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# Memorandum

Date: June 22, 2006

To: Herb Miller, Western Development Corporation

From: Louis J. Slade, P E.

Subject: South Capitol Street Access to Washington Nationals Ballpark North Parking Site

## SUMMARY

1) Parking facility design meets the Ballpark criteria of 925 Ballpark parking above-grade parking spaces.

2) Based upon implementation of good traffic control measures and design recommendations the parking facility design meets the 45 minute criteria for post-game departures.

3) Recommended access from South Capitol Street by a median slip ramp should be considered to enhance traffic operations and minimize pedestrian-vehicle conflicts at intersection of N Street, SE and South Capitol Street.

## INTRODUCTION

The District of Columbia is required to provide 1,225 parking spaces on the Ballpark site. As part of the AWC planning team, we have explored and recommended that a significant portion of the 1225 spaces be segregated into 2 or 3 parking facilities and that they be located on nearby sites directly across the street from the Ballpark, rather than within the Ballpark site. This would disperse the traffic rather than concentrating it to the Ballpark site. If parking is provided on the Ballpark site, it concentrates the traffic because there are limited opportunities for access to this parking. We understand that the new owners of the Nationals are concerned about meeting the schedule for opening day and that one reason they cite to develop the parking on the site is to meet this deadline.

The current issue is that the current plan for parking with two above-grade garages in the northeast and northwest corners of the site would preclude additional development at those locations. This memorandum provides a review of a compromise plan that places some parking below-grade and "wraps" development around some of the above grade parking. It also provides additional parking to support the development. This plan was developed by HOK Architects dated June 19th, 2006, and titled *"PRELIMINARY CONCEPT PARCELS A & B, OPTION ONE "*

## REVIEW OF CONCEPT

A few hundred of the required 1225 parking spaces will be located at the southwest tip of the site at the intersection of South Capitol and Potomac Avenue. The majority of the Ballpark parking spaces

(approximately 928 spaces) will be provided along N street between South Capitol Street and First Street, SE in two above-grade structures. The concept links these two structures with a below street grade garage that covers the west one-half of the site at the first level below grade, and covers the entire site at the second level below street grade. Internal ramping interconnects the entire structure providing for routing flexibility through some portions of the garage.

The garage complex is subdivided into approximately 928 Ballpark-designated spaces, and 771 spaces designated for the development. Most of the development-designated spaces will be available for residents in the apartment/condominium portion of the development. On game days, all of the Ballpark spaces will be restricted to premium Ballpark ticket holders. On non-game days, those 928 spaces will be open to the public and priced to encourage shopping, dining, and entertainment visits to the Ballpark District.

The design identifies three possible points of access to the garage(s) along this north portion of the site: the first would be on N Street between South Capitol Street and Half Street, and the second would be on First Street between N Street and N Place. The third access point identified in the design would be provided along the South Capitol Street frontage if a restriction on access is reconsidered. This is discussed later in this memo in the section titled District Ballpark Parking Access To South Capitol Street.

The concept plan shows two garage access points along First Street, one for Ballpark spaces, and one for the development spaces. The Ballpark parking access point on First Street just south of N Street will generate vehicular traffic (449 spaces) in the northeast corner of the Ballpark site where there will be high volumes of pedestrians moving to and from the Ballpark. Thus, this access point location will require significant traffic control intervention for public safety and to move pedestrians and cars through this area.

The other access location on N Street will be in a relatively low pedestrian impact area. Traffic using this entrance will use South Capitol Street to N Street. At the end of 1 p.m. weekday daytime games and at the beginning of 7 p.m weeknight games, Ballpark traffic will arrive and leave this access point turn via South Capitol Street during highly congested evening commuter peak period.

## TRAFFIC EVALUATION

We have evaluated this garage concept using several access and operational criteria. The criteria and a bottom line summary of findings are as follows:

1) Access from Regional Roads

    a. The northwest Ballpark garage will be accessed primarily from N Street and South Capitol Street. The advantage of providing the primary access at the west end of the Ballpark site is that vehicles can circumvent the major corridors that will carry heavy pedestrian traffic between the Ballpark, Metro rail, and other parking facilities to the north and east of the Ballpark site. These pedestrian corridors are located along Half Street, 1st Street, N Street, and N Place.

b. The concept plan has two levels of parking in the northwest parcel with at-grade access to First Street. This level of parking allows the City to consider direct access from the south on South Capitol Street via a median-entry ramp that would drop below street grade and turn directly into the garage.

c. The garage in the northeast corner of the Ballpark site with one point of access on 1st Street will require that motorists penetrate the area with the greatest concentration of fans that are arriving at the Ballpark on foot. Conflicts between pedestrians and vehicles will be reduced if motorists access this garage from the south along Potomac Avenue and 1st Street.

2) Parking Facilities Ingress and Egress

a. The garage at the intersection of N Street and South Capitol Street, which has access along N Street, could be augmented with an additional access point in the median of South Capitol Street that would provide a highly efficient entrance before games and exit after games, and it would relieve the traffic load on N Street.

b. Ballpark parkers will have exclusive use of N Street between South Capitol Street and Half Street because N Street will be closed from Half Street to the east.

c. During the exiting "tidal flow" of departing traffic, the N Street driveway would provide multiple lanes out onto N Street, and all four lanes of N Street could be operated one-way westbound with one or two lanes for turns to the north, and one or two lanes for turns to the south onto South Capitol Street. This egress operation would provide more than enough capacity to empty the northwest garage within 45 minutes. Note that pending the development of the Transportation Operations Plan for game day operations, this departing traffic may also continue westbound on N Street unless this movement is restricted to limit impacts on the community west of South Capitol Street.

d. The 1st Street driveway would exit traffic onto a section of 1st Street that will be congested with pedestrian traffic and will require traffic control officers to control conflicts and move traffic. In order to meet the 45-minute exit criterion, the traffic control will have to hold pedestrians while vehicles exit on an alternating schedule of several minutes for each "phase." If vehicles can exit to the north and to the south from two exit lanes, the 45-minute criterion should be achieved.

e. The South Capitol Street median access to the lower level of the Proposed Alternative will provide an important egress route especially after weekday afternoon games when Ballpark fans will exit during the evening commuter peak hour.

3) Level of Service for Locating a Space and Parking

a. In general, pre-game entering traffic will take the first parking spaces available as they penetrate the garage because these spaces are closest to the plaza level, and because it will be easiest to depart after the game from the parking spaces that are closest to the garage access

point where they entered.

b. As the garage fills, the driver must circulate on each floor and continue ramping up until he reaches the first available vacant parking space. This search will require multiple 360 turns and ramp climbs that can be measured as a "level of service" for this part of the process. To mitigate this challenge, the Transportation Operations Plan for game day operations could provide for parking staff directing drivers to the next available space.

4) Level of Service for Departing Traffic

a. The performance requirement set for the Ballpark Parking garages is to be able to empty the full capacity of the garages within 45 minutes, that is, the last automobile should be able to leave the garage 45 minutes after the first automobile leaves. In reality, it will be a rare occurrence when all patrons will want to leave at this rate.

b. The 45-minute criteria should be able to be achieved. The principal constraint for cars exiting the garages is the "exit tidal flow rate" of automobiles traveling in the garage aisles while other automobiles are attempting to back into the aisles from adjacent parking spaces. Typically, the capacity for moving cars along the aisles of this type of garage (sloping floor, single helix) during an exiting tidal flow is in the range of 500 to 550 vehicles per hour for each garage, totaling about 1125 vehicles per hour. *This capacity can be achieved if the garage is designed for this kind of flow including long rather than short-span structure, and generous internal turning dimensions* At this rate the garages could empty in about 50 minutes. This garage complex will have additional capacity to exit automobiles out to 1st Street through the development portion of the garage, AND, may have slip ramp egress to South Capitol Street. These two features of the garage will add to the egress capacity and would ensure that the 45-minute egress criterion will be met.

c. Note that both garages would function extremely well if floor-to-floor express ramps could be incorporated into the design. This is difficult because of the tight footprint of the sites.

**SUMMARY OF EVALUATION**

One-half of the Ballpark motorists will arrive and leave via First Street that will be congested with pedestrians; this will be mitigated with traffic control officers. The other portion of the garage provides its principal access on streets that will have low volumes of pedestrian traffic.

This concept can include a median ramp into and out of the garage from South Capitol Street that would provide excellent accessibility and would relieve the traffic loads on N Street.

**DIRECT BALLPARK PARKING ACCESS TO SOUTH CAPITOL STREET**

There is a restriction on direct access along South Capitol Street. We recommend that this restriction be revisited with the idea of developing a game day-only Ballpark access point that could be designed to fit in with the streetscape of South Capitol Street. A median ramp would allow traffic to approach from the

south, shift into the median and immediately ramp down to the lower level and turn right directly into the parking. This movement would be reversed during the end of game departure of the fan's traffic. Exiting median ramp traffic would ramp up into the median and merge into southbound traffic without the aid of a traffic control officer.

An ingress/egress ramp on South Capitol Street would aid Ballpark demand management strategies. One of these strategies is to encourage patrons driving into the city from Northern Virginia to cross the Wilson Beltway Bridge into Maryland and approach the Ballpark from the South on Interstate 295. This is the counter flow direction for commuters and would allow those motorists who wish to park in the parking garage at the intersection of N Street and South Capitol Street to enter the garage directly from South Capitol Street without adding to the congestion of this intersection. Post-game, the travel direction of the ramp could be reversed so that motorists could leave the Ballpark and head south by entering South Capitol Street at the same location. Motorists merge into southbound traffic without the aid of a traffic control officer and reduce post-game pedestrian-vehicle conflicts at the intersection of N Street and South Capitol Street.

**OTHER DETAILS OF THE CONCEPT AND DESIGN**

DDOT has already indicated concern about these two garage access locations because of their proximity to the nearby intersections. Also, DDOT has noted concern about the First Street frontage where the concept shows two parking garage entrances separated by a loading dock entrance. These concerns should be worked out with DDOT in the design phase.

The southerly 1st Street access point will serve the condominium parking levels of the garage. Studies of existing condominium buildings in the District show that most residents store their cars for occasional use, and these residents will become accustomed to adjusting there personal comings and goings to avoid Ballpark traffic peaks. Thus, we do not anticipate that these two entrances at this location will create significant conflicts that should be handled by the traffic control officers at this location.

Finally, we recommend that certain features of the garage be incorporated into the design phase.

- Floor-to-floor express ramps should be looked at to see if a fit is possible for some portions of the garages.
- Alternatively, the garages would empty more readily if double helix, rather than single-helix design could work for some portion of the garages.
- The spacing and location of columns can impact capacity so the structural design of the garage should be coordinated with traffic operations engineering considerations.