Kimley»Horn

Traffic Management Plan and Queueing Analysis
Pioneer Technology & Arts Academy, Shelton School Campus
15720 Hillcrest Road, Dallas, Texas 75248
December 27th, 2019

Introduction:

The Pioneer Technology & Arts Academy (PTAA) will move into the existing Shelton School for the upcoming 2020-2021 school year. The Shelton School has been in operation on the site since 1997, the year that the property was purchased from Prestonwood Baptist Church. The Shelton School currently has approximately 1,200 students across its lower, upper elementary, middle, and high schools. PTAA will use the same student population. Observations of the current Shelton School operations were made on Tuesday, November 12th and Wednesday, November 13th, 2019. These were standard school days with no extraordinary events on the school calendar.

Previous Traffic Management Plan (TMP) Operation:

The Shelton School has been using the same TMP for approximately a decade. That TMP was based on 1,200 students. However, the number of students in each grade level has shifted. The previous and current enrollment are compared in **Table 1**.

Table 1 – Shelton School Attendance

	Previous Enrollment	Current Enrollment	Observed Arrival	Observed Dismissal
Lower School	200	150	8:00 AM	2:45 PM
Upper Elementary	500	350	8:30 AM	3:00 PM
Middle School	350	450	8:35 AM	3:25 PM
High School	150	250	8:40 AM	4:00 PM
Total	1,200	1,200		

On weekdays, the 1,200-student school operates from 8:00 AM until 4:00 PM. Parent automobile drop-off and pick-up is organized with one loading area in the northern parking loop (Northern Loop) and one loading area in the southern parking loop (Southern Loop). There are three loading areas: the Northern Loading Area, the Western Loading Area, and the Southern Loading Area. The separate loops, loading areas, and existing pick-up and drop-off operations are illustrated in the **Existing Queueing Observations Exhibit** attached to the end of this report.

Presently, traffic for the Northern Loop enters from La Bolsa Drive and exits to Hillcrest Road on the western edge of the lot. The Northern Loading Area is used by the Upper Elementary school pick-up and drop-off drivers. The Lower school drivers also use the Northern Loop, but instead of using the Northern Loading Area, they by-pass the Upper Elementary school drivers and use the Western Loading Area before exiting to Hillcrest Road.

Traffic for the Southern Loop enters from and exits to Arapaho Road on the southern edge of the site. In both areas, entries and exits are limited to right turns to simplify operations. The Southern Loading Area serves the Middle and High schools.

Student pick-up procedure is in the modern style with multiple pick-up points, vehicles displaying student ID, and names being called ahead to match students with vehicles as they arrive. Each division of the Shelton School uses a slightly different method to match the students but achieve the same effect.

The drop-off operations for the Shelton School operate well. The maximum queue observed for either the Northern Loop or the Southern Loop was 17 vehicles, a fraction of the capacity of either queueing area.

A summary of the observations made during the current Shelton School pick-up operation is included below as **Table 2**. As a general observation, the Shelton School staff for all divisions of the school is very efficient at moving vehicles through the queue. The Lower School and Upper Elementary pick-up operations function well. Both maintained all queueing on the Shelton School campus.

The Middle School has the most students dismissed at once and generates the largest queue of any of the schools. The maximum observed queue was 88 vehicles on November 12th and 93 vehicles on November 13th. For the higher day, 41 vehicles were observed queueing on Arapaho Road. Vehicles were observed queueing on-campus before 2:45 PM, more than 40 minutes before dismissal time. Though the queue moved rapidly once the dismissal began, cars were observed queueing on Arapaho Road at 3:14 PM on November 12th and at 3:11 PM on November 13th. Generally, the vehicles queued on Arapaho Road respected the local streets and did not block the intersections. However, the Arapaho Road queueing will be addressed in the proposed TMP operation.

A licensed peace officer controls the queue operations at Arapaho Road. Because of the officer, there are relatively few delays incurred as drivers leave the Middle School Southern Loading area. Furthermore, there is a fair amount of outbound queueing area between the Southern Loading area and Arapaho Road for drivers leaving the school to queue until the officer permits them to leave. While the licensed peace officer is useful for vehicles exiting the Southern Loading area, it was observed that the outbound traffic was able to enter Arapaho Road with few delays on November 12th when no officer was present.

It should be noted that the current Shelton School by design serves students that have special needs. This may mean that PTAA, which does not specifically cater to a special needs student base, will be able to operate more quickly than the existing Shelton School. This consideration will not affect this analysis, but it should be noted nonetheless.

The High School has a high percentage of students who park on campus and drive themselves. Therefore, only a 27-vehicle queue developed, which was easily contained in the Southern Loop. The high school drivers who park on-campus park in the Northern and Southern Loops. Some of the High Schoolers are released early due to off-campus class periods. These coincide with the Upper Elementary and Middle School pick-up operations, but the High School drivers do not significantly affect the pick-up queues. Any delays incurred are temporary and minor, and the queues recover quickly.

Table 2 – Shelton School Observed TMP Operation Summary

Pick-Up Queuing Summary						
Group Grades Dismissed	**Observed Dismissal Time**	**Students Dismissed**	**Observed Maximum Queue**	**Observed Available Stacking**	**Observed Surplus (Deficiency)**	**Vehicles Queued per Student Dismissed**
Western Loading Area Lower School	2:45 PM	150	18 Vehicles	70 Vehicles	52 Vehicles	1 Vehicle per 8.3 students
Northern Loading Area Upper Elementary	3:00 PM	350	40 Vehicles	50 Vehicles	10 Vehicles	1 Vehicle per 8.8 students
Southern Loading Area Middle School	3:25 PM	450	93 Vehicles	52 Vehicles	-41 Vehicles	1 Vehicle per 4.8 students
Southern Loading Area High School	4:00 PM	250	27 Vehicles	52 Vehicles	25 Vehicles	1 Vehicle per 9.3 students

Proposed TMP Operation and Queue Analysis:

The proposed TMP assumes that the PTAA will have the same enrollment as the current Shelton School. The enrollment will likely start below these maximums and approach them over time. Furthermore, a significant portion of the PTAA high school will be taking classes off-campus at Richland Community College, further reducing the on-campus pick-up volumes.

For the Lower School, Upper Elementary, and High School, the same arrival times, dismissal times, and TMP operations are recommended. The current operations for these grades are very effective and should be continued. Since the maximum number of students per group will remain the same after PTAA moves into the Shelton Campus, the maximum queues are expected to remain the same and continue to be contained within the campus. The arrival operations are recommended to remain the same for each arrival group.

In order to contain the large Middle School pick-up queue, additional queueing length is proposed for the Southern Loop. The existing Southern Loop queue is one single-stacked queue stretching 1,230' for a capacity of 52 vehicles. As shown in the **Proposed TMP Exhibit**, four additional queueing areas are proposed to allow for more vehicles to be stored on-campus. The five queueing areas total 2,405' of queueing area, which is enough for 102 vehicles.

To properly implement the four extra queueing lanes for the Southern Loop, two parking spaces must be periodically blocked off (as noted on the **Proposed TMP Exhibit**) and additional coordination is required from campus staff to operate the queueing lanes. Currently, two traffic administrators are used to run the Southern Loop of the Shelton School pick-up. In the proposed plan, five staff members will be needed. The extra three staff will open queue lanes when the previous queue lane is full.

When Queue 1 fills up back to Traffic Administrator T2, he/she will remove the cones and allow Queue 2 to fill. Once Queue 2 fills up to T3, he/she will open Queue 3. In this manner, all five queues should be able to contain the Middle School queue.

When dismissal begins, T4 will direct those in Queue 1 to move forward to the Southern Loading area. Once Queue 1 has emptied, Queue 2 will be directed to follow suit. Queues 3-5 will be directed in due time. If needed, an emptied queue lane can be refilled as more vehicles arrive. Early arriving High School pick-up drivers can be directed into Queue 1, which should be empty by the time they arrive. The traffic administrators should have walkie-talkies or some other form of communication device so that each administrator can know what is happening and when to allow each queue lane to fill. **Table 3** shows the proposed dismissal times, maximum projected queue lengths, and projected surplus of each dismissal group. Each queueing area can handle its projected queue.

A licensed peace officer is not necessary to allow vehicles to enter Arapaho Road from the Southern Loading area. However, it is recommended to continue utilizing the peace officer for traffic control during the peak times. Presence of the peace officer may be periodically reviewed by the Dallas Police Department and may be discontinued with their approval.

Table 3 – PTAA Projected TMP Operation Summary

Pick-Up Queuing Summary						
Group Grades Dismissed	**Dismissal Time**	**Students Dismissed**	**Maximum Queue**	**Available Stacking**	**Surplus (Deficiency)**	**Vehicles Queued per Student Dismissed**
Western Loading Area Lower School	2:45 PM	150	18 Vehicles 423'	70 Vehicles 1,650'	52 Vehicles 1,227'	1 Vehicle per 8.3 students
Northern Loading Area Upper Elementary	3:00 PM	350	40 Vehicles 940'	50 Vehicles 1,170'	10 Vehicles 230'	1 Vehicle per 8.8 students
Southern Loading Area Middle School	3:25 PM	450	93 Vehicles 2,186'	102 Vehicles 2,405'	9 Vehicles 219'	1 Vehicle per 4.8 students
Southern Loading Area High School	4:00 PM	250	27 Vehicles 635'	52 Vehicles 1,230'	25 Vehicles 595'	1 Vehicle per 9.3 students

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Summary:
This TMP defines the drop-off and pick-up procedures for the Pioneer Technology & Arts Academy Shelton Campus. The proposed TMP provides a significant improvement in on-site queue storage over the existing operations, which will translate to a reduction in the number of vehicles stopping temporarily on the adjacent roadways. The TMP vehicle routes provide an available queue distance within the site that is greater than the projected maximum expected queue for the school's operations. With the TMP operating as shown and the dismissed students balanced between the loading areas, the school traffic will not need to queue vehicles in the right-of-way of any City street. Inbound vehicles should always have an open receiving space on the campus. There may be reasonable delays from opposing traffic or traffic officer control of the intersections when making the entering maneuver, but this will not form constant queues of static vehicles. The property owner/school administrator is responsible for the administration of the TMP and minimizing the impact of the vehicle queue on the City streets. The TMP should be reevaluated at intervals as directed by the City in the SUP language.

Based on the vehicle queuing analysis conducted and the resulting Traffic Management Plan, I, Scot A. Johnson, P.E. #92615, certify that the results indicate that no queuing of vehicles dropping off or picking up students at the PTAA School will extend onto City of Dallas rights-of-way.

In order to ensure that all queuing of vehicles is completely accommodated on school property, Pioneer Technology & Arts Academy 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.

Only uniformed, licensed peace officers should be allowed to direct and control traffic operating within the public right-of-way.

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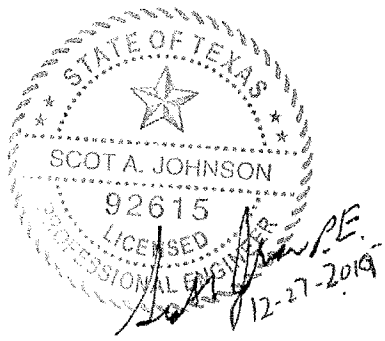
December 27th, 2019

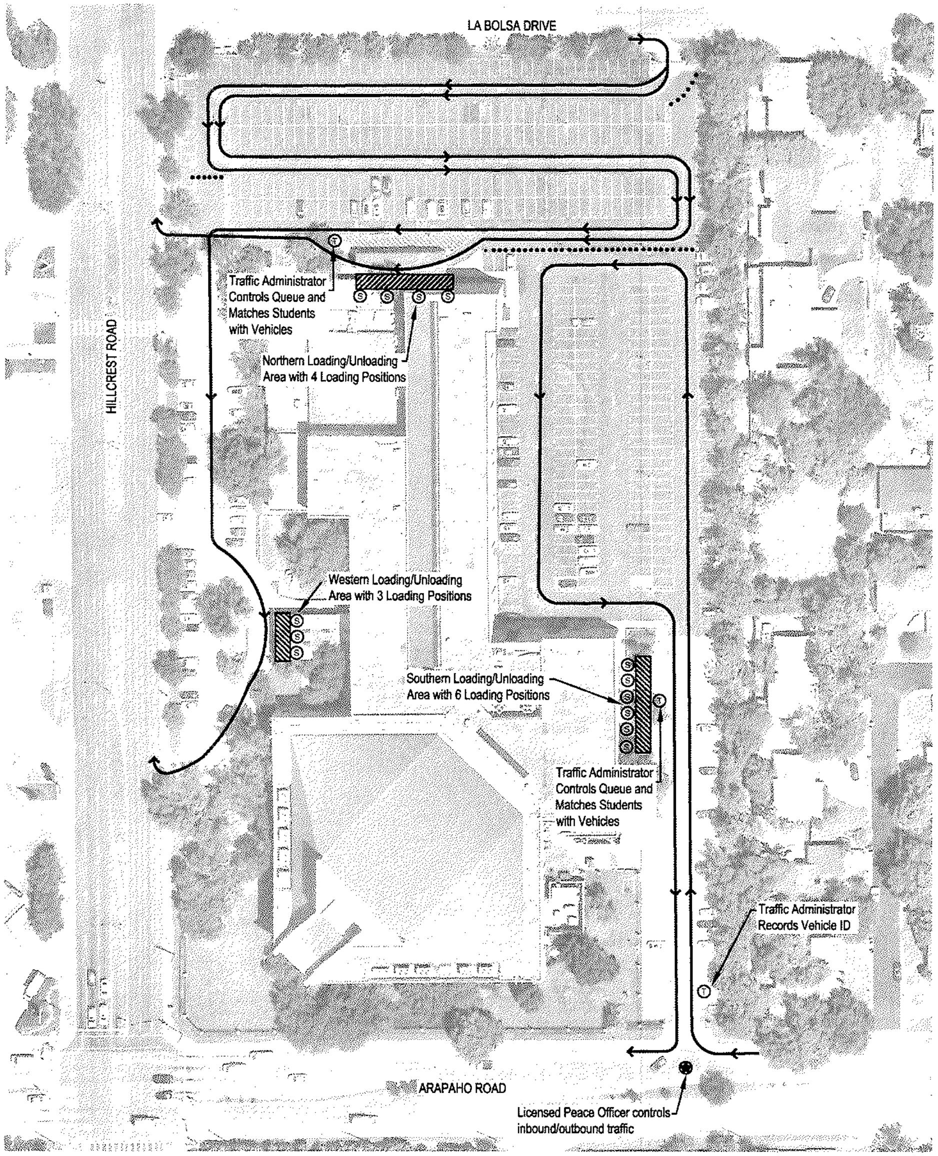


Pioneer Technology & Arts Academy has reviewed and will comply with the approved traffic management plan. The school will monitor the operation on a continuing basis to ensure that school traffic does not form queues in the public right-of-way. If any queuing should begin to occur in the public right-of-way the school agrees to take the necessary action to mitigate it as soon as possible. The school also agrees that any expansion of the total enrollment of the school or any changes in the grades enrolled will require the school to update this study and have a new traffic management plan approved before applying such changes.

Signature	Date 12/27/19
Name Shubhanan Pandey	Title Executive Director

Attachments

1. Existing Queueing Observations Exhibit
2. Proposed Traffic Management Plan Exhibit



GRAPHIC SCALE
1" = 100' on 11x17" Plot
0' 50' 100' 200'

N

TMP Legend:

- Inbound Vehicle Path
- Outbound Vehicle Path
- Licensed Peace Officer
- (T) Traffic Administrator
- (S) Staff Location
- ••• Cone or other portable barrier

Note: Queue calculations are made using linear feet.

Current Enrollment: Approx 1,200 Students

School Hours and Groups:

Grade	Approx. Student #	Start	End
Lower School	150	8:00 AM	2:45 PM
Upper Elementary	350	8:30 AM	3:00 PM
Middle School	450	8:35 AM	3:25 PM
High School	250	8:40 AM	4:00 PM

Site observations were collected Tuesday, November 12 and Wednesday, November 13, 2019.

Available queue distance in the Northern Loading Area is 1,170' (50 vehicles). The Southern Loading Area has 1,245' (52 vehicles).

The observed maximum pick-up queue demand for the Southern Loop occurred during the 3:25 PM Middle School pick-up period. The approximately 450 students dismissed generated a total queue of 93 vehicles (2,186'). The queue was not contained on-site.

The observed maximum pick-up queue demand for the Northern or Western Loop occurred during the 3:00 PM Upper Elementary pick-up period. the approximately 350 students dismissed generated a total queue of 40 vehicles (940'). The entire queue was contained on-site.

The AM drop-off queues were significantly less than the PM pick-up queues, with no more than 17 vehicles queued in either loop at once.

The proposed TMP will include solutions directed at removing queued vehicles from public right-of-way.

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PTAA
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MESQUITE, TX 75150

PLANS PREPARED BY:
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REV	DATE	DESCRIPTION	BY
1	12/27/19	INCORPORATED CITY NOTES	JMH
0	11/15/19	INITIAL PLAN SUBMISSION	JMH

DRAWN BY: IMR
CHECKED BY: JMH

KHA PROJECT NUMBER: 063236206

ENGINEER SEAL:

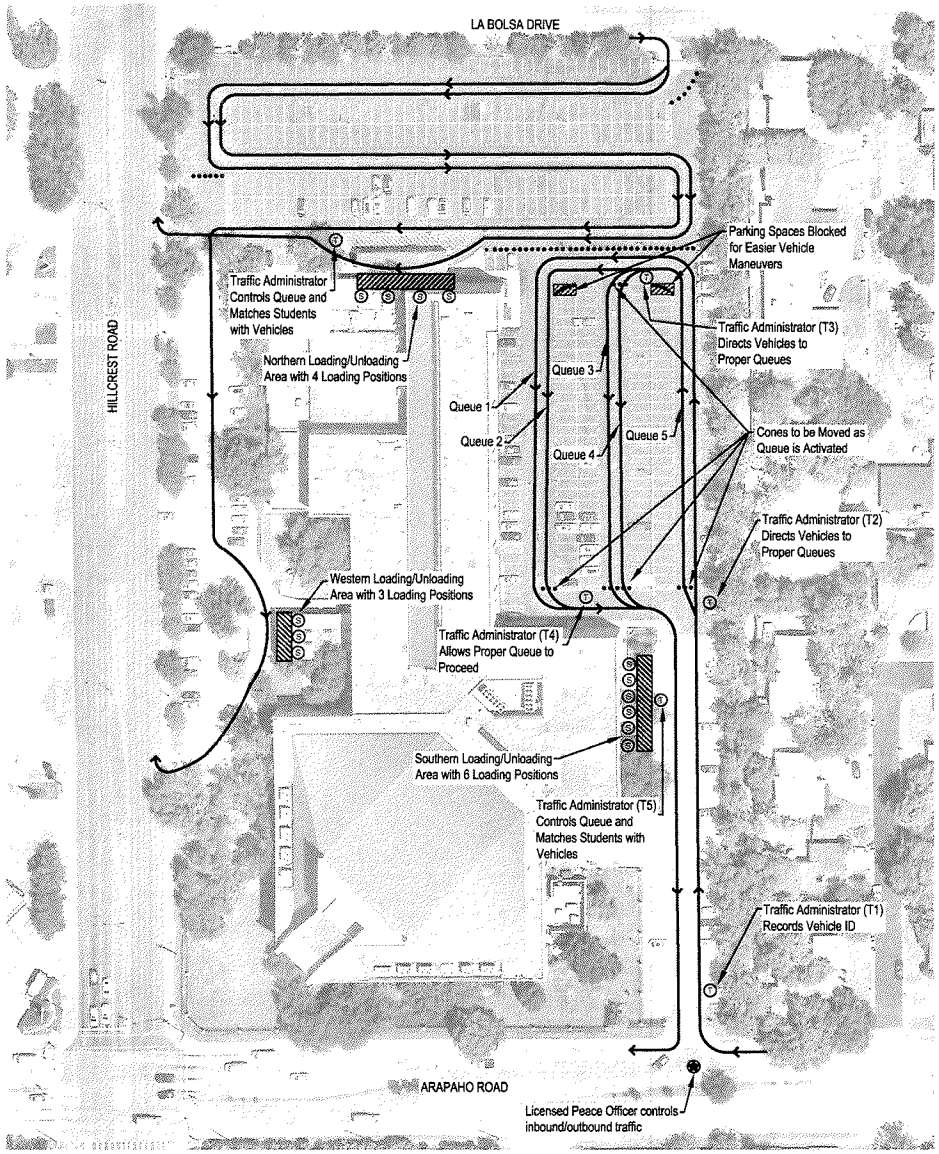
PROJECT INFORMATION:

PTAA Traffic Management Plan

Shelton School Campus
15720 Hillcrest Rd
Dallas, TX 75248
Dallas County

SHEET TITLE:
Existing Queueing Observations

SHEET NUMBER:
OBS-1



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Drop-off/Pick-up assignments and times should be actively managed in response to conditions, including changes in sports schedules.

Available queue distance in the Northern Loading Area is 1,170' (50 vehicles). With the additional queueing areas, the Southern Loading Area has 2,405' (102 vehicles).

The projected maximum pick-up queue demand for the Southern Loop would occur during the 3:25 PM Middle School pick-up period. The approximately 450 students dismissed would generate a total queue of 93 vehicles (2,186'). There is expected to be 10 vehicles (230') of surplus queue storage, and the entire queue is expected to be contained on-site.

The projected maximum pick-up queue demand for the Northern or Western Loop would occur during the 3:00 PM Upper Elementary pick-up period. the approximately 350 students dismissed would generate a total queue of 40 vehicles (940'). The entire queue is expected to be contained on-site.

In order to ensure that all queuing of vehicles is completely accommodated on school property, PTAA 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.

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12-27-2019

PTAA Traffic Management Plan

Shelton School Campus
15720 Hillcrest Rd
Dallas, TX 75248
Dallas County

Proposed
Traffic Management Plan

TMP-1