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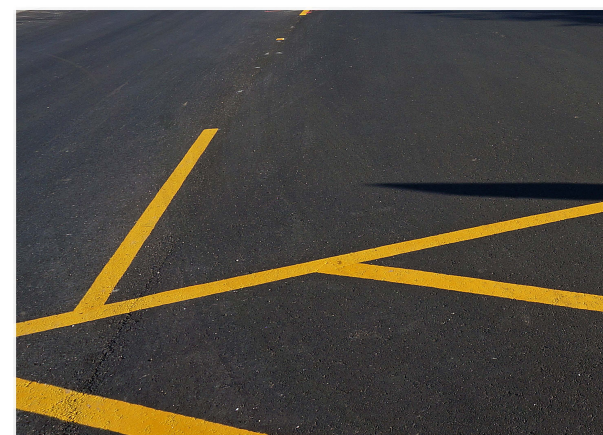
ADOT



Yuma School District One Multimodal Planning Study

MPD 002-14

Final Report



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SafeRoutes





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1. INTRODUCTION

According to the National Highway and Transportation Safety Administration (NHTSA) Safe Routes to School Toolkit, thirty years ago, more than 66 percent of all children walked to school. Walking or biking to school gives children a sense of freedom and responsibility, allows them to enjoy the fresh air, and provides opportunities to get to know their neighborhood while arriving at school alert, refreshed, and ready to start their day. Yet most American children are denied this experience; in fact today only 13 percent of American children walk or bike to school.

Why won't parents allow their children to walk or bike to school? In Marin County, California, nine pilot schools found that more than 50 percent of students lived within a mile of school yet 80 percent arrived by car. Fear of crime and "stranger danger" worried many parents, but by far, the most common concerns were traffic safety. Parents stated that the roads were too congested, the traffic moved too fast, crossing conditions were unsafe, and sidewalks and pathways were inadequate. Marin County is certainly not unique in these observations. These trends and sentiments are experienced in Yuma and many places throughout the United States.



Locally, traffic has generally increased in the Yuma area due to the growth of the overall community, which has created more traffic on city streets. However, many schools are located in mature neighborhoods where certain roadways were not in all cases designed to accommodate the volume of vehicles being experienced today. Compounding this issue, recent research indicates that nationally, 20 to 25 percent of morning traffic is due to parents driving their children to school. As a result, traffic congestion has increased around schools, prompting even more parents to drive their children to school. Additionally, two wage-earner families have fewer parents who





are able to send their child off to school in the morning or to wait in the afternoon for them to get home. There are more two car families than in the past and more parents have the means to drive to and from school, as well as after school activities.

The *Yuma School District One Multimodal Planning Study* is designed to evaluate existing pedestrian, bicycle, vehicle and bus route facilities of 15 school campuses and their surrounding neighborhoods. This study will assist the Yuma School District One ("District") in assessing existing deficiencies that can be mitigated in order to help provide a safer and more efficient travel route for all modes of transportation to and from school.

As part of this multimodal planning study, a Safe Routes to School program will be developed that tackles the challenges of planning for a safe and inviting environment for pedestrians and bicyclists. A successful Safe Routes to School program integrates health, fitness, traffic relief, environmental awareness, and safety under one program. It is an opportunity to work closely with the school, the community, and the local government to create a healthy lifestyle for children and a safer, cleaner environment for everyone.



Collaboration with the City of Yuma, who own and maintain the city streets, will also be essential to the success of this study since it is likely that suggested infrastructure enhancements will occur in city rights-of-way. In addition to suggested improvements on school properties, all suggested improvements are intended to reduce congestion around schools, slow vehicle speeds, and provide opportunities for safe crossings, bicycle facilities, and sidewalks.

1.1. Study Need & Purpose

Yuma School District One is one of the oldest and largest school districts in Yuma, encompassing a sizeable portion of the Yuma city limits. The District currently has 9,240 students in 12 elementary and 5 middle schools and covers several low to moderate income areas. The year round population in Yuma has increased by 65% over the last 20 years and by about 20% in the last decade. This substantial increase in population both seasonal and permanent residents, puts a strain on the existing infrastructure and presents some interesting challenges.



Many students in the District attend their neighborhood schools, however, there are a number of students that attend schools outside of their neighborhoods and require transportation. This is particularly true of residents of the Marine Corps Air Station Yuma (MCAS).

During peak drop-off/pick-up times, school buses, parents, and faculty converge at school parking lots creating congestion and unsafe environments for students walking and biking to school. To alleviate some of the vehicular congestion at schools and to foster an active and healthy lifestyle, the District encourages students that live close-by to either walk or bike to school. However, a challenge to implement this plan more fervently is the lack of supporting infrastructure such as bicycle, pedestrian or shared use facilities and safe street crossings in the vicinity of several of the schools.

The Arizona Department of Transportation (ADOT), through the Planning Assistance for Rural Areas (PARA) program, awarded funding to Yuma School District One to prepare this Multimodal Planning Study. The purpose of the PARA program is to assist counties, cities, towns, and tribal communities in rural Arizona to address a broad range of multimodal transportation planning issues, including roadway and non-motorized modes of travel.



The *Yuma School District One Multimodal Planning Study* will focus on the comprehensive evaluation of the daily transportation habits, needs and safety concerns of 15 elementary and middle schools in the Yuma School District One boundaries. Two schools in the District – James D. Price and Desert Mesa schools were not identified as priorities and are therefore not included as part of this study.

The purpose of the *Yuma School District One Multimodal Planning Study* is to enable Yuma School District One to evaluate the existing student drop off/pick up areas, bus routes, pedestrian routes and bicycle routes in close proximity to each of the 15 school campus locations in order to enhance the safety and convenience of access for all modes of transportation for each school site. The Safe Routes to School contributions are a component of this study and are designed to remedy physical design limitations and educate and encourage students to walk and bicycle to school.



1.2. Study Objectives

Study objectives for the *Yuma School District One Multimodal Planning Study* are identified below. These objectives were identified by the Technical Advisory Committee to guide the consultant's efforts over the course of this study. Study objectives include:

1. Conduct extensive field investigations of the 15 school sites to inventory existing conditions relating to traffic congestion, student pick up/drop off areas, bicycle routes and pedestrian routes.
2. Conduct a survey of students at each school to determine existing mode split (bus, parent drop-off/pick-up in vehicle, walk, bicycle, other) patterns for each school site.
3. Conduct a survey of students, parents and each school principal to obtain anecdotal evidence of issues or concerns relating to the daily travel to and from school for each mode of transportation.
4. Evaluate, recommend or introduce changes to existing Safe Routes to Schools (SRTS) education and encouragement programs currently used by the District.
5. Identify traffic congestion, bus route, pedestrian and bicycle route deficiencies in terms of safety and system connectivity for each school site.
6. Identify improvement projects that will address the identified deficiencies.
7. Prioritize the suggested improvement projects into Priority 1, 2 and 3 (high/medium/low) for each school.
8. Develop planning-level cost estimates for select improvements.
9. Develop a Final Report that includes the plan of improvements and final recommendations.

2. NATIONAL TRENDS & BARRIERS TO WALKING AND BIKING TO SCHOOL

2.1. Trends in Walking and Bicycling to School from 2007-2012

2.1.1. Study Background

The National Center for Safe Routes to School (SRTS) introduced, *Shifting Modes: A Comparative Analysis of SRTS Program Elements and Travel Mode Outcomes*. This report used data from local program coordinator interviews and travel tally data to examine how school-level planning and implementation of the SRTS program related to the percentage of students who would walk or bike to and from school (National Center for Safe Routes to School, 2013). The *Shifting Modes* report found that the most successful schools implementing the SRTS program had four key elements:



- The schools had identified an in-school leader
- Activities were conducted to reinforce walking and bicycling
- Generation of parent support
- Policies that supported walking and bicycling to/from school

The National Center did a three-part *Getting Results* series that showcased dozens of local programs that have reduced vehicle traffic, speeding and distracted drivers near schools and documented the increase in walking and bicycling using the parent surveys and travel tally provided by the National Center (National Center for Safe Routes to School, 2013). After collecting data between 2007 and 2012 the National Center accumulated more than 525,000 parent surveys from over 4,700 schools located in all states and The District of Columbia (National Center for Safe Routes to School, 2013).

2.1.2. Trends in School Travel Patterns

Between 2007 and 2012, walking to and from school has increased from 12.4% to 15.7% in the morning and from 15.8% to 19.7% (a 25% increase) in the afternoon (National Center for Safe Routes to School, 2013). With the data collected over several years, the National Center could explore the trends in school travel patterns and the parental perceptions related to walking and bicycling to/from school.

2.1.3. Distance from School

The largest change between travel modes occurred with students who lived one mile away from school, with an increase in walking and a decrease in busing. Expectedly, the distance from school would impact the number of students who would walk/bike to and from school (National Center for Safe Routes to School, 2013). The National Center found that schools that were one mile or less away, walking *to* school was more likely to occur in a city compared to a suburb, town, or rural area, although walking home *from* school was more likely to happen in cities and suburbs. Older students were most likely to walk and bike to and from school, and older boys were more than twice as likely to bike to/from school compared to girls. Older students who rode the bus to and from school are more likely to attend schools in towns and rural areas (National Center for Safe Routes to School, 2013).

In schools between one and two miles away, walking was more common among students who attended a low-income school in city or suburban areas, walking home from school was similar to those students who attended schools in cities, suburbs, towns and rural areas. More students who attended medium- and high-income schools would bike to school in cities. Boys who lived one to two miles away from school were more likely to bike to and from school than girls (National Center for Safe Routes to School, 2013). Students attending school more than two miles away and attending low-income schools in cities, suburbs, and towns equally walked to school. Older male students who attend a higher-income school in cities are most likely to bike to and from school; however, riding a bus to and from school was more likely at



high-income schools that are located outside of cities (National Center for Safe Routes to School, 2013). Table 1 below shows the increase and decrease of what mode of transportation students have used in grades Kindergarten through 8th grade, and the distance to arrive or depart school comparing years 2007-08 and 2012.

Table 1: Distance from School – 2007 - 2012

Mode Type	Time of Day	One Mile to School	One & Two Miles to School	More than Two Miles
Walking to/from school	Morning	23.8% to 29.4%	2.6% to 3.3%	0.6% to 0.7%
	Afternoon	29.4% to 35.5%	4.6% to 6%	1.6% to 1.9%
Bicycling to/from school	Morning	4.4% to 3.7%	2%	0.3%
	Afternoon			
Riding School Bus to and from school	Morning	16.9% to 12.2%	40.8% to 34.7%	52.9% to 44.9%
	Afternoon	21.5% to 15.4%	48.2% to 40.3%	58.8% to 51.1%
Family Vehicle to and from school	Morning	54%	53.8% to 56.1%	45.5% to 52.7%
	Afternoon	44%	44.1% to 50.9%	38.4% to 45.9%
Other	Morning	0.8% to 0.6%	0.7% to 0.5%	0.6% to 0.4%
	Afternoon	1.3% to 0.9%	1.1% to 0.9%	0.9% to 0.38%

Source: National Center for Safe Routes to School, 2013

2.1.4. Travel Patterns Among Male and Female Students

With increasing parental awareness of how healthy and fun daily walks are for students, together with the school support, more male and female students are walking between home and school. Older boys and girls who attend a medium- to high-income level school are on average more likely to walk and bike to and from school (National Center for Safe Routes to School, 2013). Table 2 below illustrates the change in the travel patterns of how male and female students arrive or depart school in 2007 to 2012. Table 3 below illustrates that there was an increase in students walking and taking a family car, whereas there was a decrease in riding a bike and taking the bus.

Table 2: Travel Patterns Among Male and Female Students – 2007 - 2012

Mode Type	Time of Day	Female	Male
Walking to/from school	Morning	12.3% to 15.5%	12.5% to 15.8%
	Afternoon	15.8% to 19.3%	15.9% to 19.6%
Bicycling to/from school	Morning	1.8% to 1.6%	3.6% to 3%
	Afternoon	1.7% to 1.5%	3.5% to 2.9%
Riding School Bus to and from school	Morning	32.9% to 25.8%	32.9% to 26.9%
	Afternoon	38.4% to 30.6%	38.4% to 30.4%
Family Vehicle to and from school	Morning	52.3% to 56.7%	50.2% to 53.6%
	Afternoon	43% to 47.8%	40.9% to 46.1%
Other	Morning	0.7% to 0.5%	0.8% to 0.6%
	Afternoon	1.1% to 0.8%	1.3% to 1%

Source: National Center for Safe Routes to School, 2013



Table 3: School Arrival and Departure Patterns by Grade – 2007 - 2012

Mode Type	Time of Day	Grades K-2	Grades 3-5	Grades 6-8
Walking to/from school	Morning	12.5% to 15.7%	13.6% to 16.6%	9.7% to 13.5%
	Afternoon	14% to 17.1%	17.7% to 20.3%	15.7% to 20.6%
Bicycling to/from school	Morning	1.6% to 1.3%	3.3% to 2.8%	3.4% to 3.9%
	Afternoon	1.5% to 1.3%	3.3% to 2.7%	3.4% to 3.9%
Riding School Bus to and from school	Morning	29.6% to 24.6%	32.3% to 25.8%	41.3% to 29.1%
	Afternoon	34.7% to 29.2%	38.3% to 31%	46.6% to 36.2%
Family Vehicle to and from school	Morning	55.7% to 57.7%	50.1% to 54.4%	44.6% to 51.2%
	Afternoon	48.6% to 51.3%	39.5% to 45.1%	33.2% to 38.7%
Other	Morning	0.6% to 0.7%	0.7% to 0.4%	1.0% to 0.3%
	Afternoon	1.2% to 1.1%	1.2% to 0.8%	1.5% to 0.7%

Source: National Center for Safe Routes to School, 2013

2.1.5. School-Level Income

Low-income students whose parents had positive opinions on walking and biking to school were more likely to either walk or bike to school in cities. Children attending medium-income schools, walking to school was more common in the morning especially for students who attend schools in the cities, where in the afternoon more students would walk home attending cities or suburb schools (National Center for Safe Routes to School, 2013). In the high-income schools students who lived closer and attended schools located in the city were more likely to walk to school since the location of the school played less of a predictive role. However, in high-income schools busing to and from school was more common outside of cities (National Center for Safe Routes to School, 2013). Table 4 below shows the increase and decrease of arrival and departure by school-level income 2007-08 to 2012.

Table 4: Travel Patterns Based Upon School-Level Income 2007 - 2012

Mode Type	Time of Day	Low-Income	Medium-Income	High-Income
Walking to/from school between	Morning	21.8% to 27.6%	10.6% to 13.2%	11.6% to 14.2%
	Afternoon	24.6% to 31.5%	14.2% to 17.4%	15.1% to 17.3%
Bicycling between home and school	Morning	0.9% to 0.7%	2% to 1.7%	3.5% to 3%
	Afternoon	0.9% to 0.7%	2% to 1.7%	3.4% to 3%
Riding School Bus to and from school	Morning	22.4% to 16.3%	32.7% to 24.5%	35.4% to 29.7%
	Afternoon	25.5% to 19.4%	38.8% to 30.1%	41.1% to 34.5%
Family Vehicle to and from school	Morning	54.1% to 54.6%	54.1% to 56.7%	48.7% to 52.6%
	Afternoon	47.4% to 47.1%	44% to 49.9%	39.2% to 44.4%
Other	Morning	0.9% to 0.8%	0.6% to 0.5%	0.8% to 0.5%
	Afternoon	1.6% to 1.3%	4% to 0.9%	1.2% to 0.8%

Source: National Center for Safe Routes to School, 2013



2.1.6. Parental Perception of Walking and Bicycling

Between 2007 and 2012 the parental perception of school travel had remained stable with one exception, that the student's school had supported walking and bicycling between home and school. During the time of this study, the percentage of parents that had supported the schools support for walking and bicycling to school increased from 24.9% to 33% (National Center for Safe Routes to School, 2013). More support of active travel was seen by parents whose children were younger, who lived closer to school, who walked to and from school and those that attended a city school. Parents who had more support and encouraged a positive approach to active travel were likely to report the schools having support for walking and bicycling to school (National Center for Safe Routes to School, 2013).

2.1.7. Conclusion

At the end of the five year study, the student active travel patterns and the parental perception of walking and bicycling to school have increased positively from 2007 through 2012. There were more students walking to and from school from data-submitted schools and parents believed walking and bicycling was a possible commute option. Although bicycling had decreased over the study period, in areas where the school is a reasonable walking distance; taking the bus to school has decreased significantly and walking to school has increased (National Center for Safe Routes to School, 2013). The study also suggests that working with school officials to build a SRTS program have seen gains in walking and encourage families to consider this alternative mode of travel to schools (National Center for Safe Routes to School, 2013).

3. SAFE ROUTES TO SCHOOL PROGRAMS

Safe Routes to School funding and assistance will play a large role in implementing the recommended physical (engineering) and programmatic improvements. Therefore, the purpose and objectives of the federal Safe Routes to School program, the state Safe Routes to School program through ADOT, and local existing efforts will be considered in developing the Yuma District One Safe Routes to Schools Plan.

3.1. National Programs

3.1.1. Federal Funding: Transportation Alternatives and Safe Routes to School Under MAP-21

In July 2012, Congress passed a new transportation bill: Moving Ahead for Progress in the 21st Century (MAP-21). MAP-21 eliminated dedicated Safe Routes to School (SRTS) funds as of October 2012. SRTS activities are now eligible to compete for federal funding alongside



other programs, including the Transportation Enhancements program and Recreational Trails program, as part of a new program called Transportation Alternatives.

Approximately \$800 million a year in Transportation Alternatives funds flows to the state DOTs and large metropolitan planning organizations (MPOs) throughout the country. Arizona's Transportation Alternatives apportionment is \$6.5M for 2014. Half of these funds are allocated by population to metropolitan planning organizations and rural areas. Within each of those areas, funding will be allocated to individual projects and programs through grant competitions. As allowed under MAP-21, Arizona has chosen to transfer the remaining portion of the Transportation Alternatives fund to the Recreational Trails Program and 25 percent to other programs.

The Transportation Alternatives projects funded through MAP-21 require applicants to match up to 20 percent of the project costs. Each state may provide some funding to offset the applicant's required match. In Arizona, the applicant must provide a 5.7 percent match (cash only) and the state will provide the remaining 14.3 percent.

The federal Safe Routes to School (SRTS) program was initially created as part of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users Act (SAFETEA-LU) in 2005. The program provided funds to states to improve the ability of elementary and middle school students to walk and bicycle to school safely. The purpose of the SRTS program was:

1. to enable and encourage children, including those with disabilities, to walk and bicycle to school;
2. to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and
3. To facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (Grades K-8).

The federal Safe Routes to School Program that began under SAFETEA-LU was funded at \$1.162 billion for fiscal years 2005-2012. These dedicated funds have benefited more than 13,000 schools. Funds apportioned for the SRTS Program prior to MAP-21 are available until expended. The State of Arizona has less than \$5M in previous SRTS Program funds unexpended, but has not allocated these remaining funds to projects.

3.2. State Programs

ADOT administers the state Safe Routes to School program, providing funding for local projects and programs and assisting local jurisdictions through training and other technical



assistance. ADOT has a Safe Routes to School Coordinator who serves as a central point of contact for the state.

Prior to MAP-21, the ADOT SRTS program continued the three main purposes defined in the federal SRTS program under SAFETEA-LU. ADOT is currently preparing guidance on the new Transportation Alternatives program that SRTS funds will be allocated under. This guidance is anticipated from ADOT in the summer of 2014. The guidance will be instructive to defining or re-defining program funding sources, authority, eligible projects, Cycle 7/8 funding guidance, etc.

Until guidance is provided, the following information is reflective of the SRTS program under SAFETEA-LU funds. There may be changes to the types of projects and criteria used for SRTS funding as ADOT implements the new requirements of MAP-21.

There are two main criteria for eligibility for ADOT SRTS funding:

1. Program funding is only for elementary and middle schools.
2. Programs and projects must be within a two-mile radius of the school.

ADOT provides funding for projects/programs in four categories as specified below:

Infrastructure Projects - Infrastructure projects include the planning, design, and construction of infrastructure-related projects that will substantially improve the ability of students to walk and bicycle to school. Infrastructure projects may include, but are not limited to:

- Sidewalk improvements - new sidewalks, sidewalk widening, sidewalk gap closures, sidewalk repairs, curbs, gutters, and curb ramps.
- Traffic calming and speed reduction improvements - roundabouts, bulb-outs, speed humps, raised crossings, raised intersections, median refuges, narrowed traffic lanes, lane reductions, full- or half-street closures, automated speed enforcement, and variable speed limits.
- Pedestrian and bicycle crossing improvements - crossings, median refuges, raised crossings, raised intersections, traffic control devices (including new or upgraded traffic signals, pavement markings, traffic stripes, in-roadway crossing lights, flashing beacons, bicycle-sensitive signal actuation devices, pedestrian countdown signals, permanent vehicle speed feedback signs, and pedestrian activated signal upgrades), and sight distance improvements.
- On-street bicycle facilities - new or upgraded bicycle lanes, widened outside lanes or roadway shoulders, geometric improvements, turning lanes, channelization and roadway realignment, traffic signs, and pavement markings.



- Off-street bicycle and pedestrian facilities - exclusive multi-use bicycle and pedestrian trails and pathways that are separated from a roadway.
- Secure bicycle parking facilities - bicycle parking racks, bicycle lockers, designated areas with safety lighting, and covered bicycle shelters. Traffic diversion improvements: separation of pedestrians and bicycles from vehicular traffic adjacent to school facilities, and traffic diversion away from school zones or designated routes to a school.

Non-infrastructure Projects - Non-infrastructure projects are non-construction activities that focus on three areas of effort:

- Education – in-classroom, campus-wide or community wide efforts to educate students, parents and motorists about safe practices, the health effects of walking and biking, the impact to the environment, and the broad range of transportation choices.
- Enforcement - ensuring that traffic laws are obeyed (including enforcement of speeds, yielding to pedestrians in crossings and proper walking and bicycling behaviors, and initiating community enforcement activities.
- Encouragement - bike, pedestrian and school-related giveaways and other materials that encourage biking and walking to schools.

Materials and Regional Support Program - The MRSP serves state, regional, and local government agencies, as well as non-profit organizations by providing funding for purchasing educational and encouragement materials for use in regional, countywide, or school district wide SRTS programs, and providing funding for statewide, countywide, or school district wide workshops relating to SRTS. All activities must be statewide, countywide, school district wide, or otherwise regional in scope.

Planning Assistance - The Planning Assistance Program is for small or resource-poor elementary and middle schools, school districts, non-profit organizations, and communities. The intent of the program is to provide the local jurisdiction or group technical resources needed to plan and implement their own SRTS projects. As a condition of the program, the applicant will apply for the next cycle of SRTS infrastructure and/or non-infrastructure funding.

3.2.1. ADOT Traffic Safety to School Guidelines

In order to promote uniformity throughout Arizona and improve safety conditions around schools, ADOT has developed guidelines for traffic safety in school areas. This document provides guidance on key components that promote safety, from the siting of schools to the design of pedestrian overpasses. There are five sections within the guidelines that are most applicable to the conditions at and around the schools in Yuma:



- Section 4 On-Site Safety
- Section 5 Off-Site Safety
- Section 7 Arizona School Crossing Controls
- Section 8 Pedestrian Traffic Signals
- Section 9 Pedestrian Overpasses and Underpasses

These sections will be referenced when identifying potential improvements and developing design guidelines as part of future phases of this Study.

3.3. Local Programs

Local Safe Routes to School efforts provide for on-the-ground implementation of programs and projects. Efforts are typically through partnerships of the local school district and city or county jurisdiction offsite of the school campuses.

3.3.1. Yuma School District One

Yuma School District One does not have a formal safe routes to school, walk to school or bike to school program. In the past, the School District has on occasion organized individual activities to promote safe and healthy places for children to walk and bicycle to school. For example, in 2007, the School District organized a parade to school at Desert Mesa Elementary School and O.C. Johnson Elementary School.

3.3.2. City of Yuma School Resource Officer Program

The School Resource Officer (SRO) Program is a collaboration of resources between the Yuma Police Department, YUHSD #70, Yuma School District One, and the Crane School District in an effort to reduce crime, drug abuse, violence, and provide a safe school environment. The goal of an SRO is to become ingrained in the lives of the youth of the community. The SRO is specifically trained to perform three roles: law enforcement officer, law-related counselor, and law-related education teacher. The SRO's, while not specifically tasked with traffic enforcement, do monitor the areas around the schools and assist with providing safe environments for students to walk and bike to/from school. SRO's are currently serving at the following Yuma schools within the project study area:

- Fourth Avenue Junior High School
- Gila Vista Junior High School
- Woodard Junior High School
- Castle Dome Middle School
- Ron Watson Middle School



4. PLANNING PROCESS & PROCEDURES

The steps in the planning process for the *Yuma School District One Multimodal Planning Study* can be described in multiple phases that include:

1. Project Initiation Meetings
2. Technical Advisory Committee Meetings (3)
3. Data Collection & Analysis Including:
 - Review and Analysis of Existing Reports and Studies
 - Field Review and Safety Audit
 - Demographic and Socioeconomic Analysis
 - Student Mode Split Surveys
 - Principal/School Official Interviews
 - Law Enforcement Observations
 - Parent Surveys
 - Youth Workshops
 - Roadway Traffic Counts
 - Crash Data
4. Working Paper #1: *Evaluation and Deficiency Report*
5. Working Paper #2: *Safe Routes and Multimodal Recommendations and Action Plan*
6. Final Report Preparation

The *Yuma School District One Multimodal Planning Study* partnered with the National Center for Safe Routes to School (“National Center”). The National Center provides a resource directory of useful tools and suggestions for transportation consultants to utilize as a guide in conducting a multimodal analysis of daily school travel patterns. This guidance is instructive, but in many respects is general in nature, so the *Yuma School District One Multimodal Planning Study* project team developed a modified work plan (within the ADOT PARA framework) to account for the unique aspects of collecting and analyzing data for 15 school sites. Previous consultant transportation and SRTS experiences along with the National Center for Safe Routes to School guidance came together to identify what methods and data types would be collected and reported for the *Yuma School District One Multimodal Planning Study*.

A brief summary of some of the study components is found below.



4.1. Project Initiation Meeting

This meeting on August 29, 2013 was conducted to gain additional clarification on the District’s needs and expectations for the study, understand what data was readily available versus what needed to be obtained and discuss early concepts of the project approach. Representatives from ADOT, Yuma School District One, the City of Yuma, and the project consultant team were in attendance for the project initiation meeting and to establish a communication protocol for the project.

4.2. Technical Advisory Committee Meetings

A Technical Advisory Committee (TAC) was established to guide and coordinate the consultant’s efforts throughout the course of the Yuma School District One Multimodal Planning Study process. TAC input and oversight was instrumental to developing a plan that achieves plan objectives. The following agencies and individuals are included on the TAC for the Yuma School District One Multimodal Planning Study. We wish to thank each of them for their guidance and support throughout the process:

Table 5: Technical Advisory Committee

AGENCY	CONTACT
AZ Dept. of Transportation	Justin Feek, Multimodal Planning Division, Project Manager
AZ Dept. of Transportation	Gabriella Kemp, ADOT Communications, Yuma District
AZ Dept. of Transportation	Thor Anderson, Environmental Planning Group
AZ Dept. of Transportation	Paul Patane, ADOT Yuma District Engineer
Yuma School District One	Kerry Jones, CFO (Ret.), Local Lead Contact Person
Yuma School District One	Ron Schepers, Transportation Manager
Yuma School District One	Raul Galaviz, Director of Maintenance
Yuma School District One	Esperanza Rodriguez, CFO
City of Yuma	Kevin Eatherly, CIP Project Manager
City of Yuma	Ana Lugo, CIP Project Manager
YMPO	Charles Gutierrez
Principle Engineering Group	Triguna Israel
Bicycle Enthusiast & Community Advocate	Gene Dalbey



The TAC met on three occasions over the course of the planning process:

October 21, 2013 - Project Kick Off and Data Collection Review

March 12, 2014 – Review and Discussion of Working Paper #1

July 1, 2014 - Review and Discussion of Working Paper #2

4.3. Review and Analysis of Existing Reports and Studies

The consultant team obtained and reviewed numerous local studies that may influence the *Yuma School District One Multimodal Planning Study* in some capacity. Additional national and state resource guides were utilized for this study; however the local studies are the focus of the analysis because they may have a direct impact on future recommendations. Please see Working Paper #1 for a complete list and summary of the relevant studies reviewed.

4.4. Field Review & Safety Audit

Over the course of four months from October 2013 to January 2014, the consultant team conducted (5) independent field reviews and safety audits of District school sites and their surrounding neighborhoods. Field reviews and safety audits provided the opportunity to physically observe and specifically identify the walking and bicycling barriers and challenges that students face using these modes of transportation. The audits also evaluate existing bus routes, bus loading zones and family vehicle loading zones and procedures. The field review was supported by aerial photography analysis and discussions with family members dropping off or picking up their child.

Consultant observations from these field reviews were used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The National Center has developed field review evaluation forms that were used by the project consultant. These forms provide consultant guidance for the systematic evaluation of neighborhood roadway segments, intersections and for school sites.

Appendix E: Site Audits

Neighborhood Site Audit: Intersection and Crosswalk Evaluation

Please use only one form for each intersection/crosswalk evaluation. Make extra copies of this page to conduct a thorough analysis of all necessary streets.

Date: _____ Day: _____ Time: _____ Weather Conditions: _____

North-South Street
Name: _____
Curb-to-curb width: _____ feet
Number of Lanes Northbound: _____
Number of Lanes Southbound: _____
Posted Speed Limit: _____
Observed Speed (if available): _____
Average Daily Traffic (ADT): _____

East-West Street
Name: _____
Curb-to-curb width: _____ feet
Number of Lanes Eastbound: _____
Number of Lanes Westbound: _____
Posted Speed Limit: _____
Observed Speed (if available): _____
Average Daily Traffic (ADT): _____

How is the intersection controlled? (circle one) Two-Way Stop Four-Way Stop Traffic Signal
Other (please describe): _____

How is the crosswalk controlled? (circle one) Flashing Light Pedestrian Activated Signal Yield Sign
No Control Other (please describe): _____

Intersection and Marked Crosswalk Evaluation

Circle One	Comments and Potential Solutions
Do drivers yield to pedestrians at the crosswalk?	Yes No
Do drivers run red lights or increase speed to catch green lights?	Yes No
Are there a high percentage of turning movements and right turns on red?	Yes No
Is there a high volume of truck traffic (>more than 1 in every 20 vehicles)?	Yes No
Are there blind curves approaching the intersection?	Yes No
Are there places where pedestrians are not visible to drivers at the intersection crossings?	Yes No
Do parked cars, junction boxes, or vegetation block the pedestrian's view of traffic while waiting to cross?	Yes No
Have crashes occurred at this location? If yes, note if pedestrians or bicycles were involved.	Yes No
Are school zone signs, flashers, or overhead signs present?	Yes No
Are there pedestrian crossing signals?	Yes No
Are there marked crosswalks?	Yes No
Does the intersection have a sidewalk leading up to it on all sides?	Yes No
Do the intersection sidewalks have accessible curb ramps?	Yes No

Neighborhood Site Audit: Roadway Segment Evaluation

Please use only one form for each roadway segment evaluation. Make extra copies of this page to conduct a thorough analysis of all necessary streets.

Date: _____ Day: _____ Time: _____ Weather Conditions: _____

General Roadway Segment Information

Name of street: _____ Between: _____ and _____
Length of segment: _____ feet Curb-to-curb width: _____ feet
Posted Speed Limit: _____ No. of Lanes: _____
Observed Speed (if available): _____ Average Daily Traffic (ADT): _____

Roadway Segment

Circle One	Comments and Potential Solutions
Are there a large number of driveways intersecting the roadway?	Yes No
Do drivers yield to pedestrians at marked mid-block crossings and driveways?	Yes No
Is there a high volume of truck traffic (>more than 1 in every 20 vehicles)?	Yes No
Are there blind curves?	Yes No
Are there locations where pedestrians are not visible to drivers at crosswalks or other places? If yes, indicate locations.	Yes No
Have auto crashes occurred on this road? If yes, indicate locations.	Yes No
Have auto-pedestrian collisions occurred on this road? If yes, indicate locations.	Yes No
Are there school zone signs, flashers, or overhead signs present?	Yes No
Are there locations along the roadway where students cross that are not marked by crosswalks? If yes, indicate location.	Yes No
Is the road too wide to cross during the walk phase of the signal (WALK + flashing DON'T WALK)?	Yes No
Are there raised medians where pedestrians can wait in the middle of the roadway?	Yes No
Are there features such as speed bumps or speed tables to slow traffic?	Yes No

School Site Audit

The following site audit should be conducted to help determine walking and bicycling conditions on and adjacent to school property. This audit will help in discovering potential areas for design improvements and increased safety at the school. Members of the School Traffic Safety Team and the principal should fill out the following audit during prime school hours in order to see how students get to and from school. Please take a map of the school grounds with you on the audit for orientation and note taking. If a map is unavailable, please construct one as you go to help you identify areas for improvements later on in the Safe Routes to School process.

Date: _____ Day: _____ Time: _____ Weather Conditions: _____

1. Sidewalks and Bicycle Routes

a. Are current pedestrian and bicycle routes separated from motor vehicles by the use of sidewalks or separated pathways?	Yes	No	NA
b. Do signs indicate the bicycle route?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Are marked bicycle lanes present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Are sidewalks and bicycle paths regularly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Are the sidewalks continuous and without gaps?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Are there accessible ramps for wheel chair access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Do the ramps have tactile warning strips or textured concrete?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Are the sidewalks lighted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Are the sidewalks used regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Are there obstructions in the sidewalk (e.g., utility poles, mailboxes, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Please describe any other problem areas regarding the school's sidewalk system and existing bicycle routes in the space provided below.			

2. Student Drop-off Areas

a. Are they designed so that students exiting and entering cars are protected from other vehicles?	Yes	No	NA
b. Do they have a continuous raised curb separating vehicles from pedestrians?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Are there accessible curb ramps for wheel chair access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Do the ramps have tactile warning strips or textured concrete?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Are there posted vehicular signs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Are there posted pedestrian signs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Is the area lighted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Does traffic seem to move freely without congestion and backup?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Please describe any other problems within the student drop-off area in the space provided below.			

Figure 1: Field Review & Safety Audit Sheets

Please refer to Working Paper #1 for a detailed review of the field review and safety audit for each of the school sites.

4.5. Student Mode Split Surveys

Utilizing a "tally sheet" template developed by the National Center for Safe Routes to School, the consultant collaborated with District staff to conduct a mode split survey of District students in November 2013.

The purpose of the mode split survey is to provide direct feedback from students on how they typically arrive and depart school each day. Teachers at each grade level were provided with the tally sheet forms and by a simple show of hands, students were asked once in the morning and again in the afternoon over a three day period (in order to establish consistency) how they arrived and departed school. The consultant team prepared initial findings which are detailed within each school summary report.

The National Center processed the surveys for inclusion into their national database and for the benefit of this project. For brevity, this lengthy report is supplied within the *Yuma District One Multimodal Planning Study* supplemental data material.

Safe Routes to School Students Arrival and Departure Tally Sheet

Teacher's First Name: _____ Teacher's Last Name: _____

Grade: (K, 1, 2, 3, 4, 5) _____ Monday's Date (month, day, year) _____ Number of Students Enrolled in Class: _____

0 1 2 3 4 5

Step 1: Please conduct these counts on two of the following three days: Tuesday, Wednesday, or Thursday. (Three days would provide better data if counted.)
 • Please do not conduct these counts on Mondays or Fridays.
 • Before asking your students to raise their hands, please read through all possible answer choices so they will know their choices. Each student may only answer once.
 • Ask your students as a group the question "How did you arrive at school today?"
 • Then, read each answer choice and record the number of students that raised their hands for each. **Please just one character or number in each box.**
 • Follow the same procedure for the question: "How do you plan to leave for home after school?"
 • You can conduct the counts once per day but during the count please ask students both the school arrival and departure questions.
 • Please conduct this count regardless of weather conditions (i.e., ask these questions on rainy days, too).

Step 2: AM - "How did you arrive at school today?" Record the number of hands for each answer.
 PM - "How do you plan to leave for home after school?" Record the number of hands for each answer.

Key	Weather	Student Tally	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
	Is sunny or rainy or overcast (circle one)	Number in class when students raise hands				Only with Children from Children from your family other families		City bus, subway, etc.	Skate-board, roller, etc.
Sample AM		20	2	3	8	2	2	2	1
Sample PM		18	1	2	8	1	2	2	1
Tues. AM									
Tues. PM									
Wed. AM									
Wed. PM									
Thurs. AM									
Thurs. PM									

Please list any disruptions to these counts or any unusual travel conditions to/from the school on the days of the tally.

Figure 2: Student Mode Split Survey



4.6. Principal/School Official Interviews

A very important component of the data collection process was to interview each individual school principal and/or other school representatives. These individuals are the true local experts as they witness first-hand the daily challenges and safety concerns associated with the morning drop off and afternoon pick up routines as well as walking habits and bus loading issues at their respective schools. Over the course of December 2013 and January 2014, the consultant conducted in-person and telephonic interviews with various school representatives.

4.7. Law Enforcement Observations

The consultant interviewed representatives from the City of Yuma Police Department regarding efforts and ongoing issues relating to traffic enforcement for Yuma School District One schools. Also discussed were the role and use of School Resource Officers. The project wishes to thank Lieutenant Steve Soho and Sergeant Dan Hartman of the Yuma Police Department for their guidance, input and support of this project. Common complaints received, typical traffic violations/safety concerns associated with many of the schools are included in this study. A brief summary of their observations for each school can be found in Section F of Working Paper #1.

4.8. Parent Surveys

Utilizing a standard and informative parent survey template developed by the National Center for Safe Routes to School, the consultant collaborated with District staff to conduct a take-home survey of parents at each of the schools included in this study. In December of 2013, the consultant team distributed the survey form in both English and Spanish formats to District administration.

Each school made the required number of paper copies of the surveys for students to take home to their parents or family members. The survey asks parents or caregivers how their child typically gets to and from



Yuma School District One Multimodal Planning Study
Questions/Talking Points for Principal Interviews

General

Review the made split survey findings of each school prior to interviewing principal

1. What year was the school built?
2. How long have you been the principal at this school?
3. How many students are enrolled at this school?
4. What is the forecast for enrollment over the next 10 years - increase, decrease, remain constant?
5. Confirm grade levels at school. Elementary seems to be K-5 and Jr. High is 6-8.
6. Are there enough parking spaces for staff/school personnel?
7. Do all grade levels begin their school day and end their school day at the same time or is their staggered start/end times? Is Kindergarten all day, 1/2 day or both?
8. How many cross walks are in close proximity to your school? Are their crossing guards stationed at each one?
9. Are there frequent traffic violations (speeding, school zone, etc) near your school?
10. Does your school have a School Resource Officer? If not, are there any plans to get one?
11. Has this school recently participated in any Safe Routes to Schools program or activity - national walk to school day, bicycle rodeo, safety assembly, etc.?

Bus Service

The District's current policy is to only bus students outside of a 1.5 mile radius or those children with special needs ("moderate support"). That said, how many buses drop off in the morning and pick up in the afternoon? Do the buses access the school using the same driveway as parent drop off and pick up? Is there a daily conflict between the two?

Morning Drop Off

1. How early do parent begin to drop kids off prior to the morning bell?
2. Does this utilize school staff to direct vehicle traffic in the morning?
3. Is there a peak traffic jam in the morning or is it minimal because parents drop their kids off at staggered times?
4. What are the biggest challenges to the morning drop off cycle?
5. Are there spots on campus where there are pedestrian/vehicle conflicts?

Figure 3: Principal/School Official Interview Questions

Parent Survey About Walking and Biking to School

Dear Parent or Caregiver,
Your child's school wants to learn your thoughts about children walking and biking to school. This survey will take about 5 - 10 minutes to complete. We ask that each family complete only one survey per school your children attend. If more than one child from a school brings a survey home, please fill out the survey for the child with the next birthday from today's date.
After you have completed this survey, send it back to the school with your child or give it to the teacher. Your responses will be kept confidential and neither your name nor your child's name will be associated with any results.
Thank you for participating in this survey!

+ CAPITAL LETTERS ONLY - BLUE OR BLACK INK ONLY +

School Name: _____

1. What is the grade of the child who brought home this survey? Grade (PK,K,1,2,3,)

2. Is the child who brought home this survey male or female? Male Female

3. How many children do you have in Kindergarten through 8th grade?

4. What is the street intersection nearest your home? (Provide the names of two intersecting streets)
_____ and _____

Place a clear "X" inside box. If you make a mistake, fill the entire box, and then mark the correct box.

5. How far does your child live from school?

Less than 1/4 mile 1/4 mile up to 1 mile More than 2 miles
 1/4 mile up to 1/2 mile 1 mile up to 2 miles Don't know

Place a clear "X" inside box. If you make a mistake, fill the entire box, and then mark the correct box.

6. On most days, how does your child arrive and leave for school? (Select one choice per column, mark box with X)

Arrive at school	Leave from school
<input type="checkbox"/> Walk	<input type="checkbox"/> Walk
<input type="checkbox"/> Bike	<input type="checkbox"/> Bike
<input type="checkbox"/> School Bus	<input type="checkbox"/> School Bus
<input type="checkbox"/> Family vehicle (only children in your family)	<input type="checkbox"/> Family vehicle (only children in your family)
<input type="checkbox"/> Carpool (Children from other families)	<input type="checkbox"/> Carpool (Children from other families)
<input type="checkbox"/> Transit (city bus, subway, etc.)	<input type="checkbox"/> Transit (city bus, subway, etc.)
<input type="checkbox"/> Other (skateboard, scooter, inline skates, etc.)	<input type="checkbox"/> Other (skateboard, scooter, inline skates, etc.)

Place a clear "X" inside box. If you make a mistake, fill the entire box, and then mark the correct box.

7. How long does it normally take your child to get to/from school? (Select one choice per column, mark box with X)

Travel time to school	Travel time from school
<input type="checkbox"/> Less than 5 minutes	<input type="checkbox"/> Less than 5 minutes
<input type="checkbox"/> 5 - 10 minutes	<input type="checkbox"/> 5 - 10 minutes
<input type="checkbox"/> 11 - 20 minutes	<input type="checkbox"/> 11 - 20 minutes
<input type="checkbox"/> More than 20 minutes	<input type="checkbox"/> More than 20 minutes
<input type="checkbox"/> Don't know / Not sure	<input type="checkbox"/> Don't know / Not sure

+ +

Figure 4: Parent Surveys



school, how far away they live, and how long it takes to travel to the school. The survey asks a series of questions that ask what types of issues influence their decision to let the child walk or bicycle to school.

The survey was the first of its kind performed by the District and response rate was fantastic. Over 3,300 parent surveys were received.

4.9. Youth Workshops

On January 23rd and 24th, 2014, consultant representatives conducted Youth Workshops to Fourth Grade classrooms at nine District schools. Fourth graders were targeted based on national trends that suggest that fourth grade tends to be the appropriate age where students have the self-confidence to begin to walk or bicycle to school unaccompanied by an adult and that is the age where parents generally feel more comfortable letting their child walk or bike to school by themselves.



The youth workshops included two exercises. The first exercise included a Traffic Safety Quiz conducted in a Jeopardy-style game show format. The classroom was divided into two teams, each taking turns answering questions regarding walking, bicycling and overall traffic safety. This exercise proved very valuable and informative to the vast majority of students who did not have a strong command of many traffic safety dos and don'ts.



The second exercise was a mapping exercise where students were divided into teams of 4-6 students. Each group was given a large aerial map illustrating their school and the surrounding neighborhood. Using markers and stickers designed by the consultant team, each student was asked to identify their home (anonymously) and identify the walking or bicycling routes that they take (or would take) to school. Students used the markers to draw a line from their home to the school which in turn gives the consultant team and District a strong understanding of the route most frequently taken.





Using the stickers, students were asked to identify locations where traffic congestion occurs, unsafe crossings and other areas that present obstacles or challenges to their ability or desire to walk or bicycle to school.

Overall, the students were extremely engaged and enthusiastic about each exercise and the youth workshop program as a whole was successful. Each student received an “I Participated” sticker and a small prize for their participation in the youth workshop. An example of the maps can be found in Working Paper #1.



4.10. Roadway Traffic Counts

The consultant team collaborated with City of Yuma staff to identify 30 roadway segments to collect traffic count, average speed and other supporting local traffic information for select roadways located adjacent to each school site. This information was utilized to supplement existing, seasonal traffic count information from the YMPO. Some roadway segments selected for traffic counts are not included in the normal YMPO traffic count process. This information helps provide the consultant and the District with an up-to-date representation of existing traffic volumes and behaviors for roadways adjacent to its schools.

On Tuesday, December 3, 2013 field counts were conducted and include 24-hour radar counts including vehicle speed and classification (by number of axles). The locations of each traffic count and summary of the findings for each school is described within each school summary report and can be found in Working Paper #1.

4.11. Crash Data

Crash data for Yuma County incidents was obtained from ADOT. The crash data is for a 5-year reporting period from January 2008 through December 2012. The consultant utilized the Yuma County-wide information to develop a more refined listing of crash data type and locations for each of the school locations included in this study. In addition, the ADOT information was distilled down to identify all crash types within a one-half mile radius for weekdays during the school year only (excluded June, July and August) for a more accurate



representation of crash activity during normal school days. A summary and map graphic of the crash data findings for each school is described within each school summary report in Working Paper #1.

5. SCHOOL-SPECIFIC MULTIMODAL EVALUATIONS, IDENTIFIED DEFICIENCIES AND SUGGESTED ENGINEERING RECOMMENDATIONS

The purpose of Working Paper #1 for the *Yuma School District One Multimodal Planning Study* is to provide a broad summary, review and evaluation of the existing multimodal conditions, daily commute habits and system deficiencies for each of the 15 schools being evaluated as part of this study.

Each school (or set of adjoining schools) is presented below in the same sequence (priority) as introduced and described in *Working Paper #1: Multimodal Evaluation and Deficiency Report*. Each project is described in a consistent table format that includes a set of findings, project description and cost indicator. Each individual project is numbered so to correspond with a map graphic to indicate the precise location of each given project.

Each recommended project represents a balanced approach, which covers both physical improvements and operational measures. To assist the District in ascertaining the potential cost associated with each project and to guide the District in prioritizing the implementation of these initiatives, an approximate cost range or indicator for each project is identified. Generally, costs for each project are indicated as:

\$ = Minimal to \$2,000 - Minimal cost allocation with short-term time frame for implementation

\$\$ = \$2,000 to \$20,000 - Moderate amounts of funding and time frame for implementation

\$\$\$ = >\$20,000 – Larger funding commitments with longer time frame for implementation



5.1. C.W. McGraw Elementary

5.1.1. School Setting and Enrollment Characteristics

C. W. McGraw Elementary School is located at the northeast corner of Arizona Avenue and 24th Street at 2345 Arizona Avenue in Yuma. C. W. McGraw Elementary School shares its northern property line with Gila Vista Junior High School. It is one of the oldest schools in the District, serving the community since 1953. C. W. McGraw Elementary School currently has 676 students enrolled at the K-5 school. C. W. McGraw's enrollment



C.W. McGraw Elementary

has remained relatively constant over the last several years; however enrollment could potentially increase over the next few years if this year's uptick in Kindergarten enrollment is any indication.

As illustrated in Figure 6, the C.W. McGraw enrollment boundary is approximately 1.1 square miles. The school itself is situated north of 24th Street on Arizona Avenue, but approximately 75% of its enrollment area is south of 24th Street between 4th Avenue to the west, Pacific Avenue to the east and 32nd Street to the south. The close proximity of all areas within the enrollment boundary and current District bus policy indicate why there are no standard buses and two special needs buses servicing C.W. McGraw.

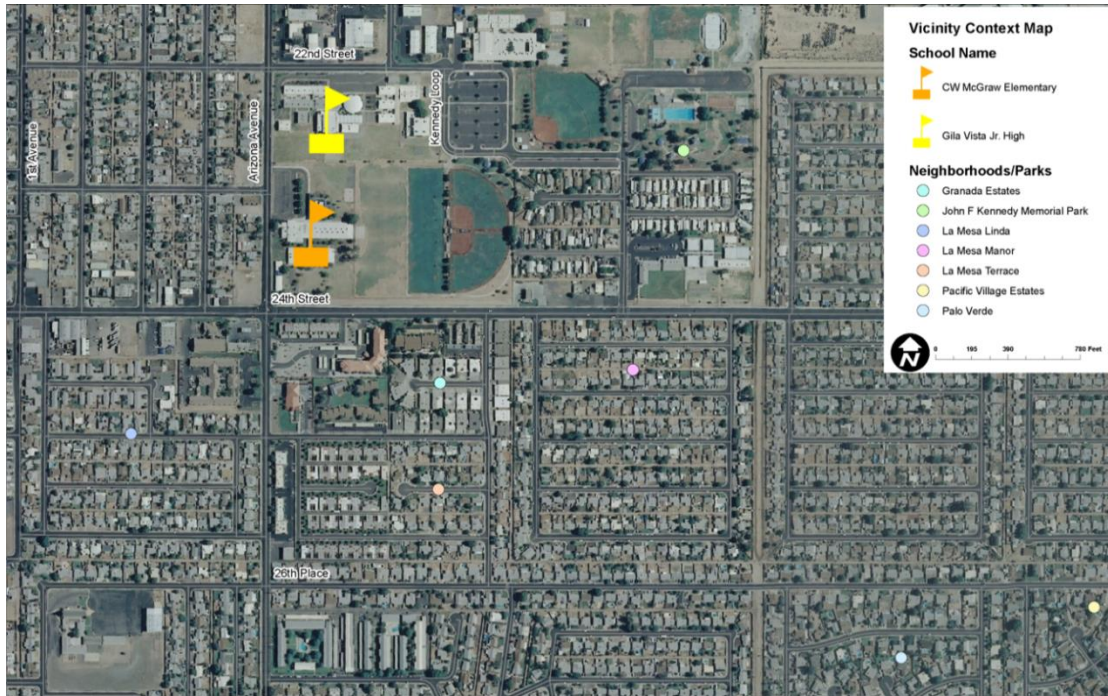


Figure 5: Vicinity Context Map

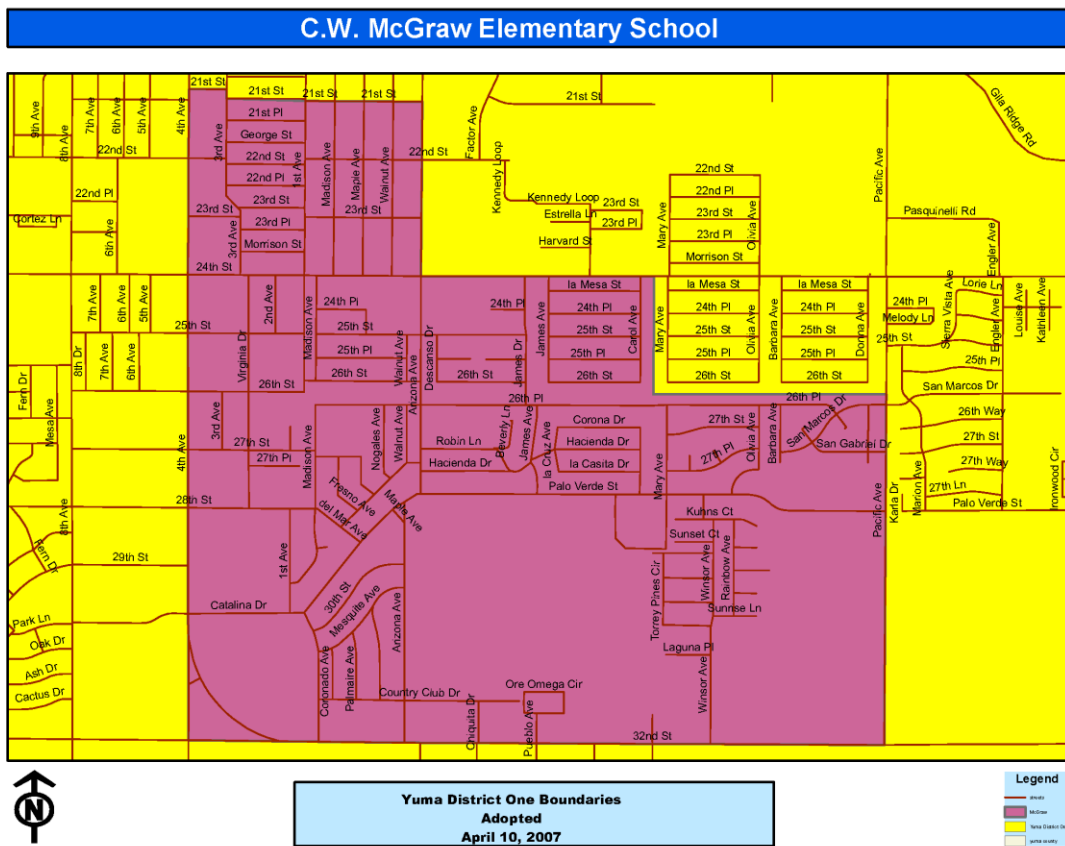
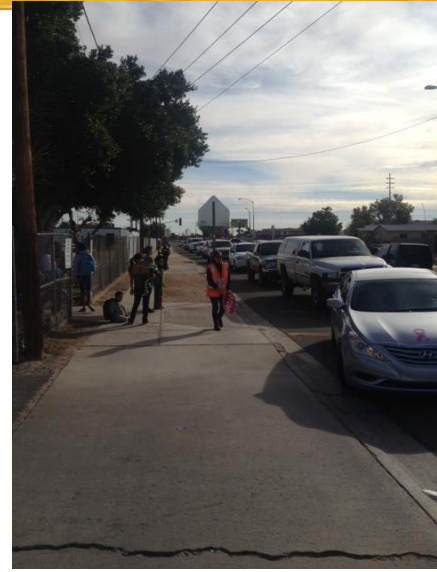


Figure 6: C.W. McGraw Elementary Enrollment Boundary



There is one vehicular entrance and one exit driveway to the school. Both are accessed from Arizona Avenue, a two lane roadway with center turn lane that has progressively experienced an increase in traffic volume as the City of Yuma has grown. This includes a mixture of commerce oriented vehicles including commercial truck accessing the industrial and distribution oriented business park area north of 22nd Street, east of Arizona Avenue. A very well-used mid-block crosswalk on Arizona Avenue in front of the school entrance is a daily safety challenge of vehicular and pedestrian congestion during the peak morning drop off and afternoon pick up peak periods.



Traffic congestion on Arizona Avenue from mid-block crosswalk to 24th Street

5.1.2. Neighborhood Character

There are a large number of individual residential neighborhoods, housing types and densities south of 24th Street within the school boundary. Yuma Country Club, La Mesa Linda, La Mesa Terrace, Granada Estates, La Mesa Manor, Palo Verde and Pacific Village Estates to name a few. Housing types range from larger lot communities such as Yuma Country Club to smaller single family homes in La Mesa Manor and numerous duplex style units. Many of the houses in the area were built in



Duplex homes on James Street

the same period as the school – the 1950's and the 1960, others more recent.

To the northeast of C.W. McGraw is John F Kennedy Memorial Park that is a regional city park with a wide variety of recreational amenities including an Olympic sized public swimming pool and baseball field. There is a large parking lot just to the north and east of C.W. McGraw. The Kennedy Loop road that accesses this area serves as a busy collector roadway in this area.





Pedestrian access gate to Gila Vista Jr. High and C.W. McGraw from Kennedy Loop



Pedestrian plaza off Kennedy Loop



Crosswalk on Kennedy Loop

To the north of Kennedy Loop and 22nd Street (east of Arizona Avenue) is a large industrial park land use area with a mix of manufacturing and distribution users in this area.

5.1.3. Yuma School District One Identified Needs & Deficiencies

C.W. McGraw Elementary was identified by the District as the #1 priority school in their PARA application to ADOT. The District’s application identified the following needs and deficiencies:



"The proximity to Arizona Ave. and 24th St. has created congestion problems. Traffic on Arizona Ave. gets congested as parents try to turn into the school parking lot during school drop-off and pick-up times. This congestion hinders emergency response vehicles and creates an unsafe area for neighborhood students and parents walking or biking to school."



Congestion on Arizona Avenue at morning drop off

5.1.4. School Official Interview & Observations

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). Some of the more notable issues or concerns identified through our interview with C.W. McGraw Elementary staff include the following observations:

- 1) Existing on-site parking is somewhat constrained. There are 27 spaces designated for staff but there are a total of 53 school personnel. Staff also park in the general purpose parking area.
- 2) There are Discovery Club activities that occur before and after school.
- 3) There are three crosswalks busy with students crossing, each with a crossing guard. The number one safety concern is for the safety of the students in these crosswalks, in particular the crosswalk directly in front of the school as well as the crosswalk at 24th Street. Many students tend to go to the Circle K at the southwest corner of Arizona Avenue and 24th Street. The crosswalk at this very busy signalized intersection used to have two crossing guards before District budget cuts limited it to one crossing guard.
- 4) The crosswalk across Arizona Avenue moved to its current location from its previous location at 23rd Street where family vehicles were blocked from being able to turn into



the school, creating long stacking and delays for these vehicles traveling southbound on Arizona Avenue.

- 5) There are not frequent traffic violations per se, but the congestion of vehicles in proximity to the schools' entrance and crosswalk are always a safety concern. Ensuring that drivers are paying attention to the school zone and crosswalk is a daily challenge. A child was "bumped" by a vehicle in the crosswalk last year. When temperatures rise, tempers escalate and driver patience decreases causing confrontations due to the congestion. Drivers do not tend to obey school personnel directing traffic as they do when law enforcement does assist.
- 6) Other than the recent Youth Workshop conducted in conjunction with this project, C.W. McGraw has not participated in any Safe Routes to School activities.
- 7) This is the first year that the school has utilized a designated bus loading zone. There are only two special needs buses that do operate on normal school schedule. The bus loading zone has functioned well but as a result only leaves only one through lane for family vehicles at the driveways entrance. Once past the bus loading zone, the driveway expands to two through lanes for family vehicles.
- 8) The biggest challenge to the morning drop off and afternoon pick up times is the combined effect of heavy pedestrian crossing at the crosswalk in front of the school together with the volume of family vehicles accessing the school. These activities both come together at once in front of the driveway at the school's entrance. Morning drop off is not as chaotic as the afternoon since the drop off period is more staggered in the mornings.
- 9) School policy requires teachers to escort their students to the sidewalk at the schools entrance when the bus loading zone and family vehicle pickup area is located.





10) Three school staff members assist in the afternoon pick up duties to help direct pedestrian and vehicular traffic. One staff member is situated at the main crosswalk connecting the front office to the parking lot. Two staff members assist in directing the family vehicle pick up by keeping cars moving forward. One staff is located at the end of the library and one in between the library and classroom buildings.

11) Staff members directing traffic are continually challenged to get the family vehicles to pull forward. Many vehicles wish to stop in front of the cafeteria to pick up their child rather than pull forward to the designated pick-up area. Other vehicles in the "through lane" continually park. Both occurrences cause a ripple effect on the traffic trying to turn into the driveway, thereby causing traffic to back up on Arizona Avenue and ultimately on 24th Street as well.

12) Due to the physical limitations and challenges in the drop off and pick up routines, school staff has been proactive in providing instructions to parents at the beginning of the school year. Each day teachers and/or staff escort the students from the classroom to the bus loading zone or crosswalk areas.



Vehicle congestion on Arizona Avenue during morning drop off



5.1.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.

In regards to C.W. McGraw, Yuma PD observations also point to the daily traffic congestion problems at morning drop off, but in particular, afternoon pick up. They noted that the lengthy stacking of vehicles on Arizona Avenue (northbound) and the ripple effect that is created onto 24th Street has been the source of numerous complaints over the years. Yuma PD also noted that the traffic on Kennedy Loop can get quite congested due primarily to the traffic generated by the Desert View Academy charter school located at 24th Street and Kennedy Lane.

5.1.6. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle drop-off and pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.

Figure 7 illustrates the locations of the various features identified and summarized below. Specific features for C.W. McGraw Elementary are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.



Arizona Avenue

- Two through lanes with center turn lane. Classified as a Minor Arterial Street by the City of Yuma.
- 40 foot pavement width with detached sidewalks and vertical curbing along both sides of the roadway. Sidewalks become attached closer to the 24th Street intersection. There are sidewalks less than 5 feet wide south of Palo Verde Street. Most ramps are accessible. No steep grades were identified.



Arizona Avenue looking south in front of school

- The posted speed limit is 35 mph.
- No Parking signage is posted along both sides of the street in front of the school.
- No bicycle facilities are signed or striped.



Detached sidewalk along east side of Arizona Avenue in front of school



- Commercial truck traffic is a regular user of the roadway. Arizona Avenue between 16th Street and 24th Street is a designated truck route in the City of Yuma General Plan.
- Two permanent school zone signs posted in front of school. Portable school zone signs also used in designated school zone area.
- Signalized intersection with 24th Street.



Northbound Arizona Avenue, approaching intersection with 24th Street

- Blind curve at intersection of Palo Verde (south of 24th Street).
- Large number of driveways intersecting the roadway.
- Striped cross walks on all four legs of the intersection with 24th Street.



Arizona Avenue looking north from 24th Street



24th Street

- Designated by the City of Yuma as a Principal Arterial (Constrained).
- Roadway with two through lanes and one center turn lane.
- 4-lane divided roadway with center turn lane. Attached sidewalks and vertical curbing both sides of roadway in proximity to school. Ramps appear accessible.
- Posted speed limit of 35 mph near the school.
- Designated truck route by City of Yuma General Plan.



24th Street at James Street intersection, looking west

- Utility poles obstruct sidewalk on either sides or roadway in select locations.
- No Parking signage posted along both sides of roadway.
- Truck Route sign on roadway guiding trucks onto Arizona Avenue.
- No dedicated right turn lane (northbound) onto 24th Street.
- No marked or striped bicycle facilities in proximity to the school.
- Designated Bike Route and No Parking signage posted on east side of roadway in proximity to the school.
- Unauthorized pedestrian crossings at James Drive have been observed by school officials and are a safety concern.



Intersection of James Drive and 24th Street

23rd Street

- Two through lane local street, no striping.
- 40 foot pavement width.
- Popular travel route for students living west of school.



23rd Street looking west from Arizona Avenue

- Posted speed limit of 25 mph.
- Detached sidewalk with vertical curb on both sides of roadway near Arizona Avenue. Ramps at Arizona Avenue appear accessible.



- Marked cross walk with signage (no crossing guard) connecting north side to south side of street at Arizona Avenue

School Access Points

- There is one, narrow vehicular entrance driveway shared by family vehicles and buses from Arizona Avenue.



- The right through lane immediately flows into the bus loading zone thereby restricting family vehicle through traffic to one lane temporarily before it opens up again to two lanes.
- There is a separate exit driveway shared by all vehicle types at the north end of the parking lot. Left and right turning movements are permitted. Students are frequently walking on the sidewalk on Arizona Avenue in front of this driveway.





- The vast majority of students walking are directed to the mid-block crosswalk in front of the school. The cross walk is only a few feet south of the vehicle entrance driveway but is located in a pedestrian “desire line” but creates challenges to vehicular traffic flow with increasing vehicle stacking on northbound Arizona Avenue. This crosswalk is likely the busiest crosswalk in the entire District.



Crosswalk on Arizona Avenue leading to school entrance



Heavy student use of mid-block cross walks at afternoon dismissal



Proximity of entrance driveway to crosswalk on Arizona Avenue

- Students also are dropped off at Kennedy Loop, particularly those students with siblings attending Gila Vista Jr. High. There is a crosswalk from the adjacent parking lot (no crossing guard) pedestrian access gate to access the school.
- Sidewalks in the immediate vicinity of the school are continuous and without gaps. It appears that all ramps in the vicinity of the school are accessible.
- There are no dedicated bicycle facilities on streets adjacent to the school. The bicycle rack is located in an easily accessible area that is well-monitored.



Crosswalk on Kennedy Loop



Pedestrian access to C.W McGraw and Gila Vista Jr. High from Kennedy Loop

- The school driveway maintains a one way directional flow. Drop off and pick up vehicles proceed forward and vehicles parking can turn left in either one of two driveways to park.
- There is a crosswalk connecting the parking lot to the front office “plaza” area. The crosswalk cuts across the two through lanes of family vehicles stacking and waiting to enter the designated drop off and pick up area.
- There are three off-site crossing guards caring for the safety of students walking and bicycling to school. As shown on Figure 7, these locations are; 1) mid-block crossing of Arizona Avenue directly in front of school offices, 2) at the signalized intersection of 24th Street and Arizona Avenue, and 3) At the intersection of 22nd Street and Arizona Avenue. This crossing is located in front of Gila Vista Jr. High.

Parking

Current on-site parking is divided into the visitor/general parking area which has 75 standard and two accessible spaces. There is a second lot reserved for school staff east of the family vehicle pick-up/drop off driveway. This lot has 27 standard parking spaces.

Though constructed somewhat recently, the 27 staff spaces only provide half the number of spaces needed to accommodate the 53 school personnel. The remainder of staff uses the general parking lot for overflow. The overall design of the parking lot includes angled parking which is generally preferred to enhance driver visibility, particularly in short-term turn over parking lots. The parking lot design provides for good traffic flow but can encourage students to cross the entrance drive outside of the designated crosswalk.



An interesting dynamic was witnessed in the consultant's site visit during the afternoon pick up routine. Prior to school being dismissed, several family vehicles parked (back in) onto the dirt shoulder area north of the exit driveway. Though these vehicles had to mount extruded curbing to get to these spaces, they were apparently desirable parking spots to presumably allow these vehicles to avoid congestion by being near the exit driveway.



Family vehicles waiting on dirt shoulder at afternoon pick up

What made this particularly interesting was the fact that many of the parking spaces in the lot were empty yet other family vehicles felt the need to park in this unauthorized dirt shoulder.



Empty parking spaces during afternoon pick up



School Bus Loading Zone

- 1) C.W. McGraw Elementary has 2 daily special needs buses that arrive and depart with the normal school schedule. There are no general purpose buses.
- 2) The bus loading zone is separated from the family vehicle loading zone (but not the family vehicle driveway leading to the loading zone) since all vehicles enter from one undersized driveway.



School bus loading zone blocked in by two lanes of Family vehicles at afternoon dismissal

- 3) Buses travel in a one-way, counter-clockwise direction (preferred) as they enter from Arizona Avenue. Buses exit through the parking lot and are required to cross the family vehicles stacked in the driveway entrance which is not ideal, but this method does avoid potential conflicts with the family vehicle loading zone.
- 4) Buses line up single-file with right wheel to the curb which is a preferred design. As a result, children do not have to walk between buses.
- 5) The bus loading zone is very compact and does not have additional capacity for more than two buses.
- 6) As noted earlier, the existing bus loading zone configuration consumes what could or should be a second drive lane for family vehicles. Northbound vehicles on Arizona Avenue that turn right into the school driveway are forced to shift into the second driveway lane when the buses are present. This creates a “pinch point” and additional burden on the function and flow of the family vehicle traffic.



Family Vehicle Drop-off and Pick up Procedures



- 1) There is a designated family vehicle drop off and pick up area on the school property. As noted, all vehicles accessing the school do so from one driveway from Arizona Avenue.
- 2) The family vehicle drop off and pickup area is separated from the other parking lot functions and children safely load and unload in a comfortable waiting area under shelter. This component of the family vehicle loading zone is functional. The parking area has sufficient depth, but the truncated driveway approach compromises the overall function and performance of the family vehicle drop off and pick up area.
- 3) There are two, unstriped through lanes (except when buses are present) leading to the family vehicle drop off and pick up area in front of the library. The student waiting



area is situated on a wide sidewalk area that is canopy covered. Signage informs drivers that the area is a designated pick-up and drop-off area.

- 4) The two drive lanes leading to and within the family vehicle drop off and pick up area are not striped. As noted previously, two school staff members assist the family vehicle loading zone area during each afternoon pick up.
- 5) Two common challenges occur daily; making sure that parents pull forward and attempting to keep the second lane of traffic reserved for through traffic. Vehicles sometimes prefer to pick up their child in front of the office area rather than the designated drop off and pick up area. When any or all of these conditions occur, it creates a “perfect storm” of quickly stacking vehicles in the compact school driveway.



Mid-block crosswalk activity during afternoon pick up

This quickly triggers the domino effect of vehicle stacking and congestion on Arizona Avenue. For drivers arriving to school from the south on Arizona Avenue, this congestion negatively affects the safety and crossing performance of the Arizona Avenue/24th Street intersection. Vehicles arriving to the school from the north on Arizona Avenue (especially at peak afternoon pick up), it is common for left turn ingress stacking of 4-8 vehicles in the center turn lane on Arizona Avenue. Left turning movements are complicated by the tight turning radius, poor driveway geometrics and competition for comfortable space with northbound drivers simultaneously negotiating right-in turns and crosswalk crossing just feet away. These conditions largely define why C.W. McGraw was the number one identified priority for the District.



Driveway entrance and crosswalk activity at afternoon pick up



Northbound Arizona Avenue traffic stacking during afternoon pick up



Staggered morning drop off



Morning Drop Off at family vehicle loading zone



Crowded family vehicle loading zone afternoon dismissal



Afternoon pick-up; school staff directing traffic

- 6) Likely wanting to avoid the congestion at the school itself, parents arriving from the west utilize a vacant lot across the street to drop off their children. The lot is easily accessed for vehicles traveling eastbound on 23rd Ave where the lot has a driveway entrance. Vehicles swoop into the lot, drop off or escort their children to the pedestrian flow on the Arizona Avenue sidewalk and crosswalk to the school entrance. Even though multiple signs on the vacant lot warn drivers of trespassing, the use of this lot, as well as the vacant lot across the street, has become a convenient method for dropping and picking up their children.



Parents dropping of children in vacant lot across Arizona Avenue

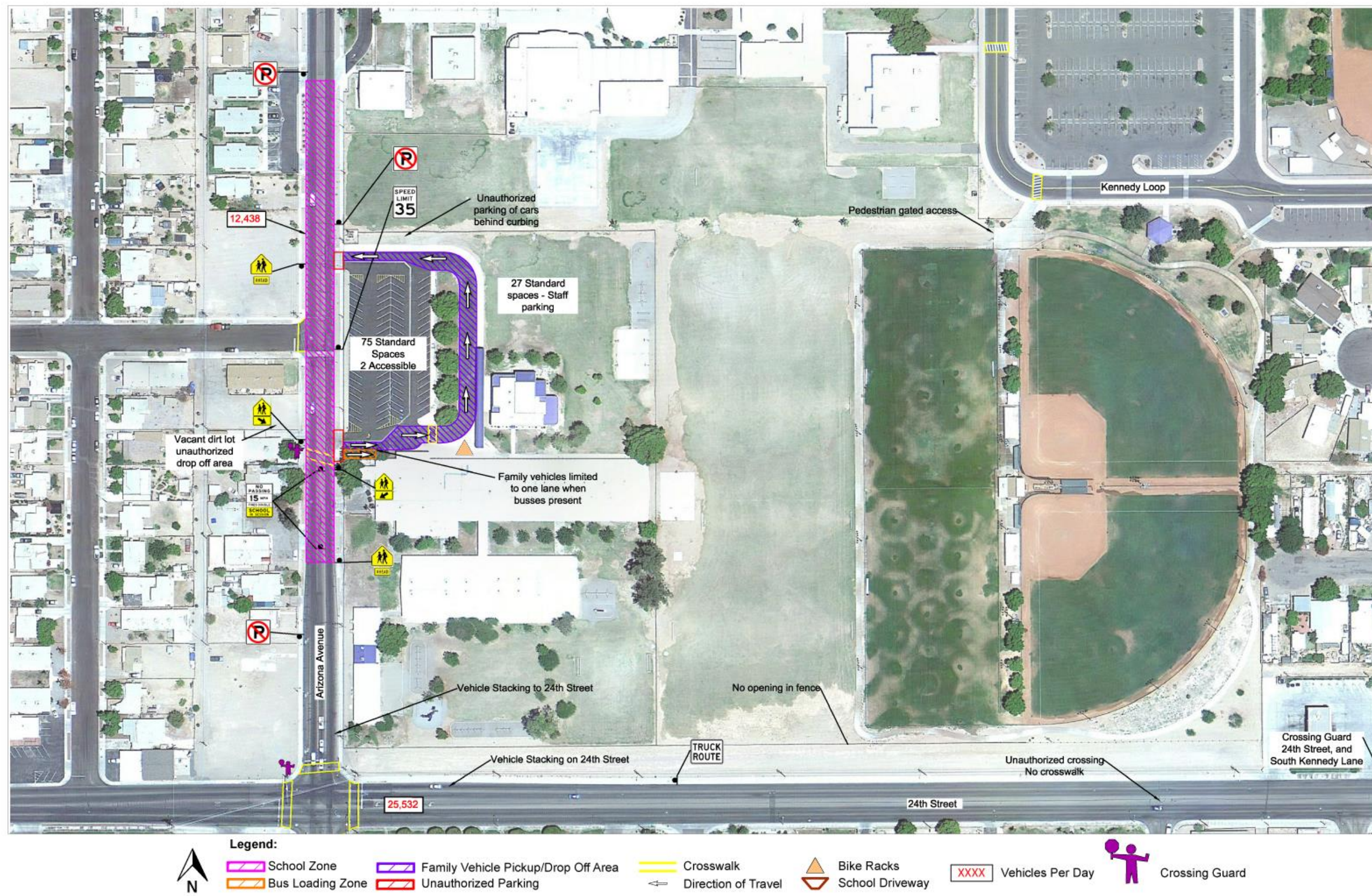


Figure 7: C.W. McGraw Elementary School – School & Neighborhood Audit Findings

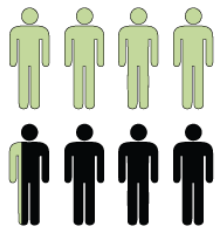


5.1.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers
C.W. McGraw Elementary School

DEMOGRAPHICS

8,043 Total Population
(Enrollment Boundary)

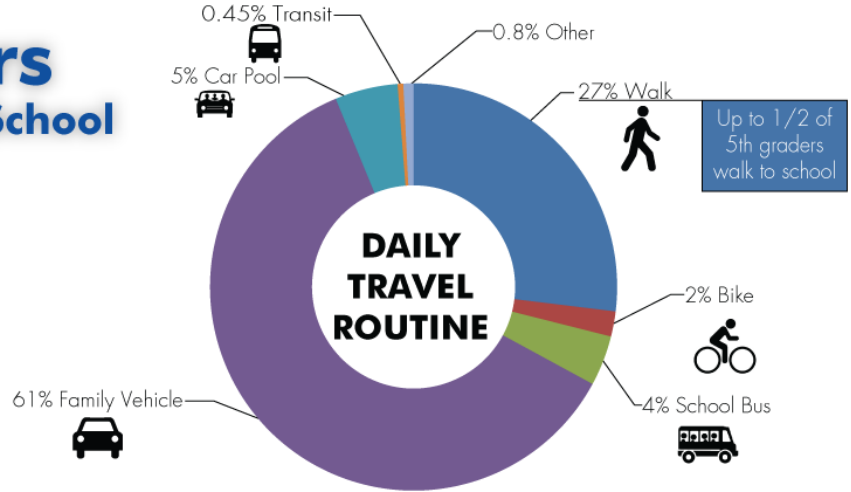


63.4%
Minority

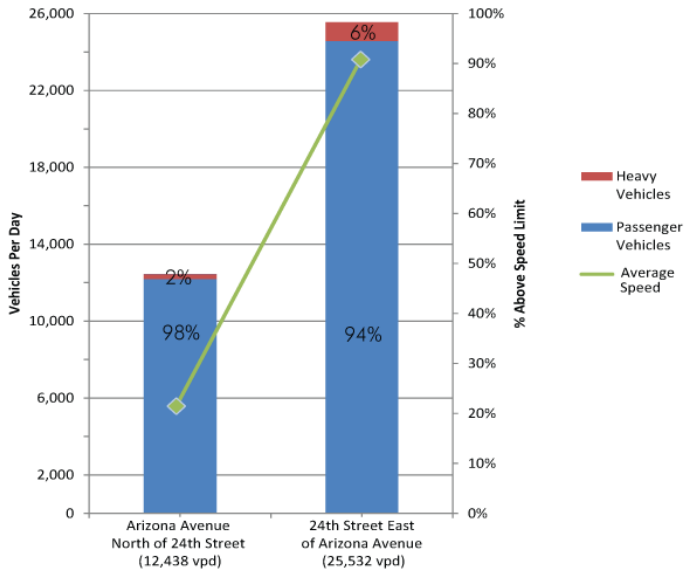
58% Hispanic Or Latino

Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView

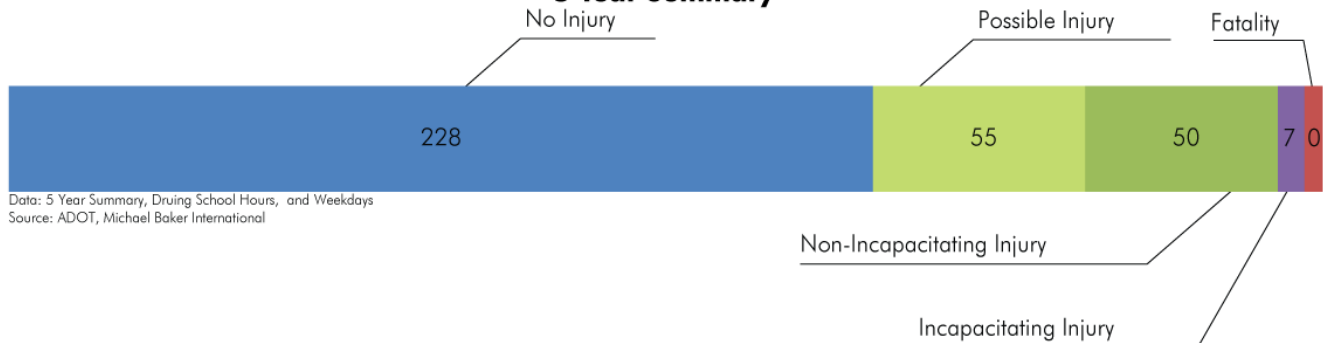
Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.



ROADWAY COUNTS



CRASH DATA
5 Year Summary



Data: 5 Year Summary, During School Hours, and Weekdays
Source: ADOT, Michael Baker International



5.1.8. School-Specific Engineering Recommendations

CW McGraw has been serving Yuma since 1953 and is located adjacent to Arizona Avenue, which has experienced increased traffic volume over the years. Vehicular and pedestrian congestion on Arizona Avenue is the main factor that leads to many safety and access concerns to and from CW McGraw on a daily basis. A large portion of the enrollment area is located south of 24th Street. There is a high percentage of students that walk to school – 25% to 30%, which exceeds the national average. Approximately 2/3 to 3/4 of students utilize the family vehicle/carpool. There are only two special-needs buses and no general-purpose buses serving CW McGraw. Only 1% to 3% of the students bicycle to and from school. Bike racks are found to be in a suitable location and on-site parking for staff and visitors is generally considered sufficient to meet the daily demand. Please refer to Figure 8 for map reference to the projects described below.

CW #1	Relocate bus loading zone.
Findings	Existing bus loading zone location increases traffic congestion at single driveway entrance, which restricts volume and flow of the already compact family vehicle driveway approach, which leads to congestion on Arizona Avenue that also negatively impacts safety and comfort of pedestrians and bicyclists utilizing the mid-block crosswalk in front of the school.
Project Description	Relocate existing bus loading zone to the east side of the general purpose parking lot. The existing number of parking spaces is sufficient for both staff and visitors. Reconfigure parking lot by eliminating the existing 17 parking spaces. Buses will line up single file with right wheel to the existing curb and sidewalk, which is the preferred design. The new bus loading zone is sufficient to accommodate the existing two buses plus an additional 2 buses for potential growth, should the District bus policy be modified. Relocation of the bus loading zone will provide a second dedicated parent vehicle driveway approach which will facilitate a smoother flow (and increase volume) of family vehicle traffic, reducing congestion backing onto Arizona Avenue. Maintain existing practice of positioning an adult at the existing crosswalk to facilitate students to and from the bus staging area (existing sidewalk). Painting of “stand back lines” on the existing sidewalk to clearly designate this area is needed.
Lead Organization/ Project Partners	Yuma District One/City of Yuma
Cost Indicator	\$



CW #2	Re-stripe and sign family vehicle drop-off area.
Findings	Existing location of the bus loading zone increases traffic congestion at the single driveway entrance, which restricts volume and flow of the already compact parent vehicle driveway approach. This leads to congestion on Arizona Avenue, which negatively impacts safety and comfort of pedestrians and bicyclists utilizing the mid-block crosswalk in front of the school.
Project Description	Provide additional striping and signage at driveway entrance and family vehicle drop-off and pick-up area to reinforce one parking lane and one through lane in order to minimize congestion and enhance safety and comfort of all user modes. Maintain current practice of having two school staff members supervise the family vehicle drop-off area and a third staff member positioned at the crosswalk in front of the office. Consider participation from City of Yuma if done in conjunction with other suggested improvements to Arizona Avenue.
Lead Organization/ Project Partners	Yuma District One/City of Yuma
Cost Indicator	\$

CW #3	Relocation of the Arizona Avenue mid-block crosswalk.
Findings	The existing mid-block crosswalk in front of the school, just south of the single school vehicular driveway entrance, does not meet ADOT minimum spacing requirements for school crossings and the current location exacerbates motorized and non-motorized congestion causing a safety concern.
Project Description	Relocate mid-block crosswalk north of 23rd Street, approximately 125 feet to align with the existing on-site sidewalk. Please see Figure 8 for additional reference. This location is suggested to align with existing on-site sidewalk to enhance safety and comfort of student pedestrians by adding a second point of pedestrian access, which will alleviate the congestion at the single point of access and meet ADOT minimum spacing requirement of 600 feet from other traffic controls (stop signs or traffic signals) without negatively impacting the vehicular congestion and stacking of vehicles on Arizona Avenue. Shifting this crosswalk north (in conjunction with the improvements identified in CW #1, CW#2 and CW#4) will greatly reduce traffic congestion for northbound vehicles on Arizona Avenue arriving from the south. Additional traffic behavior training for this crossing guard will be important so as to limit the stacking of southbound vehicles on Arizona Avenue arriving to the school, i.e. the timing of student crossings must be balanced by the stacking of no more than 5-7 vehicles on Arizona Avenue. Suggest a second school staff member



	to be positioned on the school sidewalk to direct students to remain on sidewalk and out of parking lot and driveway areas. Additional care and instruction by the crossing guard is required to avoid potential vehicle conflicts with vehicles egressing, school driveway northbound onto Arizona Avenue.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$

CW #4	Increase vehicle capacity and enhance bicycle and pedestrian safety and comfort on Arizona Avenue.
Findings	Congestion and stacking of northbound traffic on Arizona Avenue is well documented. Addition of a second northbound right turn trap lane and dedicated right turn lane from westbound 24th Street to northbound Arizona Avenue is recommended to increase roadway capacity and alleviate stacking and congestion spilling onto the high capacity roadway of 24th Street (25,000+ ADT). Said improvements should include an 8-foot wide sidewalk to enhance student staging area and improve bicycle/pedestrian safety and comfort. The City of Yuma identifies Arizona Avenue as a future five lane facility.
Project Description	Construct additional right turn trap lane on northbound Arizona Avenue from 24th Street to school entrance driveway. Construct dedicated right turn lane from westbound 24th Street to northbound Arizona Avenue. Existing roadway has extra pavement width before it taper approximately 250 feet north of the 24th Street intersection. Construct additional pavement width to adequately stripe one through lane and one right turn trap lane and comfortable space for bike route in accordance with Yuma Bicycle Facilities Master Plan. Construct 8-foot sidewalk on east side of roadway to comfortably accommodate the students who will be directed to use the east side of the road as they walk to 24th Street. Instruct bicyclist to walk their bicycles from school to the 24th Street/Arizona Avenue intersection along this sidewalk.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$\$

CW #5	Add second crossing guard at Arizona Avenue/ 24th Street Intersection.
Findings	The volume of student pedestrians coupled with the high volume of traffic and congestion in this area, in conjunction with other suggested improvements CW #1-4, a second crossing guard is



	needed. Many students go to the Circle K located on the South West corner of Arizona Avenue and 24th street after school.
Project Description	Add a second crossing guard to adequately serve the western leg of this intersection. There is an existing crossing guard at the eastern leg. A second crossing guard will allow assistance to the north and west legs of the intersection as needed to funnel students to the east side of the roadway for walking along Arizona Avenue to and from the school.
Lead Organization/ Project Partners	Yuma School District One/City of Yuma
Cost Indicator	\$

CW #6	Expand School Driveway Entrance.
Findings	Current driveway is a compact width of 24 feet, which restricts the comfort and maneuverability of southbound and northbound traffic simultaneously entering the school driveway. This improvement, in conjunction with on-site re-striping and re-location of the bus loading zone will enhance the operation and safety of this single drive entrance.
Project Description	Expand the north end of the existing driveway from 24 feet to a minimum of 30 feet.
Lead Organization/ Project Partners	Yuma School District One/City of Yuma
Cost Indicator	\$-\$\$

CW #7	Long-term project to construct new bus loading zone connecting Kennedy Loop
Findings	This long-term solution would only be necessary if no improvement in operational performance and relief of congestion is achieved with the implementation of the shorter term projects identified herein. Suggested improvements provide increased operational and safety performance for both CW McGraw and Gila Vista Junior High School as well as reduce congestion on Arizona Avenue.
Project Description	Construction of a 24-foot wide driveway section with cul-de-sac loading zone design. Driveway to function as one-way west bound with cul-de-sac egress from to Kennedy Loop. 24-foot width will allow for two outbound lanes and sufficient fire access if needed. Construct connecting sidewalks to each of the school sites.
Lead Organization/ Project Partners	Yuma School District One/City of Yuma
Cost Indicator	\$\$\$



CW #8	Bike Route Signage on 23rd Street.
Findings	23rd Street is a main thoroughfare for bicyclists and pedestrians accessing the school from neighborhoods to the west. The current pavement section is 40 feet in width. This recommendation is consistent with Yuma’s Bicycle Facilities Master Plan.
Project Description	Provide Bike Route signage or sharrows in accordance with MUTCD specifications along 23rd Street from Arizona Avenue west to 1st Avenue.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

CW #9	Continue and expand practice of targeted enforcement at 2-3 occasions each school year.
Findings	Persistent congestion on Arizona Avenue, two schools, student pedestrian activity above national averages and finding that 8% of all vehicles exceed the 35 mph posted speed limit at afternoon peak times collectively suggest that this is a priority area for expanded traffic enforcement levels.
Project Description	Yuma PD has limited resources but does engage in targeted enforcement at the beginning of each school year. Consider expanding that enforcement to reduce usage of vacant lots as family vehicle drop-off areas as well as motorists speeding and appropriate pedestrian crossing activities.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$-\$\$

CW #10	Reduce posted speed limit on Arizona Avenue during school hours from 35 mph to 25 mph.
Findings	Reduced school speed zones on higher volume roadways with mid-block crosswalk crossings have proved safe and effective at reducing motorist speeds and crash rates.
Project Description	Install school speed zone limit signs posted along Arizona Avenue (outside of designated “school zones” from 24th Street to north of 22nd Street. Automated flashers with speed limit assemblies must be coordinated between the City and District to ensure the signs are in effect during typical school hours and early release days.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$



CW #11	Install pedestrian warning signage at James Street and 24th Street.
Findings	Student pedestrians living in the neighborhoods south of 24th Street will often jaywalk at James Drive and 24th Street.
Project Description	Install “Cross Only at Crosswalks” signage at James Drive and 24th Street that guide pedestrians to cross at designated crosswalks at either Arizona Avenue to the west or Kennedy Lane to the east.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

CW #12	Expand existing shade canopy over family vehicle drop-off and pick-up area.
Findings	The existing shade canopy provides a respite from the elements, but only covers one half of the parent vehicle loading zone.
Project Description	Extend existing shade canopy structure to the north for the length of the family vehicle drop-off/pick-up area.
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$\$

CW #13	Install traffic control signage at exit driveway.
Findings	Recommendation of new mid-block crosswalk just north of this driveway creates potential conflict with vehicles exiting school driveway to northbound Arizona Avenue.
Project Description	Install traffic control signage at driveway exist warning drivers of children crossing at Arizona Avenue. Ideally, a school staff member should be positioned at this driveway to coordinate the timing of motorists exiting with children crossing in the crosswalk.
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$
CW #14	Develop flier/handout for parents describing new procedures.
Findings	In response to CW #1 and CW #2 projects, CW McGraw will need to draft a flyer describing and depicting the new drop-off and pick-up procedures for parents.
Project Description	CW McGraw officials should develop a color flyer for parent consumption that describes and graphically depicts the modified bus, parent vehicle and suggested walking and bicycling access procedures.
Lead Organization/ Project Partners	CW McGraw administration/Yuma School District One
Cost Indicator	\$

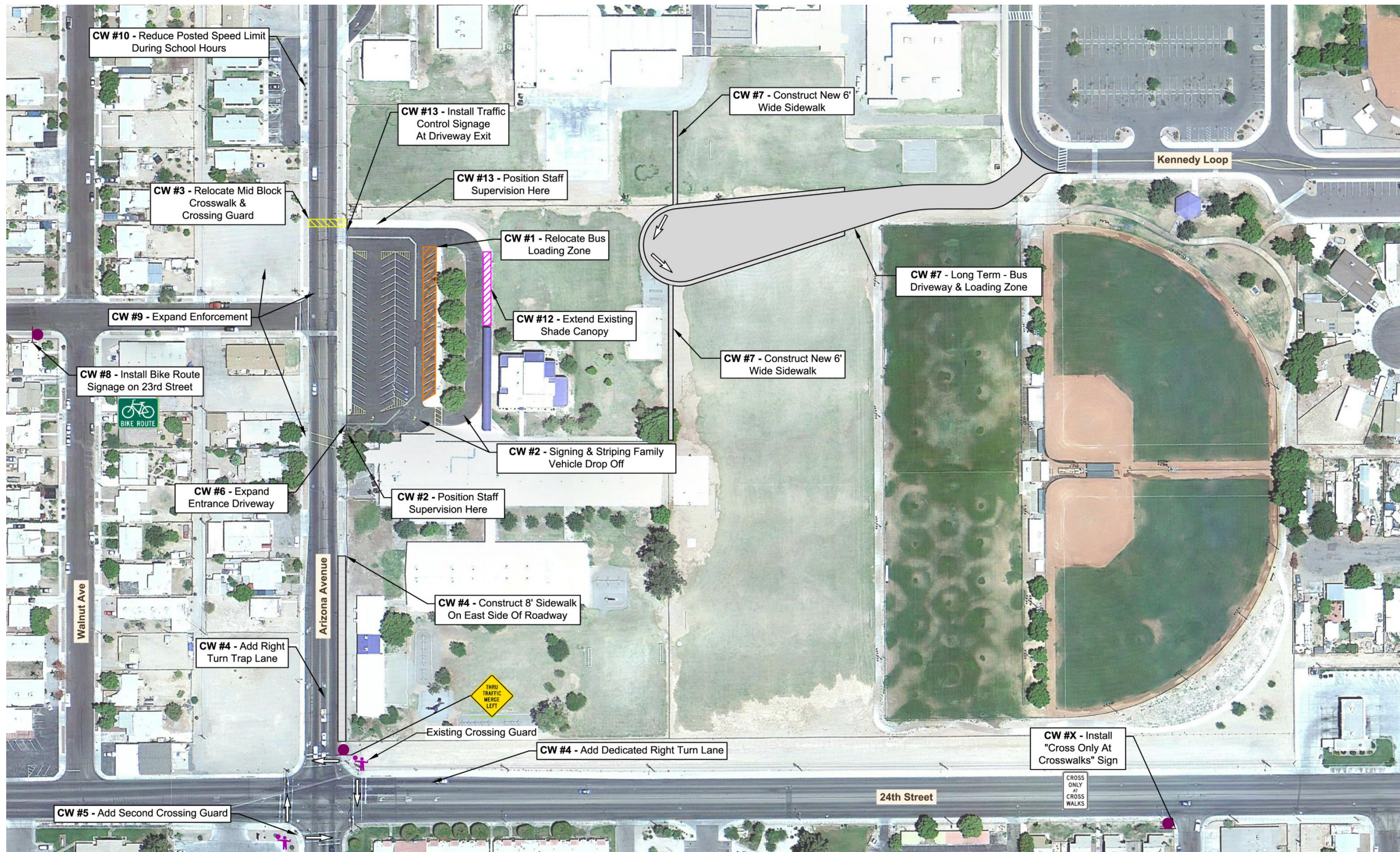


Figure 8: C.W. McGraw Recommendations & Actions Plan



5.2. O.C Johnson Elementary

5.2.1. School Setting and Enrollment Characteristics

O.C. Johnson Elementary School is located at the southwest corner of Avenue A and 12th Street at 1201 12th Street in Yuma. It is one of the oldest schools in the District, serving the community since the 1956. O.C. Johnson Elementary School currently has over 515 students enrolled at the K-5 school. O.C. Johnson's enrollment has incrementally declined over the last several years but is forecasted to remain constant or decrease slightly.



O.C. Johnson Building Entrance from Parking Lot

As illustrated in Figure 10, the O.C. Johnson Elementary enrollment boundary is approximately .86 square mile. The school itself is generally located in the geographic center of the enrollment area. The western boundary is the East Main Canal, 16th Street to the south, 4th Avenue to the east and 8th Street to the north. The close proximity of all areas within the enrollment boundary and current District bus policy suggest why there are no standard buses and two special needs bus servicing O.C. Johnson Elementary.

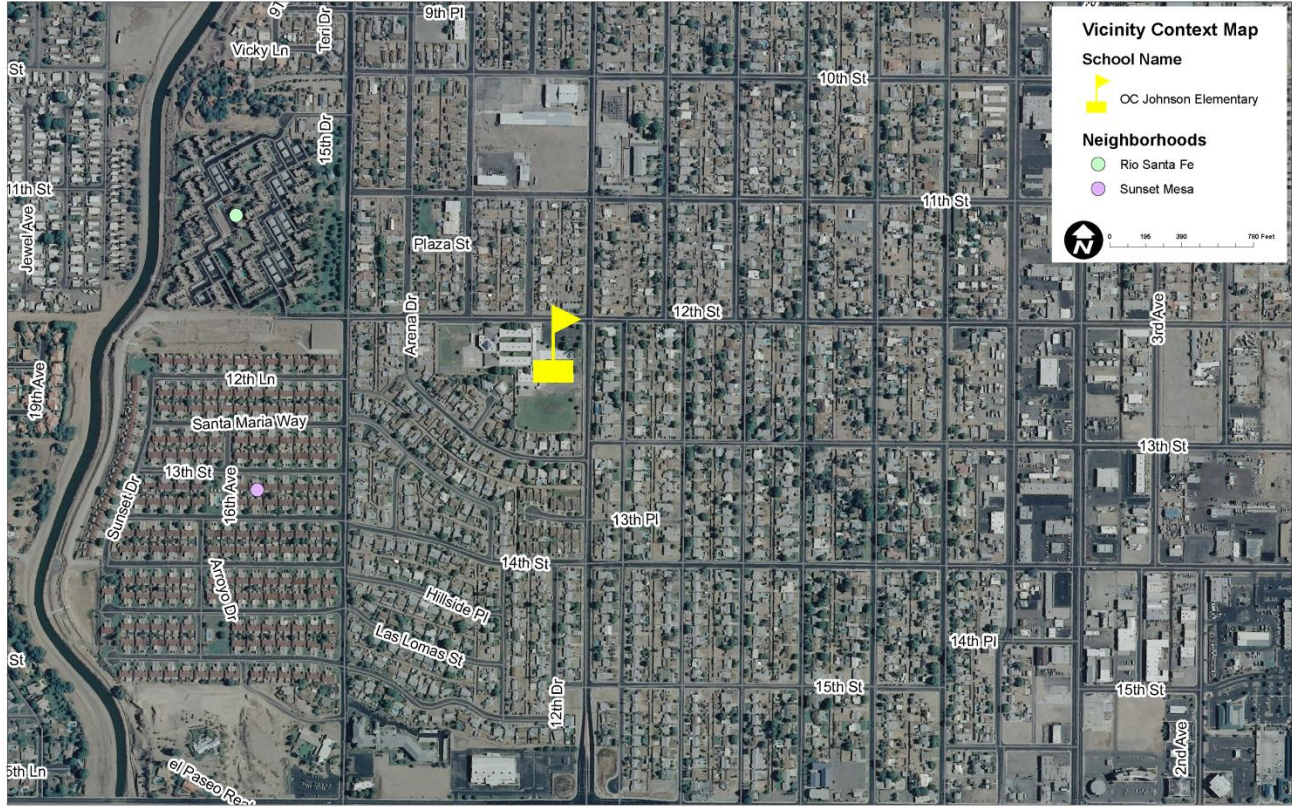


Figure 9: Vicinity Context Map

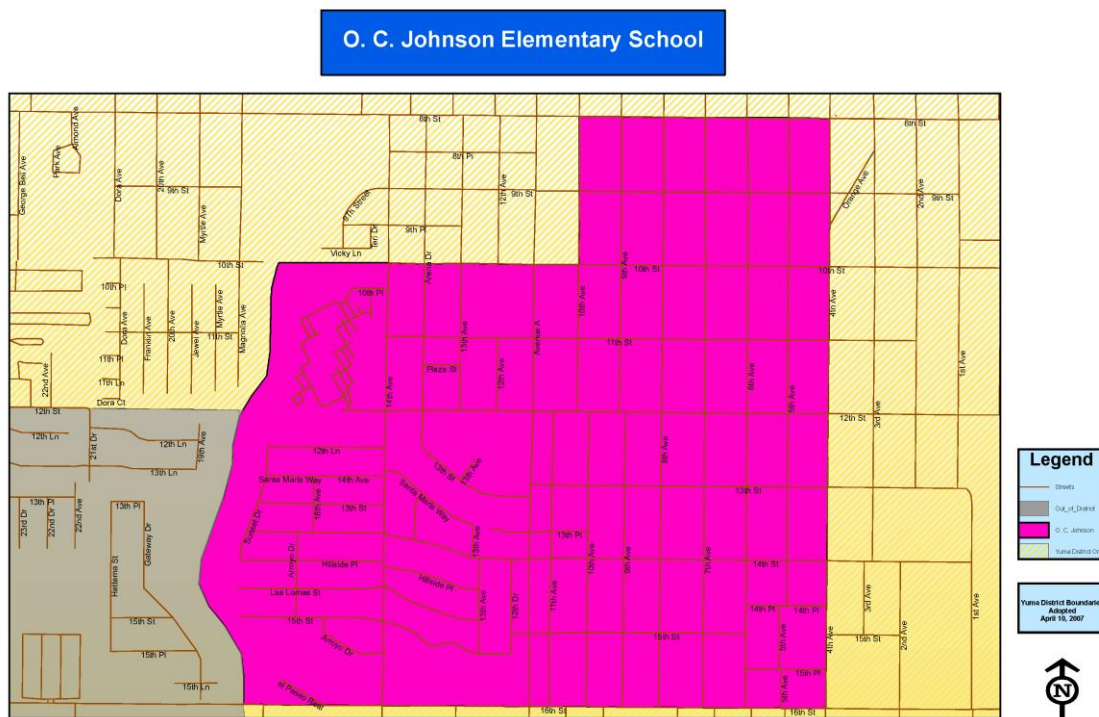


Figure 10: O.C Johnson Enrollment Boundary



The single vehicular driveway to the school is accessed from 12th Street, a two lane roadway that dead-ends at the East Main Canal approximately 900 feet west of the school. This segment of 12th Street adequately serves the residents in the surrounding neighborhoods, but becomes congested in the morning drop off and afternoon pick up periods where activities of all travel modes interface with 12th Street. No vehicular access is provided from Avenue A, but many students that live to the east and north of the school utilize the crosswalk daily at the intersection of 12th Street and Avenue A.



O.C. Johnson Entrance from 12th Street

5.2.2. Neighborhood Character

There are a large number of individual residential neighborhoods, housing types and densities within the school boundary. The majority of the enrollment area consists of mature single family detached residential homes on medium sized lots. There is also casitas, duplexes, condominiums and multi-family residential apartments in the enrollment area. The Sunset Mesa residential community consists of numerous duplex units and the Rio Santa Fe Apartments are two of the more dense developments that are located just to the west of the school.



Rio Santa Fe Apartments



Hillside Manor, Tierra Vista, Santa Maria, and Yuma Heights are just some of the single family residential neighborhoods located in proximity to O.C. Johnson Elementary.



Residential homes near the school

5.2.3. Yuma School District One Identified Needs & Deficiencies

O. C. Johnson Elementary was identified by the District as the #2 priority school in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

"Parents park on both sides of 12th Street and create congestion problems. Parents also park in the residential alleys as they wait for their children at pick-up times. This combination creates and unsafe environment for student walking and biking to school."

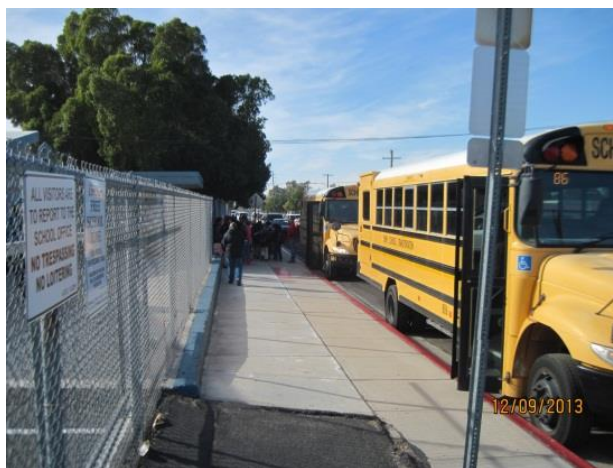
5.2.4. School Official Interview & Observations

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). Some of the more notable issues or concerns identified through our interview with O. C. Johnson Elementary staff include the following observations:

- 1) Existing on-site parking is somewhat constrained. There are 54 standard and two accessible parking spaces in the lot. There are a total of 49 school personnel. Only two general purpose spaces are signed for "Visitor." When morning visitors are parked, there are often not enough parking spaces for staff and visitors together.
- 2) The parking lot is not permitted to be used for drop off and pick up activities.
- 3) Family members with kindergartners must go to the classroom to drop off or pick up their child.



- 4) 100% of the students who attend the school are on the reduced breakfast/lunch program.
- 5) The 21st Century program is a tutoring program that occurs before and after school.
- 6) There are three crosswalks very busy with students crossing, each with a crossing guard. The number one safety concern is for the safety of the students in these crosswalks, in particular the crosswalk directly in front of the school and at 12th Street. When buses are present, a bus parked in the bus loading zone can obstruct the view of children from drivers on 12th Street.
- 7) There are no sidewalk ramps leading to the mid-block cross walk directly in front of the school. A ramp has been requested on several occasions, but one has not been provided.
- 8) There are no frequent traffic violations per se, but the congestion of vehicles in proximity to the schools entrance and crosswalk is a daily safety concern. Ensuring that drivers are paying attention to the school zone and crosswalk is a daily challenge.
- 9) Morning drop off periods are not nearly as congested as the afternoon pick up and are generally not as critical of a safety concern.
- 10) There are only two special needs buses which pick up directly in front of the school on 12th Street. They park to the east of the crosswalk but can obstruct views for the crossing guard and oncoming traffic.



O.C. Johnson bus loading zone on 12th Street



- 11) The biggest challenge to the morning drop off and afternoon pick up times is that there is no central designated place for parent drop off and pick up. Cars typically line up and down 12th Street, local streets south of the school, alleyways and across Avenue A to the east.
- 12) Teachers are required to escort their students to the bus loading and family vehicle loading zones along the front of the school on 12th Street.
- 13) Due to the physical limitations and challenges to the daily drop off and pick up routines, school staff have been proactive in providing instructions (including a map) to parents at the beginning of the school year, reminders on the monthly calendar and blackboard connect calls to remind families. Also, each day teachers and/or staff escort the students from the classroom to the bus loading zone and/or crosswalk areas.

5.2.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.



Vehicle parking on 12th Street at afternoon pick up

In regards to O.C. Johnson, Yuma PD did not identify any priority enforcement issues. They did note that on street parking is prohibited along portions of the north side of 12th Street, and violations can occur as vehicles will park there when no other spots remain. They did point out what school official interviews and the consultant’s field review observed – that there



is fairly considerable pedestrian and vehicular congestion along 12th Street, particularly at afternoon pick up.

5.2.6. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.

Figure 11 illustrates the locations of the various features identified and summarized below. Specific features for O.C. Johnson Elementary are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

12th Street

- Two through lane roadway facility. Classified as a Minor Arterial Street (Constrained) by the City of Yuma but operationally performs like a collector roadway.
- 40 foot pavement width with attached sidewalks and vertical curbing along both sides of the roadway. All sidewalks appear to be 5 feet in width and 8 feet in front of the school. No steep grades were identified.
- Posted speed limit is 25 mph.



12th Street looking west from Avenue A



- There is a mid-block crosswalk directly in front of the school which is manned by a crossing guard. The ramp is not accessible.
- Striped crosswalks exist on the south, east and west legs of the intersection of 12th Street and Avenue A. One crossing guard is located at this intersection.
- The third crossing guard is located at the intersection of 12th Street and 14th Avenue near the Rio Santa Fe Apartments.
- The intersection of 12th Street and Avenue A is a two way controlled stop. Vehicles on Avenue A do not have to stop.



Mid-block crosswalk in front of school



Intersection of 12th Street and Avenue A

- No Parking signage (on school days) is posted (and curb painted red) along the north side of the street on both sides of the intersection with 12th Avenue.



No parking signage on north curb of 12th Street



- No Parking during school days signage along with red painted curb exists along the south curb of 12th Street directly in front of the school, west of the driveway entrance. This area is used as the bus loading zone and gathering area for pedestrians using the mid-block crosswalk. Blue painted curb (no signage) then extends westward along the south curb and then transitions to a yellow painted curb in the vehicular pull out adjacent to the playground.
- No bicycle facilities are signed or striped on 12th Street adjacent to the school. Bike route signage exists on 12th Street west of the school near the Rio Santa Fe apartments.



Painted curbing and bus loading zone along north curb on 12th Street



12th Street, looking east from 14th Avenue. Bike Route signage exists.



Bus loading zone in front of school

- Two permanent “school ahead” signs are posted to the west and the east of the school. Portable school zones signs also used in designated school zone area that extends along the majority of the school frontage.



Vehicles pull out in front of playground on 12th Street

Avenue A

- Roadway has two through lanes and one center turn lane. Designated by the City of Yuma as a Principal Arterial (Constrained).
- Pavement width is 40 feet.
- Detached sidewalks and vertical curbing both sides of roadway in proximity to school. Ramps appear accessible.
- Posted speed limit of 35 mph near school.
- No Parking signage along both sides of roadway in proximity to school.
- Utility poles positioned in landscaping area between sidewalks and curbing on both sides of roadway.
- No marked or striped bicycle facilities in proximity to school.
- Portable school zone signs placed on Avenue A north and south of the 12th Street intersection.



Avenue A looking north adjacent to school



10th Street looking east from 14th Avenue



Area Local Streets

- Local streets inventoried in the field review have a pavement width of 40 feet and posted speed limit of 25 mph.
- Attached sidewalks with vertical curb on both sides of the street.
- No bicycle facilities identified.

School Access Points

- There is one vehicular driveway from 12th Street for both ingress and egress to the school.
- Family vehicle drop off and pick up is prohibited in the parking lot. The parking lot is limited to parking for school personnel, handicapped vehicles and student drop off and pick up for 21st Century program before and after normal school hours. The driveway is gated during school hours.
- Ingress and egress lanes are striped and full access turning movements are permitted.



O.C. Johnson driveway entrance



Pedestrian access way leading to pedestrian gate at the intersection of 12th Street and Avenue A

- Angled parking spaces immediately to the right of the entrance drive aisle could yield conflicts between pedestrian accessing the front office and between vehicles backing out of these (first two) spots into ingress traffic flow.
- There is a second driveway that is accessed from Avenue A, but is only used for emergency response purposes and remains closed during school hours.



- Pedestrian access to the school is well designed and follows pedestrian “desire lines.” Students walking from the north use the mid-block crosswalk (with crossing guard) which is open, visible and a short crossing distance (preferred). Students walking from neighborhoods to the east use the marked crosswalk (and crossing guard) at Avenue A and enter the school at a pedestrian access gate which channels students onto the school grounds thereby avoiding the congestion and conflict with buses and vehicles on 12th Street.



Well marked access from parking lot to school office



Busy mid-block cross walk during

- There are no dedicated bicycle facilities on streets adjacent to the school. The bicycle rack is located in an easily accessible area that is well-monitored.



Underutilized bicycle racks

- There is no crosswalk connecting the parking lot to the front office area.

There are three off-site crossing guards caring for the safety of students walking and bicycling to school. As shown on Figure 11, these locations are; 1) mid-block crossing of 12th Street directly in front of school offices, 2)at the intersection of 12th Street and Avenue A, and 3)at the intersection of 12th Street and 14th Avenue.



Parking

Current on-site parking consists of 56 standard spaces including two signed accessible spaces and two signed visitor spaces. There are a total of 49 school staff members. As previously noted, this parking lot is reserved for school personnel and handicapped drop off and pick up during normal school hours. The parking lot is normally gated when school is in session. The parking lot gate remains open and family vehicles are permitted to use the lot to drop off and pick up students for the 21st Century before and after school program. Most times there is adequate parking for school staff, but not when there are multiple visitors.

The overall design of the parking lot includes angled parking which is generally preferred to enhance driver visibility, particularly in short-term turn over parking lots. Shade trees function well by shading cars in the hot months and enhance the aesthetic appeal of the parking lot area. The parking lot design provides for good traffic flow for permitted users, but in large part only because family vehicle drop off and pick up congestion is avoided.

As further detailed in below, family vehicles park along 12th Street during the morning drop off and afternoon pick up periods.

School Bus Loading Zone

- 1) O.C. Johnson Elementary has 2 special needs buses that arrive and depart with the normal school schedule. There are no general purpose buses.
- 2) The bus loading zone is situated along a segment of the south curb of 12th Street right in front of the school and in front of the gated driveway area. The curb is painted red and signs prohibiting parking during school hours are present.



O.C. Johnson school bus loading zone on 12th Street

- 3) Buses park just to the east of the very busy mid-block crosswalk. The parked buses create a safety hazard by obscuring the view for the crossing guard looking for vehicles traveling westbound from Avenue A. This area is the most trafficked area during the afternoon release.



Afternoon release activities in front of school on 12th Street



Pedestrian blind spot created by bus loading zone

4) The bus loading zone is immediately adjacent to the family vehicle drop off and pick up area which is marked in blue and yellow curbing (no sign) just west of the bus loading zone on the south curb of 12th Street. Typically bus traffic should not share a common “driveway” with family vehicle traffic, but being that the bus loading zone is situated on a 40-foot wide local street and not upon an on-site driveway, this arrangement may not be ideal but is generally manageable and safe given the existing conditions.

5) Buses line up single-file with right wheel to the curb which is a preferred design. As a result, children do not have to walk between buses. There are large “STOP” instructions painted on the sidewalk in



Safety signage creatively painted on 12th Street sidewalk in front of school

front of the school serving as a reminder to children to stay on the sidewalk and away from approaching buses and vehicles driving on 12th Street.



- 6) The bus loading zone is very compact and does not have additional capacity for more than three buses. Buses do pull forward in egress movements. No backing movements are necessary.

Family Vehicle Drop-off and Pick up Procedures

- 1) There is no designated family vehicle drop off and pick up area on the school property. As previously noted all family vehicles drop off and pick up students along the south curb on 12th Street, to the west of the bus loading zone.

- 2) The family vehicle drop off and pick-up area is separated from the parking lot functions which is generally preferred. However, this parent drop off area is not provided upon the school property which is not an ideal design, but is safe from the standpoint that students are loaded and unloaded directly from the curb/sidewalk, and adjacent to the school.



Family vehicles parked on both sides of 12th Street during afternoon pick up

- 3) West of the bus loading zone, the curb is painted blue which typically signifies passenger loading and unloading areas (no signage identified). This “front end” of the family vehicle loading zone is approximately 165 feet in length which can accommodate up to nine (9) vehicles. Continuing to the west is a vehicle pull out area that has yellow painted curbing and is approximately 240 feet in length which can accommodate another 13 vehicles. In total, this family vehicle loading zone can accommodate up to 22 standard sized vehicles.
- 4) Family vehicles also tend to park outside of the designated family vehicle drop off and pick up area. In the congestion of the afternoon pick up routine, cars park between the driveway and Avenue A on the south curb and across many areas along the parking prohibited north curb of 12th Street, including areas marked for no parking. School officials attempt to limit vehicles parking in between the driveway and Avenue A because children have to cross in front of the school driveway and in front of buses. Buses egressing can have difficulty fitting through the parked cars, school zone signage and oncoming vehicles.



Vehicles parked on 12th Street, east of the school driveway



Alleyway just west of school campus

- 5) The lengthy nature of the formal and informal family vehicle drop off and pick up area makes it difficult for school staff to ensure that students are safely getting to their family vehicle. Family vehicles sometimes park in the alleyway to the west of the school. This creates blind spots for pedestrians and drivers along 12th Street.

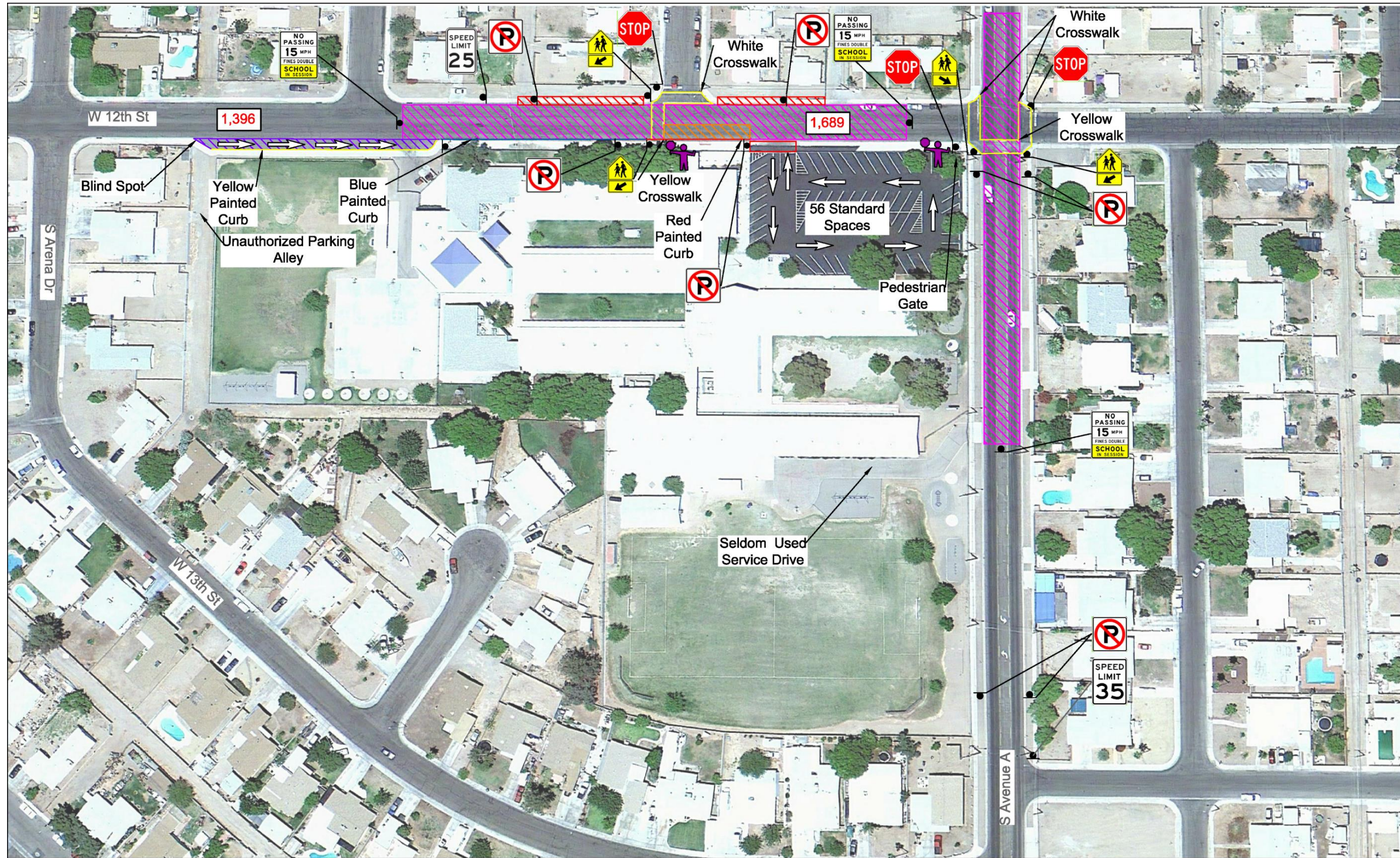


Figure 11: O.C. Johnson Elementary School – School & Neighborhood Audit Findings



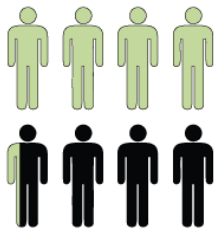
5.2.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers

O.C. Johnson Elementary School

DEMOGRAPHICS

2,986 Total Population
(Enrollment Boundary)

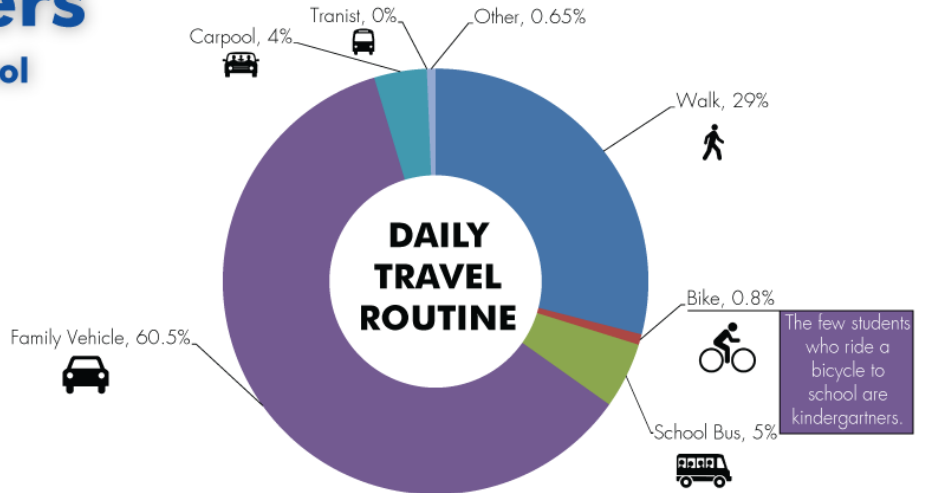


66.6%
Minority

61% Hispanic Or Latino

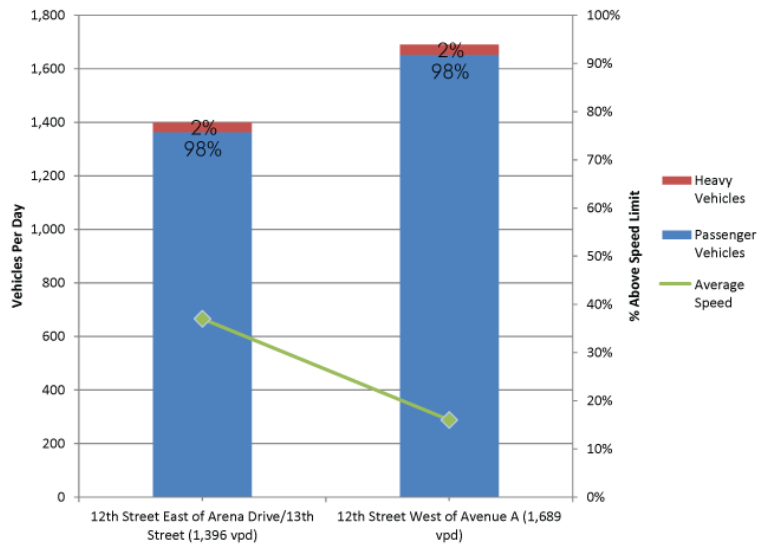
Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView

Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.



The few students who ride a bicycle to school are kindergartners.

ROADWAY COUNTS



CRASH DATA 5 Year Summary



Data: 5 Year Summary, Driving School Hours, and Weekdays
Source: ADOT, Michael Baker International



5.2.8. School-Specific Engineering Recommendations

OC Johnson Elementary has been serving Yuma since 1956 and is continually plagued by the lack of an on-site bus loading and family vehicle drop-off and pick-up area. As a result, vehicular congestion occurs daily as the bus loading zone is situated right in front of the school on 12th Street and family vehicles drop-off and pick-up their students in authorized and unauthorized areas along both sides of 12th Street. Approximately 1/4 to 1/3 of all students walk to and from school each day with the vast majority of students using the family vehicle/carpool. There are two special-needs buses. School policy requires that students must be at least 8 years old to ride their bicycles, which accounts for zero students in K-4th grade ride their bikes and approximately 3% to 4% of 5th graders ride their bicycle to school.

On-site parking at 56 spaces is not abundant, but is considered sufficient to serve the existing staff size (49) as well as visitors. All local streets in proximity to the school have sidewalks on both sides of the street and the bike racks are located in a desirable location. Please refer to Figure 12 for map reference of each project described below.

OC #1	Install ADA accessible ramp from existing side walk to existing mid-block crosswalk.
Findings	There is no curb ramp linking the existing, heavily used sidewalk on the east side of 12th Street fronting the school leading to the mid-block crosswalk on 12th Street.
Project Description	Install ADA accessible curb ramping at this important crosswalk location.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

OC #2	Relocate bus loading zone.
Findings	Suggested design guidance from both the National Center for Safe Routes to Schools and ADOT suggest that curb parking should be prohibited in advance of pedestrian crossings to maximize pedestrian and motorist visibility. The current bus loading zone location, while convenient, greatly reduces oncoming motorist and student pedestrian visibility. This space should be used as a buffer to the crosswalk and family vehicle staging area.
Project Description	Construct one-way southbound 20-foot school bus driveway and loading zone accessible from the existing service drive entrance on Avenue A. Due to the small school enrollment boundary and two special-needs buses daily, bus loading zone storage depth can be maintained at a three bus capacity. New bus loading zone location is more convenient to special-needs classrooms. Relocation of



	seldom used tether-ball apparatus is necessary.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$\$\$

OC #3	Expand existing pull-out area for family vehicle drop-off and pick-up.
Findings	There is no on-site family vehicle pick-up/drop-off area and there is a shortage of spaces along 12th Street. Family vehicle loading area needs to be maximized on the south curb that fronts the school for safe and convenient access that also will maintain through traffic on 12th Street.
Project Description	Expand the existing vehicle pull-out area approximately 165 -200 feet east from its existing eastern terminus to maximize the loading area. See Figure 12. Eliminate inconsistent curb painting to provide continuous curb painting (yellow) and corresponding signage in accordance with MUTCD standards and specifications to properly designate family vehicle drop-off and pick-up area. Support this area with two additional adult assistants to safely escort students and facilitate traffic flow. Prohibit parking for 30 feet on either side of the existing mid-block crosswalk for line of sight and safety purposes.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$

OC #4	Install "School Zone Ahead" warning signage on 12th Street west of the school.
Findings	There is an absence of appropriate warning signage for eastbound motorists arriving towards the school from the west.
Project Description	Install MUTCD W16-9p fluorescent yellow green "Ahead" warning signage near Arena Drive and in accordance with MUTCD standards and specifications.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

OC #5	Install bollards in service alley entrance west of school.
Findings	Family vehicles will sometimes use the alley for pick-up and drop-off activities. This creates vehicle/pedestrian conflicts and turning movements that are conducted in a blind spot due to the jog in the property line in this area.
Project Description	Prohibit vehicular access to the alley by installing bollards in



	accordance with City of Yuma standards and specifications at the driveway entrance into the alleyway from 12th Street.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

OC #6	Install Bike Route Signage Along 12th Street.
Findings	The Yuma Bicycle Facilities Master Plan identifies 12th Street, both east and west of Avenue A as a future Bike Route. 12th Street has a 40-foot pavement section.
Project Description	Install bike route signage or sharrows along both sides of 12th Street in accordance with MUTCD standards and specifications.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$-\$\$

OC #7	Develop flier/handout for parents describing new procedures.
Findings	In response to implementation of these projects, OC Johnson should draft a flyer describing and depicting the new drop-off and pick-up procedures for parents.
Project Description	OC Johnson officials should develop a color flyer for parent consumption that describes and graphically depicts the modified bus, parent vehicle and suggested walking and bicycling access procedures.
Lead Organization/ Project Partners	OC Johnson administration/Yuma School District One
Cost Indicator	\$

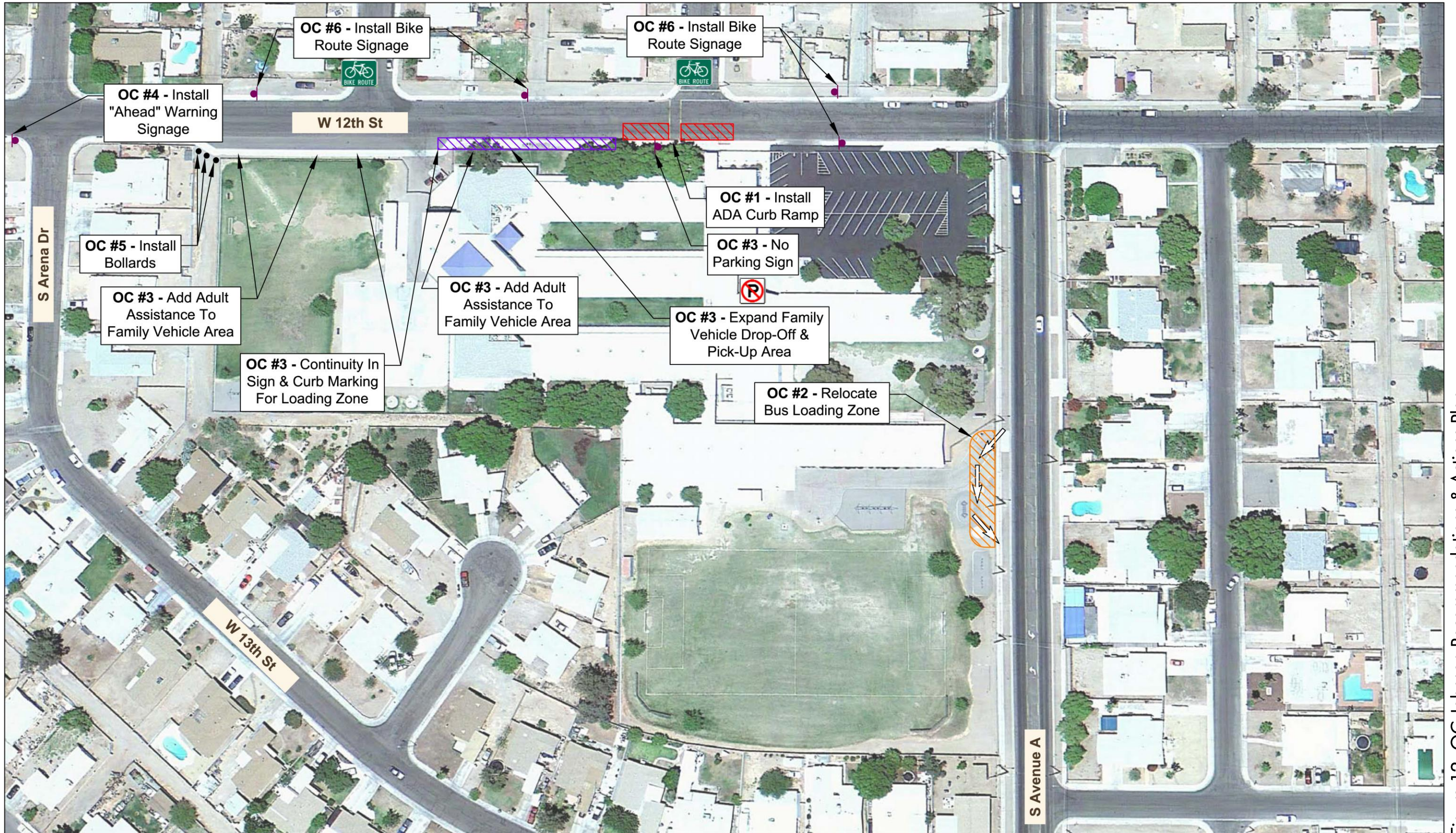


Figure 12: OC Johnson Recommendations & Actions Plan



5.3. Sunrise Elementary & Ron Watson Middle School

5.3.1. School Setting and Enrollment Characteristics

5.3.1.1. Sunrise Elementary

Sunrise Elementary is one of the newer schools in the District and was built in 2006. The school is located in the Fortuna/Foothills area at 9943 East 28th Street at the southwest corner of 28th Street and South Avenue 10 E. The Fortuna/Foothills area is one of the faster growing regions in the city of Yuma with a 2010 Census population of 26,265. The Sunrise Elementary campus is co-located with the Ron Watson Middle School campus located immediately west of Sunrise Elementary school. The two schools share a common driveway and other facilities.



Sunrise Elementary School

Sunrise Elementary is a K-5 school and currently has 670 students enrolled with a maximum student capacity of 730 students (current building facilities). Due largely to its location in the Fortuna/Foothills area, student enrollment at Sunrise Elementary is expected to increase in the future.

As the current enrollment boundary illustrates in Figure 14, the Sunrise Elementary enrollment boundary is one of the District's more expansive areas at approximately 41 square miles located both north and south of Interstate 8. The Sunrise Elementary enrollment boundary is co-terminus with the Mary Otondo Elementary enrollment boundary both north and south of Interstate 8 in the Fortuna/Foothills area. Due to the large expanse of the enrollment area, a majority of students utilize a family vehicle or school bus to get to and from school.

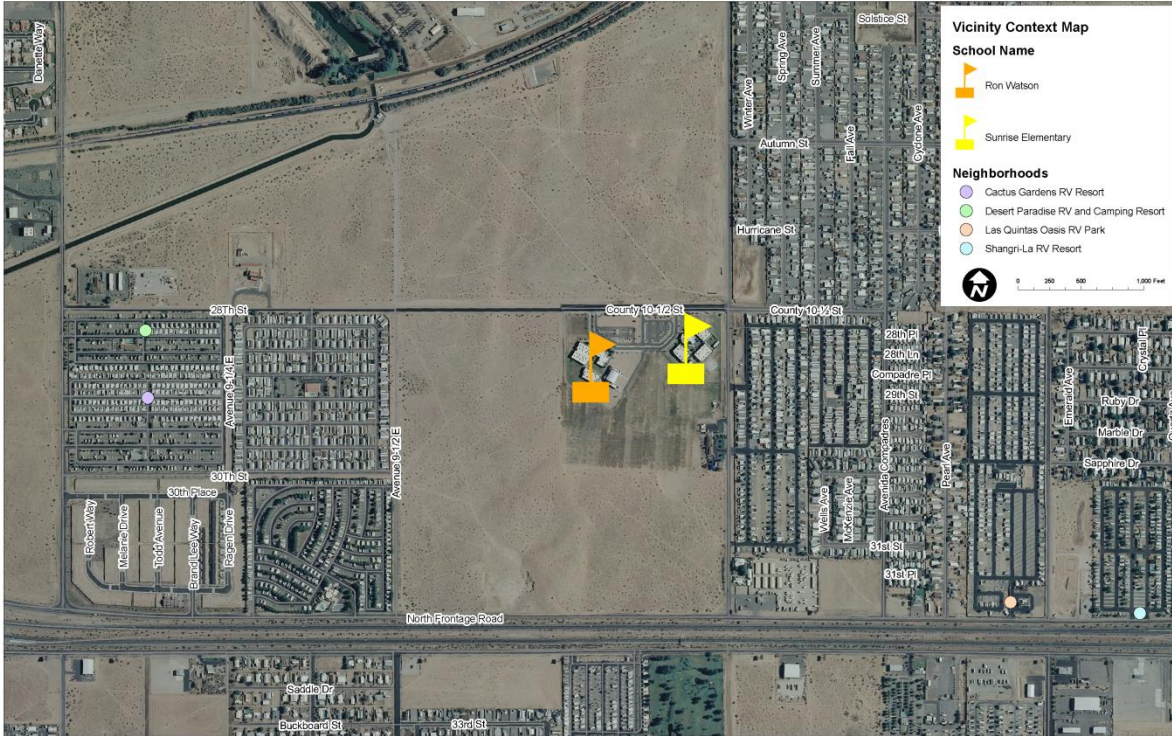
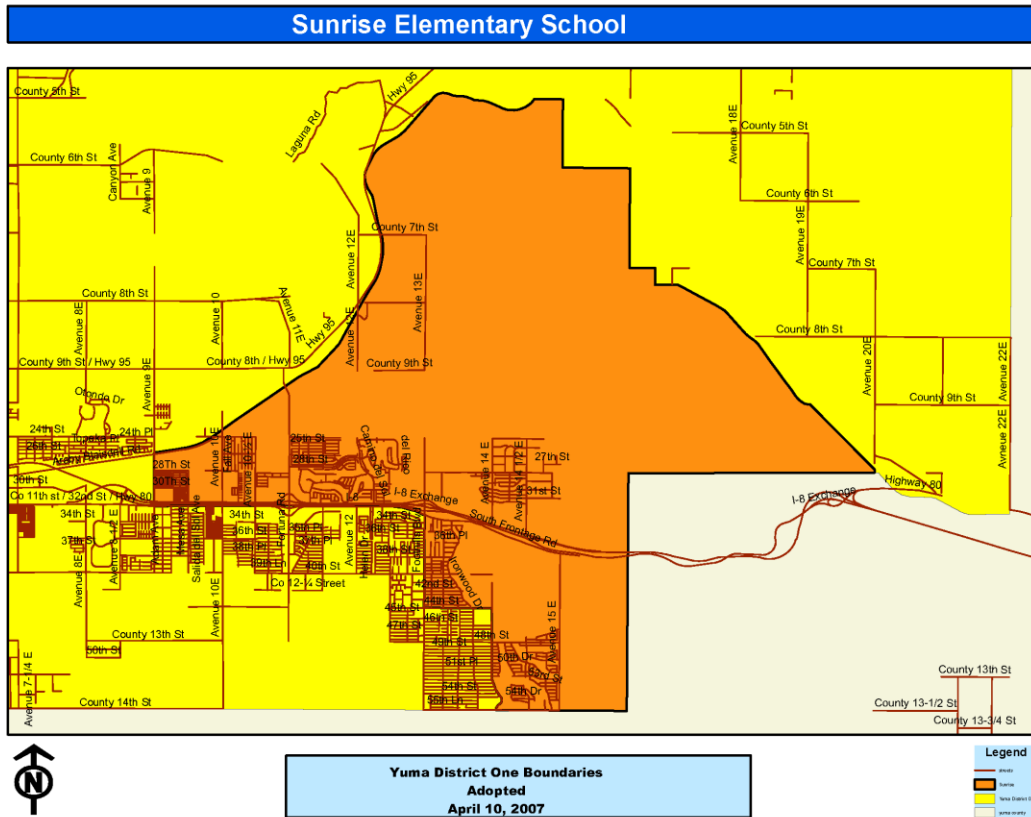


Figure 13: Vicinity Context Map



Source: Yuma School District One

Figure 14: Sunrise Elementary School Enrollment Boundary



5.3.1.2. Ron Watson Middle School

Ron Watson Middle School is located directly adjacent (west) to Sunrise Elementary at 9851 East 28th Street. The school was built in 2004. Ron Watson Middle School houses grades, 6, 7 and 8 and has a current enrollment of 420 students. Like Sunrise Elementary, the student enrollment is expected to increase due to the expected population growth in the Fortuna/Foothills area of Yuma.

As the current enrollment boundary illustrates in Figure 15, the Ron Watson Middle School boundary is similar to the Sunrise Elementary enrollment boundary. It is also one of the District’s more expansive areas at approximately 49 square miles located both north and south of Interstate 8. Due to the large expanse of the enrollment area, a majority of students utilize a family vehicle or school bus to get to and from school.

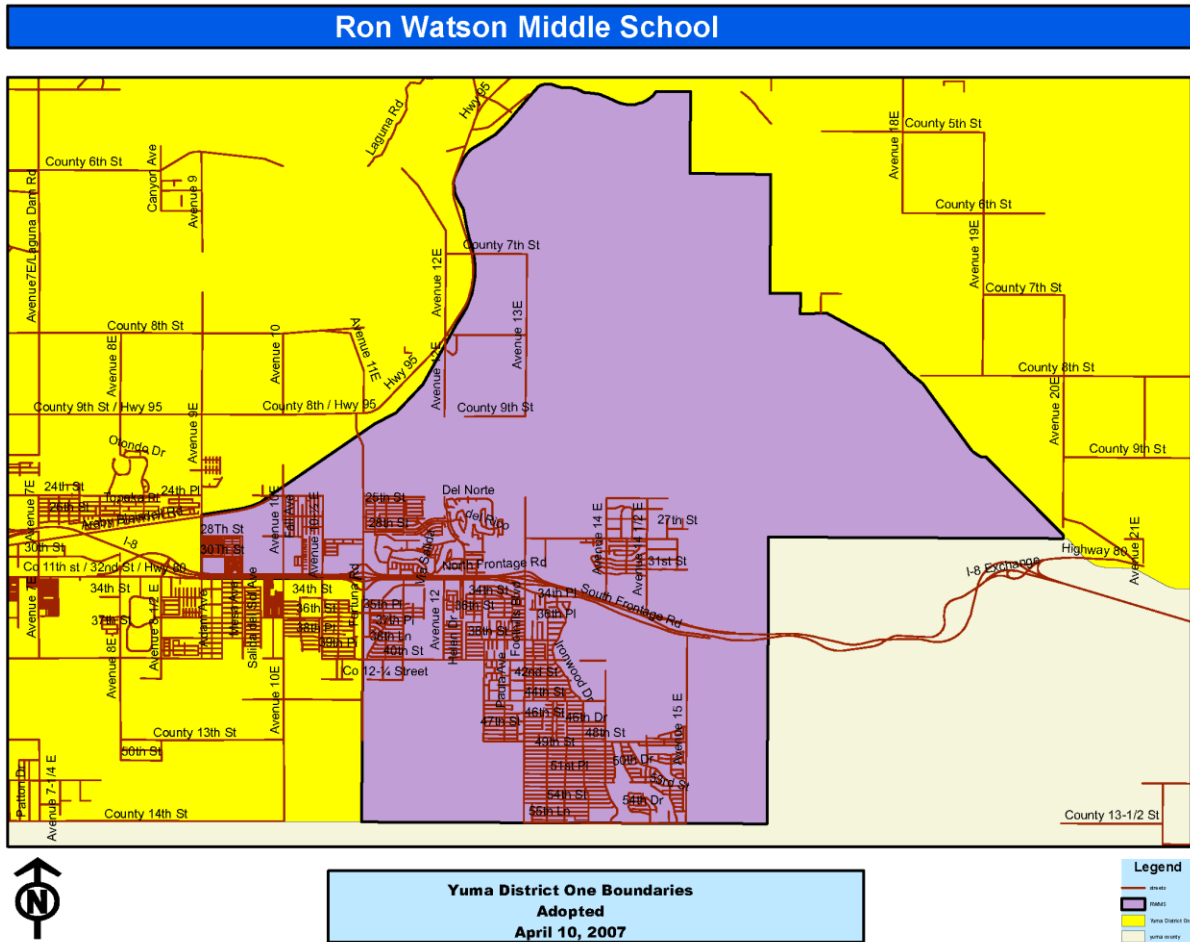


Figure 15: Ron Watson Middle School Enrollment Boundary

Source: Yuma School District One



5.3.2. Neighborhood Character

There is a large swath of vacant Bureau of Land Management (BLM) to the north of the school and vacant properties south of the school that have frontage onto the I-8 Frontage Road. There are many existing residential subdivisions, mobile home parks and RV communities in the vicinity of Sunrise Elementary. Due to the existence of the mobile home park and RV subdivisions, many of the area residents in close proximity to the school are part time.



Residences in proximity to Sunrise Elementary School

Since the school is located in the western-most portion of the enrollment boundary, the vast majority of students live to the east and south of the school. 28th Street has two travel lanes with a center turn lane from Avenue 10 E to the western property line of the Ron Watson Middle school where the street tapers to a two lane roadway west of the middle school property.



5.3.3. Yuma School District One Identified Needs & Deficiencies

Sunrise Elementary (paired with Ron Watson Middle school) was identified by the District as the #3 priority school(s) in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

"There is only one drop-off and pick-up lane that is used by buses and parents for both schools. As a result, parents park across the street on undesignated areas and create congestion and an unsafe environment for children crossing 28th Street to get to their parents vehicles parked along 28th Street. Students and parents do not use the existing crosswalk because of its isolated location."

5.3.4. School Official Interview & Observations

5.3.4.1. Sunrise Elementary

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). Some of the more notable issues or concerns identified through our interview with Sunrise Elementary and Ron Watson Middle School staff includes the following observations:

- 1) There is not enough parking for school staff. When all staff is present, they must park in the dirt or on 28th Street. The problem is compounded at times when visitors arrive.
- 2) Speeding can be a problem on 28th Street. The City of Yuma Police Department enforces at beginning of school year, but then not frequent/consistent enough throughout the school year.
- 3) Family vehicles at times will utilize the designated bus only driveway.
- 4) Due to the lack of on-site parking, parents do park along 28th Street to pick up students. This is a big safety concern. The street is signed "no parking" but not enforced.



No Parking Sign along 28th Avenue



- 5) There is no school resource officer (common for elementary schools).
- 6) Because there is only one bus lane for both schools, Sunrise Elementary buses at times must wait for Ron Watson Elementary School buses to depart before the Sunrise buses can get through, causing up to 20 minute delays at least one day a week or more frequently. Ron Watson school dismissal occurs 10 minutes prior to Sunrise Elementary.
- 7) Family vehicles often “clog” the designated drop-off lanes as vehicles will park in the through lane, not allowing traffic to progress through the site. The problem is especially acute in the afternoon pick up when everyone arrives at the same time.
- 8) Generally speaking, the afternoon traffic congestion is worse than the morning. This is primarily due to staggered morning drop-off times and one pick up time in the afternoon.
- 9) Kindergarten and First grade students are required to be picked up by their parents in the cafeteria. Parents then are required to get out of their cars, often arrive early and consume parking spaces in the parking lot or on 28th Street.

5.3.4.2. Ron Watson Middle School

- 1) A lack of onsite parking spaces is creating the need for family vehicles to park along 28th Street. The number of parking spaces constructed was much fewer than what was originally identified on the school construction plans. Many parking spaces were not constructed due to budget limitations and high construction costs. The parking lot is badly undersized; there are not enough spaces to park the entire staff, let alone visitors or those who utilize the school’s athletic fields for after school sports activities, parent-teacher conferences, choir concerts and or other school activities. The kitchen staff by example parks on the side of buildings and staff and overflow visitor parking ends up parking on the dirt areas outside of designated parking area causing a traffic safety concern and negatively impacting school property. The parking problem is so acute



School Staffs Overflow Parking



that the school recently converted some formerly designated handicapped spaces into standard parking spaces.

- 2) There are two crosswalks primarily utilized on a daily basis. The crosswalk at the intersection of 28th Street and South Avenue 10 E and a cross walk in front of the school office between the bus lane and family vehicle drop off lane. There are crossing guards stationed at each crosswalk daily.



Intersection of 28th Street and South Avenue 10 E



Visitor Overflow Parking

- 3) Similar to Sunrise Elementary observations, family vehicles parked along 28th Street before and after school is a continuous problem. Students cross through the parking lot and across access driveways to get to their family vehicle parked on 28th Street. This certainly creates a safety concern, but with Ron Watson students being older, it is not as significant of concern as for the Sunrise Elementary students who are younger.



Family vehicles parked in front of school on 28th Street

- 4) Vehicle speeding along 28th Street can be a problem at times. Law enforcement presence helps reduce speeding, but there is a desire to have a more regular enforcement presence rather than the occasional targeted enforcement that occurs today.



- 5) Ron Watson does have a school resource officer however their prescribed duties do not include assisting the direction of traffic or crossing guard duties during the morning drop off and afternoon pick up routine.
- 6) Ron Watson Middle School has not participated in any Safe Routes to School programs or activities in recent years. It was noted that due to the large enrollment boundary area (south of Interstate 8) and number of retirement aged residential homes in close proximity of the school, the vast majority of students are bused or dropped off by their families. Very few students walk or bike to the school.
- 7) The separated bus and family vehicle driveway configurations generally function well with no significant issues or problems. Mornings are less congested due to the staggered drop off times. There is one school staff member directing vehicle traffic. Afternoon pick up is more congested and there is one additional crossing guard to assist students crossing the bus lane to get to their family vehicles.
- 8) The primary concern with afternoon congestion is that family vehicles tend to stop in the through lane of traffic in the family vehicle only driveway, causing backups onto 28th Street.

5.3.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.

Traffic violations most commonly observed by Yuma PD near Sunrise Elementary and Ron Watson Middle School are speeding on 28th Street and parents parking along 28th Street to drop-off and pick up their children. As also noted by school staff and observed by the consultant, the large tract of vacant BLM land to the north of 28th Street and vacant parcels to the south can give a driver the feel that roadway speeds are 35 mph, not the posted 25 mph. The roadway is straight and flat and is at the edge of existing development. Yuma PD noted that speeding often occurs to the west of the school near South Avenue 9 East. It was



suggested that perhaps improved speed limit signage along 28th Street could help alleviate the speeding problem. Yuma PD also indicated that family vehicles parking along the north and south sides of 28th Street to drop students off in the morning and pick them up in the afternoon is a persistent problem.

5.3.6. Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

28th Street

- Two lane roadway with center striped turn lane
- No Parking signage along north side of roadway



No Parking signs along the north side of 28th Street

- Signed and striped bike lanes on both sides of the roadway
- Attached sidewalk on south side of roadway only
- Four-way stop control at intersection with South 10 Avenue E
- White striped cross walk on south and west legs only at intersection with South 10 Avenue E



- Roadway pavement tapers to two lane roadway (no center turn lane) just west of Ron Watson Middle School property line



Lack of crosswalk along north leg of 28th Street and South Avenue 10 E intersection



Crosswalks along west and south legs of the 28th Street/ South Avenue 10 E intersection



Scalloped roadway on 28th Street, west of school



South 10th Avenue E

- Two lane roadways not striped and is classified as a Collector Street by the City of Yuma.
- No sidewalks on either side of roadway.
- No bicycle facilities.
- Paved shoulders both sides along school frontage.

School Access Points

- Designated bus and separate family vehicle driveway entrances at Ron Watson Middle School.
- One way directional flows only.
- Sunrise Elementary buses at time must wait for Ron Watson buses to depart prior to getting through to Sunrise Elementary (bell 10 minutes prior).
- Middle driveway is an egress driveway shared by Ron Watson Middle School buses and Sunrise Elementary family vehicles. As a result, stacking and queuing of family vehicles in the Sunrise parking lot creates delays and confusion of on-site circulation, particularly at afternoon pick up time.



Egress only driveway in middle of two schools



Unauthorized overflow parking along egress driveway



Parking

Sunrise Elementary

Current on-site parking has approximately 42 spaces and is undersized to serve 60 existing staff members plus visitor parking. Due to lack of parking spaces, parents' park along 28th street and in bus designated driveway. On street parking is prohibited along 28th Street. Family vehicles parked along 28th causes students to cross through bus traffic and through the school parking lot creating a safety hazard.



Sunrise Elementary Parking Lot

Ron Watson

The parking lot is badly undersized. There are not enough spaces to park the entire staff, let alone visitors or those who utilize the school's athletic fields for after school sports activities, parent-teacher conferences, choir concerts and or other after school activities. The parking problem has been such a challenge that some of the former handicapped spaces were converted to standard spaces. There are approximately forty (40) spaces. The lack of on-site parking causes more family vehicles to park along 28th Street as previously noted.

School Bus Loading Zones

- Due to the large enrollment boundary, many students arrive and depart school by bus.
- Buses for both schools line up single-file with right wheel to the curb which is a preferred design.
- There are two outbound lanes designated for buses, driveways are one-way direction only and operate in a counter-clockwise direction.
- Sunrise Elementary has 6 regular school buses and one special needs bus, Ron Watson has eight (8) daily buses. With the newer school facility design, the bus loading zones operate and function well with few safety issues identified.
- There is enough stacking room for the 8 buses, though one bus usually is forced to straddle the crosswalk, creating a blind spot for student crossing, though a crossing guard is positioned at this location



- Ron Watson buses egress the school via the middle driveway. A stop sign warning family vehicles of buses crossing is located at this driveway intersection
- Afternoon delays of approximately 10-20 minutes can occur on average of once per week due to Sunrise buses having to wait for Ron Watson Middle School buses to depart before their buses can arrive since they all share the same driveway.



Marked crosswalk from parking lot across bus loading zone at Ron Watson Middle School



Family Vehicle Drop-off and Pick up Procedures

- 1) The family vehicle drop-off/pick up zones for both schools is accessed from one driveway entry point at Ron Watson Middle School.
- 2) Fronting curb space is maximized with a long driveway length.
- 3) Vehicles picking up and dropping off park along the curb and a there is enough driveway space for a second through lane.
- 4) Students loading and unloading from family vehicles must cross the bus loading zone area/driveway to access school buildings.
- 5) Afternoon egress from the Sunrise Elementary often gets congested at the egress driveway. Cars commonly are stacking in the parking lot area, creating a hazard for student pedestrians.



Family vehicle load zone sign



Family vehicle loading zone at Ron Watson Middle School

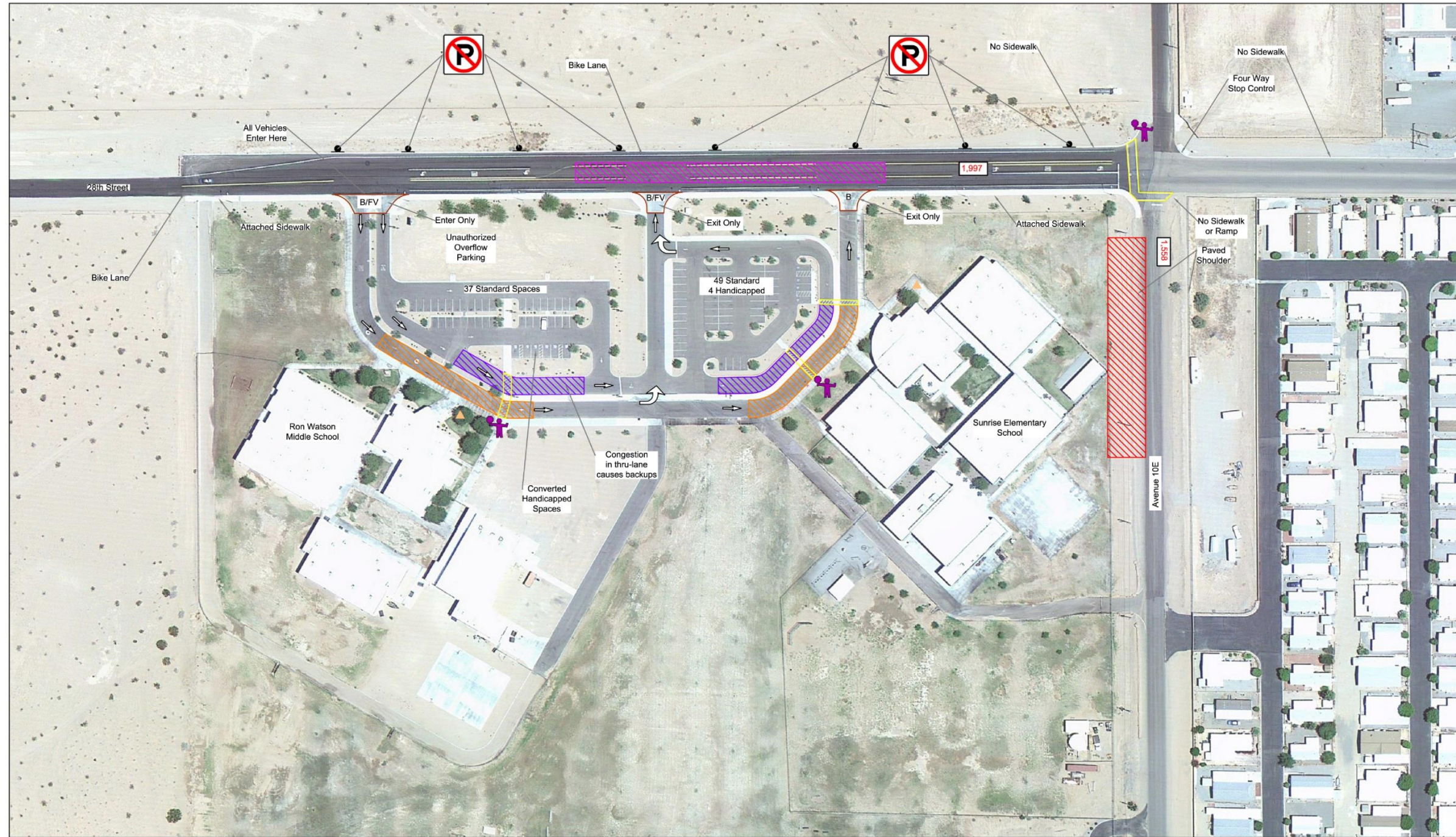


Figure 16: Sunrise Elementary School & Ron Watson Middle School - School & Neighborhood Audit Findings

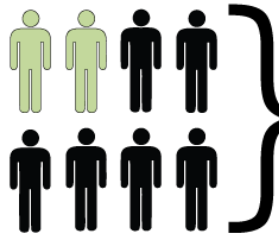


5.3.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers
Sunrise Elementary School

DEMOGRAPHICS

19,830 Total Population
(Enrollment Boundary)

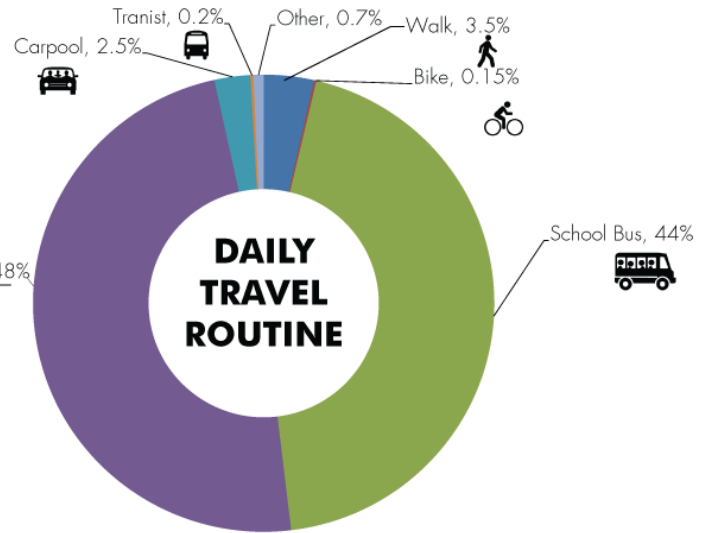


32.5%
Minority

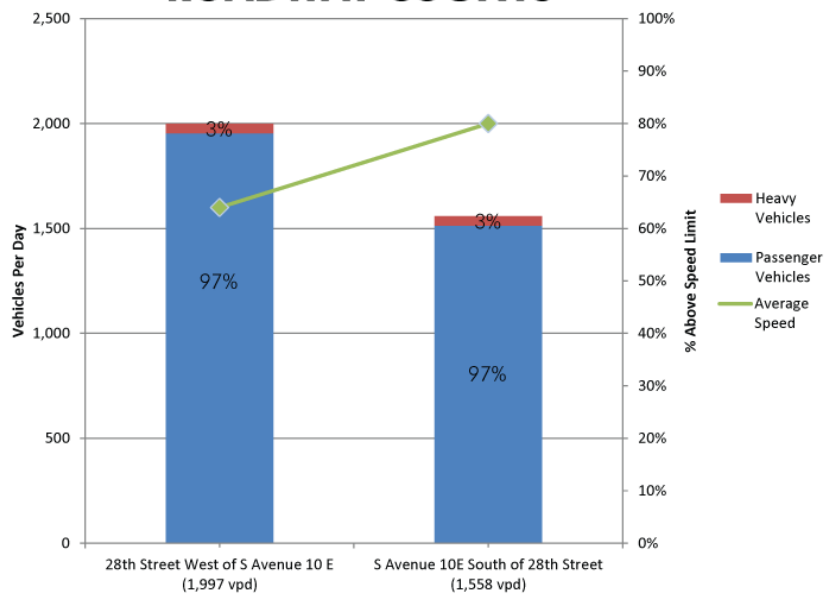
28% Hispanic Or Latino

Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView

90% to 95%
of all students
either take the
bus or a family
vehicle to and
from school.



ROADWAY COUNTS



Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.

CRASH DATA
5 Year Summary



Data: 5 Year Summary, During School Hours, and Weekdays
Source: ADOT, Michael Baker International

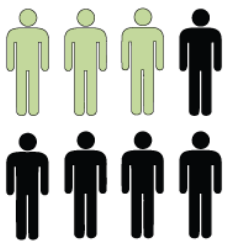


By The Numbers

Ron Watson Middle School

DEMOGRAPHICS

8,350 Total Population
(Enrollment Boundary)

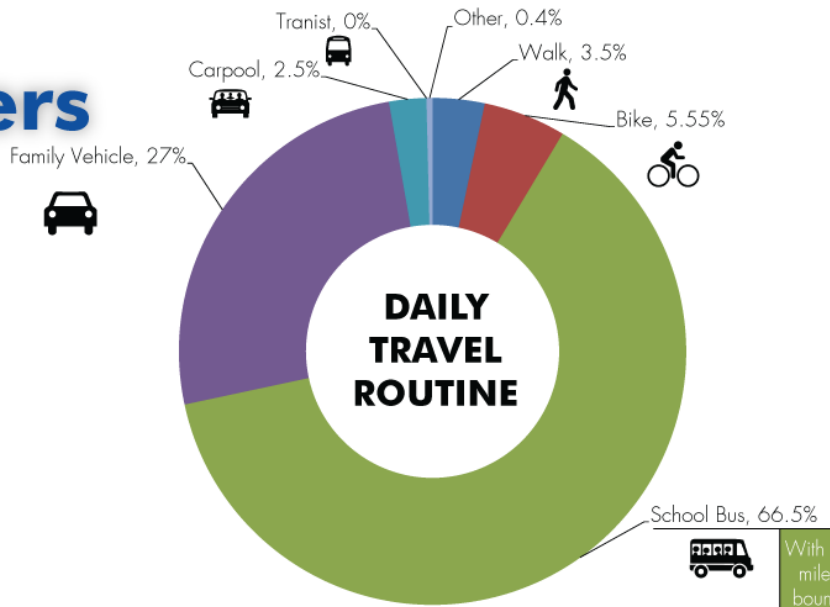


39.4%
Minority

34% Hispanic Or Latino

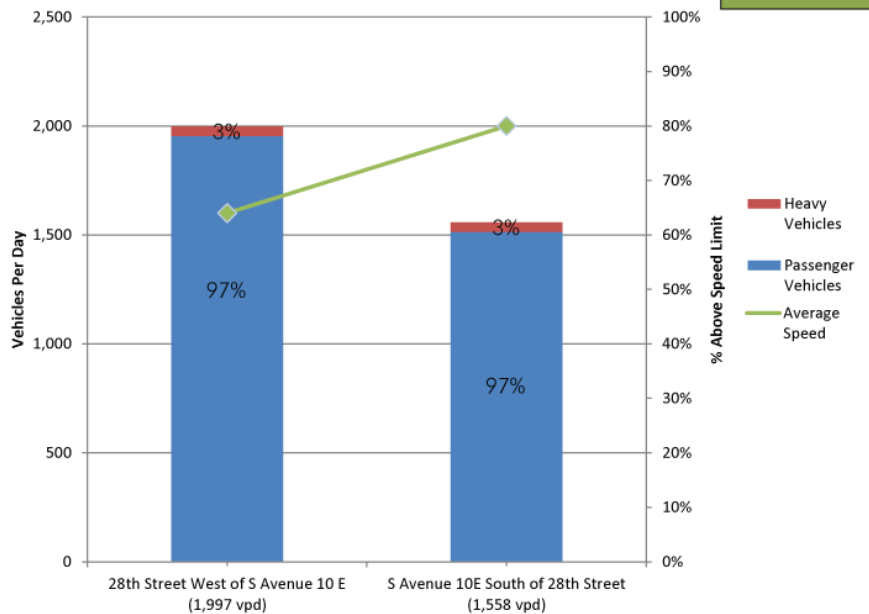
Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView

Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.



With a 49 square mile enrollment boundary, many students live in the Foothills

ROADWAY COUNTS



CRASH DATA 5 Year Summary



Data: 5 Year Summary, Driving School Hours, and Weekdays
Source: ADOT, Michael Baker International



5.3.8. School-Specific Engineering Recommendations

As aptly noted in their PARA application to ADOT, both schools have a pronounced lack of parking which leads to family vehicles illegally parking along 28th Street. This triggers students to cross 28th Street outside of any designated crosswalk creating a safety hazard. Parking is prohibited along the north side of 28th Street and is a persistent enforcement issue that will likely continue due to the lack of available parking.

The very large majority of students at both schools take the bus or a family vehicle due to the large enrollment boundary (40 + square miles) and the fact that many students live south of I-8. In fact, only 2% to 5% of all students at both schools walk to school. On average, less than 1% of students ride their bicycles to school from Sunrise Elementary and about 5% from Ron Watson Middle School.

There was a previous suggestion to evaluate moving the bus loading zone to the east side of Sunrise Elementary to access off Avenue 10E. Because the unified bus and family vehicle loading zones operate at an acceptable level of service, the “benefit” of relocating the bus loading zone does not outweigh the cost and as a result was not included in the following project recommendations. Please refer to Figure 17 for map reference to the projects described below.

SR/RW #1	Construct additional school staff and visitor parking – Ron Watson.
Findings	There are 37 existing parking spaces for staff and visitors. 61 total spaces are needed to adequately serve the 55 school personnel plus visitor parking. A larger parking area was designed with the original site plan, but reduced due to construction budget constraints.
Project Description	Construct a minimum of 24 additional parking spaces by expanding the existing parking lot to the north. Expanded design should complement the existing parking lot configuration and layout. Consider adding additional parking as budget permits to plan for expected population growth in the Fortuna/Foothills area.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$\$

SR/RW #2	Construct additional school staff and visitor parking – Sunrise.
Findings	There are currently 49 standard and 4 accessible parking spaces for staff and visitors. 66 total spaces are needed to adequately serve the 60 school personnel plus visitor parking. A larger parking area was designed with the original site plan, but reduced due to construction budget constraints.
Project Description	Construct a minimum of 13 additional parking spaces, designed with room for future expansion. Future expansion could occur to the west



	and be a joint-use parking lot with Ron Watson staff. This lot would be designated for staff only and would be accessed from the existing fire service drive off South Avenue 10E. This area would be designated for staff parking thereby increasing additional family vehicle capacity of the primary parking lot.
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$\$\$

SR/RW #3	Install speed limit signage along 28th Street. Reduce speed limit to 25 mph during school hours. Install "Your Speed Here" signage.
Findings	There is a lack of speed limit signage along 28th Street along the approach (east and west) for each school. Nearly 70% of the vehicles on 28th Street exceed the posted speed limit of 25 mph.
Project Description	Suggest installation of MUTCD signs R2-1 supplemented with S4-3P and S4-1p that establish 25 mph during school hours. Install solar powered speed sign in each direction approaching the school campus on 28th Street.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$

SR/RW #4	Construct sidewalks along both sides of South Avenue 10E and 28 th Street.
Findings	As a primary thoroughfare accessing both schools, sidewalks are needed to promote pedestrian usage and enhance pedestrian safety and comfort.
Project Description	Construct sidewalks along both sides of South Avenue 10E from 28th Street south to the I-8 frontage road. For this 1/2 mile length, there are dirt shoulders existing on both sides of the roadway within the existing right-of-way. Construct sidewalk along both sides 28 th street east of south avenue 10E.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$\$



SR/RW #5	Install white striped Crosswalk on the north and east legs at the intersection of 28th Street and South Avenue 10E.
Findings	This is the most active intersection with closest proximity to both schools and lacks necessary crosswalk striping on two of the four legs of this intersection.
Project Description	Install white striped Crosswalk on the north and east legs at the intersection of 28th Street and South Avenue 10E.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

SR/RW #6	Construct bike lanes on both sides of South Avenue 10E.
Findings	The City of Yuma has identified South Avenue 10E for bike lanes as the roadway is fully constructed to its ultimate cross section. Parent surveys have indicated that they would let their child walk/ride a bike if there were facilities on South Avenue 10 E.
Project Description	As the roadway is constructed to its ultimate cross section, incorporate bike lanes on both sides of South Avenue 10E from the I-8 Frontage Road to 28th Street. Also construct a pathway along Sunrise Elementary school property to connect to South Avenue 10E and install bike racks in front plaza area. See Figure 17 for reference.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$-\$\$\$\$

SR/RW #7	Consider evaluation and construction of an alternate parallel egress driveway from the Sunrise parking lot to 28th Street.
Findings	At afternoon pick-up peak, family vehicles often are congested to egress the parking lot as they must share one exit driveway with Ron Watson buses.
Project Description	Further engineering investigations and a city design exception are likely needed, but consider the construction of an exit only driveway from the Sunrise Elementary parking lot. In similar context to the dual ingress driveways at Ron Watson, dual egress driveways will alleviate congestion as one driveway is designated for vehicles and the second is for buses only.
Lead Organization/ Project Partners	Yuma School District One/City of Yuma
Cost Indicator	\$\$



SR/RW #8	Enhance operations and safety of the family vehicle pick-up and drop-off area – both schools.
Findings	Family vehicles tend to park/stop in the through lane which causes undue congestion for both schools. A second school staff member (or adult assistant) positioned at the crosswalk between the school bus loading zone and family vehicle drop-off and pick-up area would enhance safety since blind spots and congestion occur.
Project Description	Add appropriate striping and signage to the family vehicle approach driveway and loading zone areas to reinforce motorist’s behavior.
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$

SR/RW #9	Expand the practice of targeted enforcement by Yuma PD to 3-4 occasions each school year.
Findings	Motorists speeding and illegal parking on the north curb of 28 th Street is a persistent problem plaguing this area. By example, 40% of all drivers exhibited speed in excess of 25 mph during peak afternoon pick-up times and each principal reports that family vehicles continually park in prohibited parking areas along the north curb of 28 th Street. Speeding on 28 th Street was the most cited written response in the parent survey.
Project Description	Yuma PD has limited resources but does initiate targeted enforcement at the beginning of each school year. Consider expanding enforcement to reduce speeding and illegal parking that compromises child safety.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$-\$\$

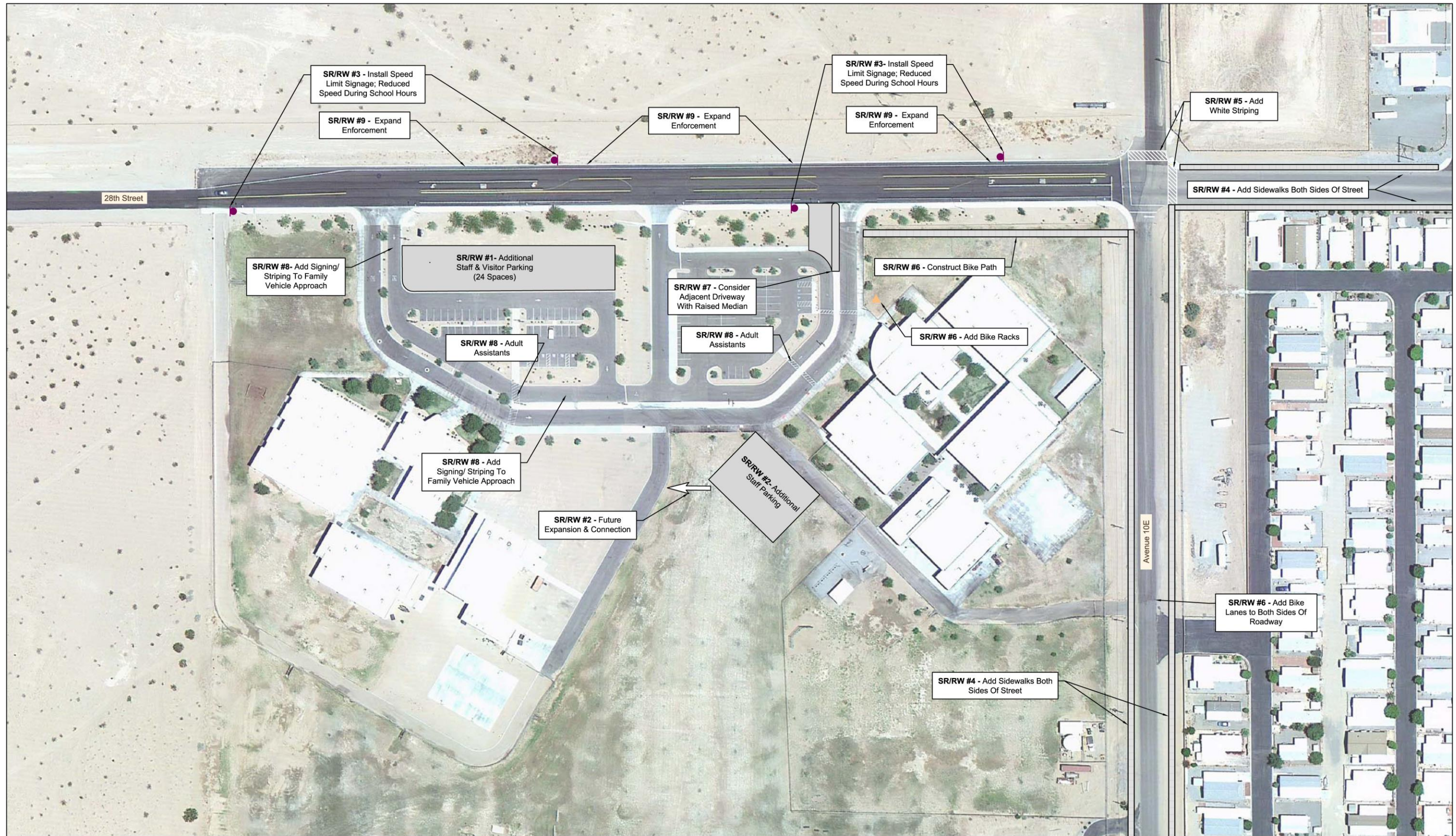


Figure 17: Ron Watson/Sunrise Recommendations & Actions Plan



5.4. Roosevelt Elementary & Fourth Avenue Middle School

5.4.1. School Setting and Enrollment Characteristics

5.4.1.1. Roosevelt Elementary

Originally constructed in 1926, Roosevelt Elementary is the second oldest school facility in the District. Located near the historic center of the City of Yuma, the school is situated at the northeast corner of 5th Street and 6th Avenue and is co-located with the Fourth Avenue Junior High to the east. While each school has their own distinct buildings, they share several access driveways and other recreational facilities.

Roosevelt Elementary is a K-5 school and currently has an enrollment of 354 students. Although the school has experienced extensive renovations since its construction, enrollment is not expected to increase in the future due largely in part to facility space limitations and the built-out nature of the surrounding enrollment area.



Roosevelt Elementary School

As the current enrollment boundary illustrates in Figure 19, the Roosevelt Elementary enrollment boundary is roughly 9 square miles, reaching from 10th Ave in the west to Avenue 3E in the east and 16th Street in the south to County 6 1/2 Street to the north. The Roosevelt Elementary enrollment boundary is bordered by the G.W. Carver enrollment boundary to the west and the O.C. Johnson as well as the Gila Vista enrollment boundary to the south. Given that the majority of the Roosevelt enrollment boundary is located within well established, densely populated neighborhoods, a large percentage of students walk, bike or utilize a family vehicle to get to and from school.

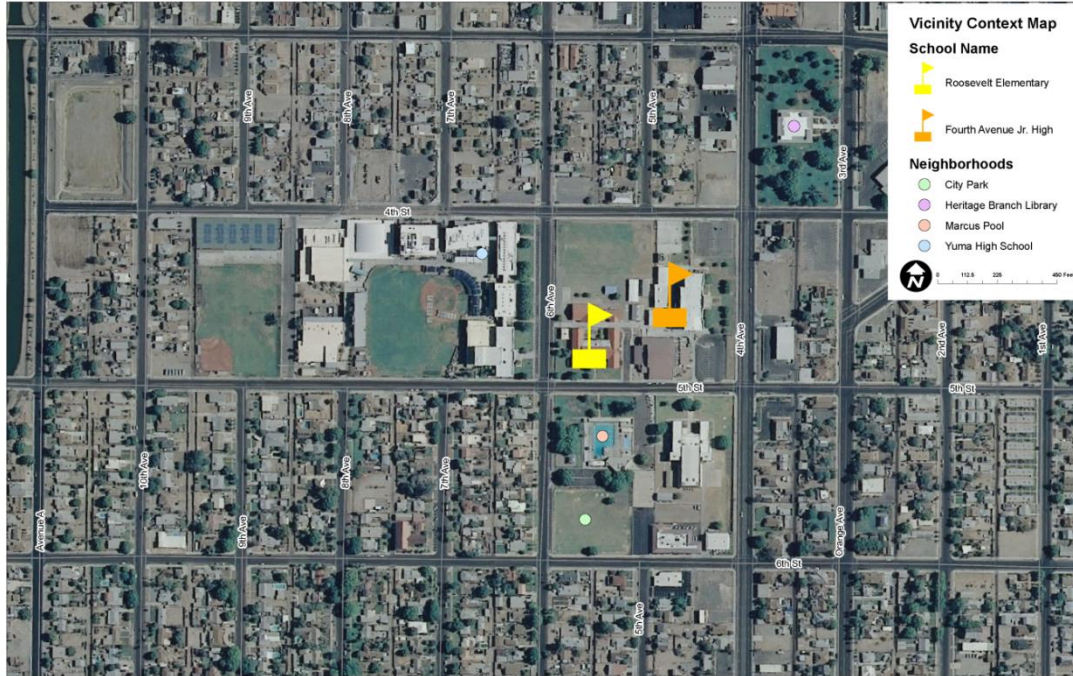


Figure 18: Vicinity Context Map

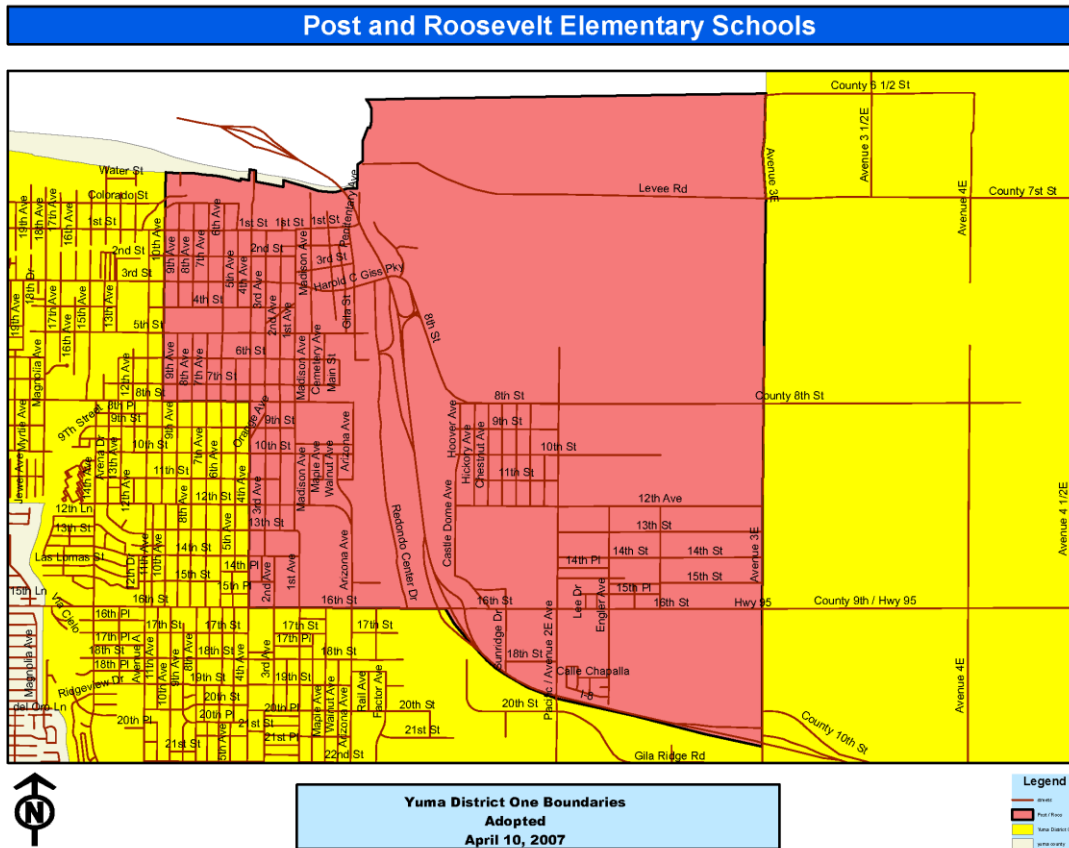


Figure 19: Roosevelt Elementary School Enrollment Boundary



Roosevelt Elementary is unique in that it was built with no off-street parking facilities. Consequently, all staff and visitor parking are facilitated by utilizing diagonal on-street parking located along 6th Avenue. Primary access to Roosevelt Elementary for student drop-off and pick-up as well as bus loading is provided via 5th Street, which creates several conflict points during morning and afternoon peak periods. These conflict areas are further exacerbated by the adjacent Fourth Avenue Junior High, which also uses 5th Street for access to one of its off-street parking lots and bus loading area.

To assist in minimizing conflict points in this congested area, traffic barricades were installed and have been in use along 5th Street for more than two decades. This traffic control change helped to diminish conflict points by eliminating through traffic during school hours. This traffic control change also helped to provide a safe crossing point to frequently utilized off-site sports recreation fields located just south of the school. However, this traffic control change also created a dead end for parents who utilize 5th Street in front of Roosevelt Elementary to drop off and pick up their children. In turn congestion and safety issues still remain along 5th Street due to parents having to make unsafe U-turns in order to enter and exit on the same street.



Designated loading sign on 5th Street in front of school

A majority of the students walk or travel from the north to the school which is located in the central part of the enrollment boundary. This condition established the need for identification of a school zone along 3rd Street at the 6th Avenue intersection and placement of a crossing guard during AM and PM peak periods.

5.4.1.2. Fourth Avenue Junior High

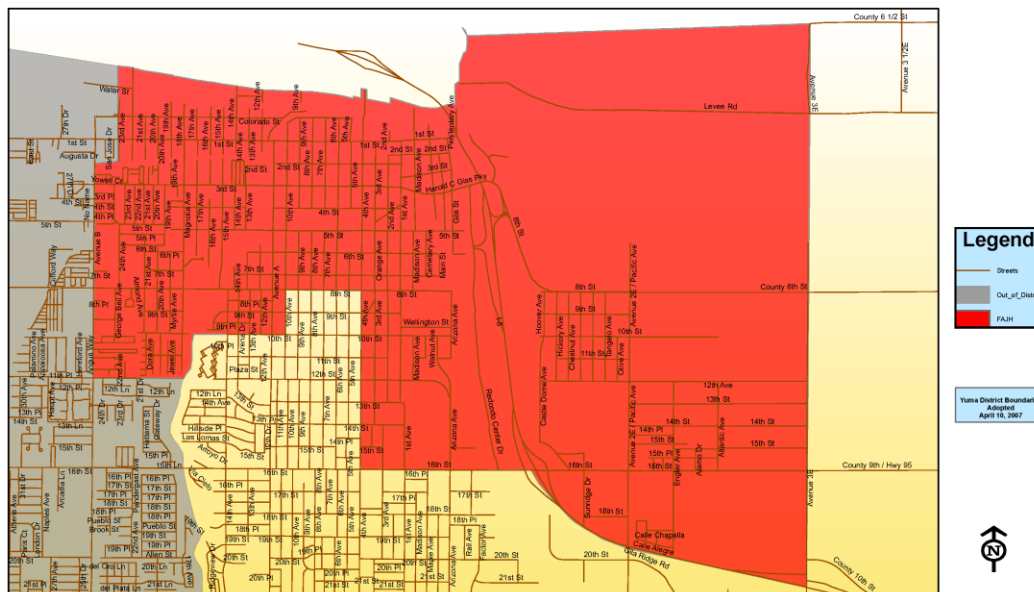
Fourth Avenue Junior High was constructed in 1920 and is the oldest school in the District. Located immediately east of Roosevelt Elementary, Fourth Avenue Junior High is situated south of Downtown Yuma; at the northwest corner of 4th Avenue and 5th Street. Fourth Avenue Junior High instructs grades, 6, 7 and 8 and has a current enrollment of 385 students. Like Roosevelt Elementary, the student enrollment level is expected to stay constant in the future due to limited facility capacity and the mature nature of development in the surrounding area.



Fourth Avenue Junior High School

As the current enrollment boundary illustrates in Figure 20, the Fourth Avenue Junior High boundary is similar to the Roosevelt Elementary enrollment boundary, however it extends even further west to the limit of the Yuma School District One boundary located along Avenue B. Due to the compact urban development pattern of the Fourth Ave Junior High enrollment boundary, a large percentage of students walk or bike to school.

Fourth Avenue Junior High School



Source: Yuma School District One

Figure 20: Fourth Avenue Junior High School Enrollment Boundary



Fourth Avenue Junior High has no direct vehicle access from 4th Avenue, which is a highly traveled four lane arterial roadway with a center turn lane. Primary vehicle and pedestrian access to the school is provided via two off-street parking lots located on 5th Street and 4th Street. As previously described, the primary family vehicle load zone and bus loading zone together are located within the 5th Street parking lot.

The combination of the large majority of Junior High students who walk to school from the north and the high volume of traffic along 3rd Street created a safety challenge, which was mitigated by placing a school zone and crossing guard at the 3rd Street and 6th Avenue intersection.

5.4.2. Neighborhood Character

In general, while there is diversity amongst the various neighborhoods that surround the Roosevelt and Fourth Avenue campuses, the range of variation is narrow. Located within the historic Yuma Townsite, much of the area is developed and includes structures that were built during the same time period as the school sites as well as structures that were constructed more recently. Development predominantly consists of single-family residential, intermixed with civic, educational



Residential Neighborhood North of 4th Street

and commercial type uses. Primary landmarks near the combined campus include the Yuma County - Heritage Branch Library to the northeast, Yuma High School to the west, and the Marcus Pool and City Park to the south.

Although both Roosevelt and Fourth Avenue are centrally located within their respective enrollment boundaries, the majority of students live north or south of the combined school campus. The street layout surrounding the school sites generally consists of a grid pattern, which offers those traveling to each school site several route options. A large majority of students live north of campus cross 3rd Street, a heavily traveled roadway in the local area, to travel to and from school. A smaller portion of students live east of the combined school campus cross at 4th Avenue which is one of the busiest arterial roadways in the region to reach school.



3rd Street



5.4.3. Yuma School District One Identified Needs & Deficiencies

Roosevelt Elementary along with Fourth Avenue Junior High was identified by the District as the combined #4 priority school in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

Roosevelt

"With limited parking, 5th St. gets congested by parents and students during drop-off and pick-up times. Currently students who ride the bus need to cross the street to reach their bus. Inadequate infrastructure such as sidewalks around the school's vicinity makes it unsafe for children to walk to school or use alternative means of transportation."



Fourth Avenue

"Students run across the highly trafficked 4th Ave. instead of using the existing underpass. The bus lane becomes unsafe and congested by students who run between the parked buses to reach their parents. Existing chains are in place to protect students crossing the street, but it is inadequate for those trying to reach the sport fields."

5.4.4. School Official Interview & Observations

5.4.4.1. Roosevelt Elementary

- 1) There is not enough parking for school staff. School staff and visitors must utilize on-street parking located along 6th Avenue on a first come first serve basis.
- 2) Family vehicles drop-off and pick-up students on the south side of 5th Street, which causes students to run across traffic and parked cars located on the north side of 5th Street. New signs are posted to encourage pick-up and drop-off on the north side of 5th Street but family vehicles at times disregard. This area represents where most pedestrian and vehicle conflicts occur.



- 3) During congested drop-off and pick-up periods there are disjointed traffic flows and even the occasional minor collision on 5th Street when family vehicles try to complete U-turns because the barricades create a dead end.

- 4) The bus loading zone is on the south side of 5th Street (between the barricades), which requires students to cross the street to get on the bus. There is one standard bus that serves Roosevelt Elementary daily.



Dismissal at Roosevelt Elementary – 5th Street and 6th Avenue

- 5) Roosevelt Elementary has not recently participated in any SRTS activities.
- 6) Teachers and other school staff walk the students to the family vehicle and bus loading zone areas daily. Additional school personnel are utilized in the afternoon when peak congestion is more chaotic than in the morning.
- 7) There is no school resource officer (common for elementary schools).
- 8) Once near the school, many students do not use designated crosswalks or the crossing guard located at 5th Street and 6th Avenue.

- 9) There currently is no formally established or enforced plan for family vehicles to follow during drop-off or pick-up periods though reminder notes on preferred procedures are sent home from time to time.



Parking lot adjacent to Marcus Pool, south of 5th Street

- 10) Need to fix parking lot located on the south side of 5th Street and possibly make through connection to Marcus Pool parking lot located off of 6th Avenue.



5.4.4.2. Fourth Avenue Junior High

1) Morning drop-off and afternoon pick-up periods create a conflict with the bus loading area and family vehicles. During drop-off and pick-up, students must cross bus loading area to reach school campus.

2) Some Roosevelt parents utilize the Junior High parking lot to drop-off and pick-up students.



Bus exiting Fourth Avenue Jr. High

3) Students need to cross 5th Street to access sports fields to the south.

4) Students do not use 4th Avenue underpass and choose to cross on surface street.

5.4.5. Law Enforcement Observations

The consultant interviewed representatives from the City of Yuma Police Department regarding efforts relating to traffic enforcement and School Resource Officers at Yuma School District One schools. The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.

Traffic violations most commonly observed by Yuma PD pertaining to Roosevelt Elementary and Fourth Avenue Junior High echo the sentiments expressed by each school principal – students crossing Fourth Avenue outside of designated crosswalks and/or the pedestrian underpass and the general family vehicle afternoon pick up activities at Roosevelt. The junior high students jaywalking across Fourth Avenue create a safety hazard. The afternoon pick up activities at Roosevelt Elementary do not develop into traffic violations per say, but the lack of loading zone space creates an unorganized, congested flow. Yuma PD felt that alternative pick up design or protocol should be evaluated as part of this study.



5.4.6. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. A key element of the audit is to identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle loading zone locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.

Figure 21 illustrates the locations of the various features identified and summarized below. Specific features for Roosevelt Elementary and Fourth Avenue Junior High are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

4th Avenue

- Four lane roadway with center striped turn lane. Classified as a minor arterial by the City of Yuma.
- Typically a 60 foot pavement width, with vertical curb and gutter and attached sidewalk on both sides.
- The sidewalk typically measures 8 feet on the west side and 5 feet on the east side. Most ramps appear to be accessible and no steep grades were identified.
- The posted speed limit is 35 mph in the vicinity of the school.
- No parking signage is posted on both sides of the street for the length of the roadway near the school.
- No bicycle facilities are present.
- There are a large number of residential and business driveways intersecting the roadway in the vicinity of the school campus.
- The 4th Avenue and 5th Street intersection is a two way stop controlled intersection for traffic on 5th Street.



- At the intersection of 4th Avenue and 5th Street there are striped cross walks located on the north, east, and west legs of the intersection.
- At the intersection of 4th Avenue and 5th Street there is a pedestrian underpass located on the south leg. This underpass is not ADA compliant and can only be accessed by stairs. The underpass is only unlocked and accessible during school hours. Many student pedestrians choose to wait for gaps in traffic and cross via surface street over utilizing underpass.
- The 4th Avenue and 4th Street intersection is a two way stop controlled intersection for traffic on 4th Street.
- At the intersection of 4th Avenue and 4th Street there are striped cross walks located on the north, east, and west legs of the intersection.

6th Avenue

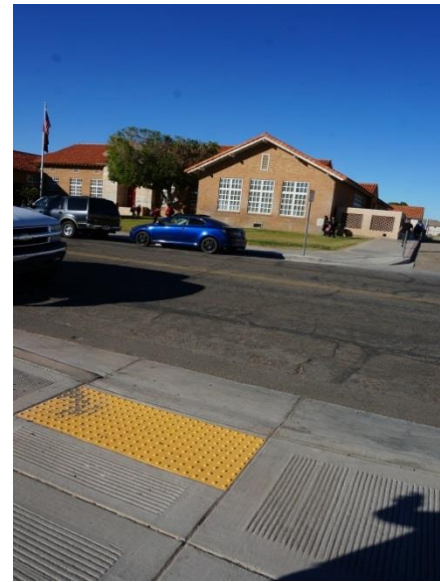
- Two lane local street with diagonal on-street parking on both sides of the roadway.
- Typically a 70 foot pavement width (including diagonal parking), with vertical curb and gutter and attached sidewalk on both sides.
- Sidewalk generally measures 5 feet on both sides. Most ramps appear to be accessible and no steep grades were identified.
- Posted speed limit is 25 mph.
- Posted as a designated Bike Route.
- The 6th Avenue and 5th Street intersection is a four way stop controlled intersection.
- At the intersection of 6th Avenue and 5th Street there are striped cross walks located on all four legs. This intersection does have a crossing guard during AM and PM periods.
- The 6th Avenue and 4th Street intersection is a four way stop controlled intersection.
- At the intersection of 6th Avenue and 4th Street there are striped cross walks located on all four legs. This intersection does not have a crossing guard during AM and PM periods.



- Due to the proximity to Yuma High School, this section of 6th Avenue is posted with “No Cruising” signs.

5th Street

- Two lane local street with on-street parallel parking on either side.
- Typically a 40 foot pavement width, with vertical curb and gutter with detached sidewalk on south side and attached sidewalk on north side.
- Sidewalk typically measures 5 feet on the south side and 8 feet on the north side. Most ramps appear to be accessible and no steep grades were identified.



Existing accessible ramp on 5th Street in front of school

- Posted speed limit is 25 mph.
- This section of 5th Street is posted with “No Cruising” signs.



Barricades on 5th Street

3rd Street

- Two lane collector street with no center turn lane.
- Typically a 40 foot pavement width, with vertical curb and gutter and detached 5 foot sidewalk on both sides of the street. Most ramps appear to be accessible and no steep grades were identified.



- No parking signage is posted on both sides of the street along the length of the roadway.
- Posted speed limit is 25 mph.
- At the intersection of 3rd Street and 6th Avenue there is a striped cross walk located on west leg of the intersection.



Crossing guard at the intersection of 3rd Street and 6th Avenue

- A large number of students cross 3rd Street at the 6th Avenue intersection. Consequently, this intersection is signed as a school zone and has a crossing guard during the AM and PM periods.

School Access Points

- 5th Street via 6th Avenue is utilized as the primary access point for family vehicles and the bus for Roosevelt Elementary during the AM and PM peak periods.
- 5th Street via 4th Avenue is utilized as the primary access point for family vehicles and buses for Fourth Avenue Junior High during the AM and PM peak periods. According to school officials, there is no conflict with buses and family vehicles in the same parking lot.



5th Street at afternoon dismissal



- The majority of students who walk to school utilize the 5th Street and 6th Avenue crosswalk and crossing guard to travel west or south and the 6th Avenue sidewalk to travel north, which connects with the school zone and crossing guard located at the 3rd Street intersection.
- Traffic barricades in operation for over two decades restrict through traffic along 5th Street and help segregate each school's dedicated traffic.

Parking

Roosevelt Elementary

The school has no on-site parking facilities. All staff and visitor parking is accommodated by on-street diagonal parking located along 6th Avenue on a first come first serve basis in competition with Yuma High School across the street. The parking lot located on the south side of 5th Street is utilized by Post Elementary school staff and visitors.

Fourth Avenue Junior High

School staff and visitor parking is provided by two off-street parking lots located on 5th Street and 4th Street. The 4th street north parking lot has a total of 48 spaces and exhibits no significant access or circulation issues. The primary family vehicle loading zone and bus loading zone is located within the 5th Street south parking lot. Please see Figure 21 for reference. This parking lot contains a total of 40 spaces. Based on the combined capacity of the two parking lots, staff and visitor parking appear to be adequate. Although, during AM and PM peak periods family vehicles do create minor congestion and conflict points with bus loading and unloading in the south parking lot.

School Bus Loading Zones

- Roosevelt Elementary is served by only one bus and Fourth Avenue Junior High is served by three buses.
- The three buses that serve Fourth Avenue Junior High drop-off and pick-up in the school bus zone located in the south parking facility accessed off 5th Street via 4th Avenue.
- The Junior High buses line up single-file with right wheel to the curb which is a preferred design. The bus loading zone radius is tight, but is navigated daily with few issues.



Roosevelt Elementary bus loading zone



- There is one ingress and egress lane into and out of the Junior High parking lot, which is shared by both family vehicles and buses.
- The single bus for Roosevelt Elementary drops students off in the Junior High bus loading zone and picks up students on the south side of 5th Street, between the barricades. The bus enters the barricade zone from the west and exists to the east onto 4th Avenue.

Family Vehicle Drop-off and Pick up Procedures

- 5th Street is predominantly used for family vehicle drop-off and pick-up for each school.
- Traffic barricades in place for over 20 years; strategically create a dead end in front of Roosevelt Elementary for family vehicles, but has little impact on Fourth Avenue family vehicles due to the looped off-street parking lot located on the north side of 5th Street.
- In front of Roosevelt Elementary, parking is permitted on the south side of 5th Street and new signs only allow loading on the north side.



Family vehicles parked along the south side of 5th Street as dismissal

- During AM and PM peak periods, the majority of family vehicles seem to park along the north and south sides of 5th Street. Typically, once the student is dropped-off or picked-up they make a U-turn on 5th Street rather than utilize the Post Elementary parking lot cul-de-sac located on the south side of 5th Street. This pattern creates unnecessary delays and congestion challenges.
- The Post Elementary parking lot located on the south side of 5th Street is in disrepair.



- Students frequently cross 5th street at unmarked locations to reach family vehicles parked on the south side of the street. School officials encourage family vehicles to park along the north side of 5th Street only.



Dead End sign posted on 5th Street in front of school

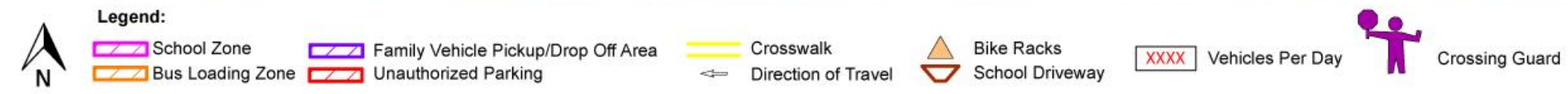
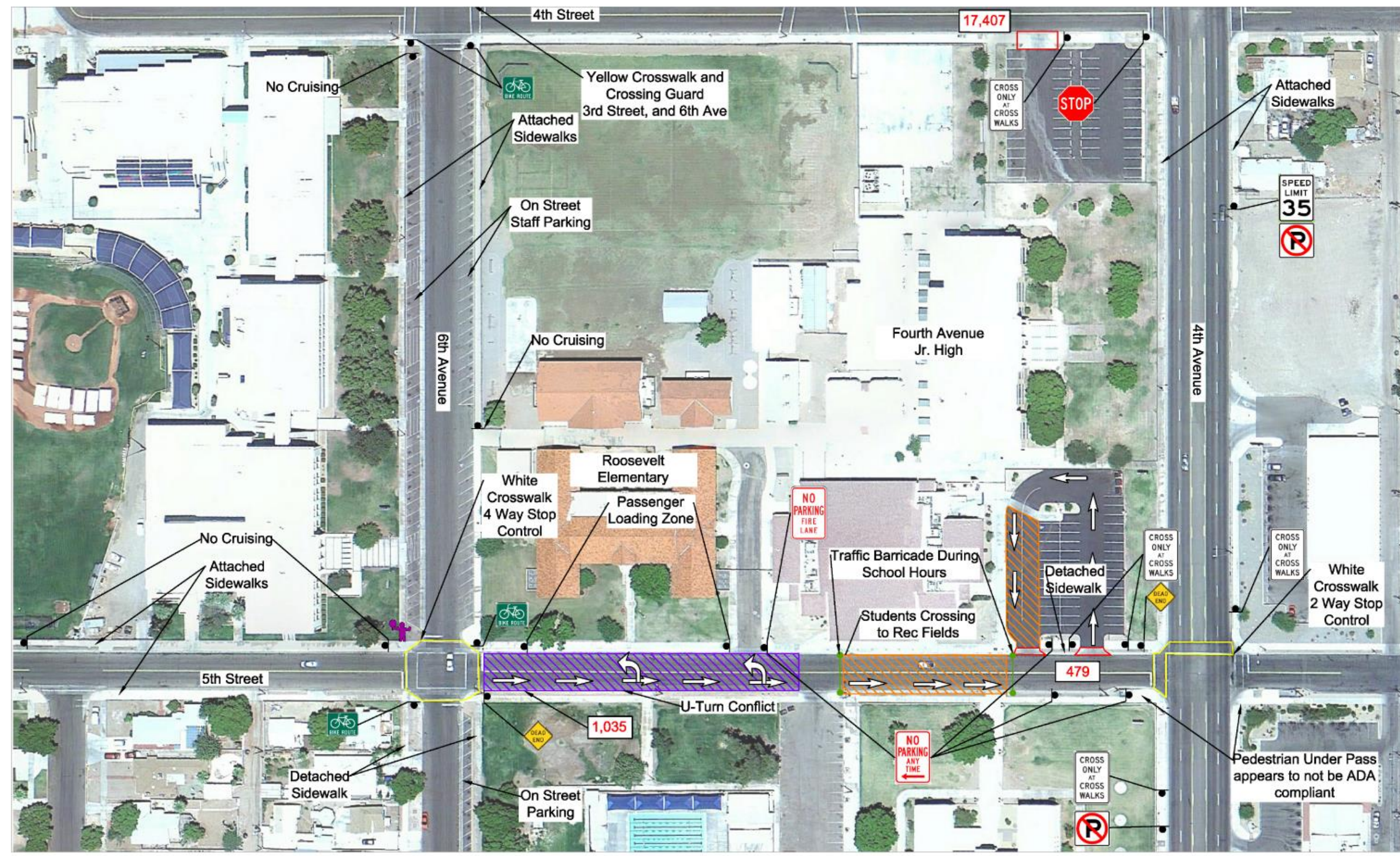


Figure 21: Roosevelt Elementary School & Fourth Avenue Jr. High School - School & Neighborhood Audit Findings

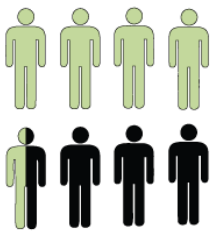


5.4.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers
Fourth Avenue Middle School

DEMOGRAPHICS

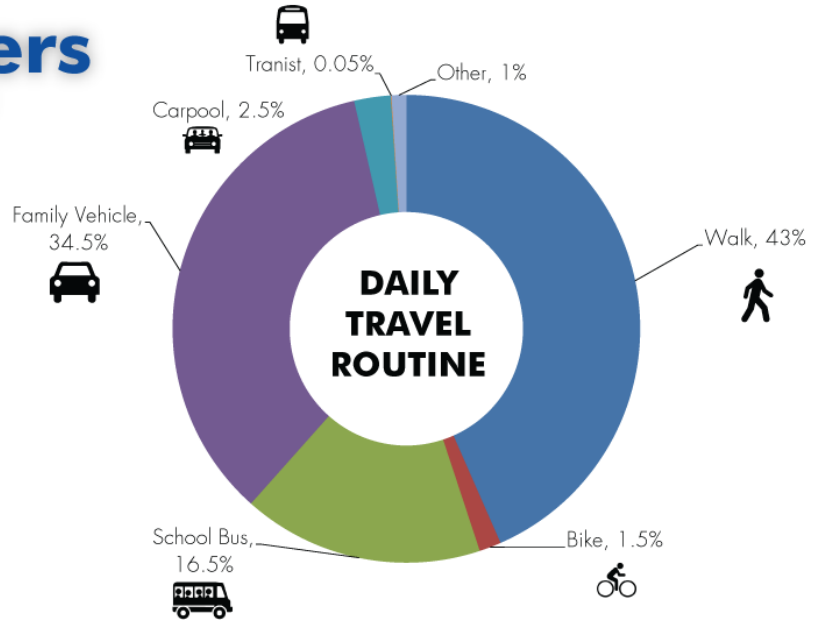
14,617 Total Population
(Enrollment Boundary)



61.5%
Minority

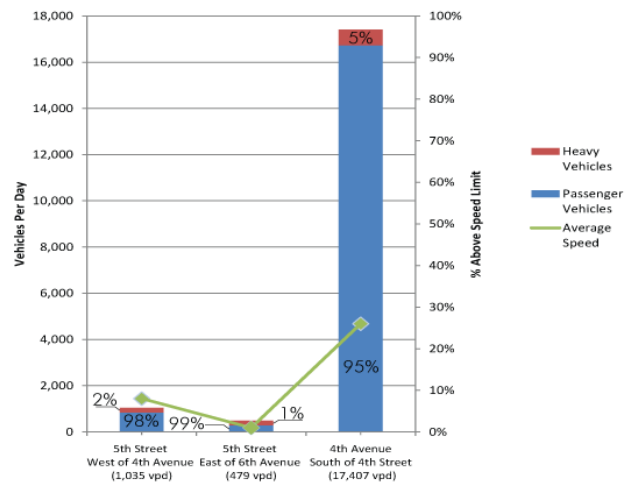
73% Hispanic

Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView



Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.

ROADWAY COUNTS



CRASH DATA
5 Year Summary



Data: 5 Year Summary, During School Hours, and Weekdays
Source: ADOT, Michael Baker International

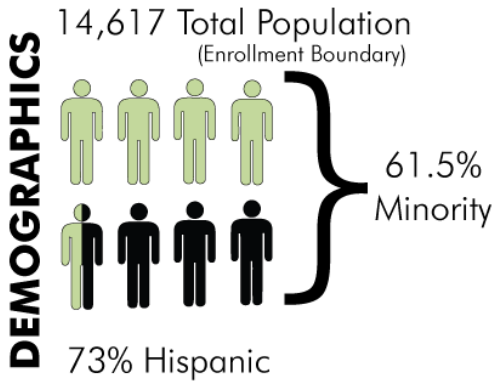
Non-Incapacitating Injury

Incapacitating Injury



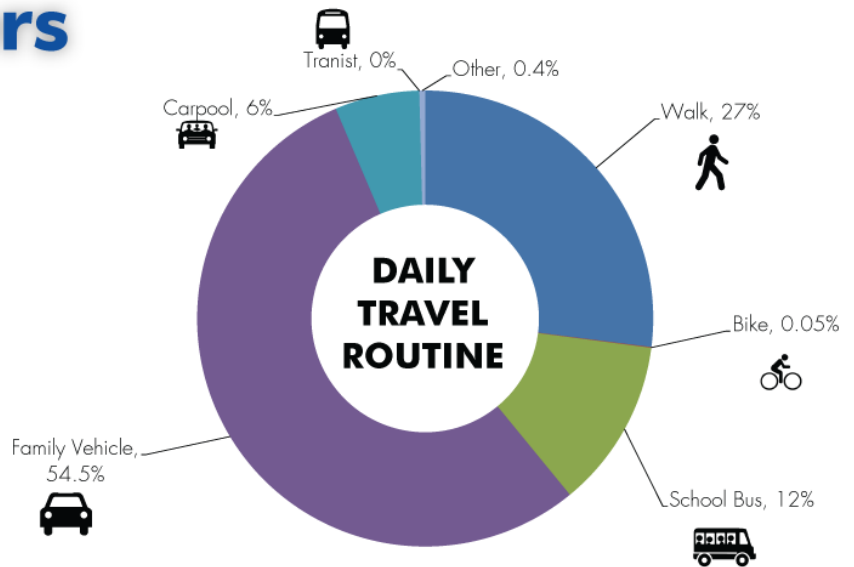
By The Numbers

Roosevelt Elementary School

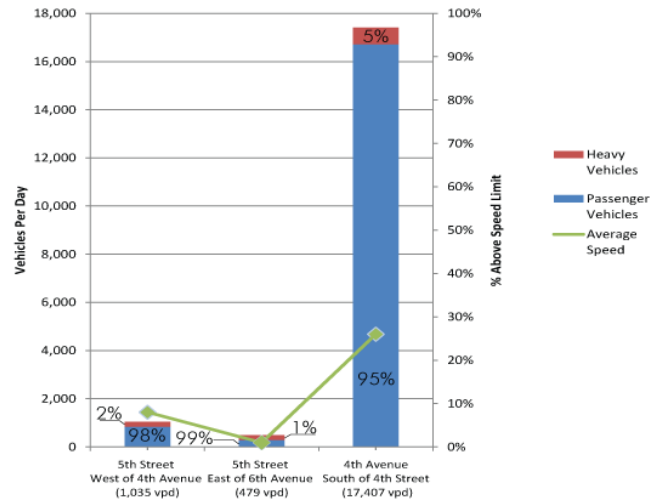


Source: 2010 United State Census, 2007-2011 American Community Survey, EPA EJView

Detailed analysis of demographic/socioeconomic, crash data, travel routines, and roadway counts can be found in Working Paper #1.

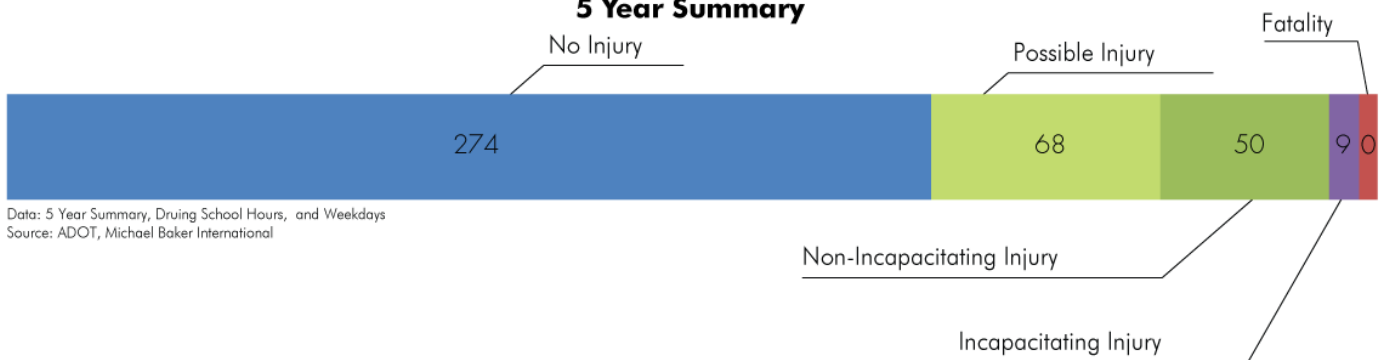


ROADWAY COUNTS



CRASH DATA

5 Year Summary



Data: 5 Year Summary, During School Hours, and Weekdays
Source: ADOT, Michael Baker International



5.4.8. School-Specific Engineering Recommendations

Located near the historic center of the City of Yuma, Fourth Avenue Junior High and Roosevelt Elementary are the two oldest schools in the District. While these co-located schools share some common transportation related issues they also each have their own unique areas of concern.

Mode split survey results displayed favorable conditions for each school in that most grades (with the exception of less independent students in 3rd grade and below) showed a fairly equal balance of children that walk to school to those who take a family vehicle. However, given the large percentage of students who walk to school, the survey also surprisingly showed that very few students choose to bike to school. The percentage of students who identified that they take the bus to school did fluctuate amongst grade levels but generally came in as the third most common mode of transportation to and from school.

To help control traffic flow and improve safety near the entrance of each school, a portion of 5th St is closed to all vehicles except school buses during school hours. This traffic control procedure helps to separate the traffic patterns of each school, creates a safe bus loading zone for Roosevelt students as well as provides a protected crosswalk during school hours for students to access the recreational play fields south of each school. However, this safety solution also creates some undesirable secondary unsafe conditions.

The traffic barricades located along 5th St create a dead end in front of Roosevelt Elementary. This dead end street is also used as the family vehicle drop-off and pick-up area for Roosevelt students. As a result, during peak morning and afternoon periods there are disjointed traffic flows and even the occasional minor collision on 5th St Street when family vehicles try to complete U-turns to exit the dead end street. This congestion also initiates some parents to drop-off or pick-up children on the south side of 5th St, which causes students to run across traffic and parked cars located on the north side of 5th Street.

For Fourth Ave Middle School, the need for students to cross the bus loading area to reach the family vehicle drop-off/pick-up area and the fact that many students cross, heavily traveled and most accident prone, 4th Ave at undefined locations represent the greatest safety concerns.

Other areas that were found to impact safety in and around each school included limited parking for Roosevelt staff/visitors, safety of students during afterschool hours at the 5th St and 6th Ave intersection and lack of crossing locations along Orange Ave.

Please refer to Figure 22 for map reference to the projects described below.



RO/FA #1	Stripe high visibility crosswalk and place crosswalk signs at north, south, and west approach of 5th St and 6th Ave intersection.
Findings	The 5th St and 6th Ave intersection is a four-leg, four-way stop controlled intersection. This intersection is heavily used by students, family vehicles and high-school students driving to the adjacent Yuma HS school during morning and afternoon peak periods. Consequently, a crossing guard is located at this intersection, during peak periods, to assist students in crossing this intersection safely. However, during after school periods the visibility of this crossing is diminished by the removal of the school crossing guard and lack of sufficient school advance crossing signage. This condition creates a safety concern for students who participate in after school programs and must cross this intersection during non-school hours.
Project Description	To improve the visibility of the 5th St and 6th Ave intersection, restripe with high visibility pavement markings and place crosswalk signs at the north, south, and west approaches to the intersection.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

RO/FA #2	Increase enforcement of four way stop during non-school hours at 5th St and 6th Ave intersection.
Findings	Traffic analysis of this intersection did not show a significant issue with speeding at this location. However, staff interviews and parent surveys indicated speeding and rolling stops are a significant problem during non-school hours.
Project Description	To assist in enhancing the safety of this intersection, increase the enforcement of this intersection during non-school hours.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$

RO /FA #3	Encourage staff to utilize on-street parking along 6th Ave, south of 5th St.
Findings	Parking for Roosevelt Elementary staff/visitors is limited due to the lack of off-street parking for the school as well as needing to share on-street parking facilities with Yuma HS to the west. Currently, on-street parking located on the west and east side of 6th Ave, between 5th St and 4th St is frequently completely utilized during school hours. However, site analysis documented that on-street parking located on the east side of 6th, south of 5th St was minimally used during school hours.



Project Description	To alleviate existing parking limitations, school staff should maximize joint use of on-street parking facilities by utilizing on-street parking located along 6th Ave south of 5th St. Alternatively, District may work with City staff to post on-street parking on 6th Ave, north of 5th St for staff only and direct visitor parking to spaces located south of 5th St.
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$

RO/FA #4	Develop two-way through drive connection between Mary Elizabeth Post Elementary and Marcus Pool parking lots. Restrict traffic flow on 5th St to one-way westbound travel during school hours.
Findings	The placement of the traffic barricades across 5th St help to define a safe bus loading zone for Roosevelt Elementary students as well as crossing area for Fourth Ave students to the athletic fields to the south. However, this safety mitigation measure also creates a dead end condition in front of Roosevelt ES and causes family vehicles to make unsafe U-turn movements as well as causes students to dart across the street to load outside of the defined family vehicle drop-off and pick-up area.
Project Description	To improve the overall circulation of this congested area, remove the north half of the basketball courts located south of the Post ES parking lot and construct a two-way drive aisle that connects the Post parking lot with the Marcus Pool Parking lot. Restrict traffic flow on 5th St to one-way travel, westbound, via new Marcus Pool/Post driveway connection during school hours. Place movable "Do Not Enter" and wayfinding signage on 5th St at 6th Ave to direct family vehicle traffic to new Marcus Pool/Post driveway connection entrance. Distribute a formal family vehicle circulation plan to all parents to inform/educate them on new procedures.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$\$\$

RO/FA #5	Restripe and sign Fourth Ave School bus loading area.
Findings	Fourth Ave buses and family vehicles comingle in the southern parking lot during morning and afternoon peak periods. Due to the limited number of school buses that service this school, the combined use of this parking lot by buses and family vehicles was not identified as a significant problem. However, students must cross the bus loading zone to reach family vehicles parked in the parking lot. This uncontrolled condition creates a safety issue when buses are exiting



	and entering the loading zone.
Project Description	Stripe and sign a designated crosswalk through the bus loading zone in order to control the location of where students access family vehicles in the parking lot. Provide secondary staff to ensure students only cross at the defined location.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

RO/FA #6	Increase enforcement of pedestrian safety laws along 4th Ave.
Findings	4th Ave is a heavily traveled arterial street. A surface crosswalk and pedestrian underpass is located at the 5th St intersection to improve the safety of students crossing this busy roadway. However, many students choose not to utilize either of these options when traveling to and from school.
Project Description	Increase local law enforcement presence during morning and afternoon peak periods to encourage students to utilize the existing pedestrian underpass. Providing official warnings for first time offences may help to reinforce safer travel patterns/habits.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$

RO/FA #7	Complete crosswalk and school crossing warrant analysis for the Orange Ave and 5th St intersection.
Findings	Orange Ave is a four lane arterial street with no east/west crosswalk located a 5th St. Students traveling from the east who utilize the 4th Ave and 5th St intersection/underpass to reach school must travel north to the 3rd Ave and Orange Ave stop controlled intersection to cross Orange Ave and then proceed south again to reach the existing pedestrian underpass. This indirect route encourages students to cross Orange Ave at an unmarked mid-block location at 5th St.
Project Description	A crosswalk and school crossing warrant analysis, per ADOT standards, should be completed for the Orange Ave and 5th St intersection
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$-\$\$



RO/FA #8	Post Bike Route signage along 5th St.
Findings	The Yuma Bicycle Facility Master Plan identifies 5th St as a bike route.
Project Description	Sign or add sharrows to 5th St as a bike route to connect to the existing bike route located along 6th Ave and Orange Ave.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

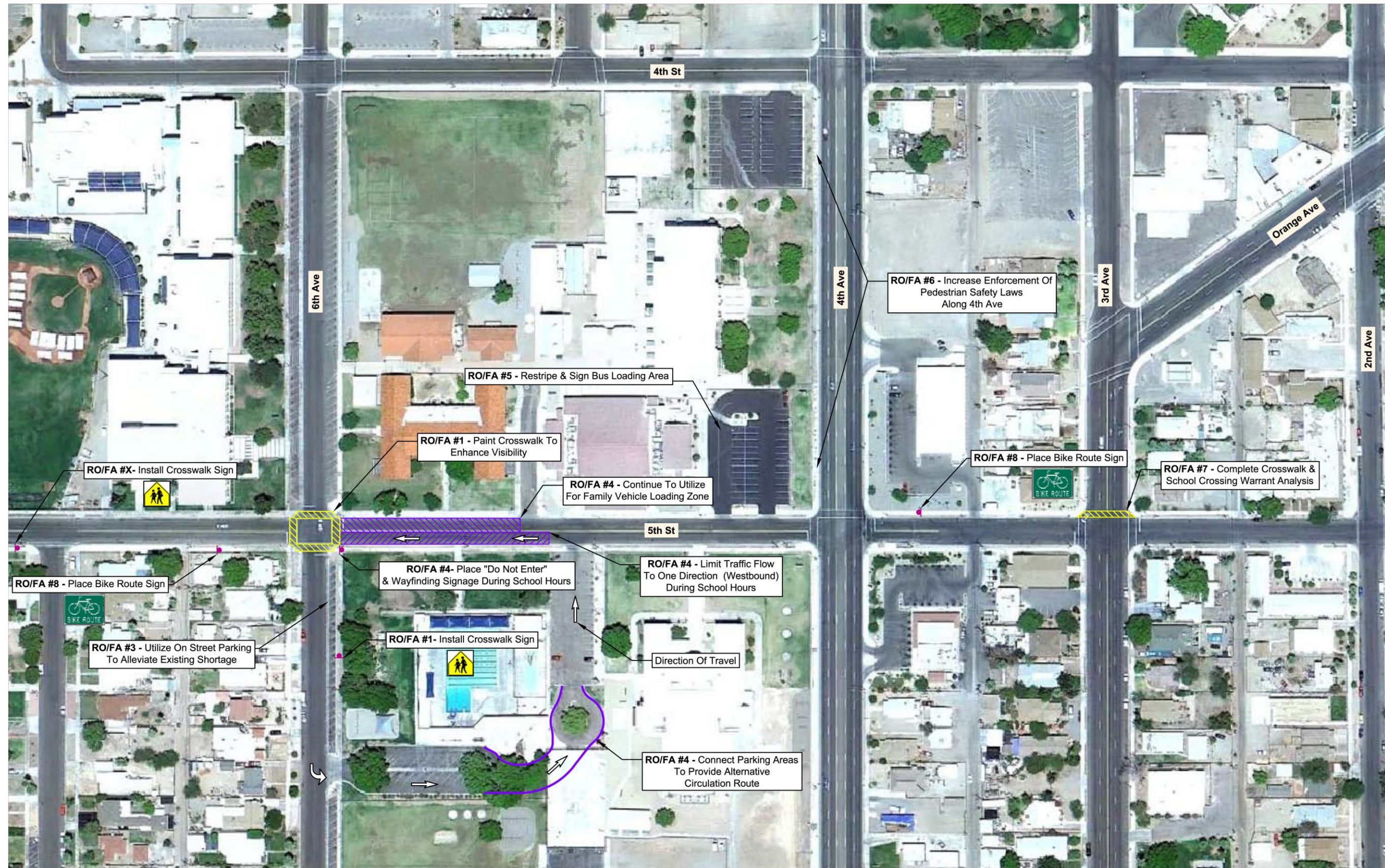


Figure 22: Roosevelt Elementary / Fourth Avenue Junior High Recommendations & Actions Plan



5.5. Alice Byrne Elementary School

5.5.1. School Setting and Enrollment Characteristics

Alice Byrne Elementary is located at 811 West 16th Street at the southwest corner of 8th Avenue and 16th Street. The school was built in 1947.



Alice Byrne Elementary is a kindergarten through fifth grade school and has approximately 350 students currently enrolled. Enrollment levels are expected to remain constant over the next 10 years.

As Figure 24 illustrates, the Alice Byrne Elementary enrollment boundary encompasses less than one square mile and is bound by the 16th Street to the north, 22nd Street to the south, the East Main Canal to the west and 4th Avenue to the east. The school is located along the northern edge of the enrollment boundary.

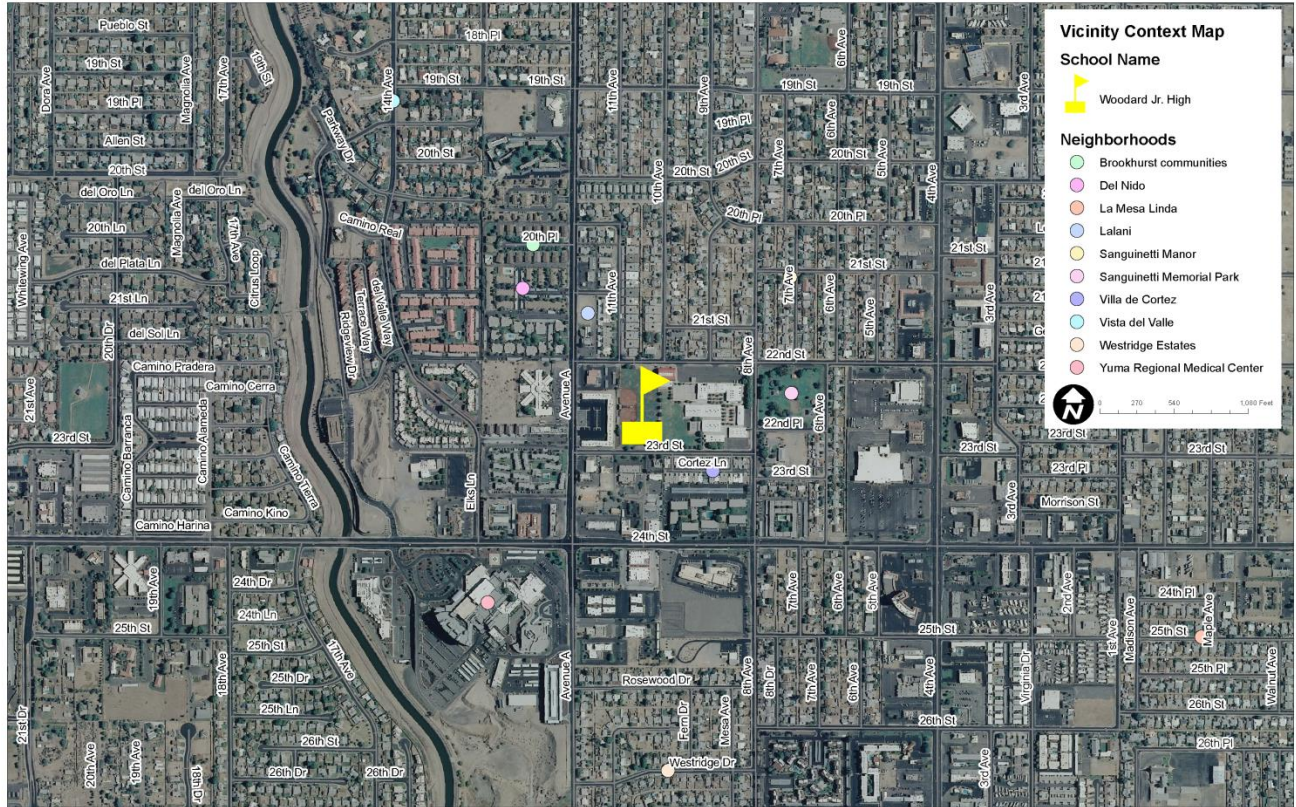


Figure 23: Vicinity Context Map

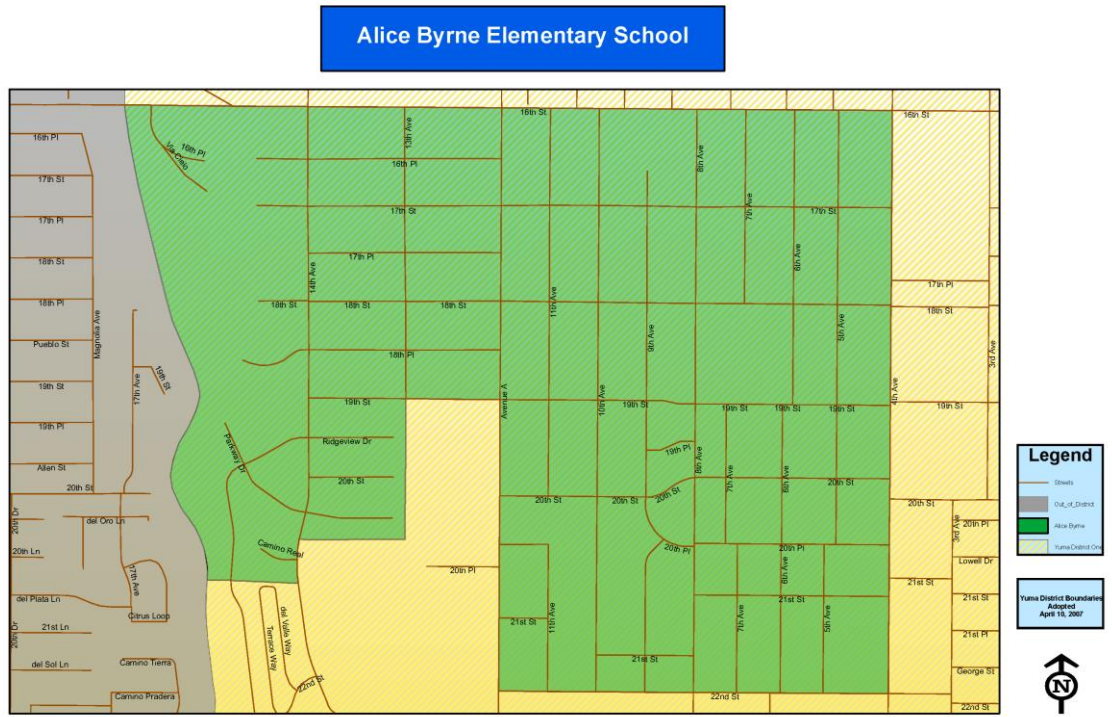


Figure 24: Alice Byrne Elementary School Enrollment Boundary

Source: Yuma School District One



5.5.2. Neighborhood Character

There are many existing single family and higher density residential communities in the vicinity of Alice Byrne Elementary. Bel Aire Estates, Bel Aire Heights, and La Mesa Vista are each medium density single family detached residential communities. The southern portion of the enrollment boundary area towards 22nd Street consists of a mixture of higher density residential uses like Sanguinetti Manor and condominium communities such as Lalani, Vista del Valle, Del Nido and Brookhurst communities. There is a vacant parcel directly east of the school and commercial land uses fronting 16th Street.





Alice Byrne Elementary is adjacent to 8th Avenue, 16th Street and 17th Street. 8th Avenue and 17th Street both have one travel lane in each direction. 16th Street consists of a five lane cross-section with two travel lanes in each direction and a center two-way left-turn lane. The roadway system in the surrounding neighborhood is a traditional grid pattern.

5.5.3. Yuma School District One Identified Needs & Deficiencies

Alice Byrne Elementary school was identified by the District as the #5 priority school in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

"Student safety is jeopardized during parent pick-up as parents overwhelm the school's front cul-de-sac and parking lot. Lack of speed limit signs along 17th St causes cars to speed through the school area."

5.5.4. School Official Interview & Observations

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). A summary of the following concerns or needs are as follows:

- 1) Parking space is inadequate. There is barely enough spaces for staff, but not enough for additional visitors. When many visitors are present, particularly in the morning, there are not enough spaces for staff.



- 2) Parents use the cul-de-sac area of 9th Avenue to park as well as a drop-off/pick-up lane.
- 3) There is an empty lot just east of the school that parents use to park. Their children walk across 8th Avenue via the midblock crosswalk.
- 4) School staff has observed parents not crossing at crosswalks with their children.
- 5) The school gates are locked until 8:00 AM so parents are encouraged to not drop children off before that time.
- 6) Riding bikes to school is only permitted for grades 3-5.
- 7) Parents of kindergarteners must park their vehicle and walk to the classroom to pick up their children.
- 8) There is no school resource officer (common for elementary schools).
- 9) There are no school staff that assist in directing traffic flow before or after school.
- 10) Generally speaking, the afternoon pick up traffic congestion is worse than morning drop off. This is primarily due to staggered morning drop-off times and one pick up time in the afternoon.
- 11) There is one general education bus and one special needs bus serving the schools' needs.



- 12) There is no formal family vehicle drop off and pick up plan, but parents are informed and encouraged to establish a routine and stick to it.



Parent vehicles navigating cul-de-sac entrance



Mid-block crosswalk at 8th Street



Student pedestrians crossing at intersection of 9th Avenue and 17th Street



5.5.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.



Observations by Yuma PD regarding Alice Byrne Elementary are consistent with school official observations. Many previous traffic enforcement concerns were resolved about 8 years ago when the 9th Avenue cul-de-sac was constructed. There are a fairly high number of traffic accidents at the intersection of 16th Street and 8th Avenue, but this is a function of traffic volume on the arterial roadway and not the schools' proximity to the roadway. There used to be cars stopping along 16th Street due to a previous mid-block crosswalk, but that crosswalk was removed so that previous hazard no longer exists. Also, the playground pedestrian gate funnels students to 17th Street which is a safety improvement over the previous design that funneled students to 16th Street.

5.5.6. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.

Figure 25 illustrates the locations of the various features identified and summarized below. Specific features for Alice Byrne Elementary School are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

8th Avenue

- Two lane roadway with center stripe.
- Classified as a collector roadway by the City of Yuma.
- Pedestrian and crosswalk signage at yellow marked midblock crosswalk just south of 16th Street.
- Crossing guard on duty before and after school at midblock crossing.
- Posted speed limit of 25 miles-per-hour.



- Continuous sidewalk on both sides of the roadway that vary between attached and detached.
- Stop control on 8th Avenue at 16th Street with a white marked crosswalk on south leg only.
- White striped cross walk on south, east and west legs only at intersection with 18th Street.
- On street parking is permitted.
- White striped cross walk on north, east and west legs only at intersection with 19th Street.



Intersection of 8th Avenue and 16th Street



17th Street

- Two lane roadway – one each direction with no center stripe.
- Posted speed limit of 25 miles-per-hour.
- Continuous detached sidewalks on both sides of the roadway.
- No striped bike lanes.
- On street parking is permitted.



- No roadway lighting.
- School staff acts as crossing guard at intersection with 9th Avenue even though there is no painted crosswalk
- Stop control at intersection with 4th Avenue, 5th Avenue, 6th Avenue, 7th Avenue, 8th Avenue, 10th Avenue, 11th Avenue and S Avenue A, but not on 9th Avenue.



16th Street

- Two travel lanes in each direction with center two-way left-turn lane.
- Classified by City of Yuma as a Principal Arterial roadway.
- Posted speed limit of 35 miles-per-hour.
- Attached sidewalks on both sides of the roadway.
- No on-street parking is permitted.
- Signal control at intersection with Avenue A and at intersection with 4th Avenue.
- Add stop control full turning movement at 8th Avenue



16th Street in front of school

School Access Points

The only point vehicular access to Alice Byrne is from the 9th Avenue cul-de-sac from 17th Street. The driveway off of 16th Street is an exit only driveway. The 9th Avenue cul-de-sac provides an adequate turning radius for a family vehicle loading zone along the curbing. Although the striping is severely faded, there is a row of diagonal parking spaces in the center portion of the cul-de-sac. Some family vehicles park and drop their children from these spots which then require the student to traverse the parking lot across vehicles that drop off and pick up curbside.

There are two pedestrian access points. A pedestrian access gate at the bus loading zone on 17th Street and another pedestrian access to the school at the mid-block crosswalk on 8th Avenue is also utilized daily.



Vehicles parked in center of 9th Avenue cul-de-sac



Egress only school driveway onto 16th Street

Parking

Currently the parking lots on-site provide approximately 44 spaces that adequately serve staff members but do not leave many extra spaces for visitors. Parking is permitted in the 9th Avenue cul-de-sac. The parking lot is a circuitous pattern that meanders along the west side of the school. This area is difficult to navigate due to its narrow drive and tight turning radii, but also serves to reduce vehicle speeds in the parking area. Visitor parking is signed near the 9th Avenue cul-de-sac and staff parking is designated at the northwest corner of the school site.



9th Avenue Entrance Drive



Parents park in the dirt lot at the southeast corner of 8th Avenue and 16th Street.

School Bus Loading Zones

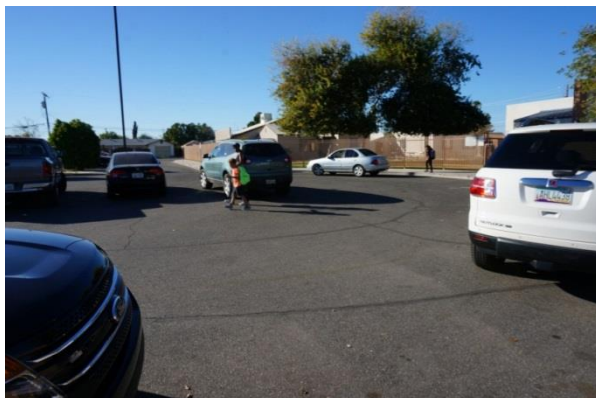
- Buses utilize the dedicated bus pull outs on 17th Street. The buses enter off of 8th Avenue and exit west on 17th Street.
- The bus loading zone is designed for children to load the bus directly from the right side of the bus along a sidewalk whereby children access the school through a pedestrian only gate and do not have to cross additional traffic. This is an optimum design.
- Alice Byrne Elementary has 1 general education school bus and one special needs bus.
- The two existing pull outs are generously sized (approx. 80 foot and 105 foot loading areas) to accommodate existing bus use for added buses if necessary.



Bus loading zone along 17th Street

Family Vehicle Drop-off and Pick-up Procedures

- The 9th Avenue cul-de-sac is used at the family vehicle drop-off/pick up zone.
- There is no marked or signed loading and unloading zones for family vehicles. Some parents use the area as a parking space as opposed to a pull through lane along the curbing.
- There is no marked or designated crossing between the drop-off/pick up lane for parent to access their parked cars in the middle of the lot.
- Many parents choose to park in the dirt lot to the east of the school and wait for their children to cross at the marked crosswalk with a crossing guard.



Students walking to family vehicle parking in middle of 9th Avenue cul-de-sac



Family vehicles await students in vacant lot east of the school

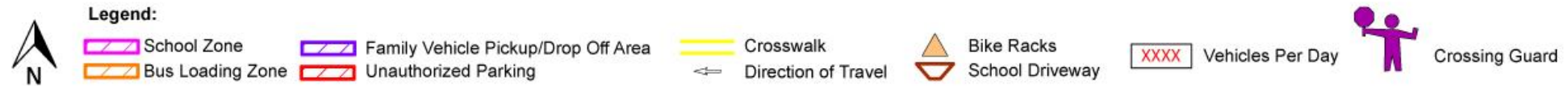
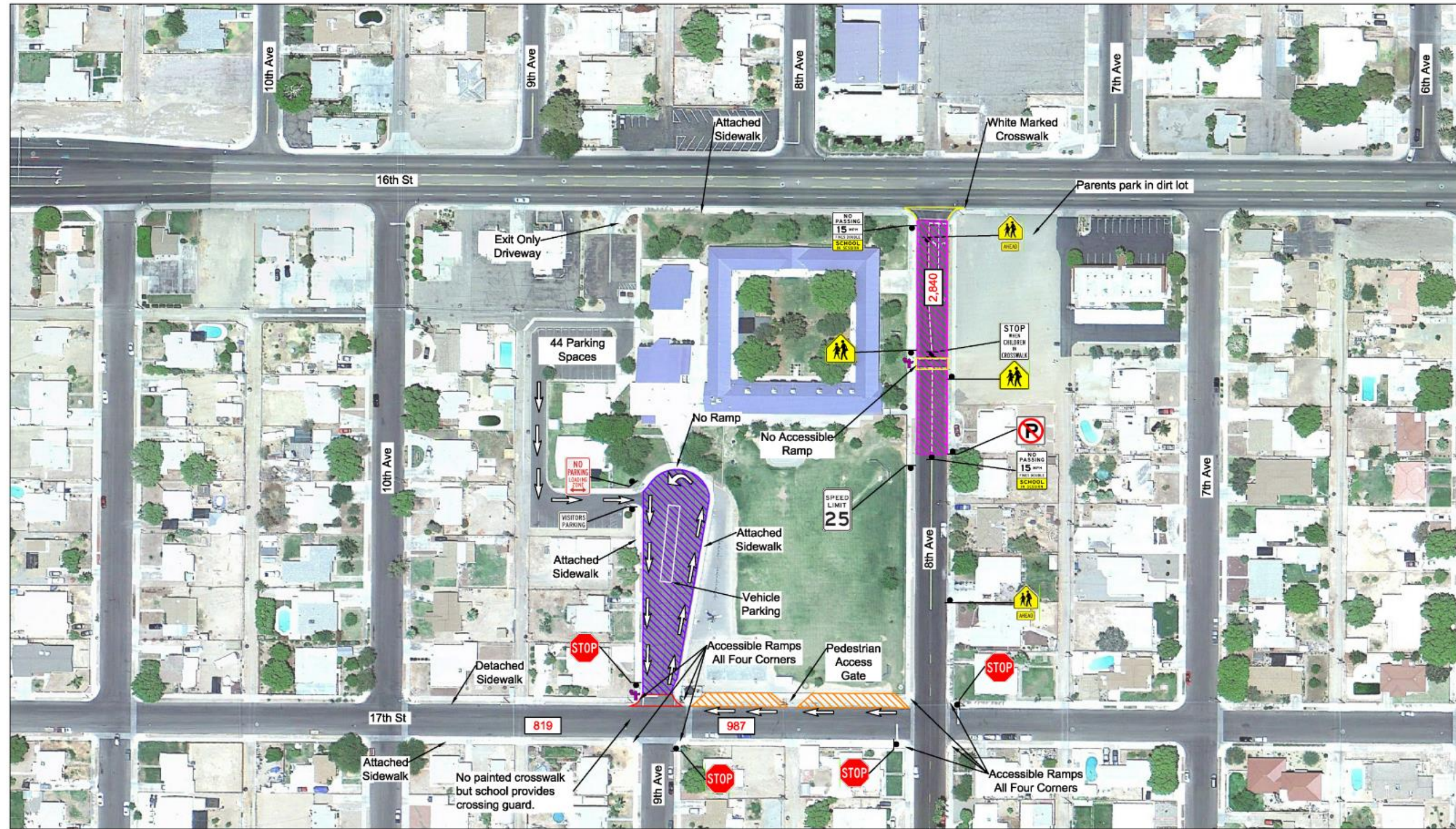


Figure 25: Alice Byrne Elementary School – School & Neighborhood Audit Findings

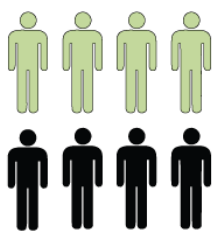


5.5.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers
Alice Byrne Elementary

DEMOGRAPHICS

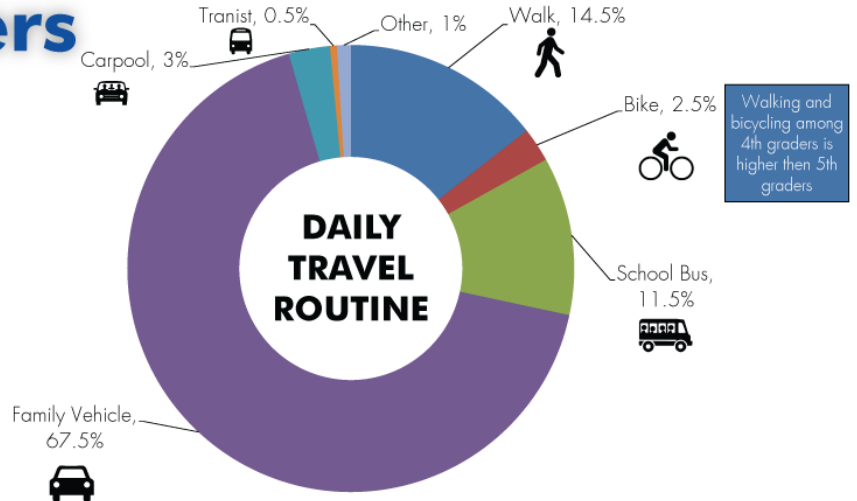
2,820 Total Population (Enrollment Boundary)



60.1% Minority

55% Hispanic

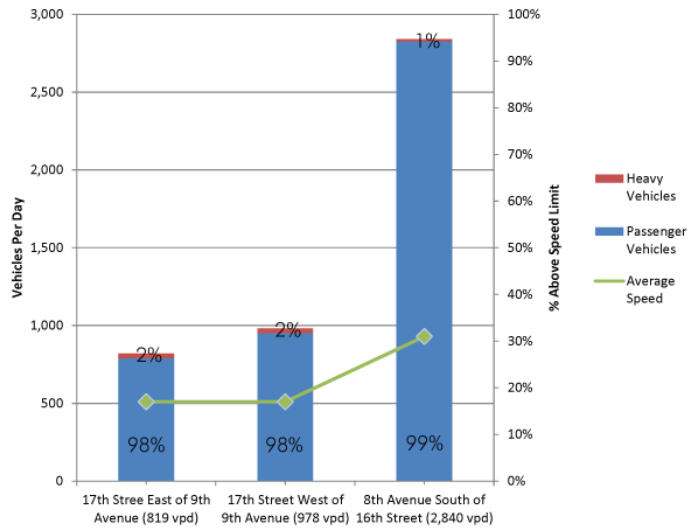
Source: 2010 United State Census, 2007-2011 American Community Survey, EPA EJView



Walking and bicycling among 4th graders is higher than 5th graders

Detailed analysis of demographic/socioeconomic, crash data, travel routines, and roadway counts can be found in Working Paper #1.

ROADWAY COUNTS



CRASH DATA
5 Year Summary



Data: 5 Year Summary, During School Hours, and Weekdays
Source: ADOT, Michael Baker International

Non-Incapacitating Injury

Incapacitating Injury



5.5.8. School-Specific Engineering Recommendations

Alice Byrne Elementary is one of the smaller schools with 350 students and is adjacent to 16th Street. Though the school boundary it serves is relatively small, on average 80% of all students use the bus or family vehicle to get to and from school each day. The existing family vehicle drop-off and pick-up area is located on 9th Avenue, a cul-de-sac which is a city maintained roadway. Over the last several years, the school has made many facility improvements that have improved the operation and safety of all modes of travel to and from the school. The 9th Avenue cul-de-sac still gets overwhelmed at afternoon pick-up and speeding on adjacent roadways can be a continual problem.

On average, 11% to 16% of students walk to school and approximately 2% to 4% of students bicycle to school. Sidewalks with accessible curb ramping exist throughout neighborhoods adjacent to the school.

The existing bus loading zone design with designated pull outs on 17th Street are generously sized at 80 and 105 feet respectively and function well for the one special-needs and one general purpose bus at Alice Byrne. There is ample room to accommodate two more buses though added buses appear unlikely due to moderate school size and the small enrollment boundary it serves. Please refer to Figure 26 for map reference to the projects described below.

AB #1	Provide enhanced measures to improve the operation and safety of the family vehicle drop-off and pick-up area on 9th Avenue.
Findings	The current family vehicle drop-off and pick-up area occurs in the 9th Avenue cul-de-sac. The daily routine operates in a somewhat haphazard manner as there is no formal drop-off and pick-up plan.
Project Description	Provide clearly designated signing and striping to identify the family vehicle drop-off and pick-up area. Based on the existing pavement configuration, striping of one loading zone lane and a second travel lane in a counter-clockwise motion is suggested. This is similar to previous lane striping prior to excessive fading. A two car buffer (30-foot) should be maintained on either side of the newly designated crosswalk extending from the front school walk to the parking spots centered within the cul-de-sac. (It is suggested that if the City/District can take possession of the vacant dirt lot to provide additional parking, these spots centered in the 9th Avenue cul-de-sac should be eliminated. Interior parking spaces should be a 45 degree angle design and limited to short term parking only. Ingress and egress into these interior spaces during morning and afternoon peaks will likely be blocked in and/or compete with the through driveway motorists in



	<p>maneuvering this area.</p> <p>Install high visibility “ladder” style yellow crosswalk from the school sidewalk entrance to the vehicle parking spaces.</p> <p>A minimum of two staff members (or adult assistants) shall man the crosswalk and one additional assistant each at the east and west lengths of 9th Avenue. Three private residential driveways access 9th Avenue on the west. Coordination with these homeowners to allow parking in front of their driveways at morning and afternoon peaks is desired and will increase parking volume and efficiency.</p> <p>A robust campaign of promotional materials educating parents of the refined and improved drop-off and pick-up procedures (sent home to parents, published on the website, etc.) at the beginning of the school year (and at least two reminders during the course of the school year) is highly suggested</p>
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$-\$\$

AB #2	Provide additional parking to sufficiently accommodate school staff and visitor parking.
Findings	There are currently 44 parking spaces on-site which is close to accommodating staff, but not adequate to accommodate staff and visitors. Due to the high percentage of family vehicles at Alice Byrne, additional spaces beyond the suggested 10% visitor count is likely warranted. The vacant dirt lot across 8th Avenue is currently owned by a private party, but has informally been used by Alice Byrne as a family vehicle drop-off and pick-up area.
Project Description	Secure a formal arrangement with the existing property owner to utilize the dirt lot for additional vehicle parking and drop-off pick-up area. Should the City of Yuma acquire this parcel, collaborate with the City to pave this lot and formally design, sign and stripe this lot in accordance with ADOT, ITE and National Center for Safe Route to School design guidelines. Improve the entrance driveway on the south end of the lot to conform to City of Yuma design standards and specifications.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One



Cost Indicator	\$\$\$
AB #3	Conduct crosswalk warrant analysis with objective of establishing a formal school crossing at the intersection of 17th Street and 9th Avenue.
Findings	The intersection of 17th Street and 9th Avenue serves as a school gateway from the south. The school has positioned a crossing guard at this intersection, but there are no crosswalk markings.
Project Description	Conduct a school crossing warrant analysis in accordance with ARS 28-797.A, ADOT and/or City of Yuma school crossing warrant analysis guidelines. Implement the recommended school crossing control.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$

AB #4	Install ADA accessible ramp from existing side walk to existing mid-block crosswalk on 8th Avenue.
Findings	There is no accessible curb ramp on the west side of 8th Avenue in front of the school leading to this busy mid-block crosswalk.
Project Description	Install ADA accessible curb ramping.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$

AB #4	Maintain and expand targeted enforcement for speeding on 17th Street and 8th Avenue.
Findings	As supported by the school principal and Yuma PD observations, the roadway counts conducted for this study revealed that 46% of all motorist exceed the posted speed limit during the afternoon pick-up peak period and 31% of all vehicles exceeded the 25 mph posted speed limit. There is a mid-block school crossing of 8th Avenue connecting the school to the vacant lot often used as a defacto parent drop-off and pick-up area. As this vacant lot becomes a more formal drop-off and pick-up area, added enforcement is needed.
Project Description	Yuma PD has limited resources but does complete targeted enforcement at the beginning of each school year. Consider expanding that enforcement to reduce speeding that compromises child safety on 8th Avenue and 17th Street.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$-\$\$



AB #5	Establish a formal family vehicle drop-off and pick-up plan and inform parents.
Findings	There is currently no defined protocol for the operation of the morning and afternoon pick-up procedures.
Project Description	A robust campaign of promotional materials educating parents of the refined and improved drop-off and pick-up procedures (sent home to parents, published on the website, etc.) at the beginning of the school year (and at least two reminders during the course of the school year) is highly suggested. Said materials should include maps or depictions to reinforce concepts.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

AB #6	Add traffic calming measures for westbound 17th Street at 9th Avenue.
Findings	17th Street currently has stop control at 4th, 5th, 6th, 7th, 8th, 10th and 11th Avenue but ironically does not at the school entrance at 9th Avenue. 17% of vehicles on 17th Street east and west of 9th Avenue exceed the posted speed limit. Traffic calming measures such as speed humps will improve safety and operation of this intersection, especially during morning and afternoon peak periods.
Project Description	If the warrant analysis (AB#3) concludes accordingly, install crossing control in accordance with MUTCD standards and specifications. If the warrant analysis does not indicate a crosswalk is needed, consider installing speed humps east and west of 9th Avenue.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$-\$\$

AB #7	Install speed limit signage on 8th Avenue.
Findings	As supported by the principal and Yuma PD observations, the roadway counts conducted for this study revealed that 46% of all motorists exceed the posted speed limit during the afternoon pick-up peak period and 31% of all vehicles exceeded the 25 mph posted speed limit. There is a mid-block school crossing of 8th Avenue connecting the school to the vacant lot often used as a defacto parent drop-off and pick-up area.
Project Description	Install solar school speed limit signs north and south of the mid-block crosswalk on 8th Avenue.



Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$-\$\$

AB #8	Conduct crosswalk warrant analysis for formal school crossing at the intersection of Avenue A and 17th Street.
Findings	Bel Air Estates is a large neighborhood west of Avenue A and located in the school boundary requiring students walking or bicycling to cross Avenue A. The only existing crosswalk is located 660 feet to the north at the busier arterial at 16th Street. 17th Avenue is residential in character and can serve Bel Air estates as central pedestrian and bicycle thoroughfare to and from school with direct access to school.
Project Description	Conduct a school crossing warrant analysis in accordance with ARS 28-797.A, ADOT and/or City of Yuma school crossing warrant analysis guidelines. Implement the recommended school crossing control.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$

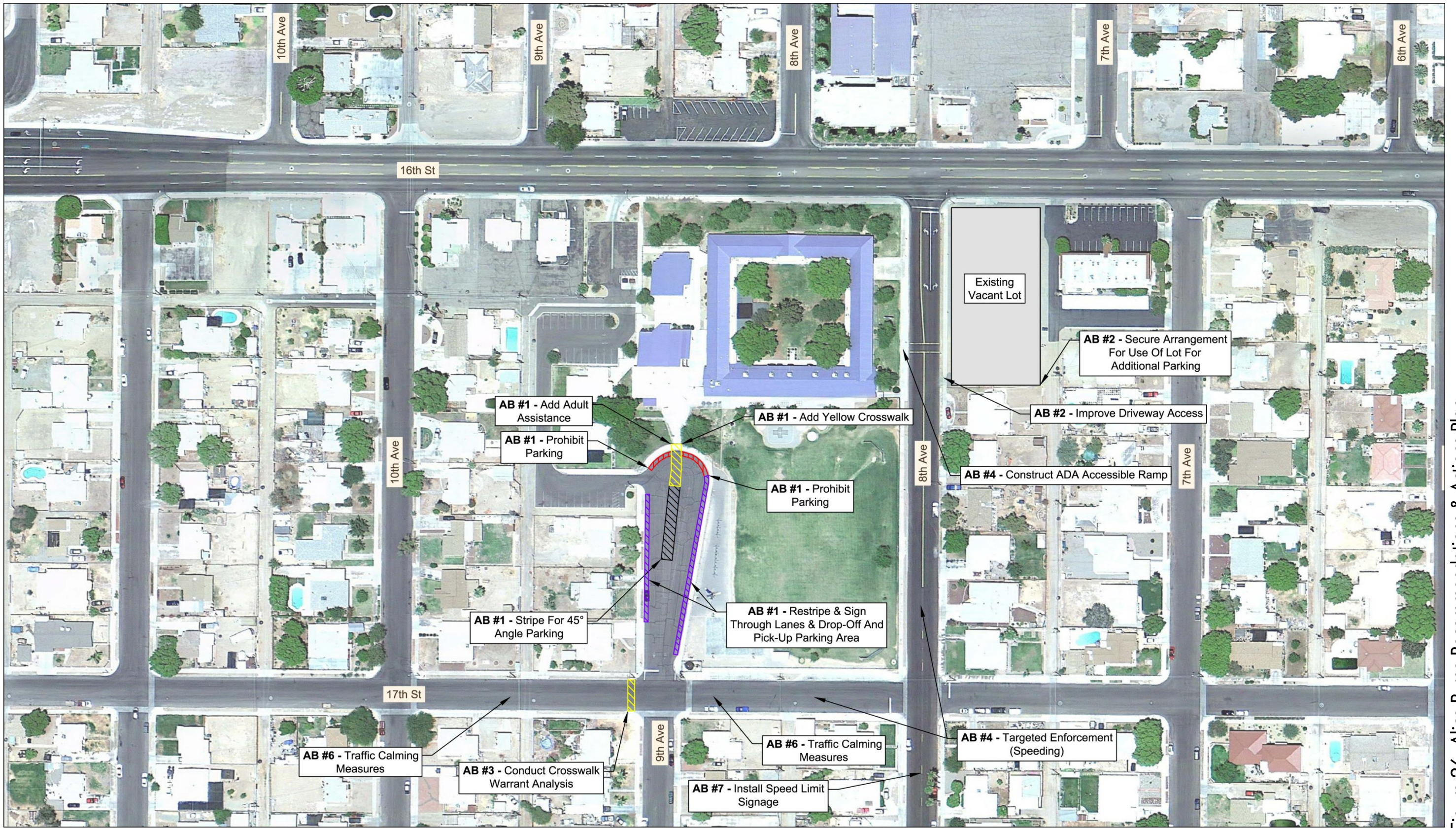


Figure 26: Alice Byrne Recommendations & Actions Plan



5.6. Gila Vista Junior High School

5.6.1. School Setting and Enrollment Characteristics

Gila Vista Junior High is located at 2245 South Arizona Avenue at the southeast corner of 22nd Street and Arizona Avenue. The school was built in 1952.

Gila Vista Junior High educates sixth, seventh and eighth grade and currently has approximately 530 students enrolled. Enrollment capacity is 700 students however enrollment is trending down in part due to three charter schools in the vicinity of Gila Vista Junior High.



As the current enrollment boundary illustrates in Figure 28, the Gila Vista Junior High enrollment boundary encompasses close to 20 square miles and is bound by Interstate 8 to the north, County 17th Street to the south, 4th Avenue the west and Avenue 8E to the east. The school is located in the northwestern portion of the enrollment boundary and the eastern boundary and southern boundary are 6 and 8 miles away respectively.

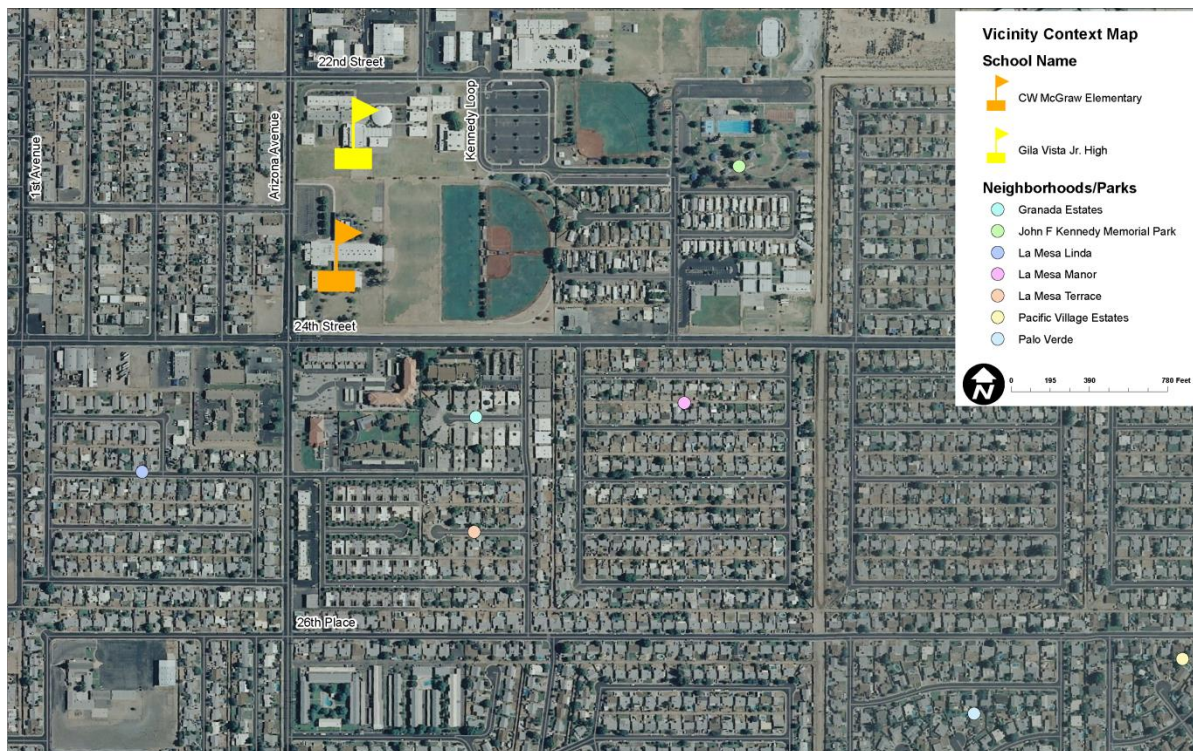
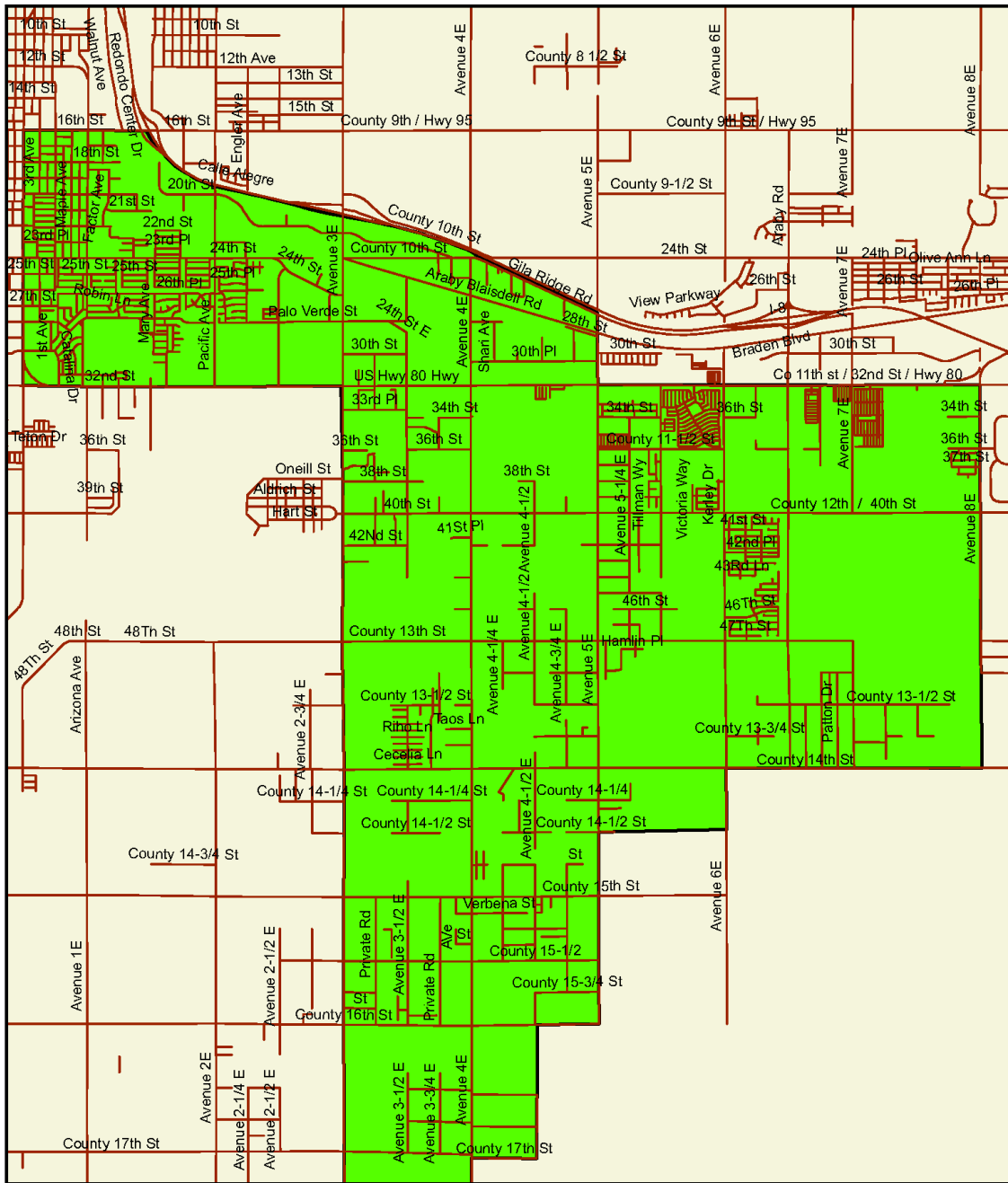


Figure 27: Vicinity Context Map



Gila Vista Junior High School



Legend

- streets
- Gila Vista
- yuma county

Yuma District Boundaries
Adopted
April 10, 2007



Source: Yuma School District One

Figure 28: Gila Vista Junior High School Enrollment Boundary



5.6.2. Neighborhood Character

There are a large number of individual residential neighborhoods, housing types and densities north and south of 24th Street in closer proximity to the school. Yuma Country Club, La Mesa Linda, La Mesa Terrace, Granada Estates, La Mesa Manor, Palo Verde and Pacific Village Estates to name a few. Housing types range from larger lot communities such as Yuma Country Club to smaller let single family homes in La Mesa Manor as well as numerous duplex style units. Many of the houses in the area were built in the same period as the school – the 1950’s and the 1960, others more recent.



Duplex homes on James Street

To the northeast of Gila Vista is John F Kennedy Memorial Park that is a regional city park with a wide variety of recreational amenities including an Olympic sized public swimming pool and baseball field. There is a large parking lot just to the north and east of C.W. McGraw. The Kennedy Loop road that accesses this area serves as a busy collector roadway in this area.



John F. Kennedy Memorial Park



To **Crosswalk on Kennedy Loop east of school**



the north of Kennedy Loop and 22nd Street (east of Arizona Avenue) is a large industrial park land use area with a mix of manufacturing and distribution users in this area.



Industrial land uses north of school

Gila Vista Junior High is adjacent to 22nd Street and Arizona Avenue. 22nd Street has one travel lane in each direction and Arizona Avenue consists of one lane in each direction with a center two-way left-turn lane.

5.6.3. Yuma School District One Identified Needs & Deficiencies

Gila Vista Junior High school was identified by the District as the #6 priority school in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

"Drop-off and pick-up traffic flows through school's parking lot, causing vehicles to back up onto 22nd St. The closing of the nearby Gwyneth Ham School has actually increased traffic speed through Kennedy Loop and thus created an unsafe condition for children who cross without a guard."

5.6.4. School Official Interview & Observations

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). A summary of the following concerns or needs are as follows:

- 1) The number of on-site parking spaces is adequate for staff and visitors.
- 2) Students often cross 24th Street at locations other than marked crosswalks.
- 3) Drive isles within the school parking lot are very narrow.



4) There is a school resource officer on campus most of the day and/or during school events.

5) Generally speaking, the afternoon traffic congestion is worse than the morning. This is primarily due to staggered morning drop-off times and one pick up time in the afternoon.



School driveway at 22nd Street with family vehicles entering and buses exiting

6) The biggest challenge in the morning is parents dropping off their kids too early.

7) There is separate entering and exiting driveways for family vehicles however, the buses exit the same driveway the family vehicles enter.

8) Parents sometimes use the bus lane to drop off their student.

9) Parents pull off to the side of 22nd Street (both north side and south side) and let students out of vehicles. Some students then need to cross 22nd Street.

10) Family vehicles entering the parking lot back up onto 22nd Street towards Arizona Avenue.



Family vehicles dropping students along the west side of Arizona Avenue



Family vehicles dropping students along the east side of Arizona Avenue



5.6.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.

The majority of Yuma PD observations focused on C.W. McGraw but noted a spillover effect of issues. The afternoon pick up time is the most congested and the student release time at Gila Vista is 15 minutes prior to C.W. McGraw. They noted that the lengthy stacking of vehicles on Arizona Avenue (northbound) and the ripple effect that is created onto 24th Street has been the source of numerous complaints over the years. Yuma PD also noted that the traffic on Kennedy Loop can get quite congested due primarily to the traffic generated by the Desert View Academy charter school located at 24th Street and Kennedy Lane. At times vehicles tend to speed on Kennedy Loop.

5.6.6. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.

Figure 29 illustrates the locations of the various features identified and summarized below. Specific features for Gila Vista Junior High School are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.



Arizona Avenue

- One lane in each direction with center two – way left-turn lane. Classified as a Minor Arterial Street by the City of Yuma.
- Posted speed limit of 35 miles-per-hour.
- 40 foot pavement width with detached sidewalks and vertical curbing along both sides of the roadway.



Arizona Avenue looking south from 22nd Street

- Pedestrian and crosswalk signage at yellow marked crosswalk at intersection with 22nd Street with a crossing guard on duty before and after school.
- Most ramps are accessible. No steep grades were identified.
- Pedestrian and crosswalk signage at yellow marked crosswalk at intersection with CW McGraw Elementary school Driveway with a crossing guard on duty before and after school.
- Signal control at the intersection with 24th Street and 16th Street.
- Painted white crosswalk on the west leg of the intersection with 22nd Street and 23rd Street.



Crossing guard at 22nd Street and Arizona Avenue



- Continuous detached sidewalk on west side of the roadway and on east side south of 22nd Street. Sidewalks are discontinuous along the west side of the roadway north of 22nd Street.
- On street parking is not permitted.
- Roadway lighting is present along both sides of the roadway.

22nd Street

- Two lanes in each direction with no center stripe.
- Posted speed limit of 25miles-per-hour.
- Continuous attached sidewalks on south side of the roadway.
- No striped bike lanes. Bike Route signage present.
- No Parking signage adjacent to school on south side of roadway.



- No roadway lighting.
- Stop control at intersection with Arizona Avenue.
- Discontinuous sidewalks on north side of roadway.



Sidewalk gap on north side of 22nd Street



Bike Route signage on 22nd Street

School Access Points

Gila Vista Junior High only has one point of entry for family vehicles and staff members on 22nd Street. Buses have two access driveways onto one, one-way direction driveway. The primary bus entrance is off Arizona Avenue and secondary driveway from 22nd Street separate from the family vehicle and staff entrance. There is one exit driveway one on 22nd Avenue; however the buses use the family vehicle entrance as the exit driveway which generates congestion, awkward turning movements and safety concerns.



Family vehicle and staff access driveway from 22nd Street



Pedestrians and bicyclists can access the school from the west by using the existing marked crosswalk across Arizona Avenue. Non-motorized access from the east can occur over three individually marked (white) crosswalks across 3 points on Kennedy Loop. Also, students that live to the south tend to cross through the fields at C.W. McGraw to either pick up siblings or continue their walk towards 24th Street.



Pedestrian gate from plaza on Kennedy Loop





Parking

Currently the parking lot on-site provides approximately 65 spaces that adequately serve staff members and visitors. The drive isles are too narrow and it is difficult to navigate through the parking lot.

The parking lot to the east near Kennedy Loop is used as overflow parking and provides more than enough spaces during school events.

School Bus Loading Zones

- Gila Vista Junior High has four (4) general education school buses and three (3) special needs buses.
- Buses utilize the dedicated bus lane for loading and unloading students. The buses have dedicated entrance points; however the buses exit the family vehicle entrance point which is a conflict point creating congestion, awkward turning movements and is a safety concern.



Bus loading zone



Bus existing family vehicle driveway entrance



Secondary bus driveway off 22nd Street onto bus loading zone

Family Vehicle Drop-off and Pick-up Procedures

- Parents enter the driveway off of 22nd Avenue and pull through the parking lot to drop-off and pick-up their student. Vehicles exit the parking lot through a separate driveway to the east.



- Parents tend to drop their children off approximately 80 feet after entering the driveway leaving room for 2 or 3 cars to queue without backing up onto 22nd Street.
- A number of parents wish to avoid the parking lot all together and pick-up or drop-off their children on 22nd Street.



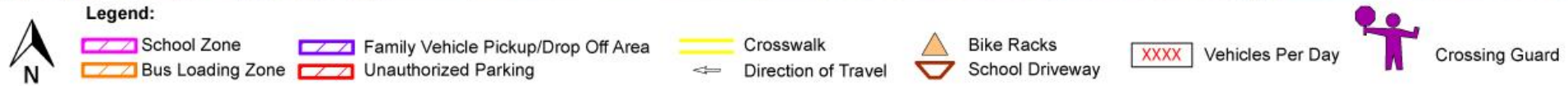
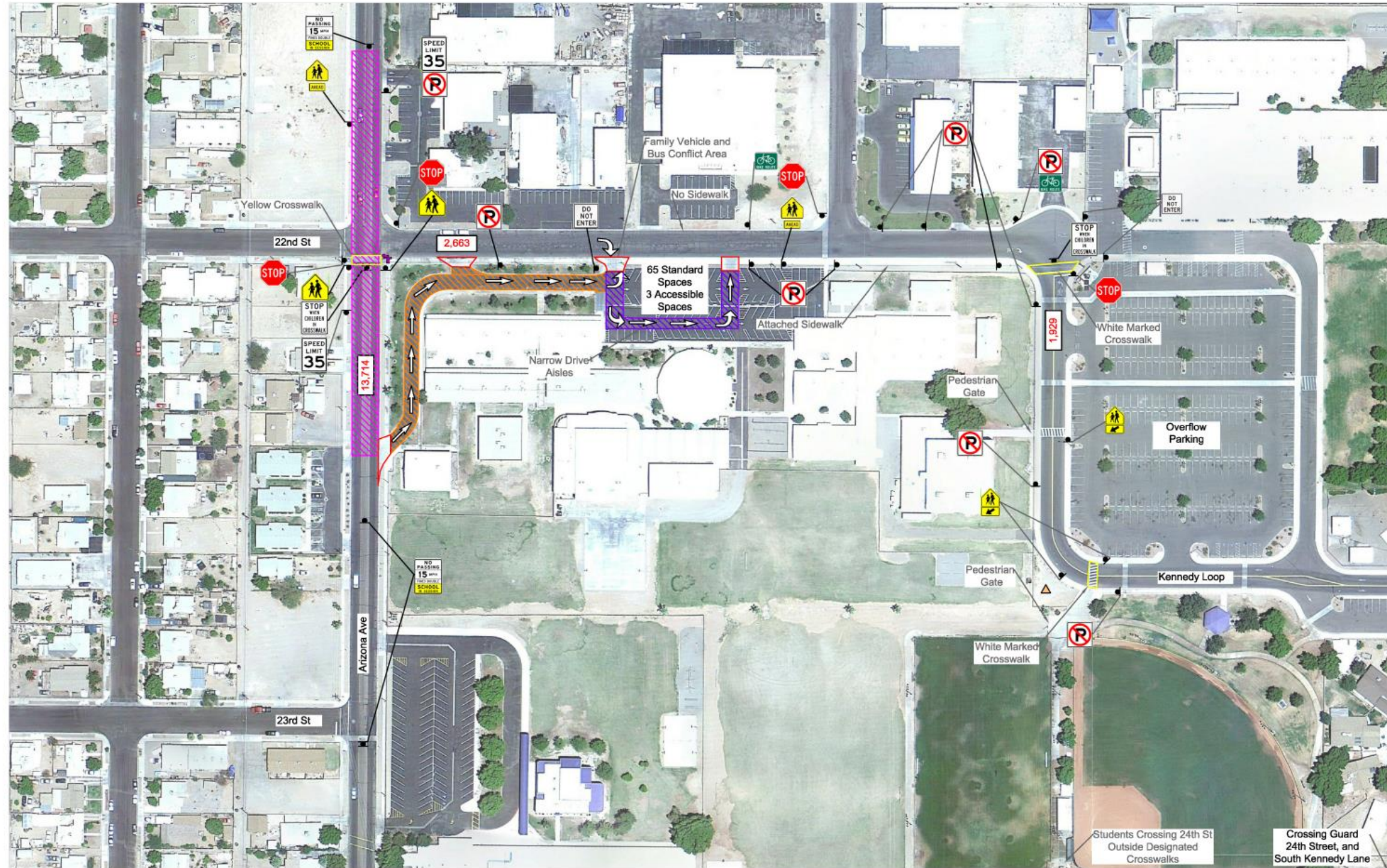


Figure 29: Gila Vista Jr. High School – School & Neighborhood Audit Findings



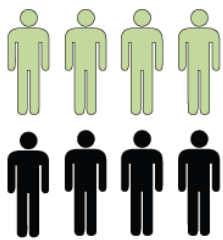
5.6.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers

Gila Vista Junior High School

DEMOGRAPHICS

18,855 Total Population
(Enrollment Boundary)

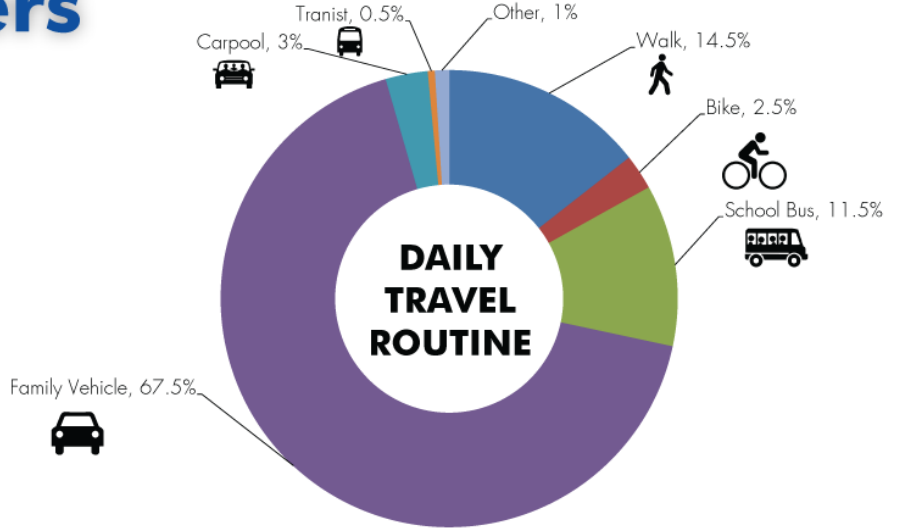


56.6%
Minority

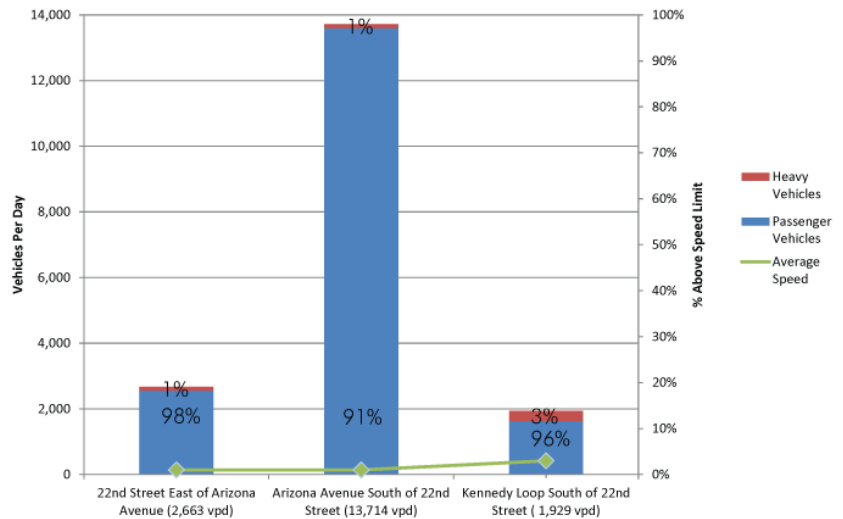
51% Hispanic Or Latino

Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView

Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.



ROADWAY COUNTS



CRASH DATA

5 Year Summary



Data: 5 Year Summary, Driving School Hours, and Weekdays
Source: ADOT, Michael Baker International

Non-Incapacitating Injury

Incapacitating Injury



5.6.8. School-Specific Engineering Recommendations

The 20 square mile enrollment boundary for Gila Vista Junior High covers a large area that draws students from up to 6 miles away to the east and 8 miles to the west. According to the mode student split survey conducted for this project, 70% to 80% of the student body arrives to school by bus or family vehicle/carpool daily. 20% to 30% of the students walk and 0% bicycle to school. There are four (4) general purpose and three (3) special-needs buses serving the school needs daily. Due to its adjacent location to CW McGraw Elementary, many of the same multimodal routines and congestion issues that plague CW McGraw impact Gila Vista Junior High as well.

Morning and afternoon peak traffic congestion is exacerbated by the conflicting existing vehicular movements at the primary entrance driveway off 22nd Street. Family vehicles enter while buses exit this driveway, enhancing congestion and compromising vehicle and pedestrian operations and safety. There is sufficient parking to accommodate both staff and visitors. School officials pointed to motorist speeding as a persistent concern on Kennedy Loop however the roadway count analysis indicated that speeding was observed more frequently on 22nd Street than on Kennedy Loop. The crash data did not find a single vehicle crash on Kennedy Loop or 22nd Street. Plans in the early stages of development (and not available at the time of print) by Yuma School District One for the re-purposing of the former Gweneth Ham school into a District facilities and services center are likely to influence and/or modify traffic operations at the elbow intersection of 22nd Street to Kennedy Loop. Please refer to Figure 30 for map reference to the projects described below.

GV #1	Conduct crosswalk warrant study with objective of establishing a formal school zone and school crossing with crossing guard on Kennedy Loop.
Findings	The large parking lot across Kennedy Loop east of the school will continue and likely expand its utilization in serving the parking and drop-off and pick-up needs of the school. Because the striped crosswalk is situated in the middle of a short block length between two 90-degree turns (and speeding has been witnessed), a warrant analysis will likely reveal the need to position a crossing guard at this location which would then necessitate creating a school zone. Said warrant analysis should evaluate the appropriate location of this crosswalk and likely recommend just one crossing as opposed to the one formal and one informal crossing (north near 22nd Street) that are currently located in this area. Potential modification to local street traffic flows as a result of the changes currently being planned for the re-purposing of the Gweneth Ham school should be factored in the warrant analysis.
Project Description	Conduct a school crossing warrant analysis in accordance with ARS 28-797.A, ADOT and/or City of Yuma school crossing warrant



	analysis guidelines. Implement the recommended school crossing control.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$

GV #2	Construct a sidewalk on the north side of 22nd Street from Arizona Avenue east to Factor Street.
Findings	Sidewalks currently exist on both sides of all streets in proximity to the school with the exception of this segment on 22nd Street located directly across the street from the school. Construction of this sidewalk will close this strategically significant sidewalk gap across from the school and improve the comfort and safety of student pedestrians by providing a buffer from the vehicular traffic on Arizona Avenue and 22nd Street, especially during the busy morning and afternoon peak periods.
Project Description	Construct a 5-foot sidewalk with vertical curbing along the north side of 22nd Street for approximately 600 feet from Arizona Avenue to Factor Street. Construct ADA accessible curb ramping at the intersections.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$\$

GV #3	Reconfigure parking lot with design enhancements to improve operations and safety for all multimodal users.
Findings	One of the primary challenges to daily ingress and egress to Gila Vista Jr. High is the fact that one driveway is shared by family vehicles entering and buses exiting. This unavoidably creates conflicting turning movements within tight turning radii and this triggers stacking of vehicles onto 22nd Street and Arizona Avenue as vehicles attempt to maneuver in this compact space. Existing drive aisle space is too narrow.
Project Description	As Figure 30 illustrates in detail, provide design enhancements to reconfigure the bus loading zone and driveway to an egress drive only by installing vertical curbing to isolate this driveway from family vehicle usage. Expand middle driveway to accommodate both directions of flow and change the direction of travel for family vehicle driveway approach and drop-off area. Re-stripe parking lot to modify the angle of parking as shown to accommodate new direction of flow. Install "Do Not Block Driveway" signage and position an adult



	<p>assistant at the family vehicle drop-off area during morning and afternoon peak periods to facilitate flow and enhance safety.</p> <p>Encourage some staff to park across Kennedy Loop for surplus parking. Seek project assistance from the City of Yuma public works department for the construction of facilities as these improvements will improve traffic operations and safety of 22nd Street and Arizona Avenue.</p>
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$\$\$

GV #4	Continue and expand practice of targeted enforcement at 2-3 occasions each school year.
Findings	Persistent congestion on Arizona Avenue, two schools, student pedestrian activity above national averages and finding that 8% of all vehicles exceed the 35 mph posted speed limit at afternoon peak times collectively suggest that this is a priority area for expanded enforcement levels.
Project Description	Yuma PD has limited resources but does do targeted enforcement at the beginning of each school year. Consider expanding that enforcement to reduce usage of vacant lots as family vehicle drop-off areas as well as motorists speeding and appropriate pedestrian crossing activities.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$-\$\$

GV #5	Install pedestrian warning signage at James Street and 24th Street. <i>This is a project reiterated from CW McGraw but is offered again to reinforce the need for this project as it effects two schools.</i>
Findings	Student pedestrians living in the neighborhoods south of 24th Street will often jaywalk at James Drive and 24th Street, especially older students attending Gila Vista Jr. High.
Project Description	Install "Cross at Crosswalk Only" or related signage at James Drive and 24th Street that guides pedestrians to cross at designated crosswalks at either Arizona Avenue to the west or Kennedy Lane to the east.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$



GV #6	Post signage prohibiting family vehicle access to the designated school bus driveway off Arizona Avenue.
Findings	The principal reports that sometimes family vehicles utilize the designated school bus driveway to drop-off their students for convenience. This compromises the operation, performance and safety of the bus driveway and loading area.
Project Description	Install “buses only”, “all other vehicles prohibited” signage at the driveway entrance on Arizona Avenue.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

GV #7	Prohibit parking along the north curb of 22nd Street.
Findings	Parking is already prohibited via existing signage along the south curb and portions of the north curb on 22nd Street. Install additional no parking signage along the north curb segment from Arizona Avenue to Factor Avenue. This signage, along with targeted enforcement, will discourage parents from dropping their students off along the north curb in front of the heavy vehicle congestion in this area during morning and afternoon peak periods.
Project Description	Add “No Parking” signage along the north curb of 22nd Street between Arizona Avenue and Factor Avenue in accordance with MUTCD standards and specifications.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$-\$\$



GV #8	Develop Flier/handout for parents describing new procedures.
Findings	In response to GV #1 and GV #3 projects, Gila Vista will need to draft a flyer describing and depicting the new drop-off and pick-up procedures for parents. A robust campaign of promotional materials educating parents of the refined and improved drop-off and pick-up procedures (sent home to parents, published on the website, etc.) at the beginning of the school year (and at least two reminders during the course of the school year) is suggested. <i>Sample reference materials will be supplied in final report.</i>
Project Description	Gila Vista officials should develop a color flyer for parent consumption that describes and graphically depicts the modified bus, parent vehicle and suggested walking and bicycling access procedures.
Lead Organization/ Project Partners	Gila Vista Jr. High administration/Yuma School District One
Cost Indicator	\$

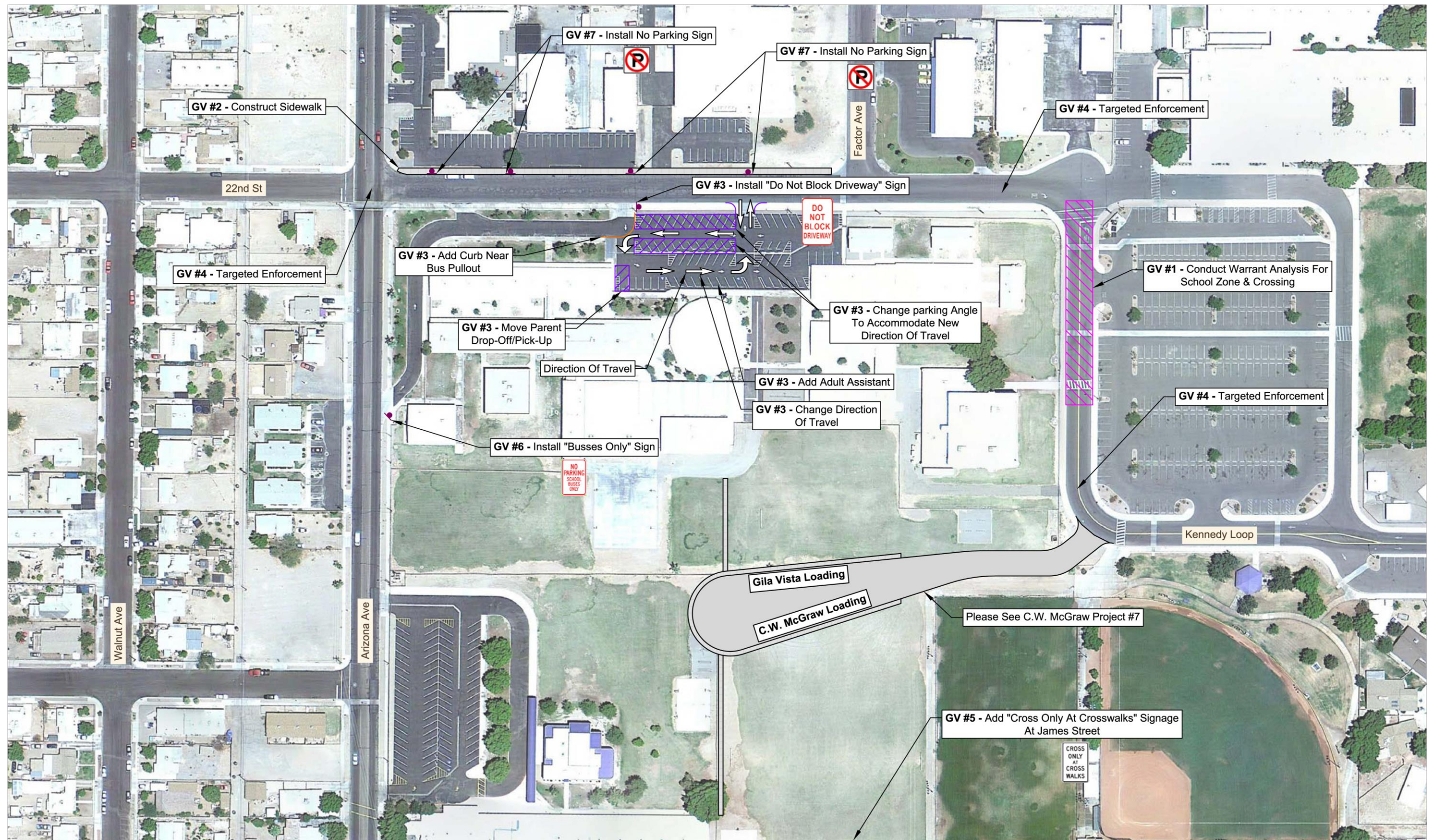


Figure 30: Gila Vista Recommendations & Actions Plan



5.7. Woodard Junior High School

5.7.1. School Setting and Enrollment Characteristics

Woodard Junior High is located at 2250 South 8th Avenue at the southwest corner of 8th Avenue and 22nd Street. Woodard Junior High provides instruction for grades 6-8 and currently has approximately 740 students enrolled. Enrollment is expected to remain constant over the next several years.



Woodard Jr. High School

As the current enrollment boundary illustrates in Figure 32, the Woodard Junior High enrollment boundary is approximately three square miles bound by 8th Street to the north, 34th Street to the south, the East Main Canal to the west and 4th Avenue to the east. The Woodard Junior High enrollment boundary neighbors the Fourth Avenue Junior High enrollment boundary both to the north and east. The Gila Vista Junior High enrollment boundary is also to the east of the Woodard Junior High enrollment boundary. The Woodard Junior High enrollment boundary is very linear north to south, extending three miles north/south and approximately one mile east/west. As a result, a large percentage of students utilize a family vehicle or school bus to get to and from school. The school is located in approximately the center portion of the enrollment boundary.

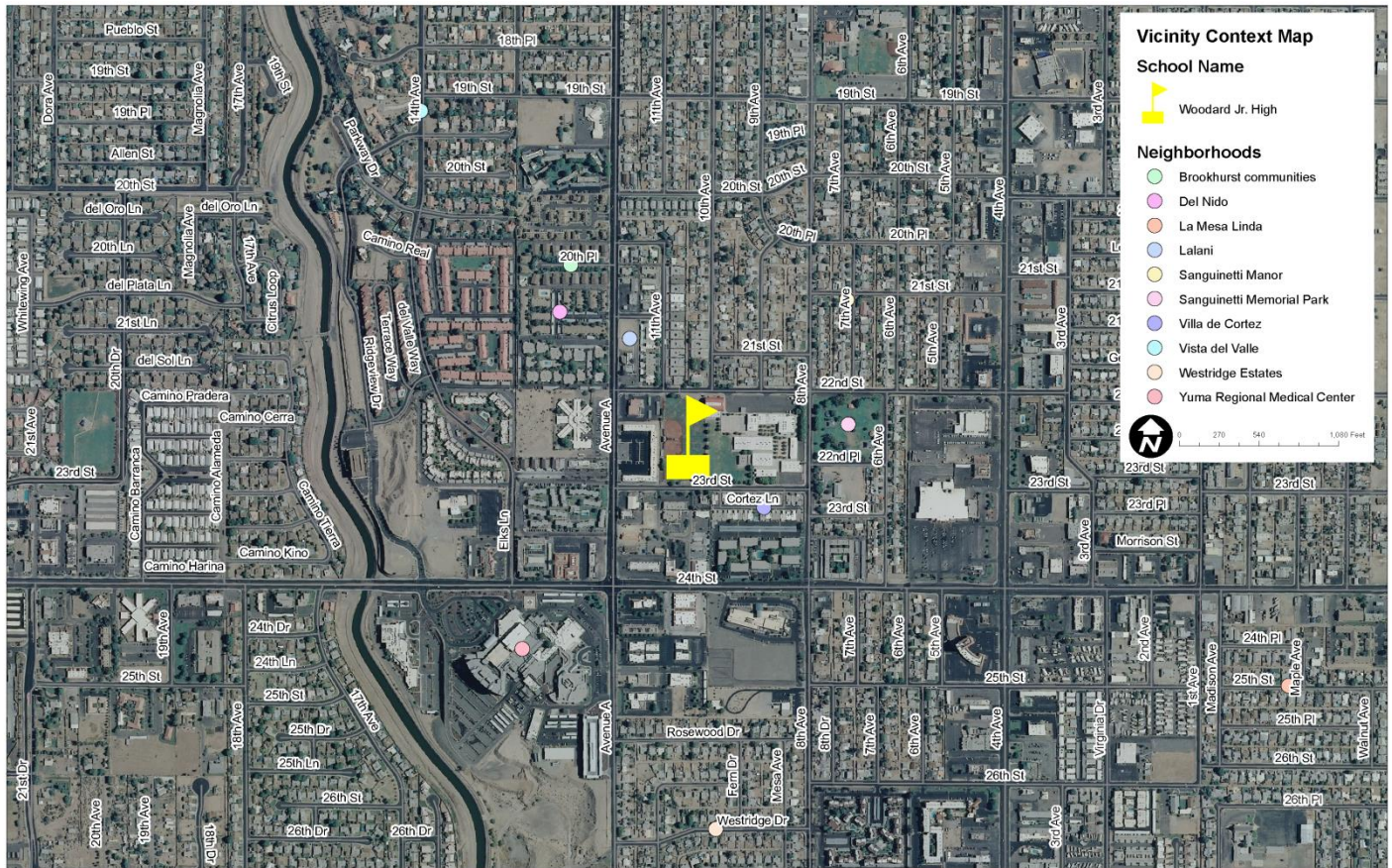


Figure 31: Vicinity Context Map



Woodard Junior High School

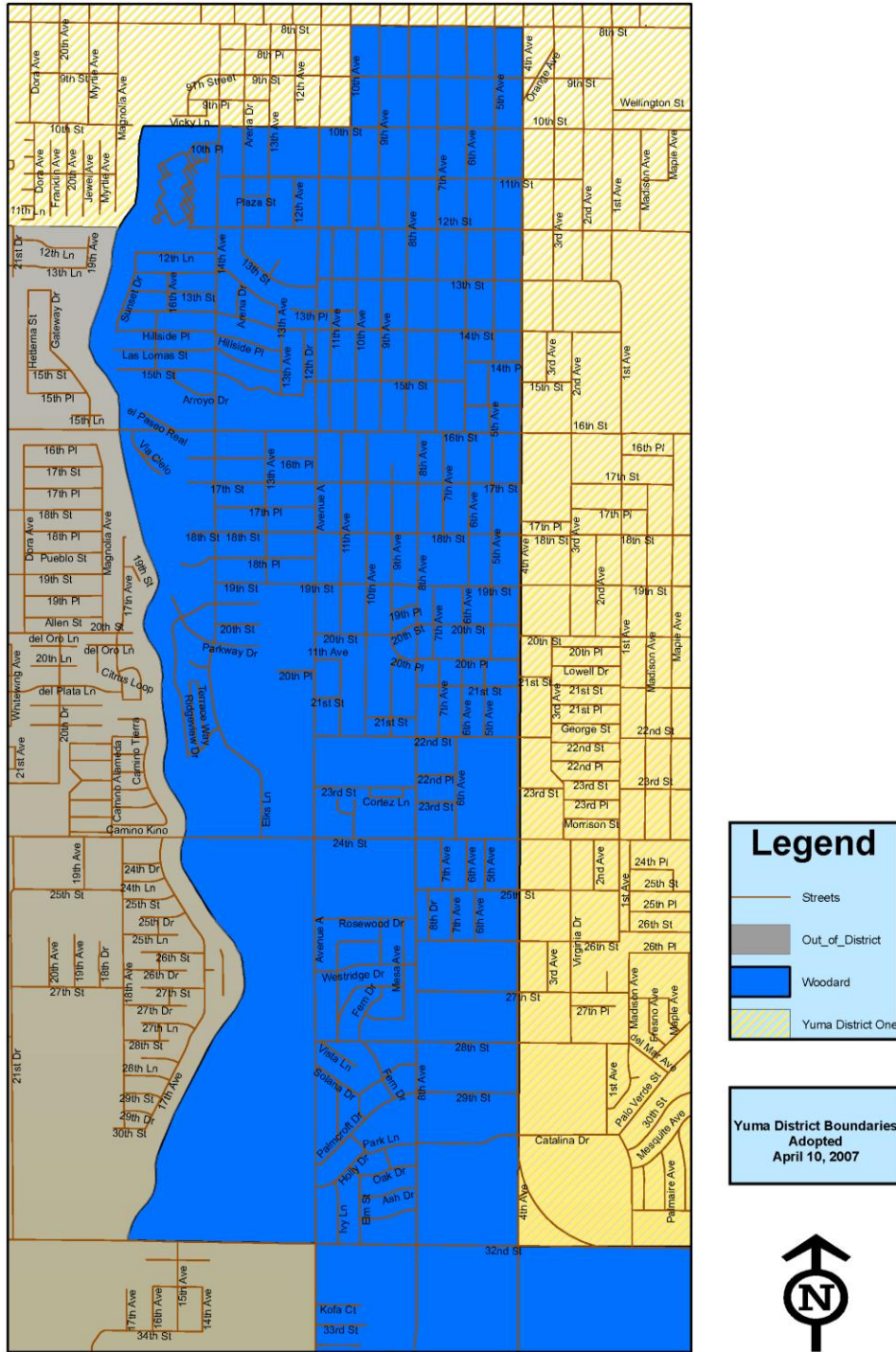


Figure 32: Woodard Junior High School Enrollment Boundary

Source: Yuma School District One



5.7.2. Neighborhood Character

There are many existing residential subdivisions, including apartment and/or condominium communities in the vicinity of Woodard Junior High. To the north, the communities of Atmar San Carlos are examples of medium density single family detached residential communities. There is also a mixture of higher density residential uses like Sanguinetti Manor and higher density condominium and duplex communities such as Lalani, Vista del Valle, Del Nido and Brookhurst communities. To the south, the Palmcroft Estates community and other various residential communities exist. There are also regional commercial retail services at the intersection of 4th Avenue and 32nd Street. Sanguinetti Memorial Park is a community park directly east of the school across South 8th Avenue. The Yuma Regional Medical Center is also within the enrollment boundary.



Neighborhood near Woodard Jr. High



Neighborhood near Woodard Jr. High



The street network in proximity to the school is a standard grid design. Adjacent to Woodard Junior High, 8th Avenue, 22nd Street and 23rd Street all have one travel lane in each direction.

5.7.3. Yuma School District One Identified Needs & Deficiencies

Woodard Junior High school was identified by the District as the #7 priority school in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

"Lack of school zone signs in front of school creates a dangerous crossing for students which have resulted in children being hit by cars. Directing students, parents, and buses all in the same parking lot area creates dangers that have caused accidents before."

5.7.4. School Official Interview & Observations

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). A summary of the following concerns or needs are as follows:

- 1) Drivers on 8th Avenue are not paying attention to the presence of the school area. There are no school zone signs on 8th Avenue.
- 2) Previous to the 2013-2014 school years, buses and family vehicles shared the same parking lot off of 22nd Street. Due to the construction of the solar panels in the parking lot, the school re-directed buses to line up on 23rd Street. However there is no dedicated bus pull-out on 23rd Street but separating the buses and passenger vehicles is working well and alleviating conflicts in the parking lot.
- 3) The parking lot off of 23rd Street is closed off to the public during school hours.
- 4) There is a small parking lot for visitors off of 8th Avenue.
- 5) The number of existing parking spaces is sufficient to accommodate staff and visitors. This is not an issue.
- 6) A school resource officer is on site during the majority of school hours.
- 7) Parents tend to drop their kids off in the parking lot off of 22nd Street. There is one designated entrance only and one designated exit only. There are times when parents



use the exit as an entrance. There are no signs or pavement markings to direct parents to the correct drop off path or area.

- 8) Generally speaking, the afternoon traffic congestion is worse than the morning. This is primarily due to staggered morning drop-off times and one pick up time in the afternoon.
- 9) There is no crossing guard or painted crosswalk at the intersection of 23rd Street and 8th Avenue.

5.7.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.

When asked to review priority safety concerns for the multiple schools included in this study, Yuma PD representatives did not identify Woodard Jr. High School as one of the priority safety concerns. As a general rule of thumb in Yuma (and throughout the country), the vast majority of priority safety concerns and traffic enforcement issues are typically associated with elementary schools and not junior high schools. It was noted that there have been some speeding complaints on 22nd Street and 8th Avenue, likely due to the straight-away nature of these roadways.

5.7.6. School & Neighborhood Audit findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.



Figure 33 illustrates the locations of the various features identified and summarized below. Specific features for Woodard Junior High School are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

22nd Street

- Two lane roadway with center stripe.
 - Classified as a Collector Street by the City of Yuma.
 - Curb to curb pavement width of 40 feet.
 - Bike Route signage along north side of roadway.
-
- 22nd Street looking west in front of school
- Posted speed limit of 25 miles-per-hour.
 - Attached continuous sidewalk on south side of roadway. Sidewalk in many areas is less than 5 feet wide.
 - Attached sidewalk on the north side of 22nd Street between 10th and 11th Avenues is discontinuous.
 - Four-way stop control at intersection with 8th Avenue.
 - Stop control for 22nd Street at the intersection with S Avenue A.
 - White striped cross walk on south, east and west legs only at intersection with 8th Avenue.

8th Avenue

- Two lane roadway with center stripe.
- Classified as a Minor Arterial (Constrained) by the City of Yuma.
- Curb to curb pavement width of 40 feet.



- Posted speed limit of 25 miles-per-hour.
- Attached sidewalks on both sides of the roadway.
- No striped bike lanes, posted as bike route.
- No parking signage Monday to Friday from 7:30 AM to 4:00 PM, on east side of street between 22nd St and 23rd St.
- On street perpendicular parking on west side of roadway between 22nd Street and 23rd Street.



8th Street in front of school

Avenue A

- Two lanes in each direction with a center two-way left-turn lane.
- Classified as a Principal Arterial (Constrained) by the City of Yuma.
- Posted speed limit of 35miles-per-hour.
- Attached sidewalks on both sides of the roadway.
- No striped bike lanes.
- Bike Route posted on east side of roadway.
- No on-street parking.
- Roadway lighting.
- Provides access to multiple commercial driveways.



- Yellow painted school crosswalk at the intersection with 21st Street with a crossing guard before school and after school.



23^d Street

- Local street with attached sidewalks and vertical curbing on both sides of the street.
- School bus loading zone uses north side of roadway. No pull outs exist. Bus unloads directly onto sidewalk and there is a pedestrian gate for access onto school grounds.

School Access Points

- Woodard Junior High has three parking lots to access the school, one lot off of 22nd Street (family vehicle drop-off and pick up, staff and visitor parking), one lot off of 8th Avenue (visitor parking) and one lot off of 23rd Street (staff parking).
- The parking lot on 23rd Street is for staff with two driveways closed off with a gate during school hours.
- The parking lot on 8th Avenue is for staff and visitors with one driveway.
- The parking lot on 22nd Street is for staff, visitors with two driveways, one used for entrance only and the other for exit only.
- The parking lot on 22nd Street is also used for morning drop-off and afternoon pick-up; there is no striping or signage directing parents within the parking lot.

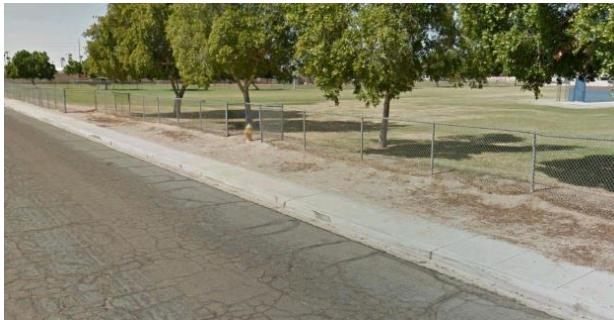
Parking

Currently the three parking lots on-site provide approximately 106 spaces that adequately serve staff members plus visitors. On street parking is permitted along 8th Avenue on the west side of the roadway adjacent to the school. Parking is not an issue at Woodard Junior High.



School Bus Loading Zones

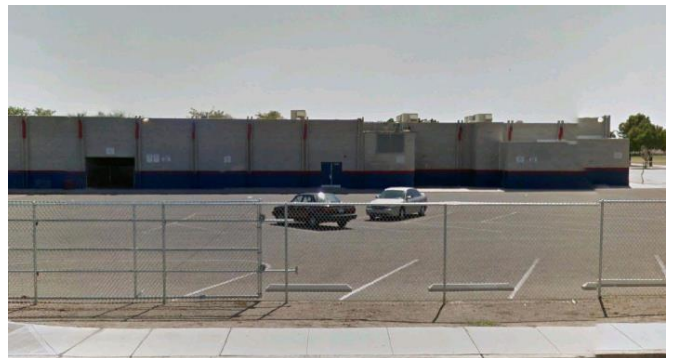
- Buses line up on the north side of 23rd Street west of the parking lot. There is no dedicated bus pull out.
- Woodard Junior High has 5 regular school buses and one special needs bus.
 - The bus loading zone is separated from the family vehicle loading zone which is a preferred design.
 - Buses line up single-file with right wheel to the curb which is a preferred design. As a result, children do not have to walk between buses.



Bus loading zone on north side of 23rd Street

Family Vehicle Drop-off and Pick up Procedures

- The family vehicle drop-off/pick up zones is accessed from one driveway entry point off of 22nd Street and exits through a second driveway in the center of the parking lot.
- Neither driveway is signed for entrance or exit, causing some vehicles to travel in the wrong direction.
- There is no marked or signed loading and unloading zones for family vehicles.
- Bus loading zone signs are present even though the bus loading/unloading has moved to 23rd Street.
- A portable building protruding into the parking lot creates awkward turning movements and blind spots.



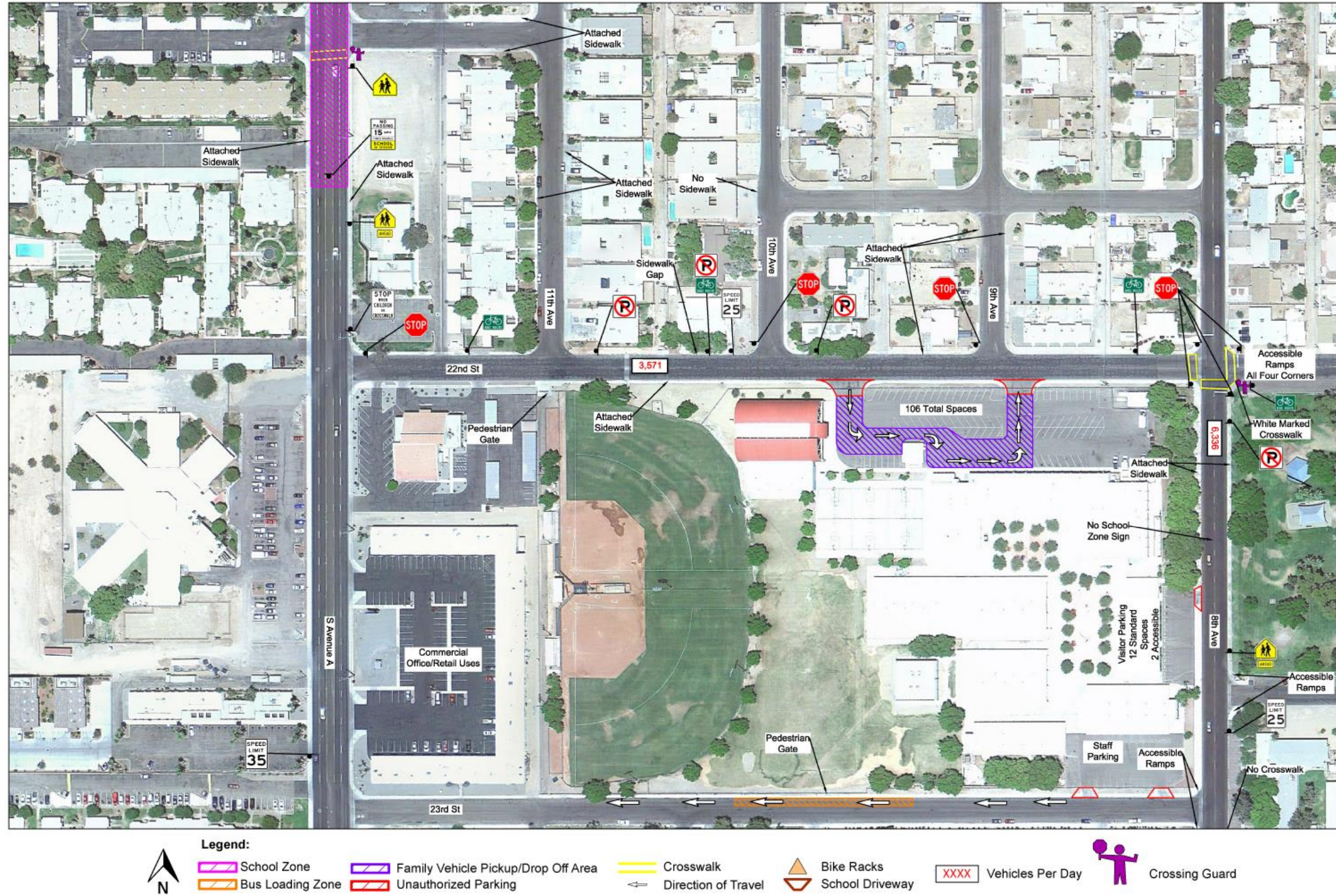


Figure 33: Woodard Jr. High School – School & Neighborhood Audit Findings

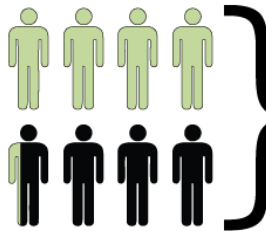


5.7.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers
Woodard Junior High School

DEMOGRAPHICS

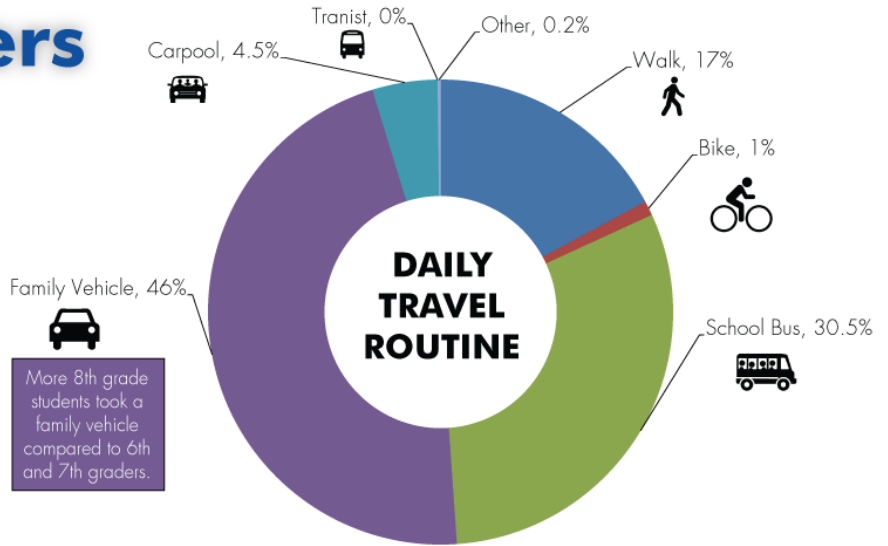
13,410 Total Population
(Enrollment Boundary)



62.8%
Minority

57% Hispanic Or Latino

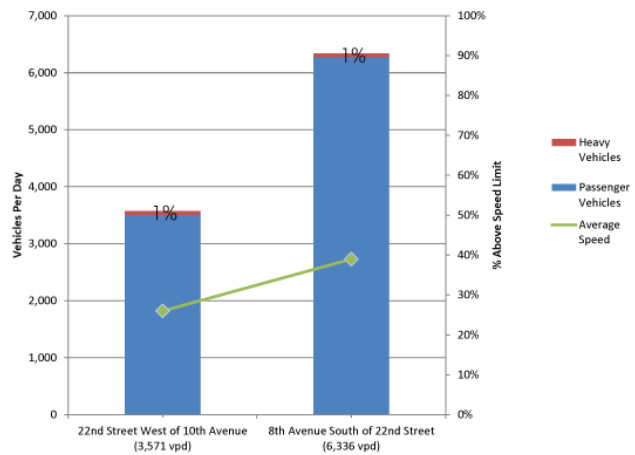
Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView



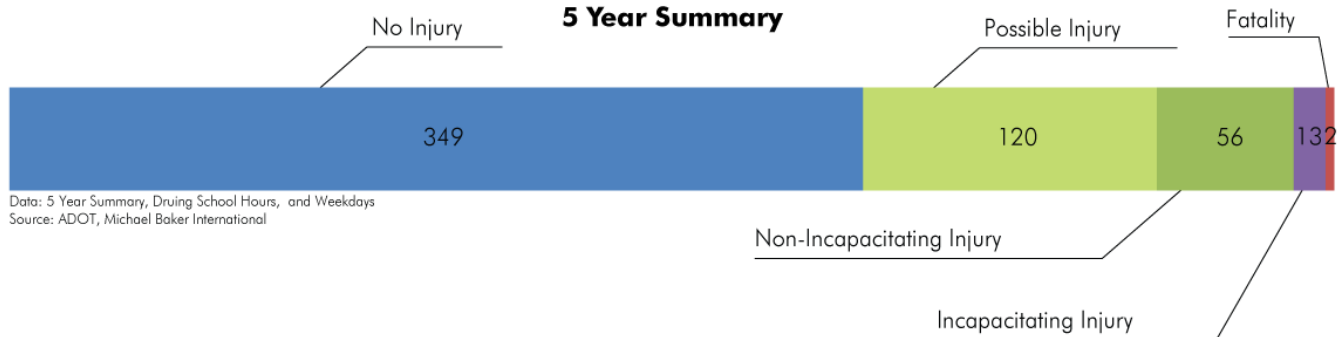
Family Vehicle, 46%.
More 8th grade students took a family vehicle compared to 6th and 7th graders.

Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.

ROADWAY COUNTS



CRASH DATA
5 Year Summary



Data: 5 Year Summary, Driving School Hours, and Weekdays
Source: ADOT, Michael Baker International



5.7.8. School-Specific Engineering Recommendations

Woodard Junior High provides instruction for grades 6-8 and is generally located in the center portion of the school's enrollment boundary. The school's enrollment boundary is very linear north to south, which results in a large percentage of students utilizing a family vehicle or school bus to get to and from school. Mode split survey findings demonstrated that on average 80% of all students either takes the bus or family vehicle to and from school each day.

Recent efforts by school staff and the district to separate the family vehicle loading area from the bus loading area has greatly improved traffic flow and overall safety in and around the school. However, the new bus loading area located along 23rd St is located within the general right-of-way and lacks any dedicated lane.

Large portions of the residential areas to the north and east of the school site lack continuous sidewalks, which create unsafe conditions for those students who walk to school and certainly contribute to the decision of those students who may be able to walk to school to choose not to.

Roadway traffic analysis of 8th Ave over a 24-hour period or during peak morning and afternoon periods did not identify speeding as a significant problem. Only 7% of vehicles in the morning drop-off period and 11% of vehicles in the afternoon pick-up exceeded the posted 25 mph speed limit. Although, statistical findings did not indicate an area of concern, staff and law enforcement did acknowledge that traffic volumes along this minor arterial do present safety concerns during peak periods and after school program release times at the intersections of 22nd St and 8th Ave and 23rd St and 8th Ave.

While Avenue A is one of the most heavily traveled streets near the school, the presence of sidewalks on each side of the street as well as a designated school zone with crossing guard at the 21st St intersection, resulted in staff, law enforcement, and consultant field audits to not identify any major deficiencies along this corridor. Similarly, although crash data analysis revealed 24th St as having the highest rate of vehicle/pedestrian accidents and fatalities near the school campus, staff and law enforcement did not identify this roadway as an area of concern.

Please refer to Figure 34 for map reference to the projects described below.



WD #1	Improve discontinuous sidewalk system within ½ mile radius of school.
Findings	The majority of the sidewalk system located within the residential neighborhoods surrounding the school is remarkably void of any continuous pedestrian paths to the school. The lack of safe pedestrian routes to and from school can have a significant impact on the number of students who choose to walk to school. Most notably there is no sidewalk on the north side of 22nd St to connect to the school crossing on Avenue A or the school crossing on 8th Avenue. In addition, the local streets within the neighborhoods of Atmar (immediately to the north of the school) and Westridge Estates (south of 24th St) have limited or disjointed sidewalks which prohibit pedestrian connectivity to 22nd St or 8th Ave.
Project Description	Construct sidewalks or connect sidewalk gaps within the neighborhoods to the north, east, and south of the school to improve pedestrian access. Priority streets should be the north side of 22nd St. (from Ave A to 4th Ave), all local north/south streets located north of 22nd St. (between Ave A and 4th Ave), and the east/west streets of Rosewood Dr. and Westridge Dr. to the south of 24th St.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$\$

WD #2	Place signing and striping for family vehicle drop-off and pick-up area off of 22nd St.
Findings	Current family vehicle drop-off and pick-up area located in the 22nd St parking lot is not clearly defined or signed, which at times creates confusion and causes some family vehicles to enter and/or exit in the wrong direction. This condition enhances congestion and safety conflict points during peak periods.
Project Description	Replace “Enter Here” sign on east side of western entrance to the 22nd St parking lot with larger more prominent “Enter Only” sign. Place “Student Drop-off/Pick-up Lane” “Enter Only” signs on west side of western entrance to the 22nd St parking lot. Stripe student drop-off and pick-up lane in parking lot with solid white line and directional arrows. Place signs and pavement marking to identify permitted student loading area. Replace “One-way – Do Not Enter” sign with larger more prominent “Exit Only” signs on east and west sides of the eastern entrance to the 22nd St parking lot
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$



WD #3	Remove bus loading signage from 22nd St parking lot.
Findings	Although the bus loading area has been relocated to 23rd St, the signage still remains in the 22nd St parking lot. This can cause some confusion for visitors who are not familiar with the daily school operations.
Project Description	Remove and if applicable relocate signage to new bus loading zone located on 23rd St.
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$

WD #4	Conduct a crosswalk and school crossing warrant analysis at the intersection of 22nd St and 10th Ave and 23rd St and 8th Ave.
Findings	Currently there is only one marked crosswalk located along 22nd St at 8th Ave. This condition does not adequately serve students walking from the north/northwest. While a school crossing is provided for students at the intersection of Avenue A and 21st St, surprisingly there is no crosswalk located along 22nd St at the western edge of the school campus to provide students who use this school crossing or who are walking from the neighborhoods to the north to conveniently reach the school campus. Similarly, the only marked crossing of 8th Ave is located at 22nd St. This condition does not conveniently serve students who access school from the south/southeast.
Project Description	Conduct a crosswalk and school crossing warrant analysis at the intersection of 22nd St and 10th Ave. 10th Ave was identified as a reasonable location to service both students who utilize the school crossing to the northwest as well as students walking from the neighborhoods to the north. Conduct a crosswalk and school crossing warrant analysis at the intersection of 23rd St and 8th Ave. This intersection was identified as an appropriate location because it is located at the southeastern edge of the school campus. Alternative crossing locations may be considered during the warrant analysis.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$-\$\$



WD #5	Add bus loading bay along north side of 23rd St.
Findings	The recent School/District effort to relocate the bus loading zone to 23rd St and separate buses from the family vehicle area has greatly improved congestion and safety around the school site. However, the new school bus loading zone is unprotected and located directly within the street travel way. This creates an unsafe condition by requiring the buses to comingle with local background traffic during entrance and exit movements.
Project Description	Create a dedicated bus loading and unloading bay along the north side of 23rd St with appropriate sidewalk access. Prohibit on-street parking, during school hours, along the north side of 23rd St as needed for operation of the bus loading area.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$-\$\$\$

WD #6	Place school advance crossing sign along all legs of the 8th Ave and 22nd St intersection.
Findings	Analysis of traffic volumes and speed at the 8th Ave and 22nd St intersection were found to be within acceptable levels of safety. In addition, visibility of the intersection was found to be adequately managed during peak periods with a crossing guard. However, anecdotal information identified that the traffic volume and visibility of this intersection during non-peak hours (especially following release of after school programs) does present safety concerns. Currently, only the south leg of the intersection is labeled with an advanced crossing sign. The north, west and east legs of the intersection lack any school zone warning signage.
Project Description	Locate school advance crossing signs along all legs of the 8th Ave and 22nd St intersection. Periodic police enforcement of this intersection should also be used to enhance the safety and visibility during non-school hours.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$



Figure 34: Woodard Junior High Recommendations & Actions Plan



5.8. Palmcroft Elementary School

5.8.1. School Setting and Enrollment Characteristics

Palmcroft Elementary School is located at 901 Palmcroft Drive in the Palmcroft Estates residential community. Palmcroft Elementary school has been serving the community since 1955. Palmcroft Elementary currently has 625 students enrolled at the K-5 school. Palmcroft Elementary tends to have a higher than normal percentage of turnover due to the number of Marine Corps Air Station (MCAS) and migrant worker families that attend the school. Unlike some of the other elementary schools located in mature areas of Yuma, Palmcroft's enrollment is planned to grow along with scheduled MCAS expansion in the coming years.



Palmcroft Elementary



Signage at school entrance driveway

As the current enrollment boundary illustrates in Figure 36, the Palmcroft Elementary enrollment boundary is very linear from north to south, stretching from 19th Street to the north to south of 40th Street and roughly from the East Main Canal to the west to 4th Avenue to the east (the enrollment boundary extends to the east of 4th Avenue south of 32nd Street). The total enrollment boundary area is approximately 12.5 square miles. The school site is situated near the middle of the enrollment boundary area.

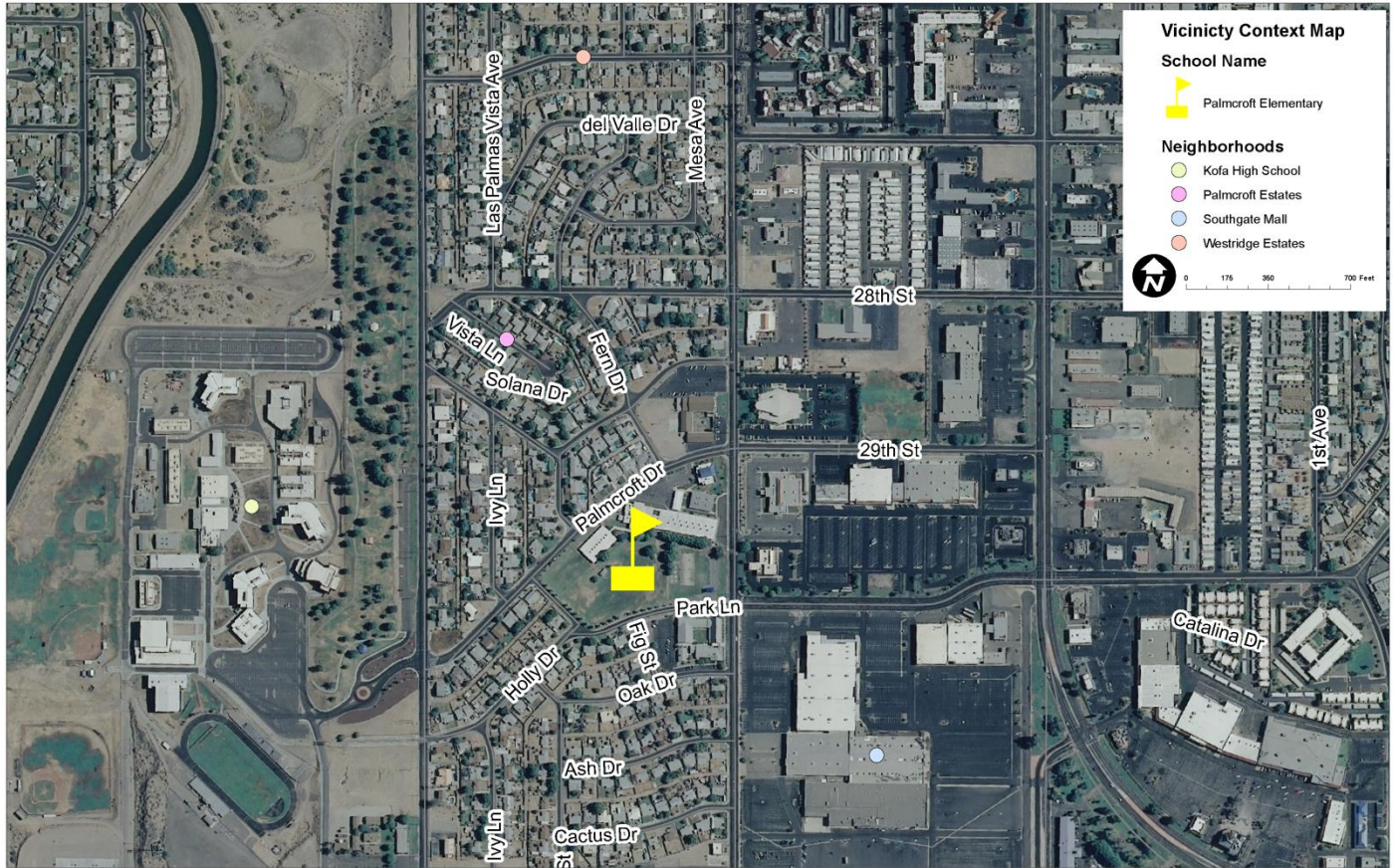
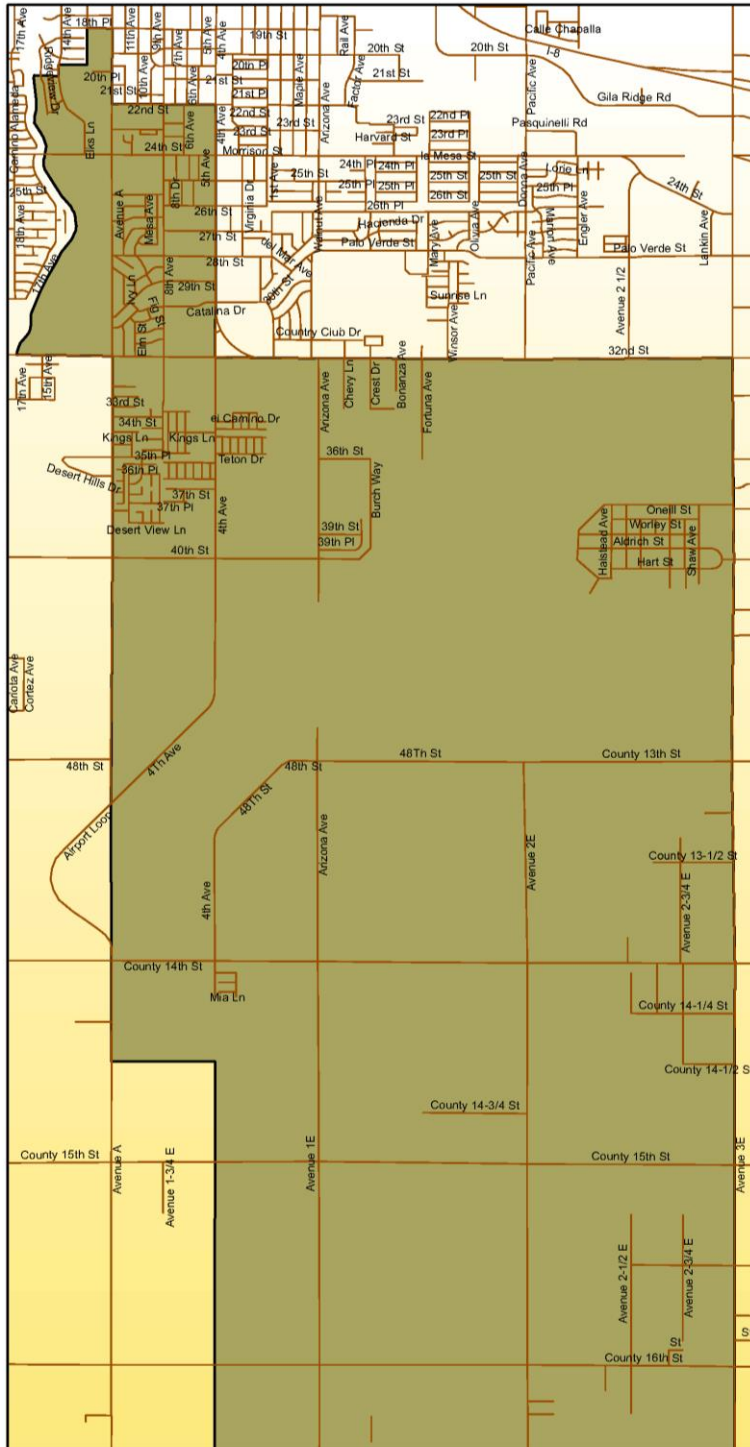


Figure 35: Vicinity Context Map



Palmcroft Elementary School



Legend

- Streets
- Palmcroft

Yuma District Boundaries Adopted April 10, 2007

Source: Yuma School District One

Figure 36: Palmcroft Elementary School Enrollment Boundary



5.8.2. Neighborhood Character

Palmcroft Elementary is situated within the Palmcroft Estates residential community and near the geographic center of the 12.5 square mile enrollment boundary area. Many of the houses in the area were built in the same period as the school – the 1950's and the 1960's. To the schools east, across 8th Avenue, regional commercial land uses (Southgate Mall) including a Sears and other supporting shops exist.



Neighborhood southwest of school

To the north and south of the school are a wide variety of residential properties and density types. These range from standard single family detached residential on small and medium sized lots to mobile home parks. Communities to the south include the communities of Rancho Ricardo, Kofa Mobile Home Estates, Capri RV Resort and Sheffield Estates. Communities to the north include Palmcroft Estates, Westridge Estates, Brentwood Estates, and Villa de Cortez. The Yuma Regional Medical Center is also located at the southwest corner of 24th Street and Avenue A.

Kofa High School is located to the east across Avenue A. The Kofa High School driveway entrance shares a traffic signal intersection with Palmcroft Drive.

South 8th Avenue is classified as a Minor Arterial (Constrained) in the Yuma General Plan consisting of two through traffic lanes and one center turn lane. Palmcroft Drive is a residential collector roadway with two traffic lanes. A Bicycle Route is also designated along the south side of the roadway.



Vehicles parked along Palmcroft Drive in front of school

5.8.3. Yuma School District One Identified Needs & Deficiencies

Palmcroft Elementary was identified by the District as the #8 priority school in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

"Dropping-off and picking-up in front of the school has created a dangerous environment for parents and students crossing Palmcroft Ln. Lack of sidewalk on Avenue A between 32nd St and Palmcroft Ln. causes many children to cross the heavily trafficked Avenue A multiple times."

5.8.4. School Official Interview & Observations

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). Some of the more notable issues or concerns identified through our interview with Palmcroft Elementary staff include the following observations:

- 1) Existing on-site parking is limited due to the schools growth over the years. Parking used to be sufficient when there was a staff of 25. There are now 75 staff members and there is a clear shortage of parking for this many employees.
- 2) Overflow staff parking and families dropping off and picking up their students utilize the Baptist Church across Palmcroft Drive to the north and the Methodist church to the south of the school at Park Lane. Both churches have agreed to let the school use their parking lot before and after school.



Overflow parking at Baptist church north of school



- 3) There is no sidewalk along the west side of Avenue A which can lead to children crossing to the east side of Avenue A when walking with older siblings attending Kofa High School.
- 4) The existing mid-block cross walk on Palmcroft Drive was moved to the west from a previous location that caused traffic to back up.
- 5) Students walking and bicycling to school from the east are encouraged to utilize 28th Street and 8th Avenue, utilizing sidewalks on the east side (school side) of the roadway.
- 6) Regarding traffic enforcement issues, speeding was not considered a problem. At times vehicles tend to ignore the crossing guards which can cause a potential hazard. What was identified as an ongoing, somewhat unresolved enforcement issue is parking violations along 28th Street.
- 7) With no designated family vehicle loading zone, the daily drop off and pick up routine has family vehicles lined up and down Palmcroft Drive and Park Lane and adjacent local streets. There are two designated "No Parking" red painted curbing segments along the south side of Palmcroft Drive just to the east and west of the primary school driveway entrance and near the mid-block crosswalk. These segments are intended to limit on street parking along these two segments to improve visibility and line of sight. Vehicles tend to ignore these painted curb no parking areas likely due to the fact Palmcroft Drive serves as the family vehicle loading zone. There is no student drop off and pick up designated areas on the school property. Yuma Police Department normally provides some targeted enforcement at the beginning of the school year, but is generally lacking for the balance of the school year. The existing condition creates a safety hazard for students crossing Palmcroft Drive outside of the designated crosswalks to get to their family vehicle.



Vehicles parked in no parking zone along Palmcroft Drive



- 8) The school does not have a school resource officer; however, they used to have one five years ago.
- 9) Palmcroft Elementary has not participated in any Safe Routes to Schools programs recently but they do team with the city in the "Great Program." The Great Program helps educate students on various aspects of school life such as bullying, drugs and bicycle safety amongst other topics.
- 10) There are five regular buses and a special needs bus (off peak time) that transport students to and from Palmcroft Elementary on a daily basis. The bus loading facility is located along the east side of the school on 8th Avenue. It is a one way driveway with ingress from the north and egress to the south. The current design functions well. The only challenge is during afternoon pick up as Palmcroft's pick up routine is dependent on the shared buses with Kofa High School students. The high school students are released first so sometimes the buses run late to Palmcroft.
- 11) The school policy is to close the parking lot gates during most portions of the day, including morning drop off, school hours and pick up after school. The gates are open to allow family vehicles to drop off their children for the Discovery Club program at 7:00 am.
- 12) School policy requires parents of kindergartners to pick their child up in front of the cafeteria which is of course a safety measure for the kindergartners but exacerbates the lack of parking issue.
- 13) Due to the physical limitations and challenges in the drop off and pick up routines, school staff has been proactive in giving instructions to parents at the beginning of the school year. Moreover, each day teachers and/or staff escort the students from the classroom to the bus loading zone or crosswalk areas.



5.8.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.

Traffic violations most commonly observed by Yuma PD near Palmcroft Elementary include parking in the “No Parking” designated areas along the south side of Palmcroft Drive. As also noted by school staff and observed by the consultant, the daily drop off and pick up routine is characterized by cars lined up and down both sides of Palmcroft Drive, even in designated no parking areas (red painted curbing, no signage). The situation was characterized as a persistent problem that has not had a resolution. The consultant’s observations are that there are sections of curbing along the south side of Palmcroft Drive that are painted yellow, blue and red, none with accompanying signage. This difference in painted curb colors is likely creating confusion amongst family members picking up and dropping off their children.



Vehicle parked just east of exit driveway on Palmcroft Drive



Yellow painted curbing on Palmcroft Drive east of school exit drive



Blue painted curbing on Palmcroft Drive west of school exit drive



5.8.6. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.

Figure 37 illustrates the locations of the various features identified and summarized below. Specific features for Palmcroft Elementary are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

Palmcroft Drive

- Two lane collector roadway. No pavement markings from Avenue A to Elm Street. Solid double line no passing striping from Elm Street to South 8th Avenue.
- 36 feet of pavement width with attached sidewalks and rolled curbing along both sides of the roadway. Ramps appear accessible.
- Posted speed limit is 25 mph.
- Bike Route signage posted along both sides of roadway.
- Cars parked along both sides of roadway at morning drop off and afternoon pick up times create blind spots for pedestrians and narrows width of through lanes.
- Two permanent school zone signs posted in front of school. Portable school zone signs also used in designated school zone area.
- Signalized intersection with Avenue A.
- Two way stop control at 8th Avenue.
- Mid-block cross walk with crossing guard located between Elm Drive and school entrance driveway.
- White striped crosswalk on north, south and west legs of Palmcroft Drive/8th Avenue intersection. Crossing guard is positioned at this location.



South 8th Avenue

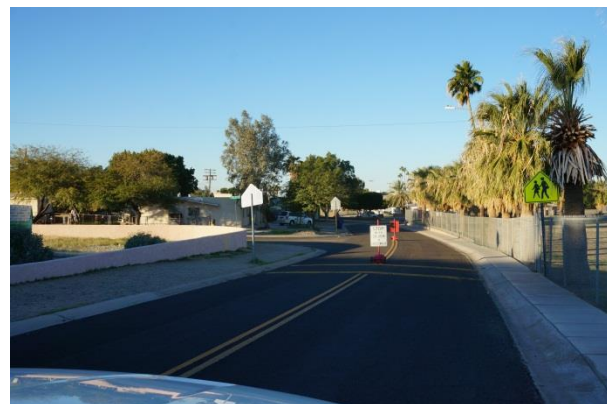
- Minor Arterial (Constrained) Street with two through lanes and one center turn lane.
- Posted speed limit of 35 mph.
- Mix of attached and detached sidewalks on both sides of roadway in proximity to school with accessible curb ramps.
- Designated Bike Route and No Parking signage posted on east side of roadway in proximity to school.
- “School Ahead” signage posted, but no designated school zone.
- School bus loading zone accessed from 8th Avenue.



Bike Route signage on 8th Avenue, south of 24th Street

Park Lane

- Two lane local street.
- Posted speed limit of 25 mph.
- Attached sidewalk with rolled curb on north side of roadway and portions of south side of roadway.
- Angled, on street parking in front of Methodist church.
- Marked cross walk with signage and crossing guard just west of church driveway entrance.
- No accessible ramp at crosswalk.



Park Lane mid-block crosswalk south of school



Park Lane mid-block crosswalk and school entrance



Lack of accessible ramp at mid-block crosswalk on Park Lane

School Access Points

- Palmcroft Elementary is entirely enclosed with a fence.
- There is one vehicular entrance driveway and one exist driveway off Palmcroft Drive.
- School buses access the bus loading zone (one way driveway) from South 8th Avenue.



School entrance driveway and gate

- There is a pedestrian gate access from Park Lane to the south.
- There is a pedestrian gate immediately east of the exit driveway on Palmcroft Drive.
- There is no designated vehicular parent drop off or pick up area on the school property. The front gates are open from 7:00 am to 8:00 am to allow access for



Discovery Club drop off and for school staff parking. The gates are then promptly closed at 8:00 am prior to the start of school. School officials feel the configuration of the existing parking lot coupled with lack of adequate parking spaces does not lend itself to facilitating on site student drop off and pick up.

- As a result, the pedestrian gates open at 7:55 and parents are directed to park at either the Baptist church or Methodist church parking lot, or in designated areas along Palmcroft Drive. Parents with children in Kindergarten or First Grade are required to walk their children to their classroom. There is considerable parking congestion along Palmcroft Drive and confusion on where parking is permitted and where it is prohibited.
- The school driveway maintains a one way directional flow.

Parking

Current on-site parking has approximately 48 standard and two accessible spaces which is not adequate to accommodate the 75 school personnel. The parking lot design is somewhat dated which presents challenges to on site queuing and maneuverability. No on-site parking spaces are utilized for the daily drop-off and pick up routine, but it is used by Discovery Club participants before and after school. As previously noted, the school has an agreement with both the Baptist church on Palmcroft Drive and Baptist church on Palm Lane to utilize their parking lots for family vehicle drop-off and pick up activities.

School Bus Loading Zones

- 1) Palmcroft Elementary has five (5) daily buses and one special needs bus on off-peak times.
- 2) The bus loading zone is separated from the parent drop off area and the bus loading zone design does not require children to walk between buses.
- 3) Buses travel in a one-way, counter-clockwise direction (preferred) as they enter from 8th Avenue. Inbound is from the north and outbound at the southern driveway.

Buses line up single-file with right wheel to the curb which is a preferred design.



Bus loading zone

- 4) The bus loading zones operate and function as there is ample room for the stacking of buses.



Family Vehicle Drop-off and Pick up Procedures

- 1) There is no designated vehicular parent drop off or pick up area on the school property. As a result, family vehicles for both morning drop off and afternoon pick up park along both sides of Palmcroft Drive or at the Methodist (Park Lane) and Baptist Church parking lots. Students (and sometimes parents) frequently cross Palmcroft Drive at undesignated crossing locations in front of the Baptist church, creating a safety hazard.
- 2) Red, yellow and blue painted curb segments along the south side of Palmcroft Drive create confusion for drivers on where to park (two parents voiced their frustration at our recent site visit). Red curbing customarily signifies no parking areas, but there is no signage to reinforce this fact and the paint is faded which may add to the confusion.
- 3) The school's front gates are open from 7:00 am to 8:00 am to allow access for Discovery Club drop off and for school staff parking. The gates are then promptly closed at 8:00 am prior to the start of school. School officials feel the configuration of the existing parking lot coupled with lack of adequate parking spaces does not lend itself to facilitating on site student drop off and pick up.
- 4) Family members of Kindergarten or First Grade are required to escort their children to the classroom. This policy exacerbates the daily parking congestion problem and could be eliminated if there was an adequate on-site student loading zone.
- 5) Family vehicles park at the Baptist church, utilizing the majority of their parking lot.



School exit driveway onto Palmcroft Drive



Figure 37: Palmcroft Elementary School – School & Neighborhood Audit Findings



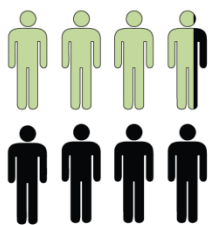
5.8.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers

Palmcroft Elementary School

DEMOGRAPHICS

10,604 Total Population
(Enrollment Boundary)

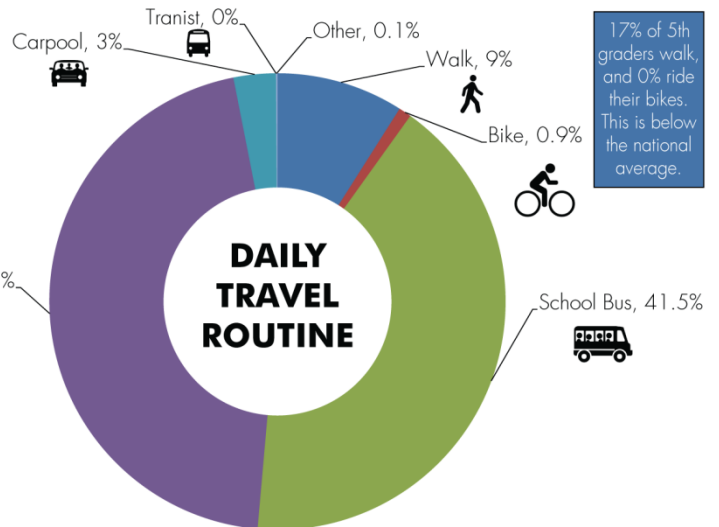


48.3%
Minority

40% Hispanic Or Latino

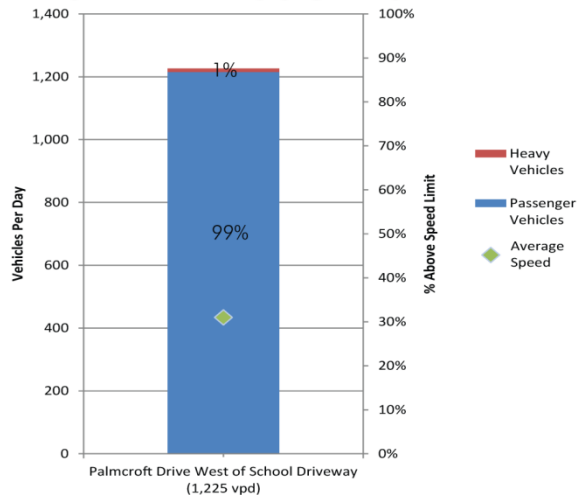
Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView

Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.



17% of 5th graders walk, and 0% ride their bikes. This is below the national average.

ROADWAY COUNTS



CRASH DATA

5 Year Summary



Data: 5 Year Summary, During School Hours, and Weekdays
Source: ADOT, Michael Baker International

Non-Incapacitating Injury

Incapacitating Injury



5.8.8. School-Specific Engineering Recommendations

With approximately 625 students, Palmcroft has one of the largest enrollments for elementary schools within the more established areas of Yuma. Unlike other mature schools included in this study, Palmcroft has a higher percentage of student turnover largely due to migrant farm worker families that attend the school. Palmcroft is also expected to grow due to anticipated expansion of the mission at the Marine Corps Air Station. The 12.5 square mile enrollment boundary is also larger than most elementary schools and the mode split findings reflect this fact in that 80% to 90% of the students are transported to and from school by bus or family vehicle. 10% to 13% of the students walk to school (roughly half the national average and what is experienced at CW McGraw by example) with very few bicycling to school.

The local streets in proximity to the school have sidewalks on both sides of the street. The single largest deficiencies that plague Palmcroft Elementary is that there is no on-site family vehicle drop-off and pick-up area and there is a parking shortage. Both deficiencies exacerbate the safety and performance of all transportation modes.

Yuma School District One is fortunate to have proximity to two churches across the street. This fact allows the District to use their parking lot facilities during morning and afternoon peak periods. These parking spaces provide much needed capacity for those parents who park and walk/pick-up their children from the classroom. School policy requires parents of kindergartners to pick-up their child in front of the cafeteria which creates a constant parking demand for the family members of the 138 kindergarten students currently enrolled. The acute lack of a formal family vehicle drop-off and pick-up area puts added pressure on traffic operations onto adjacent streets not designed to handle it properly and is a likely deterrent to promoting more walking and bicycling to school. For this reason, there are near term and longer term infrastructure and operational projects recommended below.

Palmcroft has five general-purpose buses and one special-needs bus transporting students daily. The current bus loading zone design accessed from 8th Avenue is separated from the family vehicle areas on Palmcroft Drive and Park Lane. The bus loading zone functions safely and performs well. There is a staff and visitor parking shortage as the existing parking lot was designed for a 25 school staff and there are currently 75 personnel at Palmcroft.

Speeding was mentioned as an occasional issue by school and Yuma PD. 3% of all vehicles during morning drop-off exceeded the speed limit however 48% of all vehicles in the afternoon pick-up. Please refer to Figure 38 for map reference to the projects described below.



PC #1	Repurpose the signing and striping of Palmcroft Drive – expand short term drop-off and pick-up capacity.
Findings	Palmcroft Drive currently has red, yellow and blue painted curb in short, individual segments at various locations on the south side (school side) of the roadway. These segments are situated on either side of the two school driveways. This inconsistent curb painting creates confusion in the morning and peak circulation and parking patterns. The 36-foot pavement section will accommodate on-street parking.
Project Description	Sign and paint curb (red) to prohibit parking between the mid-block crosswalk and the school entrance driveway. Also prohibit parking east of the school exit driveway to 8th Avenue. Allow on-street parking on the south side of the roadway between the two school driveways and along the north side of the roadway. Either paint curb green to generally allow short-term parking at all times or paint the curb yellow to denote loading zone activity during school hours. Confer with City of Yuma to establish the preferred approach.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$

PC #2	Expand long-term family vehicle drop-off and pick-up area capacity and procedures.
Findings	In conjunction with enhanced operations and procedures for Palmcroft Drive (PC#1), additional long-term family vehicle drop-off and pick-up area capacity is needed to reduce congestion and safety of all modes around the perimeter of the school.
Project Description	<p>As shown in Figure 38, modify traffic flow direction on Park Lane to one-way direction only from Fig Street east to 8th Avenue. Maintain two-way directional flows on Park Lane west of Fig Street to Park Lane’s intersection with Palmcroft Drive.</p> <p>Construct a continuous vehicle pull out on school property along Park Lane to create new designated family vehicle drop-off and pick-up zone. This facility should ultimately serve as the primary family vehicle drop-off and pick-up area and significantly reduce the congestion and operational stress off Palmcroft Drive and area residents by focusing the activities on the south side of the school in front of a church parcel to minimize disruption.</p> <p>A continuous family vehicle pull out along the north curb of Park Drive could provide added capacity for up to 18 family vehicles for</p>



	<p>drop-off and pick-up. Families of kindergartners and first graders are required to escort their child to and from the classroom so these families should still utilize the parking at either of the church parking lots.</p> <p>Maintain mid-block crosswalk in its current location and add yellow, "ladder" style pavement markings to low profile speed table crosswalk across the family vehicle driveway. Though not ideal location, this crosswalk with pavement markings, signage and an adult assistant to guard this crosswalk and facilitate traffic flow is essential to the operational safety of this design.</p> <p>Additional site analysis to establish minimum radius of driveway is needed in order to minimize encroachment to the existing school playground.</p> <p>It is suggested that if pursuit of this approach is desired by the project partners, a neighborhood meeting with public notification to neighboring residents.</p>
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$\$\$

PC #3	Construct accessible curb ramp on the southeast corner of Palmcroft Drive and Elm Street.
Findings	This corner is an important pedestrian gateway to the school and does not currently have accessible curb ramping.
Project Description	Install accessible curb ramping in accordance with ADA and City of Yuma standards and specifications.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

PC #4	Continue and expand targeted enforcement, particularly at afternoon pick-up.
Findings	The roadway count information and anecdotal feedback received during the data collection process both indicate that speeding and lack of coordinated parking compromise pedestrian safety on Palmcroft Drive, especially during the afternoon pick-up peak.
Project Description	Until there can be a more permanent solution to the lack of family



	vehicle drop-off and pick-up area, additional police enforcement along Palmcroft Drive is recommended to reduce speeding and enhance the parking function at the afternoon pick-up peak.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$-\$\$

PC #5	Construct additional staff-designated parking.
Findings	There is currently 49 standard and three accessible spaces located in the primary school parking lot. There are a total of 75 staff members. Including visitor parking, there should be a total of approximately 83 spaces to adequately accommodate staff and visitors. The school has a surplus of playground space that is able to be repurposed into parking area.
Project Description	Construct additional parking that is solely designated for school staff off Elm Street as shown in Figure 38. Access to Palmcroft Drive should be restricted. Driveway access off of Elm Street. The parking area as shown is sufficient to accommodate approximately 60-65 parking spaces.
Lead Organization/ Project Partners	Yuma District One/City of Yuma
Cost Indicator	\$\$\$

PC #6	Construct sidewalk along the west side of Avenue A from 32nd Street north to Palmcroft Drive.
Findings	The District identified this lack of sidewalk as a primary deficiency for Palmcroft Elementary because many of the students who walk to school do so with their older siblings who attend Kofa High School located at Avenue A and Palmcroft Drive.
Project Description	Construct a minimum of a 5-foot sidewalk along the east side of Avenue A from 32nd Street to Palmcroft Drive. Tie into existing short segment constructed in front of high school administration building. Design consideration of existing utility poles should be accounted for.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$\$



Figure 38: Palmcroft Recommendations & Actions Plan



5.9. James B. Rolle Elementary School

5.9.1. School Setting and Enrollment Characteristics

James B. Rolle Elementary has served students in the Yuma area since 1961. Located just north of the Marine Corps Air Station Yuma, the school is situated at the northeast corner of Palo Verde Street and Engler Avenue at 2711 South Engler Avenue. Currently Rolle Elementary educates approximately 625 students in pre-kindergarten through fifth grade. The maximum enrollment for the school is approximately 750 students, however, over the next 10 years enrollment is expected to stay fairly constant.

As Figure 40 illustrates, Rolle Elementary is located within the northeast corner of the school’s enrollment boundary, which covers a large area and includes land within the City of Yuma as well as within unincorporated Yuma County. Consisting of roughly 24 square miles, the enrollment boundary reaches



James B. Rolle Elementary

from Pacific Avenue on the west to Avenue 9E in the east and Interstate 8 in the north to County 17th to the south. The Rolle Elementary enrollment boundary is bordered by the C.W. McGraw and Palmcroft enrollment boundaries to the west and the Mary A Otondo enrollment boundary to the east. The large size and the fact that the school is not centrally located within the enrollment boundary leads to a greater number of students who utilize the bus to get to and from school.

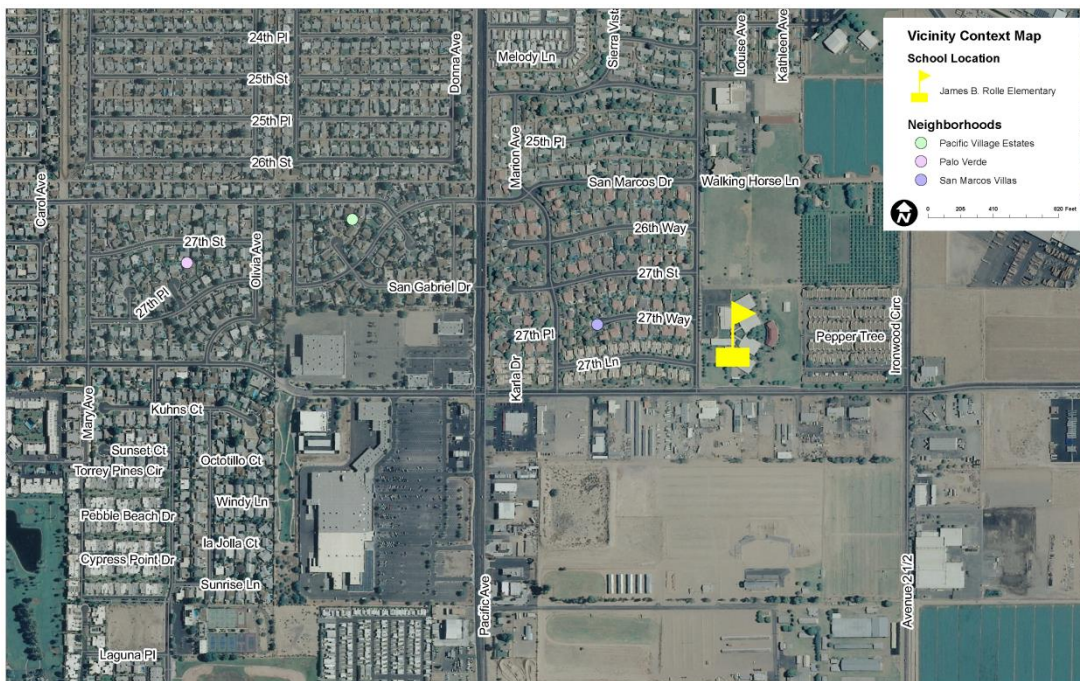
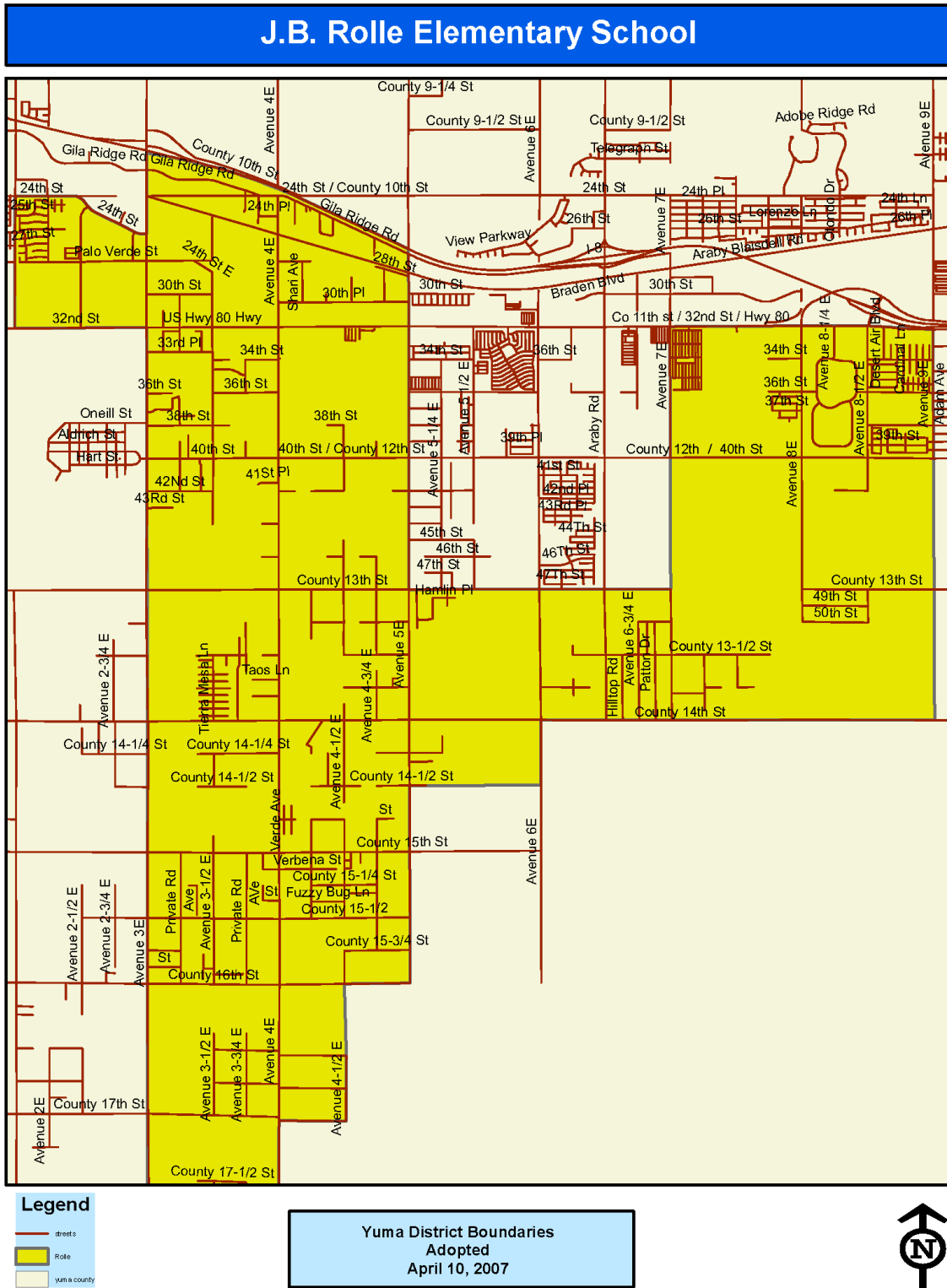


Figure 39: Vicinity Context Map



Source: Yuma School District One

Figure 40: James B. Rolle Enrollment Boundary



The school site is bounded by two roadways located along the western and southern edge of campus. Engler Avenue, a two-lane collector roadway, establishes the western boundary of the campus and provides primary ingress and egress to the school via one-way entrance and exit driveways. Palo Verde Street, a two-lane collector roadway, establishes the southern boundary of the campus and is utilized as the primary bus loading zone for the school.

5.9.2. Neighborhood Character

While the enrollment boundary for Rolle Elementary is predominantly rural in nature and covers large areas of agricultural or vacant land, the immediate neighborhood (San Marcos Villas and Engler Estates) surrounding the school is more urban in character. However, since the campus is somewhat isolated by the enrollment boundary limit located along Pacific Avenue and a ribbon of light industrial uses to the south of Palo Verde Street, there is only a small enclave of single-family residential development as well as religious centers to the north, east, and west that have reasonable non-vehicular access to the school.

The general street layout surrounding the school site consists of only two streets in the north-south direction and several through or cul-de-sacs streets in the east-west direction. While this roadway configuration provides few route alternatives to those walking or biking to school, it does help to more accurately identify travel patterns and program necessary improvements.

5.9.3. Yuma School District One Identified Needs & Deficiencies



San Marcos Neighborhood west of the school



Industrial and commercial land uses south of Palo Verde Street



Rolle Elementary was identified by the District as the #9 priority school in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

"Parent lane can't accommodate all parents, so parents' park across Palo Verde Street causing children to cross the street to reach their parents which will become more of a danger with the estimated increase in vehicular traffic for 2013."

5.9.4. School Official Interview & Observations

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). A summary of the following concerns or needs are as follows:

- 1) The family vehicle lane located in the main parking lot cannot accommodate a large number of vehicles during peak AM and PM periods.
- 2) During peak AM and PM periods, families vehicles back up into Engler Avenue and at times stack all the way to Palo Verde Street.
- 3) The morning drop-off is less chaotic than afternoon pick up when family vehicles begin lining up as early as 25-30 minutes before dismissal.



Family vehicles stacking during afternoon pick up

- 4) The family-vehicle backup along Engler Avenue causes some parents to drop-off and pick-up students on the south side of Palo Verde Street, which causes students to walk between buses parked in the bus loading zone and to cross Palo Verde Street at unmarked locations.



Students crossing Palo Verde Street outside of designated crosswalk areas to get to family vehicles

- 5) Need additional staff/personnel to enforce established rules for family vehicle drop-off and pick-up.

5.9.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.

Observations by yuma pd regarding james b. Rolle elementary are consistent with school official observations. They noted that engler avenue and palo verde street tends to get congested with vehicles back up in north bound and southbound flows on engler avenue. The northbound stacking of vehicles often spill over onto palo verde street which creates a safety hazard as students are crossing the roadway between vehicles and parked buses. Yuma pd suggested, much like the school official observations, that there does not appear to be sufficient driveway storage space for vehicles on the school site, so backing up onto engler avenue occurs relatively quickly.



5.10. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.

Figure 41 illustrates the locations of the various features identified and summarized below. Specific features for Rolle Elementary are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

Engler Avenue

- Two lane Collector Street with no center turn lane.
- Generally a 40 foot pavement width, with vertical curb and gutter as well as attached sidewalk on both sides.
- The sidewalk generally measures 5 feet on both sides. Most ramps appear to be accessible and no steep grades were identified.
- The posted speed limit is 25 mph.
- No parking signage is posted in front of the school on both sides of the street, restricting parking during school hours and days.
- No bicycle facilities are signed or striped.
- There are no residential driveways that have direct access onto Engler Avenue within the school campus limits; however, six intersections (Palo Verde St, 27th Lane, 27th Way, 27th Street, 26th Way, San Marcos Drive) are located within this portion of the roadway.
- The Palo Verde and 24th Street intersections are one way stop controlled T-intersections for traffic on Engler Avenue.



- Intersections of 27th Lane, 27th Way, 27th Street, and 26th are one-way stop controlled T-intersections. San Marcos Drive is a one way stop controlled intersection with a private drive located on the east leg.
- Striped cross walks are located across Engler Avenue at the intersections of Palo Verde Street, 27th Street, San Marcos Drive, and 24th Street.
- The 27th Street intersection is signed as a school zone and has a crossing guard during the AM and PM periods.
- 27th Way, 27th Street, 26th Way, and Marion Avenue have sidewalks without curb and gutter.



Engler Avenue looking north

Palo Verde Street

- Two lane Collector Street with no center turn lane.
- Generally a 45 foot pavement width, with vertical curb and gutter as well as attached sidewalk on the north side of the street. South side of the street has a wide gravel shoulder with no curb and gutter.
- Portions of the sidewalk on the north side of the street are discontinuous east of the school campus boundary.
- The majority of the sidewalk in front of the school has utility pole obstructions in the middle of the sidewalk.



- Sidewalk generally measures 5 feet on north side. Most ramps appear to be accessible and no steep grades were identified.
- Posted speed limit is 35 mph.
- Posted as a designated Bike Route.
- The south side of the roadway is fronted by several industrial and commercial uses that have numerous poorly defined private driveways and off-street parking spaces.
- The Avenue 2 ½ E intersection is a two way stop controlled intersection.
- With the exception of Pacific Avenue, there are no striped cross walks located across Palo Verde Street.
- There are no signs that prohibit on-street parking on either side of the street.



Palo Verde looking east from Engler Avenue

Pacific Avenue

- Four lane Principal Arterial Street (Constrained) with a center turn lane.
- Generally a 65 foot pavement width, with vertical curb and gutter as well as attached sidewalk on both sides of street.
- Sidewalks generally measures 5 feet on the west side and 8 feet on the east side. Most ramps appear to be accessible and no steep grades were identified.



- Posted speed limit is 40 mph.
- There are four way signalized intersections located at Palo Verde Street and 24th Street. Striped crosswalks are located on all four legs within each intersection.
- Only one two way stop controlled intersection exists at San Marcos Drive. One striped crosswalk is located on the west leg.
- All other intersections are stopped controlled T-intersections with no striped crosswalks.
- No parking signs are posted on both sides of the street.

School Access Points

- Students who walk to school generally enter campus along Engler Avenue, just north of the northern parking lot exit drive, via the marked crosswalk located at the intersection of Engler Avenue and 27th Street.



Marked crosswalk at 27th Street and Engler Avenue

- The one way ingress drive into the school is comprised of two lanes, one for staff and visitor parking and one shared lane for family vehicles and buses.



Vehicular driveway entrance to school

- Some family vehicles park on the west side of Engler Avenue during the AM and PM periods causing students to cross the parking lot and Engler Avenue in front of the school at unmarked locations.



Parents and students crossing Engler Avenue to unauthorized parked vehicles along the west side of the street

- Students are also dropped off and picked up by bus along the north side or family vehicle along the south side of Palo Verde Street. This causes one of the most significant safety issues for the school by having children walk between buses and cross Palo Verde Street.



Students crossing Palo Verde Street to family vehicles parked along the south side of the roadway

- The majority of the streets that lead to the school have sidewalks; however, some streets do not have curb and gutter, which causes the sidewalk to be at the same grade as the street.
- There are no dedicated bike facilities that lead to the school. The bicycle rack is located in an easily accessible area that is well-monitored.
- Ingress to the parking lot is accommodated by a one way shared family vehicle and bus driveway entrance off of Engler Avenue. Left and right in turning movements are permitted.
- Egress is facilitated by a one way shared family vehicle and bus driveway exit onto Engler Avenue. Left and right out turning movements are permitted.

Parking

- The school has a combined staff and visitor parking lot accessed via Engler Avenue.
- The parking lot has approximately 81 spaces which is sufficient for staff and visitors. There are no parking capacity issues.



Family vehicle and bus loading zone area



- The design of the parking lot includes diagonal and perpendicular parking spaces accessed via one way circulation drives which comingle with a dedicated bus loading and family vehicle pick-up and drop-off lane. General traffic flow seemed adequate; however, conflicts amongst buses and family vehicles were identified during the AM and PM periods, which caused family vehicles to stack along Engler Avenue.

School Bus Loading Zones

- Rolle Elementary utilizes one primary bus loading zone for 8 general purpose buses along Palo Verde Street and a secondary bus loading zone for 3 special needs buses located within the primary school parking lot.
- The special needs bus loading zone is separated from the family vehicle loading zone, but they share the same lane and entry drive, since all vehicles enter from the same location/direction. These buses must navigate around the family vehicles near the driveway entrance and conversely, the family vehicles must navigate around the buses upon exiting the load zone area.



Family vehicles and buses sharing one entrance driveway at afternoon pick up

- Buses within each loading zone line up single-file with right wheel to the curb which is a preferred design. As a result, children do not have to walk between buses.



General purpose bus loading zone on Palo Verde Street

- Bus loading zones are adequately signed.

Family Vehicle Drop-off and Pick up Procedures

- There is only one designated family vehicle pick up and drop off area designated on the school property.
- Student waiting area is situated on a wide sidewalk area adjacent to the loading zone. Signage informs drivers that the area is a designated pick-up and drop-off area.



On site signage

- The family vehicle drop off and pick-up area is fairly compact and cannot accommodate multiple vehicles at once.
- As noted earlier, the existing family vehicle loading zone shares the same lane as the special needs bus loading zone. This causes traffic to back-up onto Engler Avenue during AM and PM peak periods.



Traffic congestion at the entrance driveway during afternoon pick up

- The congestion causes some family vehicles to illegally park along the west side of Engler Avenue causing students to cross the loading zone, school parking lot, and Engler Avenue at unmarked locations. This congestion also causes some family vehicles to park on the south side of Palo Verde Street, which causes students to walk between buses and cross Engler Avenue at unmarked locations.



Parent and student crossing Engler Avenue at unmarked location

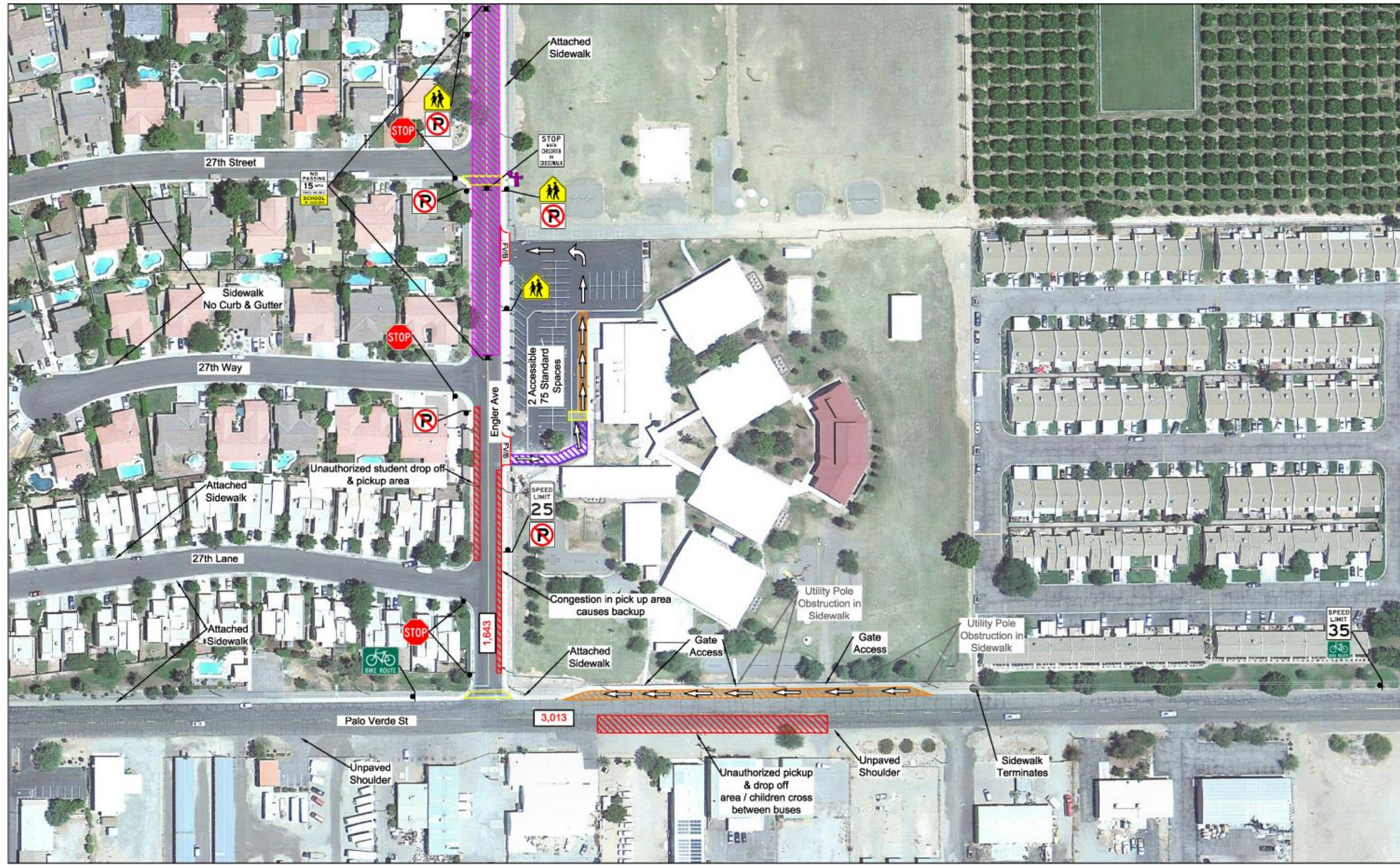


Figure 41: James B. Rolle Elementary School – School & Neighborhood Audit Findings

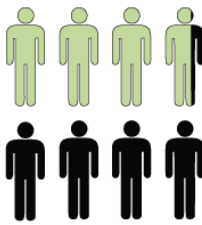


5.10.1. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers
James B. Rolle Elementary School

DEMOGRAPHICS

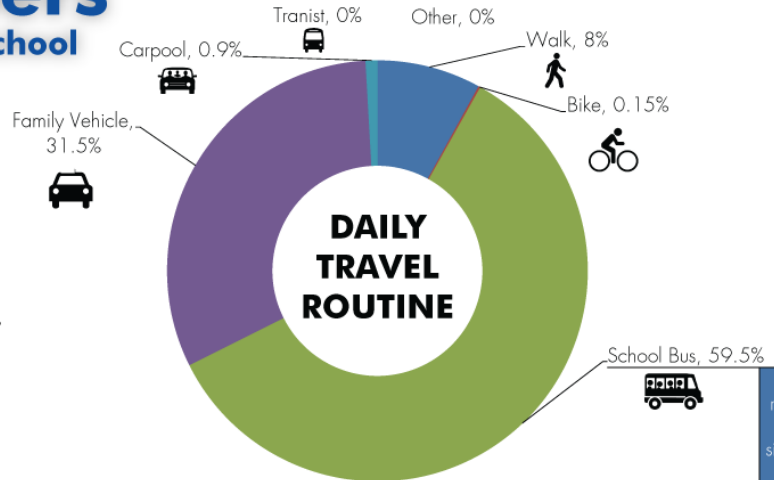
6,553 Total Population
(Enrollment Boundary)



48.3%
Minority

43% Hispanic

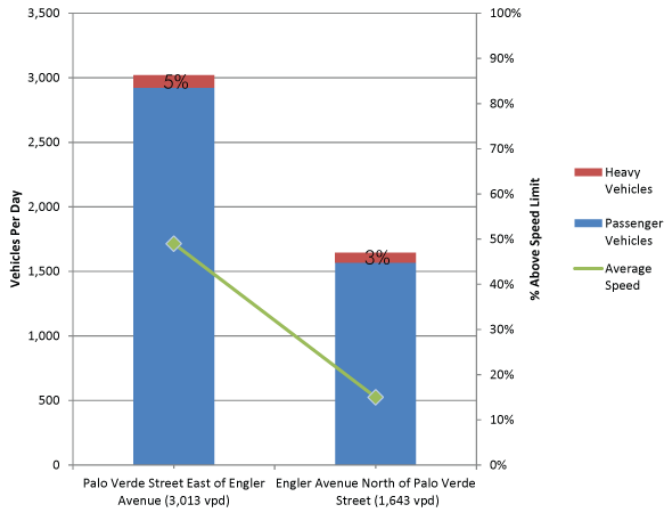
Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView



Heavy reliance due to the large size and rural land use composition

Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.

ROADWAY COUNTS



CRASH DATA
5 Year Summary



Data: 5 Year Summary, During School Hours, and Weekdays
Source: ADOT, Michael Baker International



5.10.2. School-Specific Engineering Recommendations

Situated in an isolated corner of one of the largest enrollment boundaries in the District, James Rolle Elementary exhibits a high number of students who utilize the bus or family vehicle to get to and from school. The mode split survey findings show that on average 60% of students utilize the bus and 30% of students rely on a family vehicle to travel to and from school. This results in only 8% - 10% of students identifying that they walk to and from school and surprisingly almost no students identifying that they bike to and from school.

The school campus is located on the edge of a fairly typical residential neighborhood comprised of single-family homes situated in a grid like fashion. The local streets surrounding the school generally all have sidewalks on both sides of the street, however some are at grade. The school itself is bounded by two roadways located along the western and southern edge of campus. Engler Avenue, a two-lane collector roadway, establishes the western boundary of the campus and provides primary ingress and egress to the school via one-way entrance and exit driveways. Palo Verde Street, a two-lane collector roadway, establishes the southern boundary of the campus and is utilized as the primary bus loading zone for the school.

Interviews of school staff, law enforcement, and parents along with consultant analysis and audit findings identified two interrelated issues of primary concern relating to the safety enhancement of transportation modes in and around the school. During peak AM and PM periods, high traffic volume creates excessive congestion of family vehicles at the main entrance to the school along Engler Ave. This family-vehicle backup along Engler Avenue causes some parents to drop off and pick up students on the south side of Palo Verde Street, which requires students to walk between buses parked in the bus loading zone and to cross Palo Verde Street at unmarked locations.

Issues of frequent crash locations were found to not be prevalent within the vicinity of the school campus. Most crashes in the vicinity of the school occurred along Palo Verde Street and involved vehicles only. However, traffic counts of vehicles along Palo Verde St showed that speeding is noteworthy with approximately 49% of all vehicles exceeding the posted speed limit; while on average only 15% of vehicles along Engler Ave exceed the posted speed limit.

Please refer to Figure 42 for map reference to the projects described below.



JR #1	Install “No School Drop-off or Pick-up” Signs along south side of Palo Verde Street.
Findings	Although there is a defined family vehicle drop-off and pick-up area located in the main school parking lot, some family vehicles are utilizing the unpaved shoulder on the south side of Palo Verde St as a student drop-off and pick-up area. This condition creates a significant safety hazard because it causes students to run between buses in the bus loading zone and dart out into traffic along Palo Verde St.
Project Description	Place “No School Drop Off or Pick Up” signs along the south shoulder of Palo Verde St. to educate and inform family vehicles about the dangers of dropping off and picking up students at this location.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

JR #2	Relocate family vehicle and bus loading area and extend family vehicle queuing area by reconfiguring the northeast portion of the parking lot area.
Findings	Currently, three special-needs buses along with family vehicles utilize the same loading lane within the main school parking lot. During peak morning and afternoon periods there is limited curb space to accommodate all of these modes of transportation at once. As a result, family vehicles queue along the shoulder of Engler Ave as they wait in line to drop off and pick up their child. Parents also park in no parking zones on the west side of Engler Ave and cross at unmarked locations near the already congested parking lot entrance. While the comingling of buses and family vehicles causes noticeable congestion problems during peak periods, the availability of a continuous through lane and application of one-way direction of travel help to greatly improve the overall functionality of the main loading lane.
Project Description	Reorient the parking spaces in the north east corner of the main parking lot to an east/west configuration. Then extend the existing curb and sidewalk north to increase the overall loading capacity of the main parking lot. Restripe the bus loading zone, family vehicle loading area, and family vehicle queuing area as needed. If possible the arrival and departure of the special-needs buses could be staggered to allow more curb space to be dedicated to family vehicle queuing.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$-\$\$\$



JR #3	Utilize adult supervision to direct traffic flow within loading/queuing zone.
Findings	Even with improvements to the overall storage capacity of the loading area, there is still limited curb space available to accommodate the existing needs of the special-needs buses, family vehicle loading zone and family vehicle queuing area. Placing a trained staff member to direct family vehicles will help to maximize the efficiency of this travel lane and reduce queue wait time and length. Anecdotally, it is believed that reduction of the overall queue wait time and length will also encourage parents to not use Palo Verde St as a student loading zone.
Project Description	Limit the family vehicle loading zone to 2-3 cars and place a trained staff member at the edge of the family vehicle loading zone and queuing area to avoid loading gaps and keep traffic consistently moving forward.
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$

JR #4	Place “Please Pull Forward – Driver Must Remain in Vehicle” sign within loading/queuing zone.
Findings	Lack of directional signage can cause some family vehicles that are unfamiliar with the loading zone procedures to become confused and disrupt the consistent flow of traffic.
Project Description	Locate additional “Please Pull Forward” directional signage within the family loading/queuing zone
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$

JR #5	Remove parking and install sidewalk to provide pedestrian connectivity from Engler Ave to primary school entrance.
Findings	The current school parking lot does not have any raised continuous sidewalk connecting Engler Ave to the main school entrance. Any student/pedestrian walking to or from the school campus must walk within the drive aisles of the parking lot to reach the main school entrance. Current parking assessment shows an excess level of staff and visitor parking can accommodate the loss of spaces
Project Description	Relocate the assigned parking spaces located at the south edge of the main parking lot and replace with a raised sidewalk from the main school entrance to Engler Ave.



Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$

JR #6	Provide additional adult supervision to restrict access to bus loading area to students riding the bus only.
Findings	As previously identified, some students exit the school campus to the south and walk through the bus loading zone to meet their parents on the south side of Palo Verde St. There is little to no residential homes south of the school and only one residential neighborhood east of the school which is within walking distance. Consequently, restricting students who may exit the school to the south to only those students who ride the bus or live in the Ironwood neighborhood directly east of the school would help to mitigate this substantial safety concern.
Project Description	Place school staff at the entrance/exit to the school bus loading area and only allow bus riding or walking students to exit campus at this location.
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$

JR #7	Place Bike Route Signs along Engler Avenue.
Findings	The Yuma Bicycle Facility Master Plan identifies Engler Ave to be improved with a bicycle path. Existing development along Engler Ave prohibits the development of a separated bike path along Engler Ave. However, the current 40' pavement width could support a bike lane if on-street parking was prohibited or certainly would be appropriate for a bike route.
Project Description	Sign Engler Ave as a bike route to connect to the existing bike route located along Palo Verde St.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

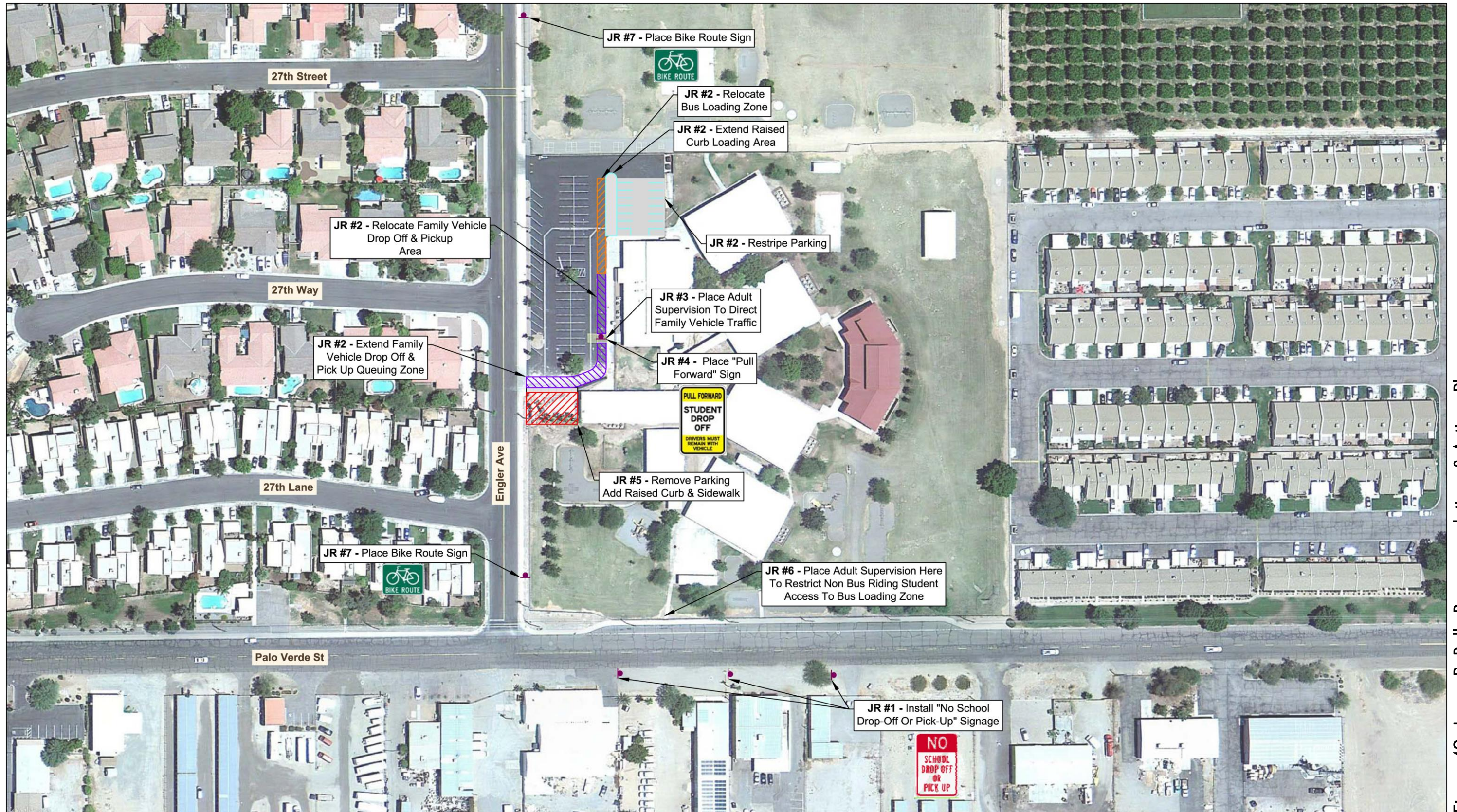


Figure 42: James B. Rolle Recommendations & Actions Plan



5.11. Pecan Grove Elementary School

5.11.1. School Setting and Enrollment Characteristics

Pecan Grove Elementary is located at 600 South 21st Avenue at the southwest corner of 21st Street and 6th Street. The school has been serving the community for over 60 years as it was built in the 1950's.

Pecan Grove Elementary is a kindergarten through sixth grade school and currently has approximately 350 students enrolled. Enrollment is expected to remain consistent with no change.



Pecan Grove Elementary

As the current enrollment boundary illustrates in Figure 44, the Pecan Grove

Elementary enrollment boundary is approximately one square mile and is bound by the Colorado River levee to the north, 12th Street to the south, Avenue B to the west and the East Main Canal and 16th Avenue to the east. The school is located near the center of the enrollment boundary.

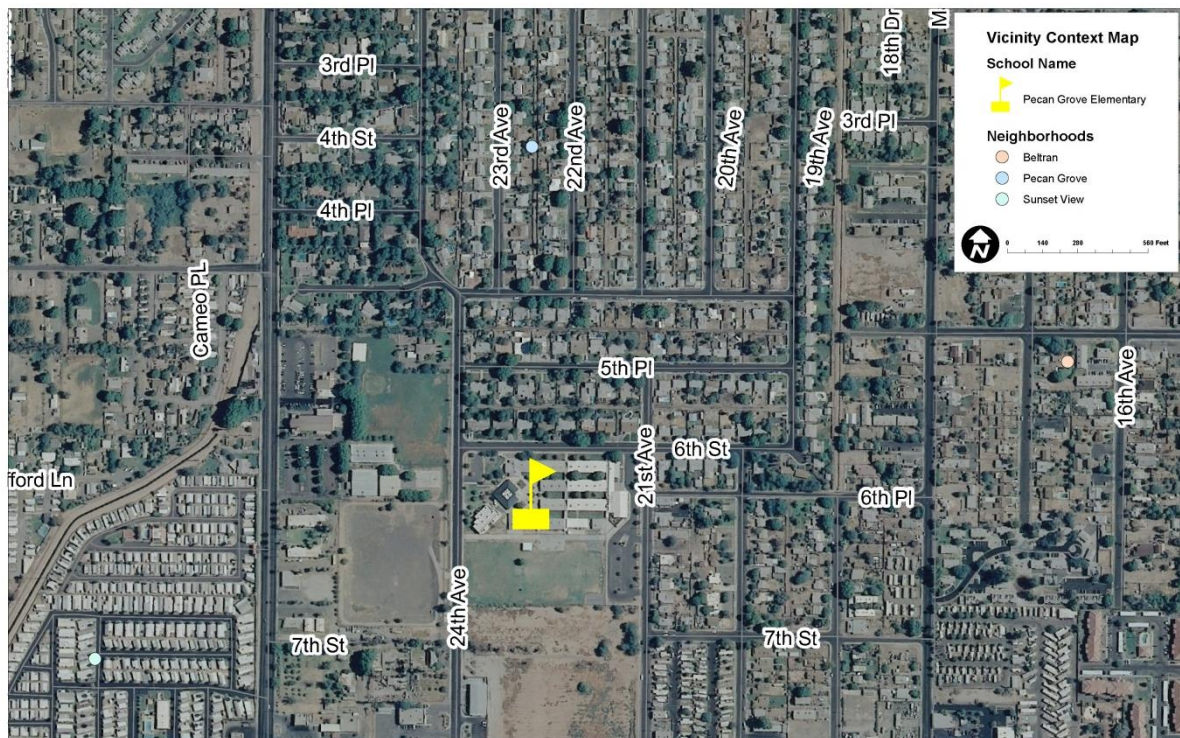


Figure 43: Vicinity Context Map



Pecan Grove Elementary School

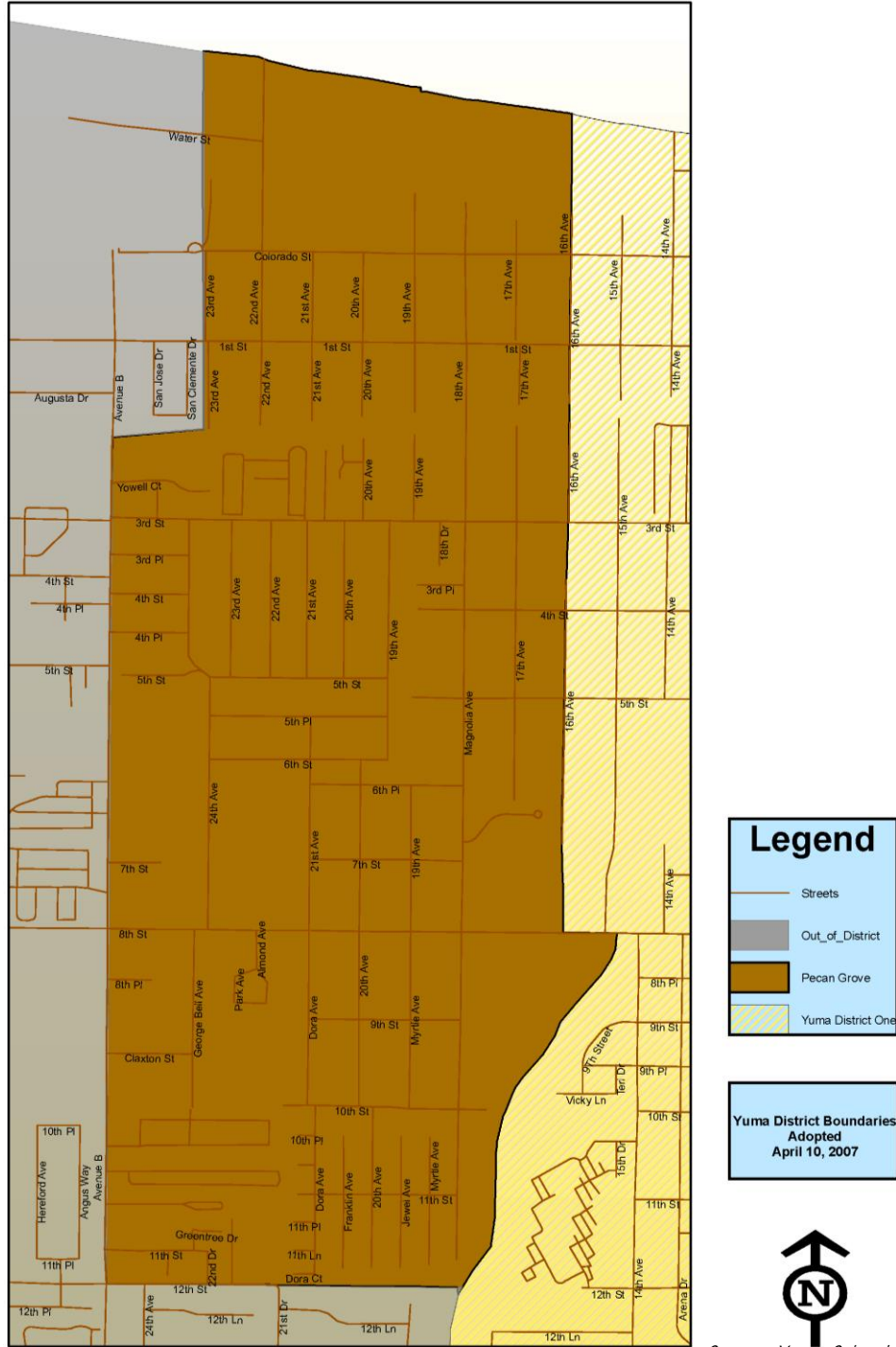


Figure 44: Pecan Grove Elementary School Enrollment Boundary



5.11.2. Neighborhood Character

There are many existing single family residential subdivisions, mobile home parks and RV communities in the vicinity of Pecan Grove Elementary. A sampling of some of these communities includes Pecan Grove, Sunset View, Magnolia Village and Pine Tree Estates. There is a vacant parcel directly south of the school as well a commercial businesses and a church along 8th Street near the school.





Neighborhoods in proximity to Pecan Grove Elementary

Adjacent to Pecan Grove Elementary, 21st Avenue, 24th Avenue and 6th Street all have one travel lane in each direction.

5.11.3. Yuma School District one Identified Needs & Deficiencies

Pecan Grove Elementary school was identified by the District as the #10 priority school in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

"Drivers speed through the school crosswalk located on 8th St. causing an unsafe environment for students, this issue needs to be reviewed and addressed."

5.11.4. School Official Interview & Observations

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). A summary of the following concerns or needs are as follows:

- 1) The numbers of parking spaces are sufficient and are not an issue for staff or visitors.
- 2) The northern parking lot is closed off to family vehicles and used as a dedicated bus lane before and after school.
- 3) There is no school resource officer (common for elementary schools).
- 4) A plan is in place for parents to drop their kids off in the parking lot off of 21st Avenue.



- 5) Generally speaking, the afternoon traffic congestion is worse than the morning. This is primarily due to staggered morning drop-off times and one pick up time in the afternoon.
- 6) A major concern is the crosswalk at the intersection of 21st Avenue and 8th Street. Crossing guards are present before and after school however not later in the day when after school programs let out. A teacher or other staff member watches the students crossing there.
- 7) Staff has also observed students crossing 21st Ave at locations other than at marked crosswalks.
- 8) Pecan Grove has 2 regular buses and 1 special needs bus and there is no dedicated bus loading/unloading zone.

5.11.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.

Yuma PD did not offer any specific or notable safety concerns or observations regarding Pecan Grove Elementary.

5.11.6. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.



Figure 45 illustrates the locations of the various features identified and summarized below. Specific features for Pecan Grove Elementary School are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

21st Avenue

- Two lane roadway with center stripe.
- 40 feet of curb to curb pavement width.
- Pedestrian and crosswalk signage near intersection with 6th Street.
- Posted speed limit of 25 miles-per-hour



- Detached continuous sidewalk on both sides of the roadway north of 8th Street



- No sidewalks south of 8th Street.



- Four-way stop control at intersection with 6th Street.
- White striped cross walk on south, east and west legs only at intersection with 6th Street.
- Stop control for 21st Ave at intersection with 5th Place, white striped cross walk on south leg only.
- Stop control for 21st Ave at intersection with 8th Street.
- Yellow striped crosswalk at across 8th Street on west leg. Crossing guard at this location but with no control.
- Yellow striped crosswalk at first school driveway south of 6th Street.

8th Street

- Two lanes in each direction with a center two-way left-turn lane.
- Classified by the City of Yuma as a Minor Arterial (Constrained).
- Posted speed limit of 35 miles-per-hour.
- Attached sidewalks on both sides of the roadway.
- No striped bike lanes.
- No on-street parking.
- Roadway lighting present.
- Provides access to commercial driveways and collector roadways.



Intersection of 21st Avenue and 8th Street, looking south

- Yellow painted school crosswalk at the intersection with 21st Avenue with a crossing guard before school and after school

24th Avenue

- Two lane roadway with no center stripe.
- Posted speed limit of 25 miles-per-hour.
- Attached sidewalks on both sides of the roadway.
- On-street parking is permitted.

School Access Points

Pecan Grove Elementary has three vehicular access points on 21st Avenue, two access points on 6th Street and one access on 24th Avenue.

Parking

Currently the two parking lots on-site provide approximately 80 spaces to adequately serve staff and visitors. On street parking is permitted along 24th Avenue on the both sides of the roadway adjacent to the school. Parking capacity is not an issue at Pecan Grove Elementary.



Parking spaces and bus loading area in front of school offices

School Bus Loading Zones

- There is no dedicated bus pull out. Buses utilize the northern parking lot area. The buses enter off of 6th Street and exit 21st Avenue. Before and after school the parking lot (10 spaces) is closed off to parents and visitors and only access by buses.
- Pecan Grove Elementary has 2 regular school buses and one special needs bus.
- Buses within each loading zone line up single-file with right wheel to the curb which is a preferred design. As a result, children do not have to walk between buses.
- The bus loading zone does not have a surplus of stacking depth, but is sufficient for the two general service buses and one special needs bus.



Bus loading zone

Family Vehicle Drop-off and Pick up Procedures

- The family vehicle drop-off/pick up zones is accessed from their southernmost driveway entry point off of 21st Avenue and exits through a second driveway in the center of the parking lot.
- This clockwise motion requires students on the passenger side of the family vehicle to exit the vehicle on the opposite side of the sidewalk and cross in front of or behind vehicles lined in the driveway.



- There is no marked or signed loading and unloading zones for family vehicles however cones are used to direct vehicles out of the parking lot.



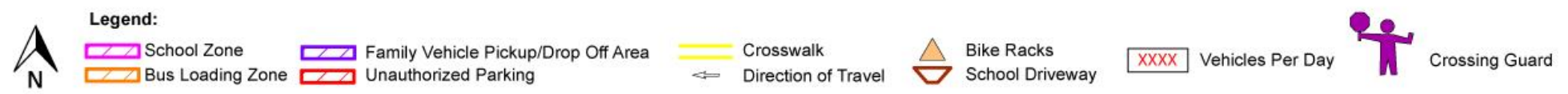
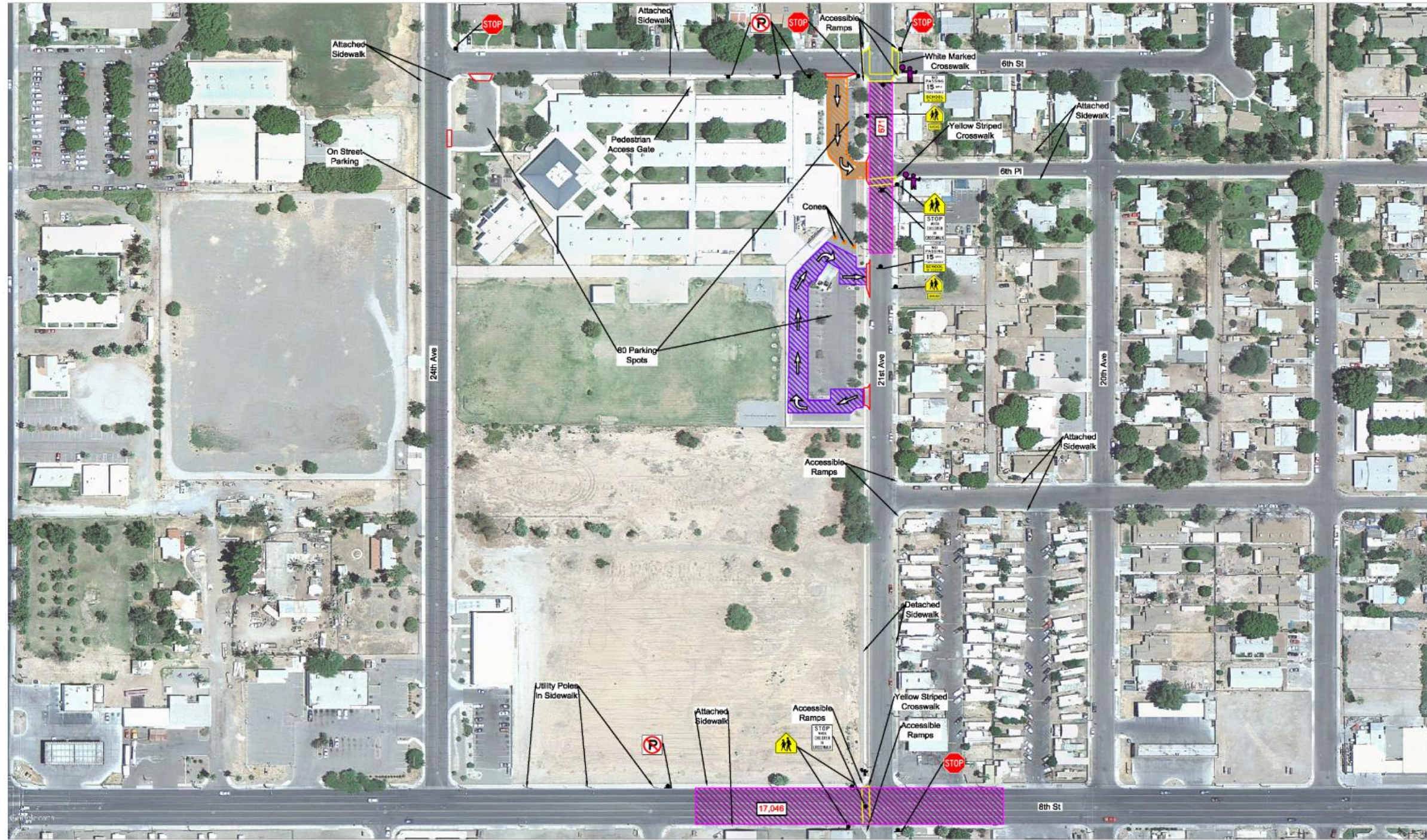


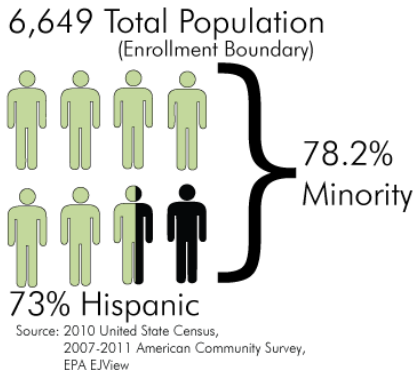
Figure 45: Pecan Grove Elementary School – School & Neighborhood Audit Findings



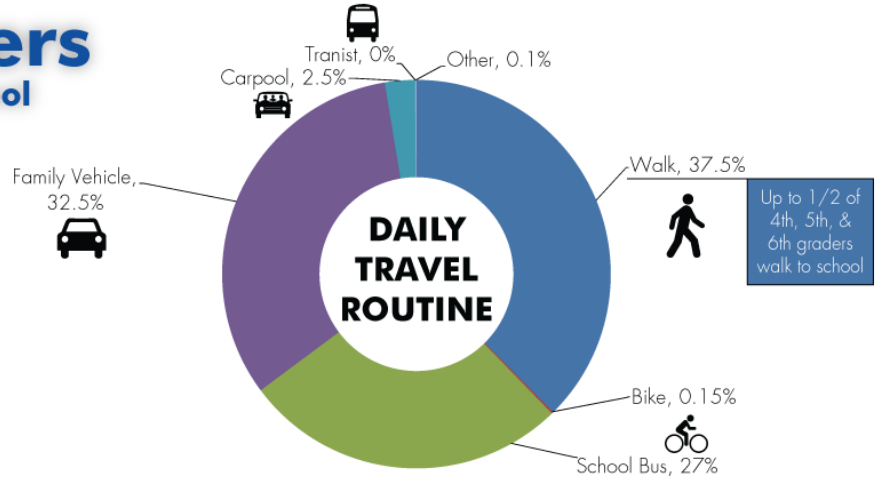
5.11.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers
Pecan Grove Elementary School

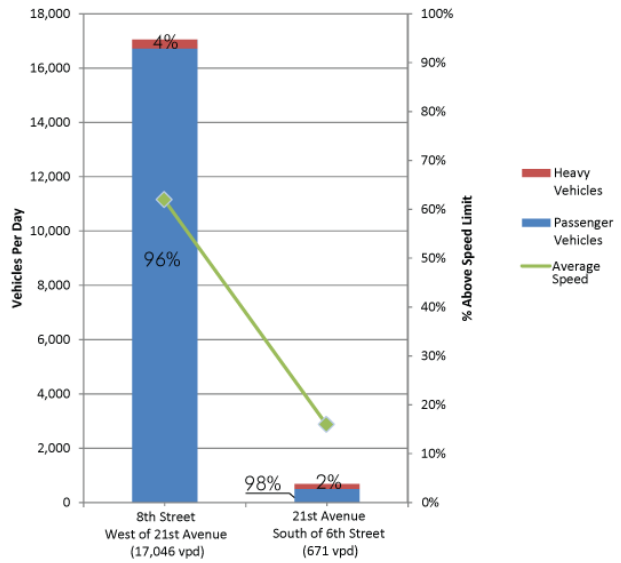
DEMOGRAPHICS



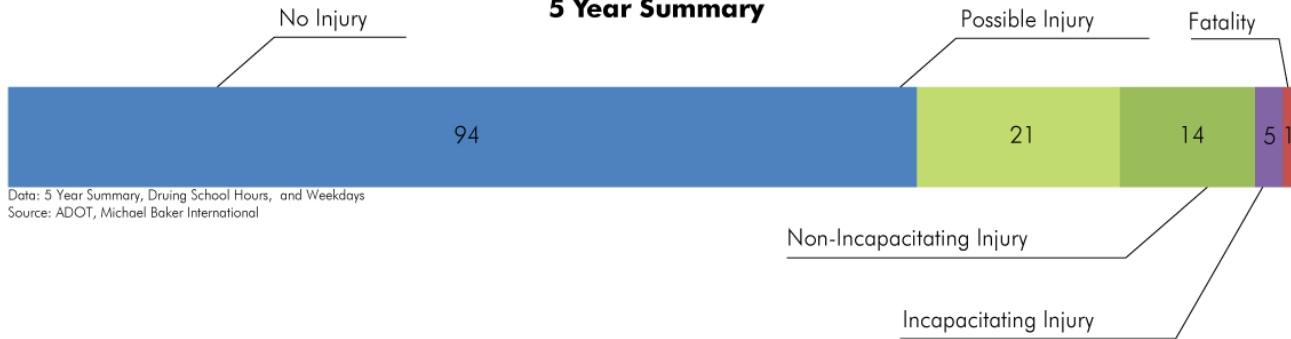
Detailed analysis of demographic/socioeconomic, crash data, travel routines, and roadway counts can be found in Working Paper #1.



ROADWAY COUNTS



CRASH DATA
5 Year Summary





5.11.8. School-Specific Engineering Recommendations

As one of the oldest schools in the District, Pecan Grove Elementary School has been educating children for over 60 years. Located in a well-established, urbanized area of the City of Yuma, Pecan Grove contains a moderate number of students who walk to school. The mode split survey findings show that on average between 30% and 50% of students walk to school. However, while a notable number of students walk to school, practically no students indicated they ride their bike to school. The remaining 50% to 70% of students rely on a family vehicle or the bus to travel to and from school.

Situated in the middle of the school enrollment boundary, the school campus draws students from all directions. For students who travel to and from school from the north and east, the transportation system is fairly well defined with appropriately placed crosswalks and sidewalks. However, for students who travel to and from school from the south, the overwhelmingly safety concern is the crosswalk located at the intersection of 21st Avenue and 8th Street.

This unsignalized crossing of a minor arterial roadway requires students to navigate four lanes of traffic plus a center turn lane as well as experiences a high degree of speeders. Analysis of traffic data identified that 62% of vehicles along 8th St exceed the posted speed limit of 35 mph. While a crossing guard is present before and after school, there is no crossing guard present to assist children when after school programs are let out. A pedestrian involved fatality has also occurred at this intersection within the last six years.

In addition, the transportation system located south of 8th St is completely void of any non-motorized amenities, including sidewalks or bike lanes.

The morning and afternoon on-site bus loading and family vehicle circulation procedures were found to be generally adequate and necessitate minimal recommendations. The clockwise family vehicle drop-off and pick-up circulation pattern is not consistent with preferred counterclockwise circulation patterns, however, it was found to provide a more adequate family vehicle queuing capacity and staff appropriately limited the permitted area where students may exit and enter family vehicles.

Please refer to Figure 46 for map reference to the projects described below.



PG #1	Conduct warrant analysis to place a flashing beacon, rapid flashing beacon or a HAWK pedestrian system at 21st Ave and 8th St.
Findings	The 21st Ave and 8th St intersection is the highest safety priority need for this school site due to the high traffic volume, vehicle speed, and recent pedestrian fatality at this location. This is the only crossing location assigned with a crossing guard for all students who live south of 8th St. The release of after school programs presents the greatest safety concern when no crossing guard is on duty.
Project Description	Complete a warrant analysis of this intersection to determine the appropriateness of placing a more visible HAWK pedestrian system that can also assist students during after school hours.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$\$

PG #2	Restripe white crosswalk on north leg of 21st Ave and 8th St.
Findings	Recent pavement maintenance covered the previously striped crosswalk located across 21st Ave at 8th St. Although the pavement markings have been removed the school assigned crossing guard still utilizes this crosswalk
Project Description	Place a white crosswalk across the north leg of 21st Ave and 8th St.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

PG #3	Enhance signing and striping in parent drop-off area.
Findings	Staffs involved effort to control and manage the family vehicle lane enables the non-preferred clockwise traffic flow pattern to function at an acceptable level. However, the lack of directional signage causes some family vehicles that are not familiar with the defined program to become confused and enter/exit through the wrong driveway.
Project Description	Place "Student Drop-off/Pick-up Lane" "Enter Only" sign at the southernmost entrance drive to the main parking lot along 21st Ave. Stripe student drop-off and pick-up lane in parking lot with solid white line and directional arrows. Place signs and pavement marking to identify permitted student loading area. Place "Exit Only" sign at the northern entrance drive into the main parking lot along 21st Ave.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$



PG #4	Install bike route signage along 21st Ave and 6th Pl.
Findings	The Yuma Bicycle Facilities Master Plan identifies 21st Ave to be signed as a bicycle route.
Project Description	Consistent with the YBFMP, place bike route signs along 21st Ave and 6th Pl.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

PG #5	Install "School Zone Ahead" warning sign on eastbound 8th St at Almond Ave.
Findings	As mentioned above, the heavily traveled 8th St is surprisingly sparsely signed with any school zone advanced crossing signage. Westbound 8th St does include one advance crossing sign; however, the eastbound direction does not include any school crossing signage.
Project Description	Place signage along 8th St with advance crossing sign in the westbound direction.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

PG #6	Develop sidewalk system south of 8th St.
Findings	The residential developments located south of 8th St are completely void of any sidewalks. Consequently, students who utilize the 8th St school crossing are provided with no pedestrian paths once they reach the south side of the street and must walk on the dirt shoulder or vehicle travel way.
Project Description	Construct an on-street sidewalk system south of 8th St to connect to existing crosswalk at 21st St. Will need to examine existing right-of-way to determine if additional right-of-way is needed. Initial project could include improvement of Dora Ave from 21st St to 10th St.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$\$



Figure 46: Pecan Grove Recommendations & Actions Plan



5.12. G.W. Carver Elementary School

5.12.1. School Setting and Enrollment Characteristics

Built in 1947, G.W. Carver Elementary has been serving the community for over 60 years. The school is located at 1341 West 5th Street just west of Avenue A on the south side of 5th Street.

G.W. Carver Elementary is a kindergarten through sixth grade school and currently has approximately 480 students enrolled. Maximum capacity for the school is 530 though the current enrollment level is expected to remain constant for the next 2 to 3 years.



G.W. Carver Elementary

As the current enrollment boundary illustrates in Figure 48, the G.W. Carver Elementary enrollment boundary encompasses less than one square mile and is bound by the Colorado River Levee to the north, 10th Street to the south, 16th Avenue to the west and 10th Avenue to the east. The G.W. Carver Elementary enrollment boundary extends one and a half miles north/south and approximately one half mile east/west. The school is located in approximately the center portion of the enrollment boundary.

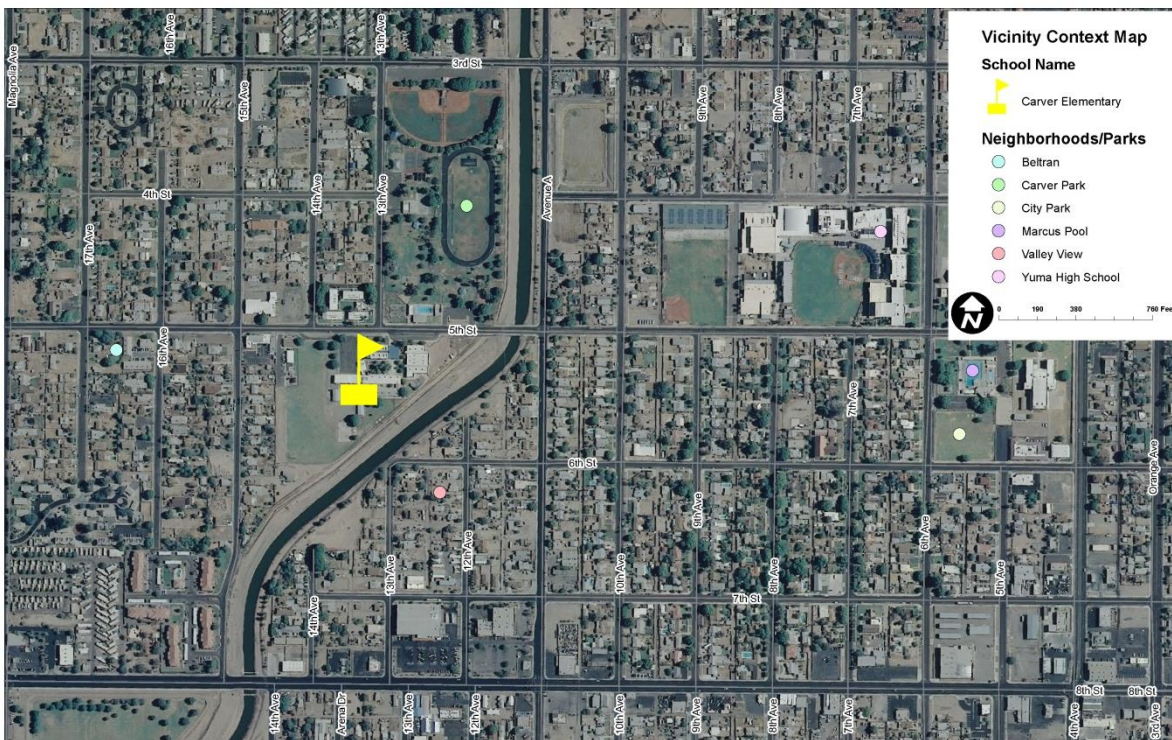
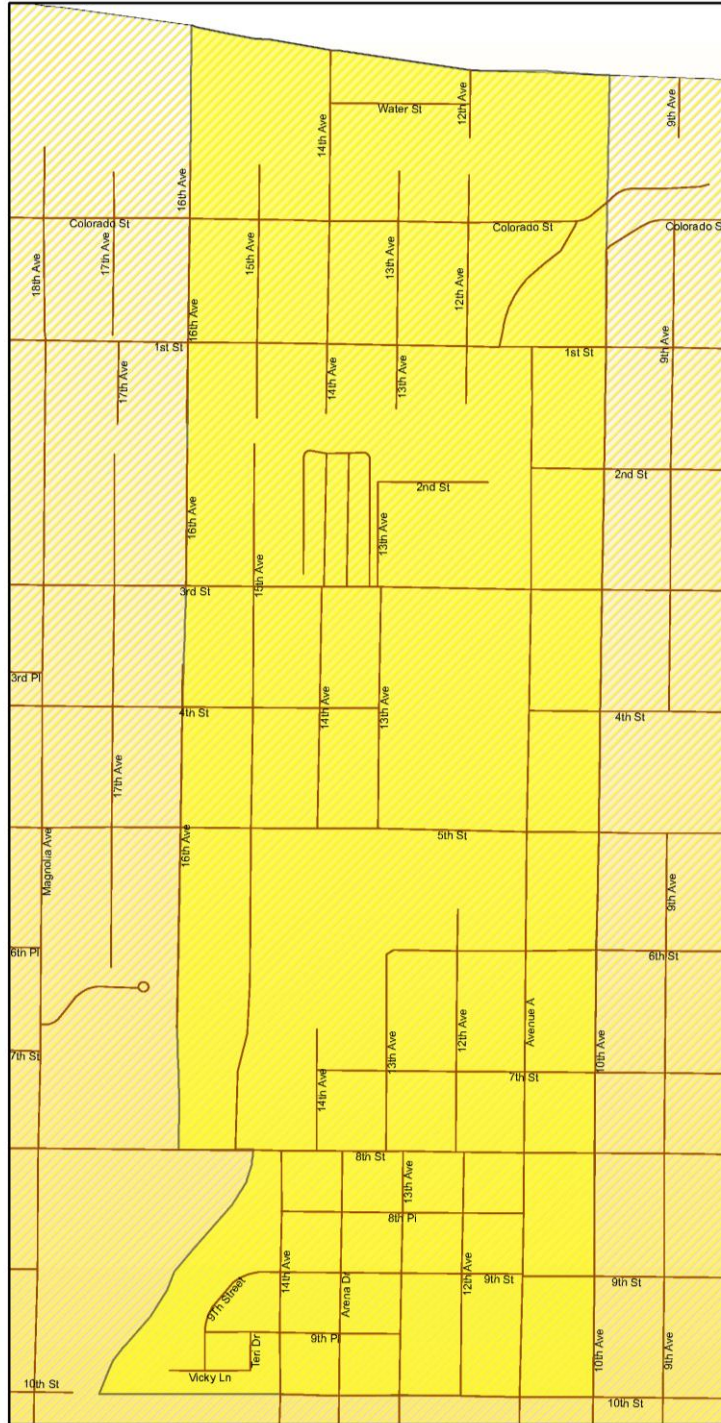


Figure 47: Vicinity Context Map



G. W. Carver Elementary School



Legend

- Streets
- Carver
- Yuma District One

Yuma District Boundaries Adopted April 10, 2007



Figure 48: G.W. Carver Elementary School Enrollment Boundary

Source: Yuma School District One



5.12.2. Neighborhood Character

There are many existing residential subdivisions, including mobile home/RV park communities in the vicinity of G.W. Carver Elementary. There is an apartment community directly across 5th Street from the school. Also across 5th Street is Carver Park just to the north of the elementary school. Yuma High School, Roosevelt Elementary and Fourth Avenue Junior High Schools are all directly east of G.W. Carver Elementary School. The East Main Canal runs diagonal through the enrollment boundary and is the southern/eastern boundary of the school property.

The roadway network in the area is a traditional grid pattern. 5th Street is a two lane collector road fronting the school and all modes of transportation access the school from 5th Street. Avenue A is a minor arterial roadway running north-south just east of the school and serves as a gateway for many students and families accessing the school.



Residential neighborhood in proximity to the school



Shared use path along the East Main Canal



Carver Park



5.12.3. Yuma School District One Identified Needs & Deficiencies

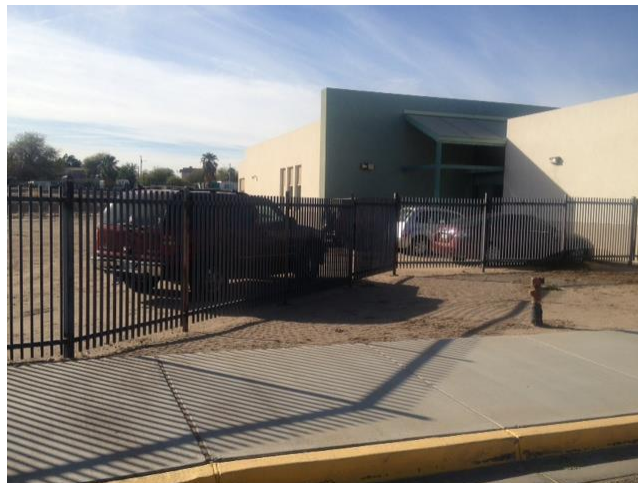
G.W. Carver Elementary school was identified by the District as the #11 priority school in their PARA application to ADOT. The District's application identified the following needs and deficiencies:

"Sidewalks around school are inadequate, uneven, cracked and have vegetation grown in them creating situations that could cause a perilous fall. The reduction of crosswalks on 5th St. has created an unsafe crossing for students and parents who need to dart through traffic. The canal has created a barrier for many of the south neighborhood students who need to walk around the canal to reach the school."

5.12.4. School Official Interview & Observations

In conjunction with the school site audits and neighborhood field reviews, the consultant prepared a list of questions to interview each school Principal and/or other school representative(s). A summary of the following concerns or needs are as follows:

- 1) There is sufficient parking on-site for staff and visitors. There are 51 spaces plus a dirt parking area that staff will sometimes use.



Staff overflow parking area

- 2) Carver uses crossing guards at two locations even though one of the crosswalk locations on 5th Street is no longer painted, school officials still put out signs and use a crossing guard there.



Marked crosswalk across 5th Street at 13th Avenue in front of the school

- 3) A second crosswalk on 5th Street was paved over when the City improved 5th Street and the crosswalk was never re-striped. There are signs and a crossing guard is used at this location. (Need to confirm location).
- 4) There is no school resource officer (common for elementary schools).
- 5) Students start arriving on campus as early as 7:30.
- 6) Staff does not direct vehicles during morning drop-off.



Family vehicle drop-off and pick up area

- 7) Parents tend to drop their students off in the parking lot as opposed to using the designated family vehicle drop-off/pick up lane. This area is separate from the parking lot and minimizes the conflicts between pedestrians and vehicles in the parking lot.
- 8) Kindergarteners are escorted by staff to the buses or to parent pick up area.
- 9) Pick-up time is very congested and lasts approximately 7-8 minutes.



- 10) Most parents follow the rules; however, staff does observe vehicles not obeying to the 15 mph school zone and jay-walking.
- 11) Every grade is escorted by a teacher to the bus loading zone.
- 12) Reminders telling parents the drop-off and pick-up procedures are sent out in new letters regularly.
- 13) Sidewalks south and east of canal are in poor condition.



Truncated sidewalk east of school



Utility pole obstructing sidewalk accessibility



Sidewalk gap



- 14) A good portion of the enrollment boundary is south of the canal, a pedestrian bridge connected to the school would help get children across the canal and avoid congested roadways.
- 15) Generally speaking, the afternoon traffic congestion is worse than the morning. This is primarily due to staggered morning drop-off times and one pick up time in the afternoon.

5.12.5. Law Enforcement Observations

The Yuma Police Department has a standard protocol to conduct an “organized enforcement” to target speeding and other traffic violations at all Yuma School District One schools the beginning of each school year.

The express intent of the organized enforcement is for the Yuma PD to have a strong visible presence at the beginning of each school year to “set the tone” for traffic safety throughout the school year. Like many municipal police departments, the lack of staff resources and competing demands and priorities on their time limits their ability to have a continued traffic enforcement presence at area schools on a frequent basis. Yuma PD will provide additional enforcement when persistent speeding or other traffic violations are reported on a case by case basis.

Observations by Yuma PD regarding G.W. Carver Elementary indicated that they receive many complaints from residents of the apartments across the street regarding on street parking when there are no parking signs posted (during school hours). Yuma PD also noted how busy the crosswalks get on 5th Street and at the intersection of 5th Street and Avenue A. Their primary safety concern had to do with students who are using these crosswalks later in the day, after the conclusion of various after school activities. This is later than the times when there is a crossing guard and the lack of supervision is a safety concern.

5.12.6. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.

Figure 49 illustrates the locations of the various features identified and summarized below. Specific features for G.W. Carver Elementary School are described as follows:



Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

5th Street

- Two lane collector roadway with center stripe.
- Posted speed limit of 25 miles-per-hour.
- Attached continuous sidewalk on south side of roadway.
- Attached, continuous sidewalk on north side of roadway between Avenue A and 13th Avenue, detached sidewalk between 10th Avenue and Avenue A and between 13th Avenue and 16th Avenue.
- Stop control at intersection with Avenue A and intersection with 15th Avenue.
- Stop control for 5th Street at the intersection with Avenue A.
- Yellow striped crosswalk and signage on east leg of intersection with 13th Avenue.



Yellow striped crosswalk at 13th Avenue and 5th Street

- White striped cross walk on north, east and west legs only at intersection with Avenue A. Yellow striped crosswalk and signage on south leg



- No parking signs from 8AM – 4PM adjacent to school on both sides of roadway

Avenue A

- Two lane roadway with center stripe north of 5th Street, three lane roadway south of 5th Street.
- Classified as a Minor Arterial (Constrained) roadway by the City of Yuma.
- Posted speed limit of 35 miles-per-hour.



Avenue A looking south

- Detached sidewalks on east side of the roadway, no sidewalk on west side of roadway north of 5th Street, attached sidewalk on west side of roadway south of 5th Street.
- No striped bike lanes.
- No parking signage.

School Access Points

- G.W. Carver Elementary has four vehicular entry points on 5th Street. One entry (one way driveway) for buses only, one entry into and out of the paved parking lot, one entry into the pick-up/drop-off zone, and one entry into and out of a dirt parking lot.



Aerial photograph showing driveway entrances off 5th Street



Parking

Currently the paved parking lot on-site provides 51 spaces which adequately serve current staff as well as visitors. The gravel lot to the east of the school is also utilized for surplus staff parking. Parking is not an issue at G.W. Carver Elementary.



Gravel parking lot area for overflow staff parking.

School Bus Loading Zones

- Even though the enrollment boundary is less than the typical size requiring bus service, G.W. Carver Elementary has 2 regular school buses and 2 special needs buses for the students living north of 1st Street and south of 8th Street so they don't have to cross major streets.
- Buses line up in the dedicated bus loading zone on the south side of 5th Street west of the parking lot. Students disembark the bus onto a sidewalk and do not have to cross other bus or vehicular traffic which is a preferred design.



Bus loading zone



Family Vehicle Drop-off and Pick up Procedures

- The family vehicle drop-off/pick up zone is east of parking lot and is accessed from one driveway entry point off of 5th Street and exits through a second driveway on 5th Street.
- Parents are only allowed to make a right turn when exiting the drop-off/pick up zone.
- The drop-off/pick up zone was constructed approximately 6-8 years ago.
- There is no signage within the drop-off/pick up zone indicating a specific area to drop the child off or pick them up.



Parent pick-up and drop-off area

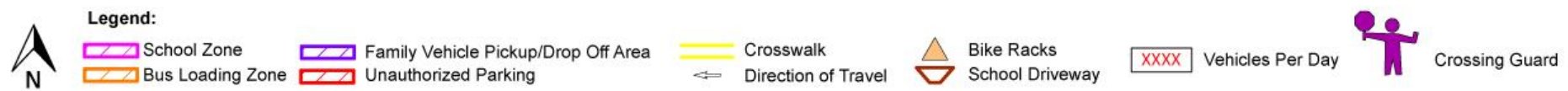


Figure 49: Carver Elementary School – School & Neighborhood Audit Findings

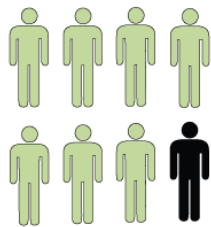


5.12.7. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers
G.W. Carver Elementary School

DEMOGRAPHICS

3,002 Total Population
(Enrollment Boundary)

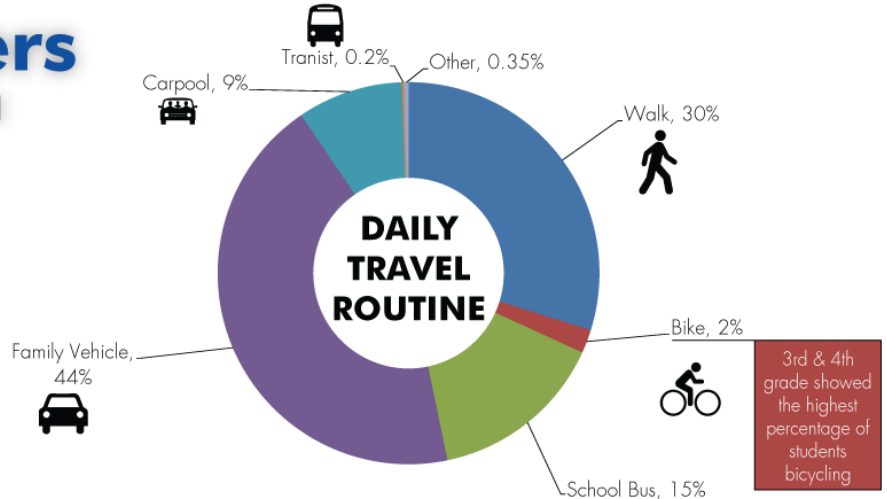


88%
Minority

51% Hispanic

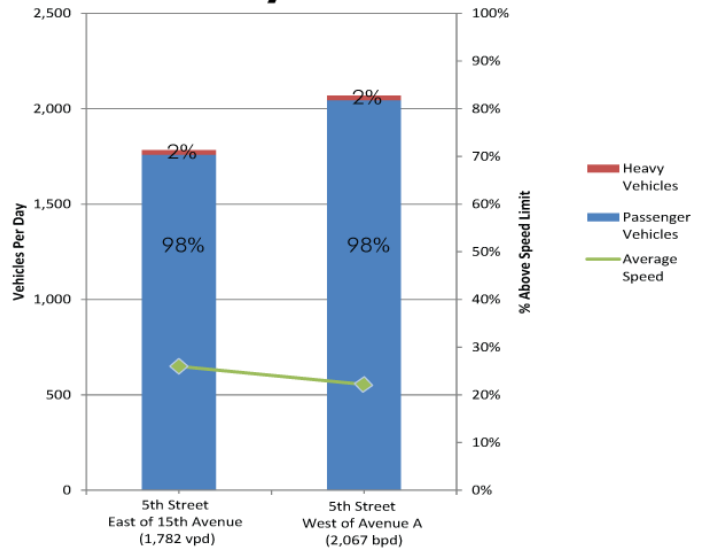
Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView

Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.

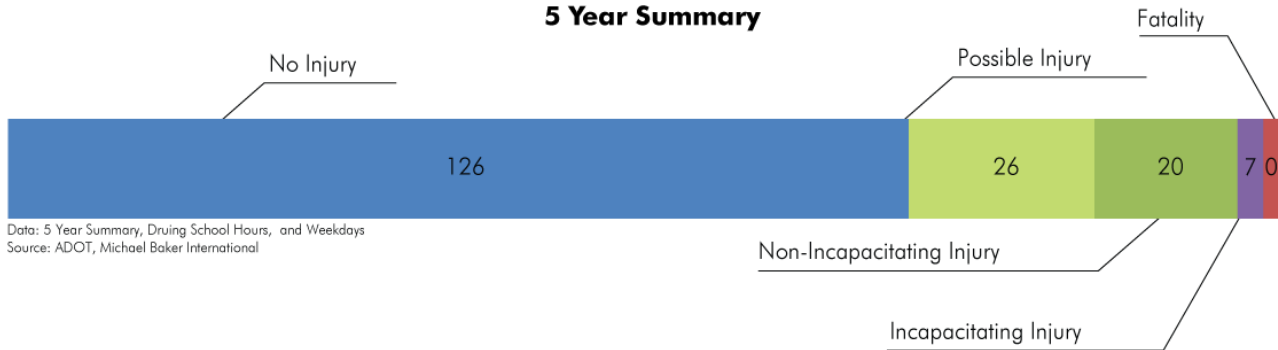


3rd & 4th grade showed the highest percentage of students bicycling

Roadway Counts



CRASH DATA
5 Year Summary



Data: 5 Year Summary, Driving School Hours, and Weekdays
Source: ADOT, Michael Baker International



5.12.8. School-Specific Engineering Recommendations

GW Carver Elementary School was established in 1947 and is located in one of the more mature parts of the City of Yuma. Centrally located within its school enrollment boundary, GW Carver has a significant number of students who walk or bike to school in comparison to other schools in the District, although, the family vehicle is still the most common form of transportation for students overall. The mode split survey findings identified that on average between 25% and 35% of students walk to school and between 5% and 10% of student's bike to school. The remaining students rely on a family vehicle/carpool (50%) or the bus (10% to 15%) to travel to and from school.

Unique to many of the older schools in the district, GW Carver has a separate dedicated bus loading area, staff/visitor parking lot and family vehicle loading area. Although only allowing buses to line up single-file, the bus loading area exhibited no significant issues and was not identified as an area of concern by staff or during individual school audits.

Like the bus loading area, staff and school audits did not identify any significant areas of concern within the family vehicle drop-off and pick-up area. However, the area was void of any identifying/directional signage to assist family members in properly navigating the dedicated lane and the inability to make a left turn when exiting the lane were noted as negative factors.

Some pedestrian/vehicle conflicts are found within the staff/visitor parking lot due to family vehicles utilizing this area as a drop-off and pick-up area as opposed to utilizing the dedicated family vehicle lane. The lack of signage in the parking lot prohibiting this activity and the limitation of left turns out of the dedicated family vehicle lane were noted as potential contributors to this undesired condition.

Most of the more prominent deficiencies identified for GW Carver consist of off-site conditions. The intersection at 5th St and 15th Ave is a two-way stopped controlled intersection in the east-west bound direction. Although this intersection lacks any crosswalk striping (removed during the last repavement effort), the school still places a crossing guard at this location due to the lack of traffic control along 15th Ave and the volume of students who cross at this location.

The overall placement of the school along the East Main Canal creates a significant barrier for a select portion of students who live southeast of the school. Due to the lack of non-vehicular crossings of the canal, many students who walk or bike to school must travel an extended distance in the opposite direction to reach school.



A limited number of gaps and sidewalk deficiencies were identified by staff and during consultant analysis. However, while important to address, these deficiencies were not found to be as predominant as other schools in the district.

Please refer to Figure 50 for map reference to the projects described below.

GW #1	Complete a crosswalk and school crossing warrant analysis on 5th St and 15th Ave intersection.
Findings	Recent pavement maintenance covered the previously striped crosswalk located across the south leg of the 5th St and 15th Ave intersection. Although the pavement markings have been removed the school still assigns a crossing guard to this location. However, while the school crossing guard provides adequate safety precautions for students during schools hours this intersection lacks any safety features for students during non-school ours.
Project Description	Facilitate a crosswalk and school crossing warrant analysis per ADOT standards for the 5th St and 15th Ave intersection to officially determine the appropriate identification level for this location.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$

GW #2	Complete traffic control needs study determine possible placement of a four-way stop at 5th St and 15th Ave.
Findings	This four-leg intersection currently provides two-way stop control, with 15th Ave uncontrolled in the north/south direction and 5th St controlled in the east/west direction. As mentioned above, the presence of a crossing guard at this intersection greatly enhances the safety of this crossing during school morning and afternoon peak periods. However, during non-school hours the lack of traffic control in the north/south direction enhances the potential for vehicle/pedestrian conflicts given the current mid-block crossing condition.
Project Description	In order to ensure adequate safety precautions are afforded for students traveling to/from the west, a traffic control needs study should be completed per ADOT standards at the intersection of 5th St and 15th Ave.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$



GW #3	Restripe crosswalk at 5th St and Avenue A.
Findings	This four-leg intersection currently provides two-way stop control, with Avenue A uncontrolled in the north/south direction and 5th St controlled in the east/west direction. This intersection is heavily used by students and is signed as a school crossing zone along Avenue A during school hours. However, during after school periods the visibility of this mid-block crossing is limited due to the removal of the school crossing zone signage and faded condition of the existing crosswalk striping. This condition creates a safety concern for students who participate in after school programs and must cross Avenue A during non-school hours.
Project Description	To improve the visibility of the 5th St and Avenue A intersection restripe the north and south leg crosswalks yellow and the east and west leg crosswalks white.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

GW #4	Identify Family Vehicle Drop-off and Pick-up area with enhanced signage/striping.
Findings	The design and location of the family vehicle drop-off and pick-up area was found to meet the needs of the school. However, the lack of adequate directional signage causes some family vehicles that are not familiar with the defined program to enter/exit the family vehicle lane through the wrong driveway or utilize the staff/visitor parking lot for dropping off and picking up. These conditions cause unnecessary congestion and in the case of the staff/visitor parking lot increased vehicle/pedestrian conflict points.
Project Description	Enhance the directional signage and striping of the family vehicle lane by placing "Student Drop-off/Pick-up Lane" "Enter Only" signs at the western entrance drive. Stripe student drop-off and pick-up lane in parking lot with solid white line and directional arrows. Place signs and pavement marking to identify permitted student loading area, do not allow parking/loading to occur near the eastern exit driveway. Place "Do Not Enter" "Exit Only" signs at the eastern exit drive to the family vehicle lane.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$



GW #5	Redesign family vehicle exit drive to accommodate left-hand and right-hand turn lanes.
Findings	Currently, the family vehicle exit drive prohibits left turns onto 5th St. The inability to make a left turn requires family vehicles who need to travel west from the school to go east and then navigate around the East Main Canal to proceed west. To avoid this circuitous path, family vehicles needing to travel west frequently choose to use the staff/visitor parking lot or prohibited on-street parking on the north side of 5th St for student drop off and pick up.
Project Description	Increase the width and curb radius on the family vehicle exit drive to allow space for both left-hand and right-hand turning movements. In order to allow for proper queuing distances do not allow parking/loading to occur near the exit driveway.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$\$-\$\$\$

GW #6	Place “No Student Drop Off or Pick Up” signs at parking lot entrance/exit drive.
Findings	The staff/visitor parking lot is frequently used by family vehicles as a drop-off and pick-up area. This uncontrolled condition causes students to walk between and behind parked cars or across drive aisles, which increases the potential for vehicle/pedestrian accidents.
Project Description	Locate “No Student Drop Off or Pick Up” signs at the entrance/exit to the parking lot. Additional staff supervision of the parking lot during peak morning and evening periods and/or informational flyers to parents would help to discourage this safety hazard.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

GW #7	Place bike route signage along 5th St.
Findings	The Yuma Bicycle Facility Master Plan (YBFMP) identifies 5th St as a bike route. In addition the plan also shows 14th Ave as a bike route path, but the District and City staff may want to discuss locating bike route signage along 13th Ave, since there is a crosswalk located here and it is adjacent to a city park.
Project Description	Place bike route signage along 5th St.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$



GW #8	Potential long-term project would be to develop a pedestrian bridge across the East Main Canal at the corner of 13th Ave and 6th St.
Findings	While the east main canal is an important infrastructure facility to the Yuma Region and the canal trail provides a beneficial recreational amenity to the local community, the canal itself does act as a significant barrier to students who live south of the school. The limitation of a pedestrian crossing over the canal requires some students to travel in the opposite direction of school to access the canal crossings located along 8th St or 5th St, which greatly lengthens their overall travel distance. The placement of a pedestrian crossing over the canal, directly into the school campus would greatly reduce the travel distance for students who live south of the school and provide a pedestrian friendly alternative route to school for students east of the school. A cost/benefit analysis of this facility would need to be completed in the future to further examine the viability of this level of improvement.
Project Description	Construct a pedestrian bridge over the East Main Canal at the corner of 13th Ave and 6th St.
Lead Organization/ Project Partners	City of Yuma/Yuma School District One
Cost Indicator	\$\$\$

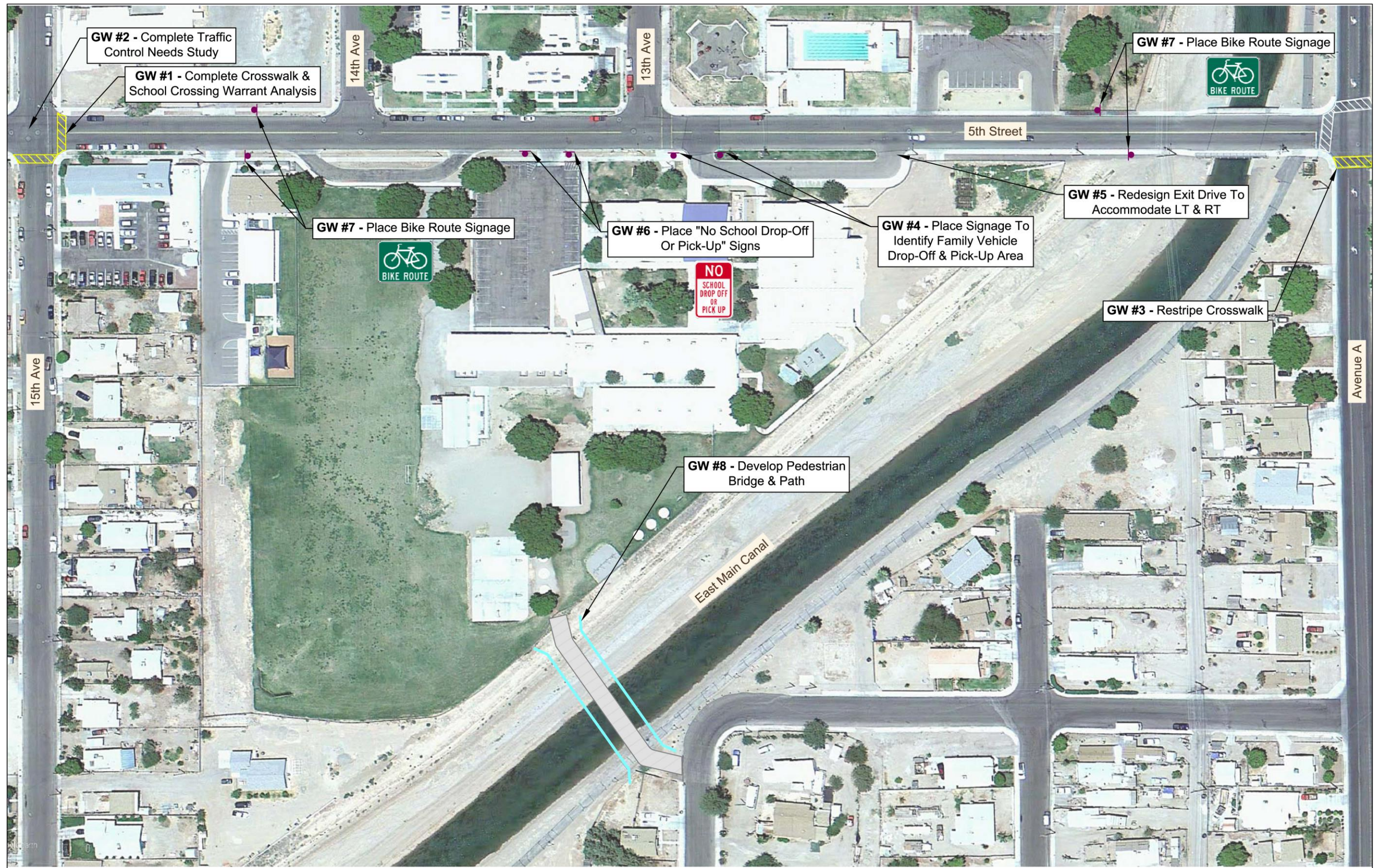


Figure 50: GW Carver Recommendations & Actions Plan



5.13. Mary A. Otondo Elementary & Castle Dome Middle School

5.13.1. School Setting and Enrollment Characteristics

5.13.1.1. Mary A. Otondo Elementary School

Mary A Otondo Elementary is one of the newer schools in the District being built in 1991. The school is located in the Fortuna/Foothills area at of the city of Yuma at 2251 South Otondo Drive just north of 24th Street. The Fortuna/Foothills area is one of the faster growing regions in the city of Yuma with a 2010 Census population of 26,265. The Otondo Elementary campus is co-located with the Castle Dome Middle School campus located immediately south of Otondo Elementary school. The two schools share driveways and other facilities.



Mary A. Otondo Elementary entrance feature

Otondo Elementary is a K-5 school and currently has 760 students enrolled with a maximum student capacity of 1,000 students (current building facilities). Due largely to its location in the growing Fortuna/Foothills area, student enrollment at Otondo Elementary is expected to increase in the future.

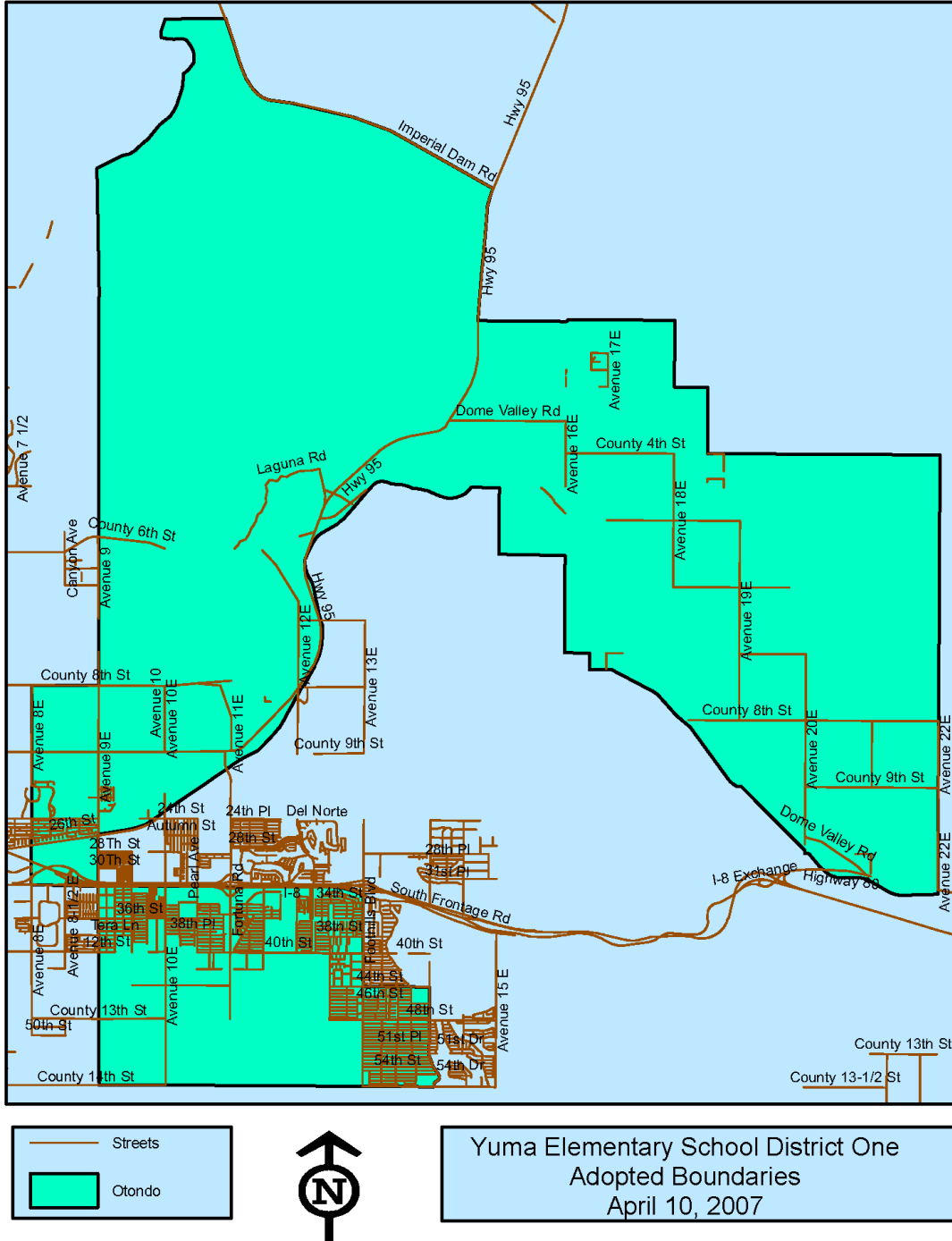
As the current enrollment boundary illustrates in Figure 52, the Otondo Elementary enrollment boundary is the District's most expansive area for elementary schools at approximately 95 square miles located both north and south of Interstate 8. The Otondo Elementary enrollment boundary is co-terminus with the Sunrise Elementary enrollment boundary both north and south of Interstate 8 in the Fortuna/Foothills area. Due to the large expanse of the enrollment area, a large percentage of students utilize a family vehicle or school bus to get to and from school.



Figure 51: Vicinity Context Map



Otondo Elementary School



Source: Yuma School District One

Figure 52: Mary A. Otondo Elementary School Enrollment Boundary



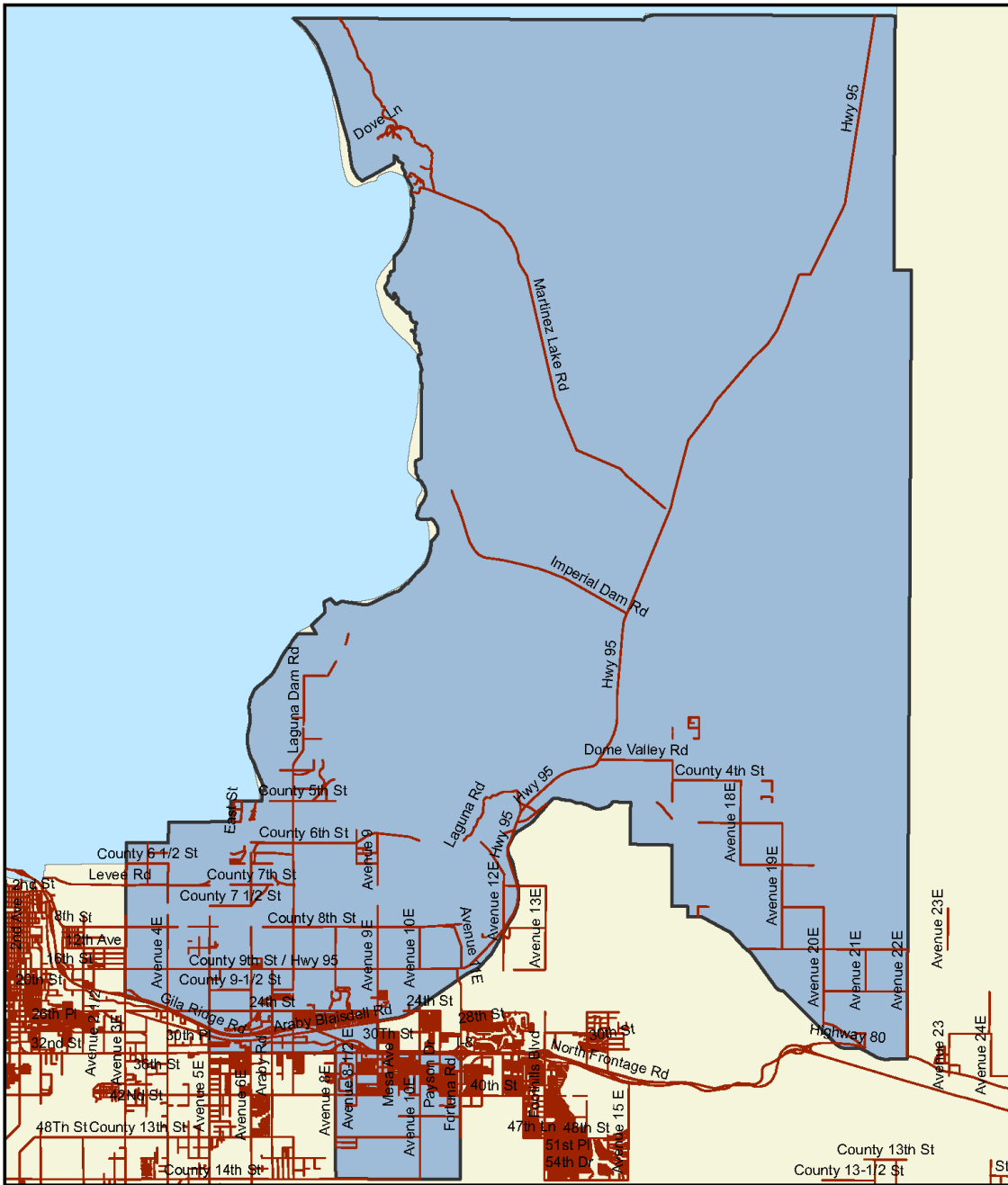
5.13.1.2. Castle Dome Middle School

Castle Dome Middle School is located directly adjacent (south) to Otondo Elementary at 2353 South Otondo Drive at the northeast corner of the intersection of 24th Street and Otondo Drive. The school was built in 2004. Castle Dome Middle School instructs grades, 6, 7 and 8 and has an enrollment of 800 students. Like Otondo Elementary, the student enrollment is expected to increase with the expected population growth in the Fortuna/Foothills area of Yuma.

As the current enrollment boundary illustrates in Figure 53 on the next page, the Castle Dome Middle School boundary is similar to the Otondo Elementary enrollment boundary. It is the District's most expansive area for a middle school at approximately 325 square miles located mostly north of Interstate 8. Due to the large expanse of the enrollment area, a large percentage of students utilize a family vehicle or school bus to get to and from school.



Castle Dome Middle School



Legend

- streets
- CDMS
- yuma county

Yuma District Boundaries
Adopted
April 10, 2007



Figure 53: Castle Dome Middle School Enrollment Boundary

Source: Yuma School District One



5.13.2. Neighborhood Character

There are very few residential homes to the north of the schools. North on Otondo Drive leads to the Arizona Western College campus and the Northern Arizona University Yuma Campus. There are many existing single family residential subdivisions immediately south of the school and 24th Street (north of Interstate 8) including Tamarack, Desert Ridge and Las Brisas.

Since the school is located in the western-most portion of the enrollment boundary, the vast majority of students live to the east and south of the school. As a result, the vast majority of student's lives south of Interstate 8 and travel on Araby Road or South Avenue 9 East then on 24th Street that is the primary east-west arterial roadway providing vehicular access to these two schools. 24th Street has two travel lanes with a center turn lane from Avenue 10 E to the western property line of the Castle Dome Middle school where the street tapers down to a two lane roadway west of the middle school property.



5.13.3. Yuma School District One Identified Needs & Deficiencies

Castle Dome Middle and Otondo Elementary school were identified by the District as the #13 and #14 priority schools respectively in their PARA application to ADOT. The District's application identified the following needs and deficiencies for Castle Dome Middle School:

"Vehicles congest the parking lot looking and waiting for students, which makes it impossible for others to exit the parking lot. Early Action project: The school district just completed a parking lot reconfiguration project to increase the drop-off/pick up zone which should alleviate some of the issue."

The District's application identified the following needs and deficiencies for Otondo Elementary School:

"There is heavy traffic at dismissal and morning drop off."



5.13.4. School Official Interview & Observations

5.13.4.1. Mary A. Otondo Elementary

- 1) Parking for staff/visitors is adequate.
- 2) Parents park across Otondo in dirt lot and have kids cross Otondo at the painted yellow crosswalk.
- 3) No crossing guard is present at the Yellow marked crosswalk on Otondo Dr.
- 4) The school utilizes a parent drop-off lane in the morning, however all parents must park and walk up to the school to pick up their children in the afternoon.
- 5) Parents sometimes park in the drop-off lane disrupting the flow of traffic in the lane.
- 6) Family vehicle and bus loading zones are clearly separated.



On site signage designating separate driveways for cars and buses



Family vehicle loading zone signage

- 7) Children walking home must wait in the cafeteria until all buses are gone. A staff member then escorts the students to the crossing guard at 24th Street and Otondo.
- 8) Staff is present in the median area between the parent drop-off and bus lane to assist students in crossing the bus lane safely.
- 9) Generally speaking, the afternoon traffic congestion is worse than the morning. This is primarily due to staggered morning drop-off times and one pick up time in the afternoon.
- 10) Protocols are in place for morning and afternoon and they are working well. The addition of a crossing guard on Otondo Drive near the elementary school exit would be helpful.



Family vehicle driveway signage



5.13.5. School & Neighborhood Audit Findings

The consultant team performed an extensive field review of each school site and the surrounding neighborhood within a one-half mile radius. One key element of the audit is to specifically identify walking and bicycling barriers and challenges to students using these modes of transportation. The audits also evaluated existing bus routes, bus loading zones and family vehicle pick up locations and procedures. Consultant observations from these field reviews are used to supplement the anecdotal feedback received from school staff, parent surveys and the youth workshops. The information obtained from the field reviews will be critical in helping the TAC identify, evaluate and prioritize future projects for each school site.

Figure 54 illustrates the locations of the various features identified and summarized below. Specific features for Otondo Elementary and Castle Dome Middle School are described as follows:

Traffic Controls, Sidewalks, Bicycle Route and Roadway Conditions

Currently a number of traffic controls, traffic calming features, and signs contribute towards the safety of students walking and bicycling in the area surrounding the school.

Otondo Drive

- Two lane collector roadway with center striped turn lane.
- Classified by the City of Yuma as a collector roadway.
- 25 mph posted speed limit.
- Attached sidewalk on east side of roadway from 24th Street intersection to first driveway entrance Castle Dome Middle School. This sidewalk continuously then runs along the frontage of both schools to provide safe, seamless pedestrian connection.
- No sidewalk on east side of roadway extending north from Castle Dome Middle School to Otondo Elementary.
- No sidewalks on west side of roadway.



Otondo Drive in front of school

- No Parking signage along east side of roadway.



No Parking signage on east side of Otondo Drive

- Yellow striped crosswalk and pedestrian signage on Otondo Drive near exit driveway for the elementary school.



Marked crosswalk across Otondo Drive near school exit driveway



Sidewalk truncates on the east side of the roadway, north of Otondo Elementary

- Sidewalk is not continuous between school sidewalk and north of exit driveway for elementary school on east side of roadway.
- Continuous attached sidewalks south of 24th Street, but not across Forget-me-Not Street.
- Signal control at the intersection with 24th Street.



- White striped cross walk on north, south, east and west legs at intersection with 24th Street. Crossing guard present at this intersection.

24th Street

- Four lane roadway with center raised median.
- Classified by the City of Yuma as a Minor Arterial Street.
- 45 mph posted speed limit.
- A separate traffic count was not taken for this study, but the YMPO identifies a total 2012 ADT on 24th Street between Otondo and Avenue 9E is 5,876 (factored average).
- Sidewalks on both sides of the roadway varying between attached and detached.
- Striped bike lanes both directions.
- School zone signage present.



School zone signage and flashing lights on 24th Street



School zone signage and flashing lights on 24th Street near Otondo Drive

School Access Points

All motorized and non-motorized access to both of the schools is off Otondo Drive. Family vehicles, buses, bicyclists and pedestrians enter from the same driveways. Currently, family vehicles entering and exiting Otondo Elementary school utilize the second driveway north of 24th Street. All buses enter from the first driveway and exist through the northernmost driveway (exit only) at Otondo Elementary. Pedestrians and bicyclists for both schools enter at the first driveway entrance along the continuous sidewalk along the east side of Otondo Drive.

Parking

Otondo Elementary

As one of the newly developed schools in the District, on-site parking and driveway spacing is generously sized and is sufficient to accommodate staff and visitor parking with a total of 140 spaces, including eight (8) handicapped accessible stalls. The parking lot is well designed as it also includes segregated pedestrian sidewalks leading into the parking lot.

Castle Dome Middle School

The parking lot is sufficiently sized at 79 spaces to accommodate both staff and visitors. Being located immediately adjacent to Otondo Elementary, overflow parking is available if needed when not in conflict with the morning and afternoon peak period demands. Moreover, due to the expansive school boundary, 85% to 93% of students on average are being dropped off via the family vehicle or school bus which reduces overall parking demand.



School Bus Loading Zones

- Due to the large enrollment boundary, many students (over 50% on average) arrive and depart school by bus.
- Buses for both schools line up single-file with right wheel to the curb which is a preferred design.
- The Castle Dome and Otondo schools utilize one continuous flow bus loading zone seamlessly linked between the two schools. There are two outbound lanes designated for buses, driveways are one-way direction only and operate in a counter-clockwise direction.
- Staggered school start and release times helps ensure that there is limited bus congestion at morning and afternoon peak periods. The existing bus loading zones are sufficient staking area and design to accommodate the existing and anticipated increase in bus operations as school enrollments are expected to increase at these two schools.

Family Vehicle Drop-off and Pick up Procedures

- There is one continuous flow (between both schools) family vehicle pick-up and drop-off driveway that is segregated from the continuous flow bus loading zone driveway. Castle Dome vehicles access the family vehicle driveway from the southernmost driveway shared with buses. Otondo family vehicles enter from a vehicular driveway situated between the schools. Otondo vehicles then merge with Castle Dome vehicles egressing the driveway. The driveway is two travel lanes in width. The right lane is designated for parking and the left lane is designated as a through lane. Though some vehicles briefly park in the designated through lane, the current design functions well and congestion is limited.
- Otondo parents are required to park their car and pick up their child at the classroom for afternoon pick up, but not at morning drop off.
- Students loading and unloading from family vehicles must cross the bus loading zone/driveway to access school buildings however school staff are present for crossings at marked locations.

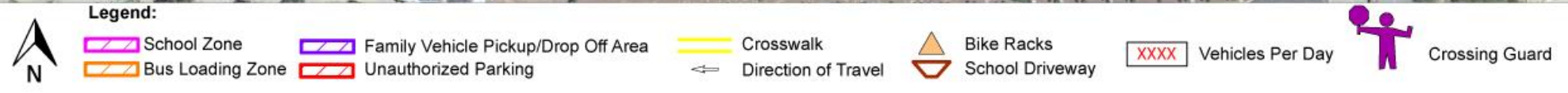
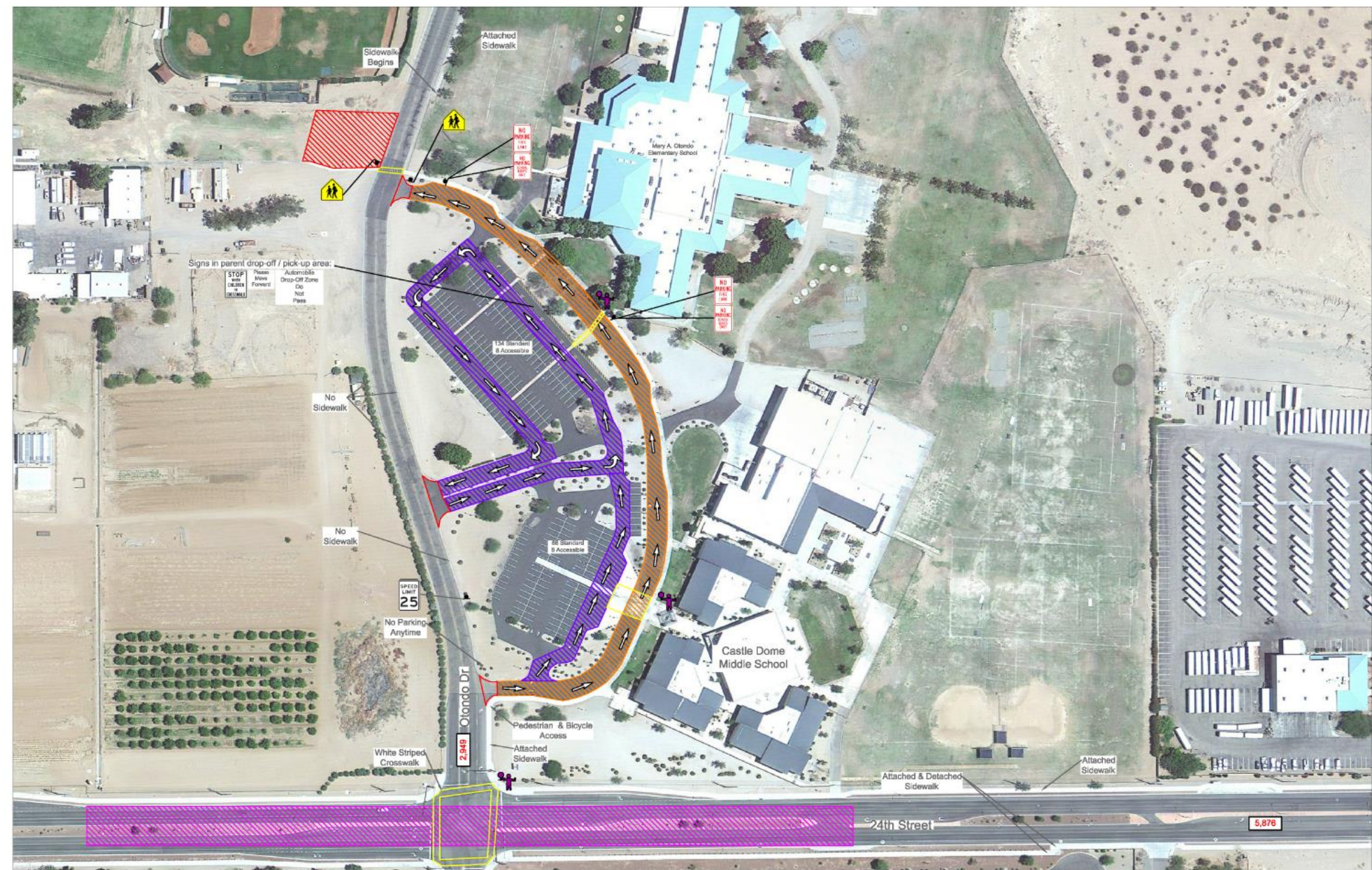


Figure 54: Mary A. Otondo Elementary School & Castle Dome Middle School - School & Neighborhood Audit Findings



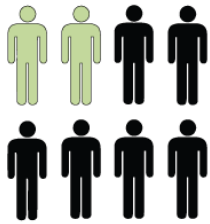
5.13.6. By The Numbers: Summary of Demographics, Daily Travel Routine, Roadway Counts, & Crash Data

By The Numbers

Mary A. Otondo Elementary

DEMOGRAPHICS

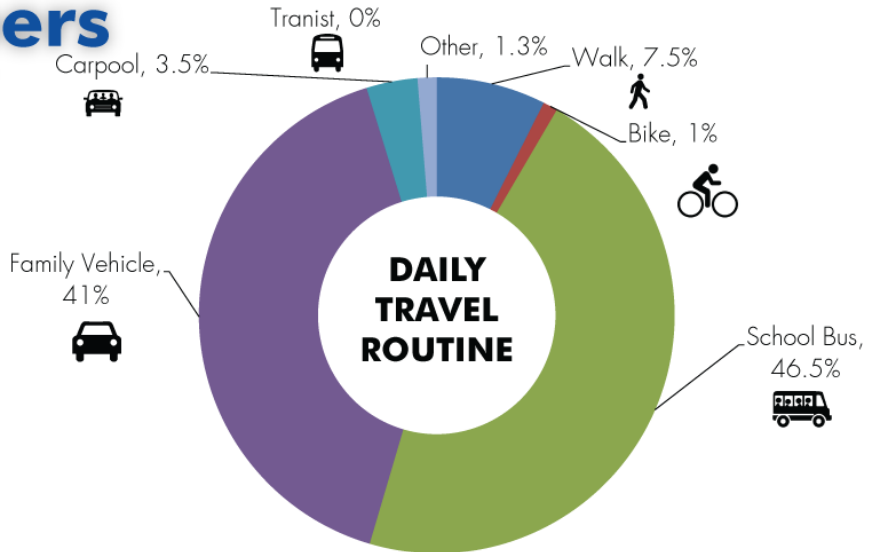
17,914 Total Population
(Enrollment Boundary)



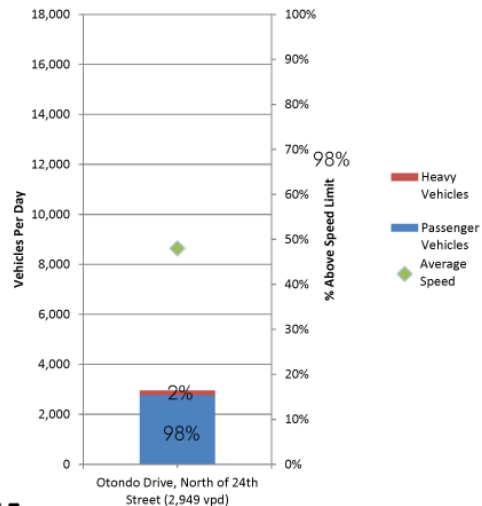
29.7%
Minority

25% Hispanic

Source: 2010 United State Census,
2007-2011 American Community Survey,
EPA EJView

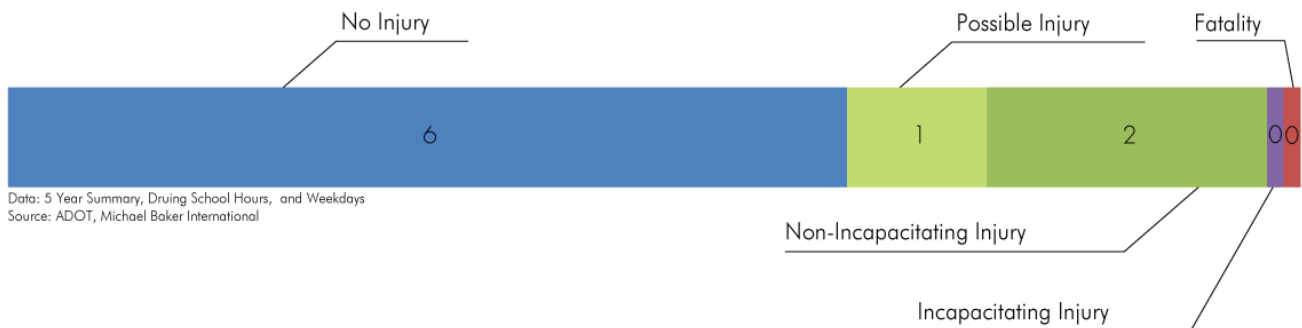


ROADWAY COUNTS



Detailed analysis of **demographic/socioeconomic, crash data, travel routines, and roadway counts** can be found in Working Paper #1.

CRASH DATA 5 Year Summary



Data: 5 Year Summary, During School Hours, and Weekdays
Source: ADOT, Michael Baker International

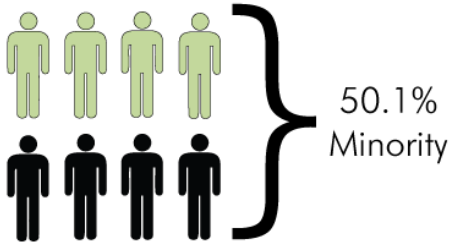


By The Numbers

Castle Dome Middle School

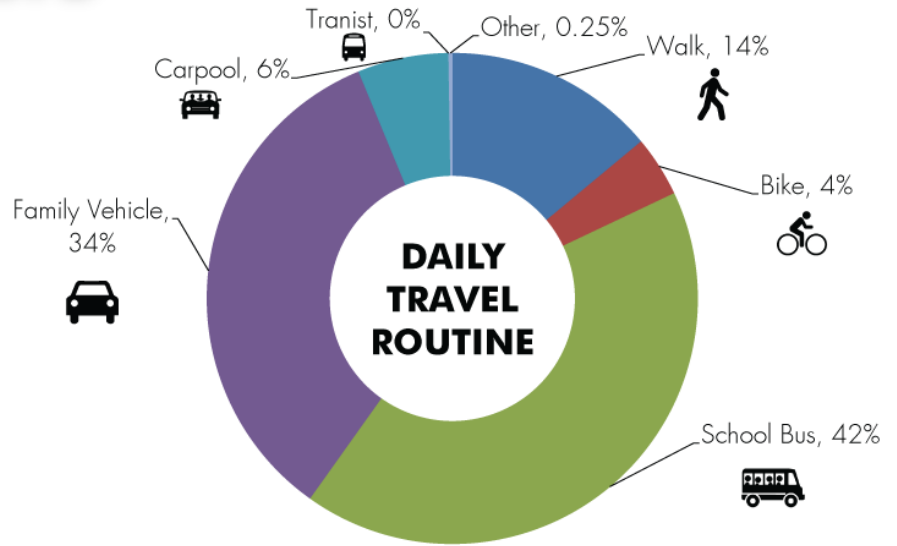
DEMOGRAPHICS

17,747 Total Population

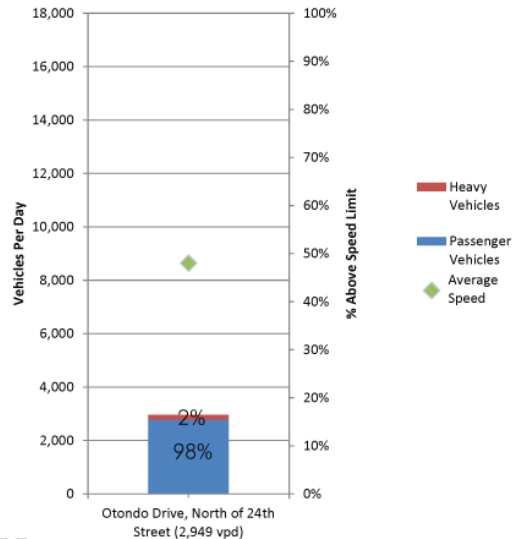


44% Hispanic

Source: 2010 United State Census, 2007-2011 American Community Survey, EPA EJView



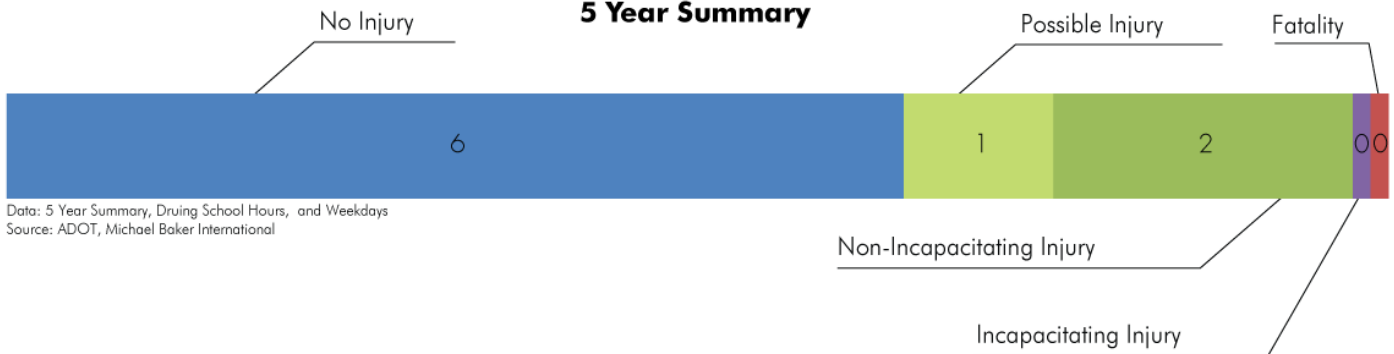
ROADWAY COUNTS



Detailed analysis of demographic/socioeconomic, crash data, travel routines, and roadway counts can be found in Working Paper #1.

CRASH DATA

5 Year Summary



Data: 5 Year Summary, Driving School Hours, and Weekdays
Source: ADOT, Michael Baker International



5.13.7. School-Specific Engineering Recommendations

As two of the newer schools in the district, Otondo Elementary and Castle Dome Middle School service the expanding Fortuna/Foothills area and are expected to grow in the future.

The enrollment boundary for each school is fairly large, which causes the majority of students to travel to each school via bus or family vehicle. The mode split survey findings identified that for both schools over 90% of all students take the bus, family vehicle, or carpool to and from school each day. As a result, on average, less than 10% of students in both Otondo and Castle Dome identified that they walk to school and virtually no students indicated they ride their bike.

Unlike other more urban schools in the district, the Otondo and Castle Dome joint campus is benefited by having a generous amount of land to accommodate the demands of various transportation mode types. In addition, given the newer age of the schools, their designs better address the present transportation needs and trends of modern schools. Each school shares a dedicated bus loading lane, yet has individual family vehicle loading areas within each of their dedicated parking lots. Students and visitors who utilize the parking lot or family vehicle loading areas must cross the bus loading zone to access each school. Consequently, for Otondo ES students, family vehicles are allowed to drop off students in the family vehicle loading area during the less congested morning peak periods, but during the more congested afternoon peak periods, family vehicles must park and walk up to the school to pick up their children. Some parents utilize the dirt lot on the eastside of Otondo Dr, which causes some children to cross Otondo Dr at the painted crosswalk. There is no crossing guard present at this crosswalk during or after school hours. During the afternoon release, students who walk or bike to school are kept in the cafeteria until all buses have exited the school. A staff member then escorts the students to the crossing guard at 24th St and Otondo Dr.

Overall, due to recently completed enhancements to the family vehicle loading area for Otondo ES as well as a well-defined and executed school site circulation plan, Otondo ES and Castle Dome MS requires very few transportation safety or enhancement related projects.



O/CD #1	Place a crossing guard at the crosswalk located on Otondo Dr near the exit of the bus loading lane.
Findings	Some parents choose to utilize the dirt lot on the east side of Otondo Dr to drop off and pick up their children. This causes students to utilize the existing yellow marked crosswalk on Otondo Dr, just north of the bus lane exit. This crosswalk has no stop control or crossing guard on duty. While the traffic volume on Otondo Dr is very low at this location, the lack of traffic control measures during peak periods, the safety of students crossing at this location is a justifiable concern.
Project Description	Place a crossing guard at the crosswalk located on Otondo Dr near the exit of the bus loading lane. If a crossing guard is not feasible at this location, the school/District should discourage the use of this dirt lot by removing the crosswalk and/or restricting students from entering/exiting the school from this location to mitigate this potential vehicle/pedestrian conflict point.
Lead Organization/ Project Partners	Yuma School District One
Cost Indicator	\$-\$\$

O/CD #2	Place crosswalk "ahead" sign north and south of existing yellow crosswalk on Otondo Dr.
Findings	The existing yellow crosswalk on Otondo Dr lacks any advance warning signs along Otondo Dr and utilizes only two minimal pedestrian crossing signs directly at the sidewalk location
Project Description	Place crosswalk "ahead" sign north and south of existing yellow crosswalk on Otondo Dr.
Lead Organization/ Project Partners	City of Yuma/ Yuma School District One
Cost Indicator	\$

O/CD #3	Provide enhanced police enforcement along 24 th St.
Findings	Staff interviews and parent surveys identified the frequent occurrence of excessive speeding and disregard for school crossing signage along 24 th St.
Project Description	Conduct enhanced enforcement activities near the intersection of 24 th St and Otondo Dr. during morning and afternoon peak periods to minimize excessive speeding and impose existing school zone traffic safety measures.
Lead Organization/ Project Partners	City of Yuma
Cost Indicator	\$



Figure 55: Mary A. Otondo Elementary / Castle Dome Recommendations & Actions Plan



6. SUGGESTED SRTS EDUCATION AND AWARENESS PROGRAMS

Education and encouragement recommendations are operational measures that focus on teaching traffic, pedestrian and bicycle safety to parents and students. These programs instill good pedestrian and bicycling behaviors in young school children as early as kindergarten where safety basics like crossing the street by “look right, look left and then look right again.”

Encouragement activities include a variety of special events and contests, outreach campaigns, presentations to school and community groups, and surveys of current practices and attitudes related to the school commute. A major objective of educational and encouragement tools is to promote a broader and more enhanced understanding by parents, school personnel, students, and the community of the health and safety concerns that can be addressed by successful SRTS programs.

Yuma School District One does not currently engage in a formal, ongoing SRTS program district-wide or at any one individual school. The District has conducted sporadic SRTS-related events in conjunction with the Yuma Police Department over the years. Events such as bicycle safety training have been conducted at some of the elementary schools, but these activities have not occurred in some time and the District or any individual school has not been consistently promoting a SRTS program. The current socioeconomic characteristics of the District would suggest that Yuma School District One would be a strong candidate to receive grant and/or federal funding for the creation and operation of education and encouragement programs. A sampling of the type of programs, types of activities and additional resources for each of these programs is offered below for District consideration.



6.1. Education

6.1.1. In-Classroom Instruction

In-classroom educational programs incorporate pedestrian and bicycle safety into the students' curriculum. In-class programs help reinforce safety and encouragement messages throughout the year. In addition to safe procedures, walking and bicycling can be encouraged through an educational program that teaches the benefits of these activities. The National Highway Safety Traffic Administration (NHSTA) recommends focusing on pedestrian training for first and second grades and on bicyclist training for third, fourth, and fifth grades. Local law enforcement or city representatives may be guest speakers for these programs.

Ways to incorporate education into specific subjects include:

- Physical education and health - hands-on training, review of bicyclist and pedestrian safety, learning about the fitness benefits, using pedometers.
- Math - performing surveys and calculating averages distances related to walking to school, creating graphs showing the results.
- Science - nature walks, discussing vehicle usage and its impacts on pollution and climate change.
- Reading and language arts- reading and writing about nature.
- Art - designing posters to encourage walking.
- Geography- participating in Walk or Bike Across America (See www.saferoutestoschools.org/walk), drawing a map of the route to school.

Online Resources/Examples:

- Walk Bike to School Curricula
<http://www.walkbiketoschool.org/keep-going/ongoing-activities/classroom-curricula>

Target Audience(s):

- Elementary
- Middle School

Materials/Resources Needed:

- Curriculum
- Class time
- Visuals, worksheets or instruction materials

Potential Funding Sources:

- Grant funding
- School printing funds

Potential Implementation Leader:

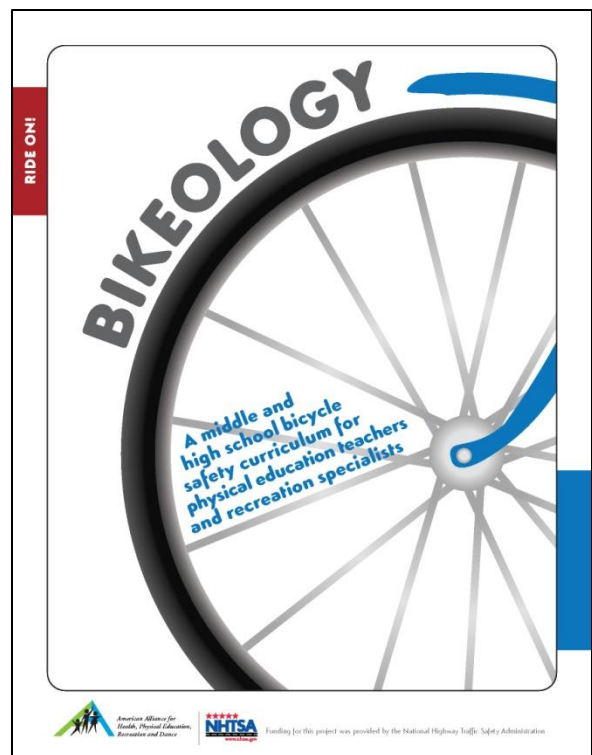
- Schools- Principal and Teachers

Potential Implementation Partners:

- PTA
- Yuma Police Department
- City of Yuma



- Marin County Bicycle Coalition Safe Routes to School Lesson Plans (Grades 1-8)
<http://www.saferoutesinfo.org/program-tools/marin-county-bicycle-coalition-safe-routes-school-lesson-plans>
- Bicycle Alliance of Minnesota (Grades K-6)
<http://bikemn.org/education/srts-education-curriculum>
- Bikeology Curriculum and Parent Guide (Grades 6-12)
http://www.shapeamerica.org/publications/resources/teachingtools/quality/bicycle_curriculum.cfm





6.1.2. Bike Maintenance Classes

Bicycle maintenance classes encourage students to bicycle to school while empowering them to take charge of their own transportation. Maintenance classes can be a series of courses or a one-time basics class. The classes can be offered after school, on weekends or as part of a special event. Maintenance classes are often part of an Earn-a-Bike program.

Online Resources/Examples:

International Bicycle Fund Youth Bicycle Maintenance

<http://www.ibike.org/encouragement/youth-curriculum.htm>



Pop-up bicycle maintenance center offers classes

Target Audience(s):

- Middle School

Materials/Resources Needed:

- Curriculum
- Instructors
- Bike repair tools
- Venue
- Visuals, worksheets or instruction materials

Potential Funding Sources:

- Grant funding
- Donations from local businesses
- Volunteers

Potential Implementation Leader:

- PTA
- Local organization/business

Potential Implementation Partners:

- Teachers
- PTA/parents
- Yuma Police Department
- Local volunteers
- Older students



6.1.3. Assemblies and School Based Special Events

Assemblies and school-wide special events reach many children quickly, building school-wide excitement and taking up relatively little class time. Assemblies work best when they are short, visual, and focused on a single topic. Fun, interactive activities such as skits, demonstrations, and games can grab students' attention. Assemblies may include pedestrian and bicycle safety, or be expanded to include other related topics such as health, the environment, or personal safety. Local law enforcement or local cycling or community organizations can assist with instruction and materials.



Photo courtesy of Healthy City Fall River

Target Audience(s):

- Elementary
- Middle School
- Teachers/staff

Materials/Resources Needed:

- Presentation, script, props
- A/V equipment
- Class time
- Assembly venue

Potential Funding Sources:

- Grant funding
- Donations/volunteers

Potential Implementation Leader:

- Schools- Principal and Teachers

Potential Implementation Partners:

- PTA
- Yuma Police Department
- Local volunteers/businesses



6.1.4. Bicycle Rodeo/Bicycle Safety Clinics

A bicycle rodeo is a fun educational event where children can practice what they learn. It involves instruction on traffic rules and safety skills, and can also include bicycle maintenance and helmet fitting. Students ride through an obstacle course where they apply the rules, practice safety skills, and negotiate hazards. Holding this event on a summer evening or a weekend can allow for parent involvement. Local bike shops may be interested in sponsorship opportunities at these events.

Online Resources/Examples:

An Organizer’s Guide to Bicycle Rodeos (Cornell University):

http://www.bike.cornell.edu/pdfs/Bike_Rodeo_404.2.pdf

Bicycle Rodeos (Bicycling Life):

<http://www.bicyclinglife.com/SafetySkills/BicycleRodeo.htm>



Photo courtesy of www.pedbikeimages.org / Mike Cynecki

Target Audience(s):

- Elementary
- Middle School
- Parents

Materials/Resources Needed:

- Parking lot or open blacktop
- Sidewalk chalk/tapes
- Cones, signs
- Brochures
- Helmets (various sizes)
- Bicycles (various sizes)
- Prizes
- Completion certificates/ diploma

Potential Funding Sources:

- Grant funding
- Donations

Potential Implementation Leader:

- PTA
- Yuma Police Department
- Local bicycling group

Potential Implementation Partners:

- PTA
- Yuma Police Department



6.1.5. School Safety Campaign

Focused school safety educational campaigns to improve driving behavior around schools should send messages through multiple channels throughout the year. They will be most effective if they reinforce a few key points that are easy to remember.

School principals can include messages about traffic safety in newsletters and emails to parents. Publications by the city are other avenues for reaching parents and community members. Banners, signs, or other creative temporary displays near the school can be used to grab drivers' attention.

Online Resources/Examples:

Utah Student Neighborhood Access Program (SNAP)

<http://www.udot.utah.gov/snap/>

Target Audience(s):

- Elementary
- Middle School
- Parents
- School neighbors

Materials/Resources Needed:

- Brochures/handouts
- Email text
- Signs/banners

Potential Funding Sources:

- Grant funding
- School printing funds
- Donations

Potential Implementation Leader:

- Schools-administration
- PTA

Potential Implementation Partners:

- Yuma Police Department
- City of Yuma
- Local businesses
- Local community organizations



6.1.6. Bus Safety Campaign

For schools where buses are used for school transportation, reminding students how to walk and bicycle safely around school buses is important. School buses can often restrict sight lines for other drivers, pedestrians, and cyclists. A bus safety campaign provides educational information to students, reminding them to be cautious when approaching and leaving the school bus, crossing the street near a school bus, or cycling near a bus.

Online resources:

Tips to Increase Your Child's School Bus Safety

<http://www.safercar.gov/parents/chuggington/bus.html>

Target Audience(s):

- Elementary
- Middle School

Materials/Resources Needed:

- Brochures/handouts
- Signs

Potential Funding Sources:

- School printing funds

Potential Implementation Leader:

- Schools-administration

Potential Implementation Partners:

- PTA
- Yuma Police Department
- City of Yuma



6.1.7. Earn a Bike

Earn a Bike programs are designed to support youth who do not already have a bicycle for transportation and primarily for those for whom cost is a barrier. Earn a Bike programs are typically structured as series of training sessions where youth learn the basics of bike repair and maintenance and safe cycling while refurbishing a donated bike. Students earn the bikes they learn to repair by participating in the classes. The program is typically provided at no-cost to the youth participants and materials are donated by local businesses. “Graduates” of the program can assist with future classes or volunteer at other safety and training activities.

Online Resources:

Earn a Bike Training Manual

<https://bikesnotbombs.org/resources/earn-a-bike-training-manual>



Earn a Bike Presentation

Target Audience(s):

- Middle School

Materials/Resources Needed:

- Curriculum
- Instructors
- Bike repair tools
- Venue
- Visuals, worksheets or instruction materials
- Bicycles
- Helmets

Potential Funding Sources:

- Grant funding
- Donations

Potential Implementation Leader:

- PTA
- Local organization/businesses

Potential Implementation Partners:

- Teachers
- PTA/parents
- Yuma Police Department
- Local volunteers



6.1.8. Bicycle Campus/Safety Town

A bicycle campus or safety town provides walking and biking safety education at a permanent location. Similar to a bicycle rodeo, a course is built or set up and students walk or bike through to learn appropriate behaviors in various settings. A bicycle campus or safety town is set up on a permanent site and is open for multiple schools or classes to visit throughout the year. The location may be on a particular school campus, at a park or another community facility.



Photo courtesy of the City of Santa Monica

Target Audience(s):

- Elementary
- Middle School
- Parents

Materials/Resources Needed:

- Permanent location
- Paint
- Cones, signs
- Brochures
- Helmets (various sizes)
- Bicycles (various sizes)
- Prizes
- Completion certificates/ diploma

Potential Funding Sources:

- Grant funding
- Donations

Potential Implementation Leader:

- City of Yuma
- Yuma Police Department
- Local bicycling group

Potential Implementation Partners:

- PTA
- Yuma Police Department
- City of Yuma



6.2. Encouragement

6.2.1. Walk to School Day and Bike to School Day

International Walk to School day is held annually on the first Wednesday in October. Bike to School day is held in May. Celebrating these days is a great way to kick-off educational and encouragement campaigns and promote awareness community wide.

Special activities like contests, group walks, music, and appearances by special community guests such as city officials can help build excitement for the day.

Informational materials should be sent to parents prior to the days and group walks on designated routes or from designated meeting spots can encourage participation.

Walk to School and Bike to School Days may also be ongoing throughout the year and promoted as Walking Wednesdays, Walk 'n Roll Wednesdays, Move It Monday, etc.

Online Resources:

National Center for Safe Routes to School - Walk Bike to School

<http://www.walkbiketoschool.org/>

International Walk to School Day

<http://www.iwalktoschool.org/>



Photo courtesy of www.pedbikeimages.org / Mike Cynecki

Target Audience(s):

- Elementary
- Middle School

Materials/Resources Needed:

- Marketing flyers
- Press release
- Refreshments
- Prizes

Potential Funding Sources:

- Donations
- School printing funds

Potential Implementation Leader:

- PTA
- Schools-administration
- Local groups/volunteers

Potential Implementation Partners:

- Teachers
- Yuma Police Department
- Fire Department
- Local businesses
- City of Yuma



6.2.2. Walking School Bus and Bike Train

In a walking school bus, parent/guardian volunteers “drive” a group of children to or from school. The bus can have regular stops like a school bus for picking up additional children. This provides parents the security of knowing their children are walking with other children and accompanied by an adult. Adults can spread the duties of walking children to school. Depending on the level of interest, the walking school bus can operate daily, weekly, or just on special event days.

Similarly, a bike train is a group of student riders accompanied by adults on bicycle.

Online Resources:

The Walking School Bus Program: A Primer and First Step

http://apps.saferoutesinfo.org/training/walking_school_bus/

The Walking School Bus: Combining Safety, Fun and the Walk to School

http://guide.saferoutesinfo.org/walking_school_bus/pdf/wsb_guide.pdf



Photo courtesy of City of Kingston

Target Audience(s):

- Elementary
- Middle School
- Parents

Materials/Resources Needed:

- Safety vests
- Training materials
- Informational flyers
- Sign up organization

Potential Funding Sources:

- Volunteers
- School printing funds

Potential Implementation Leader:

- PTA/parents

Potential Implementation Partners:

- Schools – Principal and teachers
- Yuma Police Department



6.2.3. Park and Walk

For families that live too far to walk or bicycle to school or do not have a safe route, the park and walk program allows students to walk a portion of the route and reduces traffic congestion in the area immediately around the school. Parents drive to a designated parking lot (such as a nearby park, shopping center, or church) and walk with their child the remaining distance to school. As an alternative, a parent volunteer or school staff member meets the children at the designated lot at a designated time and walks with them to the school campus.

Permission to use the off-site parking area is needed. Park and walk locations can be shown and promoted through flyers or the suggested routes to school map.

Online Resources:

National Center for Safe Routes to School – Park and Walk

http://guide.saferoutesinfo.org/encouragement/park_and_walk.cfm

Target Audience(s):

- Elementary
- Middle School
- Parents

Materials/Resources Needed:

- Maps/informational handouts

Potential Funding Sources:

- Volunteers
- School printing funds

Potential Implementation Leader:

- City of Yuma
- PTA
- Schools- Principal and Teachers

Potential Implementation Partners:

- Parents
- Yuma Police Department



6.2.4. Frequent Walker/Frequent Cyclist

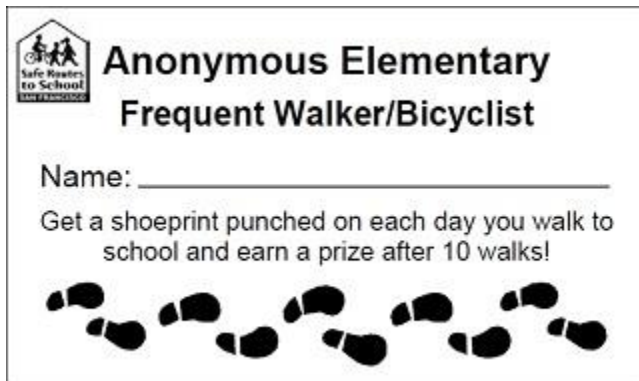
The Frequent Walker/Frequent Cyclist program uses a punch card to track student participation in walk or bike to school days and encourages ongoing participation.

On pre-announced days, students go to set locations on campus to have their cards punched by a volunteer or staff member. One punch is made for each day of participation. After the student fills up the card, the student becomes eligible to win a prize.

Online Resources:

San Francisco Safe Routes to School Punch Card

<http://sfsaferoutes.org/2011/09/walk-to-school-day-activity-frequent-walker-punch-cards/>



Target Audience(s):

- Elementary
- Middle School

Materials/Resources Needed:

- Punch cards or other tracking materials
- Prizes

Potential Funding Sources:

- Donations
- School printing funds

Potential Implementation Leader:

- Schools- Principal and Teachers
- PTA

Potential Implementation Partners:

- Local business/ organizations



6.2.5. Competitions

Class competitions can provide extra motivation as well as teaching opportunities. For instance, children can use pedometers or maps to track how far they walk each day, with their results tallied as a class or school. This kind of competition can incorporate exercises with graphs, maps, and measurements, and will be more fun if the students' progress is compared to, for instance, the distance from Yuma to Phoenix or across the nation. Other competitions could reward classes with the highest numbers of carpooling parents or participants in Walk to School Days.

Online Resources:

Walk Across America (South Carolina)

<http://www.scsaferoutes.org/files/scsr/public/content/file/574/upload/184.pdf>

Log It

<http://www.peclogit.org/logit.asp>

National Center for Safe Routes to School – Mileage Clubs

http://guide.saferoutesinfo.org/encouragement/mileage_clubs_and_contests.cfm

Target Audience(s):

- Elementary
- Middle School

Materials/Resources Needed:

- Tracking materials
- Prizes

Potential Funding Sources:

- Donations

Potential Implementation Leader:

- Schools- Principal and Teachers
- PTA

Potential Implementation Partners:

- Local business/ organizations



6.2.6. Suggested Routes to School Map

Suggested routes to school maps identify the best ways to walk or bike to school. The maps show signs, signals, crosswalks, sidewalks, crossing guard locations, and other features that facilitate students walking or biking to school. Suggested routes to school maps help parents understand the availability of routes for children to take and can be used by walking school buses or on designated walk to school days.

Some school districts provide route maps as handouts at the beginning of the school year. Some school districts or cities have created online route maps using Google maps which allow parents to customize their starting location.

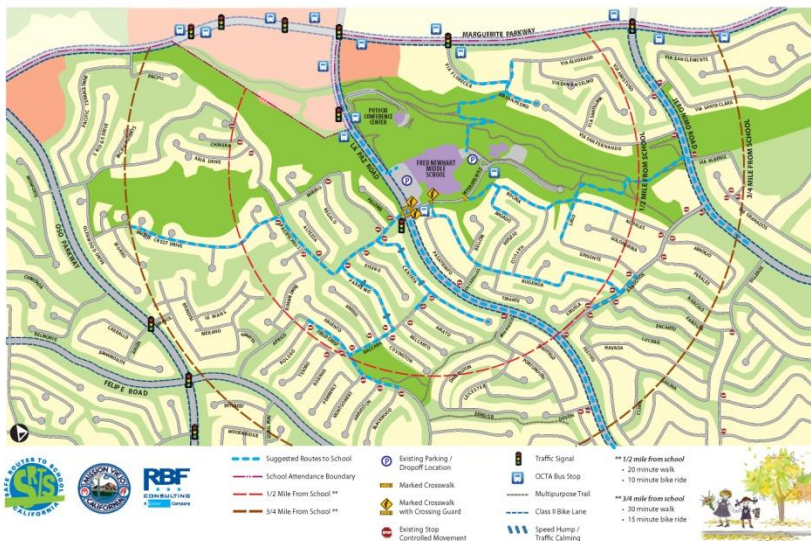
Online Resources:

ITE - School Route Maps

<http://www.ite.org/safety/SRTS/04.SchoolRouteMaps.pdf>

Solano Transportation Authority Google Map

http://www.solanosr2s.ca.gov/app_pages/view/10



Target Audience(s):

- Elementary
- Middle School

Materials/Resources Needed:

- Map creation
- Handouts

Potential Funding Sources:

- Grant funding
- School printing funds

Potential Implementation Leader:

- City of Yuma

Potential Implementation Partners:

- PTA
- Yuma Police Department
- Schools



7. ENFORCEMENT PROGRAM RECOMMENDATIONS

7.1. Speed Feedback Signs

Permanent vehicle speed feedback signs can be installed on poles in conjunction with the speed limit signs. The signs indicate the approaching car's speed. If the radar detects a vehicle speed well over the speed limit, it flashes a message to slow down without showing the actual speed. This discourages drivers from traveling at a high speed in order to see the high number register. The sign can be solar powered or connected to the power grid.





7.2. Portable Speed Radar Trailers

Speed radar trailers are a portable enforcement tool that can be used to reduce speeds and enforce speed limits in known problem areas. The trailer displays the speed of approaching cars along with a speed limit sign. Because they can be easily moved, radar trailers can be placed on streets with speeding problems as needed. Enforcement of speed limits through citations should occur with the placement of portable speed radar trailers in order to be effective.



Target Audience(s):

- Parents
- School neighbors

Materials/Resources Needed:

- Portable speed radar trailer

Potential Funding Sources:

- Yuma Police Department

Potential Implementation Leader:

- Yuma Police Department

Potential Implementation Partners:

- City of Yuma



7.3. Crossing Guards

Crossing guards help promote safe driving, walking and bicycling practices near schools. Crossing guards are trained individuals who help students safely cross the streets adjacent to the schools by helping to control traffic flow.

Placement of crossing guards is often determined by the city in conjunction with the school district. Things to consider when choosing the locations for crossing guards include the width and number of crossing lanes, sight distance, existing traffic control devices, traffic volumes, vehicular speeds, and collision history.

Online Resources:

National Center for Safe Routes to School - Adult School Crossing Guard Guidelines

http://guide.saferoutesinfo.org/crossing_guard/



Target Audience(s):

- Elementary
- Middle School

Materials/Resources Needed:

- Training
- Safety vests and other supplies

Potential Funding Sources:

- Volunteers
- School District

Potential Implementation Leader:

- City of Yuma
- Yuma Police Department
- School District

Potential Implementation Partners:

- Schools
- Parent volunteers



7.4. School Safety Patrol

School safety patrols are trained student volunteers that assist with drop-off and pick-up procedures and students arriving on-foot and on-bike to campus. For example, student volunteers may assist with enforcing rules on-campus such as walking bikes to the bike racks or helping younger students get in and out of cars efficiently.

Online Resources:

National Center for Safe Routes to School – School Safety Patrol

http://guide.saferoutesinfo.org/enforcement/safety_patrol.cfm

Target Audience(s):

- Elementary
- Middle School

Materials/Resources Needed:

- Training of students
- Safety vests and other materials

Potential Funding Sources:

- Donations
- Volunteers

Potential Implementation Leader:

- Schools- Principal

Potential Implementation Partners:

- PTA
- Yuma Police Department



7.5. Targeted Law Enforcement

Enforcement tools help ensure to compliance with traffic and parking laws in school zones. Targeted enforcement can focus on common driver behavior issues in school zones such as speeding, cell phone use, failing to yield to pedestrians, etc. Often law enforcement will issue warnings to generate awareness.

One example way to conduct targeted enforcement is a Pedestrian Safety Sting or Pedestrian Safety Enforcement Operation. The pedestrian safety enforcement operation is designed to bring attention to laws requiring motorist to stop for pedestrians at all marked and unmarked crosswalks.

Officers establish the safe stopping distance to a crosswalk and place cones at this location. A plain-clothes officer steps into the crosswalk just before a car passes the cone. If the driver fails to stop for the pedestrian, a warning or citation is given.

Media coverage prior to the event is helpful in informing and educating drivers.

Online Resources:

National Center for Safe Routes to School – Pedestrian Decoy Operations

http://guide.saferoutesinfo.org/enforcement/pedestrian_decoy_operations.cfm

Target Audience(s):

- Parents
- School neighbors

Materials/Resources Needed:

- Informational materials
- Law enforcement time

Potential Funding Sources:

- Yuma Police Department

Potential Implementation Leader:

- Yuma Police Department

Potential Implementation Partners:

- City of Yuma



8. EVALUATION RECOMMENDATIONS

8.1. Safe Routes to School Committee/Task Force

Establishing a formal Safe Routes to School Committee or Task Force can help ensure sustainability of Safe Routes to School Programs. The Committee or Task force can include representatives from the schools (teachers or administrators), the school district, the City of Yuma, Yuma Police Department, and parents. The Committee regular communicates about the efforts that are being done by individual groups and collaborates on larger efforts.

One of the primary responsibilities of the Committee can be to conduct annual or regular evaluation of the existing programs and infrastructure and communicating results of the evaluation to the appropriate responsible organizations. This may include tracking participation in walk to school events, coordinating the student tally and parent survey, and conducting walk audits.

Online Resources:

Safe Routes to School National Partnership Local School Project Evaluation Handbook

http://saferoutespartnership.org/sites/default/files/pdf/SRTS.Eval.Handbook-Final_9_08.pdf

Target Audience(s):

- Elementary
- Middle School
- Parents
- Community

Materials/Resources Needed:

- Volunteers
- Meeting venue

Potential Funding Sources:

- Volunteers

Potential Implementation Leader:

- City of Yuma

Potential Implementation Partners:

- PTA
- Yuma Police Department
- Schools – Principal and Teachers
- Students



8.2. Student Tally & Parent Survey

Conducting a Student Tally and Parent Survey using the National Center for Safe Routes to School templates on an annual basis will assist the City and school district in monitoring changes in walking/bicycling levels over time and soliciting parent input on any concerns or ideas for improvement. Grant funding often requires documentation of walking and biking rates before and after improvements are made.

Online Resources:

National Center for Safe Routes to School Database and Forms

<http://www.saferoutesinfo.org/data-central>

Safe Routes to School Students Arrival and Departure Tally Sheet

+ CAPITAL LETTERS ONLY – BLUE OR BLACK INK ONLY +

School Name: _____ Teacher's First Name: _____ Teacher's Last Name: _____

Grade(s) (PK,K,1,2,3...): _____ Monday Date (mm/dd/yyyy): _____ Number of Students Enrolled in Class: _____

Instructions:

- Please conduct these counts on two of the following three days Tuesday, Wednesday, or Thursday. (Three days would provide better data if counted)
- Please do not conduct these counts on Mondays or Fridays.
- Before using your students to use their hands, please read through all possible answer choices so they will know their choices. Each student may only answer once.
- Ask your students as a group the question: "How did you arrive at school today?"
- Then, record each answer choice and record the number of students that raised their hands for each. Place just one character or number in each box.
- Follow the same procedure for the question: "How do you plan to leave for home after school?"
- You can conduct the counts once per day but during the count please ask students both the school arrival and departure questions.
- Please conduct this count regardless of weather conditions (i.e., skip these questions on rain days, too).

Step 1. Fill in the weather conditions and number of students in each class

Key	Weather	Student Tally	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
	In sunny or rainy (check one)	Number in class when count made				Only with Children Transferring from your family or teacher	City bus, subway, etc.	State-leased scooter, etc.	
Sample AM	<input checked="" type="checkbox"/>	22	2	2	2	2	2	2	1
Sample PM	<input checked="" type="checkbox"/>	18	3	2	2	2	2	2	1
Tues. AM	<input type="checkbox"/>								
Tues. PM	<input type="checkbox"/>								
Wed. AM	<input type="checkbox"/>								
Wed. PM	<input type="checkbox"/>								
Thurs. AM	<input type="checkbox"/>								
Thurs. PM	<input type="checkbox"/>								

Please list any disruptions to these counts or any unusual travel conditions to/from the school on the days of the tally.

+ _____ +

Parent Survey About Walking and Biking to School

Share your thoughts about children walking and biking to school. This survey will take about 5 - 10 minutes to complete only one survey per school your children attend. If more than one child from a school brings a survey for the child with the next birthday from today's date.

Parental consent is required. If you have any questions, please contact the teacher. Your responses will be kept confidential. Only the child's name will be associated with any results.

LY – BLUE OR BLACK INK ONLY +

Grade (PK,K,1,2,3...): _____

Who brought home this survey? Male Female

Is this survey male or female? Male Female

How many children in your family have been in Kindergarten through 8th grade? _____

In what street does your child live? (Provide the names of two intersecting streets)

_____ and _____

How far does your child live from school? (If you make a mistake, fill the entire box, and then mark the correct box.)

1/4 mile up to 1/2 mile 1/2 mile up to 1 mile 1 mile up to 2 miles More than 2 miles Don't know

+ Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box. +

6. On most days, how does your child arrive and leave for school? (Select one choice per column, mark box with X)

Arrive at school	Leave from school
<input type="checkbox"/> Walk	<input type="checkbox"/> Walk
<input type="checkbox"/> Bike	<input type="checkbox"/> Bike
<input type="checkbox"/> School Bus	<input type="checkbox"/> School Bus
<input type="checkbox"/> Family vehicle (only children in your family)	<input type="checkbox"/> Family vehicle (only children in your family)
<input type="checkbox"/> Carpool (Children from other families)	<input type="checkbox"/> Carpool (Children from other families)
<input type="checkbox"/> Transit (city bus, subway, etc.)	<input type="checkbox"/> Transit (city bus, subway, etc.)
<input type="checkbox"/> Other (skateboard, scooter, inline skates, etc.)	<input type="checkbox"/> Other (skateboard, scooter, inline skates, etc.)

+ Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box. +

7. How long does it normally take your child to get to/from school? (Select one choice per column, mark box with X)

Travel time to school	Travel time from school
<input type="checkbox"/> Less than 5 minutes	<input type="checkbox"/> Less than 5 minutes
<input type="checkbox"/> 5 - 10 minutes	<input type="checkbox"/> 5 - 10 minutes
<input type="checkbox"/> 11 - 20 minutes	<input type="checkbox"/> 11 - 20 minutes
<input type="checkbox"/> More than 20 minutes	<input type="checkbox"/> More than 20 minutes
<input type="checkbox"/> Don't know / Not sure	<input type="checkbox"/> Don't know / Not sure

+ _____ +

Target Audience(s):

- Elementary
- Middle School
- Parents

Materials/Resources Needed:

- Class time
- Tally sheets
- Survey sheets

Potential Funding Sources:

- Grant funding
- School printing funds

Potential Implementation Leader:

- City of Yuma
- School District
- Schools- Principal and Teachers

Potential Implementation Partners:

- PTA



8.3. Walk Audits

Conduct Walk Audits of the school campus and surrounding areas with parents and school staff on an annual or otherwise regular basis will help identify any areas of concern and improvement needs as conditions change over time. Older students may be involved in conducting the walk audits. The walk audits may also be coupled with student presentations to local officials to present their findings and generate awareness.

Online Resources:

ITE – Walking and Bicycling Audits

<https://www.ite.org/safety/SRTS/03.Walking.pdf>

Pedestrian and Bicycle Information Center Walkability Checklist

http://katana.hsrb.unc.edu/cms/downloads/walkability_checklist.pdf

Target Audience(s):

- Elementary
- Middle School
- Parents

Materials/Resources Needed:

- Worksheets

Potential Funding Sources:

- Volunteers

Potential Implementation Leader:

- City of Yuma
- School District

Potential Implementation Partners:

- PTA
- Yuma Police Department
- Schools – Principal and Teachers



9. FUNDING SOURCES AND IMPLEMENTATION STRATEGIES

This section identifies potential funding sources and strategies for implementation of infrastructure, operations, education and awareness projects described in this report.

There are a wide variety of federal, state and local funding sources available for bicycle and pedestrian projects. In most circumstances, federal funding sources are primarily targeted based on available funding levels and local needs. Of significant importance is *Moving Ahead for Progress in the 21st Century* (MAP-21), the most recent federal transportation act approved by Congress and replaces SAFETEA-LU. MAP-21 funding sources have grown increasingly competitive over the past few years as the manner in which funds are co-mingled and allocated has been modified. A brief overview of MAP-21 and the State of Arizona Safe Routes to Schools competitive process is described below.

The key to effectively acquiring supplemental funding sources begins with the leadership and initiative by Yuma School District One officials. While MAP-21 and other supplemental funding sources are available to promote pedestrian and bicycle-related infrastructure and education programs, many of the system deficiencies identified (and corresponding improvement projects) for Yuma School District One tend to relate to vehicle and bus operations and associated infrastructure. Projects that improve roadways, driveways, parking lots, vehicle drop-off and pick-up areas and bus loading zones are not eligible for SRTS funding, but are eligible for funding under other programs such Surface Transportation Program and under the Federal funding formula that allocates funds to COG's and MPO's based on a population-based formula.

The City of Yuma is a project partner in that some of the suggested improvements are located within the city rights-of-way in proximity to each school. The City of Yuma has graciously agreed to allocate a portion of their annual Capital Improvement Program (CIP) funds towards priority improvement projects recommended in this report. Municipalities possess the advantage of additional funding resources (bonding, General Fund, grants, dedicated transportation sales taxes or other sources) that can assist Yuma School District One with the successful implementation of some of the recommended projects. It is imperative that the District and the City of Yuma maintain a close cooperative working relationship to successfully acquire funding sources for the improvement projects.

Yuma School District One is in the midst of preparing for a bond election that will be on the general election ballot box on November 4, 2014. The existing bond that was approved in



1996 for \$29.5 million dollars was paid in full on July 1, 2014. The bond funding included construction of:

- New Castle Dome Middle School
- New Desert Mesa Elementary School
- New Libraries at Several Schools
- Classroom Enrichments
- New Gym at Woodard Junior High School
- Technology Implementation and Integration

The bond renewal amount being requested of voters is for \$37 million. The District has identified needs for facilities maintenance, technology upgrades and new construction. Additional parking at Ron Watson Middle school is one example of a project that is already included in the bond program needs estimate. It is suggested that recommended projects identified in the Yuma Multimodal Transportation Study be considered for improvement in conjunction with other District needs and/or proceeds used to partner with the City of Yuma on select projects as bond funds become available and/or as bond revenues increase along with assessed valuations in the area.

9.1. MAP-21 Overview

MAP-21 became effective on October 1, 2012. The key themes of MAP -21 are to strengthen America's highways and transportation systems, accelerate project delivery, promote innovation, establish a performance-based Federal-aid program, substantially reduced programmatic elements, and change the federal funding formula. This includes the reduction of earmarks that historically provided for specific projects or programs in such a manner that the allocation circumvents a merit-based or competitive allocation process and/or applies to a very limited number of individuals or entities.

Of the \$37 billion in annual authorized nationwide funding, \$10 billion is allocated to the Surface Transportation Program (STP). The STP program is the federal program from which the vast majority of bicycle and pedestrian-related improvements recommended in the Yuma School District One Multimodal Planning Study would seek funding assistance. STP funding includes Safe Routes to Schools (SRTS) projects but unfortunately there is no longer a set aside for these projects as was provided under SAFETEA-LU. SRTS projects must now compete with other "transportation alternative" projects which naturally promotes greater competition for SRTS projects as they compete with larger, traditional transportation projects. However, up to 50% of the STP funds are subject to sub-allocation based on population and there is a greater emphasis on funding for rural areas which may improve Yuma's chances for obtaining funding.



9.2. Safe Routes to Schools

As noted, with the passage of MAP-21 in the summer of 2012, dedicated line item funding for SRTS projects under SAFETEA-LU has now been lumped together with other Transportation Alternatives funds. The most recent past state funding cycle was known as Cycle 6 which was awarded in 2012. Under Arizona's allocated funds under SAFETEA-LU, Cycle 6 awarded approximately \$4.5 million dollars on a competitive basis for infrastructure and non-infrastructure projects across the state.

With the change in the federal transportation bill from SAFETEA-LU to MAP-21, no funding cycle was offered in 2013 and as of the time of print, the Cycle 7 application cycle is pending further MAP-21 guidance from FHWA and ADOT.

Table 6: Funding Programs and Sources

Project Type	Federal / State																								Local					Private						
	FLAP	TAP	CMAQ	STP	HSIP	RTP	NHPP	FLTP	TTP	PLA	UZA	402	SGR	BBF	5310	5311	SRTS	BYW	FLH	TCSP	JOBS	FTA	FTA-TE	HURF	CDBG	GF	SD	GOB	DIF	DS	CB	FO	CSP	IND	EF	
Bicycle And Pedestrian Plan	x			x					x						x				x		x		x	x	X	x	x	x	x	X	X	X	X	X		
Bicycle Lanes On Roadway	x	x	x	x	x		x	x	x		x						x	x	x	x		x	x	X	X	X	X	X	X	X	X	X	X	X	X	
Paved Shoulders	x	x	x	x	x		x	x	x		x						x	x	x	x				X	X	X	X	X	X	X	X	X	X	X	X	
Signed Bike Route	x	x	x	x			x	x	x		x						x	x	x	x		x		X	X	X	X	X	X	X	X	X	X	X	X	
Shared Use Path/Trail	x	x	x	x	x	x	x	x	x								x	x	x	x		x		X	X	X	X	X	X	X	X	X	X	X	X	
Single Track Hike/Bike Trail		x		x		x													x	x						X	X	X	X	X	X	X	X	X	X	X
Spot Improvement Program	x	x	x	x	x												x			x		x		X	X	X	X	X	X	X	X	X	X	X	X	
Maps		x	x	x								x					x			x		x		X	X	X	X	X	X	X	X	X	X	X	X	
Bike Racks On Buses		x	x	x				x	x		x		x	x		x				x		x	x			X					X	X	X	X	X	
Bicycle Parking Facilities		x	x	x				x	x		x		x	x		x	x			x		x	x	X	X	X	X	X	X	X	X	X	X	X	X	
Bicycle Share (Capital And Equipment Costs Only; Operations Not Eligible)		x	x	x			x	x	x										x	x	x	x	x			X					X	X	X	X	X	
Bicycle Storage/Service Center		x	x	x				x	x		x		x	x		x	x			x	x	x	x			X				X	X	X	X	X	X	
Sidewalks, New Or Retrofit	x	x	x	x	x		x	x	x		x				x		x	x	x	x		x	x	X	X	X	X	X	X	X	X	X	X	X	X	
Crosswalk, New Or Retrofit		x	x	x	x		x	x	x		x				x		x	x	x	x		x	x	X	X	X	X	X	X	X	X	X	X	X	X	
Trail/Highway Intersection		x	x	x	x	x	x	x	x								x	x	x	x				X	X	X	X	X	X	X	X	X	X	X	X	
Signal Improvements		x	x	x	x		x	x	x								x			x		x	x	X	X	X	X	X	X	X	X	X	X	X	X	
Curb Cuts And Ramps		x	x	x	x		x	x	x		x				x		x			x		x	x	X	X	X	X	X	X	X	X	X	X	X	X	
Traffic Calming		x		x	x			x	x								x			x		x	x	X	X	X	X	X	X	X	X	X	X	X	X	
Coordinator Position			x														x									X										X
Safety/Education Position		x		x								x					x									X										X
Police Patrol		x										x					x									X										X
Helmet Promotion				x								x					x									X					X	X	X	X	X	X
Safety Brochure/Book			x	x		x						x					x						x			X				X	X	X	X	X	X	X
Training			x	x		x						x				x	x						x			X				X	X	X	X	X	X	X
Technical Assistance		x	x	x												x	x						x		X	X	X			X	X	X	X	X	X	X
Engineering	x																								X	X	X								X	X
Maintenance (Facilities & Equipment)													x														X								X	X
Maintenance (Preventative)	x																								X	X	X								X	X
Research	x																								X	X	x								x	x



Color Code	Meaning
	Continuing program & eligibility under MAP 21
	Funds available until expended, not a continuing distinct program under MAP-21
	Non MAP 21 Funding Program or Source

Abbreviation	Funding Program/Source
FLAP	Federal Lands Access Program
TAP	Transportation Alternatives
CMAQ	Congestion Mitigation and Air Quality Improvement
STP	Surface Transportation Program
HSIP	Highway Safety Improvement Program
RTP	Recreational Trails Program (State may opt out)
NHPP	National Highway Performance Program
FLTP	Federal Lands Transportation Program
TTP	Tribal Transportation Program
PLA	State/Metropolitan Planning Funds
UZA	Urbanized Area Formula Program
402	State and Community Highway Safety Grant Program
SGR	State of Good Repair Grant Program
BBF	Bus and Bus Facilities
5310	Enhanced Mobility of Seniors and Individuals with Disabilities
5311	Formula Grants for Rural Areas, Rural Transit Assistance Program, and Public Transportation on Indian Reservations
SRTS	Safe Routes to Schools
BYW	Scenic Byways
FLH	Federal Lands Highway Program
TCSP	Transportation, Community and System Preservation
JOBS	Access to Jobs/Reverse Commute
FTA	Federal Transit Capital
FTA-TE	Transit Enhancements
HURF	Highway User Revenue Fund
CDBG	Community Development Block Grant
GF	General Fund
SD	Special District (Community Facility District, Improvement District)
GOB	General Obligation Bond
DIF	Development Impact Fees
DS	Development Stipulations
CB	Corporations / Businesses (Wal-Mart, Robert Wood Foundation)
FO	Foundations (Foundation Center)
CSG	Community Service Groups
IND	Individuals
EF	Events / Fundraisers (walkathon, bike fest)



Appendix-1

MUTCD Signage Specifications for Schools in Arizona



In 1950, Arizona safety officials, parents and school officials created a traffic control concept to slow vehicles to 15 mph at school crosswalks. This concept was approved and endorsed by the Arizona State Legislation (ARS 28-797). Arizona Department of Transportation (ADOT) developed guidelines stating ways to implement ARS 28-797. ADOT's *Traffic Safety for School Areas Guidelines* is consistent with the 2009 *Manual on Uniform Traffic Control Devices* (MUTCD) and the Arizona Supplement requirements. Table 7 illustrates signage recommended to be used at school crossings documented in ADOT's *Traffic Safety for School Areas Guidelines*, the 2009 MUTCD and the Arizona Supplement.

The MUTCD and Arizona Supplement requires that .by January 17, 2011, except where a School Zone (S1-1) sign is installed to identify the beginning of a school zone, a school advance crossing assembly shall be installed in advance of the first School Crossing assembly that is encountered. If used, the 2009 MUTCD and Arizona Supplement requires that by January 17, 2011, the School Crossing Assembly shall consist of a School Zone (S1-1) sign with no crosswalk lines supplemented with a diagonal downward pointing arrow (W16-7P) plaque. All other signage can be updated in an as needed basis when current signage is damaged and needs to be replaced.



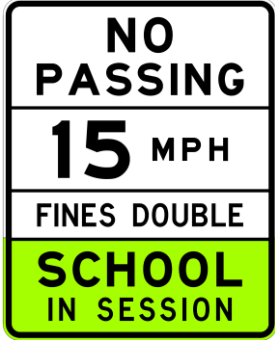

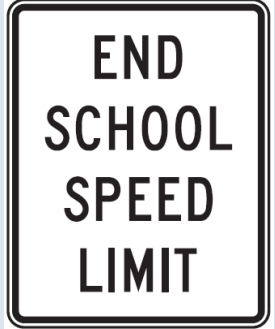

Table 7: MUTCD Signage Specifications for Schools in Arizona

Sign Code	Sign Image	Sizes	Description
S1-1		Minimum: 30" X 30" Standard: 36" X 36"	<p>If a school crossing as defined in ARS §28-797 has been established, a School Zone (S1-1) sign should be placed in advance of the school crossing per the <i>Arizona Traffic Safety for School Areas Guidelines</i>. A School Zone (S1-1) sign can be used to:</p> <ul style="list-style-type: none"> • Warn road users of an approaching school area, school crossing, or related school activity adjacent to the highway • Identify the location of the beginning of a designated school zone • Warn road users that they are approaching a crossing where schoolchildren cross the roadway • Warn approaching road users of the location of a crossing where schoolchildren cross the roadway
S5-2		Standard: 24" X 30"	<p>The end of a designated school zone may be identified with an END SCHOOL ZONE (S5-2) sign.</p> <p>It is not desirable to post END SCHOOL ZONE (S5-2) signs at locations where a school crossing (as defined in ARS §28-797) exists because, when portable school signs are in place, the 15 MPH speed zone (established by ARS §28-701) ends at the crosswalk.</p> <p>It is not desirable to post an END SCHOOL ZONE (S5-2) sign or a Speed Limit (R2-1) sign immediately downstream from the school crosswalk because it may encourage drivers to accelerate sooner.</p>
S1-1 W16-9P		Minimum: 30" X 30" Standard: 36" X 36" Standard: 24" X 12"	<p><i>School Advance Crossing Assembly:</i> The School Advance Crossing assembly shall consist of a School Zone (S1-1) sign supplemented with an AHEAD (W16-9P) plaque or an XX FEET (W16-2P or W16-2aP) plaque.</p> <p>A School Advance Crossing assembly shall be used in advance of the first School Crossing assembly that is encountered in each direction as traffic approaches a school crosswalk except where a School Zone (S1-1) sign is installed to</p>



			identify the beginning of a school zone.
S1-1		Minimum: 30" X 30" Standard: 36" X 36"	<p><i>School Crossing Assembly:</i> If used, the School Crossing assembly shall be installed at the school crosswalks, or as close to it as possible, and shall consist of a School Zone (S1-1) sign supplemented with a diagonal downward pointing arrow (W16-7P) plaque to show the location of the crossing. The School Crossing assembly shall not be installed:</p> <ul style="list-style-type: none"> • At crossings other than those adjacent to schools and those on established school pedestrian routes • On approaches controlled by a STOP or YIELD sign
W16-7P		Standard: 24" X 12"	
S4-3P		Standard: 24" X 8"	<p><i>School Speed Limit Assembly:</i> A School Speed Limit assembly or a School Speed Limit (S5-1) sign shall be used to indicate the speed limit where a reduced school speed limit zone has been established based upon an engineering study or where a reduced school speed limit is specified for such areas by statute. The School Speed Limit assembly or School Speed Limit sign shall be placed at or as near as practical to the point where the reduced school speed limit zone begins.</p>
R2-1		Standard: 24" X 30"	
S4-1P		Standard: 24" X 10"	
S5-1		Standard: 24" X 48"	
R2-6P (optional)		Standard: 24" X 18"	



<p>S4-101</p>		<p>Minimum: 20" X 30" Standard: 24" X 30"</p>	<p>If a reduced school speed limit zone within a designated school crossing has been established in accordance with ARS §28-797, a portable NO PASSING 15 MPH FINES DOUBLE SCHOOL IN SESSION (S4-101) sign shall be placed to identify the beginning point of the reduced speed zone, while a portable STOP WHEN CHILDREN IN CROSSWALK (S2-101) sign shall be placed to identify the end point of the reduced speed zone. No other sign shall be required. If other types of reduced school speed limit zones have been established, a School (S1-1) sign shall be installed in advance of the first School Speed Limit sign assembly or S5-1 sign that is encountered in each direction as traffic approaches the reduced school speed limit zone.</p> <p>Where increased fines are imposed for traffic violations within a designated school crossing in accordance with ARS §28-797, a portable NO PASSING 15 MPH FINES DOUBLE SCHOOL IN SESSION (S4-101) sign shall be placed to identify the beginning point of the higher fine zone.</p>
<p>S2-101</p>		<p>Minimum: 20" X 30" Standard: 24" X 30"</p>	<p>The downstream end of an authorized and posted reduced school speed limit zone shall be identified with an END SCHOOL SPEED LIMIT (S5-3) sign except:</p> <ul style="list-style-type: none"> • If a reduced school speed limit zone ends at the same point as a higher fines zone • At locations where a school crossing (as defined in ARS §28-797) exists because, when portable school signs are in place, the 15 MPH speed zone (established by ARS §28-701) ends at the crosswalk.
<p>S5-3</p>		<p>Standard: 24" X 30"</p>	<p>All on-street parking shall be eliminated on the approach between the NO PASSING 15 MPH FINES DOUBLE SCHOOL IN SESSION (S4-101) sign and the crosswalk during the hours the crosswalk is in effect. On-street parking should also be eliminated on the departure side of the School Crossing between the marked crosswalk and the NO PASSING 15 MPH FINES DOUBLE SCHOOL IN SESSION (S4-101) sign for the</p>
<p>R7-304</p>		<p>Standard: 12" X 18"</p>	



			opposing direction of traffic. NO PARKING signs are to be installed under provisions of A.R.S. 28-873 and in conformance with the MUTCD.
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Appendix-2

References & Resources



Pedestrian & Bicycle Safety, Crossings, and Facilities

National Highway Traffic Safety Administration: Bicycle Safety	http://www.nhtsa.gov/Bicycles
National Highway Traffic Safety Administration – Traffic Safety Facts: Children	http://www.nrd.nhtsa.dot.gov/Pubs/811767.pdf
National Center for Safe Routes to Schools: Strategies to Improve Traffic Operations and Safety	http://www.saferoutesinfo.org/sites/default/files/resources/ITE_SRTS_Briefing_Sheet_05_SchoolStrategies.pdf
Assessing Walking and Bicycling Routes A selection of tools	http://www.saferoutesinfo.org/sites/default/files/Assessing_Walking_and_Bicycling_Routes.pdf
Walking and Bicycling Audits	http://www.ite.org/safety/SRTS/03.Walking.pdf
National Center for Safe Routes to School. “How Children Get to School: School Travel Patterns from 1969 to 2009	http://www.saferoutesinfo.org/sites/default/files/resources/NHTS_school_travel_report_2011_0.pdf
U.S. Environmental Protection Agency. “School Siting Guidelines,” last modified October 2011	http://www.epa.gov/schools/siting/downloads/School_Siting_Guidelines.pdf
Tips for Creating Walking and Bicycling Route Maps	http://saferoutesinfo.org/sites/default/files/walkbikeroute_tipsheet.pdf
Safe Routes to School Briefing Sheets - School Route Maps	http://www.ite.org/safety/SRTS/04.SchoolRouteMaps.pdf
National Center for Safe Routes to School - Map-a-Route	http://maps.walkbiketoschool.org/
Bicycle Parking Guidelines, 2nd Edition	Association of Pedestrian and Bicycle Professionals (APBP). Bicycle Parking Guidelines, 2nd Edition. Washington, DC, USA: APBP, 2010.
Pedestrian Safety and ITS-Based Countermeasures Program for Reducing Pedestrian Fatalities, Injury Conflicts, and Other Surrogate Measures Draft Zone/Area-Wide Evaluation Technical Memorandum	Pécheux, K., J. Bauer, and P. McLeod. Pedestrian Safety and ITS-Based Countermeasures Program for Reducing Pedestrian Fatalities, Injury Conflicts, and Other Surrogate Measures Draft Zone/Area-Wide Evaluation Technical Memorandum. Washington, DC, USA: United States Department of Transportation, ITS Joint Program Office, 2009. Accessed April 20, 2011 http://safety.fhwa.dot.gov/ped_bike/tools_solve/ped_scd_proj/sys_impact_rpt/index.cfm#toc
An Evaluation of Effectiveness of Traffic Signs to Enhance Pedestrian Safety	Pulugurtha, S., S.S. Nambisan, M.R. Dangeti, and V. Vasudevan. “An Evaluation of Effectiveness of Traffic Signs to Enhance Pedestrian Safety.” 89th Annual Transportation Research Board Meeting Compendium of Papers CD. Washington, DC, USA: Transportation Research Board, 2011.
Improving Pedestrian Safety at Unsignalized Crossings	Fitzpatrick, K., S. Turner, M. Brewer, P. Carlson, B. Ullman, N. Trout, E. S. Park, J. Whitacre, N. Lalani, and D. Lord. TCRP Report 112/NCHRP Report 562: Improving Pedestrian Safety at Unsignalized Crossings. Washington, DC, USA: Transportation Research Board, 2006.



Traffic Calming & Traffic Control Measures	
School Site Selection and Off-site Access	http://www.ite.org/safety/SRTS/02.SchoolSite.pdf
National Center for Safe Routes to School. "How Children Get to School: School Travel Patterns from 1969 to 2009"	http://www.saferoutesinfo.org/sites/default/files/resource/s/NHTS_school_travel_report_2011_0.pdf
Traffic Operations and Safety at Schools: Recommended Guidelines.	Cooner, S.A., K. Fitzpatrick, M.D. Woolridge, G.L. Ford. Traffic Operations and Safety at Schools: Recommended Guidelines. Report No. 0-4286-2, Texas Transportation Institute, College Station, TX, 2004
Strategies to Improve Traffic Operations and Safety	http://www.ite.org/safety/SRTS/05.SchoolStrategies.pdf
Manual on Uniform Traffic Control Devices	Federal Highway Administration (FHWA). Manual on Uniform Traffic Control Devices. Washington, DC, USA: FHWA, 2009.
School Area Traffic Control	http://www.ite.org/safety/SRTS/07.SchoolAreaTrafficControl.pdf
Traffic Control Devices Handbook	Institute of Transportation Engineers (ITE). Traffic Control Devices Handbook, 2012 Draft. Washington, DC, USA: ITE, 2012.
Effects of Yellow Rectangular Rapid-Flashing Beacons on Yielding at Multilane Uncontrolled Crosswalks	Shurbutt, J., and R. Van Houten. Effects of Yellow Rectangular Rapid-Flashing Beacons on Yielding at Multilane Uncontrolled Crosswalks. Report No. FHWA-HRT-10-043. Washington, DC, USA: Federal Highway Administration, 2010.
Safety Effectiveness of the HAWK Pedestrian Crossing Treatment	Fitzpatrick, K., and E.S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. Report No. FHWA-HRT-10-042. Washington, DC, USA: Federal Highway Administration, 2010.
Reduced School Area Speed Limits	http://www.ite.org/safety/SRTS/08.ReducedSchoolArea.pdf
Traffic Safety for School Areas Guidelines	http://www.saferoutespartnership.org/sites/default/files/pdf/Lib_of_Res/SRTS_State_Program_SchoolSafety_120106.pdf
The Use of Traffic Calming Near Schools	http://www.ite.org/safety/SRTS/09.TrafficCalming.pdf
National Center for Safe Routes to School	http://guide.saferoutesinfo.org/engineering/slowng_down_traffic.cfm
FHWA Proven Safety Countermeasures	http://safety.fhwa.dot.gov/provencountermeasures

School Site Design & Access	
School Siting Guidelines	http://www.epa.gov/schools/siting/downloads/School_Siting_Guidelines.pdf
A Policy on Geometric Design of Highways and Streets.	American Association of State Highway and Transportation Officials. A Policy on Geometric Design of Highways and Streets. AASHTO, Washington, DC, 2011
School On-site Design	http://www.ite.org/safety/SRTS/06.SchoolOnSite.pdf
Strategies for the Greening of Student Pick-Ups at School Dismissal	Qualls, D. Strategies for the Greening of Student Pick-Ups at School Dismissal. Washington, DC, USA: Institute of Transportation Engineers, 2010
Designing Sidewalks and Trails for Access	http://www.fhwa.dot.gov/environment/bicycle_pedestria



	n/publications/sidewalk2/sidewalks209.cfm
Traffic Operations and Safety at Schools: Recommended Guidelines	Cooner, S.A., K. Fitzpatrick, M.D. Wooldridge, G.L. Ford. Traffic Operations and Safety at Schools: Recommended Guidelines. Report no. 0-4286-2, College Station, TX, USA: Texas Transportation Institute, 2004.
Strategies for the Greening of Student Pick-Ups at School Dismissal	Qualls, D. Strategies for the Greening of Student Pick-Ups at School Dismissal. Washington, DC, USA: Institute of Transportation Engineers, 2010
Manual on Uniform Traffic Control Devices	Federal Highway Administration (FHWA). Manual on Uniform Traffic Control Devices. Washington, DC, USA: FHWA, 2009

SRTS Funding Structure and Administration

FHWA Program Guidance	http://www.fhwa.dot.gov/environment/safe_routes_to_school/guidance/#toc123542175
FHWA SRTS Eligible Activities Defined	http://www.fhwa.dot.gov/environment/safe_routes_to_school/guidance/#toc123542195
FHWA Specific Funding Guidelines	http://www.fhwa.dot.gov/environment/safe_routes_to_school/guidance/#toc123542202
FHWA: Moving Ahead for Progress in the 21st Century (MAP-21) Guidance	http://www.fhwa.dot.gov/map21/
National Center for Safe Routes to Schools Funding Portal	http://www.saferoutesinfo.org/funding-portal/federal-funding-101
National Center for Safe Routes to Schools: Enlisting Law Enforcement Resources	http://apps.saferoutesinfo.org/lawenforcement/federal/enforcement.cfm

Education/Awareness/Enforcement/Encouragement Programs

See separate references provided in section 6.