WELLS & ASSOCIATES, LLC
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MEMORANDUM

TO: Josh Dix
P.N. Hoffman

FROM: Michael J. Workosky
John B. Young
Wells & Associates, LLC

DATE: June 2, 2003

SUBJECT: Transportation Analysis for Square 235; Northwest Washington, D.C.

Introduction

This memorandum presents a transportation analysis of the Square 235 project located in Northwest Washington, D.C. The site is situated on the northeast corner of 14th and V Streets, between 13th and 14th Streets, as shown on Figure 1.

P.N. Hoffman proposes to develop the property with approximately 280 condominium units that will be privately owned, with 24,000 S.F. of ground-level retail space. Approximately 200 parking spaces will be provided in a below-grade structure on the western portion of the property and 50 spaces within the eastern section of the site. Access is proposed from the existing public alley that traverses the property on the east side of the property. Approximately 50 of the spaces will be designated for retail use. The southern portion of the alley will be widened from 12-feet to 20-feet to facilitate two-way vehicular traffic. Vehicle traffic will be discouraged to and from the north on W Street by installing special pavement treatments.

The main entrance to the residential building will be located on 14th. Pedestrian access to the retail space will be provided from 14th Street. A copy of the site plan is shown on Figure 2.

The project developers are requesting a waiver be granted that would eliminate the need to provide a 55-foot loading dock to serve the site. Twenty-foot and 30-foot loading bays will be provided.

ZONING COMMISSION
District of Columbia
CASE NO.03-26
EXHIBIT NO.3E

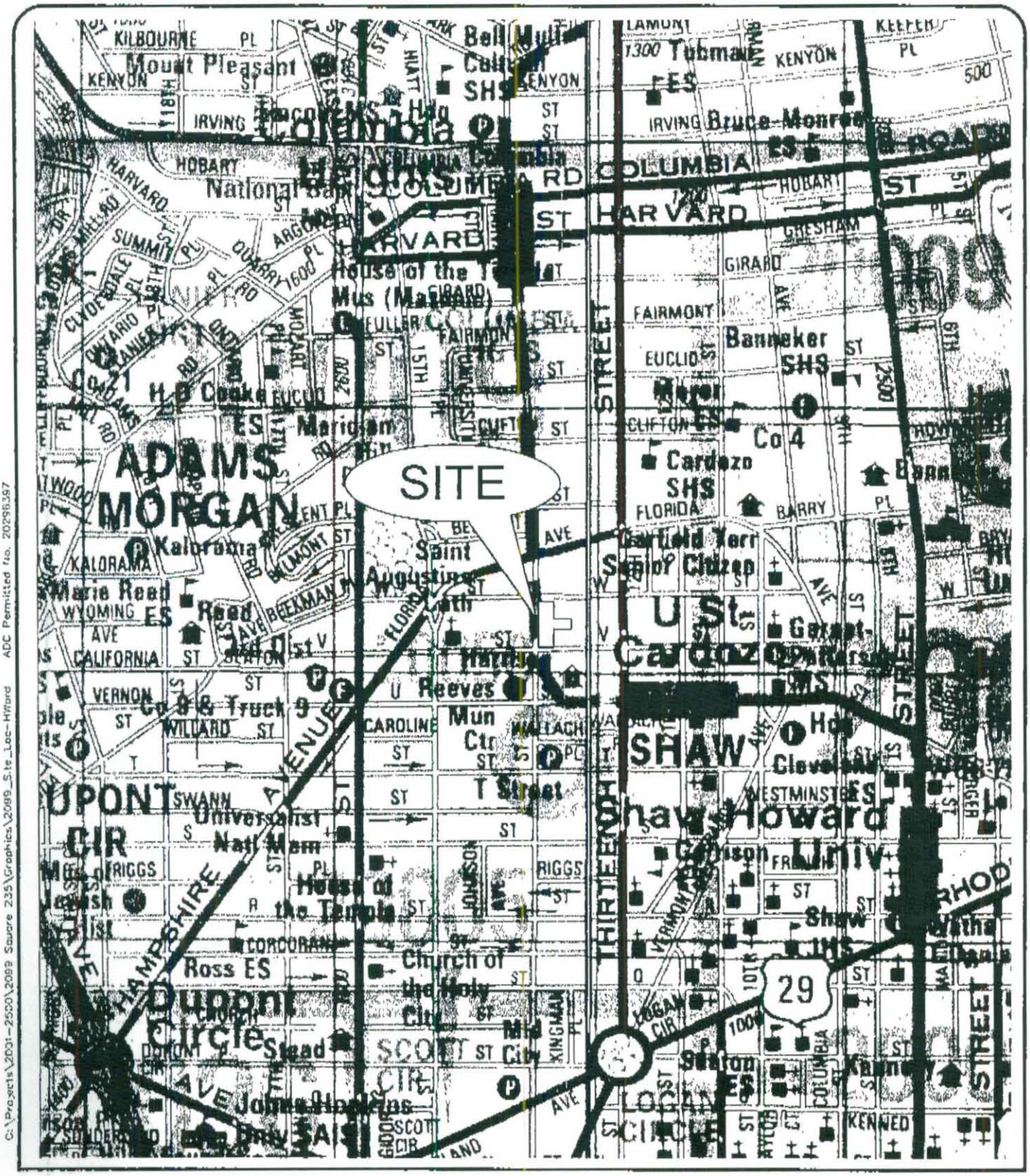


Figure 1
Site Location

North
Schematic

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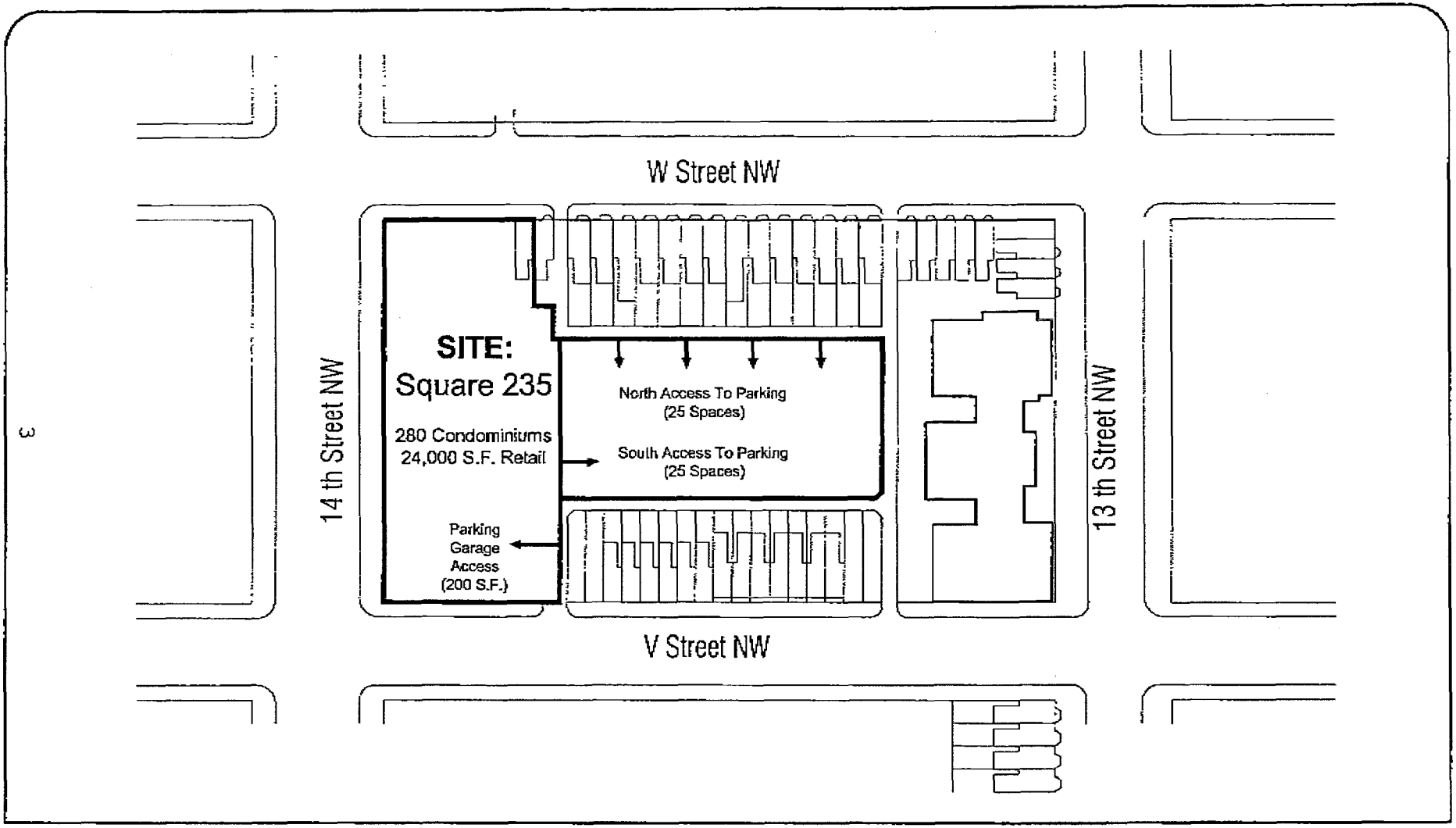


Figure 2
Site Plan
(Provided by SK & I Architectural Design Group)

North
Schematic

Square 235
Washington, DC

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The following analysis is based on a scoping letter provided to the District of Columbia Department of Public Works dated April 9, 2003. A copy of the scoping letter, outlining the traffic analysis parameters is contained in Appendix A.

The "Langston Hughes Property Traffic Impact Study", prepared by Wells & Associates and dated April 11, 2002 was used as the basis for this traffic analysis. The existing and background traffic data collected as part of that study has been incorporated into this report.

This traffic impact study was conducted with the coordination of the District of Columbia Department of Transportation (DDOT) and is intended to address the items listed in the Environmental Impact Screening Form (EISF) as required by the District of Columbia. A copy of the form with the completed portion as it relates to the traffic analysis is contained in Appendix B. This report analyzes existing traffic conditions and forecasted traffic conditions in 2007.

Sources for this study include; P.N. Hoffman, SK & I Architectural Design Group, the Institute of Transportation Engineers, the District of Columbia Department of Public Works, and the files of Wells & Associates, LLC.

Background Information

The Square 235 property consists of approximately 1.79 acres, and is currently occupied by various retail and residential land uses. The site is bounded on the west by 14th Street, and by W and V Streets on the north and south, respectively. A north-south public alley approximately 12-feet in width bisects the site that connects W and V Streets. The 12-foot alley will be widened to a standard 20 feet on the southern portion with the development of the site. The northern portion of the alley will remain as a 12-foot alley to discourage through traffic from W Street.

The existing residential units fronting W Street and V Street will remain. Residential units will replace the center portion of the lot currently containing industrial type uses.

Existing Road Network

The following is a brief description of the roadways adjacent to the Square 235 site:

1. 14th Street, N.W. This roadway provides two-way travel with two general travel lanes in each direction and curb parking on both sides. Traffic signals are provided at both V and W Streets.

2. V Street. This facility provides a single travel lane in the westbound direction with curb parking on both the north and south sides. Traffic signals are located at the 14th Street and 13th Street intersections.

3. 13th Street, N.W. 13th Street is a north-south, two-way facility that provides a single travel lane in each direction with a center left turn lane and a curb-parking lane on both sides. Parking is restricted to two-hour intervals between the hours of 7:00 AM to 8:30 PM, and prohibited on Tuesdays from 9:30 AM to 11:30 AM.

4. W Street, N.W. is a one-way, eastbound roadway consisting of a single travel lane with curb parking on both sides. Parking is limited to four-hour intervals with a permit for zone 1 on the south side of the street. Parking on the north side is prohibited on Wednesdays between 12:30 PM and 2:30 PM.

Analysis

Existing Traffic Volumes. Based on the scoping letter for the project, the following intersections were included in this analysis:

1. 14th Street/W Street.
2. 13th Street/W Street.
3. 14th Street/V Street.
4. 13th Street/V Street.

Traffic counts collected on April 3, 2002 as part of the Langston Hughes study at the V Street intersections were augmented with traffic counts collected on Wednesday, March 26, 2003 by Wells & Associates. These counts were conducted during the AM and PM peak periods, between 6:00 AM and 9:00 AM, and 4:00 PM and 7:00 PM. Pedestrian movements were also identified. Traffic signal timings were field measured during the peak hours. Existing traffic volumes and lane use are illustrated on Figures 3 and 4, respectively. Traffic count summaries are contained in Appendix C.

Public Transit

This area of Northwest Washington is well served by public transit. The U Street/Cardozo (Green Line) Metrorail station is located approximately 1,200 feet southeast of the site, providing connections to other parts of the city. Bus stops are provided on 14th Street north and south of W Street. A shelter is provided at the stop on the north side of the intersection. Additional bus stops with shelters are located on both sides of 14th Street at the U Street intersection.

Consistent with previous studies, approximately 50 percent of all residential and 35 percent of all retail trips generated by the Square 235 residents and patrons are anticipated to be transit-based trips.

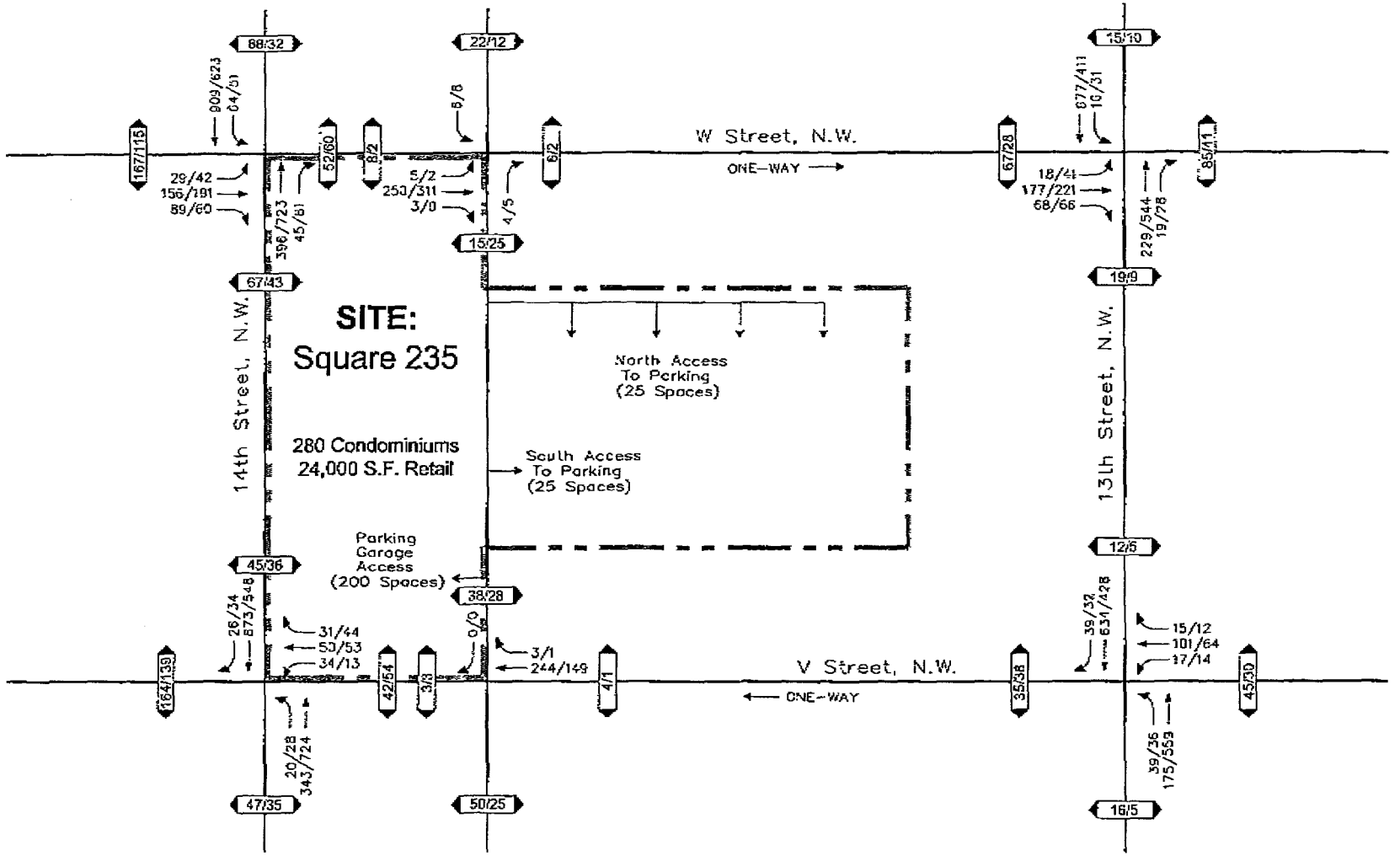


Figure 3
Existing Traffic Counts

AM PEAK HOUR / PM PEAK HOUR
XX/XX
Pedestrian Volumes
AM PEAK HOUR / PM PEAK HOUR
DOC/DOC
North Schematic

Square 235
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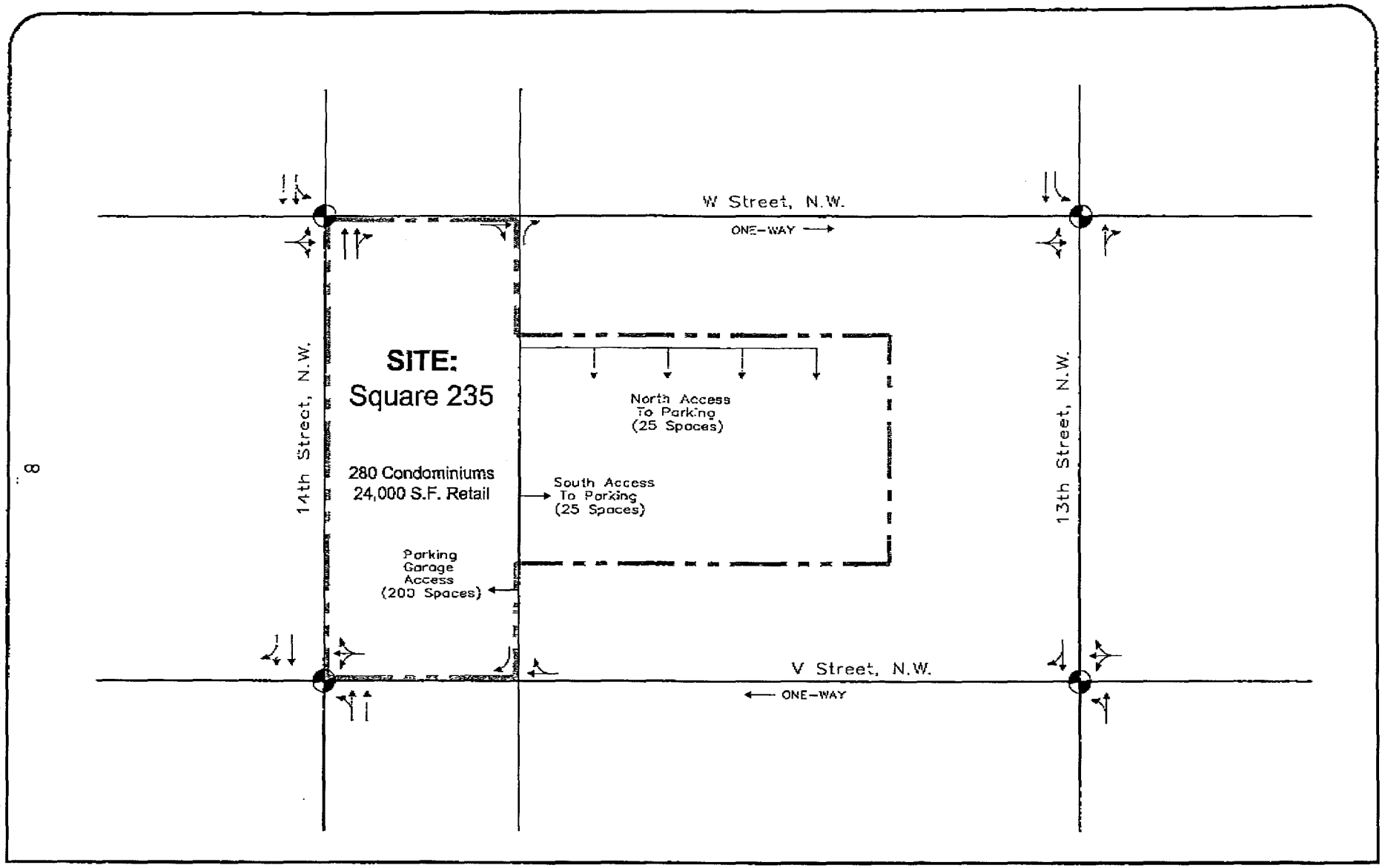


Figure 4
Existing Lane Use and
Traffic Control

Square 235
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Existing Capacity Analysis. Existing intersection levels of service (LOS) were calculated based on the existing traffic counts shown on Figure 3, existing lane use shown on Figure 4, the existing traffic signal timings and phasing recorded during peak periods, and the methodology presented in the 2000 Highway Capacity Manual, (HCS Version 4.1c) published by the Transportation Research Board. The results are presented in Table 1. Capacity analysis worksheets are contained in Appendix D.

Table 1 indicates the following:

1. The W Street intersections with 14th and 13th Streets operate at an acceptable level of service (LOS "B" or "C") during both the AM and PM peak hours.

2. The V Street intersections with 14th and 13th Streets operate at acceptable levels of service (LOS "B") during both the AM and PM peak hours.

3. All of the turning movements to and from the alley on W and V Streets operate at acceptable levels of service during both AM and PM peak hours.

Traffic Generated by Background Development. The Langston Hughes property and the Ellington Plaza Apartments projects were considered as part of this traffic study. The Langston Hughes property is located on the southeast corner of 14th and V Streets, and is planned to consist of 80 condominium units and 7,500 S.F. of ground level retail space. Access is planned on V Street. The Ellington Plaza Apartments project is located on U Street, between 13th and 14th Streets. This site is planned to be developed with 207 apartment units with access from U Street.

The number of AM and PM peak hour trips that will be generated by these projects were calculated using Institute of Transportation Engineers (ITE) Trip Generation Manual (6th Edition) trip generation rates (land use code 220) with reductions for transit use to account for proximity to the U Street/Cardozo Metrorail station. The results are summarized in Table 2.

Table 2 indicates that these projects would generate 97 AM peak hour trips (26 in and 71 out), 164 PM peak hour trips (96 in and 68 out), and 1,794 average daily (24-hour) trips.

Table 1
Square 235
Level of Serivce Summary (1,2)

Intersection	Operating Condition	Critical Movement	Existing 2003 Level of Service AM Peak	Existing 2003 Level of Service PM Peak	Background 2007 Level of Service AM Peak	Background 2007 Level of Service PM Peak	Total Future 2007 Level of Service AM Peak	Total Future 2007 Level of Service PM Peak
14th and W St	Signalized	EB	C (31.9)	C (32.2)	C (32.4)	C (32.8)	C (33.0)	C (34.3)
		NB	B (12.3)	B (14.6)	B (12.4)	B (15.0)	B (12.6)	B (15.3)
		SB	D (43.7)	B (19.3)	D (53.9)	C (20.5)	D (53.6)	C (20.6)
		Overall	**C (33.6)**	**B (19.3)**	**D (39.4)**	**C (20.0)**	**D (39.0)**	**C (20.6)**
W St and North Alley	Unsignalized	EBL/T/R	A [7.3]	A [7.2]	A [7.3]	A [7.2]	A [7.3]	A [7.2]
		NBT/R	B [10.0]	B [10.3]	B [10.1]	B [10.4]	B [10.3]	B [11.0]
		SBL/T	B [11.0]	B [11.3]	B [11.1]	B [11.4]	B [11.3]	B [12.1]
13th and W St	Signalized	EB	C (31.7)	D (35.1)	C (32.2)	D (36.1)	C (34.2)	D (41.7)
		NB	B (11.9)	B (17.2)	B (12.1)	B (18.0)	B (12.1)	B (16.7)
		SB	C (20.0)	B (13.8)	C (21.1)	B (14.2)	C (21.3)	B (13.4)
		Overall	**C (20.9)**	**C (20.5)**	**C (21.6)**	**C (21.1)**	**C (22.5)**	**C (22.5)**
14th and V St	Signalized	WB	C (27.6)	C (26.9)	C (27.4)	C (27.7)	C (30.5)	C (32.1)
		NB	B (10.4)	B (12.2)	B (10.2)	B (13.0)	B (10.6)	B (13.0)
		SB	B (13.2)	B (10.8)	B (13.0)	B (11.4)	B (13.5)	B (11.4)
		Overall	**B (13.7)**	**B (12.8)**	**B (13.5)**	**B (13.5)**	**B (14.9)**	**B (15.1)**
13th and V St	Signalized	WB	C (27.9)	C (26.7)	C (28.1)	C (26.8)	C (28.3)	C (27.3)
		NB	B (18.0)	B (17.3)	B (11.5)	B (18.2)	B (12.8)	C (32.6)
		SB	B (16.6)	B (13.8)	B (19.7)	B (14.2)	C (20.7)	B (15.5)
		Overall	**B (19.2)**	**B (16.6)**	**B (19.1)**	**B (17.2)**	**B (20.0)**	**C (25.2)**
V St and South Alley	Unsignalized	SBR	B [10.3]	A [9.4]	B [10.8]	A [9.4]	B [11.2]	B [10.8]
		WBL/T/R	A [7.2]	A [7.2]	A [7.2]	A [7.2]	A [7.2]	A [7.2]
		NBL/T	NA	NA	B [11.4]	B [10.2]	B [12.8]	B [12.2]

(1) Capacity analyses based on the updated Highway Capacity Manual software, 2000, Version 4.1c, with optimized traffic signal timings.

(2) Numbers in parenthsis and brackets represent average delay per vehicle in seconds.

Table 2
Background Development Site Trip Generation

Background development trips were assigned to the public road network based on existing travel patterns. The results are shown on Figure 5.

Background Traffic Forecasts. Background traffic forecasts (without the development of Square 235 property) were prepared by adding the existing traffic volumes shown on Figure 3 to the other development volumes shown on Figure 5. The results are shown on Figure 6.

Background Levels of Service. Capacity analyses were conducted for background conditions based on the existing lane use shown on Figure 4, the background traffic forecasts shown on Figure 6, and the Highway Capacity Manual analysis procedures. The results are summarized in Table 1. Capacity analysis worksheets for background conditions are contained in Appendix E.

Table 1 indicates that the overall levels of service will remain similar to those currently realized under existing conditions. The majority of intersections will continue to operate at LOS "B" or "C" during both the AM and PM peak hours. The 14th Street/W Street intersection is forecasted to operate at LOS "D" during the AM peak hour.

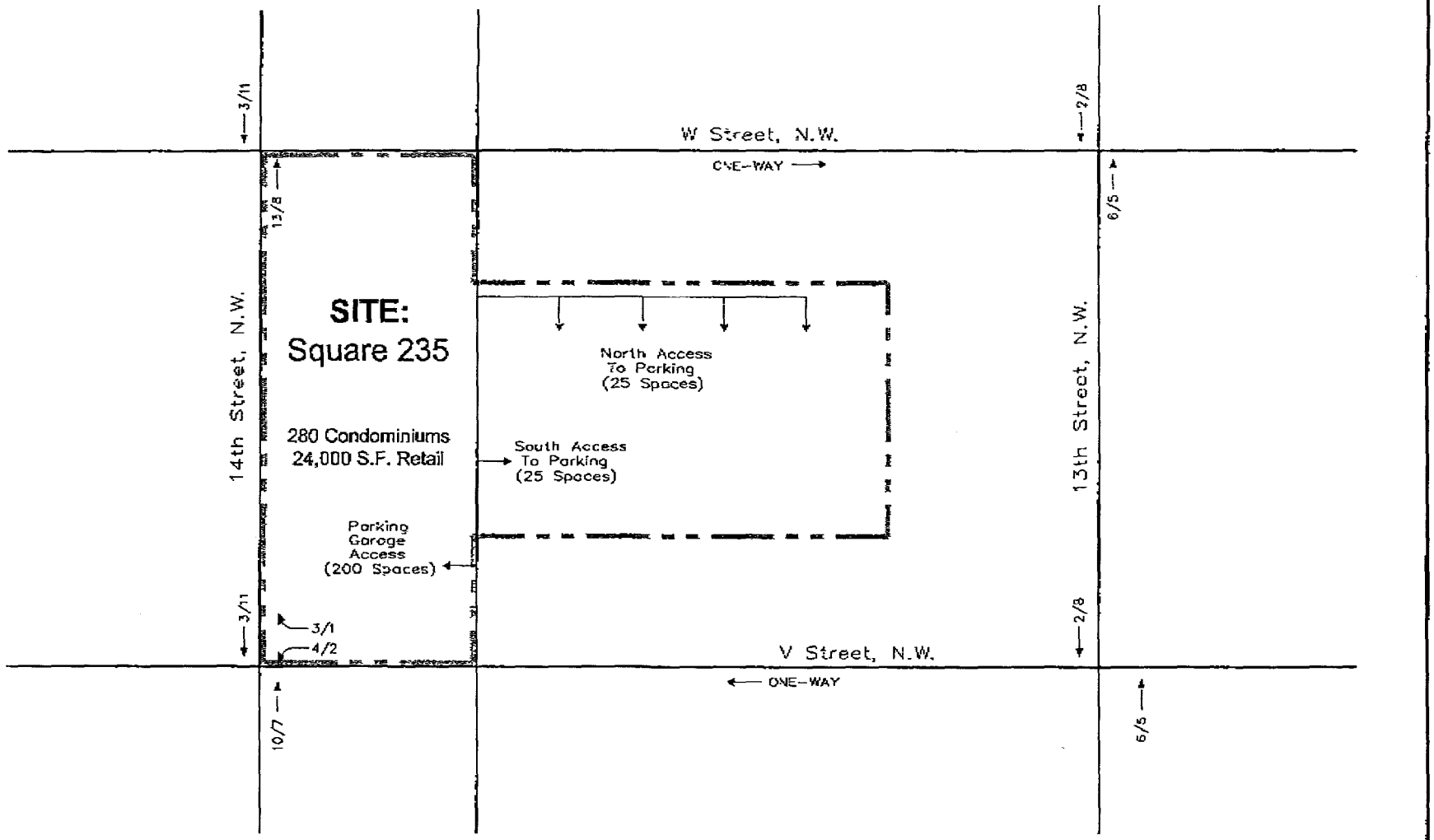


Figure 5
Traffic Generated by Background Development

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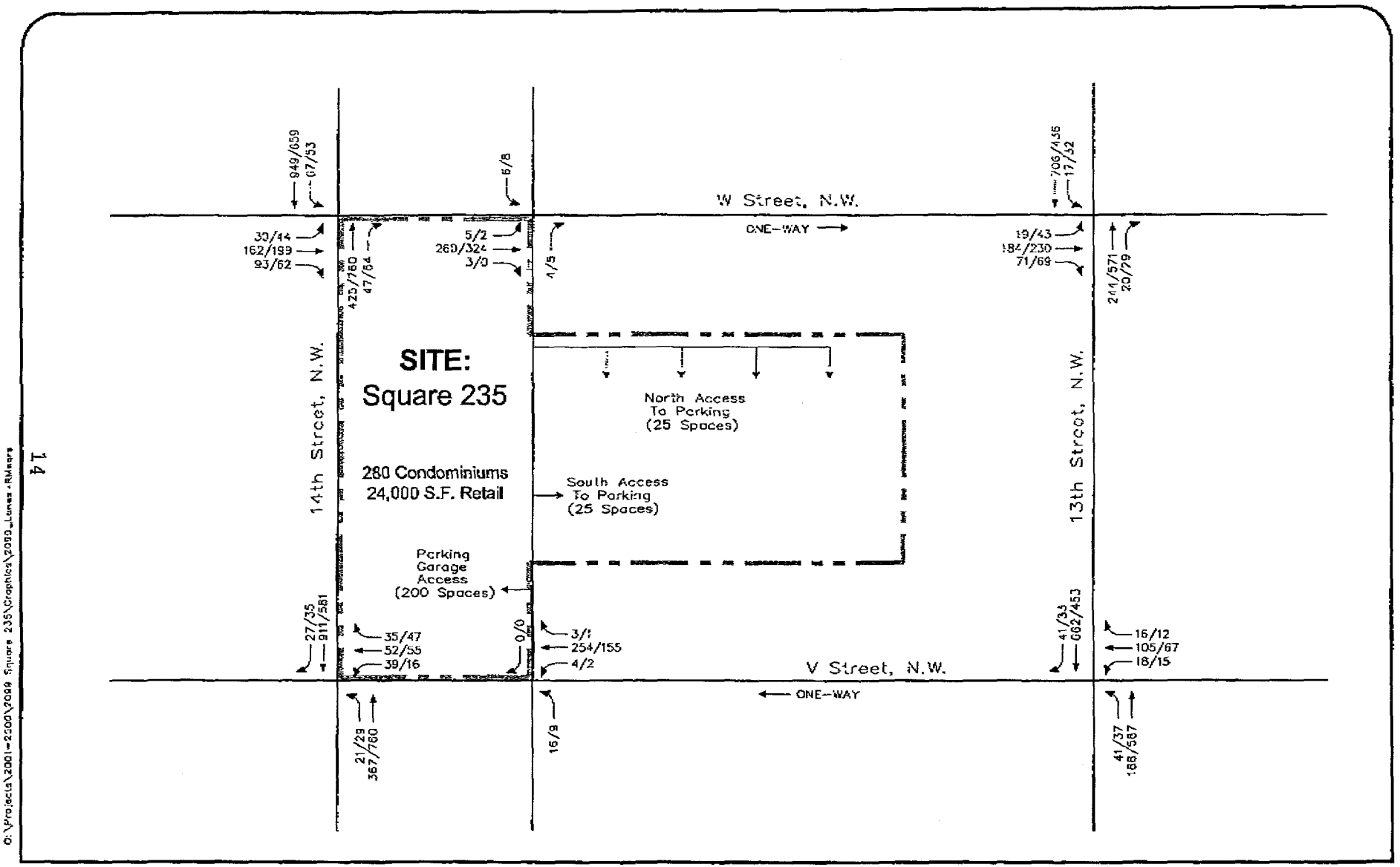


Figure 6
Background Traffic Volumes (2007)

Square 235
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Proposed Site Access. Access to the Square 235 property is proposed from the existing 12-foot wide public alley on the south side of the site connecting to V Street. The existing alley will be widened to a standard 20-feet from V Street to the north property line. A portion of the existing 12-foot wide section of the alley will remain with access to W Street. Vehicles to and from the north on W Street will be discouraged from using the 12-foot wide portion of the alley by installing special pavement treatments.

A single driveway will be provided to access approximately 250 below-grade parking spaces on two levels. Two loading berths for 30-foot vehicles will also be provided north of the garage access.

Site Trip Generation. The Square 235 property is planned to be developed with approximately 280 condominium units and 24,000 S.F. of ground-floor retail space. The number of AM and PM peak hour trips that will be generated by the site were calculated using standard Institute of Transportation Engineers rates (land use codes 230 and 820) with a 50 percent reduction in residential trips and a 35 percent reduction in retail trips for transit use as utilized in previous studies. As mentioned previously, the retail uses are expected to be community based, and would generally serve the surrounding community. Thus, this analysis is conservative since a significant portion of retail patrons are likely to be walking or transit-based trips.

The results are summarized in Table 3, and indicate that the subject site will generate 111 AM peak hour trips (45 in and 66 out), 232 PM peak hour trips (125 in and 107 out), and 2,551 average daily (24-hour) trips.

Parking Requirement. Based on the District of Columbia code, a total 210 off-street parking spaces are required. The developers propose to provide approximately 250 spaces, exceeding code requirements.

A total of 200 dedicated spaces will be provided for residential use with 50 spaces designated for retail use. In addition, approximately two to four spaces will be designated for ZipCar use. (Refer to Appendix F for additional information.)

Site-Generated Traffic Assignments. The traffic expected to be generated by the residents and retail patrons of the Square 235

property were assigned to the road network based on an analysis of the existing travel patterns in the area. For analysis purposes, both residents and retail patrons were assumed to utilize the parking garage entrance on the V Street alley.

The following distributions were derived for use in this analysis:

Direction (to/from)	Percentage
North (13th and 14th Streets)	23 percent
South	40 percent
East (W Street and V Street)	15 percent
West	22 percent
Total	100 percent

The travel patterns for patrons and residents of Square 235 are shown on Figure 7. The AM and PM peak hour traffic assignments for the project are illustrated on Figure 8, and reflect the transit mode share for residents and retail patrons.

Total Future Traffic Forecasts. The total future traffic forecasts were prepared assuming full buildout and occupancy of Square 235 based on the background traffic volumes and the traffic generated by the project. These forecasts are conservative and include the traffic currently being generated by the existing uses. The resultant traffic was added to the background development volumes shown on Figure 5 and the site-generated traffic shown on Figure 8 to yield the total future forecasts shown on Figure 9.

Total Future Levels of Service. Capacity analyses were conducted for total future conditions based on the existing lane use shown on Figure 4, the total future traffic forecasts shown on Figure 9, and the Highway Capacity Manual analysis procedures. The results are summarized in Table 1. Capacity analysis worksheets for total future conditions are contained in Appendix G.

Table 1 indicates that the overall levels of service will remain similar to those forecasted under background conditions without the site development. All of the intersections would continue to operate at acceptable levels of service during both the AM and PM peak hours. The traffic generated by the Square 235 property would not significantly impact overall levels of service at the intersections surrounding the site.

Table 3
Square 235
Trip Generation Summary **(1)**

Development/Use	Land Use Code	Amount	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Average Daily Traffic
Retail	820	24,000	GSF	41	27	68	118	127	245	2,723
35 % Metro Reduction (2)				14	9	24	41	44	86	953
Net new retail trips				27	17	44	77	83	159	1,770
Condominiums	230	280	D.U.	20	96	116	96	48	144	1,562
50 % Metro Reduction (2)				10	48	58	48	24	72	781
Net new residential trips				10	48	58	48	24	72	781
Total Site				**37**	**65**	**102**	**125**	**107**	**231**	**2,551**

Notes:
(1) Trips based on the rates and equations published in the Trip Generation Manual, Sixth Edition, by the Institute of Transportation Engineers (ITE).
(2) Transit reduction based on "Development-Related Ridership Survey II", by JHK & Associated, 1989 and Langston Hughes Traffic Study, by Wells and Associates dated April 11, 2002

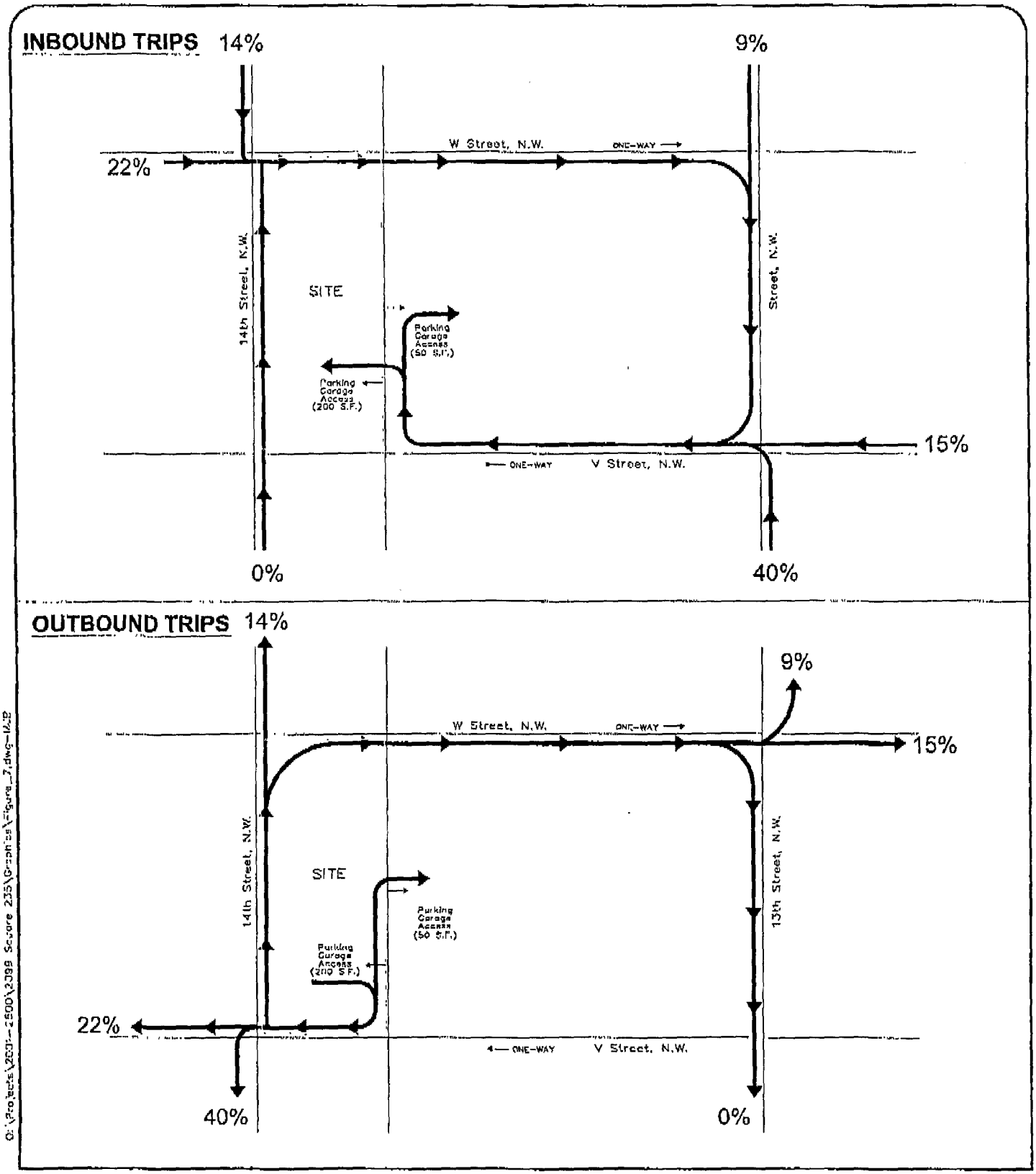


Figure 7
Site Trip Distributions

North
Schematic

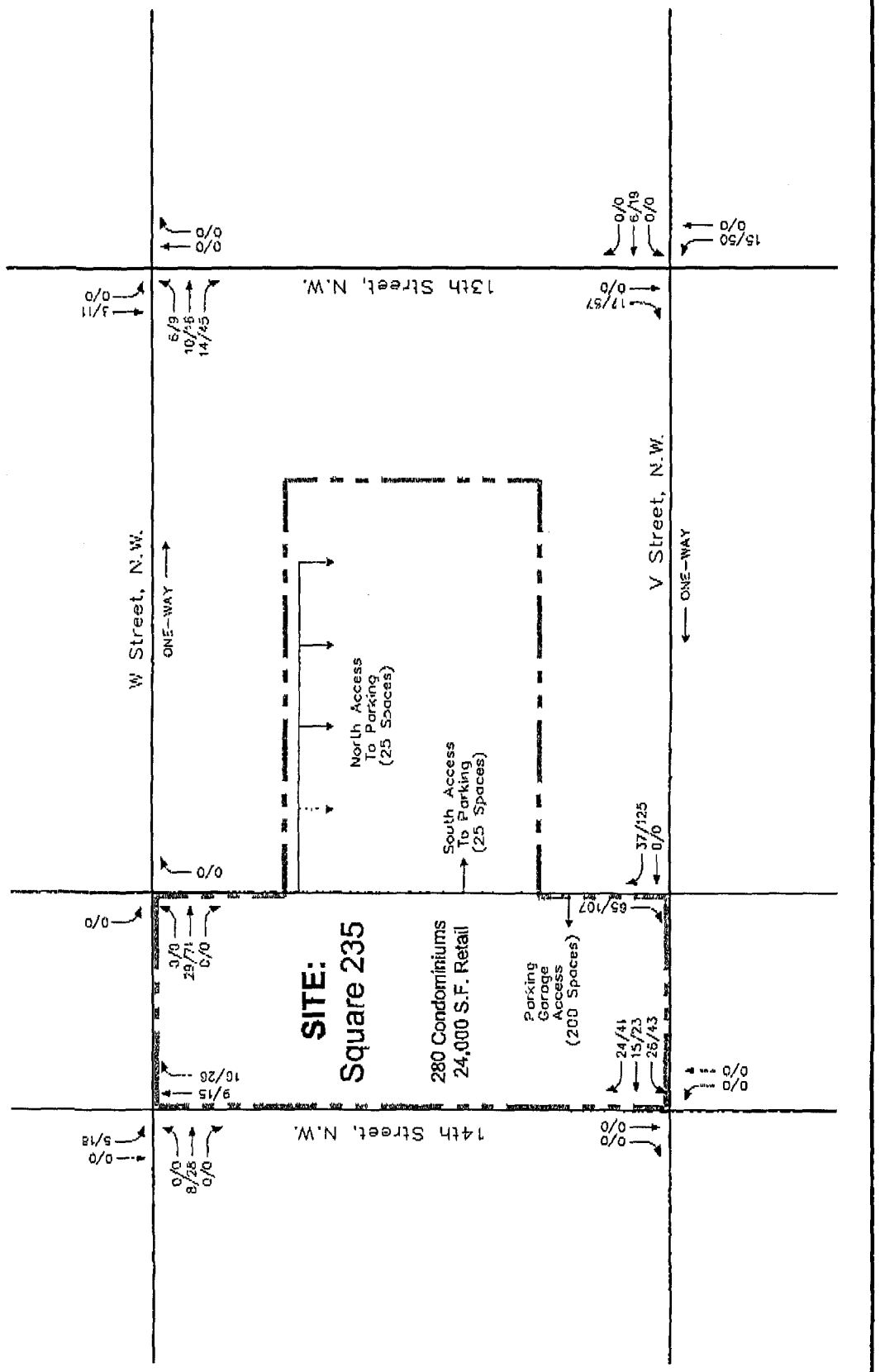


Figure 8
Site-Generated Traffic

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Square 235
Washington, DC

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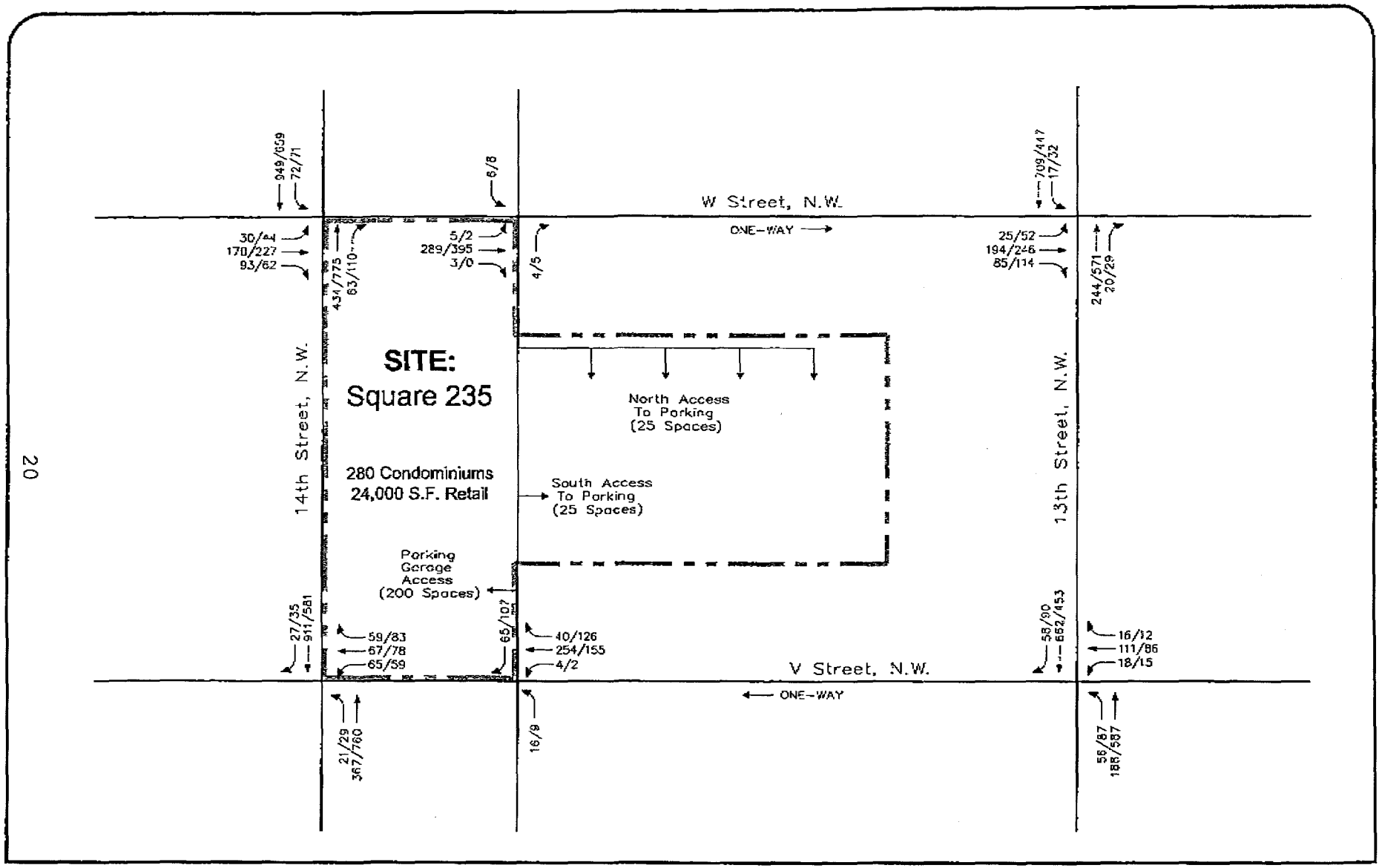


Figure 9
Total Future Traffic (2007)

Square 235
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Request for Waiver. The District of Columbia Code requires a 55-foot loading berth and a 200 S.F. loading platform be provided for residential development projects in excess of 50 units. The retail portion of the property requires two 30-foot loading berths and two 100 S.F. loading platforms. (A 55-foot loading bay is not required for the retail uses.)

Square 235 requests a waiver be granted to provide two 30-foot berths and two 100 S.F. loading platforms to serve the project. The 30-foot loading berths would be shared by both the retail and residential uses. The 55-foot loading bay would be omitted.

Discussion. It is anticipated that service vehicles would use W Street and the alley in order to access the loading docks provided within Square 235. Some retail deliveries could be made from 14th Street by providing a 15-minute loading zone that is restricted to off-peak hours.

Residential Loading Characteristics. The residential units proposed for Square 235 property are modest in size (approximately 800 S.F./unit), and are marketed primarily to first time homebuyers with one to two persons per household. Thus, the residents of this type of facility are likely to use a smaller vehicle to transport items when moving.

As part of previous studies, surveys of existing residential facilities were made to identify loading and moving characteristics of condominium units. Walk-in surveys were conducted at condominium projects within the general vicinity of the site. A total of six surveys were conducted at properties ranging from 58 to 300 units with an average size building of 138 units. The results indicate the following:

1. None of the surveyed sites provide a 55-foot loading berth for resident use.

2. The average number of moves per month was found to be one to two, indicating a low turnover rate.

3. Many of the facilities require pre-scheduling of moving and restrict this activity to general business hours on weekdays and weekends.

4. Nearly all of the surveyed sites indicated that the arrival of a large tractor-trailer is a rare

occurrence. In these infrequent instances, they must load and unload from a 30-foot dock or along the front or side of the building.

5. Telephone surveys of truck rental facilities serving the city indicate that a 14 or 15-foot van or small truck is most frequently used for moving purposes.

The residential survey information indicates that the elimination of the 55-foot loading bay would not adversely effect the loading and traffic operations of the Square 235 project. The frequency of large tractor-trailers is minimal, and would likely result from long distance moves, where multiple residences are stored within the same truck.

Although this occurrence would be infrequent, it is recommended that moving activity by residents be regulated and scheduled to ensure that potential conflicts are minimized. In the event that a large tractor-trailer arrives at the site, it should be directed to V or W Street so that the alley is not blocked for emergency vehicle access. This may require restricting some curb parking spaces.

Retail Loading Characteristics. The retail space will front 14th Street and is intended to be service oriented, relying on pedestrian activity generated by adjacent buildings. It would likely be similar to those uses currently found on 14th Street in the vicinity of the site. The majority of these shops do not require deliveries from large tractor-trailers. They are more likely to be serviced by 30-foot trucks, vans, and smaller delivery vehicles.

In order to identify the vehicle type and frequency of usage, walk-in surveys of existing retail shops and restaurants on 14th Street and in the general vicinity of the site were conducted. A total of 31 surveys were made.

The results indicate that the retail shops and restaurants averaged approximately two deliveries per day. The majority of these deliveries were made with 30-foot or smaller vehicles. Some utilized designated curbside loading areas directly in front of the establishment being served.

Approximately one-quarter of the respondents are serviced by 55-

foot tractor-trailers that arrived two to three times a week. These deliveries are generally made during the early morning or overnight (non-peak) hours, with minimal disruptions in traffic.

Conclusion. These results indicate that residential use of the 30-foot loading docks is minimal, and sharing these with retail users should not conflict with retail loading activities. Since the site configuration would allow for the development of four to five individual stores, a 15-minute loading zone on 14th Street in the vicinity of the retail shops is recommended and could be restricted to off-peak hours. Residents of Square 235 should be required to schedule moves in order to minimize any potential conflicts.

Based on the results of these studies, the request for loading waiver should be granted.

Conclusions

The conclusions of this traffic analysis are as follows:

1. All of the intersections surrounding the site currently operate at acceptable levels of service during both the AM and PM peak hours.

2. The 280 condominiums and 24,000 S.F. of retail space of the Square 235 project would generate 111 AM peak hour trips (45 in and 66 out), 232 PM peak hour trips (125 in and 107 out), and 2,551 average daily (24-hour) trips. This reflects a 50 percent transit mode split for residential and 35 percent mode split for retail based on proximity to the U Street/Cardozo Metrorail station.

3. Approximately 250 parking spaces (200 spaces for residents and 50 spaces for retail users) will be provided to serve residents and retail patrons of Square 235. This exceeds the City parking requirement. In addition, two to four of these spaces will be designated for ZipCar use.

4. The amount of vehicular traffic that would be added to the road network by Square 235 would not have a significant effect on the overall intersection delays within the study area. All of the intersections studied would maintain overall acceptable levels of service during both the AM and PM peak hours with the full development and occupancy of the project.

5. The request for a waiver to eliminate the 55-foot loading berth should be granted based on the infrequent use of this facility by residents. The two 30-foot loading berths are intended to be shared by both residents and retail users. Studies of existing condominium projects indicate a low turnover rate and rare occurrences of tractor-trailers arriving at the site that support this recommendation. Scheduling of moving activities should be required for residents to minimize potential conflicts.