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Transportation Policy and Planning Administration

To: Sharon Schellin, Secretary
Zoning Commission

From: Kenneth G. Laden
Associate Director

Rich Dybeck for KL

Date: January 4, 2007

Re: Zoning Commission Case No. 06-11 & 06-12
George Washington University Campus Plan & PUD

In addition to the comments the District of Columbia, Department of Transportation (DDOT) has previously provided to the Office of Zoning, DDOT wishes respond to questions posed by the Foggy Bottom Association and ANC 2A. DDOT has not completed the detailed analysis required by some of these questions. So the responses below represent our progress to date. We expect to provide a complete response shortly.

Question

1. Mr. Mehra's report cites a letter to DDOT's Ken Laden dated 4 October 2006, in which Wells & Associates states that it used a default assumption of two percent heavy vehicles at every intersection. However, in the report submitted in the Square 54 case (dated October 2006 and prepared after the 4 October letter, thus contradicting its own statement), Wells used the level of truck traffic that was actually observed. The truck percentages were 16 percent at some locations and as high as 48 percent. See Mehra Report at p. 1, par. 6. Mr. Mehra concludes (at pp. 1-2) that the "default assumption in the Campus Plan Study is invalid and results in considerably better levels of service than when using observed truck volumes."

(a) After receipt of the Square 54 report mentioned in the previous paragraph, but prior to the hearing on 30 November 2006, did DDOT perform any new analysis of traffic levels in this Campus Plan case, given that the Square 54 report indicated that observed heavy vehicle traffic was considerably higher than the default two percent assumption?

No. DDOT recommends that where primary data regarding trucks traffic percentages are available, they should be used instead of the general assumptions made in the campus plan analysis.

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(b) If the answer to question 1(a) is "yes," please identify who performed the analysis, and please provide the results of those analyses.

N/A

(c) If the answer to that question is "no," why did DDOT not perform any such analysis?

It is not DDOT's role to perform independent analysis; it is DDOT's role to independently review using our professional experience to review the transportation analysis provided by the applicant for reasonableness, conformance with policy and technical sufficiency. DDOT does not have the resources to conduct separate analysis for each zoning case.

Question

2. Mr. Mehra's statement notes (at p. 2) a deficiency in the five Wells reports filed in this case and the Square 54 case (No. 06-27) with respect to "queuing," i.e., congestion on Pennsylvania Avenue and K Street during peak hours forces queues back into the adjacent intersections, which has the effect of undercounting the observed volumes. In addition, data collectors record fewer vehicles passing through an intersection than actually want to pass through the intersection, with the result that the levels of service being measured are artificially inflated. He further states that under "congested conditions, other techniques such as 'saturation flow' or 'loaded cycles' should be used."

(a) Does DDOT agree that a failure to take such queuing into account can produce artificially inflated levels of service?

Yes. However, the computer software and the underlying algorithm specifically take queuing and overcapacity conditions into account. The "incremental" delay is calculated in the Synchro software to account for vehicles waiting for extra traffic signal cycles. This accounts for delays where approach traffic volumes are near saturation or are over saturated. Please note that level of service is not calculated based on the volume (demand) to capacity (supply) ratio, but rather on the number of seconds of control delay consisting of both the traffic signal and any incremental delay. Observed volumes are not undercounted; observed volumes are simply data defined by traffic movements across a specific point or duration of time. Traffic demand is a measure of the desire of a vehicle to go from Point A to Point B. There are many cases across downtown Washington, DC where supply is not meeting demand due to the number of lanes, available time in the signal cycle, construction, traffic crashes, double parking, bus stops, etc. This varies minute by minute and is the nature of congested urban traffic networks.

(b) Does DDOT believe that the "saturation flow" techniques should have been used here?

No.

(c) If the answer to question 2(b) is "no," why is that?

See answer to 2(a) above.

(d) Does DDOT believe that a "loaded cycles" technique should have been used here?

No.

(e) If the answer to question 2(d) is "no," why is that?

See answer to 2(a) above.

(f) The only reference to queuing in DDOT's 27 November 2006 report is the statement on p. 1, par. 3 that queuing is "a topic that DDOT can address with the applicant as the PUD process moves to the next stage." Why did the DDOT report not address the queuing issue as it exists at this point in time, as identified by Mr. Mehra in its report?

Queuing is a signal timing and operational issue which is best approached once the new building is in the permitted planning stages. Otherwise, DDOT engineers run into a hypothetical exercise of "what ifs" on the queuing concerns.

Question

3. In its report dated 27 November 2006, DDOT notes that GWU plans a series of new underground garages "that will try to assist in relieving some of the current intersection congestion."

(a) Please identify the garages that GWU is planning and to which DDOT is referring, and for each one, please identify the anticipated opening date and the number of vehicles it will serve.

<u>Name</u>	<u>Exit to</u>	<u>Projected Opening Date</u>	<u>Number of New Parking Spaces</u>
Square 54	22 nd Street, NW	2010	362
Square 80	F Street, NW	2010	178
Lot A	20 th & G Sts, NW	TBD	307
Lot 12	730 22 nd St, NW	TBD	401
Lot 3	2003 H St, NW	TBD	42

(b) Please identify whether DDOT anticipates a net increase or decrease in the number of parking spaces after the garages identified in response to question 3(a) are opened and the current GWU garage is closed.

DDOT anticipates a net increase in the number of parking spaces after the garages are opened.

(c) Identify how the number of available parking spaces and their locations that DDOT has identified in response to questions 3(a) and 3(b) may relieve current congestion.

Multiple entry points into a traffic network serve to reduce the volume of traffic during a particular period of time by distributing the impact compared to a single entry point. Therefore the impact on any one location is lessened. Parking garages are a supply of storage space for vehicles. There is a time series to the demand for these spaces that would be analyzed compared to on-street demand for traffic. The peak of these demands may be at different times.

(d) Is it DDOT's belief that building more parking spaces in an area such as the GWU Campus boundaries will reduce intersection congestion? If so, please explain the basis for that conclusion.

See answer to 3(c) above.

(e) Is DDOT not concerned that an increase in the number parking spaces may simply increase demand for those spaces - and thus increase congestion?

DDOT has reviewed the GW Campus Plan with concern in the noted areas where the increase of congestion may develop. That is why DDOT is requiring travel demand management as part of its conditions. The December 19, 2006 DDOT memo to the Zoning Commission with specific confirmation of items DDOT requested and performance measures for an annual report on the effectiveness of a Transportation Management Plan serves as strong evidence that DDOT views an increase in demand for parking.

(f) Since DDOT testifies that these new underground garages will only "try" to assist resolving the current intersection congestion, would it be fair to conclude that DDOT does not have much confidence that the garages will, in fact, "assist" with resolution of the problem?

DDOT does not have the authority to enforce the requirements of Zoning case rulings, that role falls to the Zoning Administrator with DCRA.

Question

4. Mr. Mehra's report states (at p. 2, par. 3) that there was almost a 50% percent discrepancy between the southbound traffic counts on 21st Street at Eye Street during the PM peak hour (634), but the number Wells used to compute levels of service was 434. When this was pointed out previously, Wells advised DDOT that the difference was due to "volume balancing," owing to data being collected on different days, as well as human error. However, Mr. Mehra points out that this is not true, that 21st Street is sending 524 vehicles from Eye Street to H Street, whereas H Street is receiving 825 vehicles in the PM peak hour. He adds that if "volume balancing" had been conducted before analysis, then the southbound volumes on 21st Street should be 735 vehicles instead of 434 - higher even than Wells estimated.

(a) Did DDOT ever perform any analysis of the discrepancy issue that Mr. Mehra identified in his report several months ago?

It is the applicant's responsibility to correct discrepancies of this nature as they are identified.

(b) Did DDOT perform any independent analysis of this issue after receiving the Wells letter of 4 October 2006 discussing "volume balancing" and prior to the 30 November 2006 hearing?

See answer to 1(c) above.

(c) If the answer to question 4(b) is "yes," why did DDOT not address this issue of discrepancies and "volume balancing" in its report dated 27 November 2006?

N/A

(d) If DDOT believes that Mr. Mehra's computations are incorrect (e.g., 735 vehicles on 21st Street), did DDOT conduct any independent computations of its own?

See answer to 1 c) above

(e) If the answer to question 3(d) is "yes," please provide the results of that analysis.

N/A

Question

5. Mr. Mehra identifies (at pp. 2-3) certain discrepancies between street peak hours and GWU's estimates of GWU's peak hours. He states that a review of the data for 31 intersections included in the Wells Report shows that 23 out of 31 intersections have street peaks earlier than Wells' estimates during the AM peak, and that 21 out of 31 intersections have street peaks earlier than the peak hour identified by Wells in the PM. He also notes that Wells' report in the Square 54 case shows street peaks identical to the GWU peaks, except for one 15-minute differential in the evening. He concludes that if this is the case, "most of the traffic analysis presented for future conditions with GWU expansion would be unduly optimistic and not valid."

(a) Did DDOT examine the discrepancies identified by Wells between the Wells estimates of peak hours in this case and in the Square 54 case prior to the hearing on 30 November 2006?

Yes, referenced morning peak hour in both studies is 8:30am -9:30am.

(b) Does DDOT agree with Mr. Mehra's assessment that if the Square 54 data are accurate, then "most of the traffic analysis presented for future conditions with GWU expansion would be unduly optimistic and not valid"?

No. Peak is not an issue.

(c) If the answer to question 5(b) is "no," why does DDOT disagree?

See answer to 5(b) above

Question

6. In his discussion of "GWU Existing Trip Generations" (Mehra Supp. Report at p. 3), Mr. Mehra notes a series of discrepancies in the travel survey of students and faculty/staff to obtain trip rates and mode of travel to and from the university. He indicates that Wells' use of lower vehicle trip calculations can result in less vehicle trip generation and thus a better level of service. He also notes that the vehicle trip generation estimates for increased

faculty/staff vary by 315 vehicles in the AM peak hour, a difference that "will have a significant effect on the projected levels of service."

(a) Without repeating here the specific numerical discrepancies identified on p. 3 of his report, did DDOT examine the discrepancies identified by Mr. Mehra in this report and his prior testimony in this case?

Yes

(b) Can DDOT explain the discrepancies identified by Mr. Mehra?

DDOT cannot trace how the applicant determined vehicle trips in the August submission. We find by tracing the calculation steps used standard methodology that the vehicle trip generation should have been lower in the August submission. The October memo removes non-respondents from mode split percentages increasing the auto share subtotal. DDOT believes the October memo corrects the erroneous calculation by the applicant.

(c) Does DDOT agree with Mr. Mehra that the differentials identified in the studies he cites can yield different levels of service?

No. Mr. Mehra assumes that the tables for vehicle trip generation in the August report are calculated correctly.

(d) If so, what levels of service should the Zoning Commission use for purposes of deciding this Campus Plan case?

Those submitted as revised in the October memo.

Question

7. With respect to Mr. Mehra's discussion of "future conditions," (Mehra Supp. Report at p. 4), Mr. Mehra notes that Wells assumed a 0.5% per year growth for through traffic to obtain background, whereas the DDOT Lower West End Traffic Study assumed a 1% growth for background conditions. Mr. Mehra notes that the total trips forecast for Wells are as much as 400 vehicles per hour less than would be obtained using the DDOT 1% rate. In the DDOT report dated 27 November 2006, DDOT states with respect to these two reports that "both growth rates are reasonable for the specified areas in the Foggy Bottom/Lower West End neighborhoods."

(a) If, as DDOT testified in its statement, both the 0.5% and 1% growth rates are "reasonable," does DDOT agree that the total trips forecast could exceed Wells' estimates by 400 vehicles per hour?

Background traffic growth projected 20 years out as a simple projection of an annual growth projection could be higher by 400 vehicles or lower by 400 vehicles.

(b) If the answer to question 6(a) is "yes," does DDOT believe that an increase of 400 vehicles over the Wells estimate is a matter of no significance to the Commission's deliberations in this case?

It is not significant as a part of a twenty year projection. Annual percentage increases have little value beyond 5 years, unless verified with regional land use models. Making a presumption of increases (or decreases) beyond the near term is affected by many factors that cannot be simply derived using a trend of existing traffic data. Not also that West End Study used 1% background growth, but had fewer specific identified development projects. The applicants traffic study included more specific individual traffic impacts studies that would contribute to traffic growth even though the background rate is lower at 0.5%

(c) If the answer to question 6(a) is "no," please set forth the analysis that led DDOT to that conclusion?

See 7(b) above.

Question

8. In DDOT's letter of 27 November 2006, where DDOT states that the 0.5% and 1% growth rates are both "reasonable" assumptions, DDOT states (at p. 2) that in "the foreseeable future (next five years), the difference in the increase in traffic between these two estimates is relatively slight."

(a) Given that GWU is applying for a 20-year campus plan to last until the year 2025, why did DDOT's report not contain any analysis for years 6 through 20?

See answer to 1(c) above. Supplemental analysis on this issue should be performed by the applicant.

Question

9. On p. 4 of Mr. Mehra's Supplemental Report, it is noted that the GWU growth in vehicle trips did not include vehicular traffic that may occur from other campuses in private vehicles or non-GWU buses.

(a) Does DDOT believe that it is appropriate to exclude that information in calculating growth in vehicle trips?

Yes.

(b) If the answer to question 9(a) is "yes," why does DDOT believe that?

If there is not projected growth in space or use as part of the master plan on the other campuses, the trip-making from those campuses would be consistent with existing levels.

Question

10. Mr. Mehra's analysis of "levels of service" (at p. 4) notes that there are currently 9 out of 37 intersections with some failing approaches (LOS E or LOS F), and with the GWU expansion, that number will grow to 14 of 37, even with mitigation and even with loss of

curbside parking. He also estimates that if DDOT's growth rates are used, an additional 12 intersections currently at LOS D may fail, resulting in a possible total of 26 failing intersections out of 37.

(a) In light of DDOT's written testimony that the 1% growth rate is "reasonable," does DDOT have any reason to question the accuracy of Mr. Mehra's projection that as many as 26 intersections could fail under the proposed GWU expansion?

Yes, see discussion of the use of "growth rates" for long-term traffic projection in Question 7.

(b) If DDOT does not agree with Mr. Mehra's estimate, how many intersections does DDOT believe could fail, using the 1% growth rate figure that DDOT deems "reasonable"?

DDOT has on-going programs to improve traffic signal control to include traffic detection and traffic responsive signals over the next 5-6 years to address traffic growth from this and other development projects. For the agency there is no "reasonable" number of failing intersections.

(c) Why did DDOT not address this issue in its report dated 27 November 2006?

DDOT has noted that the mitigation strategies, dispersing future volumes to parking garages around campus, the 2025 background forecasts and the modest increases in traffic volumes associated with the Campus Plan.

Question

11. In its report dated 27 November 2006, DDOT recommends hiring a Transportation Management Coordinator to monitor the GWU Transportation Management Program ("TMP") and recommends that this be included in the Commission's order.

(a) Should this individual be a GWU employee? Considering that the person is performing an audit function, would it not make more sense to have someone independent of GWU doing the monitoring?

Yes the program coordinator should be a GWU employee, who must provide reporting to DDOT on the effectiveness of the program

This concludes DDOT's answers to date. We hope to complete answers to the remaining questions (through # 15) as soon as possible.

GOVERNMENT OF THE DISTRICT OF COLUMBIA
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Partial Response to Questions re ZC 06-11 & 06-12

COMMENTS

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