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**MONUMENT BALLPARK – SQUARE 700 & 701
TRANSPORTATION IMPACT STUDY
WASHINGTON, D.C.**

Prepared for:
Monument Realty

Prepared by:
Wells & Associates, LLC

December 12, 2006

ZONING COMMISSION
District of Columbia

CASE NO. 06-46

EXHIBIT NO. 18

ZONING COMMISSION
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Section I INTRODUCTION

This report presents the results of a transportation impact study that was prepared in support of the Monument Realty plans to develop office, retail, residential and hotel uses on the property located on Squares 700 and 701 in southeast Washington D.C. The development site is located in the land area bounded by M Street SE, N Street SE, South Capitol Street and Cushing Place SE as shown on Figures I-1 and I-2.

Monument Realty plans to develop the site in phases. The first phase would include 330 dwelling units, 288,285 S.F. of office, 196 hotel rooms and 60,000 S.F. of ground floor retail supported by 726 below-grade parking spaces. The first phase would be located in Square 701 as shown on Figure I-2 and would be complete in 2008. This traffic study supports the Phase I development application; however a future 2014 horizon including preliminary plans for Phases 2 & 3 on Square 700 is also analyzed. Phases 2 & 3 would include an additional 881 dwelling units, 448,210 S.F. of office, and 67,856 S.F. of ground floor retail. The conceptual site plan for all phases of development is shown in Figure I-3.

The site is currently a mix of functioning and non-functioning parcels, many of which are not generating significant peak hour traffic. A WMATA bus facility is located between Half and Van Streets to the south of M Street. This facility will be relocated so that the site can be redeveloped in Phases 2 or 3.

A portal to the Navy Yard Metro station is located on site at the southeastern corner of M and Half Streets providing Green line service. This portal will remain and is to be enhanced to accommodate the additional demand created by the new USDOT headquarters located two blocks to the east and the new Major League Baseball Ballpark being constructed one block to the south. There are also several bus lines providing service along M Street.

All access to the parking garage and service areas for the Phase I component of the project will be located on Cushing Place. Cushing Place will be extended to intersect N Street rather than dead-end within the block as it does today. Phases 2 & 3 will have all access from Van Street. Half Street will be developed as a pedestrian-oriented retail corridor between the Metro station at M Street and the ballpark entrance at N Street. The design of Half Street will include features consistent with an urban pedestrian street such as traffic calming elements, on street parking and special pavement treatments.

The Monument site is located within the Ballpark District immediately adjacent to and north of the new Major League Baseball Ballpark site. The ballpark is scheduled for completion in Spring 2008. The ballpark site is bounded by N Street SE, Potomac Street SE, South Capitol Street and First Street SE.

As part of the work to prepare the area for the new ballpark pedestrian and vehicular traffic, the streets around the ballpark are being improved. Streetscape and road improvements will be implemented for South Capitol, Potomac, First, N and Eye Streets before opening day. In addition, the Frederick Douglass bridge viaduct is being lowered so that at-grade intersections are created on South Capitol Street at Potomac, P and O Streets where they do not exist today.

A Traffic Operations Control Plan (TOCP) is currently being developed by the DC Sports and Entertainment Commission (DC SEC) for the new ballpark. It is expected that during ballpark events Half Street between M and N Streets and N Street between Van Street and First Street will be closed to vehicular traffic. These closures are to better provide for the anticipated pedestrian flows that are forecasted between the ballpark and the Metro and the various parking facilities. Details of the TOCP have not been fully identified at the time of this study therefore the street closures described above were assumed to prepare weekday ballpark afternoon and evening peak hour traffic assignments.

In addition to the ballpark, there are several other significant projects planned or under construction in the vicinity of the site that were considered in the analysis as “pipeline” traffic generators.

Tasks undertaken in this study included the following:

1. Review Monument Realty’s proposed development plans and phasing build out.
2. Field reconnaissance of existing roadway and intersection geometrics, traffic controls, traffic signal phasing/timings, and speed limits.
3. Interaction with DDOT staff regarding the traffic study scope.
4. Coordination with the transportation consultant developing the TOCP for the new Major League Baseball Ballpark.
5. Compilation of existing vehicular and pedestrian traffic at 10 intersections.
6. Analysis of existing levels of service during the commuter AM and PM peak hours was conducted.
7. Other approved and planned developments in the site vicinity were identified and their traffic impacts were included.

8. Planned roadway improvements associated with the new ballpark were reviewed.
9. Background future traffic volumes were forecasted for 2008 and 2014.
10. Background levels of service were calculated at key intersections based on background traffic forecasts, future traffic controls, and future intersection geometrics.
11. The number of AM and PM peak hour trips that would be generated by the proposed project were estimated based on: (1) Institute of Transportation Engineers (ITE) trip generation rates, (2) the proximity of the project to the Navy Yard Metrorail Station, and (3) experience with other projects in Washington, D.C.
12. Total future traffic AM and PM commuter peak hour volumes were forecasted for 2008 and 2014.
13. Total future levels of service for commuter peak hours were calculated at key intersections based on total future traffic forecasts, future traffic controls, and future intersection geometrics for 2008 and 2014.
14. Background future traffic volumes for the Ballpark 4-5 PM weekday afternoon peak hour in 2008 were forecasted.
15. Traffic generated by the Ballpark during the 4-5 PM weekday afternoon peak hour was calculated based on information provided by the DC SEC transportation consultant.
16. The number of site trips that would be generated by the project during the Ballpark 4-5 PM peak hour were estimated.
17. Total future traffic volumes during the Ballpark 4-5 PM weekday afternoon peak hour were forecasted for 2008.
18. Background future traffic volumes for the Ballpark 6-7 PM weekday evening peak hour in 2008 were forecasted.
19. Traffic generated by the Ballpark during the 6-7 PM weekday peak hour was calculated based on information provided by the DC SEC transportation consultant.

20. The number of site trips that would be generated by the project during the Ballpark 6-7 PM weekday evening peak hour were estimated.
21. Total future traffic volumes during the Ballpark 6-7 PM peak hour were forecasted for 2008.

Sources of data for this analysis included traffic counts conducted by Wells & Associates; ITE; the Washington Metropolitan Area Transit Authority (WMATA); DDOT; the DC Sports and Entertainment Commission Ballpark development team; the Anacostia Waterfront Corporation; and the Monument Realty development team.

The conclusions of this traffic impact study are as follows:

1. ***The proposed Monument Ballpark development on Squares 700 & 701 provides effective vehicular and pedestrian access to the Navy Yard Metrorail Station and the surrounding street network. The immediate proximity to the Metrorail station and the urban street grid helps reduce the demand for private automobile use.***
2. ***Heavy commuter traffic along the South Capitol Street corridor contributes to vehicle delays on the main line and at the cross streets in the study area.***
3. ***Most of the study intersections currently operate at acceptable levels of service during the AM and PM peak hours with the exception of a few approaches at the South Capitol Street intersections.***
4. ***M Street is the east-west corridor serving the SW and SE DC waterfront areas. Substantial development is planned in the vicinity that will substantially increase future traffic volumes on M Street and the local street network.***
5. ***Major roadway improvements planned in conjunction with the construction of the new ballpark will greatly improve vehicular access around the site along with enhance the pedestrian and bicycle environment.***
6. ***The pipeline developments in the study area would generate a total of 913 AM peak hour trips and 1,003 PM peak hour trips upon completion in 2008. An additional 2,134 AM peak hour trips and 3,497 PM peak hour trips would be generated by the pipeline developments by 2014.***

- 7. A new traffic signal at the intersection of M Street and Half Streets will mitigate the unacceptable LOS that occurs in the 2008 background condition prior to site trips being added to the network.**
- 8. A signal at M Street and Half Streets would have great benefit for pedestrians crossing M Street. The location of the Metro portal at the intersection and the location of the ballpark entrance a block to the south will increase pedestrian flows at this intersection. A signal at this location is consistent with the spacing of existing signals along M Street.**
- 9. The Pedestrian Volume signal warrant for M Street and Half Street will likely be met in future conditions as a result of planned development even if the Monument Phase 1 and Phase 2 & 3 sites are not developed. There is also the potential for the intersection to satisfy the Four-Hour Vehicular Volume warrant in 2014 conditions.**
- 10. The Monument Ballpark – Phase 1 project in Square 701, including 330 condominium apartments, a 196 room hotel, 288,285 S.F. of office and 60,000 S.F. of retail, will generate approximately 499 AM peak hour vehicle-trips and 720 PM peak hour vehicle-trips at full build out and occupancy in 2008.**
- 11. The traffic generated by the Phase 1 site trips in 2008 will not degrade the study intersections beyond acceptable LOS with the exception of Cushing Place at M Street where the minor Cushing Place approaches increase in delay as a result of site traffic. The level of delay is generally considered acceptable for an urban, minor street approach.**
- 12. The Monument Ballpark – Phase 2 & 3 project in Square 700, including 881 condominium apartments, 448,210 S.F. of office and 67,856 S.F. of retail, will generate approximately 691 AM peak hour vehicle-trips and 947 PM peak hour vehicle-trips at full build out and occupancy in 2014.**
- 13. The traffic generated by the Phase 2 & 3 site trips in 2014 will cause some additional delay at the South Capitol Street intersections. However, because the delay increase changes some marginal LOS “D’s” to “E’s,” there will not be a noticeable operational difference.**
- 14. The Phase 2 & 3 site trips will increase delay at the intersections of Cushing Place and Van Street at M and N Streets, particularly during the PM peak hour. The delay will affect outbound site trips and not thru traffic on M Street or N Street.**

15. ***Cushing Place and Van Street facilitate site access and both streets intersect M Street with unsignalized stop control. These unsignalized approaches will experience long delays during peak periods, particularly for outbound site traffic wanting to turn left (westbound) onto M Street. At times the delay will cause familiar motorists to seek alternate routes. A new signal at M Street and Half Street would help create acceptable gaps in M Street traffic thereby benefiting these unsignalized intersections.***
16. ***The Monument Ballpark – Phase 1 would provide approximately 550 parking spaces. This is more than the minimum requirement of 395 spaces required by DC regulations. The Phase 2 & 3 program would require a minimum of 629 spaces based on the preliminary program. A parking program has not been determined for Phase 2 & 3.***
17. ***The Monument Ballpark – Phase 1 would provide sufficient loading dock accommodations. The loading needs for Phases 2 & 3 will be determined when the building program is further refined.***
18. ***It is estimated that 4,600-4,700 cars will park within the vicinity of the ballpark for a sellout weekday game.***
19. ***The weekday Ballpark traffic will peak from 4-5 PM for the outbound flow of a 1:05 PM game or peak during 6-7 PM for the inbound flow of a 7:05 PM game. These peak ballpark flows do not directly overlap the peak commuter hour of 5-6 PM.***
20. ***Approximately 70% of ballpark patrons will depart in the 4-5 PM hour after a game start time of 1:05 PM and 60% of the patrons will arrive in the 6-7 PM hour before the game start time of 7:05 PM.***
21. ***The Traffic Operations Control Plan for the ballpark is currently in development. The TCOP will need to address the dependence of site access on the operation of the M Street and Cushing Place intersection when N and Half Streets are closed to vehicular traffic. There may be an opportunity to maintain partial vehicular circulation on N Street between Cushing Place and First Street to aid site access.***

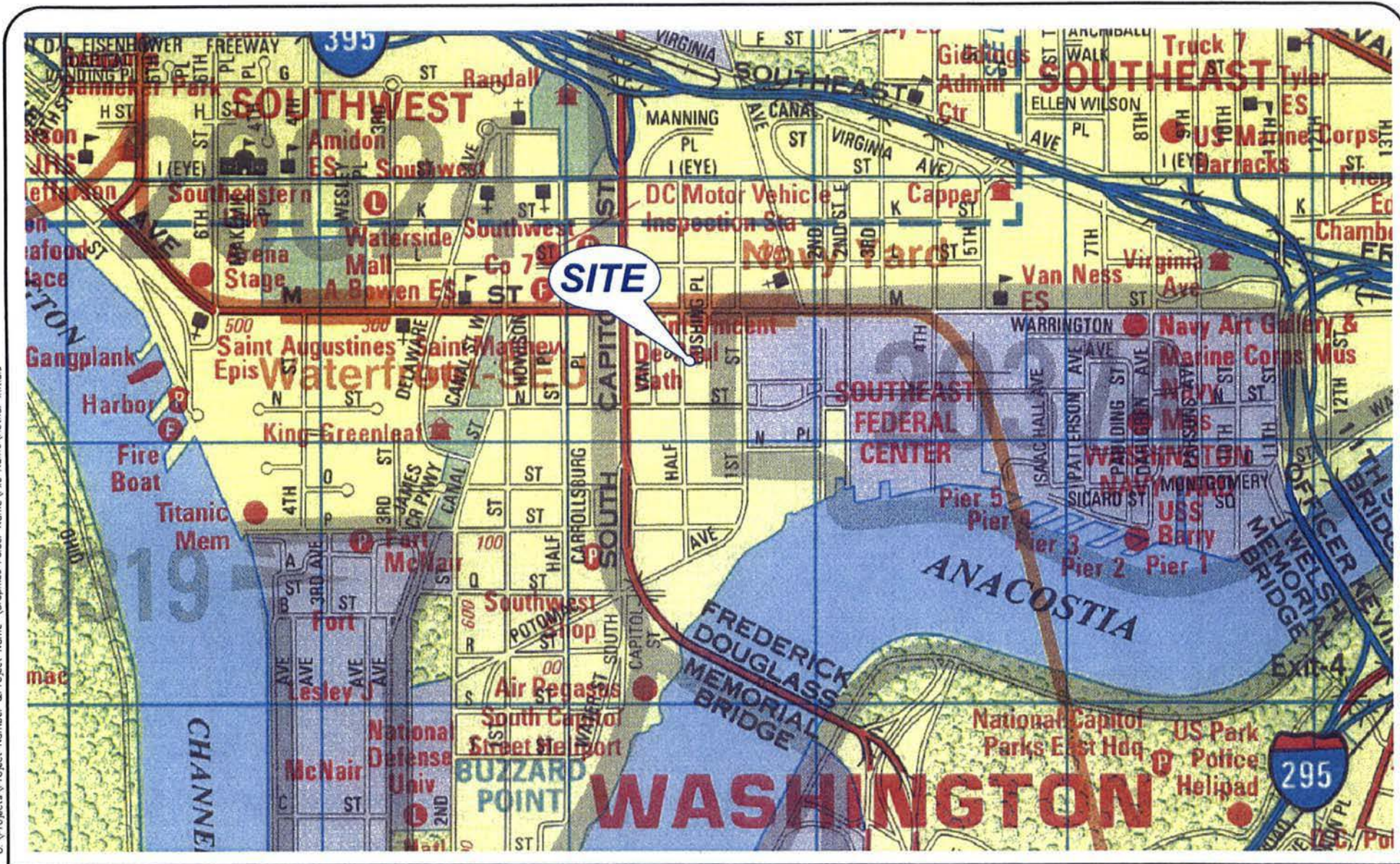


Figure 1-1
Site Location Map



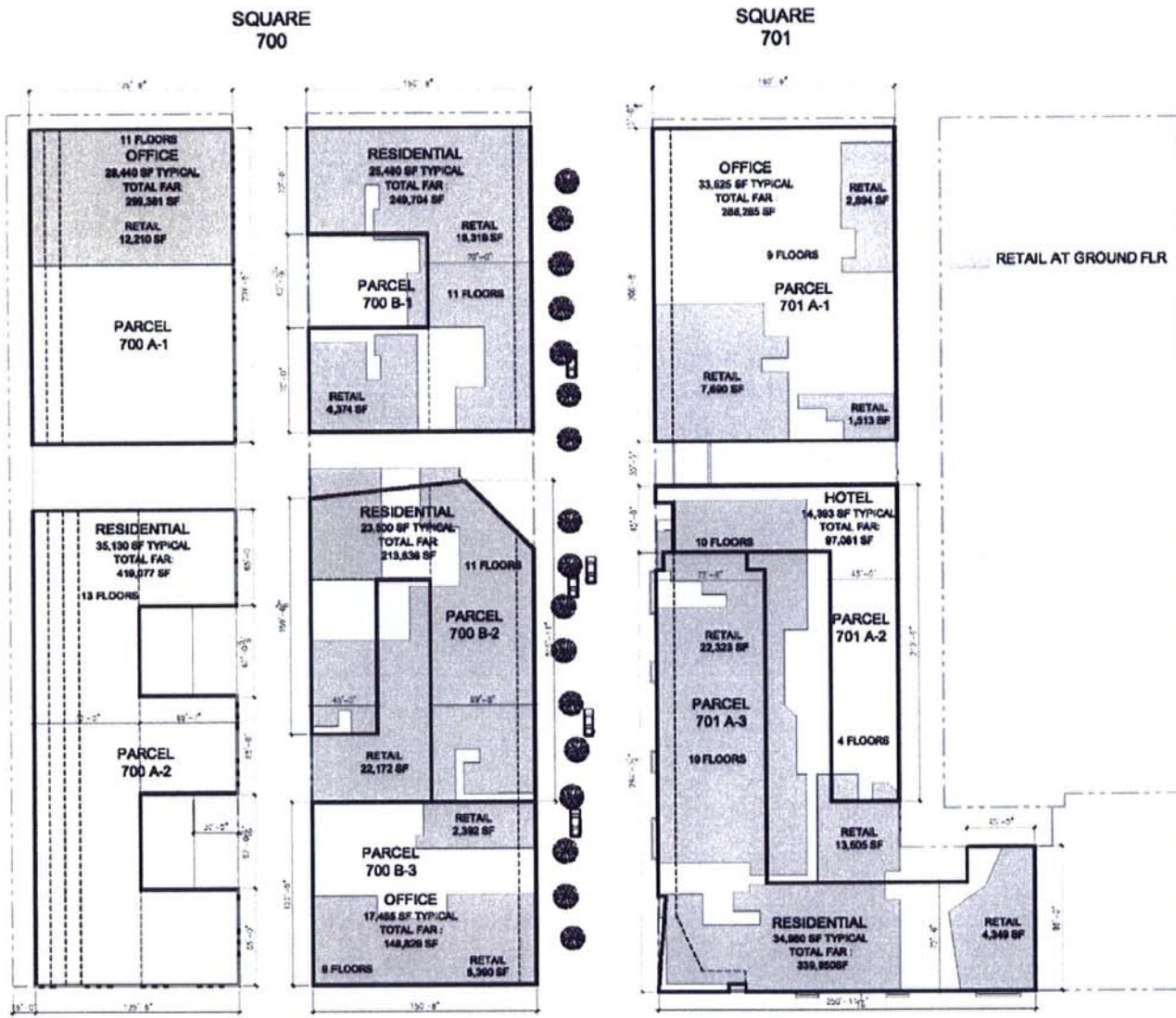


∞ Figure 1-2
Aerial Image



North

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6 Figure 1-3
Conceptual Site Plan - Phase 1, 2 & 3

Source: Monument Realty



Section 2 BACKGROUND DATA

Study Scope

The traffic study scope was discussed with DDOT staff during a scoping meeting on September 21, 2006 and captured in a scoping letter dated September 27, 2006. The study area was selected based on the intersections that would potentially be most affected by the proposed development. This study includes the following intersections:

1. South Capitol Street/Eye Street
2. South Capitol Street/M Street (local lanes only)
3. M Street SE/Van Street SE
4. M Street SE/Half Street SE
5. M Street SE/Cushing Place SE
6. M Street SE/Ist Street SE
7. South Capitol Street/N Street
8. N Street SE/ Van Street SE
9. N Street SE/Half Street SE
10. N Street SE/Cushing Place SE (future intersection)
11. N Street SE/Ist Street SE

This study evaluates the transportation impacts of the following approved and planned pipeline developments in the vicinity of the site for two future horizons; 2008 and 2014. The development programs associated with each pipeline project were determined in consultation with DDOT's Anacostia Waterfront Initiative Coordinator and they include the following:

For 2008

1. MLB Ballpark (baseball stadium)
2. 20 M Street (office)
3. Square 0699N Phase I – Ist & L Street SE (residential)
4. Jefferson at 70 Eye Street – Phase I (residential)
5. 100 M Street SE (office and retail)
6. USDOT Headquarters (office and retail)

For 2014

1. Cohen Site (residential, retail and office)
2. Ballpark District Waterfront Development (residential and retail)
3. Jefferson at 70 Eye Street – Phase II (residential)
4. Federal Gateway II (office and retail)
5. Ballpark District On Site Development (residential, hotel and retail)

6. SE Federal Center – Phase IA & IB (residential, office and retail)

Public Road Network

Regional access to the Monument Realty site is provided by I-295, I-395, South Capitol Street, and M Street SW/SE. Local access is provided from Cushing Place and Van Street via M or N Streets SE. Existing intersection lane use and traffic control at key intersections in the site vicinity are shown on Figure 2-1.

Planned Improvements

Numerous street improvements in the Ballpark District are on a fast track to be completed by spring 2008 prior to opening day of the ballpark and prior to opening of Monument Realty's Phase I development. The improvements are described below as per the October 5, 2006, DDOT Streetscape Coordination meeting.

South Capitol Street

Improvements to South Capitol Street include removal of the elevated viaduct north of the Frederick Douglass Memorial Bridge such that South Capitol Street intersects Potomac Avenue, P, O and N Streets at new at-grade, signalized intersections. The proposed cross-section of South Capitol Street within the 130' right-of-way from Potomac Avenue to N Street will include two 11' lanes and a 13' curb lane in both directions. The north and south traffic will be divided by an 18' median. Left turn lanes will not be provided and left turns will be restricted during peak hours. On street parking may be permitted during off-peak hours, but will be restricted during peak commuter peak periods.

Long-term improvements for South Capitol Street also include a new traffic oval at the Potomac Avenue intersection; however, this planned improvement will occur beyond the timeline contained in this traffic study. Similarly, removal of the grade-separation at South Capitol and M Street has been proposed as a long-term improvement. No firm plans for such an improvement currently exist and a timeline is unknown therefore it was not considered in the analysis.

Potomac Avenue SE

Potomac Avenue from South Capitol Street to First Street SE will consist of a 70' pavement section from curb to curb within a 120' right-of-way. Two 11' traffic lanes, a 5' bike lane and a 7' curb parking lane will be provided in both directions of travel. The existing pavement width is 40'

First Street SE

The reconstruction of First Street SE will include the section from Potomac Avenue to Eye Street SE. First Street is essentially a continuation of the 70' Potomac Avenue pavement section. It will include two 11' traffic lanes, a 5' bike lane and a 7' curb parking lane in both north and southbound directions. The total right-of-way is 110' offering slightly less planting area and sidewalk than on Potomac Avenue. The existing pavement width of First Street is 45'. New traffic signals were assumed to be installed at the First Street intersections with N Street and Potomac Avenue.

N Street SE

N Street will be reconstructed within a 90' right-of-way between South Capitol Street and First Street. The pavement section will include a 15' travel lane and an 8' parking lane in each direction with a total curb to curb width of 48'. On street parking will be restricted during peak hours if needed and was assumed in the analysis. The existing street section is 30' wide.

Eye Street SE

The existing 90' right-of-way on Eye Street between South Capitol Street and New Jersey Avenue will remain but with a wider pavement section of 60'. It will include two 11' traffic lanes and a 7' curb parking lane in both east and westbound directions.

Future lane use and traffic controls for the 2008 and 2014 analysis horizons consistent with the improvements described above are shown on Figure 2-2.

Existing Traffic Counts

Existing AM and PM peak period vehicular and pedestrian traffic counts were conducted on Tuesday, September 26, 2006, from 7:00 AM until 10:00 AM and from 4:00 PM until 7:00 PM by Wells & Associates at nine (9) of the study intersections listed above. The intersection of South Capitol and Eye Street was also counted from 7:00 AM until 10:00 AM and from 4:00 PM until 7:00 PM by Wells & Associates but on Thursday, October 6, 2005 during a prior study in the area.

The vehicular traffic counts are presented on Figure 2-3; the pedestrian traffic counts are presented on Figure 2-4. These counts are presented in Appendix A. The resulting AM peak hour is 7:30-8:30 AM and the resulting PM peak hour is 5:00-6:00 PM.

Figure 2-3 indicates that South Capitol Street south of N Street coming to/from the Frederick Douglass Memorial Bridge carries 4,935 AM peak hour vehicle-trips and 4,313 PM peak hour vehicle-trips. Approximately 65 percent of all AM peak hour trips travel in the northbound

direction toward downtown Washington; 35 percent travel in the southbound direction away from the DC urban core. As would be expected of a commuter corridor the pattern is opposite during the PM peak; approximately 64 percent of all PM peak hour trips travel in the southbound direction and 36 percent travel in the northbound direction.

M Street east of South Capitol Street carries 1,200 AM peak hour vehicle-trips and 1,659 PM peak hour vehicle-trips. Approximately 43 percent of all AM peak hour trips travel in the westbound direction and 57 percent travel east. Approximately 35 percent of all PM peak hour trips travel in the westbound direction and 65 percent travel in the eastbound direction.

First Street south of M Street presently carries 381 AM peak hour vehicle-trips and 295 PM peak hour vehicle-trips. Based on the traffic counts and field observations it is estimated that approximately 5% of the traffic is related to ballpark construction.

N Street east of South Capitol Street currently carries 259 AM peak hour vehicle-trips and 87 PM peak hour vehicle-trips. Based on the traffic counts and field observations it is estimated that approximately 5% of the traffic is related to ballpark construction.

Half Street south of M Street currently carries 66 AM peak hour vehicle-trips and 55 PM peak hour vehicle-trips. Based on the traffic counts and field observations it is estimated that approximately 26% of the AM traffic and 11% of the PM traffic is related to the existing WMATA bus maintenance facility and the few other remaining on site uses.

The highest numbers of pedestrians were observed at the M Street Cushing Place intersection where 150 pedestrians crossed during the AM peak hour and 88 pedestrians crossed during the PM peak hour. Overall the pedestrian patterns were consistent with what would be expected given the location of the Navy Yard Metro portals along M Street and the locations of existing development.

Existing Levels of Service

Existing peak hour levels of service were estimated based on: the existing lane usage and traffic control shown on Figure 2-1; the existing vehicular and pedestrian traffic counts shown on Figures 2-3 and 2-4, respectively; existing traffic signal phasing/timings; and the Synchro intersection capacity analysis software. The results are presented in Appendix B and summarized in Table 2-1.

South Capitol Street carries heavy amounts of regional traffic during the commuter peak hours; the peak flows are northbound (inbound) in the AM and southbound (outbound) in the PM. Vehicle queues are experienced in the peak directions along South Capitol Street, however, these queues are largely isolated to the South Capitol Street mainline. This analysis considers

the operation of the South Capitol local ramps at the grade-separated M Street intersection. It also considers the at-grade South Capitol and Eye Street intersection.

As shown in Table 2-1, the eastbound approach of Eye Street at South Capitol Street currently operates at LOS “F” during the PM peak hour. The eastbound approach of M Street at the South Capitol southbound ramp operates at LOS “E” during the PM peak hour. The northbound approach of the South Capitol Street northbound ramp at M Street currently operates at LOS “F” during the AM peak hour. These delays are attributable to the congestion on South Capitol Street caused by commuter traffic flows.

The overall LOS for the M Street and South Capitol northbound ramp intersection is an “F” during the AM peak hour. All other study intersections operate at overall LOS “D” or better during the AM and PM peak hours. Many of the intersections and their approaches operate at a good LOS of “A” or “B.”

Public Transportation Facilities and Services

The Navy Yard Metro station is located within the Square 701 – Phase I development site at the corner of M Street and Half Street. The Navy Yard station is served by the Metrorail Green line. A transfer to the Orange, Yellow and Blue lines is possible two stops away at the L’Enfant Plaza station. Virginia Rail Express (VRE) commuter service is also located at L’Enfant Plaza. The Red line Metrorail transfer is four stops away at the Gallery Place-Chinatown station. Maryland Rail Commuter (MARC) service is located at Union Station which is accessed via the Red line or the N22 Metrobus running between the Navy Yard and Union Station via the Eastern Market Metro station (Blue line). The capacity of the Navy Yard Metro station will be upgraded to better accommodate the USDOT headquarters traffic and the nearly 16,000 patrons that are anticipated to use the station during a sell out at the new ballpark.

In addition to the N22 Metrobus, the Monument Ballpark project is served by the V7, V8, V9, A42, A46, A48, P1 and P2 lines which run along M Street. Other bus lines located within several blocks of the site include the P6, V5, 90, 92, 93, 70 and 71.

New on street bike lanes will be included in the reconstruction of Potomac Avenue and First Street. These new lanes will connect to the off-street trail that crosses the Frederick Douglass Bridge to points east of the Anacostia River.

Parking Requirements

The District of Columbia Municipal Regulations were reviewed to determine the number of parking spaces required for the Monument Ballpark project. Per the DC regulations the following parking requirements apply in a CG/CR zoning district:

Office – In excess of 2,000 SF, 1 for each additional 1,800 SF of gross floor area

Hotel – 1 for each 4 rooms usable for sleeping plus 1 for each 300 SF of floor area in either the largest function room or the largest exhibit space, whichever is greater

Retail – In excess of 3,000 SF, 1 for each additional 750 SF of gross floor area

Residential – 1 for each 3 dwellings

The Phase 1 development plan includes 330 residential condominium apartments, 288,285 S.F. of office, a 196 room hotel and 60,000 S.F. of retail. Based on the requirements given above, the project would require 395 total spaces. The proposed parking garage for Phase 1 will have approximately 550 spaces therefore exceeding the minimum requirement.

The Phase 2 and 3 development plan is very preliminary and is subject to change. The preliminary program includes an additional 881 residential condominium apartments, 448,210 S.F. of office, and 67,856 S.F. of retail. The minimum parking requirement for this program per code is 629 spaces. The parking program for these later phases of development has not been determined at this time.

Loading Requirements

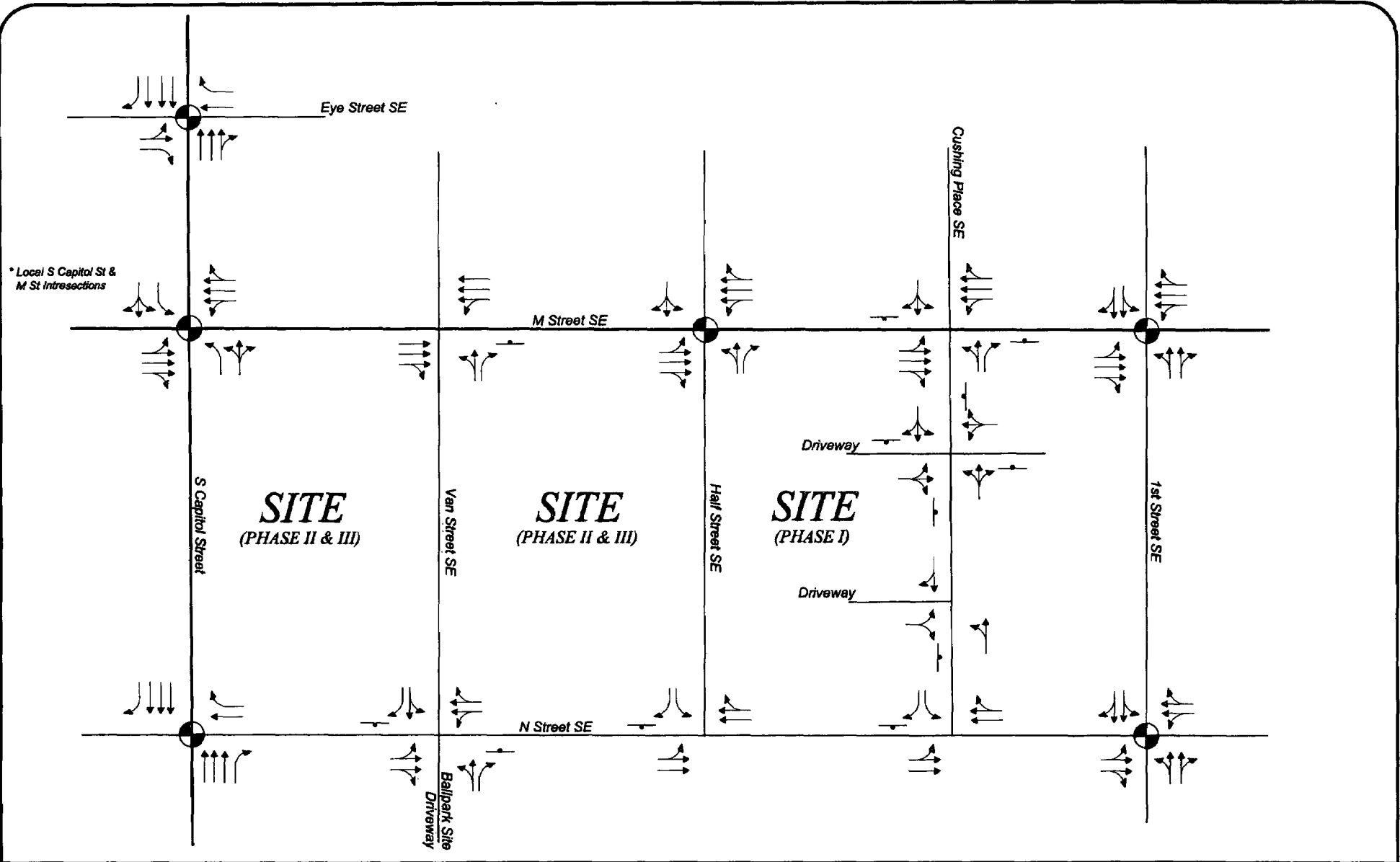
The District of Columbia Municipal Regulations were reviewed to determine the number and size of off-street loading berths required for the Monument Ballpark Phase 1 project.

Per code, an office project in excess of 200,000 S.F. would require three (3) 30 feet deep loading berths with 100 S.F. platforms and one (1) 20 feet deep service berth. The residential component would require one (1) 55 feet deep loading berth with a 200-foot platform, plus a 20 feet deep service berth. A hotel would require one (1) 30 feet deep berth with a 100 S.F. platform plus a 20 feet deep service berth. Retail would require one (1) 30 feet deep berth with a 100 S.F. platform and (1) 55 feet deep berth with a 200 S.F. platform plus a 20 feet deep service berth.

The Phase 1 program will provide a total of one (1) 65 feet deep loading berth, six (6) 30 feet deep berths and two (2) 20 feet service areas. Relief is sought to reduce one berth under the office building to 30 feet deep instead of 55 feet. Additionally, relief is sought for two (2) 20 feet service areas. The requirements given above are for individual uses and do not consider the mixed-use nature of the project or that the berths will be shared. The truck accommodations are anticipated to adequately meet the needs of the mixed-use Phase 1 program. There may be times when the service facilities will need to be managed to make sure all tenants are accommodated.

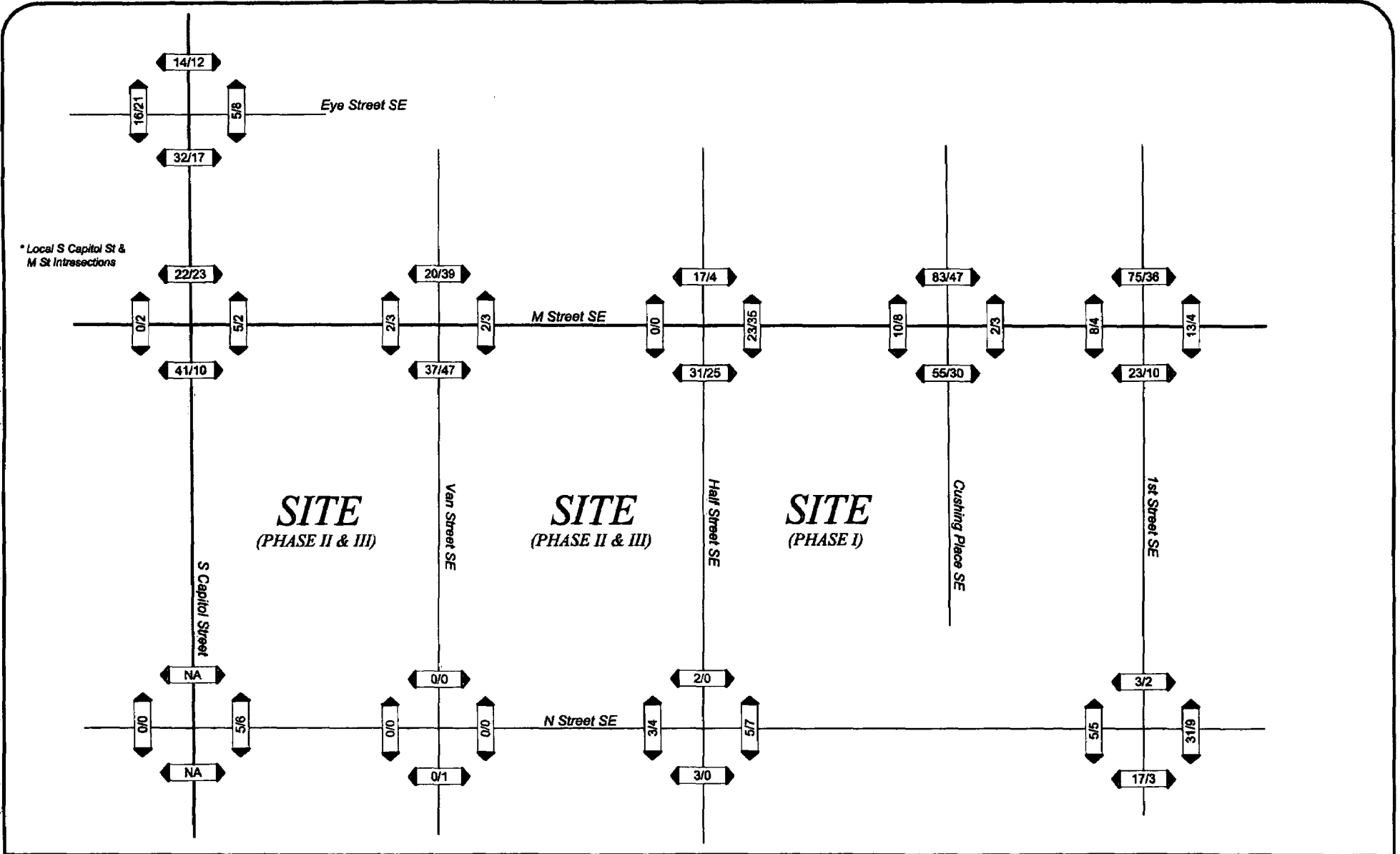
All service access for Phase I will be from Cushing Place which is 30 feet in width. The truck maneuvering was reviewed to determine that trucks and service vehicles utilizing the berths would have the ability to maneuver acceptably. The portion of the loading dock containing the 65 foot berth is angled to ease maneuvering. Trucks using the angled berth will need to enter Cushing Place from M Street and exit out to N Street. Trucks larger than 30' cannot be accommodated during ballpark event street closures of N Street. The event street closures are expected to occur weekday afternoons, weekday evenings and weekends when service vehicle deliveries do not occur or are infrequent.

The Phase 2 & 3 program has not been fully determined and therefore the loading requirements were not reviewed.



18 Figure 2-2
Future Lane Use and Traffic Controls 2008 & 2014





20 Figure 2-4
Existing Peak Hour Pedestrian Traffic Counts

AM PEAK HOUR
PM PEAK HOUR
000/000



Table 2-1
 Monument Ballpark - Square 700 & 701
 Existing Intersection Levels of Service ^{1,2,3}

Intersection	Control	Approach	Existing 2006	
			AM	PM
1. Eye Street & S Capitol Street	Signalized	EB	D (54.0)	F (184.4)
		WB	D (42.7)	D (38.6)
		NB	B (11.7)	A (9.9)
		SB	B (10.7)	B (13.0)
		Overall	B (17.8)	D (37.9)
2. M Street & Local S Capitol SB Ramp	Signalized	EB	D (36.7)	E (68.9)
		WB	A (0.5)	A (1.2)
		SB	C (32.4)	C (34.5)
		Overall	B (13.4)	D (45.5)
		M Street & Local S Capitol NB Ramp	Signalized	EB
WB	C (34.5)			C (32.7)
NB	E (140.5)			C (21.6)
Overall	F (84.4)			B (14.9)
3. M Street SE & Van Street	Unsignalized			WBLT
		NBLR	A [9.7]	B [10.1]
4. M Street SE & Half Street	Unsignalized	EB	A [0.0]	A [0.1]
		WB	A [0.4]	A [0.1]
		NB	B [10.6]	D [31.8]
		SB	A [0.0]	C [18.1]
5. M Street SE & Cushing Place	Unsignalized	EB	A [1.6]	A [0.1]
		WB	A [0.0]	A [0.1]
		NB	A [0.0]	D [28.3]
		SB	B [12.2]	A [9.3]
6. M Street SE & 1st Street SE	Signalized	EB	A (5.1)	A (4.9)
		WB	A (7.4)	A (7.5)
		NB	C (34.7)	D (41.7)
		SB	C (33.4)	C (28.2)
		Overall	B (10.2)	B (11.5)
7. N Street SE & S Capitol Street	Unsignalized	WBR	C [19.3]	B [10.2]
8. N Street SE & Van Street	Unsignalized	EB	A [1.9]	A [1.4]
		SB	A [9.6]	A [8.9]
9. N Street SE & Half Street	Unsignalized	EB	A [1.2]	A [1.7]
		SB	A [9.6]	A [9.0]
10. N Street SE & 1st Street SE	Unsignalized	EB	B [12.8]	B [10.5]
		WB	B [10.1]	A [9.4]
		NB	A [1.1]	A [0.9]
		SB	A [2.3]	A [1.0]

Notes:

¹ Based on as Synchro version 6

² Numbers in brackets, [], represent control delay in seconds per vehicle for unsignalized intersections.

³ Numbers in parenthesis, (), represent control delay in seconds per vehicle for signalized intersections.

Section 3

PHASE I (2008) – COMMUTER AM & PM PEAK HOUR ANALYSIS

Other Development Trip Generation

The number of peak hour trips that will be generated by the pipeline projects in 2008 were generated based on ITE trip rates and WMATA mode splits percentages. As shown in Table 3-1, it is estimated that these projects will generate a total of 913 AM peak hour trips and 1,003 PM peak hour trips, upon completion and full occupancy.

This analysis does not include trips generated by a ballpark event. Weekday PM ballpark peak hour conditions will be analyzed in Section 5.

Other Development Project Traffic Assignments

The trips shown in Table 3-1 were assigned to the public road network based on the information obtained from their respective traffic studies and traffic pattern changes expected with roadway improvements. A summation of the pipeline development traffic is shown on Figure 3-1.

Background Traffic Growth

Annual background traffic growth was estimated at 2 percent per year compounded for two (2) years for project buildout in 2008 as agreed to during the DDOT scoping meeting. This growth rate was applied to all the movements at all intersections. The background traffic growth is shown on Figure 3-2.

Background Traffic Forecasts

Background peak hour traffic forecasts, without the Monument Ballpark – Phase I project, were estimated based on existing traffic counts, traffic generated by the pipeline projects, historic background traffic growth and planned roadway improvements. The resulting 2008 background traffic forecasts are shown on Figure 3-3.

Background Future Levels of Service

Future peak hour levels of service, without the Monument Ballpark – Phase I project, were estimated based on: the future lane usage and traffic control shown on Figure 2-2; the 2008 background traffic forecasts shown on Figure 3-3; and the Synchro intersection capacity analysis software. Planned roadway improvements for the Ballpark District described in the previous

section were assumed and are reflected in Figure 2-2. The results are presented in Appendix C, and are summarized in Table 3-3.

Table 3-3 indicates that the significant background traffic will increase delays at some critical locations. While the overall LOS remains relatively unchanged at the Eye Street and South Capitol Street intersection, the eastbound approach during the AM peak hour goes from an LOS “D” to LOS “E” when compared to existing conditions.

Delays increase at the M Street and South Capitol southbound ramp such that the overall level of service during the PM peak hour changes from an LOS “D” to LOS “E.”

The northbound approach to the unsignalized intersection of M Street and Half Street changes from an LOS “D” to LOS “F” during the PM peak hour as a result of additional traffic growth on M Street. A possible mitigation measure at this location would be the installation of a traffic signal therefore this condition was analyzed. Based on the forecasted traffic volumes it is not likely that a signal would be warranted at this location.

The westbound approach of N Street at South Capitol Street changes from a LOS “B” to LOS “E” during the PM peak hour as a result of additional traffic and a change to the operation of the intersection. The planned roadway improvements include a new signal at this location and the addition of westbound left and through movements that are not possible presently.

The remaining intersections either operate with acceptable LOS or are largely unchanged from existing conditions operation.

Site Trip Generation Analysis

The numbers of trips that will be generated by the Monument Ballpark – Phase I when complete in 2008 were forecasted based on: (1) ITE trip generation rates, (2) the proximity of the project to the Navy Yard Metrorail station, and (3) experience with other comparable projects in Washington, D.C. The development plan includes 330 residential condominium apartments, 288,285 S.F. of office, a 196 room hotel, and 60,000 S.F. of retail. The trip generation calculations are shown in Table 3-2.

Table 3-2 shows that the project would generate 499 (346 in and 153 out) AM peak hour trips, and 720 (285 in and 435 out) PM peak hour trips. These estimates assume that approximately 54 percent of all residents, 27 percent of the hotel guests, 35 percent of the office workers and 10 percent of retail patrons would use Metro or some other non-auto mode during peak hours.

Site Traffic Assignments

The site-generated traffic volumes were assigned to the public road network based on previously-approved traffic impact studies, existing traffic counts, and knowledge of future roadway improvements. The resulting site traffic assignments are shown on Figure 3-4.

The existing WMATA bus facility was assumed to remain for the 2008 analysis. In addition, the other existing site uses were observed to not generate significant peak period traffic. Although these existing uses will be removed with the redevelopment of the site, no adjustment to existing traffic volumes was performed to account for their removal. Therefore the traffic volumes represent a conservatively higher estimate of future conditions than what may be ultimately realized.

Total Future Traffic Forecasts

The site traffic assignments in Figure 3-4 were added to the future background traffic volumes shown on Figure 3-3 to yield the total future traffic forecasts shown on Figure 3-5.

Total Future Levels of Service

Future peak hour levels of service, with the proposed Monument Ballpark – Phase I project, were estimated based on: the future lane usage and traffic control shown on Figure 2-2; the 2008 total future traffic forecasts shown on Figure 3-5; and the Synchro intersection capacity analysis software. The results are presented in Appendix D, and are summarized in Table 3-3.

With the addition of Phase I site trips to the network there are some minor fluctuations of intersection delays, however, the changes are generally negligible resulting in no changes to LOS when compared to background conditions. There are a few exceptions discussed below.

If the intersection of Half Street at M Street remains unsignalized, the northbound approach would continue to operate at LOS “F” as in the background condition. However, the addition of site trips would result in significant additional delay. The delay would likely cause familiar motorists to seek other routes. If a signal is installed the intersection would operate at LOS “A” during both the AM and PM peak hours.

The southbound approach of Cushing Place at M Street operates at LOS “F” during the AM peak hour as compared to LOS “B” in the background condition. This delay is attributable to the additional site turning movement traffic at this intersection making it difficult for the southbound traffic to find acceptable traffic gaps in the M Street flow. While the LOS is failing, the number of vehicles using this approach is relatively small and the delay of 69.7 seconds is not uncommon for a minor street approach.

Table 3-1
 Monument Ballpark - Square 700 & 701
 2008 Pipeline Project Trip Generation ^{1,2}

Background Development	Land Use	Land Use Code	Size	Units	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
20 M Street SE										
	Office	710	180,633	S.F.	18	88	106	66	33	99
Square 0699N Phase I (1st & L Street SE)										
	Residential	230	250	D.U.	7	33	40	31	16	47
Jefferson at 70 Eye Street (Phase I)										
	Residential	220	449	D.U.	17	83	100	80	39	119
100 M Street SE										
	Office	710	225,000	S.F.	111	15	126	20	97	117
	Retail	820	15,000	S.F.	18	11	29	49	53	102
					129	26	155	69	150	219
US Department of Transportation Headquarters ³										
	Office	710	5,500	Employees	462	35	497	47	422	469
	Retail	820	13,500	S.F.	9	6	15	24	26	50
					471	41	512	71	448	519
Total Background Development					642	271	913	317	686	1,003

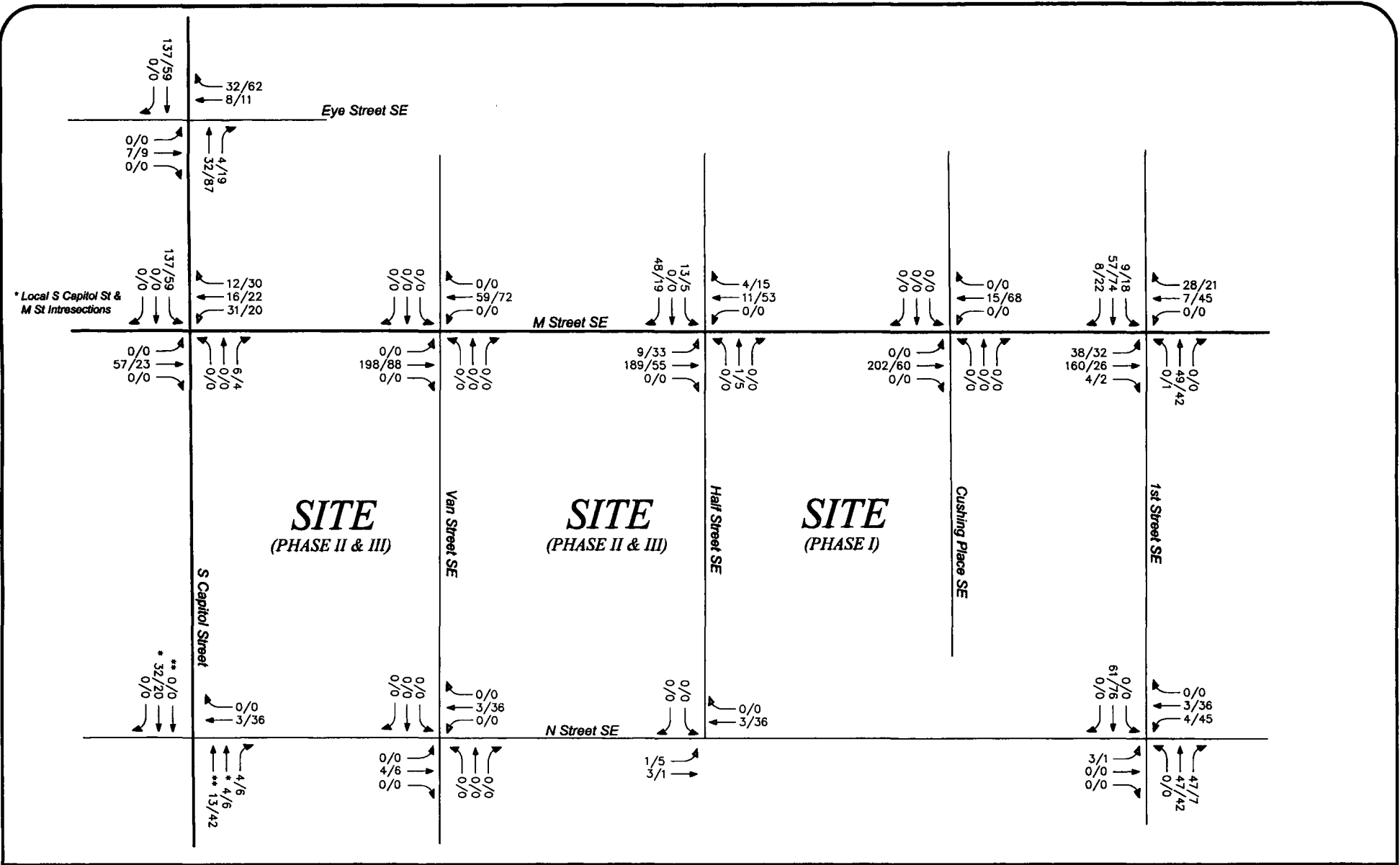
Notes: (1) Based on Trip Generation, 7th Edition, Institute of Transportation Engineers.

(2) Non-auto mode splits were adapted from the U.S. Census 2000 Data Summary File 3

	20 M St	Sq 0699N	Jefferson	100 M St Off	100 M St Ret
Non-auto mode split:	0%	0%	0%	0%	0%
Average vehicle occupancy (persons per vehicle)	1.15	1.15	1.15	1.15	1.15
	20 M St	Sq 0699N	Jefferson	100 M St Off	100 M St Ret
Non-auto mode split:	60%	58%	49%	60%	36%
Average vehicle occupancy (persons per vehicle)	1.30	1.30	1.30	1.30	1.30

(3) US DOT Trip Generation was taken from "United States Department of Transportation Traffic Impact Statement", Gorove-Slade Associates, March 14, 2003

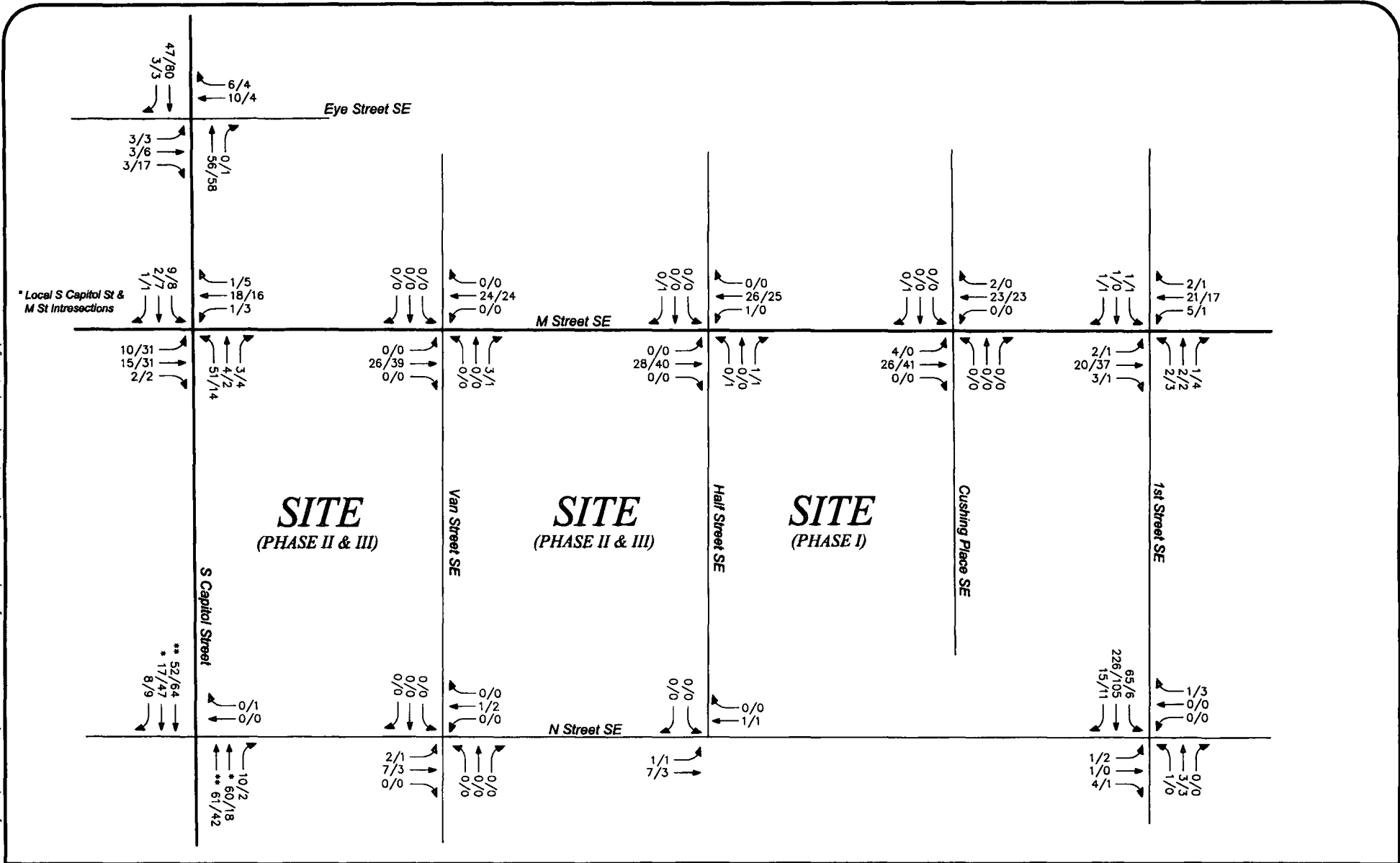
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25 **Figure 3-1**
Other Development Peak Hour Traffic Assignments 2008

* To/From Local S Capitol Street & M Street Intersection
** To/From S Capitol Street Underpass

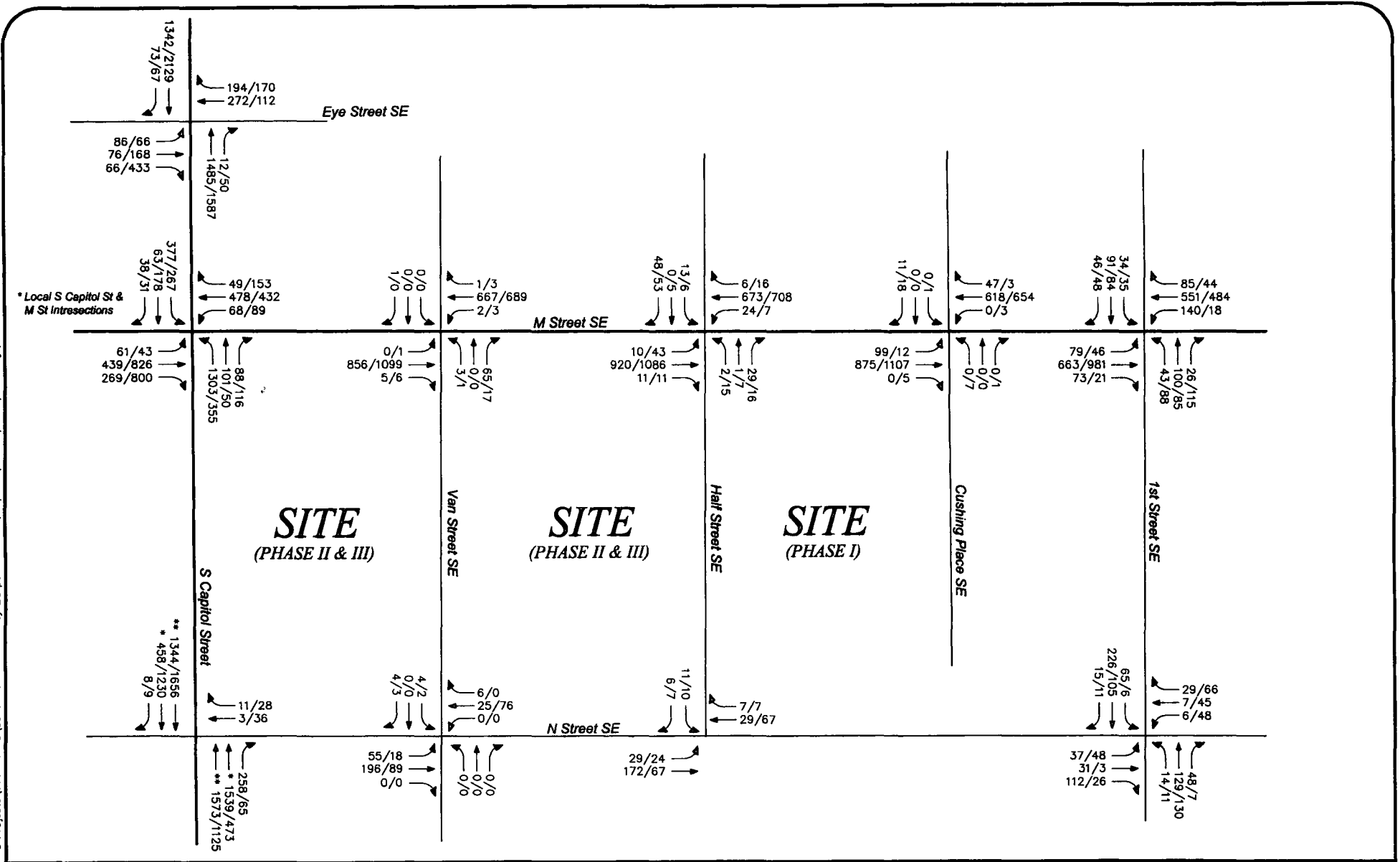




27 **Figure 3-2**
Background Traffic Growth 2008

* To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass





28 **Figure 3-3**
Background Future Peak Hour Traffic Forecasts 2008

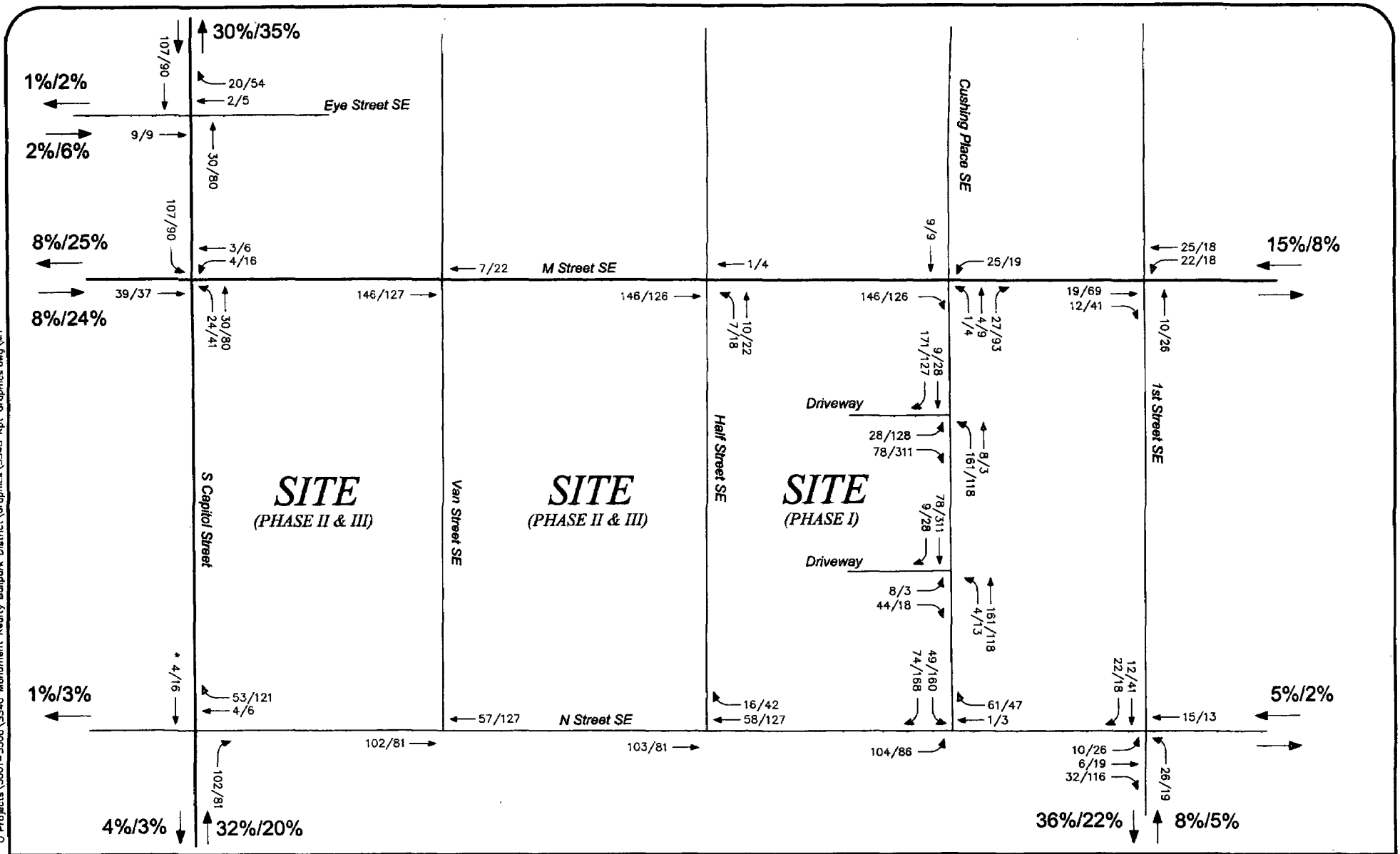
Table 3-2
 Monument Ballpark - Square 700 & 701
 Phase I (2008) Site Trip Generation

Land Use	ITE Code	Size	Units	AM Peak Hour			PM Peak Hour		
				IN	OUT	TOTAL	IN	OUT	TOTAL
Square 701									
Apartment	220	330	DU's	33	132	165	129	70	199
Internal Capture				1	4	6	28	18	46
External Trips (Total - Internal)				32	128	159	101	52	153
Person Trips ²				36	147	183	116	60	175
Site Specific External Vehicle Trips ^{3,4}				13	52	65	41	21	62
General Office Building	710	288,285	SF	385	53	438	68	334	402
Internal Capture				3	1	4	7	7	14
External Trips (Total - Internal)				382	52	434	61	327	388
Person Trips ²				440	59	499	71	376	447
Site Specific External Vehicle Trips ^{4,5}				220	30	250	36	188	224
Hotel	310	196	Rooms	57	37	94	61	55	116
Internal Capture				2	2	4	20	3	23
External Trips (Total - Internal)				55	35	90	41	52	93
TDM Reduction ^{4,6}				15	9	24	11	14	25
External Vehicle Trips (External - Transit)				40	26	66	30	38	68
Shopping Center	820	60,000	SF	70	45	115	215	232	447
Internal Capture				6	5	11	24	47	72
External Trips (Total - Internal)				64	40	104	191	185	375
Person Trips ⁷				64	40	104	191	185	375
Site Specific External Vehicle Trips ^{4,8}				58	37	95	164	177	341
Total External Vehicle Trips (Square 701 - Phase I)				331	145	476	271	424	695

Notes:

- ¹ Vehicle trips generated using Institute of Transportation Engineers (ITE) Trip Generation, Seventh Edition.
- ² Based on a non-auto mode split of 0% and an average auto occupancy of 1.15.
- ³ Based on a non-auto mode split of 54% and an average auto occupancy of 1.30.
- ⁴ Non-auto mode split taken from 2005 Development-Related Ridership Survey Final Report dated March 2006.
- ⁵ Based on a non-auto mode split of 35% and an average auto occupancy of 1.30.
- ⁶ Based on a non-auto mode split of 27%.
- ⁷ Based on a non-auto mode split of 0% and an average auto occupancy of 1.0.
- ⁸ Based on a non-auto mode split of 10% and an average auto occupancy of 1.0.

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30 Figure 3-4 Site-Generated Phase I - 2008 Peak Hour Traffic Assignments

XX% / XX% = Office Uses/Residential & Hotel Uses
 * To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass

AM PEAK HOUR
 PM PEAK HOUR
 000/000
 North

Table 3-3
 Monument Ballpark - Square 700 & 701
 Future Intersection Levels of Service 2008^{1,2,3}

Intersection	Control	Approach	Background, 2008		Total Future, 2008			
			AM	PM	AM	PM		
1. Eye Street & S Capitol Street	Signalized	EB	E (68.5)	F (148.0)	E (75.0)	F (148.3)		
		WB	D (45.2)	D (38.5)	D (46.3)	D (42.8)		
		NB	B (12.2)	B (13.1)	B (12.4)	B (13.7)		
		SB	<u>B (11.1)</u>	<u>B (17.8)</u>	<u>B (11.7)</u>	<u>B (19.4)</u>		
		Overall	B (19.6)	D (35.6)	C (20.4)	D (36.4)		
2. M Street & Local S Capitol SB Ramp	Signalized	EB	D (37.9)	F (109.1)	D (38.6)	F (127.5)		
		WB	A (0.6)	A (1.8)	A (0.7)	A (3.0)		
		SB	<u>D (38.0)</u>	<u>D (37.6)</u>	<u>D (45.1)</u>	<u>D (43.0)</u>		
		Overall	B (15.7)	E (66.7)	B (18.0)	E (76.2)		
		M Street & Local S Capitol NB Ramp	Signalized	EB	A (1.7)	A (3.1)	A (2.1)	A (3.6)
WB	C (33.6)			C (33.6)	C (29.8)	D (36.4)		
NB	<u>F (162.9)</u>			<u>C (22.2)</u>	<u>F (181.9)</u>	<u>C (24.4)</u>		
Overall	F (89.2)			B (16.2)	F (95.0)	B (17.5)		
3. M Street SE & Van Street	Unsignalized			WB	A [0.2]	A [0.1]	A [0.0]	A [0.1]
		NB	A [9.6]	B [10.2]	A [9.9]	B [10.4]		
		EB	A [0.1]	A [0.5]	A [0.1]	A [0.5]		
		WB	A [0.5]	A [0.1]	A [0.5]	A [0.2]		
		NB	B [12.7]	F [70.1]	E [39.9]	F [350.8]		
4. M Street SE & Half Street	Unsignalized	SB	C [15.2]	C [23.3]	C [16.6]	D [33.3]		
		IMPROVEMENT: Add Signal	Signalized	EB	A (1.6)	A (2.4)	A (1.5)	A (2.3)
				WB	A (3.7)	A (5.7)	B (10.8)	A (4.5)
				NB	C (30.0)	C (27.6)	C (31.3)	C (31.4)
	SB			<u>C (32.4)</u>	<u>C (29.1)</u>	<u>C (32.4)</u>	<u>C (29.1)</u>	
	Overall			A (4.1)	A (5.0)	A (6.7)	A (4.9)	
	5. M Street SE & Cushing Place	Unsignalized	EB	A [1.4]	A [0.1]	A [1.2]	A [0.1]	
			WB	A [0.0]	A [0.1]	A [0.5]	A [0.5]	
			NB	A [0.0]	D [34.7]	D [25.0]	C [19.5]	
			SB	B [10.6]	B [10.0]	F [69.7]	D [30.4]	
6. M Street SE & 1st Street SE			Signalized	EB	A (4.9)	A (3.7)	C (21.2)	A (6.3)
	WB	A (7.7)		A (6.5)	A (8.0)	B (10.9)		
	NB	C (28.0)		C (25.1)	C (28.0)	B (18.6)		
	SB	<u>C (31.9)</u>		<u>C (31.9)</u>	<u>C (32.0)</u>	<u>C (24.5)</u>		
	Overall	B (10.5)		A (9.8)	B (17.4)	B (10.6)		

Notes:

¹ Based on as Synchro version 6

² Numbers in brackets, [], represent control delay in seconds per vehicle for unsignalized intersections.

³ Numbers in parenthesis, (), represent control delay in seconds per vehicle for signalized intersections.

Table 3-3 Continued
 Monument Ballpark - Square 700 & 701
 Future Intersection Levels of Service 2008 ^{1,2,3}

Intersection	Control	Approach	Background, 2008		Total Future, 2008	
			AM	PM	AM	PM
7. N Street SE & S Capitol Street	Signalized	WB	D (45.7)	E (62.2)	D (51.2)	E (78.2)
		NB	B (11.3)	A (3.3)	B (11.1)	A (3.3)
		SB	A (2.0)	A (7.3)	A (2.0)	A (7.4)
		Overall	A (8.2)	A (6.6)	A (8.6)	A (8.7)
8. N Street SE & Van Street	Unsignalized	EB	A [1.7]	A [1.3]	A [1.3]	A [0.8]
		SB	A [9.4]	A [9.0]	A [9.9]	A [9.8]
9. N Street SE & Half Street	Unsignalized	EB	A [1.1]	A [2.0]	A [0.8]	A [1.1]
		SB	A [9.3]	A [9.2]	B [10.0]	B [10.3]
10. N Street SE & 1st Street SE	Signalized	EB	C (29.2)	C (28.6)	C (29.8)	C (30.4)
		WB	C (27.8)	C (29.5)	C (28.0)	C (30.0)
		NB	A (6.4)	A (6.2)	A (6.5)	A (6.3)
		SB	A (6.2)	A (4.7)	A (6.5)	A (6.6)
		Overall	B (13.3)	B (16.6)	B (14.3)	B (19.3)
11. N Street SE & Cushing Place	Unsignalized	EB	NA	NA	A [2.9]	A [4.0]
		SB	NA	NA	B [10.3]	B [11.3]
12. North Site Driveway & Cushing Place	Unsignalized	EB	NA	NA	B [10.6]	C [15.8]
		NB	NA	NA	A [7.7]	A [7.6]
13. South Site Driveway & Cushing Place	Unsignalized	EB	NA	NA	A [9.0]	B [10.7]
		NB	NA	NA	A [0.2]	A [0.9]

Notes:

- ¹ Based on as Synchro version 6
- ² Numbers in brackets, [], represent control delay in seconds per vehicle for unsignalized intersections.
- ³ Numbers in parenthesis, (), represent control delay in seconds per vehicle for signalized intersections.

SECTION 4

PHASE 2 & 3 (2014) – COMMUTER AM & PM PEAK HOUR ANALYSIS

Other Development Trip Generation

The number of peak hour trips that will be generated by the pipeline projects in 2014 were generated based on ITE trip rates and WMATA mode splits percentages. As shown in Table 4-1, it is estimated that these projects will generate a total of 2,134 AM peak hour trips, and 3,497 PM peak hour trips, upon completion and full occupancy. These pipeline trips are in addition to the pipeline traffic identified for 2008 conditions.

Other Development Project Traffic Assignments

The trips shown in Table 4-1 were assigned to the public road network based on the information obtained from their respective traffic studies and traffic pattern changes expected with roadway improvements. A summation of the pipeline development traffic is shown on Figure 4-1.

Background Traffic Growth

Annual background traffic growth was estimated at 2 percent per year compounded for eight (8) years for project build out in 2014 as agreed to during the DDOT scoping meeting. This growth rate was applied to all the movements at all intersections. The background traffic growth is shown on Figure 4-2.

Background Traffic Forecasts

Background peak hour traffic forecasts, without the Monument Ballpark – Phase 2 & 3 project, were estimated based on existing traffic counts, traffic generated by the pipeline projects, historic background traffic growth and planned roadway improvements. The resulting 2014 background traffic forecasts are shown on Figure 4-3.

Background Future Levels of Service

Future peak hour levels of service, without the Monument Ballpark – Phase 2 & 3 project, were estimated based on: the future lane usage and traffic control shown on Figure 2-2; the 2014 background traffic forecasts shown on Figure 4-3; and the Synchro intersection capacity analysis software. Planned roadway improvements for the Ballpark District described in the previous section were assumed and are reflected in Figure 2-2. The results are presented in Appendix E, and are summarized in Table 4-3.

Table 4-3 indicates that the considerable background traffic growth will increase delays at all study intersections when compared to 2008 background traffic conditions.

The eastbound approach at the Eye Street and South Capitol Street intersection operates at LOS “F” during both the AM and PM peak hours. Poor LOS also on the westbound approach during the PM peak hour causes the overall intersection to operate at LOS “E.”

The M Street intersections with the South Capitol Street ramps operate at LOS “F” during the PM peak hour. The intersection with the South Capitol Street northbound ramp also operates at LOS “F” during the AM peak hour. While this operation is not generally desirable it is often typical of urban intersections that handle significant commuter traffic.

The pipeline traffic growth causes the minor stop-controlled approaches (northbound and southbound) at the intersection of M Street and Cushing Place to operate at LOS “F.” The delay at these approaches is excessive and will cause motorists to seek alternative routes. The installation of a signal at M Street and Half Street would help create gaps in the M Street mainline traffic. The effect of this traffic gapping is not accurately represented by the analysis software.

The westbound approach of N Street at South Capitol Street operates at LOS “E.” This signalized approach is subject to limited green time because much of the signal cycle is needed to accommodate the mainline north-south traffic on South Capitol Street.

Site Trip Generation Analysis

The numbers of trips that will be generated by the Monument Ballpark – Phase 2 & 3 when complete in 2014 were forecasted based on: (1) ITE trip generation rates, (2) the proximity of the project to the Navy Yard Metrorail station, and (3) experience with other comparable projects in Washington, D.C. The development plan includes an additional 881 residential condominium apartments, 448,210 S.F. of office, and 67,856 S.F. of retail. The trip generation calculations are shown in Table 4-2.

Table 4-2 shows that the project would generate 691 (449 in and 242 out) AM peak hour trips, and 947 (375 in and 572 out) PM peak hour trips. These estimates assume that approximately 54 percent of all residents, 35 percent of the office workers and 10 percent of retail patrons would use Metro or some other non-auto mode during peak hours.

While the WMATA bus maintenance facility will be relocated before this phase of development the traffic was not discounted from the trip generation or the road network. Therefore, this report presents a conservative analysis.

Site Traffic Assignments

The site-generated traffic volumes were assigned to the public road network according to the directional distribution described above. The resulting site traffic assignments are shown on Figure 4-4.

Total Future Traffic Forecasts

The site traffic assignments in Figure 4-4 were added to the future background traffic volumes shown on Figure 4-3 to yield the total future traffic forecasts shown on Figure 4-5.

Total Future Levels of Service

Future peak hour levels of service, with the proposed Monument Ballpark – Phase 2&3 project, were estimated based on: the future lane usage and traffic control shown on Figure 2-2; the 2014 total future traffic forecasts shown on Figure 4-5; and the Synchro intersection capacity analysis software. The results are presented in Appendix F, and are summarized in Table 4-3.

The addition of Phase 2 & 3 site trips causes the overall LOS of the M Street at South Capitol Street southbound ramp intersection to change from LOS “D” to LOS “E” during the AM peak hour. The LOS “F” during the PM peak hour would occur even if the site is not developed. Similarly, the northbound South Capitol ramp intersection at M Street would operate at LOS “F” with or without site traffic on the network.

The approaches of Van Street and Cushing Place to M Street providing site access will operate at LOS “F” during the PM peak hour. The Cushing Place approaches will also operate at LOS “F” during the AM peak hour. These approaches are “minor” approaches in that they carry significantly less volume than the M Street mainline. Mitigation traffic control options at these locations are limited because of the proximity of Van Street to the signalized South Capitol Street intersection and the proximity of Cushing Place to the signalized First Street intersection. The analysis assumes a new traffic signal is located between the two intersections at Half Street. A signal at Half Street is consistent with the spacing of traffic signals along M Street. While a signal at Half Street does not directly reduce delays at Cushing Place and Van Street, it acts to create gaps in the M Street traffic stream that will increase the number of acceptable gaps. The Synchro analysis does not accurately represent the benefit of a new signal.

It should be noted that a traffic signal at M Street and Half Street was identified as a mitigation measure for 2008 background conditions to mitigate the intersection itself. With or without Monument Ballpark development, a signal at this location will ultimately be needed to achieve acceptable LOS. A signal at this location would also benefit pedestrian traffic that presently must cross M Street at Half Street without signal protection. Pedestrians on the north side of M Street cross at this location to enter the Navy Yard Metro station south of M Street rather

than walk down to the portal located on the north side of M Street at New Jersey Avenue. The signal will be of particular benefit for ballpark patrons that park north of M Street and cross at Half Street walking to the ballpark entrance at N Street.

The approaches of Van Street and Cushing Place at N Street will operate with high delay and marginal LOS with the addition of site traffic to the network during the PM peak hour. These delays are not atypical in urban areas during peak conditions, particularly for minor approaches that do not carry significant traffic volume.

Table 4-1
 Monument Ballpark - Square 700 & 701
 Trips Generated by Other Developments 2014 ^{1,2}

Background Development	Land Use	Land Use Code	Size	Units	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Cohen Site ³										
	Residential	230	430	D.U.	13	65	78	63	31	94
	Retail	814	20,000	S.F.	41	26	67	32	30	62
	Office	710	30,400	S.F.	227	31	258	40	196	236
					281	122	403	135	257	392
Ballpark District Waterfront Development										
	Residential	230	474	D.U.	78	48	126	235	234	468
	Retail	820	15,000	S.F.	10	39	49	30	15	45
					88	87	175	265	249	513
Jefferson at 100 Eye Street (Phase II)										
	Residential	220	246	D.U.	10	46	56	46	23	69
Federal Gateway II										
	Office	710	187,000	S.F.	103	14	117	19	90	109
	Retail	820	13,000	S.F.	17	11	28	47	50	97
					120	25	145	66	140	206
Ballpark District On Site Development										
	Residential	220	600	D.U.	24	95	119	80	42	122
	Hotel	310	180	Rooms	37	23	60	29	35	64
	Retail	820	25,000	S.F.	35	22	57	96	84	179
					96	140	236	205	161	365
SE Federal Center (Phase Ia & Ib)										
	Residential	220	2,914	D.U.	116	465	581	417	223	640
	Office	710	334,695	S.F.	248	33	281	41	213	254
	Retail	820	244,559	S.F.	157	100	257	518	541	1,058
					521	598	1,119	976	977	1,952
Total Background Development					1,116	1,018	2,134	1,693	1,807	3,497

Notes: (1) Based on Trip Generation, 7th Edition, Institute of Transportation Engineers.

(2) Non-auto mode splits were adapted from the U.S. Census 2000 Data Summary File 3

	Waterfront	100 Eye St	FG OFF	FG Ret	Ballpark	SE Fed Cent
Non-auto mode split:	0%	0%	0%	0%	0%	0%
Average vehicle occupancy (persons per vehicle)	1.15	1.15	1.15	1.15	1.15	1.15
Non-auto mode split:	Waterfront	Jefferson	FG OFF	FG Ret	Ballpark	SE Fed Cent
Average vehicle occupancy (persons per vehicle)	54%	49%	57%	32%	54%	54%
	1.30	1.30	1.30	1.30	1.30	1.30

(3) Cohen Site Trip Generation was taken from "Square 701 S.E.; Alley Closing Traffic Assessment", Wells & Associates, October 11, 2006

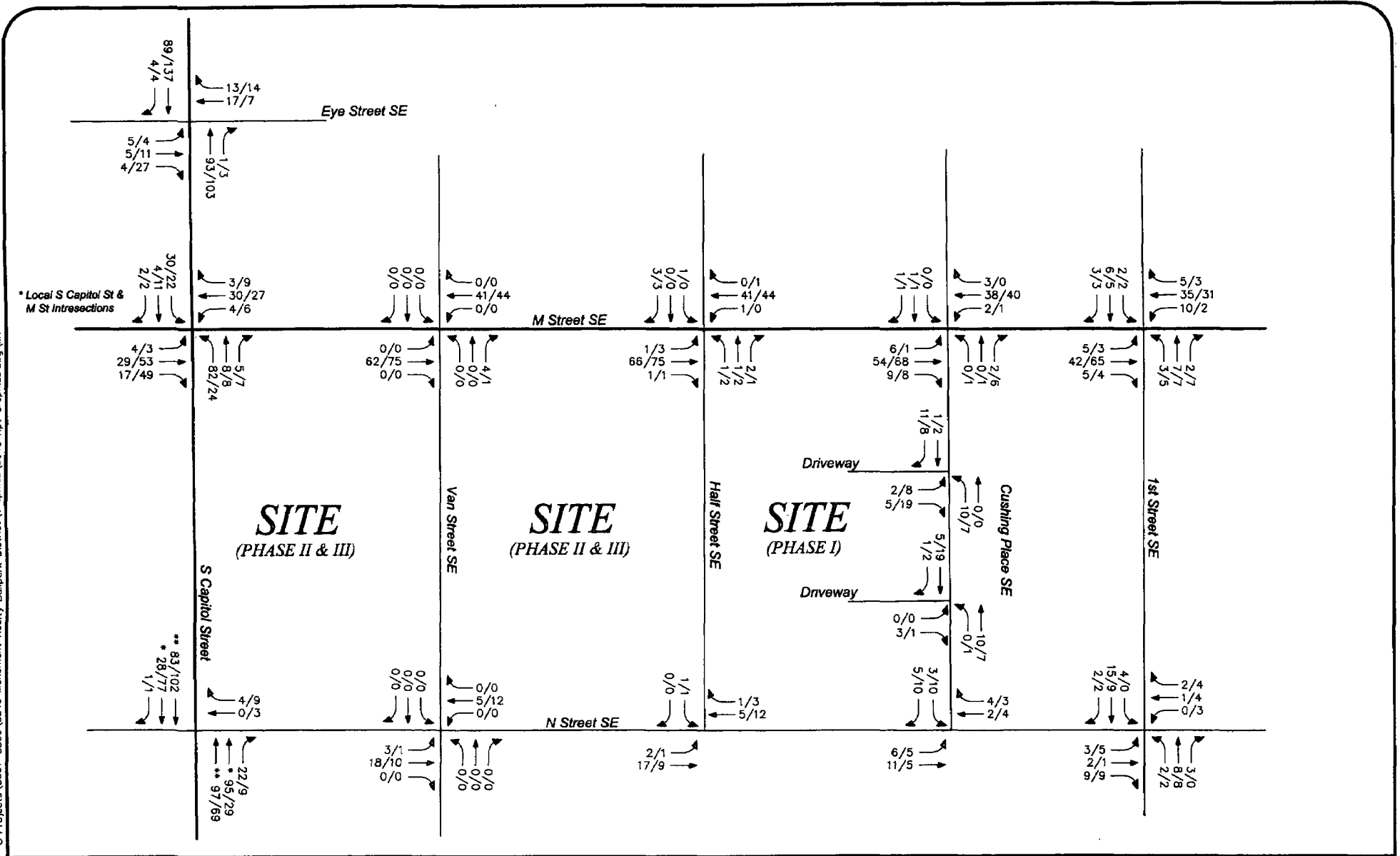
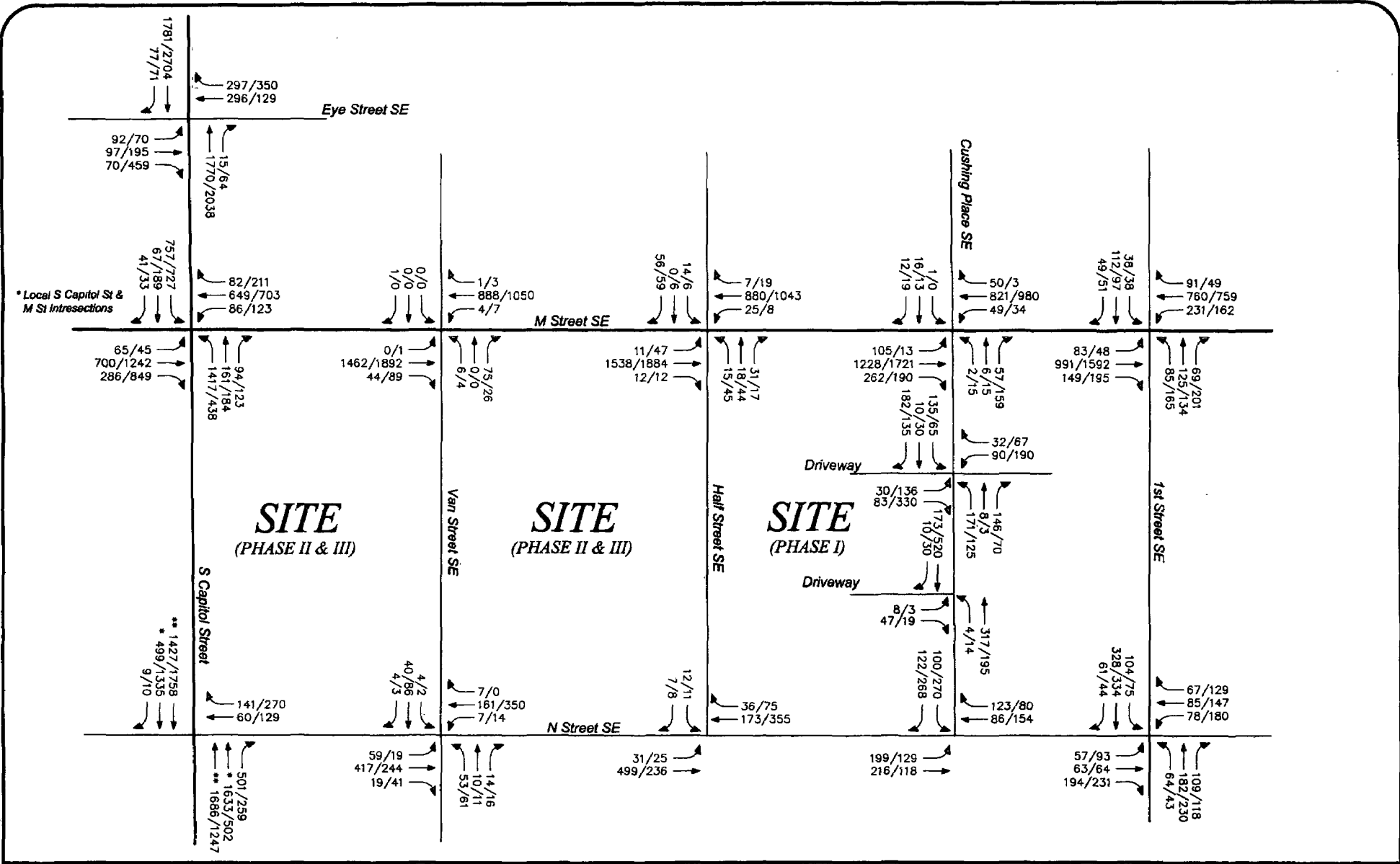


Figure 4-2
Background Traffic Growth 2014

* To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass

AM PEAK HOUR
 PM PEAK HOUR
 000/000





41 **Figure 4-3**
Background Future Peak Hour Traffic Forecasts 2014

* To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass

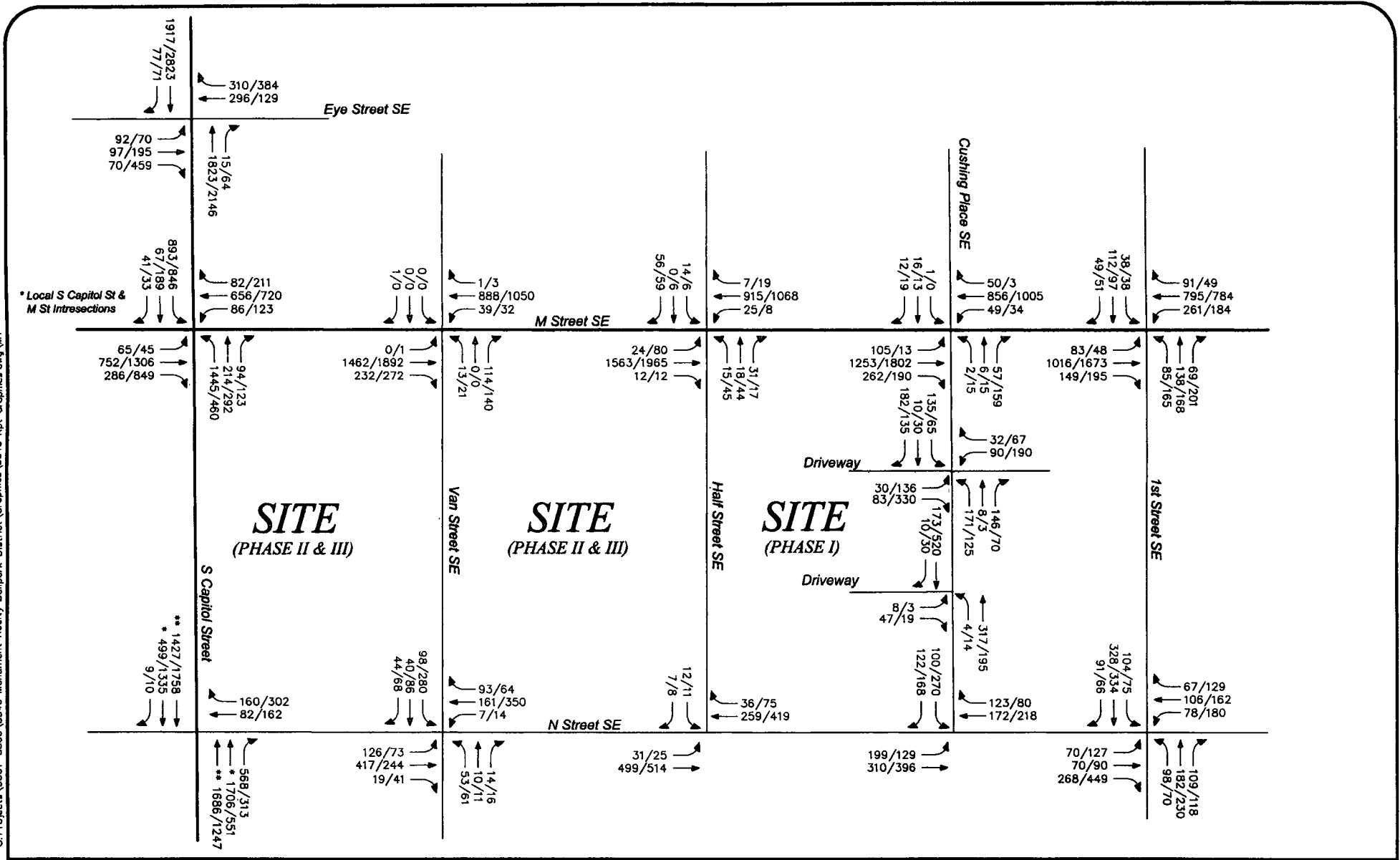


Table 4-2
 Monument Ballpark - Square 700 & 701
 Phase II & III (2014) Site Trip Generation

Land Use	ITE Code	Size	Units	AM Peak Hour			PM Peak Hour		
				IN	OUT	TOTAL	IN	OUT	TOTAL
Apartment	220	881	DU's	87	348	435	326	176	502
Internal Capture				2	7	10	35	21	56
External Trips (Total - Internal)				85	341	425	291	155	446
Person Trips ²				108	435	543	372	198	570
Site Specific External Vehicle Trips ^{3,4}				38	154	192	132	70	202
General Office Building	710	448,210	SF	548	75	623	99	482	581
Internal Capture				5	2	6	8	10	17
External Trips (Total - Internal)				543	73	617	91	472	564
Person Trips ²				694	94	788	117	604	721
Site Specific External Vehicle Trips ^{4,5}				347	47	394	59	302	361
Shopping Center	820	67,856	SF	76	48	124	233	252	485
Internal Capture				5	4	9	26	38	63
External Trips (Total - Internal)				71	44	115	207	214	422
Person Trips ⁷				71	44	115	207	214	422
Site Specific External Vehicle Trips ^{4,8}				64	41	105	184	200	384
Total External Vehicle Trips (Square 701 - Phase II & III)				449	242	691	375	572	947

Notes:

- ¹ Vehicle trips generated using Institute of Transportation Engineers (ITE) Trip Generation, Seventh Edition.
- ² Based on a non-auto mode split of 10% and an average auto occupancy of 1.15.
- ³ Based on a non-auto mode split of 54% and an average auto occupancy of 1.30.
- ⁴ Non-auto mode split taken from 2005 Development-Related Ridership Survey Final Report dated March 2006.
- ⁵ Based on a non-auto mode split of 35% and an average auto occupancy of 1.30.
- ⁷ Based on a non-auto mode split of 0% and an average auto occupancy of 1.0.
- ⁸ Based on a non-auto mode split of 10% and an average auto occupancy of 1.0.



44 Figure 4-5 Total Future Phase II & III - 2014 Peak Hour Traffic Forecasts

* To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass



Table 4-3
 Monument Ballpark - Square 700 & 701
 Future Intersection Levels of Service ^{1,2,3}

Intersection	Control	Approach	Background, 2014		Total Future, 2014	
			AM	PM	AM	PM
1. Eye Street & S Capitol Street	Signalized	EB	F (127.9)	F (172.6)	F (128.0)	F (173.1)
		WB	E (58.0)	F (85.2)	E (61.4)	F (113.4)
		NB	B (14.3)	B (17.9)	B (14.7)	B (19.8)
		SB	<u>B (13.2)</u>	<u>D (49.7)</u>	<u>B (15.2)</u>	<u>E (66.6)</u>
		Overall	C (26.4)	E (56.1)	C (27.2)	E (66.2)
2. M Street & Local S Capitol SB Ramp	Signalized	EB	D (50.5)	F (289.1)	E (59.2)	F (310.6)
		WB	A (4.1)	B (13.8)	A (6.2)	B (14.2)
		SB	<u>F (156.1)</u>	<u>F (159.4)</u>	<u>F (190.4)</u>	<u>F (225.1)</u>
		Overall	D (48.4)	F (180.7)	E (62.3)	F (206.1)
		M Street & Local S Capitol NB Ramp	Signalized	EB	A (4.5)	E (60.6)
WB	E (60.2)			F (156.1)	E (76.3)	F (168.5)
NB	<u>F (199.0)</u>			<u>C (27.1)</u>	<u>F (257.5)</u>	<u>C (31.4)</u>
Overall	F (96.9)			F (80.1)	F (121.9)	F (105.8)
3. M Street SE & Van Street	Unsignalized			WB	A [0.1]	A [0.3]
		NB	B [12.3]	C [18.5]	C [15.7]	F [54.9]
4. M Street SE & Half Street	Signalized	EB	A (1.6)	A (6.8)	A (1.6)	A (9.2)
		WB	A (3.8)	A (6.1)	A (3.9)	A (3.7)
		NB	C (31.8)	C (32.1)	C (29.9)	D (44.6)
		SB	<u>C (32.6)</u>	<u>C (29.3)</u>	<u>C (32.6)</u>	<u>D (36.0)</u>
		Overall	A (3.9)	A (7.9)	A (3.9)	A (9.1)
5. M Street SE & Cushing Place	Unsignalized	EB	A [1.2]	A [0.1]	A [1.3]	A [0.1]
		WB	A [1.4]	A [1.6]	A [1.4]	A [1.9]
		NB	F [*]	F [*]	F [*]	F [*]
		SB	F [519.0]	F [425.7]	F [605.7]	F [509.1]
6. M Street SE & 1st Street SE	Signalized	EB	A (7.8)	A (9.2)	A (8.7)	B (13.2)
		WB	B (11.2)	B (11.1)	B (11.8)	B (11.4)
		NB	C (33.0)	D (40.6)	C (31.3)	D (45.0)
		SB	<u>C (31.1)</u>	<u>C (30.5)</u>	<u>C (31.1)</u>	<u>C (30.6)</u>
		Overall	B (13.3)	B (15.4)	B (13.7)	B (18.2)

Notes:

¹ Based on as Synchro version 6

² Numbers in brackets, [], represent control delay in seconds per vehicle for unsignalized intersections.

³ Numbers in parenthesis, (), represent control delay in seconds per vehicle for signalized intersections.

Table 4-3 Continued
 Monument Ballpark - Square 700 & 701
 Future Intersection Levels of Service ^{1,2,3}

Intersection	Control	Approach	Background, 2014		Total Future, 2014		
			AM	PM	AM	PM	
7. N Street SE & S Capitol Street	Signalized	WB	E (67.2)	E (78.7)	E (76.6)	E (72.3)	
		NB	B (15.3)	A (8.3)	B (17.8)	B (10.7)	
		SB	A (2.3)	C (23.6)	A (2.3)	D (35.0)	
		Overall	B (12.8)	C (22.0)	B (15.2)	C (29.0)	
8. N Street SE & Van Street	Unsignalized	EB	A [1.1]	A [0.6]	A [2.2]	A [2.0]	
		WB	A [0.4]	A [0.4]	A [0.2]	A [0.3]	
		NB	C [20.9]	C [19.9]	D [34.9]	E [36.5]	
		SB	C [18.1]	C [20.5]	D [33.8]	F [258.0]	
9. N Street SE & Half Street	Unsignalized	EB	A [0.6]	A [0.9]	A [1.5]	A [0.5]	
		SB	B [11.2]	B [12.2]	B [12.5]	B [14.3]	
10. N Street SE & 1st Street SE	Signalized	EB	C (24.7)	B (14.9)	C (22.7)	B (17.3)	
		WB	C (25.2)	B (17.6)	C (22.8)	B (17.4)	
		NB	B (11.0)	C (21.8)	B (14.1)	C (26.1)	
		SB	A (8.2)	B (18.0)	B (10.2)	C (20.2)	
		Overall	B (15.4)	B (18.0)	B (16.7)	B (20.0)	
11. N Street SE & Cushing Place	Unsignalized	EBLT	A [4.2]	A [4.4]	A [3.7]	A [2.3]	
		SBLR	C [15.6]	C [21.8]	C [19.6]	F [50.3]	
12. North Site Driveway	Unsignalized	EB	B [14.9]	D [33.5]	NA	NA	
		WB	E [41.0]	F [318.6]	NA	NA	
		NB	A [4.8]	A [5.3]	NA	NA	
		SB	A [3.8]	A [2.4]	NA	NA	
	IMPROVEMENT: 4-way Stop	Unsignalized	EB	A [9.9]	D [29.9]	A [9.9]	D [29.9]
			WB	B [10.6]	C [16.4]	B [10.6]	C [16.4]
			NB	B [12.9]	B [14.8]	B [12.9]	B [14.8]
			SB	B [12.6]	C [15.3]	B [12.6]	C [15.3]
13. South Site Driveway	Unsignalized	EB	B [10.1]	B [12.9]	B [10.1]	B [12.9]	
		NB	A [0.1]	A [0.7]	A [0.1]	A [0.7]	

Notes:

¹ Based on as Synchro version 6

² Numbers in brackets, [], represent control delay in seconds per vehicle for unsignalized intersections.

³ Numbers in parenthesis, (), represent control delay in seconds per vehicle for signalized intersections.

SECTION 5 BALLPARK EVENT WEEKDAY AFTERNOON AND EVENING PEAK HOUR ANALYSIS 2008

Ballpark Event Activity and Street Closings

The new Major League Baseball Ballpark is being constructed to the south of the Monument Ballpark site and will be complete in spring 2008. The Traffic Operations Control Plan (TOCP) for game time conditions is currently being developed by Gorove/Slade Associates for the DC Sports and Entertainment Commission. Although the details of the TOCP are being formulated, it is presently understood that Half Street between M Street and N Streets will be closed to vehicular traffic along with N Street from Van Street to First Street during game times. The analysis contained in this section assumes these street closures for traffic conditions between 4:00 to 5:00 PM on a weekday afternoon and 6:00 to 7:00 PM on a weekday evening. Afternoon games will begin at 1:05 PM and end with approximately 70% of the patrons leaving in the 4 PM hour. Weekday evening games will begin at 7:05 PM with approximately 2/3 of the patrons arriving in the 6 PM hour. The PM peak hour presented in earlier analysis considered the commuter peak which is 5:00-6:00 PM. This section considers traffic conditions that occur on a game day the hour before and the hour after the PM commuter peak.

Other Development Trip Generation

The number of peak hour trips that will be generated by the pipeline projects in 2008 during the ballpark weekday afternoon 4-5 PM hour and weekday evening 6-7 PM hour were generated based on ITE trip rates, WMATA mode splits percentages and diurnal trip generation rates from Institute of Transportation Engineers (ITE) and ULI (Urban Land Institute) sources. As shown in Table 5-1 it is estimated that these projects will generate a total of 824 trips during ballpark post-game 4-5 PM conditions and 432 trips during ballpark pre-game 6-7 PM conditions.

Other Development Project Traffic Assignments

The trips shown in Table 5-1 were assigned to the public road network based on the regional distribution obtained from their respective traffic studies but adjusting the assignments to reflect ballpark event road closures. A summation of the pipeline development traffic for the two time periods is shown on Figure 5-1 and Figure 5-7.

Background Traffic Growth

Existing traffic patterns occurring during the ballpark 4-5 PM and the 6-7 PM peak hour were adjusted to account for game time street closures. A growth rate of 2 percent per year

compounded for two (2) years for ballpark and project buildout in 2008 was applied to all permitted movements at all intersections. The background traffic growth is shown on Figure 5-2 and Figure 5-8.

Ballpark Trip Generation Analysis

Gorove/Slade Associates is the traffic consultant for the DC Sports and Entertainment Commission. According to the Gorove/Slade Associates reports entitled Washington Nationals Ballpark Transportation Management Plan dated April 13, 2006 and the Ballpark TOPP Taskforce Summary of Recommendations dated October 11, 2006, it is estimated that 4,600-4,700 cars will be parked around the ballpark for a sell-out weekday game. These parking spaces will be located at various garages and surface lots. Of the 4,700 parked cars, approximately 2,700 spaces are located such that the ballpark trips generated by them would impact the study intersections.

Based on the Gorove/Slade Associates parking inventory for available parking around the ballpark, the following spaces are located in the vicinity of the study intersections:

1. Ballpark On-site North Parking – 975 spaces
2. Ballpark On-site South Parking – 100 spaces
3. 1100 South Capitol Street – 90 spaces
4. 1000 South Capitol Street – 100 spaces
5. 20 M Street – 190 spaces
6. 80 M Street – 200 spaces
7. 100 M Street – 200 spaces
8. SE Federal Center Parcel H/I – 406 spaces
9. WASA Site – 444 spaces

TOTAL – 2705 spaces

Using the information in the Gorove/Slade reports it was assumed that 70% of ballpark patrons depart in the 4 PM hour, three hours after the afternoon start time of 1:05 PM. Similarly, 60% of ballpark patrons arrive in the hour before a weekday evening game which starts at 7:05 PM. For the analysis this was translated to correspond to 1,894 outbound ballpark trips during the 4-5 PM hour when there is a 1:05 PM weekday game and 1,623 inbound ballpark trips during the 6-7 PM hour when there is a 7:05 PM weekday game. The distribution of ballpark parking spaces in the various parking lots around the ballpark is given in Table 5-2.

Ballpark Trip Distribution and Assignment

The ballpark Transportation Management Plan (TMP) derived that the primary automobile routes for patrons arriving to the ballpark would be as follows:

To/From North on South Capitol Street	47%
To/From North on New Jersey Avenue	2%
To/From South on South Capitol Street	10%
To/From East on M Street SE	27%
To/From West on M Street SW	14%

The distribution from the TMP was used to assign traffic generated by the ballpark to the network. The resulting assignments for ballpark generated traffic is shown on Figure 5-3 and Figure 5-9.

Background Traffic Forecasts

Background weekday ballpark afternoon post-game peak hour traffic forecasts for 2008 without the Monument Ballpark – Phase I site trips were estimated based on existing 4-5 PM traffic counts, traffic generated by the pipeline projects for 4-5 PM, historic background traffic growth, traffic generated by ballpark patrons, planned roadway improvements and ballpark event-time road closures. The resulting traffic forecasts are shown on Figure 5-4.

Similarly, background weekday ballpark evening pre-game peak hour traffic forecasts for 2008 without the Monument Ballpark – Phase I site trips were estimated based on existing 6-7 PM traffic counts, traffic generated by the pipeline projects for 6-7 PM, historic background traffic growth, traffic generated by ballpark patrons, planned roadway improvements and ballpark event-time road closures. The resulting traffic forecasts are shown on Figure 5-10.

Site Trip Generation Analysis

The number of peak hour trips that would be generated by the Monument Ballpark – Phase I in 2008 during the ballpark weekday afternoon and evening peak hours were generated based on: (1) ITE trip generation rates, (2) the proximity of the project to the Navy Yard Metrorail station, (3) experience with other comparable projects in Washington, D.C., and (4) diurnal trip generation rates from ITE and ULI sources. As in the 2008 commuter peak analysis, the development plan includes 330 residential condominium apartments, 288,285 S.F. of office, a 196 room hotel, and 60,000 S.F. of retail. The trip generation calculations are shown in Table 5-3.

Table 5-3 shows that the project would generate 813 vehicle trips (307 in and 506 out) during the afternoon ballpark peak hour of 4-5 PM. The project would generate 601 vehicle trips (365 in and 236 out) during the weekday evening ballpark peak hour of 6-7 PM. The trips in Table 5-3 also assume 250 parking spaces would be available for baseball patrons on site. As with the other ballpark generated trips it was assumed that 70% (175) of the parking space trips would

depart during the 4-5 PM hour and 60% (150) of the parking space trips would arrive in the ballpark evening peak hour of 6-7 PM.

Site Traffic Assignments

The site-generated traffic volumes for the 4-5 PM hour and the 6-7 PM hour were assigned to the public road network based on previously-approved traffic impact studies, existing traffic counts, knowledge of future roadway improvements and ballpark game-time street closures. The resulting site traffic assignments are shown on Figure 5-5 and Figure 5-11.

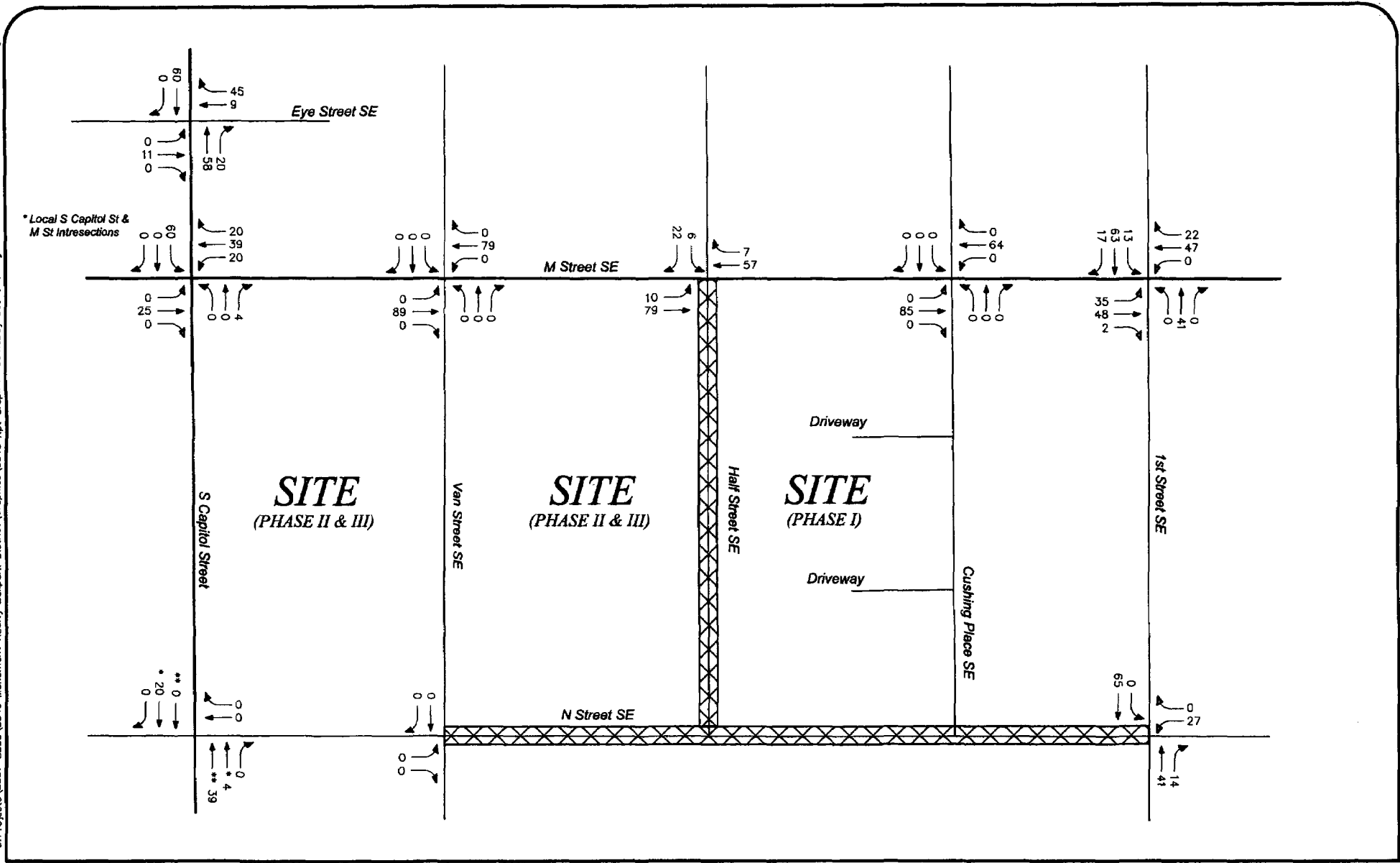
Total Future Weekday Afternoon and Evening Traffic Forecasts with Ballpark Event

The site traffic assignments for the 4 PM hour in Figure 5-5 were added to the future background traffic volumes shown on Figure 5-4 to yield the total future 4-5 PM traffic forecasts shown on Figure 5-6. The site traffic assignments for the 6 PM hour in Figure 5-11 were added to the future background traffic volumes shown on Figure 5-10 to yield the total future 6-7 PM traffic forecasts shown in Figure 5-12.

As Figure 5-6 and Figure 5-12 indicate, all site traffic must enter and exit via Cushing Place at M Street because of the game time street closures. Traffic that is normally distributed to three other intersections (Half Street at M Street, Half Street at N Street and Cushing Place at N Street) is concentrated to Cushing Place at M Street. The turning movements at Cushing Place and M Street are significantly increased and will need to be managed during ballpark events. A possible option may be to allow at least a partial opening of N Street between Cushing Place and First Street to relieve the demand at Cushing Place and M Street. The operations management of these intersections will be worked out in the TCOP. The demands of vehicular and pedestrian flows will have to be carefully balanced.

It should also be noted that many of the vehicles destined for the parking located north of the ballpark will need to use Van Street through the Phase 2 & 3 site because southbound left turn traffic from South Capitol Street onto N Street will not be permitted during weekday commuter flow periods.

Capacity analysis for the total future traffic volumes occurring during ballpark event conditions was not performed. The TOCP will determine how game-time traffic conditions will be managed therefore the assumptions that would go into the capacity analysis are not fully known at this time. The assignments assembled in this section will be used as an input to guide the TOCP analysis and development of the particulars of the management plan.



51 **Figure 5-1**
Other Development Ballpark Peak 4-5 PM Traffic Assignments 2008

 = Road Closure During Baseball Games
 * To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass
 AM PEAK HOUR
 PM PEAK HOUR
 000/000
 North

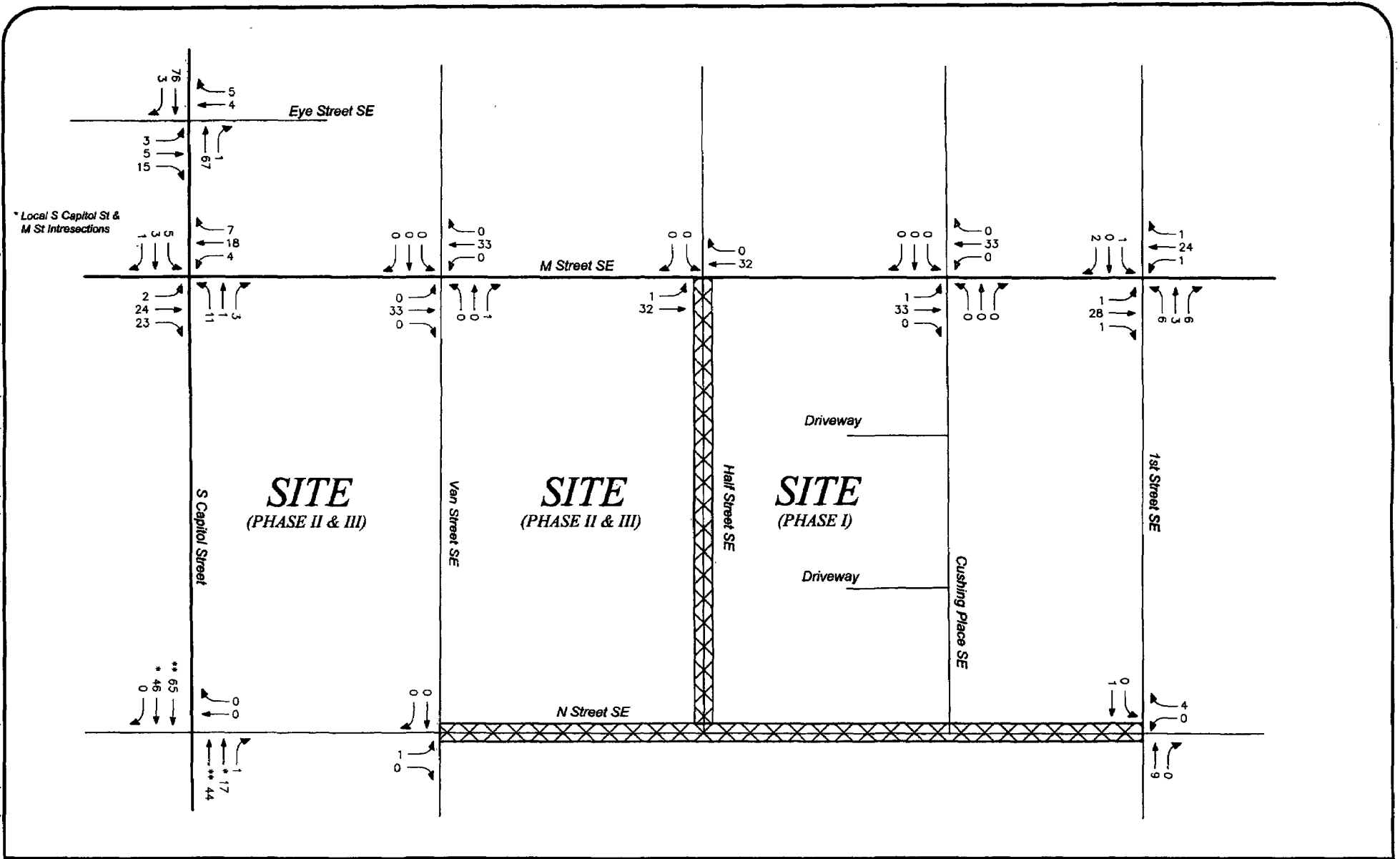
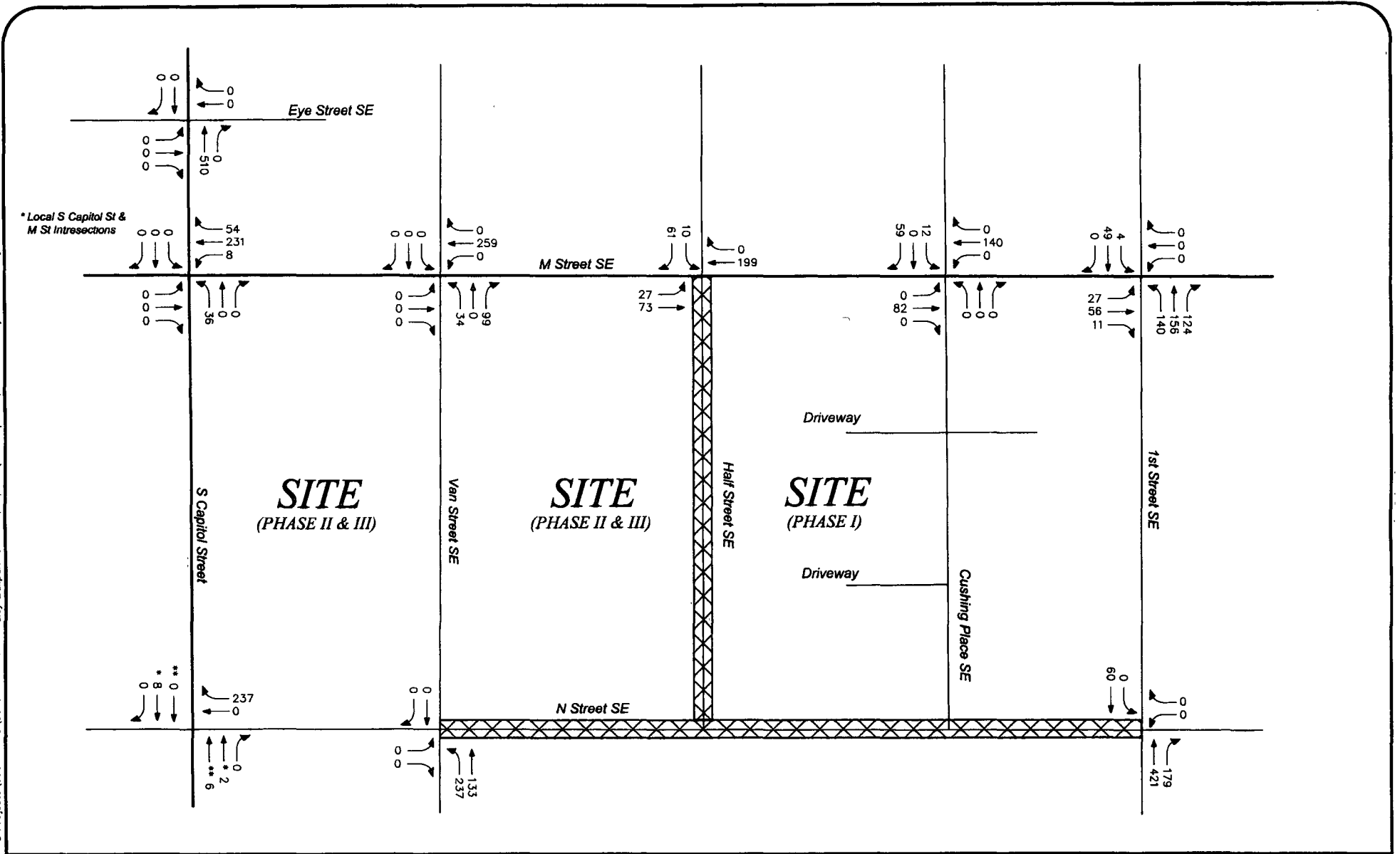


Figure 5-2
Background Future Ballpark Peak 4-5 PM Traffic Growth 2008

= Road Closure During Baseball Games

* To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass

AM PEAK HOUR
 PM PEAK HOUR
 000/000
 North

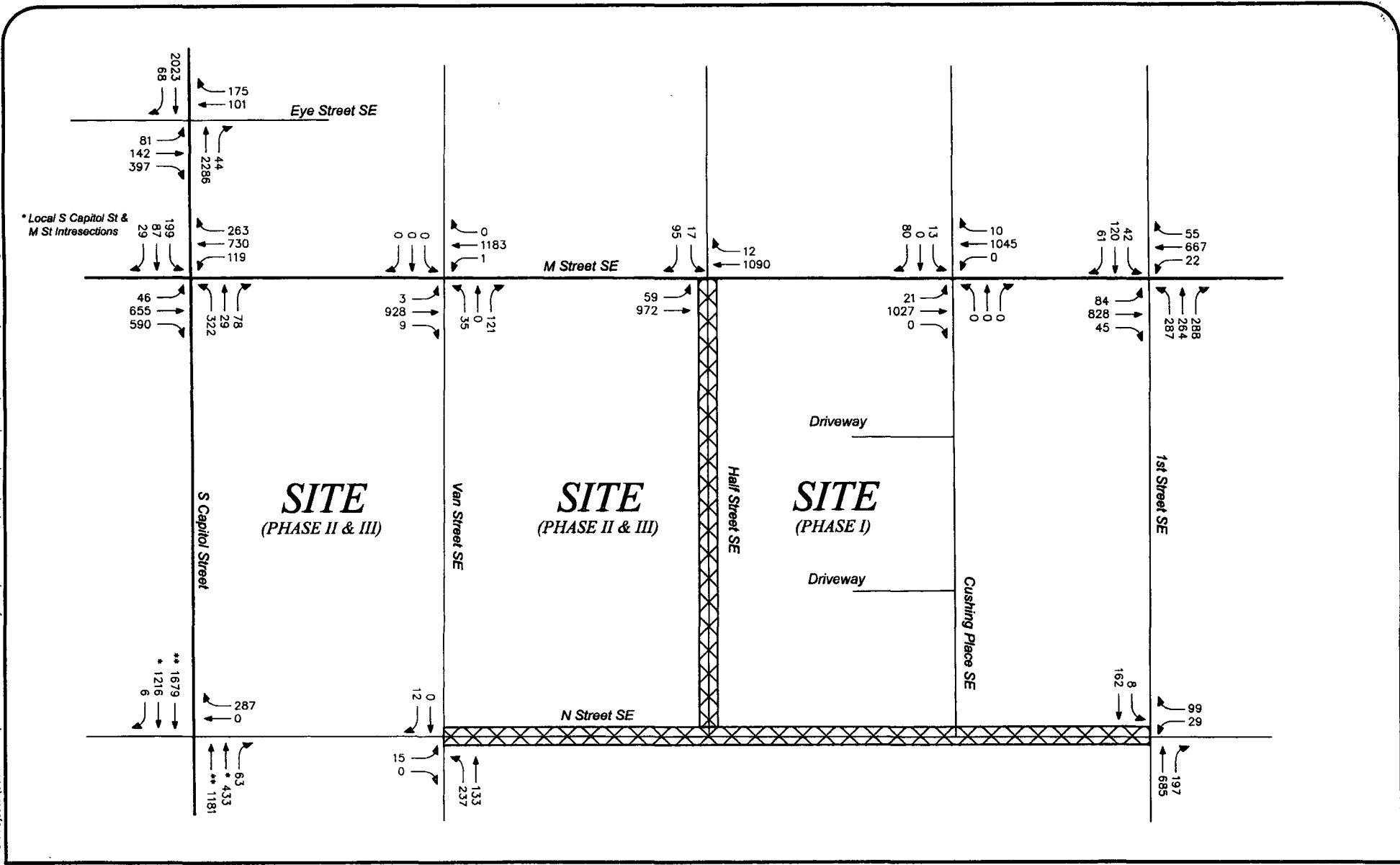


53 Figure 5-3 Ballpark Generated Traffic Peak Hour 4-5 PM Assignments 2008

= Road Closure During Baseball Games

* To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass

AM PEAK HOUR
 PM PEAK HOUR
 000/000
 North



54 Figure 5-4 Background Future Ballpark Peak 4-5 PM Traffic Forecasts 2008

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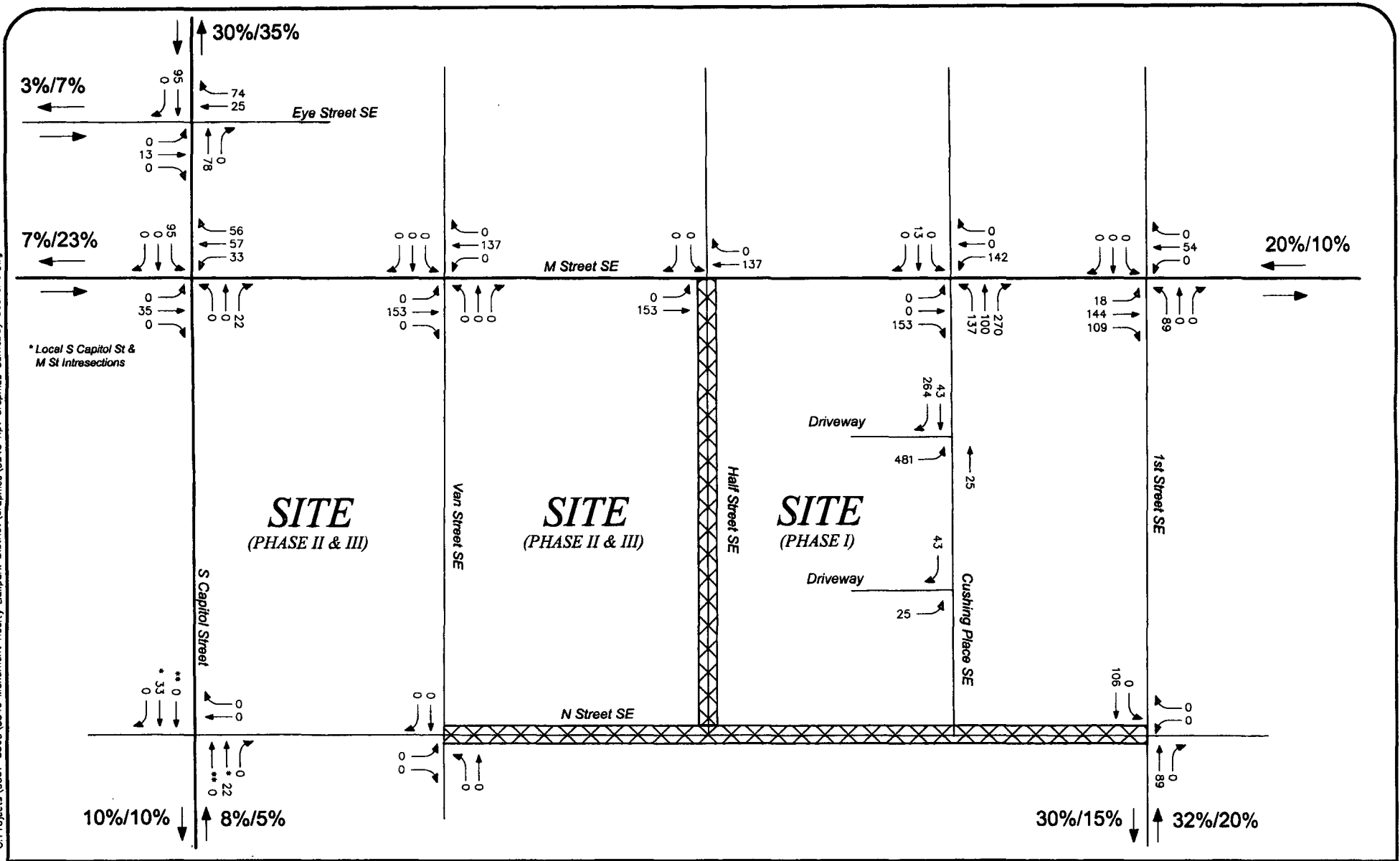
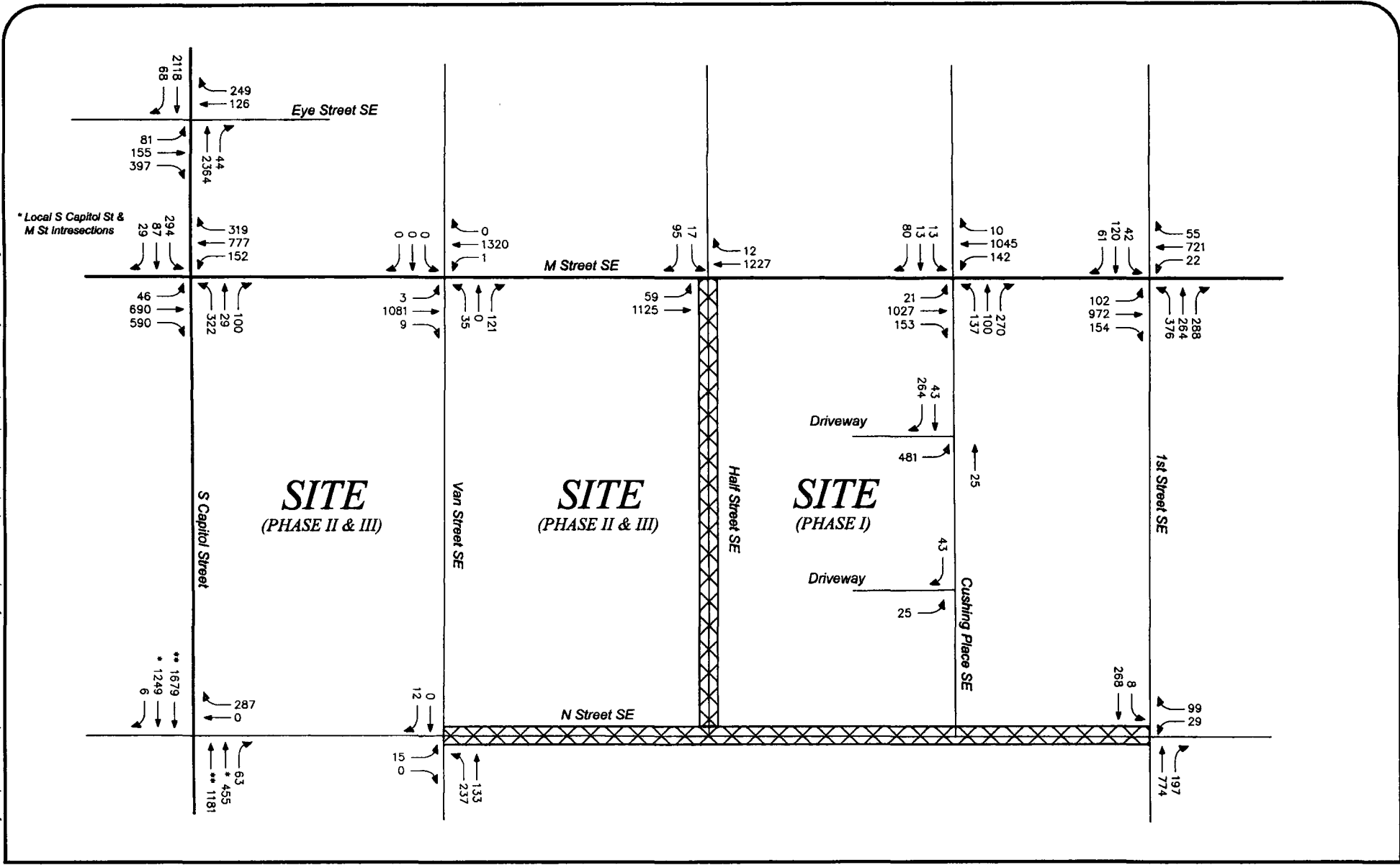


Figure 5-5
Site Generated Phase I - 4-5 PM Traffic Assignments

XX% / XX% = Office Uses/Residential & Hotel Uses
 [Hatched Box] = Road Closure During Baseball Games
 * To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass

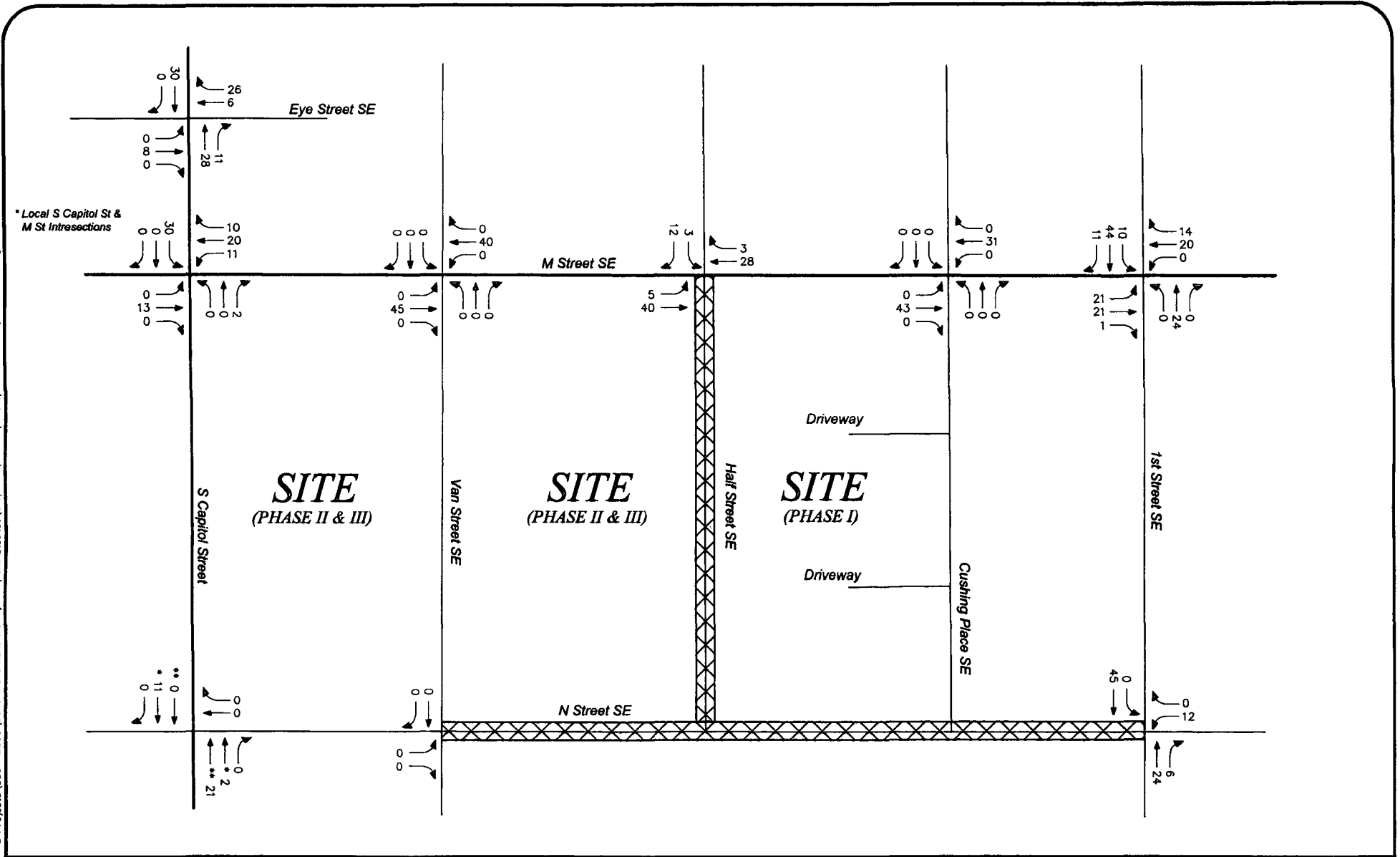
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 PM PEAK HOUR
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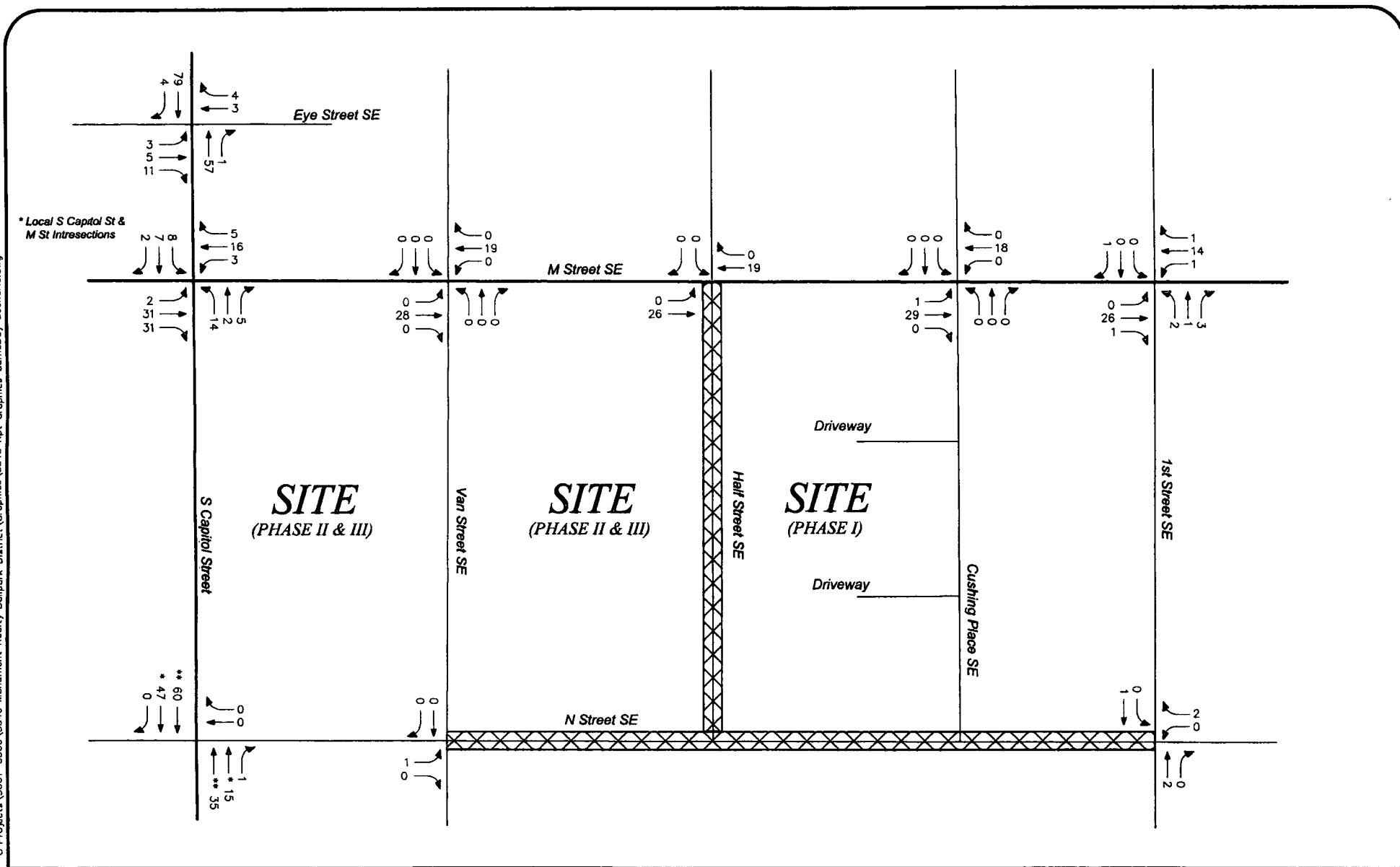
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Figure 5-6
 Total Future Ballpark Peak 4-5 PM Traffic Forecasts 2008



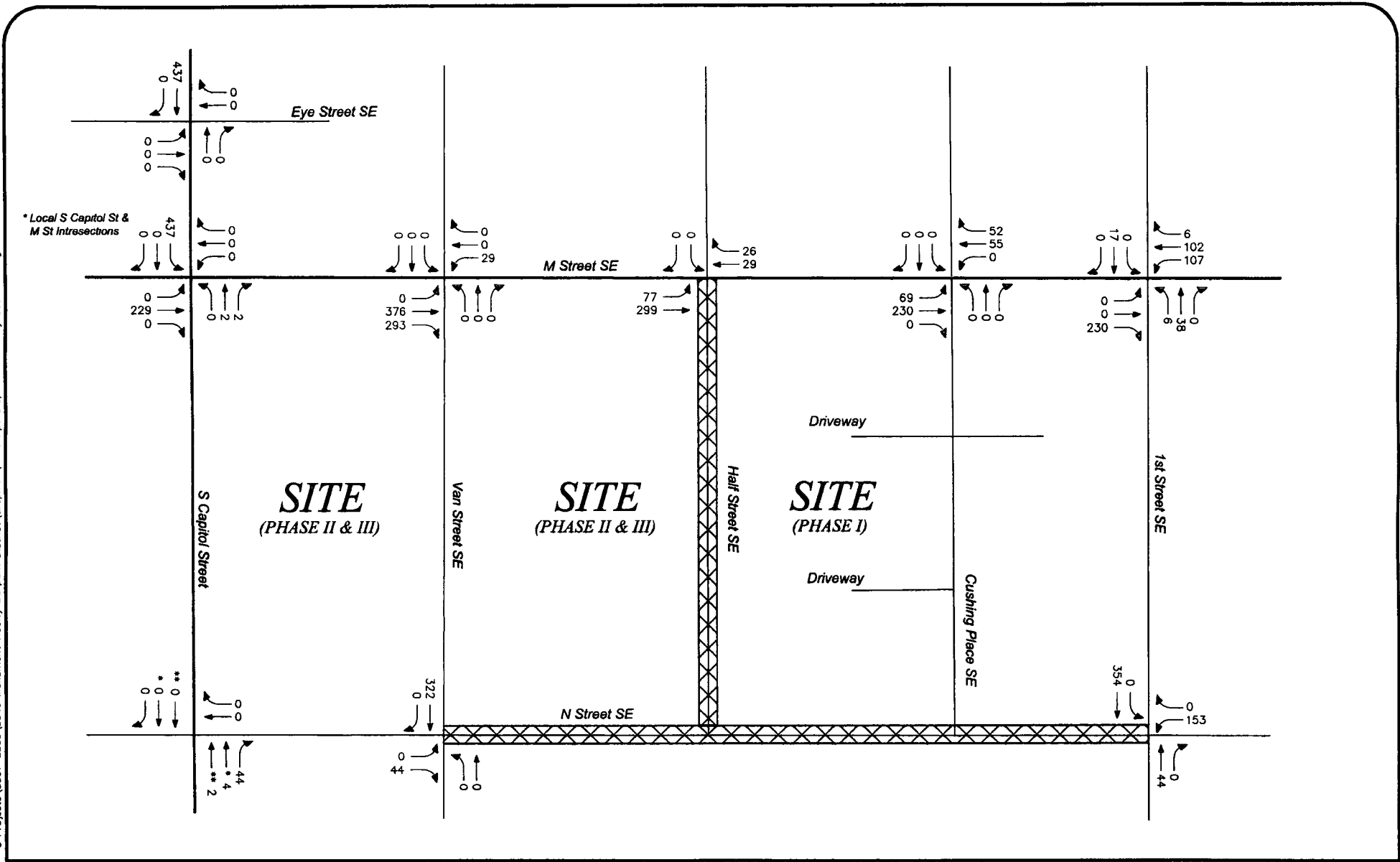
57 Figure 5-7 Other Development Ballpark Peak 6-7 PM Traffic Assignments 2008

= Road Closure During Baseball Games
 * To/From Local S Capitol Street & M Street Intersection
 ** To/From S Capitol Street Underpass
 AM PEAK HOUR
 PM PEAK HOUR
 000/000
 North



58 Figure 5-8 Background Future Ballpark Peak 6-7 PM Traffic Growth 2008

4M PEAK HOUR
 4N PEAK HOUR
 000/000
 North



59 **Figure 5-9**
Ballpark Generated Traffic Peak Hour 6-7 PM Assignments 2008

= Road Closure During Baseball Games

* To/From Local S Capitol Street & M Street Intersection

** To/From S Capitol Street Underpass

AM PEAK HOUR
 PM PEAK HOUR
 000/000

North

D:\Projects\3001-3500\3340 Monument\Realty\Ballpark\District\Graphics\3340 Rpt Graphics\GameDay_Scenario1.dwg

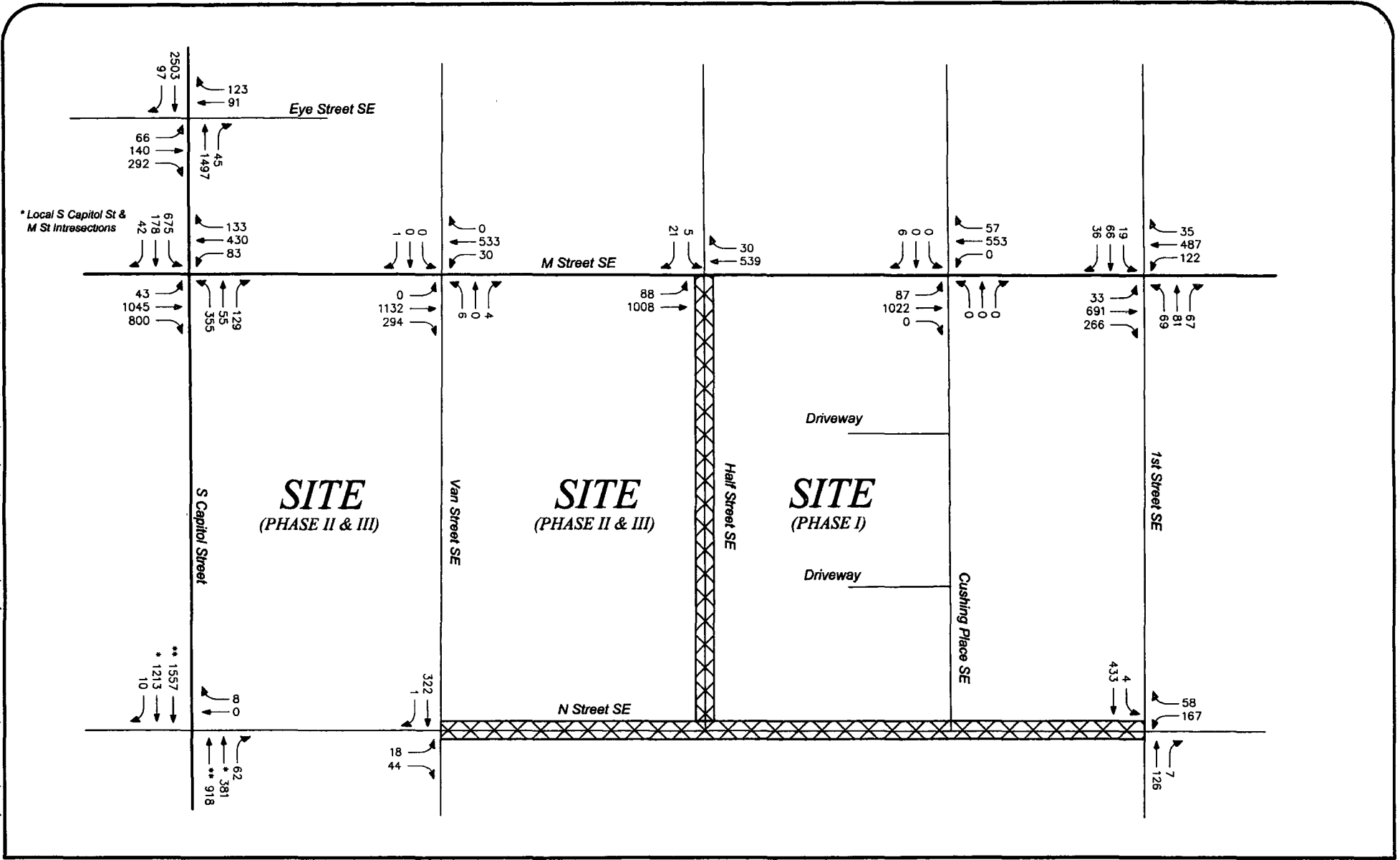


Figure 5-10
 Background Future Ballpark Peak 6-7 PM Traffic Forecasts 2008

000/000
 AM PEAK HOUR
 PM PEAK HOUR
 North

Table 5-1
 Monument Ballpark - Square 700 & 701
 2008 Pipeline Project Trip Generation Game Day Condition(1)

Background Development	Land Use Code	Size	Units	Afternoon Game (Post-Game) Peak Hour 4-5 PM			Evening Game (Pre-Game) Peak Hour 6-7 PM		
				In	Out	Total	In	Out	Total
20 M Street SE									
Office	710	180,633	S.F.	18	38	56	6	15	21
Square 0699N Phase I (1st & L Street SE)									
Residential	230	250	D.U.	33	20	53	18	16	34
Jefferson at 70 Eye Street (Phase I)									
Residential	220	449	D.U.	82	49	131	46	40	86
100 M Street SE									
Office	710	225,000	S.F.	21	45	66	8	18	26
Retail	820	15,000	S.F.	55	59	114	42	47	89
				76	104	180	50	65	115
US DOT									
Office	710	5,500	Employees	114	240	354	41	95	136
Retail	820	13,500	S.F.	24	26	50	12	21	40
				138	266	404	60	116	176
Total Background Development				347	477	824	180	252	432

Notes: (1) Based on Trip Generation, 7th Edition, Institute of Transportation Engineers.

Percent of ADT used to calculate diurnal traffic (4-5 PM):

Residential	Office	Retail
Inbound: 6.40%	Inbound: 2.44%	Inbound: 4.85%
Outbound: 3.85%	Outbound: 5.11%	Outbound: 5.20%

Percent of ADT used to calculate diurnal traffic (6-7 PM):

Residential	Office	Retail
Inbound: 3.55%	Inbound: 0.87%	Inbound: 3.7%
Outbound: 3.15%	Outbound: 2.03%	Outbound: 4.15%

(2) Non-auto mode splits were adapted from the U.S. Census 2000 Data Summary File 3

(3) US DOT Trip Generation was taken from "United States Department of Transportation Traffic Impact Statement", Gorove-Slade Associates, March 14, 2003

Table 5-2

Monument Ballpark - Square 700 & 701

Ballpark Generated Traffic: Departing Afternoon Game 4-5 PM & Arriving Evening Game 6-7 PM

Park Lot Location	Number of Patron Spaces ¹	Percent Departing Afternoon Game Between 4-5 PM ²	Outbound	Percent Arriving Evening Game Between 6-7 PM ²	Inbound
<i>On-Site North Parking</i>	975	70%	683	60%	585
<i>On-Site South Parking</i>	100	70%	70	60%	60
<i>1100 S Capitol Street</i>	90	70%	63	60%	54
<i>1000 S Capitol Street</i>	100	70%	70	60%	60
<i>20 M Street</i>	190	70%	133	60%	114
<i>80 M Street</i>	200	70%	140	60%	120
<i>100 M Street</i>	200	70%	140	60%	120
<i>SE Federal Center Parcel H/I</i>	406	70%	284	60%	244
<i>WASA</i>	444	70%	311	60%	266
Total Ballpark Generated Vehicle Trips			1,894		1,623

Notes:

¹ Parking lot information received from Gorove-Slade Associates² Departure & Arrival information based on "D.C. Major League Baseball Park", Gorove-Slade Associates, April 13, 2006

Table 5-3
 Monument Ballpark - Square 700 & 701
 Site Trip Generation Summary¹

Land Use	ITE Code	Size	Units	Afternoon Game (Post-Game)			Evening Game (Pre-Game)		
				IN	Peak Hour 4-5 PM		IN	Peak Hour 6-7 PM	
					OUT	TOTAL		OUT	TOTAL
Phase I									
Square 701									
Apartment	220	330	DU's	137	82	219	76	67	143
Internal Capture				32	21	41	25	16	41
External Trips (Total - Internal)				105	61	178	51	51	102
Person Trips ²				121	70	205	59	59	117
Site Specific External Vehicle Trips ^{3,4}				43	25	68	21	21	42
General Office Building	710	288,285	SF	74	154	228	26	61	87
Internal Capture				8	8	16	6	5	11
External Trips (Total - Internal)				66	146	212	20	56	76
Person Trips ²				76	168	244	23	64	87
Site Specific External Vehicle Trips ^{4,5}				38	84	122	12	32	44
Hotel	310	196	Rooms	61	55	116	61	55	116
Internal Capture				20	3	23	20	3	23
External Trips (Total - Internal)				41	52	93	41	52	93
TDM Reduction ^{4,6}				11	14	25	11	14	25
External Vehicle Trips (External - Transit)				30	38	68	30	38	68
Shopping Center	820	60,000	SF	236	253	489	180	202	382
Internal Capture				29	62	91	23	53	76
External Trips (Total - Internal)				207	191	398	157	149	306
Person Trips ⁷				207	191	398	157	149	306
Site Specific External Vehicle Trips ^{4,8}				188	174	362	143	135	278
Ballpark Patron Parking⁹		250	Parking Spaces	-	175	175	150	-	150
Total External Vehicle Trips (Square 701 - Phase I)				299	496	795	356	226	582

Notes:

¹ Vehicle trips generated using Institute of Transportation Engineers (ITE) Trip Generation, Seventh Edition.

Percent of ADT used to calculate diurnal traffic (4-5 PM):

Residential	Office	Retail
Inbound: 6.40%	Inbound: 2.44%	Inbound: 4.85%
Outbound: 3.85%	Outbound: 5.11%	Outbound: 5.20%

Percent of ADT used to calculate diurnal traffic (6-7 PM):

Residential	Office	Retail
Inbound: 3.55%	Inbound: 0.87%	Inbound: 3.7%
Outbound: 3.15%	Outbound: 2.03%	Outbound: 4.15%

² Based on a non-auto mode split of 0% and an average auto occupancy of 1.15.

³ Based on a non-auto mode split of 54% and an average auto occupancy of 1.30.

⁴ Non-auto mode split taken from 2005 Development-Related Ridership Survey Final Report dated March 2006.

⁵ Based on a non-auto mode split of 35% and an average auto occupancy of 1.30.

⁶ Based on a non-auto mode split of 27%.

⁷ Based on a non-auto mode split of 0% and an average auto occupancy of 1.0.

⁸ Based on a non-auto mode split of 10% and an average auto occupancy of 1.0.

⁹ 70% Departure (4-5 PM) & 60% Arrival (6-7 PM), based on "D.C. Major League Baseball Park", Gorove-Slade Associates.

SECTION 6
M STREET AT HALF STREET – CONSIDERATION OF SIGNAL WARRANT
CRITERIA

A traffic signal was identified as a possible mitigation measure for the Half Street and M Street intersection in beginning in 2008 Future Background conditions prior to any site traffic being added to the network. While a signal mitigates the undesirable LOS indicated by the capacity analysis, the Manual for Uniform Traffic Control Devices (MUTCD) traffic signal control warrant criteria need to be reviewed to determine if a signal is justified. Each of the eight warrants from the MUTCD is reviewed to identify if a signal could be “warranted” at this location.

Warrant 1, Eight-Hour Vehicular Volume

This warrant is intended for locations where a large volume of intersecting traffic is the principal reason to consider installing a signal or where the traffic volume on a minor intersecting street suffers excessive delay. To satisfy this warrant the minimum vehicular volume conditions given in Table 6-1 need to exist for each of any 8 hours of an average day.

Table 6-1
Monument Ballpark – Square 700 & 701
Warrant 1 Minimum Volume Criteria

Warrant 1, Eight-Hour Vehicular Volume	Major Street Total Minimum¹	Higher Minor Street Approach Minimum¹
Condition A-Minimum Vehicular Volume	600	150
Condition B-Interruption of Continuous Traffic	900	75
Combination of Conditions A and B ²	480 and 720	120 and 60

¹Based on 2 or more major street approach lanes and 1 minor street approach lane.

²Based on 80% of minimum required volumes for Condition A and Condition B.

In that only AM and PM peak period traffic was considered in this study, there is not sufficient data to fully evaluate this warrant. However, the peak hour volumes for each analysis horizon were reviewed based on the minimum vehicle requirements in Table 6-1 to give an indication of possible warrant satisfaction. The results of the analysis are shown in Table 6-2.

As shown in Table 6-2, only Condition B is satisfied for the PM peak hour starting in the 2008 Total Future condition. For 8 hours of a typical day to meet the minimum warrant criteria, it would be expected that at least both the AM and PM peak hours would meet the criteria. Since this is not the case it is doubtful that Warrant 1 will be satisfied in future conditions.

Table 6-2
Monument Ballpark – Square 700 & 701
Warrant 1 Evaluation for Peak Hour Conditions

Scenario	Peak Hour	Major Street Total	Higher Minor Street Approach	Condition A Satisfied? ¹	Condition B Satisfied? ¹	Combination of A and B Satisfied? ^{1,2}
Existing	AM	1,381	32	No	No	No
	PM	1,654	39	No	No	No
2008 Background	AM	1,644	61	No	No	No
	PM	1,871	64	No	No	No
2008 Total Future	AM	1,793	61	No	No	No
	PM	2,007	78	No	Yes	No
2014 Background	AM	2,473	70	No	No	No
	PM	3,013	106	No	Yes	No
2014 Total Future	AM	2,546	70	No	No	No
	PM	3,152	106	No	Yes	No

¹Based on 2 or more major approach lanes and 1 minor street approach lane.
²Based on 80% of minimum required volumes for Condition A and Condition B.

Warrant 2, Four-Hour Vehicular Volume

The Four-Hour vehicular volume warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. In order for this warrant to be met, the higher volume minor approach must have 80 vehicles per hour and the major street must have at least 1,400 vehicles per hour. This condition must exist for 4 hours of a typical day.

Referring back to Table 6-2, this condition is met for the PM peak hour beginning in the 2014 Future Background condition. If the resulting conditions in 2014 result in another 3 hours of the day satisfying this criteria than this warrant would be satisfied. A warrant study would need to be done at a future date to determine if the criterion is satisfied.

Warrant 3, Peak Hour

The peak hour signal warrant is intended for unusual cases that attract or discharge large numbers of vehicles over one hour on an average day. Such cases include manufacturing plants, industrial complexes, office complexes, etc. Even though the new stadium will discharge a large amount of traffic in a short duration, this will not be an average day condition and therefore this warrant is not applicable.

Warrant 4, Pedestrian Volume

The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. For this warrant to be satisfied, both of the following criteria must be met:

- A. The pedestrian volume crossing the major street during an average day is 100 or more for each of any 4 hours or 190 or more during any 1 hour; and
- B. There are fewer than 60 gaps per hour in the traffic stream of adequate length to allow pedestrians to cross during the same period when the pedestrian volume criterion is satisfied.

The existing pedestrian counts crossing M Street at this location are 23 and 35 for the AM and PM peak hours, respectively. These volumes occur with relatively little existing development. Most of these pedestrians are crossing M Street to use the Metro portal located in the southeast quadrant of the intersection.

As discussed in the 2008 and the 2014 analysis, there will be substantial background development that will add considerable pedestrian traffic to the streets. The USDOT headquarters will contain 5,500 employees. In addition, more than 5,000 dwelling units, approximately 1,000,000 s.f. of office and 350,000 s.f. of retail are planned in the vicinity of the intersection for both sides of M Street. The new baseball park will also add substantial pedestrian traffic during game times. Many of the parking spaces available for baseball patrons will be north of M Street with patrons crossing at Half Street to get to the stadium entrance one block away. This development does not include the additional pedestrian traffic that will be generated by the Monument development on Squares 700 and 701.

Given the radical change that is expected for the area, it is anticipated that pedestrian volumes will evidentially exceed the minimum warrant criteria and therefore planning for a future signal at this location is recommended regardless of the development taking place on the Monument site. Pedestrian volumes should be revisited at a later date once the new streetscape and new development begin to establish pedestrian patterns. This warrant is anticipated to be met in future conditions.

Warrant 5, School Crossing

This warrant is not applicable as the intersection is not a school crossing.

Warrant 6, Coordinated Signal System

This warrant is not applicable because the resultant signal spacing would be less than 1,000 feet.

Warrant 7, Crash Experience

This warrant requires that 5 or more crashes of the types susceptible to correction by a traffic control signal have occurred within a 12 month period. Crash data needs to be reviewed for the past 3 years to determine if this warrant is met. The potential for incidents could increase with the new traffic generated by the collective future development. This warrant is not known to be met at this time.

Warrant 8, Roadway Network

This warrant is applicable to intersections of two or more major routes and does not apply.

SECTION 7 CONCLUSIONS

The conclusions of this traffic impact study are as follows:

1. The proposed Monument Ballpark development on Squares 700 & 701 provides effective vehicular and pedestrian access to the Navy Yard Metrorail Station and the surrounding street network. The immediate proximity to the Metrorail station and the urban street grid helps reduce the demand for private automobile use.
2. Heavy commuter traffic along the South Capitol Street corridor contributes to vehicle delays on the main line and at the cross streets in the study area.
3. Most of the study intersections currently operate at acceptable levels of service during the AM and PM peak hours with the exception of a few approaches at the South Capitol Street intersections.
4. M Street is the east-west corridor serving the SW and SE DC waterfront areas. Substantial development is planned in the vicinity that will substantially increase future traffic volumes on M Street and the local street network.
5. Major roadway improvements planned in conjunction with the construction of the new ballpark will greatly improve vehicular access around the site along with enhance the pedestrian and bicycle environment.
6. The pipeline developments in the study area would generate a total of 913 AM peak hour trips and 1,003 PM peak hour trips upon completion in 2008. An additional 2,134 AM peak hour trips and 3,497 PM peak hour trips would be generated by the pipeline developments by 2014.
7. A new traffic signal at the intersection of M Street and Half Streets will mitigate the unacceptable LOS that occurs in the 2008 background condition prior to site trips being added to the network.
8. A signal at M Street and Half Streets would have great benefit for pedestrians crossing M Street. The location of the Metro portal at the intersection and the location of the ballpark entrance a block to the south will increase pedestrian flows at this intersection. A signal at this location is consistent with the spacing of existing signals along M Street.
9. The Pedestrian Volume signal warrant for M Street and Half Street will likely be met in future conditions as a result of planned development even if the Monument Phase

1 and Phase 2 & 3 sites are not developed. There is also the potential for the intersection to satisfy the Four-Hour Vehicular Volume warrant in 2014 conditions.

10. The Monument Ballpark – Phase 1 project in Square 701, including 330 condominium apartments, a 196 room hotel, 288,285 S.F. of office and 60,000 S.F. of retail, will generate approximately 499 AM peak hour vehicle-trips and 720 PM peak hour vehicle-trips at full build out and occupancy in 2008.
11. The traffic generated by the Phase 1 site trips in 2008 will not degrade the study intersections beyond acceptable LOS with the exception of Cushing Place at M Street where the minor Cushing Place approaches increase in delay as a result of site traffic. The level of delay is generally considered acceptable for an urban, minor street approach.
12. The Monument Ballpark – Phase 2 & 3 project in Square 700, including 881 condominium apartments, 448,210 S.F. of office and 67,856 S.F. of retail, will generate approximately 691 AM peak hour vehicle-trips and 947 PM peak hour vehicle-trips at full build out and occupancy in 2014.
13. The traffic generated by the Phase 2 & 3 site trips in 2014 will cause some additional delay at the South Capitol Street intersections. However, because the delay increase changes some marginal LOS “D’s” to “E’s,” there will not be a noticeable operational difference.
14. The Phase 2 & 3 site trips will increase delay at the intersections of Cushing Place and Van Street at M and N Streets, particularly during the PM peak hour. The delay will affect outbound site trips and not thru traffic on M Street or N Street.
15. Cushing Place and Van Street facilitate site access and both streets intersect M Street with unsignalized stop control. These unsignalized approaches will experience long delays during peak periods, particularly for outbound site traffic wanting to turn left (westbound) onto M Street. At times the delay will cause familiar motorists to seek alternate routes. A new signal at M Street and Half Street would help create acceptable gaps in M Street traffic thereby benefiting these unsignalized intersections.
16. The Monument Ballpark – Phase 1 would provide approximately 550 parking spaces. This is more than the minimum requirement of 395 spaces required by DC regulations. The Phase 2 & 3 program would require a minimum of 629 spaces based on the preliminary program. A parking program has not been determined for Phase 2 & 3.

17. The Monument Ballpark – Phase 1 would provide sufficient loading dock accommodations. The loading needs for Phases 2 & 3 will be determined when the building program is further refined.
18. It is estimated that 4,600-4,700 cars will park within the vicinity of the ballpark for a sellout weekday game.
19. The weekday Ballpark traffic will peak from 4-5 PM for the outbound flow of a 1:05 PM game or peak during 6-7 PM for the inbound flow of a 7:05 PM game. These peak ballpark flows do not directly overlap the peak commuter hour of 5-6 PM.
20. Approximately 70% of ballpark patrons will depart in the 4-5 PM hour after a game start time of 1:05 PM and 60% of the patrons will arrive in the 6-7 PM hour before the game start time of 7:05 PM.
21. The Traffic Operations Control Plan for the ballpark is currently in development. The TCOP will need to address the dependence of site access on the operation of the M Street and Cushing Place intersection when N and Half Streets are closed to vehicular traffic. There may be an opportunity to maintain partial vehicular circulation on N Street between Cushing Place and First Street to aid site access.

Appendix A

Existing Vehicular and Pedestrian Counts

Wells & Associates, LLC

McLean, Virginia

Existing Traffic Count

Time Period		Turning Movements																Total	PHF	Time Period		
		Southbound Half Street SE				Westbound N Street SE				Northbound Half Street SE				Eastbound N Street SE							North & South	East & West
		1 Right	2 Thru	3 Left	Total	4 Right	5 Thru	6 Left	Total	7 Right	8 Thru	9 Left	Total	10 Right	11 Thru	12 Left	Total					
PROJECT: Monument Realty Ballpark District		DATE: 9/26/2006		SOUTHBOUND ROAD: Half Street SE		NORTHBOUND ROAD: Half Street SE		WESTBOUND ROAD: N Street SE		EASTBOUND ROAD: N Street SE		W & A JOB NO.: 3340		DAY: Tuesday		WEATHER: Clear		COUNTED BY: Lucia		INPUTED BY: admir		
INTERSECTION: N Street SE & Half Street SE		LOCATION: Washington, DC																				
AM																						
6:00-6:15		1	1	3	5	1	1	1	3	0	0	0	0	2	44	12	58	5	61	66		6:00-6:15
6:15-6:30		3	1	1	5	4	2	1	7	1	0	1	2	0	75	10	85	7	92	99		6:15-6:30
6:30-6:45		1	1	4	6	2	4	4	10	2	0	0	2	1	46	10	57	8	67	75		6:30-6:45
6:45-7:00		1	3	5	9	2	3	2	7	1	0	1	2	0	38	8	46	11	53	64		6:45-7:00
7:00-7:15		1	0	1	2	2	3	3	8	0	1	1	2	1	45	7	53	4	61	65		7:00-7:15
7:15-7:30		2	1	10	13	3	1	2	6	7	1	0	8	4	41	9	54	21	60	81		7:15-7:30
7:30-7:45		1	0	1	2	3	2	4	9	4	1	1	6	1	47	4	52	8	61	69		7:30-7:45
7:45-8:00		2	0	2	4	2	9	4	15	1	1	0	2	1	42	8	51	6	66	72		7:45-8:00
8:00-8:15		1	0	5	6	1	5	6	12	4	0	0	4	1	37	8	46	10	58	68		8:00-8:15
8:15-8:30		2	0	3	5	1	9	4	14	5	0	0	5	0	36	7	43	10	57	67		8:15-8:30
8:30-8:45		1	0	4	5	4	4	2	10	4	0	1	5	0	34	4	38	10	48	58		8:30-8:45
8:45-9:00		1	1	4	6	4	7	2	13	4	0	0	4	0	42	12	54	10	67	77		8:45-9:00
3 Hour Totals		17	8	43	68	29	50	35	114	33	4	5	42	11	527	99	637	110	751	861		
1 Hour Totals																						
6:00-7:00		6	6	13	25	9	10	8	27	4	0	2	6	3	203	40	246	31	273	304	0.77	6:00-7:00
6:15-7:15		6	5	11	22	10	12	10	32	4	1	3	8	2	204	35	241	30	273	303	0.77	6:15-7:15
6:30-7:30		5	5	20	30	9	11	11	31	10	2	2	14	6	170	34	210	44	241	285	0.88	6:30-7:30
6:45-7:45		5	4	17	26	10	9	11	30	12	3	3	18	6	171	28	205	44	235	279	0.86	6:45-7:45
7:00-8:00		6	1	14	21	10	15	13	38	12	4	2	18	7	175	28	210	39	248	287	0.89	7:00-8:00
7:15-8:15		6	1	18	25	9	17	16	42	16	3	1	20	7	167	29	203	45	245	290	0.90	7:15-8:15
7:30-8:30		6	0	11	17	7	25	18	50	14	2	1	17	3	162	27	192	34	242	276	0.96	7:30-8:30
7:45-8:45		6	0	14	20	8	27	16	51	14	1	1	16	2	149	27	178	36	229	265	0.92	7:45-8:45
8:00-9:00		5	1	16	22	10	25	14	49	17	0	1	18	1	149	31	181	40	230	270	0.88	8:00-9:00
AM Peak 6:00-7:00		6	6	13	25	9	10	8	27	4	0	2	6	3	203	40	246	31	273	304	0.77	AM Peak 6:00-7:00
PM																						
4:00-4:15		1	0	0	1	1	31	0	32	0	1	2	3	0	14	2	16	4	48	52		4:00-4:15
4:15-4:30		3	0	0	3	3	14	0	17	0	0	0	0	0	9	2	11	3	28	31		4:15-4:30
4:30-4:45		0	0	2	2	1	3	0	4	0	0	0	0	0	11	5	16	2	20	22		4:30-4:45
4:45-5:00		3	0	2	5	1	11	1	13	0	0	1	1	0	11	1	12	6	25	31		4:45-5:00
5:00-5:15		3	0	4	7	2	9	1	12	0	0	1	1	0	18	6	24	8	36	44		5:00-5:15
5:15-5:30		0	0	3	3	3	5	0	8	2	0	2	4	0	14	3	17	7	25	32		5:15-5:30
5:30-5:45		0	0	3	3	1	8	1	10	0	1	0	1	0	19	6	25	4	35	39		5:30-5:45
5:45-6:00		4	0	0	4	1	8	0	9	0	0	0	0	0	13	3	16	4	25	29		5:45-6:00
6:00-6:15		0	0	2	2	2	5	0	7	0	0	1	1	0	10	3	13	3	20	23		6:00-6:15
6:15-6:30		2	0	0	2	0	3	0	3	1	0	0	1	0	5	4	9	3	12	15		6:15-6:30
6:30-6:45		1	0	0	1	1	1	0	2	0	0	0	0	0	6	3	9	1	11	12		6:30-6:45
6:45-7:00		0	0	2	2	1	1	0	2	0	0	0	0	0	2	2	4	2	6	8		6:45-7:00
3 Hour Totals		17	0	18	35	17	99	3	119	3	2	7	12	0	132	40	172	47	291	338		
1 Hour Totals																						
4:00-5:00		7	0	4	11	6	59	1	66	0	1	3	4	0	45	10	55	15	121	136	0.65	4:00-5:00
4:15-5:15		9	0	8	17	7	37	2	46	0	0	2	2	0	49	14	63	19	109	128	0.73	4:15-5:15
4:30-5:30		6	0	11	17	7	28	2	37	2	0	4	6	0	54	15	69	23	106	129	0.73	4:30-5:30
4:45-5:45		6	0	12	18	7	33	3	43	2	1	4	7	0	62	16	78	25	121	146	0.83	4:45-5:45
5:00-6:00		7	0	10	17	7	30	2	39	2	1	3	6	0	64	18	82	23	121	144	0.82	5:00-6:00
5:15-6:15		4	0	8	12	7	26	1	34	2	1	3	6	0	56	15	71	18	105	123	0.79	5:15-6:15
5:30-6:30		6	0	5	11	4	24	1	29	1	1	1	3	0	47	16	63	14	92	106	0.68	5:30-6:30
5:45-6:45		7	0	2	9	4	17	0	21	1	0	1	2	0	34	13	47	11	68	79	0.68	5:45-6:45
6:00-7:00		3	0	4	7	4	10	0	14	1	0	1	2	0	23	12	35	9	49	58	0.63	6:00-7:00
PM Peak 4:45-5:45		6	0	12	18	7	33	3	43	2	1	4	7	0	62	16	78	25	121	146	0.83	PM Peak 4:45-5:45

Wells & Associates, LLC

McLean, Virginia

Existing Traffic Count

Time Period		Turning Movements																Total	PHF	Time Period		
		Southbound South Capitol Street SE				Westbound M Street SE				Northbound South Capitol Street SE				Eastbound M Street SE							North & South	East & West
		1 Right	2 Thru	3 Left	Total	4 Right	5 Thru	6 Left	Total	7 Right	8 Thru	9 Left	Total	10 Right	11 Thru	12 Left	Total					
AM		6	9	80	95	8	26	16	50	40	17	255	312	26	49	9	84	407	134	541		6:00-6:15
6:15-6:30		1	14	75	90	4	55	23	82	38	7	286	331	29	51	7	87	421	169	590		6:15-6:30
6:30-6:45		7	19	74	100	9	62	16	87	27	34	278	339	39	57	12	108	439	195	634		6:30-6:45
6:45-7:00		16	12	70	98	8	90	14	112	20	25	262	307	43	72	9	124	405	236	641		6:45-7:00
7:00-7:15		12	14	77	103	2	95	16	113	18	16	304	338	52	103	6	161	441	274	715		7:00-7:15
7:15-7:30		8	21	65	94	4	107	22	133	19	23	263	305	78	84	10	172	399	305	704		7:15-7:30
7:30-7:45		9	17	66	92	9	116	9	134	25	18	307	350	66	93	13	172	442	306	748		7:30-7:45
7:45-8:00		12	18	63	93	3	115	12	130	20	36	303	359	67	91	9	167	452	297	749		7:45-8:00
8:00-8:15		9	14	52	75	13	116	12	141	15	23	313	351	56	93	17	166	426	307	733		8:00-8:15
8:15-8:30		7	12	50	69	11	97	8	116	21	21	329	371	70	90	20	180	440	296	736		8:15-8:30
8:30-8:45		11	13	45	69	9	119	10	138	20	16	329	365	72	61	16	149	434	287	721		8:30-8:45
8:45-9:00		12	22	47	81	13	83	10	106	18	19	303	340	33	74	15	122	421	228	649		8:45-9:00
3 Hour Totals		110	185	764	1,059	93	1,081	168	1,342	281	255	3,532	4,068	631	918	143	1,692	5,127	3,034	8,161		
1 Hour Totals																						
6:00-7:00		30	54	299	383	29	233	69	331	125	83	1,081	1,289	137	229	37	403	1,672	734	2,406	0.94	6:00-7:00
6:15-7:15		36	59	296	391	23	302	69	394	103	82	1,130	1,315	163	283	34	480	1,706	874	2,580	0.90	6:15-7:15
6:30-7:30		43	66	286	395	23	354	68	445	84	98	1,107	1,289	212	316	37	565	1,684	1,010	2,694	0.94	6:30-7:30
6:45-7:45		45	64	278	387	23	408	61	492	82	82	1,136	1,300	239	352	38	629	1,687	1,121	2,808	0.94	6:45-7:45
7:00-8:00		41	70	271	382	18	433	59	510	82	93	1,177	1,352	263	371	38	672	1,734	1,182	2,916	0.97	7:00-8:00
7:15-8:15		38	70	246	354	29	454	55	538	79	100	1,186	1,365	267	381	49	677	1,719	1,215	2,934	0.98	7:15-8:15
7:30-8:30		37	61	231	329	36	444	41	521	81	98	1,252	1,431	259	367	59	685	1,760	1,206	2,966	0.99	7:30-8:30
7:45-8:45		39	57	210	306	36	447	42	525	76	96	1,274	1,446	265	335	62	662	1,752	1,187	2,939	0.98	7:45-8:45
8:00-9:00		39	61	194	294	46	415	40	501	74	79	1,274	1,427	231	318	68	617	1,721	1,118	2,839	0.96	8:00-9:00
AM Peak																						
7:30-8:30		37	61	231	329	36	444	41	521	81	98	1,252	1,431	259	367	59	685	1,760	1,206	2,966	0.99	AM Peak 7:30-8:30
PM																						
4:00-4:15		5	20	23	48	43	112	27	182	18	10	75	103	196	125	15	336	151	518	669		4:00-4:15
4:15-4:30		16	15	31	62	59	115	22	196	16	2	70	88	167	140	6	313	150	509	659		4:15-4:30
4:30-4:45		6	28	27	61	30	107	23	160	13	12	60	85	136	172	13	321	146	481	627		4:30-4:45
4:45-5:00		1	21	53	75	50	108	15	173	24	4	70	98	68	169	10	247	173	420	593		4:45-5:00
5:00-5:15		5	49	56	110	29	114	15	158	35	20	83	138	188	203	11	402	248	560	808		5:00-5:15
5:15-5:30		5	52	48	105	30	95	25	150	26	15	96	137	196	191	9	396	242	546	788		5:15-5:30
5:30-5:45		13	37	40	90	31	93	7	131	29	8	81	118	199	184	6	389	208	520	728		5:30-5:45
5:45-6:00		7	33	56	96	28	92	22	142	16	8	81	105	186	194	15	395	201	537	738		5:45-6:00
6:00-6:15		6	42	43	91	25	71	20	116	20	17	62	99	243	218	11	472	190	588	778		6:00-6:15
6:15-6:30		14	34	51	99	24	75	16	115	21	13	60	94	236	124	14	374	193	489	682		6:15-6:30
6:30-6:45		7	22	23	52	28	64	25	117	25	9	55	89	220	110	12	342	141	459	600		6:30-6:45
6:45-7:00		13	16	17	46	23	50	24	97	15	7	69	91	173	76	12	261	137	358	495		6:45-7:00
3 Hour Totals		98	369	468	935	400	1,096	241	1,737	258	125	862	1,245	2,208	1,906	134	4,248	2,180	5,985	8,165		
1 Hour Totals																						
4:00-5:00		28	84	134	246	182	442	87	711	71	28	275	374	567	606	44	1,217	620	1,928	2,548	0.95	4:00-5:00
4:15-5:15		28	113	167	308	168	444	75	687	88	38	283	409	559	684	40	1,283	717	1,970	2,687	0.83	4:15-5:15
4:30-5:30		17	150	184	351	139	424	78	641	98	51	309	458	588	735	43	1,366	809	2,007	2,816	0.87	4:30-5:30
4:45-5:45		24	159	197	380	140	410	62	612	114	47	330	491	651	747	36	1,434	871	2,046	2,917	0.90	4:45-5:45
5:00-6:00		30	171	200	401	118	394	69	581	106	51	341	498	769	772	41	1,582	899	2,163	3,062	0.95	5:00-6:00
5:15-6:15		31	164	187	382	114	351	74	539	91	48	320	459	824	787	41	1,652	841	2,191	3,032	0.96	5:15-6:15
5:30-6:30		40	146	190	376	108	331	65	504	86	46	284	416	864	720	46	1,630	792	2,134	2,926	0.94	5:30-6:30
5:45-6:45		34	131	173	338	105	302	83	490	82	47	258	387	885	646	52	1,583	725	2,073	2,798	0.90	5:45-6:45
6:00-7:00		40	114	134	288	100	260	85	445	81	46	246	373	872	528	49	1,449	861	1,894	2,555	0.82	6:00-7:00
PM Peak																						
5:00-6:00		30	171	200	401	118	394	69	581	106	51	341	498	769	772	41	1,582	899	2,163	3,062	0.95	PM Peak 5:00-6:00

Wells & Associates, LLC

McLean, Virginia

Existing Traffic Count

Time Period	Turning Movements																Total	PHF	Time Period									
	Southbound South Capital Street				Westbound Eye Street				Northbound South Capital Street				Eastbound Eye Street							North & South	East & West							
	1 Right	2 Thru	3 Left	Total	4 Right	5 Thru	6 Left	Total	7 Right	8 Thru	9 Left	Total	10 Right	11 Thru	12 Left	Total												
PROJECT: Square 701	DATE: 10/6/2005																SOUTHBOUND ROAD: South Capital Street		DATE: Thursday		NORTHBOUND ROAD: South Capital Street		WEATHER: Clear		WESTBOUND ROAD: Eye Street		EASTBOUND ROAD: Eye Street	
W & A JOB NO.: 3340	COUNTED BY: Majda, Jesi & Jesenia																INPUTED BY: agan											
INTERSECTION: Eye St. & S. Capitol St.																												
LOCATION: Weashington, DC																												
AM																												
7:00-7:15	8	341	1	350	26	18	0	44	2	486	0	488	13	15	9	37	838	81	919		7:00-7:15							
7:15-7:30	12	310	1	323	33	45	1	79	8	369	0	377	17	14	15	46	700	125	825		7:15-7:30							
7:30-7:45	18	302	0	320	35	64	0	99	3	404	0	407	11	17	26	54	727	153	880		7:30-7:45							
7:45-8:00	13	328	0	341	35	59	0	94	2	286	0	288	13	9	18	40	629	134	763		7:45-8:00							
8:00-8:15	27	307	0	334	48	88	0	136	1	381	1	383	17	21	11	49	717	185	902		8:00-8:15							
8:15-8:30	12	221	0	233	38	43	0	81	2	327	2	331	22	19	28	69	564	150	714		8:15-8:30							
8:30-8:45	24	222	0	246	43	54	0	97	0	538	0	538	24	20	32	76	784	173	957		8:30-8:45							
8:45-9:00	20	219	0	239	35	64	1	100	3	543	0	546	18	17	28	63	785	163	948		8:45-9:00							
9:00-9:15	18	239	0	257	30	56	0	86	4	535	0	539	13	32	24	69	796	155	951		9:00-9:15							
9:15-9:30	31	305	0	336	31	28	1	60	2	557	0	559	25	17	24	66	895	126	1,021		9:15-9:30							
9:30-9:45	20	217	0	237	27	17	0	44	1	360	1	362	24	19	27	70	599	114	713		9:30-9:45							
9:45-10:00	19	245	1	265	15	22	0	37	1	429	0	430	12	20	24	56	695	93	788		9:45-10:00							
3 Hour Totals	222	3,256	3	3,481	396	558	3	957	29	5,215	4	5,248	209	220	256	695	8,729	1,652	10,381									
1 Hour Totals																												
7:00-8:00	51	1,281	2	1,334	129	186	1	316	15	1,545	0	1,560	54	55	68	177	2,894	493	3,387	0.92	7:00-8:00							
7:15-8:15	70	1,247	1	1,318	151	256	1	408	14	1,440	1	1,455	58	61	70	189	2,773	597	3,370	0.93	7:15-8:15							
7:30-8:30	70	1,158	0	1,228	156	254	0	410	8	1,398	3	1,409	63	66	83	212	2,637	622	3,259	0.90	7:30-8:30							
7:45-8:45	76	1,078	0	1,154	164	244	0	408	5	1,532	3	1,540	76	69	89	234	2,694	642	3,336	0.87	7:45-8:45							
8:00-9:00	83	969	0	1,052	164	249	1	414	6	1,789	3	1,798	81	77	99	257	2,850	671	3,521	0.92	8:00-9:00							
8:15-9:15	74	901	0	975	146	217	1	364	9	1,943	2	1,954	77	88	112	277	2,929	641	3,570	0.93	8:15-9:15							
8:30-9:30	93	985	0	1,078	139	202	2	343	9	2,173	0	2,182	80	86	108	274	3,260	617	3,877	0.95	8:30-9:30							
8:45-9:45	89	980	0	1,069	123	165	2	290	10	1,995	1	2,006	80	85	103	268	3,075	558	3,633	0.89	8:45-9:45							
9:00-10:00	88	1,006	1	1,095	103	123	1	227	8	1,881	1	1,890	74	88	99	261	2,985	488	3,473	0.85	9:00-10:00							
AM Peak																												
8:30-9:30	93	985	0	1,078	139	202	2	343	9	2,173	0	2,182	80	86	108	274	3,260	617	3,877	0.95	AM Peak							
PM																												
4:00-4:15	16	591	0	607	26	24	1	51	6	447	0	453	80	35	18	133	1,060	184	1,244		4:00-4:15							
4:15-4:30	16	504	0	520	35	26	2	63	8	409	0	417	107	30	20	157	937	220	1,157		4:15-4:30							
4:30-4:45	22	386	2	410	28	21	2	51	3	418	0	421	94	28	19	141	831	192	1,023		4:30-4:45							
4:45-5:00	11	406	0	417	36	17	1	54	6	377	0	383	101	33	21	155	800	209	1,009		4:45-5:00							
5:00-5:15	20	490	0	510	27	21	0	48	1	383	0	384	104	41	8	153	894	201	1,095		5:00-5:15							
5:15-5:30	15	478	0	493	24	27	0	51	16	364	0	380	109	42	21	172	873	223	1,096		5:15-5:30							
5:30-5:45	18	493	0	511	25	24	0	49	3	377	0	380	111	38	14	163	891	212	1,103		5:30-5:45							
5:45-6:00	11	529	0	540	28	25	1	54	10	321	0	331	92	32	20	144	871	198	1,069		5:45-6:00							
6:00-6:15	23	562	0	585	24	21	1	46	7	384	0	391	84	40	19	143	976	189	1,165		6:00-6:15							
6:15-6:30	22	473	0	495	20	23	1	44	11	342	1	354	77	31	16	124	849	168	1,017		6:15-6:30							
6:30-6:45	23	491	0	514	27	17	3	47	8	356	0	364	65	30	12	107	878	154	1,032		6:30-6:45							
6:45-7:00	25	431	0	456	22	21	2	45	7	330	1	338	55	26	16	97	794	142	936		6:45-7:00							
3 Hour Totals	222	5,834	2	6,058	322	267	14	603	86	4,508	2	4,596	1,079	406	204	1,689	10,654	2,292	12,946									
1 Hour Totals																												
4:00-5:00	65	1,887	2	1,954	125	88	6	219	23	1,651	0	1,674	382	126	78	586	3,628	805	4,433	0.89	4:00-5:00							
4:15-5:15	69	1,786	2	1,857	126	85	5	216	18	1,587	0	1,605	406	132	68	606	3,462	822	4,284	0.93	4:15-5:15							
4:30-5:30	68	1,760	2	1,830	115	86	3	204	26	1,542	0	1,568	408	144	69	621	3,398	825	4,223	0.96	4:30-5:30							
4:45-5:45	64	1,867	0	1,931	112	89	1	202	26	1,501	0	1,527	425	154	64	643	3,458	845	4,303	0.98	4:45-5:45							
5:00-6:00	64	1,990	0	2,054	104	97	1	202	30	1,445	0	1,475	416	153	63	632	3,529	834	4,363	0.99	5:00-6:00							
5:15-6:15	67	2,062	0	2,129	101	97	2	200	36	1,446	0	1,482	396	152	74	622	3,611	822	4,433	0.95	5:15-6:15							
5:30-6:30	74	2,057	0	2,131	97	93	3	193	31	1,424	1	1,456	364	141	69	574	3,587	767	4,354	0.93	5:30-6:30							
5:45-6:45	79	2,055	0	2,134	99	86	6	191	36	1,403	1	1,440	318	133	67	518	3,574	709	4,283	0.92	5:45-6:45							
6:00-7:00	93	1,957	0	2,050	93	82	7	182	33	1,412	2	1,447	281	127	63	471	3,497	653	4,150	0.89	6:00-7:00							
PM Peak																												
4:00-5:00	65	1,887	2	1,954	125	88	6	219	23	1,651	0	1,674	382	126	78	586	3,628	805	4,433	0.89	PM Peak							

Wells & Associates, LLC

McLean, Virginia

Existing Traffic Count

Time Period		Turning Movements																Total	PHF	Time Period		
		Southbound First Street SE				Westbound N Street SE				Northbound First Street SE				Eastbound N Street SE								
		1 Right	2 Thru	3 Left	Total	4 Right	5 Thru	6 Left	Total	7 Right	8 Thru	9 Left	Total	10 Right	11 Thru	12 Left	Total					
PROJECT: Monument Realty Ballpark District		DATE: 9/26/2006				SOUTHBOUND ROAD: First Street SE				NORTHBOUND ROAD: First Street SE				WESTBOUND ROAD: N Street SE				EASTBOUND ROAD: N Street SE				
W & A JOB NO.: 3340		DAY: Tuesday				WEATHER: Clear				COUNTED BY: Omar & Camen				INPUTED BY: admr								
INTERSECTION: N Street SE & First Street SE																						
LOCATION: Washington, DC																						
AM																						
6:00-6:15		3	28	8	39	2	1	0	3	0	6	0	6	28	2	11	41	45	44	89		6:00-6:15
6:15-6:30		4	35	10	49	5	1	0	6	2	7	2	11	45	11	19	75	60	81	141		6:15-6:30
6:30-6:45		7	31	10	48	4	0	1	5	1	4	3	8	28	9	12	49	56	54	110		6:30-6:45
6:45-7:00		6	32	23	61	7	0	0	7	0	12	3	15	21	6	15	42	76	49	125		6:45-7:00
7:00-7:15		3	55	24	82	4	1	2	7	1	13	4	18	20	7	14	41	100	48	148		7:00-7:15
7:15-7:30		4	68	20	92	3	0	0	3	0	16	4	20	39	6	11	56	112	59	171		7:15-7:30
7:30-7:45		2	50	20	72	5	1	0	6	0	16	6	22	29	10	16	55	94	61	155		7:30-7:45
7:45-8:00		3	42	13	58	8	2	1	11	0	23	10	33	29	6	10	45	91	56	147		7:45-8:00
8:00-8:15		3	28	17	48	12	1	0	13	0	36	8	44	27	8	11	46	92	59	151		8:00-8:15
8:15-8:30		6	39	12	57	3	0	1	4	1	22	7	30	23	6	10	39	87	43	130		8:15-8:30
8:30-8:45		6	28	10	44	8	0	0	8	0	25	6	31	22	8	7	37	75	45	120		8:30-8:45
8:45-9:00		3	26	19	48	5	3	1	9	0	34	8	42	21	6	20	47	90	56	146		8:45-9:00
3 Hour Totals		50	462	186	698	66	10	6	82	5	214	61	280	332	85	156	573	978	655	1,633		
1 Hour Totals																						
6:00-7:00		20	126	51	197	18	2	1	21	3	29	8	40	122	28	57	207	237	228	465	0.82	6:00-7:00
6:15-7:15		20	153	67	240	20	2	3	25	4	36	12	52	114	33	60	207	292	232	524	0.89	6:15-7:15
6:30-7:30		20	186	77	283	18	1	3	22	2	45	14	61	108	28	52	188	344	210	554	0.81	6:30-7:30
6:45-7:45		15	205	87	307	19	2	2	23	1	57	17	75	109	29	56	194	382	217	599	0.88	6:45-7:45
7:00-8:00		12	215	77	304	20	4	3	27	1	68	24	93	117	29	51	197	397	224	621	0.91	7:00-8:00
7:15-8:15		12	188	70	270	28	4	1	33	0	91	28	119	124	30	48	202	389	235	624	0.91	7:15-8:15
7:30-8:30		14	159	62	235	28	4	2	34	1	97	31	129	108	30	47	185	364	219	583	0.94	7:30-8:30
7:45-8:45		18	137	52	207	31	3	2	36	1	106	31	138	101	28	38	167	345	203	548	0.91	7:45-8:45
8:00-9:00		18	121	58	197	28	4	2	34	1	117	29	147	93	28	48	169	344	203	547	0.91	8:00-9:00
AM Peak																						
7:15-8:15		12	188	70	270	28	4	1	33	0	91	28	119	124	30	48	202	389	235	624	0.91	AM Peak
PM																						
4:00-4:15		1	9	1	11	21	6	0	27	0	90	26	116	11	0	5	16	127	43	170		4:00-4:15
4:15-4:30		3	7	2	12	27	2	1	30	1	52	12	65	3	0	8	11	77	41	118		4:15-4:30
4:30-4:45		3	8	5	16	17	1	0	18	3	29	0	32	5	0	8	13	48	31	79		4:30-4:45
4:45-5:00		4	12	0	16	30	6	1	37	0	43	1	44	7	0	7	14	60	51	111		4:45-5:00
5:00-5:15		2	12	1	15	20	2	0	22	0	33	8	41	7	1	14	22	56	44	100		5:00-5:15
5:15-5:30		4	6	2	12	25	2	2	29	0	19	0	19	4	1	14	19	31	48	79		5:15-5:30
5:30-5:45		4	3	0	7	8	2	0	10	0	23	1	24	9	0	14	23	31	33	64		5:30-5:45
5:45-6:00		1	7	3	11	10	3	1	14	0	21	4	25	5	1	6	12	36	26	62		5:45-6:00
6:00-6:15		1	11	1	13	19	2	0	21	1	17	2	20	2	0	7	9	33	30	63		6:00-6:15
6:15-6:30		1	10	0	11	10	0	0	10	0	14	0	14	2	0	4	6	25	16	41		6:15-6:30
6:30-6:45		0	6	3	9	17	1	2	20	0	15	1	16	1	1	4	6	25	26	51		6:30-6:45
6:45-7:00		0	4	0	4	6	1	0	7	0	6	1	7	4	0	1	5	11	12	23		6:45-7:00
3 Hour Totals		24	95	18	137	210	28	7	245	5	362	56	423	60	4	92	156	560	401	981		
1 Hour Totals																						
4:00-5:00		11	36	8	55	95	15	2	112	4	214	39	257	26	0	28	54	312	166	478	0.70	4:00-5:00
4:15-5:15		12	39	8	59	94	11	2	107	4	157	21	182	22	1	37	60	241	167	408	0.86	4:15-5:15
4:30-5:30		13	38	8	59	92	11	3	106	3	124	9	136	23	2	43	68	195	174	369	0.83	4:30-5:30
4:45-5:45		14	33	3	50	83	12	3	98	0	118	10	128	27	2	49	78	178	176	354	0.80	4:45-5:45
5:00-6:00		11	28	6	45	63	9	3	75	0	96	13	109	25	3	48	76	154	151	305	0.76	5:00-6:00
5:15-6:15		10	27	6	43	62	9	3	74	1	80	7	88	20	2	41	63	131	137	268	0.85	5:15-6:15
5:30-6:30		7	31	4	42	47	7	1	55	1	75	7	83	18	1	31	50	125	105	230	0.90	5:30-6:30
5:45-6:45		3	34	7	44	56	8	3	65	1	67	7	75	10	2	21	33	119	98	217	0.86	5:45-6:45
6:00-7:00		2	31	4	37	52	4	2	58	1	52	4	57	9	1	16	26	94	84	178	0.71	6:00-7:00
PM Peak																						
4:00-5:00		11	36	8	55	95	15	2	112	4	214	39	257	26	0	28	54	312	166	478	0.70	PM Peak

Project Name: Monument Realty Ballpark District

Project Number: 2249

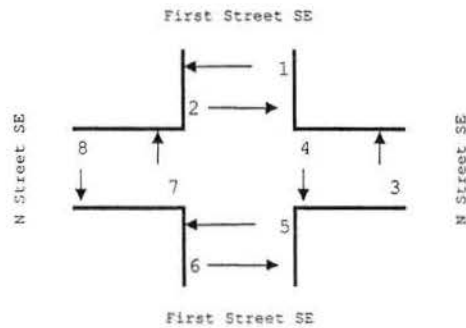
Location: Washington, DC

Intersection: N Street SE & First Street SE

Weather: Clear

Date: 3/25/2005

Surveyor: David A. Carter



Hourly Pedestrian Count

		1	2	3	4	5	6	7	8					
Time Period	From:	SE	NE	SW	SE	SW	NW	NW	NE	Total	1 & 2	3 & 4	5 & 6	7, & 8
	To:	NE	SE	SE	SW	NW	SW	NE	NW					
AM PEAK														
6:00	7:00	1	5	11	15	1	3	2	9	47	6	26	4	11
6:15	7:15	1	3	12	13	1	4	2	1	37	4	25	5	3
6:30	7:30	1	4	12	16	1	3	2	1	40	5	28	4	3
6:45	7:45	0	4	9	14	3	6	0	3	39	4	23	9	3
7:00	8:00	0	4	10	20	6	5	2	3	50	4	30	11	5
7:15	8:15	0	4	7	27	8	6	2	3	57	4	34	14	5
7:30	8:30	0	3	6	25	10	7	2	3	56	3	31	17	5
7:45	8:45	1	1	5	22	10	8	2	2	51	2	27	18	4
8:00	9:00	1	0	4	14	8	8	0	1	36	1	18	16	1
PM PEAK														
16:00	17:00	2	0	5	8	4	0	0	0	19	2	13	4	0
16:15	17:15	1	1	5	8	4	0	2	1	22	2	13	4	3
16:30	17:30	1	1	4	9	4	1	3	1	24	2	13	5	4
16:45	17:45	1	1	3	11	5	1	3	2	27	2	14	6	5
17:00	18:00	1	1	1	8	2	1	3	2	19	2	9	3	5
17:15	18:15	0	0	0	8	2	1	1	1	13	0	8	3	2
17:30	18:30	0	0	0	6	1	0	0	1	8	0	6	1	1
17:45	18:45	0	0	0	4	0	0	0	0	4	0	4	0	0
18:00	19:00	0	0	0	1	0	0	0	0	1	0	1	0	0

Project Name: Monument Realty Ballpark District

Project Number: 3340

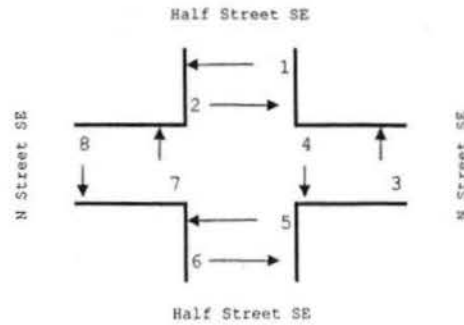
Location: Washington, DC

Intersection: N Street SE & Half Street SE

Weather: Wind

Date: 9/25/2008

Surveyor: Ibbie



Hourly Pedestrian Count

		1	2	3	4	5	6	7	8					
Time Period	From:	SE	NE	SW	SE	SW	NW	NW	NE	Total	1 & 2	3 & 4	5 & 6	7 & 8
	To:	NE	SE	SE	SW	NW	SW	NE	NW					
AM PEAK														
6:00	7:00	3	1	1	23	0	3	3	7	41	4	24	3	10
6:15	7:15	2	1	1	13	0	1	3	5	26	3	14	1	8
6:30	7:30	2	1	1	6	0	2	1	3	16	3	7	2	4
6:45	7:45	0	0	0	4	0	3	1	3	11	0	4	3	4
7:00	8:00	0	0	0	2	0	3	1	1	7	0	2	3	2
7:15	8:15	0	0	1	2	1	3	2	1	10	0	3	4	3
7:30	8:30	0	2	2	3	1	2	2	1	13	2	5	3	3
7:45	8:45	0	5	2	3	1	0	2	0	13	5	5	1	2
8:00	9:00	1	5	4	3	1	0	1	0	15	6	7	1	1
PM PEAK														
16:00	17:00	3	0	0	0	3	1	1	0	8	3	0	4	1
16:15	17:15	0	0	2	0	3	1	1	0	7	0	2	4	1
16:30	17:30	0	0	4	1	3	0	1	0	9	0	5	3	1
16:45	17:45	0	0	5	2	0	0	5	0	12	0	7	0	5
17:00	18:00	0	0	5	2	0	0	4	0	11	0	7	0	4
17:15	18:15	0	0	4	2	0	0	5	0	11	0	6	0	5
17:30	18:30	0	0	3	1	0	0	6	0	10	0	4	0	6
17:45	18:45	0	0	2	0	0	0	2	0	4	0	2	0	2
18:00	19:00	0	0	2	0	0	0	2	0	4	0	2	0	2

Project Name: Manumass Realty Ballpark District

Project Number: 2000

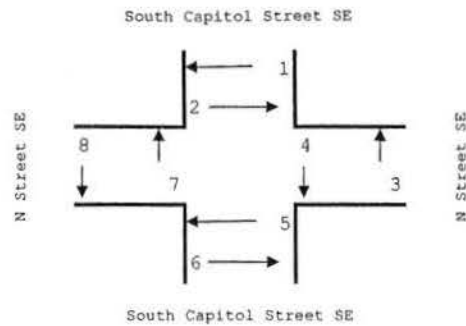
Location: Washington, DC

Intersection: N Street SE & South Capitol Street SE

Weather: Clear

Date: 02/26/2006

Surveyor: Oslem & Najda



Hourly Pedestrian Count

		1	2	3	4	5	6	7	8	Total	1 & 2	3 & 4	5 & 6	7 & 8
Time Period	From: To:	SE NE	NE SE	SW SE	SE SW	SW NW	NW SW	NW NE	NE NW					
AM PEAK														
6:00	7:00	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15	7:15	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30	7:30	0	0	1	0	0	0	0	0	1	0	1	0	0
6:45	7:45	0	0	1	0	0	0	0	0	1	0	1	0	0
7:00	8:00	0	0	1	2	0	0	0	0	3	0	3	0	0
7:15	8:15	0	0	1	2	0	0	0	0	3	0	3	0	0
7:30	8:30	0	0	0	5	0	0	0	0	5	0	5	0	0
7:45	8:45	0	0	0	9	0	0	0	0	9	0	9	0	0
8:00	9:00	0	0	0	8	0	0	0	0	8	0	8	0	0
PM PEAK														
16:00	17:00	0	1	0	0	0	0	0	0	1	1	0	0	0
16:15	17:15	0	1	0	3	0	0	0	0	4	1	3	0	0
16:30	17:30	0	1	0	3	0	0	0	0	4	1	3	0	0
16:45	17:45	0	2	0	5	0	0	0	0	7	2	5	0	0
17:00	18:00	0	3	0	6	0	0	0	0	9	3	6	0	0
17:15	18:15	0	3	0	7	0	0	0	0	10	3	7	0	0
17:30	18:30	0	3	0	13	0	0	0	0	16	3	13	0	0
17:45	18:45	0	3	0	14	0	0	0	0	17	3	14	0	0
18:00	19:00	0	2	0	14	0	0	0	0	16	2	14	0	0

Project Name: Monument Realty Bellpark District

Project Number: 2244

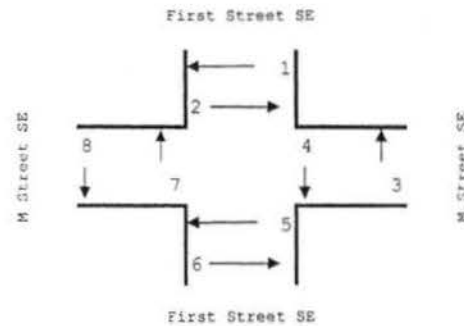
Location: Washington, DC

Intersection: M Street SE & First Street SE

Weather: Clear

Date: 8/29/2013

Surveyors: S & Davis



Hourly Pedestrian Count

		1	2	3	4	5	6	7	8					
		SE	NE	SW	SE	SW	NW	NW	NE	Total	1 & 2	3 & 4	5 & 6	7 & 8
Time Period	From: To:	NE	SE	SE	SW	NW	SW	NE	NW					
AM PEAK														
6:00	7:00	24	9	3	4	1	17	8	3	69	33	7	18	11
6:15	7:15	30	8	4	3	4	25	8	4	86	38	7	29	12
6:30	7:30	33	7	3	4	4	23	7	4	85	40	7	27	11
6:45	7:45	43	8	4	8	3	18	9	4	97	51	12	21	13
7:00	8:00	44	21	6	10	3	17	6	2	109	65	16	20	8
7:15	8:15	40	28	5	10	0	19	7	2	111	68	15	19	9
7:30	8:30	42	33	3	10	0	23	7	1	119	75	13	23	8
7:45	8:45	43	35	2	5	4	26	6	1	122	78	7	30	7
8:00	9:00	51	31	0	5	6	29	8	1	131	82	5	35	9
PM PEAK														
16:00	17:00	44	36	4	5	7	12	4	2	114	80	9	19	6
16:15	17:15	40	27	1	5	3	8	1	4	89	67	6	11	5
16:30	17:30	39	21	0	6	2	6	1	2	77	60	6	8	3
16:45	17:45	35	16	0	4	4	7	1	2	69	51	4	11	3
17:00	18:00	23	13	0	4	3	7	2	2	54	36	4	10	4
17:15	18:15	16	11	0	3	2	16	1	5	54	27	3	18	6
17:30	18:30	16	8	0	2	4	15	1	6	52	24	2	19	7
17:45	18:45	12	8	0	3	2	12	1	6	44	20	3	14	7
18:00	19:00	8	6	0	5	2	10	0	6	37	14	5	12	6

Project Name: Monmouth Realty Ballpark District

Project Number: 3240

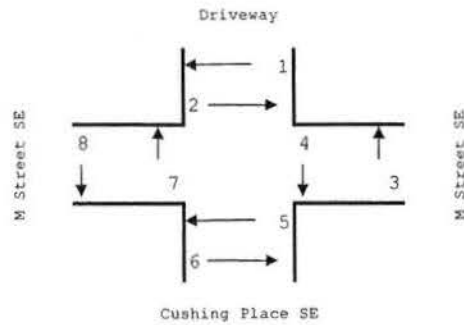
Location: Washington, DC

Intersection: N Street SE & Cushing Place SE

Weather: Clear

Date: 9/26/2006

Surveyor: Giga



Hourly Pedestrian Count

		1	2	3	4	5	6	7	8					
Time Period	From:	SE	NE	SW	SE	SW	NW	NW	NE	Total	1 & 2	3 & 4	5 & 6	7 & 8
	To:	NE	SE	SE	SW	NW	SW	NE	NW					
AM PEAK														
6:00	7:00	8	19	10	2	5	31	2	0	77	27	12	36	2
6:15	7:15	11	35	9	1	7	29	3	0	95	46	10	36	3
6:30	7:30	9	47	4	1	6	28	10	1	106	56	5	34	11
6:45	7:45	9	54	3	1	5	37	12	1	122	63	4	42	13
7:00	8:00	9	62	2	0	4	42	12	1	132	71	2	46	13
7:15	8:15	7	63	1	0	0	49	11	2	133	70	1	49	13
7:30	8:30	9	74	2	0	2	53	6	4	150	83	2	55	10
7:45	8:45	6	74	1	0	3	64	4	4	156	80	1	67	8
8:00	9:00	4	68	1	0	3	53	2	4	135	72	1	56	6
PM PEAK														
16:00	17:00	50	10	0	6	24	9	0	19	118	60	6	33	19
16:15	17:15	53	4	0	7	24	9	0	17	114	57	7	33	17
16:30	17:30	47	4	0	4	18	7	0	16	96	51	4	25	16
16:45	17:45	46	9	0	5	20	10	1	14	105	55	5	30	15
17:00	18:00	37	10	0	3	21	9	1	7	88	47	3	30	8
17:15	18:15	24	11	0	2	14	6	1	3	61	35	2	20	4
17:30	18:30	28	12	0	2	14	8	1	3	68	40	2	22	4
17:45	18:45	25	6	0	1	8	3	0	1	44	31	1	11	1
18:00	19:00	21	5	0	1	7	6	0	1	41	26	1	13	1

Project Name: Monocent Realty Ballpark District

Project Number: 2249

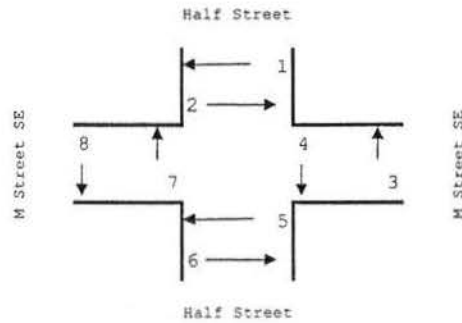
Location: Washington, DC

Intersection: D Street SE & Half Street SE

Weather: Clear

Date: 9.6.2011

Surveyor: Milton



Hourly Pedestrian Count

		1	2	3	4	5	6	7	8	Total	1 & 2	3 & 4	5 & 6	7 & 8
Time Period	From:	SE	NE	SW	SE	SW	NW	NW	NE					
	To:	NE	SE	SE	SW	NW	SW	NE	NW					
AM PEAK														
6:00	7:00	6	5	27	10	11	23	0	0	82	11	37	34	0
6:15	7:15	6	5	30	7	9	25	0	0	82	11	37	34	0
6:30	7:30	4	7	32	6	11	22	0	0	82	11	38	33	0
6:45	7:45	1	6	28	4	12	25	0	0	76	7	32	37	0
7:00	8:00	2	10	27	5	12	20	0	0	76	12	32	32	0
7:15	8:15	2	12	22	3	12	15	0	0	66	14	25	27	0
7:30	8:30	3	14	16	7	17	14	0	0	71	17	23	31	0
7:45	8:45	3	11	16	15	16	10	0	0	71	14	31	26	0
8:00	9:00	2	9	13	19	15	6	0	0	64	11	32	21	0
PM PEAK														
16:00	17:00	4	8	13	18	21	28	0	0	92	12	31	49	0
16:15	17:15	4	6	11	21	25	26	0	0	93	10	32	51	0
16:30	17:30	7	3	14	28	20	19	0	0	91	10	42	39	0
16:45	17:45	5	2	18	23	17	14	0	0	79	7	41	31	0
17:00	18:00	4	0	15	20	16	9	0	0	64	4	35	25	0
17:15	18:15	4	0	15	20	14	8	0	0	61	4	35	22	0
17:30	18:30	0	0	12	13	14	14	0	0	53	0	25	28	0
17:45	18:45	0	0	9	11	14	12	0	0	46	0	20	26	0
18:00	19:00	0	0	7	9	12	12	0	0	40	0	16	24	0

Project Name: Monument Realty Bellpark District

Project Number: 3300

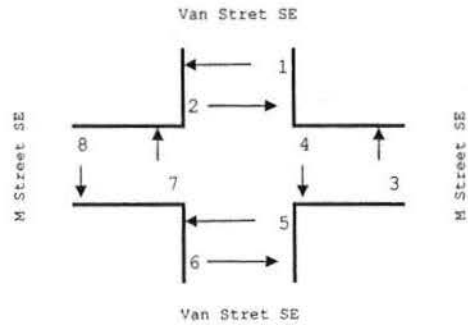
Location: Washington, DC

Intersection: M Street SE & Van Street SE

Weather: Clear

Date: 9/26/2006

Surveyor: Dwyer



Hourly Pedestrian Count

		1	2	3	4	5	6	7	8						
		SE	NE	SW	SE	SW	NW	NW	NE	Total	1 & 2	3 & 4	5 & 6	7 & 8	
Time Period	From: To:	NE	SE	SE	SW	NW	SW	NE	NW						
AM PEAK															
6:00	7:00	7	5	4	3	12	22	0	0	53	12	7	34	0	
6:15	7:15	6	5	5	3	11	20	0	1	51	11	8	31	1	
6:30	7:30	6	5	4	3	12	20	0	1	51	11	7	32	1	
6:45	7:45	8	6	1	3	12	27	0	1	58	14	4	39	1	
7:00	8:00	10	10	1	1	12	25	1	1	61	20	2	37	2	
7:15	8:15	10	9	1	0	14	32	1	0	67	19	1	46	1	
7:30	8:30	17	10	1	0	14	43	1	0	86	27	1	57	1	
7:45	8:45	15	10	1	1	17	41	1	0	86	25	2	58	1	
8:00	9:00	14	10	1	1	20	42	0	0	88	24	2	62	0	
PM PEAK															
16:00	17:00	23	18	0	2	24	24	2	1	94	41	2	48	3	
16:15	17:15	23	18	0	1	20	28	2	2	94	41	1	48	4	
16:30	17:30	23	19	1	1	22	27	2	1	96	42	2	49	3	
16:45	17:45	20	21	1	1	20	26	0	2	91	41	2	46	2	
17:00	18:00	17	22	1	2	24	23	0	3	92	39	3	47	3	
17:15	18:15	12	16	1	2	30	18	0	4	83	28	3	48	4	
17:30	18:30	15	19	0	2	35	19	0	4	94	34	2	54	4	
17:45	18:45	17	14	0	2	35	17	0	3	88	31	2	52	3	
18:00	19:00	13	13	0	0	36	18	1	2	83	26	0	54	3	

Project Name: Monument Realty Ballpark District

Project Number: 2240

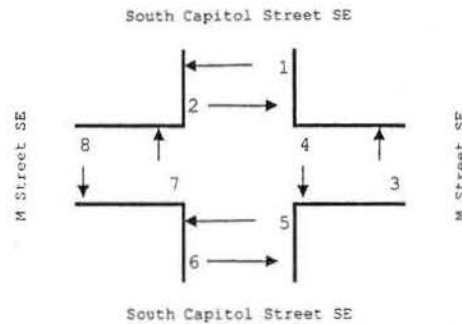
Location: Washington, DC

Intersection: M Street SE & South Capitol Street

Weather: Clear

Date: 9/16/2015

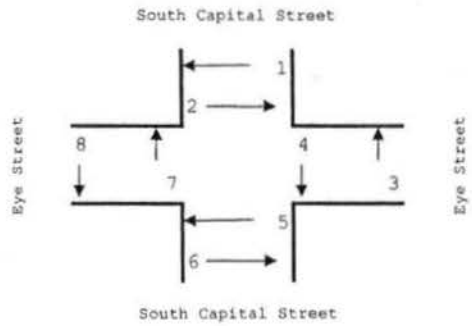
Surveyor: Jodi



Hourly Pedestrian Count

		1	2	3	4	5	6	7	8					
Time Period	From:	SE	NE	SW	SE	SW	NW	NW	NE	Total	1 & 2	3 & 4	5 & 6	7 & 8
	To:	NE	SE	SE	SW	NW	SW	NE	NW					
AM PEAK														
6:00	7:00	9	10	0	1	5	18	0	0	43	19	1	23	0
6:15	7:15	8	8	0	1	6	22	0	0	45	16	1	28	0
6:30	7:30	2	4	0	2	6	19	0	0	33	6	2	25	0
6:45	7:45	1	5	0	2	7	17	0	0	32	6	2	24	0
7:00	8:00	3	7	0	2	7	17	0	0	36	10	2	24	0
7:15	8:15	5	8	1	3	10	20	0	0	47	13	4	30	0
7:30	8:30	11	11	2	3	11	30	0	0	68	22	5	41	0
7:45	8:45	11	10	6	3	14	37	1	0	82	21	9	51	1
8:00	9:00	12	8	7	4	17	40	1	0	89	20	11	57	1
PM PEAK														
16:00	17:00	12	6	1	0	13	16	6	0	54	18	1	29	6
16:15	17:15	13	8	0	0	9	9	5	0	44	21	0	18	5
16:30	17:30	13	8	1	0	7	5	2	0	36	21	1	12	2
16:45	17:45	15	8	1	1	1	3	0	0	29	23	2	4	0
17:00	18:00	17	6	1	1	1	9	2	0	37	23	2	10	2
17:15	18:15	20	7	1	1	1	9	2	0	41	27	2	10	2
17:30	18:30	21	8	1	1	2	13	3	0	49	29	2	15	3
17:45	18:45	22	10	1	0	2	16	3	1	55	32	1	18	4
18:00	19:00	21	10	2	0	3	10	2	1	49	31	2	13	3

Project Name: Square 301
 Project Number: 3760
 Location: Washington, DC
 Intersection: Eye St. & S. Capitol St.
 Weather: Clear
 Date: 10/26/2005
 Surveyor: Majda, Paul & Jozanica



Hourly Pedestrian Count

		1	2	3	4	5	6	7	8					
Time Period	From:	SE	NE	SW	SE	SW	NW	NW	NE	Total	1 & 2	3 & 4	5 & 6	7 & 8
	To:	NE	SE	SE	SW	NW	SW	NE	NW					
AM PEAK														
7:00	8:00	5	10	1	2	6	24	5	6	59	15	3	30	11
7:15	8:15	5	10	1	2	8	25	10	6	67	15	3	33	16
7:30	8:30	4	10	2	3	8	24	11	5	67	14	5	32	16
7:45	8:45	3	20	2	3	6	18	13	5	70	23	5	24	18
8:00	9:00	4	24	3	1	4	10	18	7	71	28	4	14	25
8:15	9:15	3	30	3	2	5	14	16	7	80	33	5	19	23
8:30	9:30	4	33	3	1	4	19	15	7	86	37	4	23	22
8:45	9:45	5	29	4	3	5	21	17	9	93	34	7	26	26
9:00	10:00	4	23	2	3	5	25	15	4	81	27	5	30	19
PM PEAK														
16:00	17:00	8	3	3	1	3	9	8	12	47	11	4	12	20
16:15	17:15	7	5	3	5	3	10	11	12	56	12	8	13	23
16:30	17:30	6	7	4	4	3	17	11	9	61	13	8	20	20
16:45	17:45	5	8	4	5	1	18	15	4	60	13	9	19	19
17:00	18:00	3	9	3	5	1	16	14	7	58	12	8	17	21
17:15	18:15	5	8	3	1	1	13	13	10	54	13	4	14	23
17:30	18:30	7	9	2	1	4	7	10	10	50	16	3	11	20
17:45	18:45	16	15	1	1	14	12	9	16	84	31	2	26	25
18:00	19:00	17	16	2	1	16	14	11	18	95	33	3	30	29

Appendix B

Existing Intersection Capacity Analyses

Monument Ballpark - Square 700 & 701
 1: Eye Street & S Capitol St

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗		↕↗			↕↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00		0.91			0.91	1.00
Frbp, ped/bikes		1.00	0.95		1.00	0.97		1.00			1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Fr _t		1.00	0.85		1.00	0.85		1.00			1.00	0.85
Fl _t Protected		0.97	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1515	1269		1565	1294		4267			4272	1288
Fl _t Permitted		0.49	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		767	1269		1565	1294		4267			4272	1288
Volume (vph)	83	66	63	0	254	156	0	1397	8	0	1158	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	72	68	0	276	170	0	1518	9	0	1259	76
RTOR Reduction (vph)	0	0	49	0	0	35	0	0	0	0	0	26
Lane Group Flow (vph)	0	162	19	0	276	135	0	1527	0	0	1259	50
Confl. Peds. (#/hr)	14		32	32		14	16		5	5		16
Turn Type	Perm		Perm			Perm						Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4			8						6
Actuated Green, G (s)		32.0	32.0		32.0	32.0		77.0			77.0	77.0
Effective Green, g (s)		33.0	33.0		33.0	33.0		79.0			79.0	79.0
Actuated g/C Ratio		0.28	0.28		0.28	0.28		0.66			0.66	0.66
Clearance Time (s)		5.0	5.0		5.0	5.0		6.0			6.0	6.0
Lane Grp Cap (vph)		211	349		430	356		2809			2812	848
v/s Ratio Prot					0.18			c0.36			0.29	
v/s Ratio Perm		c0.21	0.01			0.10						0.04
v/c Ratio		0.77	0.05		0.64	0.38		0.54			0.45	0.06
Uniform Delay, d ₁		40.0	32.0		38.3	35.2		10.9			9.9	7.3
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Incremental Delay, d ₂		23.1	0.3		7.2	3.1		0.8			0.5	0.1
Delay (s)		63.1	32.3		45.5	38.3		11.7			10.4	7.4
Level of Service		E	C		D	D		B			B	A
Approach Delay (s)		54.0			42.7			11.7			10.3	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Fr _t		1.00	0.85		1.00					1.00	0.97	
Fl _t Protected		1.00	1.00		1.00					0.95	0.98	
Satd. Flow (prot)		4577	1425		4572					1513	1509	
Fl _t Permitted		1.00	1.00		0.94					0.95	0.98	
Satd. Flow (perm)		4577	1425		4301					1513	1509	
Volume (vph)	0	426	259	36	1696	0	0	0	0	231	61	37
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	473	288	40	1884	0	0	0	0	257	68	41
RTOR Reduction (vph)	0	0	230	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	473	58	0	1924	0	0	0	0	182	174	0
Turn Type			Perm D.P+P							Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		18.0	18.0		59.0					26.0	26.0	
Effective Green, g (s)		20.0	20.0		63.0					28.0	28.0	
Actuated g/C Ratio		0.20	0.20		0.63					0.28	0.28	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Lane Grp Cap (vph)		915	285		2826					424	423	
v/s Ratio Prot		0.10			c0.29					c0.12	0.12	
v/s Ratio Perm			0.04		c0.14							
v/c Ratio		0.52	0.20		0.68					0.43	0.41	
Uniform Delay, d ₁		35.7	33.3		12.0					29.5	29.3	
Progression Factor		1.00	1.00		0.03					1.00	1.00	
Incremental Delay, d ₂		2.1	1.6		0.1					3.2	2.9	
Delay (s)		37.8	34.9		0.5					32.6	32.2	
Level of Service		D	C		A					C	C	
Approach Delay (s)		36.7			0.5			0.0			32.4	
Approach LOS		D			A			A			C	
Intersection Summary												
HCM Average Control Delay			13.4		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)					9.0		
Intersection Capacity Utilization			75.2%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑	↑↑	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	632	5	2	584	3	62
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	687	5	2	635	3	67
Pedestrians					37	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)	188			680		
pX, platoon unblocked			0.92		0.92	0.92
vC, conflicting volume			729		943	269
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			538		769	38
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	93
cM capacity (veh/h)			922		303	921

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	275	275	143	129	254	254	71
Volume Left	0	0	0	2	0	0	3
Volume Right	0	0	5	0	0	0	67
cSH	1700	1700	1700	922	1700	1700	842
Volume to Capacity	0.16	0.16	0.08	0.00	0.15	0.15	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.2	0.0	0.0	9.7
Lane LOS				A			A
Approach Delay (s)	0.0			0.0			9.7
Approach LOS							A

Intersection Summary							
Average Delay			0.5				
Intersection Capacity Utilization			25.2%		ICU Level of Service		A
Analysis Period (min)			15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑			↑	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	703	11	23	636	2	2	0	28	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	764	12	25	691	2	2	0	30	0	0	0
Pedestrians								31			17	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		410			458							
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	710			807			1084	1564	292	1047	1569	249
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	710			675			969	1477	129	929	1483	249
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			99	100	96	100	100	100
cM capacity (veh/h)	874			842			183	110	828	190	110	743
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	192	382	203	198	346	175	33	0				
Volume Left	1	0	0	25	0	0	2	0				
Volume Right	0	0	12	0	0	2	30	0				
cSH	874	1700	1700	842	1700	1700	670	1700				
Volume to Capacity	0.00	0.22	0.12	0.03	0.20	0.10	0.05	0.00				
Queue Length 95th (ft)	0	0	0	2	0	0	4	0				
Control Delay (s)	0.1	0.0	0.0	1.5	0.0	0.0	10.6	0.0				
Lane LOS	A			A			B	A				
Approach Delay (s)	0.0			0.4			10.6	0.0				
Approach LOS							B	A				
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			42.5%		ICU Level of Service				A			
Analysis Period (min)			15									

Monument Ballpark - Square 700 & 701
5: M St SE & Cushing Place

Existing AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑			↑	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	95	647	0	0	580	45	0	0	0	1	0	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	703	0	0	630	49	0	0	0	1	0	12
Pedestrians								55			83	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								4			6	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		624			244							
pX, platoon unblocked	0.98			0.97			0.98	0.98	0.97	0.98	0.98	0.98
vC, conflicting volume	762			758			1187	1727	289	1179	1703	318
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	720			690			1064	1615	207	1056	1590	266
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			100			100	100	100	99	100	98
cM capacity (veh/h)	812			840			138	80	746	139	83	677

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	279	352	176	158	315	207	0	13
Volume Left	103	0	0	0	0	0	0	1
Volume Right	0	0	0	0	0	49	0	12
cSH	812	1700	1700	840	1700	1700	1700	512
Volume to Capacity	0.13	0.21	0.10	0.00	0.19	0.12	0.00	0.03
Queue Length 95th (ft)	11	0	0	0	0	0	0	2
Control Delay (s)	4.6	0.0	0.0	0.0	0.0	0.0	0.0	12.2
Lane LOS	A						A	B
Approach Delay (s)	1.6			0.0			0.0	12.2
Approach LOS							A	B

Intersection Summary		
Average Delay		1.0
Intersection Capacity Utilization	43.3%	ICU Level of Service
Analysis Period (min)		15
		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑			↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			1.00			1.00	
Frbp, ped/bikes		0.99			0.98			0.99			0.99	
Flpb, ped/bikes		0.99			1.00			1.00			0.99	
Frt		0.98			0.99			0.97			0.95	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		4432			4387			1514			1309	
Flt Permitted		0.85			0.73			0.88			0.91	
Satd. Flow (perm)		3762			3227			1360			1207	
Volume (vph)	39	483	66	135	523	55	41	49	25	24	33	37
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	537	73	150	581	61	46	54	28	27	37	41
RTOR Reduction (vph)	0	16	0	0	10	0	0	10	0	0	23	0
Lane Group Flow (vph)	0	637	0	0	782	0	0	118	0	0	82	0
Confl. Peds. (#/hr)	75		13	13		75	8		23	23		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	4 3			2				6
Permitted Phases	4			4 3			2			6		
Actuated Green, G (s)		48.0			65.0			21.0				21.0
Effective Green, g (s)		50.0			67.0			24.0				24.0
Actuated g/C Ratio		0.50			0.67			0.24				0.24
Clearance Time (s)		5.0						6.0				6.0
Lane Grp Cap (vph)		1881			2359			326				290
v/s Ratio Prot					c0.06							
v/s Ratio Perm		c0.17			0.17			c0.09				0.07
v/c Ratio		0.34			0.33			0.36				0.28
Uniform Delay, d1		15.0			7.0			31.6				31.0
Progression Factor		0.31			1.00			1.00				1.00
Incremental Delay, d2		0.5			0.4			3.1				2.4
Delay (s)		5.1			7.4			34.7				33.4
Level of Service		A			A			C				C
Approach Delay (s)		5.1			7.4			34.7				33.4
Approach LOS		A			A			C				C
Intersection Summary												
HCM Average Control Delay			10.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			52.7%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	11	1475	244	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	1603	265	0	0
Pedestrians	5					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						673
pX, platoon unblocked						
vC, conflicting volume	1741	939			1873	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1741	939			1873	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			100	
cM capacity (veh/h)	78	264			316	

Direction, Lane #	WB 1	NB 1	NB 2
Volume Total	12	1069	800
Volume Left	0	0	0
Volume Right	12	0	265
cSH	264	1700	1700
Volume to Capacity	0.05	0.63	0.47
Queue Length 95th (ft)	4	0	0
Control Delay (s)	19.3	0.0	0.0
Lane LOS	C		
Approach Delay (s)	19.3	0.0	
Approach LOS	C		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		64.0%	ICU Level of Service
Analysis Period (min)		15	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	53	185	21	6	4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	201	23	7	4	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	29				342	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	29				342	26
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				99	100
cM capacity (veh/h)	1584				630	1050

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	259	29	9
Volume Left	58	0	4
Volume Right	0	7	4
cSH	1584	1700	787
Volume to Capacity	0.04	0.02	0.01
Queue Length 95th (ft)	3	0	1
Control Delay (s)	1.9	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	1.9	0.0	9.6
Approach LOS			A













Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization		30.7%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↘	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	27	162	25	7	11	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	176	27	8	12	7
Pedestrians					2	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	37				268	33
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	37				268	33
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				98	99
cM capacity (veh/h)	1572				707	1039

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	205	35	18
Volume Left	29	0	12
Volume Right	0	8	7
cSH	1572	1700	797
Volume to Capacity	0.02	0.02	0.02
Queue Length 95th (ft)	1	0	2
Control Delay (s)	1.2	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	1.2	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization		27.8%	ICU Level of Service A
Analysis Period (min)		15	

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	33	30	108	2	4	28	13	79	1	62	159	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	33	117	2	4	30	14	86	1	67	173	15
Pedestrians		5			31							
Lane Width (ft)		10.0			10.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			2							
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)											682	
pX, platoon unblocked												
vC, conflicting volume	468	466	185	595	474	117	193			118		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	468	466	185	595	474	117	193			118		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	93	86	99	99	97	99			95		
cM capacity (veh/h)	454	454	854	312	450	914	1375			1439		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	186	37	101	255								
Volume Left	36	2	14	67								
Volume Right	117	30	1	15								
cSH	645	740	1375	1439								
Volume to Capacity	0.29	0.05	0.01	0.05								
Queue Length 95th (ft)	30	4	1	4								
Control Delay (s)	12.8	10.1	1.1	2.3								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.8	10.1	1.1	2.3								
Approach LOS	B	B										
Intersection Summary												
Average Delay			6.0									
Intersection Capacity Utilization			45.2%	ICU Level of Service							A	
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↙	↕				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0				
Lane Util. Factor		0.91			0.91		0.95	0.95				
Flt		1.00			0.99		1.00	0.98				
Flt Protected		1.00			1.00		0.95	0.96				
Satd. Flow (prot)		4556			4529		1513	1509				
Flt Permitted		0.88			1.00		0.95	0.96				
Satd. Flow (perm)		4008			4529		1513	1509				
Volume (vph)	59	598	0	0	480	36	1252	97	81	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	66	664	0	0	533	40	1391	108	90	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	730	0	0	564	0	799	785	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5			5		2	2				
Permitted Phases	5											
Actuated Green, G (s)		44.0			18.0		41.0	41.0				
Effective Green, g (s)		48.0			20.0		43.0	43.0				
Actuated g/C Ratio		0.48			0.20		0.43	0.43				
Clearance Time (s)					5.0		5.0	5.0				
Lane Grp Cap (vph)		2077			906		651	649				
v/s Ratio Prot		c0.10			c0.12		c0.53	0.52				
v/s Ratio Perm		0.07										
v/c Ratio		0.35			0.62		1.23	1.21				
Uniform Delay, d1		16.3			36.6		28.5	28.5				
Progression Factor		0.06			0.86		1.00	1.00				
Incremental Delay, d2		0.4			3.1		115.5	108.5				
Delay (s)		1.3			34.5		144.0	137.0				
Level of Service		A			C		F	F				
Approach Delay (s)		1.3			34.5			140.5			0.0	
Approach LOS		A			C			F			A	

Intersection Summary			
HCM Average Control Delay	84.4	HCM Level of Service	F
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c - Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↑	↗		↑↑↑			↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00		0.91			0.91	1.00
Frbp, ped/bikes		1.00	0.97		1.00	0.97		1.00			1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00			1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1537	1287		1565	1295		4256			4272	1284
Flt Permitted		0.88	1.00		1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1367	1287		1565	1295		4256			4272	1284
Volume (vph)	63	153	416	0	97	104	0	1442	30	0	1990	64
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	166	452	0	105	113	0	1567	33	0	2163	70
RTOR Reduction (vph)	0	0	11	0	0	39	0	2	0	0	0	22
Lane Group Flow (vph)	0	234	441	0	105	74	0	1598	0	0	2163	48
Confl. Peds. (#/hr)	12		17			12			8			21
Turn Type	Perm		Perm			Perm						Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4			8						6
Actuated Green, G (s)		28.0	28.0		28.0	28.0		81.0			81.0	81.0
Effective Green, g (s)		29.0	29.0		29.0	29.0		83.0			83.0	83.0
Actuated g/C Ratio		0.24	0.24		0.24	0.24		0.69			0.69	0.69
Clearance Time (s)		5.0	5.0		5.0	5.0		6.0			6.0	6.0
Lane Grp Cap (vph)		330	311		378	313		2944			2955	888
v/s Ratio Prot					0.07			0.38			c0.51	
v/s Ratio Perm		0.17	c0.34			0.06						0.04
v/c Ratio		0.71	1.42		0.28	0.24		0.54			0.73	0.05
Uniform Delay, d1		41.6	45.5		37.0	36.6		9.1			11.6	5.9
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		12.2	206.6		1.8	1.8		0.7			1.6	0.1
Delay (s)		53.8	252.1		38.8	38.4		9.9			13.2	6.0
Level of Service		D	F		D	D		A			B	A
Approach Delay (s)		184.4			38.6			9.9			13.0	
Approach LOS		F			D			A			B	
Intersection Summary												
HCM Average Control Delay			37.9					HCM Level of Service			D	
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			120.0					Sum of lost time (s)			8.0	
Intersection Capacity Utilization			79.7%					ICU Level of Service			D	
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Frts		1.00	0.85		1.00					1.00	0.98	
Flt Protected		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (prot)		4577	1425		4556					1513	1557	
Flt Permitted		1.00	1.00		0.83					0.95	1.00	
Satd. Flow (perm)		4577	1425		3796					1513	1557	
Volume (vph)	0	813	769	66	669	0	0	0	0	200	171	30
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	903	854	73	743	0	0	0	0	222	190	33
RTOR Reduction (vph)	0	0	598	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	903	256	0	816	0	0	0	0	222	217	0
Turn Type			Perm	D.P+P						Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		18.0	18.0		59.0					26.0	26.0	
Effective Green, g (s)		20.0	20.0		63.0					28.0	28.0	
Actuated g/C Ratio		0.20	0.20		0.63					0.28	0.28	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Lane Grp Cap (vph)		915	285		2718					424	436	
v/s Ratio Prot		c0.20	/		c0.13					c0.15	0.14	
v/s Ratio Perm			0.18		0.06							
v/c Ratio		0.99	0.90		0.30					0.52	0.50	
Uniform Delay, d1		39.9	39.0		8.4					30.4	30.1	
Progression Factor		1.00	1.00		0.11					1.00	1.00	
Incremental Delay, d2		26.8	32.4		0.2					4.6	4.0	
Delay (s)		66.6	71.4		1.2					34.9	34.1	
Level of Service		E	E		A					C	C	
Approach Delay (s)		68.9			1.2			0.0			34.5	
Approach LOS		E			A			A			C	

Intersection Summary			
HCM Average Control Delay	45.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

	→	↘	↙	←	↖	↗	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑↑			↑↑↑	↘		
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	972	6	3	593	1	16	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	1057	7	3	645	1	17	
Pedestrians					47		
Lane Width (ft)					10.0		
Walking Speed (ft/s)					4.0		
Percent Blockage					3		
Right turn flare (veh)							
Median type					None		
Median storage (veh)							
Upstream signal (ft)	188			680			
pX, platoon unblocked			0.85		0.85	0.85	
vC, conflicting volume			1110		1328	402	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			773		1030	0	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		99	98	
cM capacity (veh/h)			688		187	890	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	423	423	218	132	258	258	18
Volume Left	0	0	0	3	0	0	1
Volume Right	0	0	7	0	0	0	17
cSH	1700	1700	1700	688	1700	1700	729
Volume to Capacity	0.25	0.25	0.13	0.00	0.15	0.15	0.03
Queue Length 95th (ft)	0	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.3	0.0	0.0	10.1
Lane LOS				A			B
Approach Delay (s)	0.0			0.1			10.1
Approach LOS							B













Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization		31.0%		ICU Level of Service		A	
Analysis Period (min)		15					

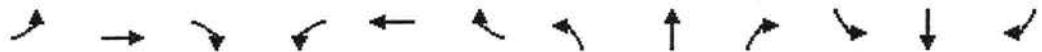
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑			↑	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	991	11	7	630	1	14	2	15	1	5	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1077	12	8	685	1	15	2	16	1	5	36
Pedestrians								47			39	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								3			3	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		410			458							
pX, platoon unblocked	1.00			0.87			0.87	0.87	0.87	0.87	0.87	1.00
vC, conflicting volume	725			1136			1434	1892	412	1138	1897	268
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	725			848			1191	1720	12	849	1726	268
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			85	97	98	99	92	95
cM capacity (veh/h)	850			658			100	70	893	193	70	711
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	280	539	281	179	342	172	34	42				
Volume Left	11	0	0	8	0	0	15	1				
Volume Right	0	0	12	0	0	1	16	36				
cSH	850	1700	1700	658	1700	1700	168	316				
Volume to Capacity	0.01	0.32	0.17	0.01	0.20	0.10	0.20	0.13				
Queue Length 95th (ft)	1	0	0	1	0	0	18	11				
Control Delay (s)	0.5	0.0	0.0	0.6	0.0	0.0	31.8	18.1				
Lane LOS	A			A			D	C				
Approach Delay (s)	0.1			0.1			31.8	18.1				
Approach LOS							D	C				

Intersection Summary												
Average Delay				1.1								
Intersection Capacity Utilization			44.6%		ICU Level of Service				A			
Analysis Period (min)			15									

Monument Ballpark - Square 700 & 701
5: M St SE & Cushing Place

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑			↑	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	12	1006	5	3	563	3	7	0	1	0	0	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	1093	5	3	612	3	8	0	1	0	0	18
Pedestrians								25			4	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		624			244							
pX, platoon unblocked	0.98			0.89			0.90	0.90	0.89	0.90	0.90	0.98
vC, conflicting volume	619			1124			1376	1773	392	1016	1774	210
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560			888			1075	1516	64	675	1517	140
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			95	100	100	100	100	98
cM capacity (veh/h)	980			662			146	103	861	296	102	859
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	286	547	279	156	306	156	9	18				
Volume Left	13	0	0	3	0	0	8	0				
Volume Right	0	0	5	0	0	3	1	18				
cSH	980	1700	1700	662	1700	1700	163	859				
Volume to Capacity	0.01	0.32	0.16	0.00	0.18	0.09	0.05	0.02				
Queue Length 95th (ft)	1	0	0	0	0	0	4	2				
Control Delay (s)	0.5	0.0	0.0	0.3	0.0	0.0	28.3	9.3				
Lane LOS	A			A			D	A				
Approach Delay (s)	0.1			0.1			28.3	9.3				
Approach LOS							D	A				
Intersection Summary												
Average Delay			0.3									
Intersection Capacity Utilization		44.5%			ICU Level of Service				A			
Analysis Period (min)			15									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕↕			↕↕↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			1.00			1.00	
Frb, ped/bikes		1.00			0.99			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			0.94			0.93	
Flt Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		4547			4499			1466			1292	
Flt Permitted		0.93			0.91			0.87			0.89	
Satd. Flow (perm)		4234			4094			1297			1170	
Volume (vph)	13	918	18	17	422	22	84	41	111	16	10	25
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	1020	20	19	469	24	93	46	123	18	11	28
RTOR Reduction (vph)	0	2	0	0	5	0	0	32	0	0	20	0
Lane Group Flow (vph)	0	1052	0	0	507	0	0	230	0	0	37	0
Confl. Peds. (#/hr)	47		30	30		47	8		3	3		8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	4 3			2				6
Permitted Phases	4			4 3			2			6		
Actuated Green, G (s)		46.0			62.0			24.0				24.0
Effective Green, g (s)		48.0			64.0			27.0				27.0
Actuated g/C Ratio		0.48			0.64			0.27				0.27
Clearance Time (s)		5.0						6.0				6.0
Lane Grp Cap (vph)		2032			2685			350				316
v/s Ratio Prot					c0.03							
v/s Ratio Perm		c0.25			0.09			c0.18				0.03
v/c Ratio		0.52			0.19			0.66				0.12
Uniform Delay, d1		18.0			7.4			32.4				27.5
Progression Factor		0.23			1.00			1.00				1.00
Incremental Delay, d2		0.8			0.2			9.3				0.7
Delay (s)		4.9			7.5			41.7				28.2
Level of Service		A			A			D				C
Approach Delay (s)		4.9			7.5			41.7				28.2
Approach LOS		A			A			D				C

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	27	449	57	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	29	488	62	0	0
Pedestrians	4					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						673
pX, platoon unblocked						
vC, conflicting volume	523	279			554	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	523	279			554	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			100	
cM capacity (veh/h)	482	716			1010	

Direction, Lane #	WB 1	NB 1	NB 2
Volume Total	29	325	225
Volume Left	0	0	0
Volume Right	29	0	62
cSH	716	1700	1700
Volume to Capacity	0.04	0.19	0.13
Queue Length 95th (ft)	3	0	0
Control Delay (s)	10.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.2	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		25.9%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	17	80	38	0	2	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	87	41	0	2	3
Pedestrians					3	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	44				168	44
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	44				168	44
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	1561				811	1024

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	105	41	5
Volume Left	18	0	2
Volume Right	0	0	3
cSH	1561	1700	926
Volume to Capacity	0.01	0.02	0.01
Queue Length 95th (ft)	1	0	0
Control Delay (s)	1.4	0.0	8.9
Lane LOS	A		A
Approach Delay (s)	1.4	0.0	8.9
Approach LOS			A

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization	22.4%		ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	18	63	30	7	10	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	68	33	8	11	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	40				144	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	40				144	36
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1569				838	1036

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	88	40	18
Volume Left	20	0	11
Volume Right	0	8	8
cSH	1569	1700	910
Volume to Capacity	0.01	0.02	0.02
Queue Length 95th (ft)	1	0	2
Control Delay (s)	1.7	0.0	9.0
Lane LOS	A		A
Approach Delay (s)	1.7	0.0	9.0
Approach LOS			A













Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization		21.5%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	45	3	25	3	9	63	11	85	0	6	28	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	3	27	3	10	68	12	92	0	7	30	12
Pedestrians		5			9							
Lane Width (ft)		10.0			10.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)											682	
pX, platoon unblocked												
vC, conflicting volume	244	180	41	204	186	101	47			101		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	244	180	41	204	186	101	47			101		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	100	97	100	99	93	99			100		
cM capacity (veh/h)	638	699	1026	715	693	948	1555			1482		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	79	82	104	49
Volume Left	49	3	12	7
Volume Right	27	68	0	12
cSH	736	897	1555	1482
Volume to Capacity	0.11	0.09	0.01	0.00
Queue Length 95th (ft)	9	7	1	0
Control Delay (s)	10.5	9.4	0.9	1.0
Lane LOS	B	A	A	A
Approach Delay (s)	10.5	9.4	0.9	1.0
Approach LOS	B	A		

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization	26.8%		ICU Level of Service
Analysis Period (min)		15	A

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0			3.0	3.0			
Lane Util. Factor		0.91			0.91			0.95	0.95			
Fr _t		1.00			0.97			1.00	0.94			
Flt Protected		1.00			1.00			0.95	0.98			
Satd. Flow (prot)		4567			4419			1513	1462			
Flt Permitted		0.92			1.00			0.95	0.98			
Satd. Flow (perm)		4206			4419			1513	1462			
Volume (vph)	41	972	0	0	394	118	341	48	106	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	46	1080	0	0	438	131	379	53	118	0	0	0
RTOR Reduction (vph)	0	0	0	0	54	0	0	27	0	0	0	0
Lane Group Flow (vph)	0	1126	0	0	515	0	277	246	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5			5			2	2			
Permitted Phases	5											
Actuated Green, G (s)		44.0			18.0			41.0	41.0			
Effective Green, g (s)		48.0			20.0			43.0	43.0			
Actuated g/C Ratio		0.48			0.20			0.43	0.43			
Clearance Time (s)					5.0			5.0	5.0			
Lane Grp Cap (vph)		2120			884			651	629			
v/s Ratio Prot		c0.15			c0.12			c0.18	0.17			
v/s Ratio Perm		0.11										
v/c Ratio		0.53			0.58			0.43	0.39			
Uniform Delay, d ₁		18.1			36.2			19.9	19.5			
Progression Factor		0.12			0.83			1.00	1.00			
Incremental Delay, d ₂		0.4			2.8			2.0	1.8			
Delay (s)		2.6			32.7			21.9	21.3			
Level of Service		A			C			C	C			
Approach Delay (s)		2.6			32.7			21.6			0.0	
Approach LOS		A			C			C			A	
Intersection Summary												
HCM Average Control Delay			14.9				HCM Level of Service		B			
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)		9.0			
Intersection Capacity Utilization			58.7%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												