

MPD 80-12: Rio Rico Walking and Biking Study

Working Paper #2 - Plan of Improvements

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Photos Courtesy of Matt Hays



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I. Introduction

Santa Cruz County was awarded funding from the Arizona Department of Transportation (ADOT) Planning Assistance for Rural Areas (PARA) program to prepare the Rio Rico Walking and Biking Study. The purpose of the PARA program is to provide assistance to rural counties, cities, towns and tribal communities in rural Arizona to address a wide variety of multimodal transportation planning issues, including roadway, non-motorized and transit modes of travel.

The University of Wisconsin and the Robert Wood Johnson Foundation recently ranked Santa Cruz County as the healthiest county in Arizona. While this distinction certainly is worthy of some “bragging rights” for Santa Cruz County, one of the factors/criteria used in this ranking was “healthy recreation facilities” – in this category Santa Cruz County ranked dead last in Arizona. The study did find that on average, Santa Cruz County residents had increased physical activity and reduced obesity rates when compared to state and national averages. This bittersweet paradox is testimony to the need that local residents and visitors alike recognize in Rio Rico – additional sidewalks, trails and bicycle lanes are needed to enhance non-motorized mobility in the Rio Rico area.



Figure 1: Regional Context Map

1.1 Study Purpose and Intent

The purpose of the Rio Rico Walking and Biking Study is to enable Santa Cruz County to establish a program for the construction of desired bike lanes and sidewalks to provide safe and convenient pedestrian and bicycle access and connectivity to select Santa Cruz Valley Unified School District No. 35 school district facilities as well as use by the general public for transportation and recreational purposes. The School and County have completed a handful of trail projects over the years, but providing additional sidewalk, bike lane and/or trail facilities to safely and adequately connect schools to other Rio Rico activity centers and neighborhoods is the primary purpose of the Rio Rico Walking and Biking Study. Schools in particular are not well-served by bicycle and



pedestrian access and the School District and County would like to enhance opportunities for bicycle and pedestrian modes of travel to engage residents in healthy lifestyle choices without the fear of bicycle and pedestrian conflicts with vehicles.

1.2 Study Objectives

Study objectives identified by the Project Team and supported by the TAC for the Rio Rico Walking and Biking Study are identified below.

- Develop a program for the prioritization and construction of bike lanes and sidewalks in Rio Rico.
- Map a network of bicycle and pedestrian routes that safely connect the Rio Rico activity centers and adjacent land uses.
- Identify pedestrian and bicycle route deficiencies in terms of safety and system connectivity.
- Identify improvement projects that will address the deficiencies.
- Develop planning-level estimates for the improvements.
- Identification of potential funding sources.
- Prioritize the improvements into near-term (5 year), mid-term (10 year), and long-term (20 year) implementation projects.
- Develop a Final Report that includes the plan of improvements and final recommendations.

1.3 Working Paper #2 Purpose & Intent

The objective of Working Paper #2, *Plan of Improvements* is intended to build upon the data collected and evaluated in Working Paper #1. The existing pedestrian and bicycle system deficiencies observed in Working Paper #1 will be used as the basis for identifying and prioritizing a “plan of improvements”. This plan will incrementally address the various system deficiencies identified by the residents of Rio Rico, TAC and project team field evaluations observed and duly noted in Working Paper #1.

Working Paper # 2 will develop a diverse set of evaluation criteria in order to assign a “score” to each identified project. The purpose is to equitably compare and contrast various improvement projects over different project types - sidewalks and trails, bicycle facilities and intersections and crossings. Resulting scores will assist the project team and stakeholders in determining which



projects will be assigned to short term (5 years), mid-term (10 years) or long term (20 years) improvement horizons.

Working Paper #2 also builds upon and supports the evaluation and prioritization of the plan of improvements by providing additional information that will be meaningful and supportive to the overall implementation of the Rio Rico Walking and Biking Study. Planning-level cost estimates are provided to give Santa Cruz County and other project stakeholders a guide as to what typical cost standards and considerations could normally be expected for pedestrian and bicycle related improvements. Working Paper #2 also identifies a series of potential funding sources and cost sharing strategies to maximize Santa Cruz County dollars by leveraging collaborative funding and/or support from other federal, state, and local government or non-profit agencies. Finally, Working Paper #2 also provides a host of supporting policies and guidelines for each pedestrian and bicycle facility type including signage, Americans with Disabilities Act issues and “best practices” guidelines to be cognizant of when constructing pedestrian and bicycle improvements.

II. Supporting Policies & Design Elements

The bicycle and pedestrian facility design elements are intended to provide a baseline set of design parameters and policy considerations that should be followed when designing and constructing bicycle and pedestrian facilities in Rio Rico. Many of the design concepts are extrapolated in whole or in part or are a combination of guidance from AASHTO’s *Guide for the Development of Bicycle Facilities*, *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, *Policy on Geometric Design of Highways and Streets* and the FHWA *Manual on Uniform Traffic Control Devices* (MUTCD). These documents are collectively sourced and utilized in providing nationally recognized guidance for the design and construction of these facilities. These resource manuals are supplemented with guidance from ADOT and professional experiences of the consultant team as necessary.

2.1 Bike Routes/Shared Roadways

Bicyclists are generally permitted to operate on all roadways except where expressly prohibited by statute, regulation or local ordinance. Santa Cruz County does not have an ordinance or any other regulation that prohibits the operation of a bicycle on County roadways. According to the AASHTO *Guide for the Development of Bicycle Facilities* (4th Edition, 2012), there are no specific design specifications or standards for bike routes (shared lanes or roadways). However, there are multiple roadway design considerations that can make shared roadways more compatible for bicyclists.



Some of these include:

- 1) Good pavement quality
- 2) Adequate sight distance
- 3) Lower design speeds
- 4) Bike-compatible drainage grates and railroad crossings
- 5) Adequate lane width
- 6) Wider shoulders
- 7) Shoulders free of rumble strips
- 8) Appropriate signage

These design features are not always available in the existing roadway system. This can be particularly true in many areas of Rio Rico where topographic variations challenge sight distances and select roadway pavement sections are older and at times can pose hazards for cyclists. Cycling enthusiasts however prefer grade changes in their bicycle trails, especially in training regimens or racing settings. As a result, special attention and further study should be given to the placement of bicycle and driver warning signage on bike route designated streets with variations in grade change.

That said, rural roadways that operate with low to very low daily traffic volumes and have good sight distances may be suitable to accommodate shared roadways (bike routes) in their present condition. These roads can often provide an enjoyable and comfortable riding experience for bicyclists of all skill levels. There is often no need to provide a formal bike lane or other special accommodation for these roadways to be suitable for bicycling.

In rural settings like Rio Rico, a narrow, curving roadway with low traffic volumes and low speeds is often more suitable and preferred by bicyclists over roadways with good geometrics, shoulders, and continuous traffic at higher speeds. Outside of urban areas, it is common that these types of shared roadways comprise a high percentage of designated and favorable bicycle routes.

In Rio Rico, the vast majority of the existing local and collector roadways identified in the Santa Cruz County Road Maintenance System are designated as local streets that have 24-foot pavement sections (two, 12-foot travel lanes). Some streets have 26-foot pavement sections (two, 13-foot travel lanes). Some of the roadways are marked with yellow center-line striping and white edge striping, but many are not. As the *AASHTO Guide for the Development of Bicycle Facilities* notes, lane widths of 13 feet or less make it likely that most motorists will encroach at least part way into the adjacent lane (or oncoming lane) to pass a bicyclist with adequate comfort and distance (typically 3-feet). Lane widths of 14 feet or greater allow vehicles to pass bicyclists without encroaching into the adjacent traffic lane. Roadways with lane widths of less than 14-feet can still



function safely for bicyclists with proper bicycle guide-signage and/or shared roadway markings. Please see section 2.7 for additional detail on signage and pavement markings.

Many of the existing roadways in Rio Rico have a 24-foot pavement width. For roadways that experience a low to very low traffic volume, the installation of these signs along Priority Underserved Roadways is the most logical, cost effective and meaningful short term benefit to promote and enhance a safe and rewarding bicycle experience in Rio Rico. The 24-foot wide roadways with no pavement markings such as Calle Cherokee, Camino Aqua Fria and Calle Calabasas were identified as Priority Underserved Roadways by community stakeholders, have two, 12-foot travel lanes. A vehicle can comfortably operate within 9-10 feet of that space. On a low-volume traffic roadway with no centerline striping and a posted speed limit of 35 mph or less, there is sufficient maneuverability for vehicles to comfortably avoid a bicyclist sharing that roadway. The lack of center line striping and low traffic volume enhances the ability for maneuverability on a low volume roadway.

This approach however would *not* be appropriate for a two lane road with center-line striping such as Camino Ramanote (a Priority Underserved Roadway) that experiences over 2,000 vehicle trip per day. The higher traffic volumes and center line striping do not provide for sufficient comfort and safety when a motorist needs to pass a bicyclist. Avoiding the cyclist would require the vehicle to encroach upon the approaching travel lane which naturally poses other safety issues and is, of course, a civil traffic violation. It is more favorable for these roadways to be retro-fitted with paved shoulders or striped bike lanes.

2.2 Paved Shoulders

When it comes to retro-fitting existing roadways in Rio Rico, the addition of bicycle improvements is best achieved together with road widening, reconfiguration or re-pavement of the existing roadway. In rural areas, the construction of paved shoulders is the most sensible and cost effective approach. The construction of a bike lane is preferred in roadways with higher traffic volumes, typically in urban or suburban settings.

Adding or improving paved shoulders can often enhance the bicyclist experience on roadways that have higher travel speeds, traffic volumes and/or limited existing lane width to adequately share the space with motorists. It is important to understand the difference between a paved shoulder and a bike lane. According to AASHTO's, *A Policy on Geometric Design of Highways and Streets*, bike lanes are travel lanes and paved shoulders that are not designated for travel but often serve as travel lanes, particularly in rural settings. Paved shoulders at intersection approaches often are maintained to the right edge of the right turn lane where bike lanes are configured differently by



maintaining the bike lane to the inside (left edge) of the designated right turn lane. It is preferable to have paved shoulders on both sides of the roadway.

In Rio Rico, where the vast majority of existing roadways do not have curbing, the desired width for a paved shoulder is 4-feet. This width should be increased to 5-feet from the face of any vertical obstructions such as a guard rail, vertical curb or other outside roadway barrier. If the adjacent travel lane is at least 12-feet in width (the majority of roadways in Rio Rico have a 24-foot roadway section, or two, 12-foot travel lanes), a 3-foot shoulder is acceptable. However, undesignated paved shoulders of a lesser width can enhance the safety and comfortable space for a bicyclist on constrained roadways in cases where it is not practical to achieve the desired paved shoulder width of 4 feet. The *AASHTO Guide for the Development of Bicycle Facilities* (4th Edition, 2012) and the *A Policy on the Geometric Design for Highways and Streets* should be consulted for specific instructions regarding roadway retro-fitting.

2.3 Bike Lanes

As introduced in Working Paper #1, there are currently no bicycle lanes or bicycle paths in Santa Cruz County. Bicycle lanes and bicycle paths share the roadway with motor vehicle traffic. Shared use paths, which are a paved facility completely separated from a roadway, are found in Rio Rico. Section 2.4 below offers additional discussion on shared use paths in Rio Rico.

Bicycle lanes are a portion of the roadway dedicated by signing, striping and pavement markings for one-way bike travel, typically in the same direction as the adjacent motor vehicle traffic. As the *AASHTO Guide for the Development of Bicycle Facilities* notes;

“Bicycle lanes are the appropriate and preferred bike facilities for thoroughfares in both urban and suburban areas. Where desired, or where there is a high potential for bicycle use, bike lanes may be provided on rural roadways near urban areas”.





This of course is an important distinction relative to the identification and prioritization of bike lane projects (or lack thereof) in Rio Rico. Paved shoulders can be designated as bike lanes with the appropriate MUTCD signage and pavement markings, especially in rural settings. The low to very low traffic volumes, low density/ intensity of existing and planned land uses, and existing circulation and carrying capacities of the rural roadways in Rio Rico collectively warrant the prudent application of shared roadway bike routes or construction of paved shoulders to accommodate a safe and cost effective expansion of a connective network of bicycle trails in Rio Rico.

2.4 Shared Use Paths

As introduced in Working Paper #1, shared use paths are designed and intended for use by bicyclists, pedestrians, joggers, skaters, and wheelchair users traveling together on a paved right-of-way (or easement) separate from the roadway facility. The Boy Scout Trail, John and Bette De Stefano and Henry Jimenez Pathways are examples of existing shared use pathways in Rio Rico. Shared use paths are typically designed for two-way travel.

Shared use paths are typically designated for areas that can provide long, continuous and uninterrupted use. They are often located adjacent to water features, utility corridors, lengthy roadways, railroad corridors and other nature features. Shared use paths should not necessarily preclude other bicycle facilities in roadways, but in rural areas there is generally not a need for such redundant facilities.

Compliance with Americans with Disabilities Act (ADA) design provisions is required for shared use paths since they are accessible by pedestrians. In fact, future designers of shared use paths in Rio Rico shall consult the Architectural and Transportation Barriers Compliance Board (Access Board) *Advanced Notice of Proposed Rulemaking on Accessibility Guideline for Shared Use Paths*.



Ten feet (10-feet) is the minimally accepted width for a paved two-directional shared use path. Typical desired widths vary from 10-feet to 14-feet depending on the mix and volumes of path users. Paths of 11-14 feet wide typically are provided for more intense usage of approximately 300 users in a peak hour or when more than 30% of the users are pedestrians or joggers. The existing shared use paths in Rio Rico are 10-feet in width which is also a sufficient width for future shared use paths in Rio Rico. The desired paved width can be reduced to 8-feet in isolated circumstances when dictated by a physical impediment, bridge structure, utility structure or fence. The MUTCD and AASHTO *Guide for the Development of Bicycle Facilities* should be consulted by designers for more specific design and signage guidelines for these circumstances.

For a typical shared use path in Rio Rico where usage on a given day is less intense than that of urban areas, no striping is necessary for the shared use path. Where operational challenges exist, a solid yellow line to prohibit passing may be utilized. Any shared use path markings shall be retro-reflective.

Graded side shoulders consisting of compressed native or decomposed granite materials should be maintained at a minimum of two feet in width (preferably 3 feet to 5 feet) with a maximum cross slope of 6:1 (horizontal/vertical). Also, a minimum of two foot clearance area shall be maintained from the edge of the shared use pathway (pavement edge) to bushes, rocks, pole signs, trash receptacles or other such objects. The preferred vertical clearance to any overhead obstruction is 10 feet. A typical shared use path for Rio Rico is shown in Figure 2 below.

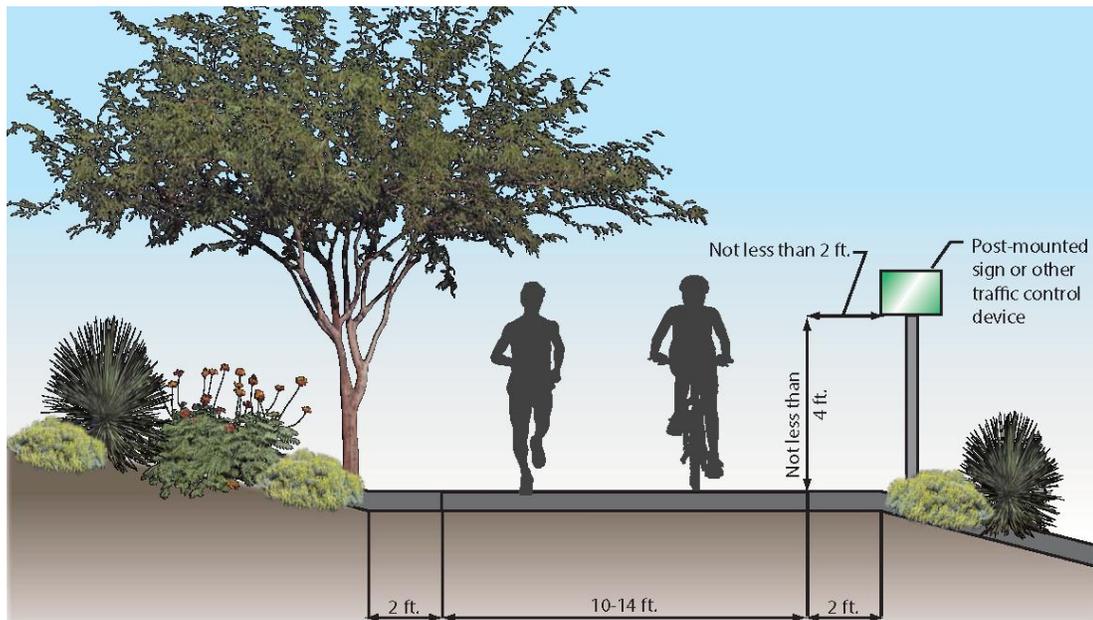


Figure 2: Typical Shared Use Path Cross Section



Future shared use path designers shall refer to the AASHTO *Guide for the Development of Bicycle Facilities* and the *Advanced Notice of Proposed Rulemaking on Accessibility Guideline for Shared Use Paths* for detailed design provisions in circumstances where the shared use path is in close proximity to a roadway and for driveway conflicts.

2.5 Multipurpose Trails

Multipurpose trails are off-road trails, typically unpaved that are intended for use by pedestrians and bicyclists. Multipurpose trails typically are set back from formal roadway facilities and often utilize natural and manmade features such as washes, rivers or utility corridors for recreational use. The Anza Trail is an example of a multipurpose trail in Rio Rico. There is no “one size fits all” approach when designing multipurpose trails as their design is highly influenced by local conditions including topography, physical impediments, and availability of right-of-way or easements.



2.6 Sidewalks

Sidewalks generally provide the greatest degree of comfort for pedestrians when pedestrian use is frequent and in close proximity to a roadway facility. In Rio Rico where much of the existing and planned land uses are rural and low density residential, sidewalks are not always necessary or desired. Generally, sidewalks are preferred in residential communities with an average lot size of 12,000 square feet or smaller. The population densities and vehicle trips generated in higher density subdivisions warrant the application of sidewalks to safely segregate the pedestrian from vehicular traffic. In residential areas with lower densities, paved shoulders on rural roadway sections adequately serve pedestrian comfort and convenience.

Santa Cruz County utilizes Maricopa Association of Governments (MAG) standard specifications and details for the design and construction of sidewalks (Figure 2). Section 1504.5 (G) of the Santa Cruz County Zoning and Development Code requires a minimum of a four (4) foot sidewalk in most residential zoning districts and a six foot sidewalk in commercial and industrial areas. The MAG detail calls for a 5-foot sidewalk width, however in areas where heavy pedestrian activity is anticipated, a six foot width is preferred. ADA regulations require that a sidewalk must be passable for two wheelchair users and is in part the rationale why a 5-foot sidewalk is generally the



preferred minimum width. Otherwise, the construction of 4-foot sidewalks would require “pull-outs” every 200 feet to meet ADA guidelines. Where topography or other physical limitations exist, the minimum acceptable width of a sidewalk for short distances is four feet.

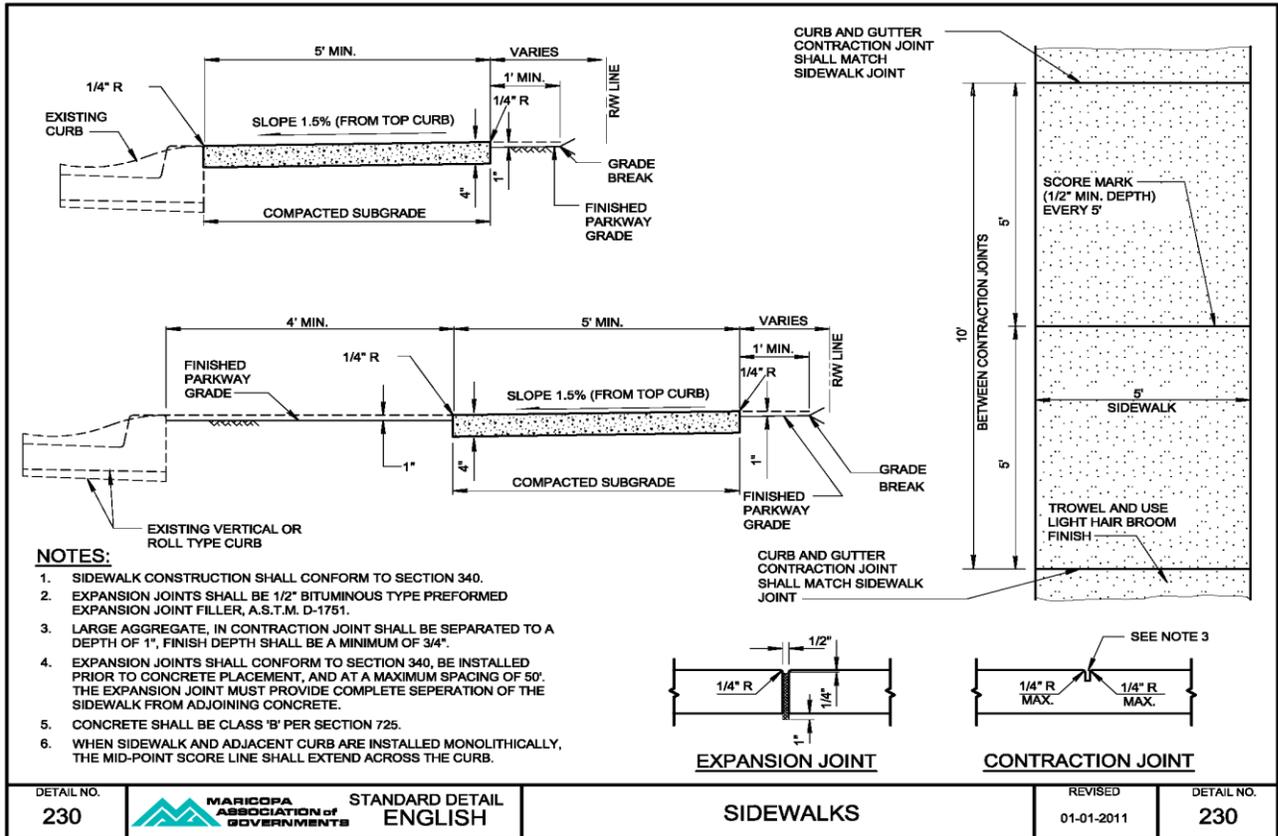


Figure 3: MAG Std. Sidewalk Detail 230

2.7 Signage

All signage must comply with the current edition of the Manual on Uniform Traffic Control Devices (MUTCD). The minimum number of signs adequate to communicate the intended message is desirable in order to prevent information overload. In Rio Rico, the application of Bike Route signs will be the most prevalent use of signs.

The signs shown may be used on roadways without bike lanes or usable shoulders and the road section may be too narrow for motorists and bicyclists to operate side by side within a lane. Alternately, W11-1 with W16-1P may be used in an area of concern where it is not feasible or cost prohibitive to modify a facility to better accommodate bicyclists.

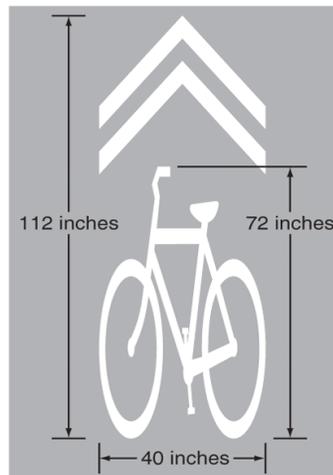


OR



Figure 4: MUTCD, W11-1

Figure 5: MUTCD, W16-1P



Source: MUTCD

2.8 At-grade railroad crossings

Railroad crossings that cross a roadway at an angle can cause steering difficulties for bicyclists. Rio Rico has railroad crossings at county roadways, including Ruby Road as perhaps the most notable. Depending on the width and depth of the flange way opening and pavement unevenness, it is common for bicycles to get “pinched” and turned away from their desired course, causing accidents and injuries.

When evaluating new crossings for roadways or the construction of a shared use path, the accepted angle of the skew between the centerline of the tracks and the bike facility is 60-90 degrees with 90 degrees being preferred. Concrete surfacing should be applied for smoothest and safest ride as it performs better in wet conditions. Rubber crossings are slippery when wet and degrade over time, especially in the Arizona sun. Figure 5 below shows a desirable railroad crossing condition.

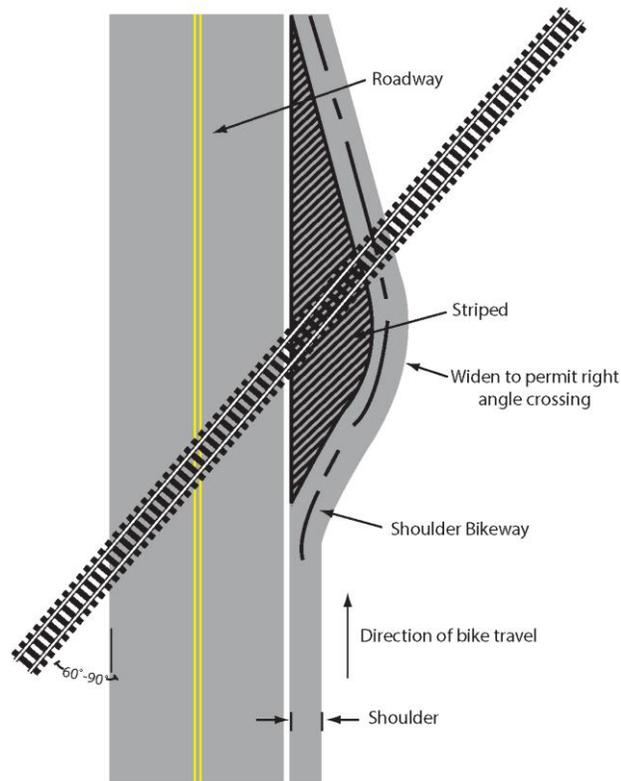


Figure 6: Preferred Railroad Crossing Detail
 Source: AASHTO Guide for the Development of Bicycle Facilities (4th Edition)

Some railroad crossings in Rio Rico also have cattle guards. Where possible, bicycle crossings should be designed where the openings of the cattle guard are perpendicular to the bicycle crossing in order to avoid the possibility of the bicycle tires dropping into the gaps and causing a potentially severe crash. If this is not possible, consider welding metal straps across the grate in a perpendicular fashion using a maximum longitudinal spacing of 4-inches. Figure 6 below illustrates some sample grate designs that are preferred in order to enhance the safety of these junctures.

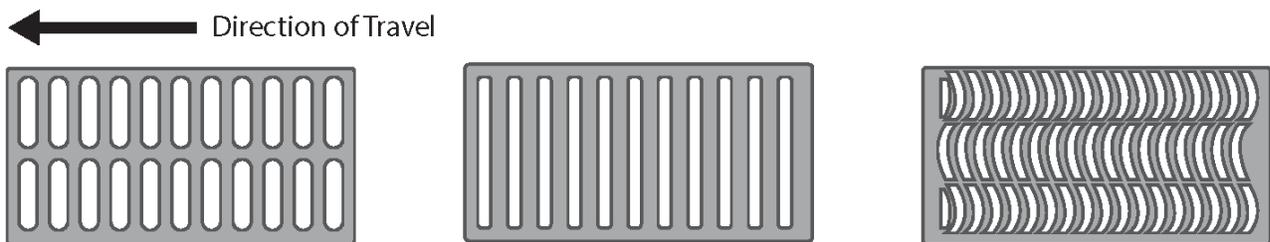


Figure 7: Preferred Cattle Guard Details



2.9 Narrow Bridges

Generally speaking, bridges should accommodate bicycles and pedestrians into their design. The type of bicycle facility should consider the function of the roadway (design speed), length of the bridge facility and existing conditions of the approach roadway. Paved shoulders (bicyclists) and sidewalks are the most common application in rural conditions such as Rio Rico. At a minimum, the addition of paved shoulders on the approach road should be included in any retrofit project. In conditions where the bicycle facility (paved shoulder) is adjacent to the edge of the bridge, a rail with a height of 42 to 48 inches (depending on design speed) should be utilized. Retrofitting existing bridges by reducing travel lane width to accommodate bicyclists and pedestrians is not a viable option in Rio Rico – the lane widths are already at 12 feet in most cases.

In conditions where existing bridge retro-fits are not practical or cost-effective, pedestrian and bicycle facilities (one shared use path) can be provided in a grade-separated crossing to enable the continuation of the existing bike or trail system in small washes. When it is necessary to provide for bicyclists on currently undersized bridges, “share the road” bicycle signage, pavement markings and driver warning signage should be utilized when widening options are not available such as Ruby Road and Rio Rico Drive crossings of the Santa Cruz River. For grade separated crossings that entail the shared use path to traverse an existing small wash facility, concrete is the preferred materials to minimize scour and erosion. Environmental permitting and hydrology studies may be necessary prior to design and construction of said facilities. This condition is only applicable to smaller wash crossings such as the West Frontage Road crossing of Aqua Fria Canyon or Ruby Road at Potrero Creek.

2.10 Mitigating Intersections with Unpaved Roadways

A common problem plaguing bicycle trail safety and maintenance in rural communities is loose gravel that becomes deposited on the bicycle trails from vehicle movements on approaching unpaved driveways. Small, loose gravel on bicycle trails creates a safety hazard for cyclists and a maintenance headache for local public works crews. When constructing a new paved shoulder, shared use path or bike lane facility, it is suggested that at a minimum 10-foot portion of the unpaved driveway approach be paved in order to reduce loose gravel depositing onto bike trails and creating crash hazards.

2.11 Pedestrian Crossings

Crosswalk markings provide safety and guidance to pedestrians who are crossing roadways by delineating paths to and within signalized intersections. In conjunction with signs and other measures, crosswalk markings help to alert road users of a designated pedestrian crossing point across roadways at locations that are not controlled by traffic control signals or STOP or YIELD



signs. At non-intersection locations, crosswalk markings legally establish the crosswalk. For approaching vehicles, appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-2, W-11-15 or W-11-15P for vehicle approaches at intersections should be considered. It is recommended that any pedestrian crossing project should first perform a warrant study to properly identify the crossing need, type and potential design. Each proposed crossing will be evaluated in more detail at the time of trail design. Examples of typical signing and pavement markings are shown below.

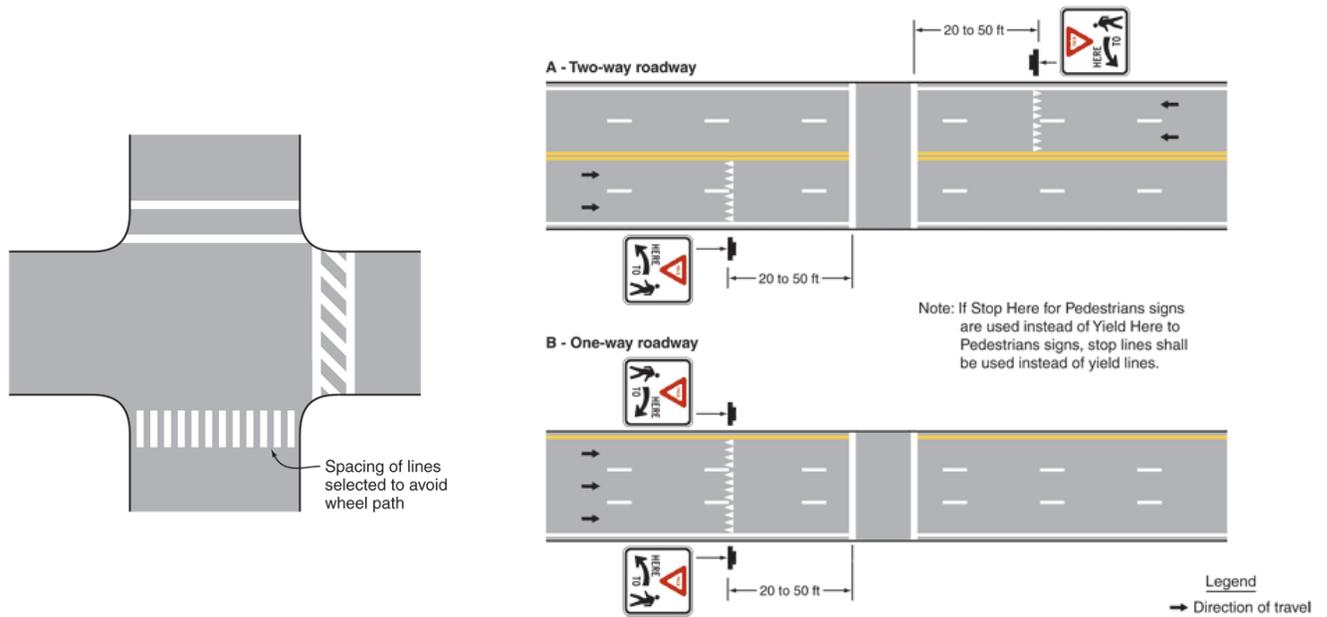


Figure 8: Typical Signing & Marking
Source: MUTCD



III. Evaluation Criteria

3.1 The Importance of Evaluation Criteria

A key component in this Rio Rico Walking and Biking Master Plan is to provide for effective measures for Rio Rico community stakeholders, County staff and the project team to objectively and effectively evaluate various types of bicycle and pedestrian improvement projects. Any master plan of this variety should be tailored to the community’s needs, enjoy the benefit of public support, and be realistic and practical in its implementation. Projects should be coordinated with existing County plans and policies, identify strategies for the phased implementation of larger projects and establish a series of priorities that are intended to guide County staff and elected officials in the decision making process.

Development of evaluation criteria for Rio Rico is truly a blend of broad transportation industry criteria, professional experiences, and community input received through the planning process. These resources collectively are refined into a combination of evaluation criteria that are tailored to the objectives identified for the Rio Rico Walking and Biking Study. It is worth noting that projects that promote the improvement of facilities that meet Safe Routes to Schools program objectives receive a weighting factor of “2” since these improvements are highly desired by the community and were emphasized as one of the primary objectives of Santa Cruz County’s application to ADOT for funding of this project.

3.2 Introduction and Description of the Evaluation Criteria

1	<p>Criteria: Project provides an improved linkage to existing or planned parks, trail or other public spaces or closes a gap in an existing trail or bicycle trail network.</p> <p>Description and Applicability: Project will enhance the current condition by providing connection (or closing a gap) from an existing residential neighborhood, activity center or existing formal or informal trail to an existing or proposed park, trail (or trail system), shared use pathway or other public space.</p> <p>Score/Rank: Yes = 1 point No = 0 points</p>
2	<p>Criteria: Noteworthy safety improvements based on 5 years of historical crash data and/or field observations.</p>



Description and Applicability: Project will enhance the current condition by improving the safety and functionality of deficient roadways, intersections and mid-block pedestrian crossings. Such improvements may consist of sidewalks on busy streets, pavement markings, signage, refuge areas, lighting or improved sight distances and driver warning systems.

Score/Rank: Yes = 1 point No = 0 points

3

Criteria: Proposed improvements are located within a two mile radius of an elementary school or middle school.

Description and Applicability: Project will enhance the current condition by targeting select bicycle and/or pedestrian improvements in proximity to existing elementary and middle schools consistent with Safe Routes to Schools criteria and funding formulas. Such improvements may consist of sidewalk improvements (repairs, widening, gap closures, and curb ramps), crosswalks, traffic control devices, signage, and roadway/traffic calming on-street bicycle lanes or paths and off-street trail facilities that may provide a neighborhood connection or short-cut.

Score/Rank: Yes = 1 point No = 0 points Weighted Score = x2

4

Criteria: Complexity of Construction (Cost)

Description and Applicability: Projects will vary in complexity of physical construction techniques and cost. Highly complex projects will require additional planning, design, possible environmental permitting, right-of-way acquisition and include challenging physical constraints due to topography or existing infrastructure deficiencies that increase overall project cost. Less complex projects typically include those projects that can be designed and constructed in a more expedited fashion due to the availability of existing right-of-way, and/or the lack of physical, environmental or other related infrastructure deficiencies.

Score/Rank: Little Complexity = 2 points
Medium Complexity = 1 point



High Complexity = 0 points

5

Criteria: Construction of the project creates the potential to reduce vehicle trips in the immediate area.

Description and Applicability: Will the construction of the proposed project create the potential to experience a reduction in vehicle trips in the immediate area by creating an alternative mode to vehicular transportation? Improved multimodal connectivity between existing neighborhoods and from neighborhoods to retail, employment or other community services are emphasized here.

Score/Rank: High Potential = 2 points
 Limited Potential = 1 point
 Project will not reduce vehicle trips = 0 points

6

Criteria: The Rio Rico community has expressed a desire to improve upon an existing deficiency and supports the project as a means to improve safety, mobility or connectivity in the immediate area.

Description and Applicability: Community stakeholders have identified key deficiencies, concerns or desired improvements through community dialogue, TAC meetings, youth workshop or other feedback received by the project team.

Score/Rank: Broad Community Support = 2 point
 Community Support = 1 points
 Deficiency Identified but lacking pronounced community support = 0 points

7

Criteria: The proposed project may have the ability to cost share with supplemental funding sources in order to implement the construction of the project.



Description and Applicability: The proposed project may yield the ability to leverage funding support from outside agencies, property owners and/or federal, state or local governments, organizations and non-profit agencies to assist in sharing or reducing the overall construction costs of the project.

Score/Rank: Yes = 1 point No = 0 points

8

Criteria: The proposed project has the potential enhance economic development and/or tourism opportunities to the Rio Rico area.

Description and Applicability: The proposed project may enhance overall economic development and tourism objectives by improving multimodal connectivity between residential neighborhoods and employment centers OR the project enhances the appeal of existing roadway or trail facilities that better complete (or help complete) a holistic network that may be used to draw regional events and tourism to Rio Rico. Examples vary and can include improvements or connections to the Anza Trail or Garrett’s or bicycle improvements to accommodate racing or training events.

Score/Rank: Yes = 1 point No = 0 points

IV. Plan of Improvements

Table 1 - Suggested Plan of Improvements identifies, discusses and ranks each of the various projects as the foundation to prioritize the Plan of Improvements for the Rio Rico Walking and Biking Study. Rankings are provided for each of the following project types: sidewalks, shared use paths, multi-purpose trails, paved shoulders, bike route/shared roadways, difficult intersections, difficult pedestrian crossings, and narrow bridge crossings.

The ranking of each project type separately is provided as a means to guide the general comparison between projects. The rankings demonstrate a rational process by which project stakeholders can balance a multitude of considerations when evaluating and prioritizing various project types. The rankings are not intended to be a final, conclusive statement that projects must be completed in the order of which they were prioritized. As Santa Cruz County and other project stakeholders move forward with the implementation of select projects, further consideration must be given to



the relative cost effectiveness of the project together with policy considerations and community benefit that, together with the guidance of this matrix, ultimately influence the decision as to what project gets implemented over another. Based on rankings received, individual projects then are placed into short term (5-year), medium term (10-year) and long term (20-year) implementation time frames.

Choices need to be made on accommodating suggested improvements and how select roadways can be phased or retrofitted in order to provide safe and meaningful improvements that often times are tempered by budget realities. Technical, political and financial realities dictate that not all improvements will happen overnight.

This process becomes a balance of art and science whereby the science component is guided by standards and specifications and the art influenced by local conditions, community input and reasonable technical judgment. Utilizing the information and guidance contained in Table 2, short term (5-year), medium term (10-year) and long term (20 year) projects are highlighted below.

Short term projects are those that can be implemented with relative ease and little cost and yet demonstrate tangible progress of implementation to the community. Examples in Rio Rico will include the installation of bike route/shared lane signage and continued improvements to the West Frontage Road shared use path.

Medium term projects typically will be more complex and costly to implement. They may include the need for formal design and/or funding through a formal CIP or other County/grant program. Examples for Rio Rico include the construction of paved shoulders and select Safe Routes to Schools improvements.

Long term projects tend to be those that are a considerable investment and have a higher degree of complexity in design, construction and perhaps political vantage point.



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Location	Approx. Length	Enhanced connection to public spaces/closes gap	Noteworthy Safety Improvement	Proximity to Schools	Complexity of Construction	Reduction in vehicle trips	Community Support	Cost Sharing Potential	Economic/Tourism Potential	Total Points	Notes
Sidewalks											
Camino Lito Galindo	Apprx. 3,200 feet	1	1	2	1	2	2	1	0	10	Camino Lito Galindo has a 50-foot right-of-way. The north side of Camino Lito Galindo is preferred for a continuous sidewalk connection and accessibility from adjoining neighborhoods to all three school sites. Sufficient right-of-way exists on each street for a sidewalk. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
Yavapai Drive "Loop" – from West Frontage Road to West Frontage Road	Apprx. 4,900 feet	1	1	0	2	2	2	0	1	9	Attached sidewalk is recommended for the north/east sides of Yavapai Drive from the existing curb return at West Frontage Road along the entire "loop" with its reconnection to West Frontage Road to the north. This "urban" area of Rio Rico is home to the most densely populated residential area and Rio Rico Plaza (Garrett's) which serves as Rio Rico's commercial services core. Pedestrians routinely frequent this route and a sidewalk is needed for safety and separation from motorists as Yavapai Drive is the most traveled roadway with over 11,000 average trips per day. A striped crosswalk with pedestrian warning signage is needed at the Garrett's driveway location.
Pena Blanca Elementary School entrance driveway	Apprx. 200 feet	0	1	2	2	1	1	1	0	8	Sidewalk on the west side of this driveway is necessary to ensure safety by reducing potential for pedestrian/vehicle conflict at this strategic school entrance.
Avenida Leon-Avenida Gandara Loop	Apprx. 7,250 feet	1	1	0	0	1	0	0	0	3	Two "local" streets that operationally function as collector roadways for the medium density residential neighborhoods it serves and in close proximity community services on Avenida Coatimundi. Sidewalks on both sides of the street will enhance the safety and operational efficiency of these busy residential collector roadways by separating the pedestrians from the vehicles in this well-traveled area. Challenges include fitting sidewalks within the existing right of way and multiple driveway conflicts.
Shared Use Paths											
West Frontage Road – Camino De Patio to Camino Lito Galindo (Phase 1)	Apprx. one mile	1	1	2	1	2	2	1	1	11	Santa Cruz County is currently in the process of constructing Phase 1 of a shared use path along the west side of West Frontage Road. West Frontage Road has ample right-of-way at 150-feet and the shared use trail alignment is sufficiently buffered from the roadway prism. Suggesting appropriate pedestrian warning signage for vehicle approaches at intersections.
West Frontage Road – Camino De Patio to Camino Ramanote (Phase 2)	Apprx. 4,300 feet	1	1	0	1	2	2	1	1	9	Santa Cruz County is currently in the process of constructing Phase 1 of a shared use path. This segment is planned as Phase 2 along the west side of West Frontage Road. West Frontage Road has ample right-of-way at 150-feet and the shared use trail alignment is sufficiently buffered from the roadway prism. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-15 or W-11-15P for vehicle approaches at intersections.
West Frontage Road – Camino Ramanote to Yavapai Drive (Phase 3)	Apprx. 2,600 feet	1	1	0	1	2	2	1	1	9	Santa Cruz County is currently in the process of constructing Phase 1 of a shared use path. This segment is planned as Phase 3 along the west side of West Frontage Road. West Frontage Road has ample right-of-way at 150-feet and the shared use trail alignment is sufficiently buffered from the roadway prism. The narrow bridge crossing over Aqua Fria Canyon will be a design challenge and is discussed under the "Narrow Bridges" section. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-15 or W-11-15P for vehicle approaches at intersections.



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West Frontage Road – Peck Canyon south to Camino Lito Galindo (Phase 4)	Apprx. 2,675 feet	1	1	2	1	1	2	1	0	9	Provide for the northerly extension of the West Frontage Road shared use path currently being designed and constructed by the County in three phases. Suggestion that this segment become phase four. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
Camino Agua Fria	Apprx. 500 feet from Yavapai Drive intersection	0	1	0	2	1	2	0	0	6	A shared use path along the south side of Camino Agua Fria is recommend from the intersection with Yavapai Drive for approximately 500 feet. This shared use path will provide an appropriate transition to the bike route planned along Camino Agua Fria and the sidewalk and shared use path system along Yavapai Drive adjacent to the more densely populated residential neighborhoods. The 80-feet of existing right-of-way is sufficient to accommodate the planned improvements.
Yavapai Drive “Loop” – from West Frontage Road to West Frontage Road	Apprx. 4,900 feet	1	1	0	2	2	2	1	1	10	A shared use path is recommended for the south/west sides of Yavapai Drive from the existing sidewalk terminus at the West Frontage Road along the entire “outer loop” with its reconnection to West Frontage Road to the north. This “urban” area of Rio Rico is home to the most densely populated residential area and the Rio Rico Plaza (Garrett’s) which serves as Rio Rico’s commercial services core. To compliment a planned sidewalk across the street, a shared use path is desired to accommodate bicyclists as well as pedestrians for existing and planned “urban” subdivisions in this area. The shared use path will enhance multimodal connectivity to the West Frontage Road shared use path, separate bicyclists and pedestrians from the busiest roadway in Rio Rico and also provide connection to the existing multiuse pathway at Camino Caralampi and ultimately to the Esplendor Resort. An existing right-of-way width of 150 feet is sufficient to accommodate this improvement and the terrain is relatively flat in order to minimize necessary grading. Future connection to a planned bike route (paved shoulders) along the Rio Rico Drive overpass will greatly enhance system connectivity in this strategic location of Rio Rico.
Camino Maricopa – Ruby R. (SR 289) to West Frontage Road	Apprx. 5,800 feet	1	0	2	1	1	1	1	0	7	Camino Maricopa is classified as a local street with Santa Cruz County but functions more so as a collector roadway. The speed limit is posted at 30 mph. This roadway provides collector-level service connecting West Frontage Road to Ruby Road (SR 289) and is a central access point for adjacent residents wanting to access the schools and West Frontage Road. A shared use path along the east side of the roadway is recommended. Camino Maricopa has 100-feet of right-of way and a 24-foot pavement section. There is sufficient right-of-way to construct a shared use pathway. The east side of the roadway has fewer topographic constraints than the west side and provides direct connectivity to the school entrance drive.
Camino Caralampi – Yavapai Drive to Calle Amarillo	Apprx. 9,400 feet	1	1	0	0	1	1	0	1	5	This roadway already has over 4,000 vehicle trips per day. It is a 24-foot pavement section with a generous 100-foot right of way. The roadway maintains a center line stripe and there are no additional paved shoulders. At its northern terminus with Yavapai Drive, non-motorized users access Garrett’s and the Esplendor Resort multipurpose trail also connects to this area. A shared use path is desired to serve this frequently traveled area of Rio Rico to maintain separation of motorists and pedestrians and bicyclists. This shared use path could extend to a southern terminus at Calle Amarillo. This 9,400 foot length includes the most populous and most traveled portions of Camino Caralampi. The path is likely most desirable on the west side of the roadway to allow access from the majority of residents and thereby creating a



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											seamless path system. The planned shared use path could connect to the existing multiuse trail near the Esplendor Resort or replace the existing portions of multiuse trail altogether. It should be noted that potential conflicts with driveway cuts and fence encroachments create challenges to design and construction costing along the west side of the roadway. Appropriate crosswalks and driver warning signage is needed at roadway intersections. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-2, W-11-15 or W-11-15P for vehicle approaches at intersections.
Via San Potosi – Avenida Lirio to Paseo de Yucatan	Apprx. 1,600 feet	0	1	2	1	1	1	1	0	7	A shared use path to accommodate pedestrians and bicyclists is preferred on Via San Potosi. This is a primary corridor for school children accessing Pena Blanca Elementary School. Sidewalk improvements are identified in the Cooperative Extension SRTS Needs Assessment Report. A shared use path is preferred to minimize future County operation and maintenance concerns/costs. Design challenges to consider include limited 50-foot rights-of-way, fencing or other encroachments, on Via San Potosi and Avenida Lirio. Considerable changes in topographic grade also pose drainage considerations that will likely increase design and construction costs for improvements on these streets.
Calle Calabasas – West Frontage Road to Circulo Guerrero	Apprx. 12,000 feet	1	0	0	1	0	1	1	0	4	Calle Calabasas provides area connectivity between the West Frontage Road and SR 289 and serving as a collector roadway for residents in the area. A fire station is located at the intersection of West Frontage Road. Robert Damon Park is a popular recreational facility frequented by local residents. Calle Calabasas is a minor collector road with 100-foot of right-of-way and a 24-foot pavement section with no center line striping. The speed limit is posted at 30 mph. A shared use path along the west side of the roadway is preferred to provide pedestrian and bicycle access for recreation users and bicycle and running enthusiasts as noted by several community members. A shared use path is more cost effective than a separate sidewalk and bike path system. This path alignment can be utilized along with the existing overhead utility power line easement traversing the west side of Calle Calabasas. Connection to a regional bike route along SR 289, the “west Rio Rico bike trail system” and access to Robert Damon Park are established. This segment includes a shared use path for the connection to SR 289 via Circulo Guerrero. As an interim measure, Calle Calabasas could be utilized as a Bike Route/Shared Road with appropriate signage and pavement markings as needed.
Boy Scout Trail	½ mile	1	0	0	1	1	2	1	1	7	The Boy Scout Trail begins at the northwest corner of Pendleton Drive and Rio Rico Drive. There is no formal trailhead. The trail begins adjacent to Pendleton Drive but immediately diverges to the northwest as it meanders through a wooded area and runs due north approximately 475 feet west of Pendleton Road. The trail runs for approximately ½ mile before the formal trail dissipates into non-descript series of lesser paths in the area. Local-area Boy Scouts maintain this trail on a semi-regular basis. Extension of this trail to the north is desired.
Rio Rico Drive from Pendleton Drive to the Anza Trailhead along north side of Rio Rico Drive	Apprx. 3,700 feet	1	1	0	2	2	2	1	1	10	A shared use path proposed at this location provides connectivity to other existing and proposed shared use paths and the Anza Trail, establishing a strategic connection and link to the overall trail system in Rio Rico. This particular section of proposed shared use path has been nominated for inclusion on the Arizona State Trail Plan. Sufficient right-of-way appears to exist though the at-grade crossing of the existing railroad



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											tracks will require safety/warning signage to alert path users. The use of compressed native materials for sections of this shared use path within the Santa Cruz River designated floodplain area should be considered in lieu of pavement due to scour and erosion concerns. Proposed construction of a trail within any USACOE 404 jurisdictional areas will likely need 404 permitting. Connection to the trailhead at the Anza Trail provides enhanced continuity and value in the overall trail network.
South Pendleton Drive – Avenida Coatimundi to Calabasas Park	Apprx. 4.6 miles	1	0	0	1	1	1	1	1	6	A southerly extension of the popular and well-traveled shared use path along Pendleton Drive from its existing terminus at Avenida Coatimundi to Calabasas Park is desired. This proposed shared use path is necessary to enhance non-motorized mobility and connectivity along Pendleton Drive which provides important north-south connectivity east of Interstate 19. Connections to Calabasas Park and the Anza Trail can enhance east-west mobility. The 50-foot right-of-way of Pendleton Drive is constraining and six fairly large wash crossings along this stretch will need to be considered in design and construction.
West Frontage Road – Rio Rico Drive to Ruby Road	Apprx. 3.15 miles	1	0	0	1	1	1	1	0	5	The total length of the West Frontage Road alignment from Rio Rico Drive south to Ruby Road is approximately 3.15 miles. Of the 3.15 miles, approximately 2.4 miles are paved from Ruby Road north to approximately 400 feet north of its intersection with Calle Calabasas where the pavement currently terminates. There is no roadway for approximately .75 miles from the existing pavement terminus north to Rio Rico Drive. A shared use path is desired along this alignment to establish a southerly extension the existing and planned shared use path along West Frontage Road north of Rio Rico Drive. This segment would greatly enhance mobility by completing a seamless north-south non-motorized connection in Rio Rico west of Interstate 19.
Multi-Purpose Trails											
Fernando Court to Peck Canyon Drive	Apprx. 1,550 feet	0	0	2	0	1	0	0	0	3	An unpaved multiuse trail can serve as a neighborhood shortcut promoting non-motorized modes of travel for school-aged children accessing the three school sites from this neighborhood. An existing pathway/jeep trail already exists. Additional research on the potential need for an easement for public ingress/egress is necessary.
Pena Blanca/Calabasas West Trail Entrance		1	0	2	0	1	1	1	0	6	As a possible alternative and/or supplement to nearby sidewalk improvements to Via San Potosi, a multipurpose trail can be constructed to the west of the school property connecting Via San Potosi and Hiedra Ct. Steep sections will require the construction of stairs. An informal network of trails already exists in the area. Easements may be necessary to formally establish this trail. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
Calle Calabasas to Avenida Palomas	Apprx. 1,000 feet	1	0	0	0	1	0	0	0	2	Identified as a “key system disconnect”, a multipurpose trail is recommended to enhance the non-motorized connection from the neighborhood near Avenida Palomas to Robert Damon Park. Currently, users must indirectly travel south or north on Avenida Palomas. A multipurpose trail to provide a more direct connection would greatly aid connectivity of this area and park amenity. A trail utilizing an existing wash approximately (125 north of Camino Caballo) and Suma Court is a possible alignment. Easements must be secured and terrain issues will need to be addressed in design and construction.
Santa Cruz River (Anza Trail) to Calabasas Park	Apprx. 1,200 feet	1	0	0	1	0	1	1	1	5	A multipurpose trail linking the Anza Trail to Calabasas Park is desired to eliminate a key system disconnect and promote trail system continuity to community assets that



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											may support community based events and recreation opportunities.
Anza Trail	Varies	1	0	0	2	0	2	1	1	7	The southern and northern extension of the existing Anza Trail is recommended. Trail facilities should be incrementally expanded to the north and south from the Guy Tobin trailhead. Leveraging community volunteers and trail enthusiasts to conduct such trail building efforts is highly recommended.
Paved Shoulders											
Via Patricia- Peck Canyon Dr.	Apprx. 3,400 feet	1	1	2	1	2	2	1	0	10	Peck Canyon Drive has a right-of-way of 100 feet. Where sufficient right of way is available, it is suggested that a striped paved shoulder be constructed and where right-of-way is limited, a bike route be provided through the use of signage and pavement markings in proximity to school facilities. Provide for safe and adequate transition to West Frontage Road future improvements. Improvements also identified in the Cooperative Extension SRTS Needs Assessment Report.
Camino Ramanote – West Frontage Road to Corrida De Toros	Apprx. 13, 400 feet (2.5 miles)	0	1	0	1	1	2	1	1	7	Identified as a Priority Underserved Roadway by community stakeholders, this two-lane roadway with center-line striping has a 24 foot pavement section in an 80-foot right-of-way. Westerly to its intersection with Corrida De Toros, the roadway has many curves, changes in grade and resulting blind spots. Camino Ramanote currently experiences just over 2,000 vehicle trips day. These collective roadway characteristics necessitate the improvement of a paved shoulder.
Peck Canyon Drive – Via Patricia to Circulo Sombrero	Apprx. 9,500 feet	0	1	2	1	1	1	1	1	8	From West Frontage Road to Circulo Sombrero, a designated bike lane (or paved shoulder in the alternate) is suggested to be constructed on the north side of the existing roadway. Peck Canyon Drive currently experiences 1,389 vehicle trips per day. Traffic will continue to increase as Rio Rico experiences additional growth and Peck Canyon Drive will likely transition from a local street to a collector road over time. Peck Canyon Drive’s intersection with West Frontage Road and serving access to the three school sites continue to place Peck Canyon Drive as high importance in providing motorized and non-motorized mobility in the area. Peck Canyon Drive has 100-feet of right-of-way and a 24-foot pavement section and center line stripe. The construction of a paved shoulder for this segment will complete a strategic segment that can contribute to two preferred bicycle recreation loop networks – Circulo Sombrero and the larger loop utilizing Calle Cherokee to Camino Ramanote and the West Frontage Road shared use path. For these reasons, a dedicated paved shoulder for this 9,500 foot segment is recommended.
Camino Providencia		1	1	0	1	1	1	1	1	7	Calle Providencia is a local street that radiates out from Yavapai Drive serving low to medium density residential neighborhoods in Rio Rico. While no existing vehicle trip data was able to be obtained for Calle Providencia, it is clear from the existing and planned land uses patterns in the area that continued residential growth will occur and so too will the motorized and non-motorized user demand. Calle Providencia is a 60-foot right of way with a 24-foot pavement section with no center line striping. Paved shoulders are suggested for both sides of Calle Providencia to its intersection with Camino Aqua Fria. Provides bicycle trail connectivity to the bike routes of Camino Aqua Fria and Camino Ramanote for larger route development in western Rio Rico. Based on its proximity to Yavapai Drive and to existing and future commercial retail activities, sidewalks are also recommended to compliment the paved shoulder



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											improvements for the first 2,150 feet from Yavapai Drive to the intersection with Circulo Montosa. If right-of-way constraints, lack of funding or other development-related challenges persist, consider the use of a shared use path for the south side of Calle Providencia.
North Pendleton Drive	Apprx. 6 miles	1	1	0	1	2	2	1	1	9	Pendleton Drive from Rio Rico Drive to Camino Josefina is approximately 6 miles long. Pendleton Drive is the only north-south collector roadway serving residents living east of I-19 and the Santa Cruz River. Pendleton Drive has an 80-foot right-of-way and a 24-foot pavement section in most locations. Community stakeholders commented on the desire to see bicycle facilities along Pendleton Drive. Extension of the popular Boy Scout Trail (shared use path separated from the roadway) was viewed as highly desirable by area residents as well. Santa Cruz County has received a grant to pave 5-foot shoulders along both sides of North Pendleton Drive for one mile north of Rio Rico Drive. These improvements will create 17-feet of pavement on each side of the roadway, sufficient for a signed bike route but not enough to warrant a bike lane.
South Pendleton Drive (to Calabasas Park)	Apprx. 5.5 miles	1	1	0	1	2	2	1	1	9	Pendleton Drive from Rio Rico Drive to Calabasas Park is approximately 5.5 miles. Pendleton Drive is the only north-south collector roadway serving residents living east of I-19 and the Santa Cruz River. Pendleton Drive has an 80-foot right-of-way and a 24-foot pavement section in most locations. Community stakeholders commented on the desire to see bicycle facilities along Pendleton Drive. Santa Cruz County has received a grant to pave 5-foot shoulders along both sides of South Pendleton Drive for a length of one mile from Rio Rico Drive. These improvements would create 14-feet of pavement on each side of the roadway, sufficient for a signed bike route but not enough to warrant a bike lane.
Rio Rico Drive – I-19 to Pendleton Drive	Apprx 6,500 feet	1	1	0	2	1	2	1	1	9	Rio Rico Drive currently experiences over 8,000 vehicle trips daily and is one of the most traveled roadways in Rio Rico. The roadway in most areas is split into two one way roadways with paved shoulders of varying widths. The integrity of the existing pavement along the paved shoulders varies, becoming narrower in areas that experience increased degradation. ADOT is conducting an I-19 East Frontage Road Study that may recommend roadway improvements at the intersection of Rio Rico Drive and East Frontage Road. Paved shoulders of 3-4 foot in width are recommended and should be maintained / expanded with routine County roadway maintenance schedule for Rio Rico Drive. The addition of bike route signage is also recommended. Improved non-motorized facilities along Rio Rico Drive will improve the mobility of local residents but also for enhancing a broader connection of the recreational and outdoor experience for visitors by linking the Guy Tobin Trailhead to other recreation and commercial land uses.
Paseo De Yucatan – from Pena Blanca School to Avenida Lirio	Approx. 1,250 feet	0	1	2	1	1	1	1	0	7	Paved shoulders are recommended for both sides of roadway to accommodate school children from higher density subdivisions to the south. Through signage, encourage school aged children pedestrian use on west side only so as to separate pedestrians from truck traffic originating from business south and east of Pena Blanca Elementary School and for seamless, continuous access to school driveway. Topography challenges and limited 50-foot right-of-way along the southern portion of this corridor create challenges in construction. Bike lane facilities not suggested due to lack of right-



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											of-way, topography and undesirable east side because of potential for truck traffic conflicts.
Avenida Lirio – Camino Maricopa to Paseo Yucatan	Apprx. 3,500 feet	1	1	2	1	1	2	1	0	9	Paved shoulders on Avenida Lirio will greatly assist the mobility of the neighborhood and improve safety in access to the schools via Camino Maricopa and Paseo Yucatan.
E. Ruby Road – I-19 to Pendleton Drive	Apprx. 2 miles	1	1	0	1	2	2	1	1	9	ADOT controls the right-of-way and ownership of Ruby Road from I-19 to approximately 600 feet to the east. East Ruby Road has 100-feet of right-of-way and is a 26-foot pavement section. ADOT is currently conducting an I-19 East Frontage Road Study that will likely recommend roadway improvements at the intersection of Ruby Road and East Frontage Road. At a minimum, paved shoulders on both sides of the roadway are recommended. With over 4,000 vehicle trips per day and growing, signage denoting a bike route is recommended. If the opportunity presents itself to complete additional roadway improvements funded by others, bike lane and sidewalks on both sides of the street are preferred from Potrero Creek bridge to East Frontage Road at this high traffic volume and turning movement location.
Paseo Mexico	Apprx. 9,800 feet	1	0	0	1	1	1	0	0	4	Paseo Mexico is a minor collector roadway with 80 feet of right-of-way and a 24-foot pavement section with center line striping. Due to the striping, there is not adequate space to accommodate a vehicle and the bicyclist comfortably in one lane (bike route). Paseo Mexico connects with Camino San Xavier (Bike Route) to form a 3.3 mile bike trail loop serving residents in this area.
Paseo Venado	Apprx. 4,000 feet	1	1	0	2	1	1	0	1	7	Paseo Venado can provide a key bicycle trail connector linking Calle Calabasas and Camino Caralampi. Paseo Venado is an 80-foot right-of-way with an existing 24-foot pavement section with center line striping. Paseo Venado experiences 1,660 average daily trips and will grow. Because the pavement width is only 24 feet and has center line striping, its potential as a bike route/shared roadway is not recommended because a cyclist would only have a 2-foot spacing where a minimum of 3-4 feet is preferred. A Bicycle LOS Model could be performed to determine the feasibility of a bike route/shared lane facility.
Bike Route/Shared Roadways											
Yavapai Drive, I-19 to West Frontage Road	Apprx. 325 feet	1	1	0	2	2	2	1	1	10	Within existing pavement conditions, a signed bike route is desired to complement the existing sidewalk and provide bicycle trail connectivity between the planned shared use path along Yavapai Drive and planned Rio Rico Drive overpass improvements.
Corrida De Toros	Apprx. 9,600 feet	1	1	0	2	1	2	0	1	8	Corrida De Toros provides the strategic middle link in the proposed Camino Ramanote – Corrida De Toros – Camino Aqua Fria bike trail system to serve residents in this area. This segment is approximately 9,600 feet in length. This roadway receives very low traffic volumes and is ideal for signage and/or pavement markings as a bicycle route to complete a 6+ mile training loop.
Camino Aqua Fria	Apprx. 9,400 feet	1	1	0	2	1	2	0	1	8	The third leg of the Camino Ramanote-Corrida De Toros-Camino Aqua Fria bike trail. After crossing Aqua Fria Canyon (low water crossing roadway), Camino Aqua Fria is an infrequently traveled roadway that is common for bicyclists and pedestrians to use for non-motorized trips to Garrett’s and other stores and restaurants in the Rio Rico Plaza. Camino Aqua Fria has a 24-foot pavement section with no center stripe within an 80-



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											foot right-of-way. This section of roadway is approximately 9,400 feet to its connection with Yavapai Drive and the Bella Vista subdivision. The portion of Camino Aqua Fria adjacent to Bella Vista community is recommended for improvement with a shared use path on the south side of the roadway or sidewalks on both sides of the road for the initial 500 feet.
Calle Cherokee	Apprx. 11,000 feet	1	0	2	2	1	1	1	1	9	This local street in Rio Rico has very few homes and experiences very low daily vehicle trips. Calle Cherokee has a 50-foot right-of-way and 24-foot pavement section. As such, Calle Cherokee is suggested for use as a bike route with the incorporation of the appropriate signage and or pavement markings as noted in the General Design Elements section. Calle Cherokee is an 11,000 foot (2+miles) segment provides an important and connection between Camino Ramanote and Peck Canyon Drive to offer residents of northwestern Rio Rico a value-added bicycle loop. Calle Cherokee was also identified by Rio Rico High School students as a route that is frequented to and from school on a daily basis.
Circulo Sombrero	Apprx. 2.25 mile loop	0	0	2	2	0	1	0	0	5	This loop road providing connection to Peck Canyon Drive to the east and the west provides a naturally ideal recreation bicycle loop experience. The road is a 50-foot right-of-way with 24-foot pavement section with very low average daily vehicular trips. Bike route signage and/or pavement markings on both sides of the roadway will safely provide the flexibility for a 2.25 mile route along Circulo Sombrero or an extended 3.5 mile complete loop route utilizing Peck Canyon Drive.
Camino Josefina	Apprx. 6 miles	1	0	0	2	0	2	0	1	6	Camino Josefina is already a preferred route by enthusiasts and skilled bikers. The very low density surrounding land use, uninterrupted length, scenic vistas, connection to broader wilderness areas, and grade changes of this road make it desirable for bicycling. It is a 24-foot pavement section with no center striping within a 180-foot right-of-way. Due to proximity to the bridge abutment, automobile rate of speed in this area and poor line of sight in areas, future connections to the planned Boy Scout Trail extension should consider a grade separated crossing and staging area with a connection to Pendleton Road south of the canyon.
Avenida Pastor – Circulo Alameda	Apprx. 1.3 miles	0	0	0	2	0	0	0	0	2	Bike routes/shared roadways fit nicely in this community enclave. Marked crossings and signage will be necessary at the intersection with Pendleton Drive.
Camino Mar	Apprx. 2.3 miles	0	0	0	2	0	0	0	0	2	Camino Mar is a two-way paved road 2.3 miles in length (where pavement ends) with a 26-foot pavement section. Grade changes, sight visibility and signage locations should be evaluated prior to implementation.
Camino Oceano	Apprx. 7,200 feet	0	0	0	2	0	0	0	0	2	This stand-alone road is very suitable with its 26-foot pavement section serving less than two dozen homes. Future crossing design and connectivity to the Boy Scout Trail requires additional study.
Valley View Drive-Camino Magnifico-Camino Panama Loop	Apprx. 2.5 mile loop	0	1	0	2	0	1	1	0	5	A bike route/shared roadway is ideal for this pocket of Rio Rico that forms a self-contained bicycle loop in this area. This “loop” does not entirely connect without a connection at Pendleton Drive that requires further evaluation.
Kents Avenue	Apprx 4,000 feet	0	1	0	2	0	0	1	0	4	Provides linkage to Camino Pesqueria and Paseo Mexico.
Camino Pesqueiria	Apprx.	0	1	0	2	0	1	1	0	5	Provides linkage to Paseo Mexico and Kents Avenue.



Table 1: Suggested Plan of Improvements

Location	Approx. Length	Enhanced connection to public spaces/closes gap	Noteworthy Safety Improvement	Proximity to Schools	Complexity of Construction	Reduction in vehicle trips	Community Support	Cost Sharing Potential	Economic/Tourism Potential	Total Points	Notes
	3,600 feet										
Willow Drive – Pendleton to Rio Rico Drive	Apprx. 3,700 feet	1	1	0	2	1	1	1	0	7	Willow Drive serves as a local roadway providing important neighborhood connectivity between Pendleton Drive and Rio Rico Drive. The roadway has a 28-foot pavement section and a 50-foot right-of-way. Consideration must be given to a cross walk design and driver warning signage (especially northbound traffic) at Pendleton Drive for access to the shared use path across the street.
Camino San Xavier	Apprx. 7,700 feet	0	0	0	2	0	1	1	0	4	Camino San Xavier is a local road with an 80-foot right-of-way and 24-foot pavement section with no center line striping. Its connection to Paseo Mexico forms a 3.3 mile bike trail loop serving residents in the area. Future crossing of Pendleton Drive will require close examination for safety in design as the intersection is located at a radius in the roadway with limited sight visibility.
Paseo Guebabi	Apprx. 11,000 feet	0	0	0	2	1	0	0	0	3	Paseo Guebabi is an 80 foot right-of-way with a 28-foot pavement section with no center line striping. This bike route segment forms a 3.8 mile bike trail loop serving residents in this area. Intersection/crosswalk design with Pendleton Drive needs to be planned in concert with the fire station driveway located directly across Pendleton Drive.
Calle Coyote	Apprx. 9,300 feet	0	0	0	2	1	1	0	0	4	Calle Coyote is a local street with an 80-foot right-of-way, 28-foot pavement section with no center line striping. This bike route segment connects with Paseo Guebabi to form a 3.8 mile bike trail loop for residents in this area.
Via Rosamorada – Ruby Road to Cerrado Sanchez	Apprx. 6,400 feet	1	1	0	2	1	1	1	1	8	Via Rosamorada is a local street with a 50-foot right-of-way and 24-foot pavement section with no center line striping. It should be noted that Santa Cruz County’s street inventory indicates that only 25-feet of right-of-way exists in certain locations and thus may be limiting.
SR 289		1	1	0	2	0	1	1	1	7	SR 289 (West Ruby Road) is an ADOT facility with a 26-foot pavement section and center line striping. According to ADOT traffic counts at SR 289 near Camino Maricopa, approximately 1,100 vehicle trips per day. Another traffic count taken another 6 miles to the west identified only 190 vehicle trips per day. The data indicates that the majority of SR 289 trips are serving residents of the neighborhoods near Calabasas Middle school and as you proceed west of town, the rate of vehicles drops substantially. In accordance with ADOT regulations, bicyclists are not prohibited from using SR 289. With the minimal volume of vehicle trips, continuation of the existing condition as a bike route, though not signed, is recommended for this facility that can attract biking enthusiasts seeking longer outings to Pena Blanca Lake.
Circulo Golondrina		1	0	0	2	0	0	0	0	3	Local “loop road” serving immediate neighborhood surrounding Robert Damon Park. 50-feet of right-of-way with a 24-foot pavement section with no center line stripe.
Intersection Improvements											
Yavapai Drive/Camino Caralampi	n/a	1	1	0	1	1	2	1	1	8	One of the busiest intersections in Rio Rico, a typical user will experience difficult cross-traffic and conflicting vehicular turning movement operations at this location. There are no crosswalks, signage or other markings to assist pedestrians and bicyclists wishing to cross Yavapai Dr. at Camino Caralampi. A signalized intersection with



Table 1: Suggested Plan of Improvements

Location	Approx. Length	Enhanced connection to public spaces/closes gap	Noteworthy Safety Improvement	Proximity to Schools	Complexity of Construction	Reduction in vehicle trips	Community Support	Cost Sharing Potential	Economic/Tourism Potential	Total Points	Notes
											marked crosswalks is recommended and likely warranted. Further evaluation of the need for a signal should also evaluate the proximity and current function and level of service of the West Frontage Rd intersection with Yavapai Dr. which is only 400 feet to the east.
Ruby Road/East Frontage Road/Pilot Travel Center Driveway Entrance	Approx 325 feet between centerlines	1	1	0	1	1	2	1	1	8	The confluence of these two intersections – only 325 feet apart – is the busiest and most accident prone intersection(s) in Rio Rico. Numerous comments from project and community stakeholders have supported this assertion. Per County traffic counts, this area experiences 7,500 ADT and a poor LOS during the am and pm peak periods. Road widening to include a dedicated portion of the roadway for bike lanes and sidewalks on both sides of Ruby Road is needed. Signing, striping and pavement markings are necessary. Marked crosswalks and warning signage at the Pilot entrance drive is needed. Recommendations from the I-19 East Frontage Road study should influence the future design of improvements that will likely come as a result of future roadway construction projects.
Rio Rico Drive/Pendleton Drive	SWC	1	0	0	2	0	1	1	1	6	Existing parking facilities are lacking at this popular trailhead location. A small paved parking lot to serve 3 typical and 1 ADA accessible parking spaces is preferred. Suitable vehicular turning movement and driveway improvements from the adjacent roadway and marked crosswalks are suggested. If signal warrants for this intersection are met, access and driveway geometrics shall be evaluated. The parking area should be designed to maintain flexibility for future expansion as popularity continues to increase. Improvements to the shared use trails in the area enhance area connectivity and accessibility benefitting locals and tourists alike.
Pedestrian Crossings											
Camino Lito Galindo/Rio Rico High School	n/a	1	1	2	2	1	2	1	0	10	Crosswalk needed at this priority high school crossing location. This improvement also identified in the Cooperative Extension SRTS Needs Assessment Report.
Peck Canyon Drive/Camino Estornino	n/a	1	1	2	2	1	1	1	0	9	A crosswalk is needed at Camino Estornino’s intersection with Peck Canyon Drive to serve school-aged pedestrians and bicyclists from the adjacent residential neighborhood.
Via Patricia and Camino Lito Galindo	n/a	1	1	2	1	1	2	1	0	9	Difficult intersection geometry, roadway radius and line of sight challenges require additional design studies for this location. A cross walk, pedestrian refuge and appropriate traffic calming signage is necessary to facilitate safe crossing at this location.
Pendleton Drive/Avenida Coatimundi	n/a	1	1	0	2	1	1	0	1	7	This existing crosswalk is in poor condition currently. Driving warning signage does exist. At a minimum, the current facility is in need of repainting and striping. Additional signage is likely warranted and low scale safety lighting for nighttime usage should be considered. As traffic volumes increase over 7,500 vehicles per day, design study of an enhanced crossing facility is suggested.
West Frontage Road/Camino del Patio (Family Dollar)	n/a	1	1	0	2	2	2	1	1	10	A very popular informal crossing used by many adjacent residents walking or biking to the Family Dollar store. This location was also identified in the historical crash data. The field study revealed a mother pushing a baby in her stroller. No crosswalk facility



Table 1: Suggested Plan of Improvements

Location	Approx. Length	Enhanced connection to public spaces/closes gap	Noteworthy Safety Improvement	Proximity to Schools	Complexity of Construction	Reduction in vehicle trips	Community Support	Cost Sharing Potential	Economic/Tourism Potential	Total Points	Notes
											exists. The Family Dollar driveway and Camino del Patio intersection is not symmetrical. The current ADT's likely do not warrant a H.A.W.K. system, but a pedestrian count and warrant study have recently been performed and the county is in the process of designing this facility for future improvement.
Rio Rico Drive/I-19 Overpass	Approx. 700 feet, including approaches and I-19 on ramps	1	1	0	1	1	1	1	1	7	The existing overpass facility serves one lane of vehicular travel in each direction and has 12-foot paved, striped shoulders (approximately) on each side. Pedestrian and bicycle users continue to increase as residents from the east frequent Garrett's. Suggested improvements recommended include a formal modification of the existing striped shoulder area to a striped and signed bike lane for one way travel together with a sidewalk in both directions. Particular attention must be given to the design of appropriate bicycle and pedestrian crossings at the freeway ramp terminals to ensure minimized vehicular conflicts. See AASHTO and ADOT standards for additional detail.
Intersection of Via San Potosi and Paseo de Yucatan	n/a	1	1	2	2	1	1	1	0	9	A crosswalk is needed at this strategic juncture of two roadways serving as a primary pedestrian access way to Pena Blanca Elementary School.
Avenida Coatimundi/Calle Juan Legarra		1	1	2	2	1	2	1	0	10	The shared use path along the south side of Avenida Coatimundi terminates at the Calle Juan Legarra alignment. Students using the shared use path cross Avenida Coatimundi at Calle Juan Legarra to access the Coatimundi Walking Trail school entrance at Feather Court. No cross walk currently exists but is needed at this location. Appropriate signage on Avenida Coatimundi warning drivers of a school crossing is suggested.
Narrow Bridge Crossings											
West Frontage Road at Aqua Fria Canyon	n/a	1	1	0	2	1	1	1	0	7	Existing County bridge structure at Aqua Fria Canyon wash crossing approx. 490 feet south of Camino Ramanote. Location poses a significant barrier to the seamless connection of the West Frontage Road shared use path system. The current structure is a two lane bridge with very narrow striped shoulders. The suggested design is to meander the planned shared use path to the west along the wash bottom rather than construct expensive bridge widening improvements. This shared use path crossing could be situated within the western portion of the existing 150 feet of West Frontage Road right of way and/or existing utility easement. Additional hydrology study and environmental permitting may be necessary for wash encroachment.
Ruby Road at Potrero Creek	n/a	1	1	0	1	2	2	1	1	9	The existing width of the bridge deck is too narrow to enable comfortable and safe walking or cycling conditions. The preferred solution is to construct a second bridge for eastbound traffic and maintain the existing bridge for westbound traffic. Sufficient right-of-way exists for this improvement. Each bridge then should be designed to accommodate a sidewalk and bike lane/paved shoulder. In the absence of funding for a second bridge, a short term approach would be to construct multiuse trails separated from the roadway in Potrero Creek. A native tread trail to safely separate pedestrians and cyclists from the narrow bridge is needed. This can be achieved with the construction of one multi-purpose trail to accommodate both pedestrians and cyclists. The multi-purpose trail and signage would need to commence prior to the guardrail approaches to the bridge.



Table 1: Suggested Plan of Improvements

Location	Approx. Length	Enhanced connection to public spaces/closes gap	Noteworthy Safety Improvement	Proximity to Schools	Complexity of Construction	Reduction in vehicle trips	Community Support	Cost Sharing Potential	Economic/Tourism Potential	Total Points	Notes
Ruby Road/Santa Cruz River	n/a	1	1	0	2	1	1	1	1	8	This important bridge spans approximately 275 feet over the Santa Cruz River. The existing bridge deck has a 26-foot pavement section including one-foot striped shoulders with center line striping. The north side of the bridge deck has a large vertical curb. Replacement/expansion of the existing facility to accommodate bike and pedestrians is preferred but not likely practical. "Share the Road" signage and pavement markings are necessary to improve the existing comfort and safety of bicyclists and pedestrians using this bridge. This is not an ideal solution, but most practical until bridge enhancements are completed.
Rio Rico Drive/Santa Cruz River	n/a	1	1	0	2	1	1	1	1	8	This important bridge spans approximately 300 over the Santa Cruz River. The existing bridge deck has a 26-foot pavement section including one-foot striped shoulders with center line striping. Both sides of the bridge deck have 2-foot raised sidewalks. Replacement/expansion of the existing facility to accommodate bike and pedestrians is preferred but not likely practical without additional government funding. "Share the Road" signage and pavement markings are necessary to improve the existing comfort and safety of bicyclists and pedestrians using this bridge. This is not an ideal solution, but most practical until bridge enhancements are completed.

*As a general observation, additional future crosswalk facilities located at proposed bike route locations that intersect with Pendleton Drive in order to access the future Pendleton Drive shared use path are necessary but premature to define crosswalk type without the known location of the shared use pathway.

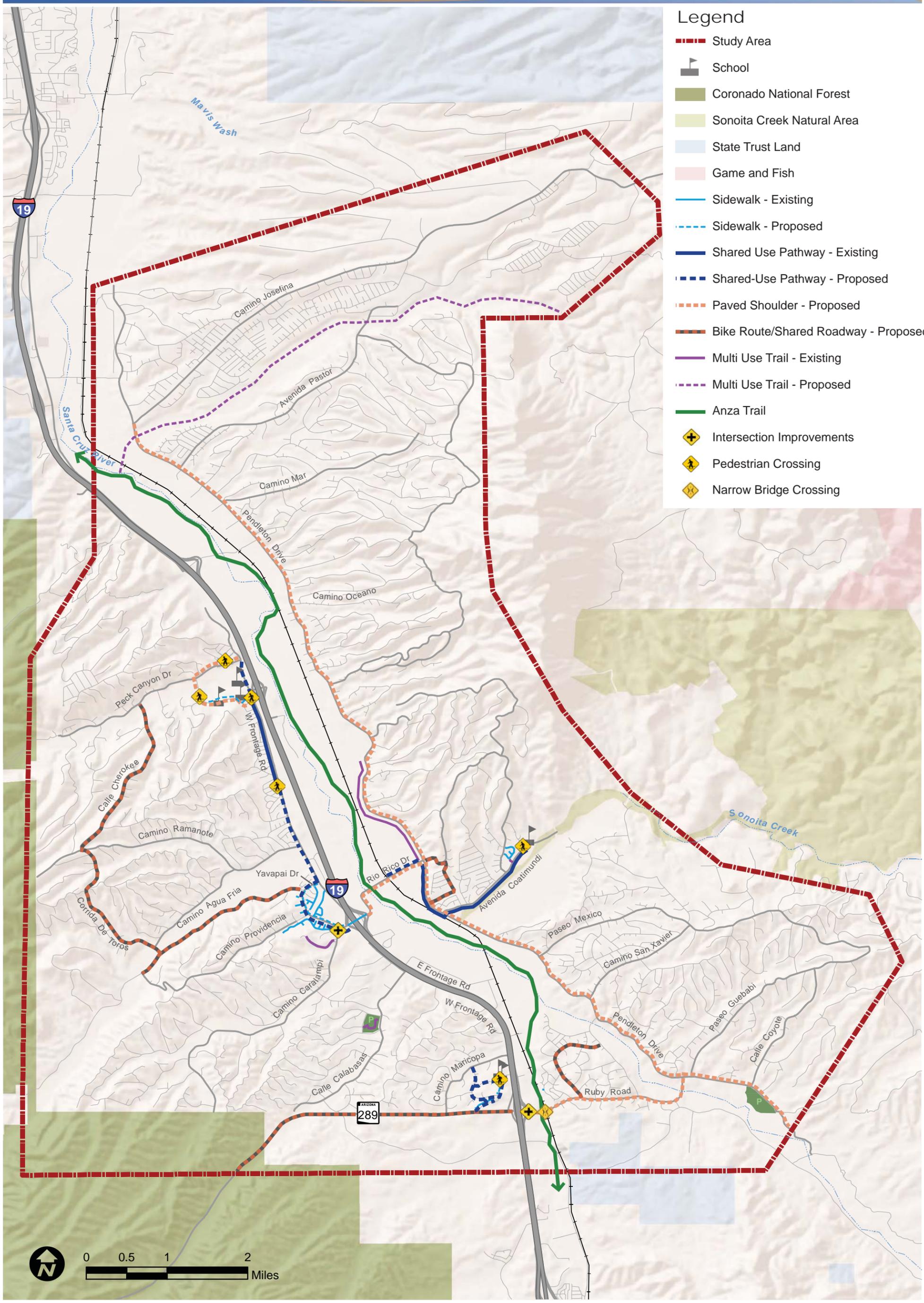


Figure 1: Plan of Improvements - Short Term (5-years)

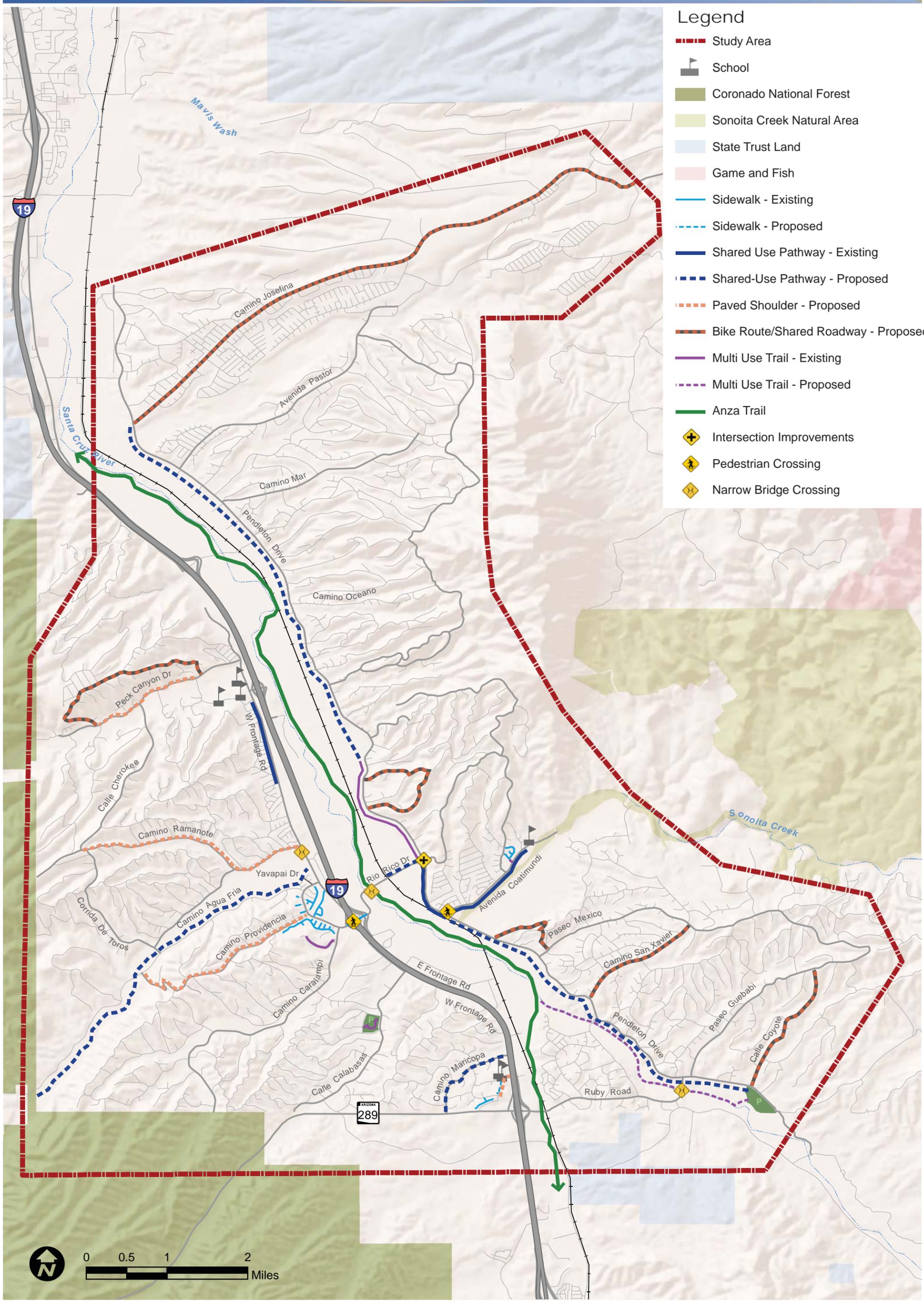


Figure 1: Plan of Improvements - Medium Term (10-years)

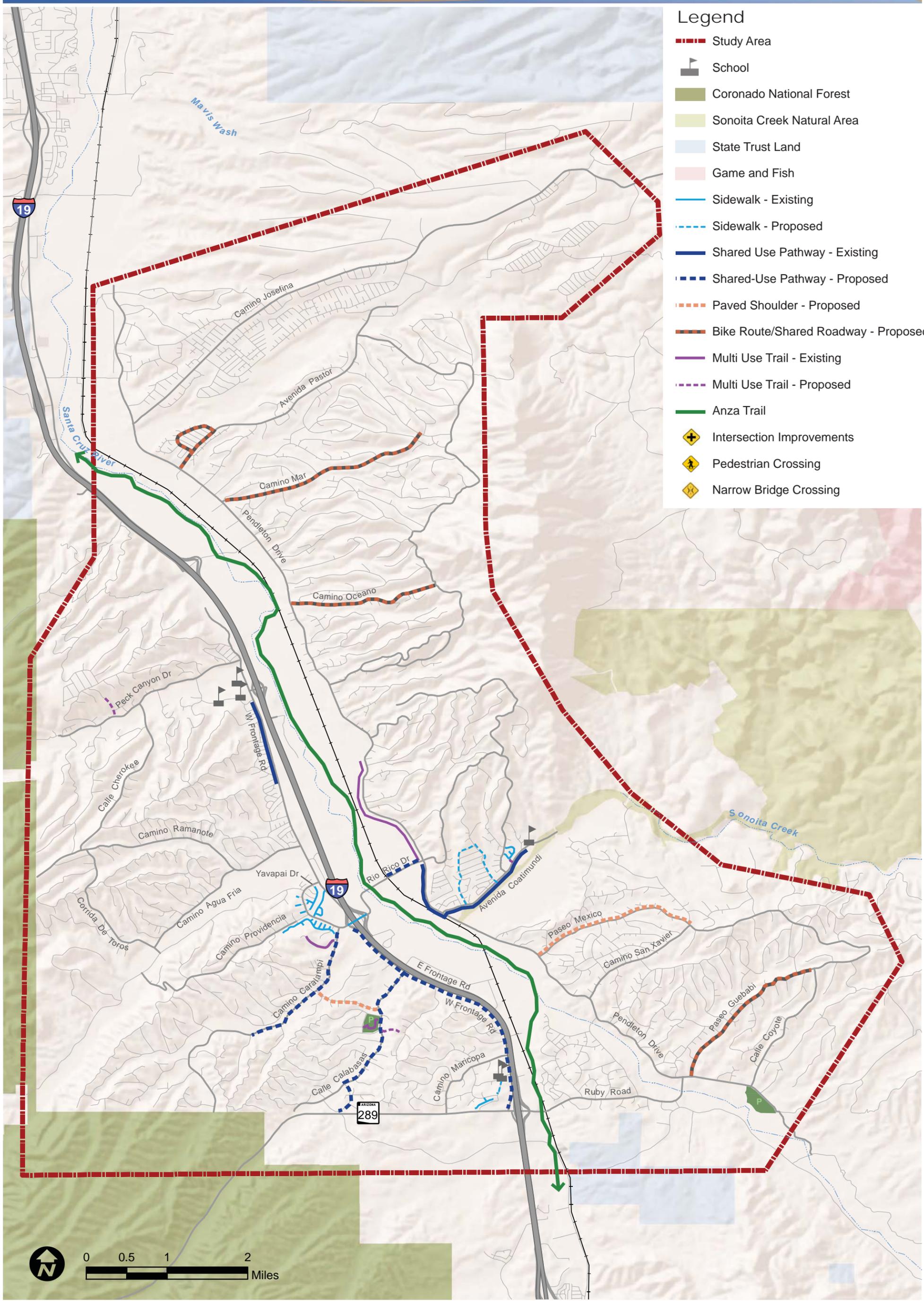


Figure 1: Plan of Improvements - Long Term (20-years)



Table 2: Summary of Suggested Short, Medium and Long Term Projects

	Short Term (5-year)	Medium Term (10-year)	Long Term (20-year)
Sidewalks	<ul style="list-style-type: none"> • Camino Lito Galindo 	<ul style="list-style-type: none"> • Pena Blanca Elementary School entrance driveway 	<ul style="list-style-type: none"> • Avenida Leon-Avenida Gandara Loop
	<ul style="list-style-type: none"> • Yavapai Drive “Loop” – from West Frontage Road to West Frontage Road 		
Shared Use Paths	<ul style="list-style-type: none"> • West Frontage Road – Camino De Patio to Camino Lito Galindo (Phase 1) 	<ul style="list-style-type: none"> • Camino Maricopa – Ruby R. (SR 289) to West Frontage Road 	<ul style="list-style-type: none"> • Camino Caralampi – Yavapai Drive to Calle Amarillo
	<ul style="list-style-type: none"> • West Frontage Road – Camino De Patio to Camino Ramanote (Phase 2) 	<ul style="list-style-type: none"> • Boy Scout Trail 	<ul style="list-style-type: none"> • Calle Calabastas – West Frontage Road to Circulo Guerrero
	<ul style="list-style-type: none"> • West Frontage Road – Camino Ramanote to Yavapai Drive (Phase 3) 	<ul style="list-style-type: none"> • South Pendleton Drive – Avenida Coatimundi to Calabastas Park 	<ul style="list-style-type: none"> • West Frontage Road – Rio Rico Drive to Ruby Road
	<ul style="list-style-type: none"> • West Frontage Road – Peck Canyon south to Camino Lito Galindo (Phase 4) 	<ul style="list-style-type: none"> • Camino Aqua Fria 	
	<ul style="list-style-type: none"> • Yavapai Drive “Loop” – from West Frontage Road to West Frontage Road 	<ul style="list-style-type: none"> • Via San Potosi – Avenida Lirio to Paseo de Yucatan 	
	<ul style="list-style-type: none"> • Rio Rico Drive from Pendleton Drive to the Anza Trailhead along north side of Rio Rico Drive 		
Multi-purpose Trails	<ul style="list-style-type: none"> • Anza Trail 	<ul style="list-style-type: none"> • Pena Blanca/Calabastas West Trail Entrance 	<ul style="list-style-type: none"> • Fernando Court to Peck Canyon Drive
		<ul style="list-style-type: none"> • Santa Cruz River (Anza Trail) to Calabastas Park 	<ul style="list-style-type: none"> • Calle Calabastas to Avenida Palomas
Paved Shoulders	<ul style="list-style-type: none"> • Via Patricia- Peck Canyon Dr. “Loop” 	<ul style="list-style-type: none"> • Peck Canyon Drive – Via Patricia to Circulo Sombrero 	<ul style="list-style-type: none"> • Paseo Mexico
	<ul style="list-style-type: none"> • North Pendleton Drive 	<ul style="list-style-type: none"> • Camino Ramanote – West Frontage Road to Corrida De Toros 	<ul style="list-style-type: none"> • Paseo Venado
	<ul style="list-style-type: none"> • South Pendleton Drive 	<ul style="list-style-type: none"> • Camino Providencia 	
	<ul style="list-style-type: none"> • Rio Rico Drive (i-19 to Pendleton Dr,) 	<ul style="list-style-type: none"> • Paseo De Yucatan – from Pena Blanca School to Avenida Lirio 	
	<ul style="list-style-type: none"> • East Ruby Rd. 		
	<ul style="list-style-type: none"> • Avenida Lirio – Camino Maricopa to Paseo Yacatan 		
Bike Route/Shared Roadways	<ul style="list-style-type: none"> • Yavapai Drive, I-19 to West Frontage Road 	<ul style="list-style-type: none"> • Camino Josefina 	<ul style="list-style-type: none"> • Paseo Guebabi
	<ul style="list-style-type: none"> • Calle Cherokee 	<ul style="list-style-type: none"> • Ciculo Sombrero 	<ul style="list-style-type: none"> • Ciculo Golondrina
	<ul style="list-style-type: none"> • Corrida de Toros 	<ul style="list-style-type: none"> • Valley View Drive 	<ul style="list-style-type: none"> • Camino Mar
	<ul style="list-style-type: none"> • Camino Aqua Fria 	<ul style="list-style-type: none"> • Camino Pesqueira 	<ul style="list-style-type: none"> • Avenida Pastor



	Short Term (5-year)	Medium Term (10-year)	Long Term (20-year)
	• Via Rosamorada	• Kents Ave.	• Camino Oceano
	• Willow Drive	• Camino San Xavier	
	• SR 289	• Calle Coyote	
Intersection Improvements	• Ruby Road/East Frontage Rd./Pilot Driveway	• Rio Rico Dr./Pendleton Dr.	
	• Yavapai Drive/Camino Caralampi		
Pedestrian Crossings	• Camino Lito Galindo/Rio Rico HS	• Pendleton Dr./Avenida Coatimundi	
	• West Frontage Rd/Family Dollar	• Rio Rico Dr./I-19 overpass	
	• Avenida Coatimundi/Calle Juan Legarra		
	• Peck Canyon Drive/Camino Estorino		
	• Via Patricia/Camino Lito Galindo		
	• Via San Potosi/Paseo de Yucatan		
Narrow Bridge Crossings	• Ruby Road @Potrero Creek	• Ruby Road @Santa Cruz River	
		• Rio Rico Dr. @ Santa Cruz River	
		• West Frontage Rd. @ Aqua Fria Canyon	



VI. Cost Estimates

The primary focus of the Rio Rico Walking and Biking Study is to develop a program for the prioritization and construction of bicycle facilities and sidewalks in Rio Rico. This study identifies, for the first time, an inventory of existing conditions and deficiencies and maps a network of proposed bicycle and pedestrian routes to safely connect activity centers in Rio Rico. To supplement the primary objectives of this study, planning-level cost estimates are offered as an “order of magnitude” of costs for each facility type. These preliminary estimates can then be utilized by elected officials, County staff, or other project stakeholders to comparatively evaluate competing projects.

There a wide variety of factors that influence the ultimate cost of any bicycle and pedestrian infrastructure improvements – area topography, line of sight, existing pavement conditions, right-of-way constraints and physical impediments such as vegetation, walls/fences and utilities. Specific project-level design analysis of the precise field conditions and physical constraints is always necessary for any infrastructure improvement project and is beyond the intent and scope of this master plan.

The following planning-level cost estimates then are provided as a broad and preliminary reference point for the project stakeholders and are intended to be refined in the design stages of a given project.

Bike Routes

Where no physical roadway improvements are planned, that is, the existing facility is suitable for shared lane usage, Bike Route signs (D11-1) should be placed approximately 8 per mile, 4 in each direction. Cost per mile for sign, post and foundation and installation is approximately \$400 per sign times 8 signs equals approximately \$3,200 per mile. Labor costs savings could be realized if the signs were able to be installed by the Santa Cruz County Public Works Department rather than a contractor.

Paved Shoulders

The addition of paved shoulders in Rio Rico assumes that a 4-foot of paved shoulder is added on each side of the roadway. Factors that influence the cost include the amount of earthworks needed and existing drainage facilities and patterns. The cost is estimated at approximately \$200,000 to \$300,000 per mile (both sides), including signs, pavement markings and installation.



Shared Use Paths

The design and construction of a shared use path can vary significantly depending on the anticipated user volume, physical constraints, earthworks, clearing and grubbing, etc. Because shared use paths are also intended for pedestrians as well as bicyclists, shared use paths must be designed in accordance to ADA requirements which can also increase the cost of a shared use path. It was noted that shared use paths range from 10 to 14-feet in width and are entirely separated from a roadway. A typical 10-foot shared use path is conservatively estimated at approximately \$300,000 per mile including contingency.

Sidewalks

The addition of sidewalks to any existing street can have a wide range of expected costs. This is primarily due to influencing factors such as existing drainage patterns and facilities (retrofitting existing bar ditch or not), existing pavement conditions, topography, ADA requirements, cross-slope, and driveway cuts to name a few. As a general rule of thumb, to add curb, gutter and sidewalk to both sides of an existing roadway will cost between \$500,000 and \$800,000 per mile. It may also be feasible to add sidewalk parallel to and offset from roadway without curb.

Crosswalks

Striping and markings for marked crosswalks at a typical intersection is estimated at approximately \$500.

Due to more rigorous striping detail and use of materials, signing and striping for mid-block crossings are estimated at approximately \$3,000.

Rio Rico Project Highlights

The planning-level cost estimates per facility type described above serve as useful guides to generally estimating multi-modal facility improvement costs. Tables 3-5, Rio Rico Project Highlights, identifies a more refined cost estimate and design considerations for a sampling of short term, medium term and long term projects.

There are a myriad of factors and variables that can influence the construction cost of any given project. Some of these are also described above. The Project Highlights below are provided in an attempt to provide an order of magnitude of costs for each project but also recognize that other influences such as environmental permitting and finer grain design components will ultimately influence the final project cost.



Table 3: Rio Rico Project Highlights - Sidewalks

SIDEWALKS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Short Term	Yavapai Drive “Loop” – from West Frontage Road to West Frontage Road	<p>Need: Approximately 4,900 feet of sidewalk is recommended for the north/east sides of Yavapai Drive from the existing curb return at West Frontage Road along the entire “loop” with its reconnection to West Frontage Road to the north.</p> <p>Benefit: This “urban” area of Rio Rico is home to the most densely populated residential area and Rio Rico Plaza (Garrett’s) which serves as Rio Rico’s commercial services core. Pedestrians routinely frequent this route and a sidewalk is needed for safety and separation from motorists as Yavapai Drive is the most traveled roadway with over 11,000 average trips per day.</p>	Scoping: \$80,000
			Design: \$120,000
			Construction: \$400,000
			2013 Estimated Cost: \$600,00
			<p>Additional Observations: Ideally, said sidewalk improvements are best achieved with the future widening of Yavapai Drive. In the event this roadway widening is not feasible or not contemplated within the next five years, a more temporary paved surface pathway could be constructed near the toe of slope area between Garrett’s and Via Bella Donna. From Via Bella Donna north, sidewalk construction can be accommodated behind the existing curb and gutter.</p>
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Medium Term	Pena Blanca School Entrance Driveway	<p>Need: Construction of approximately 200 feet of sidewalk on the west side of this school driveway.</p> <p>Benefit: This project will ensure</p>	Scoping: \$3,000



		safety by reducing potential for pedestrian/vehicle conflict at this busy, strategic school entrance.	<p>Design: \$4,500</p> <p>Construction: \$16,000</p> <p>2013 Estimated Cost: \$23,500</p> <p>Additional Observations: Sidewalk should be maintained west of the driveway entrance to provide safe separation from pedestrians and vehicles egressing driveway. Cost estimate assumes construction with federal grant funds and could be reduced if constructed with local resources.</p>
	Long Term		
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
	Avenida Leon-Avenida Gandara Loop	<p>Need: Two “local” streets that operationally function as collector roadways for the medium density residential neighborhoods it serves and in close proximity community services on Avenida Coatimundi.</p> <p>Benefit: Approximately 7,300 feet of sidewalks on both sides of the street will enhance the safety and operational efficiency of these busy residential collector roadways by separating the pedestrians from the vehicles in this well-traveled area.</p> <p>7300 LF</p>	<p>Scoping: \$120,000</p> <p>Design: \$180,000</p> <p>Construction: \$600,000</p> <p>2013 Estimated Cost: \$900,000</p> <p>Additional Observations: Both streets have 50-feet of right-of-way and the existing pavement section is 28-feet wide. In order to avoid a modification of existing drainage conveyance, a sidewalk facility with ribbon curbing that is flush with the roadway may be considered. Challenges include fitting sidewalks within the existing right of way and multiple driveway conflicts.</p>



Figure 4: Rio Rico Project Highlights – Shared Use Paths

SHARED USE PATHS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Short Term	Rio Rico Drive from Pendleton Drive to the Anza Trailhead along north side of Rio Rico Drive	<p>Need: A shared use path of approximately 3,700 feet in length at this location provides connectivity to other existing and proposed shared use paths and the Anza Trail, establishing a strategic connection and link to some of the most frequented trails in Rio Rico.</p> <p>Benefit: This particular section of proposed shared use path has been nominated for inclusion on the Arizona State Trail Plan and is an important link to the Anza Trail, the Boy Scout Trail and the Pendleton Drive Trail.</p>	Scoping: \$40,000
			Design: \$60,000
			Construction: \$200,000
			2013 Estimated Cost: \$300,000
			<p>Additional Observations:</p> <p>Sufficient right-of-way appears to exist though the at-grade crossing of the existing railroad tracks will require safety/warning signage to alert path users. The use of compressed native materials for sections of this shared use path within the Santa Cruz River designated floodplain area should be considered in lieu of pavement due to scour and erosion concerns. Proposed construction of a trail within any USACOE 404 jurisdictional areas will likely need 404 permitting.</p>
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Medium Term	Boy Scout Trail	<p>Need: The existing Boy Scout Trail begins at the northwest corner of Pendleton Drive and Rio Rico Drive. It is a native trail runs for</p>	Scoping: \$400,000
			Design: \$600,000



		<p>approximately ½ mile before the formal trail dissipates into non-descript series of lesser paths in the area. Local-area Boy Scouts maintain this trail on a semi-regular basis. A formal shared use path and trailhead is needed. Total length of this proposed project is approximately 6 miles to Josephina Canyon.</p> <p>Benefit: Many members of the community expressed a desire to develop a formal shared use path as this trail meanders through a wooded area providing the many users in the area a secluded experience away from traffic yet also provides important linkage and is a key asset to the overall trail system in Rio Rico.</p>	<p>Construction: \$2,000,000</p> <p>2013 Estimated Cost: \$3,000,000</p> <p>Additional Observations: The northerly extension of the Boy Scout Trail can create a connection to a planned multi-use path linking Josephina Canyon. Additional evaluation of a crossing type and location at Pendleton Drive and Josephina Canyon is necessary. Due to the extensive length and high cost, phased construction of this project is suggested.</p>
Long Term	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
	Camino Caralampi – Yavapai Drive to Calle Amarillo	<p>Need: This roadway already has over 4,000 vehicle trips per day. . A shared use path is desired to serve this frequently traveled area of Rio Rico to maintain separation of motorists and pedestrians and bicyclists, particularly at its northern terminus with Yavapai</p>	Scoping: \$100,000
			Design: \$150,000
			Construction: \$500,000
			2013 Estimated Cost: \$750,000



		<p>Drive, where non-motorized users access Garrett’s and the Esplendor Resort multipurpose trail also connects to this area.</p> <p>Benefit: This 9,400 foot length includes the most populous and most traveled portions of Camino Caralampi – linking many residents in the area to Garrett’s, the commercial hub of Rio Rico. The path is likely most desirable on the west side of the roadway to allow access from the majority of residents and thereby creating a seamless path system. The planned shared use path could connect to the existing multiuse trail near the Esplendor Resort or replace the existing portions of multiuse trail altogether.</p>	<p>Additional Observations: Potential conflicts with driveway cuts and fence encroachments create challenges to design and construction costing along the west side of the roadway. Appropriate crosswalks and driver warning signage is needed at roadway intersections. Suggesting appropriate pedestrian/bicycle crossing warning signage such as MUTCD W-11-2, W-11-15 or W-11-15P for vehicle approaches at intersections.</p> <p>It is a 24-foot pavement section with a generous 100-foot right of way. The roadway maintains a center line stripe and there are no additional paved shoulders. A shared use path could extend to a southern terminus at Calle Amarillo.</p>
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Table 5: Rio Rico Project Highlights – Paved Shoulders

PAVED SHOULDERS			
	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Short Term	Via Patricia-Peck Canyon Dr.	Need: Proximity to the three school locations to enhance safety of pedestrian and bicycle school aged children. Approximately 4,300 feet in length.	Scoping: \$35,000
			Design: \$50,000
			Construction: \$170,000



		<p>Benefit: These Improvements are also identified in the Cooperative Extension Safe Route to Schools Needs Assessment Report.</p>	<p>2013 Estimated Cost: \$255,000</p> <p>Additional Observations:</p> <p>Peck Canyon Drive has a right-of-way of 100 feet. Where sufficient right of way is available, it is suggested that a striped paved shoulder be constructed and where right-of-way is limited, a bike route be provided through the use of signage and pavement markings in proximity to school facilities.</p>
<p>Medium Term</p>	<p>Project Name</p>	<p>Project Need & Benefit to Rio Rico</p>	<p>Estimated Project Cost</p>
	<p>Camino Ramanote – West Frontage Road to Corrida De Toros</p>	<p>Need: Many area residents and high school students identified Camino Ramanote as a facility used for walking and biking daily. Camino Ramanote currently experiences just over 2,000 vehicle trips day. This proposed project length is approximately 2.5 miles.</p> <p>Benefit: This area will continue to see increased vehicular traffic and pedestrian and bicycle activity as Rio Rico grows. It is a popular roadway, particularly used by area youth accessing Rio Rico High School and the commercial services at Garrett’s.</p>	<p>Scoping: \$100,000</p> <p>Design: \$150,000</p> <p>Construction: \$500,000</p> <p>2013 Estimated Cost: \$750,000</p> <p>Additional Observations:</p> <p>This two-lane roadway with center-line striping has a 24 foot pavement section in an 80-foot right-of-way.</p> <p>Westerly to its intersection with Corrida De Toros, the roadway has many curves, changes in grade and resulting blind spots. These collective roadway characteristics necessitate the improvement of a paved shoulder.</p>



	Project Name	Project Need & Benefit to Rio Rico	Estimated Project Cost
Long Term	Paseo Venado	<p>Need: Paseo Venado experiences 1,660 average daily trips and will continue to grow. Because the pavement width is only 24 feet and has center line striping, its potential as a bike route/shared roadway is not recommended because a cyclist would only have a 2-foot spacing where a minimum of 3-4 feet is preferred.</p> <p>Benefit: Paseo Venado can provide a key bicycle trail connector linking Calle Calabasas and Camino Caralampi and this 4,000 length of improvements creates a continuous bike route system linking northwest Rio Rico to southwest Rio Rico.</p>	Scoping: \$30,000
			Design: \$ 50,000
			Construction: \$160,000
			2013 Estimated Cost: \$240,000
			<p>Additional Observations:</p> <p>Paseo Venado is an 80-foot right-of-way with an existing 24-foot pavement section with center line striping. A Bicycle LOS model could be performed to determine the feasibility of a bike route/shared use lane facility.</p>

VII. Funding Sources & Cost Sharing Strategies

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 Overview

MAP-21 became effective on October 1, 2012. A few 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 Rio Rico Walking and Biking 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 creates stiffer 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 Rio Rico’s chances for obtaining funding.

Safe Routes to Schools

For the past funding cycle under SAFETEA-LU, the application cycle for Safe Routes to Schools began in September with selected projects being announced in April of the following year. This past cycle was known as Cycle 6. The application cycle for the upcoming Cycle 7 year is in the process of being determined, pending further MAP-21 guidance from FHWA and ADOT for Cycle 7 applications.

For Cycle 6, there was approximately \$5,000,000 statewide available for new SRTS projects. According to ADOT, the likely maximum request/project limits will be \$45,000 for non-infrastructure projects such as education and awareness campaigns and traffic enforcement programs. Anticipated project limits will be \$450,000 for infrastructure projects. A key distinction is that now under MAP-21, SRTS projects will be required to compete against other transportation enhancement (transportation alternatives) projects for funding.

Please see Table 6 below for a complete summary of available funding sources.



Table 6: Potential Funding Sources

Source	Program	Description	Eligible Project Types	Requirements	Administration
Federal – MAP-21	National Highway Performance Program (NHPP)	The NHPP provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS.	<ul style="list-style-type: none"> Bicycle transportation and pedestrian walkways 	<p>NHPP projects must be on an eligible facility and support progress toward achievement of national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS, and be consistent with Metropolitan and Statewide planning requirements.</p> <p>Funding: Generally, 80% federal / 20% matching</p>	In general, obligated through competitive local or statewide grant programs
Federal – MAP-21	Surface Transportation Program (STP)	The Surface Transportation Program (STP) provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals	<ul style="list-style-type: none"> Recreational trails projects bicycle transportation and pedestrian walkways most transportation enhancement eligibilities (see below) 	<p>Projects must be identified in the STIP/TIP and they must be consistent with the Long-Range Statewide Transportation Plan and the Metropolitan Transportation Plan</p> <p>Funding: Generally, 80% federal / 20% matching</p>	In general, obligated through competitive local or statewide grant programs
Federal – MAP-21	Transportation Alternatives Program (TA) - <i>Includes Recreational Trails Program set aside</i>	MAP-21 establishes a new program to provide for a variety of alternative transportation projects. The TAP replaces the funding from pre-MAP-21 programs including Transportation Enhancements, Recreational Trails, Safe Routes to School, and several other discretionary programs	<ul style="list-style-type: none"> Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation Infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other nonmotorized transportation users. recreational trails program Safe routes to school program 	<p>Funding: Generally, 80% federal / 20% matching</p>	In general, obligated through competitive local or statewide grant programs
Federal – MAP-21	Congestion Mitigation and Air Quality Program (CMAQ)	The Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds transportation projects to improve air quality and reduce traffic congestion in areas that do not meet air quality standards.	<ul style="list-style-type: none"> Projects or programs that shifts traffic demand to non-peak hours or other transportation modes during peak hours Non-recreational bicycle transportation and pedestrian improvements that provide a reduction in single-occupant vehicle travel 	<p>Funding: Generally, 80% federal / 20% matching</p>	In general, obligated through competitive local or statewide grant programs



Source	Program	Description	Eligible Project Types	Requirements	Administration
Federal – MAP-21	Highway Safety Improvement Program (HSIP)	The Highway Safety Improvement Program (HSIP) is a Federal Highway Administration (FHWA) program that funds highway safety projects aimed at reducing highway fatalities and serious injuries.	<ul style="list-style-type: none"> Bike lanes, bike parking, crosswalks, and signage 	<p>Bicycle safety must be included in state’s Strategic Highway Safety Plan (SHSP).</p> <p>Funding: 90% federal / 10% matching</p>	In general, obligated through competitive local or statewide grant programs
Federal – MAP-21	Federal Lands Program (Access and Transportation Programs)	The FLP funds projects that improve access to or transportation within the Federal estate (national forests, national parks, national wildlife refuges, national recreation areas, and other Federal public lands)	<ul style="list-style-type: none"> Program administration, transportation planning, research, preventive maintenance, engineering, rehabilitation, restoration, construction, and reconstruction of Federal lands transportation facilities, and provision for pedestrians and bicycles 	<p>Project must be within, adjacent to, or provide access to Federal Lands.</p> <p>Funding: 100% Federal</p>	In general, projects are selected by Federal Land Management Agency or statewide committee.
Federal	Federal Highway Safety (Section 402) Grant Program	Highway Safety Funds are used to support State and community programs to reduce deaths and injuries on the highways	<ul style="list-style-type: none"> Conducting data analyses, developing safety education programs, and conducting community-wide pedestrian safety campaigns. Funds can also be used for some limited safety-related engineering projects 		Program administered through the Governor’s Office of Highway safety
Federal	Community Development Block Grants (CDBG)	The Community Development Block Grant (CDBG) program is a flexible program that provides communities with resources to address a wide range of unique community development needs.	<ul style="list-style-type: none"> Public Facilities and Improvements (road and street improvements) Planning and Capacity Building (transportation plans) 		Submit an annual Regional Account Application to SEAGO
State	Highway User Revenue Fund (HURF)	The State of Arizona taxes motor fuels and collects a variety of fees and charges relating to the registration and operation of motor vehicles on the public highways of the state. These collections include gasoline and use fuel taxes, motor carrier taxes, vehicle license taxes, motor vehicle registration fees, and other miscellaneous fees.	<ul style="list-style-type: none"> Expenditures of HURF must be for improvements in the public roadway right-of-way. They can also be used for the acquisition of right-of-way. Examples of eligible expenditures can include the installation of new pavement, curbing, sidewalks, street lights, traffic control devices, landscaping, distinctive banner treatments and culverts. Administrative and engineering costs are also eligible expenses and will be included in the cost of any Back to Basics project 		HURF revenues are distributed to counties, cities, towns and the State Highway Fund for obligation
State	Heritage Fund	Arizona voters created the Heritage Fund in 1990, designating up to \$10 million a year from lottery ticket sales for the conservation and protection of the state’s wildlife and natural areas.	<ul style="list-style-type: none"> Projects that help to enhance wildlife viewing or provide access to public lands 		Funds obligated by Arizona Game and Fish Department
Local	Development Impact Fees	An impact fee is a fee that is determined by a municipality and is placed on a proposed project to help cover the additional costs associated with upgrading affected public facilities resulting from new construction.			
Local	Development Stipulations	Development requirements are typically placed on proposed projects at the time of entitlement approval to help develop necessary public facilities.		Project developer must agree to proposed stipulations prior to entitlement approval.	



Source	Program	Description	Eligible Project Types	Requirements	Administration
Local	Sales Tax	Funds from a portion of a municipality's sales tax	<ul style="list-style-type: none"> • Pedestrian facilities and programs 		
Local	General Obligation bonds	Bonds are a common mechanism that counties use to borrow money for transportation projects. Most general obligation pledges at the local government level include a pledge to levy a property tax to meet debt service requirements.			



VIII. Supporting Policies

The suggested policy actions below are designed to supplement the implementation of the Plan of Improvements for the Rio Rico Walking and Biking Study.

1) Collaborate with the Santa Cruz Valley Unified School District No. 35 and the University of Arizona Cooperative Extension

Frequent collaboration to selectively target grant applications and funding for the construction of priority Safe Routes to Schools projects is particularly important in the face of funding authorization with the recent federal adoption of MAP-21. The County, school district and the Cooperative Extension should seek consultation from ADOT and others on fluid MAP-21 application requirements and strategies and regularly meet to identify and evaluate priority Safe Routes to Schools projects for grant application consideration.

2) Install bicycle route/shared roadway signage for priority bike routes.

The implementation of signage and pavement markings for priority bike routes/shared roadways is the least expensive and most meaningful way to implement short term projects and demonstrate Santa Cruz County's commitment to promoting bicycling in Rio Rico. Santa Cruz County should request budget authorization for the purchase of MUTCD signage for high priority bike routes in Rio Rico. Signage and select pavement marking should be installed by the County Public Works Department.

3) Develop a County-wide bicycle safety and education campaign.

The County should initially commence with a fairly simple, straight-forward campaign and education program on the implementation of bike route signage on select roadways in Rio Rico. As signage is installed, web-site and mail newsletters to residents can simply inform them of the installation of the signage, "road rule reminders" and safety concerns that also promote the expanded commitment to recreation, fitness and quality of life matters. As the construction of bicycle and pedestrian facilities increase over time, the campaign can expand its messages in unison. The County should consult with ADOT Bicycle and Pedestrian Program representatives regarding the content and usage of their bicycle and pedestrian safety campaign materials (*Share the Road Guide*) for reference.

4) Incorporate paved shoulder improvements into annual or routine repair and resurfacing projects.

Santa Cruz County should adopt a separate formal policy that the annual review of a CIP or street maintenance budget will incorporate the costs to construct paved shoulders with routine street repair, resurfacing overlays or reconstruction jobs. and other bicycle and



pedestrian related improvements into annual street repair budgeting process. Cost-effective improvements can be made incrementally over time.

5) Adopt County development standards that require the construction of sidewalks, shared use paths or bike lanes for new development.

When evaluating an incoming residential or non-residential development proposal, a policy requiring the incoming development to provide for the construction of pedestrian and/or bicycle improvements within the adjacent rights-of-way along the development's property frontage as opportunities arise. This is particularly important for the continuation of an existing network of pedestrian or bicycle improvements (or closing a gap) but also is required where this document or other County plans have identified these improvements even if not currently established.

6) Adopt a formal policy and program for the regular maintenance and sweeping of shared use paths, paved shoulders and shared roadways.

County consider adopting a formal policy supporting this measure so the annual funds and personnel can be properly allocated for this important provision. Community input received supports this practice. A couple biking enthusiasts noted that they love the shared use path on Avenida Coatimundi, however they have gotten many flat tires from stickers and other debris that tend to accumulate on that particular path. Routine sweeping of small rocks and pebbles on paved shoulders and bike facilities is necessary to avoid additional slipping by riders.

7) Promote a policy that requires new development to provide bike racks and safe and convenient ingress and egress.

Develop a specific policy to require the convenient placement of bike rack facilities and accessibility bike and pedestrian access routes on commercial, employment center and community service uses in Rio Rico.

8) Consider enhanced bicycle and pedestrian facilities for intersection upgrades.

Currently Rio Rico does not have any signalized intersections other than I-19 traffic interchanges at Ruby Road and Rio Rico Drive. As signalization of other intersections incrementally occur over time, said intersection improvements should accommodate a more urban or suburban standard for bike lanes and sidewalks in conjunction with the intersection improvements.