GOROVE / SLADE

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MEMORANDUM

To:	Jorge Abud	American University
	Jerry Gager	American University
	Paul Tummonds	Goulston & Storrs
	Cary Kadlecek	Goulston & Storrs
From:	Robert B. Schiesel, P.E.	
	Daniel B. VanPelt, P.E., PTOE	
Date:	January 30, 2012	
Subject:	Z.C. Case No. 11-07 – American University Campus Plan	
	Responses to "Stanford Model" Trip Cap Concept	

The "Stanford Model" discussed in the ANC 3D letter is in effect a trip cap. Trip caps are generally employed as a way to ensure that a developer or property owner is motivated to implement an aggressive transportation demand management ("TDM") plan. Vehicular trips generated are measured against the cap and exceeding the cap will trigger additional mitigating actions. The need for such a cap for American University or the WCL is not justified, as the University has demonstrated that they have a very effective TDM plan that has already had a positive impact on the reduction of vehicular trips attributable to AU, with no trip cap in place. As discussed in the transportation report for the Campus Plan, overall AU trips have declined at a rate of 3.9% per year since the transportation analyses were conducted for the 2001 Campus Plan. In fact, since the prior campus plan, the total amount of peak hour trips removed from the network due to TDM measures at the Main Campus is far more than the new WCL facility is projected to generate.

The trip cap examples cited in the ANC 3D letter need to be considered in context. If Stanford exceeds the trip cap, it will be required to fund certain roadway improvements. It is our understanding that Stanford was seeking to avoid having to provide such funding. Therefore, it agreed to the trip cap. As for the Lab School, the trip cap was instituted to better effectuate conditions included in a previous BZA Order. If the trip cap levels are exceeded for two consecutive reporting periods, additional TDM measures will be triggered. Both of these examples provide very different fact patterns than the situation for AU and the WCL's relocation to the Tenley Campus. Over the past 10 years, AU has shown that the number of vehicular trips that it contributes to the surrounding transportation network is decreasing. Moreover, the percentage of vehicular trips that AU contributes to the surrounding transportation network is very small. The implementation of a trip cap on AU related vehicular trips will likely have very little discernible impact on the overall levels of vehicular traffic on the surrounding transportation network.

Therefore, we believe there is no basis or practical need for implementing a trip cap on AU campus-related vehicular trips.

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	Responses to Report of Joe Mehra, P.E., PTOE – September 15, 2011	

Gorove/Slade has reviewed the report produced by Joseph Mehra dated September 15, 2011 and submitted to the Zoning Commission regarding the Gorove/Slade Transportation Report dated March 11, 2011 and Transportation Technical Analysis also dated March 11, 2011. This memorandum contains responses to Mr. Mehra's report that refute these assertions and cure any errors or omissions. Excerpts from Mr. Mehra's report are presented in red text with responses from Gorove/Slade immediately following in ***bold italics***.

Missing Data Elements. Gorove/Slade collected traffic and parking data to conduct the traffic analyses; however, some critical data elements were not observed or collected in the field. These critical data items include truck and bus trips, their travel patterns and their percentage of total travel on the study area roadways. Truck trips to AU include deliveries as well as trash pick-up. Further, Metrobus and AU's shuttle buses travel on these roadways and their presence impacts the traffic flow. The buses stop to pick up and drop off passengers and vehicles queue behind them, resulting in travel delays. The higher the truck/bus proportion, the lower the levels of service. Gorove/Slade assumed a default value of 2 percent for the trucks and buses. Further, Gorove/Slade assumed default values for data items which were readily available to them, including roadway lane widths and peak hour factors. Their use of wider than actual lane widths (e.g., 12 feet versus 10-11 feet on Nebraska Avenue around main campus) results in more favorable levels of service. The higher the peak hour factor, the better the levels of service. Since the actual peak hour factors were available, Gorove/Slade should have used them instead of the default values provided in the Synchro 7 traffic simulation model.

Response – Mr. Mehra's assumptions above are incorrect, as Gorove/Slade counts capture all vehicles, including trucks and buses. Gorove/Slade did not break out its counts by vehicle classification as the presence of buses and trucks was observed to be "typical" in the study area. Gorove/Slade collected turning movement counts using the standard methodology requested and accepted by DDOT.

Another missing data item is the existing queues at congested intersections and the spillback on to adjacent intersections. Commuter traffic diverts to other neighborhood streets, which are not designed for such traffic. This analysis is critical to the overall analysis and impacts the levels of service. For example, Gorove/Slade states in their report that queues on northbound Nebraska Avenue blocked the entranceway/exit of the Nebraska Avenue lot. However, the level of service for this intersection is computed to be LOS A, with a delay of less than 10 seconds per vehicle.

Response – The data referenced by Mr. Mehra is not used in the standard methodology requested and accepted by DDOT. The Gorove/Slade analysis documents results in the form of capacity and delay using HCM methodology, because that is the standard requested and accepted by DDOT. Queuing and spillback are not factors in the HCM methodology for calculating levels of service. Although results using HCM methodology are what is documented in the report, queuing calculations are performed by the Synchro software package used in the analysis. These files were submitted to DDOT, thus allowing for a thorough review of queuing and spillback if desired.

Peak Hour Determination– Gorove/Slade's report states that the "system" street peak hours are 7:45 to 8:45 AM and 5:15 to 6:15 PM. Use of the system peak hours masks the true maximum traffic volumes and the resulting levels of service at some of the studied intersections, and is contrary to industry best practices. For example, the actual peak hours at the critical intersection of Nebraska Avenue and Massachusetts Avenue are 7:30 to 8:30 AM and 4:45 to 5:45 PM. The actual (or "local") PM peak hour volume is 5,633 vehicles (at 4:45 to 5:45 PM); whereas the volume at the system peak hour of 5:15 to 6:15 PM is a somewhat lower 5,453. The pedestrian crossing volume at this intersection during the actual (local) PM peak hour is 1,785; however, Gorove/Slade has used 962 pedestrian crossings by utilizing the system peak hour for this intersection. The actual peak hour pedestrian volume is almost double that recorded during the system peak hour. Industry practice is to be conservative and use the "worst case" - which is to use the actual peak hours at each individual intersection. This is especially critical in the AU case, because AU peaks and street peaks do not coincide.

This analysis is supported by: The Transportation Impact Analyses for Site Development (An ITE Recommended Practice), which states, "In many cases, the street peak traffic hours and the site directional peak traffic hours should be analyzed to ensure not only adequate roadway operation, but also provision for sufficient driveway, turn lane and queuing capacity."

Response – The methodology Mr. Mehra describes is not the standard methodology requested and accepted by DDOT. Peak "hour" refers to one hour of the three-hour peak period in the morning and afternoon in which the volumes are the highest. The peak hour is calculated as the cumulative hour in which the system volumes of the entire study area are highest. According to the Institute of Transportation Engineers' Manual of Transportation Engineering Studies and Transportation Impact Analyses for Site Development, the time period with the highest cumulative traffic demands should be used. In this case the adjacent street volumes are higher than the site generated traffic and therefore the use of the system peak as identified by Gorove/Slade is in keeping with standard industry practice.

For background, the system peak is the accepted methodology, because the purpose of the traffic analyses contained in studies presented to the Zoning Commission is to determine the impact of such developments on surrounding neighborhood traffic, and not the impact of the development on itself. The system peak hour represents the 'worst case' traffic for the surrounding neighborhood.

Levels of Service Analysis– The key inputs to the levels of service analysis include the following:

- Traffic volumes
- Peak hour factors
- Percent of trucks/buses/shuttles

- Traffic controls
- Traffic signal timing
- Number of lanes, lane widths and their usage
- Pedestrian and bicycle counts

As noted above, Gorove/Slade used default values for the trucks/buses in the traffic stream. They also used default values for peak hour factors and lane widths. The higher the percentage of trucks and buses in the traffic stream, the lower the actual level of service. It is not clear if Gorove/Slade included bicycle counts in the levels of service analysis. The Synchro model shows 0 bicycle counts along Nebraska Avenue and Massachusetts Avenue in the vicinity of the main campus, but increased bicycle use is highlighted in the AU Campus Plan.

Gorove/Slade established LOS E as the acceptable level of service for this area in its March 2011 report. However, in their July 2009 report on AU's campus plan entitled, *Transportation Existing Conditions Assessment for 2011 Master Plan Update,* Gorove/Slade states that "For the purpose of this analysis, it is desirable to achieve a level of service (LOS) of "D" or better on each approach." The Nebraska Avenue Complex (NAC) Traffic Study that was completed recently by Kimley-Horn after scoping the study with DDOT, also established LOS D as the minimum acceptable criteria. As a result, LOS D may be considered the minimum necessary to provide an acceptable level of service, and adverse impacts may not be fully reflected in Gorove/Slade's most recent traffic analysis.

Main Campus– Even utilizing the erroneous data and assumptions discussed above, Gorove/Slade's analysis showed that five and four approaches are currently operating at LOS E or F during the AM and PM peak hours, respectively. In addition, four and nine approaches are currently operating at LOS D during the AM and PM peak hours, respectively. Correcting for the deficiencies identified above could potentially drop these approaches to LOS E or F as well.

Tenley Campus– Similar to the main campus results, Gorove/Slade showed that three and five approaches are currently operating at LOS E or F during the AM and PM peak hours, respectively. In addition, three and two approaches are currently operating at LOS D during the AM and PM peak hours, respectively. Correcting for the deficiencies identified above could potentially drop these approaches to LOS E or F as well.

Response - Gorove/Slade performed the capacity analyses using the standard methodology requested and accepted by DDOT. This methodology does not include altering the default values on such items as peak hour factors, lane widths and percentage of heavy vehicle traffic. Altering these values can shift results slightly for the better or worse, and is not as significant of an impact as Mr. Mehra portrays it to be.

Bicycles were included in the counts performed by Gorove/Slade, but they were recorded as vehicles or pedestrians depending on how they traversed the intersection, as that is the methodology used and recommended in the HCM. As the Synchro software package can perform several different traffic analysis methodologies, some inputs and variables contained within are not necessary for the HCM analysis, it is essential for the user to be knowledgeable of the software and methodologies used when performing the traffic analysis.

DDOT considers LOS "D" to be desirable, but not necessarily the minimum acceptable criteria. Instead of using a standard threshold, they examine the results and apply a context sensitive approach in determining when traffic levels are unacceptable. In most cases, unacceptable conditions begin at LOS "F", not LOS "E".

Pedestrian Analysis– Gorove/Slade conducted a pedestrian level of service analysis at signalized intersections using Chapter 18 of the 2000 Highway Capacity Manual. Gorove/Slade cites the manual and states that pedestrian delay is not

constrained by the capacity of the pedestrian walkways, even when pedestrian flow rates reach 5,000 pedestrians per hour. Gorove/Slade's pedestrian LOS results, therefore, do not have any meaningful consequences.

Chapter 18 of the Highway Capacity Manual on Pedestrians Methodology states, "Even though delay has an impact on the travel time of pedestrians, it does not reflect the functions of street corners and crosswalks, where the circulation of pedestrians and the space for pedestrians queuing to cross are important. An overloaded street corner and crosswalk can affect vehicular operations by requiring additional green crossing time or by delaying turn movements." For example, traffic attempting to turn right from Massachusetts onto Nebraska is likely to be delayed by crossing students and other pedestrians, and this delay is likely to back up traffic on Massachusetts Avenue.

However, Gorove/Slade did not analyze the pedestrian area requirements at street corners with high pedestrian volumes, such as Nebraska Avenue and Massachusetts Avenue. There are two types of pedestrian area requirements at street corners. First, a circulation area is needed to accommodate pedestrian crossing during the green phase, those moving to join the red-phase queue, and those moving between the adjoining sidewalks but not crossing the street. Second, a hold area is needed to accommodate pedestrian waiting during the red signal phase.

Response – The Pedestrian LOS used in the analysis was performed to consider delays to pedestrians when crossing streets, and is just one of the Pedestrian LOS calculations offered by the HCM. Gorove/Slade added this to the scope of the Campus Plan report, even though it is not typically included or was even requested by DDOT, in order to determine impacts to pedestrians by changes to the roadway network and traffic volumes.

It is true that pedestrian flow rates do not affect this particular calculation of LOS. Gorove/Slade has significant experience using Chapter 18 of the HCM in urban projects, and is very aware of what the LOS calculations in the report measure and do not measure. Gorove/Slade has applied the various pedestrian methodologies on enough prior projects to know that the only LOS calculation that could change due to the Campus Plan implementation, or mitigation measures suggested within the study, was the delay at crosswalks, which is why that particular pedestrian LOS calculation was employed. Existing observations and projected volumes were enough for Gorove/Slade to know that the other calculations in Chapter 18, including the queuing ones mentioned by Mr. Mehra above, would not show a significant result.

It is also true that pedestrian traffic can impede traffic trying to turn at intersections; Gorove/Slade took this into account within their calculations. The signal timings that DDOT already had in place, or that Gorove/Slade recommended included phasing that separated pedestrians and vehicles from crossing the same space at the same time (then a green light and a "Walk" sign overlap). In addition, the analysis did not allow for right-turn on reds at intersections, a conservative assumption since some right-turn on reds may occur even when many pedestrians cross intersections.

Safety Analysis– Safety of students, faculty, and staff crossing heavily travelled streets is paramount and the Gorove/Slade study has not addressed this aspect of the AU Plan at the main campus. Gorove/Slade only conducted a safety analysis to determine if there was an abnormally high vehicle accident rate at study area intersections. The study focused on crash rates at intersections. The study for the main campus does not mention pedestrian related accidents at intersections. Further, the study does not look at pedestrian accidents at mid-blocks, even though both AU and Gorove/Slade are projecting high pedestrian crossings at intersections and also mid-block on Nebraska Avenue.

Response - Gorove/Slade performed the safety analyses using the standard methodology requested and accepted by DDOT. This methodology is limited by the data provided from DDOT, which is derived from police reports. By nature, a

safety analysis cannot contain a significant amount of detail, but instead the police report summaries serve as background information to help engineers and planners examine intersections. The crash data is only provided for intersections, thus no mid-block crash analyses were performed since no data exists for mid-block locations.

FUTURE CONDITIONS

Growth Assumptions– The future conditions are those for the year 2020. Future traffic is obtained by summing the following elements: existing traffic, normal growth in through traffic, additional traffic generated by future (non AU) developments nearby, and additional traffic generated by the AU expansion.

Gorove/Slade grew the background traffic by 1 percent for the entire ten year horizon between 2010 and 2020, or only 0.1 percent per year.

The Round 8.0 Cooperative Forecasting Data from the Metropolitan Washington Council of Governments (MWCOG) show that the employment growth in the District of Columbia is projected to grow from 786,000 in 2010 to 868,300 in 2020. Similarly, the population is projected to grow from 605,500 in 2010 to 669,800 in 2020. This shows that the growth in population and employment is one percent per year and ten percent over the ten year horizon. The growth in traffic follows growth in population and employment.

In contrast to its slightly more recent analysis, the Detailed Traffic Capacity Analysis for American University Main Campus Plan by Gorove/Slade, dated September 1, 2010 states, "Other traffic increases due to inherent growth was accounted for with a 1% and 0.5% growth rate for through volumes on Nebraska Avenue and Massachusetts Avenue, respectively, compounded annually over the 12-year period of analysis (2008 to 2020). These rates were determined by comparing existing vehicular volumes travelling along Nebraska Avenue and Massachusetts Avenue to volumes from previous studies, including the 2000 Campus Plan and the 2005 School of International Services (SIS) Parking Study."

A one percent growth in traffic in the ten year horizon by Gorove/Slade is plainly unrealistic given population and employment trends and Gorove/Slade's own analysis of traffic in the area.

Response - Gorove/Slade performed background trip growth using methodology requested and accepted by DDOT. This methodology did change between versions of the analysis per a request from DDOT. Gorove/Slade and DDOT agreed to use rates derived from MWCOG's traffic model, which is based on the information cited by Mr. Mehra above.

AU Trip Generation Model

Main Campus– The Gorove/Slade report utilized "driveway counts" and parking lot observation data to obtain the number of trips generated by AU during the AM and PM peak hour. Gorove/Slade made a major assumption that "no AU related vehicles park outside the campus." This assumption is faulty and is not defensible. AU's own neighborhood parking survey showed that many AU related vehicles park on nearby neighborhood streets. Further, the AU off-campus parking citations issued in 2009 were 1,109 (a three-fold increase from 2006), and 4,784 near the Washington College of Law, which further substantiates the fact that many AU generated vehicle trips do not end on campus and were not counted as AU generated trips.

It is interesting to note that George Washington University similarly used driveway counts and parking lot data to develop GWU's trip generation model but then adjusted the data based on their travel survey to account for vehicles that were not parked at GWU parking facilities. The differences were substantial: 804 trips using parking lot data versus 1,522 trips using

the travel survey data during the AM peak hour. This is a very significant difference and Gorove/Slade should have undertaken a survey similar to that done at GWU in order to include vehicles parking off campus in their trip generation estimates.

The AU growth in vehicle trips was based on AU driveway counts and does not include students, faculty and staff who do not park inside the campus, or who drive to AU-owned properties located outside campus boundaries, or additional traffic from special events. If the GWU experience is applied to AU, the actual vehicle trip generation could be almost double the Gorove/Slade projections. The total trips forecast in 2020 are therefore significantly less than the likely projections incorporating MWCOG background traffic growth projections and AU vehicles parking in the neighborhood.

Importantly, the majority of the AU projected student growth is expected to be in the graduate student category, from 3,230 in 2010 to 4,400 in 2020. As a result, the graduate student proportion of total students is projected to increase from approximately 34% in 2010 to approximately 41% in 2020. Graduate students, according to AU's testimony, have travel characteristics that are similar to the AU law school students. Gorove/Slade surveyed the travel characteristics of law school students and employees (faculty and staff) and found that 51% and 88% drove to the law school, respectively. This results in a total in 2010 of 3,295 daily vehicle trips for the 3,230 graduate students and of 3,884 daily vehicle trips for the 2,207 main campus (non-law school) faculty and staff present in 2010. This total of 7,179 daily vehicle trips compares to Gorove/Slade's measured 1,328 peak hour trips based on their main campus driveway counts. These 1,328 trips need to be increased to 1,560 to account for the fact that Gorove/Slade's driveway counts exclude on-street parking, estimated at the modest 14.9% in the law school parking survey. (Gorove/Slades's 1,328 trips are 85.1% of 1,560 trips, where 85.1% (=100% - 14.9%) is the share of total trips that are picked up in the driveway counts if 14.9% parked on the street.) Dividing these 1,560 peak hour trips by the total 7,179 total daily trips shows that 21.73% of trips occurred during the AM (7.58%) and PM (14.15%) peak hours.

Turning to AU's trip generation for 2020 on the main campus, and assuming the same 51% and 88% of graduate students and faculty/staff continue to drive (as Gorove/Slade has implicitly done when they applied the main campus combined student and employee population growth of 12.8% to the number of peak trips observed in 2010 to get the growth in peak trips), the increase in graduate students of 1,170 (from 3,230 to 4,440) results in a total of **1,193** daily vehicle trips. The increase in faculty/staff, from 2,207 in 2010 to 2,400 in 2020, will generate an additional **340** daily trips. Therefore, a total of **1,533** daily vehicle trips will be generated by the proposed increase in graduate students and faculty/staff. Applying the 21.73% factor to these 1,533 trips, an additional 116 AM and 217 PM peak hour trips will be generated. This is approximately double the 59 and 101 peak hour vehicle trips calculated by Gorove/Slade. This shows that Gorove/Slade has underestimated the vehicle trip generation significantly. This occurs because Gorove/Slade: i) assumed that the mix of new students (which are almost entirely graduate students) will resemble the mix of existing students (which has more undergraduates than graduates) and ii) did not use their own data to correct for AU generated vehicle trips that end with the vehicle parked off campus.

Response - Mr. Mehra's comments would leave one to think that Gorove/Slade severely underestimated new trips to the AU campus with the Campus Plan in place. On the contrary, Gorove/Slade most likely severely overestimated new trips to the main campus. As stated in the report, the trips generated by the AU main campus within the last ten years have significantly decreased, even as the campus population has increased. The trip rate per person on campus has decreased at an extremely high level since the last Campus Plan. Logic would dictate that this trend would continue, and that in ten years with the new Campus Plan in place, the amount of vehicles trips generated by AU would be even fewer than they are today.

The methodology used by Gorove/Slade was a conservative one, as it ignored this and instead grew traffic at a rate based on overall population growth. This conservative approach is standard in the traffic engineering industry and was discussed with and agreed to with DDOT. Arguing over the exact way new trips were added to campus is not worthwhile when evidence suggests that trips will continue to decrease. Mr. Mehra's assumed trip generation could not come to pass without major changes to AU's TDM program, including removing many strategies and increasing the parking on campus. Instead, AU is adding TDM strategies and reducing parking on campus.

Contrary to Mr. Mehra's suggestion, the conditions that apply to the American University campus differ significantly from conditions at the GW-Foggy Bottom campus, and there was no need to adjust trip generation to account for vehicles that do not park at AU facilities.

- ***GWU is located in a denser urban neighborhood with many nearby opportunities for off-street parking in commercial garages that are privately operated and outside GWU control. By contrast, there are no nearby parking garages at AU, which means that employees are not likely to drive to campus unless they can park on campus.***
- ***There are also hundreds of on-street metered parking spaces within the GW Foggy Bottom campus, directly adjacent to campus buildings.[1] Beyond this number, there are hundreds of on-street spaces also available on the surrounding nearby streets in both the residential neighborhoods and commercial areas.***
- ***While Gorove/Slade does not deny that parking off campus by people affiliated with AU takes place, the RPP spaces near campus are not viable options for employees who work at AU, full-time students, or anyone else who needs to be on campus for more than 2 hours.***

Even if such an adjustment were applicable at GU, Mr. Mehra significantly overstates the adjustment that was made by GW to account for on-street parking. GW's trip generation number was not doubled, as Mr. Mehra erroneously suggests; rather, it was adjusted by a factor of 25%, which roughly approximates the proportion of on-street parking spaces within the Foggy Bottom campus to the number of off-street parking spaces within the Foggy Bottom campus. (Source: GW Foggy Bottom Campus Plan: 2006-2025 Transportation Impact Study, p7, 15-16)

Retail– Gorove/Slade considered additional traffic from the proposed retail establishments on East Campus by using Code 814 of the Institute of Transportation Engineers Trip Generation Report (PM Peak Hour)(Trip Generation Manual, 8th Edition). This Code for "Specialty Retail Center" would not be appropriate for a Panera Bread restaurant or a Starbucks coffee shop. If those types of establishments are included in the proposed retail space at East Campus, then Gorove/Slade would have underestimated the related impacts on traffic.

Response – As stated above, Gorove/Slade likely overestimated new trips. In addition, since the trips were based on counts of traffic in and out of the Main Campus, and since the Main Campus already has campus-based restaurants on site, the trip generation used by Gorove/Slade within its conservative methodology already inherently incorporates some restaurant activity, even before adding more through a stand-alone trip generation rate using ITE rates. This approach was discussed with and agreed to with DDOT.

Tenley Campus– Gorove/Slade conducted a travel survey to develop the trip generation rates and pedestrian and vehicle trips for the Tenley Campus. The survey gave the percentages shown in the following table (extracted from Table 26, page 112 of Gorove/Slade Transportation Technical Analysis). However, Table 4 of the Gorove/Slade Transportation Report (also dated March 11, 2011, the same as the Transportation Technical Analysis) shows a significantly higher drive alone percentage for the same survey: 46% of students drive alone, 94% of faculty drive alone, and 82% of adjunct faculty drive alone. This is a significant discrepancy and needs explanation.

[1] The GW-Foggy Bottom traffic study counted 635 spaces on the streets within the Foggy Bottom campus.

Mode	Students	Adjunct Faculty	Faculty	Staff
Walk	10%	0%	3%	1%
Drive Alone	35%	70%	75%	55%
Drive Carpool	4%	5%	0%	7%

Gorove/Slade computed the daily pedestrian trip generation to be 1,225, with 369 (30 percent) occurring during each of the AM and PM peak hours. According to Gorove/Slade's testimony, if the Washington College of Law (WCL) moves to the Tenley campus, the share of law students driving could fall from 51% to 40% and the share of faculty/staff driving could fall from 88% to 75%. Based on these assumptions, the 2000 WCL students projected to be present in 2020 will generate 800 daily round trips (=2,000 x 40% driving) and the 500 faculty/staff present in 2020 will generate 375 daily round trips (=500 x 75% driving). Summing these, a total of 1175 (=800

+ 375) daily round trips will be generated. Following Gorove/Slade's Table 28 (p. 113 of the Transportation Technical Analysis), 30% of these total trips will occur during each of the AM and PM peak hours, for a total of 353 inbound peak AM hour and 353 outbound peak PM hour trips. In Table 27, page 112 of the Transportation Technical Analysis, Gorove/Slade shows these numbers to be 125 and 100 during the AM and PM peak hours, respectively.

Hence, the correct projected vehicle trip generation for the Tenley Campus, using AU's enrollment numbers for the law school, should be approximately three times the numbers estimated by Gorove/Slade. The reason that the Gorove/Slade figures are so low is that they calculate the total of 150 inbound plus outbound AM peak hour trips generated by the WCL as 30% of the planned garage capacity of 500. They do the same to obtain their calculated 150 PM (inbound plus outbound) peak hour trips. The problem here is that garages do not generate trips, people (students, faculty and staff) do. Gorove/Slade should begin with the trips generated by those 800 students and 375 faculty/staff who will be driving to and from the law school, as our analysis above does.

But even more additional trips to the Tenley site than even this are a virtual certainty. For example, AU's website indicates that the Washington College of Law conducts extensive special events, continuing legal education courses and the like which are excluded from the Gorove/Slade trip counts and for which law school parking is generally not available. The trip generation model for Tenley is therefore invalid.

With regard to parking, as noted, AU's trip generation analysis shows that a total of 1,175 vehicles are projected to come in to the Tenley campus. A total of 400-450 parking spaces are to be provided for the 1,175 commuters, excluding those who attend special events and other daily uses. Even assuming a liberal parking turnover, 400-450 spaces may not be adequate to accommodate the parking demand. No indication is given as to where overflow parking will be accommodated. This excess demand will likely be met by parking in the adjacent neighborhoods or other off-street facilities. Based on the likely diverse origins for these trips and the fact that many commuters already park in the area streets in order to access the Tenleytown metro stop (especially those who live in DC's very large residential parking permit zone 3, the same as the Tenleytown zone), WCL commuters are likely to park all around the law school, including on both sides of Wisconsin Avenue.

It is likely that another serious adverse condition will arise at the Tenley Campus from the perspective of the neighboring properties. When the traffic leaving the Tenley site encounters congestion on Nebraska Avenue, it will likely turn right on Warren Street and divert to neighborhood streets. Gorove/Slade has estimated that as much as 49% of traffic leaving the site on Nebraska Avenue will turn right on Warren and then utilize 42nd to get to Wisconsin Avenue.

Response – The two tables do have different mode split amounts, as the table in Technical Report relays Gorove/Slade estimates for mode split at the relocated Tenley Campus, and the table in the Transportation Report relays the mode splits from the existing location. This may not be obvious from reading the reports.

Mr. Mehra's argument based on the mode split estimates and the enrollment and employment numbers is an invalid exercise as it ignores how not everyone will be on campus every day at the same time. Gorove/Slade used counts of traffic at the existing WCL parking facilities and the results of other questions from the WCL population survey to develop the trip generation rate. The projected trip generation at the future Tenley Campus is very similar to the trip generation at the current Tenley Campus, which makes sense as the decrease in drivers due to the location of the Metro station is offset by the increase in overall population.

Impact of Metro– Future trip generation to the Tenley Campus may be affected by moving the location of the Washington College of Law closer to the Metro station. At the June 23 hearing, Gorove/Slade stated that it is not possible to reliably estimate the future number of Metro users. AU has estimated that approximately 45% of students may take Metro, as compared to 14% now. A much smaller percentage of the faculty and staff is expected to take Metro. In my view, it is logical to assume that the actual number of Metro riders will ultimately be determined equally by where students, faculty, staff and visitors actually commute from relative to Metro – where they ride from – rather than solely where they ride to. Assuming riders will live or work in the same places as they do now, this suggests that a radical shift is unlikely and the future level of ridership may more closely approximate the current ridership. In view of this uncertainty, it is advisable to be conservative with Metro usage and determine traffic impacts accordingly.

Response –Gorove/Slade considers ignoring the impact of relocating the WCL to a space adjacent to a Metro Station poor transportation planning. In fact, it is highly likely the impact will be much greater than projected by Gorove/Slade. Gorove/Slade's estimates were assembled as a compromise that doesn't ignore Metro's influences, but stays conservative per industry standards.

Future Levels of Service – As described in the SUMMARY section near the beginning of this paper, we were able to correct some of the deficiencies in the Gorove/Slade analysis and rerun the 2020 traffic simulation analysis at four key intersections. We did this both with and without the AU campus plan.

The computations utilized the Synchro Model, as used by Gorove/Slade, except that we have used lane widths measured from Google Maps, peak hour factors as computed by Gorove/Slade, heavy vehicle percentages from data available at MCV (5% instead of the Synchro model default value of 2%), 1% per year growth on Nebraska Avenue over the ten year period, and improved estimates of AU generated traffic (as computed above). The results are as follows (the levels of service worksheets are available upon request):

COMPARISON OF LEVELS OF SERVICE								
	Gorove/Slade				MCV			
	Background		With Campus Plan		Background		With Campus Plan	
Intersection	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Nebraska/Ward Circle (S)	LOS C 25.0	LOS C 26.2	LOS C 26.7	LOS C 30.5	LOS D 40.2	LOS F 86.3	LOS D 51.5	LOS F 121.9
Nebraska/New Mexico	LOS C 21.7	LOS C 22.1	LOS C 21.6	LOS C 24.8	LOS C 32.6	LOS F 80.7	LOS E 69.9	LOS F 90.5
Nebraska/Van Ness	LOS C 26.6	LOS C 20.5	LOS C 30.3	LOS C 20.2	LOS D 36.0	LOS C 26.5	LOS F 98.5	LOS F 304.3
Nebraska/Wisconsin	LOS B 10.5	LOS C 33.9	LOS B 10.4	LOS D 36.5	LOS B 13.1	LOS D 49.8	LOS B 14.0	LOS E 61.2

As seen in this table and noted above, vehicle delay time and LOS deteriorate markedly once we have corrected even some of the deficiencies in the Gorove/Slade analysis. Because of resource constraints we were not able to capture: traffic queues and their effects, on-street parking and parking around AU commercial properties beyond the 14.9% correction for on-street parking, and any impacts of the greater number of pedestrian trips on traffic especially around East Campus. Had we been able to take these into account, the resulting level of service in 2020 would have been worse still.

The traffic conditions in 2020 with the campus plan are shown for the AM and PM peak hours in the last two columns of the above table. Four of the eight values are LOS F and two more are LOS E, all with very substantial delays. Or said differently, the levels of service at each of the four intersections are projected to be LOS E or LOS F during either the AM peak or the PM peak hour or both. These results are attributable to two factors: a) a very modest increase in the estimated growth rate of background traffic (a total of 10% over the 2010-20 period instead of 1%) and b) a larger and more realistic estimate of AU trip generation. It is a testament to how congested the area around AU already is that adding only 9% to background traffic growth could cause such a substantial deterioration in vehicle delay and LOS, whose magnitude can be seen by comparing the first pair of columns in the table above (which are estimated assuming 1% background growth and yield 1 intersection rated "B" and 7 rated "C") to the third pair of columns (which are estimated assuming 10% background growth and yield 1 intersection rated "B", 2 rated "C", 3 rated "D", and 2 rated "F"). The impact of AU's increased trip generation is also very substantial, as can be seen by comparing the third pair of columns (with 10% background traffic growth but without the AU campus plan expansion) to the last pair of columns (with 10% background traffic growth and with the AU campus plan expansion and yielding 1 intersection rated "B", 1 rated "D", 2 rated "E", and 4 rated "F").

A logical conclusion of this analysis is that given AU's substantial impact on traffic congestion in the surrounding area, its plans for expansion should be scaled back.

Response – Gorove/Slade completely disagrees. It appears that Mr. Mehra is adjusting variables to get the desired results. It is not possible for an arterial roadway such as Nebraska Avenue can sustain a growth rate of 1% per year, as the corridor already operates at capacity, and cannot accommodate 10.5% more vehicles. Using such conservative assumptions would obviously lead to worse capacity analysis results. As for the impact of AU traffic on these intersections, it is difficult to believe that such a small increase in traffic levels would lead to such dramatic changes in congestion (a 1-5% change in volumes do not generally lead to the congestion changes shown above). Without seeing the details behind the analysis results shown above, Gorove/Slade cannot comment further, but would suggest not taking these results into account.