TRAFFIC IMPACT ASSESSMENT STUDY
SUMMARY REPORT

FOR

GARDEN CITY ELEMENTARY SCHOOL

CRANSTON, RI

PREPARED FOR:

CRANSTON PUBLIC SCHOOL DISTRICT

845 PARK AVENUE

CRANSTON, RI 02910

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JUNE 2021

CEC PROJECT NO. 20040.00

I – INTRODUCTION

In December of 2019, Commonwealth Engineers & Consultants, Inc. (CE&C) conducted a preliminary Traffic Impact Assessment Study (TIAS), to support the Rhode Island Department of Education (RIDE) Stage 2 application for the Cranston Public Schools (CPS) Bond Issue, which was on the November 2020 City of Cranston election ballot. Five (5) schools were included in that initial assessment, including the Garden City Elementary School.

The TIAS observed the existing traffic patterns at each of the five (5) schools included in the bond issue, and evaluated the potential traffic impacts associated with the proposed improvements and student relocations at each, in order to identify any obvious and significant traffic deficiencies that would or could render the prospective student relocations unfeasible. The assessment consisted of observing and evaluating the traffic operation within and surrounding the school areas during typical school hours, particularly during the AM drop-off and PM pick-up periods. It also provided linear projections of the prospective increases in vehicular traffic at the two (2) schools where the enrollment will be increased significantly, one of which is Garden City.

The bond issue was approved by the voters of the City of Cranston, and the schematic design stage of the Garden City Elementary School replacement project was initiated immediately thereafter, followed by the design development (AKA permitting) stage. The design development plans for the project have now been submitted to the City for Development Plan Review and Planning Commission review; as part of that submission, the initial TIAS has been modified to include just the sections applicable to the Garden City Elementary School.

Note that the original overall study (and by extension the information herein specific to Garden City) was based only on available pre-schematic documents and anecdotal accounts & observations made at each of the evaluated schools. The collection of empirical traffic data (traffic counts, vehicle speed studies, vehicular accident records) was beyond the scope of that initial pre-bond study, and was intended to be performed during the design development stage of the project.

However, at and since the time of the bond issue approval in November 2020, the state has been in the midst of dealing with the COVID-19 pandemic, and the Cranston school district was using both distance (remote) learning as well as in-person learning. As a result of state-wide COVID restrictions, the volumes of vehicular travel on many roadways were appreciably reduced from what would be considered "typical" levels. Furthermore, with a number of Garden City Elementary students not attending school in-person, the "typical" student-based traffic counts that would be collected around the school and used to refine the findings in the initial TIAS (i.e. to develop existing and projected levels of service (LOS) on the adjacent roadways) have been unavailable during the design process.

Therefore, the observations, projections and recommendations herein do not have the benefit of representative existing conditions traffic counts from the neighborhood around the school; however, it is our professional opinion that the information and observations that have been available are sufficient to make a reasonable assessment of the impacts of increasing the size and student population of the school on the local traffic.

II – EXISTING CONDITIONS

Garden City Elementary School is located at 70 Plantation Drive, roughly centered between Route 2 (New London Avenue, approximately four (4) blocks west) and Pontiac Avenue (approximately five (5) blocks east). Both Route 2, a four (4) travel arterial running north and south, and Pontiac Avenue, a two (2) lane arterial running north and south, are major commercial and transit corridors in the city. The school is also located near the Garden City and Chapel View shopping plazas. The school location is in a residential neighborhood surrounded primarily by single-family homes. The roadways around the school are local roads with "generous" geometry (wide lanes with paved shoulders), good sight distances and numerous intersections controlled by stop signs; these are mainly used by the residents who live in the area, and the traffic volumes are low.

The school has sidewalk around the perimeter of the block. There are four (4) crosswalk locations along Plantation Drive and one (1) location on Neptune Street; there are currently no handicap-accessible ramps at any of the crosswalks. Most parents drop off/pick up their kids on Magazine Street (north side of school), while a smaller number of parents drop off/pick up on Plantation Drive (west side of school) and Neptune Street (south side of school), as well as on nearby streets and roadways. There are no on-site parking spaces for teachers or other school staff, so most of them park on both sides of Neptune Street. It was noted that some of the on-street vehicles were parked partially on the sidewalk alongside Neptune Street.

There are currently ≈300 students attending the school. In 2017/2018, 185 students were bused, while the remaining students ride their bikes, walk to school or are dropped off and picked up by their parents. Buses drop off/pick up students in the main "loop" driveway in front of the main school entrance (in from Neptune Street, and out to Plantation Drive); only school buses are allowed to use that driveway to drop off/pick up students.

Based on the field observations, the existing traffic volumes around the school area are light throughout the day, and the roadways appear to be operating at an acceptable level of service.

III – PROPOSED IMPROVEMENTS AND POTENTIAL TRAFFIC IMPACTS

The proposed school replacement project consists of the demolition of the existing school building and the construction of a new 85,200 SF GFA state-of-the-art school building, along with various site features and amenities. The new school will have a capacity of 550 students; relative to the current enrollment of ≈300 students, the anticipated increase in student attendance will be significant.

The proposed site improvements include the construction of a dedicated student loading lane along the south side of Magazine Street, north of the school, and the construction of two (2) new on-site parking areas for staff; a twenty (20) space lot will be located off Neptune Street along the eastern section of that road, while four (4) spaces will be constructed adjacent to the existing bus loading driveway in front of the school.

An assessment of the existing (based on school year 2017/18) and proposed student enrollment was performed as part of the TIAS, which compared the two enrollments and correlated them to the known bus ridership to and from the school. The number of non-bused riders was then determined by deducting the bus riders from the total student population, and assigning estimated percentages of non-bused riders (90%) and students who walk from within the neighborhood (10%). The results were then linearly extrapolated to estimate the various bus/non-bus vehicle counts that will be present after the proposed expansion. The results of the assessment are presented in the Traffic Projection Summary Tables below.

STUDENT ENROLLMENT ESTIMATE			
2017/18 STUDENT ENROLLMENT	PROPOSED STUDENT CAPACITY	PROPOSED ENROLLMENT INCREASE	PROPOSED PERCENTAGE INCREASE
309	550	241	78.0%

VEHICLE TRIP PROJECTIONS							
BASED ON EXISTING STUDENT CAPACITY			BASED ON PROPOSED STUDENT CAPACITY			NET INCREASE	
BUSED[1]	BUSES[2]	PASSENGER[3]	BUSED[4]	BUSES[2]	PASSENGER[3]	BUSES	PASSENGER
185	4	112	329	7	199	3	87

(1) BASED ON 2019 BUS RIDERSHIP TOTALS, PER CRANSTON SCHOOL DEPARTMENT

(2) ASSUMES TYPICAL RATE OF 50 STUDENTS/BUS

(3) ASSUMES 90% OF NON-BUSED STUDENTS RIDE IN PASSENGER VEHICLES

(4) ASSUMES COMPARABLE BUS RIDERSHIP % TO EXISTING STUDENT CAPACITY TO BUSED STUDENT RATIOS

Buses

The projection yields a total of seven (7) buses for proposed conditions, which is an increase of three (3) over current conditions. Using a "typical" full-sized (50-passenger) school bus with a length of thirty-six (36) feet, the maximum queuing capacity in the existing bus loading driveway in front of the school was determined to be six (6) buses at any one time. As this is only one less than the maximum projected number of buses that will service the school, it will be possible to stagger the bus drop-off/pick-up times so that the capacity of the bus driveway is not exceeded.

Passenger Vehicles

The projection yields a total of 199 passenger vehicles for proposed conditions, which is an increase of eighty-seven (87) over the current conditions 112 passenger vehicles. It is noted that without any dedicated loading lane or designated loading location, all 112 of these drop-offs/pick-ups are currently occurring at various different locations on the streets around the school block. It was not observed that this "randomness" caused any appreciable issues with the traffic patterns during either the AM or PM peaks; it is reasonable to assume that drivers learn the typical traffic patterns around the school and plan their drop-off/pick-up times and locations accordingly.

Using a "typical" passenger vehicle with a length of nineteen (19) feet, the maximum queuing capacity in the proposed student loading lane adjacent to Magazine Street was determined to be up to thirteen (13) vehicles at any one time. Conservatively assuming that all passenger vehicle drop-offs/pick-ups will be made in the dedicated drop-off lane, there would be approximately fifteen (15) cycles during each drop-off/pick-up period with 199 vehicles. Assuming an average cycle duration of one (1) minute, and very conservatively assuming that the cycles would be occurring sequentially and mutually exclusively (rather than progressively as one extended cycle) the total loading/unloading process in the dedicated lane would take approximately fifteen (15) minutes. This is relatively comparable to the existing conditions overall peak period duration that was observed at the school. However, as drivers would predominantly be using the dedicated loading lane off Magazine Street, the impacts on the other roadways around the school would be lessened.

IV – DESIGN/PROCEDURAL MEASURES

Based on the currently efficient traffic operations at and around the school (assumed to be due in part to the dedicated bus loading driveway off of Plantation Drive), and accounting for the proposed loading lane on Magazine Street and on-site parking spaces that will be provided, it is anticipated that typical traffic conditions at and around the school will continue to operate efficiently during peak periods, even with the increase in capacity and projected increase in student enrollment and teacher staffing. It is not anticipated that modifications to the nearby existing roads or transportation system will be needed to accommodate the school expansion. However, some measures shall be implemented to further ensure that there will be no adverse impact to the local roadways.

- Signing and striping of the crosswalks at the street intersections adjacent to the school shall be added or refreshed as needed, and potentially provided at other high-volume pedestrian (student) crossing locations in the nearby neighborhood.
- Expandable bicycle storage facilities shall be provided on-site at the school, and the use of non-motorized transportation modes by students for whom those modes are reasonably applicable shall be encouraged.
- Bus arrival/departure schedules shall be reviewed and modified as needed to manage bus queuing in the loading driveway between Plantation Drive and Neptune Street.
- Guide signage shall be installed to direct drivers to the loading lane on Magazine Street, and bus routes shall be developed to avoid the use of Magazine Street to the extent practicable.

V – CONCLUSION

The TIAS was initially performed to identify any obvious and significant traffic deficiencies that would or could render the proposed improvements, and particularly the projected student relocations, infeasible. The assessment consisted of observing and evaluating the traffic operation within and surrounding the school areas during the school hours, particularly during the AM and PM drop-off/pick-up periods, and projecting & assessing the potential increases in vehicular traffic that will result from the student relocations.

Based on the observations, there are currently no obvious or significant traffic deficiencies at Garden City Elementary School. Additionally, the proposed on-site traffic improvements, consisting of two (2) dedicated staff parking areas and a dedicated student loading lane along Magazine Street, will be an appreciable improvement over the current staff parking and student drop-off/pick-up process, and it is anticipated that they, along with the design/procedural measures described above, will offset any potentially adverse traffic impacts related to the increase in student population at the school.

As stated previously, this study is based on available anecdotal accounts and general observations made at the school, but due to the reduction in traffic volumes created by COVID, it was not possible to get representative traffic counts on the roadway system around the school during the design process to determine existing and/or projected LOS's. Nonetheless, it is our professional opinion that the accounts and observations that were available are sufficient to support the conclusions presented herein.