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July 20, 2005

Carol J. Mitten, Chair
D.C. Zoning Commission
441 4th Street, N.W.
Suite 210
Washington, D.C. 20001

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RE: Zoning Commission Case No. 04-25
Rhode Island Avenue Metro PUD
Second Post-Hearing Submission

Dear Ms. Mitten and Members of the Commission:

At the Zoning Commission's meeting of Monday July 11, 2005, regarding "Proposed Action" on Case 04-24 (Rhode Island Avenue Metro PUD), Vice Chairman Hood, acting as Chairman, stated his desire for expanded commuter parking in the WMATA garage. This is not part of the PUD, but clearly has a close relationship to it. The Applicant would emphasize that WMATA and the District of Columbia engaged in extensive consultations and analyses as to the optimal level of parking in the new commuter garage, and decided upon a 200-car garage. In the context of this issue, the Commissioners asked about shared parking (which the Applicant will study for the second-stage submission). In addition, the Commission requested an updated circulation plan and a parking study.

04-25
34

In general, the Commission engaged in a wide-ranging discussion about circulation and parking issues at this complex site. A detailed parking study was never intended to be complete prior to the Applicant's filing for the second-stage PUD. However, the Zoning Commission postponed a vote until July 28, 2005 and allowed the development team until July 20th to submit additional information including: 1) a pedestrian and vehicle circulation plan; and 2) an analysis of the feasibility of feeding 200 cars into the WMATA commuter during a typical peak rush-hour period. In response, the Applicant herewith submits two expert reports plus the circulation plan.

This transmittal also includes some transportation-related planning comments about the traffic and parking at the proposed PUD site.

1. **Commuter Parking Traffic Analysis.** The Zoning Commissioners expressed concerns about the ability of the interior portion of the loop road (where it is one lane in each direction) to handle 200 vehicles in peak commuter periods. Considering that the design of the garage is not complete, we can only rely upon our concept for the garage layout and technical traffic and parking data to allay these concerns. The development team has released O.R. George & Associates to complete a comprehensive

ZONING COMMISSION
District of Columbia
CASE NO.04-25
EXHIBIT NO.34

traffic study (for the second-stage application), and this firm has provided at this time an assessment of the commuter access capacity question. This study is attached as Exhibit A. The report confirms the feasibility of the proposed loop road to handle the necessary peak period traffic load.

In addition, the Applicant has asked its parking consultant – Walker Parking Consultants – to provide insights into this issue. The Walker Parking Consultants' summary findings are attached as Exhibit B.

2. **Circulation Plan.** Attached as Exhibit C is an updated vehicular and pedestrian circulation plan using colored arrows to clearly indicate directional movements by categories of traffic.

3. **Planning Comments.** In addition to the technical studies, the Applicant's team offers the following planning comments intended to held clarify some of the issues the Zoning Commission discussed at its July 11 meeting.

Traffic Pattern by Land Use

One of the principal advantages of mixed-use development is that vehicular trips are dispersed by in/out direction and by time of day, so as to lessen congestion. The following factors help make the circulation system in this location workable:

- Commuters – In this location arrive early, even before peak hour, because of very cheap (legally mandated) parking. Departure times in the afternoon and evening are staggered.

- Retail workers – the great majority arrive after peak hour, because most stores don't open until 10:00 a.m. or thereabouts. These workers will have widely staggered departure times.

- Residents – close to Metro stations, WMATA data from other Metrorail station areas indicates that significant percentage of apartment residents will leave their cars parked and commute by Metro.

- Other Uses – Testimony in the case indicated that the WMATA parking facilities are left open on weekends and are free of charge during that period. This may help alleviate the concerns of the large church in the vicinity, which uses the site as overflow parking on Sundays. This church was built with no physical feasibility of a curb cut from Rhode Island Avenue and thus could not provide on-site parking.

Level of Parking in PUD

Some of the Commissioners, especially Mr. Jeffries, expressed the concern that the proposed PUD substantially exceeds zoning requirements for parking, and that there may

be excessive parking proposed for the retail and residential uses in a suburban pattern. The Applicant's response at the hearing (and reaffirmed herein), was that the owners cannot finance and build an under-parked project. At this time, we would add the following comments:

- Zoning requirements for parking are bare minimums that are exceeded for real-world purposes in a high percentage of projects, with the exception of office buildings Downtown.

- Some new apartment buildings provide more than 1:1 parking and include a factor for visitor parking, even good public transit access (bus or Metrorail). The residents want a personal vehicle for non-commuting purposes.

D.C. Department of Transportation ("DDOT") Report

- At the July 11 decision meeting, Commissioners referenced the DDOT report, which, while recommending approval of the PUD stated, ". . .reduced Metro parking will have some adverse circulation and parking effects within the immediate area of the station." The report also stated the need for signal warrant analysis regarding the internal intersection between the PUD site and the adjacent Brentwood Shopping Center. The Applicant assures the Commission that we will work closely with DDOT in the traffic analysis for the second-stage PUD to address both of these issues.

We hope this information and analysis is responsive to the Commission's requests.

Sincerely,
ARNOLD & PORTER LLP

Cynthia A. Giordano

Nathan W. Gross, AICP

Attachments

Cc: Advisory Neighborhood Commission 5B
Office of Planning

Exhibit A: O. R. George & Associates Report

O. R. George & Associates Report

July 18, 2005

I. Operational Capacity of Loop Road – Future Volumes

The vehicle and pedestrian circulation diagrams show that the Loop Road would primarily serve the following:

a) Passenger vehicles entering into and departing the proposed 200-space Metro garage;

b) Metro buses entering and departing the bus bays to be provided also within the garage; and

c) Vehicles exiting the kiss-n-ride and taxi drop-off areas.

The proposed garage would be used primarily by commuters accessing the Metro Station. As such, the critical peak directional traffic flow along the Loop Road would be inbound during the morning peak period on weekdays. The outbound traffic flow during the afternoon would be dispersed and have significantly less capacity and operational impacts.

Based on data obtained during the Fall of 2002 and field investigations undertaken recently (during July 2005), it is estimated that the typical existing inbound patterns for the traffic that would be utilizing the Loop Road, during the peak period (5:00 – 8:00 AM), are as follows:

A. Time Period	Vehicular Volumes		
	Park & Ride	**Buses**	**Total**
5:00 – 6:00 AM	73 (24%)	20 (24%)	93 (24%)
6:00 – 7:00 AM	217 (71%)	25 (30%)	242 (62%)
7:00 – 8:00 AM	15 (5%)	38 (46%)	53 (14%)
Total	**305 (100%)**	**83 (100%)**	**388 (100%)**

The data above shows that vehicular attractions to the existing 340-space park-and-ride lot is somewhat distributed with the highest hourly volume representing approximately 70.0% of the total vehicles entering between 5:00 and 8:00 AM, and approximately 64.0% of the parking lot capacity (340 spaces). Assuming that this distribution to the reduced 200-space Metro garage would continue, the projected peak hour park-and-ride

attraction would consist of 128 vehicles. Assuming that the existing bus frequencies may be increased by twenty-five percent (25%) to accommodate potential increased ridership resulting from the reduced parking supply, the total morning peak hour inbound demand on the Loop Road would be 159 (i.e., 128 park-and-ride vehicles and 31 buses).

Under the current development proposal, the Loop Road would consist of one inbound lane and one outbound lane within a 24-ft pavement cross-section. To assess the adequacy of the inbound lane during the morning peak hour, the following factors were considered:

a) The proposed vehicular and circulation patterns would result in two (2) areas of significant conflicts. The major location would be the main internal intersection comprising the Loop Road, "Main Street" and the "Big Box" entrance. *[This intersection will be fully analyzed as part of the Stage II PUD process, to determine appropriate traffic control measure(s) for ensuring the operational efficiency of this location. Signalization interconnected with the adjacent intersection at Rhode Island Avenue, and a roundabout are potential options.]*

The other location would be the area in front of the proposed Metro garage. *[This will be addressed through the provision of signage, pavement marking and other appropriate measures, to be addressed as part of the detailed circulation analysis for the second-stage PUD.]*

b) Access to the existing park-and-ride lot is by use of the Smart Trip Card. With this automated form of entry, vehicles were observed to enter the lot at the average rate of 6-8 seconds per vehicle (i.e., 450 – 600 vehicles per hour). It is assumed that similar access arrangement would be provided at the proposed garage.

c) Queuing analyses were performed for the peak inbound volumes noted above (i.e., 159 vehicles) and for a worst case scenario assuming that all park-and-ride vehicles arrived during one hour (i.e., 200 passenger vehicles + 31 buses = 231 vehicles). The analyses were done using the Integrated Queue Analysis Package (IQPAC), (November 1993). This software package is nationally used to determine queuing requirements for toll stations and drive-through banks. The analyses conservatively assumed a garage entry rate of 15 seconds per vehicle (to reflect potential delays due to motorists forgetting or having difficulty in locating their cards, motorists arriving without cards, etc.). The analyses also included a passenger vehicle equivalency of two (2) vehicles per bus to account for the additional storage length required for buses. The analyses reflected the provision of a single garage entrance lane, compared to two (2) lanes currently provided. The results are as follows:

B. QUEUING ANALYSIS RESULTS

Inbound Volumes	Average Queue	Max. C. ueue	Required Storage*	Proposed Storage
• Projected (159 Vehicles)	2	15	330 ft.	900± ft.
• Worst Case Scenario (231 Vehicles)	5	17	374 ft.	900± ft

* Based on the maximum queue computed.

The above data clearly shows that the storage capacity of the one inbound lane along the Loop Road, would be adequate.

d) The Highway Capacity Manual indicates that the capacity of an arterial roadway is 1,700 vehicles per lane per hour. This assumes the provision of free flow conditions, 12-ft. lanes and the absence of parking, etc. Assuming half of that capacity for the Loop Road, the future demand would be accommodated adequately without any significant operational constraints.

Based on the above, it is concluded that the current proposal for the provision of one lane per direction along the Loop Road would not present any significant operational and safety issues. This view reflects the prospective provision of appropriate traffic control and other improvements at the main internal intersection and the area in front of the proposed garage.

A key consideration of the proposed circulation scheme is the need to minimize pedestrian-vehicle conflicts. The primary pedestrian movements would occur along the "Main Street" access to the station, and between the elevator/stairwell area of the Metro garage and the station entrance. None of these pedestrian movements would conflict with the traffic flow along the Loop Road.

Exhibit B: Walker Parking Consultants Report

WALKER
PARKING CONSULTANTS

Walker Parking Consultants
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Wayne, PA 19087

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www.walkerparking.com

July 19, 2005

Anthony F. Jutchess
A & R Development Corporation
514 10th Street, NW
Suite 600
Washington, DC 20004

Re: *Rhode Island Metro parking issues*
Walker Project #14-3280.00

Dear Tony:

During our project start-up meeting concerning parking issues related to the Rhode Island Metro development project, we discussed a few issues in particular that you asked Walker Parking Consultants (Walker) to comment on prior to submitting our final report. These issues included the following three topics:

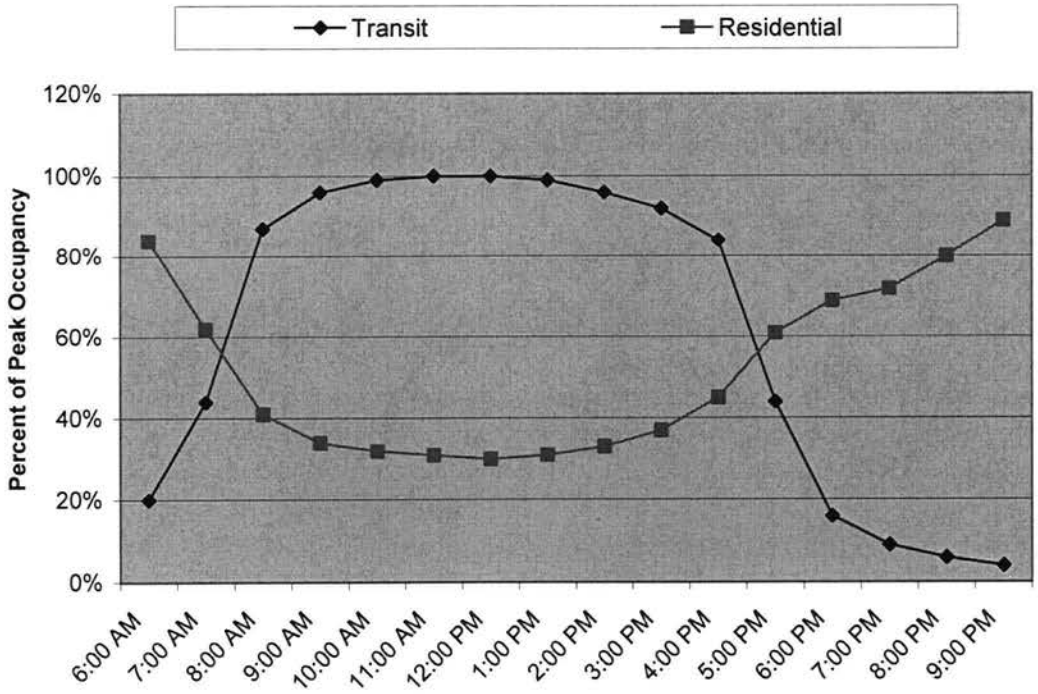
1. Whether it would be advisable to offer residential parking to the public during the weekday daytime hours when residential demand is less and, if so, what sort of parking rates would be appropriate.
2. Would a 1:1 ratio of parking spaces per residential unit be appropriate and, if so, what would be the projected vacancy rate throughout the day assuming 274 residential units.
3. Assuming that there would be a bus entrance and exit on the west side of the front façade of the WMATA garage and an automobile entrance and exit on the east side, how well would the garage function in terms of potential automobile queueing along the east entrance drive during morning rush hour traffic.

I will discuss the residential parking issues and the question of queueing separately. This letter report is offered as an update on work in progress. Walker's final report due within a month from now will discuss additional matters and may expand or revise the brief discussion below.

RESIDENTIAL PARKING

The first two issues are interrelated. In most regions of the country, it is currently easier to market residential units with dedicated parking spaces, i.e., parking that is off-limits to all but those tenants who opt to rent a monthly 'space' in the garage. The space could be either an actual reserved parking stall or simply a guaranteed space in a nested reserved area. At the Rhode Island Metro location, however, it may be possible to maintain fairly high tenant occupancy without offering reserved or guaranteed monthly parking spaces due to the proximity of the Red Line Metro Station. Current trends and the future outlook for increasing traffic congestion and the higher prices to fuel and operate a motor vehicle may well tip the scale decidedly in this direction.

One strategy to hedge your bets in this regard is to offer tenants specific rights to free parking in a public parking area but charging all non-residents market rates for parking. This would give you more flexibility as conditions may change over the next five to ten years and would have the added benefit of offering surplus parking resources for parking demand generated by local retail and Metro ridership. In general, residential parking works well as a shared parking resource with office and therefore also commuter transit land uses since the parking demand curves are complementary. During the daytime, residents who drive to work will vacate spaces that can be utilized by other workers who will need to park near the Metro to complete their commute into the central business district. The following chart based on Institute of Transportation Engineers (ITE) data illustrates these complementary demand curves:



Parking rates appropriate for this strategy will need to be investigated based on a market survey of neighboring and regional parking facilities. The highly subsidized Metro parking rates, of course, would not be appropriate comparables for a private development. In addition, there are emerging concerns that highly subsidize parking at this location is increasing traffic congestion within the District by attracting distant commuters to park here rather than at more appropriate locations such as at the park and ride sites along the beltway.

The latest edition of *Parking Generation,* published in 2004 by ITE, gives an observed parking ratio for urban low to mid-rise apartment buildings ranging from 0.7 to 1.2 spaces per unit depending upon how far the building is located from a central business district. Since the Rhode Island Metro development is adjacent to a Metro station it would seem appropriate to use a nominal parking ratio of 1.0 space per unit.

The number of spaces that would be available for non-residential use, therefore, would depend upon the garage capacity, the basic parking ratio, and the percent occupancy throughout the day. Assuming a 1:1 parking ratio for each of the 274 residential units and using published occupancy data from ITE to calculate the parking adequacy (in this case a parking surplus) we are able to construct the following table:

Time of Day	Garage Capacity	Percent Occupancy	Garage Occupancy	Parking Adequacy
6:00 AM	274	84%	230	44
7:00 AM	274	62%	170	104
8:00 AM	274	41%	112	162
9:00 AM	274	34%	93	181
10:00 AM	274	32%	88	186
11:00 AM	274	31%	85	189
12:00 PM	274	30%	82	192
1:00 PM	274	31%	85	189
2:00 PM	274	33%	90	184
3:00 PM	274	37%	101	173
4:00 PM	274	45%	123	151
5:00 PM	274	61%	167	107
6:00 PM	274	69%	189	85
7:00 PM	274	72%	197	77
8:00 PM	274	80%	219	55
9:00 PM	274	89%	244	30

As the table shows, there will be an increasing surplus of parking spaces throughout the morning hours peaking around noontime at around 190 spaces. The number of surplus spaces will then slowly decrease in the early afternoon and eventual decrease to around 100 spaces during the return rush hour in late afternoon. This table is for illustrative purposes only. The actual number of surplus spaces may turn out to be somewhat less if a significant number of tenants maintain vehicles but favor public transportation over driving to work. On the other hand, the number of surplus spaces may be somewhat greater since the table does not factor in a typical 5% to 7% vacancy rate for the residential units.

QUEUEING ANALYSIS

The first objective of a queueing analysis is to determine how many entry and exit lanes should be provided. Our queuing analysis model subsequently calculates three things:

1. Design queue, which is how long a reservoir should be provided to keep vehicles from backing into the street on entry or into parking areas on exit
2. Average queue, i.e., average number of vehicles waiting to pull up to the entrance or exit gate
3. Level of service (LOS), which is a quantitative evaluation of how acceptable the delay, if any, is to the user. The Level of Service is based on the average queue in the design hour.

In the context of parking structures, a "queue" is a line of vehicles waiting to be serviced at a device or control point. By definition it does not include the "service" position. Our model uses standard traffic engineering procedures for queueing at intersections but adapted by Walker to the requirements of parking access and revenue controls. The design procedure evaluates the type of equipment in the lane, the type of access control (cash, card etc.) and the volume of traffic by that type of user at each location. We will address each of these factors in the following sections and then apply these criteria to the queueing analysis itself.

TYPE OF EQUIPMENT

The type of equipment in the lane greatly affects the speed of processing, or service rate at an equipment lane. The service rate is the typical maximum sustainable rate of processing each transaction type in vehicles per hour (vph). Some sample base rates are as shown in the table below. We have also converted those volumes to the average time per transaction should you prefer to think of it that way.

To achieve these rates, there must always be a vehicle or person queued, so that there is no "dead time". Some of the fumbling that may occur finding tickets or cards for presentation occurs in the queue, and some patrons observe and learn how to maximize speed of transaction in this queue. Obviously, this is a theoretical maximum capacity, but that is what the theory behind queuing analysis requires be used for processing rates.

For this preliminary queueing analysis, we will assume a conservative value for vph based on insertion card technology. This will allow 435 vehicles to be processed in one hour or, in other words, it will take 8.3 seconds to process each vehicle. We will have to add another 5 seconds to this figure to account for the fact that the left hand turn into the entrance gate area is somewhat difficult to maneuver since the driver needs to pull up parallel and close to the card reader. This significant fact reduces the service rate to 271 vph.

Equipment Type	Vehicles/Hour	Seconds/Vehicle
Monthly Parker Entry or Exit		
Insertion Card	435	8.3
Proximity Card	600	6.0
Automatic Vehicle ID	800	4.5
Pay per use entry		
Push Button Ticket	400	9.0
Auto Spit Ticket	450	8.0
Pay per use exit		
Cash to Cashier—Variable Rate	135	26.7
Insertion Ticket for POF Validation	360	10.0

TYPE OF ACCESS CONTROL

The differences in processing rates in the table for various types of monthly card systems are based on the technology employed. Insertion cards are the old familiar standard — a credit card-sized plastic card with magnetic strip inserted into a slot in the reader. Proximity cards are similar sized cards that are read when simply held 4 to 6" away from a reader, rather than inserted into a slot. The rate of processing is significantly improved, from about 435 vph per lane to 600 vph per lane. They are significantly more user-friendly than insertion cards. The next level of card technology is known as automatic vehicle identification (AVI) in which a similar-sized device is attached to the windshield of the car. This device is automatically read from a much greater distance (several feet instead of inches) and with accordingly improved speed (800 vph) as the patron does not have to roll down the window and present the card to the reader. This technology is frequently used on toll roads throughout the US and for shuttle buses at airports and is becoming increasingly common in parking facilities.

Service rates for exit controls are also given in the table for reference only. The queueing analysis in this letter report deals only with the entrance queue.

PEAK HOUR VOLUMES

Peak hour volumes (PHV) – the expected number of vehicles in the busiest consecutive 60 minutes of activity – have been estimated based on our database of previous WMATA projects. We have projected peak hour volumes for weekdays mornings (60 consecutive minutes somewhere between 7 am and 9 am) to be 35% inbound and 5% outbound. For reference and comparison only, the evening peak hour volumes (between 5 pm and 7 pm) are 10% inbound and 30% outbound.

QUEUING ANALYSIS

As previously noted, the queuing analysis projects the design queue, which is the maximum queue projected for this volume with 90% confidence. The latter does not mean that this queue will be exceeded 10% of the time; rather, we are 90% confident (using standard probability theory) that the activity pattern assumed will not be exceeded at any time in this hour. Even if the queue does exceed that indicated by the 90% probability curve, it will probably be quite rare and short-lived. The design queue is used to size the reservoir at the lane so that traffic does not back up and block other movements.

The design queue is found by first calculating the traffic intensity, which equals the PHV divided by the service rate. In this case, even if we were to assume a very conservative 50% PHV rather than the observed 35%, the resulting traffic intensity would be only 0.37 based on a 200-space garage. Traffic intensity between 0.30 and 0.45 requires only one lane of for entry and produces a design queue the length of one vehicle.

The average queue is just as it would seem: the average queue encountered by patrons at that location in that hour. It is converted to average wait, in seconds, which then is used to determine LOS. Based on a traffic intensity no greater than 0.37, the average queue would be less than 0.5 and the average wait would be less than 5 seconds.

Similar to the system employed by traffic engineers, the LOS is a quantitative measure of the degree of congestion and delay, ranging as follows:

LOS A	little or no delay	<10 sec
LOS B	minimal delay	<20 sec
LOS C	average delay	<45 sec
LOS D	maximum acceptable delay	<90 sec

Since the average wait would be less than 5 seconds, the LOS for this garage would be LOS A.

CONCLUSIONS

The following summarizes our findings on the inbound am queueing analysis:

- The garage only needs one lane in at all times.
- The design queue will be very short, only the length of one vehicle.
- The average queue is very short, less than one vehicle.
- The Level of Service will be A with typically less than a 5 second wait.

If you have further questions or comments about the above analysis, please feel free to call or write.

Sincerely,

WALKER PARKING CONSULTANTS

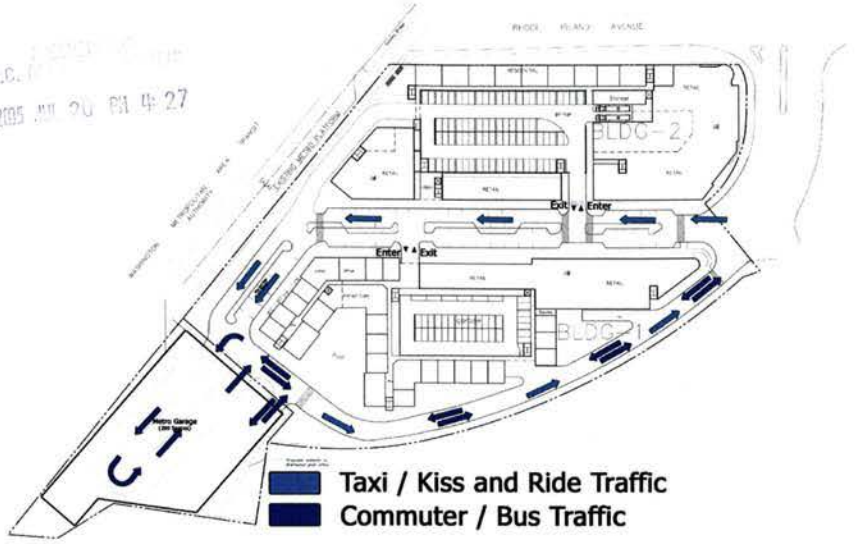
Phil Cipolla
Parking Consultant

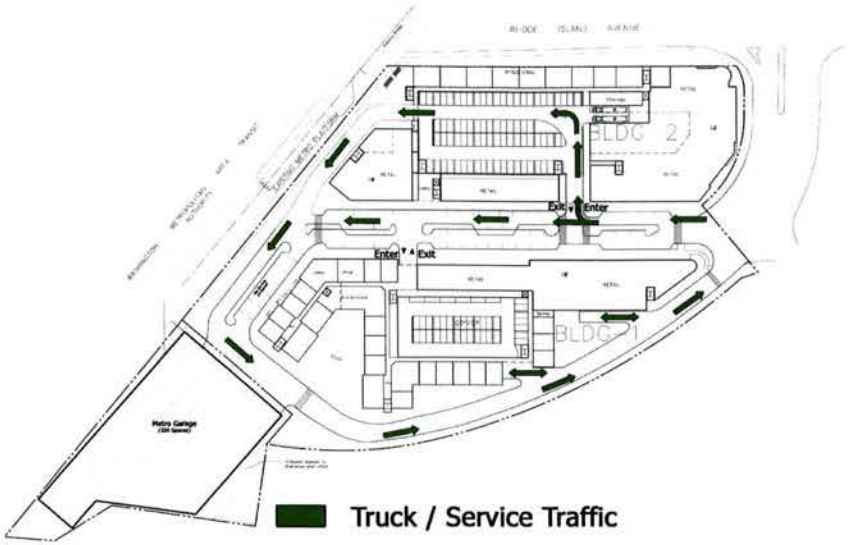
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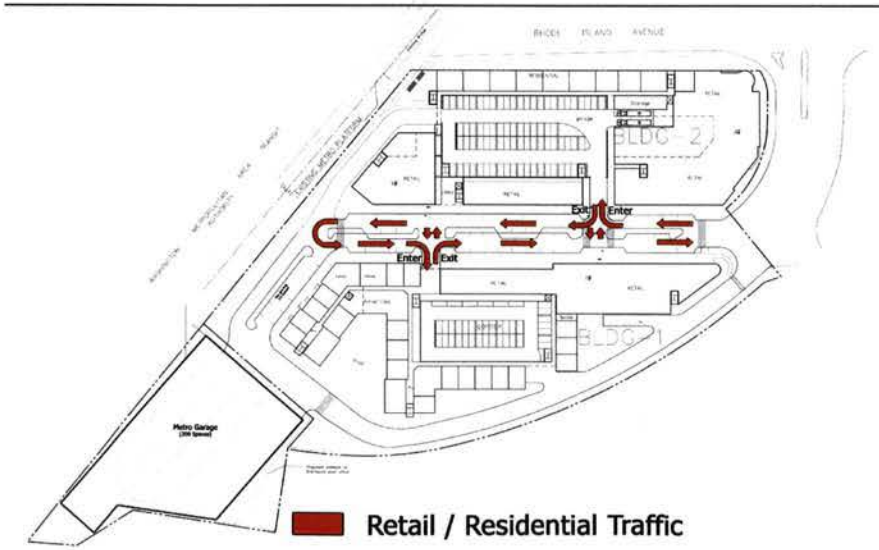
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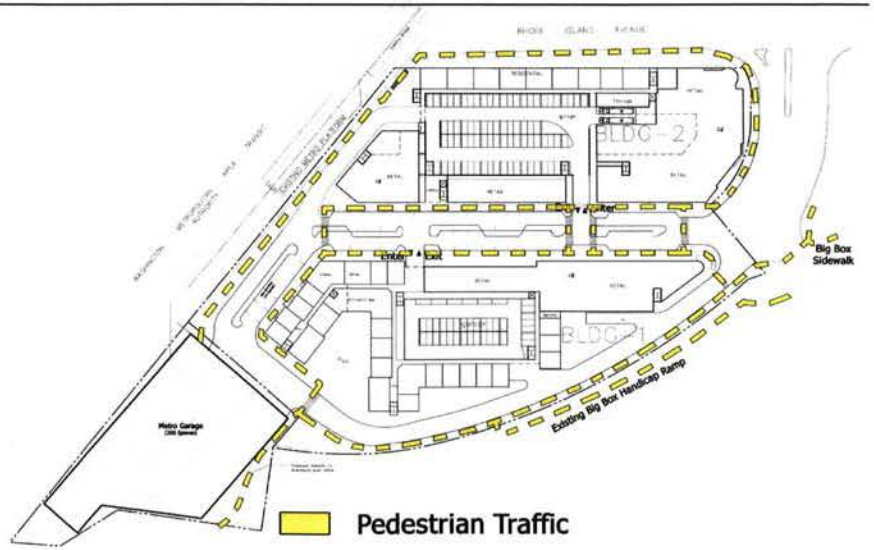
Exhibit C: Vehicular and Pedestrian Circulation Plan

D.C. [illegible]
2005 JUL 20 PM 4:27









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VEHICULAR TRAFFIC PLAN

JULY 18, 2005

RHODE ISLAND METRO
WASHINGTON D.C.

A & R DEVELOPMENT
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1" = 80'
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