coffman studio
Landscape Architecture + Planning

February 14, 2017

Re: Review of WORKING DRAFT #1 of the Paradise Valley Bicycle and Pedestrian Master Plan

Dear Reviewers:

It is with pleasure that Coffman Studio provides this first working draft of the Paradise Valley Bicycle and Pedestrian Master Plan for your review and discussion.

This plan builds off and seeks to implement the Town's 2012 General Plan as it relates to non-motorized means of travel within Paradise Valley. The Plan aims to complement the Town's vision and seeks to develop a more detailed implementation of the non-motorized goals and policies.

The main component of the plan is **Chapter Two: The Plan**, so if your time is limited, focus your attention here. You'll notice several significant changes from the 2012 General Plan:

- Pedestrian Facilities Route Map added
- Bicycle Facilities added to Lincoln Drive and Tatum Boulevard
- Camelback Manor Drive has been deleted as a bike route
- Optional Cross Section Designs for three roads. The Plan should eventually recommend specific street cross sections for specific segments or all of a roadway corridor for:
  - Lincoln Drive
  - Tatum Boulevard
  - McDonald Drive
- Added Local Street classification of 'Enhanced Local Street' which seeks to distinguish local level streets that have a bike facility designation, i.e., Desert Fairways Drive, Hummingbird

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Lane, others, and seeks to provide neighborhood level routes throughout Town as an alternative to riding on Collector Streets and Major Arterials.

- Collector Street Classification has been split into two: Major and Minor Collectors to better reflect actual roadway environments on already designated Collector Streets
- Addition of Wayfinding/Signage design guidelines, goals and implementation strategies

Chapter Three: Action provides numerous implementation strategies and tools.

This document is in a 'Word' format to ensure simple editing during early drafts. A graphic format will be developed for the 3rd draft. The final graphic format will be visually and functionally compatible with the Town's 2012 General Plan to ensure ease of navigate between the two documents.

Please review for content, flow and general organization of the document. Any edits of minor grammatical errors would be appreciated as we continue through the subsequent plan drafts.

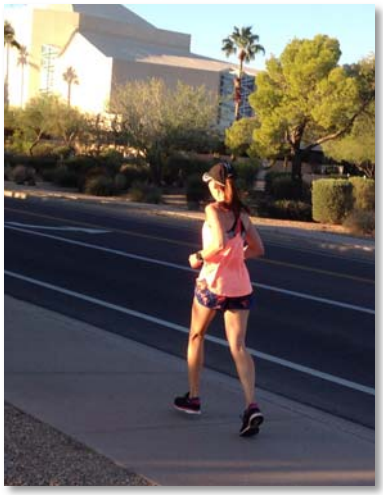
Thank you in advance for your thoughtful review and comments.

James Coffman, RLA
Consulting Project Manager

WALK & BIKE PARADISE VALLEY

The Paradise Valley Bicycle and Pedestrian Master Plan





DRAFT #1

February 14, 2017

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List of Maps

Ordinance

To be inserted upon Town Council approval/adoption.

Acknowledgments

This Plan would not have been possible without the participation of Town residents, resort representatives, and area bicycle and pedestrian advocates and professionals. The Town of Paradise Valley and the consultant team would like to thank them and the following groups for their thoughtful contributions and support in preparing the Paradise Valley Bicycle + Pedestrian Plan Master Plan; a long-range vision for making Paradise Valley a bicycle and pedestrian friendly Town.

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Council Member Paul Dembow
Council Member Scott Moore
Council Member Julie Pace
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Wayfinding, Graphics and Signage

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PLANet
planning, policy, design
Public Engagement & General Plan Integration

1. Executive Summary

WHY THIS PLAN?

This Plan completes a 2012 General Plan Implementation Measure and a Quality of Life Initiative of the Town Council and moves the Town closer to being a 'Bicycle and Pedestrian Friendly Town, as envisioned in the General Plan. Funding for this project was part of the Council approved Capital Improvement Program.

The bicycle and pedestrian network of Paradise Valley can be uniquely responsive to the varied people, landscape and character of the Town. Bicycle and pedestrian facilities can help to create great experiences for all users, while sensitively complimenting neighborhoods. Streetscapes and corridors can enhance the look, feel and functionality of the streets and washes while making them safer and more enjoyable for everyone who walks, drives, or rides a bike in Paradise Valley. This Master Plan provides the means by which these things can happen.

The purpose of Bicycle and Pedestrian Master Plan is to:

- Guide and **promote safe access** and usable bicycle and pedestrian facilities for the friendly co-existence of bicycles, pedestrians and other transportation users;
- Improve **bicycle and pedestrian safety – both real and perceived**, resulting in increased levels of **comfort** and use;
- Provide a cohesive, connected and **comprehensive bicycle and pedestrian system** that provides **route options** to different types of users who may be traveling for different purposes;
- Provide **linkages** that minimize travel distances and **reduce barriers** to access destinations within Paradise Valley and to neighboring communities;
- Propose **accessible solutions** that will increase bicycling and walking for residents regardless of their age or ability;
- Support land use policies and patterns responding to the **uniquely individual neighborhoods** throughout the Town;
- Promote **education and enforcement** of safe and lawful use of bicycling and walking facilities,
- Identify potential **funding** options, and
- Identify plans and designs that are **financially feasible** to implement.

THE PLAN'S RELATIONSHIP TO THE 2012 GENERAL PLAN

The Town's Bicycle + Pedestrian Master Plan builds off and seeks to implement the Town's General Plan that was ratified by the residents in 2012 as it relates to non-motorized means of travel within Paradise Valley. This Plan aims to complement the vision for the Town described in the General Plan. Also, it seeks to develop a more detailed implementation of the non-motorized goals and policies of the Town's General Plan through expanded implementation measures. The Bicycle and Pedestrian Master Plan is a stand-alone document that provides additional detail while supporting an amended General Plan.

WHAT IS DIFFERENT FROM 2012 GENERAL PLAN

The non-motorized circulation routes and standards are significantly more detailed than those shown in the 2012 General Plan. The citizen involvement process drove the development of safe, more context-sensitive solutions that responded to existing use patterns, topography, existing street width and overall aesthetic

character. They represent the many types of users on these facilities by giving choices; shared use paths, sidewalks, buffered on-street bike lanes, or trails. They provide for a range of experiences 'close to home' within neighborhoods while providing linkages to schools, parks, local and nearby regional destinations and non-motorized circulation routes.

- Bicycle Facilities added to Lincoln Drive and Tatum Boulevard
- All on-street bike lanes will be buffered/separated from adjacent motor vehicle lanes
- Pedestrian routes are mapped by facility type
- Camelback Manor Drive has been deleted as a bike route
- Optional Cross Section Designs for three roads. The Plan should eventually recommend specific street cross sections for specific segments or all of a roadway corridor for:
  - Lincoln Drive
  - Tatum Boulevard
  - McDonald Drive
- Added Local Street classification: 'Enhanced Local Street' which seeks to distinguish local level streets that currently have a bike facility designation, i.e., Desert Fairways Drive; others that experience heavy bicycle use that sometimes cause bicycle/pedestrian/motor vehicle conflicts, i.e., Hummingbird Lane, and others that provide neighborhood level routes as an alternative to riding on Collector Streets and Arterials, Golf Drive and others
- Collector Street Classification has been split into two: Major and Minor Collectors to better reflect actual roadway environments on already designated Collector Streets
- Addition of Wayfinding/Signage design guidelines, goals and implementation strategies that suit the Town's needs while being visually low impact
- Addition of Performance Measures to promote informed decision-making by measuring and evaluating the effects of bicycle and pedestrian investments over time

DIRECTION

Paradise Valley's beautiful setting and low-density desert lifestyle - a 'Premier Residential Community', literally in the center of a 4.5 million people metropolis is both its greatest asset and challenge. Residents, tourists and local visitors are drawn to this place and the many attractions within and surrounding Paradise Valley. The Town has invested in a multi-modal circulation system through policies and physical improvements including bike lanes, sidewalks, trails and paths. The improvements at this time are incomplete and present a patchwork of facilities, some disconnected from each other and thereby hampering opportunities to provide non-motorized connections and loops to the many desired destinations. The greatest challenge of this Master Plan is to strike a balance; between the needs of residents and visitors, between facility improvements and respect for the low-density desert character, and between guiding people to destinations without distracting from the visual quality from which the Town derives its proud name.

The public input process occurring over 10 months (assuming May 2017 completion) included thirteen separate events that are in addition to Planning Commission and Town Council meetings. These events included seven events geared to present information and solicit resident input through group activities: three open houses and four stakeholder meetings. In total, excluding staff/consultants, 95 persons attended these seven events. Two other events were done in conjunction with two Town events, the Car Show and the Safety Fair. At least 50 people came through the booth at the car show and __ persons at the safety fair. There were three online surveys done. In total, 383 persons took the surveys of which 286 reside in zip code 85253. The consultant interviewed or received completed surveys from seven local resort concierges.

The main points learned through this process can be summarized as follows:

- **Safety.** Develop and implement a network that is safe and includes better access at road crossings
- **Education**. Improve on education for cyclists and motorists regarding bike laws
- **Enforcement.** Develop an enforcement program for cyclists and pedestrians that do not abide by laws
- **Bicycle/Pedestrian Separation.** Preference for separated bicycle-pedestrian access on most roadways
- **Low Touch Local Streets.** Preference for no or very limited improvements on most local roads
- **Residents First.** Focus improvements that benefit residents first such as looped access improvements, gaps in sidewalks, and access to local destinations
- **Low Impact Wayfinding**. Use technology for wayfinding and signage as much as possible, and when signage is needed, blend it with the Town's vernacular while being low-impact
- **Partnerships.** Partner with resorts on maps and parking

PRIORITY PROJECTS/IMPLEMENTATION MEASURES AND CHALLENGES

Priority Projects

The Plan identifies several priority projects that build upon partially completed corridors and projects in the current Capital Improvement Program such as sidewalk and bike lane improvements on Doubletree Ranch Road and the Visually Significant Corridor study currently taking place in Paradise Valley. These types of projects will allow for more local loops and access to Town destinations. Other priority projects resulted from high demand expressed at public meetings, surveys and interviews such as improving connections to the major hiking/riding destinations of Camelback Mountain (Echo Canyon and Cholla Trail) and the Phoenix Mountains (Trail 100 at Tatum Boulevard and Tomahawk Trail). A window of opportunity exists to coordinate with the City of Phoenix on Phoenix Mountain trails connection opportunities at Tatum Boulevard and at 32nd Street and Lincoln Drive as they have current funds for improvements.

Priority Implementation Measures

More policy related priority implementation measures include coordinating with the local resorts in preparing a bicycle and pedestrian route map suitable for public distribution. This could replace or compliment route maps prepared by the resorts that would direct guests to routes mutually agreed upon by the Town. Since this Plan modifies street classifications and standards, these changes would need to be formally adopted and incorporated into all relevant Town plans. To address large groups of bicyclists (pelotons) on certain streets occupying entire motorized vehicle travel lanes, adding appropriate regulatory signage and increasing enforcement of bike laws in these areas would help to reduce this behavior. The Plan places a high priority on designating a Town staff person to represent the Town of Paradise Valley on the Maricopa Association of Governments (MAG) Pedestrian and Bicycle Committee to coordinate facility development, ensure that regional bikeway system designations are consistent with the Town's Bicycle Facilities Plan, and be kept aware of potential funding sources.

Challenges

Though not an extensive issue, restricted right of way widths in some areas will need to be addressed in order to implement new cross section standards for some roadways. As with any capital improvement program, budgets need be developed and funds appropriated to complete these projects. Neighborhood involvement will be necessary to implement any project and to explore potential traffic and bicycle calming projects. Staff resources are limited, so priority projects and policies will need to be carefully assigned and coordinated.

BENEFITS OF A FULLY IMPLEMENTED PLAN

According to the survey prepared for this Plan, biking and walking are very popular in Paradise Valley with the majority of walking and biking being done for recreational and health purposes. Of 160 initial survey respondents from the Town of Paradise Valley, 94% said they walk in Town, and of 156 respondents, almost 76% said they bike in Paradise Valley. This is not inconsistent with patterns throughout Arizona. According to the Arizona 2013-2017 Statewide Outdoor Recreation Report (SCORP), day hiking (87% participation), walking, jogging or running on trails or at a park (82%) are the highest land-based outdoor recreation activity for involved recreation users in Arizona. The following summarizes the key benefits.

- **Safety.** In comparing 10 U.S. cities between 2000 and 2015 where recent implementation of improved cycling infrastructure has occurred, there have been significant improvements to cycling safety and large increases in bicycle trips. Paradise Valley could expect to see similar results.
- **Quality of Life.** Accommodating pedestrians and cyclists lessens noise and congestion, increases opportunities for social interaction, affords opportunities for residents to recreate, and aids in tourism to the Town's local resorts.
- **Health.** The health benefits of regular physical activity are far-reaching: reduced risk of coronary heart disease, stroke, diabetes, and other chronic diseases; lower health care costs; and improved quality of life for people of all ages.
- **Accessibility.** An improved pedestrian network leads to greater access to more destinations by people without access to a vehicle such as persons with disabilities, older residents, youth, and visitors.
- **Transportation System.** Walking and biking is a low cost, healthy alternative to driving in single occupancy vehicles.
- **Environmental.** Walking and biking help reduce air pollution.
- **Economic.** When safe facilities are provided for pedestrians and bicyclists, people can walk and ride more and spend less on transportation, meaning they have more money to save or spend on other things. Furthermore, an increasing number of studies show that bicycle and pedestrian facilities increase home values, drive spending at local businesses, and spur economic development in communities.

It is hoped that this plan embodies the concept of balance and thereby provides a blueprint for creating a safer, bicycling and walking-friendly Town that maintains its unique and cherished quality of life. The following chapters illustrate and describe that balance.

2. The Plan

The bicycle and pedestrian network of Paradise Valley can be uniquely responsive to the varied people, landscape and character of the Town. The bicycle and pedestrian facilities can help to create great experiences for all users, while sensitively complimenting neighborhoods. Streetscapes and corridors can enhance the look, feel and functionality of the streets and washes while making them safer and more enjoyable for everyone who walks, drives, or rides a bike in Paradise Valley. This chapter provides the means by which these things can happen including:

- **Mission Statement -** to clarify what should be accomplished by the Bicycle and Pedestrian Master Plan
- **Goals And Policies -** to supplement/update those already in the Town's General Plan
- **Core Standards -** to describe the most fundamental components of the Town's bicycle and pedestrian accommodations
  - Bike Route
  - Buffered/Separated Bike Lane
  - Shared-Use Path
  - Sidewalk
  - Trail
- **Supporting Standards** – to describe features that will enhance the bicycle and pedestrian network
  - Traffic Calming
  - Enhanced Intersections
  - Wayfinding
- **Routes Maps -** to designate the level of intensity of street design from Major Arterials to Local Streets and how those corridors address bicycle and pedestrian facilities
  - Street and Off-Street Classifications Map
  - Bicycle Route Map
  - Pedestrian Route Maps
- **Cross-Section Standards for Streets and Off-Street Corridors -** to illustrate and describe corridor designs, dimensions and character

The route maps and standards are significantly more detailed than those shown in the 2012 General Plan. The citizen involvement process drove the development of more context-sensitive solutions that responded to existing use patterns, topography, existing street width and overall aesthetic character. They represent the many types of users on these facilities by giving choices; shared use paths, buffered on-street bike lanes, or trails. They provide for a range of experiences 'close to home' within neighborhoods while providing linkages to schools, parks, local and nearby regional destinations and non-motorized circulation routes.

MISSION STATEMENT

The introductory paragraph for Section 4.2. Non-Motorized Circulation, in the 2012 General Plan already encapsulates much of the mission for this Master Plan in describing the who, the what, the how, and the role of the Town in implementing its non-motorized circulation system. Using that introductory paragraph and the common themes heard during the resident input phase, below is the mission statement for this Plan:

"Make the Town of Paradise Valley a pedestrian and bicycle-friendly town focused foremost on its residents. The non-motorized circulation system will offer safe, walkable and bikeable environments that are compatible with the low-density, natural desert

environment and design excellence for which the Town is known. This system will be supported by rule enforcement and education to best mitigate conflicts between different travel modes. It will provide a well-maintained, interconnected, and continuous pedestrian network of sidewalks, and shared use trails and paths that are enjoyable places to walk, run and hike. Residents will have access to a designated bicycle circulation system located primarily on non-local roadways that provide access to local destinations such as resorts, schools, and nearby hiking spots. Bicyclists will be buffered from motor vehicles on more heavily traveled roads. Wayfinding for this bicycle circulation system will provide the least impactful signage that is both designed and in character to its location. Residents will be encouraged to integrate walking and bicycling into their daily activities to promote a healthier lifestyle and improve energy resource conservation. By making the town's non-motorized circulation system safe and enjoyable for its residents, this will additionally benefit the needs of employees within the town, resort guests, and people of all ages and abilities."

GOALS AND POLICIES

The following goals and policies supplement those in the Town's General Plan. For ease, existing General Plan goals and policies have been referenced where appropriate.

Goal BP 4.1: Non-Motorized Circulation System. *To provide a unique, high-quality non-motorized circulation system throughout the Town to meet the needs of residents, employees, and resort guests. (Goal M 4.2.1, Town's General Plan)*

Policies

BP 4.1.1	***Safe and Convenient Access to Destinations.*** The Town shall implement a non-motorized circulation system for predominantly recreational and social purposes. This network shall provide safe, convenient, and enjoyable access to destinations that are open to the public along designated bicycle and pedestrian routes identified in this Plan. Facilities providing this access may be one or more of the facility types identified in this Plan. (Policy M 4.2.1.1, Town's General Plan)
BP 4.1.2	***Linkage.*** The Town shall plan for and provide the development of non-motorized system linkages to neighborhood community non-motorized networks (Policy M 4.2.1.3, Town's General Plan)
BP 4.1.3	***Right-of-Way.*** The Town shall design existing and future roadway rights-of-way to provide safety for pedestrian and users of non-motorized modes of transportation. (Policy M 4.2.1.4, Town's General Plan)
BP 4.1.4	***Conflicts.*** The Town shall develop safe and convenient bicycle and pedestrian facilities that reduce potential conflicts between bicyclists and motor vehicles and bicyclists and pedestrians. Design of the non-motorized system shall consider ways to avoid such conflicts along routes with particular attention at roadway intersections and within hillside areas of Town. (Policy M 4.2.3.2, Town's General Plan)
BP 4.1.5	***Transfer Points.*** Where feasible, the Town shall plan for and provide the development of non-motorized system that allows for persons to transfer easily between such places as local transit stops, seasonal trolley stops, and ride-share locations.
BP 4.1.6	***Connection to Schools and Community Facilities.*** The Town shall ensure that its network of bicycle and pedestrian facilities include safe access and convenient connections to schools and other community facilities throughout the Town. (Policy M 4.2.3.8, Town's General Plan)

Goal BP 4.2: Operations and Management. *To provide a comprehensive management and operations program for the Non-Motorized Circulation System, from project inception to budget development and on-going maintenance, education, promotion and rule enforcement. (New Goal)*

Policies

BP 4.2.1	***Maintenance.*** The Town shall maintain bicycle and pedestrian facilities and its corresponding signage/wayfinding. (Policies M 4.2.1.2 and M 4.2.1.5, Town's General Plan)
BP 4.2.2	***Funding & Implementation.*** The Town shall continue its long- range program for planning and constructing non-motorized circulation facilities and seek ways through transfer, gift, grants, easement, or Capital Improvement Program funds to complete the system and to fund studies, programs and policies. (Policy M 4.2.1.2 and M 4.2.1.5, Town's General Plan)
BP 4.2.3	***Regional Coordination***. The Town shall participate in regional bicycle and pedestrian planning efforts in order to coordinate facility development, ensure that regional bikeway system designations are consistent with the Town's Bicycle Facilities Plan, and be kept aware of potential funding sources. (Policy M 4.2.3.7, Town's General Plan)
BP 4.2.4	***Education.*** The Town shall use a variety of means to educate non- motorized and motorized users regarding laws and safe use practices of non-motorized and shared facilities.
BP 4.2.5	***Enforcement.*** The Town shall enforce existing and consider new state and local statutes related to bicycles and pedestrians.
BP 4.2.6	***Promotion and Publicity.*** Using a multi-prong approach of events, activities, maps, statutes/laws, and branding, the Town shall disseminate information regarding the non-motorized circulation system.
BP 4.2.7	***Internal Planning Process.*** The Town shall implement internal policies that ensure proper communication and coordination among the various departments and sections working to improve bicycle and walking in Paradise Valley from planning through implementation.
BP 4.2.8	***Resort Coordination.*** In order to stay aware of resort visitor needs and the programs resorts develop to serve their clientele, the Town shall coordinate regularly with resort representatives.

Goal BP 4.3: Integrated Pedestrian System. *To provide a universally accessible, safe, experientially rewarding, convenient, and integrated pedestrian system throughout the Town that promotes walking, running and hiking. (Goal M 4.2.2, Town's General Plan)*

Policies

BP 4.3.1	***Interconnected and Continuous System.*** The Town shall design, build and maintain an interconnected and continuous pedestrian system of public sidewalks, shared-use paths (paved), trails (unpaved), and appropriately enhanced street crossings for convenient and safe walking free of major impediments and obstacles. (Policy M 4.2.2.1, Town's General Plan)
BP 4.3.2	***Pedestrian-Friendly Streetscapes.*** The Town shall ensure that streets include the appropriate level of pedestrian-friendly accommodation by providing such elements as detached sidewalks, frequent and safe pedestrian crossings, large medians to reduce pedestrian crossing distances, shade trees, plantings, seating where appropriate wayfinding signage and other amenities. (Policy 4.2.2.2, Town's General Plan)
BP 4.3.3	***Safe and Accessible Facilities.*** The Town shall develop safe and convenient pedestrian facilities that are universally accessible, properly designed and maintained for the safety of

	pedestrians. (Policy M 4.2.2.3, Town's General Plan)
BP 4.3.4	***Low Impact Approach.*** As a low impact approach to providing pedestrian space along lower classified streets, the Town shall consider the use of trails (unpaved) and minimal to no street markings, and for signage to be in the scale and character of the neighborhood.
BP 4.3.5	***Low Maintenance Design.*** As a low maintenance approach to providing connectivity between other bicycle and pedestrian facilities in select destinations, the Town shall consider a paved shared-use path along one side of the roadway or other similar methods.
BP 4.3.6	***On-site Connectivity.*** The Town shall encourage a continuous pedestrian route between public pedestrian facilities and main entrances of public or semi-public buildings.

Goal BP 4.4: Integrated Bicycle System. *To provide a safe, comprehensive, and integrated bicycle system throughout the Town that is accessible and compatible with traffic patterns, land uses, and neighborhoods. (Goal 4.2.3, Town's General Plan)*

Policies

BP 4.4.1	***Bicycle Circulation.*** The Town shall design, build, and maintain a Bicycle Circulation System of bike lanes, routes and shared-use paths through the Town in accordance with updated Street Classifications and Route Maps of this Plan. (Policy M 4.2.2.3, Town's General Plan)
BP 4.4.2	***Safe Facilities.*** The Town shall develop safe and convenient bicycle facilities that are compatible with other regional bicycle facilities. (Policy M 4.2.3.2, Town's General Plan)
BP 4.4.3	***Bicycle-Friendly Streetscapes.*** The Town shall ensure that streets include the appropriate level of bicycle-friendly accommodation by providing appropriate facility design, way-finding, and crossing in accordance with the updated Street Classifications and Routes Maps of this Plan.
BP 4.4.4	***Bicycle Signals.*** Where bike lanes and routes encounter traffic signals, the Town should explore intersection modifications that would make crossing intersections safer for bicyclists.

Goal BP 4.5: Traffic Calming. *To provide traffic calming opportunities that would reduce through traffic, traffic speed and bicycle speed in order to provide safer conditions for motorists, pedestrians, and bicyclists. (New Goal)*

Policies

BP 4.5.1	***Speed Management.*** The Town shall develop and implement speed management policies that support safe and appropriate driving speeds on all public streets that are also designated for use by bicyclists. (Policy M 5.3.4.6, Town's General Plan)
BP 4.5.2	***Roundabouts.*** The Town shall utilize roundabouts instead of stop signs for intersection traffic control along designated bikeways to improve safety and traffic flow, where deemed appropriate from a traffic engineering perspective. (Policy M 4.2.3.5, Town's General Plan)
BP 4.5.3	***Intersections.*** The Town shall incorporate intersection redesign techniques that slow traffic, improve bicycle and pedestrian visibility and direct or redirect users to more suitable routes where deemed appropriate from a traffic engineering perspective using such techniques as curb extensions, tighter turning radii, raised intersections, mini roundabouts, etc.
BP 4.5.4	***Narrowed Lanes.*** Where bike routes and lanes are provided, the Town shall narrow travel lanes in accordance with the updated Street Classifications and Routes.

Goal BP 4.6: Wayfinding. *To develop and implement a comprehensive wayfinding system that helps to improve safety along bicycle and pedestrian routes, is respectful to the privacy of residents, reflects community character, is sparingly used while aesthetically appealing, and incorporates technology. (New Goal)*

Policies

BP 4.6.1	***Comprehensive Wayfinding System***. The Town shall design a network signage system providing wayfinding, information, and directional signs and includes an area/street map identifying designated routes connecting to key destinations in Paradise Valley and the region.
BP 4.6.2	***Safe Facilities.*** The Town shall create safer bicycle and pedestrian facilities through the appropriate use of signage and wayfinding that make routes more visible, provides accessibility to a wide range of users, and educates and informs about the rules of the road.
BP 4.6.3	***Resident Privacy.*** The Town shall only sign routes that are identified in this Plan.
BP 4.6.4	***Community Character.*** The Town shall incorporate materials and the neutral color palette already established on existing PV signs to ensure continuity throughout Town.
BP 4.6.5	***Maintenance.*** The Town shall establish a maintenance and replacement schedule to ensure signs are not faded or damaged.
BP 4.6.6	***Aesthetic Appeal.*** The town shall incorporate welcoming and suggestive language rather than authoritative language. Use MUTCD Fabrication techniques, base sign height on user's perspective (i.e.: Pedestrian vs. Vehicular). Respond to the materials used when determining sign shape and form.
BP 4.6.7	***Minimize Quantities.*** The Town shall locate vertical signs and ground plane signs primarily at intersections and junctions/entry points with other bicycle facilities.
BP 4.6.8	***Technology.*** The Town shall incorporate the latest wayfinding technologies to complement physical wayfinding to be accessible with GPS and coordinate with existing online map tools and aps for hiking and biking communities.
BP 4.6.9	***Visual Character Hierarchy.*** The Town shall develop a graphic hierarchy based upon street classifications and develop a basic vocabulary of spatial features that assist wayfinding and imageability: identifiable places, landmarks and neighborhoods.

CORE STANDARDS

The Core Elements are a toolbox of non-motorized facilities to better serve the wide variety of bicyclists and pedestrians in Paradise Valley from casual to serious riders, walkers, joggers, dog walkers and people with strollers or people using assistive devices. Surface varieties from paved shared use paths to unpaved trails accommodate different user preferences. The Core Elements provide dedicated spaces for non-motorized use, removed from motorized vehicle travel lanes thereby creating a safer and more comfortable experience for pedestrians and bicyclists. They will exist in a variety of settings in or along streets, washes and in open space areas.

Figure __: Core Facility Standards

Facility Types	*Description*	
Bike Route	Bicycle traffic shares the roadway with motor vehicles. No special bike lanes are provided. Route only distinguished by vertical 'bike route' signage and/or by special lane markings such as custom sharrows at major intersections. Motorized vehicle speed limit below 35mph. Special regulations may be enacted and posted along such facilities to control motor vehicle speeds or restrict parking to enhance bicycling safety.	
Buffered/ Separated Bike Lane	Pavement markings or specialty paving creating a horizontal buffer delineating a minimum 4 feet width lane, exclusive of curb & gutter, unless the gutter is a fully integrated pan the full width of the bike lane. Distinguished by signage and/or pavement markings. Designed to delineate the right-of-way assigned to bicyclists and motorists with a larger more visible barrier, to provide more predictable and controlled movements by both, creating a safer environment. *Sample photo shows full gutter pan bike lane.*	
Shared-Use Path	10 feet wide off-street paved connections. Typically cover short distances between popular destinations and neighborhoods. May be striped to separate directional traffic. Pedestrians, bicyclists, skaters, wheelchair users, runners, and other non-motorized users may use shared-use paths.	
Sidewalk	6 feet gently meandering (or attached to roadway where necessary) colored concrete routes set back 5 feet from motorized traffic lane where possible to create a landscape buffer. Does not have to be associated with a street.	

Trail	4-6 feet gently meandering unpaved (i.e. compacted natural surface or decomposed granite is considered ADA accessible) routes set back 5 feet from traffic lane where possible to create a landscape buffer. Does not have to be associated with a street. May be attached to roadway as a shoulder. Examples: along Arizona Canal and in Phoenix Mountains Preserve. Open to any non-motorized user that prefers a natural surface rather than a paved surface.	

SUPPORTING STANDARDS

Like the Core Standards, Supporting Standards are a toolbox. They complement the Core Standards and help to make the bicycle and pedestrian network safer, more visible, more navigable and more enjoyable. Traffic calming and enhanced intersections should be considered where conflicts exist between vehicles and cyclists.

Traffic Calming

Although several types of speed management techniques exist, this plan suggests the use of three techniques that would be most appropriate for or already in use in Paradise Valley; Mini-Round-A-Bouts, Chicanes and Speed Humps.

Chicanes

Chicanes are an effective means of reducing speed and traffic volumes at specific locations under certain circumstances. Chicanes are barriers placed in the street that require drivers and/or cyclists to slow down and drive around them. Bicycle bypasses and signs to indicate directional priority are suggested. Barriers may take the form of landscaping, street furniture, parking bays, curb extensions, or other devices. Also provides rainwater catchment and reduces pavement and water runoff.

Figure __: Supporting Standards -Chicanes

Speed Humps

Speed humps are parabolic vertical traffic calming devices intended to slow traffic speeds on low volume, low speed roads. Speed humps are 3–4 inches high and 12–14 feet wide, with a ramp length of 3–6 feet, depending on target speed. Speed humps reduce speeds to 15–20 mph and are often referred to as “bumps” on signage and by the general public. May include additional texturing to discourage cyclists from avoiding the traffic calming measure.

Figure __: Supporting Standards – Speed Humps for motorized vehicles and bicycles

Enhanced Intersections

These facilities are proposed to heighten driver awareness of crosswalks and pedestrian areas. In addition, enhanced aesthetics and town branding can be achieved. The Bicycle and Pedestrian Route Maps show possible locations of enhanced crossings in Paradise Valley. This section first discusses intersection enhancement techniques already in use in the Town as well as mid-block crossings including a 'Z-crossing' with a 'Pedestrian Hybrid Beacon' also known as a '**H**igh intensity **A**ctivated cross**W**al**K'** (HAWK) beacon. These might be appropriate along Lincoln Drive or Tatum Boulevard where roadways are wide, traffic moves fast and where numerous destinations are located prompting more demand for crossings at mid-block or currently unsignalized crossing points. Lastly, this section discussed Mini-Roundabouts as a way to enhance intersections while also calming traffic.

Safety for all pedestrians, especially for those with disabilities, is the single most important criteria informing crosswalk design. Crosswalks serve a dual function of guiding pedestrians to locations where they should cross the street and informing drivers of pedestrian movements. Crosswalks are used in locations where pedestrians are expected, such as at intersections, as well as places where they may not be expected, such as uncontrolled crossings. Audible pedestrian signals that provide an audible signal to assist visually impaired pedestrians in crossing the street can also be integrated into crosswalk design. In Paradise Valley, crosswalks are typically located to provide safe access to schools, churches, neighborhoods and resorts.

Crosswalks should be aligned with the approaching sidewalk and maximize the visibility of pedestrians to turning vehicle movements. Particularly at complex intersections, crosswalks should be placed at locations that reflect pedestrian desire lines while also considering the safest location to cross – where there is the least amount of exposure to conflicts with other modes.

ADA-compliant curb ramps should direct pedestrians into the crosswalk and the bottom of the ramp should lie within the area of the crosswalk. Paradise Valley recently began using an "enhanced crosswalk" design in addition to the standard designs, particularly at "Visually Significant Corridors" such as the 56th St. and Lincoln Drive intersection. They typically include decorative bands along the path of travel. The decorative bands can enhance crosswalk visibility, create a more aesthetically pleasing pedestrian-friendly environment, and support branding of a district or corridor. Enhanced crossing and intersection materials most suitable to Paradise Valley include Town Standard colored concrete, colored concrete unit pavers, colored and stamped asphalt, and coloring of the signal poles using the Town's desert color palette.

Crosswalks must be consistent with the Manual of Uniform Traffic Control Devices (MUTCD) and meet basic requirements for visibility, including 12 inch wide white transverse lines along the boundary of the crosswalk to maximize visibility. Enhanced crosswalks should only be used at intersections where they are secondary to other traffic control devices.

Text has been edited to reflect Town of Paradise Valley conditions based on original NACTO white paper. (http://nacto.org/docs/usdg/crosswalk_design_boston.pdf)

Figure__: Example of an Enhanced Crosswalk at 56th St. and McDonald Dr. (photos Achen Gardner)

Figure__: Example of an Enhanced Crosswalk at McDonald Dr. and the Entrance Into the Sanctuary (photos Achen Gardner)

Z-Crossing

Staggered crosswalks (or Z–crossings) are treatments typically used on major arterial streets and other high traffic areas where the crosswalk is split by a median and offset on either side of the median. This configuration forces pedestrians to turn in the median and face oncoming traffic before turning again to cross the second half of the crosswalk. In either walking direction, the pedestrian must turn slightly toward traffic before crossing. In order to curtail shortcutting and force pedestrians to follow the intended path, some medians may also have attractive fencing to corral pedestrians in the correct direction. The example below shows a shade sail to create a more comfortable waiting area. (https://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/chapt12.cfm)

Figure __: Example of Z-Crossing with a shaded pedestrian refuge within center median. (photo J2 Design)

HAWK Beacon

While several roadway treatments are available to address pedestrian concerns, only a few are appropriate for high-speed or wide-crossing conditions such as Trailhead 100 along Tatum Boulveard. The HAWK beacon

was developed to address these types of conditions. At a HAWK crossing, drivers receive multiple cues to emphasize the potential presence of a pedestrian. These cues include a unique configuration of the HAWK beacon (two red lenses over a single yellow lens), high-visibility crosswalk markings (ladder-style markings as opposed to only two transverse white lines), a stop bar approximately 50 feet from the crosswalk, 8-inch solid lane lines between through-travel lanes, and signs that can be illuminated and read "CROSSWALK". When activated, the HAWK uses a red indication to inform drivers to stop, thereby creating a time period for pedestrians to cross the roadway. The HAWK beacon is not illuminated until it is activated by a pedestrian, triggering the warning flashing yellow lens. After a set amount of time, the indication changes to a solid yellow light to inform drivers to prepare to stop. The beacon then displays a dual solid red light to drivers on the major street and a walking person symbol to pedestrians. At the conclusion of the walk phase, the beacon displays an alternating flashing red light, and pedestrians are shown an upraised hand symbol with a countdown display informing them of the time left to cross. During the alternating flashing red lights, drivers can proceed after coming to a full stop and checking that pedestrians have already crossed their lane of travel. Each successive driver is legally required to come to a full stop before proceeding during the alternating flashing red phase. (http://www.fhwa.dot.gov/publications/research/safety/10045/)

Figure __: Example of a HAWK Beacon and Z-Crossing with Enhanced Crosswalk Paving at Kierland/Scottsdale Quarter across Scottsdale Road. (photo Valley Rain)

Mini-Roundabouts

Mini-roundabouts and neighborhood traffic circles lower speeds at minor intersection crossings and are an ideal treatment for uncontrolled intersections. Mini-roundabouts may be installed using simple markings or raised islands, but are best applied in conjunction with plantings that beautify the street and the surrounding neighborhood. Careful attention should be paid to the available lane width and turning radius. They provide the opportunity for neighborhood related public art and can provide rainwater catchment that reduces water runoff. For more information refer to National Association of Community Transportation Officials (NACTO) Guidelines and the Maricopa County Department of Transportation (MCDOT) Roadway Design Manual.

Figure __: Supporting Standards – Mini-Roundabouts

Wayfinding

Implementing a well-designed, attractive, and functional wayfinding network of signage, graphics and landmark components greatly enhances pedestrian and bicycle facilities by promoting their presence to both potential and existing users. It helps overcome a "barrier to entry" for infrequent or beginning bicyclists and walkers, and can control the uses of avid users by guiding them along a direct pathway, directing away from "off-limit" areas, and establish or regulate behavior and etiquette.

Network signage identifies the best routes to destinations within the system, and when it displays mileage or travel time, helps users estimate the amount of time it takes to travel by foot or bicycle. It also educates users to the rules and regulations of the road for cyclists, pedestrians and motorists using the same route. By providing unique and consistent imagery, design, style, and environmental quality throughout, it passively brands and markets the network as an integral part of the community.

A wayfinding network system implemented in the Town of Paradise Valley would enhance the Town's bikeway network and provide directional assistance to bicycle facilities and destinations by completing connections to adjacent systems in Scottsdale and Phoenix.

When placed along and oriented to users on the roadway, all signs should conform to the Manual on Uniform Traffic Control Devices (MUTCD). This document gives specific information on the type and general location of signage for primary bike systems. These signs are designed to work with standard roadway signs and can be installed on existing signposts and traffic light poles. Where ever possible existing post/poles should be used to eliminate sign clutter. While the MUTCD provides specifications for on roadway signage, these sections may be viewed as guidelines. Therefore, custom designs, colors, materials and branded aesthetics

unique and appropriate to the Town of Paradise Valley may be incorporated that do not follow these guidelines. However, the use of an "approved" readable typeface such as Clearview, Wayfinding Sans or Highway is highly recommended, along with the standard symbol and arrows.

Materials and Colors

The material and color palette of existing directional and interpretive signs along McDonald Drive and the Town entry monuments are the basis for future wayfinding/signage designs. In addition, signs will incorporate a developed Paradise Valley wayfinding brand and adhere to readability requirements for the user. Materials and colors include:

- Metal panels that emulate rusted steel in finishes appropriate for the signage use
- Gabion walls as bases or accents
- Cast in place letters in concrete for landmark monuments or markers
- Color palette of dark browns, earth and flora tones
- White copy for contrast with darker colors
- MUTCD fabrication methods when appropriate for the signage use:
    - Use reflective materials to provide night time visibility due to the low light night-time environments
    - High contrast of copy to background for better readability

Figure __: Existing Paradise Valley Sign Materials and Colors - Gabion walls and bases / rusted steel / encircled directional arrows / muted desert colors


Sign Types

Six general sign types have been identified in this section that form the basis for Paradise Valley's sign network.

1. Bicycle and Pedestrian Network Orientation Signs

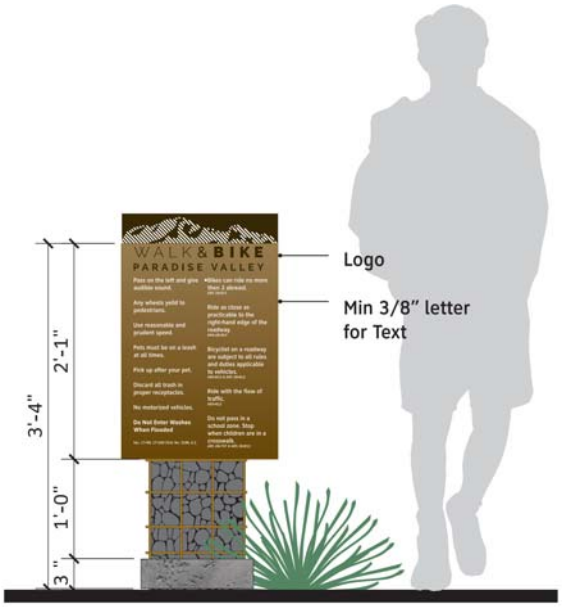
PURPOSE: Provide network rules and regulations and cognitive information and orientation.

INFORMATION: Network identity (brand), route(s), map, symbols and text for desired path behavior, destinations, rules and regulations.

PLACEMENT: At street entrances to the town with pathways for incoming pedestrian and bicycle users, and secondary locations (internal to the town) where designated appropriate for orientation.

Figure __: Sample Orientation Signs used elsewhere but with similar color and material palette to Paradise Valley


Figure __: Paradise Valley Specific Orientation sign



2. Route Identification Signs

PURPOSE: These signs indicate and confirm non-motorized users that they are on a designate route or pathway. They also indicate to motorized users the potential presence of bicyclist and pedestrian users.

INFORMATION: "Bike Route" signs may be used to designate general bike routes or may include supplemental naming and/or route identity (. The Bicycle Route sign may include a route designation, such as a number, a bike symbol, and may include custom a pictograph or words that are associated with the route or with the agency that has jurisdiction over the route.

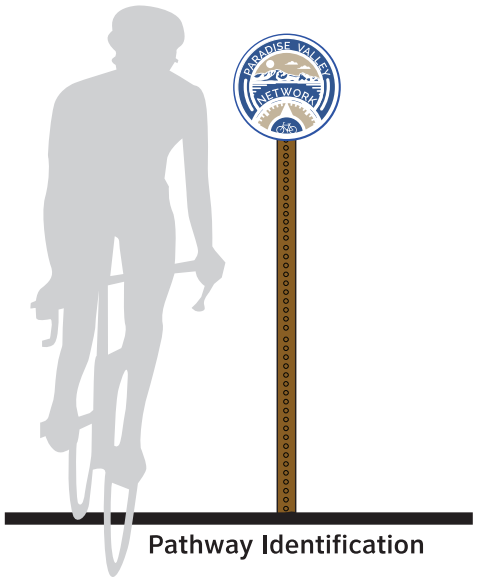
PLACEMENT: Off-Street facilities: every half (½) mile. On-Street facilities: after significant intersections and placed soon after turns to confirm destination(s) unless another type of sign is used (i.e., within 150 feet of a turn or decision point). Pavement marking can also act as confirmation that a bicyclist is on a preferred route if a vertical sign is not desirable.

Figure __: MUTCD approved bicycle Route Identification sign in use in Paradise Valley

Figure __: Standard MUTCD approved bicycle Route Identification signs

Figure ___: Customized bicycle Route Identification signs

Figure__: Possible Paradise Valley custom Route Identification sign



3. Route Guide Signs

PURPOSE: To indicate locations, distances, directions, routes, and similar information.

INFORMATION: Route identification with arrow. Supplemental arrow plaques may be placed under existing route sign. Distances are optional but recommended.

PLACEMENT: Route Guides should be placed at locations that indicate where a path turns from street or direction to another, often at street intersections. Arrowed pavement markings may be used in lieu of freestanding signage. Signs are placed at decision points– typically at the intersection of two or more route-ways and at other key locations along the route or those that provide passage or entry to the route.

DESTINATION HIERARCHY: If the Town chooses to implement Route Guide Signs to destinations within, adjacent or nearby Paradise Valley, it is important to pre-determine a list of destinations to shown on the signs. A preliminary list of those potential destinations may include:

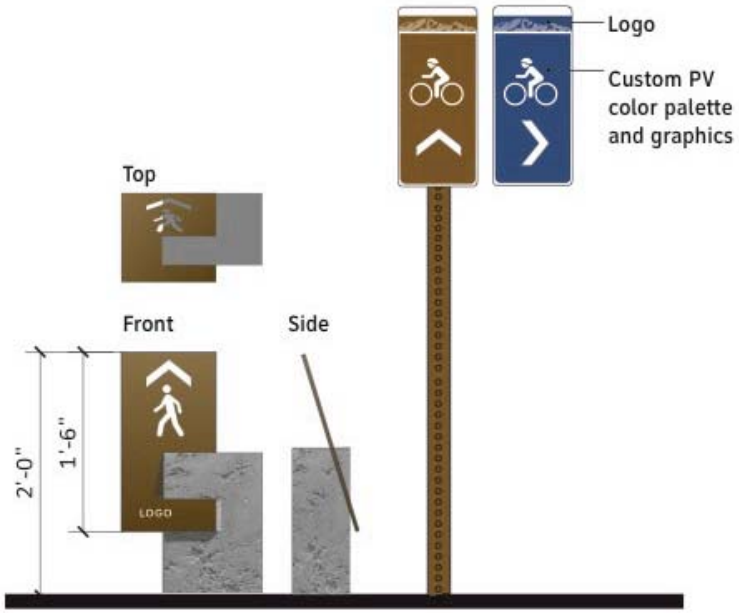
- Paradise Valley Town Hall and Offices and Services
- Parks
  - Barry Goldwater Park
  - Phoenix Mountain Preserve Trailheads
  - Cholla Trailhead
  - Echo Canyon Trailhead
- Town Resorts/Hospitality Destinations
  - Andaz Scottsdale Resort & Spa
  - Doubletree Resort
  - Scottsdale Camelback Inn
- Scottsdale Resorts/Destinations
  - Scottsdale Plaza Resort,
  - Indian Bend Wash (Scottsdale Pathways)
  - McCormick Stillman Railroad Park
  - Scottsdale Fashion Square Mall
  - Old Town Scottsdale
- Arizona Canal system
- Phoenix Resorts
  - The Biltmore
  - The Phoenician

- The Hermosa Inn
- Omni Scottsdale Resort & Spa at Montelucia
- Ritz Carlton Paradise Valley
- Sanctuary Camelback Mountain
- El Chorro Restaurant
- Camelback Country Club (public)
- Franciscan Renewal Center

- Other public or civic areas
  - Schools
  - Museum/artistic venues (Cosanti)

Figure __: Standard Route Guide signs

Figure ___Left image – Existing Paradise Valley Route Guide sign at 56th Street and McDonald Drive. Right image – Proposed simpler Route Guide sign



4. Pavement Markings

PURPOSE: Help reinforce bikeway routes, provide direction and enhance branding.

INFORMATION: Route identification with arrows or sharrows based on location to show direction of travel.

PLACEMENT: Lateral placement is critical to encourage riders to avoid the "door zone." May be placed in the center of the lane between wheel treads to minimize wear.

Under Paradise Valley conditions, pavement markings might be more visible than signs due to the street design and configuration, availability of sidewalks and shared-use paths, vegetation or parked cars. They can also help bicyclists navigate through confusing turns or changes in the route (i.e. Hummingbird lane).

Shared Lane Markings (SLMs), or "sharrows," are road markings used to indicate a shared roadway environment for bicycles and automobiles. Among other benefits, shared lane markings reinforce the legitimacy of bicycle traffic on the street, reinforce the direction of travel, and may be configured to offer directional and wayfinding guidance. While the shared lane marking supports a complete bikeway network; it is not a facility type and should not be considered a substitute for bike lanes, cycle tracks, or other separation treatments where these types of facilities are otherwise warranted or where space permits. (MUTCD section 9C.07.)

Bike lanes should be striped with a 6-inch wide solid white stripe. At an intersection approach, the bike lane should be dashed to allow for the use of a right-turn pocket for motor vehicles. A pavement stencil of a bicycle and arrow should be used to show the direction of travel. It should be located at the beginning and end of each block and at approximately 150' to 250' intervals. The stencils at the end of the block should be placed just before the dashed bike lane stripe.

Figure __: Sample Custom Pavement Markings in lieu of a standard 'Sharrow'

Figure __: Possible Custom Paradise Valley Pavement Markings in lieu of a standard 'Sharrow'

Figure ___: Existing Pavement Markings in Paradise Valley

5. Wayside Signs

PURPOSE: To provide supplemental information about the Town.

INFORMATION: Interpretive in nature for plants, historical sites, view shed, famous people, etc., that is unique to Paradise Valley.

PLACEMENT: Only within or beside sidewalks, trails or shared use paths that can be accessed and read from a pedestrian or bicyclist level in a stationery position.

Figure __: Sample Wayside Signs with similar material and color Palette to Paradise Valley

Figure __: Existing Wayside Signs in Paradise Valley on 56th Street

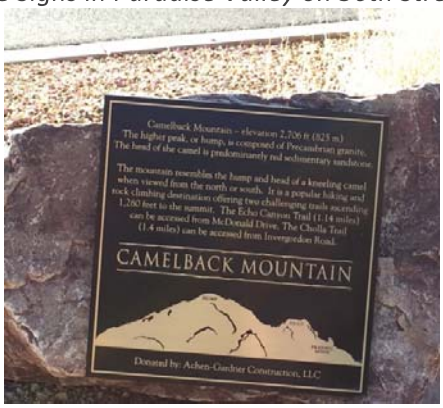
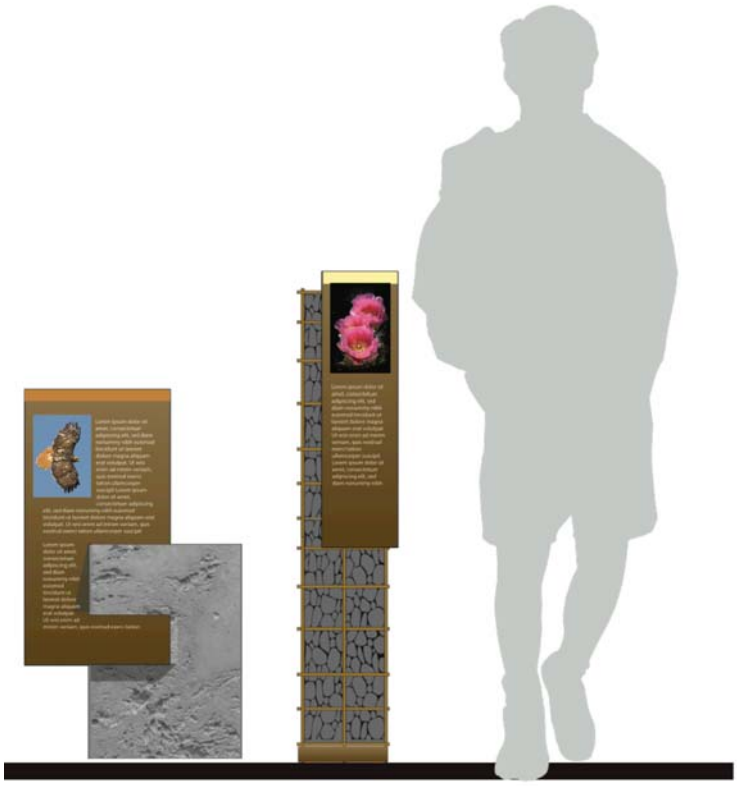


Figure ___: Proposed Paradise Valley Wayside sign



6. Custom Regulatory /Warning Signs

PURPOSE: To meet unique circumstances and aesthetics of the community, presenting regulatory or warning information in a softer language, and/or carry out the identity of the network when appropriate.

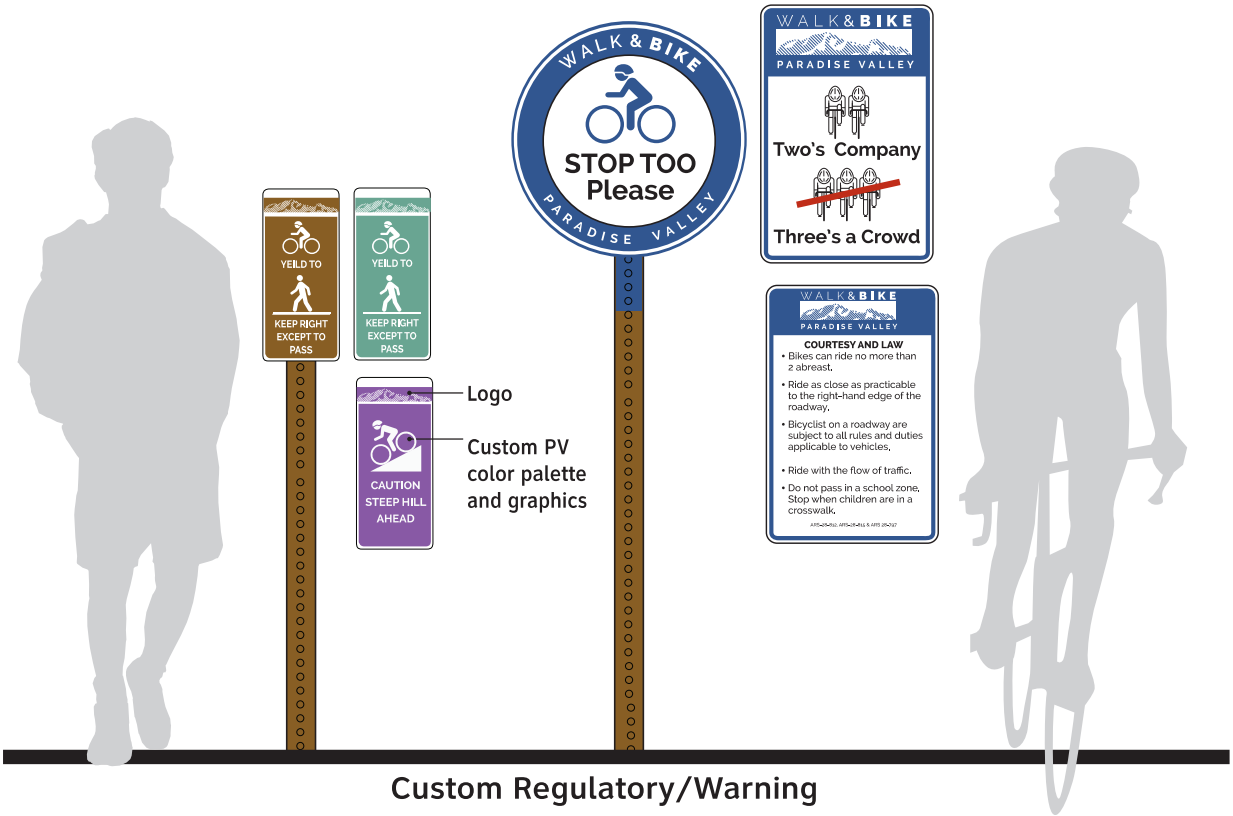
INFORMATION: Regulatory and rules of the road, rules of the bicycle or pedestrian facility

PLACEMENT: *Regulatory* – entry into the Town where positive/legal behavior is informed. Along off-street corridors as needed along path of travel.
Warning - Near-side of intersections or along path of travel, where users are required to take or cease action or be informed of an existing condition.

RECOMMENDATIONS: For such signage to command the necessary authority, they should follow MUTCD guidelines to garner authority and visibility. This includes using approved fonts, symbols, sizes, installation placement, fabrication methods and colors when appropriate.

Figure ___: Existing Paradise Valley Regulatory sign

Figure __: Custom Paradise Valley Regulatory/Warning signs using Town colors



Walk & Bike Paradise Valley Map

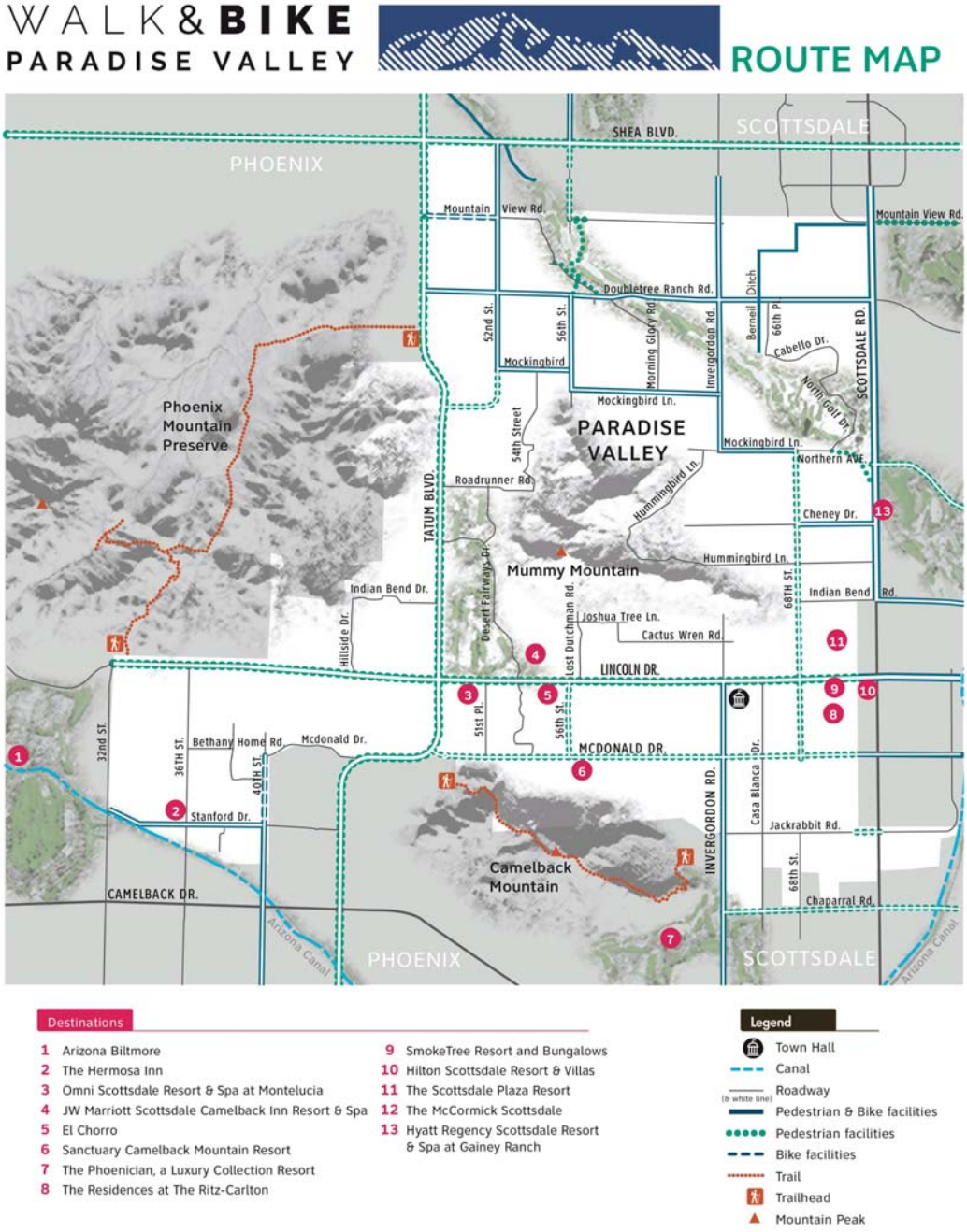
A bicycle facilities map is the primary tool for showing all the designated pedestrian paths and bikeways in Paradise Valley. A successful map available in both print and down-loadable format, would incorporate the following:

- Significant destinations (see destination hierarchy above for route guide signs)
- Locations of bicycle parking and bicycle facilities in the neighboring communities
- Basic safety information
- Standard rules of the road
- Contact information for emergency services
- Information on how to connect to on-line information and any GPS navigation apps or options connected to the system.
- Space for advertisers whose sponsorship would offset printing and web development costs

This route map should also be the basis any other maps distributed by resorts or other entities, to guests or visitors of PV. This will help control the messages of safety and guidance while also giving the Town a consistent tool to help enforce appropriate etiquette and boundaries.

This map shall also be developed into a web-based solution that is accessible to browsers of hand-held devices. The location of the web map can also included with other information such as real time weather and path conditions, best practices for outdoor activities, contact information for emergency services, and Town news. This information can eventually be used to help develop an application specifically designed for use with hand held devices that are GPS enabled and directionally aware. See the Wayfinding Technology section below.

Figure __: SAMPLE Walk & Bike Paradise Valley Map (Not final route map)



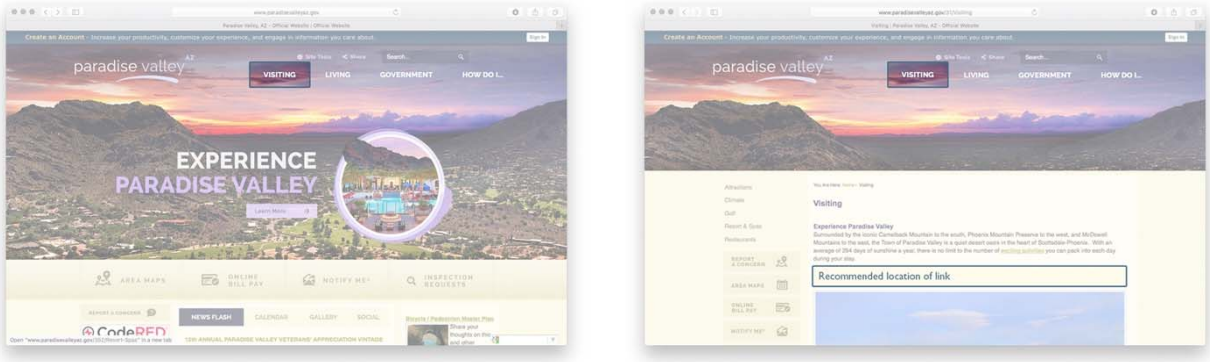
Integrating Technology Into Wayfinding

The simplest way to provide Paradise Valley wayfinding information on-line is to start with a website or URL that is specifically created for 'Walk & Bike Paradise Valley'. The URL should start with a map of the complete system. Additional content can be added such as stories, photos, locations, real time pathway/road conditions, and weather. All of the website information can then be accessed by an eventual web/device application designed for mobile/handheld devices.

A Link on the Town's Website to a Webpage With Wayfinding Information

- Use the existing "Home > Visiting" area of paradisevalleyaz.gov as a location for linking to a new webpage about wayfinding information.
- The wayfinding information page:
  - must have a content management system that is simple to use and secure
  - must function or integrate with the existing paradisevalleyaz.gov content management system
  - must be accessible by mobile/handheld devices.

Figure ___: Recommended location for map or URL paradisevalley.gov/home/visiting



The new webpage should include:

- A map made using an existing web mapping service, (example, Google Maps, Map Quest, Esri, etc.) that can include route guidance, points of interest and network information
- Access to a downloadable map
- Safety tips and best practices for outdoor activity (example: Ideal times to go outdoors depending on season, appropriate attire, etc.)
- Rules and regulations
- Climate and weather information
- Route information and destinations approved by the Town geared towards hikers, bikers, joggers, and walkers
- Information for popular routes (mini-maps, details about what you will experience)
- Contact information for emergency services
- Updates on pathway disruptions, changes, and other temporary news or direction on how to find that information in another place
- Calendar of events

Figure ___: Example of website integration illustrating potential destinations, special features, etc.

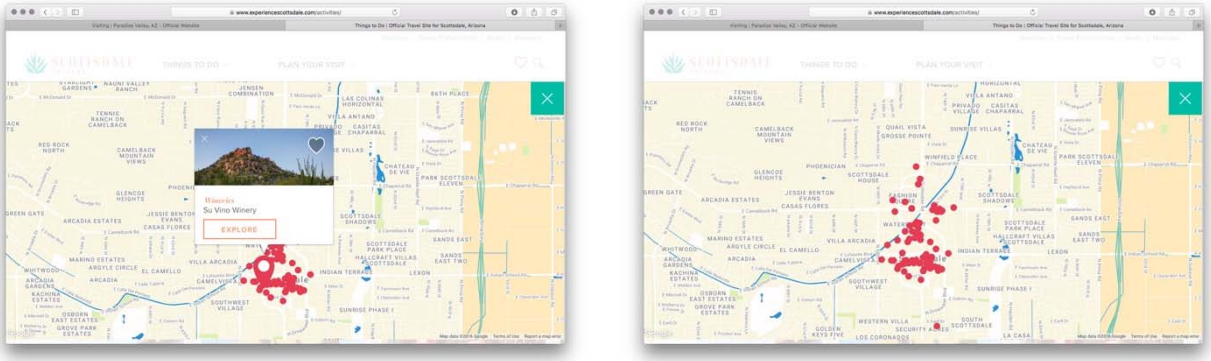
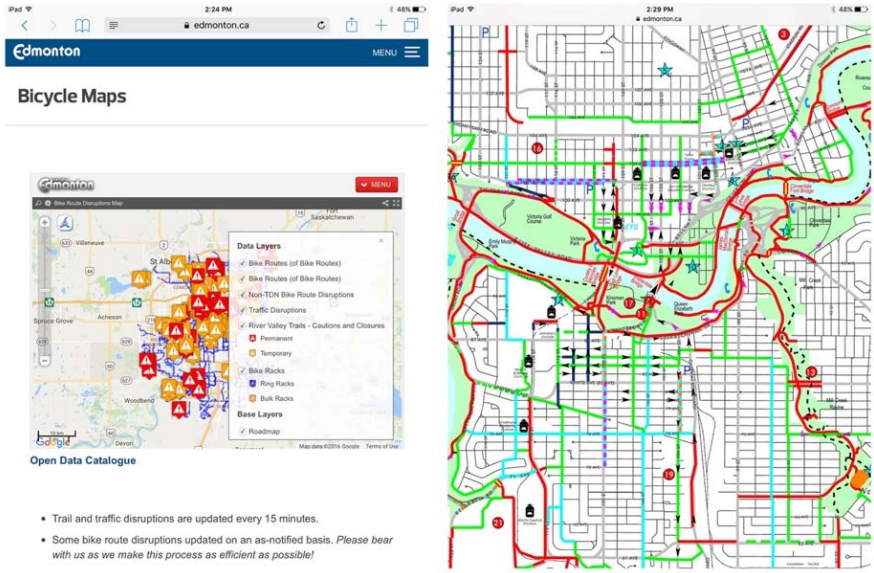


Figure __: Examples web-based maps



Developing A Downloadable Map For The Website

Any Paradise Valley map that is developed for print or placement on freestanding signs can be integrated onto the website as a link. This map effectively becomes a pocket map that residents, hotels and visitors can access in a browser or print out. The most common file format is jpeg or pdf.

The pocket map should include the same information identified above for the website map plus:

- A place to write down information like resort name, phone numbers, people met, place to check out.

Figure __: Examples of downloadable maps

See the Appendix for additional technology applications.

ROUTE MAPS

The following **Street & Off-Street Classifications Map** and **Bicycle and Pedestrian Route Maps** below reflect the **Core and Supporting Standards** and directly correlate to the **Cross-Section Standards for Streets and Wash Corridors** in the following section.

Street & Off-Street Classifications Map

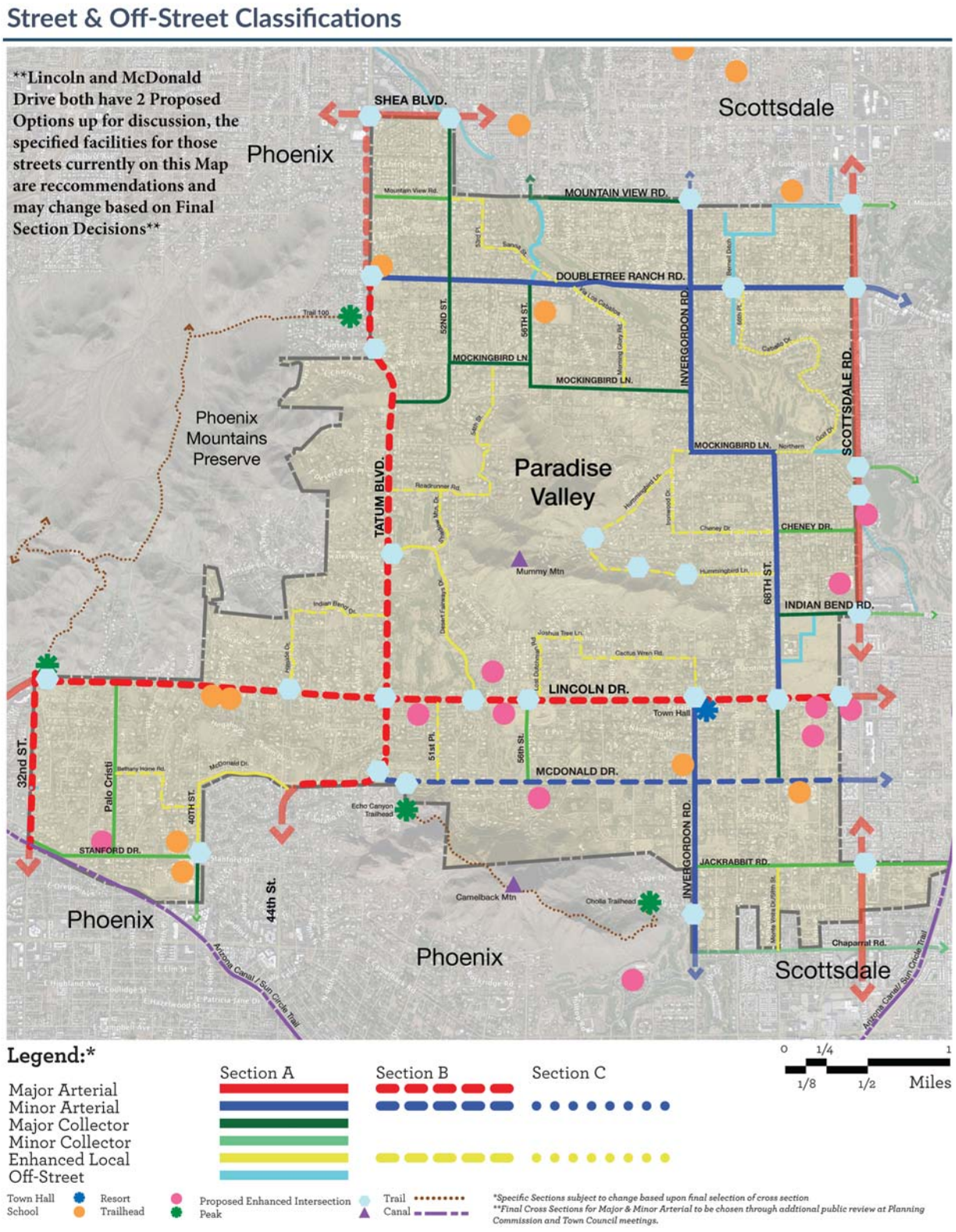
This Plan differentiates from the 2012 General Plan with the addition of several new Road Classifications and an off-street classification. Collector Streets have been split into both Major Collector & Minor Collector. Local Streets have been split into Enhanced Local & Local. The Collector Street split better reflects the actual roadway environments. Enhanced Local Streets either reflect the Town's existing bicycle route designation on a Local Street or where minor local street enhancements will better accommodate existing bicycle and pedestrian use. Different designs for Enhanced Local Streets respond to neighborhood character. The Berniel Ditch is an off-street classification. All of these classifications are expanded upon in this section.

In summary, street and off-street classifications discussed and illustrated below include:

- Major Arterial Streets
- Minor Arterial Streets
- Major Collector Streets
- Minor collector Streets
- Enhanced Local Streets
- Local Streets
- Off-Street Corridors

NOTE: All maps and cross sections will be on folded 11x17 pages in the final plan format.

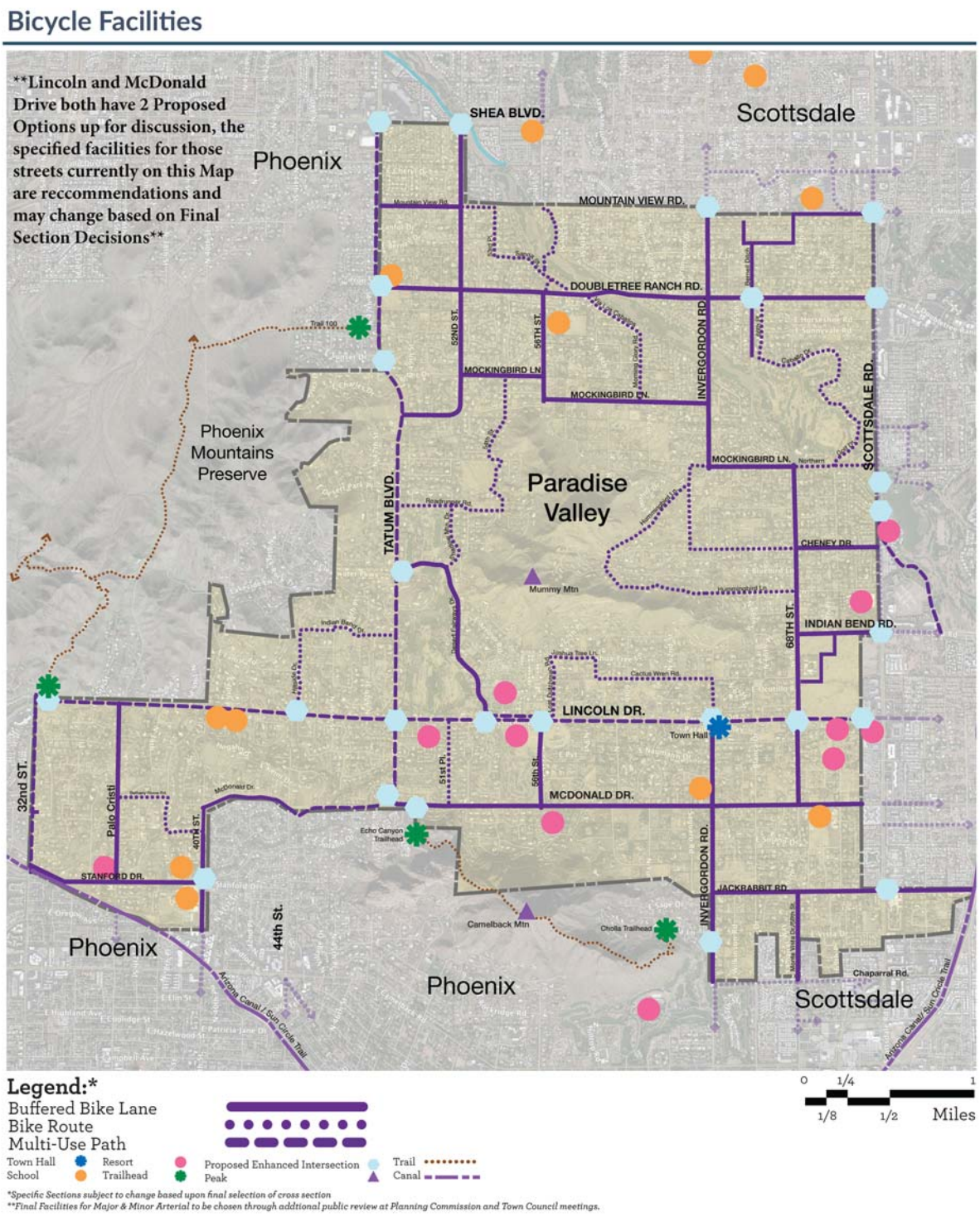
Figure __: Street and Off-Street Classifications Map



Bicycle Facilities Map

The map illustrates the locations of the various bicycle facility types. There is more focus on neighborhood level bicycle accommodations as illustrated through the bike lanes or route designations along Enhanced Local Streets. Design of these facilities varies based upon the street and neighborhood character. All bike lanes are now proposed as buffered lanes, providing a 2' separation from motorized vehicle traffic.

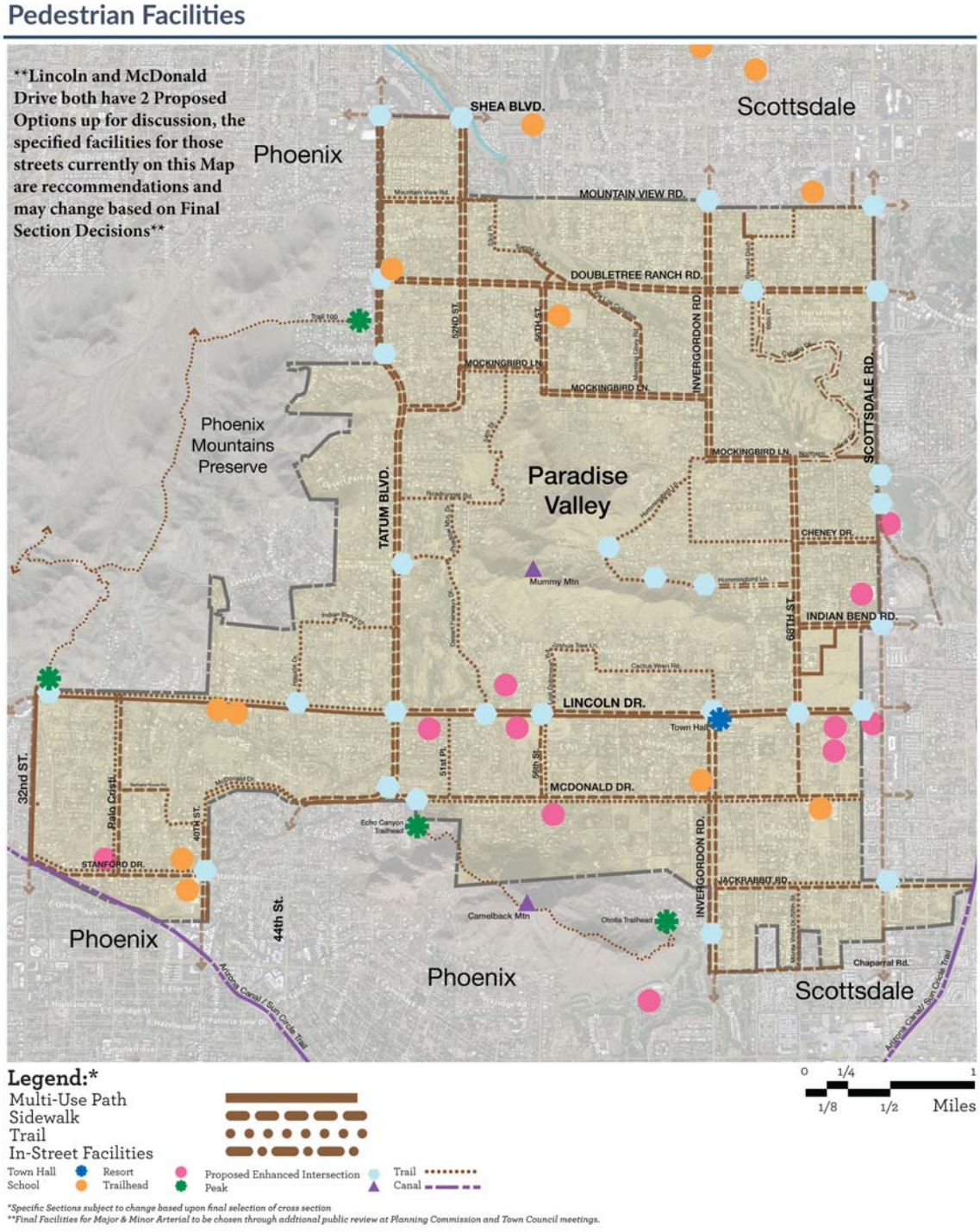
Figure __: Bicycle Facilities Map



Pedestrian Facilities Map

The map illustrates the locations of the various pedestrian facilities types. Pedestrian accommodation is now provided along both sides of Arterial and Collector Streets. There is generally a greater use of decomposed granite trails within the right of way of Minor Arterial, Collector and Enhanced Local streets providing a more integrated and safer pedestrian network throughout the Town. Trails are now an option for Local Streets.

Figure __: Pedestrian Facilities Map



CROSS SECTIONS STANDARDS FOR STREETS AND OFF-STREET CORRIDORS

There are six street and one off-street cross sections illustrated. Each classification is associated with a variety of functional and physical characteristics.

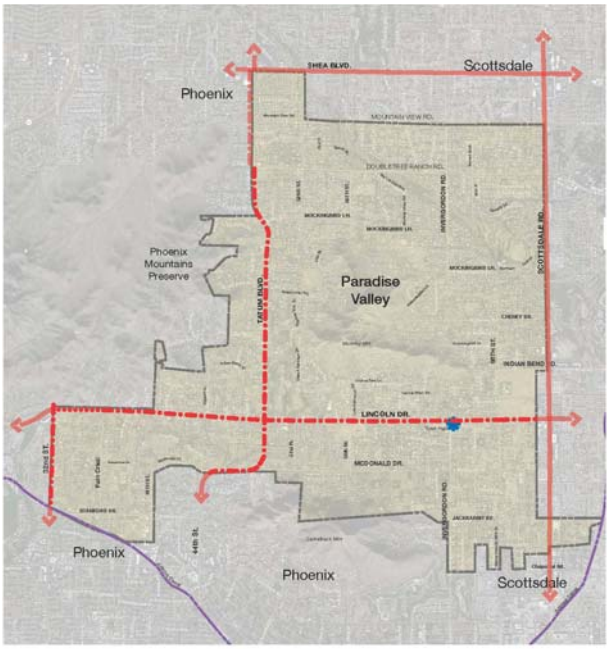
While these cross sections provide general guidance, the preferred solution for any particular roadway will be determined by the Town Engineer with direction from the Planning Department, the Planning Commission and Town Council, as appropriate. These standards will also apply to the Town's consideration of private roadways proposed in conjunction with special use permit applications.

Each section below, organized by street or corridor type, starts with a map showing where those street classifications are applied throughout Paradise Valley, followed by the cross section designs which illustrate ROW width, pavement and lane width and any bicycle and/or pedestrian facility.

NOTE: All maps and cross sections will be on folded 11x17 pages in the final plan format.

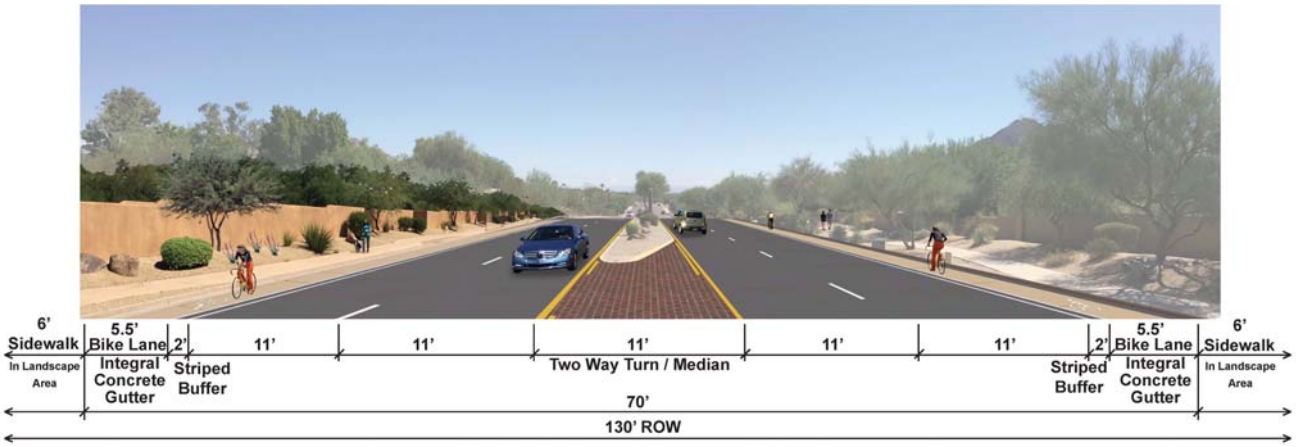
Major Arterial Streets

Two options are provided. The final plan will recommend a specific cross section for all segments of Major Arterial Streets.



Major Arterial

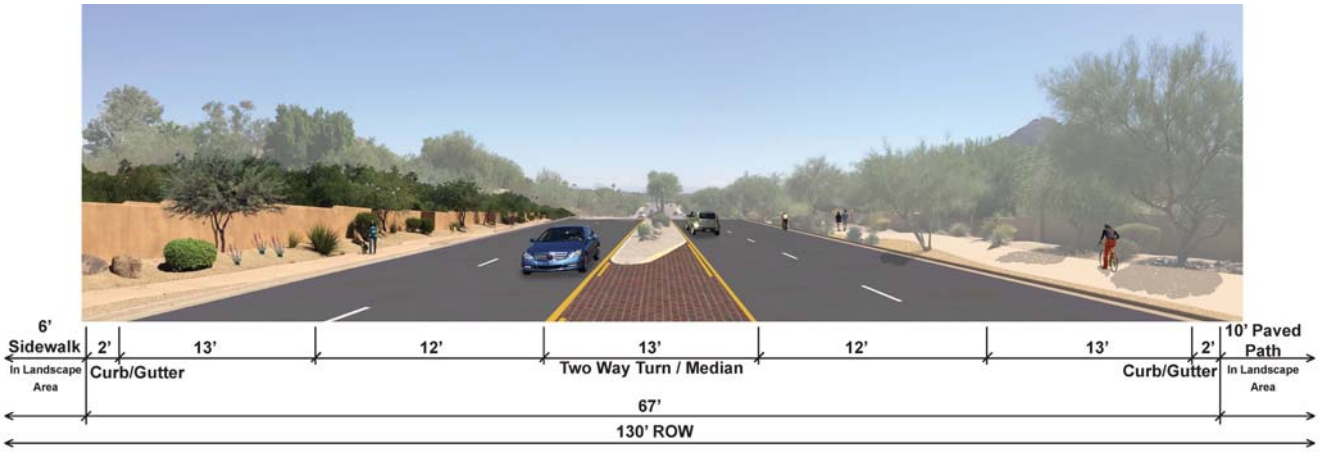
Section A



- Detached 6' min. Sidewalks on both sides - set back 5' from back of curb and gently meandering where appropriate.
- Striped 5.5' Bike Lane in a fully integrated gutter pan and 2' striped buffer (optional color/texture).
- Retain center landscape medians/turn lane (may require minor curb modifications).
- Retains 4 lanes of traffic and at turn lane at 11' widths.
- Will require new curb and gutters.
- *Traffic Calming influence due to 11' lane widths.

**If Used on Lincoln Drive, bike lanes stop west of Palo Cristi and east of Mockingbird Lane, where a Path would be located on the north side of the street.*

Section B

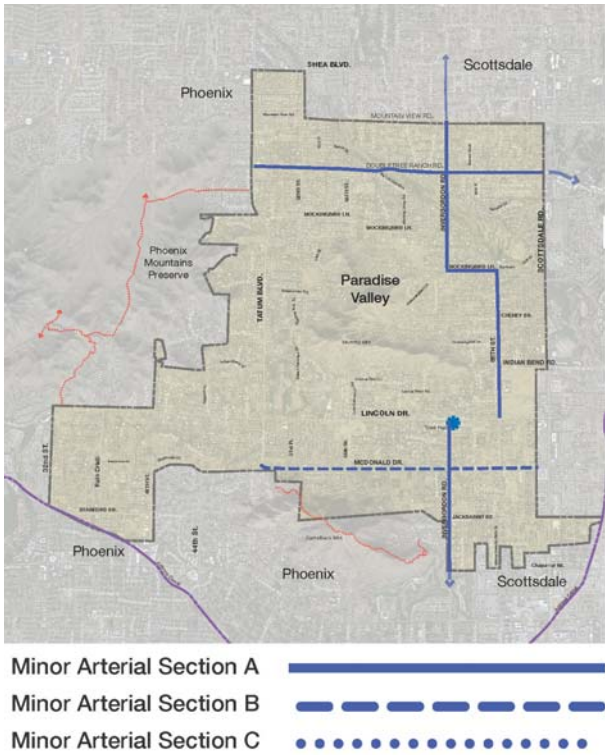


- Detached 6' min. Sidewalk on one Side - set back 5' from back of curb and gently meandering where appropriate.
- 10' Paved Path on opposite side of sidewalk
- Center landscape median/turn lane (may require minor curb modifications to existing).
- Retains 4 to 5 lanes of traffic and turn lane at 12' and 13' widths.
- Fits within existing street width, should not require new curb & gutter in most areas.

**If Used on Lincoln Drive - East of Tatum Boulevard provides detached Sidewalk on North side, sidewalk replaced with Path on north side of Lincoln Drive between Desert Fairways Drive and 56th Street. West of Tatum Boulevard to 32nd street provides Trail on the North Side. Shared Path on the south side of Lincoln Drive from Town Limit to Town Limit.*

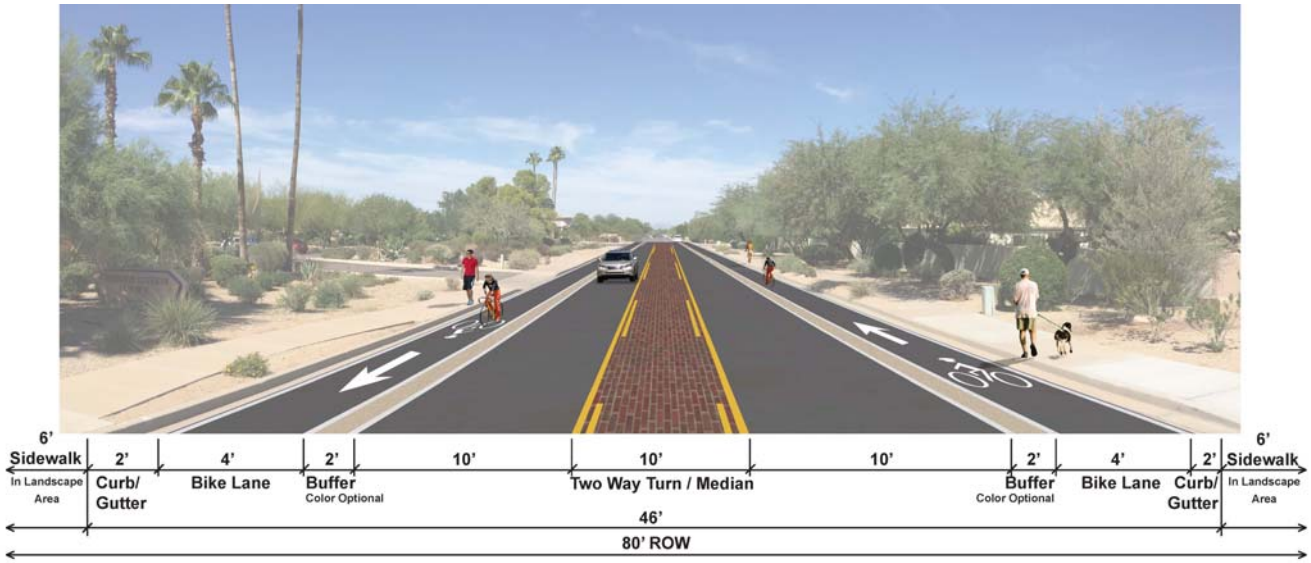
Minor Arterial Streets

Two options are provided for McDonald Drive. The final plan will recommend a specific cross section for all or different cross sections for each segment of McDonald Drive.



Minor Arterial

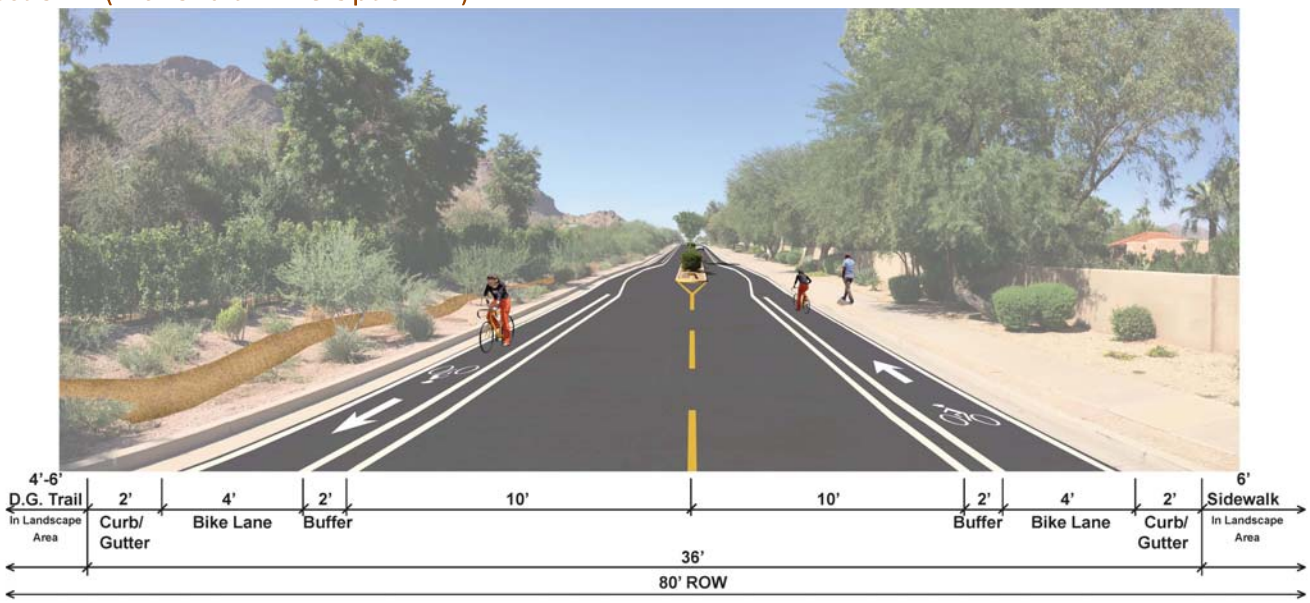
Section A



- 6' min. Sidewalk on one side with Sidewalk OR Trail on opposite - set back 5' from back of curb and gently meandering where appropriate.

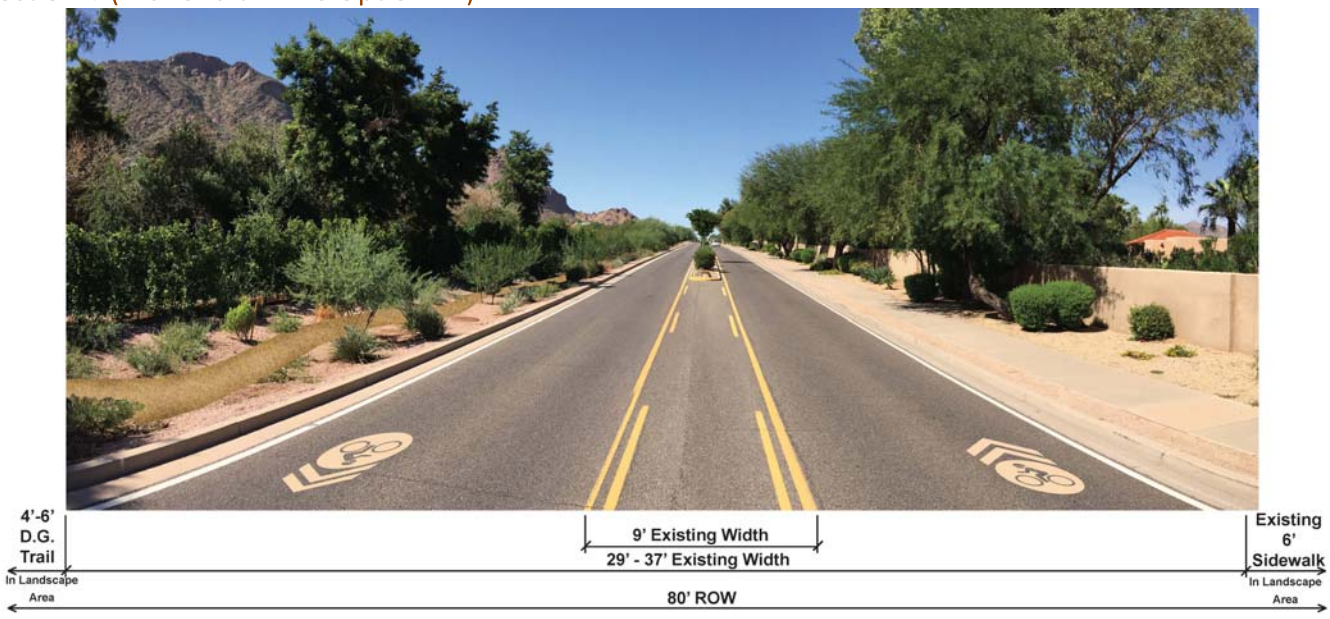
- Provide paved Sidewalks on both sides for ¼ mile at schools.
- 2'min. Color/textured Buffer for 4' min. Bike Lanes (color/texture optional).
- Optional Center landscape medians/turn lane, add texture.
- Retains 2 lanes of traffic and turn lane at 10' widths.
- May require new curb & gutter in some locations
- *Traffic Calming influence due to 10' lane widths.

Section B (McDonald Drive Option #1)



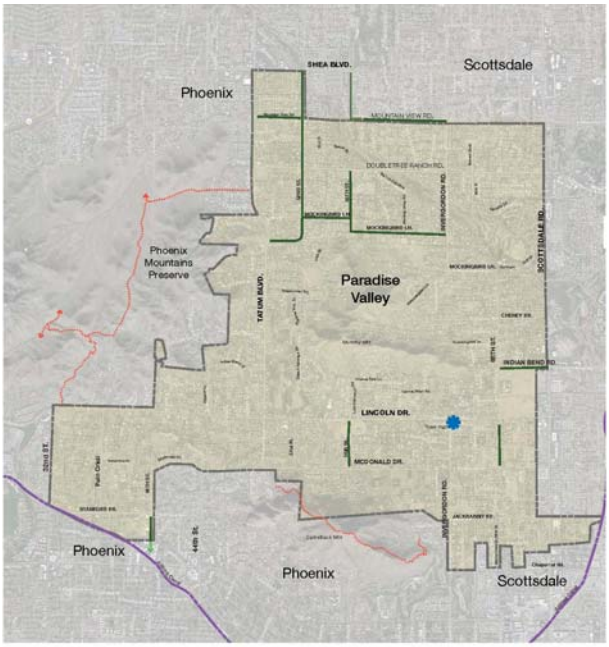
- 6' min. Sidewalk on 1 side with Trail on opposite - sidewalks on both sides for ••• mile at schools and other public places i.e. Echo Canyon Trailhead - set back 5' from back of curb and gently meandering where appropriate.
- 4' min. Bike Lanes on both sides with 2' striped buffer narrowing to standard 4' min. bike lane at Landscape Medians with no Buffer (optional color/texture in buffers).
- Retains center Landscape Median (may require minor curb modifications in some locations).
- Removes center turn lane (similar to existing Invergordon Dr.) - Existing center turn lane is as small as 7' wide in some sections, which is less than FHWA guidelines.
- Will require minor curb & gutter modifications (1.5' move outward) at curbed medians, retains existing Full Curb and Gutters elsewhere.
- Retains 2 lanes of traffic at 10' widths.
- Reduce speed limit to 25 MPH.
- *Traffic Calming influence due to 10' lane widths and 25 MPH speed limit.

Section C (McDonald Drive Option #2)



- 6' min. Sidewalk on 1 side with Trail on opposite - sidewalks on both sides for 1/4mile at schools and other public places i.e. Echo Canyon Trailhead - set back 5' from back of curb and gently meandering where appropriate.
- Sharrow (shared bike/vehicle lane) markings at intersections and medians.
- Retain center landscape medians and turn lane (may require minor curb modifications).
- Does not require new curb and gutter.
- Reduce speed limit to 25 MPH throughout Paradise Valley.
- *Traffic Calming influence due to 25 MPH speed limit.

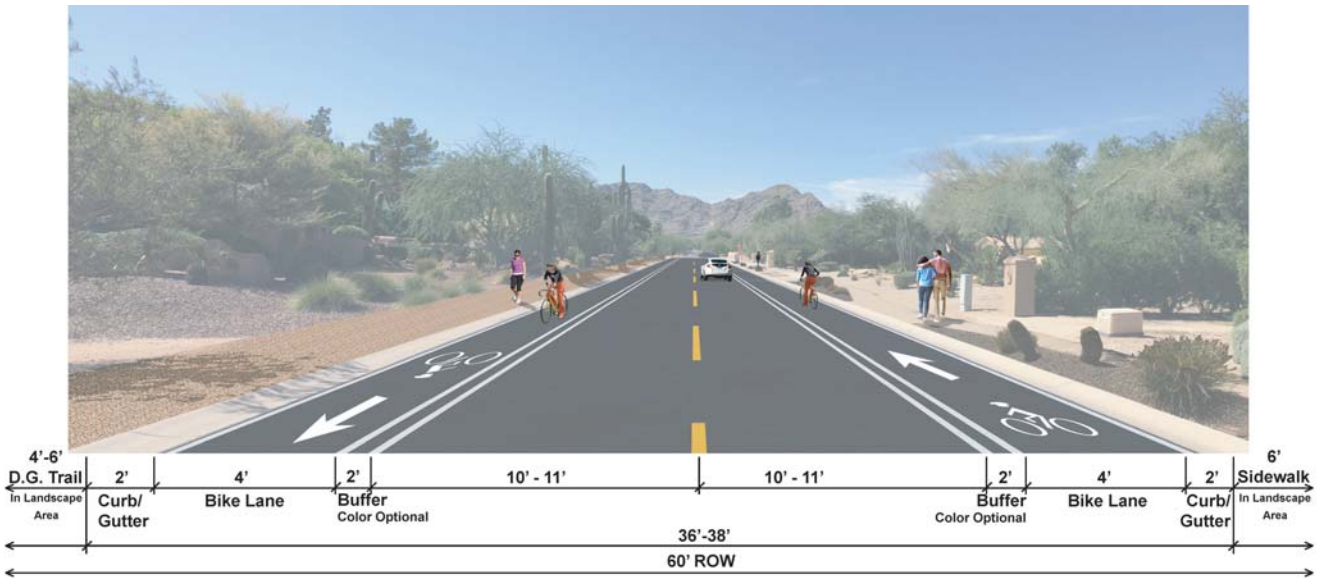
Major Collector Streets



Major Collector Section A

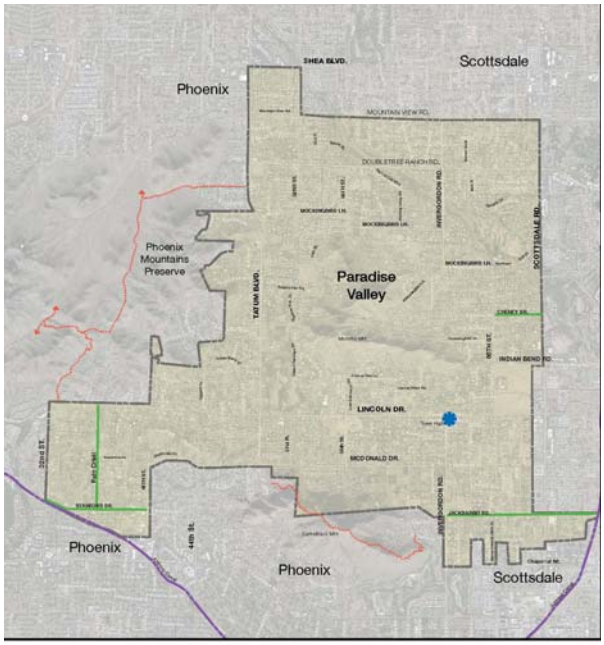
Major Collector

Section A



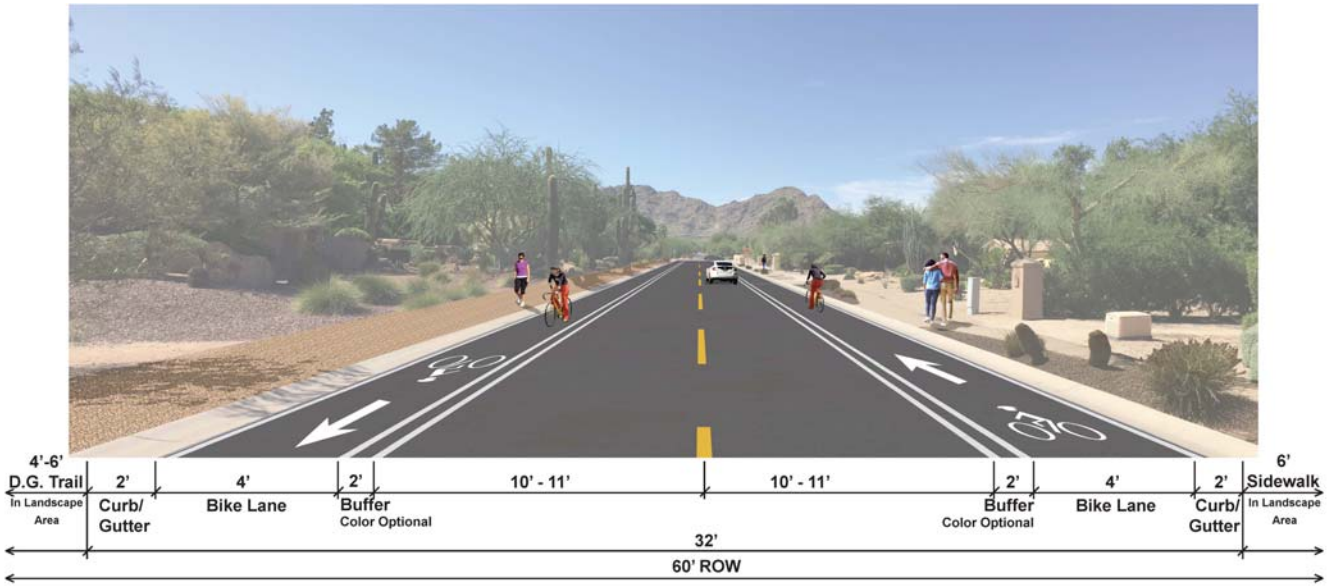
- 6' min. Sidewalk one side with Trail on opposite - set back 5' from back of curb and gently meandering where appropriate.
- 4' min. Bike Lanes on both sides with 2' striped buffer (optional color/ texture).
- Optional center landscape medians/turn lane.
- Retains 2 lanes of traffic at 10'-11' widths.
- Should not require new curb and gutter
- *Traffic Calming influence due to 10'-11' lane widths.

Minor Collector Streets



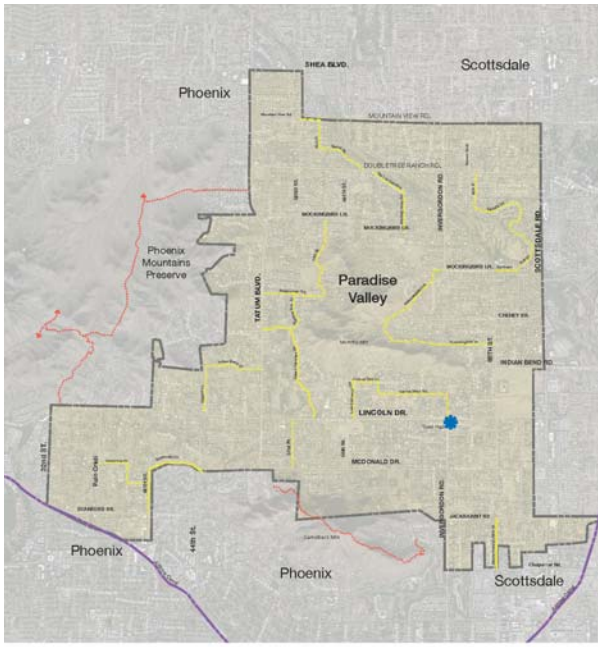
Minor Collector

Section A



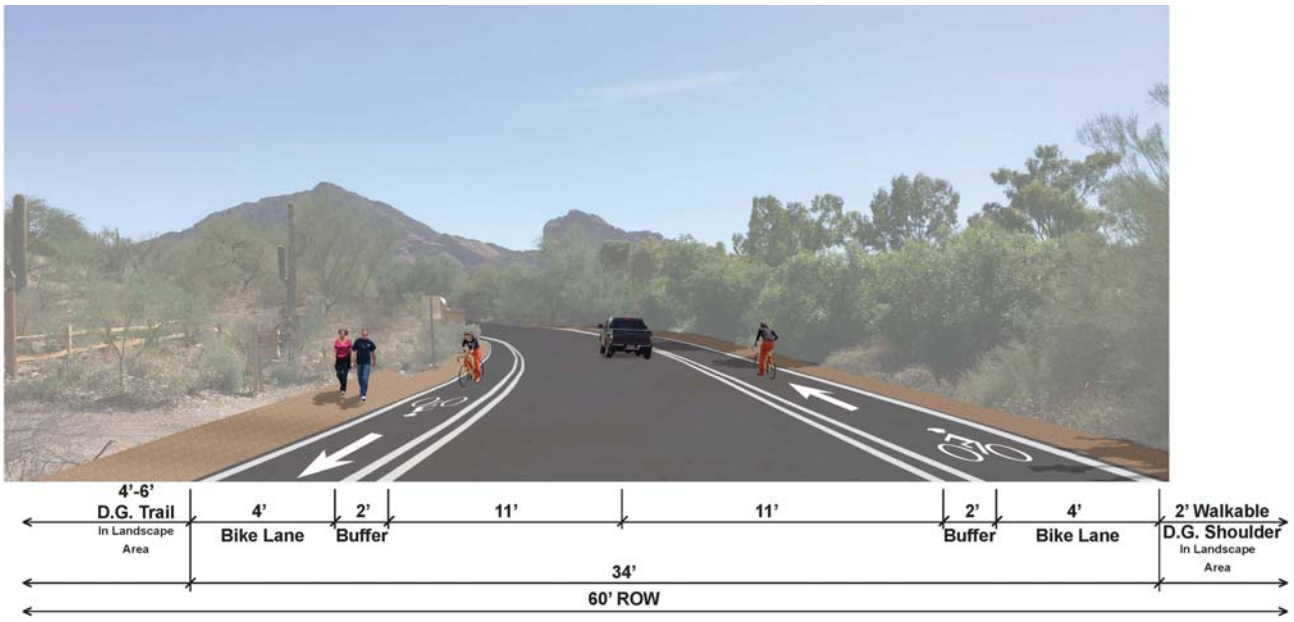
- 6' min. Sidewalk OR Trail one side (optional Sidewalk OR Trail on opposite side) - Provide Sidewalks on both sides for ¼ mile at schools - set back 5' from back of curb and gently meandering where appropriate.
- 4' min. bike lanes on both sides.
- Retains 2 lanes of traffic at 10'-11' widths
- May not require new curb & gutter.
- *Traffic Calming influence due to 10'-11' lane width.

Enhanced Local Street



Enhanced Local

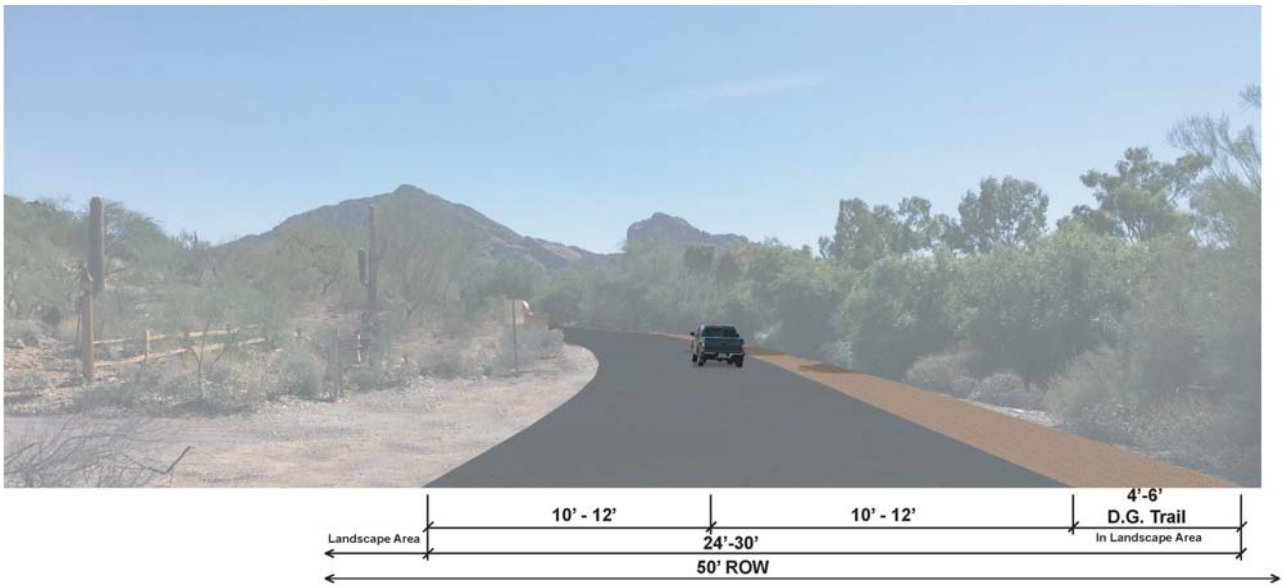
Section A



- Trails on 1 OR both sides (optional sidewalks) - set back 5' from back of curb and gently meandering where appropriate.
- 4' min. Bike Lanes on both sides with 2' striped buffer.
- Retains 2 lanes of traffic at 11' widths.
- Optional ribbon curb, unless existing OR vertical/rolled curb required for drainage/erosion control.

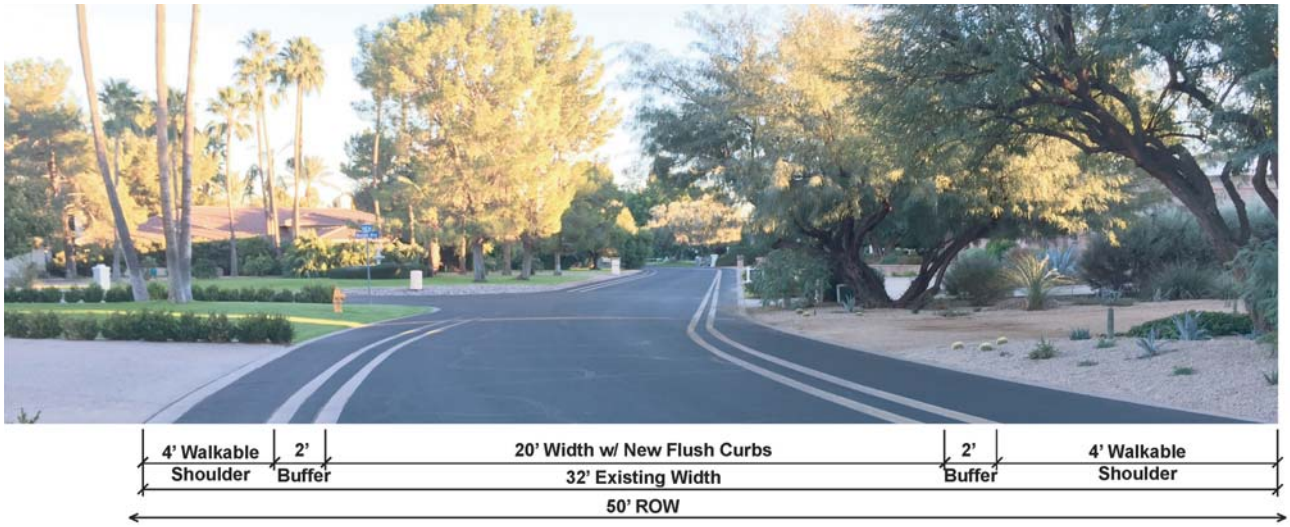
- *Traffic Calming influence due to 11’ lane widths, which is a “pavement reduction” in several areas of town.

Section B



- Trail OR 6’ Sidewalk on 1 side (optional sidewalk or trail on opposite side), implement depending upon character with the neighborhood. - set back 5’ from back of curb and gently meandering where appropriate.
- Optional Decorative in-Pavement Sharrow markings OR vertical Bike Route signage at major intersections and obstructed sight lines (curves/hills).
- Retains 2 lanes of traffic at 10’-12’ widths
- Optional ribbon curb, unless existing OR vertical/rolled curb required for drainage/erosion control.
- *Traffic Calming influence due to 10’-12’ lane widths, which is a “pavement reduction” in several areas of town.

Section C

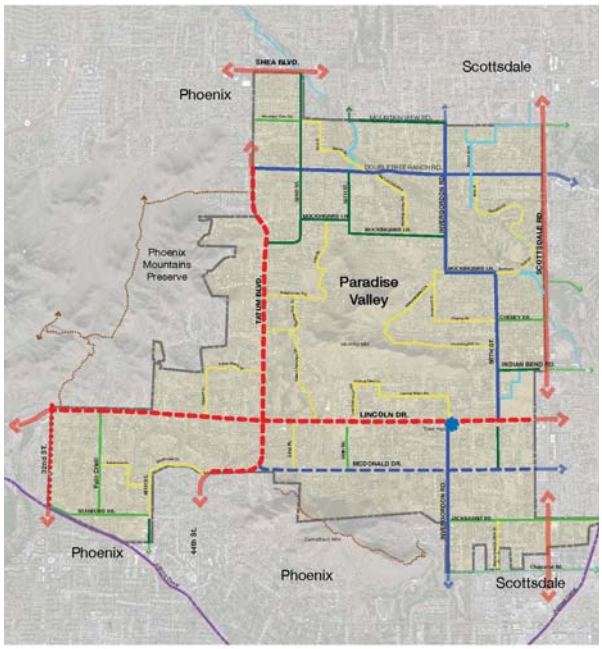


- 4’ Walkable Paved shoulder on both sides of street.
- Buffer stripes of exposed aggregate or other decorative material.
- Optional Decorative in-Pavement markings in walkable shoulder OR vertical Signage at major

intersections and obstructed sight lines (curves/hills).

- Optional no parking signs.
- Optional ribbon curb, unless existing OR vertical/rolled curb required for drainage/erosion control.

Local Streets



All Streets Not Marked Above

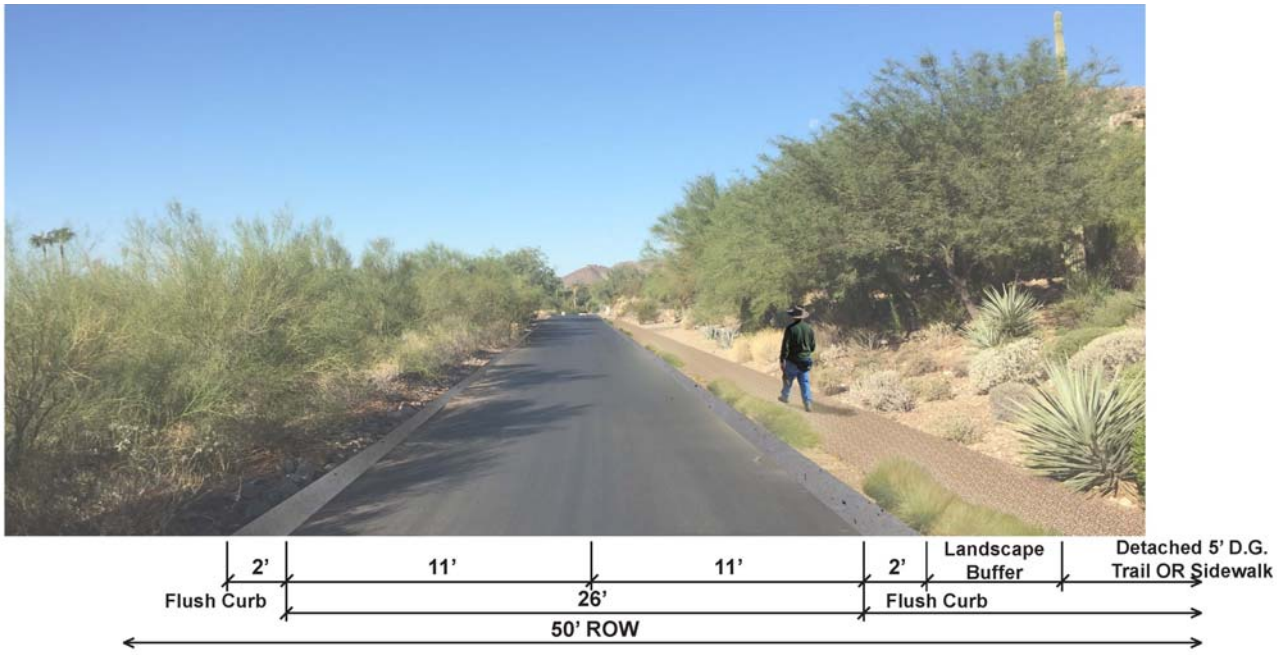
Local

Section A

- Optional Trail OR 6' Sidewalk on 1 side.
- Retains 2 lanes of traffic at 9'-11' widths.
- Optional ribbon Curb, unless existing OR vertical/rolled curb required for drainage/erosion control.

*Traffic Calming influence due to 9'-11' lane widths, which is a "pavement reduction" in several areas of town.

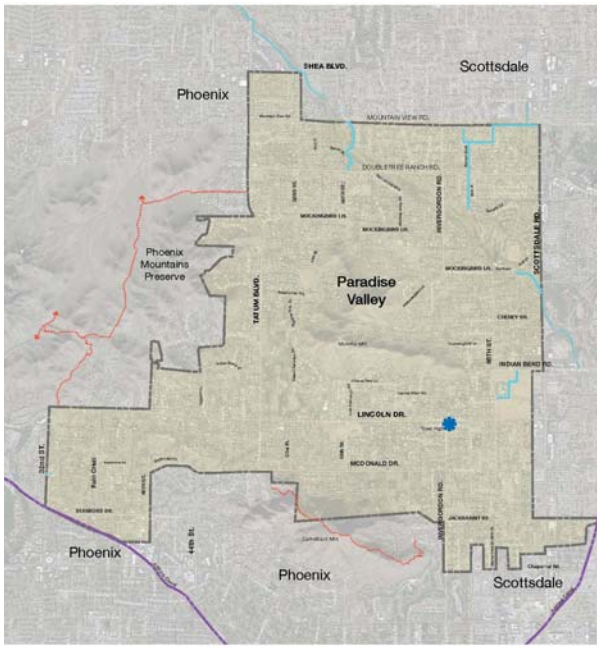
Section B



- Trail OR Sidewalk on 1 side with optional Trail OR Sidewalk on opposite.
- No Bike Lanes.
- No center lane striping.
- Except on blind turns and hills.
- Retains 2 lanes of traffic at 9'-11' widths.
- Ribbon Curb, unless existing OR vertical/rolled curb required for drainage/erosion control.

*Traffic Calming influence due to 26' max width, which is a "pavement reduction" in several areas of town.

Off-Street Corridors



Off-Street Section A

Off-Street Canals, Ditches, Etc.

Section A

- Landscaping where Right Of Way allows.
- Compacted Decomposed Granite 8'-10' Trail OR 10' Min. Shared-Use Paved Path.
- Lighting where appropriate.
- Dog cleanup stations/trash cans periodically along routes.
- Optional Benches.
- Also serves as maintenance access along Berneil Ditch.

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3. Action

This chapter outlines various implementation tools that will assist the Town as they identify and prioritize projects, develop budgets, and monitor and evaluate progress in improving the Town's bicycle and pedestrian system.

PROJECT PRIORITIZATION PROCESS

This Plan strives to create a safe and cohesive network of bicycle and pedestrian facilities. Much of the network is in place, yet many other corridors need to be completed and/or improved. All potential projects however do not have the same level of importance in completing the system. The following criteria, derived from the General Plan's goals and policies and refined to reflect citizen comments, will help to evaluate potential projects and determine the implementation sequence. Since not all criteria have the same level of importance, the public was asked at public meetings and through an on-line survey to rank order the criteria. The responses created the weight. For instance, three times as many people ranked 'Improve Safety' as the highest priority criteria than those that ranked 'Piggy Back With Other Already Planned Projects' as the highest priority criteria, giving Safety a weight of three. Each potential project can be scored using this prioritization process. The projects with the highest score should have the highest implementation priority. Cost was not used as an evaluation criteria based upon the idea that a project should first be evaluated on its merits. It will ultimately be a Council decision to decide if the project expenditure is worth the benefits it will provide. For instance, the Council could decide to fund one more expensive project rather than two lesser expensive projects because the overall benefit to the Town.

Figure __: Weighted Project Evaluation Criteria

Weight	*Criteria*	*Point Range*
3	***Improve Safety*** 0. Project involves no existing or potential safety problem. 1. Project prevents a potential problem. 2. Project corrects an existing problem.	**0-6**
2	***Close a Gap*** 0. Project does not close a gap. 1. Project closes a gap providing up to 1 mile of usable and continuous bike or pedestrian corridor. 2. Project closes a gap providing greater than 1 mile of usable and continuous bike or pedestrian corridor.	**0-4**
2	***Link to Destinations*** 0. Project provides little to no improved access to destinations such as schools, parks, shopping/eating areas, resorts, Echo Canyon, Cholla Trail, Trail 100/Christensen Trail at Tatum into Phoenix Mountains Preserve, Arizona Canal, Indian Bend Wash. 1. Project somewhat or indirectly improves access to at least one destination. 2. Project provides direct access to one or more destinations.	**0-4**
2	***Address Disruptive and/or Aggressive Behavior*** 0. Project does not attempt to lessen disruptive and/or aggressive behavior by bicyclists or drivers. 1. Project attempts to lessen disruptive and/or aggressive behavior by bicyclists OR	**0-4**

	drivers. 2. Project attempts to lessen disruptive and/or aggressive behavior by both bicyclists and drivers.	
1	***Focus on Heavy Use Corridors*** 0. Project along a corridor with low existing or potential use. 1. Project is along a corridor with moderate existing or potential use. 2. Project is along a corridor with heavy existing or potential use.	**0-1**
1	***Piggy Back With Other Already Planned Projects*** 0. No nearby planned Town of PV, cities of Scottsdale or Phoenix CIP or private projects could be amended to include this project (with Town funds). 1. At least one nearby planned private project could be negotiated to include this project (with Town funds). 2. At least one nearby Town of PV or cities of Scottsdale or Phoenix CIP project could be amended to include this project (with Town Funds).	**0-1**
1	***Address Multiple Modes*** 0. Project improves one mode: bicycle OR pedestrian facility. 1. Project improves two modes: bicycle OR pedestrian facility with a connection to transit, OR a bicycle AND pedestrian facility. 2. Project improves 3 modes: bicycle AND pedestrian facility connecting to transit.	**0-1**

PROPOSED HIGH PRIORITY CAPITAL IMPROVEMENT PROJECTS

The Priority Project List was gleaned from a more exhaustive list through a review of on-line surveys, public meetings comments, emails, interviews, a gap review of the existing bicycling and pedestrian system, and a review of the current CIP project list. They are not in priority order. They identify projects under control of the Town of Paradise Valley as well as projects that would either require or benefit from coordination with the cities of Phoenix and/or Scottsdale. A complete list of potential projects is in the Appendix.

Figure __: High Priority Capital Improvement Project List

Town Projects

Lincoln Drive - 32nd Street to Scottsdale Road (modified current CIP)

- Bicycle and pedestrian facilities

McDonald Drive - 44th Street to Scottsdale Road

- Bicycle and pedestrian facility improvements
- Paved path north side of Tatum Boulevard - 44th Street to Tatum
- Enhanced Intersection at McDonald Drive and Tatum Boulevard

Desert Fairways Drive/Roadrunner Road/54th Street/Desert Jewel Drive/54th Street – Lincoln Drive to Mockingbird Lane

- Bicycle and pedestrian facility improvements

Berniel Ditch – Doubletree Ranch Road to Scottsdale Road

- Trail and landscape improvements
- Wash crossing to the northwest to link with ROW that connects to Fanfol Drive and 65th Place alignment

56th Street – Lincoln Drive to McDonald Drive

- Bicycle facilities

Jackrabbit Road – Invergordon Road to the Arizona Canal

- Bicycle and pedestrian facility improvements
- Intersection improvements at Jackrabbit Road & Scottsdale Road

Signage and Wayfinding - throughout

- At Town entrances with bicycle facilities, communicate key bike laws, i.e. speeds, riding abreast, stop & yield
- Develop 'tourist' bicycle and pedestrian map to share with all resorts based upon the approved plan

Hummingbird Lane/Ironwood Drive/Northern Avenue – 68th Street to Mockingbird Lane

- Bicycle and pedestrian facilities
- Bicycle/traffic calming via mini-roundabouts at Quartz Mountain Road (east and west ends), 61st Place, Cholla Drive

Lincoln Drive and Camelback Manor Drive Intersection

- Traffic/bicycle calming
- Enhanced intersection for pedestrians

Northern Avenue Alignment – Golf Drive and 70th Street Intersection to Scottsdale Road

- Shared-use path within Town ROW

Project Coordination with City of Phoenix

Tatum Boulevard – Caida del Sol Drive to Shea Boulevard

- Bicycle and pedestrian facilities
- Sidewalk improvements on west side of Tatum (City of Phoenix) to improve access to Trail 100 parking/access area
- Possible HAWK signal at Tomahawk Trail
- Shared-use path on west side of Tatum Boulevard (City of Phoenix) from Doubletree Ranch Road to Shea Boulevard
- Enhanced intersection at Shea Boulevard and Tatum Boulevard

52nd Street/Shea Boulevard/Indian Bend Wash Underpass Connections

- Connections to bike lanes on 52nd Street
- Connections to future bike lanes on Shea Boulevard from Indian Bend Wash shared-use path (in Phoenix)

32nd Street – Stanford Drive to Lincoln Drive

- Bicycle and pedestrian facilities including a shared-use path on the east side of 32nd Street
- Improved trail connections from Stanford to the trail corridor on the north side of the Arizona Canal

Drop-off lane on Invergordon Road near Cholla Trailhead (within City of Phoenix)

- Dedicated drop off space for taxi and shared ride services

Project Coordination with City of Scottsdale

Northern Avenue Alignment and Scottsdale Road Crossing Improvements

- Connect new Northern Avenue shared-use path to path network along Indian Bend Wash and Scottsdale Road in Scottsdale

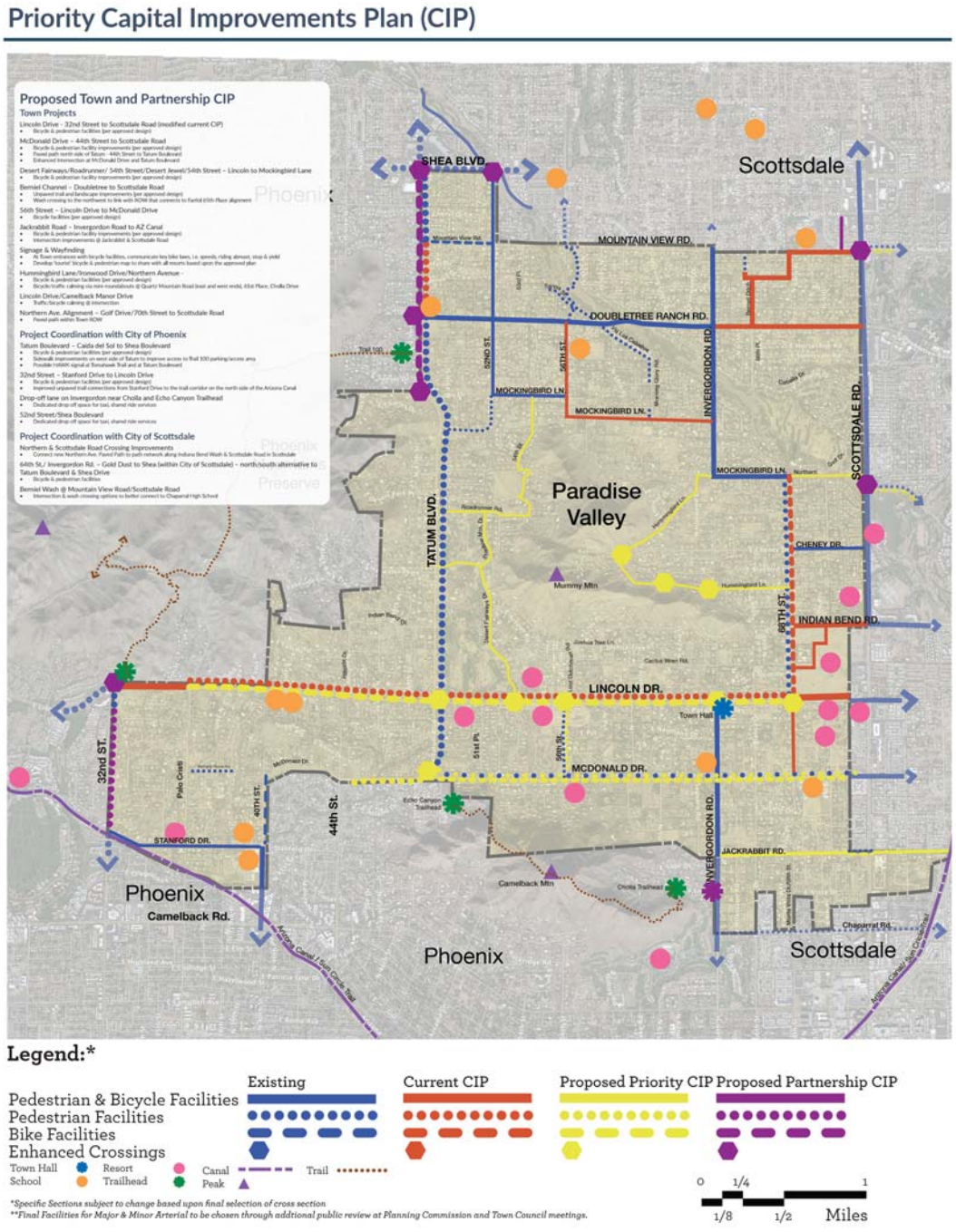
Berniel Ditch at Mountain View Road/Scottsdale Road

- Intersection and wash crossing options to better connect to Chaparral High School

64th Street/Invergordon Road – Gold Dust Avenue to Shea Boulevard (within City of Phoenix) – north/south alternative to Tatum & Shea

- Bicycle and pedestrian facilities

Figure __: Existing, Current and Proposed Priority Capital Improvement Projects Map – inserted map list same as prior list



OPINIONS OF PROBABLE COST PER CROSS-SECTION STANDARD

To assist with capital improvement program project budgets, the following opinions of probable cost have been developed for each of the different street and corridor cross section standards. As these are typical costs to implement the design shown in the standard, the per mile costs do NOT include the following: retaining wall or buffer wall costs, additional ROW costs, existing pavement maintenance, mill/overlay, or micro-seal. Costs assume existing lights and traffic signals remain in place. These costs DO include in addition to hard costs: a 20% contingency, a 10% design fee and a 14% construction administration fee.

Figure __: Cross Section Standards Opinions of Probable Cost per Mile

Roadway/Corridor Type	*Cost/mile*
Major Arterial	
Section A - Shared Use Path on one side, sidewalk on opposite side, two-way center turn lane with enhanced paving	TBD
Option - two-way center turn lane stripe only	TBD
Section B - Buffered Bike Lanes, two-way center turn lane enhanced paving and sidewalk on both sides	$4,200,000
Option - two-way center turn lane stripe only	$3,300,000
Minor Arterial	
Section A - Two-way center turn lane enhanced paving	$790,000
Option - Two-way center turn lane stripe only	$40,000
Minor Arterial (McDonald)	
Section A	$75,000
Section B	$1,400,000
Major Collector	
Section A	$33,000
Minor Collector	
Section A	$25,000
Enhanced Local	
Section A	$106,000
Section B	$118,000
Section C	$ 333,000
Local	
Section A	TBD
Section B	TBD
Section C	TBD
Wash Trail	
Section A	$450,000

Funding

Significant funding can come from sources including federal funds, the Town General Fund and Grants. The U.S. Department of Transportation's (DOT) Safer People, Safer Streets Initiative provides funding through thru many Federal agencies, including but not limited to the Transportation Alternative Program (TAP), the Federal Highway Administration (FHWA), and the Congestion Mitigation and Air Quality

Improvement (CMAQ) Program. These funds are administered through the AZ Department of Transportation and locally through the Maricopa Association of Governments. Information at: http://www.fhwa.dot.gov.environment/bicycle_pedestrian/funding.funding_opportunities.cfm.

Grants should continue to be a steady source of income for bicycle and pedestrian programs and capital, however Capital grants are generally less abundant than other programs and are generally offered by user groups. An example of grant programs include Specialized Dealer Grants, PeopleforBikes Community Grant Program, and Recreation Equipment, Inc. grants (REI).

See the Appendix for additional funding information.

IMPLEMENTATION MEASURES

The Mobility Element of the 2012 General Plan sets forth broad goals and policies related to the transportation system within the Town. Implementation requires translating these broad statements to specific actions, systematically evaluating progress, and ensuring active community participation. The following implementation measures have been identified for Non-Motorized Circulation and serve as a basis for evaluating progress by Town staff, leadership and other Town volunteers in the execution of the Bicycle and Pedestrian Master Plan.

Table _____. Non-Motorized Mobility Implementation Program		2017-2019	2020-2024	2025-2029	Annual	Ongoing
1. Maintain and update an inventory and map of the Town's non-motorized transportation network, including sidewalks, buffered bike lanes, bike routes, trails, shared-use paths, and the wayfinding/signage system and incorporate into an asset management program. This inventory combined with the Project Prioritization Criteria will assist in determining priorities for ongoing network improvement. (Table 4.5-1, Measure #6 in Town's General Plan)		X				X
Implements Which Policy(ies)	M 4.2.1.1, M 4.2.1.2, M 4.2.1.3, M 4.2.1.4, M 4.2.1.5, M 4.2.3.1, M 4.2.3.2, M 4.2.3.4, M 4.2.3.7, M 4.2.3.8 TO BE UPDATED					
Responsible Party(ies)	Community Development, Engineering Division supported by Public Works Department					
2. Define and implement long-range program for construction and maintenance of a continuous system of non-motorized circulation facilities for the benefit of the residents. (Table 4.5-1, Measure #7 in Town's General Plan)		X				X
Implements Which Policy(ies)	M 4.2.1.1, M 4.2.1.2, M 4.2.1.3, M 4.2.1.4, M 4.2.1.5, M 4,2.2.5, M 4.2.3.2, M 4.2.3.3, M 4.2.3.4, M 4.2.3.5, M 4.2.3.7, M 4.2.3.8 TO BE UPDATED					
Responsible Party(ies)	Community Development, Engineering Division, Public Works Department supported by Town Council					
3. Develop and maintain a high quality design of the roadway, bicycle and pedestrian network that promotes the character and image of the Town, reduces negative environmental impacts including noise and minimizes adverse impacts to the neighborhood through the use of roadway cross sections, traffic counts, high quality hardscaping and landscaping. (Table 4.5-1, Measure #11 in Town's General Plan)						X
Implements Which Policy(ies)	M 4.4.1.3, M 4.4.1.4, M 4.4.2.1, M 4.4.2.2, M 4.4.2.3, M 4.4.2.4, M 4.4.2.5, M 4.4.2.6 TO BE UPDATED					

Responsible Party(ies)	Community Development, Engineering Division, Public Works Department supported by Town Council					
4. Update the existing Motorized and Non-motorized Circulation Maps and both motorized and non-motorized cross sections standards to reflect those identified in this Plan and revise when necessary to allow for innovative alignments, abandonments and shared-use by different travel modes as appropriate. (Table 4.5-1, Measure #12 in Town's General Plan)		X				X
Implements Which Policy(ies)	M 4.4.2.7, M 4.4.2.8, M 4.4.2.9 TO BE UPDATED					
Responsible Party(ies)	Community Development, Engineering Division					
5. Complete high priority projects that increase safety, improve linkages and loops to destinations desired by residents. (New)		X	X			X
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Public Works Department , Engineering Division supported by Community Development, Town Council and Town Manager					
6. Evaluate the need, application, and cost sharing for the institution of traffic calming measures for both motorized vehicles and bicyclists on a neighborhood basis as requested by individual neighborhoods. This should include an assessment of various techniques, development guidelines, cost sharing, administrative process for the potential installation of individual devices and maintain a list of various traffic calming measures. Consider priority traffic/bicycle calming projects at Camelback Manor Drive/Lincoln and Doubletree Road at the Town's eastern boundary. (Table 4.5-1, #2 of the Town's General Plan)		X				X
Implements Which Policy(ies)	M 4.1.1.6, M 4.1.2.1, M 4.1.2.2, M 4.2.3.5, M 4.2.3.6, M 4.4.1.5 TO BE UPDATED					
Responsible Party(ies)	Community Development, Engineering Division, supported by Town Council					
7. Develop education and enforcement programs, activities, and web based and print materials including such things as maps, special education events and activities, traffic enforcement days/weeks, school visits, walk and bike days, and exclusive use times/days on select bicycle facilities. Distribute maps and information widely in Town offices, libraries, schools, bike shops, resorts, and other recreational retail outlets. Solicit advertisers and sponsor to offset printing costs. (New)		X				X
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Community Development, Engineering Division Public Works Department supported by Town Council					
8. Complete the Wayfinding/Signage schematic design phase with a professional environmental graphic designer for the signage types defined in this Plan. (New)			X			
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Community Development, Public Works supported by the Town Council and Town Manager					

9. Prioritize installation of appropriate signage as identified in this Plan prior to major striping revisions and/or buffered bike lane, trail or shared-use path construction as a lower cost means of communicating information to bicylists, pedestrians and drivers of motorized vehicles. (New)			X			
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Public Works Department supported by Community Development, Engineering Division					
10. Develop wayfinding technology as described in this Plan to supplement any signage or pavement markings. (New)			X			X
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Community Development, Engineering Division, Public Works Department supported by Town Council					
11. Coordinate with local resorts on desired bicycle and pedestrian routes for guests, potential shared parking and seasonal trolleys. (New)		X				X
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Community Development, Public Works Department supported by Town Council and Town Manager					
12. Designate a Town staff person to represent the Town of Paradise Valley on the MAG Pedestrian and Bicycle Committee to coordinate facility development, ensure that regional bikeway system designations are consistent with the Town's Bicycle Facilities Plan, and be kept aware of potential funding sources. (New)		X				X
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Community Development, Public Works Department					
13. Coordinate with adjacent cities on mutually beneficial projects, potential project cost sharing, mapping, shared parking, trolley and transit routes and stops and to ensure safe and efficient linkages. Timely projects with the City of Phoenix include 32nd Street and Tatum Blvd. improvement. (Table 4.5-1, #1 in the Town's General Plan)		X				X
Implements Which Policy(ies)	M 4.1.1.1, M 4.1.1.3, M 4.1.1.5, M 4.2.3.7 TO BE UPDATED					
Responsible Party(ies)	Community Development, Engineering Division supported by Town Council					
14. Promote local transit services for the Town and Special Event transit services for resort visitors; and ensure that public transit and trolley stops in the Town are functional and attractive. Cooperate with transit agencies, neighboring jurisdictions and local resorts for improving transit, trolley, and ride share pick up points and produce route maps that are shared with residents, resorts and adjacent communities. (Table 4.5-1, #5 in the Town's General Plan)		X				X
Implements Which Policy(ies)	M 4.3.2.1, M 4.3.2.2 TO BE UPDATED					

Responsible Party(ies)	Town Council, Town Manger supported by Community Development, Engineering Division and Public Works Department					
15. Implement internal policies that ensure proper communication and coordination among the various departments and sections working to improve bicycle and walking in Paradise Valley. (New)		X				X
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Community Development, Engineering Division, Public Works Department supported by Town Manager					
16. Institute a pavement reduction plan on local streets where appropriate to lessen long term maintenance costs and to provide unpaved pedestrian space within the public right of way. (New)				X		X
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Engineering Division, Public Works Department					
17. Review Town codes, standards, policies and procedures to ensure they include guidelines for providing a continuous pedestrian route between public pedestrian facilities and main entrances of public or semi-public buildings. (New)			X			X
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Community Development, Engineering Division					
18. Develop capital improvement, operations and management budgets to properly develop, maintain and improve the bicycle and pedestrian network and the related wayfinding system in the Town. (New)		X				X
Implements Which Policy(ies)	TO BE DEVELOPED					
Responsible Party(ies)	Town Manager supported by Community Development, Public Works					

PERFORMANCE MEASURES

Different from Implementation Measures, Performance Measures promote informed decision-making by relating community goals to measuring and evaluating the effects of bicycle and pedestrian investments whether they are projects or policies. The following measures were selected for their appropriateness for Paradise Valley from an exhaustive list of measures developed by the Federal Highway Administration in their 'Guidebook for Developing Pedestrian and Bicycle Performance Measures'. They have been edited and refined to reflect the specific characteristics and needs of Paradise Valley. Implementing these measures will take staff and financial resources that may currently be limited.

Adherence to Accessibility Laws

The U.S. Department of Justice (USDOJ) adopted regulations (28 CFR Part 35) that require public entities to evaluate their current services, policies, and practices, and to develop a transition plan (for entities that employ 50 or more persons) or a program access plan to make any structural changes needed to achieve program accessibility. Pedestrian access to the public right of way is a service provided by public entities, and therefore, a public entity's self-evaluation and transition plan or program access plan must include how

barriers to pedestrian access by persons with disabilities will be addressed. For many agencies, making such structural changes requires a multi-year effort. Public entities should track and report to the public their progress toward achieving compliance with accessibility standards for the public right-of-way. Some common measures include:

- Percent of total street crossings that meet accessibility standards (e.g. curb ramps, crosswalk grade and cross slope, and no median barriers).
- Percent of total sidewalk miles that meet accessibility standards (e.g. slopes, obstructions, protruding objects, changes in levels, etc.).
- Percent of total pedestrian signals that have Accessible Pedestrian Signal (APS) technology.
- Percent of total bus stops that are connected to streets, sidewalks or pedestrian paths by an accessible route and that have accessible boarding and alighting areas.
- Percent of total shared use paths that are accessible.

Adherence to Traffic Laws

Enforcement may be one of the most important elements in getting drivers, pedestrians and bicyclists to behave safely. Transportation agencies should work closely with law enforcement to identify dangerous behaviors and locations that may require enforcement efforts to improve safety. Evaluating the behavior of transportation system users (including pedestrians, bicyclists and motorists) as a proxy for safety can be measured by:

- Number of observed violations. Targeted behaviors can include:
    - Motorists: failure to yield to pedestrians or bicyclists, turning (left, right or right turn on red), driving under the influence, driving distracted, speeding, running a red light/sign, passing a bicyclist too closely (aggressive, negligent or reckless driving).
    - Bicyclists: failure to yield to pedestrians, running a red light/sign, wrong- way riding, failure to use front light, riding more than 2 abreast.
    - Pedestrians: darting or walking into traffic; crossing in an area other than a marked or unmarked crosswalk, crossing against crossing signal.
- Number and types of citations issued, including written warnings. (See examples above.) Citations and formal activity is only a small measure of actual motorists, pedestrian and bicyclist behavior at any one location.
- Tracking trend data, including observations and enforcement efforts over months and years. Use consistent methodologies for observations (i.e. time of day, locations, weather, etc.). For citations, consider comparing formal operations to one another verses everyday enforcement efforts.

Facility Maintenance

To develop and maintain a complete pedestrian and bicycle network, an up-to-date facility inventory with the presence and condition of sidewalks and bicycle facilities is necessary. Typically, this inventory will be stored in a geospatial database which can be updated and tracked over time.

Agencies that have a detailed database will be able to prioritize facility improvements based on need. "Maintenance" of facilities can be subjective depending on local, regional, and State codes and requirements; however, FHWA does maintain several guidebooks that provide additional information including 'A Guide for Maintaining Pedestrian Facilities for Enhanced Safety' and 'Designing Sidewalks and Trails for Access.'

Emerging Technologies and Trends

Mobile crowdsourcing applications documenting maintenance issues; remote surveying technology such as Lidar.

Miles/Number of Pedestrian and Bicycle Facilities

"Miles of bicycle or pedestrian facilities" is a simple measure describing the total mileage of the network within a jurisdiction. Calculating this measure generally requires an inventory of the facilities. However, if a full inventory is not feasible, jurisdictions can track miles of bicycle or pedestrian facilities added annually within their boundaries or on their transportation facilities. Reporting miles added annually and number of improved crossings added annually allows for tracking progress over time.

Pedestrian facilities are defined by American Association of State Highway and Transportation Officials (AASHTO) as "sidewalks, trails, curb ramps, grade separated crossings, wide shoulders and other technology, design features, and strategies intended to encourage pedestrian travel. Bicycle facilities are defined as improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically designed for bicycle use. Miles of bicycle or pedestrian facilities can be reported as:

- Total miles of bicycle facilities
- Miles of bicycle facilities added
- Total miles of sidewalks
- Miles of sidewalks added
- Total miles of shared use paths
- Miles of shared use paths added

A baseline list of facility types to track may include:

- Sidewalk
- Buffered Bike Lane
- Trail
- Shared Use Path
- Enhanced crossing
- Other (such as shared lane marking and paved shoulder)

Bicycle/Pedestrian Counts

Pedestrian and bicyclist volumes can be used in a number of ways including establishing baselines and measuring use, evaluating before-and-after data on projects, multimodal modeling, and project prioritization and safety analyses. Depending on data goals, pedestrian and bicyclist volumes can be collected in a number of ways, from short duration counts that are collected by a person over a few hours or the course of a day, to longer duration counts collected by automated equipment.

NCHRP Report 797: Guidebook on Pedestrian and Bicycle Volume Data Collection provides guidance on collecting volume data using manual count methods and automated counters.

Emerging Technologies and Trends

Mobile crowdsourcing applications collecting data on pedestrian and bicycle volume.

Crashes

Crash data is useful for identifying the number and severity of crashes, where crashes occur, the circumstances surrounding each crash, who is involved in crashes, and the conditions and time of day that crashes occur. By understanding common crash types and locations, agencies can determine the appropriate countermeasures and prioritize projects to improve safety. Additionally, the number of crashes can be tracked over time to track progress towards meeting safety goals. Crash data is often used along with volume data and facility type data to determine crash rates and identify crash hotspots. Some of the common measures used to evaluate the safety of the transportation system based on crash history are:

- Number of bicycle-involved and/or pedestrian-involved crashes over 5 years.
- Number of fatal or serious injuries of bicyclists and/or pedestrians over 5 years.
- Crashes per volume of bicyclists and/or pedestrians over 5 years (crash rates).

Emerging Technologies and Trends

Mobile smartphone applications collecting data on crashes, near misses, location, circumstances, etc.

4. BACKGROUND

PUBLIC INPUT SUMMARY

Beginning in the summer of 2016 and continuing into December, and following a 'Public Engagement Plan' developed at the beginning of the project, (See Appendix), the Consultant Team, working closely with Town staff, led numerous events and activities to solicit ideas and gain feedback on the existing and potential of an improved bicycling and walking network in Paradise Valley. Hundreds of people participated in meetings, walks, interviews, rides, and surveys. The Planning Commission and Town Council provided review and input starting in November 2016 and continuing into the Spring of 2017. Throughout the five phases of the planning process, thoughtful participation drove the types of alternative concepts that were prepared and ultimately affected the refinement of the bicycle and pedestrian routes, street classifications, street and wash cross sections, goals, policies and implementation measures recommended in this plan. A description of the planning process and public involvement documentation can be found in the Appendix. The greatest takeaways heard through this process can be summarized as:

Safety

- Safety for bicyclists, walkers, and drivers is critical
- Improve crossings
- Extend signal times for pedestrians
- Provide bike lanes with proper widths
- Balance bicyclists needs with traffic needs
- Provide buffers between bicyclists and motor vehicles on heavily traveled roadways
- Maintain left turn lanes
- Lincoln Drive is very difficult for bicyclists and walkers due to noise, traffic speed, lack of bike lanes and inconsistent sidewalks
- Bicyclists speed down mountain streets without concern for pedestrians
- Doubletree Ranch Road attracts large pelotons that block the entire street lane
- Explore traffic calming techniques that calm cars and bicycles

Education and Enforcement

- Need for enforcement of existing laws
- Need for education about bicycle and driver etiquette and laws (many residents experience negative impacts associated with aggressive riding of some bicyclists)
- Provide proper signage/wayfinding without clutter complimented by technology

Site Sensitivity

- People are drawn to the area by beauty, architecture, topography, landscape and a sense of safety
- Respect the existing low density, quiet, rural desert character of the Town
- Protect neighborhoods from large groups of bicyclists and pedestrians
- Minimize signs and pavement markings
- Maintain landscape medians

Connectivity

- Provide connectivity between systems and to desired destinations within and adjacent to the Town
- Link resorts rather than municipalities
- Provide east/west connectivity along Lincoln Drive and McDonald Drive
- Recognize the existing lack of right of way for some needed improvements

- Provide loops, not just out and back that primarily benefit residents
- Fix existing bicycle and sidewalk gaps
- Provide a path along the Berniel Ditch
- Improve connections to Phoenix Mountains at Tatum Boulevard/Tomahawk Trail and at 32nd Street/Lincoln Drive

Wayfinding

- Keep it simple
- Provide signs/pavement markings on the street instead of signs on poles
- Use technology instead of more signs and paper
- Use desert colors
- Place along arterial and collector streets
- Signing/interpretation is important to keep people safe and direct them where they should be

Responsiveness

- Balance the walking and bicycling needs of property owners/residents, resorts, and guests
- Bikers and pedestrians come in many shapes, sizes, and levels of expertise and want different facilities and destinations
- Biking and walking is popular
- Surveys of PV Residents:
  - Most walk and ride bicycles for general health and exercise
  - Resident bicyclists use a variety of facilities including on street bike lanes and sharing the road with motorized vehicles.
  - Half of all cyclists also use sidewalks
  - 1/3 of cyclists use shared use recreation paths (unpaved outside of roadway)
  - Mummy Mountain area was the most mentioned area for cycling
  - Safer bike routes are the most important improvement that would cause people to walk and bike more
  - Almost 2/3rd of PV respondents would like changes to the Major Arterial Road cross sections that improve bicycle and pedestrian accommodations
  - Almost 60% of PV respondents chose proposed changes to the Minor Arterial Road cross section including bicycle lanes on both sides of the street and a center turn lane.
  - Just over 60% of PV respondents chose proposed changes to McDonald Drive including bicycle lanes on both sides of the street and removal of the center turn lane
  - More than half of all PV respondents did not want changes to Local Street cross sections
- Resorts often provide their own bicycles or connect guests to rental bicycles
- Resort guests want to be in the desert for a couple of hours for fitness and leisurely walks
- Many resorts provide their own walking and bicycling maps with safety information included

Responsibility

- Provide for fiscally responsible funding, implementation, and operations
- Safety, closing a gap, and link to destinations are the three most important criteria for prioritizing the implementation of a bicycle and/or pedestrian improvement project
- Resorts would like to partner with the Town (or Phoenix) to help alleviate trailhead parking problems at Camelback Mountain
- An early morning 'Hiking Trolley' was widely supported by resorts

EXISTING CONDITIONS, PLANS & POLICIES

This section documents those existing policy, physical, and social conditions that, combined with a comprehensive public involvement process, helped to understand current assets and challenges and eventually develop this Master Plan.

The 2012 Paradise Valley General Plan

This document has a direct relationship to several sections of Chapter 4: Mobility in the 2012 General Plan. They are discussed below.

Existing Goals and Policies

The importance of walking and bicycling to Paradise Valley's quality of life is recognized through the 2012 General Plan - Chapter 4: Mobility. The Non-Motorized Circulation Section of this Chapter provides detailed goals and policies regarding integrated pedestrian and bicycle systems. These goals give impetus to this Plan:

> *"Goals and policies in this section support the goal of making the Town of Paradise Valley a pedestrian and bicycle-friendly town. Safe, walkable environments will be maintained through an interconnected and continuous pedestrian network with sidewalks and trails that are enjoyable places to walk.*
>
> *A bicycle circulation system compatible with existing motorized circulation routes and local neighborhoods will be provided.*
>
> *Residents will be encouraged to integrate walking and bicycling into their daily activities to promote a healthier lifestyle and improve energy resource conservation."*
>
> - Introductory Statement of Goals in 4.2. Non-Motorized Circulation
>
> *"To preserve those elements or features which contribute to the Town's quality of life and character as a premiere residential community and resort destination with strong rural and historic roots."*
>
> - Land Use Goal 2.1.1

Other Goals and Policies throughout the General Plan also guide and support the nature and character of bicycle and pedestrian facilities. Each Chapter also outlines implementation measures that translate the broad goals and policy statements into specific actions. See the Appendix for the complete listing of applicable General Plan Goals and Policies. See Chapter 3: Action for recommended additions and edits to these existing goals and policies that will result in the Plan's implementation.

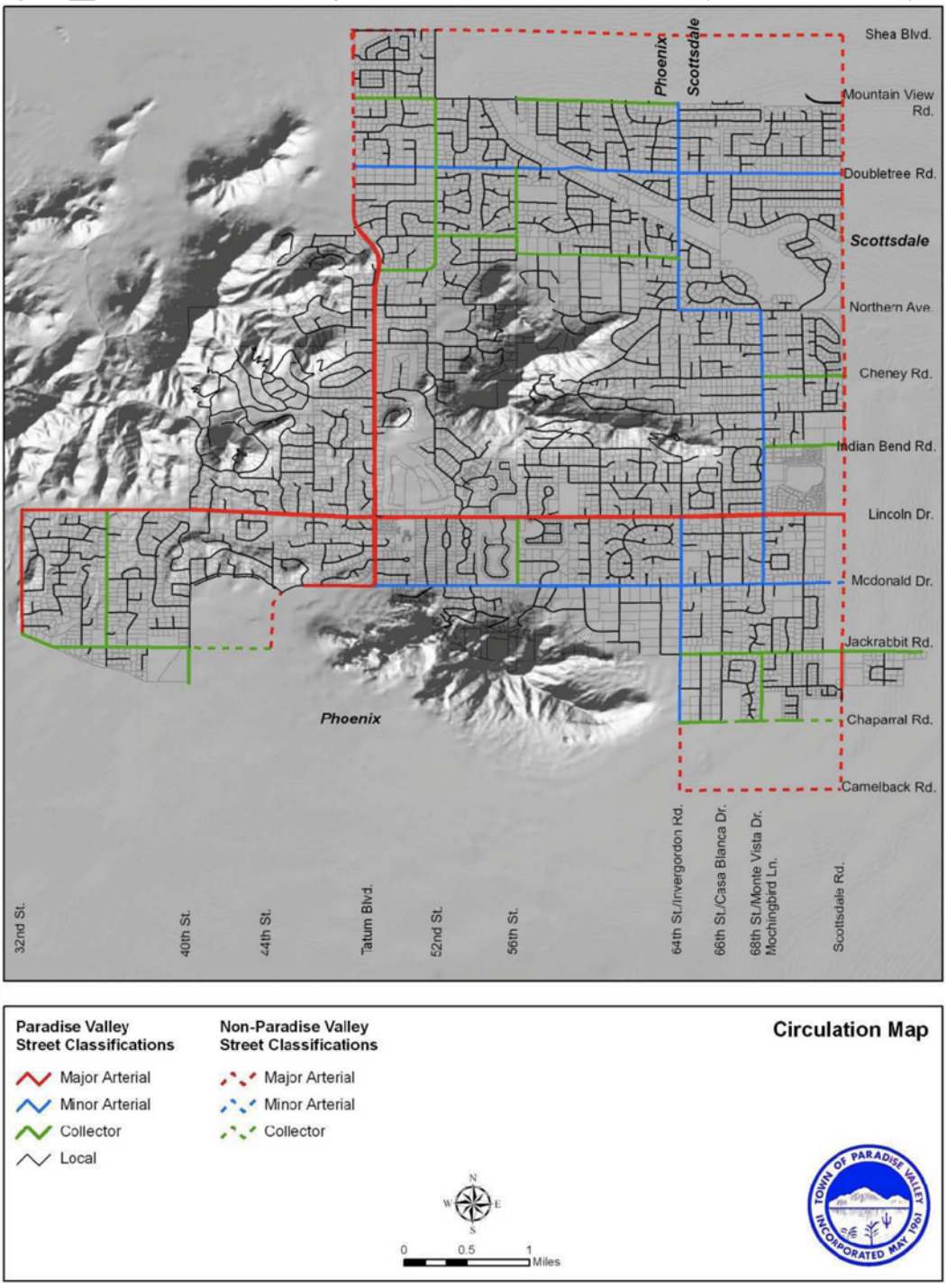
Existing Street Classifications as Related to Bicycle and Pedestrian Facilities

The General Plan further illustrates the Town's commitment to improving the non-motorized transportation system by incorporating bike lanes and sidewalks on many of the Town's standard street cross sections. The General Plan identifies four typical roadway classifications: Major Arterial, Minor Arterial, Collector, and Local. Each addresses the accommodation of bicycles and pedestrians at different levels. Pedestrian facilities appear on all classifications as an option, not as a mandatory feature, except for Local B+C, whereas bicycle facilities are only offered as an optional facility on all except the Local classification. See the General Plan for current full street cross-sections.

Figure __: 2012 General Plan Street Classifications and their Related Pedestrian and Bicycle Accommodation

Street Classification	*Pedestrian Accommodation*	*Bicycle Accommodation*
Major Arterials	Optional 6' sidewalks on both sides set back from traffic lanes min. 5'	Bike lanes only where necessary to interconnect bikeway systems.
Minor Arterials	Optional 6' sidewalks on both sides set back from traffic lanes min. 5'	Optional 4' bicycle lanes on both sides.
Collectors	Optional 6' sidewalks on both sides set back from traffic lanes min. 5'	Optional 4' bicycle lanes on both sides.
Locals	A: Optional 6' sidewalk on one side B: No sidewalks C: No sidewalks	No bicycle lanes.

Figure __: 2012 General Plan Figure 4.1: Motorized Circulation Map with Street Classifications



Existing Non-Motorized Circulation Alternatives

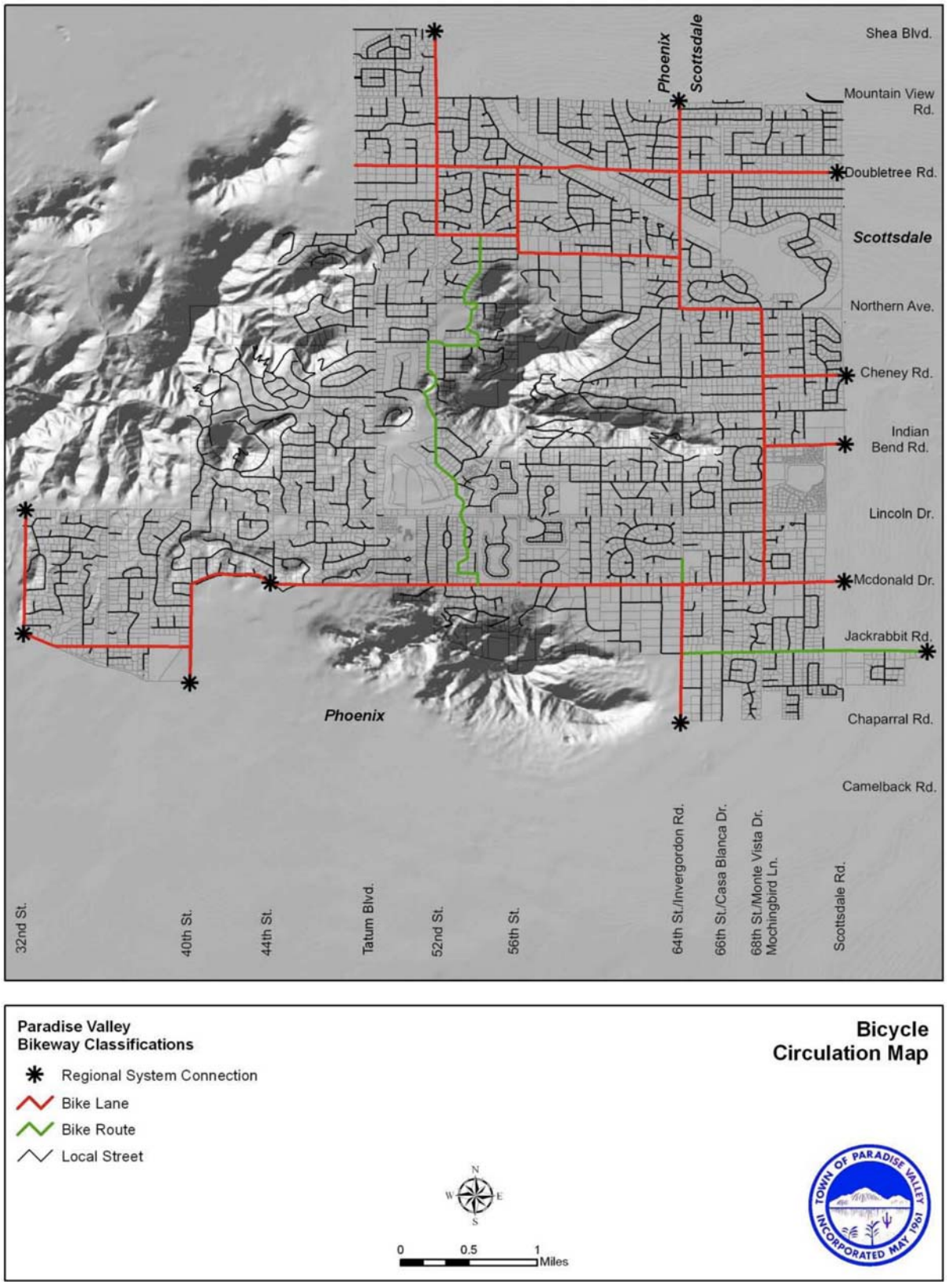
The 2012 General Plan identifies six types of non-motorized circulation alternatives: Bike Lanes, Bike Route, Sidewalk, Multi-Use Trail, Recreational Trail and Recreational Path. Only Bike Lanes and Bike Routes are mapped on the Non-Motorized Circulation Map along with regional system connection points at the Town's perimeter. No sidewalks were mapped. See Figure __: 2012 General Plan Bicycle Circulation Map. The plan recognizes these facilities are used for both trip-oriented travel and recreation and recommends a

Pedestrian Master Plan developed to address walking, jogging, hiking and other non-motorized circulation options (this Plan). The Plan states that 'All non-motorized facility markings along roadways should be in conformance with the American with Disabilities Act (ADA) and the recommendations of the AZ Department of Transportation (ADOT).'

Figure __: 2012 General Plan Non-Motorized Circulation Alternatives

Types	*Description*
Bike Lane	Pavement markings delineating a 4' wide lane, exclusive of curb & gutter. Distinguished by signage along Minor Arterials and Collector Streets. Bike Lanes are designed to delineate the right-of-way assigned to bicyclists and motorists, to provide more predictable movements by both.
Bike Route	Route only distinguished by signage along Minor Arterials and Collector Streets. There are no special lane markings and bicycle traffic shares the roadway with motor vehicles. Special regulations may be enacted and posted along such facilities to control motor vehicle speeds or restrict parking to enhance bicycling safety.
Sidewalk	6' meandering paved or unpaved (i.e. Compacted decomposed granite) routes typically set back 5' min. from traffic lane, but do not have to be associated with a street.
Multi-Use Trail	Unpaved facility such as along AZ Canal or in Phoenix Mtn. Preserve are multi-use trails used by all non-motorized ways of transportation, may be paved or unpaved.
Recreational Trail	Unpaved facilities such as Cholla & Echo Canyon Trails are associated with naturally set parks/open space and are contoured to match the terrain. These trails primary use are recreation and not necessarily used for destination travel or commuting.
Recreational Path	Off-street paved connections typically cover short distances between popular destinations and neighborhoods, should typically be 6 feet wide and may be striped to separate directional traffic.

Figure __: 2012 General Plan Figure 4.9 Non-Motorized Circulation Map with Bicycle Facilities



Existing Implementation Measures

Implementation Measures translate broad goal and policy statements into specific actions, systematically evaluating progress, and ensuring active community participation. Each identified measure is tied to their related goals and policies and identifies the responsible parties within the Town. The implementation measures address issues relevant to non-motorized circulation in many ways, both directly and indirectly. Direct implementation measure include such things as maintaining and updating an inventory and map, and implementing a construction and maintenance program for the Town's non-motorized transportation. Indirect measures address traffic calming, landscaping, traffic counts and other items that could affect the quality of non-motorized facilities.

Bicycle and Pedestrian Infrastructure Inventory

Existing bicycle and pedestrian facilities were documented to establish a baseline of existing services, constraints, opportunities, conditions and gaps. The data was recorded in maps, tables and photos. This data set coupled with on-site reconnaissance/photo documentation, was used in the creation of project base mapping, decision making, gap analysis, future facilities prioritization, phasing and implementation.

See Figure __: ***2012 General Plan Figure 4.9 Non-Motorized Circulation Map with Bicycle Facilities***. See the Appendix for additional mapping information.

Tabular Inventory

Inventory data sheets were prepared for all roads that have bike lanes/sidewalks, bike/pedestrian routes shown in the current General Plan or have had a bike/pedestrian route in a previous Town plan. The road classifications are based on the current General Plan. Segments were defined by changes in roadway characteristics or ROW width. (See example section below). See the Appendix for the complete ROW Tabular Inventory.

Figure __: Sample of Tabular Inventory

Road	Segment		ROW Width	(ROW - PW)	Posted Speed Limit	Direction	ROW																				
							LS Sidewalk LS		Bike Marking		Bike Lane	Buffer	Road Lanes							Buffer	Bike Lane	Pavement Width	Bike Marking		LS Sidewalk LS		Direction
	From	To							S sign	M mark			3	2	1	Center	1	2	3				S sign	M mark			
Major Arterial																											
Lincoln Dr	Tatum Blvd	Camelback Manor Dr	**80**	20	40	W	7		X	X	0	0		11	11	15	11	12		0	0	**60**	X	X	7		E
Minor Arterial																											
McDonald Dr	Monte Vista Dr	Quail Run Rd	**66**	34	35	W	6	6	X	X	0	0			11	9	12			0	0	**32**	X	X	6		E
Collector																											
Cheney Dr	70th St	Scottsdale Rd	**70**	38	25	W	X		X	X	0	5			11		11			5	0	**32**	X	X	6		E
Local																											
Desert Fairways Dr	Lincoln Dr	Desert Fairways Dr	**60**	26	25	S	X		X	X	0	0			11	0	23					**34**			X		N

Facility Summary of Non-Motorized Circulation Alternatives

The following table summarizes the number of miles for each non-motorized circulation alternative shown or discussed in the 2012 General Plan and how many miles of that alternative exist on the ground today. See Figure __: Existing Bicycle Facilities Map and Figure __: Existing Pedestrian Facilities Map.

Figure __: Facility Summary of the 2012 General Plan Non-Motorized Circulation Alternatives

Facility Type	*Planned Miles*	*Existing Miles*
Bike Lane	17.6	9.9
Bike Route	4.2	1.3

NOTE:

- Though Sidewalks, Multi-use Trails, Recreational Trails, and Recreational Paths were defined in the 2012 General Plan, none were shown on maps.
- The 2012 General Plan did not map sidewalks. The 2003 Paradise Valley General Plan Non-Motorized Circulation Map had shown sidewalks combined with all proposed bike lanes as well along additional roads. See the Appendix for the 2003 General Plan Non-Motorized Circulation Map.
- The 2003 Paradise Valley General Plan Non-Motorized Circulation Map had also shown bike lanes on Lincoln Drive and Tatum Blvd through all of Paradise Valley and several other bike routes that are not identified in the 2012 General Plan.
- A bike route is shown as 'Existing' if it has either or both a bike route signs or is shown on a local or regional map.

Local Connectivity & Destinations

Paradise Valley's central location in metropolitan Phoenix gives it access to many bicycle and pedestrian connections and destinations from hiking trails to malls, shops to restaurants, and from the freeway system to the airport. At Paradise Valley's border, the City of Phoenix manages four major trail destinations at Camelback Mountain. (Echo Canyon and Cholla Trailhead), the 32nd Street Trailhead on Lincoln Drive and the Christiansen Trail/Trail 100 on Tatum Boulevard and Tomahawk Trail. Additional destinations in Phoenix include the Arizona Canal/Sun Circle Trail at 32nd Street, the Phoenician Resort and commercial sites at Tatum and Shea Boulevard. Destinations in adjacent Scottsdale include the Arizona Canal/Sun Circle Trail at Jackrabbit Road, downtown Scottsdale, many resorts and commercial establishments along Scottsdale Road, and schools and parks including McCormick Stillman Railroad Park and Chaparral High School.

Both Phoenix and Scottsdale have comprehensive master plans that address non-motorized transportation. The Nonmotorized Vehicle Element of the **City of Scottsdale Transportation Master Plan 2016** illustrates shared-use paths (paved), on-street bike lanes, and shared-use trails (unpaved). The **2004 Scottsdale Trails Master Plan** provides additional detail for the trail system outside of the McDowell Sonoran Preserve. The plan shows bike lanes and sidewalks on major arterials, minor arterials, major collectors, and minor collectors. City of Scottsdale bicycle and pedestrian facilities that link into Paradise Valley include:

- Proposed shared-use path along Shea Boulevard
- Proposed path along McCormick Parkway
- Existing path and bike lanes along Indian Bend Road
- Existing bike lanes on Scottsdale Road north of Indian Bend Road to just north of Mountain View Road
- Existing trail and a proposed path along the Berniel Wash/Mountain View Road
- Proposed trail along Doubletree Ranch Road
- Proposed trails and paths along the Indian Bend Wash east of Scottsdale Road
- Existing bike lanes on McDonald Drive east of Scottsdale Road
- Existing bike lanes on Lincoln Drive east of Scottsdale Road
- Path and trail along the Arizona Canal with a pedestrian bridge across the canal at Jackrabbit Road
- Bike lanes on Jackrabbit Road east of the Arizona Canal
- Intermittent bike lanes on Chaparral Road east and west of Scottsdale Road

- Sidewalks exist along most streets leading into Paradise Valley

The **2014 City of Phoenix Comprehensive Bicycle Master Plan** provides design and policy guidance to the city for improving the bicycling environment. It recommends bike lanes on arterial (greater than 100' ROW width) and provides options for buffered bike lanes and raised cycle tracks. Where possible, the City proposed to restripe travel lanes to 11'-12' to accommodate bike lanes. Project implementation is organized in priority Tiers from Tier I with the highest priority and Tier III the lowest priority. Several connections and future projects lie at the Paradise Valley border:

- Existing bike lanes on 40th Street south of the Arizona Canal
- Existing bike lanes on 64th Street/Invergordon Road
- Undesignated route on 44th Street north of Camelback Road
- Existing bike route on 36th Street south of the Arizona Canal
- Existing bike lanes on 52nd Street north of Mountain View Road
- Proposed intersection/crossing improvements at 32nd Street/Stanford Drive/Arizona Canal - Tier 3
- Proposed improvements to the Indian Bend Wash path corridor north of Shea Boulevard and crossing improvements at Shea Boulevard – Tier 2
- Sidewalks exist on most streets that lead into Paradise Valley

By 2024, Phoenix intends to complete 50% of Tier II and Tier III project. By 2029 they will complete 75% of Tier II and Tier II projects and by 2034 they will complete 100% of Tier II and tier III projects.

See the Appendix for more information on regional destinations. See Figure __: Existing Bicycle Facilities Map and Figure __: Existing Pedestrian Facilities Map that illustrate many of these connection points and destinations.

Figure: __ Routes – Existing Bicycle Facilities

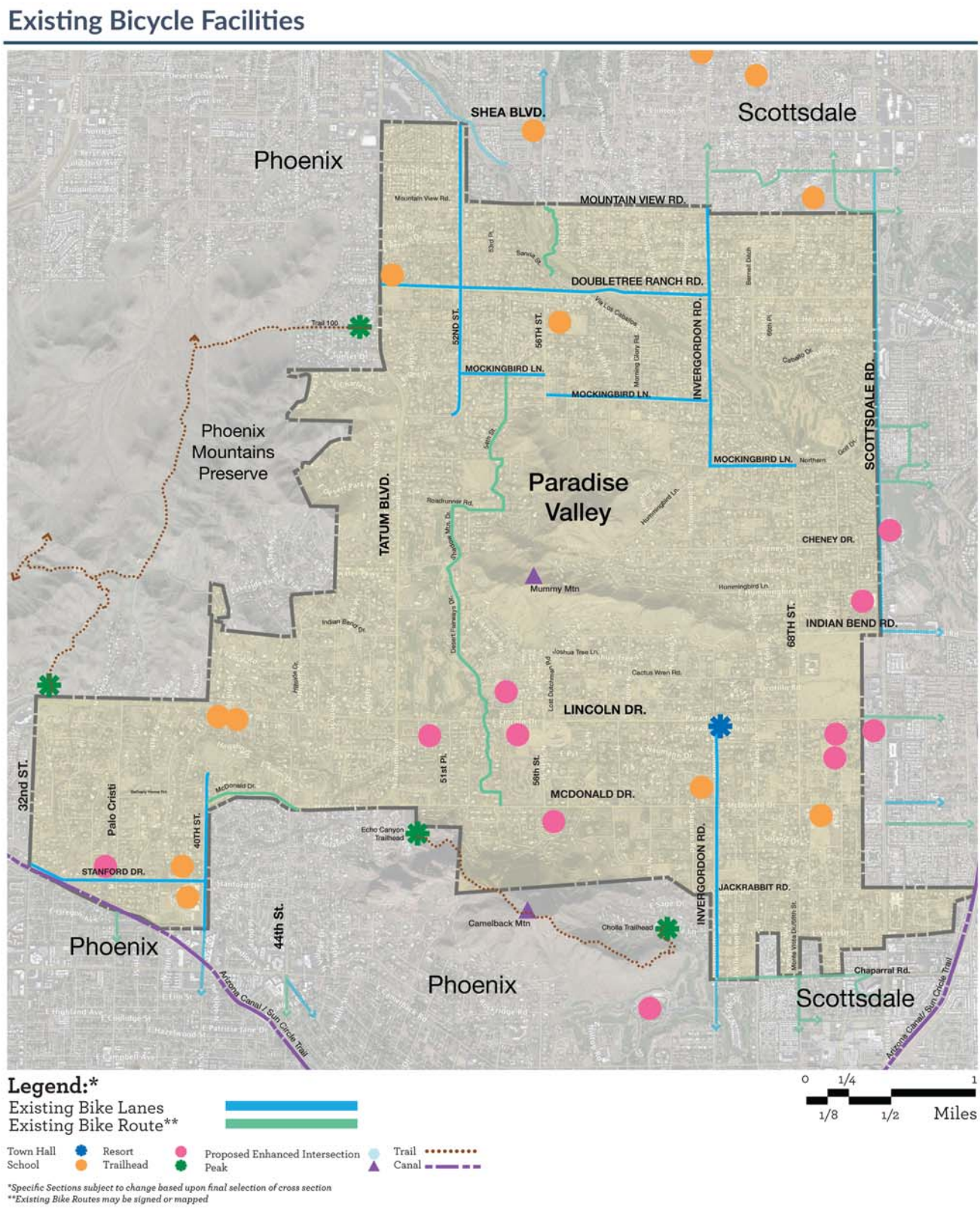
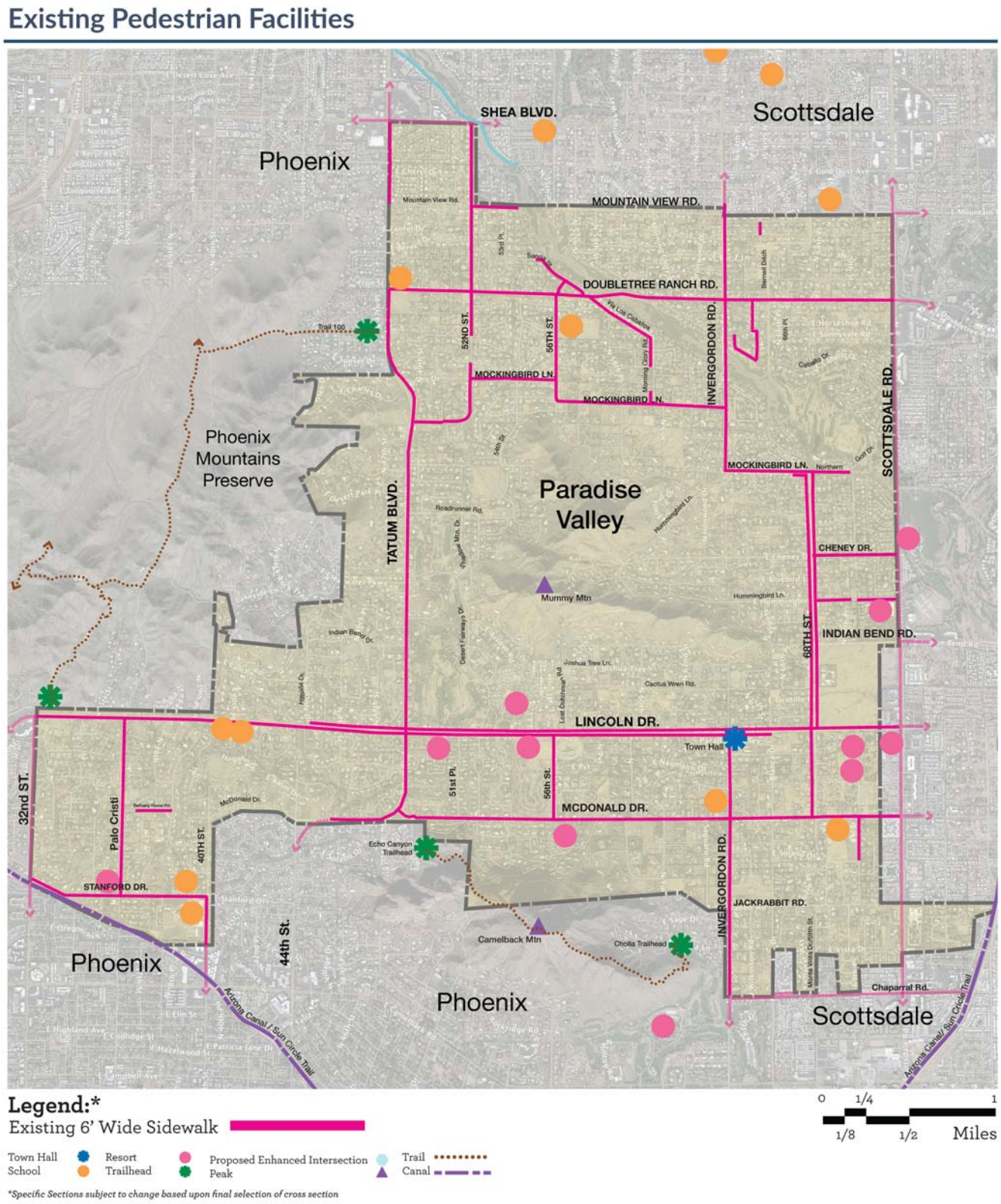


Figure __: Routes – Existing Pedestrian Facilities (Non-local Streets Only)



Wayfinding Inventory

Having safe and attractive bicycle lanes, paths, sidewalks and crossings that connect people to the places they want to go is not enough. Publicly accessible maps and safety tips combined with a wayfinding or signage system directs people to how they can move through a system with the least conflict, knowing it connects to the destinations they desire. The following summarizes the current state of bicycle and pedestrian signage and wayfinding in Paradise Valley.

Signing

There is almost no directional signage provided along bikeways or for major destinations in Paradise Valley. Where they are signed and have pavement markings, the graphics and signage are not consistent, and in poor condition. Bikeways that lead through residential neighborhoods provide a unique situation where the road is often shared with motorized vehicles, bicycles and pedestrians. This presents a dangerous situation when there is not a properly built facility or marked signage to make users away of each other. There are a few directional signs along McDonald Drive that were installed with the roadway improvement to 52nd Street from Lincoln Drive to McDonald Drive. These signs match the interpretive signs, located at the respite spot midway between McDonald Drive and Lincoln Drive, and while they are "oriented" to vehicles the letter height is sized for pedestrians not vehicles. The respite includes wayfinding signs and a map.

Mapping

The various Paradise Valley resorts have found that biking and walking is a big draw for their guests. Many of them provide or rent bicycles to their guests. Many have created their own versions of maps, directions and information pamphlets to promote the adjacent commercial, recreational and neighborhood viewing areas. Each map is different, based on their location, and are not "sanctioned" by the Town or respectful of adjacent residents' privacy. Safety information plays a significant part of their communications for walking and biking. The Town does not currently provide any bicycle and/or pedestrian route maps.

Branding

There is no bicycle, pedestrian or general Paradise Valley branding or logo that acts to connect and brand a complete system of wayfinding elements or routes. Wayfinding is not just signs. People use other objects to orient themselves to an area - they can be sculptural/artistic landmarks or notable businesses landmarks such as El Chorro or the Camelback Inn or visible natural landmarks such as Camelback Mountain.

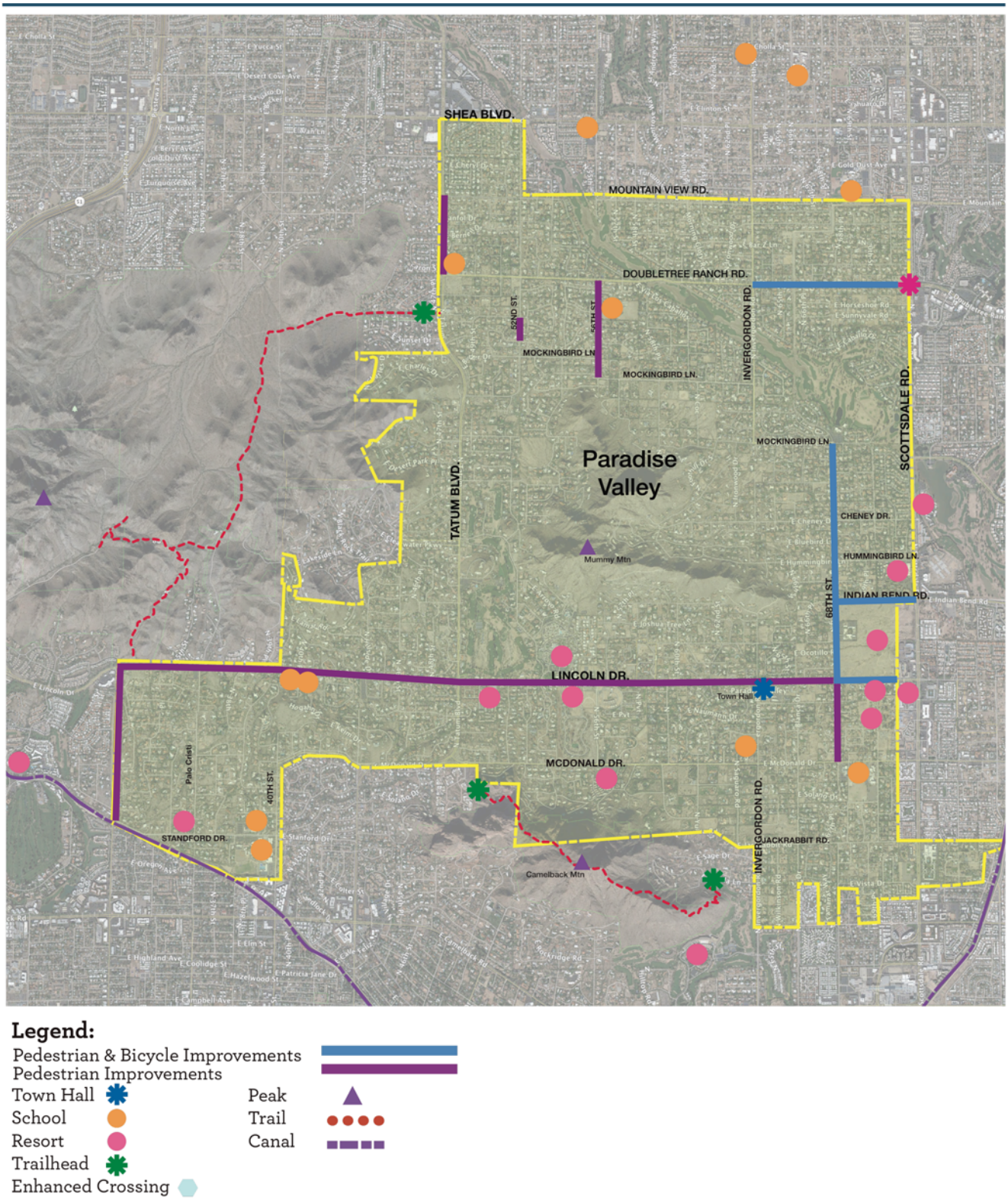
Photo Documentation

Photo documentation of existing bicycle and pedestrian conditions occurred through various team site visits in the summer and fall of 2016 as well as during the Walk/Bike Ride that occurred with Town staff and Stakeholders on August 13, 2016.

Existing Capital Improvement Program (CIP)

Using General Plan maps, goals and standard cross-sections as guides, street and sidewalk improvement projects are currently ID'd through FY2020-21 in the CIP. As projects identified in this Plan are planned, budgeted (as funds become available), and implemented, they will be vetted through the Town's CIP process. Current planned projects vary from site-specific projects that will improve either one or multiple transportation modes of travel as well as Master Plan scale projects, including this Plan (also identified as a Quality of Life Initiative approved by Town Council.) The CIP project list reflects information available at the time. All capital improvement project programming and funding is subject to annual approval by Town Council and is therefore subject to change. See the Appendix for detailed descriptions of the projects illustrated below.

Figure __: Existing Capital Improvement Projects 2016-2021



Existing Maintenance & Operations

The Town of Paradise Valley's Public Works Department develops the annual budget for maintenance of Town right-of-ways and Town property. This includes bike lanes, sidewalk repairs and maintenance at the Berniel Wash. The work is performed by a combination of Town staff and contractors. Maintenance and operations funds come from two funding sources: Highway Users Funds (HURF) and the Town's General Fund. See the Appendix Definitions section for an explanation of these funds.

Crash Data

There were 16 reported collisions in the Town between 2009 and 2015 involving motor vehicles and bicycles and two collisions involving pedestrians in that period. This averages to approximately three bicycle incidences per year and one pedestrian incidence every 3 years. Of all these crashes only three were in a designated bike lane or a marked crosswalk perhaps highlighting the enhanced safety provided by bike lane and crosswalk markings. See the Appendix for additional crash data.

Arizona Bicycle Laws

The Bicycle laws in Paradise Valley are the same as the Arizona Revised Statutes (ARS) for bicycle traffic, but are often unknown or misunderstood. The misunderstanding and lack of knowledge of bicycle laws are a point of contention between cyclists and other users because very few understand what the other is allowed to be doing and often do not completely understand the laws for what mode of transportation they may be using. Some of the most commonly misunderstood laws and codes include that bicyclists can ride two abreast and no more (ARS 28-815), bicyclists have to ride as close as practicable to the right-hard curb or edge of roadway, unless they are preparing to make a left hand turn, or if there is an object in the way and the bicyclists needs to go around it (ARS-28-815), and a Town policy that bicycles may generally ride on a sidewalk. See the Appendix for more detailed information.

Bicycle/Pedestrian Count

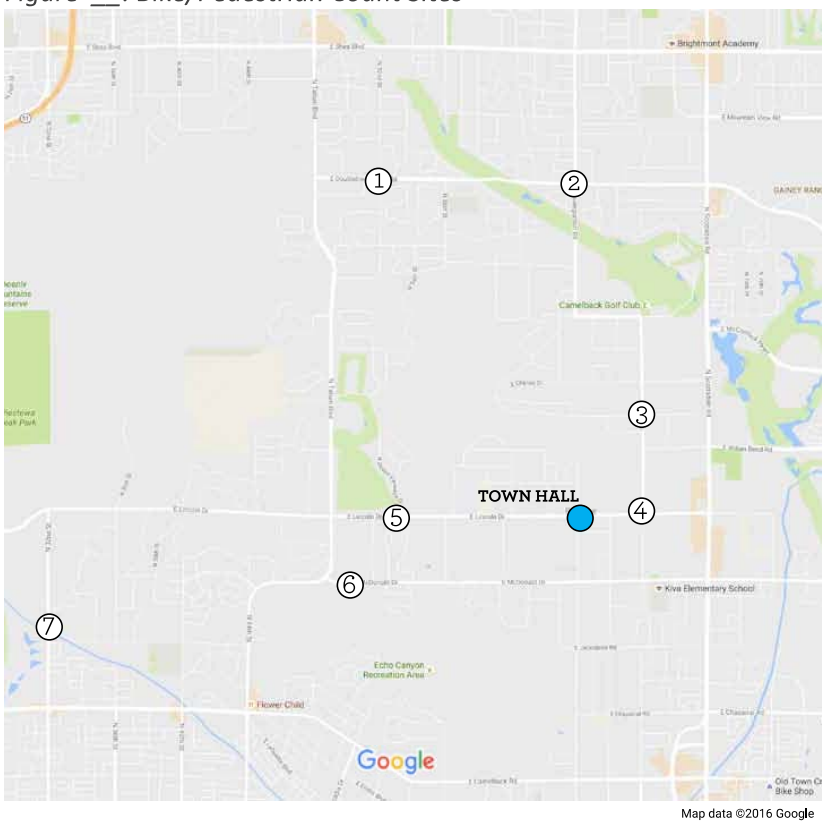
The consultant team completed a bicycle and pedestrian count in Paradise Valley using the guidelines from the MAG Bicycles Count Report format with a group of student volunteers from the Arizona State University Landscape Architecture Program.

There were a total of 7 count sites placed strategically across Paradise Valley to collect a well-rounded sampling of different conditions throughout the town. The counts were all conducted on October 15th, 2016 from 6:00am-9:00am as the daily temperatures where still in the 100 degree range at the peak of day, and people tend to be most active with cycling and walking in the cooler hours of the day. The table below displays the total counts for each site within the 3-hour period. See the Appendix for a more in-depth look into the break down of each count site by hour and specific notes on each site.

Figure __: Bike/Pedestrian Count Sites and Counts

Location	*Total Bicycles*	*Total Pedestrians*
1.) Doubletree & 52nd Street	172	35
2.) Doubletree & Invergordon	237	40
3.) Hummingbird & 68th/Mockingbird	**239 (highest)**	100
4.) 68th/Mockingbird & Lincoln	223	33
5.) Lincoln & Desert Fairways	86	73
6.) McDonald & Echo Canyon Parking	89	**166 (highest)**
7.) Stanford & 32nd Street/AZ Canal	48	43

Figure __: Bike/Pedestrian Count Sites



BEST PRACTICES

As a foundation to build upon, a best practices literature research was undertaken to document current guidelines, policies and examples. The referenced materials provide guidelines and polices for safety, facilities metrics and qualitative information. See the Appendix for additional information and resources.

National Resources

The Federal Highway Administration (FHWA) and other organizations have developed an array of resources, guidelines and standards to assist bicycle and pedestrian implementing agencies. The FHWA supports taking a flexible approach to facility design that is safe and convenient. FHWA encourages agencies to appropriately use these guides and other resources to help fulfill the aims of the 2010 US DOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations - "...DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities, and utilize universal design characteristics when appropriate." The concept of 'context-sensitive' design is particularly relevant to Paradise Valley where bicycle and pedestrian facilities should blend with the Town's low-density and scenic character.

As a means to evaluate the state of a pedestrian and bicycle network, the Federal Highway Administration (FHWA) adapted the principles from the Dutch CROW (Centre for Research and Contract Standardization in Civil and Traffic Engineering) manual. According to the FHWA, 'an exemplary pedestrian and bicycle network will satisfy each of these principles.' These principles are embedded in the underlying purpose of this Master Plan.

- **Cohesive Network.** Opportunities for direct travel between destinations are made possible by focusing on links between existing infrastructure and destinations.
- **Directness.** An exemplary connected network will minimize the distance a person must travel to reach a destination, prioritizing a convenient path between destinations. Walking trips should be targeted at not more than one mile. Bicycle trips should be targeted at not more than two miles.
- **Accessibility.** Refers to the ability of a network to serve all of its users regardless of age or ability.
- **Alternatives.** The presence of alternate routes that provide choices to non-motorized road users is a sign of a well-connected, comprehensive transportation network. Alternatives are a key consideration for providing route options to different types of users, who may be traveling for different purposes.
- **Safety & Security.** To improve networks, agencies can make changes to address safety concerns – both real and perceived. Countermeasures intended to improve pedestrian and bicycle safety are outlined in resources like the FHWA Pedestrian and Bicycle Safety Guide and Countermeasure Selection Systems, known as PEDSAFE and BIKESAFE.
- **Comfort.** The comfort of a particular route builds off of many of the other principles discussed previously. The perceived safety of a route, in particular, can impact a pedestrian or bicyclist's comfort level and can heavily influence whether they will choose to travel in a certain location.

The Appendix provides pages of additional resources. Key Federal documents are summarized below.

Walkability

Offering guidance for pedestrian design, the 2004 American Association of State Highway and Transportation Officials **(AASHTO) Guide for the Planning, Design and Operation of Pedestrian Facilities** provides comprehensive guidance on planning and designing for people on foot. Meeting the requirements of the Americans with Disabilities Act (ADA) is an important part of any bicycle and pedestrian facility project. The United States Access Board's proposed **Public Rights-of-Way Accessibility Guidelines**[1] (PROWAG) and the **2010** Americans with Disabilities Act **(ADA) Standards for Accessible Design**[2] contain standards and guidance for the construction of accessible facilities. This includes requirements for sidewalk curb ramps, slope requirements, and pedestrian railings along stairs.

Bikeability

There are three primary sources of guidance for bicycle facility design.

Manual on Uniform Traffic Control Devices (MUTCD)

The Federal Highway Administration's (FHWA) **MUTCD** defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. The MUTCD is the primary source for guidance on lane striping requirements, signal warrants, and recommended signage and pavement markings. Bikeway treatments not explicitly covered by the MUTCD are often subject to experiments, interpretations and official rulings by the FHWA.

AASHTO Guide for the Development of Bicycle Facilities

This guide, updated in June 2012 provides guidance on dimensions, use, and layout of specific bicycle facilities. The standards and guidelines presented by AASHTO provide basic information, such as minimum sidewalk widths, bicycle lane dimensions, detailed striping requirements and recommended signage and pavement markings.

2012 Urban Bikeway Design Guide

This guide by the National Association of City Transportation Officials (NACTO), is the newest publication of the nationally recognized bikeway design standards, and offers guidance on the current state of the practice. It is based on current practices in the best cycling cities in the world. The intent of the guide is to offer substantive guidance for cities seeking to improve bicycle transportation in places where competing demands for the use of the right of way present unique challenges. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

Signage/Wayfinding

The following summarizes a best practices framework that applies to signage and wayfinding for walking and biking at various scales from regions to communities to neighborhoods to sites.

Vocabulary

Develop a basic vocabulary of spatial features that assist wayfinding and imageability: identifiable places, landmarks, paths, and regions.

Landmarks

Use landmarks to provide orientation cues and memorable locations - Landmarks serve two useful purposes. The first is as an orientation cue. If the navigator knows where a landmark is in relation to his present position, he can relate to where he is and which way he is facing in the space he shares with the landmark. A desirable property of a landmark for this use is visibility - the ability to be seen from a large surrounding area. The second purpose is creating a sense of place and bringing information or aesthetics to the site through memorable design features or place-sensitive public art.

Routes of Different Visual Character

Create routes of differing visual character such as - a distinction in function or use, or some attribute of its content that is consistently maintained within the region but not without. Regions may not have sharply defined boundaries, or their extent may be in some part subjective; but a minimal requirement is that there is a generally agreed space said to be within the region, and a surrounding area said to be outside it.

User Maps

Provide a map for users - When navigating in any type of space, a map is a valuable navigation aid. It places the entire space within the navigator's view, and several kinds of judgments can be made readily; the location of the navigator, and what is in the immediate vicinity; what destinations are available, and what routes will take the navigator there; and the size of the space, and how far the navigator is along his chosen path. This overall survey view of the area provides orientation and helps provide the base for a navigator's mental map.

Signs at Decision Points

Provide signs at decision points to help wayfinding decisions - Decision points are where the navigator must make a wayfinding decision (for example, whether to continue along the current route or to change direction.) A sign should tell the navigator what's in the direction it points, and the destinations so indicated should help the navigator reach his eventual goal.

Regional Resources

The Maricopa Association of Governments (MAG) through its Bicycle and Pedestrian Committee (consisting of staff from Phoenix area jurisdictions), with approvals by its Regional Council (Town of Paradise Valley is a member), provides a series of bicycle and pedestrian design guidelines, polices and Master Plans in which these jurisdictions can use or reference to better serve their own communities. The Committee ensures that these documents fully represent the region's wide variety of development patterns from high to low density, socioeconomic factors, and topographic variety to ensure guidelines can be tailored to each community's unique characteristics. The relevant documents are listed below and more fully described in the Appendix.

- **Pedestrian Plan 2000.** Identifies and recommends programs and actions that guide and encourage the development of pedestrian areas and facilities and ultimately increase walking as a viable mode of transportation throughout the region.
- **Pedestrian Policies and Design Guidelines 2005.** Provides a source of information and design assistance to support walking as an alternative transportation mode.
- **Regional Bikeway Master Plan 2007.** Serves as a guide for improving, expanding, and connecting the MAG Region's bicycle facility network.
- **Complete Streets 2011.** This resource ensures that facilities for bicycle, pedestrians and transit are recognized as integral to a properly design and functioning street.
- **MAG Bike Count 2014.** Develops a regional and local bicycle counting strategy, collects the first snapshot of regional bicycle counts and helps build an understanding of cycling trends and use over time with the goal of assisting jurisdictions in prioritizing bicycle improvement projects. One site was counted in Paradise Valley. This site and several others were counted in the PV Bicycle/Pedestrian Count largely using the methodology established by MAG. This count is discussed below.
- **Valley Path Brand & Wayfinding Signage Guidelines.** Serves as a technical resource to guide parks and transportation agencies as they plan, design, and implement the brand and wayfinding signage along the off-street bicycle network in the Phoenix metro area. The guidelines stress connectivity and a level of wayfinding continuity across jurisdictions. They recognized the desire of local jurisdictions to refine the guidelines to better reflect their community.