HIGHLAND PARK ISD
TRAFFIC MANAGEMENT PLAN REPORT FOR
PROPOSED HPISD ELEMENTARY SCHOOL SITE
ON NORTHWEST HIGHWAY
BETWEEN AIRLINE ROAD AND DURHAM
IN THE CITY OF DALLAS, TEXAS

PURPOSE OF STUDY

The purpose of conducting this study is to provide a Traffic Management Plan (TMP) that will certify to the city of Dallas that no queuing of vehicles dropping or picking up students will extend onto City of Dallas right-of-way as a result of internal queuing constraints. In order to ensure that all queuing of vehicles is completely accommodated on school property, school administrative officials should implement the proposed Traffic Management Plan (TMP), monitor the operation on a continuing basis, and if any vehicle queuing should begin to occur on public right-of-way, provide actions necessary to mitigate queuing.

STUDY AREA TRAFFIC CONDTIONS

Roadways:

Northwest Highway: is a six-lane divided roadway (Principal Arterial) adjacent to the north side of the proposed school site with a speed limit of 35 mph.

Airline Road: is a two lane residential roadway adjacent to the west side of the proposed school site with a speed limit of 30 mph.

Wentwood: is a two lane residential roadway south of the proposed site with a speed limit of 30 mph.

Northwest Parkway: is a two-lane, two-way roadway with a roadway width of 20 feet that runs parallel to Northwest Highway. This roadway functions as a frontage road for businesses and residences along Northwest Highway.

Durham Street: is a two lane residential roadway adjacent to the east side of the proposed school site with a speed limit of 30 mph that will serve as the primary access to the school site and parking garage.

Intersections:

- **Northwest Highway at Hillcrest Road** (Full actuated traffic signal).
- **Northwest Parkway at Airline**
- **Northwest Parkway at Durham**
- **Wentwood at Airline (All Way Stop**
- **Wentwood at Durham (All Way Stop)**

Z150-195

Enrollment capacity and hours of operation.

The enrollment capacity for this new elementary is 770 (Kindergarten through thru 4th grade students).

Traffic volumes and time estimates

Turning movement counts were conducted at Wentwood at Airline and Durham on June 17, 2014. Additional turning movement counts were conducted at Northwest Parkway at Airline, Northwest Parkway at Durham and Northwest Highway at Hillcrest on May 12, 2015. A 24-hour bi-directional machine count was taken on Northwest Parkway between Airline and Durham on May 12, 2015.

TRIP GENERATION

Estimated vehicle trip ends to and from the study area were also calculated utilizing trip generation rates and characteristics collected and compiled by the Institute of Transportation Engineers (ITE) in the ninth edition of their trip generation handbook. **Table 1 and Table 2** have been prepared to summarize the associated trip generation data and the calculated trips that are anticipated to be generated by the proposed elementary school. We have used the higher value of the average ITE rates or the fitted curve equations. Copies of the ITE data sheets used to develop **Tables 1 and 2** have been attached to this report.

TABLE 1
Trip Generation Data

LAND USE	ITE CODE	UNITS	QUANTITY
Elementary School	520	Students	770

The trips indicated in **Table 2** are the total unadjusted traffic volumes for the residential land use proposed for the study site.

TABLE 2
Calculated Trip Ends

LAND USE	A.M. PEAK HOUR		P.M. PEAK HOUR	
	IN (vph)	OUT (VPH)	IN (vph)	OUT (VPH)
Elementary School	191	156	57	59
TOTAL	191	156	57	59

(ADT = average daily trips; vpd = vehicles per day; vph = vehicles per hour; in = vehicles entering the site; and out = vehicles exiting the site)

QUEUING ANALYSIS

A key issue is the prevention of internal queuing (on school site) onto adjacent city streets of buses and passenger cars. Following is a discussion of the potential queuing.

QUEUE CALCULATIONS

The afternoon pick-up operations create the largest queues around the campus. Utilizing a queue estimator developed by the North Carolina Department of Transportation estimates were made about the future queues associated with the enrollment and pick-up times for the proposed Elementary School. See **Table 3** for a summary of those estimates.

It is estimated that approximately 770 children (Kindergarten through 4th grade) will attend the proposed school. The arrival and dismissal times are normally staggered to allow one arrival/dismissal for Kindergarten and 1st graders, and then another arrival/dismissal for second, third and fourth graders. Assuming that the number of children is equal per each grade (5 grades), the number of students for each grade is 154 students. The two arrival/dismissal number of students is indicated in **Table 3.**

Table 3. Minimum Queue Length Calculations

Grades & Release Times	Number of Students	Total Vehicles	Calculated Minimum Queue Length (ft.) *
Kindergarten and 1st grade @3:00	308	23	515
2nd, 3rd, and 4th @ 3:15	462	35	767

*School Traffic Calculator form North Carolina State University

Queuing

The probability of queuing for any site is dependent on the arrival service rate (number of units arriving during a time period) and the departure service rates (the number of units that can be served during the same time period).

Observations at other Highland Park ISD schools and at schools in other school districts indicates that the average service rate for discharging/loading a vehicle in a school speed zone is 5 seconds per vehicle with active participation by teachers, student safety patrol, or volunteers in opening and closing car doors for students. This allows 12 vehicles per minute to be served by each assistant (station). The discharge/loading time extends to up to 20 seconds per vehicle without a school crossing guard or other volunteers.

The storage length in the loading/unloading lane in front of the entrance to the parking garage accessible from Durham Street is 250 feet. The queue lane (discharge/loading lane) will provide enough pavement width for cars to load/discharge and then allow vehicles that have completed their operation to enter a lane available for moving traffic.

The storage length of 250 feet could easily allow 10 loading/discharge stations with a minimum of 22 feet per station. This many stations would allow for discharge of up to 120 vehicles per

minute. The estimate minimum queue length is 35 vehicles. With a discharge rate of 12 vehicles per second, even one assistant (station) would allow this queue to be completely discharged in 3 minutes.

TRANSPORTATION MANAGEMENT PLAN

Passenger Car/Day Care Bus Management Plan

Traffic will enter the site through access to a school drive (queue lane) that parallels Durham Street. This traffic will then exit the drive and turn left or right onto Durham Street. The exit will be wide enough to provide a two lane exit.

Teachers/administers/volunteers with possible assistance by school safety patrol (4th graders), should be used to open car doors and allow student (s) to exit/enter the vehicles quickly and safely. Once the student (s) are discharged/loaded, the driver would be notified and then the driver would exit the drop off/pick up zone and travel to Durham Road to turn left or right.

ADA Bus Management Plan

ADA capable buses will load/unload along a specifically designed parking area along Durham Street adjacent to the school. It is suggested that since this area allows children to load/unload off street, it is suggested that the ADA buses not flash their lights during the loading/unloading process because this would require passing vehicles to stop. This could create unnecessary southbound vehicle queues.

Pedestrian (Walking) Management Plan

The need for school crossing guards will be determined after a review of student enrollment records. Key locations to be analyzed would include Wentwood at Airline and Wentwood at Durham. A follow up analysis after school has been open for approximately six (6) weeks should be made to determine if any school crossing guards are needed.

School Administrators, with assistance from the City of Dallas Transportation Department shall develop a Safe Routes to School Map/Plan and distribute this to teacher, students and parents.

In addition to the Safe Routes to School Map/Plan, additional instructions will be provided to teachers/administrators/students to include the following:

Parking

- Do not parking in designed fire lanes. If dropping off or loading children, it is permitted to stop or stand as long as the parent does not leave the vehicle. (This would then be illegally parking in a fire lane).
- Parking is prohibited within 15 feet of a fire hydrant, within 20 feet of a marked crosswalk.
- No double parking on roadway side of other vehicle legally parked
- Parking is prohibited within 30 feet of the approach to a stop sign.
- Parking is prohibited in a school bus loading zone.
- Parking is prohibited in a marked crosswalk.

Miscellaneous instructions:

- Students should have all their belongings in hand so that they may exit or enter their vehicle safely and quickly.
- Vehicles must face the direction of traffic.
- It is unlawful to open a car door on the traffic side.
- Administrators/teachers/safety patrol personnel should wear orange reflective safety vests when assisting loading/unloading.
- Children should wait in an orderly fashion in the designated waiting area when loading passenger vehicles, school buses, or day care buses.
- Cars/day care buses should enter the loading/unloading queue lane on Durham Street and enter behind the last car in the queue lane.
- Cars/day care buses should continually pull forward until their children are either loaded/ or discharged.
- If cars/day care buses cannot enter the queue lane, driver around the school to re-enter the queue lane. These cars could stage along Northwest Parkway and await an opportunity to enter the queue lane.
- Once children or loaded or discharged, cars/day care buses must exit at Durham Street by either turning left or right.

Institutional goals/tasks

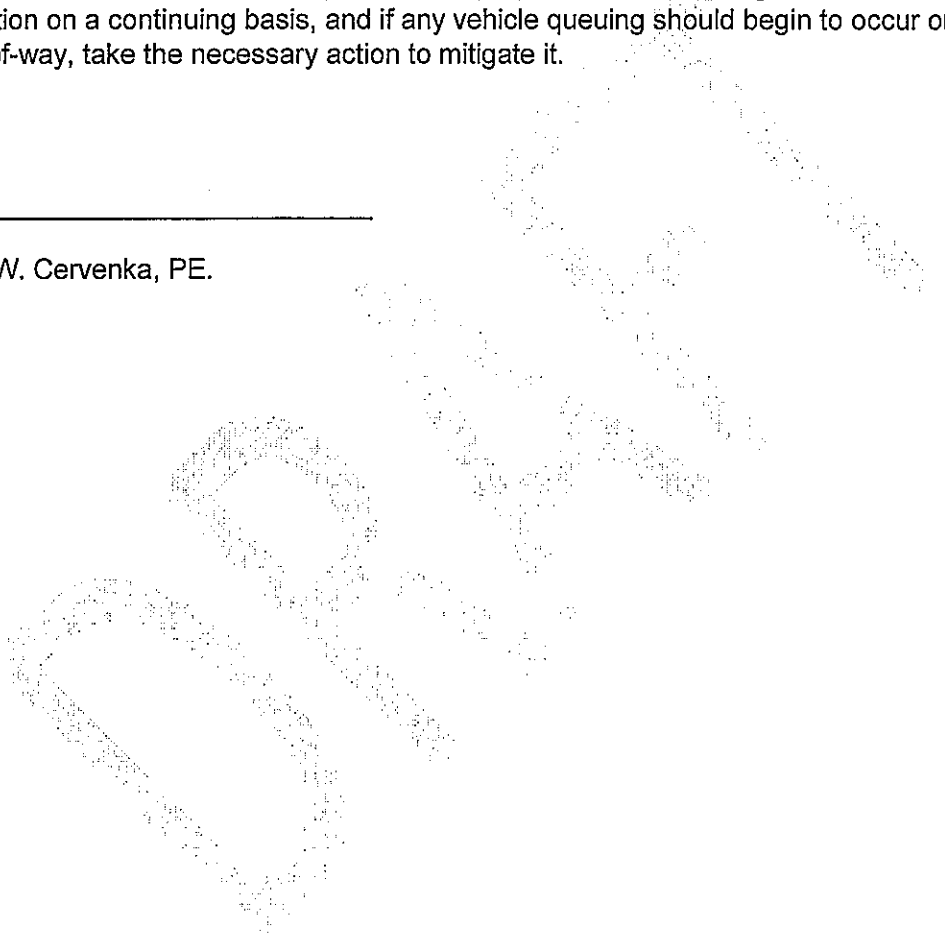
The need for school crossing guards should be determined based on actual pedestrian counts. And an analysis should be conducted after school has been open for about six (6) weeks to determine if a school crossing guard is needed.

Parking must be prohibited along Durham Street in the vicinity of the school driveways during school hours.

Transportation Management Plan (TMP) conclusions/recommendations.
(When detailed site plan is available)

The following statement would be included on a final site plan to verify to the City of Dallas that queues from the school site will not impact adjacent city streets.

Based on the vehicle queuing analysis conducted and the resulting Traffic Management Plan, I, Larry W. Cervenka, PE. #37109, certify that the results indicate that no queuing of vehicles dropping off or picking up students as the proposed Highland Park ISD Elementary School will extend onto City of Dallas rights-of-way as a result of internal queuing constraints. In order to ensure that all queuing of vehicles is completely accommodated on school property, school administrative officials should implement the proposed Traffic Management Plan, monitor the operation on a continuing basis, and if any vehicle queuing should begin to occur on public right-of-way, take the necessary action to mitigate it.



Larry W. Cervenka, PE.

APPENDIX