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March 23, 2021

Kimberly Hinton
MSTA Project Engineer
750 N. Greenfield Parkway
Garner, NC 27529

Subject: Casa Esperanza – Traffic Management Plan
Wake Forest, North Carolina

Dear Ms. Hinton,

This letter provides a Traffic Management Plan (TMP) Update for the proposed Casa Esperanza to be located north of Height Lane and east of Star Road in Wake Forest, North Carolina. This TMP was prepared in accordance with the North Carolina Department of Transportation (NCDOT) Municipal and School Transportation Assistance (MSTA) guidelines. The TIA considered an urban charter school with a maximum of 754 students, serving grades pre-K through 8. This TMP assumes off-site improvements, as identified by the Traffic Impact Analysis (TIA) Addendum submitted concurrently with this letter.

Introduction

The proposed Casa Esperanza is anticipated to have a maximum of 754 students, serving grades pre-K through 8, and is anticipated to have a staggered bell of a minimum of thirty (30) minutes between grades pre-K through 3 and grades 4 through 8. These grade groupings each consist of five (5) grade levels and are anticipated to be even in size.

Access to the charter school site will be provided via one (1) ingress only driveway (southern) and one (1) egress only driveway (northern) along Star Road. Parents are anticipated to enter the site via the southern driveway and navigate through the campus in a counterclockwise direction. Based on the current site plan, there will be two (2) (un)loading zones located side by side. Based on NCDOT MSTA guidelines and to provide conservative results, only one (1) (un)loading zone was considered for the purposes of the analysis. The analysis should reflect the worst-case scenario should staff choose to not pursue the two (2) (un)loading zone scenarios on a given day.

The proposed school is expected to be constructed within an area consisting primarily of industrial and residential development. Based on the most recent NCDOT AADT data (2019), US 1 has an annual average daily traffic (AADT) volume of approximately 47,000 vehicles per day (vpd) within the study area. No AADT information was available for Star Road, Height Lane, or Ponderosa Service Road based on the NCDOT AADT map.

Based on the site plan, 2,730 feet of stacking length is provided from the start of the ingress only driveway along Star Road for ingress parent and staff trips to the start of the (un)loading zone. Based on the recommended stagger, the two (2) grade groupings are anticipated to have an even size of approximately 377 students. Utilizing 100% of one grade grouping (approximately 377 students) plus 25% of the other grade grouping (approximately 94 students) gives 471 students that may arrive under one bell schedule. The additional 25% is expected to account for any overlap. For a 471-student capacity charter school, the MSTA School Traffic Calculator indicates a maximum high demand internal stacking need of 2,625 feet for student pick-up and drop-off. This maximum high demand internal stacking length accounts for an additional 30% of extra stacking length in the MSTA School Traffic Calculator. The current site plan shows that the maximum high demand internal stacking length is exceeded and approximately 2,730 feet of internal stacking distance is provided.

It should be noted that the school intends to operate with pre-K and Kindergarten students. Based on coordination with NCDOT during scoping, if these students were walked into and out of the school, a reduction in required stacking length may be considered; however, based on coordination after scoping (February 23, 2021), the latest site plan does not adequately accommodate kindergarten park and walk-in area on the site plan. Therefore, MSTA noted that no queue credit would be provided. Walking pre-K and Kindergarten students may still be arranged to additionally accommodate any stacking concerns at build-out, but no reductions in queuing were considered. Existing parallel spaces, dedicated spaces, and crosswalks will accommodate for walking students in/out of the school, as needed. Table 1, below, summarizes the stacking based on 471 students.

Table 1 – Stacking Summary

LAND USE	STACKING CALCULATIONS (FEET)		STACKING PROVIDED (FEET)
	AVERAGE	HIGH DEMAND	
Casa Esperanza (471 Students) *	2,019	2,625	2,730

*The school is anticipated to consist of 754 total students with a staggered bell schedule of a minimum of thirty (30) minutes. Each grade grouping is anticipated to consist of 377 students. Assuming 100% of one grade grouping plus a 25% overlap of the other grade grouping gives 471 students that may arrive under one peak period.

Should stacking exceed the on-site storage length due to off-site deficiencies, vehicles may utilize the second circulating lane through the entire campus. The following measures are recommended if the second circulating lane (bypass lane) is dedicated to stacking:

- All staff should arrive a minimum of thirty (30) minutes prior to the first bell and leave a minimum of thirty (30) minutes after the last bell.
- Parents should watch for on-site signage to navigate through the site.
- Place staff member(s) at the following location on-site:
    - School ingress driveway

Circulation through the site will follow a counterclockwise pattern and students will be dropped-off/picked-up to the west of the proposed school. Based on the counterclockwise pattern, students will be dropped-off/picked-up on the driver side of the vehicle. Students dropped off/picked up on the driver side of the

vehicle is not typically preferred by MSTA; however, based on the younger age of students (grades pre-K - 8), it is less likely that students will be in the front passenger seat and may be recommended to exit the vehicle on the driver's side. This counterclockwise pattern was recommended by NCDOT based on any conflict with entering and exiting vehicles. This configuration minimizes conflict and allows for better on- and off-site flow.

On-Site School Operations

All before and after school activities should be coordinated with a representative(s) of the proposed school to determine if there is any conflict with conventional drop-off / pick-up times and operations. NCDOT's MSTA group requires all roadways internally within the development be analyzed with a speed limit of 10 miles per hour (mph); therefore, the maximum safe speed on the campus is recommended to be 10 mph.

On-Site Parking

Staff shall park in the designated staff parking lot located north side of the school and the angled parking on the south side of the school. School visitors and parents requiring additional time to unload shall park in the designated visitor parking area located immediately after the (un)loading zone.

Morning Drop-Off Operations

The following are recommendations for operations of staff, visitor / parents, and carpool users during the morning unloading operations. It should be noted that minimal vehicles are expected to start queueing prior to the start of morning unloading operations based on typical school patterns. The queuing lanes, designated parking areas, and loading area are illustrated in the site plan.

Staff:

- Based on coordination with the school, signage is anticipated to be provided on-site to deter parents from utilizing the bypass lane. If parents still use the bypass lane, then a staff member(s) shall rope and / or cone off the bypass lane a minimum of 15 minutes before unloading operations begin.
- A staff member(s) shall remove the rope and / or cones at the parking spaces located to the south of the school a minimum of 15 minutes after unloading operations end.
- When parking, staff should fill in the southernmost (angled) parking spaces first, located to the south of the school. Once these spaces are full, staff should continue to navigate through the school loop and park to the north of the school, prior to the (un)loading area. Staff should not park in the short-term visitor spots.
- Staff member(s) parked in the southernmost (angled) parking spaces should not move their vehicle until a minimum of 15 minutes after unloading operations begin.
- It is recommended that staff arrive at a minimum of 30 minutes prior to the first bell.

Visitors / Parents:

- School Visitors / Parents needing additional time to unload during morning unloading operations shall park in the designated visitor parking area located on the west side of the school, to be accessed via the school loop, immediately after the (un)loading zone. It should be noted that these carpool vehicles will have to traverse through the designated vehicle stacking lane prior to utilizing the designated visitor parking area. Visitors / Parents walking students should utilize the pedestrian crosswalks, as necessary, when crossing the vehicle stacking lane.

Carpool Vehicles:

- Carpool vehicles should be designated by their child(ren)'s bell schedule, as possible. This may be done via windshield stickers, hanging tags, or flags, if necessary. Parents with children in multiple bell schedules (i.e. one 1st grade student and one 7th grade student) should drop-off all children in one bell schedule, as designated by the school.
- Based on the counterclockwise pattern of the site circulation, students will be dropped-off on the driver side of the vehicle; therefore, it is recommended that students exit the vehicle on the driver's side, as possible. Staff should monitor this process and ensure safety of the unloading area as well as maintain efficiency in this process.
- Student(s) shall unload when the vehicle comes to a complete stop within the designated drop-off/pick-up loading area and then proceed to the school. Representative(s) of the school shall assist in directing the student(s) as needed. Five (5) vehicles shall be unloading at any given time during the morning unloading operations, per NCDOT MSTA guidelines.
- Carpool vehicles shall leave the designated drop-off/pick-up loading area when the proceeding vehicles have unloaded and started to exit or as directed by a representative(s) of the school. It is recommended that no vehicle be allowed to pass another vehicle unless directed by a representative(s) of the school.

Afternoon Pick-Up Operations

The following are recommendations for operations of staff, visitor/parents, and carpool users during the afternoon loading operations. The queuing lanes, designated parking areas, and loading area are illustrated in the site plan.

Staff:

- Based on coordination with the school, signage is anticipated to be provided on-site to deter parents from utilizing the bypass lane. If parents still use the bypass lane, then a staff member(s) should rope and/or cone off the bypass lane a minimum of 30 minutes before loading operations begin, if necessary.
- A staff member(s) shall remove the rope and/or cones at the bypass lane a minimum of 15 minutes after loading operations.
- Staff member(s) parked in the southernmost (angled) parking spaces should not move their vehicle until a minimum of 30 minutes after loading operations begin.
- It is recommended that staff leave a minimum of 30 minutes after the last bell.

Visitors/Parents:

- School Visitors/Parents needing additional time to load during afternoon loading operations shall park in the designated visitor parking area located on the west side of the school, to be accessed via the school loop, immediately after the (un)loading zone. It should be noted that these carpool vehicles will have to traverse through the designated vehicle stacking lane prior to utilizing the designated visitor parking area. Visitors/Parents walking students should utilize the pedestrian crosswalks, as necessary, when crossing the vehicle stacking lane.
- All parents desiring to enter the carpool queue before school ends shall do so no more than 1 hour prior to their student(s)'s scheduled dismissal.

Carpool Vehicles:

- Carpool vehicles should be designated by their child(ren)'s bell schedule, as possible. This may be done via windshield stickers, hanging tags, or flags, if necessary. Parents with children in multiple bell schedules (i.e. one 1st grade student and one 7th grade student) should pick-up all children in one bell schedule, as designated by the school.
- Based on the pattern of the site circulation, students will be picked-up on the driver side of the vehicle; therefore, it is recommended that students enter the vehicle on the driver's side, as possible. Staff should monitor this process and ensure safety of the loading area as well as maintain efficiency in this process.
- Student(s) shall load when the vehicle comes to a complete stop within the designated drop-off/pick-up loading area and then proceed to the school. Representative(s) of the school shall assist in directing the student(s) as needed. Five (5) vehicles shall be loading at any given time during the afternoon loading operations, per NCDOT MSTA guidelines.
- Carpool vehicles shall leave the designated drop-off/pick-up loading area when the proceeding vehicles have loaded and started to exit or as directed by a representative(s) of the school. It is recommended that no vehicle be allowed to pass another vehicle unless directed by a representative(s) of the school.

Staff Requirements for Traffic Control during Unloading/Loading Operations

It is recommended that a minimum of two (2) representatives of the proposed school (or officers) are present during morning and afternoon unloading and loading operations, respectively, and as follows:

- One (1) staff member should be placed at the end of the designated vehicle stacking lane, just upstream of the designated drop-off/pick-up loading area, directing vehicles to enter the loading area as the proceeding vehicles have exited the loading area. This staff member is responsible to oversee safety of the loading area as well as maintaining efficiency of the unloading and loading process.
- A second staff member is recommended to be placed at the start of the designated vehicle stacking lane to direct parents into the carpool stacking lane, as necessary. This staff member will be responsible for determining if parents are arriving at their proper bell schedule and to monitor the stacking line. Should stacking exceed the distance accommodated on-site, this staff member will be responsible to route parents into a second circulating lane. Additional staff should be placed at the start of the bypass lane if a second circulating lane is considered.

While they are not expected to be required, additional staff members could be placed on the sidewalk adjacent to the designated loading area to ensure students are safety unloaded/loaded out/into their vehicles.

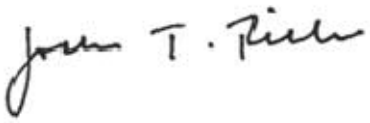
Additional Mitigation Options during (Un)Loading Operations

If the stacking proves to be insufficient in future conditions even with the additional circulating lane, one (1) officer should be positioned at the intersection of Star Road and the parent/staff egress driveway (Site Drive 1) to provide time for parents to exit the site and to prevent on-site queuing from spilling back beyond the (un)loading zone. Additional staff members could be placed on the sidewalk adjacent to the designated loading area to ensure students are safety unloaded/loaded out/into their vehicles in a timely and efficient manner.

Pre-K and Kindergarten students may be parked and walked into and out of the school via the designated visitor parking zone located on the north side of the school, to be accessed via the loop at the end of the (un)loading zone if there is heavy stacking.

Please let us know if you have any questions regarding this information.

Sincerely,
RAMEY KEMP & ASSOCIATES, INC.



Joshua Reinke, P.E.
North Carolina State Traffic Lead

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