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TESTIMONY OF JOE MEHRA, P.E.
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IN OPPOSITION
TO Edmund Burke School APPLICATION

I am Joe Mehra, President of MCV Associates, Inc. I have over 25 years of experience in traffic engineering and transportation planning. I was the co-author of the first ever handbook on Site Impact Traffic Evaluation that was prepared for the U.S. Department of Transportation. I will present a review and critique of the Gorove/Slade Traffic Reports dated September, November and December 2000 and April 2001, followed by our own traffic analysis.

Roadway Network - The existing roadway network in the vicinity of the school consists of the heavily traveled major arterial Connecticut Avenue, Upton Street, Van Ness Street, Tilden Street and the Public Alleys between Veazey Terrace and Tilden Street. Upton and Van Ness Streets are residential streets. Upton Street is narrow with parking on both sides, and provides access to several institutional uses such as Howard Law School, Levine School, Hillwood, etc. Van Ness Street is a dead end street. The public Alleys between Veazey Terrace to Van Ness Street, between Van Ness Street and Upton Street and between Upton Street and Tilden Street are used for access to and from the school. The public alley is the only egress for some of the residents.

Comments on Gorove/Slade Reports Dated September 25, November 8, December 20, 2000 and April 10, 2001.

Existing Data - The turning movement counts at all locations were taken in 1999. These counts were not adjusted to make them current. Further, some of the counts were taken in July, 1999 during the summer break and the Edmund Burke School was not in session. These counts will not reflect the typical traffic volumes when the school is in session. The traffic analysis based on summer counts (with significantly lower traffic volumes due to vacations , etc. do not reflect real world conditions when the school is in session. The results and findings based on these counts are therefore NOT VALID.

The report notes on page 6 that the maximum queues on Upton Street is 4 (westbound) and 5 vehicles (eastbound) and extends for 10 minutes during the AM peak hour.

The Gorove/Slade data shows that the peak one hour during the morning is between 7:45 to 8:45 AM, however they have used the peak hour as 7:30 to 8:30 AM. The traffic volumes are approximately 10 percent less during the 7:30 to 8:30 AM in comparison to 7:45 to 8:45 AM. The selection of the peak one

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hour during the PM peak period (2:00 to 4:00 PM) is also not correct. The data shows that the peak one hour is 3:00 to 4:00 PM, however, the levels of service calculations are based on 2:30 PM to 3:30 PM time period (approximately 10% less traffic).

The selection of the PM peak hour between the hours of 2:00 PM to 4:00 PM as the schools afternoon peak hour is wrong. The Institute of Transportation Engineers Recommended Practice for Traffic Access and Impact Studies for Site Development notes "The time period(s) that provide the highest cumulative directional traffic demands should be used to assess the impact of site traffic on the adjacent street system and to define the roadway configurations and traffic control measure changes needed in the study area". Gorove/Slade Report notes on page 4 that approximately half of the students participate in after school programs and athletics until 6:30 PM. The selection of the 2:30 PM to 3:30 PM time period by Gorove/Slade results in approximately 50% less traffic on Connecticut Avenue than the later peak hour. Thus, the Recommended Practice for traffic impact studies is not being followed. Gorove/Slade is not being consistent in their analysis. It should be noted that Gorove/Slade analyzed the commuter peak hour for the Levine School Traffic Impact Study although the commuter peak hour did not coincide with the school peak hour.

Edmund Burke School Trip Generation (Existing Conditions) - The Gorove/Slade Report does not show the trips or trip rates for the existing school site. It does not show the use of public transportation or carpooling. Further, the Gorove/ Slade report shows that a total of 21 students drive to school. The report does not provide the data regarding existing vehicle trip generation. Based on these numbers the existing school needs at least 57 parking spaces for the faculty/staff and students.

Existing Levels of Service - Gorove/Slade used the Highway Capacity Manual (HCM), 1997 to estimate capacity and levels of service at the four intersections under study. The signalized intersections were analyzed as being in "other areas". These intersections should be analyzed as being in CBD or similar areas. The HCM notes that if the areas characteristics are such that the streets are narrow or narrow sidewalks, several parking maneuvers, taxi or bus activity, limited use of exclusive turn lanes , mid-block curb cuts, high pedestrian activity, etc. then the CBD or similar areas should be used. A LOS C at Connecticut and Tilden in the AM peak hour for the existing conditions by Gorove/Slade, using "other areas" is actually a LOS D. Due to the reasons noted above, all levels of service provided by Gorove/Slade are not correct and show better levels of service than the real world conditions. The levels of service at the intersection of Connecticut Avenue and Van Ness Street is LOS F during the AM peak hour.

Future Traffic Volumes - The future traffic volumes consist of the existing traffic volumes, the normal growth in through traffic volumes, the traffic from other developments and the traffic from the proposed school. The Gorove/Slade Report has not grown the traffic that was counted in 1999 to the future year (2002 or later), has not included the traffic from the approved adjacent developments such as the full occupancy of the International Center, the Levine School of Music Auditorium, and the Hillwood Museum. The total future traffic volumes are therefore incorrect.

Total Future Levels of Service - As noted before, the total future levels of service have been estimated based on a 2:30 to 3:30 peak hour and have been estimated using wrong area type. The use of the ITE recommended peak hour (5:00 to 6:00 PM) would result in LOS F at all three intersections on Connecticut Avenue.

Access and Circulation Plan

The four different reports do not show the school trip assignment to the roadway network. The trip distribution shows that 40% of the school traffic is coming from the east on Tilden Street during the AM hour and they would prefer to use Upton Street for drop-off and pickup instead of using the Connecticut Avenue entrance (since Connecticut Avenue northbound backs up from Van Ness through Upton). Therefore the Gorove/Slade statement that 80 to 90 percent of the school traffic will use Connecticut Avenue entrance is erroneous. Further, most of the departing traffic will use Upton Street since approximately 25 percent of the traffic is heading north on Connecticut Avenue.

The circulation plan (I-F) shows that vehicles using the Connecticut Avenue entrance can exit on to Upton Street, adjacent to the Public Alley. The intersections of the Public Alley and the School driveway at Upton Street will result in a severe conflict at Upton Street. The left turns from the school driveway will conflict with the right turns from the Public Alley and in turn conflict with the traffic on Upton Street. This will result in a major conflict and unsafe conditions on Upton Street, the Public Alley and the school driveway. In addition, the plan assumes that buses will be using the Public Alley to access the parking areas. The Alley is narrow and as noted below is used as a two way Alley. The use of the Alley for buses will result in unsafe conditions to the students as well as the motorists.

The report notes on page 11, that southbound Connecticut Avenue traffic will shift to Reno Road, turn left on to Tilden Street, left on to Connecticut Avenue and right in to Connecticut Avenue access point. This circuitous route (involving five turning movements and passing through several traffic controls) will add a considerable amount of travel time to the school traffic. The easier and shorter

route is to turn left from southbound Connecticut Avenue on to Veazey Terrace (using the protected left turn green arrow), cut through the Alley between Veazey Terrace and Van Ness Street and the Alley between Van Ness Street and Upton Street and the drop-off students on Upton Street.

There are several major flaws with the access and circulation plan, as presented to the Board:

1. The existing morning and afternoon volumes and patterns do not show any vehicles turning from Connecticut Avenue on to Upton Street, although the Gorove/Slade report shows over 50 vehicles turning from the north and south, respectively, on Connecticut Avenue.

2. The graphic (board) shows a total of 135 vehicles approaching the school in the morning hour for the existing conditions, whereas the report shows a total of 167 vehicles.

3. The proposed morning volumes approaching from Van Ness/Public Alley is 15 vehicles whereas parking for 25 vehicles is provided. How will the other 10 vehicles get to the parking lot?

4. The circulation plan does not show how the exiting vehicles on to northbound Connecticut Avenue will proceed east, west or south. These vehicles will probably turn right on to Van Ness Street and drive through the Public Alley and on to Upton Street. Therefore the bar charts shown on the boards are incorrect. The impact on Van Ness and Upton Streets will be much more severe than indicated. The compliance plan does not address the exiting vehicles' travel patterns.

5. Stacking Spaces - The report states that the maximum stacking during the PM peak hour will be 12 vehicles. The Gorove/Slade report states that there will be stacking for 6 vehicles on site. Since no changes were made to the circulation plan, how did the stacking increase from 6 spaces to 17/19 spaces.

6. The circulation plan assumes that parents will drop-off the students at remote lots. There are no benefits or incentives to the parents for this assumption. On rainy days and inclement weather days, on days when the parents/students are running late, all parents will drive to school and not to the remote lots.

Transportation Management Plan (TMP)

The TMP assumptions and calculations are in ERROR, as presented below.

1. The TMP notes that access to Upton Street will be restricted for shuttles only. As shown in the proposed morning and afternoon plans, this is not so.

2. The May 16 supplement states that 36 students currently take Metro. The reason that others do not is probably that Metro is not convenient to them (in Virginia or Maryland). Gorove/Slade assume that the subsidy will increase the Metro use to more than double the current use (from 36 to 80 students). It should be noted that this is a Private school and the provision of transit subsidy may not increase the transit ridership to 45 percent of the Virginia and Maryland student population. My estimate of future transit use from Virginia and Maryland students is 48 and not 80 resulting in a decrease of 3 vehicles and not 36, as estimated by Gorove/Slade.

3. The calculations of the shuttle use is in error. The supplement notes that 170 vehicles (85% of the incoming vehicles of 200) are target for shuttle service. The 200 incoming includes 4 shuttle bus trips, 39 staff/employee trips and 36 transit trips. Therefore the target vehicle trips are 110 (85% of 200-4-39-27). Further, 24% of these are assumed to shift to shuttle and this comes to 26 trips. The supplement incorrectly calculates this to be 40. As noted earlier, parents have no incentives to drop the students at remote lots to be shuttled to the school during the AM hours only. My estimate of shuttle use is 10 students, which results in a reduction of 8 vehicle trips and not 40, as estimated by Gorove/Slade.

4. The TMP makes another major error in that <u>one student equals one vehicle.</u> The school staff and the Police person have said that there is a considerable amount of carpooling in that more than one student arrives in one vehicle. The reductions estimated by transit subsidy and shuttle service are students **<u>not</u>** vehicles. Therefore a carpooling factor has to be applied before the students can be converted to vehicles.

5. The existing auto occupancy is approximately 1.33 students per vehicle. Based on my estimation, the reduction in vehicle use due to transit subsidy is 3 vehicles (4/1.33) and due to shuttle service is 8 vehicles (10/1.33). The total reduction during the morning peak hour is 11 vehicles. Therefore the total impact on Connecticut Avenue, Upton Street and Van Ness Street is 189 vehicles and not 124, as stated in the Supplement.

<u>Gorove/Slade Technical Memorandum Dated June 15, 2001</u>

The June 15 Memorandum estimates that a total of 28 vehicle trips will be reduced during the AM peak hour if the school population is kept at the Approved levels (270 students and 35 faculty/staff). The memorandum states that, "During the AM peak hour at the approved Burke school level, there will be 6 fewer

vehicles approaching the school via the public alley and 6 fewer vehicles approaching the school on Upton Street." This statement is not true, since these numbers add up to only 12, however, the reduction is 28 vehicles and therefore the impact on the public alley and Upton Street is more than 6 vehicles. Consequently, Table 2 (on Page 2) is incorrect, Figure 2 is incorrect and the calculations of levels of service in Table 2 (on Page 5) based on the Figure 2 numbers is also incorrect.

Conclusion - Due to the major errors in the use of the existing traffic data, the traffic analysis including the levels of service are not valid. The Gorove/Slade Report conclusion that all (except Connecticut Avenue at Van Ness during the AM peak hour) of the studied intersections are projected to operate at acceptable levels of service during the AM and PM peak hours is **NOT VALID**. The proposed circulation plan would result in unsafe conditions on Upton Street at its intersections with the school driveway and the Public Alley. The traffic impacts of the proposed school expansion will make the existing bad conditions worse on Upton Street, the Alleys between Veazey Terrace, Van Ness and Upton Streets and Connecticut Avenue. The circulation plan and access routing proposed by the school for the parents, students and faculty/staff is not enforceable. Use of school buses on Upton Street is unsafe due to the narrow roadway width, parking on both sides of the street and the fact that Upton Street is a two-way street. The estimation of trip reduction due to the Transportation Management Plan is erroneous showing a significantly higher reduction than possible.

MCV TRAFFIC ANALYSIS

New Traffic Data Collection - MCV collected new traffic counts on Thursday, November 9, 2000. Data was collected at the intersection of Upton Street and the "Alley" and also at the intersection of Van Ness Street and the "Alley" between Veazey Terrace and Van Ness Street during the hours of 7:00 to 9:00 AM, 2:00 to 6:30 PM, and 7:00 to 8:00 PM (since an evening activity was planned by the school on this day). Further, the pedestrian activity and the queues on Upton Street were also observed.

A comparison of the traffic volumes on Upton Street and Van Ness Street between the Alley and Connecticut Avenue during the AM peak hour is as follows:

	MCV (Nov. 2000)	GSA (Sept./Oct. 1999)	Difference GSA-MCV
Eastbound Upton	131	142	+11 (8%)
Westbound Upton	171	93	-78 (-84%)
Total Upton	302	235	-67 (-29%)
Eastbound Van Ness	127	109	-18 (-17%)
Westbound Van Ness	185	149	-36 (-24%)
Total Van Ness	312	258	-54 (-21%)

The above comparison shows that the Gorove/Slade traffic volumes on Upton Street and Van Ness Street are 21 percent to 29 percent less than current existing volumes. This supports our conclusion above, that the Gorove/Slade data is outdated and therefore their conclusions based on old data is not valid.

The traffic volumes on these streets during the other time periods on November 9, 2000 were as follows:

Street	AM Peak Hour (7 to 9)	Afternoon Peak Hour (2 to 4)	Commuter PM Peak (5 to 6)	7:00 to 8:00 PM
Upton Street	302	201	178	87
Alley between Van Ness and Upton	57	27	55	13
Van Ness Street	312	232	293	206
Alley between Van Ness and Veazey Tr	88	53	89	36

This shows that Upton Street and Van Ness Street along with the two alleys are used extensively during the school hours. Approximately 100 vehicles travel from the Veazey Terrace Alley to Upton Street Alley.

I also observed the queues in front of the school during the AM peak hour. The queue on Upton Street started to build up reaching a maximum of 26 vehicles in the westbound direction at approximately 8:07 AM. Between the hours of approximately 8:00 AM to 8:15 AM, the alley's access on to Upton Street was

blocked. Further, traffic on northbound Connecticut Avenue blocked Upton Street during this same time period.

A significant amount of pedestrian activity was observed during the AM peak period. A total of 166 pedestrians were observed on Upton Street near the school. Many of these pedestrians crossed Upton Street and/or the Alley, thus creating a vehicle/pedestrian conflict.

Several vehicles were observed to travel north on the one-way southbound alley, creating an unsafe condition.

Levels of Service Analysis - The Highway Capacity Manual for unsignalized intersections does not provide for a methodology to estimate the levels of service at the intersection of Upton Street and the Alley that would include the effect of the intersection of Connecticut Avenue and Upton Street. Based on field observations during the peak one hour, vehicles were observed to undergo severe delays.

Based on MCV traffic analysis, it can be concluded that the existing conditions in the area are unsafe and congested and any additional traffic on the adjacent roadways will make it worse.

EBS Transportation Management Plan

Gorove/Slade Analysis

Transit Subsidies

Current 36	students take Metro from VA/MD	299 Total students
Future 44	students take Metro from VA/MD	360 Total students
Future 36	students shift to Metro with transit subsidy (VA/MD)	
Future 80	students take Metro from VA/MD	360 Total students
Future 36	Vehicle trip reductions due to transit subsidy	

Shuttle Service

200	TOTAL vehicle Trips Inbound
85	Percent from North, West and East
170	vehicle trips potential market (0.85*200)
40	24% vehicle trip reduction (0.24*170)
10	passengers per trip (40/4 trips)

MCV Analysis

Corrected Analysis Using Gorove Slade Assumptions

Current 36	students take Metro from VA/MD	299 Total students
Future 44	students take Metro from VA/MD	360 Total students
Future 36	students shift to Metro with transit subsidy (VA/MD)	
Future 80	students take Metro from VA/MD	360 Total students
Future 27	Vehicle trip reductions due to transit subsidy (36/1.33)	

ESTIMATED BY MCV

Future 4	students take Metro from VA/MD
Future 3	Vehicle trip reductions due to transit subsidy

Corrected Analysis Using Gorove Slade Assumptions

200	TOTAL vehicle Trips Inbound
-4	shuttle trips
-39	Faculty/staff vehicle trips
-27	Metro trips due to subsidy
130	Total student vehicle trips inbound
85	Percent from North, West and East
110	vehicle trips potential market (0.85*130)
146	student trips potential market (110*1.33)
35	24% student trip reduction (0.24*146)
26	vehicle trip reduction (35/1.33)

ESTIMATED BY MCV

10	Total Students shift to shuttle
8	vehicle trip reductions due to shuttle