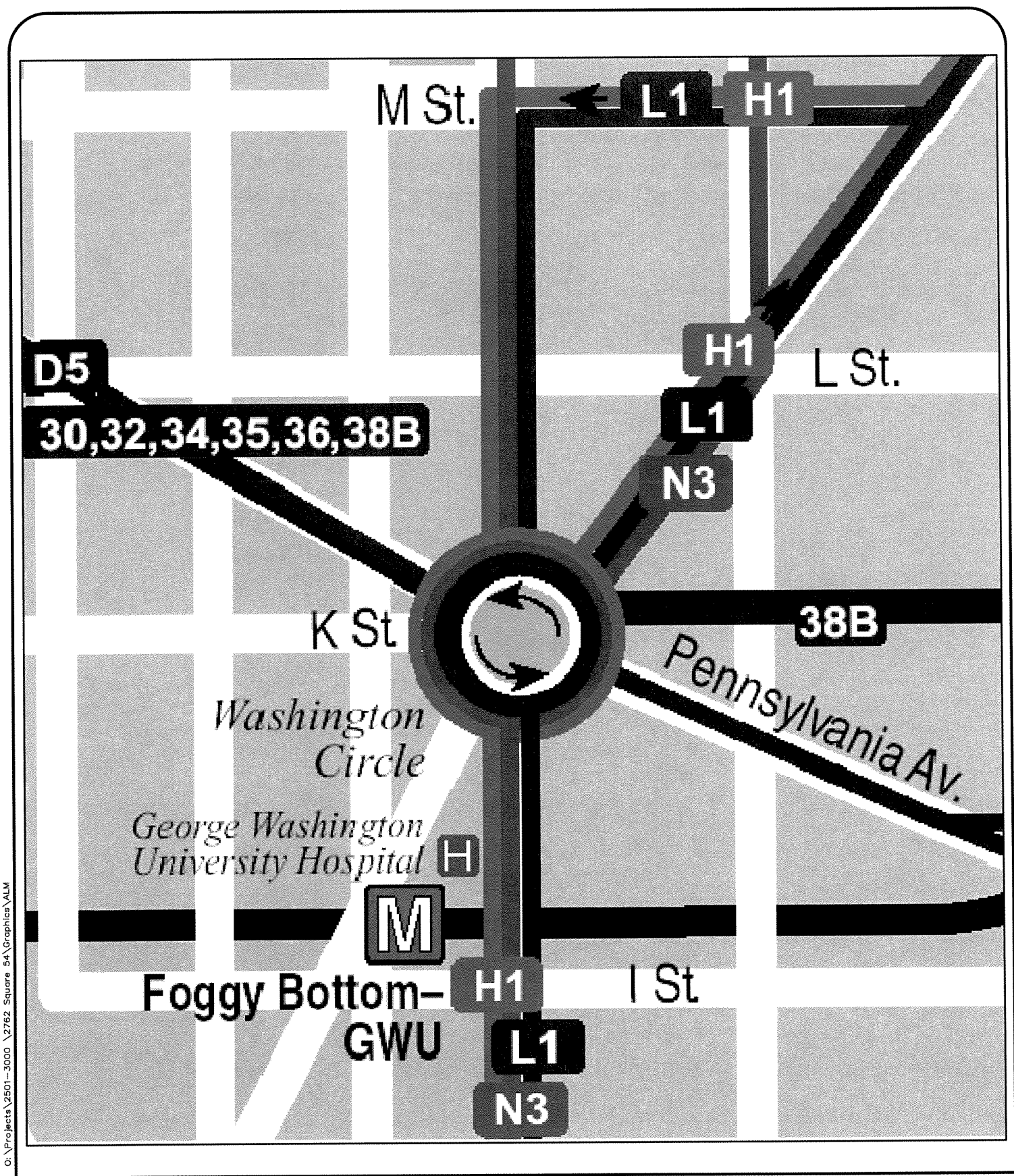


Figure 2-4  
Day Time Curb Parking Restrictions





O:\Projects\2501-3000\2762 Square 54\Graphics\ALM

Figure 2-5  
Existing Public Transportation Services



Table 2-6

Local Resident Auto Availability

		Percent	Cumulative Percent
<b>Total All Census Tracts Block Groups</b>	<b>6,816</b>		
Owner occupied:	<u>1,998</u>		
No vehicle available	786	39.3%	39.3%
1 vehicle available	1,041	52.1%	91.4%
2 vehicles available	165	8.3%	99.7%
3 vehicles available	6	0.3%	100.0%
4 vehicles available	0	0.0%	100.0%
5 or more vehicles available	<u>0</u>	<u>0.0%</u>	100.0%
Average Auto Ownership	0.70	100.0%	
Renter occupied:	<u>4,818</u>		
No vehicle available	3,076	63.8%	63.8%
1 vehicle available	1,512	31.4%	95.2%
2 vehicles available	190	3.9%	99.2%
3 vehicles available	8	0.2%	99.3%
4 vehicles available	0	0.0%	99.3%
5 or more vehicles available	<u>32</u>	0.7%	100.0%
Average Auto Ownership	0.43	100.0%	
<b>Total Average Auto Ownership</b>	<b>0.51</b>		

Note: Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data

H44. TENURE BY VEHICLES AVAILABLE [15]

- Universe: Occupied housing units

Table 2-7  
Local Resident Journey to Work Mode Split

		Percent	Cumulative Percent
<b>Total All</b>			
<b>Census Tracts Block Groups</b>		<b>6,699</b>	
<u>Car, Truck or Van</u>		<u>961</u>	
	Drove Alone	795	11.9%
	Carpooled	166	2.5%
<u>Public Transportation</u>		<u>1,754</u>	
	Bus	282	4.2%
	Streetcar	0	0.0%
	Subway	1,375	20.5%
	Railroad	6	0.1%
	Ferryboat	0	0.0%
	Taxicab	91	1.4%
	Motorcycle	9	0.1%
	Bicycle	29	0.4%
	Walked	3,568	53.3%
	Othermeans	19	0.3%
	Stayed Home	359	5.4%

Note: Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data  
P30. Means of Transportation to Work for Workers 16 years and  
Over [16] - Universe: Workers 16 years and over

## **Section 3 ANALYSIS**

### **Overview**

This section presents analyses of existing and projected traffic conditions. It includes analysis of existing intersection levels of service, projections of future traffic volumes with and without re-development of Square 54, estimates of peak hour traffic that would be generated by Square 54, and analysis of future intersection levels of service with and without re-development of Square 54.

### **Existing Levels of Service**

Existing peak hour levels of service were estimated at the key intersections in the study area based on the existing lane usage and traffic control shown on Figure 2-1, the existing vehicular and pedestrian traffic counts shown on Figures 2-2 and 2-3, respectively, the existing traffic signal timing plans obtained from DDOT, and the Highway Capacity Manual. The results are presented in Appendix C and summarized in Table 3-1.

Table 3-1 indicates that the majority of the key intersections in the study area presently operate at an overall acceptable level of service (LOS) "D" or better during the AM and PM peak hours.

The eastbound right turn movement, which operates under yield control, at the Washington Circle/K Street intersection currently operates at a LOS "F" during the AM peak hour.

The westbound approach at the 23<sup>rd</sup> Street/Eye Street intersection currently operates at capacity at a LOS "F" during the PM peak hour due to the high volume of westbound traffic turning left onto 23<sup>rd</sup> Street.

The westbound movement at the 22<sup>nd</sup> Street/Pennsylvania Avenue intersection presently operates at capacity at LOS "F" during the PM peak hour due to the high volume of through traffic traveling towards Washington Circle.

Finally, the southbound approach at the 24<sup>th</sup> and K Street (westbound) intersection currently operates at a LOS "E" during the PM peak hour.



**Pipeline Project Vehicle-trip Generation**

The number of peak hour vehicle-trips that will be generated by the seven other approved or proposed but incomplete development projects were estimated based on their respective development programs, peak hour trip generation based on the Institute of Transportation Engineers' (ITE) Trip Generation Report, 7<sup>th</sup> Edition, and non-auto mode splits observed at other comparable projects in Washington, D.C.

As shown in Appendix D, it is estimated that these projects will generate a total of 476 AM peak hour vehicle-trips and 592 PM peak hour vehicle-trips, upon completion and full occupancy.

**Vehicle-trip Distribution Analysis**

The distribution of peak hour vehicle-trips generated by the other approved projects was determined based on previous traffic studies. The distribution of the peak hour vehicle-trips generated by Square 54 was determined based on existing travel patterns. This distribution is described as follows:

<u>To/From:</u>	<u>Retail/Office</u>	<u>Residential</u>
North along 23 <sup>rd</sup> Street	15%	35%
South along 23 <sup>rd</sup> Street	33%	16%
East along K Street	10%	20%
West along K Street	13%	6%
Northwest along Pennsylvania Avenue	23%	19%
<u>Southwest along New Hampshire Avenue</u>	<u>6%</u>	<u>4%</u>
Total	100%	100%

**Pipeline Project Traffic Assignments**

The vehicle-trips shown in Table 3-2 were assigned to the public street network based on previous traffic studies. The results are shown on Figure 3-1.

**Background Traffic Growth**

Annual background traffic growth was estimated at 0.5 percent per year compounded for five (5) years for project buildout (2010). This growth rate was applied to all movements at each intersection in the study area.

### **Background Traffic Forecasts**

Background peak hour traffic forecasts without re-development of Square 54 were estimated based on existing traffic counts, traffic generated by approved but incomplete developments, and historic background traffic growth. The background traffic forecasts for the year of project buildout (2010) are shown on Figure 3-2.

### **Background Future Levels of Service**

Future peak hour levels of service without redevelopment of Square 54 were estimated at the key intersections in the study area for the year of project buildout (2010) based on the intersection lane usage and traffic control shown on Figure 2-1, the background traffic forecasts shown on Figure 3-2, and the Highway Capacity Manual. The results are presented in Appendix E and are summarized in Table 3-1.

Table 3-1 indicates that the pipeline developments would not affect the existing levels of service except at the 22<sup>nd</sup> Street/Pennsylvania Avenue and 23<sup>rd</sup> Street/Eye Street intersections, where the overall level of service would drop to a LOS "E" during the PM peak hour, and at the intersection of 24<sup>th</sup> Street and K Street (westbound), where the southbound approach would operate at a LOS "F" during the PM peak hour.

### **Site Trip Generation Analysis**

The numbers of vehicle-trips that will be generated by re-development of Square 54 were estimated based on: (1) Institute of Transportation Engineers (ITE) vehicle-trip generation rates, (2) the proximity of the project to the Foggy Bottom-GWU Metro station, and (3) experience with other comparable projects in Washington, D.C.

Based on the Development Related Ridership Survey II (WMATA), it was assumed that 60 percent of all office vehicle-trips, 63 percent of all residential vehicle-trips, and 60 percent of all retail and grocery store vehicle-trips would be made on foot, by Metrorail or Metrobus, or by some means of transportation other than automobile.

The proposed re-development of Square 54 would generate a total of 396 AM peak hour vehicle-trips (287 in and 109 out) and 627 PM peak hour vehicle-trips (245 in and 382 out) at project buildout and full occupancy, as shown in Table 3-2. Approximately 37 to 63 percent of these vehicle-trips would be generated by the office component, 10 to 13 percent by the residential component, and 24 to 53 percent by the retail and grocery store component.