

Applied Learning Academy and International Newcomer Academy

Fort Worth, TX

Safe Routes to School Plan



2017



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I. Project Background

Over the past generation, student travel to school by walking and bicycling has declined dramatically across the United States: in 1969, nearly 50 percent of all children walked or biked to school, compared to 13 percent in 2009. Simultaneously, childhood obesity has more than tripled. There is a growing body of research that has linked these trends with fundamental infrastructure changes in our communities that discourage people from walking, including suburban sprawl, ever-increasing speed and volume of motor vehicle traffic, and roads designed and maintained without consideration of pedestrian safety or comfort.

Safe Routes to School (SRTS) is a nationwide initiative dedicated to reversing these trends and encouraging more children to walk and bicycle to school. SRTS employs the “five Es” to meet these goals: Engineering, Education, Enforcement, Encouragement, and Evaluation.

Engineering: Engineering measures include the design, construction and maintenance of physical infrastructure that can improve the safety and comfort of students walking and bicycling in and around the school campus.

Education: Educational programs as part of SRTS efforts teach students bicycle, pedestrian, and traffic safety skills, and teach drivers how to drive safely around schools and share the road.

Enforcement: These are strategies to deter the unsafe behavior of drivers, bicyclists and pedestrians, and encourage all road users to obey traffic laws and share the road.

Encouragement: Encouragement programs serve to promote walking and biking as safe and healthy forms of transportation. Encouragement strategies are intended to be fun and generate excitement and enthusiasm about walking and bicycling.

Evaluation: Evaluation of the SRTS program is important to understand the effectiveness of the program, identify improvements that are needed, and ensure the program can continue in the long term. Evaluation can measure the number of infrastructure projects constructed, the before and after shift in mode share (drive, bike, walk, bus), and whether there was a change in attitudes toward walking and bicycling.

The North Central Texas Council of Governments (NCTCOG) was awarded a Transportation Infrastructure Generating Economic Recovery (TIGER) grant in 2014 to address a number of factors related to school siting and transportation to schools. As part of that effort, NCTCOG conducted walking safety audits and developed SRTS plans for four schools in North Texas, including the Applied Learning Academy (ALA) and International Newcomer Academy (INA) in Fort Worth. Neither of these schools are traditional neighborhood schools, and instead draw students from across the Fort Worth Independent School District (ISD). Therefore, the purpose of this SRTS plan is to identify measures, including both infrastructure projects and programmatic activities, which will make it safer for students to walk and bicycle to school from the nearby neighborhoods. These measures will also increase safety for students walking and bicycling to nearby destinations during or after school, including North Z Boaz Park, the Fort Worth Transportation Authority (FWTA) bus stops on Lackland Road, and the commercial businesses at the intersection of Camp Bowie W. Blvd. and Alta Mere Drive. These

recommended measures will serve as an action plan which, when carried out by the local project stakeholders, will encourage and enable more students to walk and bicycle to school and to nearby destinations as part of school-related activities.

The project was initiated when a teacher at ALA contacted staff at NCTCOG about the need for improved pedestrian facilities around the school. NCTCOG staff assembled a project team, consisting of the following stakeholders:

- ALA Principal, Staff, and Students
- City of Fort Worth – Transportation and Public Works Department
- City of Fort Worth – Planning and Development Department
- Texas Department of Transportation, Fort Worth District
- Fort Worth ISD – Safety and Security Department
- Fort Worth Transportation Authority – Service Planning
- Blue Zones Project, Fort Worth

Two meetings were held at ALA, during which the teacher, principal, and a number of students shared the results of a survey they had conducted to see how ALA and INA students currently get to and from school; identified the neighborhoods from which students walked to school; identified the major destinations that students desired to walk to as part of school-related activities; and considered the existing barriers that limit walking and bicycling. Subsequently, a walking safety audit was conducted by the project team to evaluate the routes between these origins and destinations, the existing barriers, and potential opportunities.

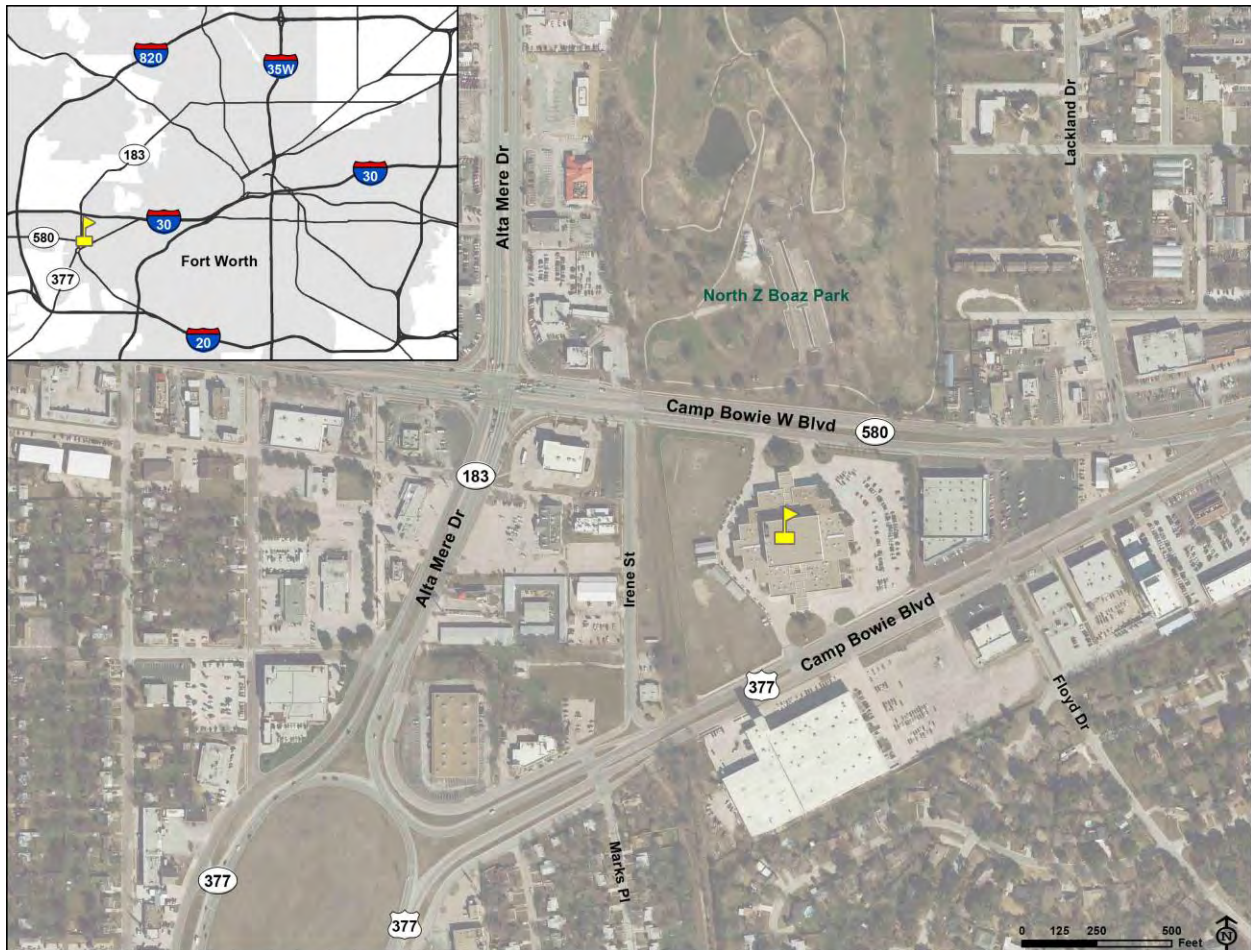
The result of these activities is a list of recommended projects and activities (action items) intended to make walking and bicycling to ALA and INA, and to destinations around the schools, a safer and more appealing option than driving. This SRTS Plan should be updated at regular intervals to reflect changes in priorities, leadership and conditions.

The Champion (primary) contact person for this SRTS Plan is:

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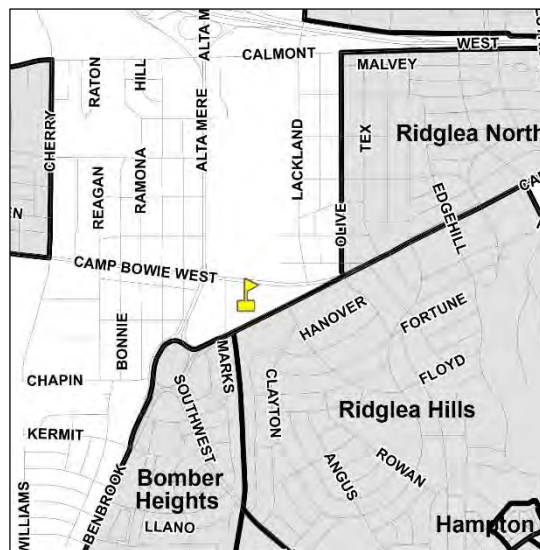
II. School Profile

FIGURE 1 - SCHOOL CONTEXT



The Fort Worth ISD Applied Learning Academy (ALA) and International Newcomer Academy (INA) share a building that is located at 7060 Camp Bowie Blvd., Fort Worth, TX, 76116 on the west side of Fort Worth. The schools are located in a triangle between three State roadways: Camp Bowie W Blvd. (State Spur 580) to the north, Camp Bowie Blvd. (US Highway 377) to the south, and Alta Mere Drive (State Highway 183) to the west. North of the school, across Camp Bowie W Blvd., is North Z Boaz Park and the 10-acre Zbonz dog park, which opened in 2016 on the former site of the Z Boaz Golf Course and includes several new walking paths. To the south of the school, across Camp Bowie are the Bomber Heights and Ridglea Hills neighborhoods, shown in **Figure 2**.

FIGURE 2 - NEIGHBORHOODS SURROUNDING ALA/INA



ALA and INA are both Fort Worth ISD magnet schools, meaning that they do not have attendance zones and instead draw students from across the district. ALA opened in 1993, as a middle school extension to Alice Carlson Applied Learning Center (grades K-5th). ALA and INA moved to their current location in 2000. The building was constructed in the early 1960s as the first Neiman Marcus in Fort Worth (see **Figure 3**) until Neiman Marcus moved to Ridgmar Mall in 1976.¹ When the building was purchased by Fort Worth ISD during the early 1990s, the building's interior was divided into offices, classrooms or labs, and the west parking lot converted into a large grass playing field.²

FIGURE 3 - NEIMAN MARCUS ON THE SITE OF ALA AND INA, 1963



Neiman Marcus occupied the building that today houses ALA and INA from 1963 to 1977. (Source: www.thedepartmentstoremuseum.org)

The mission of ALA, which serves grades 6th through 8th, is to establish a learning community that, among other things,

“...involves students in powerful learning experiences which include applied learning projects and community service; and provides for broad-based involvement of student-mentors, institutions of higher learning, parents, and community in decision-making so that students acquire a foundation of learning and real-world experiences which equip them to participate in traditional and non-traditional institutions of learning and become motivated, successful, life-long learners, collaborative problem solvers, and community participants.”

The goals of INA, which serves grades 6th through 9th, include fostering rapid language learning and acquisition of content knowledge, orienting students to U.S. culture, and serving as a bridge to LEP (limited English proficiency) and content classes at the Language Centers (the next level of the ESL program) at the home campuses.

¹ Baker, Sandra. (2014, December 4). Neiman Marcus to move Fort Worth store to Clearfork development. Retrieve from <http://www.star-telegram.com/news/business/article4274570.html>

² Gordon, Denise. (2009, December). A case study of the Applied Learning Academy: Reconceptualized quantum design of applied learning. Texas A&M University (Publication No. AAT 3400724)

School Enrollment and Demographics

ALA serves students in grades 6th through 8th, and INA serves students in grades 6th through 9th. As of the 2016-2017 school year, 318 students were enrolled at ALA and 646 students were enrolled at INA, for a combined campus total of 964 students. Based on the School Report Cards released by the Texas Education Agency for the 2015-2016 school year, more than 50 percent of students attending both ALA and INA are Hispanic and are considered economically disadvantaged.³ Summaries of student enrollment by grade and student demographics for ALA and INA are shown in **Figure 4** and **Figure 5**.

FIGURE 4 - ALA STUDENT DEMOGRAPHICS (2015-16)

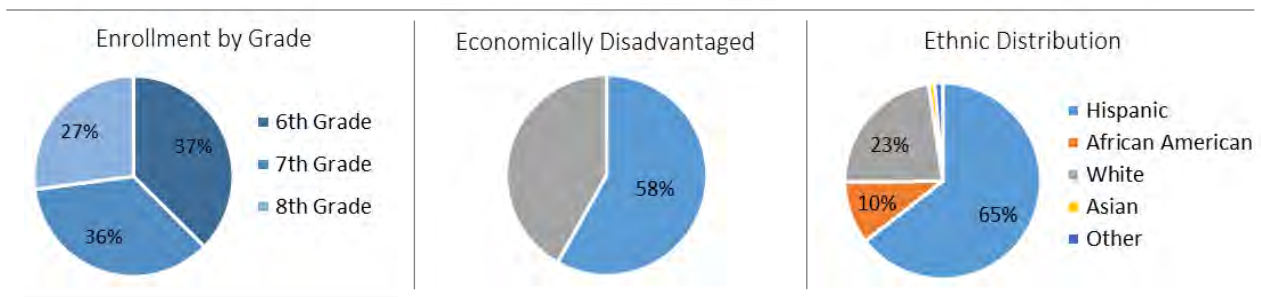
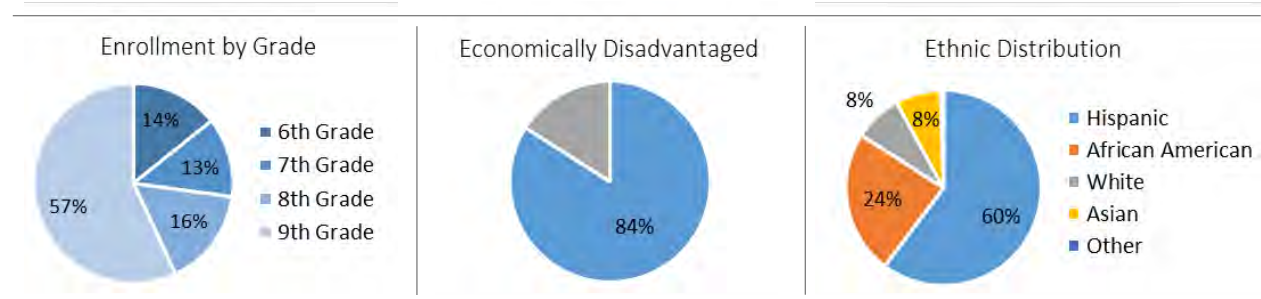


FIGURE 5 - INA STUDENT DEMOGRAPHICS (2015-16)



³ Students are considered “economically disadvantaged” in the Texas Education Agency’s Student Report Cards if they are eligible for free or reduced-price lunch or other public assistance (e.g., Temporary Assistance for Needy Families (TANF)). The U.S. Department of Agriculture is responsible for setting the income eligibility guidelines each year for free- and reduced-price lunches.

III. Current School Travel Environment

Student Travel Mode

In anticipation of the SRTS planning project, both schools conducted an informal survey of how students get to and from school. The results are as follows:

- 51 percent of students take the bus
- 47 percent of students carpool or are driven in a family vehicle
- 2 percent of students walk

As of the 2016-17 school year, four school buses serve ALA, and 15 serve INA.

School Hours

ALA and INA have staggered arrival and dismissal times. INA's administrative office opens at 7:00 am., school starts at 7:50 am, the dismissal bell rings at 2:55 pm, and the office closes by 3:00 pm. ALA's administrative offices open at 7:40 am, school starts at 9:20 am, and afternoon dismissal is at 4:20 pm when the office also closes. Both schools have after school activities—including band, orchestra, and school dances—that end between 5:00 pm and 6:00 pm. The school's running club meets on Tuesdays and Thursdays after school.

Crossing Guards

The school does not currently have any crossing guards.

School Zone

The school does not currently have a designated school zone on any of the streets surrounding the school.

IV. Evaluating Issues and Opportunities

Existing issues and opportunities were identified through meetings with school and community stakeholders, a questionnaire filled out by school administrative staff, an analysis of crash data and traffic counts, and finally a walking safety audit. The following sections detail the findings of each of these activities.

Current Community Concerns

The school community's concerns related to walking and bicycling around the ALA and INA campus were identified through surveys distributed to ALA and INA administrative staff, and during two project team meetings that were held at ALA; the first on February 7, 2017, and the second on March 3, 2017. The school questionnaire asked school staff to describe any traffic safety concerns in the school vicinity that are a concern for student walkers, the frequency that they hear of the concern and from whom. Two locations with safety concerns were identified in ALA's questionnaire:

1. Getting across Camp Bowie to North Z Boaz Park, which school staff hear about frequently from students and faculty.
2. Getting to the bus stop on Lackland Road that serves the FWTA No. 2 bus route, which school staff hear about sometimes from faculty.

The only location with safety concerns identified in INA's questionnaire as impacting student walkers:

1. Parking lot after school during dismissal, which school staff hear about often from parents, students, and staff.

In the questionnaires, staff at both schools said that teachers are interested in taking students to North Z Boaz Park.

During the first meeting on February 7, 2017, three ALA students gave a presentation on why they need a crosswalk or school zone on Camp Bowie W Blvd. (State Spur 580) between the school and North Z Boaz Park. The reasons are as follows:

- The school's Running Club goes to the park after school every Tuesday and Thursday around 5 pm.
- Fairs/festivals are held at the park.
- Teachers and students would like to use the park for science and physical education classes.
- Currently, teachers go out into the middle of the street to stop traffic.
- There is no school zone on any of the roads surrounding the school.

Faculty from ALA, said that they would like to be able to safely access the FWTA bus stop on Lackland Road for field trips. The bus stop serves the No. 2 bus route, a high-frequency route that provides direct access to the Museum District as well as Downtown Fort Worth. When possible, taking the FWTA bus is preferable to taking a school bus because of the expense associated with school buses and their time limitations—the school bus would have to be back at the school by 2:00 pm., but ALA's school day does not end until 4:20 pm. Teachers had taken students on field trips before using FWTA, but would not do it again unless conditions were changed. Specific concerns were the lack of push buttons or pedestrian signalization to get across Camp Bowie W Blvd. at Lackland, the lack of sidewalks or sidewalks that are obstructed on Camp Bowie W Blvd., and the limited sight distance caused by the curve and rise of the road.

Additional issues and opportunities that were identified during the two project team meetings at ALA are as follows:

- Some students walk to school from the Ridglea Hills Neighborhood south of Camp Bowie Blvd. (US 377), which is an opportunity for increasing walking and bicycling.
- Community stakeholders desire dedicated bicycle facilities on Camp Bowie W Blvd. as a way to provide bicycle accommodations and calm traffic.
- Students go to the CVS located at the southeast corner of Camp Bowie W (SS 580) and Alta Mere Drive (SH 183) after school to get food if they have an event at the school later that night, which is an opportunity to improve the safety of students walking to destinations near the school.
- Poor lighting on the school campus is a safety concern at night.

Crash Data and Traffic Counts

Figure 6 illustrates the location of traffic-related bicycle and pedestrian crashes, vehicular crashes, and the most recent traffic count data. Based on crash data from TxDOT for 2012 to 2016, one pedestrian and one bicycle fatality occurred in the project area—the only traffic-related fatalities from 2012 to 2016 in the area. In the crash reports, the light condition for both fatal crashes was described as “Dark, Not Lighted.” The fatal pedestrian crash occurred at the intersection of Camp Bowie W Blvd. (SS 580) and Alta Mere Drive (SH 183). The bicycle fatality, as well as a bicycle non-incapacitating injury, occurred on Camp Bowie W Blvd. between the planned Bomber Spur Trail alignment and the school entrance. For both of these bicycle crashes, the light condition for these crashes was described as “Dark, Not Lighted”, contributing factors were “Driver Inattention” and “Failed to Control Speed”, and the impacting vehicle was traveling west.

On Camp Bowie Blvd. (US 377) near the intersection with Floyd Drive there was a bicycle crash (incapacitating injury) and a pedestrian crash (non-incapacitating injury). Both of these crashes occurred between 3:00 and 5:00 pm. in the afternoon. No contributing factors were given for the bicycle crash. The pedestrian crash involved a person in a motorized wheelchair, one motor vehicle traveling south and making a right turn, and the contributing factors of “Failure to Yield Right-of-Way to Pedestrian” and “Cell/Mobile Phone Use.”

Pedestrian crashes (non-incapacitating injuries) also occurred at the intersections of Alta Mere Drive and Ruby Place, and Lackland Road and Z Boaz Place. These occurred when the light condition was “Dark, Lighted” and “Dark, Not Lighted” respectively, were intersection-related, and involved one motor vehicle traveling south and a pedestrian attempting to cross at an uncontrolled intersection. While none of these crashes were directly related to the students attending ALA or INA, they reveal the high rate of speed at which some motorists travel on Camp Bowie W Blvd., driver inattention, and a lack of lighting at the intersection of Camp Bowie W Blvd. and Lackland Drive and on Camp Bowie W Blvd. (SS 580) between Lackland Road and Alta Mere Drive (SH 183).

Camp Bowie W Blvd. (SS 580), a four- to six-lane roadway with a raised median and a 35 mph speed limit, had a 2014 average daily traffic count of 17,422. Camp Bowie Blvd. (US 377), a six-lane roadway with a raised median and a 35 mph speed limit, had a 2014 traffic count of 8,674. Alta Mere Drive (SH 183), a six-lane roadway (10 lanes wide at the intersection with Camp Bowie W Blvd.) with a raised median and 40 mph speed limit, had a 2016 average daily traffic count of 32,466.

FIGURE 6 - EXISTING CONDITIONS



Walking Safety Audit

Overview and Route

A walking safety audit was conducted by staff from NCTCOG, City of Fort Worth, Fort Worth ISD, TxDOT and Blue Zones Project - Fort Worth on March 22, 2017, with the purpose of identifying barriers and opportunities for walking and bicycling to and from ALA/INA as well as to destinations near the schools. Observations were conducted at and around ALA/INA during the arrival and dismissal times for both schools. In the morning, NCTCOG staff and the other members of the project team observed parent drop-off, and pedestrian and bicyclist behaviors. In the afternoon, members of the project team, led by NCTCOG staff, conducted walking assessments of various streets and intersections around the school, as well as observations of pedestrian and parent pick-up behaviors. A map of the safety audit walking routes and observation locations can be found in **Appendix B**, and the walking audit checklist in **Appendix C**.



Key Observations

Pedestrian and Bicyclist Observed Behaviors:

Camp Bowie W (SS 580):

- Pedestrians:
 - Morning: one observed walking to the school from the west on the sidewalk on the south side of the street. At least five adults or charter school students were observed crossing Camp Bowie W in the turn lane to the west of Lackland Road.
 - Afternoon: five observed to the east of the school.
- Bicyclists:
 - Morning: several observed riding east. One on the north side of the street moved into the travel lane (somewhere between the park and Lackland Road), biking against traffic.
 - Afternoon: five observed to the east of the school.



Camp Bowie (US 377):

- Pedestrians:
 - Morning: seven charter school students observed running across the street by Denny’s.
 - Afternoon: five INA students walked west from the school, then ran across to the south side of the street at approximately the Bomber Spur alignment (most said they lived in the neighborhood farther down on the south side of Camp Bowie, one was walking to his home past the traffic circle).
- Bicyclists:
 - Morning: one bicyclist observed in the morning riding west in the left lane, then turning further down the street (toward the traffic circle).
 - Afternoon: two bicyclists observed in the afternoon riding east on the sidewalks on the south side of the road, and both crossed to the north side of the street, one just past Floyd Drive to go to Goodwill.

Issues and Opportunities:

- On-Campus Pedestrian Facilities: There are no sidewalks leading into the school campus from the adjacent streets—Camp Bowie W (SS 580) and Camp Bowie Blvd. (US 377)—and the presence of the school gates forces pedestrians into the travel lane. This could increase the likelihood that a student may get hit by a car entering or exiting the campus. There is only one marked crossing point for pedestrians to the school building. There is a need to trim an overgrown shrub on the northwest side of the school that is encroaching on the sidewalk.
- Drop-Off and Pick-Up: Disorganized traffic circulation creates potentially unsafe situations for students.
 - Buses double-stacked. In the afternoon, students run to the buses through the lane where cars and other buses enter the campus.
 - Parent drop-off occurred in non-designated areas (northwest entrance/driveway and parking lot). Parents drop students off at random places on the campus, causing kids to walk through traffic lanes and cross in front of moving vehicles. Cars sometimes drop off and then do U-turns to go the other way—an unsafe maneuver that can result in students getting hit.
 - Disorganized on-campus traffic circulation and lack of directional guidance. There are two driveways on Camp Bowie (US 377), but neither is designated as an entrance or exit, and motorists were observed going into and out of both. Parents enter through the bus loading areas.
 - Before school starts, most students congregate in the sports fields or in the driveway on the west side of the school.



No Sidewalks into Campus



Bus Loading in Vehicle Travel Lanes



Parked Cars; Sidewalk Obstruction

- Camp Bowie W/SS 580 (Alta Mere to Lackland): There are many sidewalk obstructions, and curb ramps are missing in some locations. Near the Lackland intersection, there is no buffer between the sidewalk and travel lanes, poor separation between sidewalks and driveways in some areas, and frequent driveways that make walking uninviting. There are no street lights.



- Intersection of Camp Bowie W and Alta Mere Drive/SH 183: There are no push buttons or pedestrian walk signals. There is poor lighting, and ramps and pedestrian landings are in bad condition.
- Crossing between ALA and North Z Boaz Park: There is a need for a mid-block crossing. To cross Camp Bowie W at a marked crosswalk to go to the park, students would currently have to walk to the marked crosswalk at the intersection Alta Mere Drive (SH 183), where there are no pedestrian walk signals—a total distance of approximately 0.4 miles to get to the park across the street from the school. Once at the driveway to the park, there are no sidewalks leading into the park, forcing pedestrians to walk in the driveway or in the grass.
- Intersection of Camp Bowie W and Lackland Road: There are no painted crosswalks, pedestrian walk signals, push buttons, or countdown features. There are also a high number of commercial driveways at the intersection. Valero, for example, has four driveways—two each on Camp Bowie W and Lackland Road—and two of these are less than 10 feet from the intersection. The majority of students walking from the bus stop on Lackland to the charter school on Camp Bowie Blvd. crossed through the turn lane to the west of the intersection.

- Lackland Road (Camp Bowie W to Z Boaz Place): There is a lack of separation between sidewalks and driveways. The sidewalk obstructions (bus bench, 99 Cent Store sign) and wide driveways make walking uninviting. The street lights need to be upgraded to LED to improve visibility.



- Camp Bowie/US 377 (Bomber Spur to Floyd Drive): Students were observed crossing mid-block at Bomber Spur, and at the charter school near Floyd Drive. Sidewalks are missing in some areas, and some driveways are in poor condition. High traffic speeds (estimated 40-55 mph) were observed.
- Floyd Drive: There are gaps in the sidewalks leading to the Ridglea Hills neighborhood on Floyd Drive.



Sidewalks End at Bomber Spur



Sidewalk Gaps on Floyd

Key Issues and Opportunities

Based on the findings from the school administrator surveys, project team meetings, crash data and traffic count assessment, and the walking safety audit, the following six key issues were identified as impacting students' ability to walk or bicycle in and around the Applied Learning Academy (ALA)/International Newcomer Academy (INA) campus.

Issue 1: Crossing Camp Bowie W (SS 580) between the school campus and North Z Boaz Park and access into the park.

- The school's Running Club goes to the park after school every Tuesday and Thursday around 5:00 pm., the school hosts fairs/festivals at the park, and teachers and students would like to use the park for science and PE classes. Currently, teachers go out into the middle of the street to stop traffic.
- To cross Camp Bowie W at a marked crosswalk to go to the park, students would currently have to walk to the marked crosswalk at the intersection Alta Mere Drive (SH 183), where there are no pedestrian walk signals—a total distance of approximately 0.4 miles to get to the park across the street from the school.
- During the safety audit, it was observed that there were few, if any, breaks in the traffic long enough to support so many students crossing at one time.
- During the safety audit, high vehicular speeds were observed on Camp Bowie W.
- Between 2012 and 2016, there was a bicycle fatality and non-incapacitating injury mid-block on Camp Bowie W Blvd., between Irene Drive and the school entrance. Both of these crashes had contributing factors on the part of the driver of "Driver Inattention" and "Failed to Control Speed."
- There are no sidewalks into the park from Camp Bowie W, forcing pedestrians to walk in the driveway or in the grass.

Issue 2: Access to the FWTA bus stops on Lackland Road from ALA/INA and the charter high school on Camp Bowie.

- Teachers would like to be able to get to the FWTA bus stop on Lackland Road to take students on field trips to the Museum District and Downtown Fort Worth. One teacher that previously took students on a field trip to the Museum District felt so unsafe walking to the bus stop that she said she would never do it again. Reasons she gave for feeling unsafe included the lack of push buttons or pedestrian signalization to get across Camp Bowie W at Lackland, the poor sight distance caused by the curve and rise of the road, the lack of sidewalks, and existing sidewalks are obstructed on Camp Bowie W.
- Charter school students and other adult pedestrians were observed crossing Camp Bowie W to the west of Lackland Road in the middle of the turn lane. The charter school students then walked through the Goodwill parking lot, and finally ran across Camp Bowie Blvd. near Floyd Drive to get to the school.
- Between 2012 and 2016, there was one bicycle crash and one pedestrian crash on Camp Bowie Blvd. near Floyd Drive, indicating potentially unsafe traffic conditions where charter school students are crossing Camp Bowie Blvd. to get from the bus stop to the school.
- Bicyclists that were observed riding east on Camp Bowie W towards Lackland were riding in the street (some facing traffic).
- There are many sidewalk obstructions on Camp Bowie W and Lackland Road, including the FWTA bus bench on the east side of Lackland Road that leaves only a two-foot sidewalk clearance.

- The frequency of driveways along Camp Bowie W and at the intersection of Camp Bowie W and Lackland Road makes walking uninviting and potentially unsafe.

Issue 3: Lack of a way for students living in the neighborhood to the southeast of the school (Ridglea Hills neighborhood) to safely cross Camp Bowie Blvd. (US 377) and get to the school.

- During a project team meeting, it was reported that a few students walk to the school from the Ridglea Hills neighborhood.
- Gaps in the sidewalk network along Floyd Drive leading into the Ridglea Hills neighborhood, as well as missing curb ramps and deteriorating sidewalks and driveways on Camp Bowie Blvd., were observed during the safety audit.
- High traffic speeds were observed on Camp Bowie Blvd. during the safety audit.
- Between 2012 and 2016, there was one bicycle crash and one pedestrian crash on Camp Bowie Blvd. near Floyd Drive, indicating potentially unsafe traffic conditions where charter school students and students traveling from the Ridglea Hills neighborhood cross Camp Bowie Blvd.

Issue 4: Lack of a way for students living in the neighborhoods to the southwest of the school (Bomber Heights neighborhood) to safely cross Camp Bowie Blvd. (US 377) and get to the school.

- INA students were observed running across Camp Bowie after school where the sidewalks end near the Bomber Spur alignment.
- The sidewalk along Camp Bowie Blvd. ends to the west of the school at the Bomber Spur alignment.
- Overgrown vegetation at the Bomber Spur alignment appears to largely block the area that students would otherwise use to walk in the grass along Camp Bowie Blvd.
- High traffic speeds were observed on Camp Bowie Blvd.

Issue 5: Lack of on-campus pedestrian infrastructure and disorganized traffic circulation poses a threat to the safety of students walking in and around the ALA/INA campus.

- The school questionnaire asked administrators to identify any traffic safety concerns that impact student walkers, how often they hear about it and from whom. There was one concern identified in INA's questionnaire: the parking lot after school during dismissal, which school staff hear about often from parents, students, and staff.
- There are no sidewalks leading into the school campus from Camp Bowie or Camp Bowie W, and the school gates force pedestrians into the driveway. INA students that were observed walking home from school walked in the driveway in front of the school buses to exit the campus.
- Overgrown landscaping partially obstructs the sidewalk on the northwest side of the school.
- Many, if not most, of ALA's students were observed congregating in and around the driveway on the west side of the school building before school started. Yet cars were also observed parking and driving through this area.
- Parents drop students off at random places on the campus, causing kids to walk through traffic lanes and cross in front of moving vehicles. Sometimes drivers would drop off a student then do a U-turn to go the other way—an unsafe maneuver that can result in students getting hit.
- Vehicles were observed going in and out of the two driveways on both Camp Bowie and Camp Bowie W. None of the driveways are marked as entrances or exits.
- Buses double-stacked. In the afternoon, students were observed running to the buses through the lane where cars and other buses enter the campus.

- Poor lighting on the school campus was reported to be a safety issue at night, given the high number of ALA students that participate in after-school activities.

Issue 6: There are many pedestrian safety issues at the intersection of Camp Bowie W (SS 580) and Alta Mere Drive (SH 183).

- It was reported that ALA students that have after-school activities late at night will walk to the CVS and other restaurants at the intersection of Camp Bowie W and Alta Mere Drive to get food.
- One of two traffic fatalities in the area from 2012 to 2016—a pedestrian fatality—occurred at this intersection. In the crash report, the lighting condition was described as “Dark, Not Lighted.”
- From 2012 to 2016, there were more than 80 vehicular crashes at this intersection. One of these crashes was a severe crash resulting in an incapacitating injury.
- This intersection had some of the highest numbers of vehicular crashes in the project area.
- The only street lighting at this intersection illuminates only the turn lanes. There is no lighting for the crosswalks.
- There are no push buttons or pedestrian walk signals.

V. Recommendations

Comprehensive SRTS programs seek to increase safety and encourage students to walk and bicycle as a means of transportation through the five Es: Engineering, Education, Enforcement, Encouragement, and Evaluation. The following sections outline the recommendations under each of these strategies.

Engineering Recommendations

Engineering measures for SRTS include the design, construction and maintenance of physical infrastructure that can improve the safety and comfort of students walking and bicycling in and around the school campus. Specific engineering strategies for the school campus and the area around the school that was targeted as part of this effort are summarized below. Following these bulleted lists of recommendations are two tables that sort these recommendations: **Table 1** sorts the infrastructure recommendations by responsible entity, implementation timeframe, and improvement type; and **Table 2** sorts the recommendations by improvement type, followed by location. Cost estimates are also included with **Table 2**.

There are three main sources for funding for SRTS projects and activities: federal transportation grant money administered through the TxDOT and NCTCOG, local funding, and private funding. Funding sources are described in more detail in the Next Steps section of this document. The engineering recommendations presented here are meant to be flexible and the decision to undertake a project or program should be made based on the available resources of the project team, and when applicable, the City of Fort Worth. At the very least, the City, School District, and TxDOT should review the recommendations periodically and specifically if there is any work to be done at, or near the school. The Next Steps section of this document identifies “Quick Fixes” as well as projects that should be prioritized should resources become available.

City of Fort Worth:

- Conduct studies for the three proposed mid-block pedestrian crossings on Camp Bowie W (SS 580) and Camp Bowie (US 377), and for the crosswalks at the intersection of Camp Bowie W and Lackland Road. (See **Figure 7**)
- Conduct studies for the installation of pedestrian push buttons and countdown features at the intersections of Camp Bowie W (SS 580) and Alta Mere Drive (SH 183), and Camp Bowie W and Lackland Road.
- Assess the feasibility of striping a temporary mid-block crosswalk on Camp Bowie W between the school and the park to improve the safety of the ALA/INA students before a pedestrian hybrid beacon (HAWK) and accompanying curb ramps and pedestrian refuge island can be installed. A temporary high-visibility crosswalk is recommended between the curb ramps of the school driveway and the park.
- Install a pedestrian hybrid beacon (or HAWK) with a high visibility crosswalk, curb ramps, and pedestrian refuge island on Camp Bowie W to connect the school and park.
- Install two new high-visibility mid-block crosswalks with accompanying Pedestrian Crossing Warning Signs on Camp Bowie (US 377)—one for students traveling between ALA/INA and the residential streets to the southwest of the school, and the other for the charter school students traveling between the school and the FWTA bus stops on Lackland Road.
- Install Advance Pedestrian Crossing Warning Signs for the mid-block crosswalks on Camp Bowie W (SS 580) and Camp Bowie (US 377).

- Install pedestrian push buttons, walk and countdown signals for all crossing directions at the intersections of Camp Bowie W (SS 580) and Alta Mere Drive (SH 183), and Camp Bowie W and Lackland.
- Install street lights to illuminate the crosswalks at the intersections of Camp Bowie W (SS 580) and Alta Mere Drive (SH 183) and Camp Bowie W and Lackland Road, and at the mid-block pedestrian hybrid beacon on Camp Bowie W.
- Construct a new sidewalk to extend into Z Boaz Park from Camp Bowie W.
- Construct a new sidewalk on the south side of Camp Bowie (US 377) to the west of Floyd Drive in front of the antiques store.
- Construct new sidewalks on the west side of Floyd Drive adjacent to the antiques store to improve the connection to the Ridglea Hills neighborhood.
- Construct new sidewalks on the south side of Camp Bowie (US 377) to connect to the residential streets to the southwest of the school.
- Trim vegetation, and remove or relocate utilities and signs where they obstruct the sidewalks.

Fort Worth Transportation Authority and City of Fort Worth:

- Install a new landing pad for the bus stop bench on the east side of Lackland Road to create at least a three foot clearance on the sidewalk.

Texas Department of Transportation:

- Install two landing pads for the new pedestrian push buttons at the intersection of Camp Bowie W (SS 580) and Alta Mere Drive (SH 183).
- Install temporary speed feedback displays on Camp Bowie W (SS 580) for motorist awareness.

Fort Worth Independent School District:

- Create four new pedestrian routes into and out of the ALA/INA campus by installing new sidewalks in the excess space in the school driveways, relocating/replacing the school gate at one location to make room for the new sidewalk, and installing crosswalks to connect the sidewalks to the school building. The driveways are estimated to be 30 feet wide, and therefore have ample room to install a minimum 5-foot sidewalk in the driveway and leave two 12.5-foot lanes, eliminating the need to relocate most of the gates and build new retaining walls. Based on the proposed traffic circulation plan described below, which calls for three lanes of traffic at one driveway, the sidewalk at that location may need to be located off to the side of the driveway and the school gate moved to accommodate it.
- Create a safer and more organized bus and vehicular traffic circulation plan for the campus by restricting access to the driveway on the west side of the school (where kids congregate before and after school), installing three directional concrete triangles, and implementing additional signage and pavement markings to make it clearer where cars should enter and exit, and where parent and bus loading should occur. These measures are intended to provide better separation between bus and parent traffic, reduce double-stacking, and encourage parents to drop students off at the curb on the school side of the driveway. The Fort Worth ISD Transportation Department should be included in conversations about the installation of the concrete directional triangle medians to ensure that they do not adversely impact bus turning movements.

For Longer-Term Study:

- Work with staff from the Federal Highway Administration (FHWA) and TxDOT's Design/Traffic Operations Division to assess the feasibility of developing a new "spec" for continental crosswalks, so that TxDOT staff would have the capability of installing higher-visibility crosswalks on TxDOT roadways in the future, where appropriate.
- Evaluate the need for yellow flashing beacons on Camp Bowie (US 377) to warn motorists of pedestrians crossing.
- Evaluate opportunities for connections from the future Bomber Spur trail to ALA/INA and Z Boaz Park.
- Assess the feasibility of lane reductions (from six lanes to four lanes) and the installation of dedicated bicycle facilities on Camp Bowie W (SS 580) and Camp Bowie (US 377) to calm traffic, and provide dedicated bicycle facilities to increase bicyclist comfort and prevent collisions between bicyclists and distracted motorists.
- Work with property owners to conduct sidewalk and driveway spot repairs on Camp Bowie and Camp Bowie W.
- Work with property owners to close three of the driveways at the intersection of Camp Bowie W and Lackland Road.

FIGURE 7. RECOMMENDED CROSSING IMPROVEMENTS

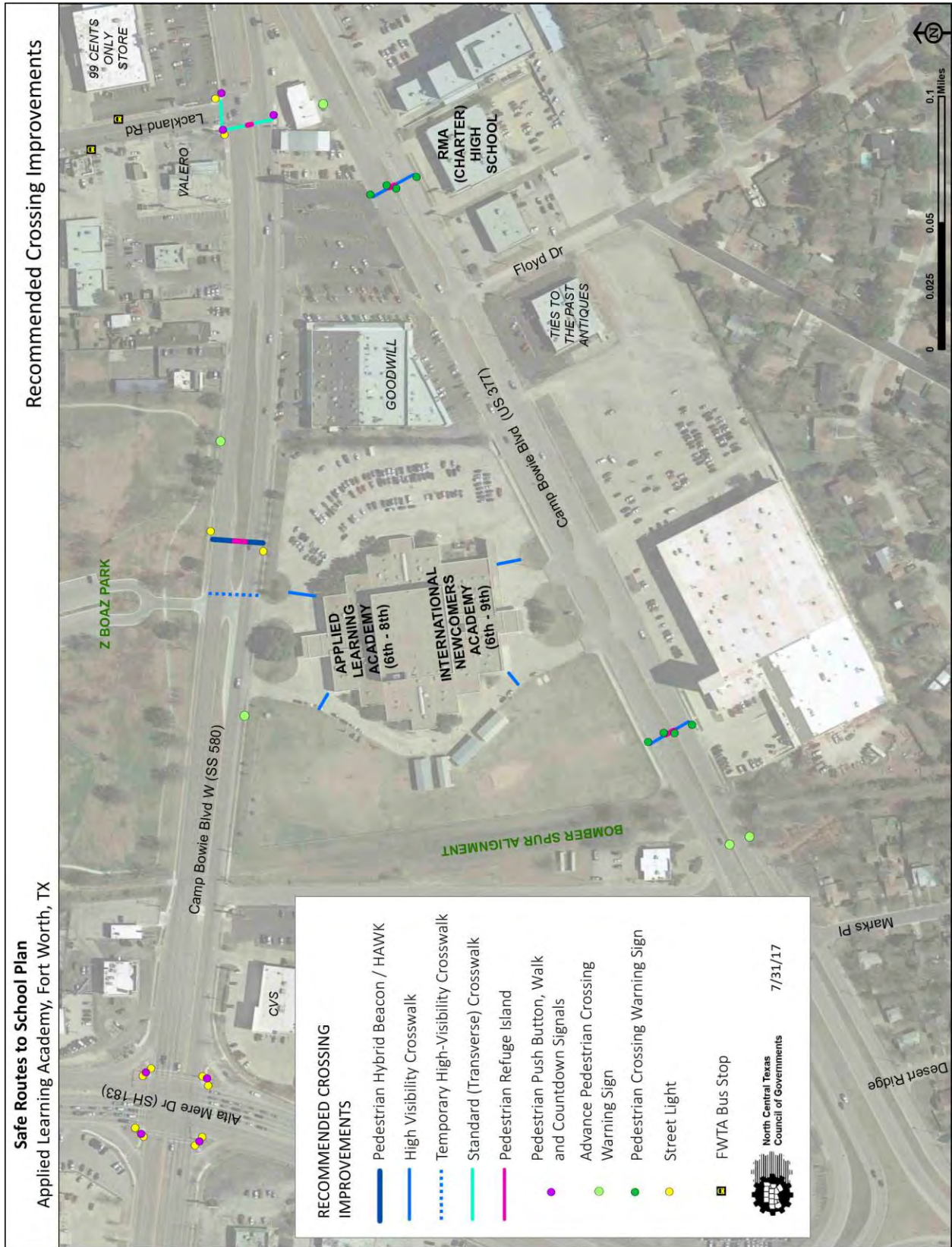


FIGURE 8. RECOMMENDED SIDEWALK AND CURB RAMP IMPROVEMENTS

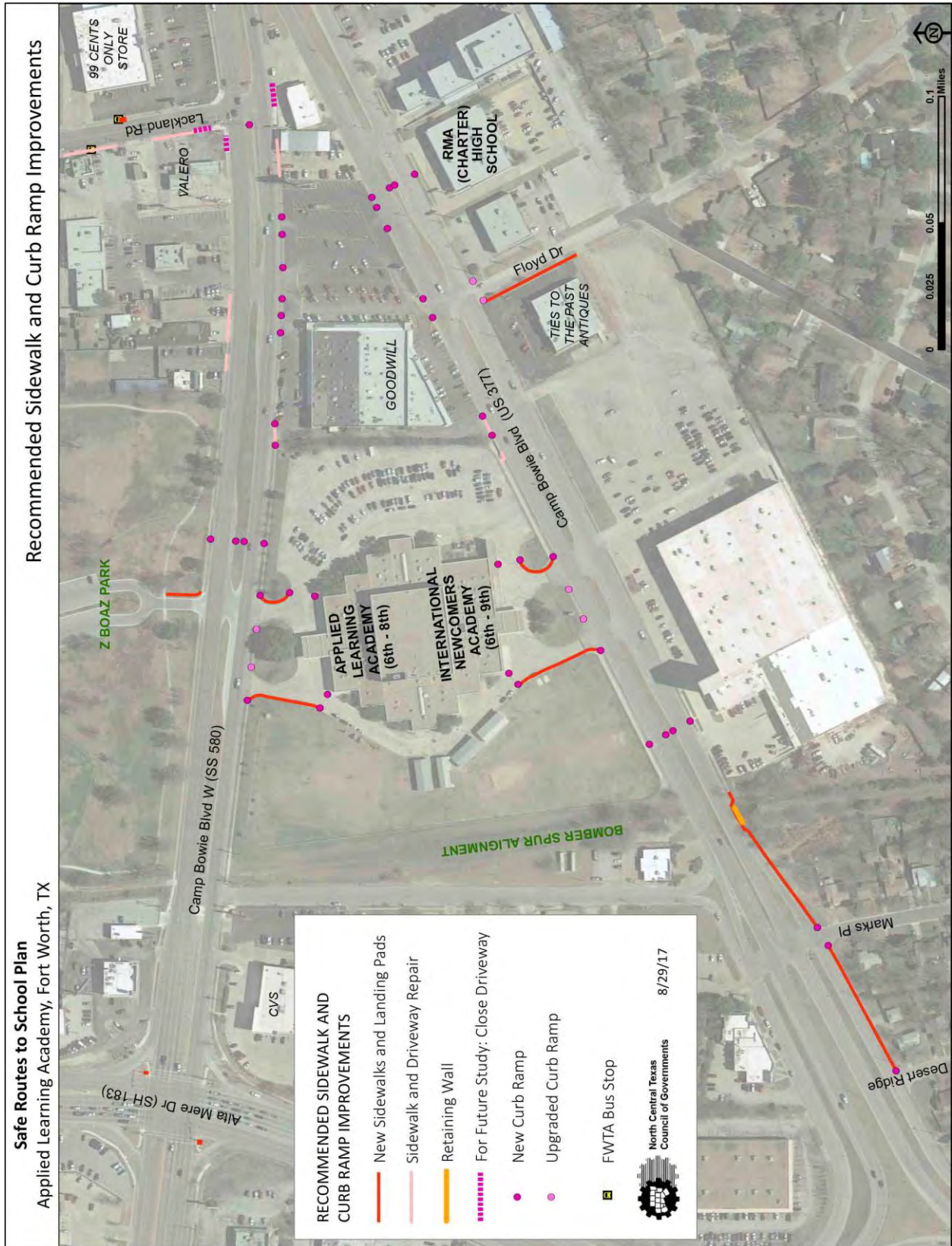


FIGURE 9. RECOMMENDED SPOT IMPROVEMENTS



FIGURE 10. RECOMMENDED CAMPUS TRAFFIC CONTROL

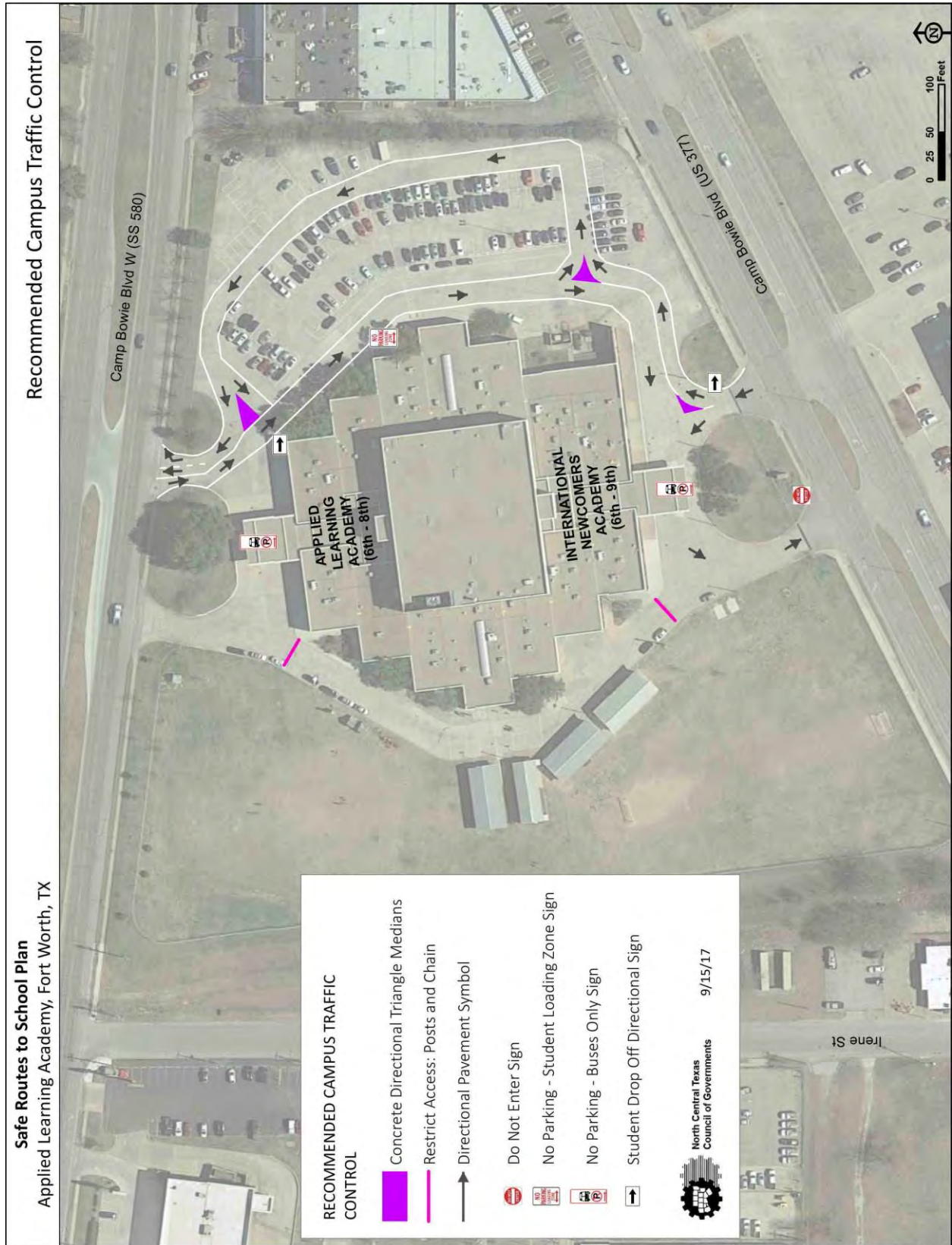


TABLE 1 - RECOMMENDED INFRASTRUCTURE IMPROVEMENTS, BY RESPONSIBLE ENTITY

Timeframe:
Short Term (0 - 2 years)
Medium Term (2-5 years)
Long Term (5+ years)

Responsible Entity	Infrastructure Type	Quantity	Approx. Length (linear feet)	Location(s)	Issue Addressed (p. 15-17)
City of Fort Worth	High Visibility Crosswalk (temporary)	1	110	Camp Bowie W (SS 580) between curb ramps at the school and park driveways	Issue 1
City of Fort Worth	High Visibility Crosswalk	1	80	Camp Bowie Blvd. (US 377) to the east of Floyd Dr.	Issue 2 and 3
City of Fort Worth	High Visibility Crosswalk	1	80	Camp Bowie Blvd. (US 377) to the west of the school driveway	Issue 4
City of Fort Worth	Advance Pedestrian Crossing Warning Sign	4	N/A	On either side of the mid-block crosswalks on Camp Bowie W (SS 580) and Camp Bowie Blvd. (US 377)	Issues 1, 2, 3, and 4
City of Fort Worth	Pedestrian Crossing Warning Sign	8	N/A	On either side of the mid-block crosswalks on Camp Bowie Blvd. (US 377)	Issues 1, 2, 3, and 4
City of Fort Worth	Trim Overgrown Vegetation	3	N/A	Various locations on Camp Bowie W (SS 580) and Camp Bowie Blvd. (US 377)	Issues 2, 3, and 4
City of Fort Worth	Sidewalks	N/A	75	Along the driveway of Z Boaz Park to connect the new mid-block crosswalk to the park's trail system	Issue 1
City of Fort Worth	Pedestrian Signalization	8	N/A	Camp Bowie W (SS 580) and Alta Mere Dr. (SH 183)	Issue 6
City of Fort Worth	Pedestrian Signalization Countdown Signals	4	N/A	Camp Bowie W (SS 580) and Lackland Rd.	Issue 2
City of Fort Worth	Relocate Sign	1	N/A	Lackland Rd. - 99 Cent Store sign	Issue 2
City of Fort Worth	Relocate Fire Hydrant, Utility Box and Pole	3	N/A	Various locations on Camp Bowie W (SS 580) between the school driveway and Lackland Rd.	Issue 2
City of Fort Worth	Sidewalks	N/A	215	West side of Floyd Dr. adjacent to the antiques store to connect to the existing sidewalk south of the store	Issue 3
City of Fort Worth	Sidewalks (and Retaining Wall)	N/A	650 (30)	South side of Camp Bowie Blvd. (US 377) from where the existing sidewalk ends at the Bomber Spur alignment west to Desert Ridge Rd. Retaining wall at the Bomber Spur alignment	Issue 4
City of Fort Worth	Pedestrian Hybrid Beacon (including crosswalk)	1	N/A	Camp Bowie W (SS 580) to the east of the school and park driveways	Issue 1

Responsible Entity	Infrastructure Type	Quantity	Approx. Length (linear feet)	Location(s)	Issue Addressed (p. 15-17)
City of Fort Worth	Pedestrian Refuge Island	1	N/A	At the pedestrian hybrid beacon on Camp Bowie W (SS 580) to the east of the school and park driveways	Issue 1
City of Fort Worth	Pedestrian Refuge Island	1	N/A	At the new crosswalk across Camp Bowie W (SS 580) at Lackland Rd.	Issue 2
City of Fort Worth	Pedestrian Refuge Islands	2	N/A	At the 2 new mid-block crosswalks on Camp Bowie Blvd. (US 377)	Issues 2, 3 and 4
City of Fort Worth	Street Lights	8	N/A	Camp Bowie W (SS 580) and Alta Mere Dr. (SH 183)	Issue 6
City of Fort Worth	Street Lights	2	N/A	At the pedestrian hybrid beacon on Camp Bowie W (SS 580) to the east of the school and park driveways	Issue 1
City of Fort Worth	Street Lights	2	N/A	Camp Bowie W (SS 580) and Lackland Rd.	Issue 2
City of Fort Worth	ADA Curb Ramps	4	N/A	At the proposed Pedestrian Hybrid Beacon on Camp Bowie W (SS 580) to the east of the school and park driveways	Issue 1
City of Fort Worth	ADA Curb Ramps	6	N/A	Along Camp Bowie Blvd. (US 377) to the east of the school driveway at the proposed mid-block crosswalk and at the intersection of Floyd Dr.	Issue 3
City of Fort Worth	ADA Curb Ramps	7	N/A	Along Camp Bowie Blvd. (US 377) to the west of the school driveway at the proposed mid-block crosswalk	Issue 4
TxDOT & City of Fort Worth	Standard ("Transverse") Crosswalks	2	150	Camp Bowie W (SS 580) and Lackland Rd.	Issue 2
TxDOT	Temporary Speed Feedback Displays	2	N/A	Camp Bowie W (SS 580)	Issue 1
FWTA & City of Fort Worth	Landing Pad	1	10	At the existing bus bench on the east side of Lackland Rd. to expand the sidewalk or relocate the bench so it does not obstruct the sidewalk	Issue 2
Fort Worth ISD	Trim Vegetation	2	N/A	Along the sidewalk on the northwest side of the school, and along the northeast school driveway so that it does not obstruct the new sidewalk	Issue 5
Fort Worth ISD	Posts and Chain (Access Restriction)	2	N/A	At the north and south entrances to the driveway along the west side of the school	Issue 5
Fort Worth ISD	Do Not Enter Sign	1	N/A	At the school's southwest driveway entrance	Issue 5
Fort Worth ISD	No Parking - Buses Only Signs	2	N/A	At the bus loading areas on the north and south sides of the school	Issue 5
Fort Worth ISD	Student Drop Off Directional Sign	2	N/A	On the northeast and southeast sides of the school	Issue 5

Responsible Entity	Infrastructure Type	Quantity	Approx. Length (linear feet)	Location(s)	Issue Addressed (p. 15-17)
Fort Worth ISD	Student Loading Zone Sign	1	N/A	On the east side of the school	Issue 5
Fort Worth ISD	Directional Pavement Symbols (Arrows)	TBD	N/A	At various locations on the school campus	Issue 5
Fort Worth ISD	Pavement Lane Markings	N/A	N/A	At various locations on the school campus	Issue 5
Fort Worth ISD	Sidewalks (New)	N/A	510	Four locations that connect the sidewalks along Camp Bowie W (SS 580) and Camp Bowie Blvd. (US 377) to the school building	Issue 5
Fort Worth ISD	High Visibility Crosswalks	4	165	Various locations on the school campus to connect the new sidewalks to the school	Issue 5
Fort Worth ISD	ADA Curb Ramps	16	N/A	Various locations on the school campus and at the school driveways	Issues 3, 4, and 5
Fort Worth ISD	Relocate Gate	1	N/A	On the east side of the school's northeast driveway, so that it does not obstruct the new sidewalk to be located along the driveway	Issue 5
Fort Worth ISD	Concrete Directional Medians	3	N/A	At various locations on the eastern side of the school campus	Issue 5
Property Owner & City of Fort Worth	Wheel Stops	18	N/A	Parking spots for Fallas Discount Stores along Camp Bowie W (SS 580)	Issue 2
Property Owner & City of Fort Worth	Sidewalk/Driveway Repair	N/A	205	Along the west side of Lackland Rd between Camp Bowie W (SS 580) and Z Boaz Pl.	Issue 2
Property Owner & City of Fort Worth	Sidewalk/Driveway Repair	N/A	255	Four locations along Camp Bowie W (SS 580) between the school/park driveways and Lackland Rd.	Issue 2
Property Owner & City of Fort Worth	Sidewalk/Driveway Repair	N/A	?	Two locations along the north side of Camp Bowie Blvd. (US 377) to the east of the school driveway	Issue 3
Property Owner & City of Fort Worth	ADA Curb Ramps	8	N/A	Eight locations along Camp Bowie W (SS 580) from the school driveway east to Lackland Rd.	Issue 2
Property Owner & City of Fort Worth	ADA Curb Ramps	6	N/A	Six locations along Camp Bowie Blvd. (US 377) from the school driveway east to the proposed mid-block crosswalk	Issue 3
Property Owners, City of Fort Worth, & TxDOT	Driveway Closure	3	TBD	At the intersection of Camp Bowie W (SS 580) and Lackland Rd.	Issue 2

TABLE 2: RECOMMENDED INFRASTRUCTURE IMPROVEMENTS BY TYPE, BY LOCATION

Sidewalks

Improvement Type	Location(s)	Approx. Length (linear feet)	Responsible Entity	Issue Addressed
Sidewalks	Along the driveway of North Z Boaz Park to connect the new mid-block crosswalk to the park's trail system	75	City of Fort Worth	Issue 1
Sidewalks	West side of Floyd Dr. adjacent to the antiques store to connect to the existing sidewalk south of the store	215	City of Fort Worth	Issue 3
Sidewalks (including a retaining wall at Bomber Spur and three new curb ramps)	South side of Camp Bowie Blvd. (US 377) from where the existing sidewalk ends at the Bomber Spur alignment west to Desert Ridge Rd.	650 (30 - retaining wall)	City of Fort Worth	Issue 4
Sidewalks (including 12 curb ramps)	Four locations that connect the sidewalks along Camp Bowie W (SS 580) and Camp Bowie Blvd. (US 377) to the school building	510	Fort Worth ISD	Issue 5

Typical Unit Costs:⁴

- New Sidewalk: \$55 (SY)
- Curb: \$20 (LF)
- Retaining Wall: \$55 (SF)
- Remove Existing Sidewalk: \$11 (SY)
- New ADA Curb Ramp: \$2,000 (EA)

Pedestrian Crossing Treatments

Improvement Type and Quantity	Location(s)	Approx. Length (linear feet)	Responsible Entity	Issue Addressed
Pedestrian Hybrid Beacon, High Visibility Crosswalk, Pedestrian Refuge Area, and Curb Ramps (4)	Camp Bowie W (SS 580) to the east of the school and park driveways	N/A	City of Fort Worth	Issue 1
High Visibility Crosswalk (temporary) (1)	Camp Bowie W (SS 580) between the school and park driveways	110	City of Fort Worth	Issue 1
High Visibility Crosswalk, Pedestrian Refuge Area, and Curb Ramps (4)	Camp Bowie Blvd (US 377) to the east of Floyd Dr.	80	City of Fort Worth	Issues 2 and 3
High Visibility Crosswalk, Pedestrian Refuge Area, and Curb Ramps (4)	Camp Bowie Blvd. (US 377) to the west of the school driveway	80	City of Fort Worth	Issue 4
Standard ("Transverse") Crosswalks (2), Pedestrian Refuge Area (1), and Curb Ramp (1)	Camp Bowie W (SS 580) and Lackland Rd.	150	City of Fort Worth & TxDOT	Issue 2
High Visibility Crosswalks (4)	Various locations on the school campus	170	Fort Worth ISD	Issue 5
Push Buttons, Walk and Countdown Signals (4)	Camp Bowie W (SS 580) and Lackland Rd.	N/A	City of Fort Worth	Issue 2

⁴ Typical Unit Prices are the 3-month (May 2017 - July 2017) statewide item average prices taken from the Texas Department of Transportation's Average Low Bid Unit Prices website: <http://www.txdot.gov/business/letting-bids/average-low-bid-unit-prices.html>

Push Buttons, Walk and Countdown Signals (8)	Camp Bowie W (SS 580) and Alta Mere Dr. (SH 183)	N/A	City of Fort Worth	Issue 6
Street Lights (8)	Camp Bowie W (SS 580) and Alta Mere Dr. (SH 183)	N/A	City of Fort Worth	Issue 6
Street Lights (2)	Camp Bowie W (SS 580) between the school and park driveways	N/A	City of Fort Worth	Issue 1
Street Lights (2)	Camp Bowie W (SS 580) and Lackland Rd.	N/A	City of Fort Worth	Issue 2

Typical Unit Costs:

- High Visibility Crosswalk: \$1,200 (crossing)
- Pedestrian Push Button (On Existing Pole): \$500 (EA)
- Pedestrian Push Button (Stand Alone): \$900 (EA)
- Walk and Countdown Signal: \$650 (EA)
- Pedestrian Hybrid Beacon/HAWK: \$125,000 (location)
- Street Light: \$5,000 (EA)

Cost Estimate to Perform a Midblock Pedestrian Crossing Warrant Study:⁵

- Fee (Including Data Collection): \$3,500 - \$4,500
- Fee (Data Collection Done by Others): \$2,500 - \$3,500

Signage and Traffic Control

Improvement Type and Quantity	Location(s)	Approx. Length (linear feet)	Responsible Entity	Issue Addressed
Advance Pedestrian Crossing Warning Signs (4)	At the mid-block crosswalks on Camp Bowie W (SS 580) and Camp Bowie Blvd. (US 377)	N/A	City of Fort Worth	Issues 1, 2, 3, and 4
Pedestrian Crossing Warning Signs (8)	At the mid-block crosswalks on Camp Bowie Blvd. (US 377)	N/A	City of Fort Worth	Issues 2, 3, and 4
Temporary Speed Feedback Displays (2)	Camp Bowie W (SS 580)	N/A	TxDOT	Issue 1
Do Not Enter Sign	At the school's southwest driveway	N/A	Fort Worth ISD	Issue 5
Buses Only Signs (2)	At the school's bus loading areas	N/A	Fort Worth ISD	Issue 5
Drop Off Directional Signs (2)	At various locations on school campus	N/A	Fort Worth ISD	Issue 5
Student Loading Zone Sign	On the east side of the school	N/A	Fort Worth ISD	Issue 5
Concrete Directional Medians (3)	At various locations on the eastern side of the school campus	N/A	Fort Worth ISD	Issue 5
Posts and Chain (2)	At the entrances to the driveway along the west side of the school	N/A	Fort Worth ISD	Issue 5
Directional Pavement Arrows	At various locations on school campus	N/A	Fort Worth ISD	Issue 5
Pavement Lane Markings	At various locations on school campus	N/A	Fort Worth ISD	Issue 5

Typical Unit Costs:

- School/Pedestrian Crossing Sign: \$1,000 EA

Spot Treatments

Improvement Type and Quantity	Location(s)	Approx. Length (linear feet)	Responsible Entity	Issue Addressed
Trim Vegetation (3)	Various locations on Camp Bowie W (SS 580) and Camp Bowie Blvd. (US 377)	N/A	City of Fort Worth	Issues 2, 3, and 4

⁵ Estimates provided by a consultant that performs warrant analyses for NCTCOG's Regional Traffic Signal Retiming Program.

Trim Vegetation (2)	On the northwest side of the school, and along the northeast school driveway so that it does not obstruct the new sidewalk	N/A	Fort Worth ISD	Issue 5
Relocate Gate	On the east side of the school's northeast driveway, so that it does not obstruct the new sidewalk to be located along the driveway	N/A	Fort Worth ISD	Issue 5
Relocate Sign	Lackland Rd. - 99 Cent Store sign	N/A	City of Fort Worth	Issue 2
Relocate Fire Hydrant, Utility Box and Pole (3)	Various locations on Camp Bowie W (SS 580) between the school and Lackland Rd.	N/A	City of Fort Worth	Issue 2
Landing Pad	At the existing bus bench on the east side of Lackland Rd. to expand the sidewalk or relocate the bench so it does not obstruct the sidewalk	10	FWTA & City of Fort Worth	Issue 2

Longer-Term Work with Nearby Property Owners

Improvement Type and Quantity	Location(s)	Approx. Length (linear feet)	Responsible Entity	Issue Addressed
Sidewalk/Driveway Repair	Along the west side of Lackland Rd. between Camp Bowie W (SS 580) and Z Boaz Pl.	205	Property Owner & City of Fort Worth	Issue 2
Sidewalk/Driveway Repair	Four locations along Camp Bowie W (SS 580) between the school/park driveways and Lackland Rd.	255	Property Owner & City of Fort Worth	Issue 2
Sidewalk/Driveway Repair	Two locations along the north side of Camp Bowie Blvd. (US 377) to the east of the school driveway	TBD	Property Owners & City of Fort Worth	Issue 3
New ADA Curb Ramps (8)	Eight locations along Camp Bowie W (SS 580) from the school driveway east to Lackland Rd.	N/A	Property Owners & City of Fort Worth	Issue 2
New ADA Curb Ramps	Six locations along Camp Bowie Blvd. (US 377) from the school driveway east to the proposed mid-block crosswalk	N/A	Property Owners & City of Fort Worth	Issue 3
Upgraded ADA Curb Ramps	Four locations at the school driveways along Camp Bowie W (SS 580) and Camp Bowie Blvd. (US 377)	N/A	Fort Worth ISD & City of Fort Worth	-
Wheel Stops (18)	Parking spots for Fallas Discount Stores along Camp Bowie W (SS 580)	N/A	Property Owner & City of Fort Worth	Issue 2
Driveway Closure (3)	At the intersection of Camp Bowie W (SS 580) and Lackland Rd.	TBD	Property Owners, City of Fort Worth, & TxDOT	Issue 2

Typical Unit Costs:

- Remove Existing Sidewalk: \$10 (SY)
- Remove Driveway: \$40 (SY)
- New Sidewalk: \$55 (SY)
- Curb: \$20 (LF)
- Replace Existing Curb Ramp: \$2,000 (EA)

Education, Enforcement, Encouragement, and Evaluation Recommendations

The following non-infrastructure programs and activities should be implemented before, during, and after infrastructure project development.

Education

Educational programs as part of SRTS efforts teach students bicycle, pedestrian, and traffic safety skills, and teach drivers how to drive safely around schools and share the road. Curriculum programs implemented in schools can teach children the basics regarding pedestrian and bicycle safety, which may also help them eventually become better drivers. Available curriculums that schools can use include the Look Out Texans school kits (www.lookouttexans.org/school-resources) and BikeTexas SafeCyclist curriculum (www.biketexas.org/education).

Applied Learning Academy and International Newcomer Academy:

Students attending ALA currently learn about walking and bicycling safety in 6th grade health class. It is recommended that education also be extended to students attending INA. Educational materials should also be provided to parents on proper school drop-off procedures, avoiding unsafe behaviors (e.g., making U-turns), and yielding to bicyclists and pedestrians. An example of this type of educational material is NCTCOG's *School Zone Safety Tips* flyer, available for download on www.LookOutTexans.org.

Enforcement

These are strategies to deter the unsafe behavior of drivers, bicyclists and pedestrians, and encourage all road users to obey traffic laws and share the road. Deterrents to unsafe behavior may include education on the unsafe behavior, increasing police presence, or installing warning signage and striping.

Applied Learning Academy and International Newcomer Academy:

The school should periodically have the School Resource Officer (SRO) assist with enforcing safe drop-off/pick-up procedures, and ensuring that motorists are yielding to pedestrians crossing the street at the crosswalks adjacent to the school.

City of Fort Worth:

The City of Fort Worth Police Department should conduct speed enforcement on Camp Bowie W (SS 580) and Camp Bowie (US 377) several times throughout the year to discourage speeding.

Encouragement

Encouragement programs serve to promote walking and biking as safe and healthy forms of transportation. Encouragement strategies are intended to be fun and generate excitement and enthusiasm about walking and bicycling.

Applied Learning Academy and International Newcomer Academy:

After implementation of the plan, the school should promote the use of the park as part of classroom activities to teachers, and the use of the FWTA bus stop on Lackland as an easy and inexpensive way to get to the attractions in the downtown cultural district for field trips. Additionally, the school could establish mileage clubs and contests to encourage students to increase their levels of activity in general, and to walk

and bicycle to school where possible. Students are asked to keep a record of the number of miles they bike or walk. Contests are generally established as an individual student monitoring their progress, as a classroom tracking their combined progress, or as schools competing against each other.

Evaluation

Evaluation of the SRTS program is important to understand the effectiveness of the program, identify improvements that are needed, and ensure the program can continue in the long term. Evaluation can measure the number of infrastructure projects constructed, the before and after shift in mode share (drive, bike, walk, bus), and whether there was a change in attitudes toward walking and bicycling. Specific evaluation metrics might include the following:

- Number and percentage of students walking and biking safely to school
- Number and percentage of students that are driven to school in a family vehicle
- Number of times throughout the year that students go to Z Boaz Park and the FWTA bus stop as part of during-school and after-school activities
- Number of students that receive walking and bicycling education
- Dollar amount of grants received and Capital Improvement Plan funding
- Number of Safe Routes to School projects constructed

It is recommended that the City of Fort Worth and ALA/INA track the implementation of the projects and programs that are recommended in this plan in a five-year follow-up report.

VI. Next Steps

Project Implementation

The recommendations identified in the previous section have been divided into those that are less costly (cost less than \$10,000) and easier to implement (do not require an intensive design effort), and those that are more costly or will require additional design efforts to prepare construction documents and bid the projects.

Short-Term Recommendations (“Quick Fixes”)

- Install pedestrian crossing signs at the following locations:
 - On Camp Bowie W on either side of the school and park driveways (one sign in each direction), and
 - On Camp Bowie Blvd. west of where Camp Bowie Blvd. and Camp Bowie W split and near Floyd Drive (one sign in each direction), and just before the Bomber Spur alignment for vehicles traveling eastbound.
- Install temporary speed feedback displays on Camp Bowie W between Alta Mere Drive and Lackland Road.
- Trim the overgrown vegetation at the following locations:
 - On the south side of the intersection of Camp Bowie W and Lackland Road, and
 - Along the sidewalk on the northwest side of the school.
- Install posts and chain to restrict vehicular access to the driveway on the west side of the school.
- Install a “Do Not Enter” sign at the entrance to the southwest school driveway.
- Conduct studies to determine whether the mid-block crosswalk and pedestrian hybrid beacon are warranted between the school and the park.
- Install a temporary high-visibility crosswalk on Camp Bowie W between the school and the park driveways.



Priority Long-Term Projects

Based on feedback from the project team meetings, the project team offers the following suggestions for priority actions that should be implemented as funding becomes available; however, this does not preclude other recommendations in this plan from being implemented as well.

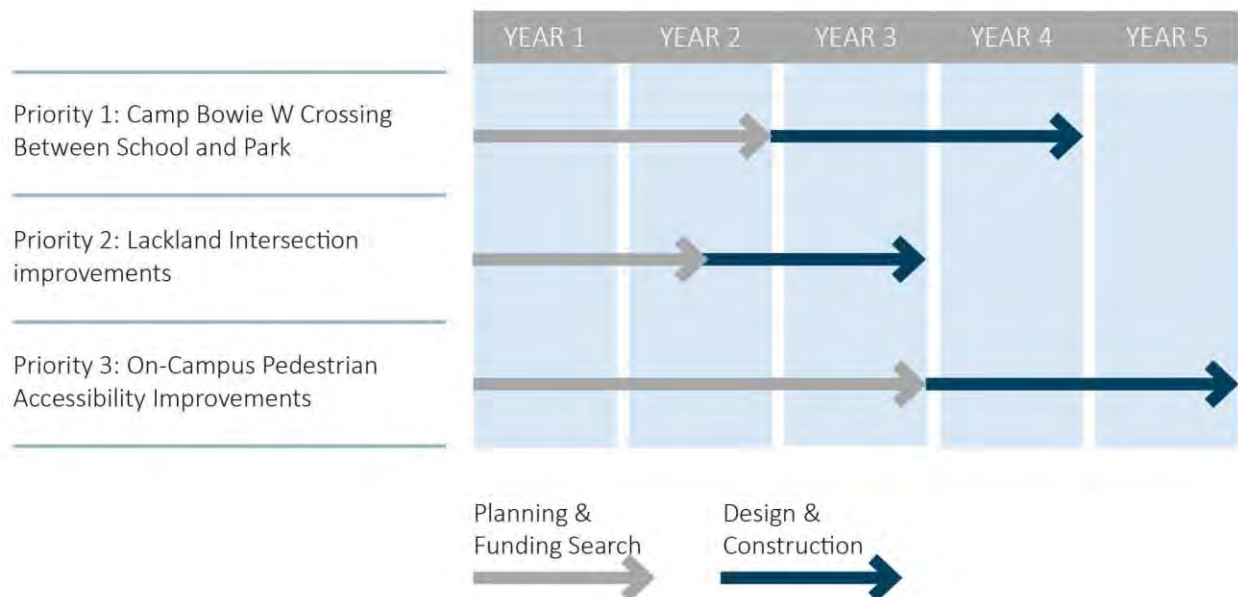
1. Improve the safety of students crossing Camp Bowie W to go to North Z Boaz Park.
 - a. Install the pedestrian hybrid beacon, high visibility crosswalk, pedestrian median refuge area, lighting, and curb ramps
2. Improve the safety and comfort for pedestrians accessing the FWTA bus stop on Lackland Road from Camp Bowie W.
 - a. Conduct studies to determine whether pedestrian signalization and crosswalks are warranted at the intersection of Camp Bowie W and Lackland Road
 - b. Install pedestrian signalization at the intersection

- c. Install crosswalks on the north and west sides of the intersection
 - d. Remove the sidewalk obstructions on Camp Bowie W and Lackland Road
3. Improve pedestrian accessibility to the ALA/INA campus.
- a. Create four new pedestrian routes into and out of the ALA/INA campus by installing new sidewalks in the excess space in the school driveways, relocating/replacing the school gate at one location to make room for the new sidewalk, and installing crosswalks to connect the sidewalks to the school building. The driveways are estimated to be 30 feet wide, and therefore have ample room to install a minimum 5 foot sidewalk in the driveway and leave two 12.5 foot lanes, eliminating the need to relocate most of the gates and build new retaining walls. Based on the proposed traffic circulation plan described below, which calls for three lanes of traffic at one driveway, the sidewalk at that location may need to be located off to the side of the driveway and the school gate moved to accommodate it.

Infrastructure Implementation Schedule

The graphic below depicts a conservative recommended implementation timeline for high priority projects.

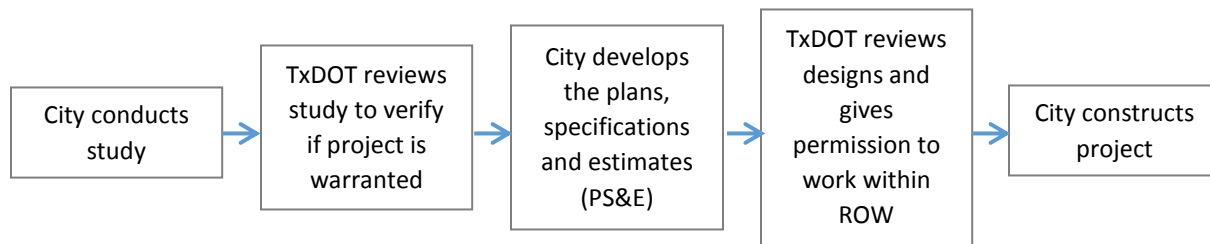
FIGURE 11: IMPLEMENTATION TIMELINE FOR HIGH PRIORITY PROJECTS



Roles and Responsibilities

ALA and INA are located on a campus owned by Fort Worth ISD, in the City of Fort Worth, and adjacent to three state roadways; therefore, the implementation of this plan will require a collaborative approach. It is recommended that ALA, INA, and Fort Worth ISD assume the role of project lead for all activities and improvements recommended to occur on the school campus, while the City of Fort Worth—in coordination with TxDOT where appropriate—assume the role of project lead for all improvements recommended to occur in the public right-of-way. Below is an example process for installing the mid-block crosswalks or pedestrian hybrid beacon on Camp Bowie W (SS 580) or Camp Bowie Blvd. (US 377):

FIGURE 12: EXAMPLE PROCESS FOR INSTALLING CROSSING IMPROVEMENTS ON STATE ROADS



NCTCOG will be responsible for coordinating with FHWA and TxDOT safety staff to encourage TxDOT’s Design/Traffic Operations Division to develop a new “spec” for continental crosswalks.

Funding Strategies

Funding is needed to plan and implement physical improvements, hold events, purchase incentives, and develop and implement educational programs and materials. Possible funding sources include, but are not limited to:

Federal Funds: Federal programs eligible for reimbursement

Federal transportation funds are available through the Transportation Alternatives Programs and Congestion Mitigation and Air Quality (CMAQ) program, administered by NCTCOG for urbanized areas with populations over 200,000. For more information on available funding and future Calls for Projects, go to www.nctcog.org/tap or www.nctcog.org/trans/air/vehicles/investments/funding/index.asp. Generally, a school or school district must team with a government entity to apply for government funding if improvements are sought outside the school perimeter.

State Funding Sources

The Highway Safety Improvement Program (HSIP) is for highway safety projects that eliminate or reduce the number of fatalities and serious injuries on all public roads. Submitted project proposals are evaluated within several categories of work, including Intersections and Pedestrians. Safety lighting at intersections is an eligible improvement under the Intersections category. Improvements to prevent pedestrian crashes, such as pedestrian signals, pedestrian hybrid beacon, pedestrian crosswalk, and sidewalks are eligible under the Pedestrian category. Projects are evaluated using a Safety Improvement Index (SII) and three years of crash data, and are selected and managed by TxDOT’s Traffic Operations Division.⁶ For more information, go to <http://www.txdot.gov/inside-txdot/forms-publications/publications/highway-safety.html>.

Local Funding Sources

The City of Fort Worth pays for sidewalks through the following:

- New sidewalks: The City pays for the installation of new sidewalks through its “Safe Pathways Program.” The number of sidewalks constructed each year is dependent upon funding availability.
- Sidewalk replacement: Under City Code the maintenance and repair of sidewalks is the responsibility of each individual property owner. Since sidewalks are typically within City right-of-way the City

⁶ <http://ftp.dot.state.tx.us/pub/txdot-info/tpp/utp/2017/utp-2017.pdf>

reserves the right to inspect sidewalks and to notify property owners to make repairs when their sidewalks become unsafe. To assist property owners with maintaining sidewalks, the City offers a cost participation program. The program allows property owners to have qualified sidewalks replaced with cost participation by the City. The current cost participation level, as set by City Council, is 25% to the property owner and 75% to the City. The City's cost participation is subject to change from time to time. To qualify for this program, the City must inspect each sidewalk and determine whether full replacement is required. The City will determine the costs and bill the property owner in advance for his/her share. When payment is received the City will schedule the replacement. The City will not participate in minor repair or routine maintenance of sidewalks—only total replacement. Where property owners fail to participate in their share of sidewalk replacement and where the City has determined the sidewalk is an immediate hazard to the general public, the City may choose to repair or remove the sidewalk and bill the property owner for the work.⁷

Health Organizations

Tarrant County Public Health

One of the goals of the Tarrant County Voices for Health program is to improve walkability surrounding Tarrant County elementary school neighborhoods. One of the ways they have worked to meet that goal is by engaging multiple partners in a Safe Routes to School effort for Christine C. Moss Elementary School. For more information: <http://access.tarrantcounty.com/en/public-health/tarrant-county-voices-for-health.html>

Cook Children's

Safe Kids Tarrant County (SKTC) is a local coalition and nationally-recognized community partnership led by Cook Children's Community Health Outreach department. SKTC is dedicated to preventing unintentional childhood injury which is the number one killer of children ages 14 and under. For more information: <https://www.cookchildrens.org/health-resources/safety/Pages/default.aspx>

Corporations and Businesses

Local corporations and businesses may be able to provide cash, prizes, and/or donations, such as printing services, through community giving or other donation programs. Parents or other members of stakeholder teams may be a good personal source for contacting companies.

⁷ City of Fort Worth. A Guide to Land Development: Section VII: Sidewalk Policy. Retrieved from http://fortworthtexas.gov/uploadedFiles/Water/Serving_You/Developers_and_New_Businesses/sidewalkVII.pdf

VII. Appendices

- A. Meeting Agendas and Minutes
- B. Walking Audit Observation Areas and Routes
- C. Audit Tool (Checklist)
- D. Engineering Improvements Glossary

A. Meeting Agendas and Minutes

Meeting Minutes

Subject	Fort Worth Applied Learning Academy Safe Routes to School Kick-Off Meeting	Date	Tuesday – February 7, 2017
Facilitator	NCTCOG	Time	2:30 pm – 3:30 pm
Location	Applied Learning Academy, 7060 Camp Bowie W Blvd., Fort Worth, TX 76116	Recorded by	Kathryn Rush
Attendees	Alice Buckley (Principal, ALA), Alexandra Checka (Teacher, ALA), three ALA students, Julia Ryan (City of Fort Worth), Chandra Muruganandham (City of Fort Worth), Phil Dupler (Fort Worth Transportation Authority), Brandy O'Quinn (Blue Zones Project), Karla Weaver (NCTCOG), Shawn Conrad (NCTCOG), and Kathryn Rush (NCTCOG)		

Meeting Purpose	The purpose of this meeting was to provide an introduction to the Safe Routes to School technical assistance that NCTCOG staff would be providing to the Applied Learning Academy in Fort Worth, as well as bring together the major stakeholders including city staff, school staff, the Fort Worth Transportation Authority, and local advocates for walking and bicycling.
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Discussion Items	
<p>Karla Weaver gave an introduction to the Safe Routes to School technical assistance project, including the scope of work and timeline.</p> <p>Three students from the Applied Learning Academy gave a presentation on why the school needs a crosswalk or school zone. The following points were made:</p> <ul style="list-style-type: none"> • The school doesn't currently have a crosswalk or school zone • It is surrounded by dangerous four-lane roads • It is a certified Blue Zones school • To get to the park across the street for recess and P.E., for science classes, and for the running club that already goes there after school, an adult must ferry students across Camp Bowie at an uncontrolled location • There are a few kids who walk to school (they estimated about five students walk from the Ridglea Hills neighborhood) <p>Principal Buckley and Ms. Checka noted that there is a school zone on Lackland Rd. to the northeast of the school even though there is no school along that road. They explained that it is because kids walk to the community center (RD Evans Community Center) on Lackland Rd.</p> <p>Ms. Checka expressed a desire to take the FWTA No. 2 bus to get to the Kimball Art Museum for field trips. Most kids ride the school bus to get to school. However, those that participate in after-school activities (e.g., running club, theatre, orchestra, etc.) are left without transportation home. One student remarked that if kids rode the bus during school for field trips or other activities, they might be more comfortable using it to get home from after-school activities.</p> <p>In anticipation of the project, the school had already conducted a survey of how students get to and from school. The results are as follows:</p> <ul style="list-style-type: none"> • 84 students take the school bus 	

- 4 students walk
- 78 students carpool or are driven by parents

One of the students mentioned that they made a video of drop-off/pick-up procedures and conditions that they could share with NCTCOG staff.

The group discussed the following questions posed by NCTCOG staff:

- Are there other people we should include in the SRTS team? Recommendations included TxDOT, Fort Worth ISD, PTA President, and Buffalo Westside Business Association.
- Present to the PTA? Principal Beckley remarked that it would have to be planned with an event, but that they would be an easy sell on the project.
- Education and outreach to students? NCTCOG staff discussed Look Out Texans, and other safety education materials available for schools. Ms. Checka mentioned that as part of FitWorth, a survey is given to students each week about how much they exercised.

NCTCOG staff requested that Principal Beckley or Ms. Checka fill out a questionnaire on existing conditions related to school operations and transportation.

NCTCOG staff went over potential dates for the next Safe Routes to School meeting—which would include a more in-depth discussion of existing conditions—and requested that attendees follow up with their preferred date.

Action Item(s)			
	Item	Responsibility	Target Completion Date
1	Schedule date of next Safe Routes to School Team Meeting	Kathryn Rush	
2	Return completed school questionnaire to Kathryn Rush	Principal Buckley or Ms. Checka	By next team meeting

Next Meeting

Date: March 3, 2017

Time: 2:30 – 3:30 pm

Location: Applied Learning Academy

Meeting Minutes

Subject	Fort Worth Applied Learning Academy Safe Routes to School Team Meeting	Date	Friday – March 3, 2017
Facilitator	NCTCOG	Time	2:30 pm – 3:30 pm
Location	Applied Learning Academy, 7060 Camp Bowie W Blvd., Fort Worth, TX 76116	Recorded by	Kathryn Rush
Attendees	Alice Buckley (Principal, ALA), Alexandra Checka (Teacher, ALA), 11 ALA students, Chandra Muruganandham (City of Fort Worth), Phil Dupler (Fort Worth Transportation Authority), Brandy O'Quinn (Blue Zones Project), Korin Adkins (TxDOT), Federico Hernandez (TxDOT), Karla Weaver (NCTCOG), Shawn Conrad (NCTCOG), and Kathryn Rush (NCTCOG)		

Meeting Purpose	The purpose of this meeting was to review existing conditions that impact the safety and comfort of walking and bicycling to and around the Applied Learning Academy/International Newcomer Academy, in order to prioritize the areas to observe as part of the safety audit.
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Discussion Items

Karla Weaver gave an introduction to the Safe Routes to School technical assistance project, including the scope of work and timeline.

Ms. Checka and the students gave an overview of why the school would like to have a crosswalk and possibly a school zone on Camp Bowie. Reasons included:

- **The school's running club goes to the park every Tuesday and Thursday**
- They want to take the T to museums in downtown Fort Worth (they noted that school buses are expensive and have to be back at the school by 2pm)
- Students will have more field trips downtown in the next few weeks

Ms. Checka recalled how she had taken students once to the bus stop on Lackland to go to the museums, and would never do it again unless there were changes. She noted that there is no push button or pedestrian signalization to get across Camp Bowie at Lackland, and that there is poor sight distance to the curve and rise of the road. There is also a lack of sidewalks, or sidewalks are obstructed on Camp Bowie near the intersection with Lackland.

Frederico Hernandez said that he had never heard of there being an issue at this school, and inquired whether they had reached out to TxDOT. Ms. Checka responded that she had gone to a public meeting, and was told that they would have never approved a school to be at that location. NCTCOG staff asked what the best way was for schools to get in touch with TxDOT, and Mr. Hernandez advised that they would need to go to TxDOT through the City.

Ms. Checka described how once North Z Boaz Community Park opened up on the north side of Camp Bowie last year, it became an extension of the school—which has limited recreational facilities. The group discussed the idea of a **mid-block crossing between the school and the park**. Mr. Hernandez said that TxDOT doesn't like to do mid-block crossings, but have installed them in the past. If that is a route that students use, that could be enough justification. Retrofitting the traffic signal at the intersection of Lackland and Bowie would be easy to do; however, there was concern **that the crosswalks at the intersection wouldn't be wide enough to accommodate all of the kids crossing at once**.

The group discussed the possibility of installing a school zone. School zones are traditionally installed where there is a designated school crossing. Most students that attend ALA and INA take the bus or are dropped off by parents. School

zones are typically active and slow traffic 30 to 45 minutes before and after the morning and afternoon school bell. Due to the staggered nature of ALA and INA's arrival and dismissal times, **the school zone would be active for more than two hours**. The school zone could also be adjusted for regular events, such as the running club. School zones are applied for through the City, but do not need city council approval. Chandra Muruganandham with the City of Fort Worth said that they may have some school speed feedback signs that would be installed at the school possibly by April.

Brandy O'Quinn discussed the need for bicycle lanes on Camp Bowie, which could be accomplished as part of the current repaving effort. The addition of bicycle lanes would provide safer accommodations for bicyclists, slow down traffic, and decrease the crossing distance for students and staff to get to the park. She mentioned that there had been several requests for bicycle lanes, and that the **City's master thoroughfare plan and complete streets policy may** recommend them on a street such as Camp Bowie. Karla Weaver discussed the need for the bicycle lanes to be in the **City's bicycle** and trail plan, in order for it to be considered by TxDOT. NCTCOG and TxDOT went over the different types of bicycle facilities, and the bicycle accommodations that TxDOT typically installs.

Kathryn Rush summarized from the kick-off meeting in February that some students walk to the school from the Ridglea Hills neighborhood south of Camp Bowie. She asked whether there are other places that students come from or go to **after school**. **The ALA students mentioned that students sometimes 'sneak out' after school** and go to the CVS down the street to get food if they are staying for an event later that night, such as band or orchestra rehearsals, theatre, etc. **Brandy O'Quinn and Ms. Checka said that poor lighting on the school campus is a safety issue at night.**

NCTCOG staff went over the scheduled date for the safety audit – March 22nd, requested volunteers from the City and TxDOT to participate, and went over what to expect. Participants will be paired up with trained COG staff members, and assigned to observe a focus area that was identified as part of this meeting.

NCTCOG staff said that they would send a follow-up email with the meeting invite for the safety audit.

Action Item(s)			
	Item	Responsibility	Target Completion Date
1	Send out invitation to participate in the safety audit	Kathryn Rush	
2	Conduct safety audit on March 22 nd	Safe Routes to School Team	

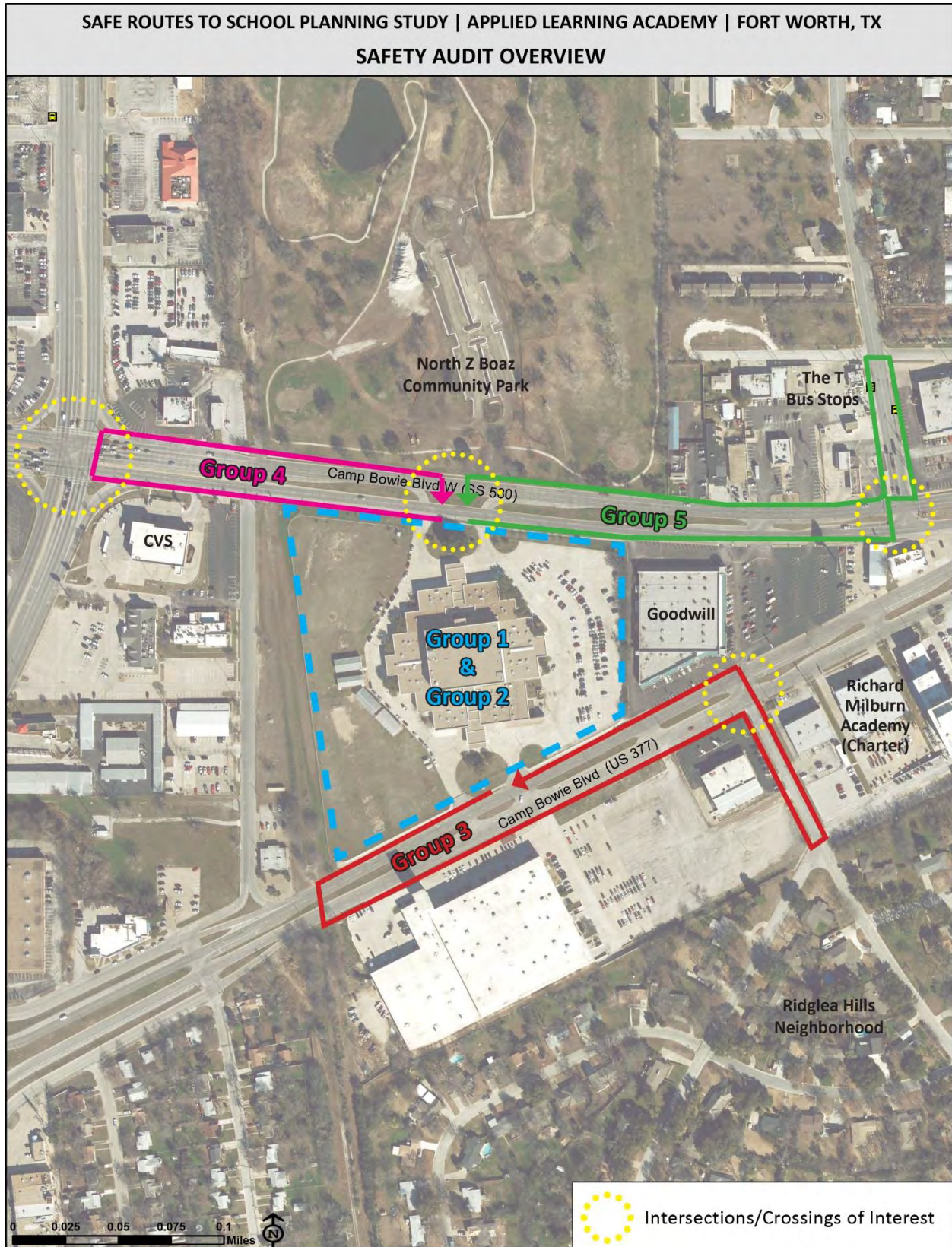
Next Meeting

Date: March 22, 2017

Time: 2:30 – 5:00 pm

Location: Applied Learning Academy

B. Walking Audit Observation Areas and Routes



C. Audit Tool (Checklist)

WALKING AND BICYCLING SCHOOL SAFETY AUDIT

Name: _____ Date: _____ Time: _____

Identify on your map the flow of vehicular and bus drop-off/pick-up traffic.

Parent and Bus Loading Areas	Yes	No	N/A	Comment
1. Are there signs indicating parent pick-up/drop-off areas?				
2. Are bus driveways physically separated from parent pick-up/drop-off areas? If not, do there seem to be conflicts between cars and buses?				
3. Is there a continuous sidewalk adjacent to the loading area(s) leading to the school entrance?				
4. Are sidewalks acceptable (e.g., are they wide enough to accommodate peak periods of pedestrian traffic, is the surface smooth, etc.)?				
5. Are there accessible ramps for wheelchairs, with a detectable warning surface?				
6. Do students have to cross parking lots or traffic lanes to get to the school from the loading area(s)?				
7. Do teachers or a safety patrol assist with the drop-off/pick-up process? Is this effective?				
8. Are loading areas well lit?				
9. Is parent loading occurring only in designated areas? If not, note the non-designated areas.				
10. *Does the designated parent loading area have an organized/moving queue? Or do parents seem to be stuck until the entire line moves?				
11. Does the parent loading/pick-up queue wrap out of the designated area, and impact adjacent streets?				
12. Are school buses staged single-file?				
13. If buses are "double-stacked" for loading areas, are measures taken for the safety of students needing to cross in front of or behind buses?				

**Questions as part of NCTCOG's Idle-Free School Zone Program.*

ADDITIONAL OBSERVATIONS:

WALKING AND BICYCLING SCHOOL SAFETY AUDIT

Name: _____ Date: _____ Time: _____

From sidewalks in the public right-of-way, how do students walking and bicycling get to the school entrance from all directions? (Only evaluate those pedestrian and bicycle facilities on school property.)

Campus Sidewalks & Bicycle Facilities	Yes	No	N/A	Comment
1. Are school gates or fences appropriately located to provide direct and convenient access for pedestrians to and from the school grounds?				
2. Are pedestrians clearly directed to crossing points?				
3. Are crossing points for pedestrians properly signed and/or marked?				
4. Where it is necessary for pedestrians to cross motor vehicle paths on the school grounds, are they assisted by such safety measures as crossing guards, safety patrols, raised or striped pedestrian walkways, etc?				
5. Are sidewalks acceptable (are they wide enough to accommodate peak periods of pedestrian traffic, is the surface smooth, etc.)?				
6. Are there any formal or informal off-street paths or cut-throughs?				
7. Is there bicycle parking on the school site?				If Yes, how many spaces are there? _____
8. Is the location of bicycle parking in reasonable proximity to the school entrance and along a sidewalk or bike path to the school?				
9. Is the bicycle parking well lit?				

ADDITIONAL OBSERVATIONS:

POTENTIAL IMPROVEMENTS:

WALKING AND BICYCLING SCHOOL SAFETY AUDIT

Name: _____ Date: _____ Time: _____

Intersections

Intersection Cross Streets: _____

Issue	Yes	No	N/A	Comment
1. What is the traffic control device? (2-way stop, 4-way stop, traffic light, etc.)				
2. Are there pedestrian walk signals for all crossing directions?				
3. Does the push button work and is it reachable by a person in a wheelchair?				
4. Is there sufficient crossing time, and a countdown feature?				
5. Are there accessible curb ramps for wheelchair access on all corners?				Number of curb ramps per corner: _____
6. Do the ramps have detectable warning strips?				
7. Presence and condition of the pedestrian landing area (5x5-ft. flat section at the top of the ramp).				
8. Are there painted crosswalks for all crossing directions?				
9. Are the curb ramps contained within the crosswalk markings?				
10. Are crosswalks wide enough to accommodate peak pedestrian traffic?				
11. Is the visibility of the crosswalks adequate during the day and night?				
12. Are there barriers present that could prevent a driver from seeing a child preparing to cross the street (e.g., utility boxes, vegetation, parked vehicles, signage, or fences)?				
13. Do cars park or wait, blocking the vision of other motorists, bicyclists, and pedestrians?				
14. Is the pedestrian crossing adequately lit?				
15. Do wide curb radii lengthen pedestrian crossing distances and encourage high-speed right turns?				
16. Do turning vehicles pose a hazard to pedestrians crossing the street?				

ADDITIONAL OBSERVATIONS:

PROPOSED IMPROVEMENTS:

WALKING AND BICYCLING SCHOOL SAFETY AUDIT

Name: _____ Date: _____ Time: _____

Streets

Street Name: _____ Posted Speed Limit: _____

Relative Traffic Volume Level (*High, Medium, or Low): _____

*High would refer to busy arterials, Medium to collectors or high volume residential streets, Low to quiet residential streets.

Issue	Yes	No	N/A	Comment
1. Are sidewalks present and continuous without gaps?				
2. Are sidewalks well maintained (free of cracks and holes, standing water, debris)?				
3. Are sidewalks obstructed (poles, vegetation, etc.)?				
4. Are sidewalks wide enough to accommodate peak periods of pedestrian traffic?				
5. Are there accessible ramps for wheelchairs?				
6. Are there any conflicts between bicycles and pedestrians on the sidewalks?				
7. Are the sidewalks adequately lit for pedestrians to see, be seen, and feel safe?				
8. Does the number of driveways intersecting sidewalks make the route dangerous or undesirable for pedestrian travel?				
9. Is there a buffer between the sidewalk and adjacent travel lane?				
10. What is the landscaping like? Is it conducive to promoting walking and biking? Does it block sidewalks or ability to see traffic?				
11. Is traffic speed or volume a problem for pedestrians? Please describe.				
12. Are there abandoned buildings or cars along the route to school?				
13. Does (actual or suspected) crime take place in the area?				

ADDITIONAL OBSERVATIONS:

PROPOSED IMPROVEMENTS:

WALKING AND BICYCLING SCHOOL SAFETY AUDIT

Name: _____ Date: _____ Time: _____

Pedestrian and Motorist Observed Behaviors

Issue	Yes	No	Location / Comment
1. Number of pedestrians you observe: _____			
2. Number of bicyclists you observe: _____			
3. Are pedestrians walking in the street?			
4. Are students or other pedestrians running across the street?			
5. Are students entering the street or travel lanes from between parked cars?			
6. Do students or other pedestrians cross the street at places other than marked crosswalks? If so, where?			
7. Are there any informal off-street paths or cut-throughs (i.e., "goat trails")?			
8. Are bicyclists following proper traffic laws (e.g., stopping at traffic signals and stop signs)?			
9. Are drivers blocking crosswalks?			
10. Do motorists yield to pedestrians in crosswalks?			
11. Do drivers obey the posted speed limit?			
12. Did you witness any conflicts, collisions or near-collisions between motorists and pedestrians?			

ADDITIONAL OBSERVATIONS:

PROPOSED SOLUTIONS:

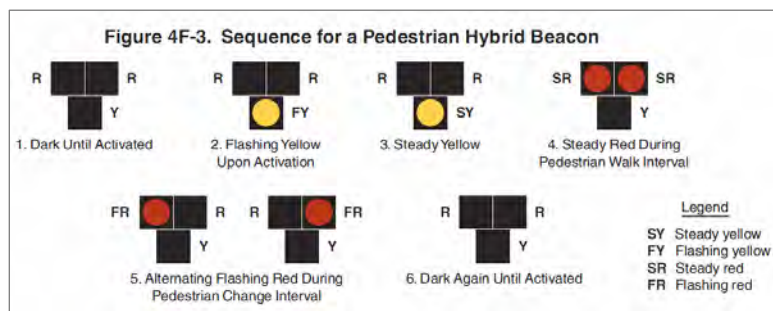
D. Engineering Improvements Glossary

Pedestrian Hybrid Beacon

The pedestrian hybrid beacon (PHB) (also known as the High intensity Activated crossWalk (or HAWK)) is a pedestrian-activated warning device located on the roadside or on mast arms over midblock pedestrian crossings. The PHB is an intermediate option between the operational requirements and effects of a rectangular rapid flash beacon and a full pedestrian signal because it provides a positive stop control in areas without the high pedestrian traffic volumes that typically warrant the installation of a signal. The installation of a PHB has been shown to reduce pedestrian crashes by 69 percent, and total roadway crashes by up to 29 percent.⁸ In a recent TRB study of crash modification factors (a multiplicative factor used to compute the expected number of crashes after implementing a given countermeasure) for four crossing treatment types—pedestrian hybrid beacons, rectangular rapid flashing beacons, pedestrian refuge areas, and advanced yield or stop signs and pavement markings—pedestrian hybrid beacons were found to be the most effective treatment (CMF of 0.45).⁹



Source: FHWA, Texas MUTCD



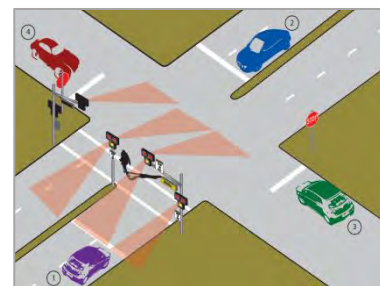
Coordination with Adjacent Signals: There are advantages and disadvantages of coordinating PHBs with adjacent traffic signals. It may be problematic if cycle lengths are long and result in long waits for the WALK signal. Long wait times will encourage pedestrians to cross early when they find a gap in traffic, thus increasing unnecessary delays for motorists when the PHB stops traffic.

PHBs and Intersections: The 2009 MUTCD Section 4F.02, paragraph 04 provides the following Guidance (not a Standard):

“When an engineering study finds that installation of a pedestrian hybrid beacon is justified, then the PHB should be installed at least 100 feet from side streets or driveways controlled by STOP or YIELD signs.”

That Guidance was not a part of the research conducted by TTI that was used to justify the inclusion of the PHB in the 2009 MUTCD. All of the PHBs studied in Tucson were at local street intersections, because that is where pedestrians typically cross. Placing a PHB at a location where pedestrians do not cross will likely not be used. The NCUTCD unanimously voted to remove the Guidance in Section 4F.02 at the June 2011 annual meeting for the publication of the next MUTCD. A new Standard is proposed to read:

“If a pedestrian hybrid beacon is installed at or immediately adjacent to an intersection with a side road, vehicular traffic on the side road shall be controlled by STOP signs.”

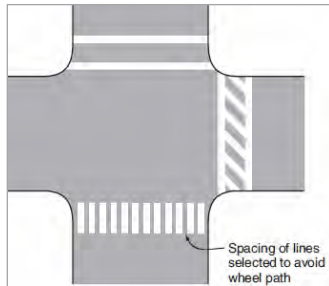


⁸ Federal Highway Administration. (2017). Pedestrian hybrid beacon. FHWA-SA-12-012. Retrieved from https://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_012.cfm

⁹ National Academies of Sciences, Engineering, and Medicine. 2017. *Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24627>.

Crosswalks

Marked crosswalks alert drivers approaching and traveling through the intersection of the potential presence of pedestrians. Marked crosswalks also direct legal pedestrian movements to desirable crossing points (Texas MUTCD, Section 3B.18). Shown below clockwise from the top are the three primary types of crosswalk markings: transverse, diagonal, and longitudinal (also known as continental or ladder).



Source: Texas MUTCD

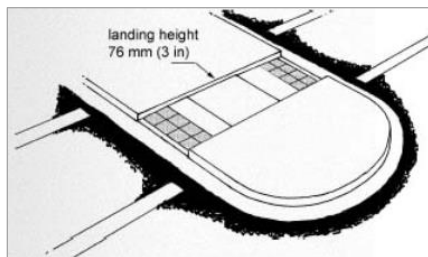


Continental Crosswalk (Source: FHWA)

The types of crosswalk markings can be classified as basic or high visibility. Basic crosswalks consist of two transverse lines. High visibility markings consist of diagonal or longitudinal lines parallel to traffic flow with or without transverse lines. An FHWA study found that continental markings were detected at about twice the distance upstream as transverse markings during daytime conditions, which meant that drivers traveling at 30 mph had eight additional seconds of awareness of crossing pedestrians.¹⁰ High-visibility crosswalk markings (such as longitudinal or continental markings) should be installed for all crosswalks at non-intersection locations, areas with lots of pedestrian traffic, and intersections with conflicts between vehicular and pedestrian movements.

Median Pedestrian Refuge Island

Refuge Islands provide pedestrians and bicyclists a refuge area within intersection and midblock crossings, and on wide thoroughfares, provide a location for pedestrians or bicyclists to wait partially through their crossing. They also break up crosswalks at complex multilane intersections into shorter and easier sections for pedestrians to cross. By reducing the crosswalk distance, refuge islands reduce pedestrian exposure to vehicle traffic, thereby improving safety and comfort (ITE, 2010, *Designing Walkable Urban Thoroughfares*). In a recent study of crash modification factors (CMF) for four crossing treatment types, pedestrian refuge areas were found to have a CMF of 0.68.⁷



Source: FHWA, 2017

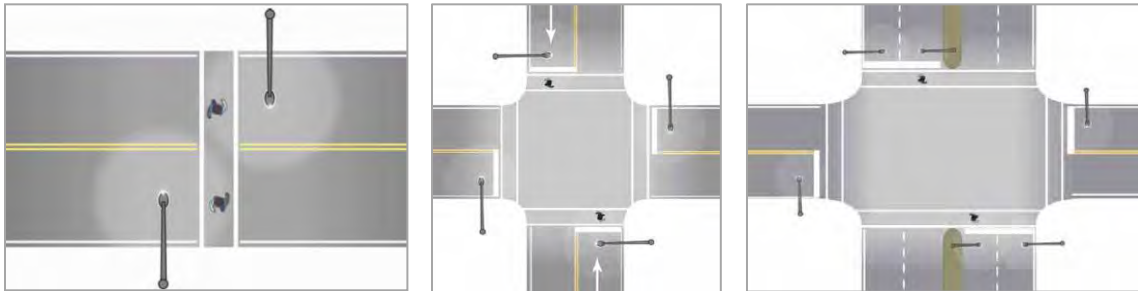


Source: FHWA

¹⁰ Fitzpatrick, Kay; Chrysler, Susan T.; Irigavarapu, Vichika; & Sug Park, Eun. (2010). Crosswalk marking field visibility study. FHWA-HRT-10-068. Federal Highway Administration, McLean, VA.

Crosswalk Lighting

Driving or walking on, or across, a roadway is less safe in darkness than in a lighted area, due to the reduced visibility of hazards and pedestrians. Studies have shown a reduction in nighttime fatal crashes of up to 60 percent, and a 45 percent reduction of pedestrian injury crashes with the use of roadway lighting.

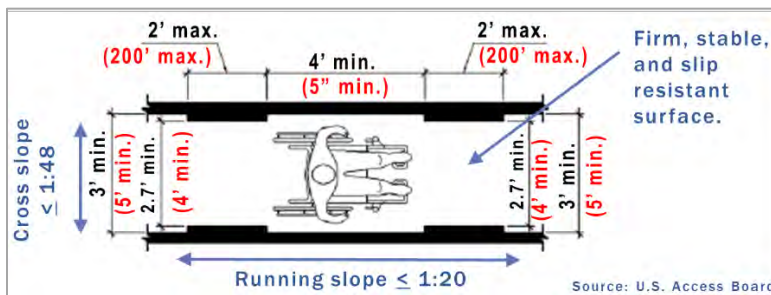


Source: Informational Report on Lighting Design for Midblock Crosswalks (FHWA-HRT-08-053)

The luminaire should be located so that it provides 20 lux at 5 ft. above the pavement at crosswalks. It should be located at least 3 m (10 ft.) from the crosswalk. If possible, the subsequent luminaire in a continuous lighting layout along a given direction of travel should be located at least 10 times farther away from the crosswalk; this mitigates the changes in background luminance associated with the viewing perspective. Similarly, a color difference between continuous roadway lighting and crosswalk lighting may highlight the presence of the crosswalk.

At intersections, 30 vertical lux is considered a conservative estimate of the lighting level for adequate visibility. In order to provide for positive contrast of the pedestrian, the luminaires should be located away from the intersection to provide light on the approach side of the pedestrian.

ADA Accessible Routes



Crossing Signs

In a recent national study of crash modification factors (CMF) for four crossing treatment types (a multiplicative factor used to compute the expected number of crashes after implementing a given countermeasure), advanced yield or stop signs and pavement markings were found to have a CMF of 0.75



Source: Texas MUTCD (R1-5 and R1-5a)

Source: FHWA

Traffic Control Signs

Examples of the traffic control signs that may be used on the school campus to improve student safety and travel flow are shown below.



Source: Texas MUTCD

Concrete Directional Triangle Median

The painted directional triangles in the following images are examples of the traffic control effect intended by the proposed concrete directional triangle median.



Source: Google Earth



Source: Google Earth