

Renfroe Middle School Traffic Impact Assessment

DECATUR, GEORGIA



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PROJECT # 019754009

Prepared For:

City Schools of Decatur

Prepared By:

Kimley»»Horn

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INTRODUCTION

The City Schools of Decatur have engaged Cooper Carry and Kimley-Horn to develop plans for an expanded Renfro Middle School to accommodate growth expected to occur from additional enrollment as well as potential future City annexation. The school currently has 938 students and is expected to have 2,225 students in 2018. The Board of Education has made the decision to accommodate all new students on the existing site and for a design solution aimed at reusing the existing structure to the greatest extent possible.

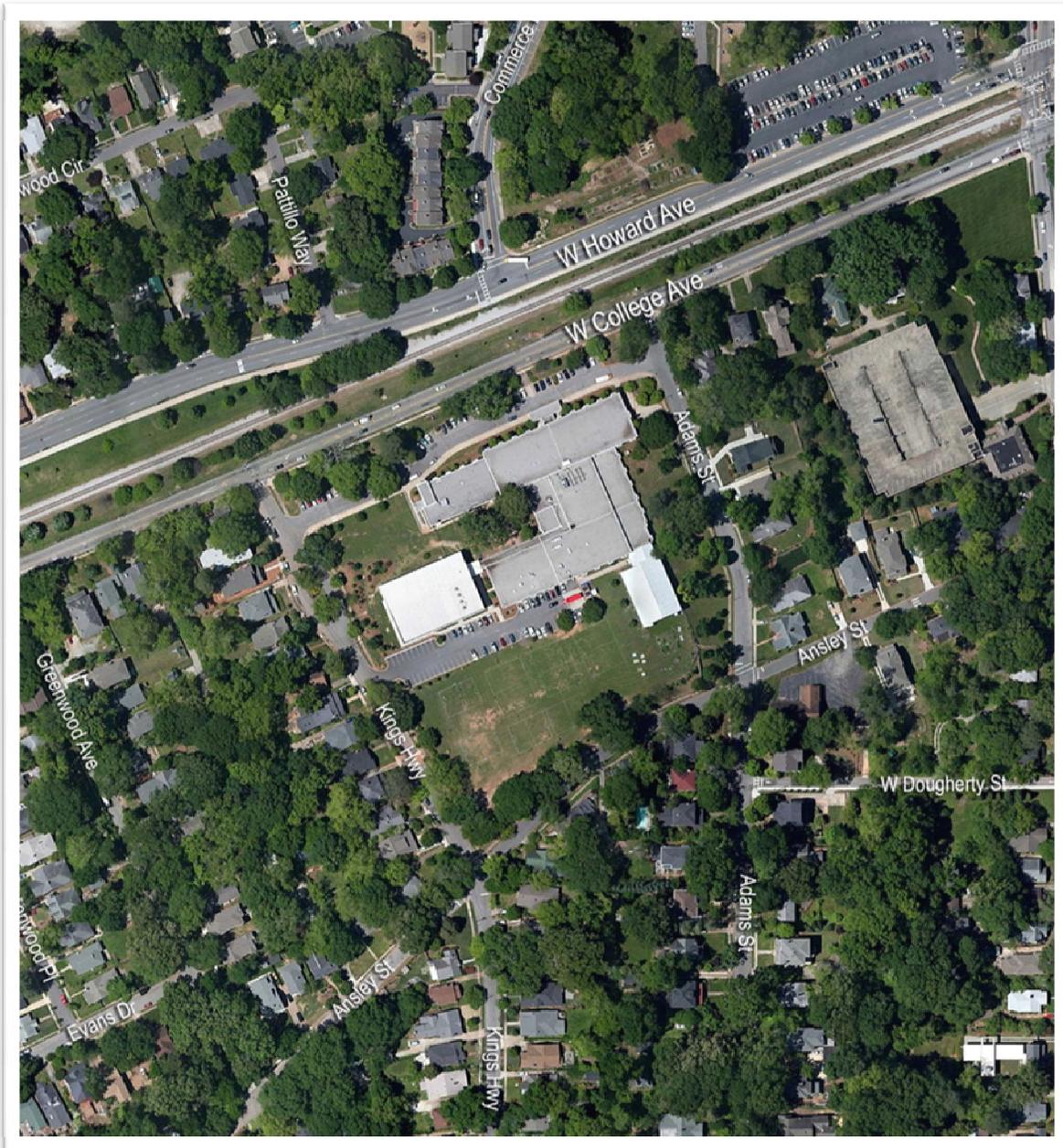
Kimley-Horn has developed this traffic impact assessment to provide Cooper Carry with guidance on design that will respond to the transportation demands that will be created by this increased enrollment. Recommendations are aimed at minimizing the impact of the School's growth on the adjacent community. The assessment presented in this report is based on conversations with School staff, parents, the MAK District neighborhood, and the City of Decatur. The information learned from these stakeholders was coupled with our own observations of traffic operations at the school and applying current travel behaviors with future student enrollment to develop measures that will adequately meet these needs.

This assessment includes a detailed review of vehicular traffic, bus circulation, pedestrian, bicycle and parking characteristics. It should be noted that the feasibility of each recommendation should be tested by the design team and vetted with stakeholder groups. Coordination with other agencies, such as the City of Decatur and the Georgia Department of Transportation may also be necessary for many of the recommendations to be applied. Realizing some measures are more ambitious than others, all recommendations may not be able to be incorporated into the design. Various limitations may prevent certain measures from being incorporated into the design; however, consideration should be given to keeping with in the intent of the recommendations to the greatest extent possible.

STUDY AREA DETERMINATION

The study area considered in this study was determined based on conversations with school staff, the adjacent MAK neighborhood, and the design team. The study area includes areas that experience the most impact from school functions. This includes the roadways of West College Avenue (US 278), Kings Highway, Adams Street, and Ansley Street. Intersections at the convergence of these roadways were also evaluated at West College Avenue, Adams Street, Ansley Street, and Kings Highway. As shown in Figure 1, the School campus is located within a densely populated residential area with an established street grid. A railroad and West College Avenue run along the northbound side of the site, creating someone of a barrier to the north.

Figure 1 – Site Location



EXISTING CONDITIONS

Field observations of vehicular and foot traffic were conducted at Renfroe Middle School on Friday, August 29th during the morning arrival and afternoon departure of students. Observation periods included 8:00 a.m. to 9:00 a.m. and 3:00 p.m. to 4:00 p.m. It should be noted that this was the Friday before Labor Day weekend. This day was chosen based on direction from Principal Thomas, who stated that volumes would be consistent with higher levels of congestion. It should also be noted that conditions were warm and sunny during the morning and afternoon; however, traffic conditions were lighter than sometimes experienced because such a high percentage of students walked to and from school on this day.

Walkers and Bicyclists

MORNING ARRIVALS

A large proportion of the student population was observed walking to school along West College Avenue as well as from Kings Highway and Adams Street. Approximately 360 students were counted walking into the main entrance between 8:00-9:00 a.m. Additionally, 38 bicyclists arrived and locked their bicycles on the bicycle racks provided at the northeast entrance, with overflow bicycles locked to nearby trees and posts.

AFTERNOON DEPARTURES

A slightly larger number of students was observed departing the school grounds at the end of the school day. Approximately 390 students were observed departing Renfroe at the West College Avenue at Adams Street intersection heading northeast on West College Avenue as well as heading south on Adams Street. Another 50 students were observed heading southwest on West College Avenue. It is likely some additional students were not counted leaving the school on foot along Kings Highway and Adams Street via exits at the back of the building. Only three bicycles of the 38 that arrived in the morning were remaining at 4:00 p.m. when the majority of students had filtered out of the building and off of school premises.

Vehicular Traffic

MORNING ARRIVALS

Renfroe Middle School Driveway between Adams Street and Kings Highway

Observations began at approximately 8:00 a.m. at the driveway entrance on Kings Highway. While two-way traffic was observed before 8:00 a.m., it was clear that drivers expected eastbound one-way operations from Kings Highway to Adams Street during the morning drop-off. The majority of drop-off traffic through the driveway occurred during the 15-minute period from 8:15-8:30 a.m. Approximate counts of vehicles utilizing the driveway and/or dropping off students on Kings Highway just south of West College Avenue are shown in Table 1.

Table 1 – Renfroe Driveway Entrance Kings Highway at West College Avenue		
Time Period	Driveway Passenger Vehicles	Approximate Kings Highway/Adams Street Vehicles
8:00 – 8:15 a.m.	27	N/A
8:15 – 8:30 a.m.	50	N/A
8:30 – 8:45 a.m.	23	N/A
8:45 – 9:00 a.m.	3	N/A
Total Vehicles	103	~ 100

As shown in the table above, an additional 50 or so vehicles were observed dropping students off along Kings Highway and another 50 or so along Adams Street. These parents likely used these streets as drop-offs to avoid the queues along the main driveway.

Up to nine school buses were observed using the drop-off area during pickup. These buses primarily arrived before 8:30 a.m. and staged in the drop-off area for several minutes.

Some notable driveway observations include the following:

- Parking along the driveway was entirely filled by 8:07 a.m. with low turnover thereafter
 - Approximately 95% of vehicles dropped off their students and left immediately thereafter; 5% either parked temporarily for drop-off or to go inside
- School buses and passenger vehicles generally arrived in the driveway heading east on West College Avenue, turning right onto Kings Highway, and then immediately left into the driveway
 - Stopping/standing on Kings Highway and Adams Street occurred on both sides of the roadway to facilitate drop-off outside of the driveway, which generally proceeded quickly and efficiently with some exceptions:
 - Passengers occasionally exited the vehicle on the driver’s side, stepping into and impeding traffic
 - There was one instance in which a driver double-parked on Kings Highway heading to West College Avenue, which stopped traffic while the passenger exited the vehicle
- Around 8:18 a.m. there were approximately six school buses in the circle drive, which impeded passenger vehicle drop-offs through the driveway and caused a queue of approximately seven passenger vehicles (which did not extend past the southwest edge of the school building)
 - As soon as four school buses departed at 8:22 a.m., frontage cleared and allowed passenger vehicle drop-offs to continue to flow

West College Avenue Queuing

Very little queuing was observed along West College Avenue for vehicles trying to access Kings Highway during the morning observation period. No queuing was present during most of the observation period. The westbound and eastbound approaches occasionally reached a length of three vehicles (approximately five times during the observation period); however, those queues lasted only approximately 10 seconds. Much of the queuing that did occur was the result of pedestrians crossing at the crosswalk of Kings Highway. The left-turn lane, which exists for the westbound approach along West College Avenue, had adequate storage length for the morning observation period; however, the width (less than 10 feet) is inadequate for larger vehicles, such as school buses.



No queuing was observed during most of the morning observation period.

Queues were observed blocking Adams Street for several periods of approximately 10 seconds as a result of the delay caused by the downstream signal at South Candler Street.

Neighborhood Observations along Kings Highway, Adams Street, and Ansley Street

As stated previously, approximately 80 parents dropped off their children along Kings Highway and Adams Street. These drop-offs did not have a major impact on traffic operations along the neighborhood streets since no standing took place.

AFTERNOON DEPARTURES

Renfroe Middle School Driveway between Adams Street and Kings Highway

The number of passenger vehicles in the driveway during afternoon departure was much smaller than the morning drop-off numbers. It also occurred very quickly over approximately a 15- to 20-minute period rather than the morning traffic that drifted in fairly steadily for closer to 45 minutes. Only 40 passenger vehicles were observed in the driveway from approximately 3:40 to 4:05 p.m., and only two were waiting for students prior to the final school day bell at 3:45 p.m. An additional 31 students were picked-up by passenger vehicles that pulled over temporarily on Adams Street directly south of West College Avenue on both sides of the street. It is likely that additional students rendezvoused at locations throughout the neighborhood to be picked-up other than those observed at Adams Street, the school driveway, or Kings Highway (which was not counted during this observation period).

Traffic flow through the driveway was greatly impeded by the large flow of students traveling on foot that exited the northeast corner of the building for the 10- to 15-minute period immediately after school let out. A police officer/crossing guard stood near the Adams Street exit of the driveway and helped the flow of students generally heading northeast across the driveway get to West College Avenue. Again, students crossed Adams Street directly adjacent to this location following West College Avenue and impeding any traffic heading left out of the driveway towards West College Avenue. Passenger vehicles and buses were stopped for periods of time as short as 20 seconds and as long as approximately 2 minutes by the driveway crossing guard while pedestrians at this location crossed during the 15- to 20-minute departure period. Queues, likely due to the relatively low volume of pick-ups, did not exceed eight vehicles.

The crossing guard at the intersection of Adams Street with West College Avenue directed both pedestrian and vehicular traffic, allowing left-turning vehicles to both enter and exit Adams Street from and to West College Avenue. Queues along West College Avenue will be discussed in the next section.

Passenger vehicle occupancy, or the number of students picked-up per vehicle, was determined to be approximately 1.3 persons per vehicle. Many pick-ups were for a single student, but there were several two- and three-person carpools observed.

A single school bus arrived as early as 3:20 p.m. and as late as 4:02 p.m., but the majority arrived within 10 minutes of the official school release time at 3:45 p.m. While the very first bus departed at 3:40 p.m., before school let out, five of the afternoon buses departed at approximately 3:56 p.m.

West College Avenue Queuing

No queuing was observed along West College Avenue until approximately 3:35 p.m. Queuing for eastbound travel appeared to be caused by the intersection of West College Avenue with South Candler Street farther up the road. Starting at approximately 3:50 p.m., eastbound traffic on West College Avenue started to stack up from South Candler Street to as far as Greenwood Place and almost to Jefferson Place (three blocks southwest of Adams Street) until after 4:00 p.m. Temporary traffic control included not only pedestrian crossing assistance, but also vehicular assistance with left turns both onto and off of West College Avenue from and to Adams Street.



Queues from South Candler Street looking east along West College Avenue



Queues from South Candler Street looking west along West College Avenue

School buses, while few (less than 10), caused some minor delay due to challenges associated with turning into and out of the existing school driveway, which is located a short distance from West College Avenue and with a tight turning radii onto West College Avenue. Buses heading east on West College Avenue, with the intent to enter the school driveway via Kings Highway could not make the right turn onto Kings Highway and then the immediate left turn into the driveway if there was any vehicle stopped on Kings Highway northbound towards West College Avenue. Likewise, the large size of school buses compared to the short length of Adams Street between the driveway and West College Avenue sometimes meant that a school bus would block southbound traffic on Adams Street when turning left and waiting in a queue to access West College Avenue. Crossing guard assistance at this location helped clear queues on Adams Street quickly.

Neighborhood Observations along Kings Highway, Adams Street, and Ansley Street

Parents began queuing along Kings Highway and Adams Street at approximately 3:25 P.M. Both Kings Highway and Adam Street were observed to be parked on both sides for the majority of the block from West College Avenue to Ansley Street. Parents were also parked in the restricted parking area located along Kings Highway. Although many cars were parked along both roadways, traffic generally flowed well during this period. No parents were observed to be parked along Ansley Street.

Parking

Renfroe Middle School currently has approximately 113 parking spaces onsite. Two parking lots separate staff/teacher parking and visitor parking. Staff/teacher parking is located in the rear of the building. Visitor parking is located within the bus loop at the front of the school near the entrance. Parking is generally fully occupied during the school day. Through discussions with the community it is evident that parking is inadequate for special events. Vehicles park on the surrounding neighborhoods streets. The only field and green space is used as a parking lot for morning special events. Because the field is occupied in the afternoon/evening, parking is not an option.

During morning drop off, 50 or so vehicles were observed dropping students off along Kings Highway and another 50 or so along Adams Street. These parents likely used these streets as drop-offs to avoid the queues along the main driveway.

After school in the afternoon, 31 students were picked-up by passenger vehicles that pulled over temporarily on Adams Street directly south of West College Avenue on both sides of the street. It is likely that additional students rendezvoused at locations throughout the neighborhood to be picked-up other than those observed at Adams Street, the school driveway, or Kings Highway (which was not counted during this observation period).

EXISTING CONDITIONS SUMMARY

Field observations were taken from 8:00 a.m. to 9:00 a.m. and 3:00 p.m. and 4:00 p.m. on August 29, 2014.

- Morning Arrival
 - 360 students walking
 - 38 bicyclists
 - Majority of vehicular drop-off occurred between 8:15 a.m. and 8:30 a.m.
 - 50 passenger vehicles entered from Kings Highway
 - Approximately 80 parents dropped off their children along Kings Highway and Adams Street
 - 9 school buses observed to use the drop-off area
 - 95% of vehicles dropped off their students and left immediately after
 - At 8:18 a.m., six school buses in the circle drive impeded passenger vehicle drop-off
 - Caused a queue of seven passenger vehicles
 - Little queuing was observed along West College Avenue
- Afternoon Departures
 - Passenger vehicles in the driveway during afternoon departure was much smaller than the morning drop-off numbers
 - 31 students were picked up by passenger vehicles that pulled over temporarily on Adams Street directly south of West College Avenue
 - Traffic flow was greatly impeded for 10-15 minutes by the large flow of students traveling on foot that exit the northeast corner of the building
 - Queues did not exceed eight vehicles due to low volume pick-up
 - Average number of students picked up per vehicles is 1.3
 - Earliest school bus arrived at 3:20 p.m. and the latest school bus arrived at 4:02 p.m.
 - Majority of buses arrived within 10 minutes of official school release time
 - Queuing for eastbound travel appeared to be caused by the intersection of West College Avenue with South Candler Street
 - School buses caused minor delay due to challenges associated with turning into and out of the existing school driveway
 - Parents begin queuing on Kings and Adams Highway at approximately 3:23 p.m.
 - Parked on both sides of the streets for the majority of the block
- Parking
 - 113 parking spaces
 - Teachers/staff park in the rear of the building
 - Visitors/handicap spots in the front of the building

FUTURE PROJECTIONS

The campus redevelopment plan includes both an increase in student enrollment as well as a proposed annexation of the City of Decatur. The projected number of students from increased enrollment is 1,666, as determined by the Board of Education. The Board estimates an additional 559 students with the annexation. With the increased enrollment and annexation, by 2018 Renfroe Middle School is projected to have up to 2,225 students. In addition to the increased student population, the school is expected to see an increase from the existing 100 staff members to 175 staff members to support the future volume of students.

The discussion in this section is based on the 2,225 students and 175 staff projected for the school and likely traffic and parking impacts to the school and surrounding area as a result of the increase in population.

Volume Projections

Data collected and described in the first section of this report was used to determine the existing mode split for how students travel to and from Renfroe Middle School. As discussed, Renfroe Middle School has an unusually high percentage of walkers and bikers, totaling approximately 45% of all students. This is likely the highest in the Atlanta region and something the school should be proud of. Approximately 28% of students travel via automobile and the remaining 27% of students travel via bus. It should be noted that on days with inclement weather (rain or cold conditions), the number of walkers and bikers is much lower and the number of automobiles is much higher.

To develop future mode splits, a review of the potential areas to be annexed and the likely growth of the City was assessed. Because many of the additional 1,287 students will live further away from the school than many of the students do today, a lower percentage of these additional students will walk and a higher percentage will travel via bike, automobile, and bus. For that reason, the walk percentage will likely be half of what it is today, with the other modes picking up the difference.

Table 2 shows the mode splits for Existing 2014 Conditions and Projected 2018 Conditions with associated volumes for each mode. It should be noted that a single number was chosen, as opposed to a range of numbers, for simplicity sake. In reality, the Projected 2018 mode splits and volumes may vary some from this table.

Table 2 – Peak Traffic Conditions Afternoon Pick-Up				
Travel By Mode	Existing 2014 Conditions (938 students/100 staff)		Projected 2018 Conditions (2,225 students/175 staff)	
	Volume	% of Total Students	Volume	% of Total Students
Walkers ¹	390	41%	445	20%
Bikers ¹	40	4%	150	7%
Vehicles ² (1.3 students/car)	200	28%	650	38%
Buses (Existing: 35-40 students/bus Projected: 50 students/bus)	6	27%	16	35%
Parking Demand ³ (non-special event days)	113	N/A	200	N/A

¹ These volumes decrease substantially on days with inclement weather

² These volumes increase substantially on days with inclement weather

³ Assumes 10-15% visitor parking

Needs Assessment

Vehicular Traffic

Information provided in the existing conditions and volume projections sections of this report were evaluated to determine what the future needs of the school campus will be. The school already faces some traffic congestion and parking challenges. These will need to be addressed while also addressing increased strain on the school due to increased volumes.

Based on the projections, and assuming that vehicle occupancy remains the same as it is today (1.3 students per car), the number of vehicles accessing the school will increase dramatically, by more than 300 percent, from 200 vehicles today to 650 vehicles in 2018. Without a doubt, measures must be put in place to mitigate this increase in vehicles. Additionally, assuming the occupancy of buses increases from 35-40 students per bus to 50 students per bus, an increase of more than 200 percent (from 6 to 16 buses) will occur in 2018.

Table 3 shows the translation of the above vehicular and bus volumes to the amount of space needed to stage them (queue length) by comparing the existing space the vehicles and buses take up when parked compared with the future projected numbers.

Table 3 – Projected Queue Lengths Afternoon Pick-Up				
Travel By Mode	Existing 2014 Conditions (938 students/100 staff)		Projected 2018 Conditions (2,225 students/175 staff)	
	Volume	Linear Feet of Queue	Volume	Linear Feet of Queue
Vehicles ¹	200 veh	4,000'	650 veh	13,000'
Buses ²	6 buses	240'	16 buses	640'

¹ Assumes 20 feet per vehicle when parked

² Assumes 40 feet per bus when parked

As shown in Table 3, the amount of space needed to accommodate all of the vehicles that will be attracted by the school will increase dramatically if all characteristics of the site and school schedule remains the same as it is today. As a point of reference, approximately 500 feet currently exists onsite for vehicle and buses queuing, whereas there is a 4,000-foot demand. This explains why at least half of the parents use Kings Highway and Adams Street to pick-up and drop-off their children. Without additional onsite queuing areas, the increased demand for staging vehicles will likely make its way further into the neighborhood, possibly spilling further south along Ansley Street and Kings Highway and Adams Street south of Ansley Street.

Bikers and Walkers

There will likely be a slight increase in walkers, but a more substantial increase in bikers to the campus with its growth. Currently, the school and areas around the school, such as sidewalks along Kings Highway and Adams Street, do not meet current federal Americans with Disabilities Act (ADA) standards. For instance, curb ramps do not exist at most driveways, making it impossible for any wheelchair-bound student to travel to school on adjacent sidewalks. The City Schools of Decatur should work with the City of Decatur on the City's ADA Transition Plan (required by the federal government) to make locations near the school a priority for implementation of new ADA-accessible pedestrian facilities.

The need for addition bike facilities also should not be overlooked. The school should include a substantial amount of safe and secure bike parking as well as convenient showers, especially for staff that may want to make use of them when biking to work.

Parking

The school's available 113 parking spaces are well utilized most of the time and generally provide enough parking during a typical weekday. As discussed earlier, parking during special events becomes challenging, with the athletic field and adjacent streets used as overflow.

With a future staff count of 175 and using the same visitor space percentage of 10 to 15 percent, the school will need to provide 200 spaces onsite. This may become challenging due to the limited spaces on the site, potentially requiring evaluation of the construction of vertical/structure parking.

Needs Assessment Summary

Based on the assessment of what is likely to occur if Renfroe Middle School increases in student population from 938 students to 2,225 students and from 100 staff to 175, there are several clear issues that should be addressed. These key elements are as follows:

- Substantially decrease onsite vehicular demand
- Increase the amount of onsite queuing spaces for vehicles and buses
- Bring the campus and adjacent street network up to current ADA standards
- Increase and improve quality of bicycle parking
- Increase the amount of on-campus parking

The ideas listed in the Recommendations Section of this report describe detailed methods with which to address each of the above needs.

RECOMMENDATIONS

Based on observations made at the school, discussions with school staff and the public in August 2014, and a review of future demands on the school campus, several overarching strategies should be employed to address the needs of a growing Renfroe Middle School. Many of these strategies could improve campus operations today. Increasing the school population will further increase the need for their consideration and implementation. The following strategies should be addressed as part of the redesign and expansion of the school. More detailed recommendations addressing each strategy follows in the subsequent sections. Some of the recommendations will require the City Schools of Decatur to coordinate with the City of Decatur and other entities to make the changes.

Strategy 1: Separate buses from vehicular traffic

Strategy 2: Enhance maneuverability for buses into and out of the site, particularly along West College Avenue

Strategy 3: Increase queuing lengths onsite and the efficiency of vehicular loading and unloading

Strategy 4: Provide additional staging area for vehicles to pick-up and drop-off

Strategy 5: Provide additional support/incentives for walking and biking to school and encourage staff to take advantage of existing transit options

Strategy 6: Manage on-street parking restrictions on surrounding streets more effectively, especially Kings Highway and Adams Street

BUS QUEUING

Bus/vehicle Separation

The school is currently served by six buses during the morning drop-off and afternoon pick-up periods. On occasion, additional buses serve the school in the afternoon. These buses do not all come at the same time. Observations determined that up to six buses were queued during a typical morning drop-off peak period and again up to six during the afternoon pick-up peak period. Most buses arrive at the school prior to parents arriving in vehicles, but some buses become mixed in the queue along with vehicles if they arrive later. A typical school bus is 36-feet-long, with approximately 4 feet between each bus when parked. This equates to a need for approximately 240-linear-feet of stacking space taken up by queued school buses for both the morning and afternoon peak periods. Future projections estimate that up to 16 buses will queue onsite in 2018 during peak conditions. This equates to approximately 640-linear-feet of staging space needed for buses to queue onsite in the future. It should be noted that if stacked side by side, only 320-linear-feet of stacking distance is needed.

To increase the safety of students and decrease congestion caused by the mix of vehicles with buses, buses should have a separate area away from queued vehicles to stage while waiting for and loading and unloading students. Ideally, the bus staging area would also be close to one of the school's assembly spaces (cafeteria, gym, etc.) to provide for more efficient loading of students.

One particular challenge at Renfroe is vehicular traffic on local, neighborhood streets. While the neighborhood is leery of bus traffic along Kings Highway and Adams Street, one possible solution to separate cars and buses is to maintain and improve vehicular areas near College Avenue and provide a separate bus entry and exit to the site further south along Kings Highway and/or Adams Street. While communications with the neighborhood would be necessary to explain this change, the limited number of buses at Renfroe could more easily be brought through the center of the site or rear of the site along internal driveways that could then be closed during the day. This strategy would bring buses further into the site, but could limit auto access to the College Avenue Area and not permanently divide the site with an active driveway.

Maneuverability of Buses

In addition to the separated and adequate staging area for buses, maneuverability of buses should be enhanced. Specifically, buses were noted during observations as having to make very wide turns onto West College Avenue to exit the site. This challenging maneuver creates issues with oncoming traffic and creates congestion along West College Avenue. Moving bus access further away from West College Avenue and increasing intersection turning radii at the intersection of West College Avenue with Adams Street, particularly the southeast corner of this intersection, would help reduce these maneuverability, safety, and added congestion issues.

VEHICULAR TRAFFIC

Existing vehicular demand is expected to increase from approximately 200 vehicles today to more than 650 vehicles in the future, with much more demand on days with inclement weather. Addressing vehicular demands of the school should be paramount to the redesign and expansion of the school campus.

Efficiency of Loading

The time it takes for students to load and unload at the school's front door is the single most important factor regarding delay incurred at K-12 schools. While the school currently loads and unloads students in an efficient manner, additional actions should be sought to further decrease these times. Due to the nature of arrival and departure, loading (afternoon pick-up) typically takes much longer than unloading (morning drop-off). Below are several methods that can improve loading efficiency:

- Building configuration – The building should be laid out in such a way where students are kept in a safe location (lobby, gym, cafeteria, etc.) in close proximity to the location where they are picked up.
- Queuing and vehicular storage space – Adequate space must be provided for vehicles to stage and lateral width must be provided to allow vehicles to exit the line prematurely if they receive their student(s). Queuing lengths are particularly problematic at Renfroe Middle School and should ideally be lengthened. This strategy would have the largest single impact on loading/unloading and neighborhood challenges at Renfroe.
- Staffing – Adequate staffing should be in place in order to enforce rules and direct drivers to the appropriate locations (for example, maximizing space by directing drivers to pull forward as much as possible).
- Nature of the loading zone near building entrance – The loading zone should be as long as possible and covered to the greatest extent possible. This is especially important on days with

inclement weather—allowing a greater distance for students to load and unload without being exposed to the elements.

- Use of technology – Technologies are emerging that notify staff/students in real time when their ride has approached/is about to approach the pick-up location. This communication is done through transponders in vehicles and equipment that relays the actuation to staff/students inside the staging area.

Multiple Loading Locations

As the school grows, consideration should be given to providing more than one vehicular loading zone. For instance, consideration should be given to having a 6th grade loading zone on one side of the building and a combined 7th/8th grade loading zone on the opposite side of the building. The placement of these zones should be such that the vehicular queues experienced by each do not overlap. Of course, parents with students in multiple grades and carpools should be allowed to pick up multiple students from one location.

Vehicular Queuing

Based on observations, more than 100 vehicles were noted to drop students off on either Kings Highway or Adams Street. Parents drop-off along these streets to avoid long queues at the front door; however, this behavior creates congestion on the neighborhood streets and causes inconvenience to neighbors, especially for neighbors who have homes without driveways and who are required to compete with parents to park their vehicles on the street. One of the reasons this on-street parking occurs (other than because of its convenience) is that there is only 500 feet of queuing space for vehicles on the school property. The site should be designed to increase the amount of queuing space for vehicles onsite to the greatest extent possible. It will be impossible to queue all waiting vehicles onsite; however, upwards of 1,000-linear-feet of storage on the school property would reduce congestion on neighborhood streets if possible.

Even with more storage for stacking vehicles onsite, the demand for on-street parking in the adjacent neighborhood will remain to some extent, whether it be on a daily basis or during special events. The school should consider allowing on-street parking on only one side of the street, closest to the school in order to prevent parents from blocking these roads and allowing other motorists to pass through the area.

West College Avenue

West College Avenue experiences a tremendous amount of congestion especially during the afternoon pick-up timeframe, and into the early evening hours. This is caused by many factors, including the middle school and high school's release schedules as well as general commuter traffic. Very short and narrow westbound left-turn lanes exist at its intersections with Adams Street and Kings Highway. These turn lanes, not originally constructed as part of the roadway, required that width be taken away from the two through travel lanes along West College Avenue. Both the turn lanes and through travel lanes are substandard and provide low levels of service for the general traveling public. It can be especially difficult for MARTA buses to travel along this corridor. Efforts should be made to widen West College Avenue along the school's frontage from Adams Street to Kings Highway to accommodate at a minimum 11-foot through travel lanes with a continuous 10-foot left-turn lane at Kings Highway. This measure would require coordination with the Georgia Department of Transportation.

Enforcement

It was noticed during observations that parents did not mind the “Residential Parking Only” signs located along Kings Highway, and parked in front of several houses without driveways for a period of over 20 minutes during the afternoon pick-up period. Additional staff or city resources should be assigned to help manage and enforce parking along Kings Highway and Adams Street during afternoon pick-up periods.

WALKERS AND BICYCLISTS

Pedestrian Access

Renfroe Middle School experiences a high percentage of students walking to school compared to other peers in the Atlanta metropolitan area. With up to 400 students walking to school each day, and that number likely increasing to near 450 as the school grows, sidewalks and crosswalks in the area should be enhanced. Most of the sidewalks around the school are very narrow (generally five feet or less). Consideration should be given to widening sidewalks with heavy pedestrian traffic to six or seven-foot-wide. Additionally, all sidewalks and crosswalks adjacent to the schools should be updated to meet the federal government’s ADA guidelines. At a minimum, curb ramps should be placed at each sidewalk that enters into a crosswalk and high visibility crosswalks should be maintained near the school.

Bicycle End Trip Facilities

The current number of bike racks is insufficient, leaving many students locking their bikes to nearby trees and poles. With more than 40 bicyclists on a typical day today, and that number potentially growing to near 150 bicyclists in the future, additional bike parking will be essential. New bike racks should be installed in a visible, secure, covered location near the front door of the school. Incorporating a safe space for children to store their bikes will be a way to celebrate the school’s unique high bicycling student population and perhaps encourage more students to do so.

In addition to bike racks, consideration should be given to private and convenient showering facilities. Showers will be especially useful for staff that bike to school on warm days. Having showers available at work offers the ability to persuade a worker to bike to work who otherwise would not.

On-Road Bicycle Facilities

The City of Decatur is currently working on several projects that will incorporate bike lanes, side paths, and other bike facilities along several of the adjacent roadways. For instance, a side path is planned to travel along the west side of North McDonough Street. The school should continue to work with the City to look for opportunities for additional on-street bike facilities, including additional signage, shared lane markings “sharrows,” and bike boxes at intersections, as well as other treatments.

TRANSPORTATION DEMAND MANAGEMENT

Scheduling

During observations, it was noted that heavy congestion occurred along West College Avenue at approximately 4 p.m. This congestion was generally created by the lack of capacity at downstream intersections, in particular West College Avenue with South Candler Street. One source of this congestion

may be the closely spaced school start and end times between the high school and middle school. Decatur High School is in session from 8:30-3:30 and Renfroe Middle School is in session from 8:40-3:40. This very small difference (only ten minutes) in schedules, coupled with the two school's proximities (less than a half-mile) may have a substantial amount to do with creating the congestion experienced during the peak hours of the day. Consideration should be given to staggering high school and middle school start and end times more, which may result in less congestion along West College Avenue, especially during the afternoon peak periods.

In addition to staggering start and end times between the two schools, consideration could be given to staggering start and end times between each grade at the middle School. While this may be challenging from a staffing and internal operations perspective for the Middle school, staggering arrival and departure times by grade or another metric may lower peak vehicular demands at the school. Bus scheduling and the scheduling of after school programs, such as athletics and clubs, plays a significant role in the ability for this to be successful.

Increasing Vehicular Occupancy

As stated earlier, it was observed that each vehicle carried approximately 1.3 children. Increasing the number of children per vehicle is another targeted approach to reducing the number of vehicles traveling to the school. Many schools have seen increase in vehicular occupancy by creating incentives for parents to cooperate more by carpooling with neighbors. The parent/teacher organization or other school/community organization should work to develop incentives and provide time and resources to help parents find other parents willing to participate in a more structured carport program. Increasing the number of students per vehicles from 1.3 to 1.5 would reduce the number of vehicles driving to the school in 2018 from 650 vehicles to 560 vehicles. Further increasing the students per vehicle to 2 per vehicle would decrease the vehicular demand from 650 vehicles to 420 vehicles.

PARKING

Future parking needs were calculated by the projected number of teachers/staff on campus. Today Renfroe Middle School employs approximately 100 teachers/staff. The 2018 projections indicate that there will be upwards of 175 teachers/staff onsite. As a general rule, one space per staff member should be accommodated onsite, with a certain number of spaces for visitor parking as well (10-15% of spaces). Today, approximately 113 parking spaces are currently available, in two parking lots. Based on the future staff projections, the future site should include a minimum of 200 onsite parking spaces.

No reasonable number of onsite parking spaces is enough for special events. During many cases (such as in the afternoon and evenings) the athletic field is not available for parking. The school should further investigate the use of the Agnes Scott College' parking deck, which is located along South McDonough Street, less than a quarter-mile from Renfroe Middle School. The top two floors include approximately 226 parking spaces that could potentially be used for school parking. If an agreement is put in place between the college and the school, consideration should be given to constructing a stronger pedestrian connection from the parking deck to Renfroe Middle School by connecting the deck to West College Avenue with a safe and secure lighted sidewalk. The use of this deck may also be an option for daily overflow or assigned use by Renfroe Middle School staff if needed. If an agreement with Agnes Scott College is not obtainable, DCS should identify and consider other off-site parking locations and commensurate pedestrian sidewalk improvements to facilitate off-site parking.