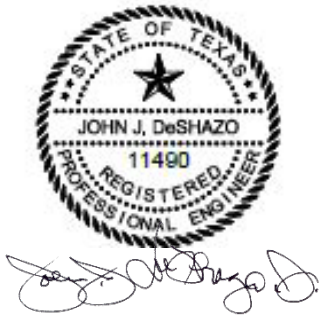
DeShazo Group

Traffic. Transportation Planning. Parking. Design.

Texas Registered Engineering Firm F-3199



May 7, 2019

Technical Memorandum

To: Mr. Karl Crawley – Masterplan

From: DeShazo Group, Inc.

Date: May 7, 2019

Re: Traffic Management Plan for Dallas Environmental Science Academy
DeShazo Project Number 18045

INTRODUCTION

DeShazo Group, Inc. (DeShazo) is an engineering consulting firm based in Dallas, Texas, providing licensed engineers and planners skilled in the field of traffic and transportation engineering. DeShazo's services were retained Masterplan to provide a traffic management plan (TMP) for Dallas Environmental Science Academy (DESA) located at 3531 N Westmoreland Road in Dallas, Texas.

The school is currently in operation at the subject site with an enrollment of 459 students in grades 6th through 8th and has an enrollment capacity of 500 students.

The school site is zoned R-5(A) (Single Family) and will be undergoing construction to connect the two parking lots on Gallagher Street and retain existing portable classrooms. As part of the approval process, submittal of a TMP to the City of Dallas is required as a record of the preferred strategies to be used by the school to ensure overall traffic safety and efficiency. This TMP is intended to assess existing and anticipated traffic conditions at the school during the morning drop-off and afternoon pick-up peak periods on the basis of satisfying these objectives. By consent of the TMP, the School agrees to be held self-accountable for the enforcement of the strategies presented herein until and unless the City of Dallas deems further measures are necessary. (NOTE: In this report, the term "parent" refers to any individual who is involved in the drop-off or pick-up of one or more students at the School.)

TRAFFIC MANAGEMENT PLAN

A school TMP is important to safely achieve an optimum level of traffic flow and circulation during peak traffic periods associated with student drop-off and pick-up. By properly managing the vehicular traffic generated during critical periods, the safety and efficiency of other modes of travel—including pedestrian traffic—will also inherently improve and the operational impact on the public street system should also be minimized. **This plan, however, should not be considered a comprehensive set of instructions to ensure adequate safety; it should be used as a tool to facilitate a safer and more efficient environment.**

School Operational Characteristics

As required by the City of Dallas, DeShazo observed on-site traffic on four different occasions at the following times.

- Thursday, November 15, 2018, during student dismissal
- Monday, November 26, 2018, during student dismissal
- Tuesday, November 27, 2018, during student arrival
- Tuesday, November 27, 2018, during student dismissal
- Friday, April 12, 2019, during student dismissal
- Monday, April 15, 2019, during student arrival

Field observations indicate that current practices during the morning drop-off period present minor obstruction of vehicular traffic. Arrival of vehicles in the morning is also notably more sporadic than any traffic generated during the afternoon pick-up period. **Table 1** summarizes the school's operational characteristics assumed in this analysis.

Table 1. School Operational Characteristics

	Existing Conditions	**Proposed Conditions**
Enrollment (by grade)	6th Grade – 164 students 7th Grade – 150 students 8th Grade – 145 students *Total: 459 students*	 *Total: 500 students*
Daily Start/End Schedule	All Grades: >Start: 8:20 AM >End: 3:40 PM	No significant changes
Approximate Percentage of Students Travelling by Mode Other Than Drop-off/Pick-up	By 16 School Buses: ≅ 88% By 54 Vehicles: ≅ 12%	By 16 School Buses: ≅ 88% By 60 Vehicles: ≅ 12%

NOTE #1: Dallas Environmental Science Academy does not have a specific attendance boundary. Instead, the Academy serves students within the entire City. Therefore, the percentage of students who take the bus is likely to be higher compared to schools that serve a specific attendance boundary.

NOTE #2: To the highest degree practical, the accounts of "existing conditions" presented in this report were based upon actual on-site observations conducted by DeShazo during typical school day(s)/conditions and from personal interviews of school representatives. The analyses and recommendations presented in this report for "proposed" or "future" conditions were based upon evaluations of "existing conditions" and may be supplemented by DeShazo's professional judgment and experience. "Proposed"/"Future" conditions are intended to reflect the anticipated day-to-day conditions at full occupancy.

NOTE #3: Occasional functions or other events may be held at the school, which generate traffic outside of the traditional peak drop-off and pick-up periods. While some of the measures presented in this report may be applicable in such cases, traffic characteristics other than those directly associated with the primary drop-off and pick-up periods are not the subject of this analysis.

EXISTING TRAFFIC CONDITIONS

Site Access and Circulation

The subject site currently has one point of ingress and one point of egress for each of the two parking lots on Gallagher Street. However, once the two parking lots are connected the site will have one point of ingress (easternmost driveway) and one point of egress (westernmost driveway) on Gallagher Street.

Student Loading

During the morning drop-off period all students, whether dropped off by parent or by bus are dropped off on Bickers Street **(Exhibit 1A)**. Once students are dropped off they are greeted by school staff and proceed to the school entrance on Bickers Street, which is currently the only entrance with a metal detector.

As previously mentioned, arrival of vehicles in the morning is notably more sporadic than afternoon. Observations found a total of five vehicles and two buses during the peak drop-off time. Once parent vehicles and buses have dropped off students they proceed east towards N Westmoreland Road.

During the afternoon pick-up period **(Exhibit 1B)** parents park on either side of Gallagher Street and wait for students to be dismissed. Buses proceed eastbound on Bickers Street upon arriving and queue in front of the school. DeShazo measured the maximum number of cars at the site location during pick-up time was about 54 vehicles (38 on Gallagher Street, 4 on Bickers Street and 12 on the eastern side parking). Eleven full size school buses and 4/5 small buses were counted during the data collection on Bickers Street. Bus loading is facilitated by two to three school staff members. Once all buses are loaded they proceed east towards N Westmoreland Road.

Vehicular Queue Lengths

Dallas Environmental Science Academy should accommodate all morning arrival traffic and all afternoon dismissal traffic operations in accordance with **Exhibit 3**. School staff should try to maximize efficiency of student loading operations at all times. Maximum accumulation of vehicles is subject to both the rate of arrival traffic and the rate at which the school staff is able to load/unload students into their corresponding cars; any delay or inadequacy in the loading/unloading operations results in unwarranted accumulation of traffic. The more number of staff undertakes the traffic operations, the less chances of vehicle queue to get in the public right-of-way.

School Crossing Guards

The relatively low number of students (approximately 12%) that are picked-up by their parents are seen getting inside the car in the middle of the street. As all parking, stopping or standing is prohibited on public right of way, the pick-up of students on the middle of the street is also prohibited. DeShazo did not observe any pedestrian traffic to or from the school to the neighborhood. A crossing guard is not required based on these assumptions.

DART Bus Route

DART bus route does not conflict with the school peak hour traffic. **Exhibit 4** showes the DART route in the vicinity of the school.

RECOMMENDATIONS

The school administration should implement an active management of student loading to expedite queueing operations and reduce the maximum accumulation of traffic. Queue pick-up participation is a challenge that schools face constantly. Despite the anticipated practices and operational characteristics at Dallas Environmental Science Academy, full cooperation of all school staff members, students and parents is crucial for the success of the systematic queue. Proper training of school staff on the duties and

expectations pertaining to this plan is recommended. Sufficient communication at the beginning of each school term (and otherwise, as needed) with students and parents on their duties and expectations is also recommended. DeShazo recommends consideration of the following recommendations to optimize queue operations:

Traffic Queue Operations

- Implementation of an "Advance Passenger Identification System" to expedite queue operations. This system uses hangtags displayed through the windshield of arriving vehicles to identify arriving vehicles with the name(s) of corresponding student(s).
- Use of apps or software (e.g., Driveline Dispatch®) to expedite queue operations. This software efficiently displays family names of upcoming vehicles on indoor screens and provides students and school staff with a chart of vehicles approaching the loading zone.
- Staff participating in student drop-off/pick-up operations should, in lieu of simple hand gestures, procure and use reversible hand-paddle signs with the messages "STOP" and "SLOW". Optional additional equipment for staff may include whistles (for audible warnings) and flashlights (for visual warnings) in order to gain the attention of motorists.
- Morning arrival and afternoon dismissal traffic operations should be managed in accordance with the traffic circulation, & loading zones depicted in **Exhibit 3**. An appropriate number of school staff shall be assigned to fulfill the duties of student supervision, traffic control, and other related duties as generally depicted on the plan. The additional number of vehicles may queue on the curb side of the school (WB direction only) during peak hours only when the inside loading area is full.

Student Safety

- Student safety should remain paramount at all times. School administration should continuously remind students, parents and staff of their expectations relative to this traffic management plan throughout the school year.
- School administration should review traffic operations and address any problems concerning this traffic management plan and identify solutions in the interest of student safety.
- In accordance with the Transportation Code, Section 545.4252, State law prohibits the use of wireless communication devices while operating a motor vehicle during the time a school zone is in effect. Restrictions do not apply to stopped vehicles or the use of handheld free devices.

SUMMARY

This TMP should be used by Dallas Environmental Science Academy to provide safe and efficient transportation of students, staff, and faculty to and from the site. The plan was developed with the intent of optimizing safety and efficiency and the goal of accommodating vehicular traffic generated by the school within the site at peak traffic periods. School administration should review details of this TMP on a regular basis to confirm its effectiveness.

END OF MEMO

SCHOOL REVIEW AND COMMITMENT

This plan was developed for Dallas Environmental Science Academy with the intent of optimizing safety and efficiency related to vehicular traffic generated by the School during peak traffic periods. A concerted effort and full participation by the School administration, staff, students and parents are essential to maintain safe and efficient traffic operations.

The school also confirms that it will implement an advance passenger identification system (i.e., name card/hangtags) and use STOP signs, whistles and vests.

The School has reviewed the Traffic Management Plan and is in support of the strategies presented herein.

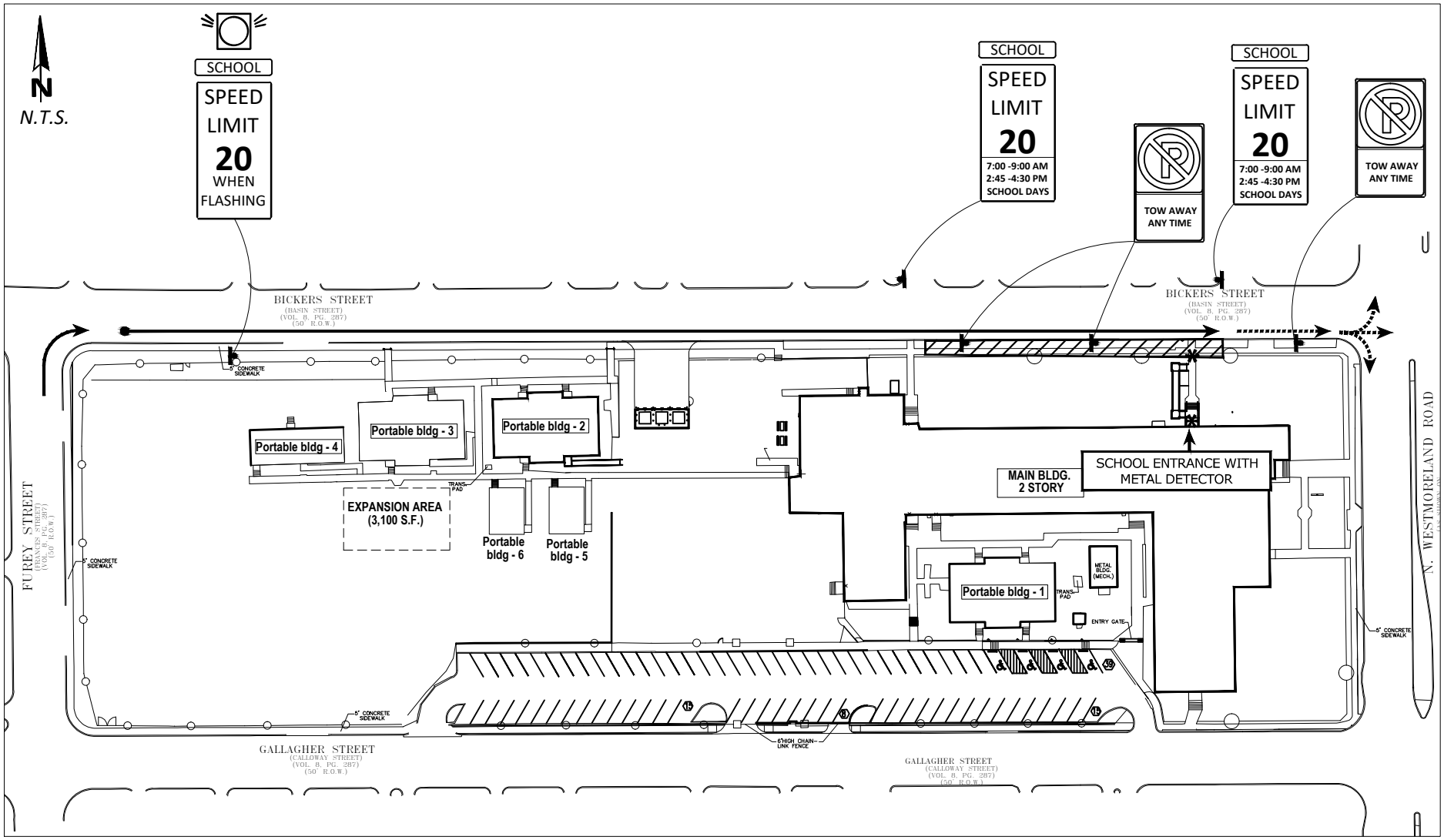
The School is committed to continually reviewing and assessing the effectiveness of the TMP and if warranted, will implement changes in the interest of increasing safety, efficiency and minimizing impacts on the surrounded community.

_____ _____

Arnoldo Zuniga, Principal
Dallas Environmental Science Academy

Date

DeShazo Group



Queuing Summary

Student Group	Student Enrollment	Daily Schedule	Traveling Modes	Vehicular Traffic Demand – Queue
6th - 8th Grade	459 Students	8:20 AM - 3:40 PM	Bus: 89% Pick-Up: 11%	Observed (1): 190 LF (5 veh & 2 buses)

Note: (1) Based on on-site observations to determine maximum queue

Legend

- Inbound Route
- School Stuff
- Vehicle/Bus Queue
- Outbound Traffic
- Loading Zone

The purpose of this Traffic Management Plan (TMP) is to evaluate traffic operations that promote safety and efficient vehicle circulation. The school administration should adhere to this TMP. Any deficiency due to spillover of queuing into undesignated areas of the city rights-of-way, including roadway travel lanes, should be corrected by the school immediately.

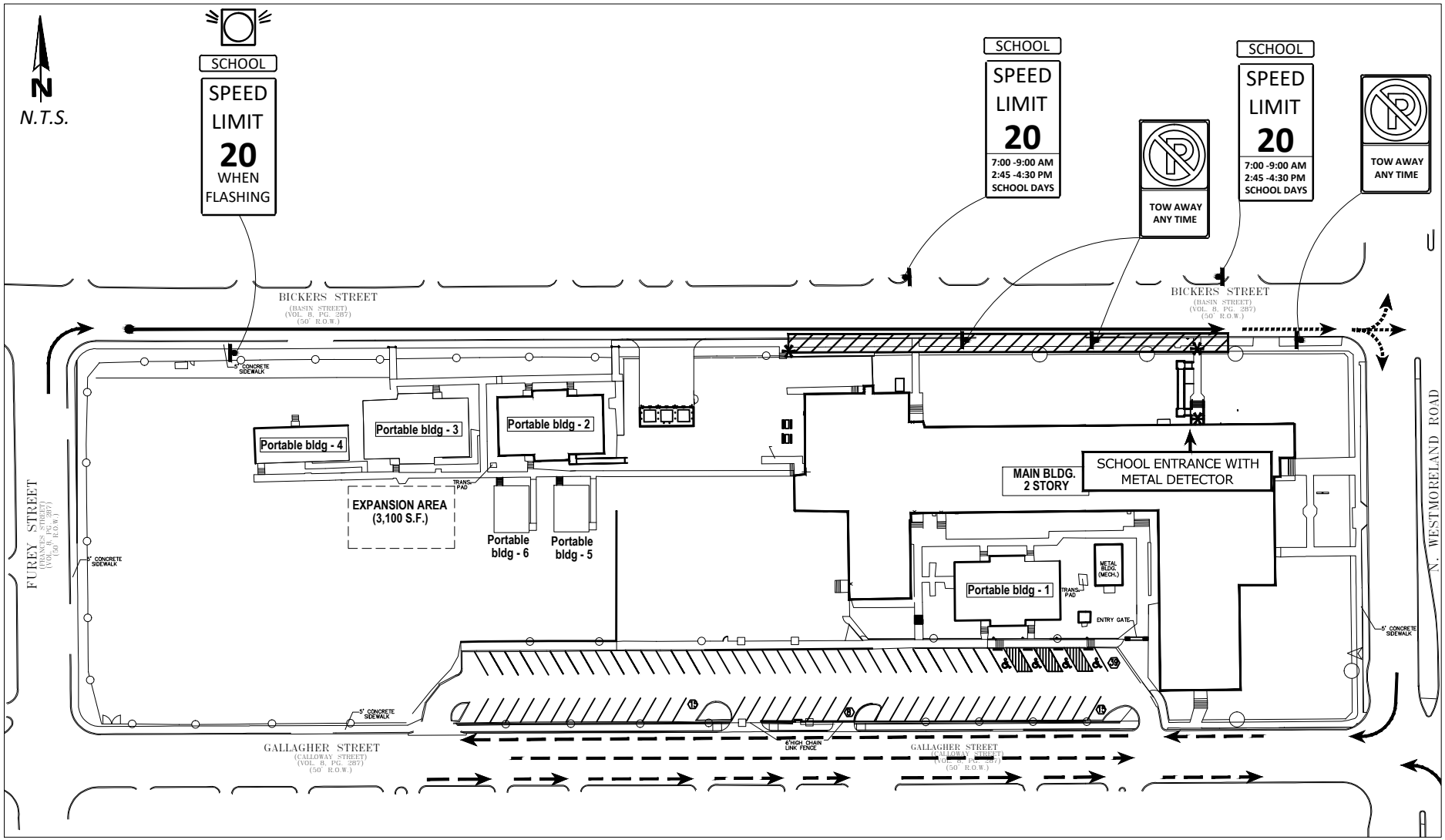
EXHIBIT **1A**

Existing Traffic Circulation - Morning Arrival

Dallas Environmental Science Academy
3531 N Westmoreland Road, Dallas, Texas

DeShazo Group, Inc.
Texas Registered Engineering Firm F-3199
400 S. Houston St. Suite 330
Dallas, Texas 75202
(214) 748.6740

DeShazo Group



Queuing Summary

Student Group	Student Enrollment	Daily Schedule	Traveling Modes	Vehicular Traffic Demand – Queue
6th - 8th Grade	459 Students	8:20 AM - 3:40 PM	Bus: 89% Pick-Up: 11%	Observed (1): 190 LF (5 veh & 2 buses)

Note: (1) Based on on-site observations to determine maximum queue

Legend

- Inbound Route
- School Stuff
- Bus Queue
- Outbound Traffic
- Loading Zone
- Vehicle Queue

The purpose of this Traffic Management Plan (TMP) is to evaluate traffic operations that promote safety and efficient vehicle circulation. The school administration should adhere to this TMP. Any deficiency due to spillover of queuing into undesignated areas of the city rights-of-way, including roadway travel lanes, should be corrected by the school immediately.

EXHIBIT **1B**

Existing Traffic Circulation - Afternoon Dismissal

Dallas Environmental Science Academy
3531 N Westmoreland Road, Dallas, Texas

DeShazo Group, Inc.
Texas Registered Engineering Firm F-3199
400 S. Houston St. Suite 330
Dallas, Texas 75202
(214) 748.6740

DeShazo Group

EXHIBIT 2: STUDENT DISMISSAL QUEUE MODEL

DeShazo Model for Public Schools 2019 *DeShazo No. 19019*

PROJECT INFORMATION

School Name:	*Dallas Environmental Science Academy*	Grades:	*6th - 8th*
City, State:	*Dallas, Texas*	District:	
School Type:	*Middle School*	Date:	*4/23/2019*

STUDENT DISMISSAL QUEUE MODEL

i) Projected Inbound PM Peak Hour Trips:	T_{in}=	60	cars
ii) Student Loading Area:	LA=	230	LF
ii) Maximum Loading Stations (LA/23.5):	S =	18	stations
ii) Average service time per vehicle:	F_Q=	9	cars/min
iii) Estimated Time of Carpool Operations (mins):	T_O=	12	mins
iii) Estimated Peak Arrival Rate (sec/car):	R_A=	6	sec/car

iv) Theoretical Peak Queue:

$$Q_{max} = T_{in} \times \frac{60}{T_O} \times \frac{60}{S * F_Q} \times \frac{R_A}{60} = 11$$ *vehicles in theoretical peak queue*

iv) Adjusted Peak Queue:

- Traffic Management In Effect: yes → F_m = *0.10*
  [i.e., coordinated inbound traffic/queuing plan; range: 0.00-0.47]
- Mixed Traffic Circulation: no → F_c = *0.00*
  [i.e. apportioned location for each mode of transp.; range: 0.00-0.25]
- Parking Allocation: no → F_P = *0.00* *(see Exhibit for details)*
  [i.e. portion of theoretical peak queue heading to a parking stall; 0.00 for mandatory queues]

v) Projected Peak Queue:

$Q_{proj} = Q_{max} \times (1 + F_M + FC - F_P)$ = 13 vehicles (306 LF @ 23.5 feet/vehicle)

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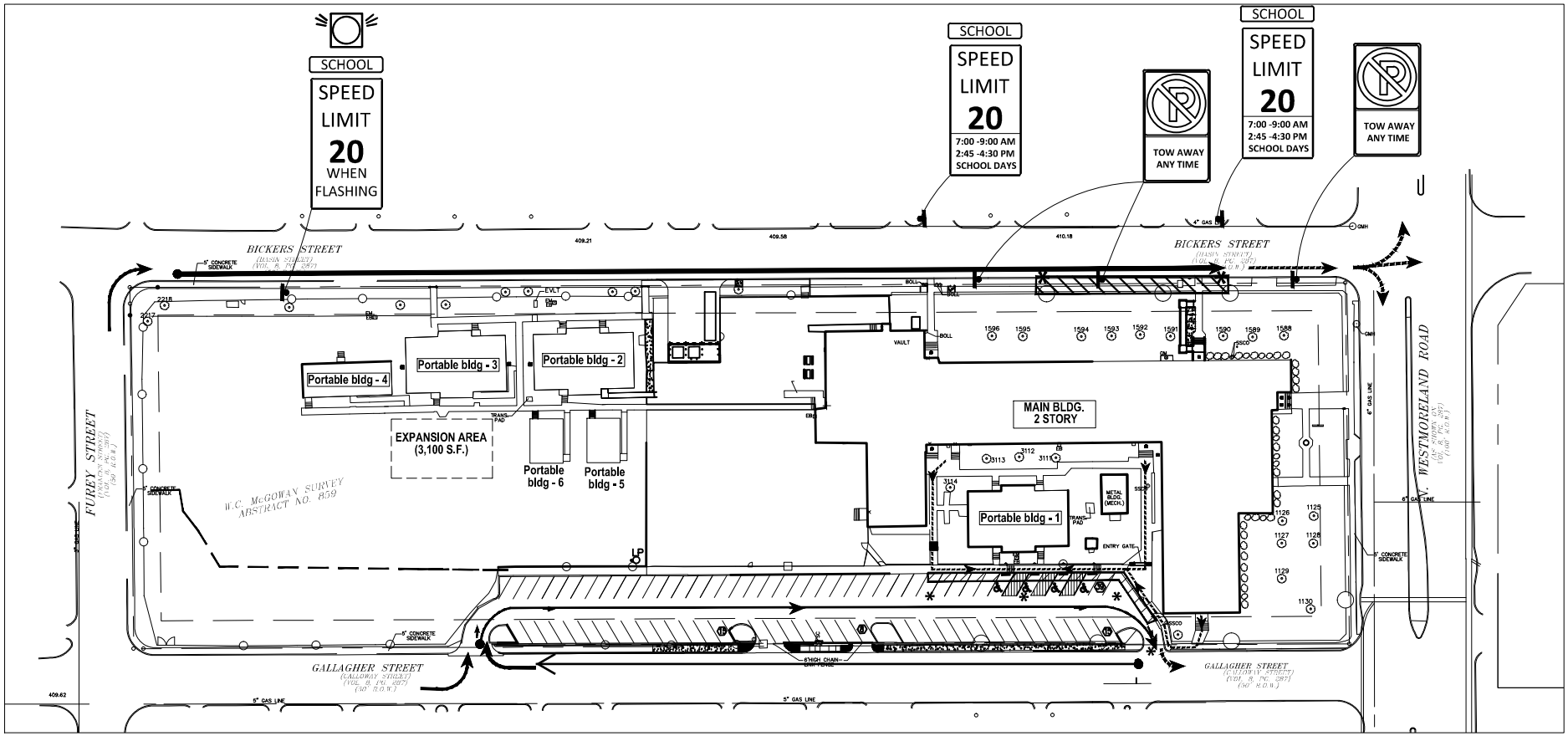

Queuing Summary

Student Group	Student Capacity	Daily Schedule	Traveling Modes	Vehicular Traffic Demand — Queue
6th - 8th Grade	500 Students	8:20 AM - 3:40 PM	Bus: 89% Pick-Up: 11%	Projected (1): 968 LF (43 veh) Provided: 1,175 LF (50 veh) Surplus: 50 LF (2 veh)

Note: (1) Based on on-site observations to determine maximum queue

Legend

- Inbound Route
- Vehicle Queue
- Bus Queue
- Loading Zone
- School Staff
- Outbound Route
- Pedestrian Walking Route

The purpose of this Traffic Management Plan (TMP) is to evaluate traffic operations that promote safety and efficient vehicle circulation. The school administration should adhere to this TMP. Any deficiency due to spillover of queuing into undesignated areas of the city rights-of-way, including roadway travel lanes, should be corrected by the school immediately.

N

N.T.S.

EXHIBIT **3**

Traffic Management Plan - Morning Arrival/Afternoon Dismissal

Dallas Environmental Science Academy
3531 N Westmoreland Road, Dallas, Texas

DeShazo Group, Inc.
Texas Registered Engineering Firm F-3199
400 S. Houston St. Suite 330
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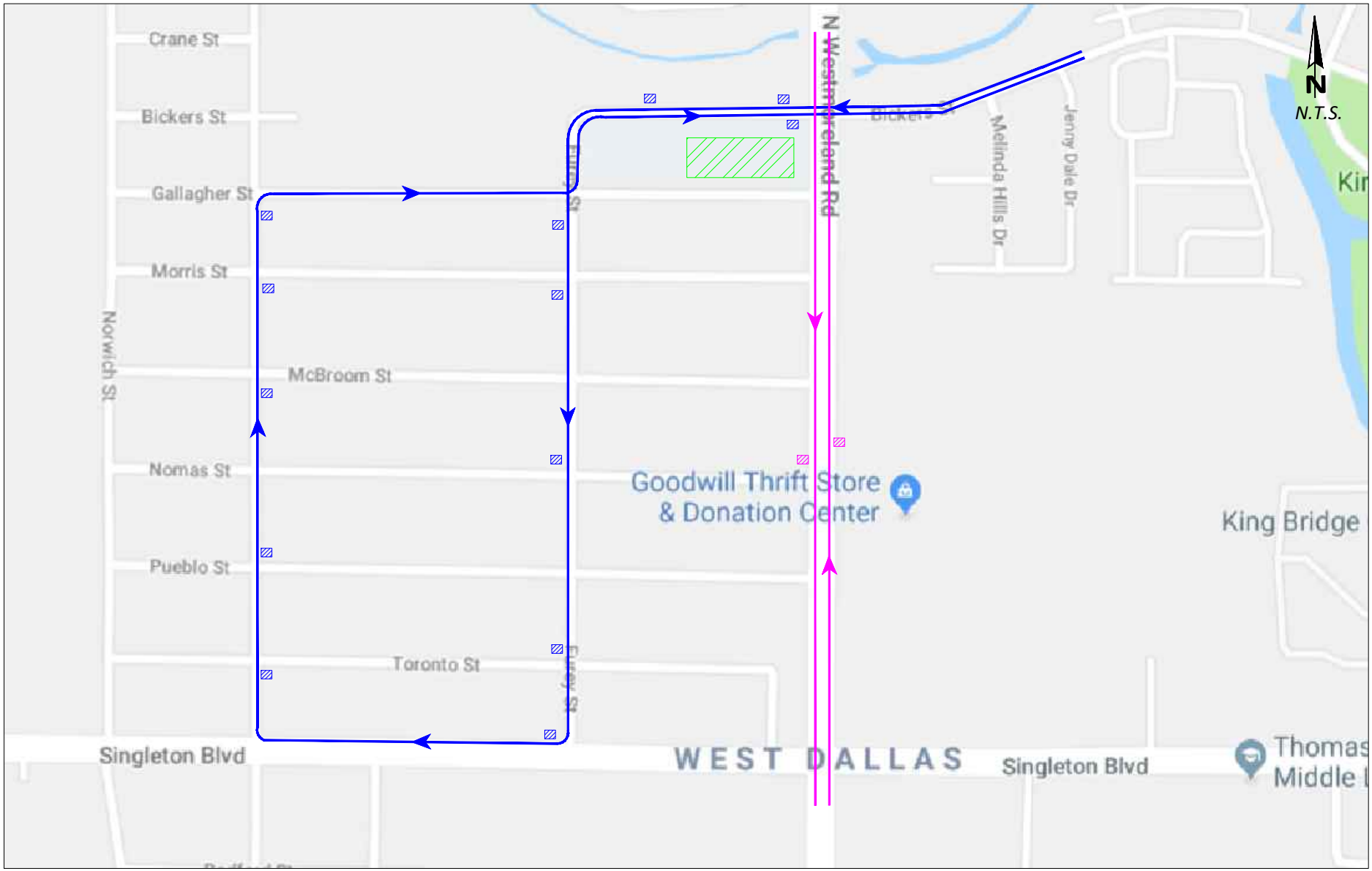

Legend

- Bus Route 52
- Bus Route 404 and 59
- Bus Stop for Route 52
- Bus Stop for Route 404 and 59
- School

EXHIBIT **4**

BUS ROUTES AND BUS STOPS

Dallas Environmental Science Academy
3531 N Westmoreland Road, Dallas, Texas

DeShazo Group, Inc.
Texas Registered Engineering Firm F-3199
400 S. Houston St. Suite 330
Dallas, Texas 75202
(214) 748.6740