CROSSWALK EVALUATION

FRUITA TRAFFIC COMMITTEE

December 2018

FRUITA
COLORADO

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INTRODUCTION

Purpose

The City of Fruita strives to be a bike and pedestrian friendly community. This requires focused efforts to encourage walking by providing facilities that are functional and convenient, as well as create an environment where pedestrians feel safe. This means that the pedestrian facilities need to be an integral component of the transportation system and potential conflicts with the other modes of transportation are minimized as much as practical. The City of Fruita began prioritizing crosswalk improvements in the 2016 budget and have been addressing individual crosswalk safety issues. This did not, however, include a comprehensive approach to crosswalk safety or include a consistent treatment approach. This study focuses on evaluating the primary conflict points throughout the City where pedestrian facilities cross vehicular traffic and provides a compilation of the safety evaluations that have been completed.

Crosswalk Inventory

Fruita's existing transportation network consists of approximately 103 existing marked crosswalks. Almost all these crosswalks cross major or minor collector roadways at locations determined over the years as having higher pedestrian movements. These pedestrian areas tend to be centered in the downtown core area, along school walk routes, or connected with other walking destinations (e.g. transit stops, trails, parks, etc.). The types of crosswalk treatments have been standardized to some extent (i.e. type of signage & pavement markings) and, for the most part, comply with the Manual on Uniform Traffic Control Devices (MUTCD), but there does not appear to be any formal criteria being used to determine the location of marked crosswalks or the level of treatments required. As a result, there are a number of crosswalks that have varying levels of treatments and may not be spaced appropriately.

Controlled Crossings

The majority of the crosswalks in Fruita are located at stop-controlled intersections. This includes a number of crosswalks across streets intersecting with collector roadways, but it does not appear to be consistent and it is unclear how some of the locations were determined necessary for marked crossing (see example in Figure 1). In general, the stop-controlled crossing locations appear to have appropriate pavement markings and signage, and provide safe opportunities for pedestrians to cross. Even crossing at unmarked locations with stop-

control provides for relatively safe crossing options for pedestrians. This study does not include evaluation of stop-controlled crossings and focused more on areas that may require additional crossing treatments to improve safety. Additional measures at stop-controlled intersections may need to be considered if concerns exist with driver compliance, accident history, or longer crossing lengths.

Figure 1: Example of Crosswalks at Intersecting Roads

Uncontrolled Crossings

Certain locations along the road corridor do not make sense to install stop-control measures for the vehicular traffic. These areas require the pedestrians to take additional cautionary measures and only cross when there are safe gaps in the traffic. Jurisdictions have the authority to install marked crosswalks at uncontrolled locations based on standard guidelines and engineering judgement. Unfortunately, simply installing a marked crosswalk does not necessarily improve the safety for the pedestrians and additional safety measures may be needed. In fact, in some locations, installing a marked crosswalk has shown to increase the chance of pedestrian-vehicle accidents due to the false sense of security provided to the pedestrian and lack of impact on driver awareness. Consequently, installing an uncontrolled crosswalk should be considered carefully and installed only where standard warrants are met.

"Installing an uncontrolled crosswalk should be considered carefully and installed only where standard warrants are met."

The City of Fruita currently has 38 crosswalks located at uncontrolled locations. These locations are the focus of this study, which includes evaluating if these crossings are in the appropriate locations and what types of treatment measures might be warranted to improve safety.

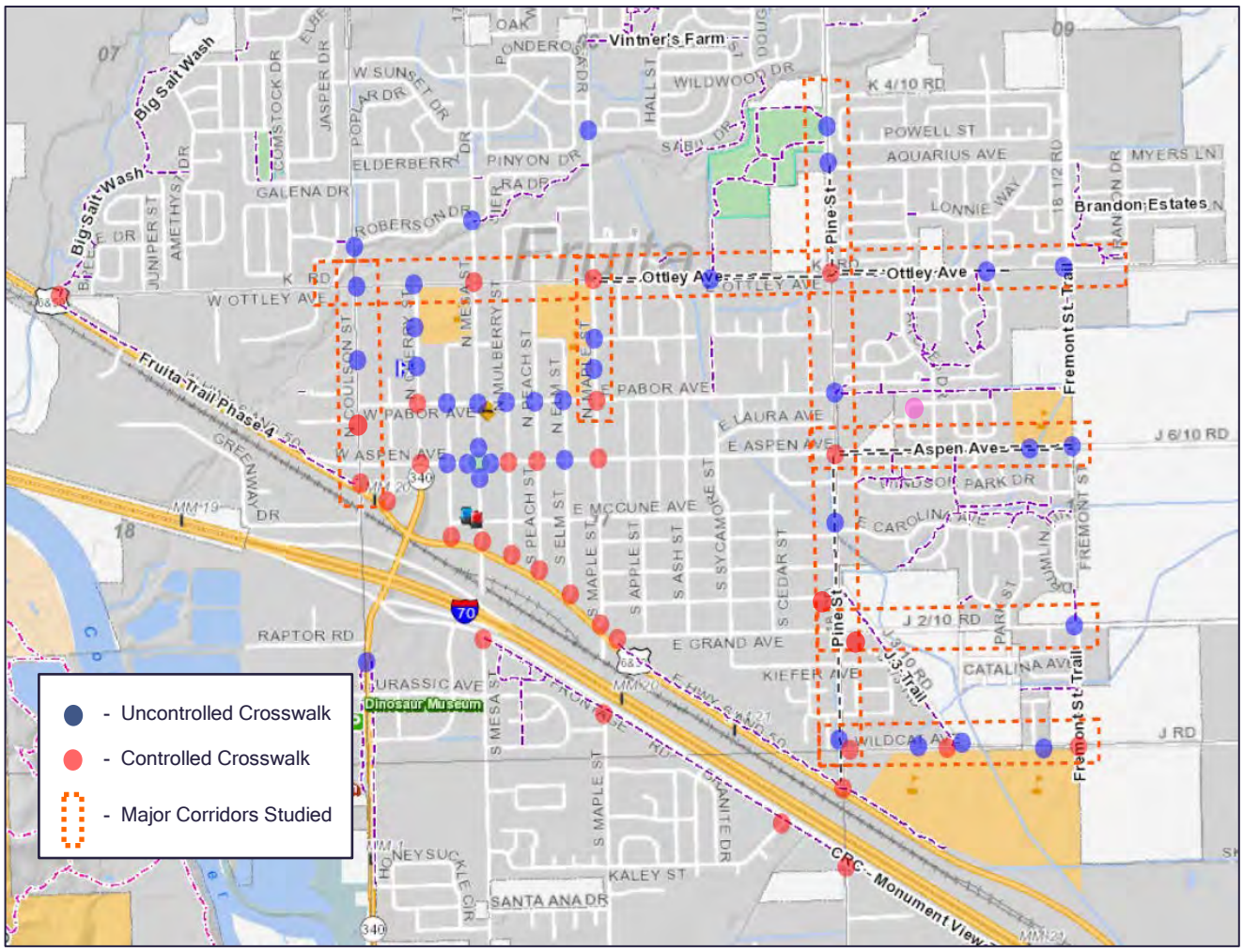


Figure 2: Vicinity Map of Crosswalk Locations

EVALUATION PROCESS

Design Guidance

The Fruita Traffic Committee began the evaluation process by researching design standards and guidelines for crosswalk safety. The Manual on Uniform Traffic Control Devices (MUTCD) is a national standard that includes warrant criteria for pedestrian crossings and provides some guidance on signage and pavement markings. However, the federal warrants and guidelines are more applicable to pedestrian crossings on highways and arterial roadways than local streets. Additional bicycle and pedestrian guidelines published by the Federal Highways Administration (FHWA), State agencies, and other local governments were researched to determine what standards were available that could be used to supplement the MUTCD guidelines.

The City of Grand Junction published *Pedestrian Crossing Treatment Installation Guidelines* in February of 2016. The review of this document found that it included a comprehensive review of crosswalk standards and provided crosswalk guidelines that are better suited for the local street system. The document does this by including lower pedestrian volume thresholds and includes exception criteria for multi-use path crossings, school crossings, and crossings that serve walking destinations. The City of Grand Junction localized guidelines are based on a compilation of localized standards and safety data that were found to still be current at the time of this study. Therefore, it was determined that the Fruita Traffic Committee would use the City of Grand Junction guidelines as the basis for evaluating crosswalks in Fruita rather than fully developing a separate set of standards.

Evaluation Factors

Data to evaluate the crosswalks was collected based on established criteria for crosswalk safety. This included accounting for both the vehicular & pedestrian traffic volumes, vehicle speeds, sight visibility, crossing length, number of vehicle lanes crossed, pedestrian connectivity to walking destinations, pedestrian demographics (elderly or youth), crosswalk spacing, and geometry considerations. This study did not, however, evaluate crosswalk conditions relative to on-going maintenance items, such as condition of pavement markings, age of signage, condition of concrete ramps, or ADA compliance. These items should instead be evaluated and repaired/replaced as part of normal maintenance operations to not impact the safety of the public.

Focus Areas

The crosswalk evaluations contained in this study focused on the areas that had the highest potential safety issues and did not evaluate every single crosswalk. Fortunately, the City of Fruita did not have any data showing a history of pedestrian-vehicle accidents to reflect a certain area of safety concern. Instead, the areas of emphasis were determined based on uncontrolled crossing locations where: (1) vehicle speeds were 30 MPH or higher; (2) multi-use paths cross the roadway; and/or (3) crossings are located in school zones. Consideration was also made for existing crosswalks that had higher peak hour pedestrian volumes along potential school routes. In addition to the systematic methods of trying to identify areas of concern, the Fruita Traffic Committee had a list of crosswalks that had been evaluated over the past couple of years in reaction to reports of near misses or calls of concern for crosswalks, all of which were on uncontrolled crossings along collector roadways.

	Total Existing Crosswalks	**103**
	Stop-controlled crosswalk locations	65
Evaluation Focus Areas	Uncontrolled crosswalk locations	38
	Uncontrolled crossings on 35 MPH streets	19
	Crosswalks in school zones	25
	Multi-Use Path Crossings	11

As a result, it was determined that this study would focus on evaluating all uncontrolled crossings of collector roadways and not include crossings of local streets that are outside of school zones. It is anticipated that this document will serve as a guide in continuing to evaluate

additional crosswalks as resources are available and as changes to the transportation system occur.

New Crosswalk Locations

While this study was focused on evaluating and improving existing crosswalk locations, some of the evaluations did include discussions on relocating crosswalks and even adding new crosswalks at certain locations (mainly along the Ottely Avenue and Pine Street corridors). The need for a new crosswalk should be evaluated thoroughly and not be installed if it does not meet the defined warrants. Figure 1 from the City of Grand Junction guidelines provides a flow chart used in the evaluation process to determine if a crosswalk is warranted (refer to Appendix A) and should be used for evaluation of any new crosswalks for consistency.

CORRIDOR AND AREA OBSERVATIONS

The following sections describe the general findings of the crosswalk evaluations for designated corridors or areas of concern.

Pine Street Corridor

With a continuous speed limit of 35 MPH, being located within a half mile of three schools, and functioning as the busiest north-south collector roadway through town (over 6,100 vehicles trips per day), there are inherently potential conflicts between vehicular, bicycle, and pedestrian users. The existing corridor (from Highway 6 to L Road) only includes two stop-controlled intersections with a spacing of over 2,000 feet. There are existing crosswalks at each of these stop-controlled locations and 5 other marked crosswalks at uncontrolled locations, which appear to have irregular spacing based on locations of potential pedestrian routes. However, as development continues to occur along the corridor and to the east, the pedestrian traffic patterns are changing and the spacing of the crossings will need to be modified to accommodate changes to pedestrian routes. This is reflected most by the fact that there are two uncontrolled crossings located near Little Salt Wash Park within 390 feet of each other, yet the section of Pine Street north of the high school has crosswalks spaced at more than 2,400 feet apart. As a result, this evaluation not only includes recommendations for the types of crosswalk treatments, but also includes recommendations for relocating or installing other crosswalks. A summary of the findings is included in Appendix B on page 1.

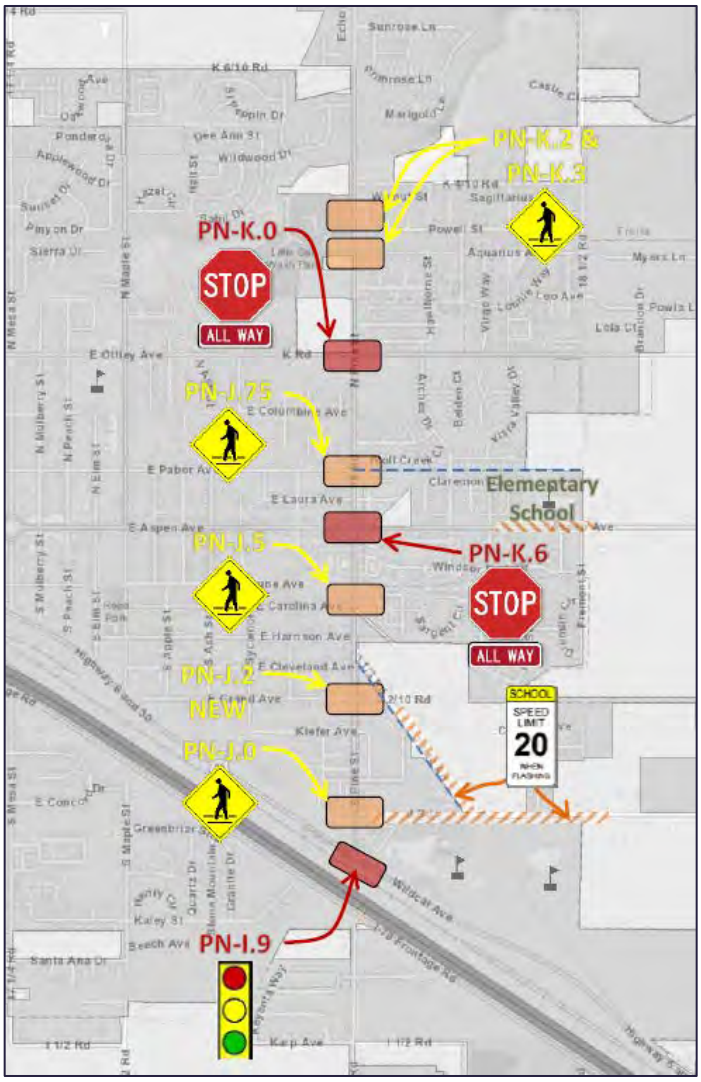


Figure 3: Pine Street Crosswalk Locations

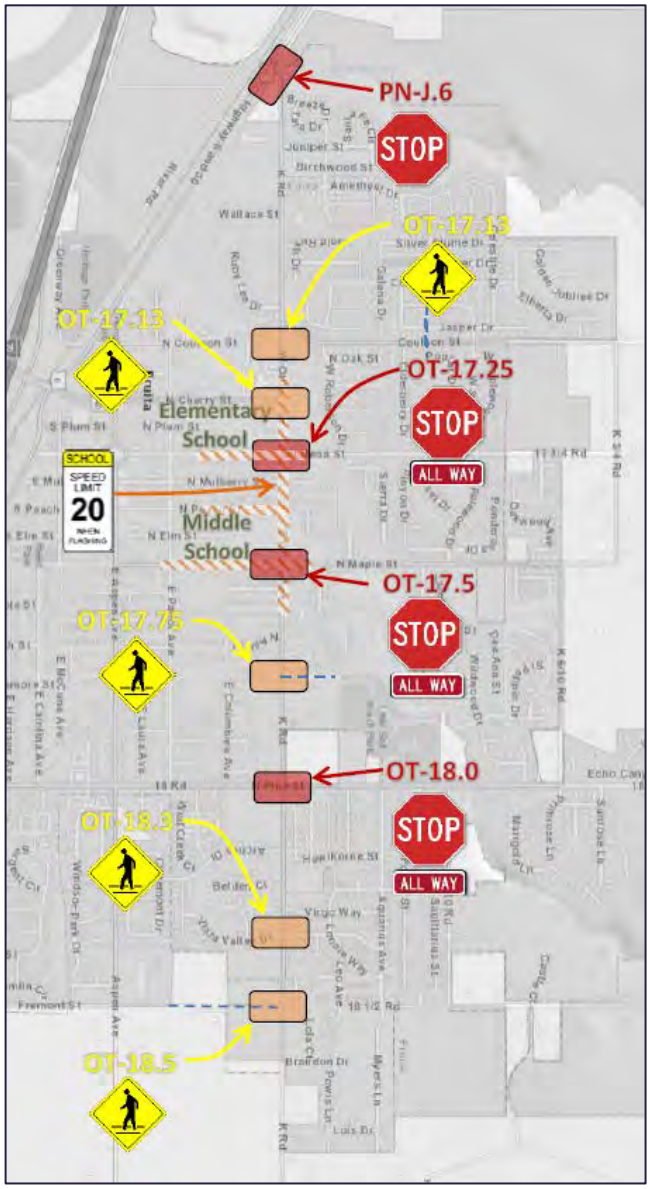


Figure 4: Ottley Avenue Crosswalk Locations

Ottley Avenue Corridor

There are 13 marked pedestrian crossings on Ottley Avenue in the City of Fruita. Seven (7) of the crossings are located at stop-controlled intersections with the remaining six (6) located at uncontrolled intersections. The uncontrolled crossing locations appear to be well spaced throughout the corridor and provide connections to multi-use paths, transit facilities, and/or schools. The pedestrian and bicycle traffic along this corridor consists of a high percentage of children since there are two schools located on this corridor within ¼ of a mile. However, the major crossings near the schools appear to be within reduced speed zones and are staffed with crossing guards during school arrival/departure times. Some of the uncontrolled crosswalks located outside of the designated school zones have higher pedestrian volumes and vehicles traveling at higher speeds that have higher safety risks. These types of crossings are recommended as the highest priority for crosswalk improvements. A complete summary of the crosswalks evaluated along the Ottley Avenue Corridor are included in Appendix B on page 2.

Downtown Core

The City adopted a master plan for streetscape improvements in the downtown area in 2013. This document provides specific guidance on pedestrian traffic functions and recommended improvements, which includes the importance of traffic calming and crosswalks. The first phase of implementing the recommended improvements was completed on Aspen Avenue at the Peach Street and Mulberry Street intersections. Future streetscape improvements will further incorporate the recommendations from the downtown master plan, but in the mean time there

are a few areas with potential safety concerns that may need to be prioritized sooner. There are also some areas just outside the limits of the study that should be evaluated further.

Figure 5: Concept from 2013 Downtown Streetscape Improvements Plan

The downtown core area tends to have higher concentrations of pedestrian traffic and slower vehicular speeds. However, safety issues associated with congestion, driver awareness, and sight distance are still present. The crosswalks with stop-controlled intersections appear to be functioning well and provide for a safe alternative to cross without needing additional improvements. Some of the uncontrolled intersections though require considerable effort from the pedestrian users to cross during peak hours due to shorter gaps in vehicle spacing. This is especially true for the crosswalks on Aspen Avenue at Plum Street, Mulberry Street, and around the Circle.

Aspen Avenue @ Mulberry Street

The Traffic Committee reviewed alternatives to modify the Mulberry Street intersection and found that installing a 4-way stop was not a viable solution for vehicular traffic. However, it is

recommended that efforts to improve sight distance for eastbound and westbound traffic should be improved, if possible. This may need to include limiting additional on-street parking.

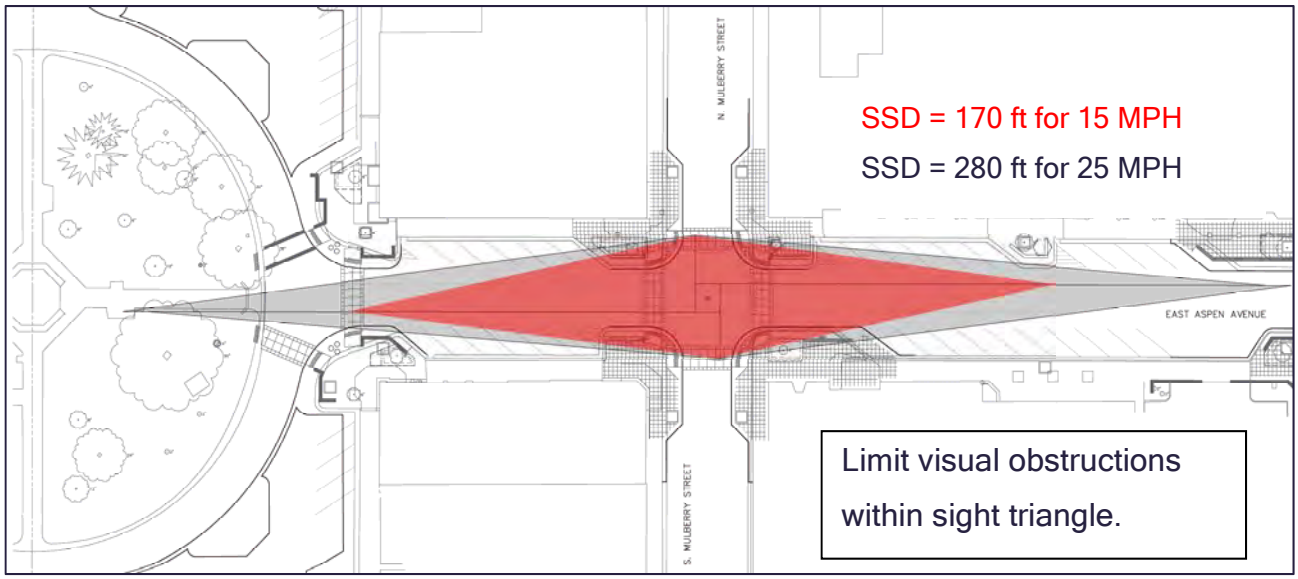


Figure 6: Aspen Avenue at Mulberry Street Sight Distance

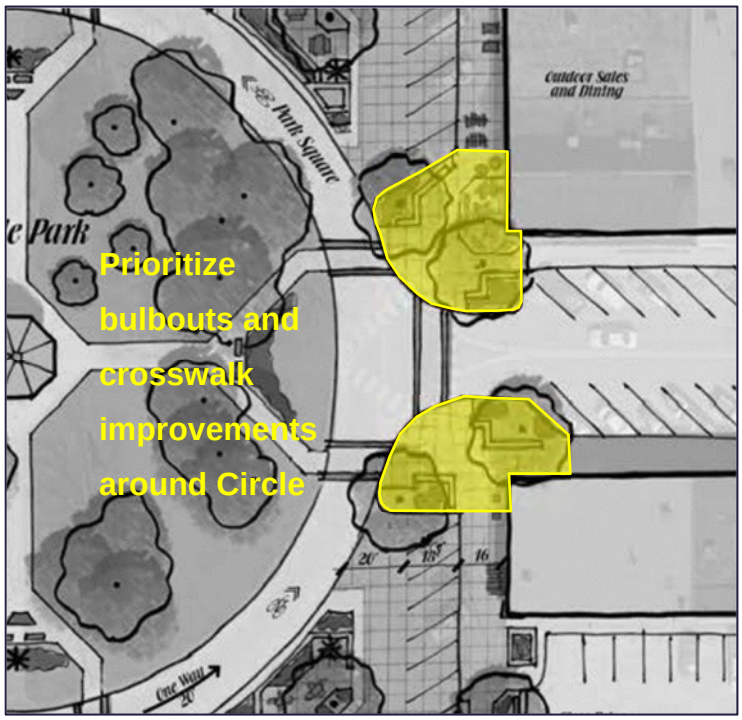


Figure 7: Concept for Crosswalk Improvements at Circle

The Circle / Park Square

The existing crosswalks at the intersections around the Circle pose considerable challenges for pedestrians crossing, especially from the center outward. These crosswalks around the Circle are recommended to be relocated with future streetscape improvements to shorten the crossing lengths as part of additional traffic calming features. However, the cost of the streetscape improvements around the Circle is quite high (estimated at over $2.5 million in 2013) and are not currently included in capital plans for at least 10 years. It is recommended that the intersection bulbouts around the Circle be prioritized in advance of the parking courts and other Park Square improvements to address some of the safety issues associated with the crosswalks sooner.

Aspen Avenue @ Plum Street

The Plum Street intersection also does not have stop control and has higher volumes of vehicular traffic than further east. This intersection is also just beyond the limits of the downtown master plan and lacks the guidance on traffic calming measures. As such, it should be noted that the crosswalks on Aspen Avenue at Plum Street should be characterized as a high priority for safety improvements. This intersection currently has crosswalk bar pavement markings but does not have any type of basic crosswalk signage. This may be in part due to the fact that the area is already congested with other roadway signage due to its close proximity to the traffic signal at Cherry Street, individual property access points, and highway access signs. Some solutions might include installing geometric improvements to reduce the crossing lengths, installing additional signage, or eliminating some of the vehicular access points along this section of Aspen Avenue. Any geometric changes would need to be coordinated with the Colorado Department of Transportation to accommodate traffic from the west, with the downtown master plan to the east, and with the business owners in the immediate vicinity. This evaluation did not include any public outreach or interagency coordination related to this area and recommends that this be completed prior to making any changes.

Figure 8: Aspen Avenue at Plum Street

School Zones

The Safe Routes to School (SRTS) program was established by the Federal Highway Administration to address issues perceived as barriers for children in walking or bicycling to school. The City of Fruita strives to address these types of barriers, as well, and have utilized SRTS grant dollars to improve safety for children in school zones. A grant through the SRTS program allowed the City to install flashing beacons for all the school zones in Fruita, which establishes a speed reduction to 20 MPH when flashing.

Through the SRTS program, the City of Fruita also partnered with the Mesa County Regional Transportation Planning Office and School District #51 to complete walking & bicycling audits

for each elementary and middle school in Fruita. These audits have been beneficial in safety outreach with the schools and have helped to identify safety issues that may not have been identified through sole engineering evaluations. Below is a summary of some of the pedestrian safety issues related to crosswalks in school zones that were identified as part of the SRTS audits or through this crosswalk evaluation process.

FMHS & Fruita 8/9 School

Wildcat Avenue serves as the primary access for both Fruita Monument High School (FMHS) and the Fruita 8/9 schools, which can be one of the most congested city streets in Fruita during school arrival and departure times. The section of Wildcat Avenue from Pine Street to J.3 Road was restriped in the summer of 2016 to eliminate on-street parking in front of FMHS to include a 3-lane road section with bike lanes. The section of Wildcat Avenue from J.3 Road to Fremont Street that is located along the frontage of the Fruita 8/9 School narrows to a 2-lane road section but still provides a continuous bike lane in each direction. The half mile of Wildcat Avenue from Pine Street to Fremont Street includes 6 marked crosswalks with 4 of them located at stop-controlled intersections and 2 of them are at uncontrolled locations. The congested nature of the traffic during peak hours can make this section of roadway intimidating for pedestrians to cross and resulted in a pedestrian-vehicle accident that resulted in severe injuries to a student attempting to cross at the uncontrolled crosswalk at the Fruita 8/9 School.

To improve the safety for pedestrians along Wildcat Avenue, it is recommended that the priority be to reduce the number of crosswalks, if possible. Crosswalks located at uncontrolled locations should be eliminated first and students should be directed to stop controlled intersections when able. Eliminating crosswalks will require further coordination with the individual schools and should also require some crosswalk education for the students. Some potential changes that might be able to be incorporated as part of future access changes planned by FMHS are included in Appendix B on Page 4.

Fruita Middle School

A walk audit was completed for the Fruita Middle School in September of 2016. The middle school provides teacher crossing guards after school to minimize pedestrian crossing accidents in the immediate vicinity of the school. However, this school has the least amount of on-site parking and it was noted in the audits that the visibility of crossing pedestrians is obstructed by the amount of on-street parking and drop-offs. The audit also indicated poor lighting at some of the crossing locations. The two crosswalks with the highest potential for safety concerns are the two uncontrolled crossings located on Maple Street at a roughly 300-foot spacing. Pedestrian volumes for these two crossings do not appear to warrant marked crosswalks outside of the school zone hours. The City of Fruita is planning a capital utility/roadway project on Maple Street and should coordinate with the school to eliminate one of these crossings or incorporate improved pedestrian crossing facilities, if possible.

Rim Rock Elementary

There are two uncontrolled crosswalks on Aspen Avenue within the school zone for Rim Rock Elementary School. During school arrival and departure times flashing school zone beacons enact a speed reduction to 20 MPH and Rim Rock provides crossing guards to help students cross safely. Outside of school zone times, the posted vehicular speeds are 35 MPH with pedestrian volumes that do not warrant marked crosswalks. Additional treatments may be necessary if vehicular speeds or driver awareness issues are observed, but no immediate treatments are warranted at this time.

It should be noted that the Fremont Street corridor near Rimrock Elementary currently consists of a combination of half-street improvements and asphalt trail facilities. Sections of the Fremont Street corridor could be considered a multi-use trail for the purpose of determining crossing warrants, but the Aspen Avenue crossing consists of connections at a partially built street intersection. Any crossing treatments considered prior to the full development of the street intersection should be considered temporary and it is not recommended to install any hard geometric treatments in the interim.

Shelledy Elementary

Shelledy Elementary is unique in the fact that it is served by collector roadways on three (3) sides of the school. This allows for disbursement of traffic around the school and reduces having centralized concentrations of traffic near the parking lot similar to the other schools. An

SRTS walking and bicycling audit was completed in 2014 for Shelledy Elementary that observed students were directed to marked crosswalks where crossing guards were present. This practice appears to still be in place and results in heavy pedestrian volumes crossing Mesa Street and Maple Street at Ottley Avenue during school zone times. Outside of school zone times, pedestrian volumes at any one location appear to be minimal and vehicular speeds near the school are still only 25 MPH. No immediate safety concerns were identified that would result in the need for crossing treatments at this time, but there are a few recommendations included in the findings that could be incorporated as street intersection improvements are made or the adjacent Community Center campus further develops.

CONCLUSIONS AND RECOMMENDATIONS

The overall condition of most crosswalks in the City of Fruita appear to meet national standards and comply with the Manual on Uniform Traffic Control Devices (MUTCD). This study provides criteria and data used to evaluate crosswalks of potential concern and provides guidance that is appropriate for use on the local transportation network. Even so, each crossing should be evaluated on a case-by-case basis based on a number of factors and engineering judgement to determine warrants and types of treatments.

In general, the crosswalks that have the highest potential for safety risk are located on major collector roadways where the speed limits are 35 MPH. Flashing beacons have been installed for school zones along these corridors and provide safer opportunities for children to cross these busy roads during school zone hours. However, crossings providing connections to multi-purpose trails where no such speed reductions exist should be prioritized as having the greatest safety concern. This study provides recommended treatments for each crosswalk evaluated and assigned HIGH, MEDIUM, or LOW priorities for the recommended measures. In some cases they include removing or relocating a crosswalk rather than simply adding additional treatments. The following table shows the crosswalks with a HIGH priority rating and have been completed in the past few years.

Table 1: High Priority Crosswalks

Crossing ID	Street	Crossing Location	Recommended Crossing		Priority	Date Completed
			Type	Improvements		
CS-J.8	Coulson Street	Community Center	B	Traffic calming bulbouts to reduce crossing length.	HIGH	2016 Crosswalk Improvements
PN-J.75	Pine Street	Pabor Avenue	C	Raised Pedestrian Refuge Island on north side of intersection.	HIGH	2017 Crosswalk Improvements
OT-18.5	Ottley Avenue	Fremont Street	C	Pedestrian Activated Flashing Beacons. Geometric improvements if feasible. Future signal.	HIGH	2018 Crosswalk Improvements (flashing signage)
AR-J.75	Arches Drive	Pabor Trail (Rimrock Trail)	A	Install basic marked crossing.	HIGH	2018 Rimrock Trail Improvements
OT-17.75	Ottley Avenue	Sycamore Street	C	Geometric improvements to narrow crossing length.	HIGH	Planned for 2019

A complete listing of all crosswalks evaluated and the associated recommended crossing measures can be found in Appendix C.

REFERENCES & SUPPORTING DOCUMENTS

City of Grand Junction, Colorado, Transportation Engineering. *Pedestrian Crossing Treatment Installation Guidelines*. (February 2016).

Federal Highway Administration. *Manual on Uniform Traffic Control Devices*. (May 2012).

Miller, Demian. *Countermeasure Strategies for Pedestrian Safety: Crossing Islands and Raised Medians*. Tindale Oliver and Associates. Pedestrian and Bicycle Information Center. (October 2015). Retrieved from http://www.pedbikeinfo.org/pdf/Webinar_PSAP_100115.pdf

National Association of City Transportation Officials. Midblock Crosswalks. Urban Street Design Guide. Retrieved from https://nacto.org/publication/urban-street-design-guide/intersection-design-elements/crosswalks-and-crossings/

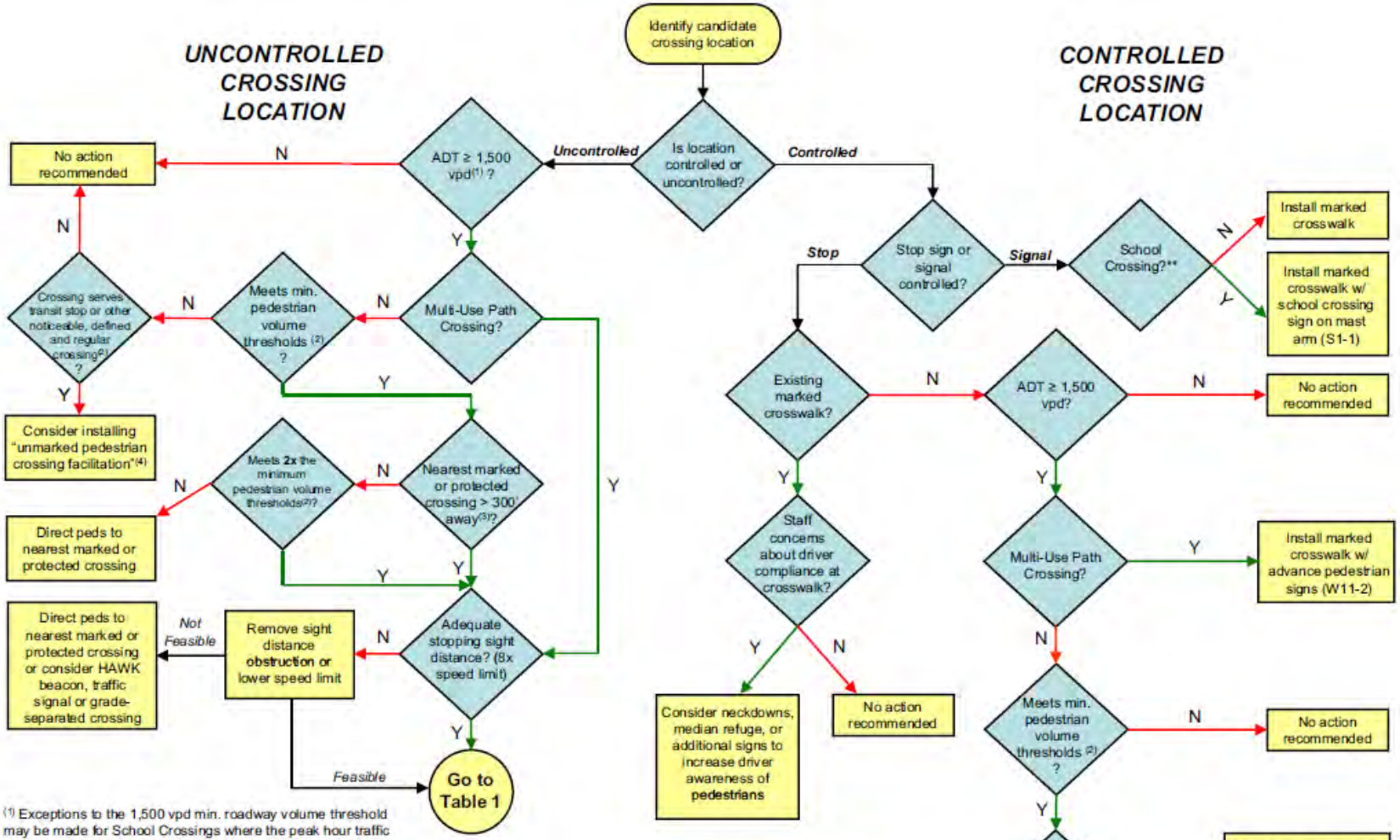
Turner, S.M., Carlson, P.J., *Pedestrian Crossing Guidelines for Texas*. Texas Transportation Institute. (December 2000).

APPENDIX A

Design Guidance Documents

Pedestrian Crossing Treatment Flowchart

Uncontrolled Crosswalk Decision Matrix



(1) Exceptions to the 1,500 vpd min. roadway volume threshold may be made for School Crossings where the peak hour traffic exceeds 10% of the daily traffic

(2) **Minimum Pedestrian Volume Thresholds**:

- 20 peds per hour* in any one hour, or
- 18 peds per hour* in any two hours, or
- 15 peds per hour* in any three hours

* Young, elderly, and disabled pedestrians count 2x towards volume thresholds

** School Crossing defined as a crossing location where ten or more student pedestrians per hour are crossing.

(3) Distance to nearest marked or protected crossing may be reduced to 200' in urban conditions, subject to engineering judgment, where 1) the crosswalk does cross any auxiliary lanes, and 2) crossing treatments and crossing activity would not create undue restriction to vehicular traffic operations.

(4) An "unmarked pedestrian crossing facilitation" is any treatment that improves a pedestrian's ability to cross a roadway, short of the marked, signed and enhanced crossings detailed in Table 1. Installation of this type of pedestrian facilitation is subject to engineering judgment and may include curb ramps and/or a raised median refuge. However, no effort is made to attract pedestrians or recommend that pedestrians cross at this location. The treatments simply provide an improvement for a low volume pedestrian crossing where pedestrians are already crossing and will like continue to cross.

City of Grand Junction Pedestrian Crossing Treatment Installation Guidelines

Figure 1 – Pedestrian Crossing Treatment Flowchart

UNCONTROLLED CROSSWALK DECISION MATRIX

This information to be used as a supplement to the *City of Grand Junction Pedestrian Crossing Treatment Installation Guidelines* dated February 2016 and should be used as a guideline for the City of Fruita in place of Table 1 on Page 18 of the document. The Flowchart on page 17 should still be used to determine if improvements are warranted prior to using the table below.

Roadway Configuration	Special Warrants[1]	Vehicle ADT > 1,500 to 9,000			
		Posted Speed Limit			
		≤ 30 mph	35 mph	40 mph	45 mph
Two Lanes	No	A	B	C / D	E
Two Lanes	Yes	B	C / D	C / D	E
Three Lanes with Striped Median	No	C / D	C / D	C / D	E
Three Lanes with Striped Median	Yes	C / D	C / D	C / D	E

(1) SPECIAL WARRANTS

The City of Fruita has prioritized installing a higher level of crosswalk improvements for the following two conditions:

1. School routes (outside of school zones) where traffic exceeds 150 vph AND greater than 10 students crossing per hour.
2. Multi-use path crossing meeting minimum pedestrian volume thresholds.

CROSSWALK TYPE	CROSSWALK TOOLS
TYPE A - BASIC If marked crosswalk is warranted, install all BASIC measures listed.	▫ White high-visibility striped crosswalk bars; and ▫ High-visibility pedestrian crosswalk road-side signage at crosswalk; and ▫ High-visibility pedestrian crosswalk road-side signage in advance of crosswalk.
TYPE B - ENHANCED If marked crosswalk is warranted, install **BASIC** measures and at least one **ENHANCED** measure per engineering evaluation if feasible.	▫ Advanced yield lines with "Yield Here to Pedestrians" signs, and/or ▫ In-street pedestrian crossing signs.
TYPE C / D - ENHANCED / GEOMETRY If marked crosswalk is warranted, install **BASIC, ENHANCED, & GEOMETRIC** improvements as determined by an engineering evaluation.	▫ Tighten curb radius to narrow crossing length, or ▫ Curb Extensions (bulb-outs), or ▫ Pedestrian Refuge Island, or ▫ Pedestrian activated Flashing beacons.
TYPE E - DO NOT INSTALL Do not install marked crosswalk at uncontrolled crossing.	▫ Direct pedestrians to a signalized or stop controlled crossing.

APPENDIX B

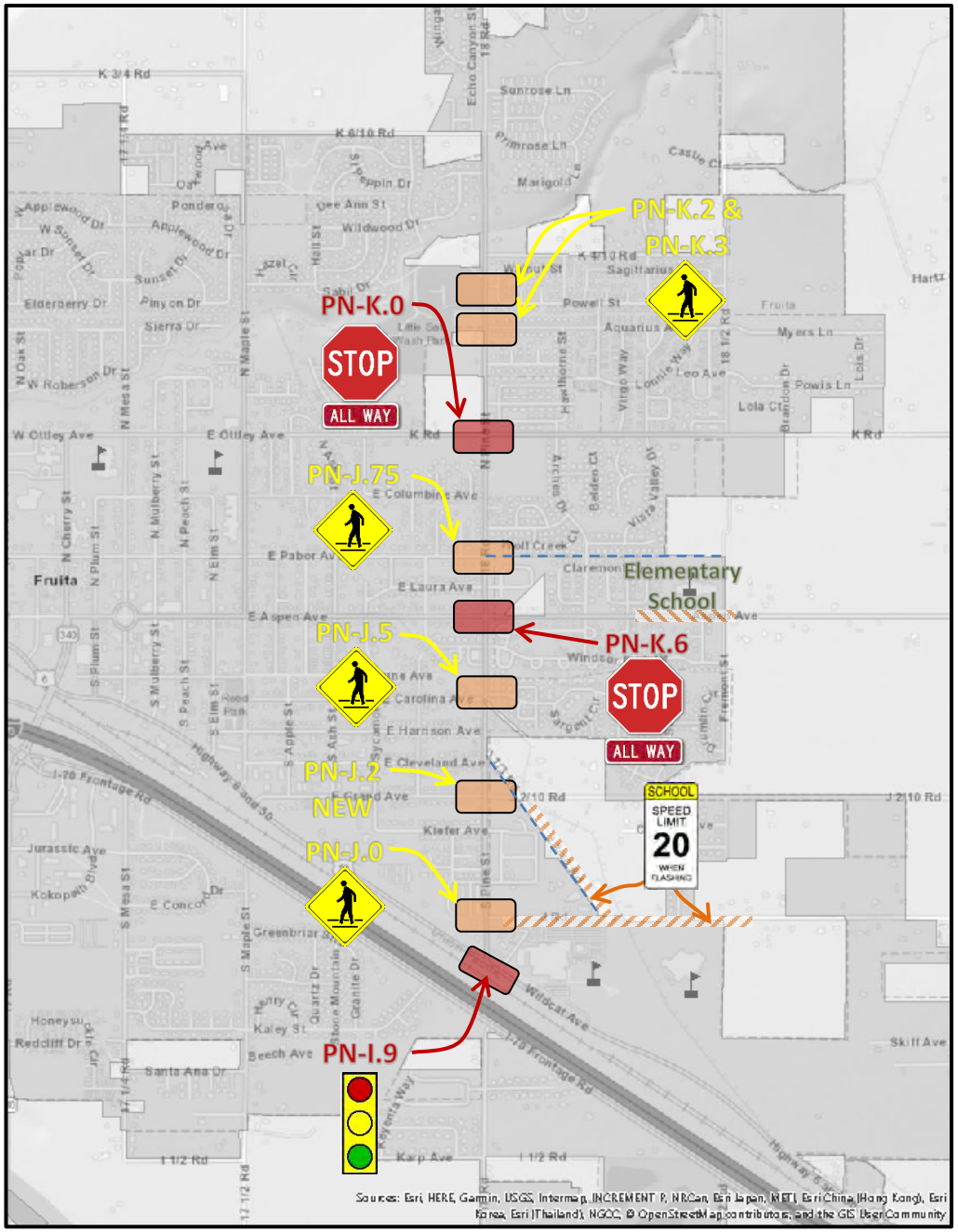
Summary Evaluation Data for Areas of Concern

Ottley Avenue Corridor Crosswalks

Pine Street Corridor Crosswalks

Shelledy Elementary Area Crosswalks

Wildcat Avenue Crosswalks near FMHS



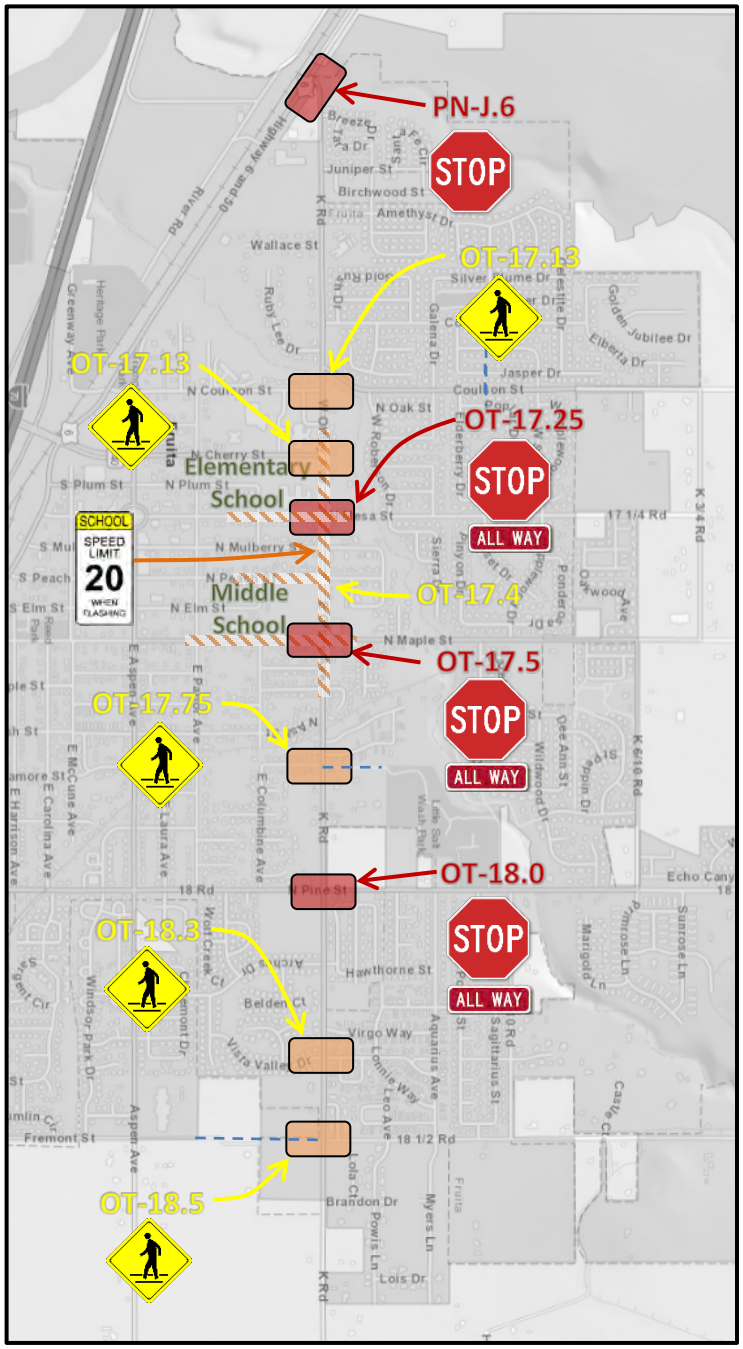
LOCATION: North Pine Street

VEHICULAR TRAFFIC: 3,300 to 6,100 ADT

POSTED SPEED: 35 MPH

SCHOOL ZONES: None on Pine Street

Crossing ID	Roadway Type	Crossing Type	Near-term Action
PN-K.3	3 lane, No Stop control	Type C Enhanced	Pedestrian Refuge
PN-K.2	3 lane, No Stop Control	Type C Enhanced	Relocate to Sunflower Ave.
PN-K.0	3 lane, Stop Control	Stop	None, signal in future
PN-J.75	3 lane, No Stop Control	Type C Enhanced	None, refuge installed 2017
PN-J.6	3 lane, Stop Control	Stop	None, signal in future
PN-J.5	3 lane, No Stop Control	Type C Enhanced	Relocate to McCune w/ refuge
PN-J.2 (NEW)	3 lane, No Stop Control	Type C Enhanced	Install new crossing w/ refuge
PN-J.0	3 lane, No Stop Control	Type C Enhanced	None
PN-I.9	3 lane, No Stop Control	Signal	None



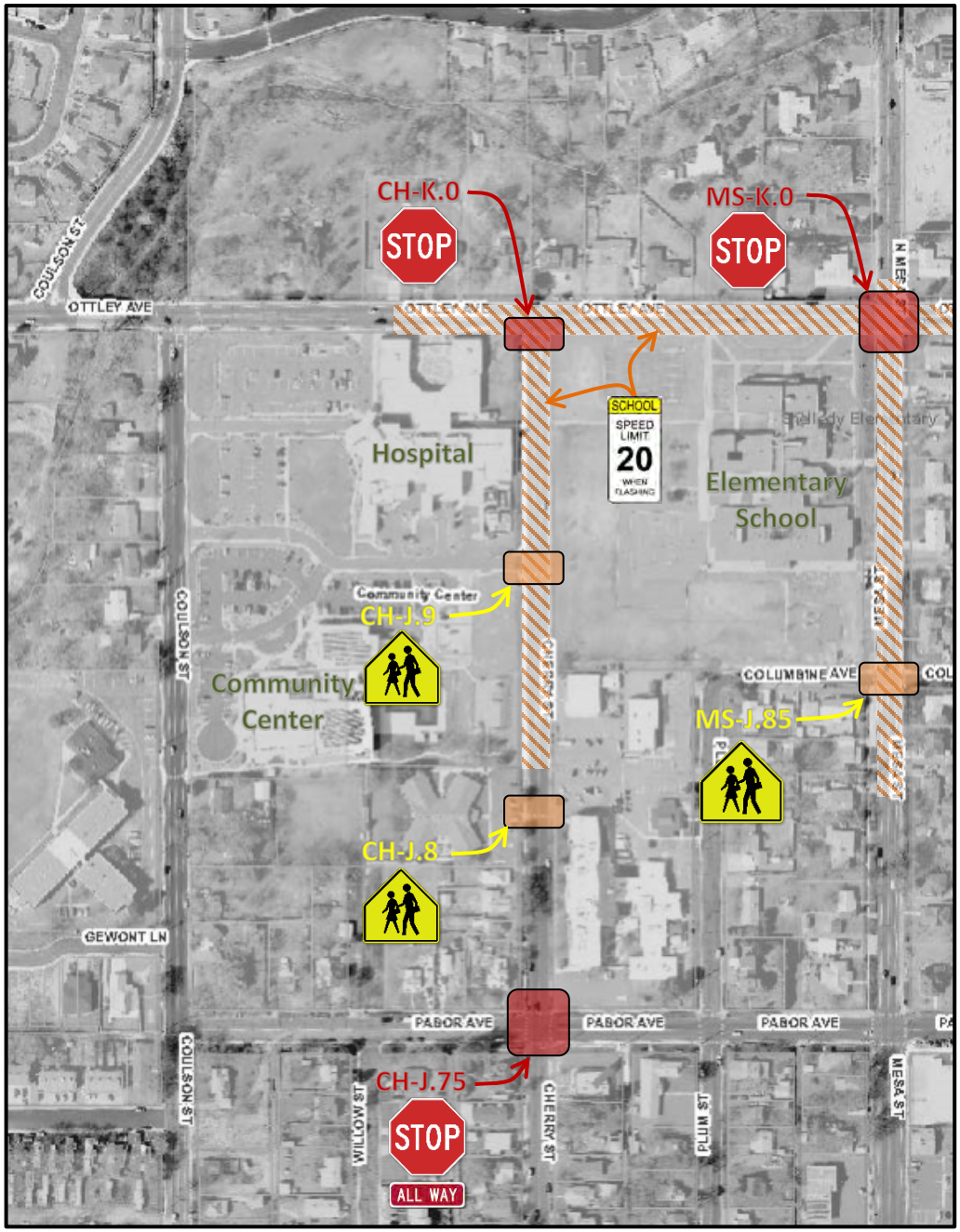
LOCATION: Ottley Avenue

VEHICULAR TRAFFIC: 859 to 4,765 ADT

POSTED SPEED: 35 MPH

SCHOOL ZONES: Shelledy Elementary & Fruita Middle School

Crossing ID	Crossing Location	Crossing Type	Near-term Action
OT-16.5	Highway 6	Stop Sign	None
OT-17.0	Coulson St.	Type C Enhanced	None, stop sign or signal in Future
OT-17.13	Cherry St.	4-Way Stop	Eliminate east crosswalk
OT-17.25	Mesa St.	4-Way Stop	None, consider bulbouts
OT-17.4	Peach St.	Unmarked	None, direct students to Maple
OT-17.5	Maple St.	4-Way Stop	None, consider bulbouts
OT-17.75	Sycamore St.	Type C Enhanced	Refuge Island or Neckdown
OT-18.0	Pine Street	4-Way Stop	None, signal in future
OT-18.3	Holly Park Dr.	Type C Enhanced	Refuge island or flashing signage
OT-18.5	Fremont St.	Type C Enhanced	None, stop sign or signal in future



LOCATION: Shelledy Elementary

VEHICULAR TRAFFIC: 3,381 to 3,562 ADT

POSTED SPEED: 25 MPH (20 MPH School)

Crossing ID	Crossing Location	Crossing Type	Near-Term Action
CH-K.0	Ottley Ave.	Stop Sign	None
CH-J.9	Community Center	Type C Enhanced	Reduce crossing length if feasible
CH-J.8	Willows	Unmarked	Remove marked crossing
CH-J.75	Pabor Ave.	4-Way Stop	None
MS-K.0	Ottley Ave.	4-Way Stop	None, consider bulbouts
MS-J.85	Columbine Ave.	Type A Basic	Only one crossing of Mesa at this location
MS-J.75	Pabor Ave.	4-Way Stop	None

NOTES:

1. Crosswalk warrants based on pedestrian volumes that only occur within school zones during periods of reduce speed limit enforcement should not be used as sole justification for crosswalk improvements for determining level of improvements for higher speed roadway.
2. Refer to Safe Routes to School Walk & Bike Audit completed in 2015 for additional safety recommendations.

LOCATION: Wildcat Avenue @ FMHS

VEHICULAR TRAFFIC: 2,344 ADT & 387 VPH

POSTED SPEED: 35 MPH (20 MPH when flashing)

ROAD CONFIGURATION: 3 Lane w/ Striped Median

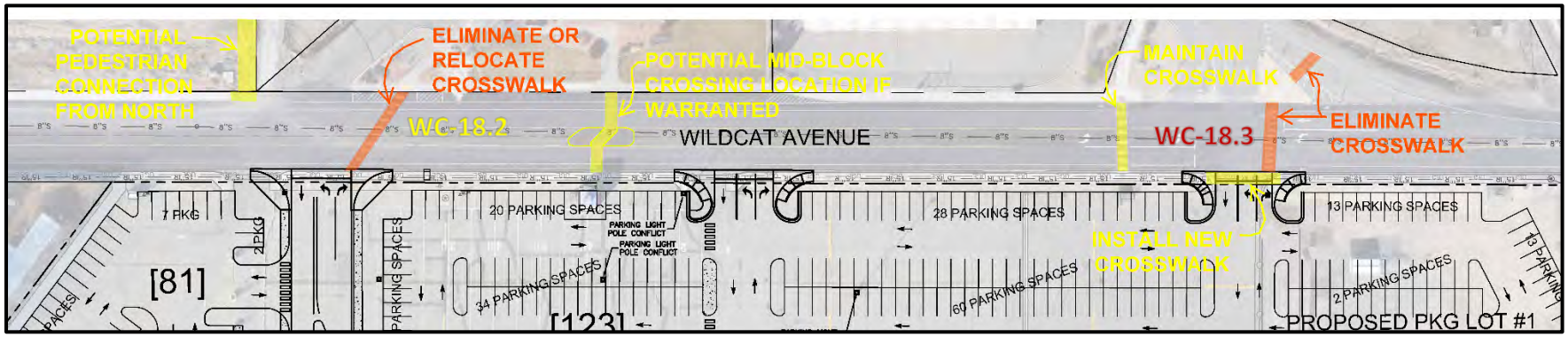


Figure represents potential changes based on planned access locations being considered by School District No. 51.

Crossing ID	Crossing Location	Crossing Type	Near-term Action
WC-18.2	Fruita Monument High School	Type C Enhanced	Consider eliminating and route pedestrians to J.3 Road, or Relocate to location where pedestrian refuge island may be feasible.
WC-18.3	J.3 Road	Stop Control	Eastern crossing does not connect to any existing pedestrian facilities. Evaluate if eastern crosswalk is needed.

APPENDIX C

Complete Crosswalk Evaluation Data

CITY OF FRUITA CROSSWALK EVALUATION DATA

Crossing ID	Street	Crossing Location	Vehicular Traffic: Stop Control	Roadway Configuartion	ADT	(VPH)	Speed (MPH)	Multi-Use Path Crossing?	Nearest Marked Crosswalk	School Zone	Adequate SSD?	Observed Issues	Recommended Crossing: Type	Recommended Crossing: Improvements	Priority	Date Completed
OT-18.5	Ottley Avenue	Fremont Street	No	3 lane w/ striped median	2,755	289	35	Yes	860'	No	Yes	Enforcement of speed reduction for WB traffic, crosswalk education for pedestrians.	C	Pedestrian Activated Flashing Beacons installed 2018. Geometric improvements if feasible. Future signal.	HIGH	2018 Crosswalk Improvements
OT-17.75	Ottley Avenue	Sycamore Street	No	2 Lanes thru traffic	2,785	260	35	Yes	1,300'	No	Yes	Serves transit stop and connects to trail north to LSW Park.	C	Geometric improvements to narrow crossing length.	HIGH	Planned for 2019
PN-J.75	Pine Street	Pabor Avenue	No	3 Lane w/ striped median	5,034	506	35	Yes	625'	No	Yes	Driver awareness issues for SB right, school crossing, relocate to north side of intersection and install raised median refuge island.	C	Raised Pedestrian Refuge Island on north side of intersection.	HIGH	2017 Crosswalk Improvements
CS-J.8	Coulson Street	Community Center	No	2 Lanes thru traffic	3,859	342	30	Yes	825'	No	Yes	Bulbouts constructed in 2016. Visibility limited when vehicles parked in close proximity to crossing.	B	Traffic calming bulbouts to reduce crossing length.	HIGH	2016 Crosswalk Improvements
AR-J.75	Arches Drive	Pabor Trail (aka Rimrock Trail)	No	2 Lanes thru traffic	829	79	25	Yes	None	No	No	Sight Distance limted to 20 MPH for SB traffic. School routes / trail connection to elementary school. 85th% speeds of 14 MPH observed due to proximity of dip.	A	Install basic marked crossing	HIGH	2018 Rimrock Trail Improvements
GR-18.5	Grand Avenue	Fremont Street	No	2 Lanes thru traffic	473	52	35	Yes	2,180'	No	No	Trail acts as school route for pedestrians. Large spacing to next crossing. Crossing seems unexpected for WB vehicles. Partial street intersection.	E	Install flashing beacons once traffic ≥ 1,500 vpd. Remove vegetation limiting sight dist.	MEDIUM	
OT-18.3	Ottley Avenue	Holly Park Drive	No	3 lane w/ striped median	2,755	289	35	No	860'	No	Yes	Crosswalk serves as connection for Holly Park Subdivision to Olga Anson Park, Need to Verify Pedestrian usage prior to any changes.	C	Geometric improvements to narrow crossing length. May need to relocate west to avoid left turn impacts.	MEDIUM	
PN-J.2	Pine Street	Grand Ave (new)	No	3 Lane w/ striped median	6,103	545	35	No	1,150'	No	Yes	Evaluate pedestrian school routes (may be better located at J.3), geometry issues with off set alignment of J.2, tree in sight triangle	C	Incorporate raised refuge similar to Pabor crossing.	MEDIUM	
PN-J.5	Pine Street	Carolina Avenue	No	3 Lane w/ striped median	6,103	545	35	No	775'	No	Yes	Serves transit stop, consider relocating better meet spacing needs for pedestrian traffic	C	Relocate crossing and west bus stop to McCune Right-of-Way	MEDIUM	
PN-K.2	Pine Street	Aquarius Avenue	No	3 Lane w/ striped median	3,640	363	35	No	390'	No	Yes	Relocate to south to Sunflower with development of southern LSW Park property.	C	Type C crossing treatments - Relocated to Suflower with development of south LSW Park property	MEDIUM	
PN-K.3	Pine Street	Powell Street	No	3 Lane w/ striped median	3,640	363	35	No	390'	No	Yes	Connection from subdivision to LSW Park. Overflow parking has reduced peak pedestrian volumes but still warrants crossing	C	Consider refuge or other measure to reduce crossing length and provide traffic calming	MEDIUM	
CS-J.6	Coulson Street	Aspen Avenue	Yes	2 Lanes thru traffic	3,859	342	30	No	200'	No	Yes	No marked crosswalk at this location. Crossing length would be long due to truck turning radius.	A	Install crosswalk bars on north and east sides of intersection.	MEDIUM	
MS-J.85	Mesa Street	Columbine Avenue	No	2 Lanes thru traffic	3,381	348	25	No	625'	Yes	Yes	Visibility of crossing pedestrians can be obstructed by vehicles parking on street for student pickup. 2 crossings at the intersection seems unnecessary.	A	Remove south crossing, No other action required.	MEDIUM	2018 Chip Seal Project

CITY OF FRUITA CROSSWALK EVALUATION DATA

Crossing ID	Street	Crossing Location	Vehicular Traffic: Stop Control	Roadway Configuartion	ADT	(VPH)	Speed (MPH)	Multi-Use Path Crossing?	Nearest Marked Crosswalk	School Zone	Adequate SSD?	Observed Issues	Recommended Crossing: Type	Recommended Crossing: Improvements	Priority	Date Completed
PB-17.20	Pabor Avenue	Plum Street	No	2 Lanes thru traffic	1,270	126	25	No	275'	No	Yes	Marked crosswalk bars but not crosswalk signage. Low vehicle speeds. Marked crossing not warranted.	E	Either remove marked crossing or install proper signage.	MEDIUM	
PB-17.30	Pabor Avenue	Mulberry Street	No	2 Lanes thru traffic	1,270	126	25	No	275'	No	Yes	Marked crosswalk bars but not crosswalk signage. Low vehicle speeds. Marked crossing not warranted.	E	Either remove marked crossing or install proper signage.	MEDIUM	
PB-17.40	Pabor Avenue	Peach Street	No	2 Lanes thru traffic	1,270	126	25	No	275'	No	Yes	Marked crosswalk bars but not crosswalk signage. Low vehicle speeds. Marked crossing not warranted.	E	Either remove marked crossing or install proper signage.	MEDIUM	
WC-18.4	Wildcat Avenue	Fruita 8/9 School Entrance	No	2 Lanes thru traffic	2,344	387	35	No	360'	Yes	Yes	Serves 15 homes and pedestrians being dropped off across from school. No pedestrian facilities to connect to stop control intersection. Accident 8/2017.	C	Existing treatments adequate. Consider eliminating once pedestrian facilities to Fremont.	LOW	
OT-17.13	Ottley Avenue	Cherry Street	No	2 Lanes thru traffic	3,043	374	35	No	600'	Yes	Yes	Shelledy provides crossing guards to assist in school arrival and departure times. Does not meet pedestrian volumes outside of speed reduction times.	A	Consider removing one of the Ottley crossings & install Geometric improvements if feasible.	LOW	
PN-K.4	Pine Street	K.4 Road	No	3 Lane w/ striped median	3,640	363	35	No		No	Yes	Unmarked crosswalk, ramp on west side of Pine, no pedestrian facilities on K.4 Road.	E	Remain unmarked crossing until K.4 pedestrian improvements are constructed.	LOW	
CH-J.9	Cherry Street	Community Center Access Road	No	3 lane w/ striped median	3,562	380	25	No	445'	Yes	Yes	Potential conflict with right turn vehicles onto Cherry Street. Community Center parking pick up location for school.	C	Evaluate options to reduce crossing length or improve driver awareness.	LOW	
CH-J.8	Cherry Street	Willows	No	2 Lanes thru traffic	3,562	380	25	No	365'	No	Yes	Mid-block crossing used primarily by FHW staff from Court Yard to Willows facilities. Connects to driveway access.	E	Remove marked crosswalk if feasible.	LOW	
MS-J.75	Mesa Street	Pabor Avenue	No	2 Lanes thru traffic	3,381	348	25	No	450'	No	Yes	Visibility of crossing pedestrians for SB vehicles obstructed by on-street parking near intersection. Traffic calming features (bulbouts) recommended.	A	Install geometric improvement for traffic calming and to reduce crossing length.	LOW	
PB-17.45	Pabor Avenue	Elm Street	No	2 Lanes thru traffic	1,270	126	25	No	275'	Yes	Yes	Marked crosswalk bars but not crosswalk signage. Low vehicle speeds. Marked crossing not warranted.	A	Install crosswalk signage.	LOW	
MP-J.7	Maple Street	Middle School Entrance	No	2 Lanes thru traffic	1,505	157	25	No	285'	Yes	Yes	Visibility of pedestrians can be limited with on-street parking during school zone hours. Crossing not warranted outside of school zone hours. Connects to driveway.	E	Existing treatments adequate. Consider removing with future road project.	LOW	
MP-J.8	Maple Street	Columbine Avenue	No	2 Lanes thru traffic	1,505	157	25	No	325'	Yes	Yes	Visibility of pedestrians can be limited with on-street parking during school zone hours. Skewed alignment.	A	Relocate or modify to reduce crossing length.	LOW	
WC-18.2	Wildcat Avenue	Fruita Monument High School	No	3 Lane w/ striped median	2,344	387	35	No	485'	Yes	Yes	Diagonal geometry causes longer crossing length. Congested area to cross during school zone hours. May be safer to route pedestrians to stop control.	C	Consider eliminating or relocating to location where pedestrian refuge island may be feasible.	LOW	

CITY OF FRUITA CROSSWALK EVALUATION DATA

Crossing ID	Street	Crossing Location	Vehicular Traffic: Stop Control	Roadway Configuartion	ADT	(VPH)	Speed (MPH)	Multi-Use Path Crossing?	Nearest Marked Crosswalk	School Zone	Adequate SSD?	Observed Issues	Recommended Crossing: Type	Recommended Crossing: Improvements	Priority	Date Completed
WC-18.0	Wildcat Avenue	Pine Street	Yes	3 Lane w/ striped median	2,344	387	35	No	675'	Yes	Yes	Location of crosswalk east of stop bar. Potential safety issue with NB vehicles turning from Pine Street due to limited visibility.	S	Stop control Adequate (Consider relocating closer to intersection)	LOW	
WC-18.3	Wildcat Avenue	J.3 Road	Yes	3 Lane w/ striped median	2,344	387	35	Yes	485'	Yes	Yes	Crosswalk located on both sides of intersection. No connecting pedestrian facilities on East side of J.3 Road or on north side of Wildcat to the west.	S	Stop control Adequate (Evaluate if eastern crosswalk is needed)	LOW	
OT-16.5	Ottley Avenue	Highway 6	Yes	2 Lanes thru traffic	859	93	35	Yes	3,300'	No	Yes	Bicycles don't always stop for crossing.	S	Stop Control Adequate (No Action Required)	--	--
GR-18.1	Grand Avenue	J.3 Road	Yes	2 Lanes thru traffic	473	52	35	Yes	2,180'	No	Yes	Heavy pedestrian volumes from high school and 8/9. Low vehicle traffic volume on Grand, no other crossings nearby.	S	Stop control Adequate (No action required)	--	--
OT-17.0	Ottley Avenue	Coulson Street	No	2 Lanes thru traffic	3,043	374	35	No	600'	No	Yes	Driver awareness issues with right turning movement. Just before school zone. Students appear to cross at Cherry Street.	A	Future Signal or stop control intersection (No action required)	--	--
OT-18.0	Ottley Avenue	Pine Street	Yes	3 lane w/ striped median	2,785	260	35	No	1,300'	No	Yes	Consider measures to increase driver awareness of pedestrians.	S	Stop control adequate, Future Signal (No action required)	--	--
OT-17.5	Ottley Avenue	Maple Street	Yes	2 Lanes thru traffic	4,765	494	35	No	1,250'	Yes	Yes	Heavy pedestrian volumes in school zone from middle school. Refer to FMS walk audit.	S	Stop control adequate, consider bulbouts to reduce crossing length (No action required)	--	--
OT-17.4	Ottley Avenue	Peach Street	No	2 Lanes thru traffic	4,765	494	35	No	620'	Yes	Yes	Unmarked crossing. Does not meet warrants outside of school zone times. Installed marked crossing not believed to increase safety.	E	Unmarked, direct middle school Students to Maple St. crossing. (No action required)	--	--
OT-17.25	Ottley Avenue	Mesa Street	Yes	2 Lanes thru traffic	4,765	494	35	No	600'	Yes	Yes	Heavy pedestrian volumes in school zone from elementary school	S	Stop control adequate (No action required)	--	--
PN-J.0	Pine Street	Wildcat Avenue	No	3 Lane w/ Raised Median	6,103	545	35	No	450'	No	Yes	Serves transit stop, school crossing, consider new crosswalk to north to reduce spacing distance	C	Existing pedestrian refuge island. (No action required)	--	--
PN-J.6	Pine Street	Aspen Avenue	Yes	3 Lane w/ striped median	5,252	525	35	No	625'	No	Yes	School crossing for Rimrock Elem. (Attendance area from Sycamore to Pine)	S	Stop control adequate (No action required)	--	--
PN-K.0	Pine Street	Ottley Avenue	Yes	3 Lane w/ striped median	3,640	363	35	No	1,230'	No	Yes	Pedestrian crossing length is longer than desired. 4-way stop control.	S	Stop control adequate (No action required)	--	--
MP-K.3	Maple Street	Sabil Drive	No	2 Lanes thru traffic	2,878	268	35	No	1,600'	No	Yes	No sidewalk connection to south on east side of Maple street. Relocate to LSW with construction of new bridge in future.	B	Existing Treatments adequate.	--	--

CITY OF FRUITA CROSSWALK EVALUATION DATA

Crossing ID	Street	Crossing Location	Vehicular Traffic: Stop Control	Roadway Configuartion	ADT	(VPH)	Speed (MPH)	Multi-Use Path Crossing?	Nearest Marked Crosswalk	School Zone	Adequate SSD?	Observed Issues	Recommended Crossing: Type	Recommended Crossing: Improvements	Priority	Date Completed
MS-K.15	Mesa Street	Roberson Drive	No	2 Lanes thru traffic	2,448	242	35	No	700'	No	Yes	May be able to incorporate grade separated crossing when replace LSW bridge in future.	B	Existing Treatments adequate.	--	--
CS-K.1	Coulson Street	Roberson Drive	No	2 Lanes thru traffic	2,052	213	35	No	500'	No	Yes	Pedestrian connection to subdivsion on west side of street not considered multi-use trail system for evaluation.	B	Existing Treatments adequate.	--	--
CS-K.0	Coulson Street	Ottley Avenue	Yes	2 Lanes thru traffic	3,859	342	30	No	825'	no	Yes	No safety issues noted with Coulson St. crossing. Refer to Ottley crossing at this intersection.	S	Stop control Adequate (No action required)	--	--
CH-K.0	Cherry Street	Ottley Avenue	Yes	3 lane w/ striped median	3,562	380	25	No	445'	Yes	Yes	School provides crossing guards. No queing of vehicles observed into intersection from school entrance.	S	Stop control Adequate (No action required)	--	--
CH-J.75	Cherry Street	Pabor Avenue	Yes	2 Lanes thru traffic	3,562	380	25	No	365'	No	Yes	4-Way Stop control. Adequate pavement markings and signage	S	Stop control Adequate (No action required)	--	--
MS-K.0	Mesa Street	Ottley Avenue	Yes	2 Lanes thru traffic	3,381	348	25	No	625'	Yes	Yes	School provides crossing guards. Bulbouts on 2 corners of intersection.	S	Stop control Adequate (No action required)	--	--
PB-17.12	Pabor Avenue	Cherry Street	Yes	2 Lanes thru traffic	1,270	126	25	No	275'	No	Yes	No safety issues noted.	S	Stop control Adequate (No action required)	--	--
PB-17.25	Pabor Avenue	Mesa Street	Yes	2 Lanes thru traffic	1,270	126	25	No	275'	No	Yes	Traffic Calming features recommended to reduce crossing length if feasible.	S	Stop control Adequate (No action required)	--	--
PB-17.50	Pabor Avenue	Maple Street	Yes	2 Lanes thru traffic	1,270	126	25	No	300'	Yes	Yes	Visibility of pedestrians can be limited with on-street parking during school zone hours. Consider traffic calming (bulbouts) to reduce crossing length.	S	Stop control Adequate (No action required)	--	--
WC-18.5	Wildcat Avenue	Fremont Street	Yes	2 Lanes thru traffic	2,344	387	35	Yes	360'	Yes	Yes	SSD restrictions exist, but visibility adequate if vehicles stop. Development of Fremont Street will need to incorporate safe intersection crossing.	S	Stop control Adequate (No action required)	--	Lighting Improved 2018