MEMORANDUM

To: David Nevarez., P.E., City of Dallas

From: Tyler Fosnes, P.E. (Tennessee), KCI Technologies, Inc.
Kyle Jones, P.E., KCI Technologies, Inc. (TBPE Firm #10573)

Re: **Golden Rule – Pleasant Grove – Traffic Management Plan**

Date: July 20, 2023

Introduction

This purpose of this memo is to provide a traffic management plan (TMP) for the Golden Rule School – Pleasant Grove campus. The school is located on Bruton Road, west of Cheyenne Road in Dallas, Texas. Specifically, the school is located at 10747 Bruton Road, Dallas, TX 75217, and their phone number is 469-341-5780. The school is currently planned to expand by 176 middle school students. The Pleasant Grove campus includes two vehicular access points on Bruton Road.

The TMP exhibit, attached, consists of a site-specific plan providing guidelines to coordinate traffic circulation during school peak hours. Specifically, this TMP is intended to promote strategies to manage all modes of transportation and maintain student safety at all times.

Existing Conditions

The following roadway provides access to the Pleasant Grove campus:

- Bruton Road is a two-way roadway that travels in an east-west direction with three lanes in each direction. Bruton Road is divided by a center median in the vicinity of the school. Bruton Road provides connection between Interstate 635 to the east and C.F. Hawn Freeway to the west. The posted speed limit on Bruton Road near the school is 35 mph.

The Golden Rule School – Pleasant Grove campus has a current enrollment of 236 full-time students. The existing enrollment includes 48 Pre-K students either during the morning hours (arrive at 8:00 AM, dismiss at 12:00 PM) or the afternoon hours (arrive at 12:00 PM and dismiss at 3:00 PM). The remainder of the existing enrollment consists

of elementary students. Elementary school students arrive at 7:30 AM and dismiss at 3:30 PM. The 176 new middle school students will arrive and dismiss on a schedule, staggered from the elementary school, beginning at 8:00 AM and 4:00 PM, respectively. There are no school buses associated with the school, and students arriving on alternative modes of travel are minimal and discouraged by the school.

Field observations of the existing traffic management system at the school were made in 2023 on April 25, April 27, May 2, and May 4. The observations were made during arrival and dismissal periods. A summary of the field observations is presented in Table 1.

TABLE 1: SUMMARY OF FIELD OBSERVATIONS

DATE	FEATURE	AM ARRIVAL	PM DISMISSAL
4/25/23	Duration of Queue on Public Roadway:	<20 minutes	<20 minutes
	Maximum Eastbound Left-Turn Queue on Public Roadway:	<60 feet (2 vehicles) *(Contained within Eastbound Left-Turn Lane Storage)*	<60 feet (3 vehicles) *(Contained within Eastbound Left-Turn Lane Storage)*
	Maximum Westbound Right-Turn Queue on Public Roadway:	Westbound Queue Contained On-Site	Westbound Queue Contained On-Site
4/27/23	Duration of Queue on Public Roadway:	<20 minutes	<30 minutes
	Maximum Eastbound Left-Turn Queue on Public Roadway:	<60 feet (3 vehicles) *(Contained within Eastbound Left-Turn Lane Storage)*	150 feet (6 vehicles)
	Maximum Westbound Right-Turn Queue on Public Roadway:	~30 feet (2 vehicles) *(Queue Distance Measured from Eastern Driveway)*	~240 feet (12 vehicles) *(Queue Distance Measured from Western Driveway)*
5/2/23	Duration of Queue on Public Roadway:	<20 minutes	<30 minutes
	Maximum Eastbound Left-Turn Queue on Public Roadway:	<60 feet (2 vehicles) *(Contained within Eastbound Left-Turn Lane Storage)*	<60 feet (3 vehicles) *(Contained within Eastbound Left-Turn Lane Storage)*
	Maximum Westbound Right-Turn Queue on Public Roadway:	~15 feet (1 vehicle) *(Queue Distance Measured from Eastern Driveway)*	~210 feet (10 vehicles) *(Queue Distance Measured from Western Driveway)*
5/4/23	Duration of Queue on Public Roadway:	<20 minutes	<30 minutes
	Maximum Eastbound Left-Turn Queue on Public Roadway:	<60 feet (3 vehicles) *(Contained within Eastbound Left-Turn Lane Storage)*	<60 feet (3 vehicles) *(Contained within Eastbound Left-Turn Lane Storage)*
	Maximum Westbound Right-Turn Queue on Public Roadway:	~15 feet (1 vehicle) *(Queue Distance Measured from Eastern Driveway)*	~210 feet (10 vehicles) *(Queue Distance Measured from Western Driveway)*

The field observations indicate that the majority of traffic entering the school for drop-off/pick-up travel through the eastern access point. These vehicles travel to the northern parking lot, circulate through the parking lot, and exit out the same travel path after drop-off/pick-up.

As shown in Tables 1A-1D, field observations also indicate that during the morning arrival period, the maximum queue on the public roadway for eastbound left-turning vehicles is less than 60 feet (3 vehicles) and accommodated by the existing left-turn lane storage. It should be noted that, while the assumed feet per vehicle length is 25 feet, it was observed that three vehicles were able to fit in the existing left turn bay. This is most likely due to less buffer room being provided in between vehicles. Additionally, the maximum queue on the public roadway was approximately 50 feet (2 vehicles) queued up to the eastern entrance.

During the dismissal period in the afternoon, field measurements indicate that the maximum queue on the public roadway for eastbound left-turning vehicles was calculated to be 150 feet (6 vehicles). Additionally, the maximum queue along the public roadway is approximately 300 feet (12 vehicles) for westbound right-turning vehicles. It should be noted that the westbound queue length was measured from the western access point and extends just passed the eastern driveway. An opening in the queue was maintained for exiting vehicles from the driveway throughout the dismissal period.

It should also be noted the duration that vehicles were observed queueing on the public roadway was less than 30 minutes during all arrival/dismissal periods. Photos of existing conditions are presented at the end of the report. Mitigation measures for the queueing issues will be presented in the TMP Exhibit and TMP Summary later in the report.

According to information provided by school officials and field observations, an identification system is in place for dismissal that involves student name signs displayed in vehicles and walkie-talkie communications in order to coordinate students with their vehicles as they arrive. There are two off-duty peace officers that direct traffic along Bruton Road during arrival and dismissal periods. Four school staff members assist in walking students to/from vehicles during arrival and dismissal periods.

Turning Movement Counts

In order to provide data for the traffic impact analysis, traffic counts were conducted at the following locations:

- Bruton Road and Leroy Road

- Bruton Road and West School Access
- Bruton Road and East School Access
- Bruton Road and Cheyenne Road

Turning movement counts were conducted from 6:30 – 8:30 AM and 3:00 – 6:00 PM on a typical weekday in September 2019 by Marr Traffic. From the counts, it was determined that the peak hours of traffic flow for the combined traffic at the four study intersections occurred from 7:15 – 8:15 AM and 3:15 – 4:15 PM. It should be noted that this is not indicative of the peak queueing duration during arrival and dismissal of the school, but rather the overall study area analyzed in the September 2019 traffic impact study. The existing peak hour traffic volumes are presented on a figure at the end of the report.

Sight Distance

Sight distance measurements were conducted on Bruton Road at the site access drives to determine if adequate sight distance would be available for motorists making left or right turns from the site accesses. For a 35 mph speed on Bruton Road, the guidelines from *A Policy on Geometric Design of Highways and Streets*, by the American Association of State Highway and Transportation Officials (AASHTO), call for a minimum stopping sight distance of 250 feet as a design value. This is the distance required for a motorist to detect an object in the roadway necessitating a stop and be able to stop before reaching the object.

Subsequently, AASHTO also provides minimum design values for intersection sight distance. For example, the intersection sight distance allows enough time gap for a motorist to turn from the site access drives onto Bruton Road without requiring a motorist on Bruton Road to significantly reduce speed. For example, for a speed of 35 mph, the design value for intersection sight distance for a motorist turning right from a stop is 335 feet. Therefore, it is desirable to provide a minimum of 335 feet looking to the east of the site accesses onto Bruton Road. For a speed of 35 mph, the design value for intersection sight distance for a motorist turning left (across 3 lanes) from a stop is 440 feet. Therefore, it is desirable to provide a minimum of 440 feet looking to the west of the site accesses onto Bruton Road.

According to field measurements, adequate intersection sight distance is available for all turning movements from the site access drives, with one exception. Adequate sight distance is not available for motorists turning right from the East School Access onto

Bruton Road. Specifically, approximately 80 feet of sight distance is available due to an existing house located east of the property.

It should be noted that this driveway is existing. Furthermore, during arrival and dismissal periods an off-duty peace officer will mitigate this issue by directing traffic. During non-peak hours, motorists turning right have the option of exiting out of the western site access point.

TMP Exhibit

The TMP exhibits are shown on the next page. Figure 1 shows the existing circulation pattern utilized by the school. Figure 2 shows the proposed new circulation pattern. The TMP Summary section discusses the recommended mitigation measures for the observed traffic flow issues. The TMP exhibit shows the following features of the Pleasant Grove campus:

- Building footprints, curbs, parking, pavement markings, designated student drop-off and pick-up locations.
- School site location and all ingress and egress points of access for motor vehicles or pedestrians.
- On-site traffic circulation, including any temporary traffic control devices.
- Location of school staff assisting with unloading and loading students, as well as location of school off-duty peace officers and/or off-duty deputized officers.

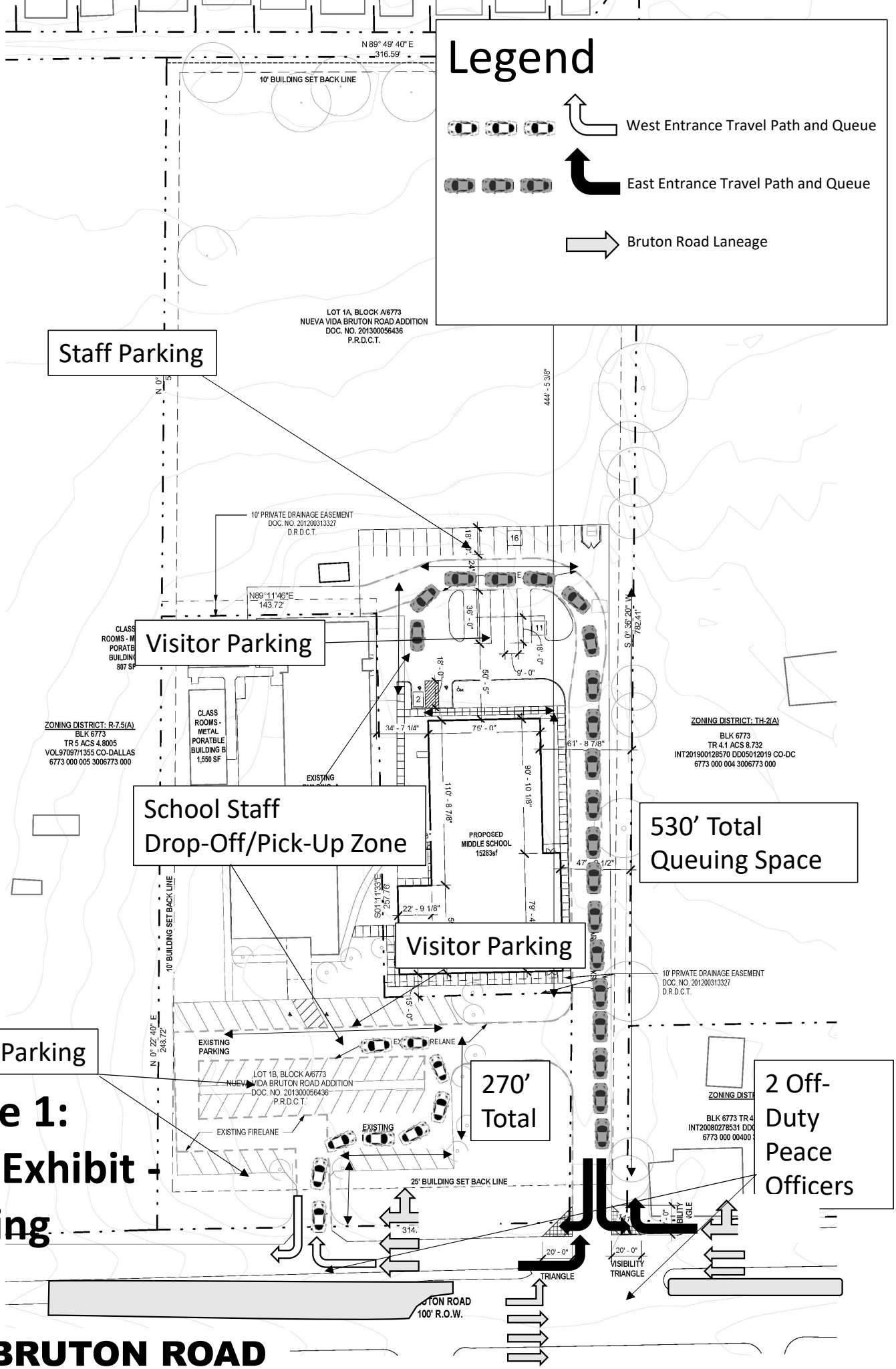
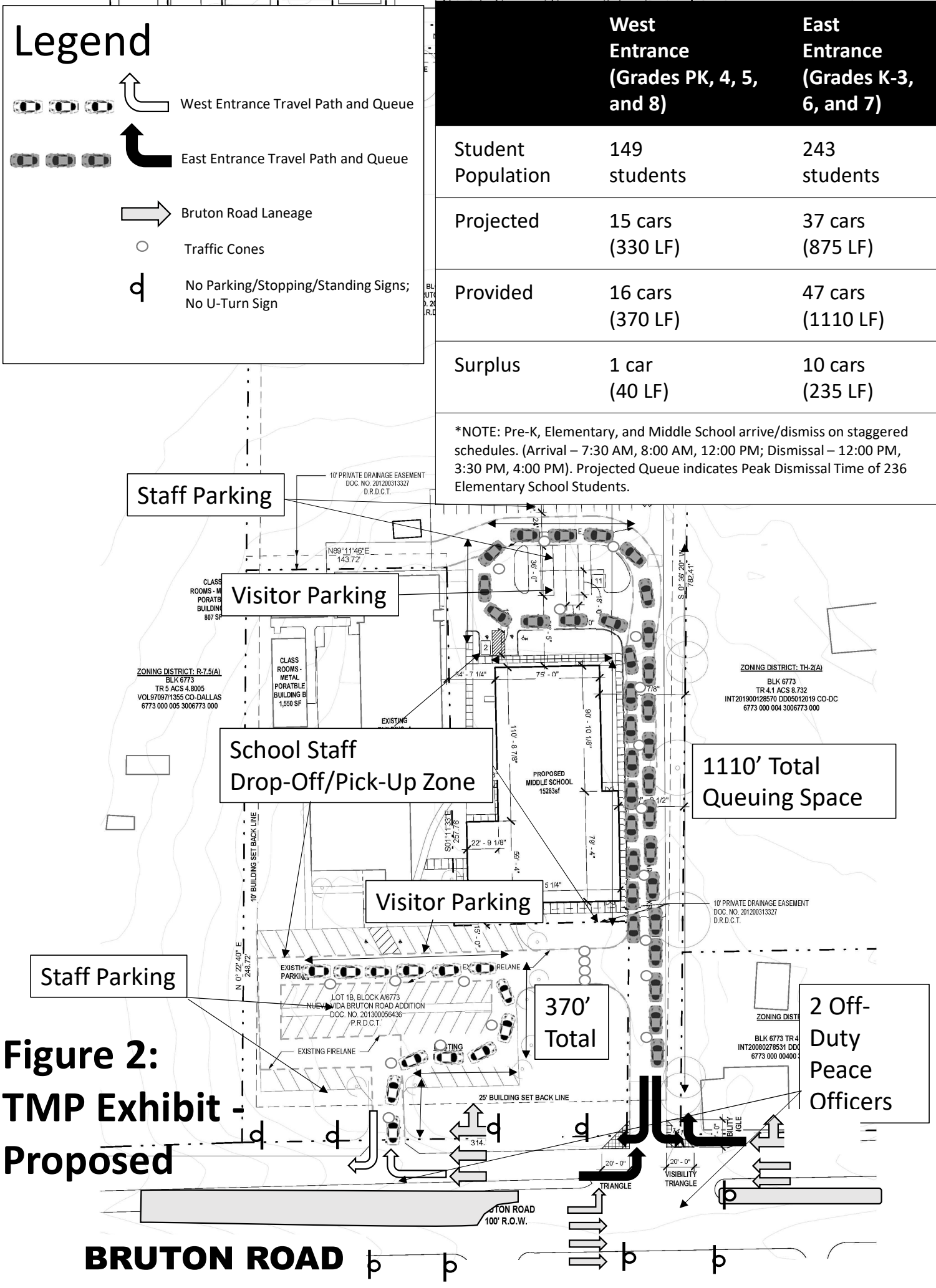


Figure 1: TMP Exhibit - Existing



	West Entrance (Grades PK, 4, 5, and 8)	East Entrance (Grades K-3, 6, and 7)
Student Population	149 students	243 students
Projected	15 cars (330 LF)	37 cars (875 LF)
Provided	16 cars (370 LF)	47 cars (1110 LF)
Surplus	1 car (40 LF)	10 cars (235 LF)

*NOTE: Pre-K, Elementary, and Middle School arrive/dismiss on staggered schedules. (Arrival – 7:30 AM, 8:00 AM, 12:00 PM; Dismissal – 12:00 PM, 3:30 PM, 4:00 PM). Projected Queue indicates Peak Dismissal Time of 236 Elementary School Students.

Figure 2: TMP Exhibit - Proposed

TMP Summary

TABLE 2: SUMMARY OF TMP

FEATURE	Existing Conditions	Projected Conditions
Student Arrival Time:	Elementary - 7:30 AM, 12:00 PM (Pre-K only)	Elementary - 7:30 AM, 12:00 PM (Pre-K only) Middle School – 8:00 AM
Student Dismissal Time:	Elementary – 12:00 PM (Pre-K only), 3:30 PM	Elementary – 12:00 PM (Pre-K only), 3:30 PM Middle School – 4:00 PM
School Enrollment:	PK – 48 students KG – 36 students Gr. 1 – 40 students Gr. 2 – 34 students Gr. 3 – 22 students Gr. 4 – 24 students Gr. 5 – 17 students Gr. 6 – 15 students*	PK – 48 students KG – 36 students Gr. 1 – 40 students Gr. 2 – 34 students Gr. 3 – 22 students Gr. 4 – 24 students Gr. 5 – 17 students Gr. 6,7,8 – 176 students*
Number of School Staff Assisting Loading/Unloading:	4	4
Number of Off-Duty Peace Officers:	2	2
Storage Capacity:	530 feet (Eastern Entrance) 270 feet (Western Entrance – Underutilized)	1,110 feet (Eastern Entrance) 370 feet (Western Entrance)
**It should be noted that the 6th grade enrollment is already existing and is planned to move up through 7th and 8th grade. The total number of students for all 6-8th grade is expected to be approximately 176 students when fully utilized.*		

It is the goal of this TMP to eliminate all queues along Bruton Road during arrival and dismissal periods for the school. As shown in on Figure 2 (TMP Exhibit) during arrival and dismissal periods, traffic follows two separate travel paths. As depicted in Figure 2, these paths should be separated by cones to avoid conflicts. The first path is planned to travel through the western site access point and circulate through the southern parking lot. This path provides 370 feet of queuing space that is mis-utilized in existing conditions based on field observations. The second path is planned to travel through the eastern site access point and circulate through the northern parking lot. As shown in Table 2, the expansion

project will provide 580 feet of added storage capacity for the travel path that enters the eastern site access and 100 feet of added storage capacity for the travel path that enters the western site access. This is due to the northern parking lot being shifted further north than its existing location and the shifting of drop-off/pick-up locations.

The staggered arrival/dismissal schedule (elementary school at 7:30 AM and 3:30 PM; middle school at 8:00 AM and 4:00 PM) along with the added storage capacity should help mitigate existing queueing issues along Bruton Road. As shown, the elementary population is expected to remain at 236 students with an additional 176 middle school students to be dismissed at a separate time. Therefore, the maximum queue lengths are expected to occur during the elementary school dismissal period. This means the excess queues onto public roadways that needs to be eliminated will remain the same as existing conditions or decrease due to improved operations.

As discussed in the field observations section of this memo, the eastbound queues were contained within the existing left-turn lane storage (<60 feet) for the duration of the AM arrival period. Additionally, the westbound queues were limited to ~1-2 vehicles for the duration of AM arrival period. Therefore, it is expected that operations and queues for the AM period should remain acceptable.

As discussed, the maximum eastbound queue during the PM dismissal period was approximately 150 feet (6 vehicles). Furthermore, the maximum queue extended approximately 300 feet (12 vehicles) for westbound vehicles measured from the western access. Therefore, the total maximum onto public roadways that needs to be mitigated is approximately 450 feet (6 EB vehicles + 12 WB vehicles). As shown in Figure 2 and Table 2, an additional 580 feet of storage capacity will be provided for the eastern access travel path on-site, and an additional 100 feet of storage capacity will be provided for the western access travel path. As a result, the added storage capacity should mitigate the queuing issues along Bruton Road. Furthermore, the extension of the eastbound left-turn lane or implementation of a westbound right-turn lane is not recommended at this time due to the additional storage capacity on-site. Queue length calculations are attached as an appendix.

Further mitigating the existing queues, it is recommended that Golden Rule Charter School implement a standard practice to efficiently utilize both the east and west entrance during dismissal. Ideal utilization for each entrance would be 30 percent of parents using the west travel path and 70 percent of parents using the east travel path. Table 3 illustrates a possible methodology of how parents would be distributed in order to achieve these percentages:

TABLE 3: DISTRIBUTION OF PARENTS FOR DISMISSAL

Method and School		West Travel Path		East Travel Path	
		Group	Approximate Percent	Group	Approximate Percent
Sort by Grade*	Elementary School	4th and 5th Grade	27%	K-3rd Grade	73%
	Middle School	8th Grade	33%	6th and 7th Grade	67%
** This may result in siblings being separated. In this case, older siblings should join younger siblings' travel path during AM arrival and the younger siblings should join older siblings' travel path during PM dismissal.*					

Relatedly, the Texas Transportation Institute's *Traffic Operations and Safety at Schools: Recommended Guidelines* was reviewed to determine if the provided storage length will be adequate to accommodate the school. This study provides recommended storage lengths based on student population size for elementary, middle, and high schools. According to the guidelines, it is recommended that 900-1,200 feet of storage be provided for elementary/middle schools with student populations of 200-600 students. Therefore, the proposed 1,480 feet of total storage should be sufficient.

It was requested through coordination with the City of Dallas to evaluate restricting the eastbound u-turning movement at the intersection of Bruton Road at the site access drive. The impact of u-turning movements on traffic operations at an intersection differs minimally from left turn movements. However, the impact of restricting u-turns at this site could be beneficial for overall safety at the intersection and the negative impacts would be minimal. Therefore, it is recommended that a u-turns be restricted at this location.

It was also requested through coordination with the City of Dallas to evaluate the potential of restricting the eastern access drive to right-in/right-out only. As a result, this would likely cause increased u-turns at adjacent intersections. Furthermore, the traffic volumes for southbound left-turning vehicles exiting the site (per the September 2019 TIS) show that the number of vehicles making that movements should be manageable without causing significant delays. This is due to the presence of off-duty peace officers directing traffic during arrival and dismissal periods. Therefore, it is not recommended that the eastern access drive be restricted to right-in/right-out movements.

In the event of an emergency occurring during peak arrival/dismissal periods, the school plans to utilize existing procedures to allow emergency vehicles onto the campus. School staff and traffic control officers will direct traffic either off-site, into parking spaces, or off the side of the internal drives in order to clear a path for emergency vehicles to travel.

TMP Statement

The driveway parents should use for arrival and dismissal will be separated by grade as assigned by the school. In the event of siblings the access drive will be determined by the youngest sibling's grade during AM arrival and the oldest sibling during PM dismissal. Follow the travel path at your assigned driveway as directed by off-duty peace officers and traffic cones. Identification card should be ready at drop-off / pick-up. Continue to follow the travel path to exit out of the same driveway that was entered. Follow direction of off-duty peace officers to maintain safety and traffic circulation.

Conclusions and Recommendations

The analyses presented in this memo that safe and efficient traffic operations can be achieved by implementing the following recommendations:

- Maintain existing traffic management plan characteristics, including 4 school staff members, 2 off-duty peace officers, temporary traffic control equipment, and student identification system.
- Maintain and utilize the existing travel paths for both the eastern and western entrance points, as shown in the TMP Exhibit. Utilize traffic cones to prohibit the two travel paths from intersecting at the existing connection on the southern portion of the campus.
- Implement a standard practice to control utilization of each travel path by assigning students to each path by grade level. The recommended distribution strategy is identified above. Goal utilization should be 30% for the west travel path and 70% for the east travel path.
- Shift the front of the dismissal queue for each travel path to maximize storage. For the west path this pushes the front of queue to the west corner of the existing building. For the east path, this pushes the front of the queue to the northeast corner of the building expansion.
- Stagger arrival and dismissal times for elementary and middle school students with as much time between phases as possible to avoid queueing issues.

- No parking, standing, or stopping on Bruton Road is allowed. Any observed vehicular queue on Bruton Road should be immediately mitigated.
- Install No Parking/Stopping/Standing signs along the north and south Bruton Road near the site access drives in order to discourage on-street parking before the arrival/dismissal periods end. Figure 2 (TMP Exhibit - Proposed) identifies the placement of the proposed signs.
- Install a No U-Turn sign within the median at the intersection of Bruton Road and the easternmost access drive. Figure 2 (TMP Exhibit - Proposed) identifies the placement of the proposed sign.

SCHOOL TMP REVIEW AND COMMITMENT

The school traffic management plan (TMP) for *<School_Name>* was developed with the intent of optimizing safety and efficiently accommodating vehicular traffic generated during the school's typical student drop-off and pick-up periods. A concerted effort and full participation of the school administration are essential to maintain safe and efficient traffic operations.

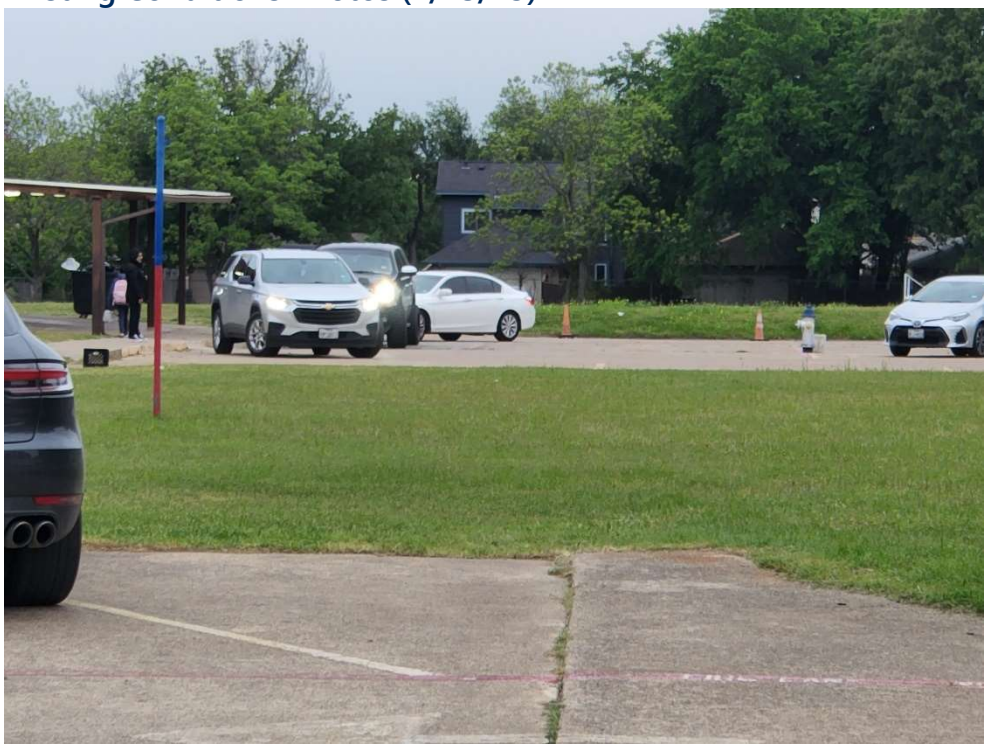
By consent of this submittal, the school administration hereby agrees to implement, adhere to, and support the strategies presented in this TMP for which the school is held responsible until or unless the City of Dallas deems those strategies are no longer necessary through a minor amendment.

Signature

7/7/2023
Date

Name: JOHNNY PEREIRA
Title: CHIEF EXEC. ASST.

Existing Conditions Photos (4/25/23)



1: *Morning Arrival Period - Back Entrance (Eastern Access) On-Campus*

2:*Afternoon Dismissal Period – Eastbound Left-Turn Lane at Eastern Access*

Existing Conditions Photos (4/27/23)

3: *Morning Arrival Period – Eastern Access Drive on Campus*

4:*Afternoon Dismissal Period – Westbound Right-Turn onto Western Access Off-Campus*

Existing Conditions Photos (5/2/23)

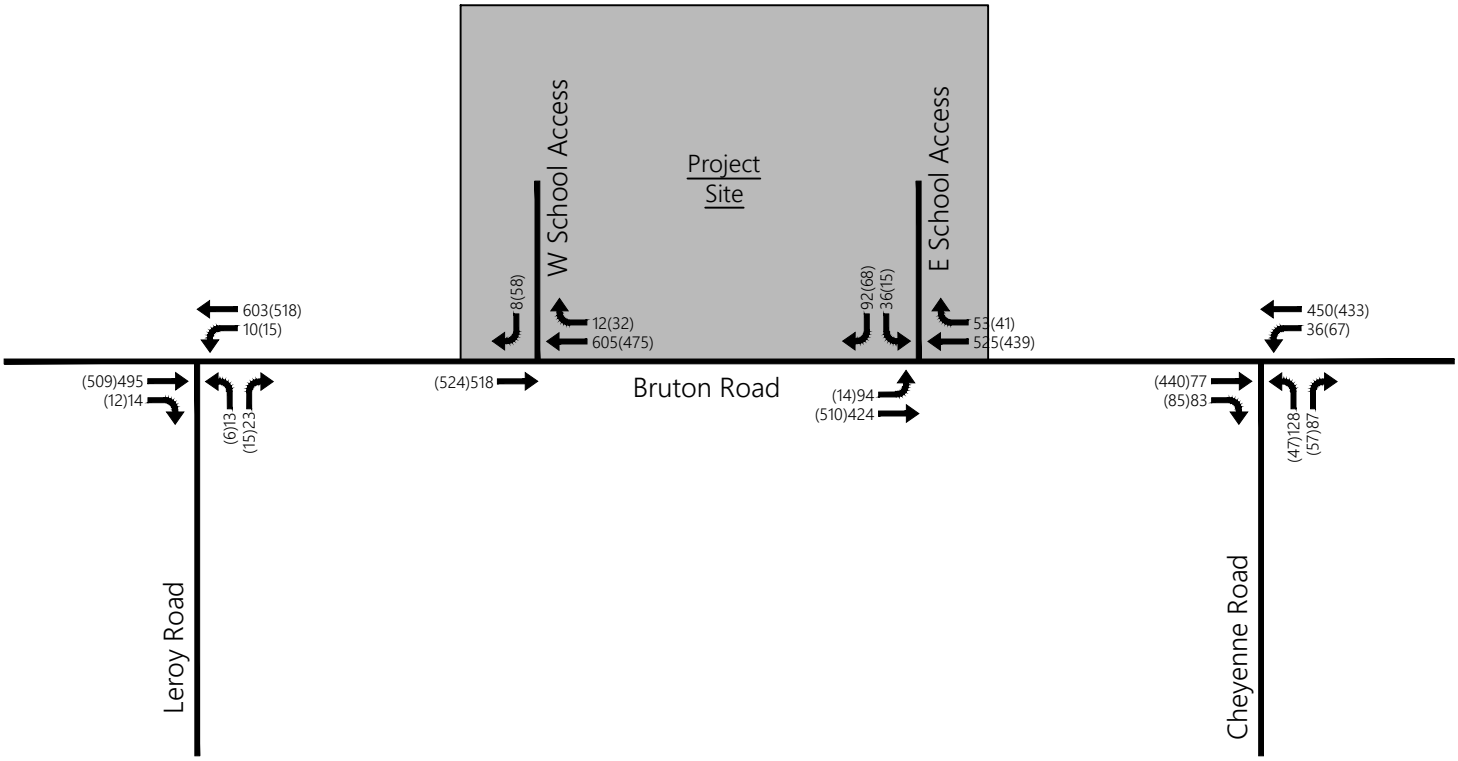
5: *Morning Arrival Period - Back Entrance (Eastern Access) On-Campus*

6:*Afternoon Dismissal Period – Westbound Right-Turn onto Western Access Off-Campus*

Existing Conditions Photos (5/4/23)

7: *Morning Arrival Period - Back Entrance (Eastern Access) On-Campus*

8:*Afternoon Dismissal Period – Eastern Access On-Campus*



XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

Existing Peak Hour Traffic Volumes
(Not to Scale)

Figure 3.

APPENDIX

Queue Length Calculations

Existing On-Site Storage Length = 530 East Entrance + 270 West Entrance = 800 ft
Observed Overflow Queue Length = 150 EB + 300 WB = 450 ft

Existing Queue Length = 800' On-Site + 450' Overflow = 1,250 ft
LF / Vehicle Ratio = 23.5 LF / Vehicle

Future Eastern On-Site Storage Length = 1,110 ft (47 vehicles)
Future Western On-Site Storage Length = 370 ft (16 vehicles)

Projected Queue Eastern Entrance = 1,250' x 70% = 875 ft (37 vehicles)
Projected Queue Western Entrance = 1,250' ft x 30% = 375 ft (16 vehicles)

Note: Due to the recommended staggered arrival / dismissal times, to the peak queueing period is projected to remain during the elementary dismissal of 216 students. Queues associated with the middle school dismissal of 176 students are expected to be less than the elementary dismissal.