

County of Loudoun

Office of Transportation Services

MEMORANDUM

DATE: November 4, 2009
TO: Sophia Fisher, Project Manager, Department of Planning
FROM: George Phillips, Senior Transportation Planner *SJP*
SUBJECT: SPEX 2009-0028 Arris Montessori School
Second Referral

Background

In response to initial OTS comments dated October 13, 2009, the applicant has provided additional materials for review. This referral is based on materials received from the Department of Planning on October 21, 2009, including (1) a revised statement of justification, dated October 15, 2009; (2) a letter from the applicant, dated October 15, 2009, responding to first referral comments; (3) a special exception plat, revised October 14, 2009, from Bowman Consulting Group, Ltd., and (4) additional traffic information and analysis, dated October 15, 2009, from Wells & Associates.

Additional Traffic Information and Analysis Summary

The applicant's latest traffic information (*Attachment 1/Table 3A*) includes a trip generation analysis and comparison that breaks out child care and private school uses as defined by the Loudoun County Zoning Ordinance. Option 1 includes 89 day care students and 86 private school students. Option 2 includes 51 day care students and 124 private school students. These options were compared against the 100% private school use for 175 students which were included in the applicant's original study, dated June 22, 2009 (*Attachment 2/Table 3*). While there was a decrease in the A.M. peak hour trips, a maximum of 14 more P.M. peak hour trips are shown to be generated when compared to that shown in the earlier study. These additional trips were added to the total future traffic volumes at the Loudoun County Parkway/Cape Court intersection and re-analyzed for the P.M. peak hour (*Attachment 1/HCM Analysis*). The eastbound left-turn movement onto northbound Loudoun County Parkway delay increased by 0.5 seconds to 19.3 seconds of delay, which maintains LOS C.

Transportation Comments

Discussed below are the initial OTS staff comments, the applicant's response, and the issue status in terms of whether or not the staff comment has been adequately addressed.

1. **Initial Staff Comment (First Referral October 13, 2009)**; Based on information included in the application, child care is proposed with this application. Yet, the trip generation data provided in the applicant's traffic study does not appear to include these additional trips. Thus, the traffic may be undercounted and the LOS analysis inaccurate. Child care uses would likely produce trips that coincide with the A.M. and P.M. peak hour, requiring a revised analysis. Please clarify why the trip generation for the child care was not provided and confirm the hours of operation and capacity of the child care facility.

***Applicant's Response (October 15, 2009)**: A trip generation analysis and comparison has been completed for two options that would break out the child care and school uses as defined by the Zoning Ordinance. One option included 89 child care students/86 regular students and the second option included 51 child care students/124 regular students. The comparison is shown on Table 3A attached and indicates that during the AM peak hour fewer trips would be generated than that shown in the traffic study. During the PM peak hour a maximum of 14 more trips may be generated when compared to that shown in the traffic study. These additional trips were added to total future traffic volumes at the Loudoun County Parkway/Cape Court intersection and re-analyzed for the PM peak hour. The results of the capacity analysis indicates that the eastbound left-turn movement increased in delay by 0.5 seconds to 19.3 seconds of delay, maintaining a level of service (LOS) "C". Based on the results of the additional analysis, the conclusions of the traffic study remain valid. The analysis worksheet is provided with this response.*

Child care trip generation was assumed to be part of the rates used as these rates reflect a Montessori School use similar to that proposed. The hours of operation for the school are 7:30 AM to 6:00 PM with staggered arrivals and departures for students depending on age group. One factor determining the capacity of the child care facility is based on the available outdoor play space. Other factors may also apply. The play area shown with the previously submitted site plan would yield approximately 51 child care students. A revised site plan would permit up to 89 child care students. This range of students was the basis for the additional traffic analysis and worse case condition was analyzed.

Issue Status: The applicant has adequately addressed the concern that child care trips were not incorporated into the analysis. Issue adequately addressed.

2. **Initial Staff Comment (First Referral October 13, 2009)**: The applicant needs to ensure that adequate parking and appropriate vehicle circulation is available for the proposed uses given the existing zoning and businesses adjacent to this site. This needs to be verified by appropriate Building & Development staff.

***Applicant's Response (October 15, 2009)**: A Drop-off/Pick-up Plan, Sheet 4 has been added to the plan set to illustrate drop-off locations, over 600 feet of stacking, and circulation. The*

286 existing spaces on site are shared among users in the building/site. Currently users in the building include a design center, government and private sector contracting, an insurance office, construction contractors, internet and digital communications office, and a private high school (Ideal School).

Issue Status: The applicant has provided a realistic drop-off/pick-up Plan. This Plan should be included in the Special Exception conditions along with appropriate signage to direct users for the drop-offs and pick-ups. However, it is unclear from the applicant's response whether the existing 286 spaces for the overall site will be adequate for this particular use. As previously noted, the number of parking spaces available for the proposed use should be indicated by the applicant and verified by Building & Development staff. Further clarification is recommended.

3. **Initial Staff Comment (First Referral October 13, 2009):** The applicability of Route 28 Tax District payments for the proposed uses needs to be confirmed. If applicable, a condition of approval consistent with the condition language included with the Ideal Schools application (SPEX 2008-0020) is recommended.

Applicant's Response (October 15, 2009): *The applicant for the Ideal Schools special exception was also the owner of the property. Here, the Applicant is a tenant and not the owner of the Property and is unable to agree to a condition that affects the owner's liability for taxes.*

Issues Status: So noted. OTS defers to the County Attorney's office for a final determination.

RECOMMENDATION

Subject to resolution of the issues noted above, OTS would have no objection to the approval of this application. OTS staff is available to meet with Department of Planning staff and the applicant to discuss.

ATTACHMENTS

1. Applicant's New Traffic Information (Table 3A and HCM Analysis)
2. Trip Generation From Applicant's Original Traffic Study (Table 3)

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cc: Andrew Beacher, Assistant Director, OTS
Lou Mosurak, Senior Coordinator, OTS

Table 3A

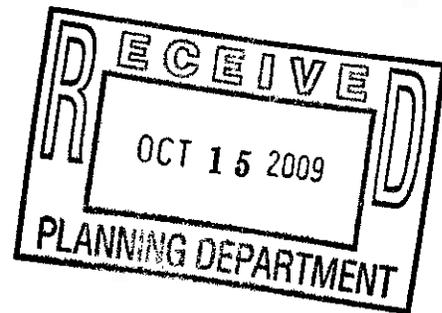
Arris Montessori School

Site Trip Generation Comparison

Land Use	ITE ⁽¹⁾ Code	Amount	Units	AM Peak Hour			PM Peak Hour			Average Daily Traffic
				In	Out	Total	In	Out	Total	
With Traffic Study (WTS)										
Private School ^(2,3)	534	175	Students	96	82	178	50	57	107	434
			Rate	0.55	0.47					
Comparison with Day Care Use										
<i>Option 1</i>										
Private School ⁽³⁾	534	86	Students	44	36	80	23	25	48	213
Day Care	565	89	Students	38	33	71	34	39	73	399
	Total	175		82	69	151	57	64	121	612
	Difference (W TS vs Opt 1)			(14)	(13)	(27)	7	7	14	178
<i>Option 2</i>										
Private School ⁽³⁾	534	124	Students	63	52	115	33	38	71	308
Day Care	565	51	Students	22	19	41	20	22	42	228
	Total	175		85	71	156	53	60	113	536
	Difference (W TS vs Opt 2)			(11)	(11)	(22)	3	3	6	102

Notes:

- (1) Trip estimates based on rates and equations published in the Institute of Transportation Engineers Trip Generation, 8th Edition
- (2) AM Peak hour reflects independent trip rates collected by W+A which reflects higher trips than ITE. PM Peak hour reflects peak hour of generator which would occur before the commuter PM peak hour.
- (3) ADT rate from ITE Land Use Code 536 (Private School K-12).



HCM Unsignalized Intersection Capacity Analysis

1: Cape Ct & Loudoun County Pkwy

10/15/2009



Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	↶		↶	↕	↕	↷	
Volume (veh/h)	89	166	92	908	354	49	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	97	180	100	987	385	53	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				Raised	Raised		
Median storage (veh)				1	1		
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	1078	192	438				
vC1, stage 1 conf vol	385						
vC2, stage 2 conf vol	693						
vCu, unblocked vol	1078	192	438				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)	5.8						
tF (s)	3.5	3.3	2.2				
p0 queue free %	69	78	91				
cM capacity (veh/h)	314	817	1118				
Direction, Lane #							
	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	277	100	493	493	192	192	53
Volume Left	97	100	0	0	0	0	0
Volume Right	180	0	0	0	0	0	53
cSH	524	1118	1700	1700	1700	1700	1700
Volume to Capacity	0.53	0.09	0.29	0.29	0.11	0.11	0.03
Queue Length 95th (ft)	77	7	0	0	0	0	0
Control Delay (s)	19.3	8.5	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	A					
Approach Delay (s)	19.3	0.8			0.0		
Approach LOS	C						
Intersection Summary							
Average Delay			3.4				
Intersection Capacity Utilization			46.9%		ICU Level of Service		A
Analysis Period (min)			15				

Table 2
Arris Montessori School
Background Trips

Land Use Options	ITE ⁽¹⁾ Code	Amount	Units	AM Peak Hour			PM Peak Hour			Average Daily Traffic
				In	Out	Total	In	Out	Total	
Office	710	11,790	SF	30	4	34	16	76	92	257
Ideal Schools	536	48	Students	23	15	38	3	5	8	119
Total Background Trips				53	19	72	19	81	100	376

Note: (1) Trip estimates based on rates and equations published in the Institute of Transportation Engineers Trip Generation, 8th Edition.

Table 3
Arris Montessori School
Site Trip Generation Comparison

Land Use	ITE ⁽¹⁾ Code	Amount	Units	AM Peak Hour			PM Peak Hour			Average Daily Traffic
				In	Out	Total	In	Out	Total	
Private School ^(2,3)	534	175	Students	96	82	178	50	57	107	434
			Rate	0.55	0.47					

Notes:

- (1) Trip estimates based on rates and equations published in the Institute of Transportation Engineers Trip Generation, 8th Edition.
- (2) AM Peak hour reflects independent trip rates collected by W+A which reflects higher trips than ITE. PM Peak hour reflects peak hour of generator which would occur before the commuter PM peak hour.
- (3) ADT rate from ITE Land Use Code 536 (Private School K-12).