

Friendship Shopping Center Traffic Study Peer Review

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I. Introduction

The Giant Food Grocery Store of our interest is located at 3336 Wisconsin Avenue, N.W. The owner of this property has a Planned Unit Development (PUD) pending (Friendship Shopping Center PUD), which involves a significant renovation and enlargement of the grocery store and also the addition of retail and residential units.

The Friendship Shopping Center PUD is bounded by Wisconsin Avenue to the East, Macomb Street to the south, and Idaho Avenue to the west. Newark Street divides this area into two portions: the North Parcel and the South Parcel. Among these streets, Macomb Street is a Collector Street, Wisconsin Avenue is a four-lane Principal Arterial, and others are Local Streets. Also, currently Idaho Avenue is operated as a two-way street between Newark Street and Macomb Street, a northbound one-way street south of Macomb Street, and a southbound one-way street north of Newark Street.

The developer requested a number of zoning changes for various portions of the property. The proposed truck loading entrance and truck turn-around in the middle of the 3300 block of Idaho Avenue will significantly affect the current residences and the new townhouses in terms of noise, pollution and safety.

The developer proposed a truck management plan. It includes counts of current truck use, but no explicit projection for the number of trucks that will serve the new Giant and PUD.

Mr. Thomas Haines commissioned Precision Systems, Inc. (PSI) a peer review study to evaluate the Wisconsin Avenue Giant Transportation Impact Study Report and its Addendum developed by Wells and Associates, Inc. (WAI). There are three components in our study:

1. To determine an estimate of this future truck Average Daily Traffic (ADT), based on the information provide by the PUD (e.g., square footage of the grocery of the grocery store, retail stores, office space, and residences that the various loading docks will serve, etc.) and based on industry standards and other tools. Mr. Thomas Haines further asked PSI to analyze the feasibility of the PUD proposed truck management plan, and the impact of the truck loading entrance/turnaround along 3300 block of Idaho Avenue.
2. To collect 24-hr vehicle classification counts for Macomb Street, Newark Street, Idaho Avenue, Ordway Street, 36th Street, and 38th Street, on a typical Thursday when both public schools and private schools are in session. The count locations are shown by Figure 1.

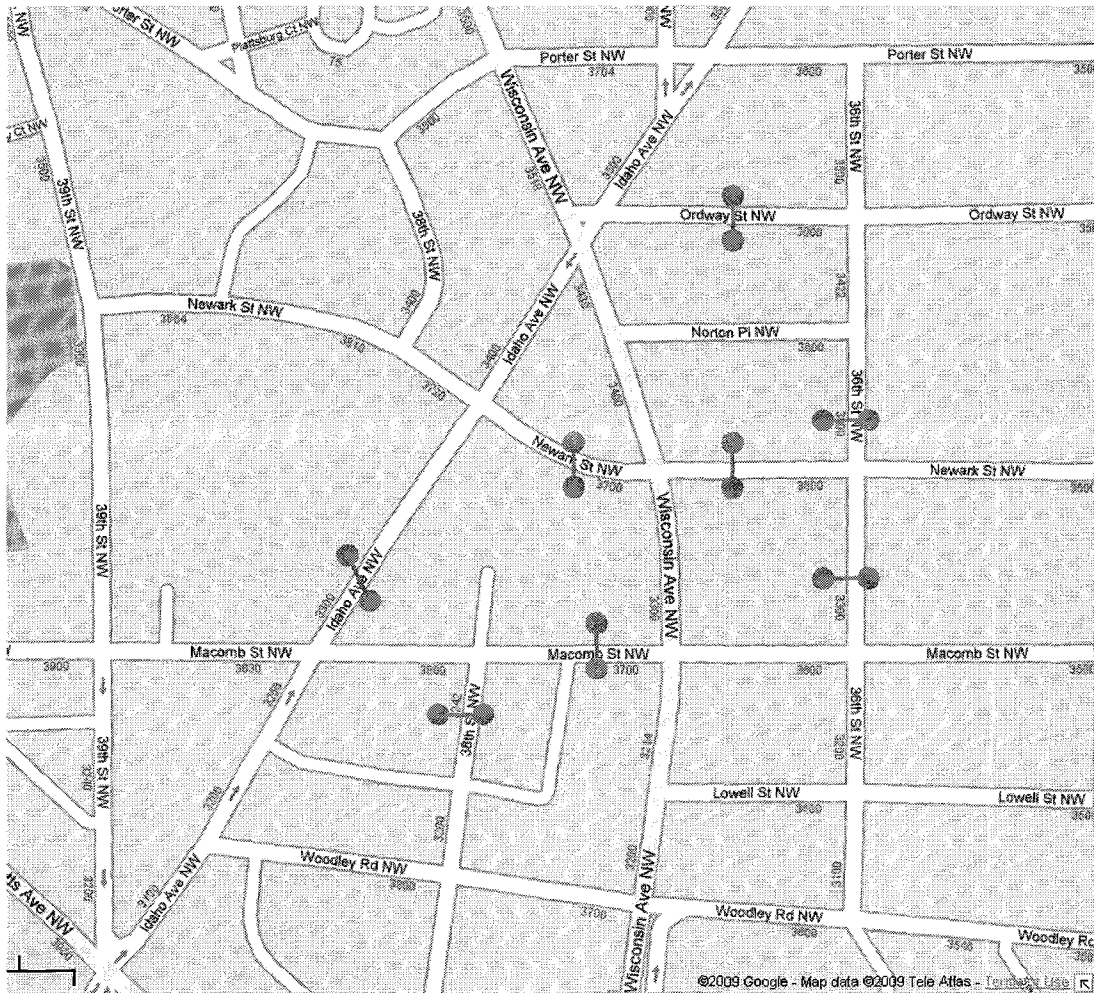


Figure 1. Locations for Traffic Counts

3. To review the study report developed by WAI, to make sure all data collected are valid, all methods used are correct, all assumptions made are defensible, all projections are valid, and all results/conclusions are legitimate.

The first section (Section I) of this report introduces the background of this study, followed by Section II, which reviews WAI's study report and the feasibility of the Truck Management Plan proposed by the developer. Section III describes the methods and results of future truck volume estimate and total traffic volume estimate. Section IV summarizes the traffic counts data, and Sections V is for summary and recommendations. The last section (Section VI) lists the references.

II. Traffic Study Report Peer Review

Evaluation of Wisconsin Avenue Giant Transportation Impact Study Report (hereafter referred to as "Report"), its Addendum (hereafter referred to as "Addendum"), and Truck Management Plan

Section 1. Evaluation of Changes in Traffic Operation and Control

The Report states that the proposed conversion of Idaho Avenue between Newark Street and Wisconsin Avenue from one-way to two-way would allow trucks to enter and exit the supermarket loading area and keep truck traffic off of Macomb Street, Newark Street, and other neighborhood streets (Section 2, last paragraph on page 7, WAI Report). If this change was approved by DC Department of Transportation (DDOT), proper signage should be installed indicating "No Through Trucks" on these local streets.

The Report suggests to relocate the crosswalk south of Norton Place to Idaho Avenue and install a new traffic signal at Wisconsin Avenue/Idaho Avenue intersection, to improve pedestrian safety. A traffic signal warrant study should be conducted at this intersection; if the warrants are not satisfied, the developer shall seek approval from DDOT for this proposal and allocate its own funds for construction.

As stated earlier, Macomb Street is classified as a "Collector", and Idaho Avenue is classified as a "Local Street", according to DDOT functional classification map. If the through truck traffic is prohibited on Macomb Street, most truck traffic destined to this PUD site will have to use Wisconsin Avenue and then turn onto Idaho Avenue. The northbound Wisconsin truck traffic turning left onto Idaho Avenue would be a difficult and dangerous movement due to the sharp angle at this intersection. Also, since truck traffic is not to travel on other local streets, and there would be more truck traffic generated after this development, truck volume on Idaho Avenue would be extensively higher than current situation.

Furthermore, Idaho Avenue south of Macomb Street is currently operated as a northbound one-way. After the trucks load/unload the goods at this PUD site, they have to travel northbound on Idaho Avenue to the Idaho/Wisconsin intersection, possibly making another difficult and dangerous right turn onto Wisconsin Avenue.

Section 2. Evaluation of Parking Plan

The developer provides 388 parking spaces for the commercial uses, 47 fewer than required by District of Columbia Municipal Regulations (DCMR). The developer also provides 147 parking spaces for residential uses, 70 more than required by DCMR. Although the total number of spaces provided is 23 more than required, the developer should still meet the requirement for commercial parking, because residential spaces cannot be used for commercial purposes. In addition, not only the commercial parking

spaces are fewer than the DCMR requirements, they are fewer than the PUD needs (see Section V Item 6).

It should be noticed that at the PUD site, the applicant seeks up to 25% of the retail frontage for restaurants, approximately translating to 25% of total retail square footage; restaurants generate twice as many daily trips as regular retail stores. The deficiency in commercial parking spaces will force some of the PUD customers to park on the residential streets, therefore increasing the noise level, jeopardizing the pedestrian safety, deteriorating the pavement conditions, and affecting the ability of residents to find parking spaces after work.

Section 3. Evaluation of Loading Plan

The design plans are examined and the conclusion is that sufficient turning radii are provided for truck entrance/exit activities at both North Parcel and South Parcel loading docks.

The DCMR requires four 55-foot and three 30-foot loading berths, but the developer only provides two 55-foot berths but five 30-foot berths. The smaller berths cannot accommodate tractor-trailers, and overflow tractor-trailers will have to wait on the local streets. The developer should provide two more 55-foot loading berths to meet the requirement. In addition, not only the 55-foot loading berths are fewer than the DCMR requirements, they are also fewer than the PUD needs (see Section V Item 5).

The DCMR requires four 200-s.f. and three 100-s.f. loading platforms, but the developer only provides three 200-s.f. but five 100-s.f. loading platforms. The developer should provide one more 200-s.f. loading platforms to meet the requirement.

The DCMR requires four service spaces, but the developer only provides three service spaces. The developer should provide one more service space to meet the requirement.

The methods and results of future truck volume estimate at this development site, as well as the evaluation of Truck Management Plan proposed by the developer, are described in “Section III. Future Truck Volume Estimate” in this report.

Section 4. Evaluation of *Left Turn Phase Assessment* Section of the Addendum

PSI reviewed WAI’s analysis regarding the suggested Left Turn Phase for northbound Wisconsin Avenue traffic at Macomb Street, Newark Street, and Idaho Avenue. We agree with the conclusion that the addition of the left turn phase will not significantly worsen the LOS, but WAI did not mention the criteria they used to determine that these left turn phases are necessary. Furthermore, these changes need to be approved by DDOT.

Section 5. Evaluation of Existing Traffic Counts

As required by the client, and for comparison purpose, PSI team collected link counts for eight (8) locations, as shown by Figure 1. These counts are summarized in Section IV of this report; the original data are shown in the Appendix.

Section 6. Evaluation of Existing Level of Service Analysis, Background Traffic Forecasts, and Background Future Level of Service

WAI used one percent per year growth rate to estimate future traffic volume for the Connecticut Avenue intersection, but used a quarter of one percent at other intersections. It is a general practice to use a one percent yearly growth rate for travel demand forecasting in DC metropolitan area, but it is not reasonable for WAI to use a much lower growth rates for intersections other than Connecticut Avenue intersection.

Section 7. Evaluation of Site Trip Generation Analysis

PSI has also estimated the trip generation using rates provided by ITE (as shown by Tables 8), and the results show discrepancies from WAI's analysis results. The difference is most significant for AM Peak Hour traffic volume estimates.

Section 8. Evaluation of Site Traffic Assignment, Total Future Traffic Forecasts, and Total Future Levels of Service

PSI carefully reviewed this section and did not find major problems in study findings, assumptions, and reasoning.

Section 9. Evaluation of *Truck Management Plan* provided by the developer

North Parcel Truck Management Plan

The proposed development only provides two 30-foot loading berths, but the zoning regulations require two 55-foot berths and a 30-foot berth. It is very difficult to coordinate and schedule the arrivals of trucks of various retails businesses; therefore situations might concur when multiple trucks arrive at the same time and some of them have to wait on the Idaho Avenue.

Also, all truck traffic accessing the North Parcel will be directed to enter and exit and site from Wisconsin Avenue via Idaho Avenue. As mentioned earlier, it is a dangerous movement for a truck to turn onto Wisconsin Avenue from Idaho Avenue or to turn onto Idaho Avenue from Wisconsin Avenue, due to the geometry configuration of this intersection.

South Parcel Truck Management Plan

The primary loading area off Idaho Avenue south of its intersection with Newark Street only serves the loading of the Giant grocery store. The other 32,155 s.f. of retail and 17,320 s.f. of flex/office have to use the single loading berth within the proposed building at the terminus of the public alley off Macomb Street. The applicant seeks up to 25% of the retail stores to be restaurants and cafes, which will introduce extensive truck delivery activities everyday.

As shown in Table 5, per ITE Trip Generation Handbook, 32,155 s.f. of retail and 17,320 s.f. of flex/office generate about 68 truck trips on a typical day. Again, it is very difficult to coordinate and schedule the arrivals of these delivery trucks. Also, it is questionable whether the loading area at this location would be able to accommodate this amount of trucks; many of them will have to wait on Macomb Street until the trucks in front of them finish loading/unloading.

It should be further noted that Two Amy's Restaurant next to this location uses the public alley for loading/unloading, further reducing the capacity of this loading facility for the south parcel PUD retails/offices.

III. Future Truck Volume and Total Traffic Volume Estimate

Future Truck Volume Estimate

This section presents three methods to estimate the future truck volume generated at this redevelopment site. The first two methods use practices provide by ITE, and the third method used vicinity Giant Store data to estimate the future Giant Store truck volume at the PUD site.

Existing Land Use:

Giant = 18,478 S.F.

Retail Stores = 44,000 (North Parcel) + 46,406 (South Parcel) = 90,406 S.F.

Bank = 5,750 S.F.

Proposed Land Use:

Giant = 56,210 S.F.

Retail Stores = 30,799 (North Parcel) + 32,155 (South Parcel) = 62,954 S.F.

Flex/Office Space = 17,320 S.F.

ITE Trip Generation Handbook Second Edition provides two methods for estimating truck traffic generated at a mixed development site. These two methods are denoted as Method One and Method Two¹, as follows:

Method One:

From Table A.1 in ITE Trip Generation Handbook Appendix A, we can obtain daily truck generation rates by different land use. Truck volumes are estimate using this table, for both existing and proposed situations, as shown by Table 1 and Table 2.

	Land Use	Other	Regional Retailing Center	Major Supermarket	
	Area (S.F.)	5750	44000	18478	
Truck Trips Per 1,000 GSF	Courier Vans	0.7	0.4	0.2	
	Light Rigid Trucks	0.9	0.9	0.4	
	Heavy Rigid Trucks	0.4	0.6	0.4	
	Articulated Trucks	0	0.1	0.2	
	Total	2	2.0	1.2	
Result	Courier Vans	4.0	17.6	3.7	
	Light Rigid Trucks	5.2	39.6	7.4	
	Heavy Rigid Trucks	2.3	26.4	7.4	
	Articulated Trucks	0.0	4.4	3.7	Total
	Total	11.5	88.0	22.2	121.7

Table 1. Truck Volume Estimate Under Existing Situations, Method One

	Land Use	Office	Regional Retailing Center	Major Supermarket	
	Area (S.F.)	17320	62954	56210	
Truck Trips Per 1,000 GSF	Courier Vans	1.9	0.4	0.2	
	Light Rigid Trucks	0.4	0.9	0.4	
	Heavy Rigid Trucks	0	0.6	0.4	
	Articulated Trucks	0.2	0.1	0.2	
	Total	2.5	2	1.2	
Result	Courier Vans	32.9	25.2	11.2	
	Light Rigid Trucks	6.9	56.7	22.5	
	Heavy Rigid Trucks	0	37.8	22.5	
	Articulated Trucks	3.5	6.3	11.2	Total
	Total	43.3	125.9	67.5	236.7

Table 2. Truck Volume Estimate Under Proposed Situations, Method One

¹ It shall be noted that these two methods are strictly for informational purposes. They provide no recommended practices, procedures, or guidelines.

Method Two:

This method utilizes Table A.2 in ITE Trip Generation Handbook Appendix A.

Land Use	Area	Daily Truck Trips Per 1,000 GSF (Average)	Estimated Trip
Variety/Pharmacy (Giant)	18,478	0.6	11.1
Soft Retail	44,000	2	88.0
Personal Services (SunTrust Bank)	5,750	2.3	13.2
Total			112.3

Table 3. Truck Volume Estimate Under Existing Situations, Method Two

Land Use	Area	Daily Truck Trips Per 1,000 GSF	Estimated Trip
Variety/Pharmacy (Giant)	56210	0.6	33.7
Office Building	17320	0.2	3.5
Soft Retail	62954	2	125.9
Total			163.1

Table 4. Truck Volume Estimate Under Proposed Situations, Method Two

Land Use	Area	Daily Truck Trips Per 1,000 GSF	Estimated Trip
Office Buildings	17320	0.2	3.5
Soft Retail	32155	2	64.3
Total			67.8

Table 5. Truck Daily Trip Estimate for South Parcel Retail and Office Space, Assuming No Restaurants

Land Use	Area	Daily Truck Trips Per 1,000 GSF	Estimated Trip
Office Buildings	17320	0.2	3.5
Prepared Food (Restaurants)	8039	3.9	31.3
Soft Retail	24116	2	48.2
Total			83.0

Table 6. Truck Daily Trip Estimate for South Parcel Retail and Office Space, Assuming 25% of the Retail Are Restaurants

Method Three:

Numbers of delivery trucks on a typical weekday for other Giant Stores in the study vicinity area are collected (as shown in Table 7), and the values of number-of-truck-per-1000sf are calculated. The average of these values is used to estimate the future truck volume (for Giant Store only).

Store Number	Address	No. of Tractor-Trailers	No. of Light Rigid Trucks	Area (S.F.)	Tractor Trailers/1000SF	Light Rigid Trucks/1000SF
0383	4303 Connecticut Avenue, N.W., Washington, DC 20008	3	6	23,000	0.13	0.26
0312	5463 Wisconsin Avenue, Chevy Chase, MD 20815	5	8	28,000	0.18	0.29
0357	5400 Westbard Avenue, Bethesda, MD 20816	6	20	61,407	0.10	0.33
0780	3480 S. Jefferson Street, Falls Church, VA 22041	11	10	60,000	0.18	0.17
0758	1454 Chain Bridge Road, McLean, VA 22101	6	12	55,000	0.11	0.22
0765	1230 W. Broad Street, Falls Church, VA 22046	7	12	48,000	0.15	0.25
0125	12051 Rockville Pike, Rockville, MD 20852	5	8	65,000	0.08	0.12
				Average²	0.14	0.25

Table 7. Number of Delivery Trucks at Giant Stores in the Vicinity of the study area on a typical weekday

² The data from Giant Store #0125 were not considered when calculating the average ratios, because this store does not sell liquors as the other stores do.

The estimated future tractor-trailer volume generated by the Giant Store on the typical weekday is:

$$56,210 \text{ sf} \times 0.14 \text{ trucks/1000sf} \times 0.001 = 7.9$$

The estimated future light rigid truck volume generated by the Giant Store on the typical weekday is:

$$56,210 \text{ sf} \times 0.25 \text{ trucks/1000sf} \times 0.001 = 14.0$$

Among these three methods to estimate future truck volume described above, Method Three is preferred.

Existing and Future Total Traffic Volume Estimate

An ITE recommended procedure was used to estimate the traffic volume generated at the development site, for both existing and proposed situations, as shown by Table 8. Comparisons are also shown in the table between PSI and WAI results. WAI included the 46,406 s.f. of vacant store space at the south parcel when estimating the existing traffic volumes. Therefore WAI's estimates are significantly higher than PSI's numbers, under existing conditions.

In WAI's analysis, the existing retail space used is 114,634 s.f., and the proposed retail space used is 136,484 s.f., an increase of 19%.

In PSI's analysis, the existing retail space used is 68,228 s.f., and the proposed retail space used is 136,484 s.f., an increase of 100%.

The ITE trip generation method indicates that trips generated at a retail site is linearly related with the square footage datum of the retail space. Obviously, WAI's estimates significantly under-estimated the difference between daily trips under existing situations and daily trips under proposed situations.

Existing (ITE Estimated)														
Retail (Including Bank and Shopping Center)	WAI	96,156	S.F	820	NA	179	115	294	173	188	361	249	229	478
Supermarket	WAI	18,478	S.F	850	NA	37	23	60	125	121	246	142	136	278
Total	WAI				NA	216	138	354	298	309	607	391	365	756
Difference (PSI - WAI)						-109	-64	-173	-44	-56	-100	-98	-90	-188
Percent Difference (Difference / PSI)						-102%	-86%	-95%	-18%	-22%	-20%	-33%	-33%	-33%
Proposed (ITE Estimated)														
General Office	WAI	17,320	S.F	710	NA	40	6	46	17	81	98	5	4	9
Shopping Center	WAI	62,954	S.F	820	NA	118	75	193	113	123	236	163	150	313
Supermarket	WAI	56,210	S.F	850	NA	112	71	183	302	290	592	323	311	634
Mid-Rise Apartment	WAI	138	DU'S	230	NA	7	30	37	32	17	49	20	20	39
	PSI	138	DU'S	230	NA	13	29	41	31	23	54	NA	NA	NA
Residential Condo/Townhouse	WAI	8	DU'S	223	NA	0	1	1	12	6	18	12	11	23
Total	WAI				NA	277	183	460	476	517	993	523	495	1,018
Difference (PSI - WAI)						-78	-45	-123	-22	-63	-84	-46	-43	-89
Percent Difference (Difference / PSI)						-40%	-33%	-37%	-5%	-14%	-9%	-10%	-10%	-10%

Table 8. Estimate of Traffic Volume Under Existing and Proposed Situations⁴

³ 44,000 S.F. for Shopping Center (820) and 5750 S.F. for Drive-In Bank (912)

⁴ NA = Not Available
DU = Dwelling Unit
S.F.= Square Feet

IV. Traffic Count Summary

24-hr link classification traffic counts were collected for the eight (8) locations shown in Figure 1 during the following days:

- Thursday, February 12, 2009
- Friday, February 13, 2009

Table 9 shows the summary of these traffic counts. The raw count data are attached in the Appendix section of this report.

Link	Thursday, February 12, 2009	Friday, February 13, 2009
36th Street Between Newark Street and Norton Place	1685 / 2	1452 / 2
36th Street Between Macomb Street and Newark Street	1372 / 2	1243 / 2
38th Street South of Macomb Street	1273 / 8	1236 / 1
Idaho Avenue Between Macomb Street and Newark Street	3507 / 34	3380 / 36
Macomb Street West of Wisconsin Avenue	4436 / 27	4053 / 38
Newark Street Between 36th Street and Wisconsin Avenue	2136 / 7	1945 / 16
Newark Street Between Wisconsin Avenue and Idaho Avenue	4005 / 0	4094 / 3
Ordway Street East of Wisconsin Avenue	420 / 2	414 / 4

Table 9. Summary of Link Traffic Counts, in the Format of Total Traffic Count / Truck Count

The link traffic count data collected by WAI for Newark Street west of 34th Street seem quite low (1,308 Thursday September 25, 1,319 Friday September 26, and 1,279 Friday September 27), compared with the counts for Newark Street between 36th Street and Wisconsin Avenue shown in Table 9.

V Summary and Recommendations

1. As shown in Table 8, 4,630 total vehicular trips are generated under the current land use situations in a typical day, but 8,687 daily trips would be generated under the proposed situations. With the number of trips almost doubled, the traffic impact to the study site will be much more significant.
2. The link traffic count collected by WAI for Newark Street west of 34th Street (1,308) on Thursday September 25, 2008, is 39% lower than the count for Newark Street between 36th Street and Wisconsin Avenue (2,136) on Thursday February 12, 2009. These two counting locations on Newark Street are almost next to each other and are of similar natures. As a through street connecting 34th Street and Wisconsin Avenue, it is unlikely that almost 40% of vehicular traffic would get off Newark Street using either 35th Street or 36th Street.
3. Using Method Three to estimate future daily tractor-trailer trips, our result indicates that eight (8) tractor-trailers would make delivery to the proposed 56,210 Giant Food Store on a typical day. The damage that a tractor-trailer causes to the pavement is significantly more severe than a passenger car or a light rigid truck.

Idaho Avenue from Newark Street to Macomb Street is down-slope toward the south. The current Giant loading plan indicates that a tractor-trailer traveling southbound on Idaho Avenue has to decelerate and then make a left turn into the loading area. The repeating force caused during the deceleration processes frequently applies to the pavement surface and the sub-course. This force, over time, will result in potholes on and deformation of the pavement surface. It is suggested that the Giant loading berths be relocated to close to Newark Street, which is relatively flat.

4. The current Giant loading berths location indicates that Idaho Avenue from Wisconsin Avenue to the loading space is used as a truck route. This section of roadway is about 650 feet in length, and classified as a Local Street according to DDOT functional classification map. It is a rare practice in the District of Columbia that a local street is used as a truck route, or a major loading facility is located at the middle of a low-density residential street. Roadway maintenance/repair cost will be significantly increased after this change in road use.
5. As mentioned earlier, at the South Parcel, 32,155 s.f. of retail and 17,320 s.f. of flex/office generate about 68 delivery truck trips on a typical day; these trucks will use the 30-foot loading berth located at the alley off Macomb Street. Within the 32,155 s.f. of retail, up to approximately 25%, or 8,039 s.f., is restaurant space. As shown in Table 6, the truck generation rate for restaurant is 3.9 per 1000 s.f., almost doubling the rate for soft retail. Tables 5 and 6 show that the

number of daily truck deliveries for the south parcel retail and office falls between 68 and 83.

Once the size of a loading berth is determined, the capacity of this berth is decided by the duration of loading/unloading operation, and the arrival pattern of delivery trucks. Loading/unloading duration can be shortened by adding more staff, providing better arrangement of goods inside the truck, and etc. But the PUD truck management plan is inadequate to explain how to make the truck arrival pattern uniform; it is possible that many trucks arrive at the same time.

Again, a single 30-foot loading berth only allows one truck to access the berth at a time. The other trucks have to either wait on Macomb Street to be served.

Currently, the average truck delivery time for the retails at the PUD site is 30 minutes (shown in Table 3-2 of WAI's Memorandum dated October 22, 2008) on a typical weekday. The weekday delivery time is from 7am to 9pm, a period of 14 hours. There are 28 30-minute periods within 14 hours. Assuming the arrival pattern of the trucks is uniform, the future truck delivery time is still 30 minutes, and 68 trucks are generated within a day, the overflow rate is

$$(68\text{trucks}-28\text{trucks}) / 28\text{trucks} = 143\%$$

Two Amy's restaurant next to the alley off Macomb Street has approximately 10 delivery trucks per day, and approximately half of these trucks currently use the alley to load/unload. If this loading facility is over capacity after the PUD development, the Two Amy's trucks have to use the street for delivery, again increasing the noise level, jeopardizing the pedestrian safety, and deteriorating the pavement conditions.

As mentioned earlier, a 30-foot loading berth cannot accommodate a tractor-trailer; it is suggested that at least one more 55-foot loading berth be added at this location.

6. The developer did not propose enough commercial parking spaces but provided more-than-required residential spaces. The PUD customers cannot use the residential parking, and therefore the spillover vehicles will have to park on the residential streets.

Land Use	Area	Spaces Provided	Estimated Peak Period Parking Demand
North Parcel			
Retail	30,779	0	189
South Parcel			
Retail	32,155	388	191
Office	17,320	----	138
Total	----	388	518

Table 10. Commercial Parking Spaces Provided and Needed

Table 10 shows the commercial parking spaces provided and needed. The peak period parking demand was estimated using ITE Parking Generation, 3rd Edition, for a typical non-December weekday. The peak-period parking spillover rate is

$$(518-388) / 388 = 130 / 388 = 33\%$$

It should be noted that the PUD developer dedicated 30 parking spaces to the non-PUD retail customers, reducing the parking spaces of PUD customers to 358. Therefore the adjusted peak-period commercial parking spillover rate is

$$(518-358) / 358 = 160 / 358 = 45\%$$

7. The grading nature of this site indicates that the proposed development plan may face drainage problems. A thorough hydraulic/drainage study is recommended.
8. It is suggested that DDOT conducts an analysis for the impacts of changing Idaho Avenue from Wisconsin Avenue to Newark Street from one-way to two-way, on existing street parking, future pattern, and etc.

VI. References

1. ITE, *Trip Generation*, 8th Edition, *An ITE Informational Report*, 2008
2. ITE, *Trip Generation Handbook*, 2nd Edition – *A Recommended Practice*, 2004
3. US Census Bureau, *Journey to Work: 2000 (C2KBR-33)*, 2004
4. DDOT, *DC Roadway Functional Classification Map*, 2006
5. ITE, *Parking Generation*, 3rd Edition, 2004

Appendix: Link Traffic Counts Data