



**CITY OF SCOTTSDALE
TRANSPORTATION COMMISSION
PATHS & TRAILS SUBCOMMITTEE**

Notice and Agenda

8:30 A.M.

Tuesday, August 3, 2021

Meeting will be held electronically and remotely

Until further notice Path and Trails Subcommittee meetings are being held electronically. While physical facilities are not open to the public, Path and Trails Subcommittee meetings are available on Scottsdale’s YouTube channel to allow the public to virtually attend and listen/view the meeting in progress.

1. Go to ScottsdaleAZ.gov, search “live stream”
2. Click on “Scottsdale YouTube Channel”
3. Scroll to “Upcoming live streams”
4. Select the applicable meeting

Call to Order

Roll Call

Don Anderson, Chair, Transportation Commission
Kyle Davis, Subcommittee Member
Teresa Kim Hayes-Quale - Commissioner, Parks and Recreation Commission
B. Kent Lall, Comimssioner, Transportation Commission
William Levie, Subcommittee Member

Public Comment

Only written comments submitted electronically are being accepted. To be considered, please submit your written Public Comment on an agenda item at least 90 minutes before the meeting’s scheduled time to the following link:

<https://www.scottsdaleaz.gov/boards/transportation-commission/public-comment>

However, Arizona State Law prohibits the Path and Trails Subcommittee from discussing or taking action on an item that is not on the prepared agenda.

1. Introduction of New Staff and Committee Member..... Information

2. [Approval of Meeting Minutes](#)Action
Approval of the Regular Meeting minutes of June 1, 2021

3. [Transportation Action Plan](#)Information and Discussion
Proposed changes to the Street and Bikeway Elements – Susan Conklu, Senior Transportation Planner
Proposed changes to the Trail Element – Greg Davies, Senior Transportation Planner

4. [Guidelines to Identify Pedestrian Crossing Treatments](#).....Information
Presentation of the guidelines to identify Pedestrian Crossing Treatments – Kiran Guntupalli, Principal Traffic Engineer

5. **Other Transportation Projects and Programs Status** Information
Status of projects and programs – Susan Conklu, Senior Transportation Planner

6. [Subcommittee Identification of Future Agenda Items](#)Discussion
Subcommittee members may identify items or topics of interest for future Subcommittee meetings

7. **Adjournment**



Persons with a disability may request a reasonable accommodation by contacting Mariah Maindonald at 480-312-7839. Requests should be made 24 hours in advance, or as early as possible, to allow time to arrange the accommodation. For TYY users, the Arizona Relay Service (1-800-367-8939) may also contact Frances Cookson at 480-312-7637.



DRAFT SUMMARIZED MINUTES

CITY OF SCOTTSDALE TRANSPORTATION COMMISSION PATHS & TRAILS SUBCOMMITTEE

TUESDAY, JUNE 1, 2021

Meeting Held Electronically

CALL TO ORDER

The meeting of the Paths & Trails Subcommittee was called to order at 8:30 a.m. A formal roll call confirmed the presence of Subcommittee members as noted below.

1. ROLL CALL

PRESENT: Donald Anderson, Chair – Transportation Commission
Kyle Davis, Subcommittee Member
Kent Lall, Commissioner – Transportation Commission

ABSENT: William Levie, Subcommittee Member

STAFF: Susan Conklu, Senior Transportation Planner
Kiran Guntupalli, Principal Traffic Engineer
Greg Davies, Senior Transportation Planner
Dave Meinhart, Transportation Planning Manager
Nathan Dromme, Senior Transportation Planner

PUBLIC GUEST: Teresa Kim Hayes-Quale, Commissioner – Parks and Recreation Commission

2. APPROVAL OF MEETING MINUTES

Susan Conklu, Senior Transportation Planner introduced Parks and Recreation Commissioner, Teresa Kim Hayes-Quale. A Parks and Recreation Commissioner will be appointed to the Subcommittee at the June 16, 2021 Parks and Recreation Commission meeting. Ms. Quale introduced herself and provided a brief biography. Ms. Conklu introduced new employee, Nathan Dromme, who spoke briefly about his background.

Chair Anderson called for modifications and approval of the minutes. One correction was made.

COMMISSIONER LALL MOVED TO APPROVE THE MINUTES OF THE APRIL 6, 2021 MEETING AS AMENDED. SUBCOMMITTEE MEMBER DAVIS SECONDED THE MOTION, WHICH CARRIED 3-0 WITH CHAIR ANDERSON, SUBCOMMITTEE MEMBER DAVIS AND COMMISSIONER LALL VOTING IN THE AFFIRMATIVE WITH NO DISSENTING VOTES.

3. PATH COUNTERS UPDATE

Susan Conklu, Senior Transportation Planner, noted that only recently have cities begun to add bicycle counts to their data collection programs. The data allows cities to justify system expansion and improvements as well as providing support on grant funding applications. It is a foundation in the evaluation and planning area, which is one of the Five Es in measuring a city's bike friendliness by the League of American Bicyclists. Long-term trends can be analyzed for better connectivity, level of service, mode share and crash rates. It also serves to supplement targeted education and enforcement, which are two of the other five Es. Better data supports changes to federal, regional and local funding splits between various travel modes.

EcoCounter was chosen as the first count vendor for the location of the Crosscut Canal Bridge and Path, installed in summer, 2018. It uses ZELT inductive loops added into the concrete to detect cyclists. The pyro sensor urban posts detects pedestrians. These also show direction of travel for both types of users. In 2020, staff identified eight locations for permanent counters and the City purposed two mobile counters to be deployed in various locations. The City's on-call contractor completed installation of the eight new locations at an average cost of \$22,500 per site for equipment and installation. Collection data for the dates of 4/16/21 through 5/16/21 was reviewed. The City-wide user total was approximately 161,000. A review of individual location data for weekday and weekend periods was provided.

Next steps include:

- Study counts monthly or quarterly
- Provide updates
- MAG Regional Bike and Pedestrian Counts
- Bicycle Friendly Community Application 2023

Chair Anderson agreed with the importance of gathering the data in order to allocate funds to areas requiring the most work.

Commissioner Lall inquired about the cost of automatic counters. Greg Davies, Senior Transportation Planner, stated that the first counter was installed at Crosscut in May of 2018. The City made the decision to move to an automatic retrieval at a per-year cost of \$250 per counter. When the new counters were installed, manual data extraction was deemed to be significantly more cost-effective. Dave Meinhart, Transportation Planning Manager, added that manual collection provides staff with a field site inspection of actual conditions. Ms. Conklu stated that the City is free to reevaluate costs in the future.

In response to a question from Chair Anderson, Mr. Davies stated that data is collected from all counters in one fell swoop. It takes approximately five minutes to retrieve counts for each counter. In response to an additional question from Chair Anderson, Mr. Davies noted that the City has

two mobile counters it can deploy. An urban multi-post costs \$5,600. The mobile units are similarly priced.

4. GREEN BIKE LANE MARKINGS

Kiran Guntupalli, Principal Traffic Engineer, stated that green bike lane markings are the traffic control devices used on roadways to protect bicyclists. The Manual on Uniform Traffic Control Devices (MUTCD), last published in 2009, is the guide used to install traffic control devices in any public right-of-way. Any jurisdiction that wants to use green colored pavement in marked bicycle lanes and in extensions of bicycle lanes through intersections and traffic conflict areas must submit a written request to the Federal Highway Administration (FHWA) Office of Transportation Operations. Jurisdictions using green colored pavement under this interim approval must also agree to maintain an inventory list of all locations where green colored pavement is installed.

Uses for bike lane markings include:

- Green colored pavement as a supplement to other pavement markings
- Lines used to extend a bicycle lane across an intersection or driveway
- Dotted lines used to extend a bicycle lane across the beginning of a turn

Practitioner input has been that these methods ensure that bike lanes and conflict areas are more conspicuous, that they encourage the use of bicycle facilities and increase active transportation. Maintenance concerns include high installation costs, degradation of the appearance over time and the need for frequent, ongoing maintenance.

Key considerations include

- No documented safety benefits
- Application will be based upon an identified need and engineering judgment
- Application shall conform to MUTCD
- Funds to install and maintain

In responses to a question from Chair Anderson, Mr. Guntupalli confirmed that Phoenix and other cities in the West Valley are employing these methods.

Commissioner Lall said he was surprised to see no documented benefits. Mr. Guntupalli clarified that as these are no installations, little documentation is available to confirm benefits. Commissioner Lall noted that Portland, Oregon has used the green markings for several years.

Commissioner Quale cited the locations of Hayden north to Pinnacle Peak, with many bike lanes, fast traffic and right turn lanes, noting that green markings are a great reminder to drivers. Mr. Guntupalli stated that the City's bicycle network is well established; striping plans are frequently reviewed. Green striping will come with significant costs and maintenance. The City will continue to look at options to determine the appropriateness of use. Commissioner Quale noted the prevalence of tourists in the City, who have little to no familiarity with bicycle road-sharing locations. Any additional identification methods would be a positive step.

Chair Anderson asked whether the City is actually considering such implementation or merely doing studies. Mr. Guntupalli stated that the City has not identified any locations for installations at this time, however, they continue to evaluate. A pilot program is not currently planned, but may

be considered in the future. Chair Anderson noted that in February, the Commission had a presentation on the draft bicycle and pedestrian collision report. The correlation from that report in terms of collision locations might be helpful in determining areas that could be observed or tested for comparative data. Mr. Guntupalli said that staff would evaluate this and follow up with the Commission.

Commissioner Davis agreed with Commissioner Lall's comments on Portland. Tempe also uses very evident green markings. It would be surprising to find that so many cities are investing significant capital if they were not proving to be effective; he fully supports a pilot program.

5. OTHER TRANSPORTATION PROJECTS AND PROGRAM STATUS

Ms. Conklu and Greg Davies, Senior Transportation Planner gave a brief update on other projects:

- 70th Street Bikeway Study
- Old Town Bicycle Master Plan
- McDowell Road bike lanes
- Thomas Road from 56th Street to 73rd Street
- 68th Street from Indian School Road to Thomas
- Camelback Road, including sidewalk from Miller Road to Scottsdale Road
- HAWKs at Oak and Scottsdale Road; 86th Street and Thomas Road; Saddleback/Camelback Road; Indian Bend Road at McCormick Park; Hayden Road at sports fields
- Alley maintenance program
- Street light conversion program
- Lighted intersection street signs
- April Bike Month

6. SUBCOMMITTEE IDENTIFICATION OF FUTURE AGENDA ITEMS

Subcommittee Member Davis suggested the possibility of discussion regarding public outreach on improvements to Civic Center Mall. The previous versions of the Master Plan for this space indicated a dedicated bike path through the area. He would like to see a presentation regarding bicycle connectivity and infrastructure.

Ms. Conklu stated that for the August meeting, the Commission will be reviewing the bikeways, trails and pedestrian elements of the Transportation Action Plan.

7. ADJOURNMENT

With no further business to discuss, the meeting adjourned at 9:38 a.m.

Paths & Trails Subcommittee
June 1, 2021
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SUBMITTED BY:

eScribers, LLC

***NOTE:** These are summary action meeting minutes only. A complete copy of the audio/video recording is available at <http://www.scottsdaleaz.gov/boards/Transp.asp>

SCOTTSDALE TRANSPORTATION COMMISSION REPORT



To: Paths and Trails Subcommittee
From: Greg Davies, Senior Transportation Planner
Susan Conklu, Senior Transportation Planner
Subject: Transportation Action Plan
Proposed Changes to the Street, Bikeway and Trail Elements
Meeting Date: August 3, 2021

Action: Discussion - no action requested.

Purpose:

At the March 2021 Transportation Commission meeting, staff introduced some early concepts for consideration in the development of Transportation Action Plan (TAP). Since March, staff has refined and/or identified proposed changes to the street classification, trail and shared-use path systems. In addition, a new designation of Neighborhood Bikeway corridors is proposed for inclusion in the TAP. The proposed changes support two previously discussed focus points: 1) emphasize refinement of the existing transportation system over adding extensive new infrastructure, especially if the new infrastructure will be difficult to implement at a reasonable cost; and 2) emphasize livable streets/community over rapid traffic throughput. At the May 4, 2021, Special Transportation Commission meeting, staff presented proposed changes to the Street, Bikeway, and Trail Elements.

Information:

Street Element – Proposed Street Classification Changes

Staff is proposing that several reductions in street classifications be carried forward into the draft TAP, due to long-term traffic volume trends and 2040 travel demand forecasts. These changes include (in numerical/alphabetical order):

- Major Arterial (6 lanes w/raised median) to Minor Arterial (4 lanes w/raised median)
 - 1) Hayden Road: McKellips to Indian School
- Couplet (5 lanes w/raised median) to Minor Arterial
 - 1) Drinkwater Boulevard
 - 2) Goldwater Boulevard
- Minor Arterial to Minor Collector (2 lanes w/center turn lane or median)
 - 1) Westland Drive: Scottsdale to Hayden
 - 2) McDowell Mountain Ranch Road: 105th to Bell
- Major Collector (4 lanes w/center turn lane or median) to Minor Collector
 - 1) 64th Street – Jomax to Dynamite
 - 2) 92nd Street: Raintree to Frank Lloyd Wright
 - 3) 96th Street: Via Linda to Shea
 - 4) 100th Street: Frank Lloyd Wright to Frank Lloyd Wright
 - 5) 130th/132nd Street: Shea to Via Linda
 - 6) Legend Trail Parkway: Pima to Stagecoach Pass

- 7) McCormick Parkway: Scottsdale to Hayden
- 8) Osborn Road: 68th to Scottsdale
- 9) Raintree Drive: Thompson Peak to Frank Lloyd Wright
- 10) Redfield Road: Raintree to Frank Lloyd Wright
- 11) Thunderbird Road: 89th to Frank Lloyd Wright

All of the proposed changes in street classification listed above would allow for use of either paint diets (converting curb lanes to buffered bike lanes) or road diets (moving curbs inward to reduce the amount of paved surface) to improve bicycling conditions. Regardless of choice, paint diets and road diets can also improve existing pedestrian conditions by moving auto traffic farther from any existing sidewalks.

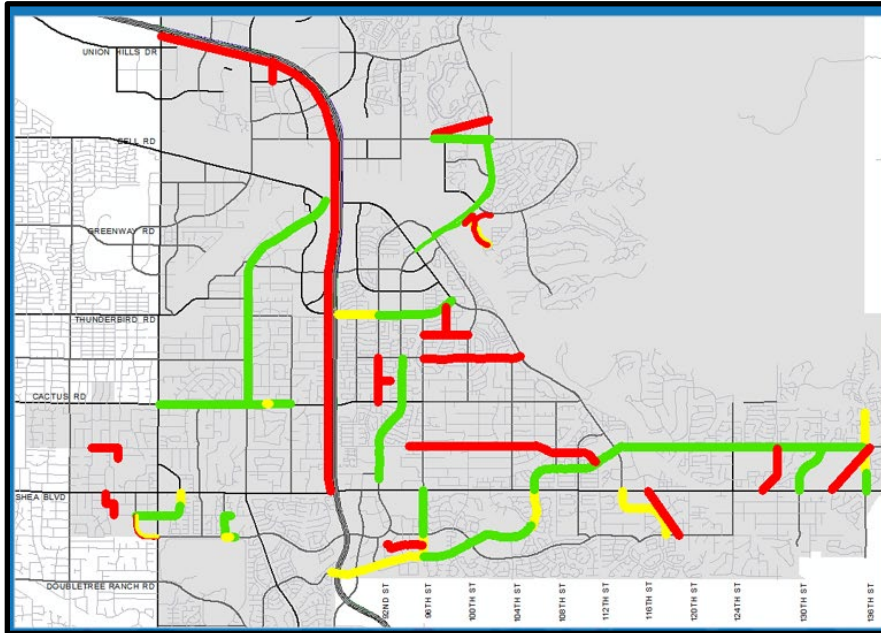
Staff is proposing a second minor collector cross section that does not include or plan for a center turn lane. These roadway segments are prime candidates for improving the comfort level of on-street biking and pedestrian access through the use of buffered bike lanes. A list of thirty-nine potential candidates is included as [Attachment 1](#). Approximately fifty lane miles of minor collectors could be converted to this classification.

Bikeway Element – Proposed Path System Changes

A review of the city's existing and planned shared use path system ([Attachment 2](#)) has been completed by staff. The three primary shared use paths are the north/south running Indian Bend Wash (IBW) Path and the east/west running Arizona Canal Path and the Central Arizona Project (CAP) Canal Path. Adjustments to the non-primary path system were broken into three categories.

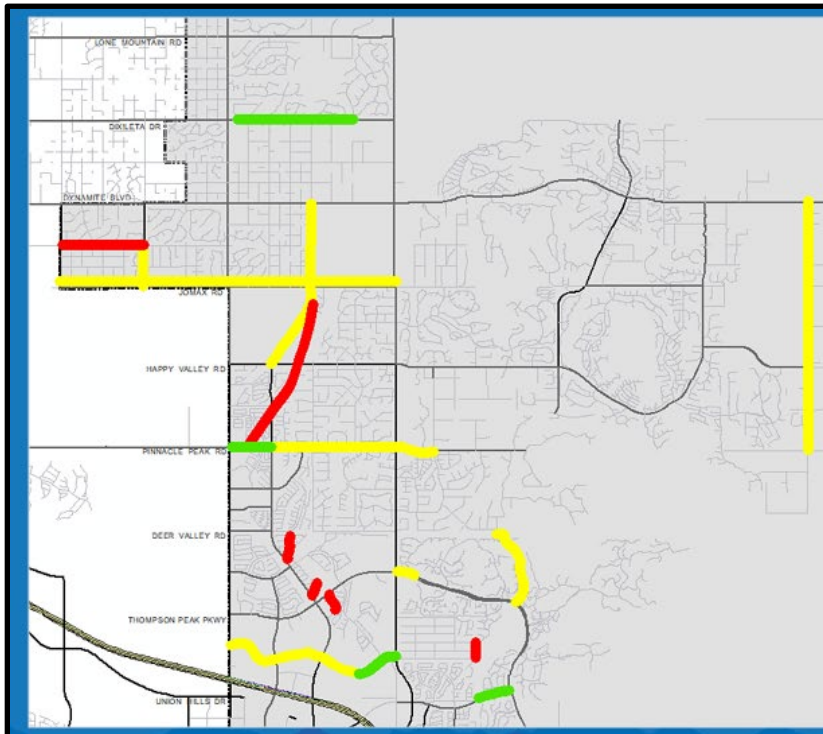
- 1) Additions to the planned system – (22) miles. Most of the proposed additions ([Attachment 3](#)) are completions of side paths in roadway corridors or other existing city rights-of-way and easements. A new regional path corridor using the Jomax Road alignment to connect west into the city of Phoenix is proposed.
- 2) Additions to the existing path system – (21) miles. All of the proposed additions to the existing path system map as side paths are 8-foot or 10-foot-wide sidewalks that are separated from the back of curb in most cases and/or are adjacent to bike lanes. A list of the locations is provided in [Attachment 4](#).
- 3) Deletions from the planned path system – (31) miles. Proposed deletions focused on segments where cost and constructability would be significant factors. Proximity (typically ¼ mile or less) to other path or low vehicular volume on-street bike lanes was also taken into consideration. A list of the proposed deletions is provided in [Attachment 5](#).

Maps of the proposed changes are provided below.



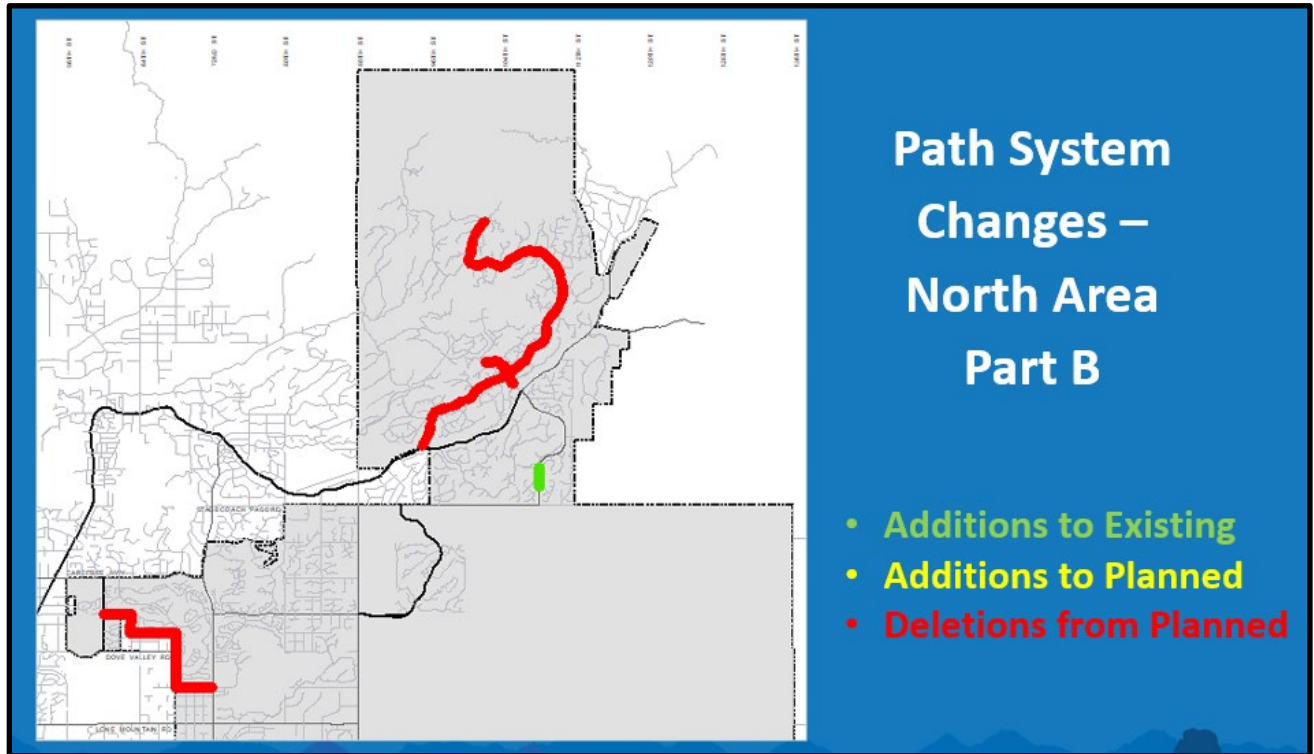
Path System Changes – Central Area

- Additions to Existing
- Additions to Planned
- Deletions from Planned



Path System Changes – North Area Part A

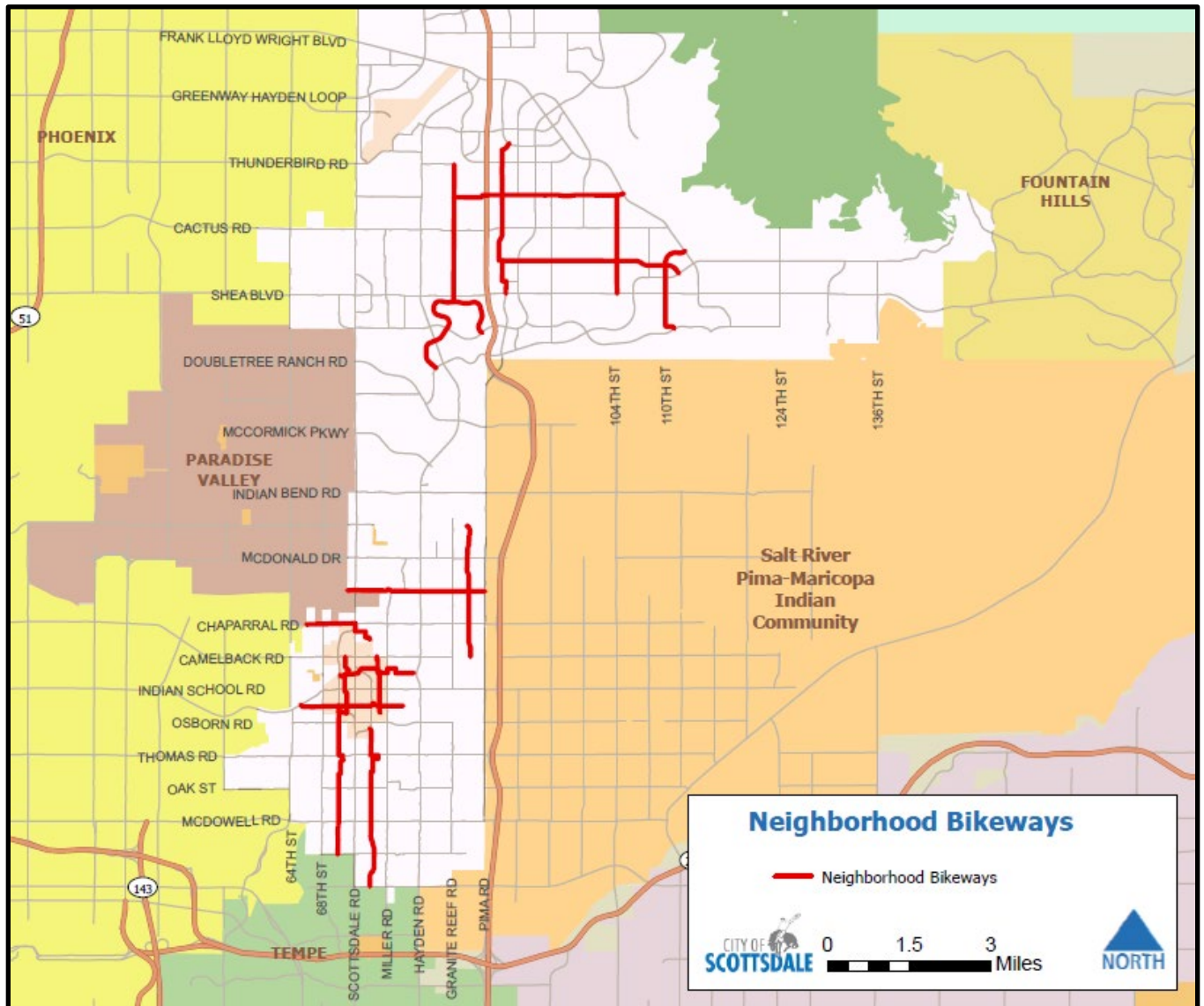
- Additions to Existing
- Additions to Planned
- Deletions from Planned



The net proposed change to the path system is an increase of twelve miles. As noted in the Street Element section above, minor collectors that do not require a center turn lane will also be a focus area for adding improved bike lanes, typically with painted buffers

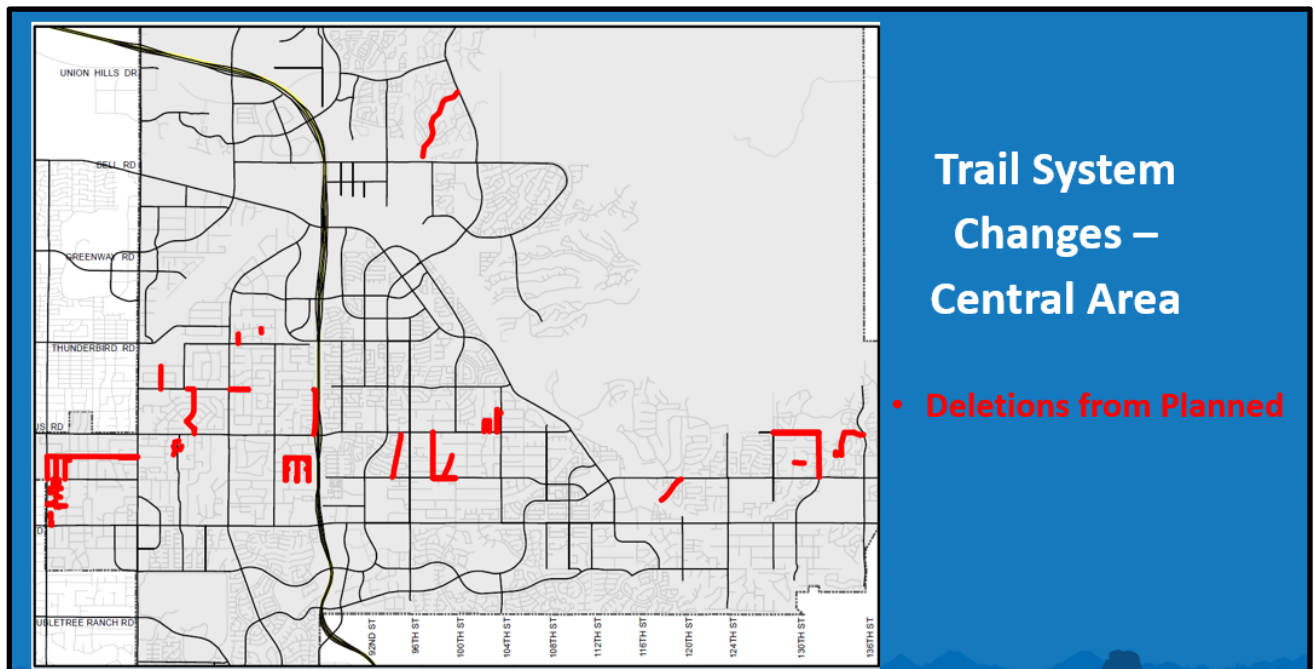
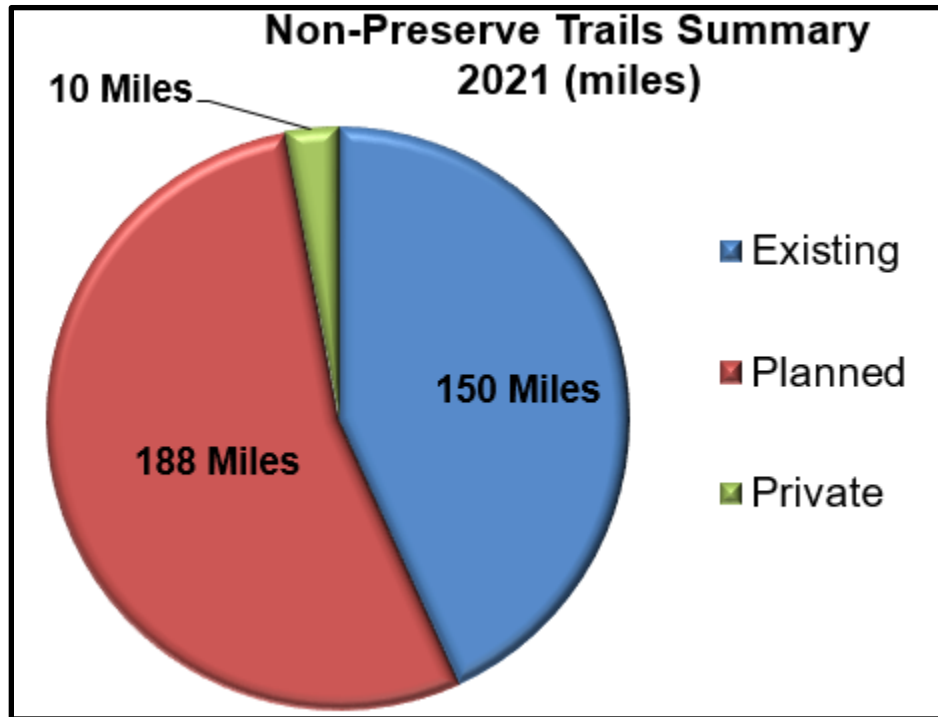
Proposed New Designation – Neighborhood Bikeways

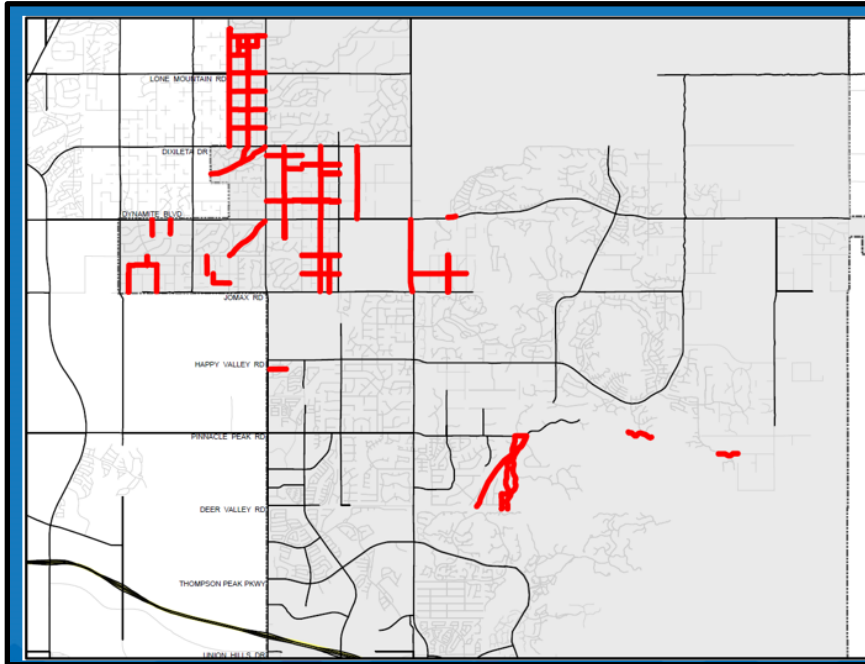
Neighborhood Bikeways are typically found on streets with traffic volumes of under two thousand vehicles per day (vpd) and residential speeds. Often, bikeways contain connections that can only be made by bike or as a pedestrian. They are typically found on the ¼-mile network through neighborhoods but feature destinations such as parks, schools, libraries, community centers, religious centers, medical facilities, and connect to the rest of the bikeway network. These are considered low-stress bike routes for a wide range of users compared to bike lanes along busier streets. These corridors typically have shared lane markings (sharrows) or bike lanes depending on traffic volumes, and can include signage and traffic calming, and enhanced crossings at major streets. [Attachment 6](#) provides a list of approximately 31.8-miles of proposed designated bikeways. A map of the proposed Neighborhood Bikeways is provided below, including the Key Routes from the Old Town Bicycle Master Plan recommendations.



Trail Element – Proposed Trail System Changes

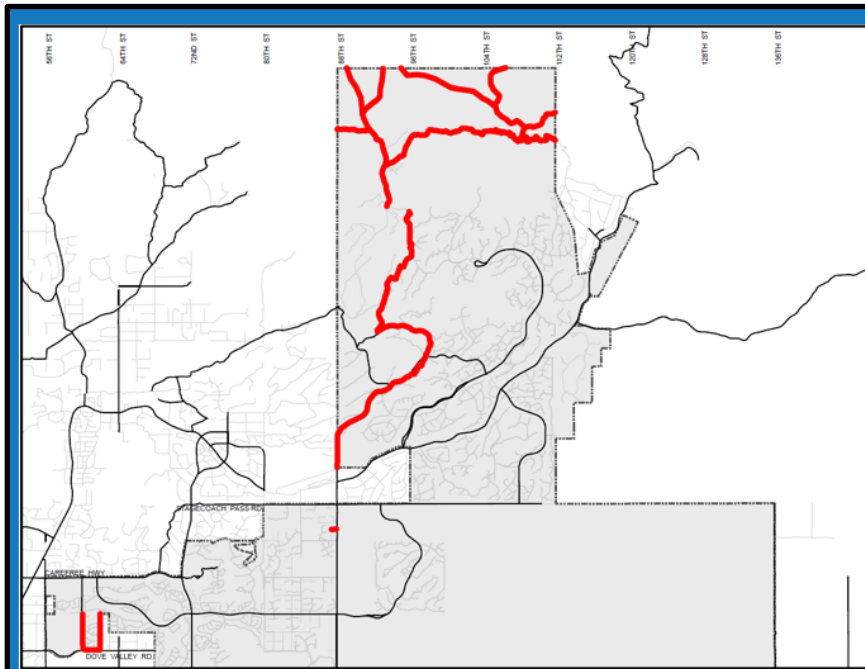
Today, the trail network outside of the McDowell Sonoran Preserve includes 150 miles of existing trails and 188 miles of planned trails (see pie graph below and [Attachment 7](#)). Staff proposes reducing the planned trail network by 54 miles ([Attachment 8](#)). The proposed changes are based on lack of connectivity, network redundancy, infeasibility due to terrain, and/or lack of sufficient public rights-of-way or easements (see maps below).





Trail System Changes – North Area Part A

- Deletions from Planned



Trail System Changes – North Area Part B

- Deletions from Planned

Next Steps:

Continue work on the preparation of the draft TAP. Staff will present the draft elements and implementation plan at the August 4 Special Transportation Commission Meeting. These include draft goals, policies, and performance measures.

[Attachment 1](#): Proposed Minor Collectors with no center turn lane

[Attachment 2](#): 2021 Planned and Existing Path System Map

[Attachment 3](#): Proposed Additions to the Planned Path System

[Attachment 4](#): Proposed Additions to the Existing Path System

[Attachment 5](#): Proposed Deletions from the Planned Path System

[Attachment 6](#): Proposed Neighborhood Bikeways

[Attachment 7](#): 2021 Planned and Existing Trail System Map

[Attachment 8](#): Proposed Deletions from the Planned Trail System

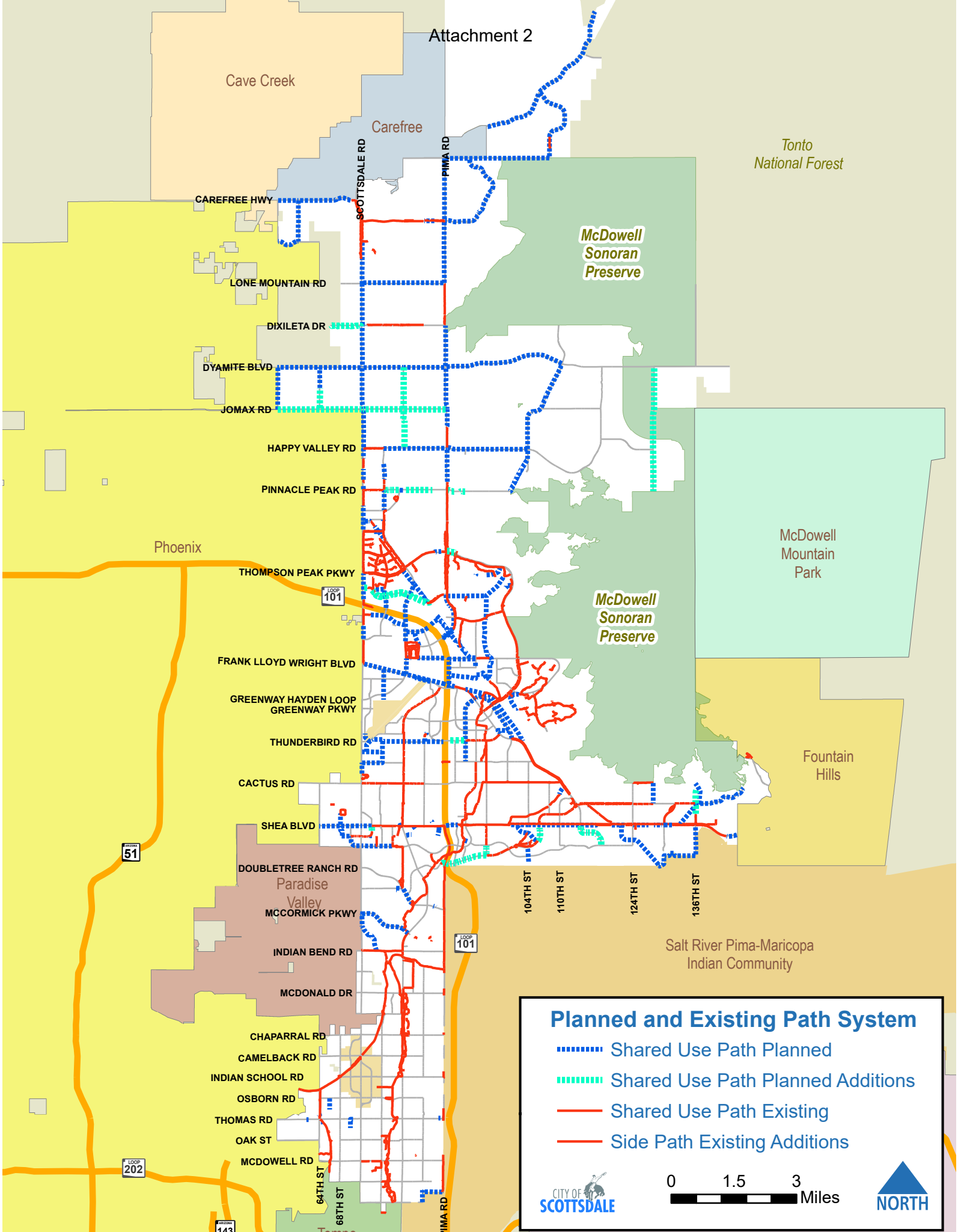
Contacts:

Greg Davies, 480-312-7829, gdavies@scottsdaleaz.gov

Susan Conklu, 480-312-2308, sconklu@scottsdaleaz.gov

Potential Minor Collectors w/no Center Turn Lane

#	Street	From	To	2016 Classification	Proposed	Length (ft.)
1	68th Street	Camelback Road	Chaparral Road	Minor Collector	Minor Collector - no center lane	2,590
2	78th Street	Jackrabbit Road	McDonald Drive	Minor Collector	Minor Collector - no center lane	2,600
3	78th Street	Mountain View Road	Shea Boulevard	Minor Collector	Minor Collector - no center lane	2,550
4	84th Street	Shea Boulevard	Thunderbird Road	Minor Collector	Minor Collector - no center lane	10,350
5	90th Street	Cactus Road	Thunderbird Road	Minor Collector	Minor Collector - no center lane	5,150
6	92nd Street	Sweetwater Avenue	Thunderbird Road	Minor Collector	Minor Collector - no center lane	2,580
7	100th Street	Cactus Road	Camino del Santo	Minor Collector	Minor Collector - no center lane	3,400
8	104th Street	Shea Boulevard	Sweetwater Avenue	Minor Collector	Minor Collector - no center lane	7,800
9	108th Street	Via Linda	Cactus Road	Minor Collector	Minor Collector - no center lane	3,800
10	110th Street	Mountain View Road	Cholla Street	Minor Collector	Minor Collector - no center lane	5,600
11	110th Street/Alameda	Cholla Street	Frank Lloyd Wright Boulevard	Minor Collector	Minor Collector - no center lane	2,200
12	124th Street	Mountain View Road	Shea Boulevard	Minor Collector	Minor Collector - no center lane	2,600
13	128th Street	Southern terminus	Dynamite Boulevard	Minor Collector - no center lane	Minor Collector - no center lane	15,400
14	130th Street	Southern terminus	Shea Boulevard	Minor Collector	Minor Collector - no center lane	3,300
15	136th Street	Dynamite Boulevard	Lone Mountain Road	Minor Collector	Minor Collector - no center lane	10,400
16	Camelback Road	82nd Street	Granite Reef Road	Minor Collector	Minor Collector - no center lane	1,300
17	Chaparral Road	66th Street	Scottsdale Road	Minor Collector	Minor Collector - no center lane	3,900
18	Dove Valley Road	60th Street	64th Street	Minor Collector	Minor Collector - no center lane	2,650
19	Eastwood Lane/Via de Ventura	Scottsdale Road	Doubletree Ranch Road	Minor Collector	Minor Collector - no center lane	5,100
20	Granite Reef Road	Thomas Road	Osborn Road	Minor Collector	Minor Collector - no center lane	2,600
21	Granite Reef Road	McDonald Drive	Arizona Canal	Minor Collector	Minor Collector - no center lane	3,100
22	Grayhawk Drive	Scottsdale Road	Hayden Road	Minor Collector	Minor Collector - no center lane	4,000
23	Jackrabbit Road	Quail Place	Scottsdale Road	Minor Collector	Minor Collector - no center lane	600
24	Jackrabbit Road	Miller Road	Hayden Road	Minor Collector	Minor Collector - no center lane	2,150
25	Miller Road	Chaparral Road	Jackrabbitt Road	Minor Collector	Minor Collector - no center lane	2,650
26	Miller Road	Shea Boulevard	Cactus Road	Minor Collector	Minor Collector - no center lane	5,250
27	Mountain View Road	117th Way	124th Street	Minor Collector	Minor Collector - no center lane	4,000
28	Oak Street/Murray Lane	Miller Road	Granite Reef Road	Minor Collector	Minor Collector - no center lane	5,800
29	Osborn Road	64th Street	68th Street	Minor Collector	Minor Collector - no center lane	2,400
30	Paradise Lane	98th Street	Thompson Peak Parkway	Minor Collector	Minor Collector - no center lane	3,300
31	Pinnacle Peak Road	92nd/93rd Street	Via Ventosa	Minor Collector	Minor Collector - no center lane	5,800
32	Raintree Drive	Frank Lloyd Wright Boulevard	100th Street	Minor Collector	Minor Collector - no center lane	1,350
33	Ranch Gate Road	118th Street	128th Street	Minor Collector	Minor Collector - no center lane	6,900
34	Roosevelt Street	Scottsdale Road	Hayden Road	Minor Collector	Minor Collector - no center lane	5,200
35	Roosevelt Street	Granite Reef Road	Latham Street	Minor Collector	Minor Collector - no center lane	1,100
36	Sweetwater Avenue	Scottsdale Road	Hayden Road	Minor Collector	Minor Collector - no center lane	5,200
37	Sweetwater Avenue	90th Street	Frank Lloyd Wright Boulevard	Minor Collector	Minor Collector - no center lane	9,700
38	Thunderbird Road	Hayden Road	84th Street	Minor Collector	Minor Collector - no center lane	2,600
39	Via Linda	Via de Ventura	Loop 101 underpass	Minor Collector	Minor Collector - no center lane	8,000



Cave Creek

Carefree

Tonto National Forest

McDowell Sonoran Preserve

CAREFREE HWY

SCOTTSDALE RD

PIMA RD

LONE MOUNTAIN RD

DIXILETA DR

DYAMITE BLVD

JOMAX RD

HAPPY VALLEY RD

PINNACLE PEAK RD

Phoenix

THOMPSON PEAK PKWY

101

FRANK LLOYD WRIGHT BLVD

GREENWAY HAYDEN LOOP
GREENWAY PKWY

THUNDERBIRD RD

CACTUS RD

SHEA BLVD

DOUBLETREE RANCH RD

Paradise Valley

MCCORMICK PKWY

INDIAN BEND RD

MCDONALD DR

CHAPARRAL RD

CAMELBACK RD

INDIAN SCHOOL RD

OSBORN RD

THOMAS RD

OAK ST

MCDOWELL RD

64TH ST

68TH ST

PIMA RD

104TH ST

110TH ST

124TH ST

136TH ST

McDowell Mountain Park

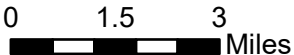
McDowell Sonoran Preserve

Fountain Hills

Salt River Pima-Maricopa Indian Community

Planned and Existing Path System

- ⋯⋯⋯ Shared Use Path Planned
- ⋯⋯⋯ Shared Use Path Planned Additions
- — — Shared Use Path Existing
- - - - Side Path Existing Additions



Additions to Planned Path System

Corridor/Area	From	To	Min. Width	Feet	Notes
136th Street	Desert Cove	Trailhead	8	3,250	Approx. 1200' is built on east side from Shea to Desert Cove
74th Street	North Lane	Shea	8	500	East side; current 6' sidewalk
96th Street	Via Linda	Mt. View	8	1,250	Connect to existing side path on west side north of Mt. View
114th/117th Street	Mountain View	Shea	8	4,400	Connects to Shea/FLW underpass
Desert Canyon School vicinity	south	north	8	1,900	Reconfigure using existing 25' path and trail easement west of ballfields
Thunderbird Road	Loop 101	92nd	8	2,100	Less than 8' on north side starts at trail crossing; 8' continues on south side to park access
Via Linda	87th Place	96th	8	5,900	Use north side to connect to Pima Path on west end and Via Linda north side path on east end
Via Linda	Lakeview Dr.	Shea	8	2,050	Consider shifting to south/east side at Lakeview signal rather than at Shea; fewer slope and utility issues; matches further north
64th Street	Jomax	Pinnacle Vista	8	2,600	Extend planned path further south
128th Street	Southern end	Rio Verde Dr.	8	15,600	Approx. 3,900' is in Preserve boundary
Dixileta Drive	67th	Pima	8	13,800	Approx. 7200' in place on north side east of Scottsdale Road; possibly shift to south side west of Scottsdale (higher density)
Hayden Road	Happy Valley	Dynamite	10	10,800	Along State Land that was rezoned within the Preserve boundary
Jomax Road	56th	Pima	10	21,100	Long-range regional connection to Cave Creek Rd and Sonoran Blvd along lower volume road
Legacy Boulevard/Hualapai Drive	Scottsdale	Powerline corridor	8	11,400	Approx. 1700' is built on the north side and 2500' is built on the south side
Pinnacle Peak Road	Miller	92nd	8	10,300	8' exists on south side from Scottsdale to Miller; 8' exists on south side from approx. 1,550' to 550' west of Pima
Reata Pass Wash corridor	TPP	98th St cul-de-sac	10	5,400	City owns the drainageway through DC Ranch
Thompson Peak Parkway	Pima	90th	10	1,200	Connect north side of underpass to Pima Road; currently unpaved trail
				22	Miles

Additions to Existing Path System

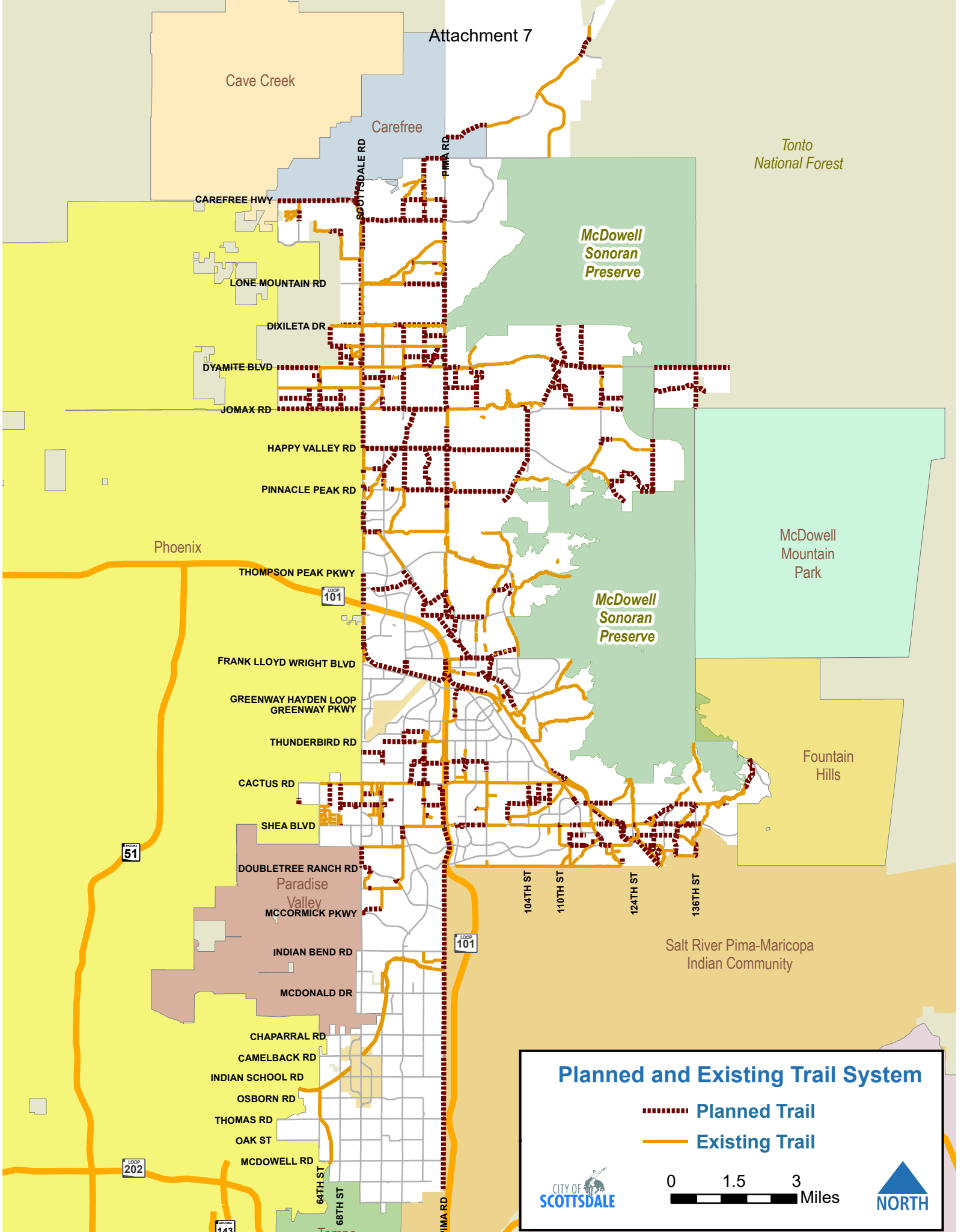
Corridor/Area	From	To	Min. Width	Feet	Notes
78th Street	Mountain View	Gold Dust	8	1,250	8' side path exists and connects to Mountain View underpass to east (approx. 330' on north side of Mt. View to widen)
92nd/94th Street	IBW Path	Sweetwater	8	7,700	8' side path is continuous on west side from Upper Camelback Walk portion of IBW north to Sweetwater bikeway
96th Street	Mt. View	Shea	8	2,500	8' side path is continuous on west side
130th/132nd Street	Shea	Via Linda	8	3,050	Already have a sidewalk approx. 8' wide for entire length on east side
136th Street	Shea	Desert Cove	8	1,200	Approx. 1200' is built on east side from Shea to Desert Cove
Cactus Road	Scottsdale	84th	8	7,800	8' side path is continuous on north side, with a 300'-long narrow section approx. 950' east of Hayden
Gold Dust Ave./74th St.	70th	North Lane	8	3,200	8' side path is continuous on south/east side; back of curb but adjacent to bike lane; connection to Gold Dust east
Gold Dust Avenue	78th	79th Way	8	600	All but a few feet on the south already at 8'
Hayden Road	Cactus	Redfield	8	6,500	8' side path is continuous on east side
Hayden Road	Redfield	FLW	8	9,000	8' side path is continuous on west/north side
Thompson Peak Parkway	FLW	Bell Road	8	8,200	Continuous 8' side path in place on south/east side
Thompson Peak Parkway	100th	Bell Road	8	7,350	Continuous 8' side path in place on north/west side
Thunderbird Road	92nd	FLW	8	4,500	8' side path is continuous on north side
Via Linda	124th	128th	8	2,550	8-10' side path is continuous on south side
Via Linda	132nd	136th	8	2,550	8' side path is continuous on north side
Via Linda	FLW	124th	8	6,850	Continuous 8' side path on north side; also continuous 8' side path on south side (except for CAP bridge)
Via Linda	Shea	FLW	8	6,050	8' side path is continuous on east/south side
Via Linda	96th	Mt. View Lake Dr.	8	3,600	8' side path is continuous on north side; connects to Scottsdale Ranch Park path
Via Linda	Scottsdale Ranch Park	Lakeview Dr.	8	1,200	8' side path is continuous on north side
Dixileta Drive	72nd Way	Ensueno	8	7,200	Approx. 7200' of 8' side path in place on north side east of Scottsdale Road
Hualapai Drive	Powerline corridor	Pima	10	2,500	10' exists on south side along Water Campus
Legacy Boulevard	Reata Pass Wash	TPP	8	2,000	8' side path already exists on north side
Lone Mountain Parkway	Via Cortana	Standing Stones	8	1,300	8' side path already exists on east side
Pinnacle Peak Road	Scottsdale	Miller	8	10,300	Connect to existing 8' side path on south side west of Miller
				21	Miles

Deletions from Planned Path System

Corridor/Area	From	To	Feet	Notes
68th Place	Mescal Park	Cholla	600	Neighborhood residential street with only 7 nearby houses
68th Way/68th Place	Gold Dust	Shea	1,400	Provides improved access to area with Chaparral HS on-street parking issues
82nd Street alignment	Mayo	Loop 101	1,350	AXON development reoriented the planned street network
92nd Alignment	Cactus	Thunderbird	5,350	Nearby buffered bike lanes and IBW path; keep trail only
128th/Wash Corridor	Shea	Via Linda	3,050	Planned 124th and 132nd options work better
Aztec Park and school area	96th	100th	4,740	Eliminate all back yard-type alignments
Cholla Street	94th Way	Via Linda	12,270	Bikeway instead
Cholla Street	66th	68th Place	1,500	Rural neighborhood with trail, traffic calming and bike lanes
Desert Canyon School vicinity			3,000	Reconfigure using existing 25' path and trail easement west of ballfields
Larkspur alignment	92nd	93rd	850	Proposing elimination of future path this segment would connect with; keep trail only
Mayo Clinic/Wash Corridor	Shea	Cactus	6,200	Use 136th St. corridor instead
Mt. View/70th St.	Scottsdale	Gold Dust	0	Same length; shift alignment to north/east side of street; Chaparral HS bike parking is off Gold Dust
Pima Freeway Corridor	Shea	Bell	21,150	West side
Pima Freeway Corridor	Bell	Scottsdale	12,900	South side
Powerline	Mountain View	Shea	2,700	Use 114th/117th instead
Sweetwater Avenue	96th	FLW	5,700	Buffered bike lanes in place; very low volume street
Thompson Peak Parkway	CAP Basin Bridge	800' NE	800	Already have side path on TPP
Via Linda	124th	128th	2,550	8-10' side path is continuous on south side
Via Linda	132nd	136th	2,550	8' side path is continuous on north side
Via Linda	Mt. View Rd.	Lakeview Dr.	3,900	8-10' side path is continuous on north side
Villages at McCormick Ranch	91st	96th	2,350	Private path; no evidence of public easement for path/sidewalk
Windgate Ranch	Bell	TPP	3,600	Route using north side of Bell; easemnt does not allow paving
96th Street alignment	Hualapai	Diamond Rim	1,050	Only connects to 4 parcels
Desert Mountain gated	Private	Private	31,600	All paths behind gates
Grayhawk gated	Private	Private	3,800	Behind gates east of Hayden/Miller and north of TPP
Pinnacle Vista	56th	64th	5,200	Use Jomax corridor instead
Rawhide Wash	Pinnacle Peak	Jomax	11,600	Sandy bottom wash with floodwalls blocking ingress/egress
Terravita Trail/NOAS			12,550	Trail easement is within NOAS - no pavement allowed in NOAS
			31 Miles	

Proposed Neighborhood Bikeways

Street	From	To	Mileage
70th Street	Continental Drive	2nd Street	2.4
	(potential extension)		0.4
74th Street	McKellips Road	Thomas Road	2.0
	(potential extension)		0.5
84th Street	Shea Boulevard	Thunderbird Road	2.5
86th Street	Camelback Road	Lincoln Drive	2.0
	(potential extension)		0.5
Arabian Trail	Via Linda	Mountain View Road (east)	2.5
90th Street	Shea Boulevard	Redfield	2.4
104th Street	Shea Boulevard	Sweetwater	1.5
110th Street	Mountain View Road	Frank Lloyd Wright	1.5
Jackrabbit	Scottsdale Road	87th Terrace	2.0
Cholla	89th Street	Via Linda	2.8
Sweetwater	84th Street	Frank Lloyd Wright	2.6
2nd Street	Indian Bend Wash	Crosscut Canal	1.6
Glenrosa Street/5th Avenue	Indian Bend Wash	Arizona Canal	1.4
Chaparral Road/Rancho Vista Drive	64th Street	Arizona Canal	1.2
70th Street/Marshall Way	Osborn Road	Camelback Road	1.1
75th Street	2nd Street	Camelback Road	0.9
		Total	31.8



Cave Creek

Carefree

Tonto National Forest

McDowell Sonoran Preserve

CAREFREE HWY

SCOTTSDALE RD

PIMA RD

LONE MOUNTAIN RD

DIXILETA DR

DYAMITE BLVD

JOMAX RD

HAPPY VALLEY RD

PINNACLE PEAK RD

Phoenix

THOMPSON PEAK PKWY

101

FRANK LLOYD WRIGHT BLVD

GREENWAY HAYDEN LOOP
GREENWAY PKWY

THUNDERBIRD RD

CACTUS RD

SHEA BLVD

DOUBLETREE RANCH RD

Paradise Valley

MCCORMICK PKWY

INDIAN BEND RD

MCDONALD DR

CHAPARRAL RD

CAMELBACK RD

INDIAN SCHOOL RD

OSBORN RD

THOMAS RD

OAK ST

MCDOWELL RD

64TH ST

68TH ST

Tempe

143

McDowell Mountain Park

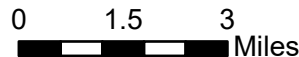
McDowell Sonoran Preserve

Fountain Hills

Salt River Pima-Maricopa Indian Community

Planned and Existing Trail System

- Planned Trail
- Existing Trail



Proposed Deletions from Planned Trail System

Trail Name	From Location	To Location	Classification	Length Miles
Church Wash Trail	Adobe Dr	Church Rd	Secondary	0.887731908
Church Wash Trail	Church Rd	Pinnacle Peak Rd	Secondary	0.305567852
133rd Wy Trail	Summit Dr	Wash	Neighborhood	0.051673549
Chiricahua Wash Trail	Chiricahua Pass Rd	Mountains	Secondary	1.43108997
North Pima Trail	Northview Ln	Madera Dr	Secondary	2.90114908
Northern Trail	96th St	104th St	Secondary	1.445879234
Northern Trail	104th St	112th St	Secondary	1.80793367
Northern Trail	Northern Trail	Old Mine Trail	Secondary	0.221955764
Via Ventosa Trail	Cross Canyon Wy	Pinnacle Peak Rd	Secondary	1.108608145
Jenan Trail Connector	Jenan Dr	Easement	Neighborhood	0.041592066
Jenan Trail Connector	Jenan Dr	Easement	Neighborhood	0.041158944
Jenan Trail Connector	Jenan Dr	Easement	Neighborhood	0.041894801
Whispering Wind Trail	Scottsdale Rd	Wash	Neighborhood	0.225565461
83rd St Trail	Redfield St	Property Line	Neighborhood	0.04389873
Gray Trail	Thunderbird Rd	Property Line	Neighborhood	0.101119601
Church Rd Trail	Church Wash Trail	Via Ven Tosa	Secondary	0.411711228
Papago Trail	Granite Reef Rd	Pima Path	Neighborhood	1.003353052
SR L101 Trail	Cactus Rd	Sweetwater Ave	PRIMARY	0.499970829
Poinsettia Trail	129th Wy	131st St	Neighborhood	0.106403328
Chiricahua Wash Trail	Chiricahua Trail	Mountains	Secondary	0.682133075
Chiricahua Trail	Larry Hughes	Chiricahua Pass	Secondary	2.436119848
Dynamite Blvd Trail	83rd St	Bridge	Secondary	0.10457032
Church Rd Trail	Adobe Dr	Church Wash Trail	Secondary	0.878357191
Old Mine Rd Trail	Chiricahua Pass Rd	City Boundary	Secondary	3.095920655
134th St Trail	Wash	Property Line	Neighborhood	0.037242169
Chiricahua Wash Trail	Chiricahua Wash Trail	City Boundary	Secondary	0.453565746
Chiricahua Wash Trail	Chiricahua Trail	Mountains	Secondary	0.717439867
Paradise Dr Trail	Miller Rd	Easement	Neighborhood	0.04758282
132nd St Trail	Via Linda	Cactus Rd Alignment	Neighborhood	0.489184879
Cactus Rd Trail	128th St	132nd St	Neighborhood	0.494482734
94th Wy Wash Trail	Cholla St	Cortez St	Neighborhood	0.104664337
62nd St Trail	Dove Valley Rd	Evening Glow Dr	Neighborhood	0.492093545
Redbird Trail	90th St	95th St	Neighborhood	0.731780009
92nd St Trail	Jomax Rd	Pinnacle Vista Dr	Neighborhood	0.500994318
Ashler Hills Dr Trail	68th St	Scottsdale Rd	Neighborhood	0.487514552
68th St	Dixeleta Dr	Lone Mountain Rd	Neighborhood	0.998741615
Calle De Las Estrellas	69th St	71st St/Ashler Hills	Neighborhood	0.484155514
65th St Trail	65th St Culdesac	Easement	Neighborhood	0.028399922
Desert Cove Ave Trail	65th St	Easement	Neighborhood	0.04213885
Desert Cove Ave Trail	66th St	Easement	Neighborhood	0.068244125
70th St Trail	Lone Mountain Rd	Calle De Las Estrellas	Neighborhood	0.369975523
Jenan Dr Trail	64th St	Scottsdale Rd	Neighborhood	0.78485387
Sweetwater Ave Trail	Hayden Rd	Easement	Neighborhood	0.194434938
Carriage Trail	66th St	Scottsdale Rd	Neighborhood	0.84555957
Carriage Trail	Carriage Trail	Dixileta Dr	Neighborhood	0.246930465
133rd Wy Trail	Summit Dr	Wash	Neighborhood	0.051673549
94th Wy Wash Trail	Poinsettia Dr	Cactus Rd	Neighborhood	0.228930558
94th Wy Trail	Cortez St	Cortez St	Neighborhood	0.085590795
60th St Trail	Palomino Ln	Seven Palms Dr	Neighborhood	0.475030381

Proposed Deletions from Planned Trail System

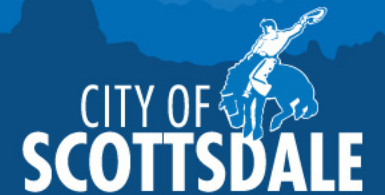
Trail Name	From Location	To Location	Classification	Length Miles
Dove Valley Rd Trail	60th St	62nd St	Neighborhood	0.233274991
98th St Trail	Cholla St	Cactus Rd	Neighborhood	0.488714543
94th Wy Wash Trail	Cortez St	Poinsettia Dr	Neighborhood	0.045555712
78th St Trail	Dynamite Blvd	Dixileta Dr	Neighborhood	0.983116741
82nd St Trail	Dynamite Blvd	Dixileta Dr	Neighborhood	0.989584987
Dale Ln Trail	76th St	Hayden Rd	Neighborhood	0.374446847
Morning Vista Ln Trail	Scottsdale Rd	76th St	Neighborhood	0.484490827
Morning Vista Ln Trail	78th St	Hayden Rd	Neighborhood	0.251015435
247 Trail	74th St	76th St	Neighborhood	0.2352871
Balancing Rock Rd	78th St	Hayden Rd	Neighborhood	0.252149006
74th St Trail	Oberlin Wy	Dynamite Blvd	Neighborhood	0.240975258
78th St Trail	Jomax Rd	Dynamite Blvd	Neighborhood	0.986306574
Redbird Rd Trail	76th St	Hayden Rd	Neighborhood	0.507445731
98th Wy Wash Trail	Cholla St	Jenan Dr	Neighborhood	0.257518825
Corvalian Estates	Shea Blvd/64th St	Cholla St/66th St	Neighborhood	0.039848992
Corvalian Estates	Shea Blvd/64th St	Cholla St/66th St	Neighborhood	0.037827627
Corvalian Estates	Shea Blvd/64th St	Cholla St/66th St	Neighborhood	0.031378002
Corvalian Estates	Shea Blvd/64th St	Cholla St/66th St	Neighborhood	0.02473643
103.5 St Trail	Cactus Rd	Larkspur Dr	Neighborhood	0.240029652
Larkspur Tr	Easement	104th St	Neighborhood	0.033628174
102nd St Trail	Cactus Rd	Easement	Neighborhood	0.289788823
Corvalian Estates	Shea Blvd/64th St	Cholla St/66th St	Neighborhood	0.039254976
Corvalian Estates	Shea Blvd/64th St	Cholla St/66th St	Neighborhood	0.043253638
Corvalian Estates	Shea Blvd/64th St	Cholla St/66th St	Neighborhood	0.04016359
Mescal St Trail	Mescal St Culdesac	Easement	Neighborhood	0.023234888
68th St Trail	Lone Mountain Rd	Ashler Hills Dr	Neighborhood	0.495877869
Lone Mountain Dr	68th St	Scottsdale Rd	Neighborhood	0.488451568
134th St Trail	Summit Dr	136th St	Neighborhood	0.430159152
Jenan Dr Trail	70th Pl	Scottsdale Rd	Neighborhood	0.19974454
64th St Trail	Cholla St	Jenan Dr	Neighborhood	0.246026617
76th St Trail	Cactus Rd	Sweetwater Ave	Neighborhood	0.632627461
74th St Trail	Sweetwater Ave	Sutton Dr	Neighborhood	0.246461807
68th St Trail	Ashler Hills Dr	Lonesome Tr	Neighborhood	0.104153129
70th St Trail	Calle De Las Estrellas	Ashler Hills Dr	Neighborhood	0.119358092
Pinnacle Vista Dr Trail	76th St	Hayden Rd	Neighborhood	0.504316203
Sonoran Trail	122nd St	124th St	Secondary	0.280051582
Troon Trail	Easement Boundary	Easement Boundary	Secondary	0.371660021
64.5 St Trail	Easement	Cholla St	Neighborhood	0.043828316
Via Linda Estates	BOR Property Line	Via Linda Rd	Secondary	0.285505777
Via Linda Estates	CAP	BOR Property Line	Secondary	0.032376023
Cholla St Trail	98th St	100th St	Neighborhood	0.241294352
69th St Trail	Ranch Rd	Calle De Las Estrellas	Neighborhood	0.121893713
Ranch Road Trail	68th St	70th Street	Neighborhood	0.254836259
70th St Trail	Dixileta Dr	Lone Mountain Rd	Neighborhood	0.999466118
Windstone Trail	68th St	Scottsdale Rd	Neighborhood	0.487514552
Montgomery Rd Trail	68th St	Scottsdale Rd	Neighborhood	0.491439935
Wildcat Dr Trail	68th St	Scottsdale Rd	Neighborhood	0.491966079
74th St Trail	Dynamite Blvd	Dixileta Dr	Neighborhood	0.980198749
Windgate Trail	Windgate Trail	Thompson Peak Pkwy	Secondary	0.872926625

Proposed Deletions from Planned Trail System

Trail Name	From Location	To Location	Classification	Length Miles
Corvalian Estates	Shea Blvd/64th St	Cholla St/66th St	Neighborhood	0.04351281
Desert Hills Trails	84th St /Cholla St	87th Pl/Cholla St	Neighborhood	1.060046256
65.5 St Trail	Cholla St	Jenan Dr	Neighborhood	0.253805917
64.5 St Trail	Cholla St	Jenan Dr	Neighborhood	0.203812672
132nd St Trail	Via Linda	Cactus Rd Alignment	Neighborhood	0.489184879
79th St Trail	Jomax Rd	Pinnacle Vista Dr	Neighborhood	0.492059799
Baraca Trail	87th Pl	Pima Rd	Secondary	0.066059233
Morning Vista Ln Trail	76th St	78th St	Neighborhood	0.239729205
Dale Ln Trail	Scottsdale Rd	75th St	Neighborhood	0.363261956
Dale Ln Trail	75th St	76th St	Neighborhood	0.118777216
Dale Ln Trail	79th St	Hayden Rd	Neighborhood	0.118300876
Cactus Rd Trail	128th St	132nd St	Neighborhood	0.494482734
Pima Rd Trail	Jomax Rd	Dynamite Rd	Primary	0.98638815
Quail Track Trail	57th St	60th St	Neighborhood	0.385311081
60th St Trail	Jomax Rd	Quail Track Dr	Neighborhood	0.364013164
59th St Trail	QUail Tack Dr	Pinnacle Vista Dr	Neighborhood	0.110241469
57th Street Trail	Jomax Rd	Redbird Rd	Neighborhood	0.242135763
Saguaro Trail	68th St	Scottsdale Rd	Neighborhood	0.683459646
61st Pl	Calle De Mandel	Dynamite Blvd	Neighborhood	0.188886324
59th Pl Trail	Calle De Mandel	Dynamite Blvd	Neighborhood	0.206967091
65th Pl Trail	Redbird Rd	Pinnacle Vista Dr	Neighborhood	0.239209862
Cavedale Trail	Redbird Rd	68th St	Neighborhood	0.350507564
57th Street Trail	Redbird Rd	Quail Track Dr	Neighborhood	0.114215353
			Total Miles	53.74609388

Transportation Action Plan

Paths and Trails Subcommittee – August 3, 2021



Proposed Street Classification Changes

Points of Emphasis

- 1) Refinement of the existing transportation system over adding extensive new infrastructure
 - Especially if the new infrastructure will be difficult to implement at a reasonable cost
- 2) Livable streets/community over rapid traffic throughput

Potential Street Classification Changes – Reductions in Number of Travel Lanes (Arterials)

- **Major Arterial to Minor Arterial**
 - 1) Hayden Road: McKellips to Indian School
- **Couplet to Minor Arterial**
 - 1) Goldwater Boulevard
 - 2) Drinkwater Boulevard
- **Minor Arterial to Minor Collector**
 - 1) Westland Drive: Scottsdale to Hayden
 - 2) McDowell Mountain Ranch Road: 105th to Bell Raod

Potential Street Classification Changes (cont'd)

- **Major Collector (4 travel lanes) to Minor Collector (2 travel lanes)**
 - 1) 64th Street: Jomax to Dynamite
 - 2) 92nd Street: Raintree to Frank Lloyd Wright
 - 3) Raintree Drive: Thompson Peak to Frank Lloyd Wright
 - 4) Redfield Road: Raintree to Frank Lloyd Wright
 - 5) Thunderbird Road: 89th to Frank Lloyd Wright
 - 6) 100th Street: Frank Lloyd Wright to Frank Lloyd Wright
 - 7) 96th Street: Via Linda to Shea
 - 8) 130th/132nd Street: Shea to Via Linda
 - 9) Legend Trail Parkway: Pima to Stagecoach Pass
 - 10) McCormick Parkway: Scottsdale to Hayden
 - 11) Osborn Road: 68th to Scottsdale

Streets with long-term traffic volumes counted at 10%-60% of minor collector capacity (15,000-18,000 vehicles per day based on side access, signal spacing and intersection capacity)

Changes would allow for improved cycling and pedestrian comfort; restriping can often be coordinated with future pavement preservation treatments

Opportunities Created Through Street Reclassifications (paint diet coordinated with pavement treatment)



Major Collector
124th Street - Before



Minor Collector
124th Street - After

Opportunities Created Through Street Reclassifications (road diet)



Major Collector
96th Street - Before



Minor Collector
96th Street - After

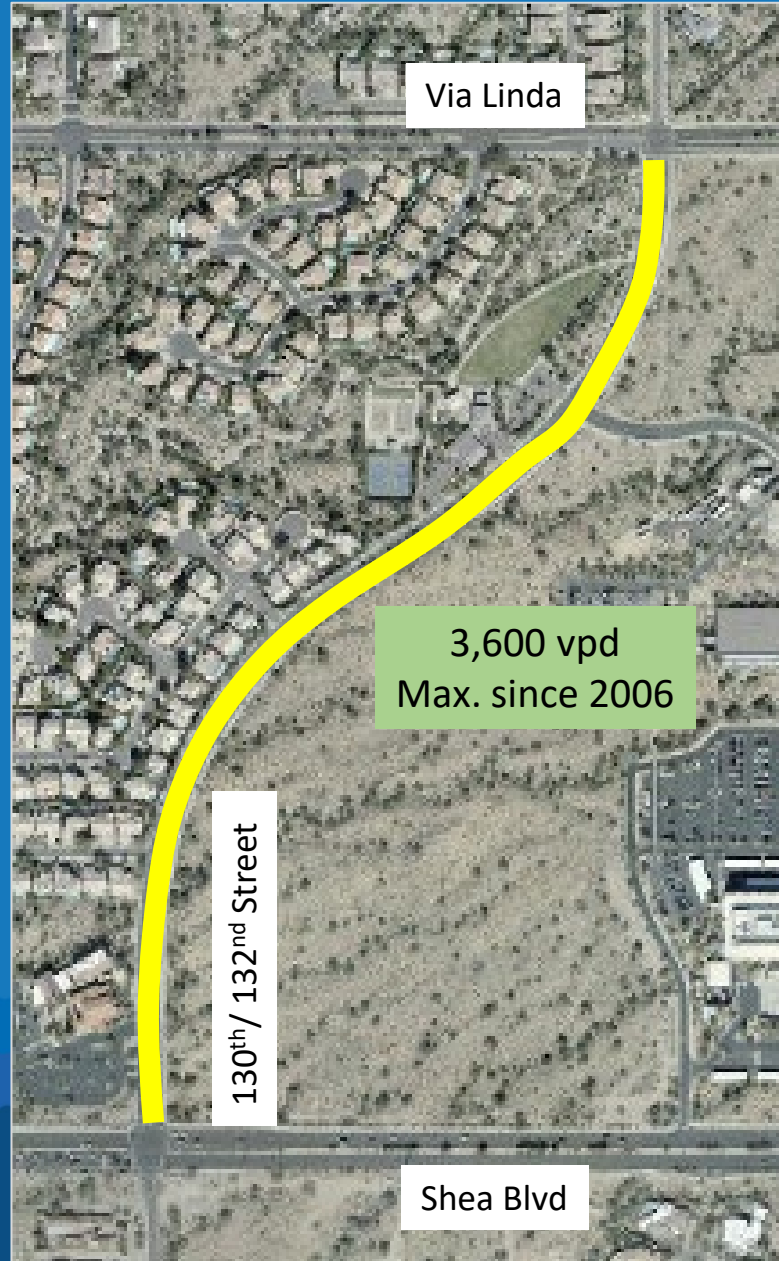
Major Collectors to Minor Collectors – Horizon Area



Highest volumes 2006-2018
(vehicles per day)

- 1) 92nd Street – 2,400 vpd
- 2) 100th Street
 - 9,000 north of Thompson Peak
 - 6,900 south of Thompson Peak
- 3) Raintree Drive – 9,000 vpd
- 4) Redfield Road – 2,200
- 5) Thunderbird Road
 - 6,900 vpd west of 96th Street
 - 4,600 vpd east of 96th Street

Major Collector to Minor Collector





Major Collector to Minor Collector



Major Collector to Minor Collector



Street	From	To
68th Street	Camelback Road	Chaparral Road
78th Street	Jackrabbit Road	McDonald Drive
78th Street	Mountain View Road	Shea Boulevard
84th Street	Shea Boulevard	Thunderbird Road
90th Street	Cactus Road	Thunderbird Road
92nd Street	Sweetwater Avenue	Thunderbird Road
100th Street	Cactus Road	Camino del Santo
104th Street	Shea Boulevard	Sweetwater Avenue
108th Street	Via Linda	Cactus Road
110th Street	Mountain View Road	Cholla Street
110th Street/Alameda	Cholla Street	Frank Lloyd Wright Boulevard
124th Street	Mountain View Road	Shea Boulevard
128th Street	Southern terminus	Dynamite Boulevard
130th Street	Southern terminus	Shea Boulevard
136th Street	Dynamite Boulevard	Lone Mountain Road
Camelback Road	82nd Street	Granite Reef Road
Chaparral Road	66th Street	Scottsdale Road
Dove Valley Road	60th Street	64th Street
Eastwood Lane/Via de Ventura	Scottsdale Road	Doubletree Ranch Road

Minor Collectors with No Center Turn Lane

Changes in striping typically coordinated with pavement treatment

Granite Reef Road	Thomas Road	Osborn Road
Granite Reef Road	McDonald Drive	Arizona Canal
Grayhawk Drive	Scottsdale Road	Hayden Road
Jackrabbit Road	Quail Place	Scottsdale Road
Jackrabbit Road	Miller Road	Hayden Road
Miller Road	Chaparral Road	Jackrabbitt Road
Miller Road	Shea Boulevard	Cactus Road
Mountain View Road	117th Way	124th Street
Oak Street/Murray Lane	Miller Road	Granite Reef Road
Osborn Road	64th Street	68th Street
Paradise Lane	98th Street	Thompson Peak Parkway
Pinnacle Peak Road	92nd/93rd Street	Via Ventosa
Raintree Drive	Frank Lloyd Wright Boulevard	100th Street
Ranch Gate Road	118th Street	128th Street
Roosevelt Street	Scottsdale Road	Hayden Road
Roosevelt Street	Granite Reef Road	Latham Street
Sweetwater Avenue	Scottsdale Road	Hayden Road
Sweetwater Avenue	90th Street	Frank Lloyd Wright Boulevard
Thunderbird Road	Hayden Road	84th Street
Via Linda	Via de Ventura	Loop 101 underpass

Minor Collectors with No Center Turn Lane (cont'd)

Changes in striping typically coordinated with pavement treatment

Opportunities Created With No Center Turn Lane

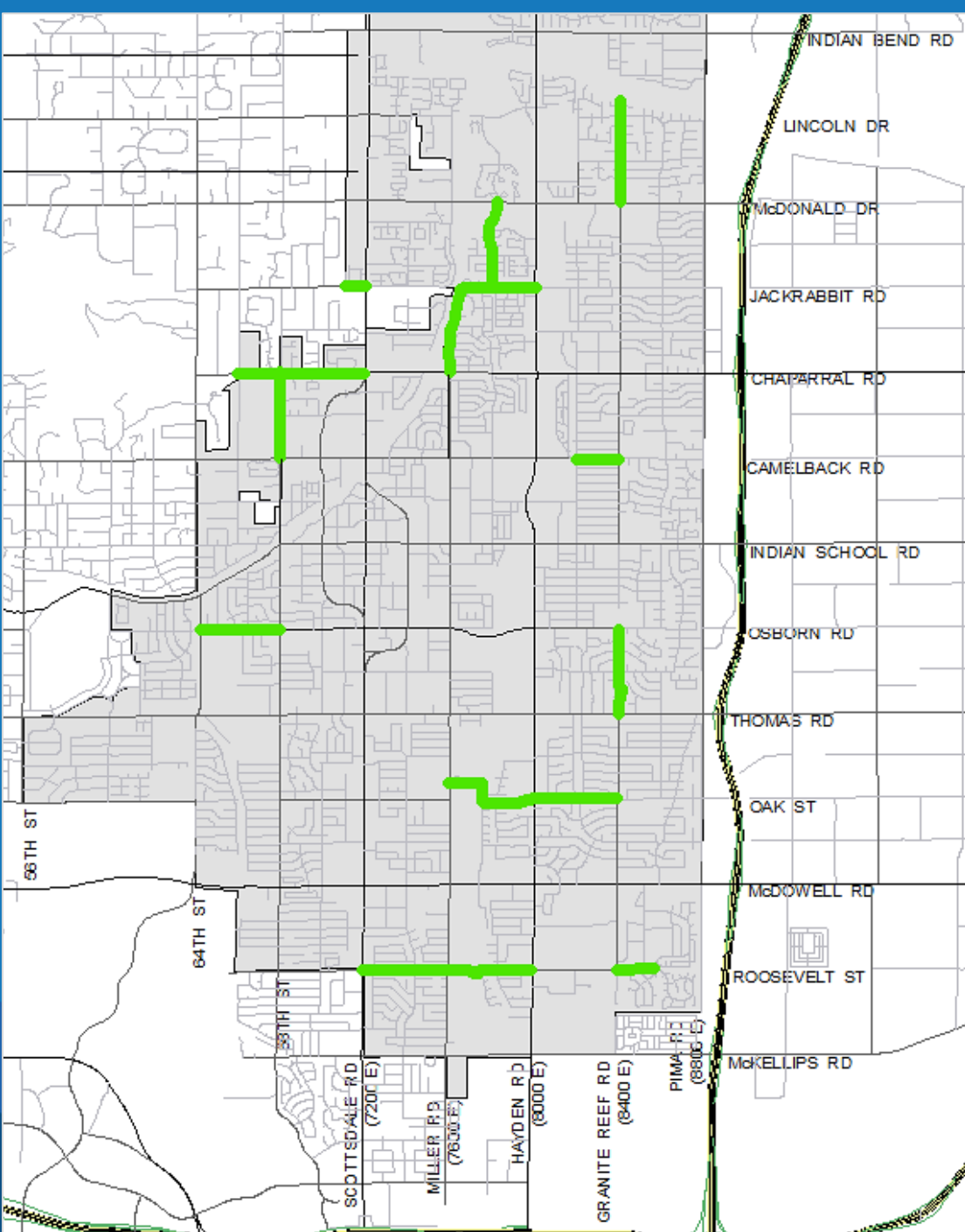


Minor Collector – with center turn lane



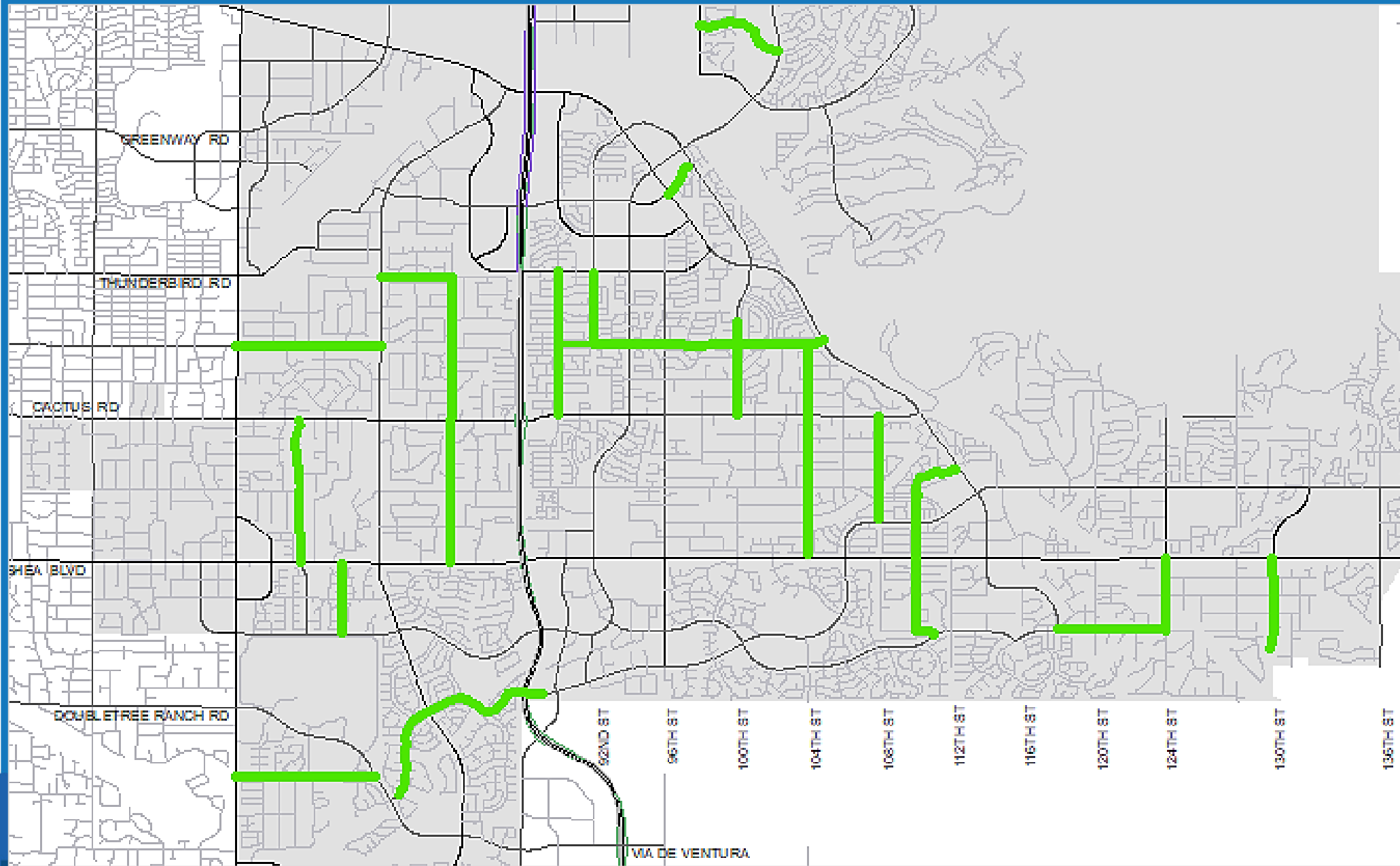
Minor Collector – no center turn lane

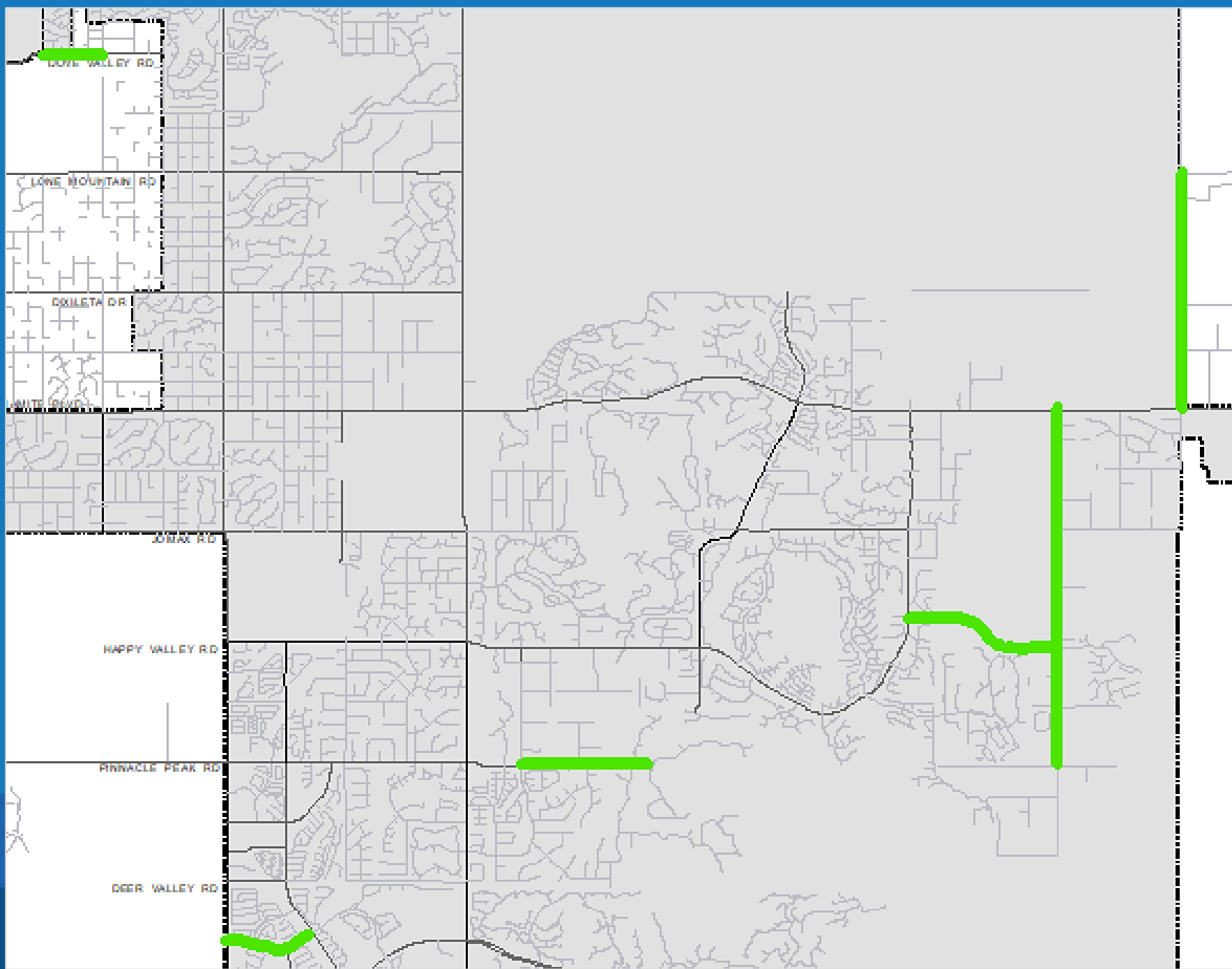
Approximately 50 additional lane miles of existing minor collectors could be converted to the no center lane cross section



Minor Collectors with no Center Turn Lane – South Area

**Minor
Collectors
with no
Center
Turn Lane –
Central
Area**





**Minor
Collectors
with no
Center Turn
Lane –
North Area**



**CITY OF
SCOTTSDALE**

Discussion

SCOTTSDALE PATHS AND TRAILS SUBCOMMITTEE REPORT



To: Paths and Trails Subcommittee
From: Kiran Guntupalli, Principal Traffic Engineer
Subject: Guidelines to Identify Pedestrian Crossing Treatments
Meeting Date: August 3, 2021

Action: Information and Discussion - no action requested.

Purpose:

Between the years of 2014 and 2018, the state of Arizona has seen a 59% increase in the annual number of pedestrian fatalities. To proactively address this issue on local roads in the city of Scottsdale, Traffic Engineering staff has created a guiding document that takes elements of other national, state, and local pedestrian crossing guidelines and fits it to Scottsdale's roads. This document also incorporates many elements from past draft versions that Traffic Engineering staff has utilized over the years when installing new pedestrian crossing treatments. This item presents a guiding document entitled "Guidelines to Identify Pedestrian Crossing Treatments" for information and discussion at the Paths and Trails Subcommittee.

Background:

Traffic Engineering and Transportation Planning staff receive many requests for painted crosswalks, flashing crosswalk signs, and other traffic control to assist pedestrians and bicyclists cross busy streets. There is some guidance for determining which traffic control is appropriate based upon the number of crossings and the volume of traffic, but traffic engineers mostly have to rely on published guidelines that have been developed at the national and state level, and engineering judgment. For any traffic control application, Traffic Engineers have to be concerned about justification and consistency. Criteria is typically developed and applied to establish justification for when a traffic control device is appropriate. Also, installing a traffic control device at one location but not at a location with similar conditions can make the city liable if a collision occurs at the location without the device.

For the development of the Guidelines to Identify Pedestrian Crossing Treatments, Traffic Engineering staff primarily utilized information from the following documents:

- Federal Highway Administration Safe Transportation for Every Pedestrian (STEP) – Resources
- Arizona Department of Transportation Pedestrian Safety Action Plan and Pedestrian Hybrid Beacon Warrants
- Manual on Uniform Traffic Control Devices (MUTCD)

Traffic Engineering staff also identified twenty (20) pedestrian crossing locations to evaluate for potential crossing treatment. Staff collected data at these locations and used the information to help modify established recommendations to better fit the Scottsdale environment.

Information:

The guidelines document outlines a clear three step process for evaluating a potential pedestrian crossing location. The first step "Identification and Description of Crossing Location" is a cursory review of the crossing locational characteristics, feedback from the public or city staff and any other information about the area that can be gleaned from city's records. The second step "Traffic Data Collection and Operational Analysis" involves physically visiting the site, conducting observations of existing operational characteristics, and collecting any relevant data that could not be acquired in step one. The third and final step is to put all the information gathered in steps one and two together using the established evaluation sheets in the exhibit section which includes the selection of a recommended treatment or counter measure. The guidelines document including all exhibits is provided in [Attachment 1](#).

The evaluation focuses primarily on the following ten considerations and assign weighting that was based on past studies in the city and other national and state guidelines. The ten criteria are:

- Origin and Destination
- Pedestrian Volume
- Vehicular Volume
- Distance to the Nearest Defined Crossing
- Posted Speed Limit
- Crossing Distance
- Median Type
- Roadway Illumination
- Collision History
- Sight Distance (Calculations in **Exhibit C**)

These criteria are each described in detail in the document and combined into an evaluation scoresheet in **Exhibit A** of the document. The scoresheet is to be used in each pedestrian crossing study to help assign priority to the project and help with selection of the appropriate counter measure. One of the defining features of the document and part of what makes it unique to Scottsdale is its use and definition of “Origin and Destination.” Again, to be proactive the city has factored in Origin and Destination, or in other words latent pedestrian demand, into the decision-making process for installing pedestrian crossing treatments. The Origin and Destination factor uses a pedestrian Gravity Demand Model developed by the Maricopa Association of Governments (MAG) for the city that estimates levels of pedestrian level activity for a particular area based on existing development along with geographic and demographic information. A more detailed description of this model is in **Exhibit B** of the document.

The selection of a counter measure is made in part by the evaluation score, an understanding of the location’s context, and the benefits and disadvantages of each counter measure. Locations with a score of 30 or more warrant consideration of a higher-level treatment such as a Rectangular Rapid Flashing Beacon (RRFB) or a Pedestrian Hybrid Beacon (PHB). Counter measures described in the report that have been used throughout the city of Scottsdale include:

- Improved Street Lighting
- High Visibility Striped Crosswalk
- In-Pavement Signage
- Raised Crosswalk
- Bulb out/Curb Extension
- Unmarked Pedestrian Refuge
- Rectangular Rapid Flashing Beacon (RRFB)
- Pedestrian Hybrid Beacon (PHB)
- Traffic Signal
- Grade Separated Crossing

Each of the above listed counter measures are listed in **Exhibit D** of the document and include traffic volume and speed criteria for installation along with general notes of how and when each might be typically applied. It also includes rough cost estimates to provide context for budget estimation. It should also be mentioned that these counter measures may also be combined into one comprehensive counter measure depending on the location characteristics. For example, on a wide road with an existing raised median or two-way left turn lane, the most appropriate solution might involve both a pedestrian refuge, a high visibility crosswalk and a Rectangular Rapid Flashing Beacon or Pedestrian Hybrid Beacon.

Next Steps:

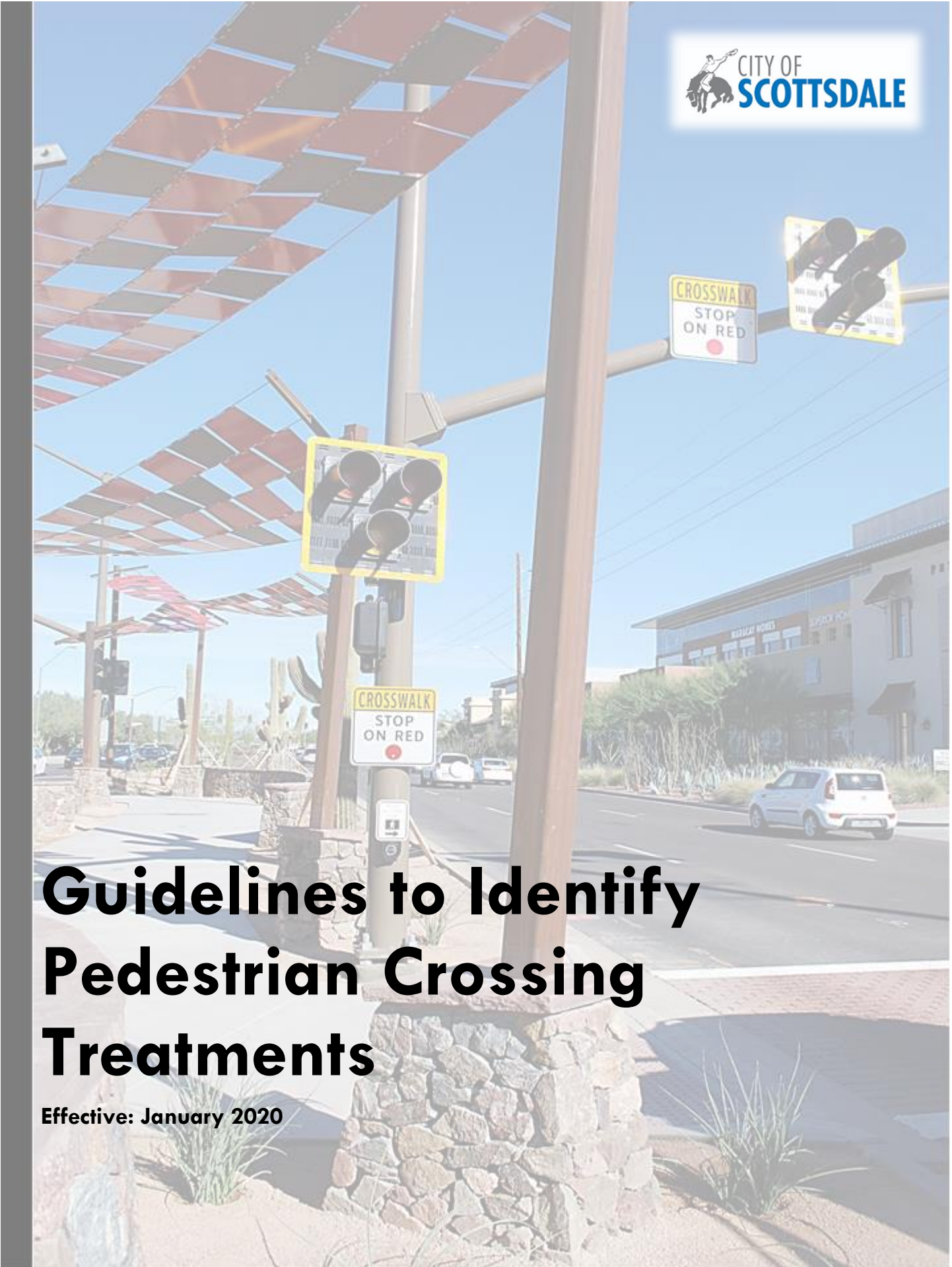
City staff will use this document to guide analysis and implementation of new pedestrian crossing treatments throughout the city.

[Attachment 1](#): Guidelines to Identify Pedestrian Crossing Treatments



Guidelines to Identify Pedestrian Crossing Treatments

Effective: January 2020



1.0 INTRODUCTION

The primary purpose of this document is to standardize the decision-making process to identify and prioritize the implementation of various pedestrian crossing treatments in the City of Scottsdale. Special attention is focused on consideration of standards set forth by Federal Highway Administration (FHWA), Institute of Transportation Engineers (ITE), Manual on Uniform Traffic Control Devices (MUTCD), National Association of City Transportation Officials (NACTO), and Transportation Research Board (TRB).

The general guidance provided in this document should not serve as a replacement for engineering judgement. It is important that engineering flexibility is maintained, as each pedestrian crossing location presents unique obstacles which may be addressed in varying ways.

The 2009 MUTCD outlines such engineering judgement; in Section 1A.09 the following provision is presented:

The decision to use a particular device at a particular location should be made on the basis of either an engineering study or the application of engineering judgment. Thus, while this Manual provides Standards, Guidance, and Options for design and applications of traffic control devices, this Manual should not be considered a substitute for engineering judgment. Engineering judgment should be exercised in the selection and application of traffic control devices, as well as in the location and design of roads and streets that the devices complement.

While these guidelines focus primarily on addressing the needs of pedestrians, they may also be used to address the needs of other non-motorized road users that may benefit from the installation of a pedestrian crossing improvement. Special consideration should be given in order to accommodate the needs of disabled persons.

2.0 EVALUATION PROCEDURE

Evaluation of an individual crossing location for potential crossing treatments in the City of Scottsdale should include the following steps:

- Step 1: Identification and Description of Crossing Location
- Step 2: Traffic Data Collection and Operational Analysis
- Step 3: Crossing Evaluation

The Crossing Evaluation Worksheet is included in **Exhibit A** and may be utilized as a guide through these steps.

Step 1: Identification and Description of Crossing Location

Conduct an office level review of the location using geographic information and other city records to define the study limits. Consider the following characteristics:

- Character area and surrounding land use (school, park, etc.).
- Future development proposals.
- Potential path or trail connections.
- Posted speed along the major street at the crossing location.
- Nearest crossings in each direction and associated traffic controls.
- Crossing distance along with the number and type of lanes.
- Presence and type of median (raised, striped, center two-way left turn lane, etc.)

The primary goal of this step is to determine the precise crossing location and to note any important characteristics that should be observed during a field visit.

Step 2: Data Collection and Observational Analysis

- Conduct a field review and make note of pedestrian and vehicle activity and other factors that are not observable by reviewing a map or other electronic and paper records.
- Collect a minimum of two hours of pedestrian counts if there is a possibility that the number of crossings may exceed 20 in a peak hour within the crossing area. A reasonable effort should be made to collect counts during the hours when the most pedestrian crossing events are expected to occur.
- Gather or collect hourly and average daily traffic (ADT) volumes for automobile traffic along the roadway at the crossing location. This data is often obtainable through the city's past count records.
- Measure the stopping and crossing sight distance for each approach. Refer to **Exhibit C** for calculations.
- Due to the potential for vehicular traffic queues to impact safety at the crossings, the presence of queues extending from downstream signals or intersections back into the crossing location should be observed, as well as any "differential" queuing that may occur on a lane to lane basis.
- Collect and analyze pedestrian and bicyclist crash data for crashes occurring within or on either side of the crossing location for the most recent five years of available data.

Step 3: Crossing Evaluation

- Using all data and pertinent information collected in steps 1 and 2, complete the pedestrian crossing evaluation form and associated attachments in **Exhibits A - D**.

It is important to keep in mind that to be effective, a traffic control device should meet five basic requirements:

- A. Fulfill a need;*
- B. Command attention;*
- C. Convey a clear, simple meaning;*
- D. Command respect from road users;*
- E. Provide adequate time for proper response.*

3.0 EVALUATION CONSIDERATIONS

Recognizing the limited availability of resources to implement crossing treatments within the City, it is important to use careful discretion when deciding to install a crossing treatment. Potential crossing locations should exhibit substantial need for treatment. The primary considerations and factors involved in the decision-making process and evaluation score sheet (**Exhibit A**) are described in further detail in this section.

Origin and Destination

In a proactive effort to address safety concerns for active transportation users, the City of Scottsdale considers potential pedestrian and bicyclist origins and destinations within the vicinity of the crossing area as the most significant factor in warranting a pedestrian crossing treatment study. This factor also considers the latent demand for the crossing location. It is essential that the expected increase in volume of pedestrian crossings after the installation of a crossing treatment be considered as a part of this evaluation. This potential increase in usage is estimated by considering the existing surrounding land use, past trends in pedestrian activity, roadway characteristics and newly planned developments.

In order to provide a baseline for this analysis, the City of Scottsdale utilizes the active transportation gravity demand model developed by the Maricopa Association of Governments as a starting point. Refer to **Exhibit B** for further information regarding the demand model. Adjustments can be made to the gravity demand model score in order to account for unique and localized variations within the vicinity of the crossing area.

Pedestrian Volume

The number of existing pedestrian crossings at an uncontrolled location is often a good indicator of the overall demand for an improved crossing treatment. A general rule of thumb is that if 20 pedestrians are currently crossing within the study area during a typical peak hour then the location meets the minimum threshold for a higher-level crossing treatment (i.e. RRFB, PHB, Traffic Signal or Separated Grade Crossing). However, the lack of crossings does not always discount the need for a crossing treatment, since some locations may be difficult to cross, but still have a high demand. Latent demand captured within the origin and destination score is used to account for this.

Vehicular Volume

The conflicting vehicular volume is another significant factor when evaluating a crossing location since it is indicative of the delay that a pedestrian may experience while attempting to cross the road. The longer the pedestrian must wait, the less likely they will wait for an acceptable/safe crossing gap. Additionally, high traffic volumes increase the potential number of conflicts that a pedestrian may experience while crossing.

Distance to the Nearest Defined Crossing

Pedestrians are often unwilling to walk far out of their way to utilize an improved crossing. Many roads in the southwest portion of the United States, including the City of Scottsdale, have signalized intersections spaced at quarter mile or half mile increments and are often farther away than pedestrians are willing to walk. It can be expected that the number of midblock pedestrian crossing events will increase as the distance between the study location and the nearest improved crossing increases.

Posted Speed Limit

Similar to vehicular volume, the posted speed on the conflicting road within the study location can be used to better understand the potential outcomes of conflicts between pedestrians and motor vehicles. Higher vehicular speeds tend to correlate with higher injury rates in pedestrian-vehicle collisions. For many pedestrians, roads with high posted speeds are considered greater crossing obstacles and may discourage pedestrian trips in an area where pedestrian activity may otherwise be high.

Crossing Distance

The crossing distance or the combined width of each lane and potential median on the conflicting road is an indication of the amount of time it takes a pedestrian to cross at the study area. Additionally, a high vehicular volume in association with a long crossing distance generally indicates that the number of acceptable gaps for a pedestrian to cross are minimal.

Median Type

The presence and type of median may affect the degree of safety at a crossing location. In general, roads with raised medians are more accommodating for pedestrians than roads with no median because the median provides a refuge area to help the pedestrian complete a two-stage crossing, i.e., when a pedestrian crosses one direction of travel, waits in the refuge area and then crosses the second direction of travel.

Roadway Illumination

Many pedestrian collisions happen at nighttime when visibility is limited. Often in this case, the pedestrian may expect that the vehicles will notice them and slow down as they cross. However, the nighttime conditions make driver detection of a pedestrian less likely at necessary distances to allow for time to slow or take evasive action. The type and intensity of existing roadway lighting should be considered in the crossing evaluation. Double-sided street lighting is preferred for pedestrian crossing locations.

Collision History

Past trends in collision history are often good indicators to be used in determining the most appropriate treatment at a crossing location. However, it is important to recognize that there is often a high degree of randomness associated with pedestrian collisions. Some locations that experience a pedestrian crash may not be suitable for a new crossing treatment or may already have an effective treatment.

Sight Distance

Sight distance plays a pivotal role in the safety of pedestrians and drivers alike. A driver must be able to see that a pedestrian is in the roadway at sufficient distance to allow for time to react to avoid a collision. Similarly, a pedestrian looking to cross the roadway must be able to anticipate that they will have enough time to do so without risking exposure to a conflicting vehicle. Therefore, in selecting a crossing treatment both factors must be accounted for.

Stopping Sight Distance:

Vehicle stopping sight distance is the distance at which the driver of the vehicle must be able to identify a person or object, have time to react, and safely come to a stop.

Crossing Sight Distance:

Pedestrian crossing sight distance refers to the distance away that a pedestrian must be able to observe approaching vehicles in order to make the decision to cross the roadway and safely cross without potential conflict with a vehicle. Because vehicles are required to yield to pedestrians, crossing sight distance is not necessarily required. However, to reduce the potential conflicts providing the pedestrian adequate sight distance is highly desirable for any crossing.

An inspection of the available sight distance should be performed, and the worksheet in **Exhibit C** should be used in all pedestrian crossing studies. If it is possible to provide the required pedestrian crossing sight distance, reasonable effort should be made. In locations that do not provide the pedestrian adequate crossing sight distance it becomes exceedingly important to incorporate added safety features if crossing treatment is pursued. Particularly, there should be added effort to raise driver awareness of the pedestrian in the crossing facility and reduce the required sight distance for crossing (i.e. reduce speeds, reduce crossing distance).

4.0 CONCLUSION

With the creation of these guidelines the City of Scottsdale intends to standardize the decision-making process for evaluating the installation of pedestrian crossing treatments at unsignalized and uncontrolled locations. When used in combination with engineering judgement and available resources for construction and operations, these guidelines will aid in reducing the number of daily instances where a pedestrian is faced with two undesirable options:

- Cross a busy street at an uncontrolled location; or,
- Walk an extended distance to utilize a safe crossing

Exhibit A: Pedestrian Crossing Evaluation

Location: _____

Date: _____

1. Origin/Destination (0–12 points) – Award points based on MAG Gravity Demand Model. Refer to Exhibit B: Up to 5 points may be added or subtracted to the point value to account for special circumstances.

Provide Justification for any addition or subtraction in the comments section.

Less than 100	0 points	_____
100 and 150	4 points	
150 -185	8 points	
185 – 223	12 points	

2. Pedestrian Volume (0-10 points) – Award points based on the number of observed crossing events during a typical pedestrian peak hour:

Less than 10	0 points	_____
Between 10 and 20	5 points	
20 or more	10 points	

3. Vehicular Volume (0-6 points) – Award Points:

Less than 3,000 ADT	0 points	_____
3,000 – 9,000 ADT	2 points	
9,000 – 15,000 ADT	4 points	
15,000 ADT or greater	6 points	

4. Distance to Nearest Controlled Crossing (0-8 points) – Award points:

Less than 300 feet	0 points	_____
300 – 600 feet	2 points	
600 – 900 feet	4 points	
900 – 1,500 feet	6 points	
Greater than 1,500 feet	8 points	

5. Posted Speed (0-6 points) - Award points:

25 mph	0 points	_____
30 mph	2 points	
35 mph	4 points	
40 mph or Greater	6 points	

6. Crossing Distance (0-4 points) – Award points:

Less than 35 feet	0 points	_____
35 - 50 feet	1 points	
50 - 60 feet	2 points	
60 – 70 feet	3 points	
Greater than 70 feet	4 points	

7. Median Type (0-5 points) – Award points:

10 feet or greater (raised)	0 points	_____
Between 3 feet and 10 feet (raised)	2 points	
Center two-way left turn lane	3 points	
Striped median	4 points	
No median	5 points	

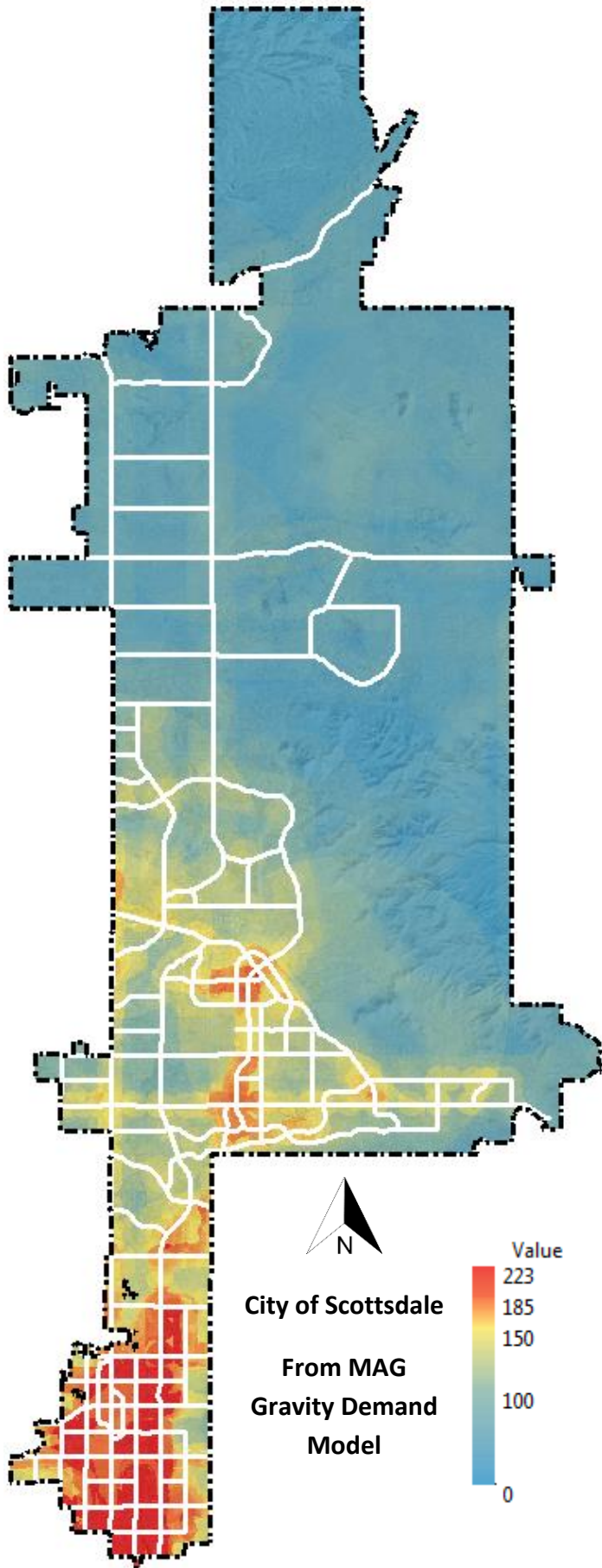
8. Roadway Illumination (0-3 points) – Award points based on presence and/or type of existing roadway illumination within proximity to the crossing area:

9. Collision History – Award 5 points for every correctable pedestrian, bicycle, skateboarder, or scooter related collision that has been reported within the study area in the most recent 5 years of collision data:

GRAND TOTAL _____

Note: A minimum total score of 30 points must be achieved for the location to be considered for a RRFB, PHB, Traffic Signal, or Separated Grade Crossing. Refer to **Exhibit D** for counter measure selection guidance. Scores may be used for prioritization of funds.

Exhibit B: MAG Gravity Demand Model



Gravity Analysis Factors and Variables

Factor	Variable	Distance	Weight
Pedestrian and Bicycle Crash History *	Weighted crash kernel density	0.25 mile	10
Employment Density (number of jobs)*	Proximity to employment and number of jobs	2 miles	20
School	Proximity to schools	0.5 mile	10
University	Proximity to Universities	1 mile	15
Existing Transit	Proximity to bus stops	0.25 mile	10
	Proximity to light rail stops	0.50 mile	10
	Proximity to transit stops with high ridership	bus 0.25 miles rail .050 mile	10
Parks	Proximity to parks	.025 mile	10
Demographics*	High population density	NA	20
	High bike mode share	NA	10
	High walk mode share	NA	10
	High transit mode share	NA	10
	High percentage of low-income households	NA	10
	High percentage of older adult population (65+)	NA	10
	High percentage of zero vehicle households	NA	10
Strava Data*	Annual Bicyclist Activity	0.5 mile	20
	Annual Pedestrian Activity	0.5 mile	20

* These factors use a tiered weighting method in which the variables are broken into quintiles and scored using a quintile scale. For example, a variable with a weight of 10 will apply a score of 10 to the highest quintile and the proceeding quintiles receive a score of 8, 6, 4, and the lowest quintile receiving a score of 0.

Contact City of Scottsdale Traffic Engineering staff for locational demand model scores.

Refer to the MAG Active Transportation Plan for more Information regarding demand model scoring and analysis.

Exhibit C: Sight Distance Calculations

$$SSD = (1.47 * PS * 2.5secs) + 1.075 * (\frac{PS^2}{11.2ft/s^2})$$

Posted Speed - PS (mph)	Stopping Sight Distance - SSD (ft)	Posted Speeds - PS (mph)	Stopping Sight Distance - SSD (ft)
15	80	40	305
20	115	45	360
25	155	50	425
30	200	55	495
35	250		

$$CSD = 1.47 * PS * (2.5sec + \frac{CD}{3.5 ft/s})$$

Posted Speed -PS (mph)	Crossing Distance - CD (ft)	Crossing Sight Distance - CSD (ft)	Posted Speed -PS (mph)	Crossing Distance - CD (ft)	Crossing Sight Distance - CSD (ft)
25	24	344	45	24	619
25	36	470	45	36	846
25	48	596	45	48	1073
30	24	413	50	24	688
30	36	564	50	36	940
30	48	715	50	48	1192
35	24	481	55	24	757
35	36	658	55	36	1034
35	48	834	55	48	1311
40	24	550			
40	36	752			
40	48	953			

Evaluation:

Posted Speed: _____

Crossing Distance: _____

*Crossing distance may be measured to the median if a 10 foot or wider raised median is present

Required Stopping Sight Distance: _____

Required Crossing Sight Distance: _____

Satisfies Both Required Sight Distance Criteria?

Yes / No

Existing Sight Distance:

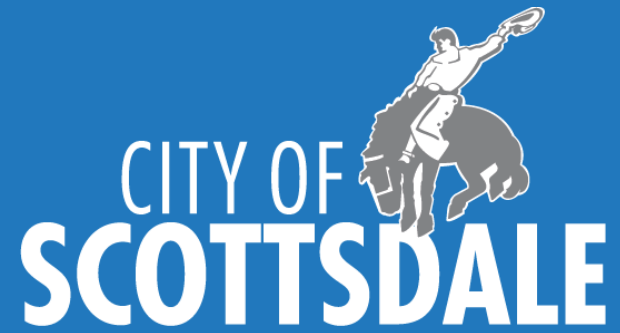
Stopping: Direction () = _____ ft. Direction () = _____ ft.

Crossing: Direction () = _____ ft. Direction () = _____ ft.

Exhibit D: Pedestrian Crossing Treatment Options

Treatment Option	Appropriate Conditions
Improved Street Lighting	<ul style="list-style-type: none"> - Posted Speed: Any - Traffic Volume: Any - Used to improve visibility of the crossing area during nighttime hours - Average Cost: \$2,000 per street light pole and light fixture*
High Visibility Striped Crosswalk with Warning Signs (Uncontrolled)	<ul style="list-style-type: none"> - Posted Speed: 25 – 30 mph - Traffic Volume: 3,000 – 5,000 ADT - Crossing distance: less than 50 feet - Often used where yield compliance is a concern - Average Cost: \$1,500*
In Pavement Signage	<ul style="list-style-type: none"> - Posted Speed: 25 – 30 mph - Traffic Volume: 5,000 – 10,000 ADT - Often used where both yield compliance and speed compliance are concerns - Include High Visibility Crosswalk - Average Cost: \$1,000*+\$1,500 accounts for ongoing maintenance
Raised Crosswalk	<ul style="list-style-type: none"> - Posted Speed: 25 mph - Traffic Volume: 1,500 – 5,000 ADT - Often used where both yield compliance and speed compliance are concerns - Include High Visibility Crosswalk + In Pavement Signage (If feasible) - Average Cost: \$8,000*
Bulb out/Curb Extension	<ul style="list-style-type: none"> - Posted Speed: 25 – 30 mph - Traffic Volume: 3,000 – 9,000 ADT - Used to shorten crossing distance and improve sight distance - Used in areas with on-street parking, must not restrict bike lanes and drainage - Include High Visibility Crosswalk + In Pavement Signage + Raised Crosswalk (If feasible) - Average Cost: \$15,000 per extension*
Pedestrian Refuge (Unmarked)	<ul style="list-style-type: none"> - Posted Speed: 30 – 45 mph - Traffic Volume: 5,000 – 15,000 ADT - Used where crossing distance, vehicular volumes, and speeds are concerns - Often used as a first step in areas with low existing or latent pedestrian demand - Average Cost: \$30,000*
Rectangular Rapid Flashing Beacon (RRFB)	<ul style="list-style-type: none"> - Posted Speed: 30 – 35 mph - Traffic Volume: 9,000 – 15,000 ADT - Often used to improve yield compliance and visibility - Often used as a first step in areas with moderate pedestrian demand (< 20 pedestrian crossing in a peak hour) - Add Pedestrian Refuge (If feasible) - Average Cost: \$20,000 beacon/signing and striping only*
Pedestrian Hybrid Beacon (PHB)	<ul style="list-style-type: none"> - Posted Speed: 35 – 50 mph - Traffic Volume: 12,000 ADT or greater - Typically used on arterial roads with high speeds and volumes - May be warranted by MUTCD guidance - Used to assign right of way to pedestrians - Average Cost: \$150,000*
Traffic Signal	<ul style="list-style-type: none"> - Posted Speed: 25 – 55 mph - Traffic Volume: 10,000 ADT or greater - Used where vehicular activity at an intersection may also warrant the installation of a traffic signal - A complete traffic signal warrant analysis must be completed in accordance with MUTCD Chapter 4C - Average Cost: \$275,000*
Separated Grade Crossing	<ul style="list-style-type: none"> - Posted Speed: 30 – 55 mph - Traffic Volume: 15,000 ADT or greater - Used at multi-use path crossings or other high-profile crossing locations - Average Cost: Highly variable between \$600,000 and \$6,000,000*

*Average costs are rough estimates based on 2019 market value; the actual project cost may vary considerably by location. Two or more treatment options may be used in conjunction with one another



Guidelines to Identify Pedestrian Crossing Treatments

Paths and Trails Subcommittee – August 3, 2021

Background

- Number of Requests
- Improve Pedestrian Safety
- Uniformity in Analysis
- Engineering Judgement
- Countermeasure Identification



Guidelines to Identify Pedestrian Crossing Treatments

Effective: January 2020

Guidelines Development Process

- Past Experiences
- References
 - Federal Highway Administration - Safe Transportation for Every Pedestrian (STEP) — Resources
 - Arizona Department of Transportation -Pedestrian Hybrid Beacon evaluation sheet
 - Manual on Uniform Traffic Control Devices (MUTCD)
- Follow up Analysis

Table 1. Application of pedestrian crash countermeasures by roadway feature.

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	1 2 4 5 6	1 2 7 9	1 2 7 9	1 2 4 5 6	1 2 5 6	1 2 7 9	1 2 4 5 6	1 2 7 9	1 2 5 6
3 lanes with raised median (1 lane in each direction)	1 2 3 4 5	1 2 3 7 9	1 2 3 7 9	1 2 3 4 5 6	1 2 3 5 6	1 2 3 7 9	1 2 3 4 5 6	1 2 3 7 9	1 2 3 5 6
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	1 2 3 4 5 6	1 2 3 7 9	1 2 3 7 9	1 2 3 4 5 6	1 2 3 5 6	1 2 3 7 9	1 2 3 4 5 6	1 2 3 7 9	1 2 3 5 6
4+ lanes with raised median (2 or more lanes in each direction)	1 2 3 4 5 6	1 2 3 7 8 9	1 2 3 7 8 9	1 2 3 4 5 6	1 2 3 5 6	1 2 3 7 8 9	1 2 3 4 5 6	1 2 3 7 8 9	1 2 3 5 6
4+ lanes w/o raised median (2 or more lanes in each direction)	1 2 3 4 5 6	1 2 3 7 8 9	1 2 3 7 8 9	1 2 3 4 5 6	1 2 3 5 6	1 2 3 7 8 9	1 2 3 4 5 6	1 2 3 7 8 9	1 2 3 5 6

Given the set of conditions in a cell,
 # Signifies that the countermeasure is a candidate treatment at a marked crossing location.
 * Signifies that the countermeasure should be used by:
 1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
 2 Raised crosswalk

Exhibit 640-A. PEDESTRIAN HYBRID BEACON (PHB) EVALUATION

PEDESTRIAN HYBRID BEACON (PHB) EVALUATION

Location: _____ Date: _____

- Motor vehicle crashes correctable by installation of PHB – Award 5 points for each crash (for the most recent 5 years of data) involving pedestrians, bicyclists, wheel chairs, skateboards, motorized scooters, or golf carts crossing within 500 feet on either side of the proposed PHB locations, or half the distance to the nearest signal (whichever is less):
 0 points → 0 – 10 pedestrians per peak hour (average)
 2 points → 11 – 20 pedestrians per peak hour (average)
 4 points → 21 – 39 pedestrians per peak hour (average)
 6 points → 40+ pedestrians per peak hour (average)
- Peak hour pedestrian crossing volume – Award points if the average peak hour pedestrian crossing volume within 500 feet on either side of the proposed PHB location, or half the distance to the nearest traffic signal (whichever is less):
 0 points → 0 – 10 pedestrians per peak hour (average)
 2 points → 11 – 20 pedestrians per peak hour (average)
 4 points → 21 – 39 pedestrians per peak hour (average)
 6 points → 40+ pedestrians per peak hour (average)
- Location of nearest existing traffic signal or existing PHB – Award points:
 - 5 points → Less than 500 feet
 0 points → 500 – 1,000 feet
 5 points → Over 1,000 feet
- Posted speed limit – Award points:
 0 points → Under 30 mph
 2 points → 30 – 35 mph
 4 points → 40 – 45 mph
- Roadway traffic volume (AADT) – Award points:
 0 points → Less than 5,000
 2 points → 5,000 – 9,999
 4 points → 10,000 – 14,999
 6 points → 15,000+
- Raised median – Award 5 points if the roadway does not have a raised median with a minimum width of 6 feet.
- Shared-use path or walkway – Award 5 points if a designated, maintained, and permitted shared-use path or walkway crosses the road at the proposed PHB location.
- Pedestrian activity generator – Award 5 points if the proposed PHB location is within 500 feet of a senior center, medical facility, community center, school, or other pedestrian activity generator.
- Roadway illumination – Award 5 points if the proposed PHB location does not have roadway illumination.
- Crossing distance – Award 5 points if the crossing distance is greater than 36 feet. (If a raised median with a minimum width of 6 feet is present, the crossing distance is measured to the median).

GRAND TOTAL _____

top Here For) Pedestrians sign
 ising sign
 ng Beacon (RRFB)**
 n (PHB)**
), Safety effects of marked versus unmarked
 61 on Uniform Traffic Control Devices, 2009 Edition
 //www.cmb-transportation.org/, FHWA, Pedestrian
 ter, S. Smith, C. Sunstrom, N.J. Threlk, J. Zegeer
 crossing Treatments, Transportation Research Board
 Highways, Transportation Research Board, Washing

Evaluation Procedure

- Identification and Description of Crossing Location
- Traffic Data Collection and Operational Analysis
- Crossing Evaluation



Evaluation Considerations

- Origin and Destination
- Pedestrian Volume
- Vehicular Volume
- Distance to the Nearest Defined Crossing
- Posted Speed limit



Evaluation Considerations (Cont.)

- Crossing Distance
- Median Type
- Roadway Illumination
- Collision History
- Sight Distance



Exhibit A: Pedestrian Crossing Evaluation

Location: _____ Date: _____

1. Origin/Destination (0-12 points) – Award points based on MAG Gravity Demand Model. Refer to Exhibit B: Up to 5 points may be added or subtracted to the point value to account for special circumstances.

Provide Justification for any addition or subtraction in the comments section.

Less than 100	0 points	_____
100 and 150	4 points	_____
150 -185	8 points	_____
185 – 223	12 points	_____

2. Pedestrian Volume (0-10 points) – Award points based on the number of observed crossing events during a typical pedestrian peak hour:

Less than 10	0 points	_____
Between 10 and 20	5 points	_____
20 or more	10 points	_____

3. Vehicular Volume (0-6 points) – Award Points:

Less than 3,000 ADT	0 points	_____
3,000 – 9,000 ADT	2 points	_____
9,000 – 15,000 ADT	4 points	_____
15,000 ADT or greater	6 points	_____

4. Distance to Nearest Controlled Crossing (0-8 points) – Award points:

Less than 300 feet	0 points	_____
300 – 600 feet	2 points	_____
600 – 900 feet	4 points	_____
900 – 1,500 feet	6 points	_____
Greater than 1,500 feet	8 points	_____

5. Posted Speed (0-6 points) - Award points:

25 mph	0 points	_____
30 mph	2 points	_____
35 mph	4 points	_____
40 mph or Greater	6 points	_____

6. Crossing Distance (0-4 points) – Award points:

Less than 35 feet	0 points	_____
35 - 50 feet	1 point	_____
50 - 60 feet	2 points	_____
60 – 70 feet	3 points	_____
Greater than 70 feet	4 points	_____

7. Median Type (0-5 points) – Award points:

10 feet or greater (raised)	0 points	_____
Between 3 feet and 10 feet (raised)	2 points	_____
Center two-way left turn lane	3 points	_____
Striped median	4 points	_____
No median	5 points	_____

8. Roadway Illumination (0-3 points) – Award points based on presence and/or type of existing roadway illumination within proximity to the crossing area:

9. Collision History – Award 5 points for every correctable pedestrian, bicycle, skateboarder, or scooter related collision that has been reported within the study area in the most recent 5 years of collision data:

GRAND TOTAL _____

Note: A minimum total score of 30 points must be achieved for the location to be considered for a RRFB, PHB, Traffic Signal, or Separated Grade Crossing. Refer to Exhibit D for counter measure selection guidance. Scores may be used for prioritization of funds.

Pedestrian Crossing Evaluation Score Sheet

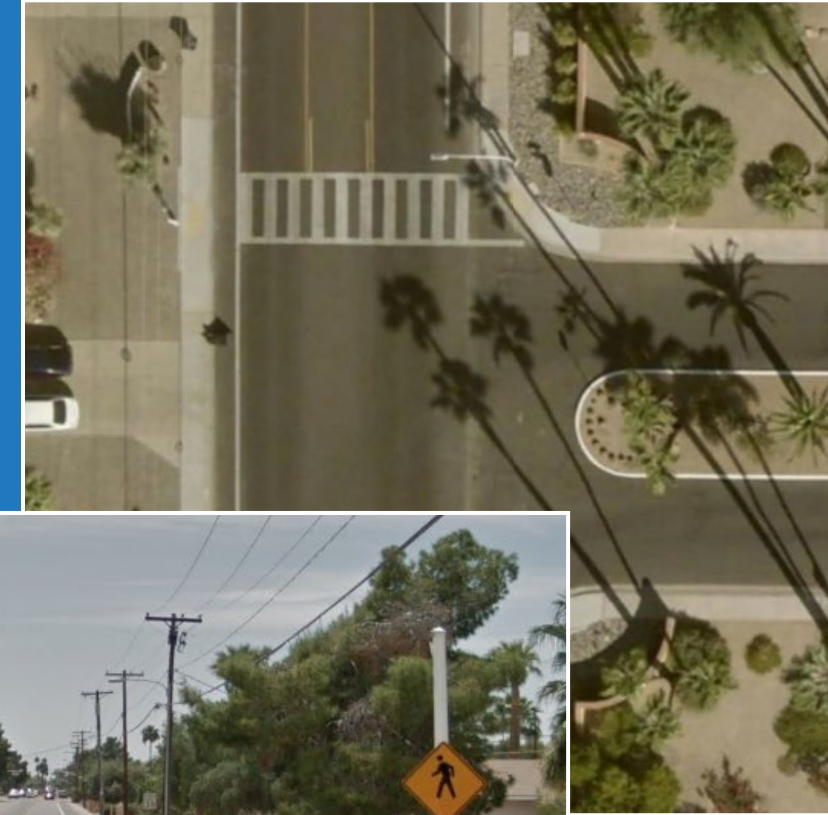
- Thresholds developed using past studies and national guidelines
- High Scoring locations gain higher priority and may be appropriate for higher level treatments

Pedestrian Crossing Treatment Options

- Improved Street Lighting
- High Visibility Striped Crosswalk
- In-Pavement Signage
- Raised Crosswalk
- Bulb-Out/Curb Extension
- Unmarked Pedestrian Refuge
- Rectangular Rapid Flashing Beacon
- Pedestrian Hybrid Beacon
- Traffic Signal
- Separated Grade Crossing

High Visibility Marked Crosswalk

- Posted Speed: 25 – 30 mph
- Traffic Volume: 3,000 – 5,000 ADT
- Crossing distance: less than 50 feet
- Typical Cost: \$1,500*



In-Pavement Signage

- Posted Speed: 25 — 30 mph
- Traffic Volume: 5,000 — 10,000 ADT
- Include High Visibility Crosswalk
- Typical Cost: \$1,000* + \$1,500
accounts for ongoing maintenance



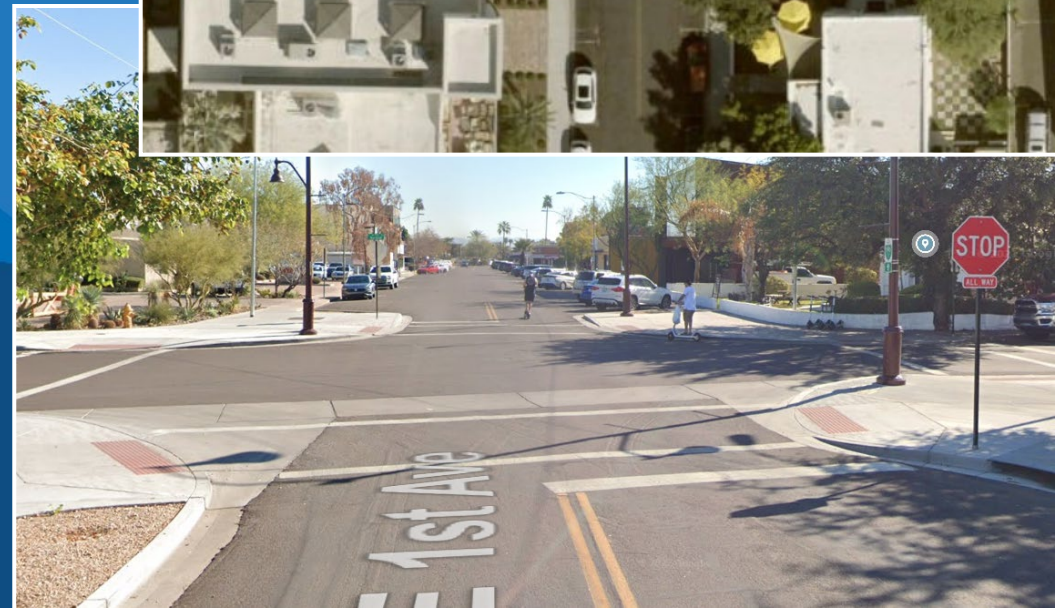
Raised Crosswalk

- Posted Speed: 25 mph
- Traffic Volume: 1,500 – 5,000 ADT
- Include High Visibility Crosswalk + In Pavement Signage (If feasible)
- Typical Cost: \$8,000*



Bulb-Out/Curb Extension

- Posted Speed: 25 — 30 mph
- Traffic Volume: 3,000 — 9,000 ADT
- Shorten crossing distance and improve sight distance
- Used in areas with on-street parking
- Include High Visibility Crosswalk + In Pavement Signage + Raised Crosswalk (If feasible)
- - Average Cost: \$15,000 per extension*



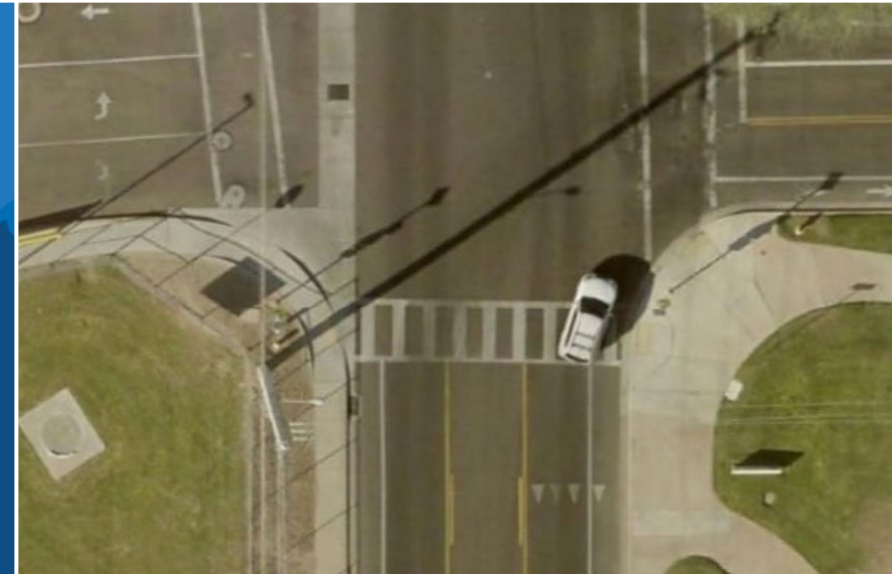
Unmarked Pedestrian Refuge

- Posted Speed: 30 — 45 mph
- Traffic Volume: 5,000 — 15,000 ADT
- Used where crossing distance, vehicular volumes, and speeds are concerns
- Often used as a first step in areas with low existing or latent pedestrian demand
- Average Cost: \$30,000*



Rectangular Rapid Flashing Beacon (RRFB)

- Posted Speed: 30 — 35 mph
- Traffic Volume: 9,000 — 15,000 ADT
- Often used to improve yield compliance and visibility
- Often used as a first step in areas with moderate pedestrian demand (< 20 pedestrian crossing in a peak hour)
- Add Pedestrian Refuge (If feasible)
- Average Cost: \$20,000 beacon/signing and striping only*



Pedestrian Hybrid Beacon (PHB)

- Posted Speed: 35 — 50 mph
- Traffic Volume: 12,000 ADT or greater
- Typically used on arterial roads with high speeds and volumes
- May be warranted by MUTCD guidance
- Used to assign right of way to pedestrians
- Average Cost: \$250,000*



Traffic Signal

- Posted Speed: 25 — 55 mph
- Traffic Volume: 10,000 ADT or greater
- Used where vehicular activity at an intersection may also warrant the installation of a traffic signal
- A complete traffic signal warrant analysis must be completed in accordance with MUTCD Chapter 4C
- Average Cost: \$275,000*

Separated Grade Pedestrian Crossing

- Posted Speed: 30 — 55 mph
- Traffic Volume: 15,000 ADT or greater
- Used at multi-use path crossings or other high-profile crossing locations with very high pedestrian volumes
- Average Cost: Highly variable between \$600,000 and \$6,000,000*



Questions?

Additional Slides



Table 1. Application of pedestrian crash countermeasures by roadway feature.

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	① 2 4 5 6	① 5 6 7 9	① 5 6 7 9	① 4 5 6 7 9	① 5 6 7 9	① 5 6 7 9	① 4 5 6 7 9	① 5 6 7 9	① 5 6 9
3 lanes with raised median (1 lane in each direction)	① 2 3 4 5	① ③ 5 7 9	① ③ 5 7 9	① 3 4 5 7 9	① ③ 5 7 9	① ③ 5 7 9	① ③ 4 5 7 9	① ③ 5 7 9	① ③ 5 9
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	① 2 3 4 5 6 7 9	① ③ 5 6 7 9	① ③ 5 6 9	① 3 4 5 6 7 9	① ③ 5 6 7 9	① ③ 5 6 9	① ③ 4 5 6 7 9	① ③ 5 6 9	① ③ 5 6 9
4+ lanes with raised median (2 or more lanes in each direction)	① ③ 5 7 8 9	① ③ 5 7 8 9	① ③ 5 8 9	① ③ 5 7 8 9	① ③ 5 7 8 9	① ③ 5 8 9	① ③ 5 7 8 9	① ③ 5 8 9	① ③ 5 8 9
4+ lanes w/o raised median (2 or more lanes in each direction)	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 8 9	① ③ 5 6 7 8 9	① ③ 5 6 8 9	① ③ 5 6 8 9

Given the set of conditions in a cell,

- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

- 1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
- 2 Raised crosswalk
- 3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
- 4 In-Street Pedestrian Crossing sign
- 5 Curb extension
- 6 Pedestrian refuge island
- 7 Rectangular Rapid-Flashing Beacon (RRFB)**
- 8 Road Diet
- 9 Pedestrian Hybrid Beacon (PHB)**

*Refer to Chapter 4, 'Using Table 1 and Table 2 to Select Countermeasures,' for more information about using multiple countermeasures.

**It should be noted that the PHB and RRFB are not both installed at the same crossing location.

This table was developed using information from: Zegeer, C.V., J.R. Stewart, H.H. Huang, P.A. Lagerwey, J. Feaganes, and B.J. Campbell. (2005). Safety effects of marked versus unmarked crosswalks at uncontrolled locations: Final report and recommended guidelines. FHWA, No. FHWA-HRT-04-100, Washington, D.C.; FHWA. Manual on Uniform Traffic Control Devices, 2009 Edition, (revised 2012). Chapter 4F, Pedestrian Hybrid Beacons. FHWA, Washington, D.C.; FHWA. Crash Modification Factors (CMF) Clearinghouse. <http://www.cmfclearinghouse.org/>; FHWA. Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE). <http://www.pedbikesafe.org/PEDSAFE/>; Zegeer, C., R. Srinivasan, B. Lan, D. Carter, S. Smith, C. Sundstrom, N.J. Thirsk, J. Zegeer, C. Lyon, E. Ferguson, and R. Van Houten. (2017). NCHRP Report 841: Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments. Transportation Research Board, Washington, D.C.; Thomas, Thirsk, and Zegeer. (2016). NCHRP Synthesis 498: Application of Pedestrian Crossing Treatments for Streets and Highways. Transportation Research Board, Washington, D.C.

Exhibit 640-A. PEDESTRIAN HYBRID BEACON (PHB) EVALUATION

PEDESTRIAN HYBRID BEACON (PHB) EVALUATION

Location: _____ Date: _____

1. Motor vehicle crashes correctable by installation of PHB – Award 5 points for each crash (for the most recent 5 years of data) involving pedestrians, bicyclists, wheel chairs, skateboards, motorized scooters, or golf carts crossing within 500 feet on either side of the proposed PHB locations, or half the distance to the nearest signal (whichever is less): _____
 2. Peak hour pedestrian crossing volume – Award points if the average peak hour pedestrian crossing volume within 500 feet on either side of the proposed PHB location, or half the distance to the nearest traffic signal (whichever is less): _____
 - 0 points → 0 – 10 pedestrians per peak hour (average)
 - 2 points → 11 – 20 pedestrians per peak hour (average)
 - 4 points → 21 – 39 pedestrians per peak hour (average)
 - 6 points → 40+ pedestrians per peak hour (average)
 3. Location of nearest existing traffic signal or existing PHB – Award points: _____
 - 5 points → Less than 500 feet
 - 0 points → 500 – 1,000 feet
 - 5 points → Over 1,000 feet
 4. Posted speed limit – Award points: _____
 - 0 points → Under 30 mph
 - 2 points → 30 – 35 mph
 - 4 points → 40 – 45 mph
 5. Roadway traffic volume (AADT) – Award points: _____
 - 0 points → Less than 5,000
 - 2 points → 5,000 – 9,999
 - 4 points → 10,000 – 14,999
 - 6 points → 15,000+
 6. Raised median – Award 5 points if the roadway does not have a raised median with a minimum width of 6 feet. _____
 7. Shared-use path or walkway – Award 5 points if a designated, maintained, and permitted shared-use path or walkway crosses the road at the proposed PHB location. _____
 8. Pedestrian activity generator – Award 5 points if the proposed PHB location is within 500 feet of a senior center, medical facility, community center, school, or other pedestrian activity generator. _____
 9. Roadway illumination – Award 5 points if the proposed PHB location does not have roadway illumination. _____
 10. Crossing distance – Award 5 points if the crossing distance is greater than 36 feet. (If a raised median with a minimum width of 6 feet is present, the crossing distance is measured to the median). _____
- GRAND TOTAL** _____

Exhibit A: Pedestrian Crossing Evaluation

Location: _____ Date: _____

1. Origin/Destination (0-12 points) – Award points based on MAG Gravity Demand Model. Refer to Exhibit B:
Up to 5 points may be added or subtracted to the point value to account for special circumstances.

Provide Justification for any addition or subtraction in the comments section.

Less than 100	0 points	_____
100 and 150	4 points	_____
150 - 185	8 points	_____
185 - 223	12 points	_____

2. Pedestrian Volume (0-10 points) – Award points based on the number of observed crossing events during a typical pedestrian peak hour:

Less than 10	0 points	_____
Between 10 and 20	5 points	_____
20 or more	10 points	_____

3. Vehicular Volume (0-6 points) – Award Points:

Less than 3,000 ADT	0 points	_____
3,000 – 9,000 ADT	2 points	_____
9,000 – 15,000 ADT	4 points	_____
15,000 ADT or greater	6 points	_____

4. Distance to Nearest Controlled Crossing (0-8 points) – Award points:

Less than 300 feet	0 points	_____
300 – 600 feet	2 points	_____
600 – 900 feet	4 points	_____
900 – 1,500 feet	6 points	_____
Greater than 1,500 feet	8 points	_____

5. Posted Speed (0-6 points) - Award points:

25 mph	0 points	_____
30 mph	2 points	_____
35 mph	4 points	_____
40 mph or Greater	6 points	_____

6. Crossing Distance (0-4 points) – Award points:

Less than 35 feet	0 points	_____
35 - 50 feet	1 points	_____
50 - 60 feet	2 points	_____
60 – 70 feet	3 points	_____
Greater than 70 feet	4 points	_____

7. Median Type (0-5 points) – Award points:

10 feet or greater (raised)	0 points	_____
Between 3 feet and 10 feet (raised)	2 points	_____
Center two-way left turn lane	3 points	_____
Striped median	4 points	_____
No median	5 points	_____

8. Roadway Illumination (0-3 points) – Award points based on presence and/or type of existing roadway illumination within proximity to the crossing area:

9. Collision History – Award 5 points for every correctable pedestrian, bicycle, skateboarder, or scooter related collision that has been reported within the study area in the most recent 5 years of collision data:

GRAND TOTAL _____

Note: A minimum total score of 30 points must be achieved for the location to be considered for a RRFB, PHB, Traffic Signal, or Separated Grade Crossing. Refer to Exhibit D for counter measure selection guidance. Scores may be used for prioritization of funds.

TENTATIVE FUTURE AGENDA ITEMS

Rev.7-15-2021

TRANSPORTATION COMMISSION

MEETING DATE: September 16, 2021

REPORTS/PRESENTATIONS DUE September 9

- **Approval of Meeting Minutes** Action
Approval of Regular meeting minutes August 19, 2021
- **Median Opening Analysis**.....Presentation and Discussion
Reviewing data for “pork Chop” median openings compared to standard median openings – David Smith, Traffic Engineer Senior
- **Bicycle and Related Devices Ordinance**.....Presentation, Discussion and Possible Action
Presentation of the amended Bicycle and Related Devices Ordinance – Susan Conklu, Senior Transportation Planner
- **Other Transportation Projects and Programs Status**Information
Status of projects and programs – Mark Melnychenko, Transportation & Streets Director
- **Commission Identification of Future Agenda Items**.....Discussion
Commissioners may identify items or topics of interest for future Commission meetings

MEETING DATE: October 21, 2021

REPORTS/PRESENTATIONS DUE October 14

- **Approval of Meeting Minutes** Action
Approval of Regular meeting minutes August 19, 2021
- **Other Transportation Projects and Programs Status**Information
Status of projects and programs – Mark Melnychenko, Transportation & Streets Director
- **Commission Identification of Future Agenda Items**.....Discussion
Commissioners may identify items or topics of interest for future Commission meetings

FUTURE ITEMS:

- **Miller Road Bridge and Flood Control Project**Presentation, Discussion and Possible Action
Update on the Miller Road Bridge and Flood Control Project – David Meinhart, Transportation Planning Manager
- **Loop 101 Mobility Project**.....Presentation and Discussion
Kristin Darr, consultant
- **Impact on Parking**.....Presentation and Discussion
Latest parking study, Walter Brodzinski, Right-Way Supervisor
- **November 2018 Sales Tax Projects**.....Presentation and Discussion
Status of Projects funded by November 2018 Additional Sales Tax
- **Assist Business’ during CIP Construction**.....Presentation and Discussion
Discussion on working with local business’ during Capital Improvement Projects – Dave Lipinski, City Engineer
- **Urban Air Mobility**Presentation and Discussion
Discuss Urban Air Mobility as Mode of Transportation
- **Smart City**.....Presentation and Discussion
Discussion on the City’s participation in Smart City applications.
- **New Project Development**Presentation and Discussion
Project development and how it ties in with Transportation – Phil Kercher, Traffic Engineer & Ops Manager
- **Vacant Land**Presentation and Discussion
Impact on areas and traffic with new buildings created – Phil Kercher, Traffic Engineer & Ops Manager
- **Study and Results from Truck Platooning**Presentation and Discussion

Update on Study and Results from Truck Platooning

- **Electric Car Movement.....Presentation and Discussion**
Presentation on electric car movement – Hong Huo, Traffic Engineer Principal
- **Shea and 124th Street UnderpassPresentation and Discussion**
Update on underpass – Greg Davies, Transportation Planner Senior or David Meinhart, Transportation Planning Manager
- **Downtown Trolley.....Presentation and Discussion**
Update on trolley usage – Ratna Korepella
- **General Plan Update.....Presentation and Discussion**
Update on general plan – Erin Perreault
- **Bus Ridership and the Transit System.....Presentation and Discussion**
Update on bus ridership and the Transit System – Ratna Korepella
- **Transportation Action Plan Action**
Presentation of the Transportation Action Plan recommendations - presented by David Meinhart
- **Transit System Evaluation Recommendations..... Action**
Presentation of the Transit Plan Evaluation Recommendations – Ratna Korepella
- **Clever Devices Application on busesPresentation and Discussion**
Discussion of the status of the Clever Devices application that will provide computer aided dispatch a vehicle locator system
- **Update on MAG Prop 400EPresentation and Discussion**
Update on MAG Prop 400E – MAG staff
- **Approval and Funding Process of Projects Related to the Transportation Action Plan...Presentation and Discussion**
Discuss the approval and funding process of projects related to the Transportation Action Plan– David Meinhart, Transportation Planning Manager

PATHS & TRAILS SUBCOMMITTEE

MEETING DATE: October 5, 2021

REPORTS DUE September 28, 2021

- **Approval of Meeting Minutes** **Action**
Approval of Regular meeting minutes of August 3, 2021
- **Bicycle and Related Devices Ordinance** **Presentation and Discussion**
Presentation of the amended Bicycle and Related Devices Ordinance – Susan Conklu, Senior Transportation Planner
- **Civic Center Renovation** **Presentation and Discussion**
Update on design and construction of Civic Center renovation project – Susan Conklu, Senior Transportation Planner
- **Other Transportation Projects and Programs Status** **Information**
Status of projects and programs – Susan Conklu, Senior Transportation Planner
- **Subcommittee Identification of Future Agenda Items** **Discussion**
Subcommittee members may identify items or topics of interest for future Subcommittee meetings

MEETING DATE: December 7, 2021

REPORTS DUE November 30, 2021

- **Approval of Meeting Minutes** **Action**
Approval of Regular meeting minutes of October 5, 2021
- **Other Transportation Projects and Programs Status** **Information**
Status of projects and programs – Susan Conklu, Senior Transportation Planner
- **Subcommittee Identification of Future Agenda Items** **Discussion**
Subcommittee members may identify items or topics of interest for future Subcommittee meetings

FUTURE ITEMS:

- **Wayfinding** **Presentation and Discussion**
Update on Wayfinding – Susan Conklu, Senior Transportation Planner
- **Bicycle Education Program** **Presentation and Discussion**
Update on Laws and Education – Susan Conklu, Senior Transportation Planner
- **Bike Month Recap** **Presentation and Discussion**
Information on Bike Month – Susan Conklu, Senior Transportation Planner
- **Vision Zero** **Presentation and Discussion**
Information on Vision Zero (Tempe) – Susan Conklu, Senior Transportation Planner
- **Equestrian Connectivity** **Presentation and Discussion**
Panel – Susan Conklu, Senior Transportation Planner
- **Access to Indian Bend Wash** **Presentation and Discussion**
Better access and how the Parks Dept. can assist. – Susan Conklu, Senior Transportation Planner
- **Path and Trail Gap Analysis** **Presentation and Discussion**
Information on gaps in the citywide path and trails network – Greg Davies, Senior Transportation Planner