BICYCLE MASTER PLAN: 2012

RESOLUTION NO. 10184

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MESA, MARICOPA COUNTY, ARIZONA, ADOPTING THE 2012 MESA BICYCLE MASTER PLAN.

WHEREAS, The City of Mesa has long recognized the value in adopting and implementing a long-range Bicycle Master Plan; and

WHEREAS, the Bicycle Master Plan update process included numerous public meetings, public surveys, citizens working groups, community outreach, updates via the City's internet website, and numerous briefings and updates to the Transportation Advisory Board; and

WHEREAS, the City of Mesa desires to develop, adopt and implement a comprehensive Bicycle Master Plan to serve as a guideline to address local and regional bicycle issues; and

WHEREAS, the effort to update the Mesa Bicycle Master Plan has included a wide-ranging series of public meetings, community events, review and comment opportunities via the internet, and public surveys, all designed to solicit comments and opinions regarding the Bicycle Master Plan, resulting in an unprecedented level of public involvement; and

WHEREAS, the Bicycle Master Plan serves as a statement of community vision, to help guide the City and the community as a whole in the future.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MESA, MARICOPA COUNTY, ARIZONA:

That the Mesa City Council hereby adopts the Bicycle Master Plan: 2012, presented for Council review on the date written below.

PASSED AND ADOPTED by the City Council of the City of Mesa, Maricopa County, Arizona, this 28th day of January, 2013.

APPROVED:

Mayor

CITY OF MESA CORPORATE SEAL MARICOPA COUNTY, AZ

ATTEST:

City Clerk
Interim

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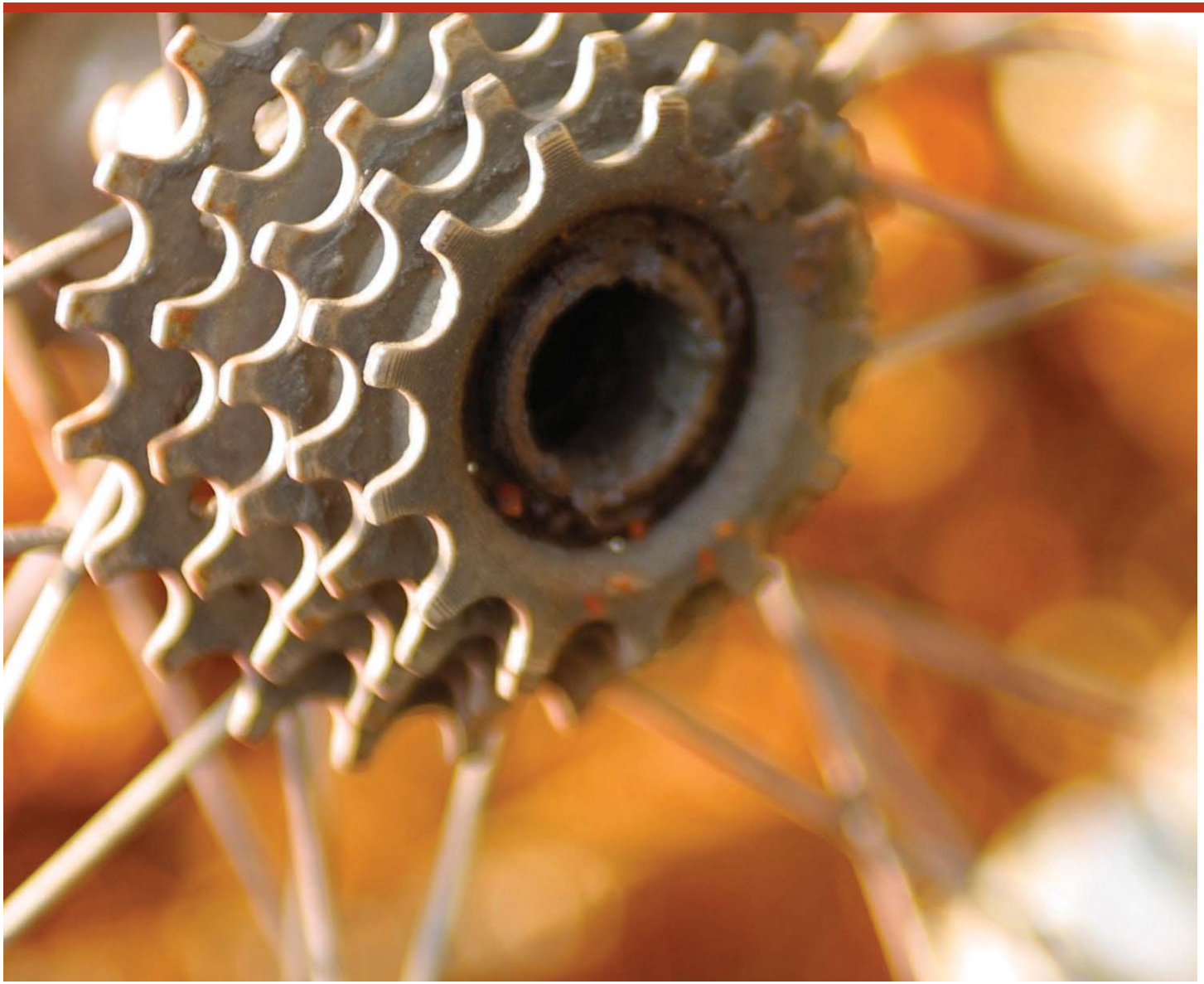
MESA'S VISION FOR BICYCLING

MESA IS A WORLD-CLASS CITY FOR BICYCLING WHERE BICYCLING IS A VIABLE TRANSPORTATION CHOICE. MESA ENCOURAGES ACTIVE PARTICIPATION IN POLICY AND PLANNING EFFORTS THROUGH ALL LEVELS OF THE COMMUNITY. MESA WILL BUILD A MORE INCLUSIVE BICYCLING COMMUNITY THROUGH A WELL DESIGNED, FINELY WOVEN WEB OF FACILITIES CONNECTING PARKS AND RECREATION, SCHOOLS, ACTIVITY CENTERS, AND EMPLOYMENT CENTERS, AND BY REPRESENTING THE NEEDS OF THE DIVERSE POPULATION OF BICYCLISTS IN MESA.

EXECUTIVE SUMMARY



The City of Mesa began its bicycle planning nearly 35 years ago when the first Mesa Bicycle Study was conducted, resulting in the first 14.5 miles of bike lanes in the City. Thirty-five years and four bicycle plan documents later, the City of Mesa is one of the premier cities in the southwestern United States for bicycling. The 2012 Mesa Bicycle Master Plan defines a set of goals, objectives, and strategic performance measures to be completed within the life of the plan, to make Mesa a world class community for bicycling. While this plan is visionary, it has constructed a framework that is practical and functional, which will create a bicycle network and supporting facilities, and programs necessary to make bicycling a viable choice for a wide variety of trips. This plan is designed to increase social interaction on streets, offer alternatives to driving, reduce pollution,

"It is by riding a bicycle that you learn the contours of a country best, since you have to sweat up the hills and coast down them. Thus you remember them as they actually are, while in a motor car only a high hill impresses you, and you have no such accurate remembrance of country you have driven through as you gain by riding a bicycle."

Ernest Hemingway

and promote education and awareness, thereby advancing Mesa towards achieving Bicycle Friendly Community "Platinum" status.

As Mesa becomes ever more mindful of the need to be sustainable as a City and to provide a well-connected and intelligent transportation network, it is natural that bicycling is woven into the urban fabric to provide residents of Mesa the tools needed to function as a city of the 21st century. Bicycling is already a popular form of transportation in Mesa, and current economic factors are motivating more and more residents in Mesa to get out of their automobiles and reunite themselves with bicycling.

GOALS AND OBJECTIVES

The City of Mesa Bicycle Master Plan presents five goals that will be pursued over the life of the plan. These goals can be considered directives that must be taken to achieve the plan's intent.

GOAL ONE: To increase bicycle mode share for all trips to work and school in Mesa within the life of the plan.

GOAL TWO: To improve safety of bicyclists throughout Mesa, reducing the rate of bicycle related crashes by one-third by the year 2022.

GOAL THREE: To develop and implement the League of American Bicyclists five measurable E's of a Bicycle Friendly Community: Education, Enforcement, Engineering, Encouragement, and Evaluation.

GOAL FOUR: To achieve Silver, then Gold, and then Platinum level Bicycle Friendly Community Status by the year 2022.

GOAL FIVE: To establish capital and operating budgets for the Bicycle Program at a level to accomplish these goals by 2022.

Each goal is broken down into a series of objectives and strategic performance measures in Chapter Two in order to provide realistic steps toward each goal and methods to account for any achievement.

EDUCATION, ENCOURAGEMENT, AND ENFORCEMENT

There is an emphasis on the City's intent to attain League of American Bicyclists, Bicycle Friendly Community "Platinum" status. Current safety education and encouragement programs include media campaigns, special events, public outreach, and participation in the Safe Kids Coalition of Maricopa County. The City also provides resource materials such as Bike Maps and safety information brochures.

Establishing and developing additional programs and educational opportunities will increase awareness and enthusiasm for bicycling. Proposed new programs include education for children and adults, diversion programs for traffic infractions, education material for motorists, and more participation in the Safe Routes to School program.

MESA'S BICYCLE FACILITIES

The City of Mesa currently uses standard bike facility elements such as bike lanes and bike routes. This Master Plan discusses and proposes design alternatives such as raised, colored and separated bike lanes; "sharrows;" pedestrian traffic signals; shared-use paths; wayfinding; and bicycle parking. Bicycle usage can be enhanced by providing short-term and long-term parking as well as increasing availability of bicycle parking in the public right-of-way and on private development. The relationship between bicycling and transit must always be considered in any future bike facility planning.

Pat's Cyclery 1947-2011

MESA'S BICYCLE NETWORK NEEDS

The Mesa Bicycle Master Plan presents a strategy for progression to Bicycle Friendly Community "Platinum" status by recommending expansion of network on-street facilities from 274 centerline miles to 394 centerline miles and off-street facilities from six miles to 93 miles during the life of the plan.

To determine where new facilities are needed, a methodology based on gaps in the existing network was developed. The details of this methodology are presented in Chapter Five. Essentially the analysis consists of identifying various types of gaps across the network to develop a ranking system for needs. This analysis resulted in five levels of need for network segments citywide. These levels are presented graphically as different colors on Map 5-15.

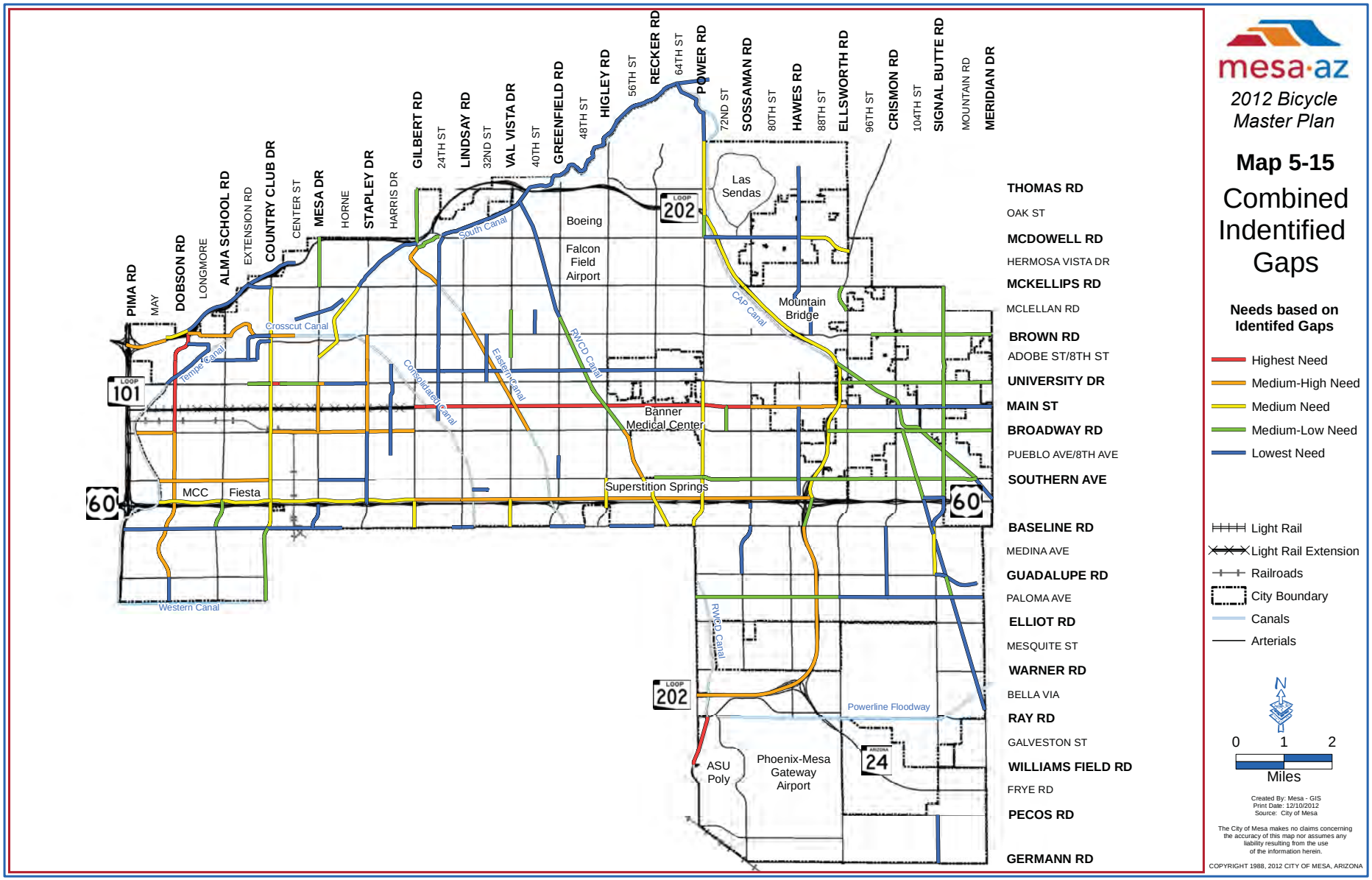
MESA'S BICYCLE PROGRAM NEEDS

In addition to the planned facilities, the plan proposes to expand programs as well. These include safety education for children, adults, bicyclists, and motorists; improving the existing Safe Routes to School Program within the Mesa Public Schools; reducing bicycle related citations through traffic diversion classes; establishing a viable media campaign to deliver bicycle related information to the public; and establishing a tourism campaign that will successfully promote Mesa as a bicycling destination and encourage travel to Mesa for bicycling.

IMPLEMENTATION, EVALUATION, AND FUNDING

The network segments are scored with a set of "implementation criteria" in Chapter Six. These are "real world" subjective judgments by Transportation staff used to balance the purely analytical results of the needs ranking. The combination score of the implementation criteria and the needs ranking results in a priority list for segment projects citywide. The top 40 prioritized projects are listed on Table A, and shown on Map 6-2. Additionally, the projects are presented for each Council District on Maps 6-3 through 6-8 included in Chapter Six. Note that Table 6-2 in Chapter Six includes cost data for all projects. These are planning level estimates that should be used mostly for a sense of general magnitude. Actual estimates will be developed during initial design. Finally, Map 6-9 shows the ultimate future bike network that takes into consideration all existing facilities and all future facilities proposed in this plan.


Mayor Scott Smith Proclaims Bike Month and invites everyone to attend the "Great Arizona Bicycle Festival."


PIMA RD
MAY
DOBSON RD
LONGMORE
ALMA SCHOOL RD
EXTENSION RD
COUNTRY CLUB DR
CENTER ST
MESA DR
HORNE
STAPLEY DR
HARRIS DR
GILBERT RD
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LINDSAY RD
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VAL VISTA DR
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GREENFIELD RD
48TH ST
HIGLEY RD
56TH ST
RECKER RD
64TH ST
POWER RD
72ND ST
SOSSAMAN RD
80TH ST
HAWES RD
88TH ST
ELLSWORTH RD
96TH ST
CRISMON RD
104TH ST
SIGNAL BUTTE RD
MOUNTAIN RD
MERIDIAN DR
THOMAS RD
OAK ST
MCDOWELL RD
HERMOSA VISTA DR
MCKELLIPS RD
MCLELLAN RD
BROWN RD
ADOBE ST/8TH ST
UNIVERSITY DR
MAIN ST
BROADWAY RD
PUEBLO AVE/8TH AVE
SOUTHERN AVE
BASELINE RD
MEDINA AVE
GUADALUPE RD
PALOMA AVE
ELLIOT RD
MESQUITE ST
WARNER RD
BELLA VIA
RAY RD
GALVESTON ST
WILLIAMS FIELD RD
FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
Banner Medical Center
Superstition Springs
MCC
Fiesta
ASU Poly
Phoenix-Mesa Gateway Airport
South Canal
Crosscut Canal
Tempe Canal
Consolidated Canal
Eastern Canal
RWCD Canal
CAP Canal
Western Canal
Powerline Floodway
LOOP 101
LOOP 202
60
ARIZONA 24
mesa·az
2012 Bicycle Master Plan
Map 5-15
Combined Indentified Gaps
Needs based on Identifed Gaps
Highest Need
Medium-High Need
Medium Need
Medium-Low Need
Lowest Need
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials
N
0 1 2
Miles
Created By: Mesa - GIS
Print Date: 12/10/2012
Source: City of Mesa
The City of Mesa makes no claims concerning the accuracy of this map nor assumes any liability resulting from the use of the information herein.
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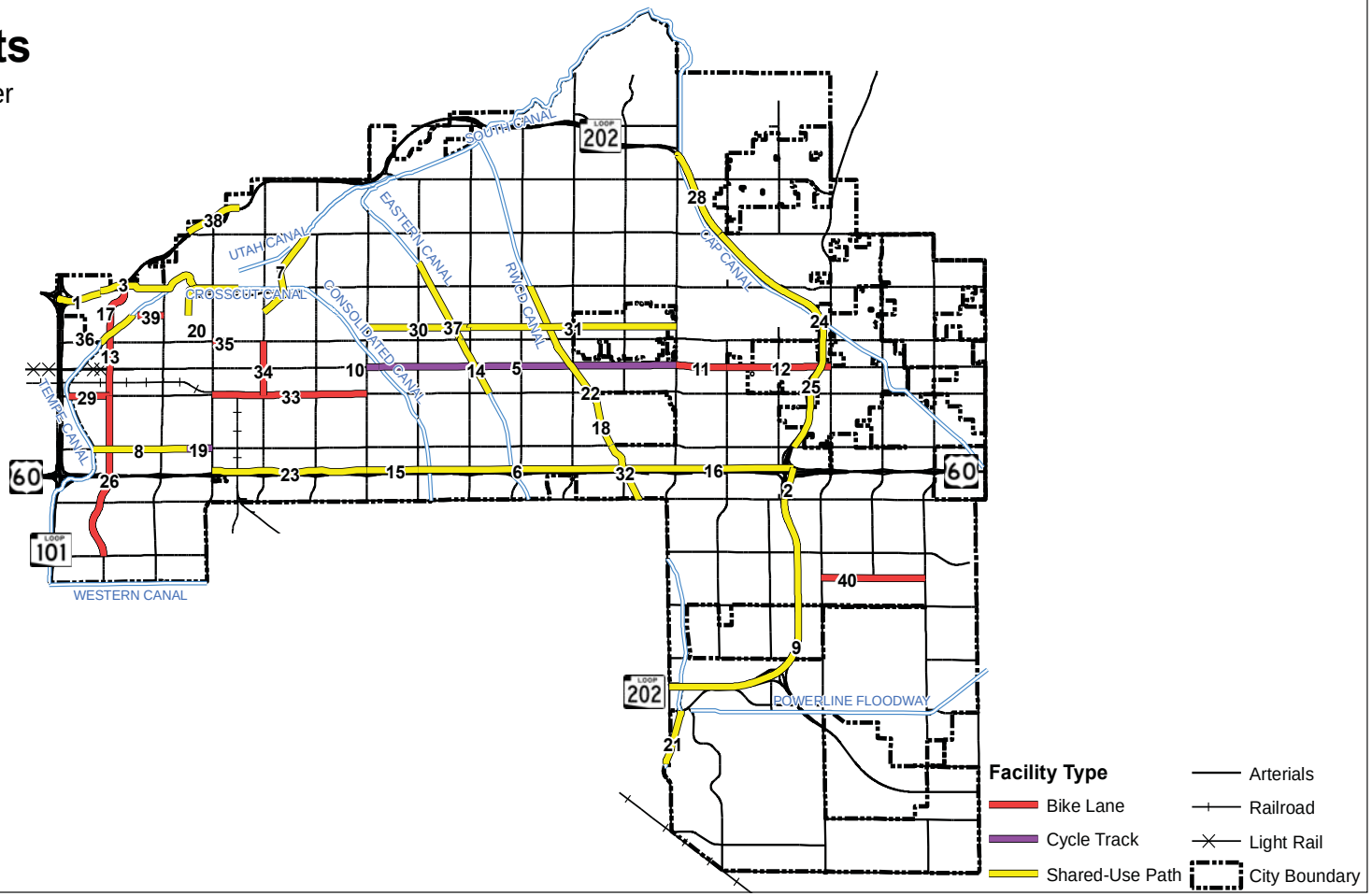
Top 40 Projects

Labeled in Priority Order

Map 6-2



Priority	District	Project Location and Description	Facility Type	Multiple District Project
1	One	Riverview/Rio Salado Pathway - Wrigleyville West to Tempe Rio Salado Pathway	Shared-Use Path	
2	Six	Loop 202 San Tan Freeway R.O.W. - Baseline Road to U.S. 60	Shared-Use Path	
3	One	Riverview/Rio Salado Pathway - Wrigleyville West to Dobson Road	Shared-Use Path	
4	One	West Mesa Connector - Center Street to Dobson Road	Shared-Use Path	
5	Two	Main Street - Consolidated Canal to Power Road	Cycle Track	
6	Two	US 60 R.O.W. - Lindsay Road to Recker Road	Shared-Use Path	
7	One	Porter Park Pathway - Mesa Drive to McKellips Road	Shared-Use Path	
8	Three	Southern Avenue - Extension Road to West City Limit (Fiesta District)	Shared-Use Path	
9	Six	Loop 202 San Tan Freeway R.O.W. - Power Road to Baseline	Shared-Use Path	
10	Four	Main Street - Gilbert Road to the Consolidated Canal	Cycle Track	
11	Five	Main Street - Power Road to Sossaman Road	Bike Lane	
12	Five	Main Street - Sossaman Road to Ellsworth Road	Bike Lane	
13	Three	Dobson Road - Broadway Road to Rio Salado Parkway/8th Street	Bike Lane	
14	Two	Eastern Canal - University Drive to Broadway Road	Shared-Use Path	
15	Three	US 60 R.O.W. - Gilbert Road to Lindsay Road	Shared-Use Path	
16	Six	US 60 R.O.W. - Recker Road to the Loop 202 San Tan Freeway	Shared-Use Path	
17	One	Dobson Road - Rio Salado Parkway to the Loop 202 Red Mountain Freeway	Bike Lane	
18	Two	RWCD/EMF - Broadway Road to Southern Avenue	Shared-Use Path	
19	Four	Southern Avenue - Country Club Drive to Extension Road	Cycle Track	Three
20	One	University Drive - Country Club Drive to Robson	Bike Lane	Four

Priority	District	Project Location and Description	Facility Type	Multiple District Project
21	Six	RWCD/EMF - Ray Road to Williams Field Road	Shared-Use Path	
22	Two	RWCD Canal SUP - Brown Road to Broadway Road	Shared-Use Path	
23	Four	US 60 R.O.W. - Country Club Drive to Gilbert Road	Shared-Use Path	
24	Five	Loop 202 Red Mountain Freeway - McKellips Road to University Drive	Shared-Use Path	
25	Five	Loop 202 Red Mountain Freeway - University Drive to Southern Avenue	Shared-Use Path	
26	Three	Dobson Road - Broadway Road to Guadalupe Road	Bike Lane	
27	One	Utah Canal Connection - Rio Salado Parkway to the West Mesa Connector	Shared-Use Path	
28	Five	Loop 202 Red Mountain /CAP - Power Road to McKellips Road	Shared-Use Path	
29	Three	Broadway Road - Dobson Road to West City Limit	Bike Lane	
30	One	Highline Trail - Gilbert Road to Val Vista Drive	Shared-Use Path	
31	Two	Highline SRP Powerline Easement - Val Vista Drive to Power Road	Shared-Use Path	
32	Two	RWCD/EMF - Southern Avenue to Baseline Road	Shared-Use Path	Six
33	Four	Broadway Road - Country Club Drive to Gilbert Road	Bike Lane	
34	Four	Mesa Drive - Broadway Road to University Drive	Bike Lane	
35	Four	University Drive - Robson to Macdonald	Bike Lane	
36	Three	Tempe Canal - University Drive to Rio Salado Parkway/8th Street	Shared-Use Path	
37	One	Eastern Canal Trail - Lindsay Road to University Drive	Shared-Use Path	
38	One	Salt River Basin - McKellips Road to Center Street	Shared-Use Path	
39	Three	Rio Salado Parkway/8th Street - Longmore Road to Alma School Road	Bike Lane	One
40	Six	Powerline Easement - Ellsworth Road to Signal Butte Road	Bike Lane	

Top 40 Featured Projects

Table A					GAP Evaluation	Implementation Criteria Score							
Priority	Project Location and Description	Facility Type	District	Length	Need Score	Criteria Total Score	Need + Criteria Score	Estimated Costs			Estimated ROW Costs	Estimated O&M Costs/yr
								Design	Construction	30% Contengency		
1	Riverview/Rio Salado Pathway - Wrigleyville West to Tempe Rio Salado Pathway	Shared-Use Path	2	0.9	2.0	7	9	$85,803	$858,025	$257,408	$0	$5,577
2	Loop 202 San Tan Freeway R.O.W. - Baseline Road to U.S. 60	Shared-Use Path	6	0.6	4.0	6	10	$61,905	$619,054	$185,716	$0	$4,024
3	Riverview/Rio Salado Pathway - Wrigleyville West to Dobson Road	Shared-Use Path	1	0.5	3.0	8	11	$48,603	$486,029	$145,809	$0	$3,159
4	West Mesa Connector - Center Street to Dobson Road	Shared-Use Path	1	2.0	2.0	9	11	$399,760	$3,997,601	$1,199,280	$0	$13,111
5	Main Street - Consolidated Canal to Power Road	Cycle Track	2	5.8	1.0	10	11	$720,029	$7,200,291	$2,160,087	$ 1,440,058	$37,442
6	US 60 R.O.W. - Lindsay Road to Recker Road	Shared-Use Path	2	4.0	2.0	10	12	$399,760	$3,997,601	$1,199,280	$0	$25,984
7	Porter Park Pathway - Mesa Drive to McKellips Road	Shared-Use Path	1	1.8	3.0	10	13	$181,392	$1,813,916	$544,175	$0	$11,790
8	Southern Avenue - West City Limit (Fiesta District) to Extension Road	Shared-Use Path	3	1.8	2.0	11	13	$180,000	$1,800,000	$540,000	$360,000	$11,700
9	Loop 202 San Tan Freeway - Power Road to Baseline Road (Gateway Shared-Use Pathway Project)	Shared-Use Path	6	5.6	2.0	11	13	$556,312	$5,563,116	$1,668,935	$0	$36,160
10	Main Street - Gilbert Road to the Consolidated Canal	Cycle Track	4	0.2	1.0	13	14	$29,386	$293,865	$88,159	$58,773	$1,528
11	Main Street - Power Road to Sossaman Road	Bike Lane	5	1.0	1.0	13	14	$24,728	$247,278	$74,184	$49,456	$6,429
12	Main Street - Sossaman Road to Ellsworth Road	Bike Lane	5	2.0	2.0	13	15	$50,447	$504,471	$151,341	$100,894	$13,116
13	Dobson Road - Broadway Road to Rio Salado Parkway/8th Street	Bike Lane	6	1.5	1.0	14	15	$65,000	$650,000	$195,000	$130,000	$9,786
14	Eastern Canal - University Drive to Broadway Road	Shared-Use Path	5	1.1	2.0	13	15	$114,812	$1,148,120	$344,436	$0	$7,463
15	US 60 R.O.W. - Gilbert Road to Lindsay Road	Shared-Use Path	6	1.0	2.0	13	15	$99,266	$992,663	$297,799	$0	$6,452

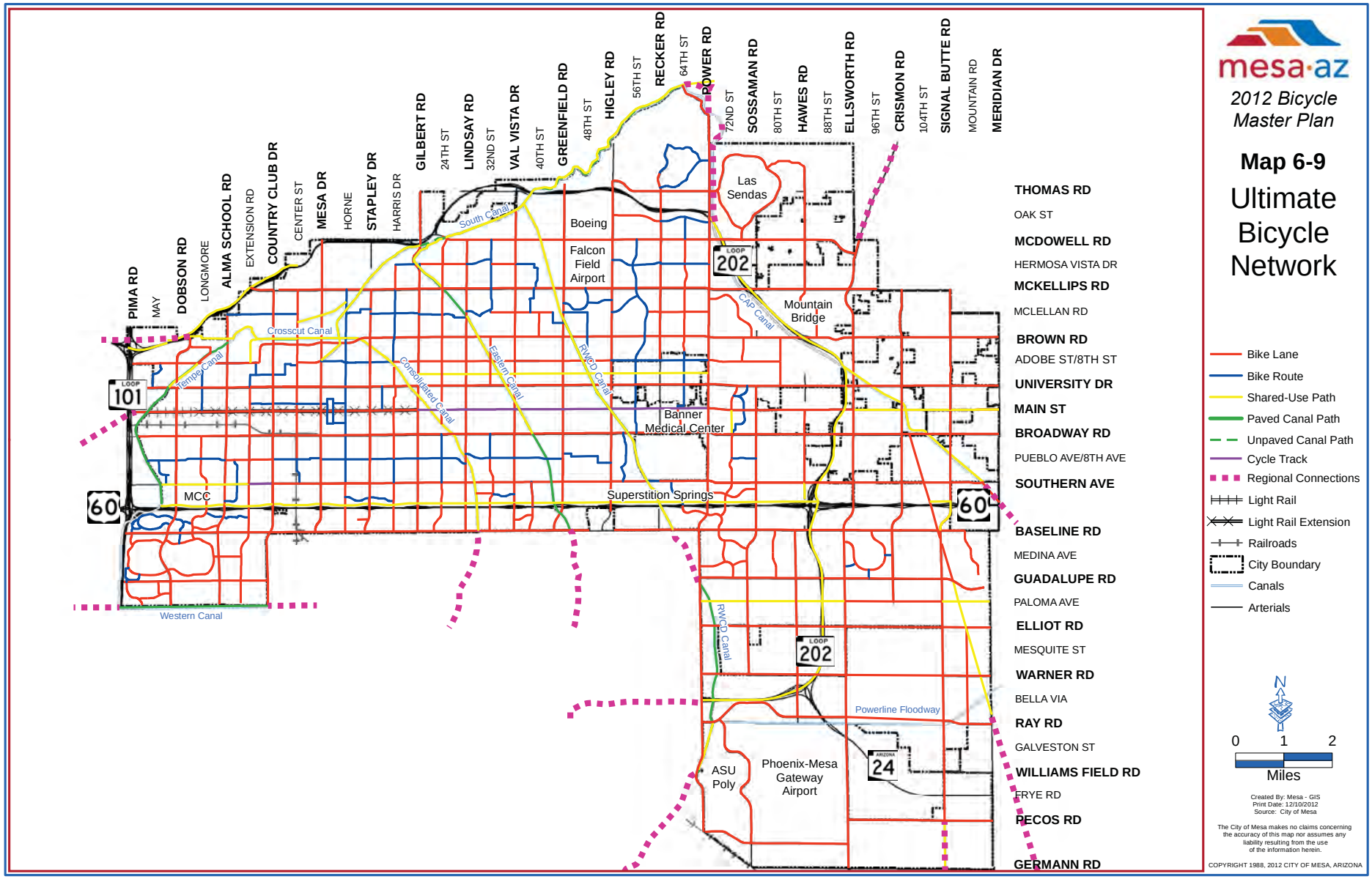
Top 40 Featured Projects

Table A

Priority	Project Location and Description	Facility Type	District	Length	GAP Evaluation: Need Score	Implementation Criteria Score: Criteria Total Score	Implementation Criteria Score: Need + Criteria Score	Estimated Costs: Design	Estimated Costs: Construction	Estimated Costs: 30% Contengency	Estimated ROW Costs	Estimated O&M Costs/yr
16	US 60 R.O.W. - Recker Road to the Loop 202 San Tan Freeway	Shared-Use Path	6	3.3	2.0	13	15	$330,668	$3,306,685	$992,005	$0	$21,493
17	Dobson Road - Rio Salado Parkway to the Loop 202 Red Mountain Freeway	Bike Lane	1	0.7	1.0	14	15	$17,221	$172,208	$51,662	$34,442	$4,477
18	RWCD/EMF - Broadway Road to Southern Avenue	Shared-Use Path	2	1.1	2.0	14	16	$143,000	$1,430,000	$429,000	$0	$6,967
19	Southern Avenue - Country Club Drive to Extension Road	Cycle Track	4	0.5	2.0	14	16	$61,938	$619,381	$185,814	$123,876	$3,221
20	University Drive - Country Club Drive to Robson	Bike Lane	1	0.2	1.0	15	16	$4,000	$40,000	$12,000	$10,000	$1,040
21	RWCD/EMF - Ray Road to Williams Field Road	Shared-Use Path	6	1.0	1.0	15	16	$103,190	$1,031,899	$309,570	$0	$6,707
22	RWCD Canal SUP - Brown Road to Broadway Road	Shared-Use Path	2	2.3	4.0	12	16	$231,781	$2,317,812	$695,344	$0	$15,066
23	US 60 R.O.W. - Country Club Drive to Gilbert Road	Shared-Use Path	4	3.0	3.0	13	16	$300,404	$3,004,039	$901,212	$0	$19,526
24	Loop 202 Red Mountain Freeway - McKellips Road to University Drive	Shared-Use Path	5	2.5	3.0	13	16	$253,832	$2,538,317	$761,495	$0	$16,499
25	Loop 202 Red Mountain Freeway - University Drive to Southern Avenue	Shared-Use Path	5	2.5	3.0	13	16	$253,978	$2,539,779	$761,934	$0	$16,509
26	Dobson Road - Broadway Road to Guadalupe Road	Bike Lane	3	3.1	2.0	14	16	$100,750	$1,007,500	$302,250	$201,500	$20,316
27	Utah Canal Connection - Rio Salado Parkway to the West Mesa Connector	Shared-Use Path	1	0.9	5.0	12	17	$68,857	$688,572	$206,572	$0	$5,968
28	Loop 202 Red Mountain/CAP - Power Road to McKellips Road	Shared-Use Path	5	1.7	3.0	14	17	$171,165	$1,711,652	$513,496	$0	$11,126
29	Broadway Road - Dobson Road to West City Limit	Bike Lane	3	0.8	2.0	15	17	$19,614	$196,137	$58,841	$39,227	$5,100
30	Highline Trail - Gilbert Road to Val Vista Drive	Shared-Use Path	1	2.0	5.0	13	18	$199,352	$1,993,518	$598,055	$0	$12,958
31	Highline SRP Powerline Easement - Val Vista Drive to Power Road	Shared-Use Path	2	4.0	5.0	13	18	$399,880	$3,998,799	$1,199,640	$0	$25,992
32	RWCD/EMF - Southern Avenue to Baseline Road	Shared-Use Path	2	1.2	3.0	15	18	$117,225	$1,172,254	$351,676	$0	$7,620

Top 40 Featured Projects

Table A					GAP Evaluation	Implementation Criteria Score						
Priority	Project Location and Description	Facility Type	District	Length	Need Score	Criteria Total Score	Need + Criteria Score	Estimated Costs			Estimated ROW Costs	Estimated O&M Costs/yr
								Design	Construction	30% Contengency		
33	Broadway Road - Country Club Drive to Gilbert Road	Bike Lane	4	3.0	2.0	16	18	$74,762	$747,621	$224,286	$149,524	$19,438
34	Mesa Drive - Broadway Road to University Drive	Bike Lane	4	1.0	2.0	16	18	$25,124	$251,240	$75,372	$50,248	$6,532
35	University Drive - Robson to Macdonald	Bike Lane	4	0.2	1.0	17	18	$4,757	$47,566	$14,270	$9,513	$1,237
36	Tempe Canal - University Drive to Rio Salado Parkway/8th Street	Shared-Use Path	3	0.8	5.0	13	18	$77,804	$778,043	$233,413	$0	$5,057
37	Eastern Canal Trail - Lindsay Road to University Drive	Shared-Use Path	1	1.6	2.0	16	18	$143,000	$1,430,000	$429,000	$0	$10,719
38	Salt River Basin Shared-Use Path - McKellips Road to Center Street	Shared-Use Path	1	1.1	5.0	14	19	$143,000	$1,430,000	$429,000	$0	$7,208
39	Rio Salado Parkway/8th Street - Longmore to Alma School Road	Bike Lane	3	0.5	5.0	14	19	$12,646	$126,463	$37,939	$25,293	$3,288
40	Powerline Easement - Ellsworth Road to Signal Butte Road	Bike Lane	6	2.0	5.0	14	19	$50,450	$504,499	$151,350	$100,900	$13,117


mesa·az
2012 Bicycle Master Plan
Map 6-9
Ultimate Bicycle Network
PIMA RD
MAY
DOBSON RD
LONGMORE
ALMA SCHOOL RD
EXTENSION RD
COUNTRY CLUB DR
CENTER ST
MESA DR
HORNE
STAPLEY DR
HARRIS DR
GILBERT RD
24TH ST
LINDSAY RD
32ND ST
VAL VISTA DR
40TH ST
GREENFIELD RD
48TH ST
HIGLEY RD
56TH ST
RECKER RD
64TH ST
POWER RD
72ND ST
SOSSAMAN RD
80TH ST
HAWES RD
88TH ST
ELLSWORTH RD
96TH ST
CRISMON RD
104TH ST
SIGNAL BUTTE RD
MOUNTAIN RD
MERIDIAN DR
THOMAS RD
OAK ST
MCDOWELL RD
HERMOSA VISTA DR
MCKELLIPS RD
MCLELLAN RD
BROWN RD
ADOBE ST/8TH ST
UNIVERSITY DR
MAIN ST
BROADWAY RD
PUEBLO AVE/8TH AVE
SOUTHERN AVE
BASELINE RD
MEDINA AVE
GUADALUPE RD
PALOMA AVE
ELLIOT RD
MESQUITE ST
WARNER RD
BELLA VIA
RAY RD
GALVESTON ST
WILLIAMS FIELD RD
FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
Banner Medical Center
Superstition Springs
MCC
ASU Poly
Phoenix-Mesa Gateway Airport
South Canal
Crosscut Canal
Tempe Canal
Consolidated Canal
Eastern Canal
RWCD Canal
CAP Canal
Powerline Floodway
Western Canal
LOOP 101
LOOP 202
60
ARIZONA 24
Bike Lane
Bike Route
Shared-Use Path
Paved Canal Path
Unpaved Canal Path
Cycle Track
Regional Connections
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials
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Miles
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CHAPTER ONE

INTRODUCTION

BICYCLING IN MESA

As Mesa treks into the second decade of the 21st century, we realize that there is an increasing need to make available a vibrant connected bicycle network that will provide an efficient, safe, and reasonable means of transportation for our residents' daily trips.

Bicycling in Mesa has already become a very popular way of getting from one place to another. During these times of high gas prices, a warming climate, increasing traffic volume, and expanding waistlines, large numbers of bicyclists are utilizing the City's bicycle lanes, paths, and routes to travel to their homes, schools, work, transit lines, friends, or shopping.

The League of American Bicyclists began as the League of American Wheelmen (LAW) in 1880, and was responsible for defending the rights of cyclists. The League of American Wheelmen is credited with getting paved roads in this country before the reign of the automobile.

By 1898, the League of American Wheelmen had more than 102,000 members including the Wright Brothers, Diamond Jim Brady, and John D Rockefeller! In 1994, the League was renamed the League of American Bicyclists and began to focus its programs on education in addition to advocacy.

The League's Bicycle Friendly Community program recognizes communities nationwide that support the five E's of bicycling -- education, enforcement, engineering, evaluation, and encouragement.

On weekends the City's bicycle network is teeming with cyclists including clubs, racers, and enthusiasts wishing to get out and enjoy the wonders of the Arizona landscape. Mesa is recognized and respected as a Bicycle Friendly Community and destination as evidenced by Mesa's current bronze level status for excellence in engineering awarded by the League of American Bicyclists, and by Mesa being recognized in 2010 by Forbes Magazine as the tenth best city in the nation for bicycle commuting according to the 2010 Alliance for Biking & Walking Benchmarking Report.

The City is planning to install bicyclist and pedestrian actuated crossing signals along a newly constructed shared-use pathway where it crosses wide arterial streets.

Additionally, 19 miles of on-street bicycle lanes were added in 2012 bringing the total to 128 miles. Two miles of new shared-use pathway along the Consolidated Canal was funded for construction as part of the American Recovery and Reinvestment Act that was authorized by the Federal Government in 2008. Mesa also continues its efforts to educate the public about bicycle safety and awareness through school and community programs.

As Mesa set this plan update in motion for the fourth edition of the Bicycle Plan, staff began to formulate a comprehensive framework to ensure bicycling continues to be an integral part of the City's multi-modal transportation system by focusing on two main goals:

1. **Increase the use of bicycling for all trips by establishing a bicycle network that adequately responds to the transportation needs and desires of all Mesa residents.**
2. **Increase cyclist safety through the development and maintenance of a bicycle network that improves compatibility among bicycles and other transportation modes.**

These two main goals are being developed through:

- Analyzing existing bicycle facility conditions, and developing the network of bikeways.
- Promoting and facilitating bicycling as a safe, convenient, and comfortable form of transportation and recreation throughout the City.
- Making bicycling safer and more convenient for bicyclists of all ages and skill levels.

Mesa began identifying the need for bicycle facilities with the adoption of the first Mesa Bicycle Study in 1974. Since that time Mesa has continued to provide bicyclists with an improved environment though the addition of on-street and off-street bicycle facilities.

This chapter will identify some of the benefits of bicycling including:

- The role of bicycling in alleviating congestion on the overall transportation network of the City
- Enhanced health
- Economic benefits of riding a bicycle

Additionally it is important to understand bicycle trip characteristics associated with a person's level of experience riding a bicycle, and how bicycle trips are characterized and analyzed.

This section will also provide a synopsis of current bicycle use in the community, assess commuter biking statistics, and show how the City of Mesa compares to other cities.

THE BENEFITS OF BICYCLING

Bicycling as an alternative form of transportation to the gasoline dependent automobile is more appealing than ever. There are a variety of benefits associated with bicycling on a regular basis. Bicycling can:

- Provide needed relief to a congested transportation network.
- Provide considerable environmental and health benefits.
- Provide economic benefits and financial relief from expenditures related to operating a vehicle on a daily basis to and from work.
- Create benefits to the quality of life, which directly benefit the social health of a City.

Bicycling is an activity that can be enjoyed by all ages, and represents a viable means of transport.

MOTOR VEHICLE TRIP REDUCTION

Some city streets experience daily volumes above the designed road capacity. This often results in a lower level of service, lost time, increased pollution, and driver frustration, according to the League of American Bicyclists. Many vehicle trips residents take on a daily basis are short and could be taken by bicycle in 10 minutes or less. Traffic volumes throughout the City's arterial corridors can average anywhere from 20,000 to 50,000 vehicles per day. Shifting some of these trips to bicycle can help to reduce traffic volumes. Alternative modes of travel such as bicycling are encouraged throughout the City by providing enhanced bicycle facilities and a well-connected bicycle network.

Collectively, as an alternative to the automobile, increased bicycling throughout the City can also reduce on-street parking demand in concentrated areas. Often, a bike trip can be more convenient than a vehicle trip in an urbanized area since a bicycle is easier to maneuver, and parking is often less problematic for a bicycle. Also, bicyclists can easily transfer to bus and rail to continue a trip or travel a farther distance to their destination.

"When I see an adult on a bicycle, I do not despair for the future of the human race."

H.G. Wells

Amount of space required to transport the same number of passengers by car, bus, and bicycle.
Poster in City of Muenster Planning Office, August 2011

ENVIRONMENTAL BENEFITS

Bicycling, instead of driving a car, can significantly help to improve the environment by reducing the amount of pollutants in our air and water. Every day millions of barrels of oil are burned in the form of gasoline. Motor vehicle emissions represent 31 percent of total carbon dioxide, 81 percent of carbon monoxide, and 49 percent of nitrogen oxides released in the U.S. (The Green Commuter, A Publication of the Clean Air Council).

Sixty percent of the pollution created by automobile emissions happens in the first few minutes of operation, before pollution control devices can work effectively. Since "cold starts" create high levels of emissions, shorter car trips are more polluting on a per-mile basis than longer trips (League of American Bicyclists).

According to the World Watch Institute, a short four-mile trip by bicycle can keep approximately

four pounds of pollutants out of the air that we breathe. Not surprisingly, many of the United States' major metropolitan areas do not meet the air quality standards specified in the 1990 Clean Air Act Amendments. By encouraging our citizens to switch motor vehicle trips over to bicycle trips we can reduce energy needs and pollution emissions from the transportation sector.

PHYSICAL HEALTH

No matter what your experience is with bicycling or how much bicycling you have done in the past, riding a bicycle can be a great way to exercise and become more fit. Riding a bicycle on a regular basis may result in increased strength, stamina, conditioning, and associated long-term weight loss. When considering the growing rate of obesity in the United States associated with poor diet and a sedentary lifestyle, the choice of cycling on a regular basis is not only good for one's overall health, but it also lowers the risk of heart-related diseases and other health problems. It is also very helpful in reducing overall stress levels.

Since bicycling promotes a healthier lifestyle, there are subsequent economic benefits associated with increased levels of physical activity. Collectively, increased levels of exercise and proper nutrition may help to reduce obesity and an array of diseases. These reductions may ultimately have an impact on lowering long-term health costs and relieving the burden on the nation's healthcare system. Obesity, high blood pressure, and heart-related diseases are responsible for a significant amount of annual medical expenditures within the United States.

QUALITY OF LIFE FACTORS

Comfortable, well-connected bicycle facilities offer alternatives to driving in a motor vehicle and make bicycling for exercise or recreation easier. This increases the opportunity for social contact with other individuals. By providing suitable bicycle facilities and amenities that are well connected and offer coordinated routes, communities enable the interaction between neighbors and members of the public that can strengthen relationships and contribute to a greater sense of place and identity. The number of people bicycling can be an indication of a community's livability factor, which has a profound effect on attracting businesses, workers, and tourism.

ECONOMICS

Economic rewards to the individual bicyclist can be realized through reduced health care costs and reduced auto ownership, insurance, maintenance, and operating costs. Economically, bicycling provides a cost-efficient means of travel, dramatically offsetting the costs associated with dependence on a vehicle. Opting to ride a bicycle to work or school can save on gas, vehicle maintenance, and parking costs.

The majority of Americans drive a motor vehicle to and from work. According to the U.S. Census Bureau, in 2010, approximately 86 percent of all Americans age 16 or over drove a motor vehicle to their place of employment, whereas 0.5 percent rode a bike. In Mesa, according to the U.S. Census Bureau, in 2010 approximately 0.9 percent of all individuals who commuted to work traveled by means of a bicycle. Therefore, an increase in bicycle ridership could help to reduce costs to those individuals who drive motor vehicles to work.

Some people may not live within a comfortable distance to ride a bicycle to work. However, for those who do, they can take advantage of the benefits associated with bicycling.

According to a number of bicycle clubs such as Greater Arizona Bicycling Association (GABA), Coalition of Arizona Bicyclists, and a variety of recent, bicycle studies such as "The Economic Significance of Cycling," the typical costs associated with maintaining and operating an average bicycle on an annual basis ranges from $150 to $300 dollars. In contrast, according to the American Automobile Association in a 2007 study entitled, "Your Driving Costs," the annual cost of maintaining a vehicle is much higher. The national average for vehicle ownership depends on the type of vehicle, and the total miles that are placed on the vehicle each year as shown in Table 1-1.

The American Automobile Association averages are based on a number of considerations, including:

- Fuel and oil
- Maintenance and repairs
- Tires
- Insurance
- License, registration, and taxes
- Depreciation
- Finance charges

When considering the differences between the two modes of travel, it is certain that any use of a bicycle to offset overall vehicle mileage is extremely cost effective and will save money.

Table 1-1

2010 NATIONAL AVERAGE FOR VEHICLE OWNERSHIP (Total Ownership Operating Costs)

Type of Vehicle	Miles Per Year Total Costs (Cents Per Mile)		
	10,000	15,000	20,000
Small Sedan	$5,600 (56¢)	$6,450 (43¢)	$7,480 (37¢)
Medium Sedan	$7,300 (73¢)	$8,400 (56¢)	$9,640 (48¢)
Large Sedan	$9,300 (93¢)	$10,500 (70¢)	$11,800 (59¢)
Composite National Average	$7,400 (74¢)	$8,550 (57¢)	$9,600 (48¢)
Bicycle	$225* (2¢)	$225* (1.5¢)	$225* (1¢)

*Does not include Maintenance and Repairs

Source: American Automobile Association, 2010, Your Driving Costs

Dobson Road and Southern Avenue Commuter

When asked "On which types of streets do you prefer riding for your level of comfort?"

66% of respondents preferred riding on arterial streets.

BICYCLE TRIP AND RIDER CHARACTERISTICS

When assessing the types of bicyclists in the community and the nature of the trips that they are taking, there are a number of categories to consider. The League of American Bicyclists distinguishes rider abilities by dividing all bicycle riders into four different levels that can be categorized by experience, the types of trips that occur on a regular basis, the length of those trips, and the route taken.

The information in this section, taken directly from the League of American Bicyclists, will provide a brief overview of concepts related to:

- Overall rider experience levels
- Types of bicycle trips
- Trip length
- Trip purpose

LEVEL OF EXPERIENCE/TYPES OF RIDERS

Experienced riders are typically those who have ridden a bicycle for a number of years in various conditions. The experience level, or comfort level, can generally be broken down into four different groups: 1) No Way, No How; 2) Interested but Concerned; 3) Confident & Enthused; and 4) Strong & Fearless. These cyclist types are characterized by the needs and concerns that they share about their bicycling environment.

No Way, No How

Bicyclists who fall in the "No Way, No How" classification are often riders who have either had a bad experience as a bicyclist, or motor vehicle driver. Usually, under no circumstance will these cyclists ride on the street in or near traffic. They are prone to be nervous and unpredictable in or around traffic.

Interested but Concerned

"Interested but Concerned" bicyclists are often riders who have simply yet to obtain the proper safety and bicycle handling skills needed to feel safe and proficient in traffic. Familiarity with proper handling skills, in addition to an understanding of bicycle safety issues and how to interact with traffic, often increase the inexperienced bicyclist's knowledge, equipping them with a better grasp of operating a bicycle in traffic.

Confident & Enthused

"Confident & Enthused" bicyclists feel comfortable in traffic and have the needed skills to effectively maneuver their bicycles in a variety of different traffic conditions. These cyclists have the confidence and skills to travel and operate their bicycles as motor vehicles on arterials; however, if given the opportunity, will choose an alternative path of travel such as a shared-use path or secondary street instead.

Strong & Fearless

The "Strong & Fearless" riders will ride anywhere in any condition and are as comfortable on their bicycles as they are in their cars. Their overall skill levels, confidence in operating a bicycle, understanding of bicycle safety, ability to ride in a variety of road and bicycle facility conditions, and ability to maneuver a bicycle within a range of traffic conditions ultimately gives them the confidence and knowledge to ride on roadways that offer no bicycle lane or shoulder with the same ease as a roadway with full bicycle facilities.

The Bicycle Master Plan will take into account and include facilities for users at all experience and comfort levels.

BICYCLE TRIP CHARACTERISTICS

Although bicycle trips and trip distances vary considerably, all trips are generally identified as being either recreational, utilitarian, or commuter oriented. One intent of this plan is to provide equal opportunity to bicyclists for all trip types.

Recreational Trips

Recreational trips are taken for general leisure purposes, sightseeing, personal training, exercise, or trips of a similar nature to city parks and recreational facilities. With this type of trip, most bicyclists travel along arterials, collectors, local roadways, bicycle lanes, shared-use canal paths, off-road mountain biking trails, or other linkages connecting several recreational uses. Although not always the case, the majority of recreational trips have a tendency to occur over the weekend and during the early morning hours, when cyclists are out exercising or training over the road.

Utilitarian Trips

Utilitarian trips are those that involve the use of a bicycle for personal trips, such as shopping, attending to personal business, or social visits. Such trips regularly occur on the City's arterial, collector and local streets, and are often shorter than recreational or commuter bicycle trips. Utility trips are rather popular in local areas where traveling longer distances is not necessarily required.

Commuter Trips

Commuter trips on bicycles typically involve cyclists who travel to a place of employment or school. The nature of a commuter bicycle trip to and from work is often considered "utilitarian" in scope. However, it is often placed into a separate category for bicycle planning purposes. Commuting trips frequently occur during morning (a.m.) and late-afternoon to early-evening (p.m.) periods of peak traffic, and involve longer distances than utilitarian trips. During the week, commuting cyclists generally represent a good number of individuals riding bicycles, whereas, recreational and utilitarian bicycle trips are typically more frequent during the weekends.

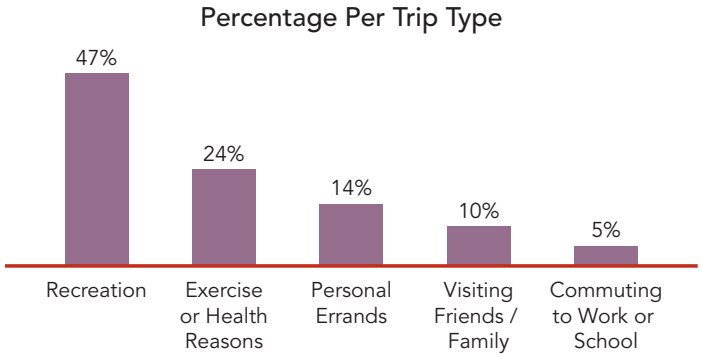
A large portion of Mesa cyclists are utilitarian riders.

STANDARD BICYCLE TRIP LENGTHS AND PURPOSE

According to a U.S. Department of Transportation, Bureau of Transportation Statistics study, in 2002 the average length of a bicycle trip in the United States was approximately 3.9 miles. This study relied on an extensive survey, with 2,525 respondents throughout all areas of the country. As part of the bicycle trip length observations, it was determined that:

- 38.6% of all bicycle trips were less than a mile in length.
- 18.5% of all trips ranged from one to two miles in length.
- 23.8% of all trips ranged from two to five miles in length.
- 11.8% of all trips ranged from five to ten miles in length.
- 7.3% of all trips were over 10 miles in length.

Bicyclists reported a variety of responses regarding their purpose for taking a trip as indicated in the following chart:



At a national level, the primary facilities used for bicycling trips were as follows:

- Sidewalks
- Bicycle paths, walking paths, and trails
- Shoulders of paved roads
- Bicycle lanes on roads

BICYCLE USE IN MESA

From June to September of 2008, the City of Mesa's Transportation Department conducted a combined (on-line and mail out) bicycle survey, Survey One, in an effort to determine community bicycling characteristics, and to obtain general feedback from the bicycling public. The survey was structured in a manner designed to obtain personal respondent survey data including general socioeconomic information.

During this survey period 316 respondents answered a series of questions that were focused upon general cycling preferences and in-depth information on facility needs throughout the City of Mesa.

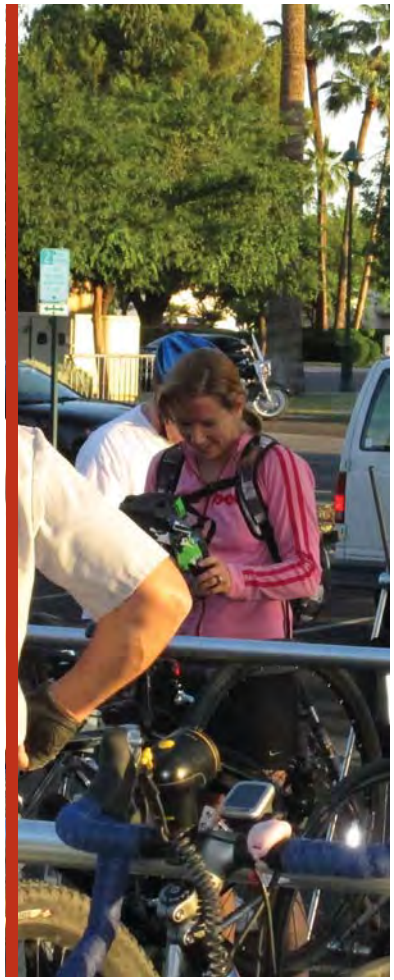
This three-month survey was helpful in obtaining key data and information on current bicycle riders throughout the City and was a very important component of the overall bicycle planning process.

While it is understood that the Mesa Community Bicycle Survey attempted to reach a wide and diverse cross-section of the public through several avenues including mailers, on-line sites, surveys handed out to bike shop patrons, and a survey included with the monthly City of Mesa utility billing, only a small sampling of the overall public responded to the survey. However the resulting survey data was helpful in providing a better understanding of bicyclists who are on the City's transportation network and their concerns. It is also acknowledged that the survey data has not captured the responses of the younger children and elementary, middle, and high school students, who typically ride on local, non-arterial streets, canal paths, and areas associated with recreational uses and schools.

The completed survey results have offered an initial public discourse on bicycle facility usage, the need for future bicycle facilities, and a general overview

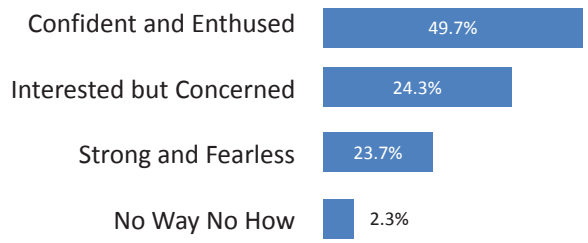
of traffic and safety concerns expressed by citizens of Mesa who regularly ride bicycles throughout the community. Although complete survey results are provided in Appendix B, some of the initial, general observations from Survey One are listed below:

- The majority of respondents (65.5%) were between the ages of 41 and 60 years old.
- The majority of respondents have a college degree or a post graduate degree (77.1%).
- The majority of respondents are employed in professional positions.
- Half of the respondents in the survey (50.8%) belong to, or have a tendency to be affiliated with a bicycle club or bicycle advocacy group.
- Almost all respondents own a car (97.0%), and the majority of respondents (73.6%) drive alone in a car for their primary mode of transportation.
- Approximately 16.0% of all survey respondents stated that they rely solely on a bicycle for their primary means of transportation for all trips.
- Of all respondents, 62.3% consider themselves advanced bicyclists; 29.4% consider themselves intermediate bicyclists, and 8.3% consider themselves to be beginners.
- The average respondent within the City of Mesa rides his or her bicycle at least four days a week.
- Half of respondents (52.0%) use their bicycles for fitness and recreational purposes, 28.0% commute to work or school, and 6.4 % use their bicycles to run errands or to travel to other local destinations.
- Of respondents 66.0% prefer to ride on arterial roadways; 45.2% prefer to ride on collector streets, and the remaining 23.7% prefer to ride on lesser-congested local roadways.
- Of respondents 66.0% prefer to ride in the City's designated bicycle lanes.
- The majority of respondents (79.7%) see a need for more bike lanes on arterial roads and more shared-use paths throughout the City of Mesa.
- When asked about safety and traffic concerns, 35.8% of respondents stated that motorists are not considerate of bicyclists; 20.6% of respondents stated that motorists drive their vehicles too fast on Mesa roadways; 17.6% stated that there are too many motor vehicles on the streets; 12.9% stated that they do not feel safe on a bicycle in Mesa; 10.8% stated that traffic signals are not set for bicycles, and the remaining 2.4% stated that they do not feel safe on community shared use pathways.



From March to June of 2010, the City of Mesa's Transportation Department conducted a second combined (on-line and mail out) bicycle survey, Survey Two, in an effort to continue to analyze Mesa's bicycle trip characteristics. The survey was structured to obtain personal respondent data as well as detailed information about the respondents' trip characteristics, trends, and rider ability levels. A total of 313 respondents answered a series of questions that focused on cycling trip purpose, bicycle facility preferences, rider comfort levels, and facility needs throughout the City of Mesa.

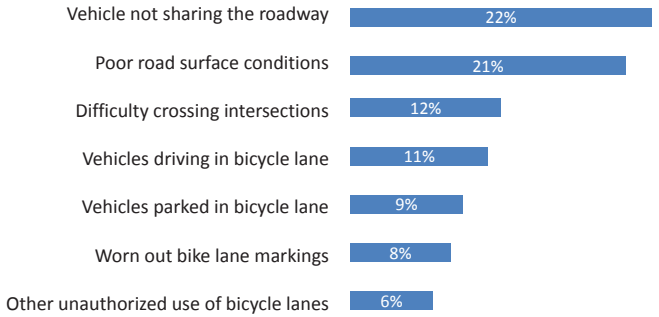
Rider Confidence/Ability Level



The completed survey results have offered a general overview of cyclists' trends, needs, concerns, and origins/destinations throughout the City. Although the complete survey results are provided in Appendix B, a quick overview of the results of Survey Two is provided below:

- 49.7% of respondents described their confidence ability level as confident and enthusiastic.
- The majority of respondents (72.1%) describe their primary purpose of bicycle trips as exercise and recreation.
- Just over a third of the respondents in the survey (35.5%) commute to and from work or school by bicycle.
- When asked what particular problems were regularly encountered on their bicycle route while commuting, 21.9% of respondents stated that motorists did not share the road with cyclist; 20.7% of respondents stated that they encounter poor road surface conditions; 12.5% stated that there was a perceived difficulty crossing through intersections; 11.0% stated that they experienced vehicles driving in the bike lane; 9.4% stated they encountered vehicles parked in the bike lane, and the remaining 7.9% of respondents stated they experienced worn out bike lane markings.
- A large majority (79.8%) of respondents would support reductions in roadway lane widths and speeds to provide more accessibility for bicycles.

Particular Problems Regularly Encountered on a Bicycle Trip



MESA COMPARED TO OTHER CITIES

Table 1-2 provides an analysis of bicycle commuting to work for selected American cities with populations between 350,000 and 550,000. These cities were chosen because of their similar population to the City of Mesa, and collectively serve as a reasonable comparison of how bicycle commuting in Mesa compares with other regions of the country. Data was collected from the U.S. Census Bureau's "Means of Transportation to Work for Workers Aged 16 or Over," and from Census Bureau population estimates for cities, released on August 25, 2011.

Comparative population from the 2010 census is displayed in Table 1-2. The total number of people who commute to their place of work by bicycle is relatively low. Only 0.5% of the working population in the United States uses a bicycle as a means of getting to work. The City of Mesa has a higher percentage of individuals who ride a bicycle to work. When comparing Mesa with the selected list of cities, Mesa has a greater share of cyclists commuting to work than Miami, St. Louis, Atlanta, Cleveland, and Kansas City. In Arizona, only Tucson has a higher percentage of bicycle commuters than Mesa.

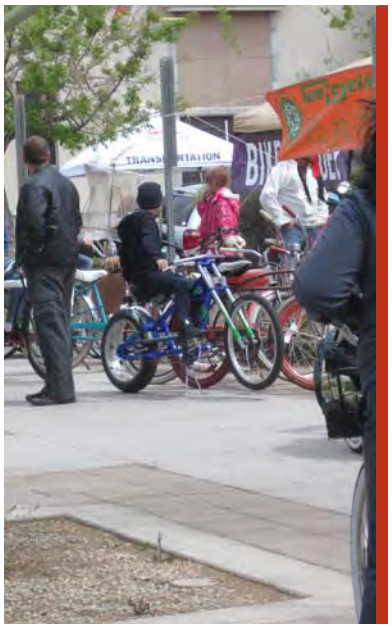
These figures suggest that Mesa is a city that has a visible bicycling population. The City of Mesa should continue to take the necessary steps to enhance existing bicycle facilities and to plan for future facilities that will become necessary over time. When considering the increased demand for cyclists wanting to ride to work as indicated through survey responses, in addition to the City's intent to improve upon the existing bicycle network, the City of Mesa will continue to work toward creating an overall environment that promotes higher percentages of bicycle commuters over time.

Table 1-2

BICYCLE COMMUTING (Comparison Between Mesa and Peer Cities)

City	2007 U.S. Census Population Estimate*	% of Labor Force Commuting To Work by Bike
Tucson, Arizona	525,529	2.22%
Minneapolis, Minnesota	377,392	1.89%
Portland, Oregon	550,396	1.76%
Sacramento, California	460,242	1.35%
Oakland, California	401,489	1.22%
Mesa, Arizona	439,041	0.90%
Miami, Florida	409,719	0.55%
St. Louis, Missouri	350,759	0.35%
Atlanta, Georgia	519,145	0.35%
Cleveland, Ohio	438,042	0.22%
Kansas City, Missouri	450,345	0.12%
National Average		0.38%

Source: U.S. Census 2010



PAST BICYCLE PLANNING EFFORTS

This section will provide an overview of past planning efforts at the local and regional levels, and consider the plans of governmental entities that surround the City of Mesa. An overview of efforts by surrounding communities and county jurisdictions will be provided and assessed in an effort to incorporate regional connectivity into this plan. Regional bicycle lanes and routes will also be considered when developing and implementing Mesa's long-range bicycle planning process.

Over the past several decades Mesa has developed a commitment to all modes of travel. During the 1970's when many communities were without basic pedestrian facilities, Mesa began to study and understand that modes of transport other than the automobile were needed in order to have a well-balanced transportation network. Planning efforts began in 1974 with the first of many studies and plans that would pave the way for the bicycle friendly community that the citizens of Mesa enjoy today.

1974 MESA BICYCLE STUDY

CITY OF MESA
BICYCLE STUDY
1974

The Mesa Bicycle Study was prepared approximately 38 years ago by a municipal Bicycle Committee, representing one of Mesa's earliest attempts at addressing comprehensive bicycle planning. The 1974 study encouraged the inclusion of bicycle lanes and bicycle paths along existing streets and within future developments, and addressed the issue of bicycle routes.

After the 1974 bicycle study was completed, a total of 14.5 miles of bicycle routes were developed within the City of Mesa. The routes were primarily situated along Horne, Longmore, 8th Avenue/Pueblo, and 8th Street/Adobe Road, and were selected as part of a community-wide bicycle route demonstration project. These particular streets were designated as "preferential" areas for bicycles and had bicycle route signs posted without any other bicycle facilities such as striped lines for bicycle lanes.

Although the study led to the development of bicycle routes, many of the recommendations and concepts of the study were not implemented as the City grew significantly over the 1970's and 1980's. Today, the recommendations of the 1974 Mesa Bicycle Study are considerably outdated, and the plan is no longer a useful document for implementation purposes.

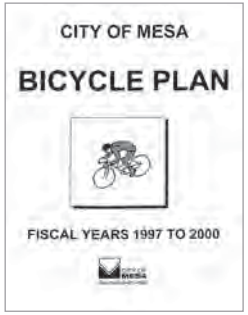
DRAFT MESA BIKEWAY PLAN 1988

In 1988, Diana Jensen Marsh, an Arizona State University Planning student, prepared the Mesa Bikeway Plan in cooperation with the City of Mesa Transportation Department for fulfillment of her graduate student degree. Although the City Council never adopted the plan, it represented the first in-depth, comprehensive overview of bicycle planning topics throughout the community, and acknowledged the recurrent need for bicycle facilities in Mesa.

The plan assessed existing conditions, provided an overview and analysis of bicycle safety and education, established a series of goals, objectives, and strategies, and called for the creation of a defined bikeway system throughout the City of Mesa. In addition, the Draft Mesa Bikeway Plan provided an analysis

of bikeway system design concepts for bicycle lanes, shared traffic lanes, bicycle paths, and sidewalks. The Plan also addressed the need for a Bicycle Program Coordinator, encouraged education and enforcement programs, identified implementation measures, and outlined a number of short and long-range projects designed to enhance bicycling throughout Mesa.

CITY OF MESA BICYCLE PLAN: FISCAL YEARS 1997 TO 2000



In 1993, Mesa continued to advance the awareness of bicycling when the Mayor appointed an Ad Hoc Bicycle and Pedestrian Amenities Committee to address a number of bicycle and pedestrian issues throughout the community. This effort resulted in 24 recommendations from the Committee that were meant to improve the local bicycling environment. A bicycle planning effort was launched in Mesa by incorporating the Ad Hoc Committee's 24 recommendations, which resulted in the City of Mesa Bicycle Plan: Fiscal Years 1997 to 2000.

The 1997 to 2000 Mesa Bicycle Plan addressed issues and needs, developed goals and objectives, assessed opportunities and constraints, inventoried existing conditions, and provided a number of recommendations that were intended to improve cycling in Mesa. The plan focused upon four primary goals:

1. Develop and maintain a continuous and interconnected bikeway system.
2. Promote the City of Mesa streets as shared roadways for the use of motorist and bicyclists.
3. Develop bicycle safety education for children and adults.
4. Promote bicycling as a viable alternative to motorized travel for short trips and as a way to improve air quality and decrease congestion.

The plan assessed bike routes, bike lanes, bike paths and multi-use paths, and developed a number of bike route recommendations that were implemented between the Fiscal Years of 1997 to 2000. Recommendations were also made for multi-use bike paths, bicycle facilities, codes, policies, safety, and bicycle promotion activities throughout the City of Mesa.

MESA 2025 TRANSPORTATION PLAN: BICYCLE COMPONENT

On June 24, 2002, the Mesa City Council adopted the Mesa 2025 Transportation Plan. This plan included streets, transit, bicycles, pedestrians, travel demand management, the Mesa city center, finance, and proposed measures on how to potentially implement the adopted transportation plan over time.

The bicycle element of the 2025 Mesa Transportation Plan provided overall guidance in the following five key areas:

- Supporting the implementation of the Transportation Element of the Mesa General Plan.
- Identifying a preferred future network of bikeways.
- Identifying vital end-of trip facilities.
- Integrating the bicycle network with transit service.
- Promoting bicycling through education, enforcement, and encouragement.

The 2025 Mesa Transportation Plan addressed the importance of bicycling throughout the community, assessed conditions, addressed a future bikeway system and its maintenance, and provided general information on bicycle safety, education, and enforcement.

CITY OF MESA PARKS AND RECREATION PLAN

The purpose of the City of Mesa Parks and Recreation Division Strategic Master Plan is to provide a broad policy and management framework to guide decision-making to meet current and future recreational needs well into the twenty-first century. The recommended policies and actions are intended to further the City's General Plan to address "Growing Smarter Plus" legislation and the City's Strategic Plan completed in June 2001. The Parks and Recreation Strategic Master Plan is comprehensive in that it addresses the recreation programming, park maintenance, park land, and recreation facility needs that are required to support Mesa residents over the next 25 years. Previously it was the responsibility of the Parks and Recreation Division to plan, operate and maintain the off-street bicycle facilities in the City. In 2005 those responsibilities were transitioned to the Transportation Department were they are currently managed today.

BICYCLE CRASH ANALYSIS

The City of Mesa publishes annual bicycle crash analysis reports, which represent a statistical compilation of pedal cyclists involved in crashes with motor vehicles on City of Mesa streets. These reports can be reviewed on the web at ***http://www.mesaaz.gov.***

By definition, a "pedal cyclist" represents a non-motorized vehicle operated by pedals and propelled by human power, and is inclusive of bicycles, tricycles, unicycles, pedal cars, and other multi-axle means of pedal transportation operated by human power. These annual studies were initiated in an effort to understand the underlying causes of collisions between pedal cyclists and motor vehicles, and to determine whether the traffic environment could be improved to provide better safety for pedal cyclists throughout the community.

These studies address crash rates at intersections and mid-block locations, crashes by street and intersection classification, by location, and by direction of travel. They analyze the geographic distribution of crashes throughout the City, and the number of crashes by age, gender, cause, date, time, and injury severity. The studies also consider the types of equipment used by pedal cyclists involved in crashes, compliance with state laws, the number of hit and run victims, and whether alcohol was involved. These studies represent a thorough analysis of crash statistics concerning pedal cyclists, and have been a very useful resource. This data is analyzed further in the safety discussion found in Chapter Five.

MESA BIKE MAP EVOLUTION

In April of 2012, the 7th publication of the Mesa Bike Map was released during Valley Bike Month. Prior versions of the Mesa Bike Map were released in 1988, 1997, 2006, 2007, 2008 and 2010.

The newest version of the Mesa Bike Map displays bike lanes, bike routes, shared-use paths, paved canal paths, featured bicycle routes, and unpaved canal paths throughout the City. The bike map displays the location of all streets within the community, labels the major roads, and

displays all connecting bike facilities. This useful resource also provides a variety of safety and defensive driving tips for the bicycling public.

REGIONAL PLANNING & COORDINATION EFFORTS

THE MARICOPA COUNTY BICYCLE TRANSPORTATION SYSTEM PLAN (1999)

On May 19, 1999, the Maricopa County Board of Supervisors adopted the Bicycle Transportation System Plan. The plan was developed to provide an overview of:

- Bicycling conditions within Maricopa County.
- Facility and policy program changes focused on improving and integrating bicycle transportation.
- Ways to strengthen the overall bicycle program at the County, while implementing a number of recommendations over time.

The Plan also presented the existing on and off-road bicycle network facility recommendations.

MARICOPA ASSOCIATION OF GOVERNMENTS REGIONAL BICYCLE PLAN (1992)

The Maricopa Association of Governments (MAG) Regional Council adopted the Regional Bicycle Plan in February 1992. The Regional Bicycle Plan has been incorporated into the region's Long Range Transportation Plan. The MAG Regional Council approved a bicycle plan update in March 1999.

MARICOPA ASSOCIATION OF GOVERNMENTS REGIONAL OFF-STREET SYSTEM PLAN (2001)

Adopted by MAG in February 2001, the Regional Off-Street System (ROSS) Plan was prepared as a complement to the 1999 MAG Regional Bicycle Plan and identified existing off-street corridors, which could be utilized for non-motorized transportation.

The ROSS Plan provided an overview and identified a series of issues pertaining to access, safety, connectivity, facilities, and implementation.

MARICOPA ASSOCIATION OF GOVERNMENTS REGIONAL BIKEWAY MASTER PLAN (2007)

In 2005, MAG's Regional Bicycle Task Force and Pedestrian Working Group initiated discussions regarding the need for the MAG Regional Bikeway Master Plan, and identified primary tasks that were essential for the success of the plan. As a result of this process, the 2007 MAG Regional Bikeway Master Plan was created and adopted and includes sections on:

- Goals and objectives
- Regional bicycle plan maps
- Project rating criteria
- Recommendations and future actions
- Identifying cost estimates for the overall implementation of the on-road regional bicycle plan

SOUTHEAST MARICOPA/NORTHERN PINAL COUNTY AREA TRANSPORTATION STUDY

Completed in September of 2003, the Southeast Maricopa/Northern Pinal County Area Transportation Study was a jointly sponsored project among the Maricopa Association of Governments, the Central Arizona Association of Governments, and the Arizona Department of Transportation. While the intent of the plan was focused upon examining the long-range transportation needs between Maricopa and Pinal Counties, it also provided for an analysis of bicycle linkages, and included the area of Mesa south of the US 60 Superstition Freeway within the planning study area. The plan provided an overview of bicycle nodes and destinations, existing on and off-road bicycle facilities, and provided a brief overview of other bicycle plans and municipal bicycle policies.

NEIGHBORING BICYCLE PLANNING AND REGIONAL CONNECTIVITY

City of Apache Junction

The City of Apache Junction General Plan was adopted on November 2, 1999. Through the document's Land Use and Circulation Elements, the plan calls for the connection of a shared use pathway between the City of Apache Junction and the City of Mesa's eastern planning boundary. The plan also calls for the continuation of bicycle lanes along the major arterials passing from Pinal County into Maricopa County.

In May of 2004 the City of Apache Junction also completed a Small Area Transportation Study, which specified the incorporation of bicycle lanes into minor and major arterial roadways throughout the community.

City of Chandler

The City of Chandler's General Plan was adopted by the Chandler City Council in 2008, and contains a circulation element that plans for the community's bicycle network. The City of Mesa shares a common boundary with the City of Chandler along the Western Canal between the Price Freeway and the County Club Drive/Arizona Avenue corridor. Primary bicycle lanes and bikeways from the City of Chandler currently connect with the City of Mesa along the Price Road, Dobson Road, and Alma School Road corridors and the Western Canal.

Town of Gilbert

The Town of Gilbert currently uses the community's 2005 General Plan Update to plan for their municipal bicycle network. The City of Mesa and the Town of Gilbert share north-south connectivity on a number of common arterials with bike lanes, which include:

- Power Road
- Higley Road
- Val Vista Drive
- Lindsay Road
- Stapley Drive (Cooper Road)

East-west, connectivity is shared with the Town of Gilbert through:

- Baseline Road
- Guadalupe Road
- Ray Road
- Pecos Road

- Williams Field Road

Additionally, the City of Mesa shares a number of canals with the Town of Gilbert, including the RWCD Canal, the Eastern Canal, the Consolidated Canal, and the Western Canal.

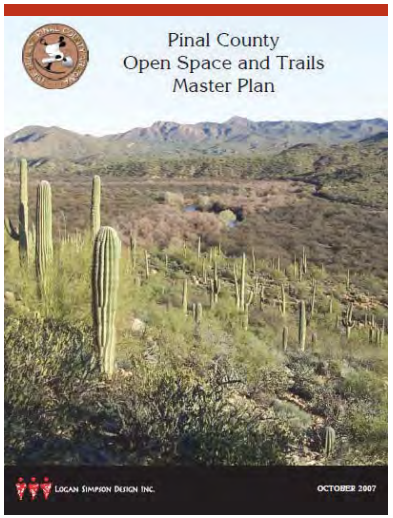
City of Tempe

The City of Tempe has planned for its bicycle network through the 2008 City of Tempe Comprehensive Transportation Plan, and the Tempe General Plan 2030. Shared major and minor arterials between the City of Tempe and the City of Mesa with bike lanes include:

- University Drive
- Main Street
- Broadway Road
- Baseline Road
- Guadalupe Road
- 8th Street/Rio Salado Parkway and Town Lake Path.

Pinal County

The Pinal County Open Space and Trails Master Plan is the Open Space and Recreation Element of the Pinal County Comprehensive Plan (2001, amended 2007). Pinal County has identified three regional trail connections throughout the county, which include the Central Arizona Project (CAP) canal corridor and Sun Circle Trail Network. Within Pinal County, the intent is to include a 10-foot wide shared use pathway along the CAP canal corridor with connectivity to nearby Maricopa County. The CAP canal corridor enters the City of Mesa Planning Area from the eastern boundary with the City of Apache Junction near Meridian Road between Southern Avenue and Baseline Road. Pinal County also addresses localized and subregional bicycle planning goals and efforts through transportation and land use studies.

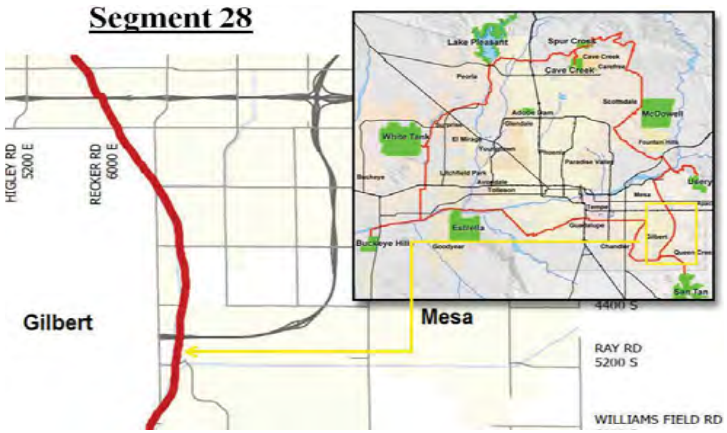


REGIONAL TRAIL SYSTEMS

The area's regional trail system provides extensive opportunities for recreation, non-motorized mobility, and commuting throughout Maricopa and Pinal County.

Maricopa County Regional Trail System

The Maricopa County Regional Trail System Plan is an essential element of the multi-modal transportation system throughout Maricopa County. This system was built with the vision that all major parks belonging to Maricopa County would be connected by these segments of trails linking together to form the larger trail system. Maricopa County facilities provide alternative transportation corridors for bicyclists and pedestrians by connecting off-street, non-motorized trails between the County's regional parks.

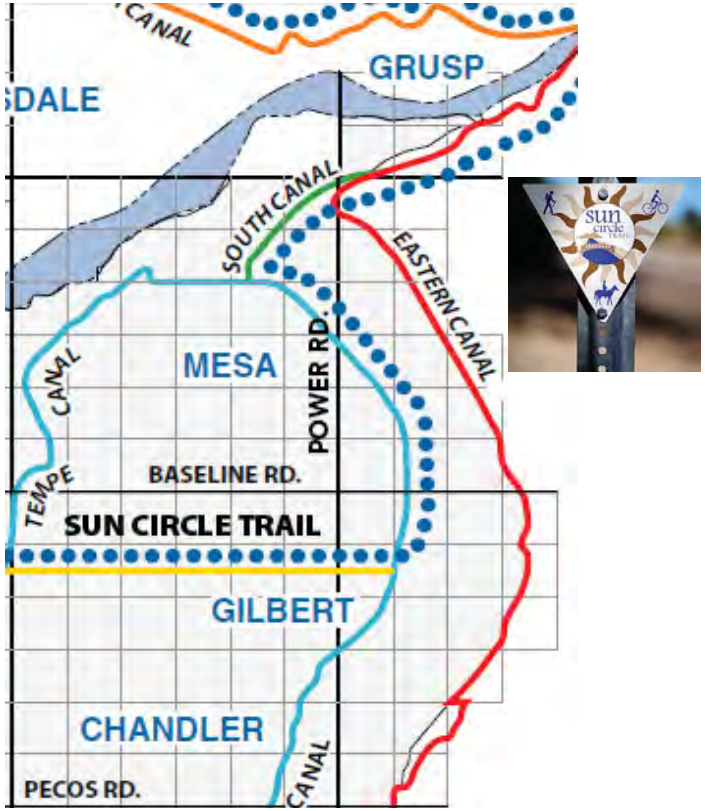


Maricopa County Regional Trail System Map

The Maricopa County Regional Trail system, which lies within portions of Mesa, encompasses the Roosevelt Water Conservation District Canal (RWCDC) and the East Maricopa Floodway (EMF). The corridor runs from the South Canal along the northern border of Mesa to Queen Creek Wash through the towns of Gilbert and Queen Creek, a distance of 18 miles.

Sun Circle Trail

The Sun Circle Trail (depicted in blue below) encompasses approximately 140 miles of hiking and riding trails that encircle the greater Phoenix metropolitan area, and for the most part use existing canal banks. In the mid-1960's, the Arizona State Horsemen's Association Trails Committee first recognized the unique recreation opportunity made available by the canals and preceded to ride, map, and propose the Sun Circle Trail to the Maricopa County Board of Supervisors. In 1965, the Maricopa County Board of Supervisors, the Salt River Project (SRP), and the Bureau of Reclamation provided an historical first by signing a 50-year agreement for use of sixty-six miles of canals for parts of the trail.



Sun Circle Trail

Valley Forward's Pedestrian Freeway

The Valley Forward Association brings business and civic leaders together for thoughtful public dialogue on regional issues and to promote cooperative efforts towards regional planning. The Valley Forward Pedestrian Freeway was designed to provide additional enhancements to the Maricopa County Regional Trail System. Valley Forward's vision is to connect communities and selected key destinations through a non-motorized system promoting health and wellness, connectivity and economic development. The City of Mesa is fortunate to have or be near a large portion of eight Valley Forward "gems," which include:

28. Salt River

29. Tonto National Forest

30. Usery Mountain Regional Park

34. Chandler Regional Park

35. Riparian Preserve at Water Ranch

36. Red Mountain Park

37. Park of the Canals

42. Pueblo Grande Ruins

The City of Mesa's portion of the Va Shly'ay Akimel Environmental Restoration Project and Rio Salado Pathway Tempe to Mesa Project would connect the Phoenix and Tempe Rio Salado projects with 13 more miles of trail along Gem 28 of the planned "Priceless Necklace of Trails and Gems."

Valley Forward Necklace of Gems

WHY MESA NEEDS AN UPDATED BICYCLE PLAN

The Mesa 2012 Bicycle Master Plan is a renewal of the City's commitment to bicycling and dedication to providing guidance and policy that will help improve air quality and reduce congestion.

Cutting edge cities like Mesa have a responsibility to ensure that there are suitable and sustainable networks in place that offer an alternate mode for travel other than the use of the automobile.

The previous City of Mesa planning and construction efforts have established a solid foundation of arterial-based bicycle lanes. This plan update will expand the bicycle network and program to include more types of trips and riders.

2012 Great Arizona Bicycle Festival.

ENVIRONMENTAL QUALITY

Each year the transportation network in the United States is responsible for one third of the nation's carbon footprint, (see Figure 1).

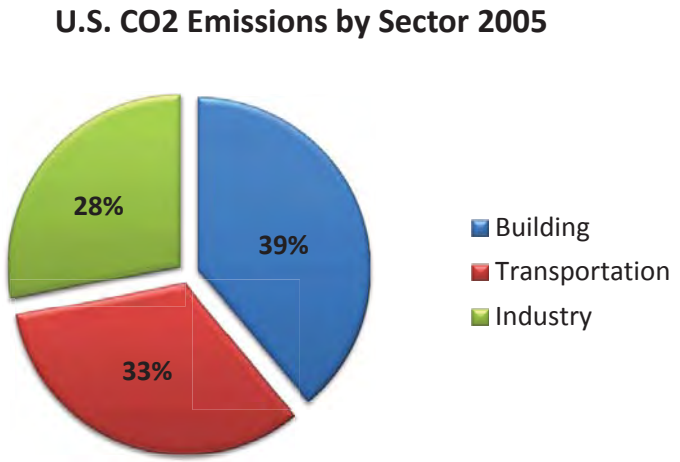


Figure 1 *Source: Energy Information Administration*

Automobiles constitute approximately 30% or 1/3 of those emissions (see Figure 2). As reported by the Natural Resource Defense Council, every gallon of gasoline burned emits 20 pounds of CO2, the principal global warming pollutant. It seems impossible that a gallon of gasoline, which weighs about 6.3 pounds, could produce 20 pounds of carbon dioxide (CO2) when burned. However, most of the weight of the CO2 doesn't come from the gasoline itself, but the oxygen in the air.

When gasoline burns, the carbon and hydrogen separate. The hydrogen combines with oxygen to form water (H2O), and carbon combines with oxygen to form carbon dioxide (CO2).

On February 16, 2005 the Kyoto Protocol, the international agreement to address climate disruption, became law for the 141 countries that had ratified it to that date. By the June 2005 U.S. Conference of Mayors Annual Meeting, 141 mayors had signed the Agreement – the same number of nations that ratified the Kyoto Protocol. Since then, 1,042 additional mayors including Mayor Scott Smith of Mesa have committed to meet or beat the greenhouse gas emission reduction target suggested for the United States in the Kyoto Protocol – a 7% reduction from 1990 levels by 2012. Bicycle transportation infrastructure will play a crucial part in meeting this goal.

Automobiles and Trucks produced three-quarters of the nation's carbon emissions from transportation in 2005

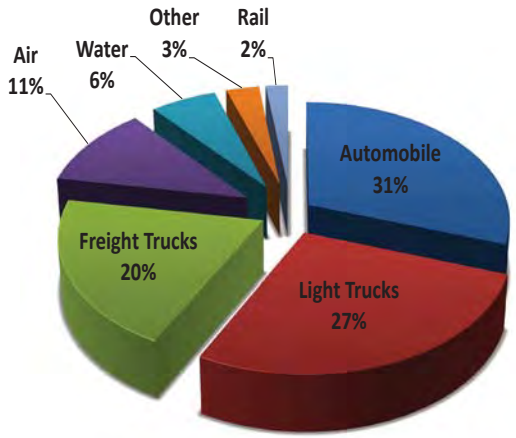


Figure 2

Source: Energy Information Administration

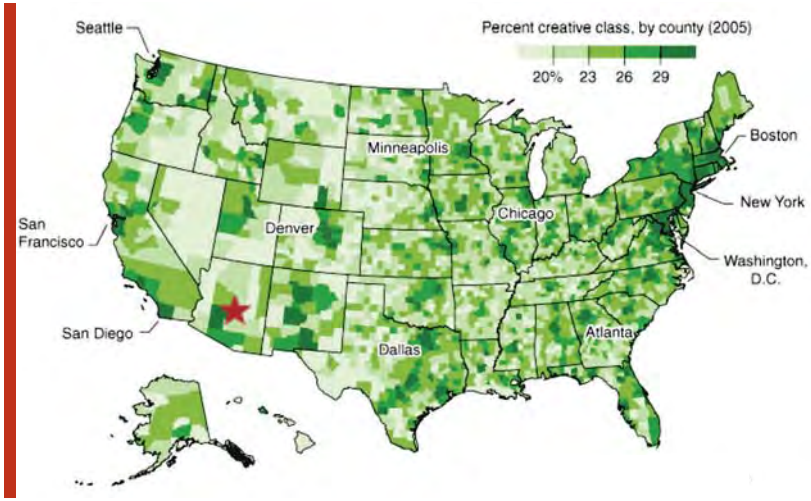
In a 2008 Brookings report, titled "Shrinking the Carbon Footprint of Metropolitan America," the Phoenix Metropolitan area scored very well with a ranking of 21st out of the top 100 metropolitan areas that were scored on how effectively the region can reduce its carbon footprint relative to other cities.

In order to help address Mesa's commitment to environmental quality, this bicycle plan provides recommendations to increase and improve bicycling options for the residents of Mesa.

2012 Great Arizona Bicycle Festival.

A NEW SHIFT IN THE EXPECTATIONS OF MESA RESIDENTS

As societies mature and become more educated, personal basic needs are fulfilled and attention to basic necessities begins to shift and grow, giving way to experiences and self-actualization over physical goods. During this transformation, the residents who inhabit these societies begin to look for cities that are willing to accommodate the way of life of what has been called the "Creative Class."



The Creative Class is comprised of educated individuals whose economic function is to create new ideas, new technology, and creative content. They prefer to work in a nontraditional workplace environment, have nontraditional work hours, have nontraditional business dress, and prefer to commute and travel in an area that allows them to use alternate modes for transportation such as bicycle and transit.

The development of areas attractive to the Creative Class draws the industry and services that are focused on developing new opportunities and supporting innovation. The companies that draw these types of professionals are very conscious of the diverse and individualistic lifestyles which are interactive, environmentally conscious, and experimental. People drawn to these places have a very perceptive understanding of the livability of their communities, striving to create a sense of place that is sustainable and focuses on the values of a better quality of life, creative freedom and recreation. Developing a sustainable community for bicycling with this plan will help the City adapt to this new generation of resident.

Finally, there is simply more demand for bicycle facilities by all types of riders. The 2012 Bicycle Master Plan addresses this new demand with recommendations for additional facilities and improved programs.

HOW THE PLAN WILL BE USED

The City of Mesa Bicycle Plan will become a part of the overall Mesa Transportation Plan update providing guidance in managing bicycle facilities and policy recommendations that meet the current and future demand within the public right-of-way.

The Mesa Bicycle Plan also incorporates policy recommendations and project priorities, which serve as the basis for future funding requests.

PLAN UPDATE PROCESS AND PUBLIC INVOLVEMENT PROGRAM

PRIMARY SCOPE AND PURPOSE

When preparation began for the Bicycle Plan, staff considered current infrastructure, development of new policies and procedures, and the prioritization of future projects and needs. A horizon year was set for the Plan as developed and written that will best serve as a viable resource until 2022, or ten years from the time of adoption. Staff concluded that in order to produce a feasible plan, the plan would need to serve two purposes: 1) Look at existing conditions and programs and determine whether those programs are best serving the community of Mesa and helping its citizens to become safer, and healthier; and 2) Set in place a list of goals and objectives to establish a "blueprint," or framework for enhancing the overall bicycle network and for effectively working toward achieving the desired community vision for the City of Mesa.

PUBLIC INVOLVEMENT PROGRAM

Public involvement is an essential element of preparing a planning document that will provide direction and guidance for future bicycle facilities. To ensure that the proposed Bicycle Master Plan reflects the priorities and vision of Mesa's residents, a public involvement program was critical.

The public involvement program was designed to ensure that staff, elected officials, stakeholders, and the general public had ample time and opportunities to be involved in the development of the Bicycle Master Plan. Effective public participation facilitates understanding and improves planning by bringing all issues and perspectives to the table. Sustainable plans are technically feasible, economically viable, environmentally compatible, and publicly acceptable.

The purpose of the public involvement program was to:

1. Have a clear understanding of the level of public participation in determining the direction of the Plan.
2. Identify the specific goals of the public involvement process for the Plan.
3. Establish a process for collecting and analyzing information from staff, elected officials, stakeholders, and the general public.
4. Identify appropriate communication tools and techniques that were implemented during the planning and development of the Bicycle Master Plan.

The process was continually evaluated and altered to best meet the needs of staff, elected officials, stakeholders, and the general public throughout the process.

This process and all information regarding methods, procedures, and conclusions is fully outlined in Appendix A.

EXISTING CONDITIONS DATA COLLECTION

The City of Mesa's on-road bicycling system is comprised of numerous bicycle lanes and designated bicycle routes throughout the community.

The majority of bicycle lanes and routes are located along the arterial road network, which also facilitates the majority of Mesa's vehicular trips.

Sidewalks, small neighborhood bicycle paths, and other smaller facilities that are not located on roadways, such as trails or off-road shared use paths are not classified as part of the on-road bicycling system, but they do play a vital role in movement of bicycles throughout the community.

As part of this analysis, staff conducted a detailed inventory of current facilities throughout the City. This process consisted of breaking the City down into one square mile areas. These one square mile sections were given a specific grid number in a Geographic Information System (GIS) mapping program and individually printed out.

Staff used these one mile grid maps to conduct an on-street survey of each area and individually catalog bicycling and pedestrian facilities including:

- Sidewalks
- Crosswalks
- Curb ramps
- Bike lanes
- Pavement markings
- Signing
- Pavement condition

Through the collection of this data City staff were able to determine areas under served by bicycle facilities and present that information through GIS to determine prioritization of future projects.

CHAPTER TWO

GOALS & OBJECTIVES

PURPOSE OF GOALS AND OBJECTIVES

GOALS

This chapter provides an overview of planning goals and objectives for the City of Mesa's 2012 Bicycle Master Plan. The goals and objectives in this chapter help to establish a framework for enhancing the overall bicycle network and for effectively working toward achieving the desired community vision for the City of Mesa, as identified within Chapter One of this plan.

The goals and objectives for the Plan identify clear directives that should be taken to achieve the desired bicycle vision for the City of Mesa, and represent a response to community needs, values, and concerns. The identified goals and objectives will help to guide the actions of staff and elected officials in their efforts to make Mesa a better place in which to ride a bicycle. As part of the Plan's implementation strategy, the goals and objectives will be regularly assessed to determine how effectively they are being carried out over time.

These goals capture the essence of the community's and City's vision for bicycling in Mesa. The objectives and actions that describe each of the goals act as a vehicle to achieve these goals. The five primary goals of the Plan are listed in the table below.

OBJECTIVES

While a goal is a broader statement of what a community would like to accomplish over time, and a goal statement essentially functions as a "target" of what is to be reached in order to obtain a desired outcome, objectives are statements or items that represent steps toward accomplishing a goal. While goals are essentially broader policy targets, objectives are designed to function as individual implementation steps on how to obtain a desired goal. The purpose for establishing goals and objectives as identified within this chapter is primarily intended to provide a comprehensive framework for the implementation of the Mesa 2012 Bicycle Master Plan over time.

The goals and objectives will help to accomplish the Plan's vision statement, and set a clear foundation for what directions will need to be taken over time in order to implement the Bicycle Plan.

GOAL	DESCRIPTION
Goal One	Increase bicycle mode share for all trips to work and school in Mesa to 5% within the life of the Plan.
Goal Two	Improve safety of bicyclists throughout Mesa. Reduce the rate of bicycle-related crashes by one-third by the year 2022.
Goal Three	Develop and implement a bicycle program using the League of American Bicyclists' five measurable E's of a Bicycle Friendly Community: Education, Enforcement, Engineering, Encouragement, and Evaluation/ Planning.
Goal Four	Achieve Platinum recognition from the League of American Bicyclists by 2022.
Goal Five	Prioritize needs and establish capital and operating budgets for the Bicycle Program.

GOAL ONE

Increase bicycle mode share for all trips to work and school in Mesa to 5% within the life of the Plan.

OBJECTIVES

- Increase bicycle network connectivity between neighborhoods, parks, canals, various land uses, other transportation modes, and neighboring jurisdictions.
- Develop a bicycle count program to collect data.
- Adopt a target level of bicycle use (e.g., percent of trips) within a specific timeframe, and improve data collection methods necessary to monitor progress.
- Provide direct bicycle access to common destinations.
- Identify and connect all gaps in current bicycle network.
- Develop an attractive and inviting bicycle network. Plan, design, construct, and maintain bicycle facilities that meet or exceed accepted standards and guidelines.
- Continue to promote, encourage, and increase bicycling to work.
- Make the City of Mesa itself a model employer by encouraging bicycle use among City employees (e.g., by providing parking, showers, and lockers).
- Develop and implement a citywide bike share program.

STRATEGIC PERFORMANCE MEASURES

1. Percentage of on and off-street bikeways completed within one (1) mile of all residential sub-divisions.
2. Percentage of bicycle commuter trips increased (Survey Data).
3. Percentage of overall bicycle ridership increased (Survey Data).
4. Ensure new developments include appropriate bicycle routes and facilities.
5. Ensure new developments provide for bicycle connectivity to surrounding development.
6. Support new land use policies aimed at increasing mixed use developments at high densities.

GOAL

OBJECTIVE

GOAL TWO

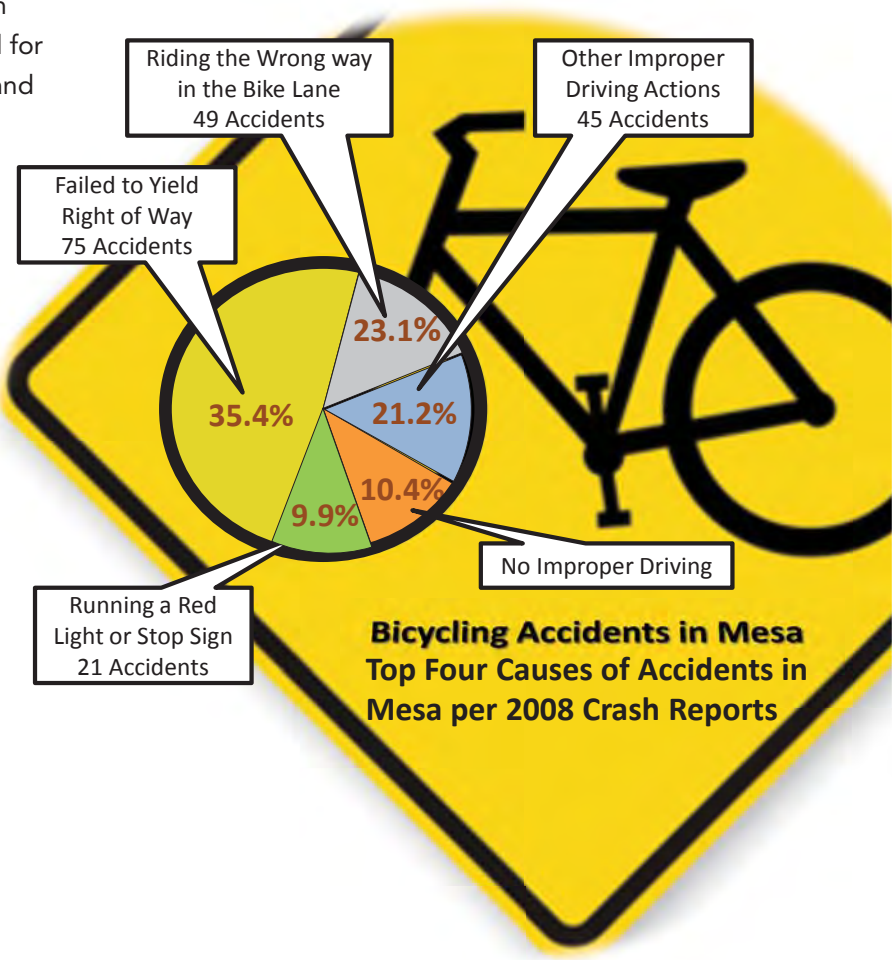
Improve safety of bicyclists throughout Mesa. Reduce the rate of bicycle-related crashes by one-third by the year 2022.

OBJECTIVES

- Increase awareness by implementing a media campaign for bicycle safety.
- Provide safety literature and current bicycle route maps for public use.
- Identify areas and conditions perceived as unsafe with the highest bicycle-involved crashes. Use this crash data to determine areas of the City to be targeted for enforcement in an effort to reduce these crashes and violations.
- Develop a mitigation plan to correct areas and conditions that are deemed unsafe in the previous objective.
- Coordinate with the Mesa Police Department to develop and implement education curriculum for both officers and citizens to improve enforcement and observance of bicycle laws.

STRATEGIC PERFORMANCE MEASURES

1. Reduce bicycle accident rates.
2. Encourage Mesa driving schools to increase bicycle awareness, and awareness of bicycle-related rights and responsibilities.
3. Establish an adult bicycle education program.
4. Establish a bicycle traffic ticket diversion education program.
5. Implement improvements needed to make streets a safer place to ride a bicycle.



GOAL THREE

Develop and implement the League of American Bicyclists' five measurable Es of a Bicycle Friendly Community (Education, Enforcement, Engineering, Encouragement, and Evaluation).

OBJECTIVES

- Develop a bicycle education program for bicyclists and motorists based on legal, predictable, and safe behaviors for all road users.
- Implement a Safe Routes to School Program within the City of Mesa.
- Encourage increased use of bicycles for transportation and recreation.
- Support local organized events and promote Mesa's ideal climate & facilities for year-round bicycling to visitors.
- Work with health and wellness industry to promote bicycling.
- Increase awareness throughout the community by implementing a media campaign for bicycle safety.

STRATEGIC PERFORMANCE MEASURES

1. Percentage of schools within the Mesa Public Schools District Implementing Safe Routes to School Programs.
2. Number of adult bicycle education and encouragement programs included in private industry wellness programs.
3. Number of bicycle-related events held in Mesa.
4. Number of bicycle public service announcements.

GOAL FOUR

Achieving Silver, then Gold, then Platinum recognition from the League of American Bicyclists by 2022.

OBJECTIVES

- Establish a Bicycle Advisory Committee to guide and advise on implementation of the 2012 Bicycle Master Plan.
- Update City of Mesa laws, regulations, and policy documents to address bicycle accommodations through City Codes and Zoning Ordinances.
- Strive to make streets a safer place to ride a bicycle.
- Increase the number of bicycle racks, bicycle lockers, and bicycle service centers throughout the City.
- Establish information programs to promote bicycling for all purposes, and to communicate the many benefits of bicycling to residents and businesses (e.g., with bicycle maps, public relations campaigns, neighborhood rides, etc.).

STRATEGIC PERFORMANCE MEASURES

1. Number of Mesa Bicycle Maps distributed.
2. Number of Mesa residents participating in bicycle education programs or events.
3. Number of bicycle racks installed.
4. Level of Bicycle Friendly Community recognitions and awards.

GOAL FIVE

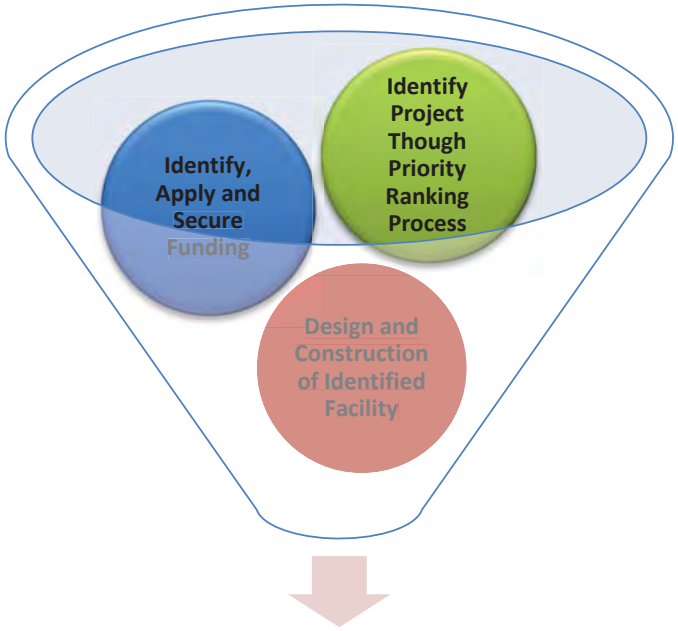
Establish capital and operating budgets for the Bicycle Program at a level to accomplish these goals on an ongoing basis.

OBJECTIVES

- Secure funding for design and construction of future bicycle facilities.
- Secure funding for implementation of programs outlined in the 2012 Bicycle Master Plan.
- Continually address bicycle needs, and incorporate improvement needs into the five-year Capital Improvement Program (CIP).
- Encourage available private funding and partnerships, corporate donations, and other sources that could be utilized to develop bicycle facilities and programs.
- Identify and design high priority projects to compete for available MAG regional funding.

STRATEGIC PERFORMANCE MEASURES

1. Amount of grant funding applied for and obtained for bicycle programs.
2. Improvement of established partnerships between City of Mesa Transportation Department Bicycle Programs and local businesses, Transportation Advisory Board, Coalition of Arizona Bicyclists, non-profit organizations, and educational institutions to promote public/private partnerships.
3. Percentage of Mesa bicycle network connected to activity centers and adjacent cities.
4. Number of bicycle projects added to the City of Mesa Capital Improvement Program.



CHAPTER THREE

EDUCATION, ENCOURAGEMENT, AND ENFORCEMENT

INTRODUCTION

The purpose of this chapter is to provide an overview of bicycle safety and education within the City of Mesa. This chapter will assess items pertaining to safety and enforcement; existing bicycle safety and awareness; types and targets of educational programs; the existing bicycle safety, education, and awareness program; future safety and public educational needs; and a public awareness campaign to promote safety and continuing education. When addressing the subject of bicycles, and Mesa's on and off-road bicycle network, the issue of safety and maintaining a safe environment is of primary concern for residents. The public expects and demands Mesa's transportation network to be safe for

all users. Improving safety through education and enforcement can help to alleviate neighborhood livability issues as well as decrease the probability of a variety of health and economic problems.

According to the Federal Highway Administration, if we are successful in improving the real and perceived safety of pedestrian and bicyclists, we will also increase use.

Federal Highway Administration, February 24, 1999

MesaRides! Initiative kickoff press conference

MESARIDES!

In November of 2010, Mayor Scott Smith in cooperation with the Mesa Police and Transportation Departments launched an Education, Encouragement, and Enforcement awareness campaign called **"MesaRides!"** a City of Mesa initiative to promote safe cycling in Mesa. Efforts under the umbrella of **"MesaRides!"** focus on Encouragement, Education, and Enforcement, three of the five Es of the League of American Bicyclists. These efforts include:

- Public Service Announcements running on Channel 11 and YouTube throughout the year.
- Articles regarding bicycle safety and education published in City newsletters, including "OpenLine" which goes out with City utility bills.
- Partnerships with local bike shops and non-profit agencies to distribute bicycle safety information.
- Participation in community events including City Hall at the Mall, Building Stronger Neighborhoods, and City Council pancake breakfasts where residents can get information, ask questions, and make suggestions about bicycling in Mesa.
- Continuing to develop Mesa's "Bike4Life" and "Bike2Work" community bike events during Valley Bike Month each April. These events promote bicycling as a viable travel mode option.

Having partners to educate both motorists and cyclists about the current laws and help them understand how to ride and drive safely in Mesa is a commitment that will be carried through and expanded on with **"MesaRides!."**

EDUCATION

"Safety" can be defined as freedom from danger, risk, injury, or harm. When addressing the concept of bicycle safety, the theory set forth by the League of American Bicyclists is to educate the user to safely operate a bicycle when traveling from one geographic area or location to another. Maintaining an individual's personal safety without incident is the primary goal and focus of bicycle safety. Safety education efforts can contribute to maintaining a safe environment for bicyclists, and can be more effective when coordinated with other public agencies and private organizations.

When taking into consideration the level of ability that individuals have with operating a bicycle on the public street network, many are afraid of riding their bicycles along busy roads, or simply lack the essential knowledge or skills to ride in busy traffic conditions. Bicycle safety, education and awareness programs are intended to address a variety of issues, and provide services related to improving awareness and keeping individuals safe when operating a bicycle throughout the community. Ongoing education and services are concerned with reaching bicyclists of all ages, and the City of Mesa places an emphasis on organizing events, teaching, training, providing awareness, building confidence, and setting target goals to educate children, adults, and motorists throughout the City.

TYPES AND TARGETS OF EDUCATIONAL PROGRAMS

The City of Mesa currently has a number of educational and safety programs that are intended to promote public awareness and foster an environment of bicycle safety throughout the community. The following information provides a brief overview of programs that are designed or targeted specifically for children, adults and motorists. Although Mesa has made progress toward enhancing a curriculum of teaching bicycle safety to children and students, enhancing bicycle safety awareness throughout the community, and providing public outreach opportunities concerning the general public, there are still many things that could to be done in order to educate, and promote safety and awareness to the motoring public.

Approximately 700 bicyclists and 5,000 - 6,500 pedestrians are killed each year in the U.S. as a result of collisions with motor vehicles. As a group, bicyclists and pedestrians comprise more than 14% of all highway fatalities each year. Pedestrians account for as much as 40 to 50% of traffic fatalities in some large urban areas.

http://safety.fhwa.dot.gov/pedbike/univcourse/

EARLY INTERVENTION PROGRAMS FOR YOUTH CYCLISTS

The City of Mesa currently has a number of educational opportunities that are targeted toward enhancing bicycle safety and awareness for elementary school-age children in Mesa Public Schools. Bicycle safety opportunities are primarily targeted at public schools and public events for children and students. This effort is concentrated on specific bicycle safety education programs such as: bicycle rodeos, school crossing guard training, public ride events, and information distributed at training and bicycle events. Bicycle safety education programs at Mesa Public Schools are often provided to all grade levels, depending on the school's request, and involve helmet education, traffic rules, handouts, and videos.

Youth bicyclists under 15 years old incur roughly 60% of all bicyclist injuries, are overrepresented in crashes with motor vehicles compared with their representation in the population, and are likely to be at fault in most crashes with motor vehicles. Although youth bicyclists still have the highest rate of fatal bicycle crashes, only 24% of all bicyclists killed in 2002 and 39% of those injured in traffic crashes in 2002 were under age 16. In comparison, bicyclists under age 16 accounted for 42% of those killed in 1992 and 68% of those killed in 1978.

Traffic Safety Facts 2002: Pedalcyclists, NHTSA, National Center for Statistics and Analysis

PROGRAMS FOR ADULT BICYCLISTS

Bicycle safety education and awareness for adults within the City of Mesa primarily focuses on public events and educational meetings associated with bicycling or bicycle commuting. The Mesa Transportation Department is active in distributing educational materials and brochures at public safety events throughout the community and at scheduled races and rides. The Mesa Transportation Department also visits company events and scheduled meetings for adult commuters who utilize a bicycle as a means of transportation to and from work on a regular basis. Other safety and awareness opportunities are associated with Annual Bike to Work and family ride events. Additionally, the City often supports other outreach efforts provided by the League of American Bicyclists, Greater Arizona Bicycle Association (GABA), Arizona Bicycle Clubs, the Coalition of Arizona Bicyclists, and Safe Kids of Maricopa County.

BICYCLE DIVERSION PROGRAM

With the increased enforcement of bicycle laws and related citations, there is an opportunity to offer an alternative to the fines that are assessed for these violations. Mesa is researching bicycle diversion classes as an option to reach cyclists who are cited for traffic infractions. The City is considering offering violators the chance to enroll in a League of American Bicyclists certified bicycle safety course in lieu of a fine. The citation would be dismissed upon successful completion of the course. Typically these classes are instructed by League certified instructors and include both classroom and hands-on instruction.

PROGRAMS FOR MOTORISTS

At present, the Mesa Transportation Department promotes annual events such as the Ride of Silence and the Not One More "Ride of Honor." These events are organized and designed to draw attention to individuals who were killed or injured by motor vehicles while operating a bicycle on public streets. The events are held to promote safety and raise awareness among motorists, law enforcement officials, and lawmakers, and to convey the message that bicyclists are on the road as well, and that safety and traffic rules need to be upheld. These events provide media opportunities to share the safety and awareness message. Aside from these events and educational materials that are distributed by the City of Mesa and other organizations, the primary opportunities that motorists have to obtain bicycle safety and educational information are through driver education and defensive driving classes.

EXISTING BICYCLE SAFETY, EDUCATION, AND AWARENESS PROGRAMS

The following information provides an overview of safety, educational and awareness programs, and bicycle events (where materials are distributed and awareness is highlighted).

Safe Kids Coalition of Maricopa County — The Safe Kids Coalition of Maricopa County is part of a global network of organizations whose overall mission is to prevent accidental childhood injuries, including bicycle injuries, which collectively, are a leading killer of children under the age of 14 years old. A City of Mesa representative from the Transportation Department has been an active participant of the Safe Kids Coalition since 2004 and an active board member of the coalition since 2007. The Safe Kids Coalition provides the ability to communicate prevention messages directly to kids and their families through comprehensive programs, which entail home safety, child passenger safety, fire safety, and bicycle and pedestrian safety.

Helmet Your Brain — The Helmet Your Brain safety program was developed by the St. Joseph's Children's Hospital and focuses on the prevention of head and traumatic brain injuries. It is taught in the Mesa elementary schools by a representative of the Mesa Transportation Department. This safety program educates students on the dangers of brain injuries, and promotes the importance of wearing a helmet while operating a bicycle.

Think First — This is an award-winning national program for teens and young adults. Think First is primarily focused on teaching students to consciously "use their minds" in order to "protect their bodies" from serious injury that may result from operating a bicycle. The Think First curriculum is taught in the Mesa Public Schools by staff from the Transportation Department.

Cardon Children's Medical Center - At present, four elementary schools within the Mesa Public School District participate in a program through the Cardon Children's Medical Center, where they provide assistance for children in pre-school and kindergarten with free bicycle helmet fitting and bicycle safety education. This is a program that is sponsored by the hospital's Injury Prevention Coordinator and is very beneficial to school-aged children learning bicycle safety. Helmet fitting is also supported by the Mesa Transportation Department's safety education staff.

Mesa Fire Department Bomberos Bicycle Giveaway (On Hold) — This program is sponsored and coordinated by the Mesa Fire Department as part of the Fire and Life

Safe Kids
Maricopa County

Safety Education Program, and is conducted through a number of elementary schools in the community. Bicycle safety is taught by the Fire Department throughout the school year as part of the Family Tree Program. As part of this program, a safety lesson on bicycles and helmets is provided in the classroom and students are then provided with a free bicycle and helmet by members of the Mesa Fire Department. This very successful program, which has been placed on hold due to budgetary demands not only provided students with free bicycles and helmets, but also taught safety concepts and heightened bicycle safety awareness for school-aged children in the community.

School Crossing Guard Training — Sponsored by the Maricopa Association of Governments, the City of Mesa provides the location and training for annual East Valley crossing guard training. Past and current Mesa Public School crossing guards, as well as adjoining school district's crossing guards, are educated in crossing procedures, equipment, traffic laws, health, and safety. The crossing guards then educate the students on how to cross the street while bicycling and instruct students who ride their bicycles how to cross a crosswalk onto campus.

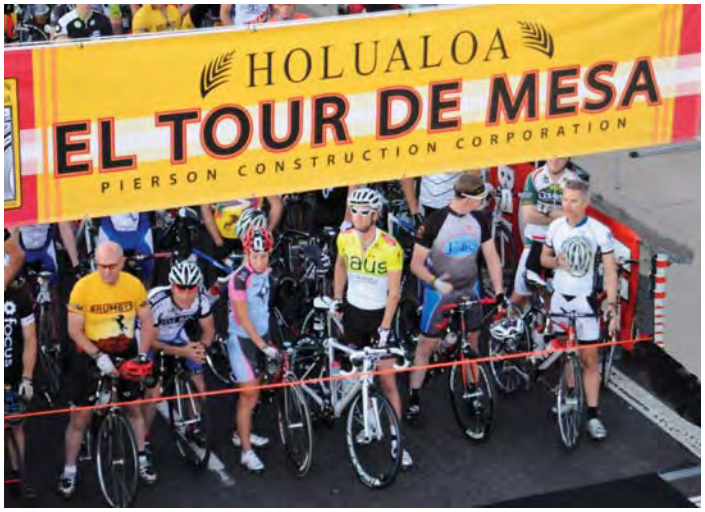
ENCOURAGEMENT

BICYCLE RESOURCES

- **Mesa Bike Map —** In March of 2012, the City of Mesa released its latest "Mesa Bike Map." The 2012 version maps out six featured bike routes of varying lengths in addition to showing locations of bicycle lanes, routes, shared-use paved paths, paved canal paths, and unpaved canal paths throughout the City. The bicycle map shows all public streets within the community, labels the major streets, and displays all connecting bicycle facilities. This useful resource also provides a variety of safe and defensive riding tips for bicycle operators. Several thousand maps were printed and are distributed throughout the community.
- **Bicycle Safety, Enforcement, and Awareness Materials —** Mesa regularly creates bicycle safety, enforcement, and awareness informational materials such as brochures, papers, booklets, public service announcements (PSA's), and other source information that is distributed to the general public. In addition, Mesa regularly advertises sponsored bicycle events through the public media and on the web in an effort to promote safety, enforcement, and bicycle awareness. Community outreach needs are continually assessed to keep the public informed and up to date on current information.

BICYCLE EVENTS

El Tour de Mesa — El Tour de Mesa is an annual 70-mile ride/race that begins and ends within the City of Mesa. It includes a 25-mile ride and a "family fun ride." The event is coordinated by Perimeter Bicycling Association of America, headquartered in Tucson and includes an annual registration that has averaged over 1,200 bicycle riders over the last several years. The City of Mesa maintains a safety education booth at the event, and highlights bicycle helmet awareness, bicycle safety, and distributes informational materials and bicycle maps to participants and the general public.



Valley Metro Bike Month — Within the State of Arizona, Bike Month is held annually during the month of April as opposed to the National Bike Month held in May. Arizona celebrates Bike Month in April to take advantage of spring's cooler weather. Valley Metro, the regional public transportation agency, takes the lead in coordinating and communicating with the cities, agencies, and departments that participate in Bike Month activities and events, and takes the lead in advertising Bike Month events throughout the metropolitan region. The City of Mesa participates in this event, and coordinates activities with Valley Metro to promote Bike Month on an annual basis.

The Great Arizona Bicycle Festival — The Great Arizona Bicycle Festival, featuring El Tour de Mesa, is a celebration of all things bike. In April of each year, in coordination with Valley Bike Month, the festival offers residents the opportunity to take part in the Great Arizona Bike Swap, Downtown Historic Bicycle Tour, a Kids Zone, and Bicycle Safety Rodeo along with a health fair, live music, food, and more. Mesa residents are encouraged to bring their bikes and ride through the streets as part of Ciclovía Mesa that closes the downtown to all motorized vehicles allowing for bicycles, scooters, roller skates, and other non-motorized forms of transportation to enjoy the festivities.

Bike2Work and School Day — The City of Mesa sponsors an annual Bike to Work and Bike to School Day, and coordinates the event with Earth Day and regional bike to work efforts in neighboring cities. Bike2Work is open to the public, and the Mesa Transportation Department sponsors a pancake breakfast to riders as well as safety education information, free handouts, and informational packets. This event is well-marketed throughout the City, includes a department challenge for City employees. The department with the highest percentage of participants is awarded a free lunch and receives the travelling trophy to be displayed in that department's work section for the year.

For the Bike to School component, the City of Mesa depends on extensive advertisement throughout each school within the Mesa Public School District in order to ensure maximum participation. The Mesa Public Schools also include informational updates within school newsletters. The Transportation Department utilizes the annual Bike to School event as an awareness

opportunity, and provides safety and educational information to schools throughout the district.

International Walk and Bike to School Day – Although this event includes and promotes walking as well, the City of Mesa uses this event to teach students about bicycle safety and rules of the road. The Mesa Transportation Department coordinates the annual event. The Mesa Police Department, the Mesa Fire Department, and FedEx also participate in the event.

FUTURE NEEDS

In order to establish a safe environment for bicyclists throughout the community, the City of Mesa continually works toward the goal of reducing the number of collisions and fatalities through ongoing safety education and awareness for all ages and types of motorists and bicyclists. Mesa will continue to educate bicycle riders on the concept of "driving a bicycle" as opposed to "riding a bicycle."

A crucial component of bicycle safety and education is to stress that a bicycle is a vehicle, not an impractical form of transportation or a toy, and that driving a bicycle carries the same responsibility as driving a car. Some of the community's primary safety and educational needs include the following items:

- To educate and support additional Mesa schools to actively participate in the Safe Routes to School Program.
- To continue adding bicycle lanes and routes (when applicable) throughout the City of Mesa in an effort to expand the overall network, and to provide a higher level of bicycle accessibility.
- To increase the frequency and marketing of community bicycle rides in order to promote ongoing awareness.
- To expand educational and awareness programs by the City of Mesa, as resources permit.
- To increase marketing efforts for "Share the Road" as outlined in Arizona Revised Statutes (ARS) 28-735. This legislation highlights the importance of maintaining three-foot spacing between motor vehicles and bicycles. Through the promotion of additional "Share the Road" concepts, there is a need to include signs signifying the importance of providing three feet of space between a motorist and a bicyclist. There is a need to have these signs placed along heavily utilized bicycle routes and lanes throughout the City.
- Installation of additional pedestrian and bicycle crossing signals as needed where shared-use pathways cross arterial streets.

PUBLIC AWARENESS CAMPAIGN TO PROMOTE SAFETY AND CONTINUING EDUCATION

Although the City of Mesa is very active in promoting bicycle safety, education, and awareness to the community-at large, future efforts will continue to focus on elements of "how to enhance the overall public awareness campaign" in an effort to further advance bicycle safety and continuing bicycle education throughout the City of Mesa. This not only helps to reinforce the message, but also ensures that our residents will receive information that is current and in a format that is convenient for them.

The City of Mesa has established an organized delivery mechanism through **MesaRides!** to effectively provide an overall safety message, product, or service to the bicycling community of Mesa. **MesaRides!** transmits this message through print, public awareness announcements, or visual media. Opportunities to promote the safety message include the following activities:

- Current local and regional bicycle maps at City facilities, the Chamber of Commerce, libraries, and bicycle shops.
- The development of a current web site and social media with bicycle safety information and maps.
- The promotion of Bike Month activities, events, and rides at the local and regional levels.
- More of an emphasis on and awareness of bicycles and public transportation. This campaign can place an emphasis on the interface between bicycling commuters, the availability of METRO Light Rail, and Valley Metro local and regional bus transport.
- Coordinating activities with Citywide bicycle clubs and organizations, and bicycle shops in order to maximize participation in City bicycling activities both at the municipal and private levels so that bicyclists can in turn participate in club-organized and individual bike shop-level sponsored events.
- Coordinate activities with the Employees Clean Air Club, private clubs and employers, and other organizations that are currently located within the City of Mesa.
- Establish community wide efforts and coordination to actively participate in rides sponsored by organizations such as the Ride of Silence and the Not One More Foundation to promote sharing the road with bicyclists and vehicles on a daily basis.

In the future, it will be necessary to continue to advance safety, education, and awareness concepts throughout the community. In doing so, the City may have to modify or re-create past practices associated with the Bicycle Safety, Education, and Awareness Program, and continue to advance a multi-tiered approach to maximizing public bicycle awareness in the future.

ENFORCEMENT

Laws should be consistent and interpreted consistently so that neither police nor users (motorists and bicyclists) will be confused on what is legal behavior. Many of the traffic laws that are in place today were created to provide the efficient and safe movement of motor vehicles. Enforcement of bicycle safety rules and regulations is also a function of the Mesa Police Department. Enforcement of traffic laws is an important component of educating motorists and cyclists about the laws of the road as well as improving safety between both users. Bicyclist and motorists both have common behaviors that are illegal and dangerous (Table 3-1).

Law enforcement officers enforce laws for pedestrians, bicyclists, and vehicle drivers, to improve safety. Presently, the enforcement of violations by cyclists plays a very important role in overall traffic safety within Mesa. Enforcement for bicycle violations within the community helps promote compliance with traffic laws, potentially reducing the number of violators and repeat traffic offenders. By increasing enforcement of bicycle related laws, there may be a reduction in fatalities and the number of car-bicycle crashes, thus promoting increased safety.

Types of enforcement throughout the City may include issuing citations, conducting arrests, or providing written or verbal warnings to bicyclists concerning traffic violations. Common violations for bicyclists are driving on the wrong side of the roadway and operating a bicycle at night without appropriate lighting. Other legal obligations for bicyclists can be found in Arizona Revised Statutes, Title 28, entitled Transportation Laws.

Based on observations and input from citizen advocates, advisory boards, survey respondents, and City staff, typical bicycle-motor vehicle conflicts that should be addressed include the following items:

- Motorists not yielding to bicyclists.
- Motorists driving in bicycle lanes.
- Motorists not providing bicyclists with enough room on the street (three-foot spacing as specified in ARS 28-735).
- Bicyclists disobeying traffic signals or wrong way riding.
- New drivers and winter visiting drivers not aware of bicycle laws.
- Bicyclists not utilizing proper safety equipment such as lights and reflectors.

Table 3-1

Common Violations by Road Users	
Bicyclists	**Motorists**
Failure to have proper lighting	Failure to signal
Running red lights	Running red lights
Rolling through stop signs	Rolling through stop signs
Failure to yield to pedestrians	Failure to yield the right of way
Parking in front of walkways	Parking in bike lanes
Riding on the wrong direction	Turning right from the bike lane or in front of cyclists

Between community education and support for enforcement efforts, the City of Mesa can help to build respect between bicyclists and motorists by working together with the Mesa Police Department and the Maricopa County Sheriff's Office in identifying high risk areas that have above average crash and fatality rates. The City of Mesa will continue to assess future enforcement needs and requirements in order to promote a safe environment for bicycling throughout the community. There will also be a thorough analysis of how the City can work to incorporate enforcement components into the mode of bicycling, in order to maintain bicycling as a safe and efficient mode of transport for citizens of the community.

MESA BICYCLE MOUNTED POLICE OFFICERS

Mesa bicycle officers are able to better incorporate their senses, including smell and hearing, to detect and address crime. Mesa bike patrol officers are often able to approach suspects virtually unnoticed, even in full uniform and are a highly mobile, visible presence. According to the International Police Mountain Bike Association (IPMBA) research has shown that bicycle patrols are more approachable than cruisers allowing for positive interface between the police and public. Mountain bikes have proven effective in a number of different environments. They are swift and agile in busy urban areas where traffic snarls and crowds delay motorized units. Bikes are also effective in less urban areas for park patrol, parking lots, campus areas, residential patrol, business security, athletic or civic events, and specialized details. They can be operated on streets, sidewalks, alleys, trails, and other areas that are difficult to access with motor vehicles.

POLICE EDUCATION

Police officers come in contact with bicyclists and motorists on a daily basis. This puts police officers in a unique position to assist with and add credibility to community efforts encouraging bicycling and improving bicycle safety. However, most officers do not possess the bicycle specific law knowledge to enforce bicycle laws effectively. Awareness of these rules can lead to more efficient enforcement of laws and encourage good behaviors, while taking advantage of teachable moments with both bicycles and motorists. The ultimate goal is to prevent crashes and enhance traffic safety. Most police officers have never received bicycle specific training and they are unaware of the leading causes of bicycle related crashes. Without the proper knowledge and training police officers cannot warn bicyclists and motorists of improper actions that may lead to accidents and injuries between the two modes of users. Currently the City of Mesa has taken steps to inform police officers about bicycle laws through the institution of briefings on bicycle related traffic laws. These briefings are conducted in all districts on an annual basis.

ARIZONA BIKE LAW

Cyclists riding their bicycles on the roadway, shoulder, or driveway are considered drivers of vehicles and must operate according to the laws for drivers of vehicles. Cyclists walking with their bicycles are considered to be pedestrians, and must operate according to the laws for pedestrians. These laws are enacted in an attempt to create a safer environment for the citizens of Arizona. Unfortunately it seems that many are unfamiliar with bicycle related traffic laws, and thus compliance is much lower than with laws that pertain primarily to motor vehicle operation. It is important for bicyclists, drivers of vehicles, and police officers to understand these laws, and to view a bicyclist as an operator of a vehicle on the roadway and not a bicycle rider.

This concept of operating a bicycle as a driver is not easily understood or remembered by a lot of cyclists because since childhood, unlike the automobile, bicycles were a toy. Enforcement programs can be used to educate roadway users about the traffic laws and serve as a reminder to obey traffic rules, and encourage safer behaviors. Enforcement is not meant by definition to limit a police officer to writing a citation. Enforcement can apply to several different approaches that can be effective for getting the violator's attention of an infraction and the corrective measures that are needed to become a safer participant on the road.

National bicycle crash data indicates the types of incidents and circumstances that put the cyclists at the greatest risk. In 2002, the National Highway Traffic Safety Administration (NHTSA) awarded a grant to The Massachusetts Bicycle Coalition (MassBike) to develop a national program to educate police departments about laws relating to bicyclists. As part of that work, MassBike reviewed crash data from 1998 through 2002. Table 3-2 presents the results of that data analysis.

Several states have integrated bicycle operation and safety questions into motor vehicle driver tests. These questions are intended to bring awareness and understanding of bicyclists and their lawful place on the roadway. Challenging drivers to be knowledgeable about bicycles and understanding that bicycles are in fact a legal mode of transportation with the right to use roadways should help to discourage animosity and negative connotations and misconceptions about cyclists.

Mesa staff support implementation of bicycle laws with higher safety standards such as mandatory helmet laws for minors and prohibiting bicycle riding on sidewalks in the Town Center and other high pedestrian areas. Mesa staff also provide support for new bicycle related legislation brought forward in initiatives by private non-profit bicycle advocacy groups.

Table 3-2

Crashes for Adults vs. Children

Bicycle Crash Type	Percent of all bicycle crashes-Adults	Percent of all bicycle crashes-Children
Motorist failed to yield - daylight	25%	13%
Bicyclist failed to yield - daylight	23%	47%
Bicyclists riding wrong way on road	13%	8%
Bicyclist riding on the correct side of road – limited light and motorist error	13%	7%
Bicyclists riding on sidewalk	10%	10%
Motorist overtaking bicyclist – daylight	6%	4%
Bicyclist riding on the correct side of the road – no motorist error	7%	7%
Other (mostly parking lot)	3%	4%

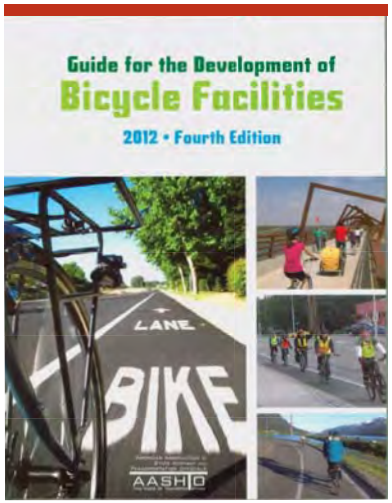
CHAPTER FOUR

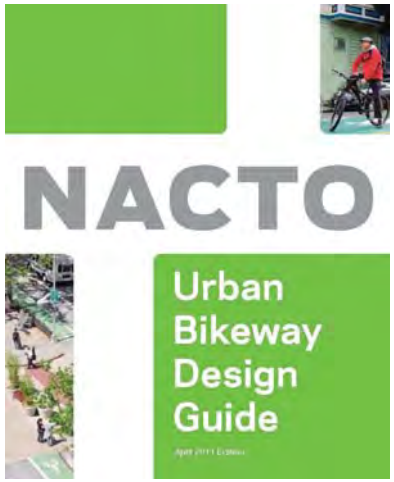
BICYCLE FACILITIES AND DESIGN OPTIONS

INTRODUCTION

This chapter will provide an overview of bicycle facility elements used by the City of Mesa. Additionally, this chapter will introduce newer concepts that may be considered in the future. The bicycle facilities used within the City of Mesa are meant to provide a safe and comfortable experience for the bicyclist. Facilities include bicycle lanes, bicycle routes, shared use paths, bicycle parking, and bicycle access.

As mentioned above, this plan will expand the City's current bicycle facility options by discussing current best practices and introducing innovative concepts. The goal of this chapter is to develop and present the best bicycling facilities available.





BASIC ELEMENTS

The network of facilities for bicyclists consists of a handful of basic elements. These elements include bicycle lanes and routes, shared-use paths, various signing and pavement markings used to define bicycle facilities, unique traffic controls, and the bicycle boulevard concept. Many of these elements will help to create a street that includes space for bicyclists, thereby making it more "complete." A Complete Street helps to encourage bicyclists, as well as pedestrians, to use the street cross-section to travel. Discussions on the basic bicycle facilities elements follow.

The City of Mesa Transportation Department uses national guides in designing and operating bicycle facilities including the National Association of City Transportation Officials (*NACTO*) *Urban Bikeway Design Guide* and the American Association of State Highway and Transportation Officials (*AASHTO*) *Guide for the Development of Bicycle Facilities* (*AASHTO Guide*).

BICYCLE LANES

Bicycle lanes provide bicyclists with a space dedicated to them that allows the rider to travel at a speed independent from adjacent motor vehicles or pedestrians. Bicycle lanes help to increase the visibility of bicycle riders to motorists. In cases where right-of-way or barriers prevent the continuation of a bicycle lane, the facility may be reduced to a bicycle route until continuation of the bicycle lane is possible. All bicycle lanes should be in accordance with the City of Mesa Standard Details and the *Manual On Uniform Traffic Control Devices* (*MUTCD*).

The *AASHTO Guide* defines a bicycle or bike lane as "a portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists." The City of Mesa typically incorporates bicycle lane design into all appropriate new construction. Additionally, roads are evaluated and bike lanes are added whenever possible during resurfacing and reconstruction of existing streets.

There are several factors Mesa takes into account when looking at the design of a bicycle lane. The City follows *AASHTO* minimum recommendations for bicycle lane width. City of Mesa Standard detail M47.5 illustrates specifications for a typical bicycle lane layout. Bicycle lanes not only provide a dedicated space for bicyclists, but also greatly reduce bicycle and pedestrian conflicts.

Bicycle lanes have the following characteristics:

1. Bicycle lanes are not physically separated from vehicle lanes.
2. Bicycle lanes are designated by signs and pavement markings (lane striping and symbols).
3. Bicycle lanes offer preferential or restricted use to bicyclists.
4. Bicycle lanes increase operating width for bicyclists.
5. Bicycle lanes provide for more predictable movement of motorists and bicyclists.
6. Bicycle lanes may vary in width depending on conditions.

Other considerations that may be taken into account when designing bicycle lanes are:

- Bicycle lanes should be one-way facilities.
- Bicycle lanes should carry bicycle traffic in the same direction as adjacent motor vehicle traffic.
- Bicycle lanes should never be placed between a parking lane and the curb.
- Pavement surfaces should be level and smooth.
- Where drain inlets and utility covers are present, they should be bicycle-safe and adjusted flush with the roadway surface.
- Delineate bicycle lanes from motor vehicle lanes with minimum 6-inch wide solid white stripes. Mesa uses 8-inch wide stripes for bike lanes.
- Where bicycle lanes exist in advance of a roundabout, terminate bicycle lane striping at the pedestrian crosswalk, providing access to the sidewalk.

ALTERNATIVE BICYCLE LANE CONCEPTS FOR CONSIDERATION

Raised Bicycle Lanes create a physical separation and an individual space for the rider. The change in surface elevation and color help both the motorist and the cyclist to differentiate between travel lanes. The raised lane design should take into account considerations such as smoothness, drainage, color, and mountable curb slope.

Colored Bike Lanes can often be a traffic calming technique that gives a visual perception of a narrower roadway. Colored bike lanes give the rider a psychological perception of separation from traffic and provide guidance and separation of bicycle and motor vehicles in confusing mixed traffic intersections. Green bike lanes highlight areas where bicycles and cars could encounter a potential conflict from crossing paths. The green color of the bike lanes is to alert drivers and bicyclists of the possible conflict and prompt them to take extra precaution when traveling across these areas.

A Separated On-Street Bike Lane or Cycle Track is a more secure bike lane with a one- or two-way lane separated from car traffic by a barrier. This method is commonly used European cities; it is less common in the U.S.

A Bike Box is a colored area at a signalized intersection that allows bicyclists to position themselves in front of traffic waiting at the red light. Designed to be used only at signalized intersections, the box is intended to reduce car-bike conflict, increase cyclist visibility, and provide bicyclists a head start when the light turns green.

BICYCLE ROUTES

Bicycle routes are identified through a number of signs but do not have separate lanes for exclusive bicycle use. Bicycle routes have traditionally been placed along roadways and half-mile streets with lower traffic volumes, yet provide higher degrees of connectivity between neighborhoods and the arterial street network. They have worked well in providing access to neighborhoods. Bicycle routes have also functioned as a safety component to the transportation system through their use of visible route signage, which provides notice to motorists that they are driving along a designated bicycle route, and that bicyclists could be near. Although not striped like a bicycle lane, bicycle routes often contain a pavement line separating road shoulders from vehicular traffic.

Sharrow lane marking.

SHARED LANES (SHARROWS)

Sharrows are used to show motorists that bicyclists may "take the lane" as well as helping bicyclists achieve proper lane positioning. In San Francisco, which studied design and placement of sharrows in 2004, sharrows were shown to improve lane positioning of bicyclists and improve passing distance by motorists. Sharrows also cut down on the number of sidewalk bicyclists and wrong-way bicyclists.

Sharrow lane markings can be used to alert motor vehicle drivers to the presence of bicyclists. Identifying the lane as shared-use will inform bicyclists to take their lawful portion of the travel lane while positioning them outside the "door zone" of cars parked on-street. The use of shared lane markings also encourages motorist to give the proper three feet of distance when passing.

Shared lanes are often used where there is not enough right-of-way to incorporate full bike lanes but traffic volumes and street width warrants the encouragement of bicyclists to ride on the correct side of the roadway. Shared lane markings should not be used on roads with a speed limit more than 35 mph, and lane markings should be provided every 250 feet as well as after every intersection.

ACCOMMODATIONS AT MAJOR INTERSECTIONS

Intersection design is complicated by the need to accommodate several different turning patterns at one time by bicyclists, vehicle drivers, and pedestrians. When evaluating an intersection with regard to movement of motor vehicles and non-motor vehicles, several different assumptions may be considered regarding traffic volume, location, and specific context of the intersection.

1. Motor vehicles executing a right hand turn should do so from the furthest most right lane.
2. Bicycle through traffic should always be to the left of a motor vehicle right turn only lane.
3. Bicycle traffic executing a left hand turn at an intersection should do so from the left hand turn only lane or from the lane furthest to the left or as close to the centerline or the left side lane as practicable.

The only clear instruction found in the *MUTCD* with regard to bicycle lanes that enter into or extend through an intersection is that a through bicycle lane shall not be positioned to the right of a right turn only lane. Intersection layout details are available in the City of Mesa Standard Details.

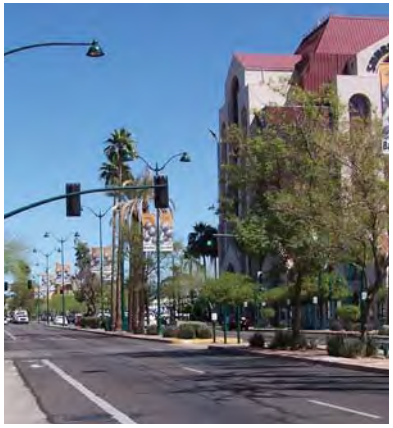
BICYCLE AND PEDESTRIAN ACTUATED CROSSING SIGNALS

The success of a shared use pathway or trail system is highly dependent on the ability of the user to safely cross busy streets when encountered. In order to prevent a high traffic volume arterial from becoming a barrier to bicyclists, the incorporation of pavement markings and traffic signals should be considered. The choice to travel as a bicyclist is in part dependent upon the actual and perceived ability to safely and efficiently cross streets along the intended travel route.

There are a variety of crossing treatments available to assist bicyclists and pedestrians to cross the road safely. These treatments may include crosswalks or enhanced crosswalks and traffic signals, such as pedestrian hybrid beacons, also known as H.A.W.K. signals.

PEDESTRIAN ACTUATED SIGNAL DEVICES

Pedestrian actuated signal devices require the user to push a button in order to activate a walk signal indicator and initiate a WALK interval. According to the *MUTCD*, pedestrian actuated signal devices should be installed:



Main Street Pedestrian Actuated Crossing.

- When a traffic signal is installed under the Pedestrian Volume or School Crossing warrant,
- When an exclusive pedestrian phase is provided (when motorists are stopped in all directions),
- When vehicular indications are not visible to pedestrians, and
- At any established school crossing with a signalized intersection.

SHARED-USE PATHWAY DESIGN

Shared-use paths are facilities exclusive to non-motorized users and have minimal vehicular cross traffic. Shared-use paths are not to be confused with trails, which are similar with regard to right-of-way, but typically not paved.

Shared-use paths provide excellent recreational opportunities to bicyclists as well as joggers, walkers, roller bladers, and wheel chair users. Shared-use paths can occupy abandoned railroad alignments, canal access roads, or utility easements, as well as parks and educational campus environments.

An important consideration when planning and designing shared-use paths is access management. Ingress and egress opportunities should be provided frequently, accessing local streets, neighborhoods, activity centers, and parks. Shared-use paths should be well lit to provide security and visibility.

The City of Mesa strives to achieve a minimum of 10 feet in width for shared-use paths, which complies with the *AASHTO Guide*. However, when possible, paths ranging from 12-15 feet are preferred. Conversely, there are often situations where the area is too narrow to obtain the minimum desired width. In those cases it is better to reduce the path width than terminate it all together. In locations that will be used by equestrians in addition to bicyclists and pedestrians, consideration should be given to accommodating horses. Equestrians should be offered a mode separation that will afford horses better footing such as decomposed granite or sand.

Consolidated Canal / Bicycle Rest Area

BICYCLE BOULEVARD CONCEPTS

Bicycle boulevards are low motor vehicle volume, low motor vehicle speed streets, where bicycle traffic is encouraged while similar through trips by non-local vehicular traffic are discouraged. Bicycle boulevards are meant for safe and efficient movement of bicycles. This can be achieved through several different methods including use of signs, on-street markings, or traffic calming devices to create a roadway that prioritizes bicycle traffic.

The design of the bicycle boulevard is very flexible and can be tailored to meet specific needs for each roadway. The idea of the bicycle boulevard is to provide an environment where bicyclists are free to use the full lane, sharing road space with cars. Motorists on these routes expect to see bicyclists and therefore travel with caution. Not all design elements are needed to constitute a bicycle boulevard. A bicycle boulevard can be created simply with the incorporation of pedestrian actuated signals and wayfinding along a route. Designated streets should be distinguished with uniformly colored signs and pavement markings.

The City of Mesa plans to incorporate this concept throughout the City on streets that have already been established as bicycle thoroughfares such as Adobe Road/8th Street and Pueblo/8th Avenue.

Boulder, Colorado Bicycle Boulevard

WAYFINDING

The City of Mesa is installing additional signing with directional arrows to identify bicycle destinations and provide other useful information bicyclists can use when navigating throughout the City (example: "To Downtown"). Experienced, intermediate, and novice riders alike will have an enhanced experience with an alternative that blends the roadway riding experience with the conveniences of a canal shared-use pathway.

Wayfinding for bicycling means a consistent use and organization of definite sensory cues from the external environment.

These cues can be present in the form of pavement markings and signs, or other audible or tactile cues. Wayfinding provides valuable information at decision points, helping bicyclists find their way through the built and natural environment.

Here are some examples of signage and pavement markings that are being utilized around the country where wayfinding has been incorporated in efforts to help users navigate through unfamiliar environments.

Wayfinding signage and pavement marking examples

BICYCLE PARKING DESIGN STANDARDS

At present, the City of Mesa does not have adopted bicycle parking provisions in its municipal zoning ordinance. Current planning cases are reviewed during design, and are generally recommended to consider bicycle parking at all commercial and industrial developments. These recommendations do not include the number of spaces needed, location, or proximity to buildings. They also do not account for long-term versus short-term parking. Current design standards as specified in Chapter 15 of the City of Mesa Zoning Ordinance do not provide direction for bicycle rack placement, how the rack element interacts with the bicycle, or direction for additional racks when placed in groups.

REVIEW OF BICYCLE PARKING CLASSIFICATIONS

Bicycle parking types fall into two primary classifications: short and long term parking. These classifications define the type of facilities that will be provided to the bicyclist. Short-term parking focuses on outdoor installations intended for limited use, enabling the bicyclist to secure their bicycle usually for a period of less than four hours. Long-term parking is intended for bicyclists who are leaving their bicycles for an extended period of time, typically much longer than four hours.

SHORT-TERM PARKING

Short-term parking is usually provided by a bicycle rack unit that is intended to provide two points of support to the bicycle, and may be used with a typical bicycle lock. Typically, short-term parking does not provide security for bike accessories or weather protection, and is intended to be located no more than fifty feet (50') from the main door of the building, but not farther than the closest automobile parking space, in a well-lit, visible location. The amount, location, usage, and ratio of bicycle to motor vehicle parking spaces should be monitored and adjusted to best accommodate the users of that facility.

LONG-TERM PARKING

These locations are intended to be indoors along with additional amenities that may include showers, lockers, maintenance stations, onsite mechanics, and bicycle rentals. Long-term parking is intended for users who are going to leave their bicycles unattended for extended periods of time. Locations that might be considered for long-term parking facilities may include places of employment, transit centers, educational facilities, airports, and train stations.

Long-term Parking Source: bicyclinginfo.com

DESIGN STANDARDS

Bicycle rack elements should be designed to follow these standards (See Figure 4-1):

1. The bicycle rack must support the bicycle upright by its frame in a minimum of two places.

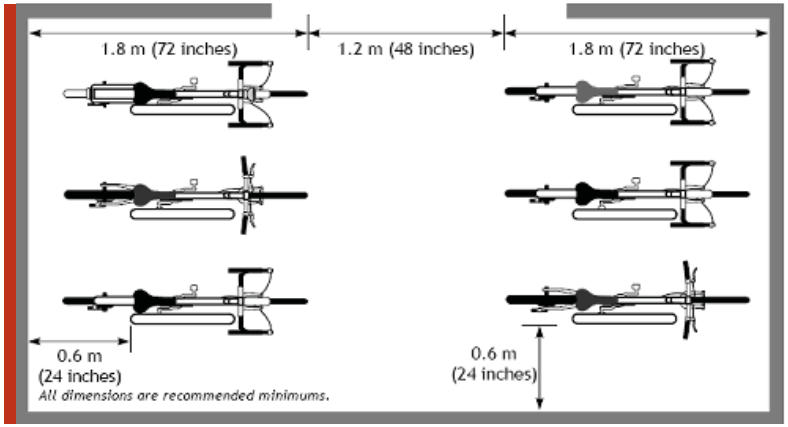


Figure 4-1 Bicycle parking dimensions
Source: Wisconsin DOT

2. Enable the bicycle frame and one or both wheels to be secured.

3. Support a bicycle without a diamond shaped frame with a horizontal top tube.

4. Allow front-in parking. A U-lock should be able to lock the frame down tube and front wheels securely.

5. Allow back-in parking with the ability to U-lock the bicycle seat tube and rear wheel.

6. The rack unit should be resistant to cutting or being detached by common hand tools that can be stored in a backpack or coat.

BICYCLE PARKING DIMENSIONS

- Bicycle parking should be at least two feet wide by six feet long, and have a minimum overhead clearance of seven feet.
- Racks should have a minimum of a four-foot aisle for bicycle maneuvering beside or between each row of parking.
- Racks and lockers should be securely anchored to the ground or a structure.

BICYCLE PARKING LOCATIONS

- Bicycle parking should be located in a well-lit, secure location, within 50 feet of the main entrance or an entrance when located at a building with multiple entrances, but not further than the nearest motor vehicle parking space.
- Parking racks should be located so they will not conflict with pedestrian movements, and should have direct curb cut access to discourage riding on the sidewalk.
- Parking should be separated from vehicle parking by a physical barrier to reduce to the chance of damage to the bicycle by an adjacent vehicle.
- Many facilities will require both types of bicycle parking to provide appropriate parking for both short-term customers and long-term employees.
- Bicycle parking, when located in public right-of-way, should maintain a minimum of 42 inches of clearance to allow for substantial ADA pedestrian passage through the area.

RECOMMENDED ZONING CODE ADDITIONS

Tables 4-1 and 4-2 provide bicycle parking requirements recommended to be included in the zoning code.

Table 4-1 Recommended Zoning Code Minimum Required Bicycle Parking Spaces			
PARKING FOR BICYCLES			
Use		Bike Parking Requirement	
		Long-term	Short-term
Residential Users			
I	Multiple Residences	1 per 4 units	None
II	Multiple Residences with 5 or more units shall also provide	None	2 bike racks per 20 units
Public Assembly and Schools			
III	Theaters, auditoriums, assembly halls, churches, clubs, lodges, fraternal buildings, funeral homes, arcades, cyber bars	1 per 4,000 sq. ft. 1 per 2,000 sq. ft. in Downtown Core (DC) Districts	1 per 40 seats and 1 per 1,000 sq. ft. of non-seated area: 1 per 20 seats and 1 per 1,000 sq. ft. of non-seated area in Downtown Core (DC) Districts
IV	Community centers and libraries, pools	1 per 4,000 sq. ft. 1 per 2,000 sq. ft. in Downtown Core (DC) Districts	1 per 4,000 sq. ft. 1 per 2,000 sq. ft. in Downtown Core (DC) Districts
V	Swap meets and farmers markets	1 per 4,000 sq. ft.	1 per 4,000 sq. ft.
VI	Schools, kindergarten through ninth grade	1 per classroom	None
VII	High schools, charter schools, academies, colleges, universities, trade or vocational schools	A number of spaces equal to ten (10) percent of the maximum students present at peak hour plus five (5) percent of employees	None
Health Care			
VIII	Medical or dental offices and outpatient clinics	1 per 4,000 sq. ft. 1 per 2,000 sq. ft. in Downtown Core (DC) Districts	1 per 4,000 sq. ft. 1 per 2,000 sq. ft. in Downtown Core (DC) Districts
IX	Hospitals and nursing and convalescent homes	1 per 12,000 sq. ft.	1 per 4,000 sq. ft.
X	Day care centers and nurseries	1 per 12,000 sq. ft.	1 per 4,000 sq. ft.
Group Commercial Developments			
XI	Group Commercial Developments (Shell buildings, no specific uses)	1 per 12,000 sq. ft.	1 per 4,000 sq. ft. 1 per 2,000 sq. ft. in Downtown Core (DC) Districts

Table 4-1 (continued)

PARKING FOR BICYCLES			
Use		Bike Parking Requirement	
		Long-term	Short-term
Independent Commercial Building and Uses			
XII	General offices/retail and services	1 per 10,000 sq. ft. 1 per 8,000 sq. ft. in Downtown Core (DC) Districts	1 per 3,000 sq. ft. 1 per 2,000 sq. ft. in Downtown Core (DC) Districts
XIII	General auto repair garage, service stations, car washes and drive through lubrication shops	1 per 12,000 sq. ft.	1 per 4,000 sq. ft.
XIV	Hotel and motel	1 space per 10 rooms or suites	2
XV	Restaurant, bar	1 per 12,000 sq. ft.	1 per 4,000 sq. ft.
XVI	Outdoor sales and service areas, (car lots, plant nurseries, building supplies, etc.)	1 per 12,000 sq. ft.	1 per 4,000 sq. ft.
Recreation			
XVII	Bowling centers	1 per 12,000 sq. ft.	1 per 4,000 sq. ft.
XVIII	Golf courses and driving ranges	None	2
XIX	Miniature golf, amusement parks, batting cages, water parks, skating rinks, dance/event halls	1 per 8,000 sq. ft.	1 per 2,000 sq. ft.
XX	Health spas/clubs, gyms, handball, racquetball courts/clubs	1 per 8,000 sq. ft.	1 per 2,000 sq. ft.
XXI	Municipal and private parks	1 per 2500 sq. ft. of built area	1 per 500 sq. ft. of built area
Group Industrial Buildings and Uses			
XXII	Shell building, no specific use	1 per 12,000 sq. ft.	2
Independent Industrial Buildings and Uses			
XXIII	Mini storage	None	2
XXIV	Warehouses	1 per 12,000 sq. ft.	2
XXV	Manufacturing	1 per 12,000 sq. ft.	2

In addition to the recommended minimum bicycle parking requirements, facilities to accommodate the basic needs of bicyclists requiring longer term bicycle security and amenities that will support longer commutes such as locker and shower facilities are recommended.

Table 4-2 Recommended Long-term Bicycle Parking Amenities for Special Zoning Districts.

Within Town Center/ Fiesta/ and Mesa Gateway Districts	
Recommendation per use	Amenities
Structures containing **LESS** than 50,000 square feet of M-1, M-2, P.E.P, O-S, C-1, C-2, C-3, DC, and DC gross floor area should provide shower and clothing storage facilities for employees commuting by bicycle.	One shower stall per gender and two lockers per gender.
Structures containing 50,000 square feet or **MORE** of M-1, M-2, P.E.P, O-S, C-1, C-2, C-3, DC, and DC gross floor area should provide shower and clothing storage facilities for employees commuting by bicycle.	One shower stall per gender and two lockers per gender per 50,000 square feet of gross floor area.
All structures in Overlay Zoning Districts: BIZ, PAD, or DMP gross floor area should provide:	One additional shower stall per gender and two additional lockers per gender.

BICYCLE PARKING AT TRANSIT SHELTERS

While the majority of bicyclists in Mesa take their bicycles with them when transferring to transit, consideration still should be given to ensure that bicyclists are able to leave their bikes in a safe, secure location if choosing not to travel with them. Transit stops at major arterials in Mesa typically provide amenities including covered shelters, shade screens, benches, trash receptacles, and bike loops. With the recent increase in ridership on transit routes due to the economic downturn, staff has been evaluating transit ridership and has begun to incorporate bicycle lockers at high volume transit locations to provide additional long-term and secure accessibility to users.

BICYCLE STATION AND SHARE CONCEPTS

Bicycle stations provide support services to bicyclists, including secure, staffed bicycle parking and resources for repairs, maps, and other information. Many of these bicycle station facilities offer free parking during hours of operation, as well as paid memberships, which offer 24-hour access to secure parking.

In planning for the current extension of light rail, the need for this type of bicycle facility in the downtown area was identified. During light rail design a location should be identified for a bicycle station that can be implemented in coordination with the light rail extension.

One of the services being considered for the bicycle station is a bike share program that would offer users the ability to rent bicycles on a per minute basis to make short trips to and from the light rail station.

Tempe Bike Station

BICYCLE ACCESSIBILITY

Bicycle accessibility generally refers to how bicycles will be accommodated at interchanges, intersections, driveways, and median openings of a roadway. The objectives are to enable access to land uses while maintaining roadway safety and mobility through controlled access location, design, spacing, and operation. This is particularly important for arterials intended to provide efficient service to high volumes of vehicle traffic. Intersections, mid-block collector streets, and private driveways increase the potential for conflicts involving vehicles, bicyclists, and pedestrians. Controlling access to specific land uses and limiting the number of ingress and egress points along an arterial can enhance a cyclist's experience by limiting conflict points that have to be negotiated.

When looking at bicycle accessibility it becomes apparent that existing limited access to typical Arizona neighborhoods creates a significant barrier to bicyclists and pedestrians who are attempting to enter or exit a location. In reviewing new neighborhood design proposals and identifying ways to eliminate existing barriers, Mesa works to improve travel choices that will reduce indirect routes that potentially discourage non-motorized travel.

CORRIDOR DESIGN IMPROVEMENT OPPORTUNITIES

Intersections, major arterials, physical barriers, T-intersections, drainage grates, bridges, and railway crossings all require attention with respect to how they impact accessibility to the street network by bicyclists. In some cases, several alternative design treatments need to be used to address complex issues along routes. Using designs that are sensitive to the unique context of each individual project allows proper roadway treatments to be incorporated, ensuring that all modes of traffic are equally addressed, thus creating a "complete street" that serves all users.

EXISTING MAJOR ARTERIALS AND ROADWAYS

Mesa currently has 229.5 centerline miles of arterial streets that provide a grid network across most of the City on approximately one mile intervals that serves as the backbone of the transportation network in Mesa. Failing to provide provisions for non-motorized travel leads to an incomplete, fragmented, and inefficient transportation system that increases traffic volumes by inadvertently promoting single occupant vehicle (SOV) travel.

Arterial streets include two, four, six, and eight lane streets, with traffic volumes ranging from 20,000 to 50,000 vehicles per day. Although the City of Mesa strives to add more bike lanes each year as normal maintenance covers existing lane markings, there are locations where there is not enough room to provide the width needed to incorporate bike lanes.

Where there is a relatively short section (approximately 1,000 feet or less) that it is too narrow for a bike lane, but there is room for a bike lane before and after the narrow section, Mesa uses alternative signing and pavement markings that allow bicyclists to continue in a shared lane capacity until they reach the end of the narrow section and re-enter the bike lane.

SIDEWALKS

There are a great number of bicyclists who ride on the sidewalks and against traffic. Arizona State Law does not prohibit bicycle riding on sidewalks. It does require bicyclists operating on the roadway or shoulder to follow the rules that apply to drivers

of vehicles. However, sidewalks are not part of the roadway or shoulder for this purpose, and bicyclists may ride in either direction along a sidewalk.

Bicyclists who ride on the sidewalk in effect create a bikeway/driveway intersection that is separate from a driveway's intersection with the street. According to the American League of Bicyclists, "bicyclists that ride on the sidewalk are approximately 50% more likely to be involved in an accident due to the fact that each driveway encountered becomes a potential intersection scenario." The motorist looks to ensure that traffic is clear, not seeing the cyclist on the sidewalk outside of the line of sight. This is especially likely when the bicyclist is moving in the opposite direction as the adjacent street traffic.

DRAINAGE GRATES ON ROADWAYS AND PATHS

The City of Mesa has made the use of bicycle friendly drainage grates a high priority. This has improved safety for riders throughout the City. Older, non-bicycle friendly grates posed the potential for bicycle wheels to fall into the grate causing an accident. The most effective way to avoid drainage grate conflicts for bicyclists is to replace them with curb inlet style drains that eliminate the need to have a drainage grate in the bike lane. (Figure 4-2)

Due to drainage requirements, including the need to limit how far water from a 10-year storm will encroach upon traffic lanes, it is generally necessary to use inlet catch basins that have the capability to handle larger volumes of water than curb inlets can handle.

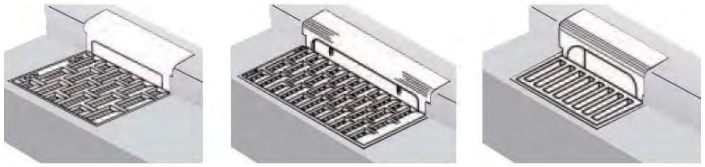


Figure 4-3 Source: Oregon DOT

When drainage grates are needed, it is imperative that they use bicycle friendly designs. (Figure 4-3)

CURBING AND CURRENT STREET PAVEMENT CONDITIONS

The City of Mesa continually assesses the condition of curbing, sidewalks, and pavement as part of its general maintenance procedures. The average lifespan of pavement is 20 years. From the moment that a road is constructed it begins to deteriorate. Nationally, civil engineers and street maintenance professionals utilize the Pavement Condition Index (PCI). The City of Mesa has been utilizing the Pavement Condition Index for over 18 years to perform pavement condition surveys each year on over 1,200 miles of streets. Information from the annual surveys identifies specific areas where various types of preventive maintenance treatments such as slurry seal, acrylic seal, or other sealcoats, can be applied. The surveys also identify areas requiring more aggressive rehabilitation projects like a rubberized asphalt overlay or partial reconstruction. Each year Mesa strives to improve the City's overall roadway pavement conditions.

Mesa staff assess the condition of curbing and sidewalks at the same time they evaluate street pavement condition. Sidewalk and curb deficiencies impacting safety or ability to use the sidewalk are repaired right away. Other repairs and updates such as adding ramps are completed in coordination with the road rehabilitation or reconstruction. Additionally, during these rehabilitation projects for major streets, Mesa staff determine if bicycle lanes can be added to the roadway as part of the project.

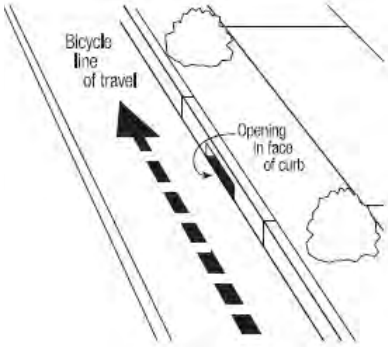


Figure 4-2 Source: bicycleinfo.com

PHYSICAL BARRIERS

Major barriers that cause difficulties to bicyclists in the City of Mesa are the US60 and L202 Red Mountain freeways. These barriers have been mitigated through the use of bike lanes and sidewalks that extend over the freeways at most arterials and half-mile collector streets. Aside from those major barriers that divide the City, other obstacles exist that provide the cyclist with equally challenging obstacles during their rides.


Eastern Canal Crossing at Pueblo Ave.

Medians are intended to restrict or limit motor vehicle traffic from performing left hand turns to reduce the number of conflict points along major arterials. While these are very helpful for reducing vehicle conflicts, there must also be careful thought in the design of medians and their impact on cyclists' access to housing and commercial developments.

Canals are often popular choices for pedestrians and bicyclists who travel throughout the City of Mesa. While canals offer an alternative option that allows bicyclists to travel in Mesa while encountering minimal contact with motor vehicles, they often provide a long barrier for those users needing to access areas that are across the canal. The City of Mesa works with the Salt River Project (SRP) to provide bridge crossings at high use areas when planning and constructing shared-use paths along canals. While these canals are owned by the United States and maintained by SRP, the City of Mesa has a long standing intergovernmental agreement that allows recreational use of the canal banks.

CROSSINGS AT BRIDGES

The City of Mesa currently has 86 bridges within the City limits that are accessible to bicycles. These bridges range from canal crossings at points where canals intersect roadways to ADOT overpasses that cross the US60 and the L202 Red Mountain freeways. The majority of the bridges on Mesa's roadways have been constructed to fully accommodate bike lanes. Those bridges that presently do not meet current City of Mesa standards are brought up to substantial conformance during road reconstruction projects when feasible.

RAILROAD AND ROADWAY INTERSECTIONS

The City of Mesa currently has two rail lines that intersect Mesa's roadway network. AASHTO design considerations recommend that all railroad grade crossings should ideally be at a right angle to the rails. The greater the angle deviates from the recommended right angle, the greater the probability that the bicyclist's front wheel may become trapped in the flangeway causing loss of control. In cases where railroad tracks cross the roadway at an angle of 45 degrees or less, a widened shoulder should be provided to enable the cyclist to achieve a safer angle when approaching the crossing. Crossing surfaces should be level and constructed of a material such as concrete, which is longer lasting than wood or asphalt and less likely to become uneven or damaged.

CHAPTER FIVE

MESA'S BICYCLE NETWORK

INTRODUCTION

The goals of this chapter are to:

- Provide an overview of existing conditions,
- Define what Mesa's vision is for its future bicycle network,
- Analyze current access points and connections, and
- Determine current gaps in the network.

Once these gaps are identified they will be prioritized for future project funding in Chapter Six.

"Mesa offers some of the best bicycling in the state, between commuter friendly bike lanes and our proximity to the desert trails and epic road rides there is something for everyone."

Travis Jones –
Owner of Two Wheel
Jones Bicycles.

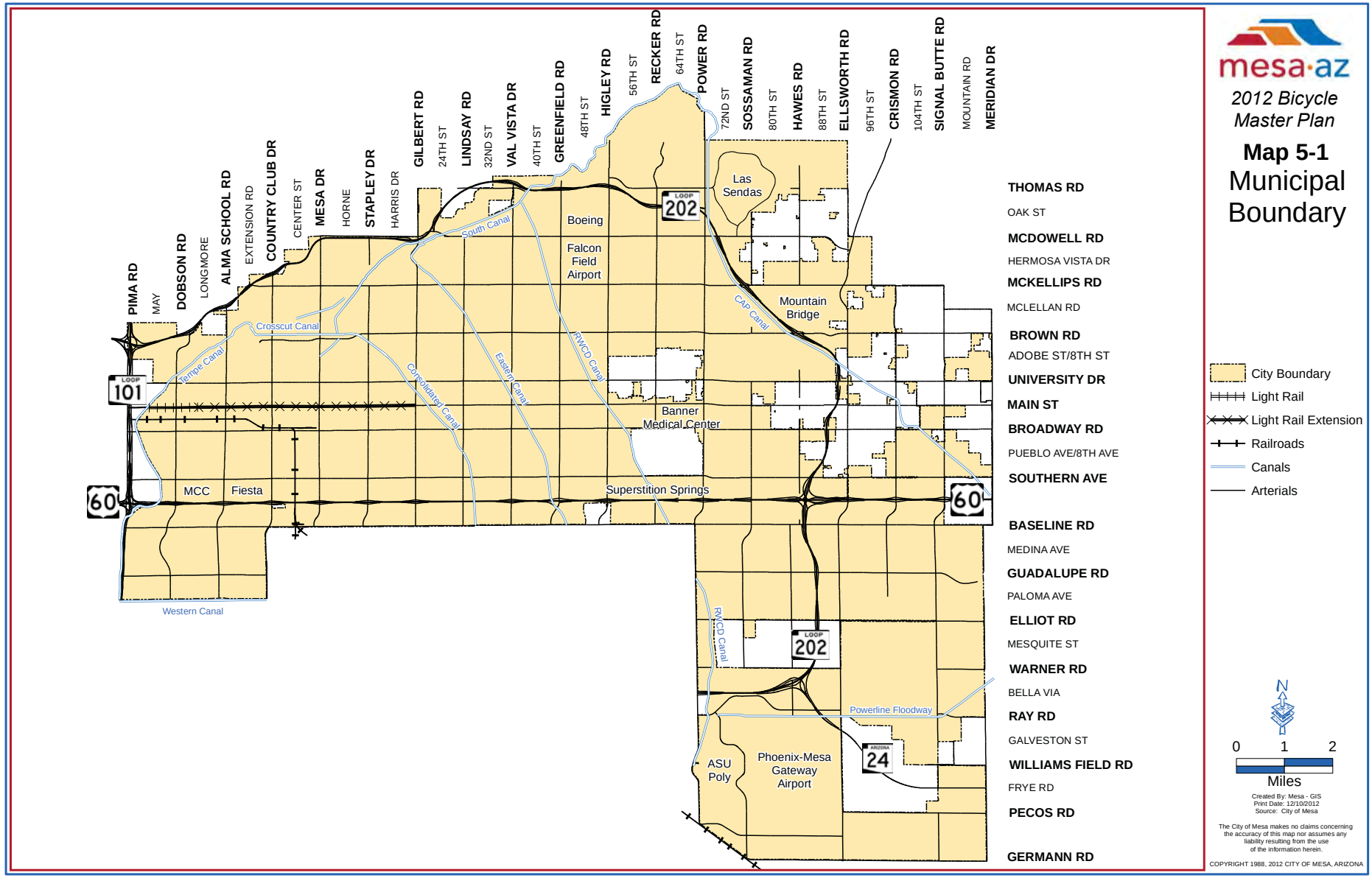
Local bike shop owners help support Mesa's economy and play an active role in bicycle network planning.

McDowell Road - A very popular cyclist route.

DESCRIPTION OF THE STUDY AREA

The existing boundaries of the City of Mesa are displayed on Map 5-1. As shown on the map, the far eastern boundary of the City is currently situated along the Meridian Road corridor; whereas, the western boundary of the community is situated along the Loop 101 Price Freeway corridor. From east to west, the City is approximately 18 miles wide. The far northern boundary of the City is situated along the Salt River, and the southernmost boundary of Mesa is situated along Germann Road. From north to south, the community is a little over 16 miles in distance.

For the purpose of this plan, the study area will encompass an extended area on which the City of Mesa anticipates to have an influence with respect to bicycling and connectivity to neighboring cities. Map 5-2 displays the Study Area Boundary for the City of Mesa Bicycle Master Plan.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DOBSON RD
LONGMORE
ALMA SCHOOL RD
EXTENSION RD
COUNTRY CLUB DR
CENTER ST
MESA DR
HORNE
STAPLEY DR
HARRIS DR
GILBERT RD
24TH ST
LINDSAY RD
32ND ST
VAL VISTA DR
40TH ST
GREENFIELD RD
48TH ST
HIGLEY RD
56TH ST
RECKER RD
64TH ST
POWER RD
72ND ST
SOSSAMAN RD
80TH ST
HAWES RD
88TH ST
ELLSWORTH RD
96TH ST
CRISMON RD
104TH ST
SIGNAL BUTTE RD
MOUNTAIN RD
MERIDIAN DR
THOMAS RD
OAK ST
MCDOWELL RD
HERMOSA VISTA DR
MCKELLIPS RD
MCLELLAN RD
BROWN RD
ADOBE ST/8TH ST
UNIVERSITY DR
MAIN ST
BROADWAY RD
PUEBLO AVE/8TH AVE
SOUTHERN AVE
BASELINE RD
MEDINA AVE
GUADALUPE RD
PALOMA AVE
ELLIOT RD
MESQUITE ST
WARNER RD
BELLA VIA
RAY RD
GALVESTON ST
WILLIAMS FIELD RD
FRYE RD
PECOS RD
GERMANN RD
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Falcon Field Airport
Mountain Bridge
Banner Medical Center
Superstition Springs
MCC
Fiesta
ASU Poly
Phoenix-Mesa Gateway Airport
South Canal
Crosscut Canal
Tempe Canal
Consolidated Canal
Eastern Canal
RWCD Canal
CAP Canal
Powerline Floodway
Western Canal
LOOP 101
LOOP 202
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ARIZONA 24
mesa·az
2012 Bicycle Master Plan
Map 5-1
Municipal Boundary
City Boundary
Light Rail
Light Rail Extension
Railroads
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Arterials
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Created By: Mesa - GIS
Print Date: 12/10/2012
Source: City of Mesa
The City of Mesa makes no claims concerning the accuracy of this map nor assumes any liability resulting from the use of the information herein.
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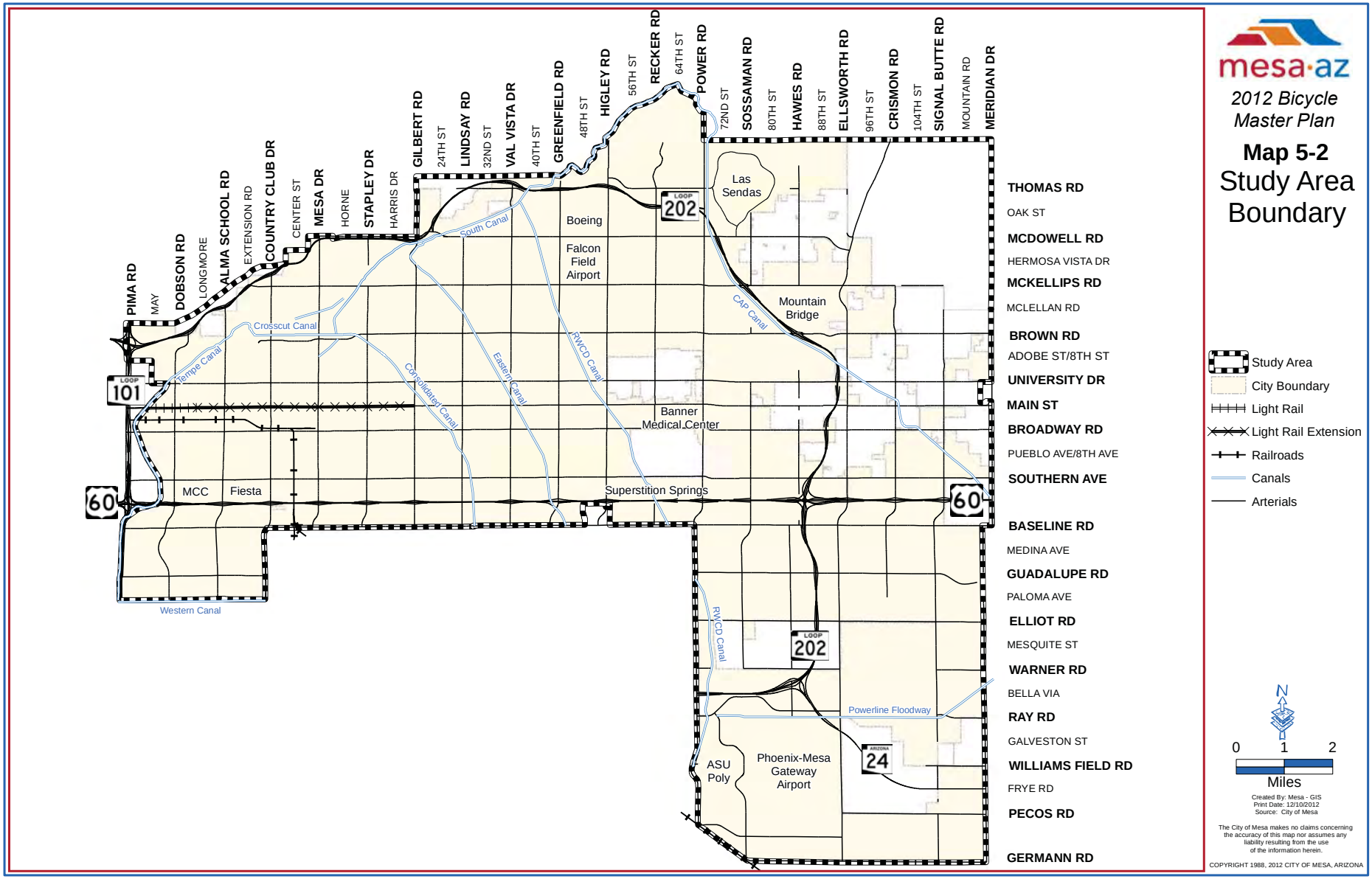
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MCLELLAN RD
BROWN RD
ADOBE ST/8TH ST
UNIVERSITY DR
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MEDINA AVE
GUADALUPE RD
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MESQUITE ST
WARNER RD
BELLA VIA
RAY RD
GALVESTON ST
WILLIAMS FIELD RD
FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
Banner Medical Center
Superstition Springs
MCC
Fiesta
ASU Poly
Phoenix-Mesa Gateway Airport
South Canal
Crosscut Canal
Tempe Canal
Consolidated Canal
Eastern Canal
RWCD Canal
CAP Canal
Powerline Floodway
Western Canal
LOOP 101
LOOP 202
LOOP 202
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ARIZONA 24
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2012 Bicycle Master Plan
Map 5-2
Study Area Boundary
Study Area
City Boundary
Light Rail
Light Rail Extension
Railroads
Canals
Arterials
N
0 1 2
Miles
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MESA'S NETWORK OF THE FUTURE

An integral part of increasing bicycle usage in Mesa is a well-established, finely-grained bicycle network that increases connectivity between neighborhoods, various land uses, and other modes, as well as connections to neighboring jurisdictions. It is the vision of Mesa to provide direct bicycle access to all common destinations, and connect all gaps in the current bicycle network.

A proper balance between modes will reduce conditions unfavorable to cyclists.

To accomplish an increase in ridership, the City of Mesa must first realize the need to achieve a new balance between the different modes utilized by residents to achieve their everyday travel needs. When comparing different travel modes, there is a growing general understanding that the existing balance among types of road users too heavily favors motor vehicles and underserves bicyclists and pedestrians. It is quite apparent that motorized vehicles enjoy a place on the road that severely dominates over the movement of other modes.

When looking at these restrictive factors and the negative effects they may have on bicycle usage, a good starting point is understanding the work that has already begun in the Netherlands by a not-for-profit organization called C.R.O.W. (The National Information and Technology Centre for Transport and Infrastructure) in which the government and businesses work together in pursuit of their common bicycling interests through the design, construction, and management of roads and other traffic and transport facilities. Active in research and in issuing regulations, C.R.O.W. focuses on distributing knowledge products to all target groups. C.R.O.W.'s design manual "Sign Up For the Bike," has become a world renowned publication for bikeway design.

As discussed in the C.R.O.W. design manual, there are five main component requirements that should be met. Failing to adhere to these requirements could result in a condition where cycling is not as attractive of a mode of transportation as it could be. The five main components are safety, coherence, directness, comfort, and attractiveness. When applying these components to the current conditions in Mesa, respondents from our survey stated that:

- **Safety** was a major concern, and road safety problems were a key factor in the choice to cycle or not.
- **Coherence** in that consistency and continuity of bicycle facilities need to be achieved to have a non-restrictive, finely tuned bicycle network.
- **Directness** affects travel time, distance, and the ability to reach desired destinations safely and efficiently, and is a consideration affecting the choice to make a trip by bicycle.
- **Comfort** of road and pathway surfaces, and the number of stops have a direct effect on the cyclist's perception of a facility and its suitability for bicycling.
- **Attractiveness** is most significant to recreational cyclists who tend to have strong opinions on the attractiveness of bicycle facilities and their perception of safety and how restrictive a facility is.

Although the perceptions of cyclists may differ, and some opinions weigh heavier in some categories than others, each of these components will need to be evaluated to achieve a context sensitive bicycle network that will accomplish a balance among all five components and provide a non-restrictive, well connected bicycle network.

Inaccessible bike facilities often cause confusion to both cyclists and motorists.

ACCESS TO FACILITIES

Accessibility refers to the ease of reaching destinations. High accessibility allows users to reach other activities or destinations quickly while inaccessibility allows fewer places to be reached in the same amount of time. The analysis used in this Plan determined those projects which provide the greatest accessibility for cyclists while improving facilities.

Ultimately, the goal of the bicycle network is to provide "low stress" routes between origins and destinations. Currently, there are a number of corridors in Mesa where bicycles are sharing the road with other users. As the City evaluates these corridors for future improvements, it is important to review each roadway project to identify possible lane reductions, narrowing, or widening that will allow bicycle facilities to be added. A number of these improvements may be accomplished by modifying existing lane widths and cross-sections to include bicycle lanes.

CONNECTIONS

As Mesa continues to expand and improve upon its existing arterial-based bicycle network, important connections that allow cyclists to gain access to the main bicycle arteries throughout the City must be maintained. By integrating non-arterial bicycle routes and shared-use pathways, we will begin to weave a fine-grained, well-developed circulatory system for all levels of cyclists to travel on. This system will increase user confidence and provide a potentially safer alternative for those users not at ease traveling adjacent to higher speed arterial vehicular traffic.

In addition to evaluating our public street projects, Mesa will continue to work with future developers and business owners on bicycle access. These private parties will be informed about the benefits to providing sensible and attractive interconnectivity between neighborhoods and businesses as demonstrated in Figure 5-1. These connections will help to encourage residents to leave their automobiles at home and ride their bicycles for daily errands.

Driving-only transportation pattern

Walkable, connected transportation network

Figure 5-1

CONTEXT SENSITIVE SOLUTIONS (CSS)

Context sensitivity can mean a variety of different things and can solve a variety of problems when used to determine the best and most efficient bicycle facilities for a certain street or corridor. Context sensitivity pays close attention to the "micro" scale of a roadway and how it influences specific land uses in communities. Land uses that border a roadway also have a great deal to do with the way motorists, pedestrians, and bicyclists actually use the street environment.

According to a Federal Highway Administration report published in March 2007 titled "Context Sensitive Solutions Strategic Planning Process Summary Report," the following core CSS principles apply to transportation processes, outcomes, and decision-making:

1. Strive toward a shared stakeholder vision to provide a basis for decisions.
2. Demonstrate a comprehensive understanding of contexts.
3. Foster continuing communication and collaboration to achieve consensus.
4. Exercise flexibility and creativity to shape effective transportation solutions, while preserving and enhancing community and natural environments.

CSS plays a key role in community planning theories and practices like smart growth, new urbanism, and place making.

Mesa takes an active approach in CSS through neighborhood and stakeholder interaction to provide written direction and policy in subarea plans. These plans guide developers through the planning process, ensuring their projects capture the flavor of the district that community steering members deem to be important.

CSS principles have been incorporated into Mesa's core planning practices for new development and capital street projects. Applying CSS results in streets that provide a more balanced transportation hierarchy, creating shared spaces for all users, including bicyclists.

Mesa's many sub-area plans specify accommodations for bicycles.

DEVELOPING A RECOMMENDED FUTURE NETWORK

EXISTING BICYCLE NETWORK

Mesa's emphasis on expansion of the current bicycle network from 1974 to 2009 has influenced the popularity of bicycling in Mesa. Priority has been placed on building a well-connected bicycle network that will efficiently convey cyclists throughout the City during their daily travels. See Figure 5-2.

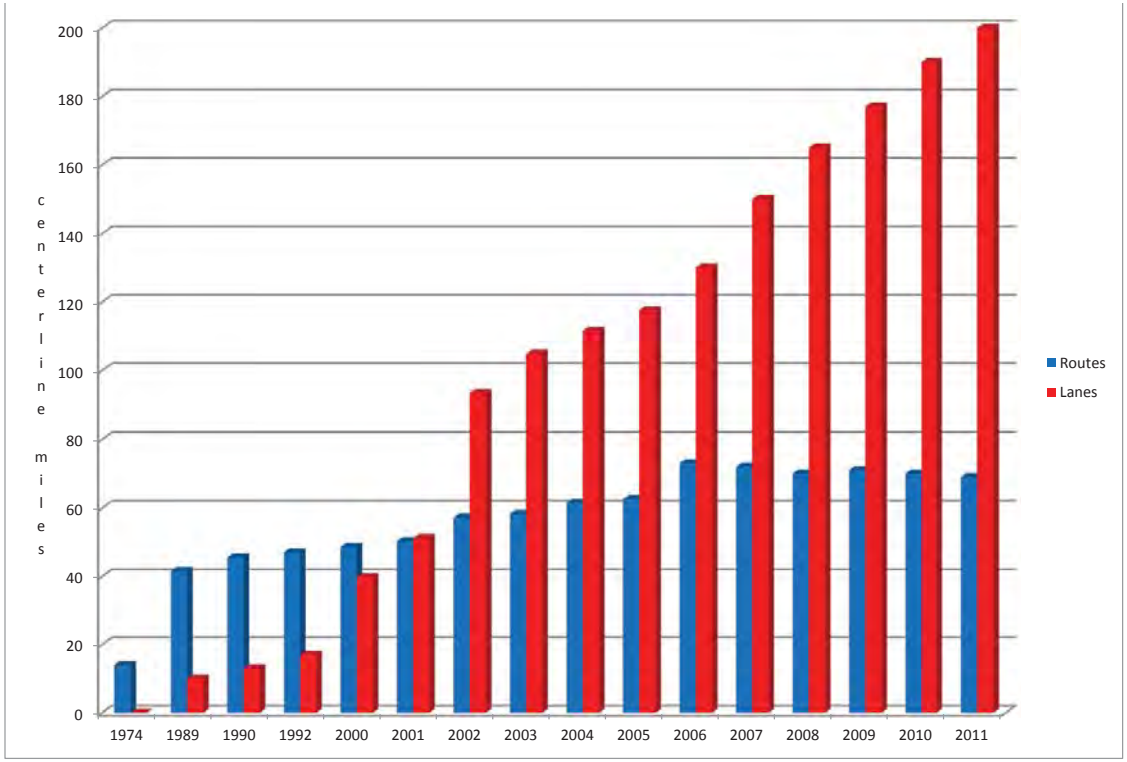


Figure 5-2
Created by: City of Mesa Traffic Studies

Mesa's dedication to the enhancement of on-street and off-street facilities provides a bicycle network for a well-established rider base that now needs to be expanded upon in order for Mesa to continue as a well-known bicycle destination in the region and state.

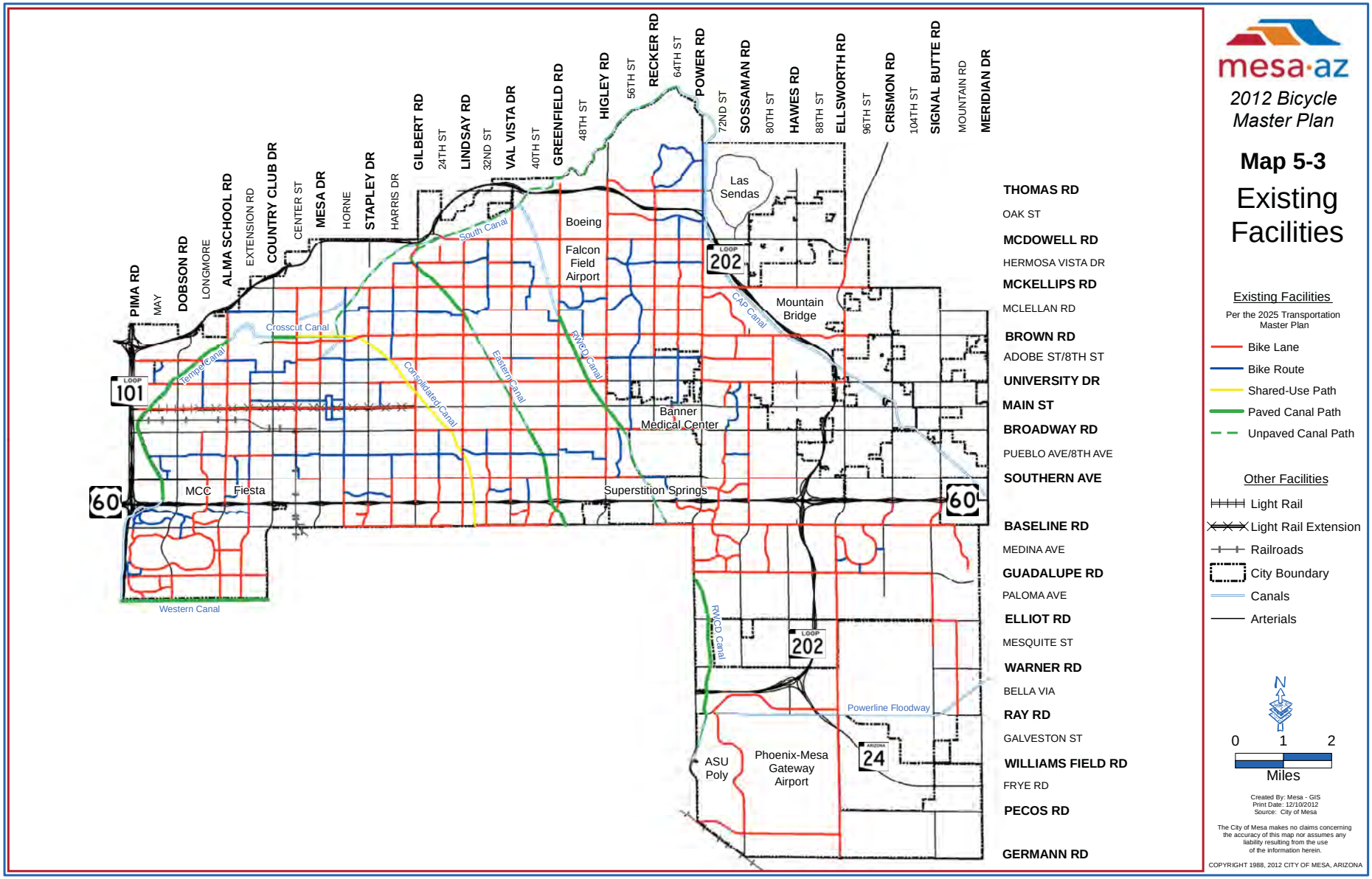
Mesa's existing on-street bicycling system is comprised of numerous bicycle lanes and designated bicycle routes throughout the City. As displayed on Map 5-3, as of 2011 there were a total of approximately 260 miles of designated routes and lanes that make up the existing on-road bicycle system. The majority of bicycle lanes and routes are located along the arterial roadway network, which also facilitates the majority of Mesa's vehicular trips.

Sidewalks, small neighborhood bicycle paths, and other smaller facilities that are not located on roadways, such as trails, off-street shared use paths, or shared-use paths along canals, are technically not classified as part of the on-street bicycling system.

BICYCLE LANES

A bicycle lane is essentially a segment of a roadway cross-section which has been specifically designated for bicyclists, and includes signage and pavement markings. Chapter Four discussed the design standards of bicycle lanes in more detail.

The City of Mesa's bicycle lane network has been in development since 1974, and has continued to expand in overall mileage over the years. In 1990, there were a total of 13 centerline miles of bicycle lanes throughout the City. This number expanded to a total of 40 centerline miles in 2000, and as of 2011, there were a total of approximately 185 centerline miles of bicycle lanes throughout the community. As displayed on Map 5-3, the majority of bicycle lanes throughout the community are situated along the arterial road network, and additional lanes are situated on a number of the City's half-mile roads that are located midway between the arterial streets. Table 5-1 provides an overview of the primary east-west arterial corridors containing bicycle lanes throughout the City; whereas, Table 5-2 provides an overview of the primary



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2012 Bicycle Master Plan

Map 5-3

Existing Facilities

Existing Facilities

Per the 2025 Transportation Master Plan

- Bike Lane
- Bike Route
- Shared-Use Path
- Paved Canal Path
- Unpaved Canal Path

Other Facilities

- Light Rail
- Light Rail Extension
- Railroads
- City Boundary
- Canals
- Arterials

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MESA BICYCLE LANES ON MAJOR EAST-WEST ARTERIAL ROADWAYS
Roadways from North to South

Arterial Corridor	Extent of Longest Continuous Segment	Total Approximate Corridor Length	Continuous Segment
Thomas Road	Higley Road to Power Road – 2.0 Miles	2.0 Miles	YES
McDowell Road	24th Street to Power Road – 5.5 Miles	5.5 Miles	YES
McKellips Road	Center Street to 96th Street – 12.0 Miles	12.0 Miles	YES
Brown Road	Country Club Drive to 72nd Street – 9.5 Miles	9.5 Miles	YES
University Drive	Gilbert Road to Higley Road – 4.0 Miles	7.5 Miles	NO
Main Street	Extension Road to Mesa Drive – 1.5 Miles	1.5 Miles	YES
Broadway Road	Gilbert Road to Power Road – 6.0 Miles	6.0 Miles	YES
Southern Avenue	Harris Drive to RWCD Canal – 5.3 Miles	5.3 Miles	YES
Baseline Road	Horne to Gilbert Road – 1.5 Miles	3.3 Miles	NO
Guadalupe Road	Price Road to Country Club Drive – 3.0 Miles	6.5 Miles	NO

Table 5-1

MESA BICYCLE LANES ON MAJOR NORTH-SOUTH ARTERIAL ROADWAYS
Roadways from East to West

Arterial Corridor	Extent of Longest Continuous Segment	Total Approximate Corridor Length	Continuous Segment
Alma School Road	Baseline Road to South City Boundary – 1.5 Miles	3.0 Miles	NO
Gilbert Road	Loop 202 to Brown Road – 2.2 Miles	3.7 Miles	NO
Lindsay Road	McDowell Road to Baseline Road – 6.0 Miles	6.0 Miles	YES
Val Vista Road	Adobe Road to Southern Avenue – 2.5 Miles	4.0 Miles	NO
Greenfield Road	McDowell Road to Pueblo Avenue – 4.5 Miles	4.5 Miles	YES
Higley Road	Longbow Parkway to Southern Avenue – 6.2 Miles	6.2 Miles	YES
Recker Road	Thomas Road to Brown Road – 3.0 Miles	3.0 Miles	YES
Power Road	McDowell Road to Adobe Road – 2.5 Miles	2.5 Miles	YES
Sossaman Road	University Drive to Southern Avenue – 2.0 Miles	2.0 Miles	YES
Ellsworth Road	Ray Road to Pecos Road – 2.0 Miles	2.0 Miles	YES

Table 5-2

north-south community arterial corridors containing bicycle lanes. The longest east-west uninterrupted linear bicycle lane along a bicycle corridor is McKellips Road from Center Street to 96th Street, which is a distance of approximately 12 miles. The longest north-south uninterrupted linear bicycle lane along a bicycle corridor is Higley Road from Longbow Parkway to Southern Avenue, which is a distance of over six miles. Some of the existing bicycle lanes are continuous; whereas, other corridors have non-continuous lane availability on either one or both sides of the established roadway.

BICYCLE ROUTES

Aside from bicycle lanes, another component of the Mesa on-road bicycle system is that of bicycle routes, which are located throughout various areas of the City. The first bicycle routes within the City of Mesa were designated during 1974, when a total of approximately 25 miles were established by the Mesa City Council. By 1994, there were a total of 42 miles of bicycle routes, and this number slightly increased to a total of 45 miles by 2000. The decade of the 1990s signifies a time when the City placed more of an emphasis on establishing bicycle lanes throughout areas of the community in an effort to establish more of an integrated network. As of 2010, there were a total of 77 designated bicycle route miles within the City.

Featured bike routes within the City of Mesa are delineated by signage that provides clear wayfinding along the designated route to help the bicyclists to navigate. The purpose of the route system throughout the City of Mesa is to indicate locations throughout the City where bicycling conditions are favorable and which directly connect destinations and other multi-modal uses. The City will incorporate the use of destination wayfinding signs throughout the network to direct bicyclists to activity centers, parks, schools, and transportation stations.

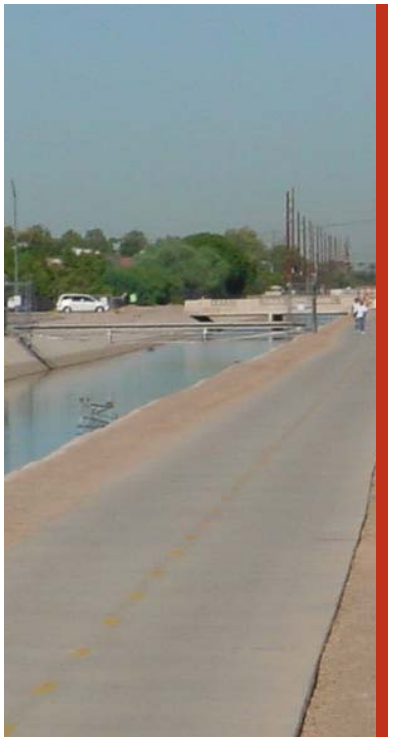
MESA'S OFF-STREET SYSTEM

Mesa's off-street bicycling system is comprised of paved and unpaved shared-use pathways located throughout the community.

By definition, an off-street system is a bicycle network that is physically separated from vehicular traffic by open space, trails, or other barriers that prohibit direct contact with the roadway grid network. The off-street network is often referred to as the "Shared-Use Pathway" system, because such routes are often shared by cyclists and other non-motorized users who use these paths for various recreational and non-recreational purposes.

As of 2012, the City has a total of 58 miles of assorted off-street paths:

- 6 miles - "Mesa Standard Design" shared use paths as called out on Map 5-3 as "Shared-Use Path"
- 9 miles - Paved canal banks to address particulate matter (PM-10) as called out on Map 5-3 as "Paved Path"
- 17 miles - Unimproved canal banks utilized by the public as called out on Map 5-3 as "Unpaved Path"
- 8 miles - Assorted private paved and unpaved paths. This last category of paved and unpaved pathways are not associated with the canal system, and are often found in parks and lower-density residential neighborhoods.



The Consolidated Canal offers a paved shared-use pathway from Center Street to Baseline Road.

Bicyclist rides along McDowell Road

METHODOLOGY TO IDENTIFY NEEDS

This chapter presents a methodology used to determine facility needs in the City of Mesa bicycle network. The methodology consists of compiling a set of gap categories. The categories are:

1. Staff Analysis Gaps – Gaps in the bicycle network identified by Transportation Department staff members.
2. Latent Demand Gaps – Gaps in the bicycle network that are needed to serve high-demand areas of the City as determined by a latent demand analysis.
3. Transit Gaps – Gaps between the bicycle network and transit facilities such as bus stops and Park and Ride centers.
4. Public Comment Gaps – Gaps highlighted by citizens during the public participation process.
5. Regional Connection Gaps – Gaps between the City of Mesa bicycle network and surrounding agency and regional network facilities.

Each of these gap categories is explained further and analyzed in this chapter. The resulting gap segments for each category are shown in separate maps at the end of the chapter. As a part of the methodology in this chapter, the more gap categories including a specific network segment, the more that segment is needed. In other words, if a segment is called out in all five categories, it is given a top needs ranking, while a segment included in only one category is conversely given a bottom needs ranking. Therefore, the projects are divided into five levels of need, per the number of gap categories.

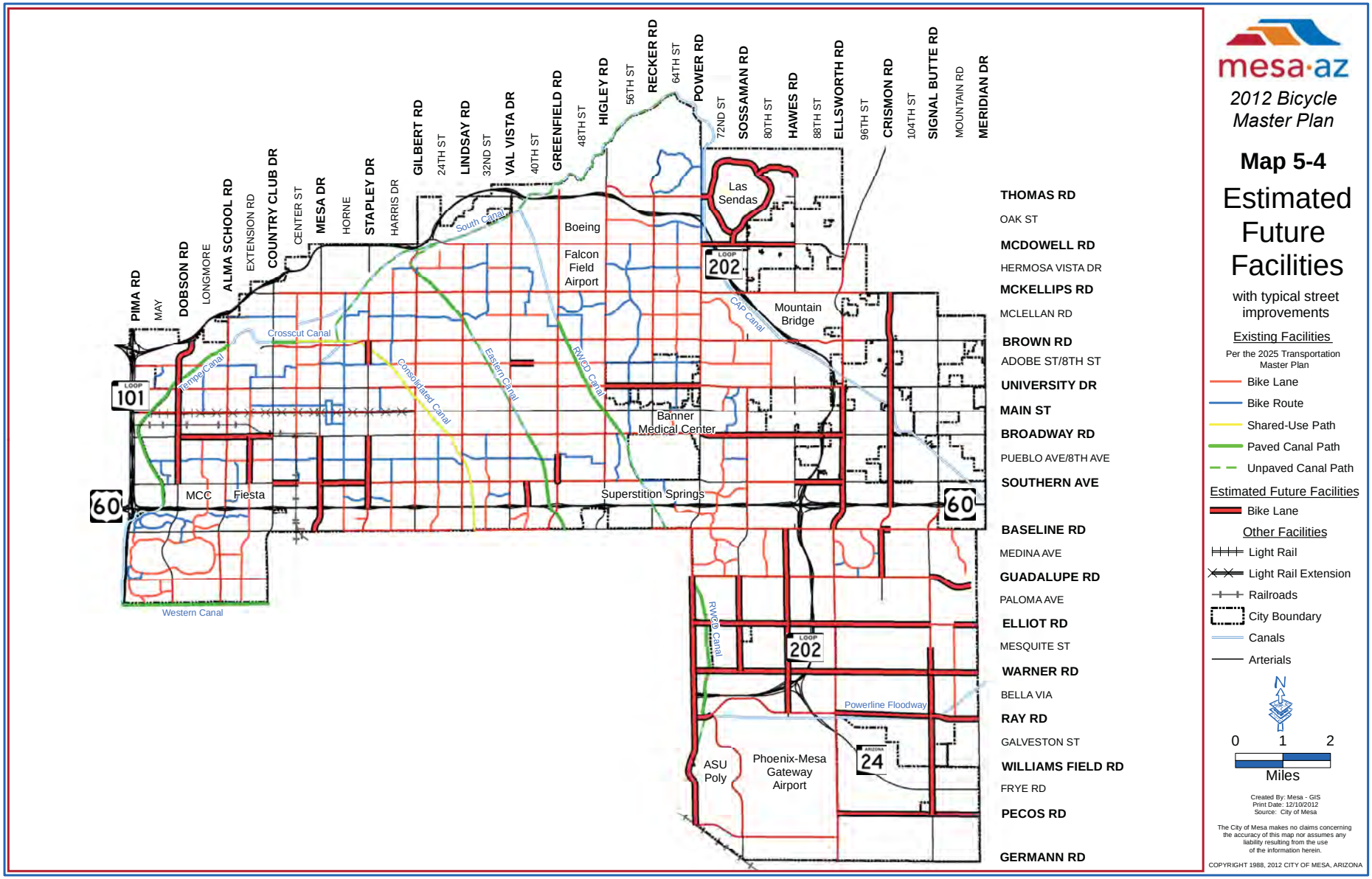
Finally, a Citywide map is included that shows all of the network gaps color-coded by level of need.

FUTURE ON-STREET IMPROVEMENTS BY STANDARD ROADWAY IMPROVEMENTS

Periodically, Mesa's streets are improved through new construction or rehabilitation projects throughout the City. These projects can be initiated through the Regional Transportation Plan, routine maintenance, and new construction by developers who are required to make street improvements adjacent to their developments. These improvements may result in adding bike lanes. Map 5-4 shows an estimate of future bicycle lanes based on projects completed per the 2025 Transportation Plan.

ESTIMATED FUTURE BICYCLE NETWORK GAPS IDENTIFIED BY CITY STAFF

The City of Mesa's Transportation Department continually monitors and assesses bicycle lanes. This bicycle plan assesses a number of corridor options and connectivity issues. The City of Mesa Transportation Staff analyzed Map 5-4 and determined locations that appeared to have network gaps. Map 5-5 shows an estimate of locations where bicycle facilities may be needed to accommodate build-out per the 2025 Mesa Transportation Plan. Shared-use pathways within Mesa are often located in areas not served by a street. Map 5-5 identifies these gaps that are created by connectivity issues between streets and shared-use pathways.



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2012 Bicycle Master Plan

Map 5-4

Estimated Future Facilities

with typical street improvements

Existing Facilities

Per the 2025 Transportation Master Plan

- Bike Lane
- Bike Route
- Shared-Use Path
- Paved Canal Path
- Unpaved Canal Path

Estimated Future Facilities

- Bike Lane

Other Facilities

- Light Rail
- Light Rail Extension
- Railroads
- City Boundary
- Canals
- Arterials

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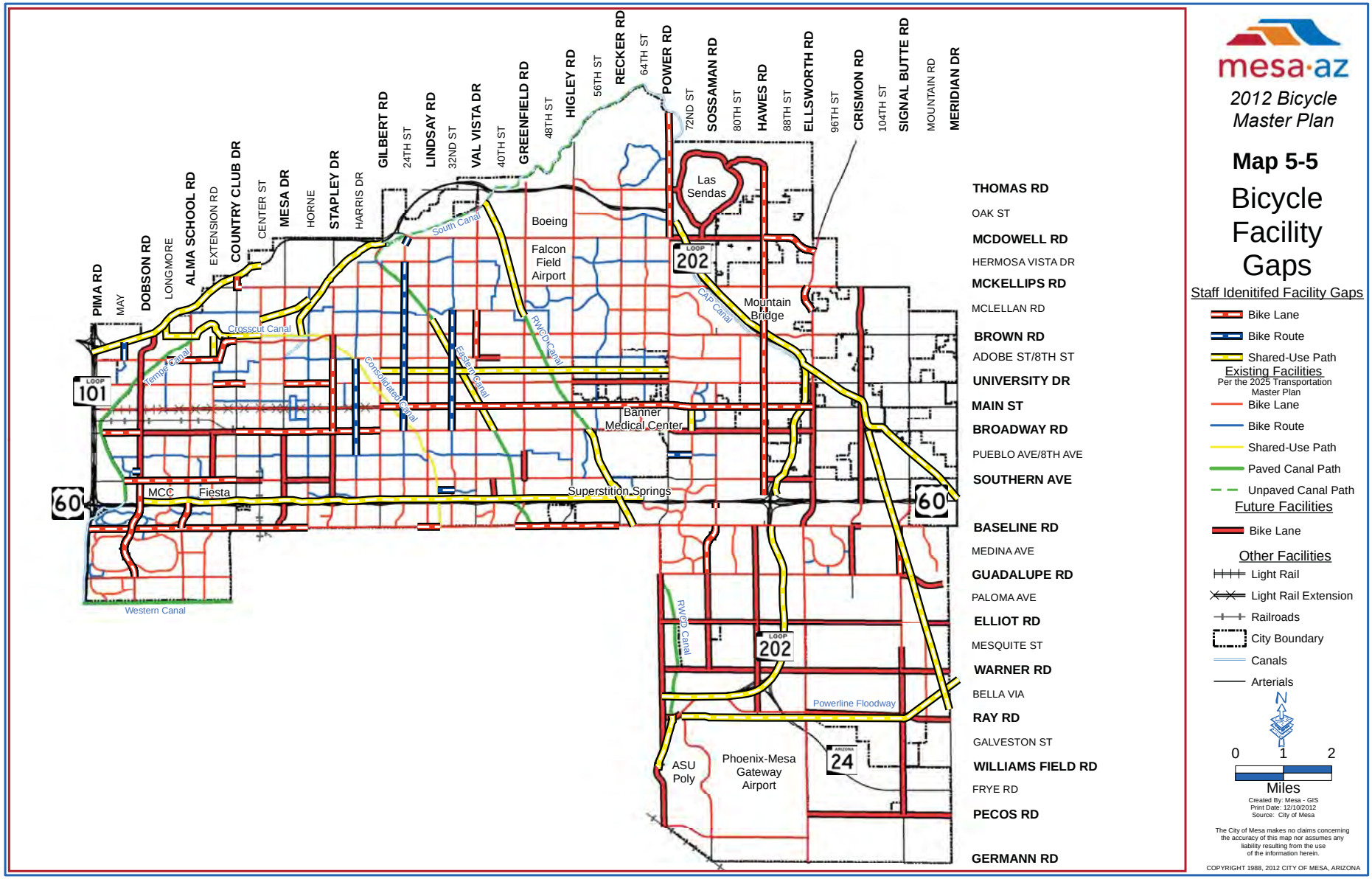

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2012 Bicycle Master Plan

Map 5-5

Bicycle Facility Gaps

Staff Idenitifed Facility Gaps

- Bike Lane
- Bike Route
- Shared-Use Path

Existing Facilities
Per the 2025 Transportation Master Plan

- Bike Lane
- Bike Route
- Shared-Use Path
- Paved Canal Path
- Unpaved Canal Path

Future Facilities

- Bike Lane

Other Facilities

- Light Rail
- Light Rail Extension
- Railroads
- City Boundary
- Canals
- Arterials

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GENERATORS AND ATTRACTORS

When observing and analyzing where and which type of bicycle improvements should be implemented, it is important to view the overall context of the surrounding land use and movement patterns for the specific area. Generators and attractors represent trip ends for four general utilitarian trip purposes identified in the National Personal Transportation Survey (NPTS):

1. Work trips (WK)
2. School trips (SC)
3. Shopping and errands trips (SE)
4. Recreational and social trips (RS)

Generators are origins (beginning trips) that are represented by every residence in a specific Target Study Area (TSA) as shown on Map 5-6a.

Attractors, as shown on Map 5-6b are destination (end of trip) locations that are represented by every:

- Business
- School
- Park
- Social establishment
- Service establishment

Detractors, as shown on Map 5-6c are conditions that would potentially detour users from traveling along a particular route to a specific attractor due to certain elements such as:

- High traffic speeds
- High daily traffic volumes
- Barriers (railroad, freeways, canals)

LATENT DEMAND MODELING IDENTIFIED GAPS

Relationships between generators, attractors as shown in Figure 5-3, and the travel patterns that are associated with them can be accessed through a gravity modeling concept called "Latent Demand." A brief description of the Latent Demand Modeling theory is discussed in this chapter. The Latent Demand Method is described in detail in *Measuring the Bicycle/Pedestrian Friendliness of a Roadway Network,* available at Sprinkleconsulting.com/Transportation-Research.aspx under "PlanningTools."

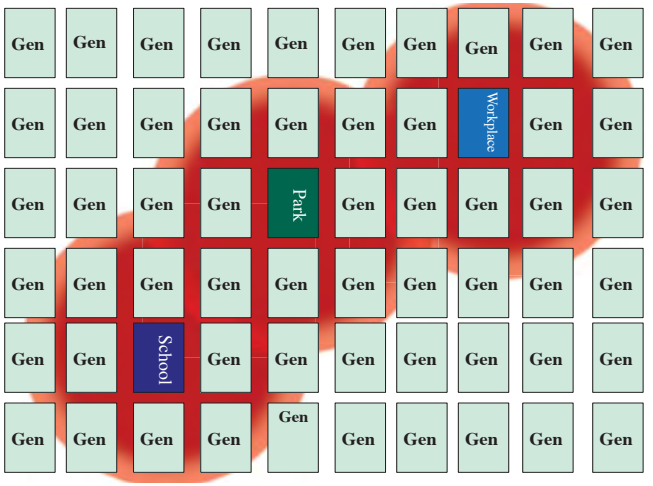
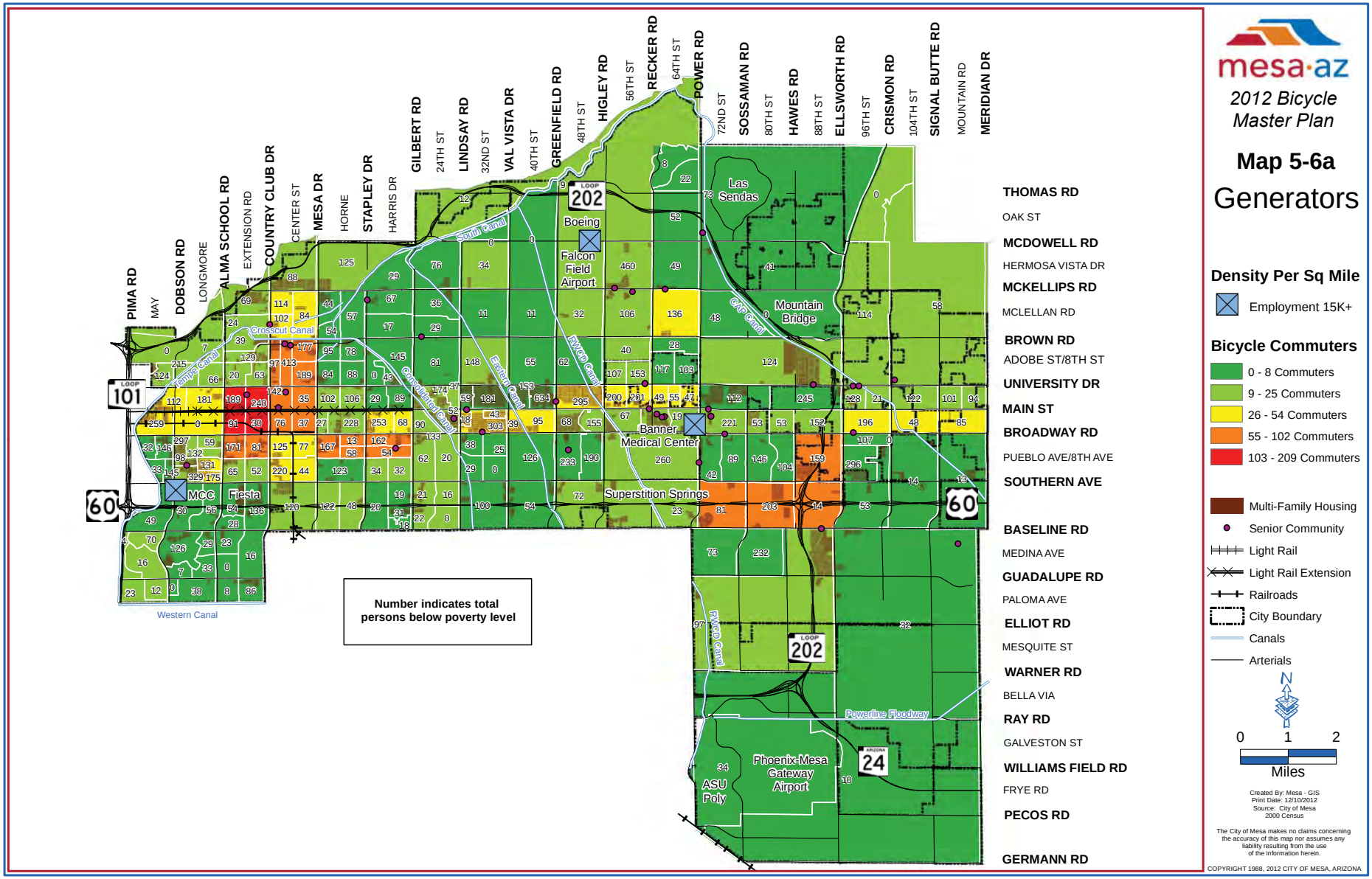


Figure 5-3
Image is an illustration of the relationship between trip generators and trip attractors for a specific travel shed. The darker shades on the network represent more trips; the lighter shades represent network segments with fewer trips,.

Latent demand modeling quantifies both origin and destination of all mode trips considering all key generators and attractors along with all potential trips. Travel patterns and the relationship between a specific origin and destination reflect the total number of trips, regardless of travel mode. The total number of travel trips between these locations is directly related to the total possible trips that can be produced in the TSA (generators) and the total number of attractors in the destination area.

The relationship between the origins and destinations also includes impedances such distance, time, and conditions of the travel environment. These impedances play a significant role in people's perception whether or not a trip is achievable by bicycle. Unlike the automobile, impedances greatly affect the decision whether or not to ride a bicycle for that specific trip. For example people generally are more willing to ride their bicycles greater distances to work than they are for simple errands.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2012 Bicycle Master Plan
Map 5-6a
Generators
Density Per Sq Mile
Employment 15K+
Bicycle Commuters
0 - 8 Commuters
9 - 25 Commuters
26 - 54 Commuters
55 - 102 Commuters
103 - 209 Commuters
Multi-Family Housing
Senior Community
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials
N
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Miles
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2000 Census
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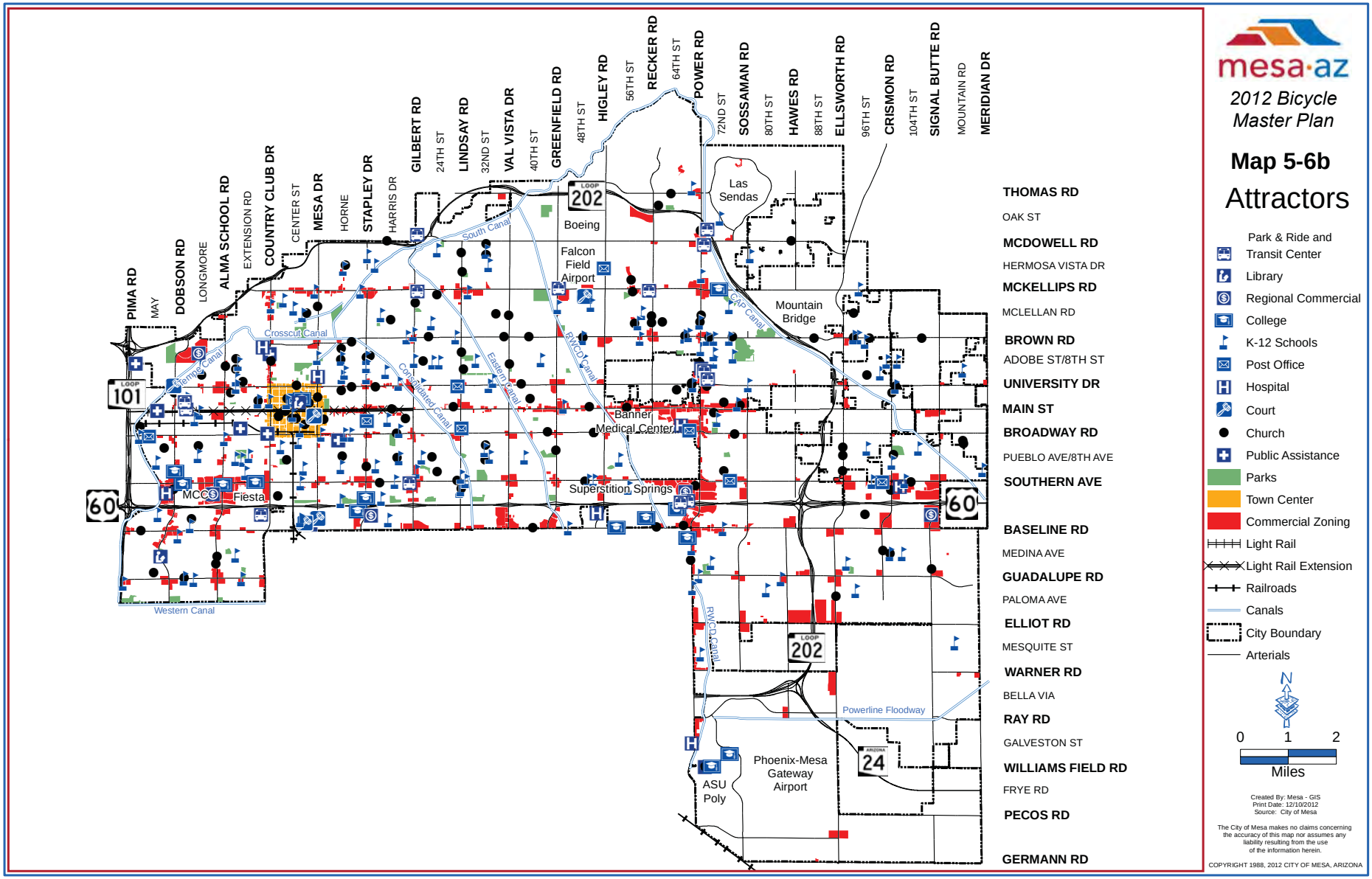
PIMA RD
MAY
DOBSON RD
LONGMORE
ALMA SCHOOL RD
EXTENSION RD
COUNTRY CLUB DR
CENTER ST
MESA DR
HORNE
STAPLEY DR
HARRIS DR
GILBERT RD
24TH ST
LINDSAY RD
32ND ST
VAL VISTA DR
40TH ST
GREENFIELD RD
48TH ST
HIGLEY RD
56TH ST
RECKER RD
64TH ST
POWER RD
72ND ST
SOSSAMAN RD
80TH ST
HAWES RD
88TH ST
ELLSWORTH RD
96TH ST
CRISMON RD
104TH ST
SIGNAL BUTTE RD
MOUNTAIN RD
MERIDIAN DR
THOMAS RD
OAK ST
MCDOWELL RD
HERMOSA VISTA DR
MCKELLIPS RD
MCLELLAN RD
BROWN RD
ADOBE ST/8TH ST
UNIVERSITY DR
MAIN ST
BROADWAY RD
PUEBLO AVE/8TH AVE
SOUTHERN AVE
BASELINE RD
MEDINA AVE
GUADALUPE RD
PALOMA AVE
ELLIOT RD
MESQUITE ST
WARNER RD
BELLA VIA
RAY RD
GALVESTON ST
WILLIAMS FIELD RD
FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
Banner Medical Center
Superstition Springs
MCC
Fiesta
ASU Poly
Phoenix-Mesa Gateway Airport
South Canal
Crosscut Canal
Eastern Canal
Consolidated Canal
Western Canal
CAP Canal
RWCD Canal
Powerline Floodway
Number indicates total persons below poverty level
LOOP 101
LOOP 202
60
ARIZONA 24



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2012 Bicycle Master Plan

Map 5-6b

Attractors

- Park & Ride and Transit Center
- Library
- Regional Commercial
- College
- K-12 Schools
- Post Office
- Hospital
- Court
- Church
- Public Assistance
- Parks
- Town Center
- Commercial Zoning
- Light Rail
- Light Rail Extension
- Railroads
- Canals
- City Boundary
- Arterials

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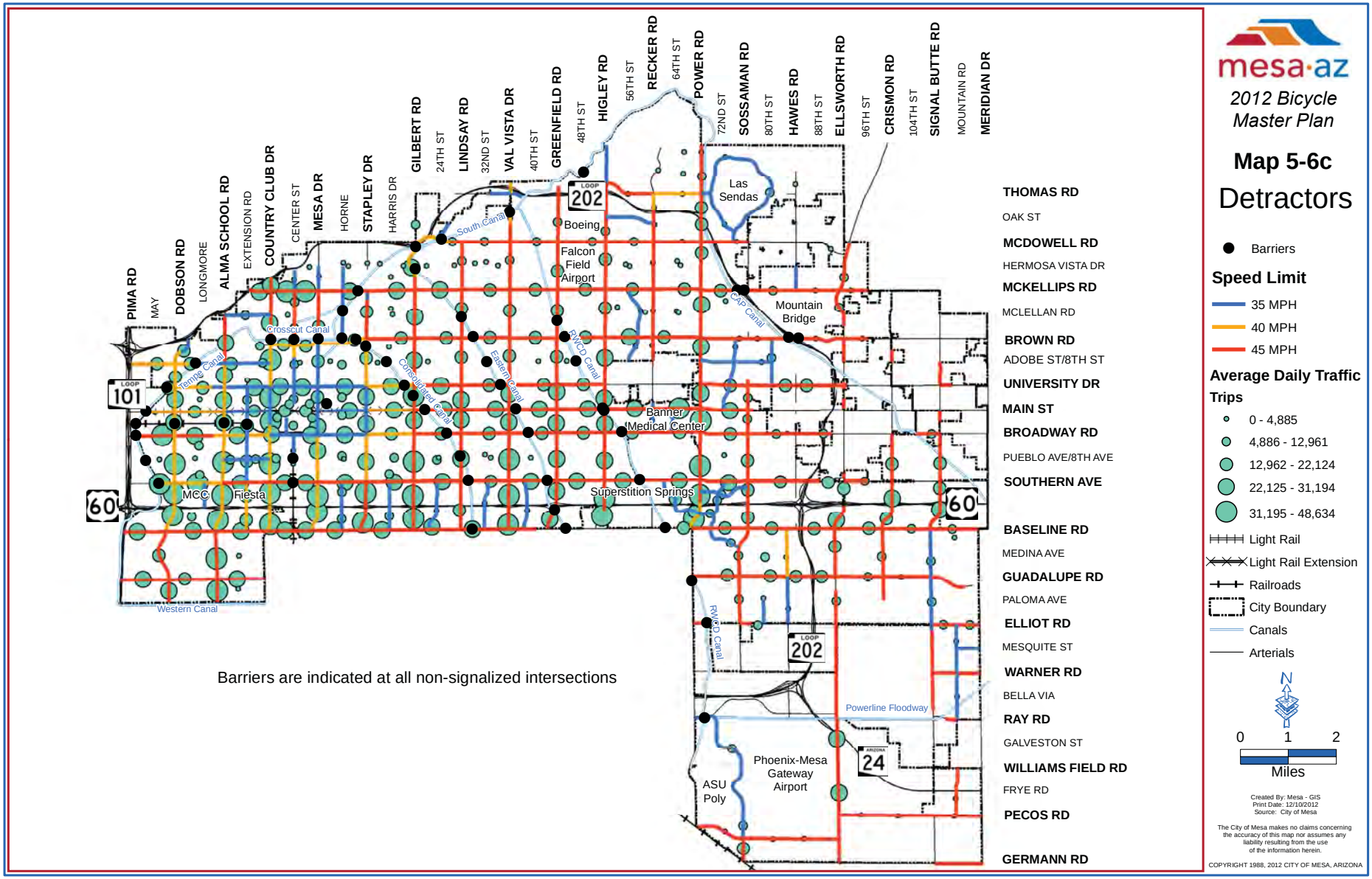
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LONGMORE
ALMA SCHOOL RD
EXTENSION RD
COUNTRY CLUB DR
CENTER ST
MESA DR
HORNE
STAPLEY DR
HARRIS DR
GILBERT RD
24TH ST
LINDSAY RD
32ND ST
VAL VISTA DR
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GREENFIELD RD
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HIGLEY RD
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RECKER RD
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POWER RD
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SOSSAMAN RD
80TH ST
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88TH ST
ELLSWORTH RD
96TH ST
CRISMON RD
104TH ST
SIGNAL BUTTE RD
MOUNTAIN RD
MERIDIAN DR
THOMAS RD
OAK ST
MCDOWELL RD
HERMOSA VISTA DR
MCKELLIPS RD
MCLELLAN RD
BROWN RD
ADOBE ST/8TH ST
UNIVERSITY DR
MAIN ST
BROADWAY RD
PUEBLO AVE/8TH AVE
SOUTHERN AVE
BASELINE RD
MEDINA AVE
GUADALUPE RD
PALOMA AVE
ELLIOT RD
MESQUITE ST
WARNER RD
BELLA VIA
RAY RD
GALVESTON ST
WILLIAMS FIELD RD
FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
Banner Medical Center
Superstition Springs
MCC
Fiesta
Phoenix-Mesa Gateway Airport
ASU Poly
South Canal
Crosscut Canal
Tempe Canal
Consolidated Canal
Eastern Canal
RWCD Canal
CAP Canal
Powerline Floodway
Western Canal
LOOP 101
LOOP 202
60
ARIZONA 24
Barriers are indicated at all non-signalized intersections
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2012 Bicycle Master Plan
Map 5-6c
Detractors
Barriers
Speed Limit
35 MPH
40 MPH
45 MPH
Average Daily Traffic Trips
0 - 4,885
4,886 - 12,961
12,962 - 22,124
22,125 - 31,194
31,195 - 48,634
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials
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Miles
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Once all generators and attractors are identified and mapped in GIS, special queries can be performed to capture data for a specific TSA, which can be calculated to determine potential trips between origin and destinations within a specific "travel shed" as shown in Figure 5-3 using the latent demand algorithm.

The problem with sampling areas based on these criteria is that these criteria sometimes fail to take into account seemingly random differences from one place to another and how those context sensitive variables may cause a skew in the outcome of the modeling. There are some well-documented population and land use characteristics that are associated with higher levels of bicycling. For example, people with college educations are more likely to bicycle, while less educated people who live in denser urban environments and bicycle for utilitarian purposes are less likely to ride.

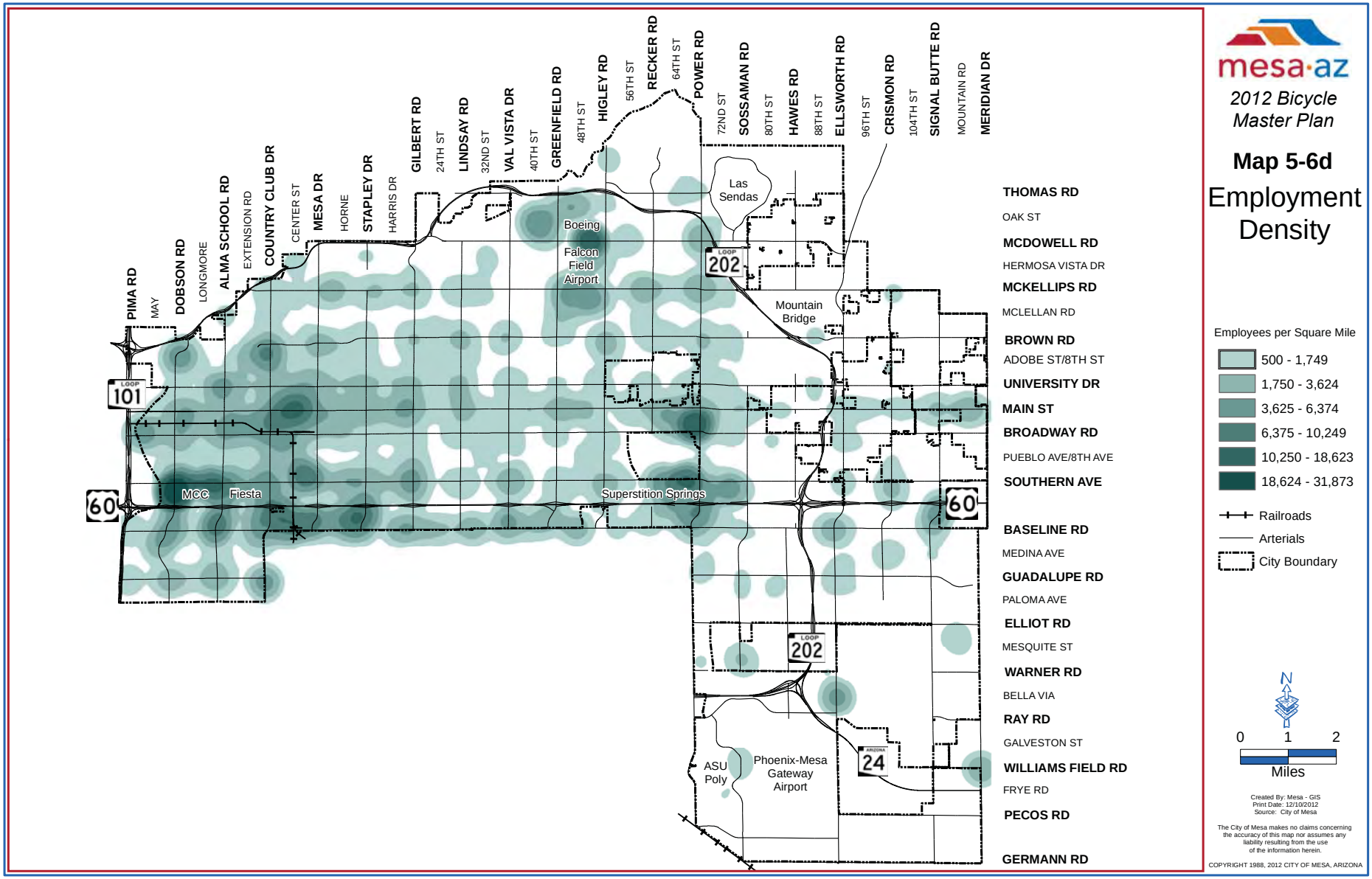
RELATIONS BETWEEN DEMOGRAPHIC FACTORS AND BICYCLING

The latent demand methodology explained above requires demographic data. The data includes employment densities and residential neighborhood densities. This data is related by the phenomenon of a neighborhood's density being directly impacted by an employment center's density. In other words, when an employment center density increases, the surrounding neighborhood density increases. Also more employment centers will result in denser surrounding neighborhoods. As discussed in earlier chapters of this plan, bicyclists tend to prefer trips between one and three miles. Therefore, the more employment centers or other attractors within a one to three mile radius, the more likely someone will make a trip by bike.

Maps 5-6d, 5-6e and 5-7 help to illustrate the relationship between employment densities, population densities, and bike riding demand. Map 5-6d shows employment density, while Map 5-6e shows population density. Each map shows theoretical catchment areas around employers and residential developments. Higher density is represented by darker colors on Maps 5-6d and Map 5-6e.

Research and anecdotal evidence indicate that demand for residential housing, the housing prices, surrounding amenities, and proximity to employment are all factors that influence whether a transportation corridor has more or less potential to be favored for on-street and off-street bicycle facilities. These factors also impact the desire for bike connections to transit and end of line amenities at employment centers for bike commuters.

The residential and employment factors discussed above were applied to the Latent Demand Scoring (LDS), part of the modeling process. The result of the analysis is a graphic representation of potential bicycling facilities demand in the theoretical catchment areas as shown on Map 5-7. Map 5-8 shows the potential bicycling facilities demand along with the future bike network.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GUADALUPE RD
PALOMA AVE
ELLIOT RD
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WARNER RD
BELLA VIA
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GALVESTON ST
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FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
MCC
Fiesta
Superstition Springs
ASU Poly
Phoenix-Mesa Gateway Airport
LOOP 101
LOOP 202
60
ARIZONA 24
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2012 Bicycle Master Plan
Map 5-6d
Employment Density
Employees per Square Mile
500 - 1,749
1,750 - 3,624
3,625 - 6,374
6,375 - 10,249
10,250 - 18,623
18,624 - 31,873
Railroads
Arterials
City Boundary
N
0 1 2
Miles
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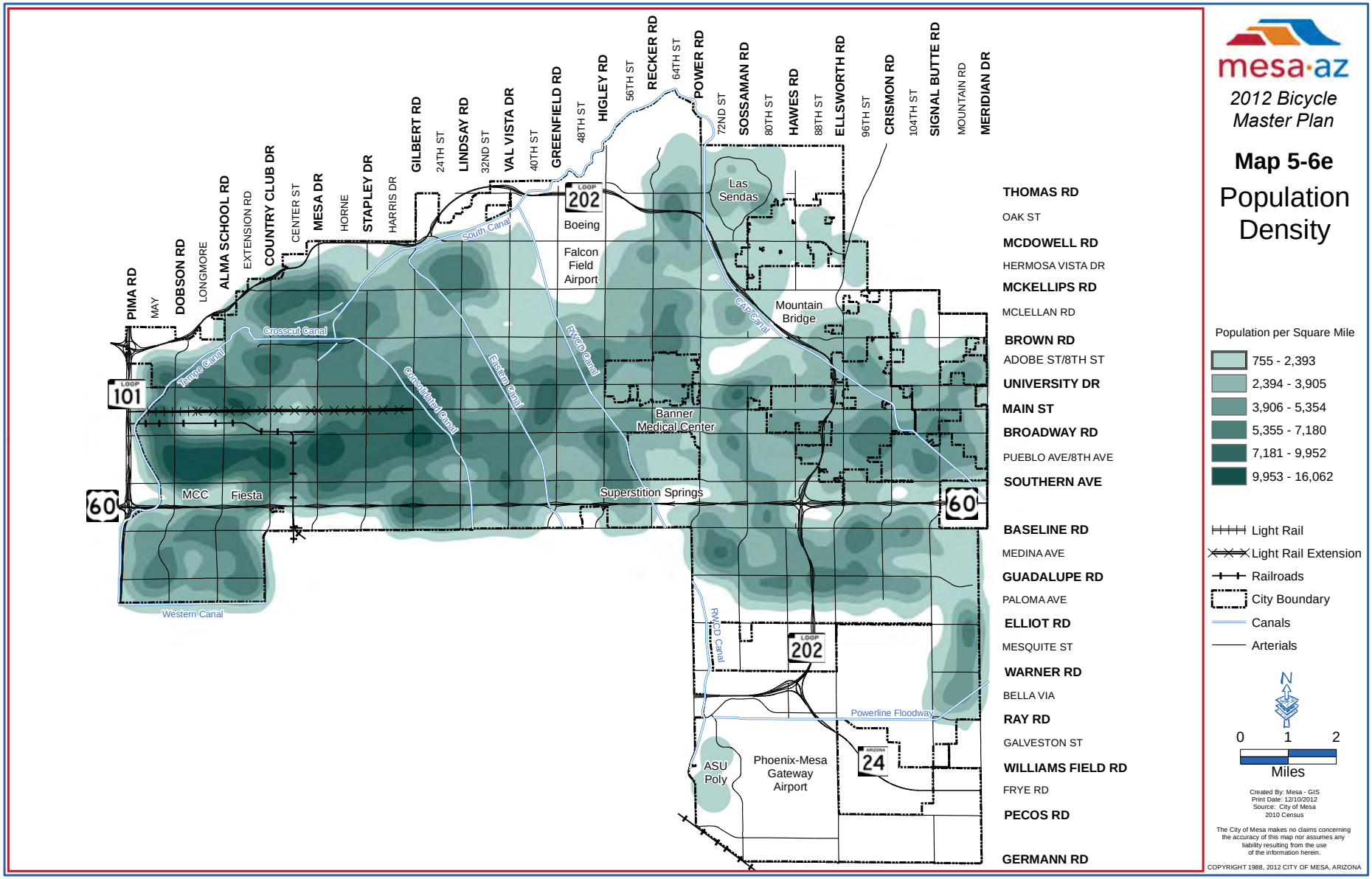
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2012 Bicycle Master Plan
Map 5-6e
Population Density
PIMA RD
MAY
DOBSON RD
LONGMORE
ALMA SCHOOL RD
EXTENSION RD
COUNTRY CLUB DR
CENTER ST
MESA DR
HORNE
STAPLEY DR
HARRIS DR
GILBERT RD
24TH ST
LINDSAY RD
32ND ST
VAL VISTA DR
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GREENFIELD RD
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MCLELLAN RD
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ADOBE ST/8TH ST
UNIVERSITY DR
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BROADWAY RD
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SOUTHERN AVE
BASELINE RD
MEDINA AVE
GUADALUPE RD
PALOMA AVE
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FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
Banner Medical Center
Superstition Springs
MCC
Fiesta
ASU Poly
Phoenix-Mesa Gateway Airport
South Canal
Crosscut Canal
Tempe Canal
Consolidated Canal
Eastern Canal
RWCD Canal
CAP Canal
Western Canal
Powerline Floodway
LOOP 101
LOOP 202
60
ARIZONA 24
Population per Square Mile
755 - 2,393
2,394 - 3,905
3,906 - 5,354
5,355 - 7,180
7,181 - 9,952
9,953 - 16,062
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials
N
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Miles
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2010 Census
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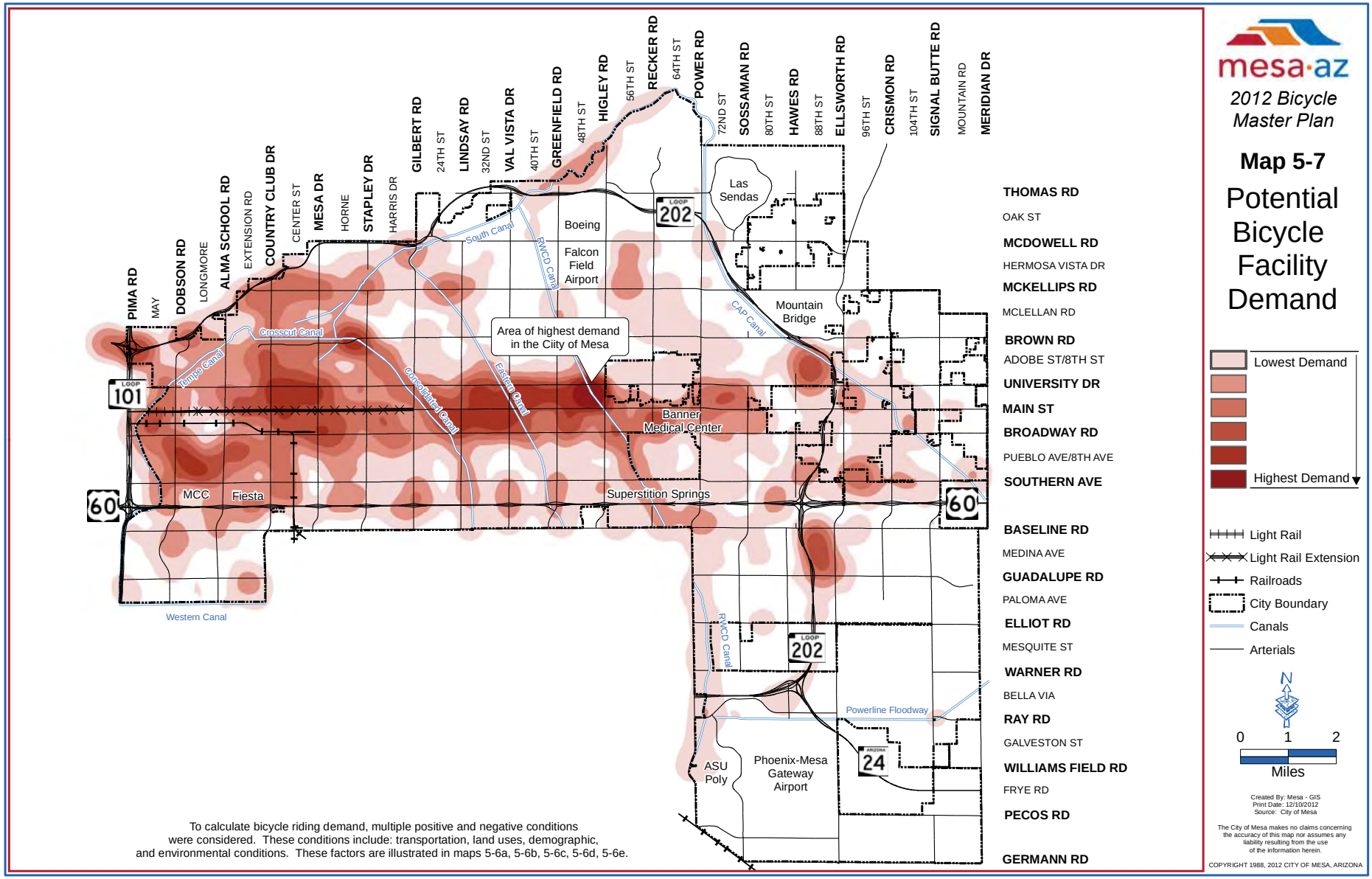
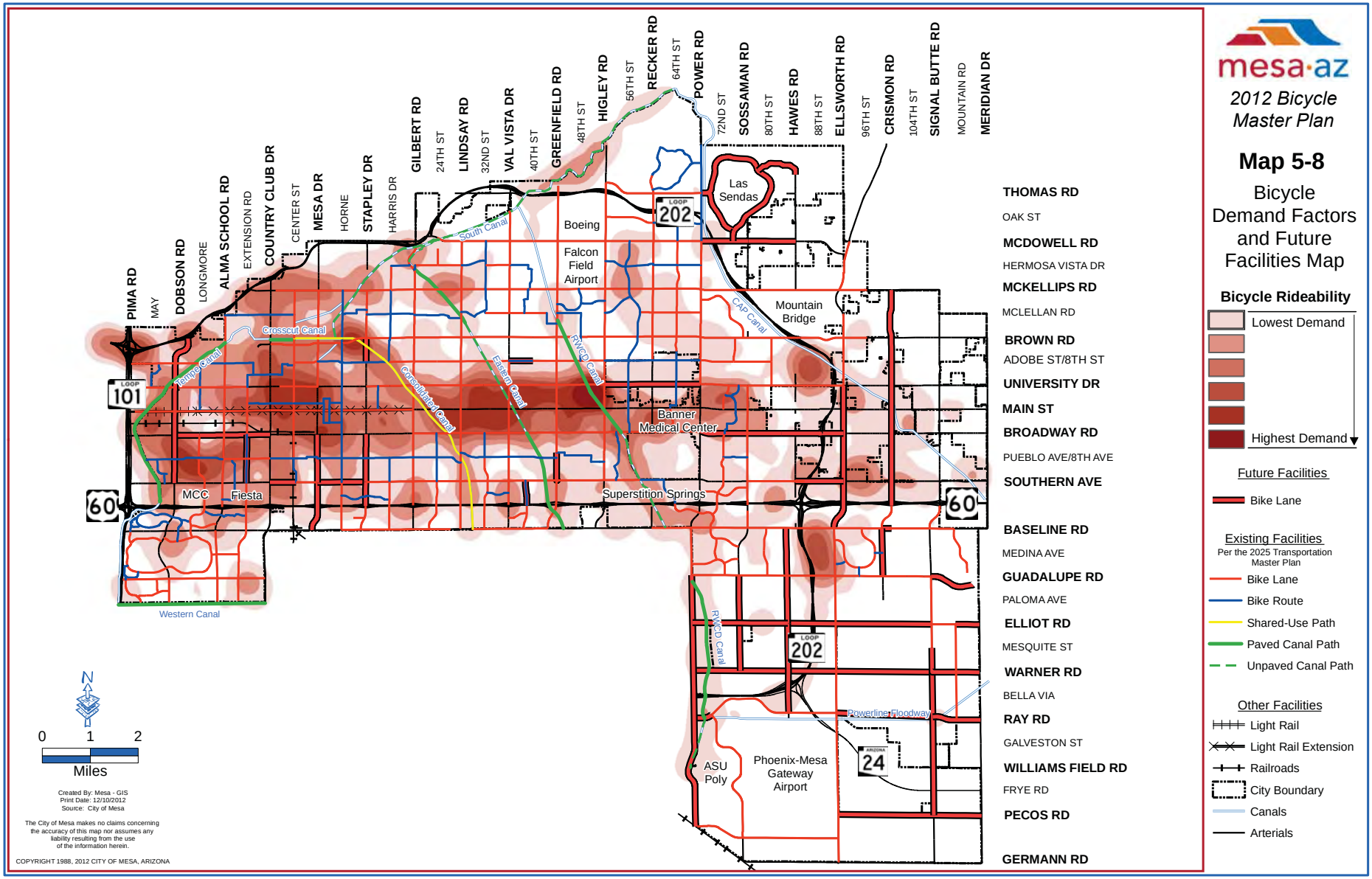


To calculate bicycle riding demand, multiple positive and negative conditions were considered. These conditions include: transportation, land uses, demographic, and environmental conditions. These factors are illustrated in maps 5-6a, 5-6b, 5-6c, 5-6d, 5-6e.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BELLA VIA
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GALVESTON ST
WILLIAMS FIELD RD
FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
Banner Medical Center
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Crosscut Canal
Tempe Canal
Consolidated Canal
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RWCD Canal
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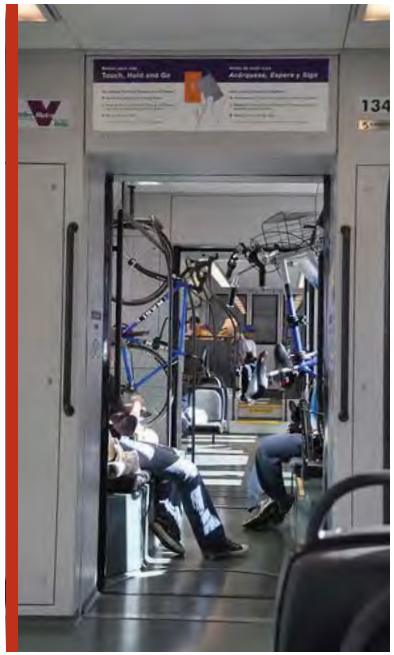
2012 Bicycle Master Plan
Map 5-8
Bicycle Demand Factors and Future Facilities Map
Bicycle Rideability
Lowest Demand
Highest Demand
Future Facilities
Bike Lane
Existing Facilities
Per the 2025 Transportation Master Plan
Bike Lane
Bike Route
Shared-Use Path
Paved Canal Path
Unpaved Canal Path
Other Facilities
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials



GAPS IN CONNECTIONS BETWEEN BICYCLE AND TRANSIT

While bicycling and walking typically account for approximately one half of all personal trips in European cities, there is a sharp contrast to the United States where non-motorized trips account for a mere 10 percent of trips. Automobile park and ride facilities account for a major share of suburban transit access according to the Federal Highway Administration (FHWA-PD-93-016, The National Bicycling and Walking Case Study No. 17: Bicycle and Pedestrian Policies and Programs in Asia, Australia, and New Zealand, 1993).

Integration between bicycles and transit services enhances travel potential for both modes by offering advantages that each mode alone cannot provide such as:

- Bike-on-transit service enables bicyclists to travel greater distances and overcome topographical barriers.
- Bicycle-on-transit services to recreational destinations during off-peak periods can increase overall transit ridership and increase efficient use of capacity.
- Bicycle-on-transit services, on-street bicycle lanes, and bicycle parking enlarge transit's catchment area by providing accessibility to travelers who are beyond walking distances from transit stations.

Currently, the City of Mesa contracts with Valley Metro Regional Public Transportation Authority (RPTA) to offer a total of 13 local fixed routes as depicted on Map 5-9a. In addition to these local routes, there is a fare-free local community downtown circulator, five express routes shown on Map 5-9b providing service to downtown Phoenix, and a bus rapid transit (BRT) service that connects to METRO light rail. The light rail is a 20-mile system that opened throughout the Phoenix Metropolitan area on December 27, 2008.

The City of Mesa has about one mile of light rail track plus a full station platform and an 802-space park-and-ride facility at the Sycamore Transit Center. The station also contains spaces for bicycles and bicycle lockers. The Sycamore station currently functions as an end-of-the line facility for the metropolitan light rail system.

Approximately 195,000 bicycles were loaded onto Valley Metro Buses in Mesa during the fiscal year 2010-2011

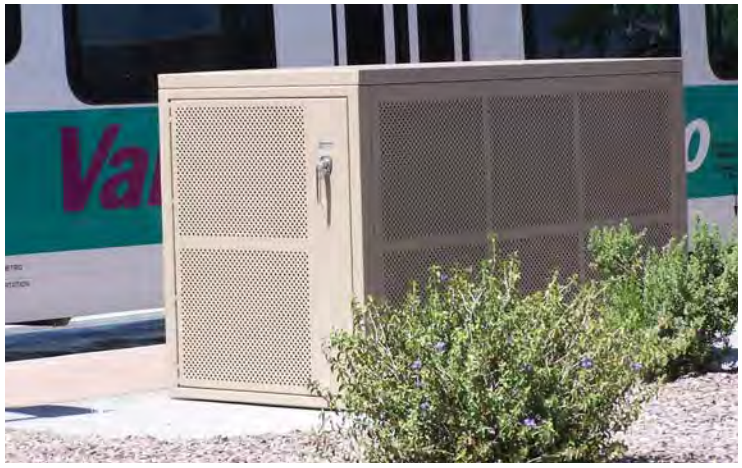
BICYCLE RACKS AND LOCKERS AT TRANSIT STOPS

In 2010, there were a total of 1,018 bus stops along the established transit routes throughout the City. Of this number, 110 bus stops (10.8 percent) had bicycle racks to accommodate cyclists who were using transit as a multi-modal option. Aside from bicycle racks, bike lockers are another amenity for bicyclists. At present, several locations throughout the community include locker facilities as shown on Map 5-9b. Over the next three to five years, Mesa intends to add bicycle lockers at each of the City's publicly-owned park-and-ride lot facilities, and to assess candidate locations at bus stops situated within high capacity transit corridors throughout the City (Map 5-9b).

BICYCLE RACKS AND LOADING OF TRANSIT VEHICLES

Each of the Valley Metro RPTA buses that operate on the City of Mesa's transit routes can accommodate bicyclists by storing their bicycles on a rack, located on the exterior front of the bus. This allows for buses to provide another facet of multimodal travel throughout the City and the broader region. Bicyclists who decide to use transit can board a bus along any route or at a park-and-ride lot and travel with their bicycle to another location of their choice.

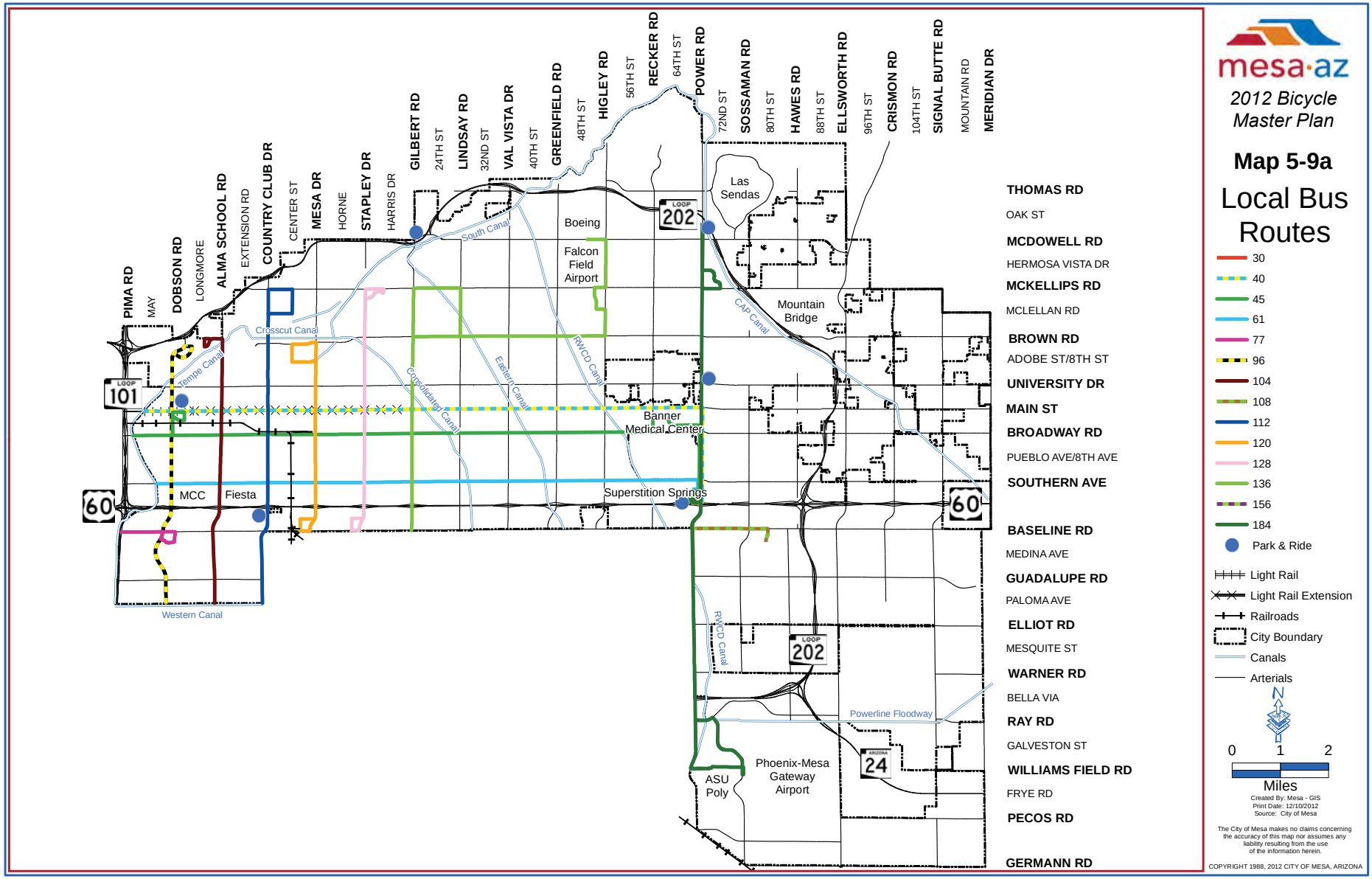
The use of bicycles on transit has been gaining in popularity over the last five to 10 years, as many people are opting to travel to a destination utilizing both bicycling and transit modes. As displayed in Table 5-3, the total number of bicyclists who have boarded their bicycle onto a public transit vehicle has increased from 67,671 in Fiscal Year 2000-2001, to a total of 194,631 in Fiscal Year 2010-2011. This represents a 187.6 percent change over a ten-year period. Table 5-4 shows the difference between bicycle boardings from FY 2008-2009 to FY 2010-2011 by individual route. Although Table 5-4 displays each of the Mesa transit routes, the RED line, which used to travel along Main Street, is no longer an active route. Table 5-4 shows a change of 34 percent in bicycle boardings over the three-year period. Map 5-10 shows the future transit facilities along with the estimated future bike network.



Bicycle lockers at Sycamore Transit Center.

PUBLIC ASSESSMENT OF GAPS IN THE CURRENT BICYCLE SYSTEM

As part of Mesa's overall assessment of the current bicycle network and the public's perception of that network, staff invited comments through several open public meetings. When discussing the system as a whole, there was a general consensus that Mesa's on-street bicycle facilities were on par with or better than its peer cities. Residents did feel that Mesa's paved canal system and wayfinding along those canal systems were not on par with other cities in the valley and needed improvements that would offer alternative routes for those riders not comfortable riding on-street. Along with the disconnected paved canal system, Mesa's bicycling community raised a concern with a lack of connectivity along our on-street system as supported by further analysis shown on Maps 5-5 and 5-7 as gaps in the network. The public comments are depicted on Map 5-11 and in Tables 5-5 and 5-6.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FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
Banner Medical Center
Superstition Springs
MCC
Fiesta
ASU Poly
Phoenix-Mesa Gateway Airport
South Canal
Crosscut Canal
Tempe Canal
Consolidated Canal
Eastern Canal
RWCD Canal
CAP Canal
Western Canal
Powerline Floodway
LOOP 101
LOOP 202
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ARIZONA 24
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2012 Bicycle Master Plan
Map 5-9a
Local Bus Routes
30
40
45
61
77
96
104
108
112
120
128
136
156
184
Park & Ride
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials
N
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Miles
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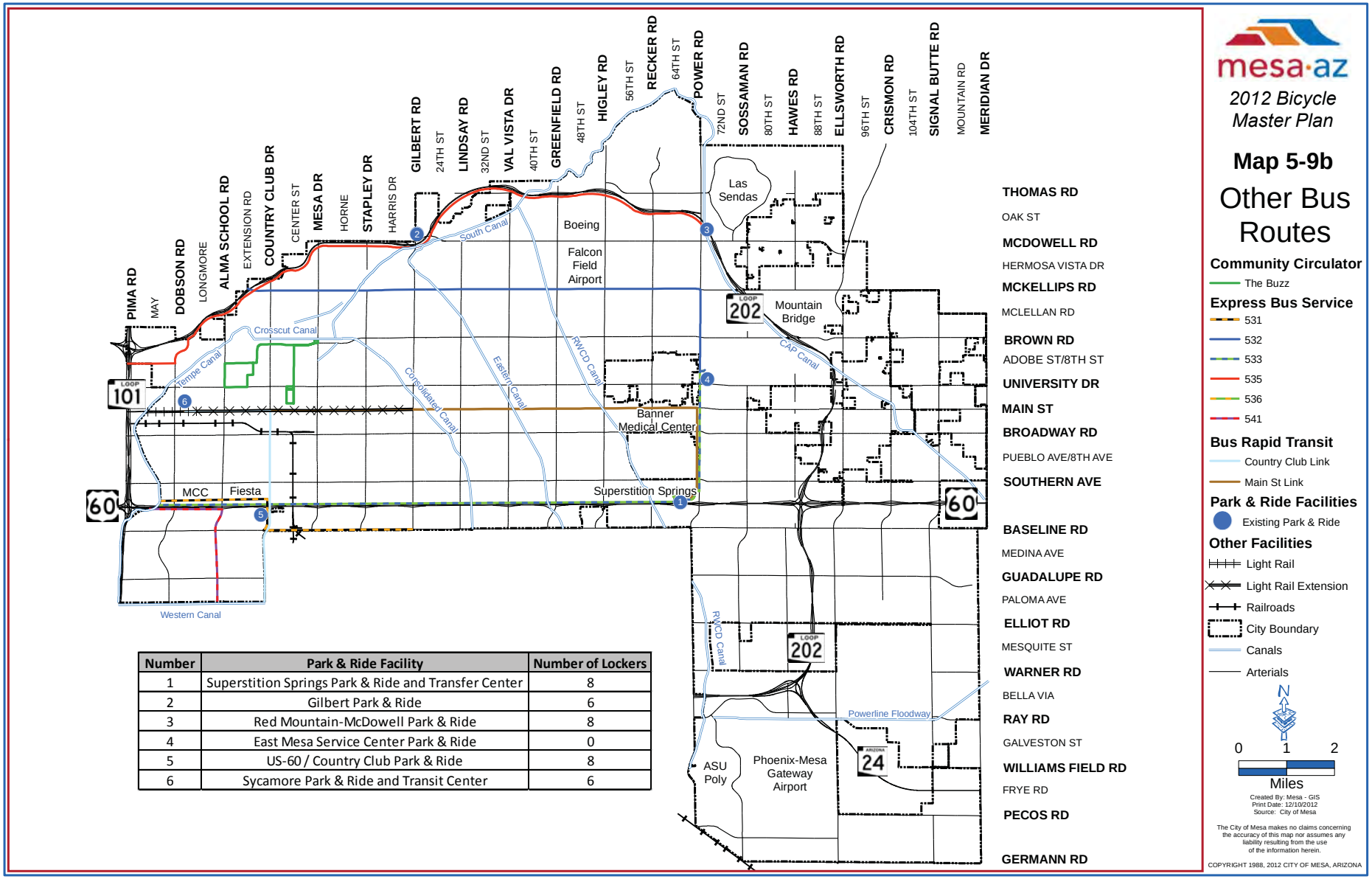

Number	Park & Ride Facility	Number of Lockers
1	Superstition Springs Park & Ride and Transfer Center	8
2	Gilbert Park & Ride	6
3	Red Mountain-McDowell Park & Ride	8
4	East Mesa Service Center Park & Ride	0
5	US-60 / Country Club Park & Ride	8
6	Sycamore Park & Ride and Transit Center	6

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2012 Bicycle Master Plan

Map 5-9b

Other Bus Routes

Community Circulator
- The Buzz

Express Bus Service
- 531
- 532
- 533
- 535
- 536
- 541

Bus Rapid Transit
- Country Club Link
- Main St Link

Park & Ride Facilities
- Existing Park & Ride

Other Facilities
- Light Rail
- Light Rail Extension
- Railroads
- City Boundary
- Canals
- Arterials

N

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Miles

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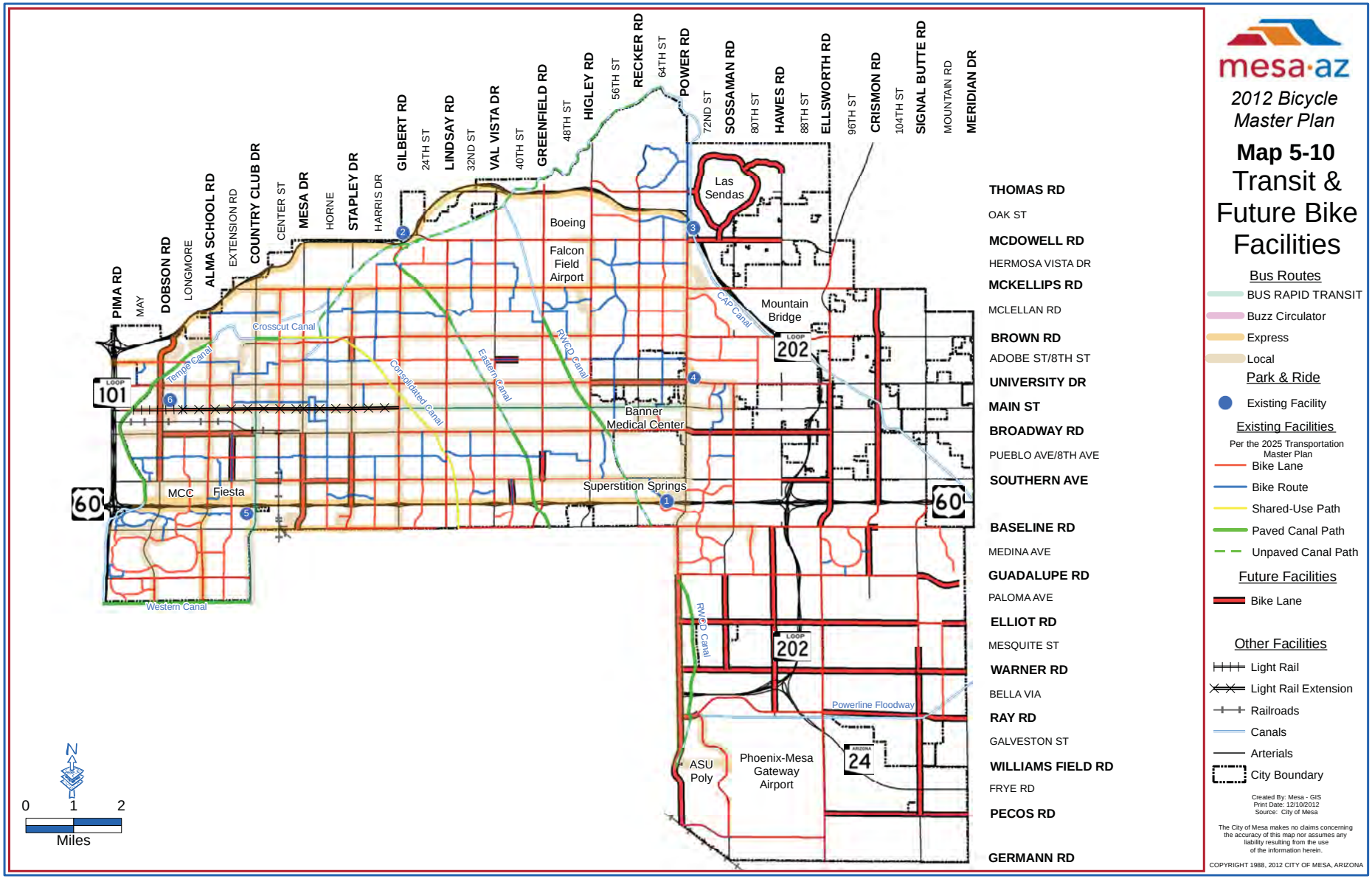

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2012 Bicycle Master Plan

Map 5-10

Transit & Future Bike Facilities

Bus Routes
- BUS RAPID TRANSIT
- Buzz Circulator
- Express
- Local

Park & Ride
- Existing Facility

Existing Facilities
Per the 2025 Transportation Master Plan
- Bike Lane
- Bike Route
- Shared-Use Path
- Paved Canal Path
- Unpaved Canal Path

Future Facilities
- Bike Lane

Other Facilities
- Light Rail
- Light Rail Extension
- Railroads
- Canals
- Arterials
- City Boundary

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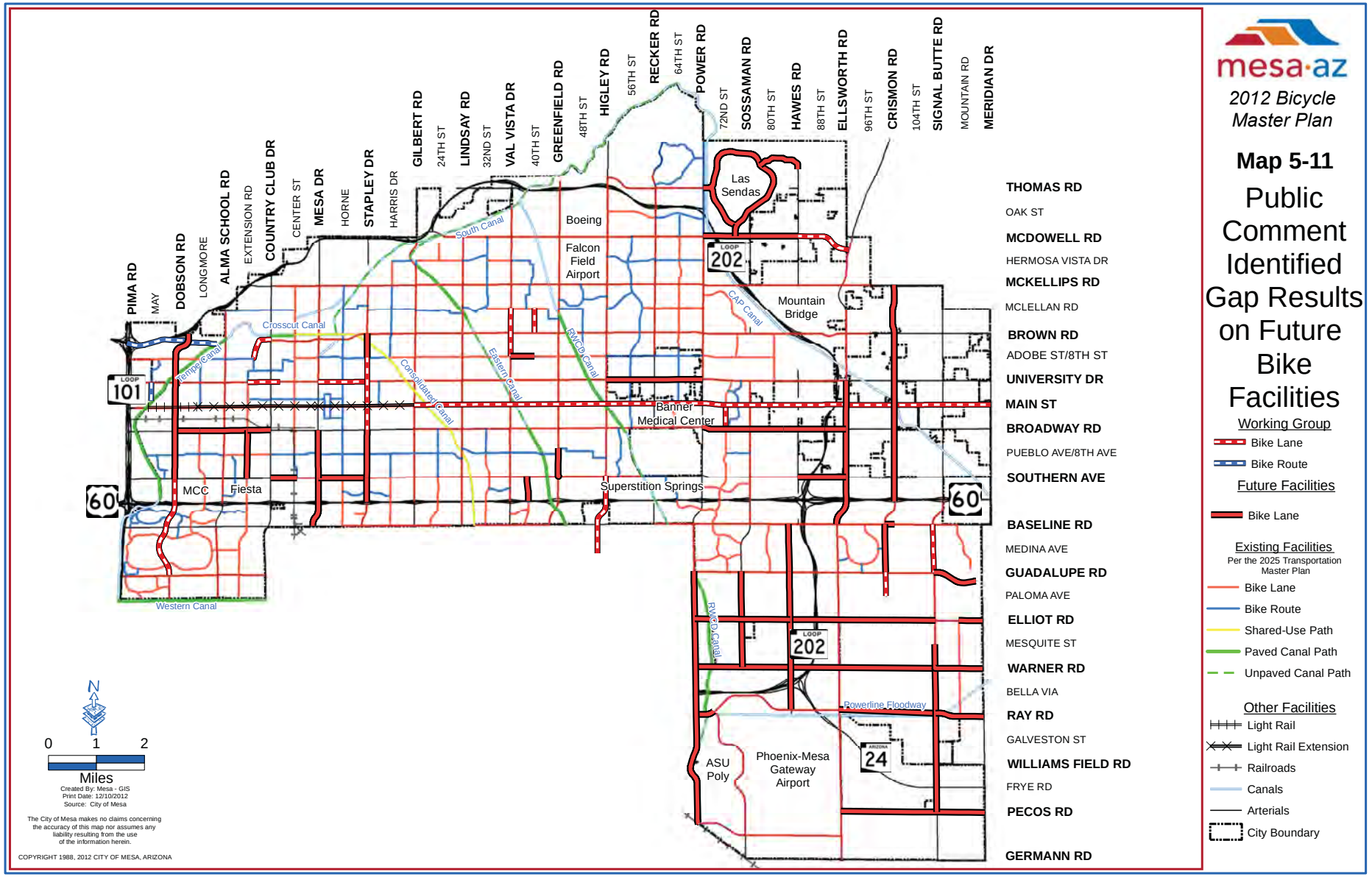
City of Mesa Total Bicycles Loaded onto Public Transit Vehicles FY 2000-2001 to FY 2010-2011		
Fiscal Year	Total Bicycle Loadings	Change From Previous Year
2000-2001	67,671	--
2001-2002	79,143	17.0%
2002-2003	84,485	6.7%
2003-2004	95,883	13.5%
2004-2005	97,138	1.3%
2005-2006	95,731	-1.4%
2006-2007	102,373	6.9%
2007-2008	108,779	6.3%
2008-2009	145,735	34.0%
2009-2010	175,006	20.1%
2010-2011	194,631	11.2%
Percentage change from FY 2000-2001 to FY 2010-2011		187.6%

Table 5-3

City of Mesa Total Bicycles Loaded Onto Public Transit Vehicles By Route FY 2008 – 2009 to FY 2010 – 2011					
Route Number	Route Name	2008 – 2009 Total Bicycle Transit Loadings	2009 – 2010 Total Bicycle Transit Loadings	2010 – 2011 Total Bicycle Transit Loadings	% Change 2008-2009 to 2010-2011
30	University Drive	22,997	18,757	21,511	-6%
40	Apache/ Main Street	10,790	25,521	30,176	180%
45	Broadway Road	18,992	18,353	19,814	4%
61	Southern Avenue	28,735	32,224	35,312	23%
77	Baseline Road	1,807	1,740	1,356	-25%
96	Dobson Road	15,000	18,887	20,342	36%
104	Alma School Road	8,684	9,848	9,664	11%
108	Elliot Road	1,175	1,122	825	-30%
112	Country Club Drive	8,937	9,496	11,454	28%
120	Mesa Drive	3,564	3,352	3,162	-11%
128	Stapley Road	3,047	2,761	3,539	16%
136	Gilbert Road	5,564	5,004	6,828	23%
156	William Field Road	1,286	1,089	1,238	-4%
531	Mesa/Gilbert Express	580	473	1,996	244%
532	Mesa Express	809	333	446	-45%
533	Mesa Express	720	422	479	-33%
536	Mesa Express	104	75	260	150%
541	Chandler Express	164	137	267	63%
RED LINE	Main Street	5,113	130	--	--
Link	Main Street	6,264	21,638	19,931	218%
Link	Arizona Avenue	--	--	2,100	--
The Buzz	*The Buzz*	1,030	3,644	3,919	280%
	Total Boardings	145,735	175,006	194,631	34%

Table 5-4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2012 Bicycle Master Plan
Map 5-11
Public Comment Identified Gap Results on Future Bike Facilities
Working Group
Bike Lane
Bike Route
Future Facilities
Bike Lane
Existing Facilities
Per the 2025 Transportation Master Plan
Bike Lane
Bike Route
Shared-Use Path
Paved Canal Path
Unpaved Canal Path
Other Facilities
Light Rail
Light Rail Extension
Railroads
Canals
Arterials
City Boundary
PIMA RD
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PUBLIC AND WORKING GROUP IDENTIFIED ON-STREET GAPS		
Road	**Segment**	**Description**
McDowell Road	Hawes Road to Ellsworth Road	No Bicycle Lanes – highly utilized bikeway, gateway to Usery Pass
McDowell Road	West of Gilbert Road	Connectivity issues to West Mesa
Signal Butte Road	Guadalupe Road north of Madero Avenue	No Bicycle Lane
Signal Butte Road	Guadalupe Road south of Elliot Road	No Bicycle Lane
Baseline Road	Crimson Road east to Wildrose	No Bicycle Lane
Ellsworth Road	Baseline Road to University Drive	No Bicycle Lane
Guadalupe Road	Hawes Road to Eastridge	No Bicycle Lane on south side of Road
Broadway Road	Loop 202 to Ellsworth Road	No Bicycle Lanes
Broadway Road	Dobson Road to Alma School Road	No Bicycle Lanes
72nd Street	Broadway Road to Main Street	Pathway connection along drainage culvert
Val Vista Drive	Adobe Road to McLellan Road	No Bicycle Lanes
Dobson Road	Western Canal to Loop 202	No Bicycle Lanes
Stapley Drive	US 60 to McKellips Road	No Bicycle Lanes
Southern Avenue	Mesa Drive to Stapley Drive	No Bicycle Lanes
Alma School Road	Railroad crossing to Pepper Place	No Bicycle Lanes
University Drive	Tempe Canal east to Dobson Road	No Bicycle Lanes

Table 5-5

PUBLIC AND WORKING GROUP IDENTIFIED OFF-STREET GAPS		
Canal	**Segment**	**Description**
RWCD Canal	Southern City Limits to Ray Road	Unpaved and gate restricted
San-Tan Shared-Use Pathway	Power Road to Hawes Road Adjacent to the Loop 202	Need to make connection across RWCD Canal and spillway connecting to Town of Gilbert Shared-Use Path
Spook Hill Shared-Use Pathway (CAP)	University Drive to Northeast City Limits on Power Road/Bush Highway	Unpaved and gate restricted
Eastern Canal	Consolidated Canal to Gilbert Road	Unpaved
Consolidated Canal	West of Center Street to Alma School Road	Mesa Country Club restricted use

Table 5-6

REGIONAL BICYCLE CONNECTION GAPS

The City of Mesa Bicycle Plan should take advantage of opportunities to connect to adjacent communities' networks. This allows users to expand trips to further ranges. Connecting links to adjacent networks are shown on Map 5-12. Map 5-13 shows the regional connections along with the future bicycle network.

SUMMARY

Throughout this chapter, various maps have been presented in an attempt to illustrate those factors that impact where bicycle facilities are needed. Map 5-4 shows an estimate of future bike facilities based on the City of Mesa 2025 plan.

Maps were also developed for potential bike facility latent demand (Map 5-7), transit (Map 5-9a and 5-9b), public comments (Map 5-11), and regional connections (Map 5-12). Each map was then overlaid onto Map 5-4 in order to see how the mapped factors are associated with the estimated future bike facilities. Next, Transportation Department staff analyzed each map to uncover possible gaps relative to each factor. The gaps called out from public comments were depicted on Map 5-11. Additionally, Transportation staff analyzed Map 5-4 on its own for gaps which resulted in Map 5-5.

This gap analysis resulted in the following maps:

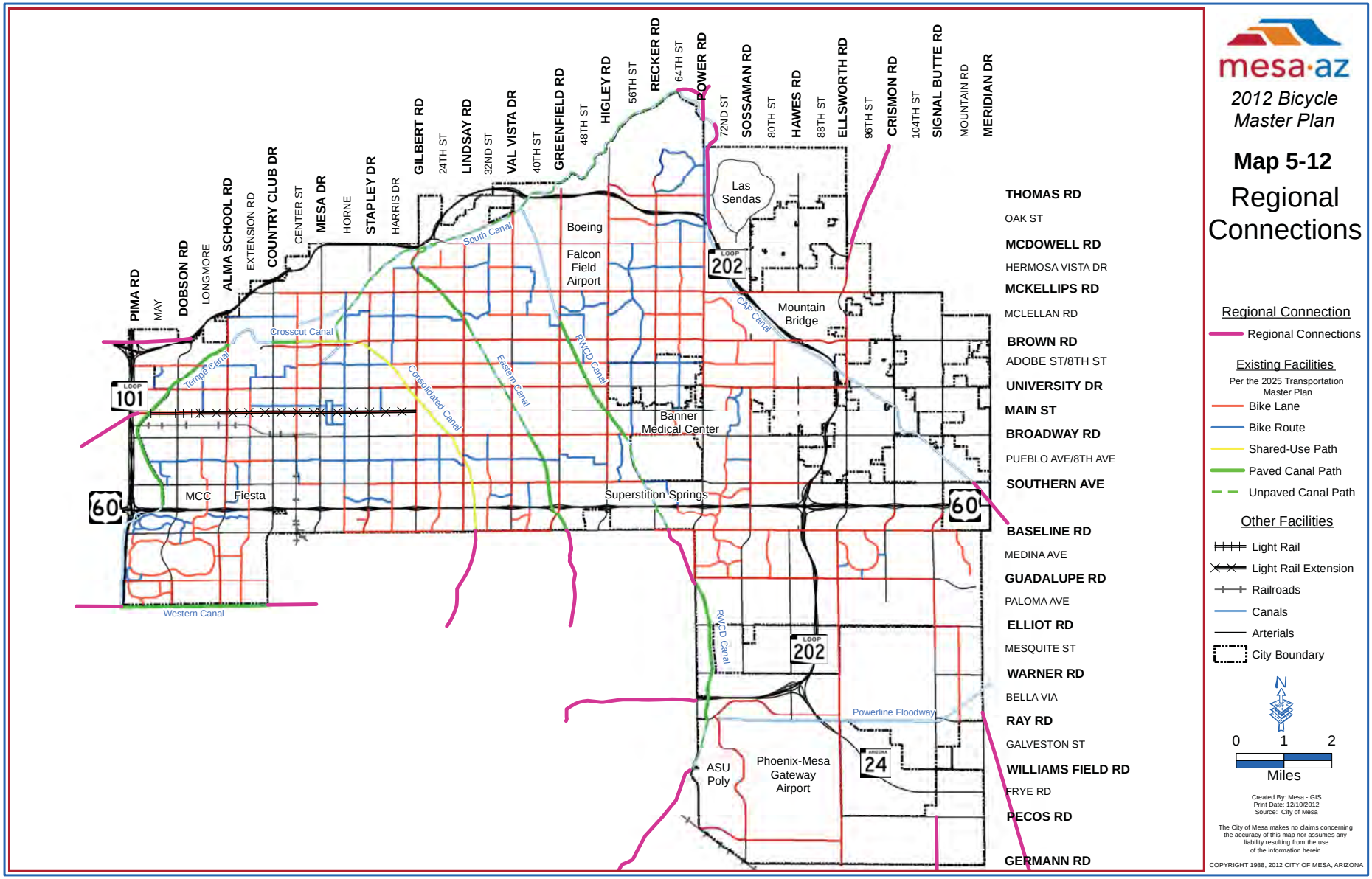
- Map 5-14a – Transit Identified Gaps
- Map 5-14b – Latent Demand Identified Gaps
- Map 5-14c – Public Comment Identified Gaps
- Map 5-14d – Regional Connection Gaps
- Map 5-14e – Staff Identified Gaps

The gaps on Maps 5-14a through 5-14e were then compiled onto Map 5-15. Map 5-15 illustrates overall facility needs based on gaps and was used as the starting point for the prioritization of projects in Chapter 6.

While Map 5-15 identifies gaps that have been recognized as needing critical improvements, many improvements will depend on a variety of factors including:

- Project costs.
- Funding.
- Fatal flaws identified during feasibility.
- Public support or opposition.
- Future development, which could present new opportunities that would benefit bicycling.

All these factors are defined and discussed in Chapter Six, and play an important role in the prioritization process.



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2012 Bicycle Master Plan

Map 5-12

Regional Connections

Regional Connection

- Regional Connections

Existing Facilities

Per the 2025 Transportation Master Plan

- Bike Lane
- Bike Route
- Shared-Use Path
- Paved Canal Path
- Unpaved Canal Path

Other Facilities

- Light Rail
- Light Rail Extension
- Railroads
- Canals
- Arterials
- City Boundary

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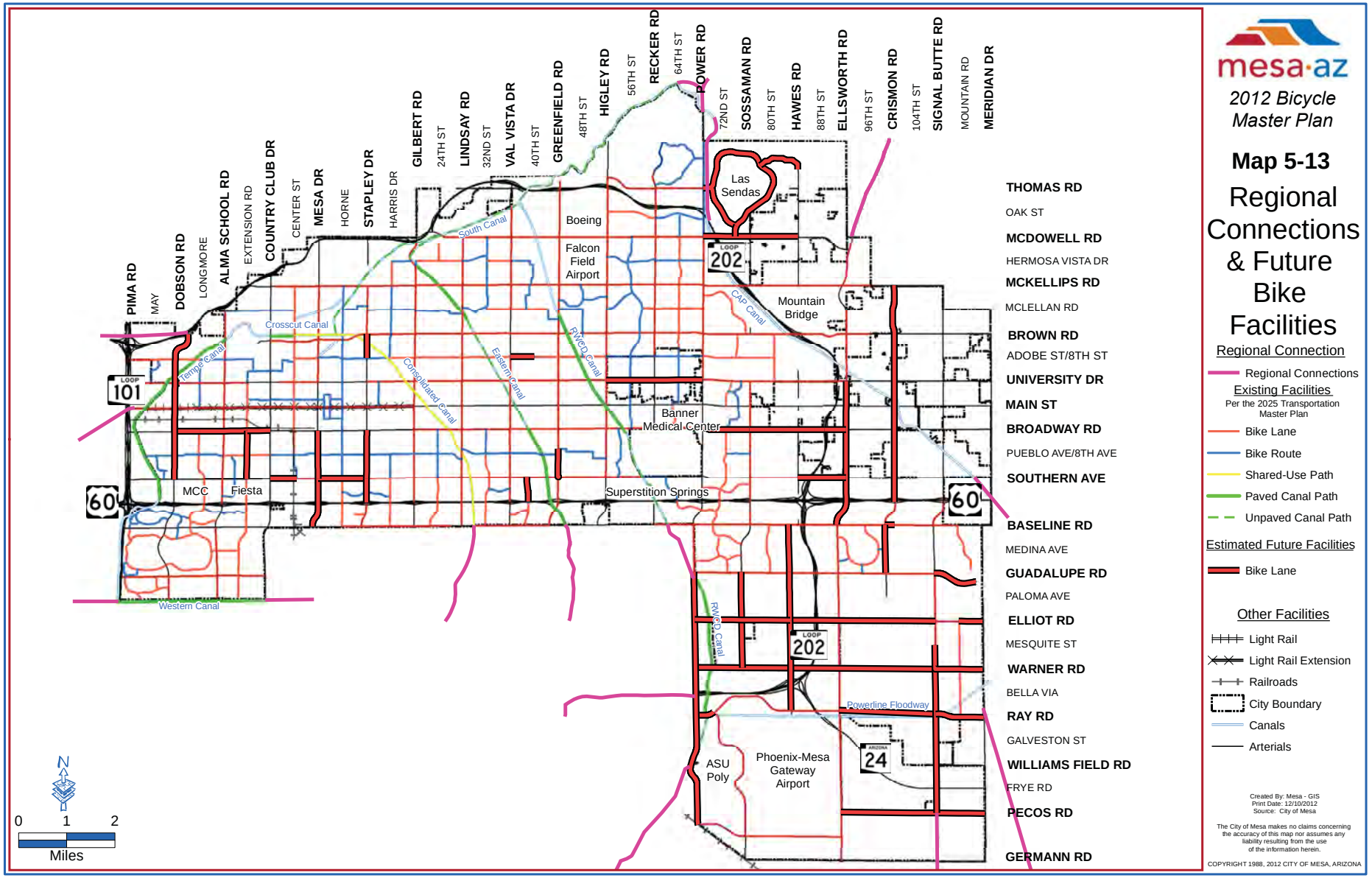
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2012 Bicycle Master Plan
Map 5-13
Regional Connections & Future Bike Facilities
Regional Connection
Regional Connections
Existing Facilities
Per the 2025 Transportation Master Plan
Bike Lane
Bike Route
Shared-Use Path
Paved Canal Path
Unpaved Canal Path
Estimated Future Facilities
Bike Lane
Other Facilities
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials
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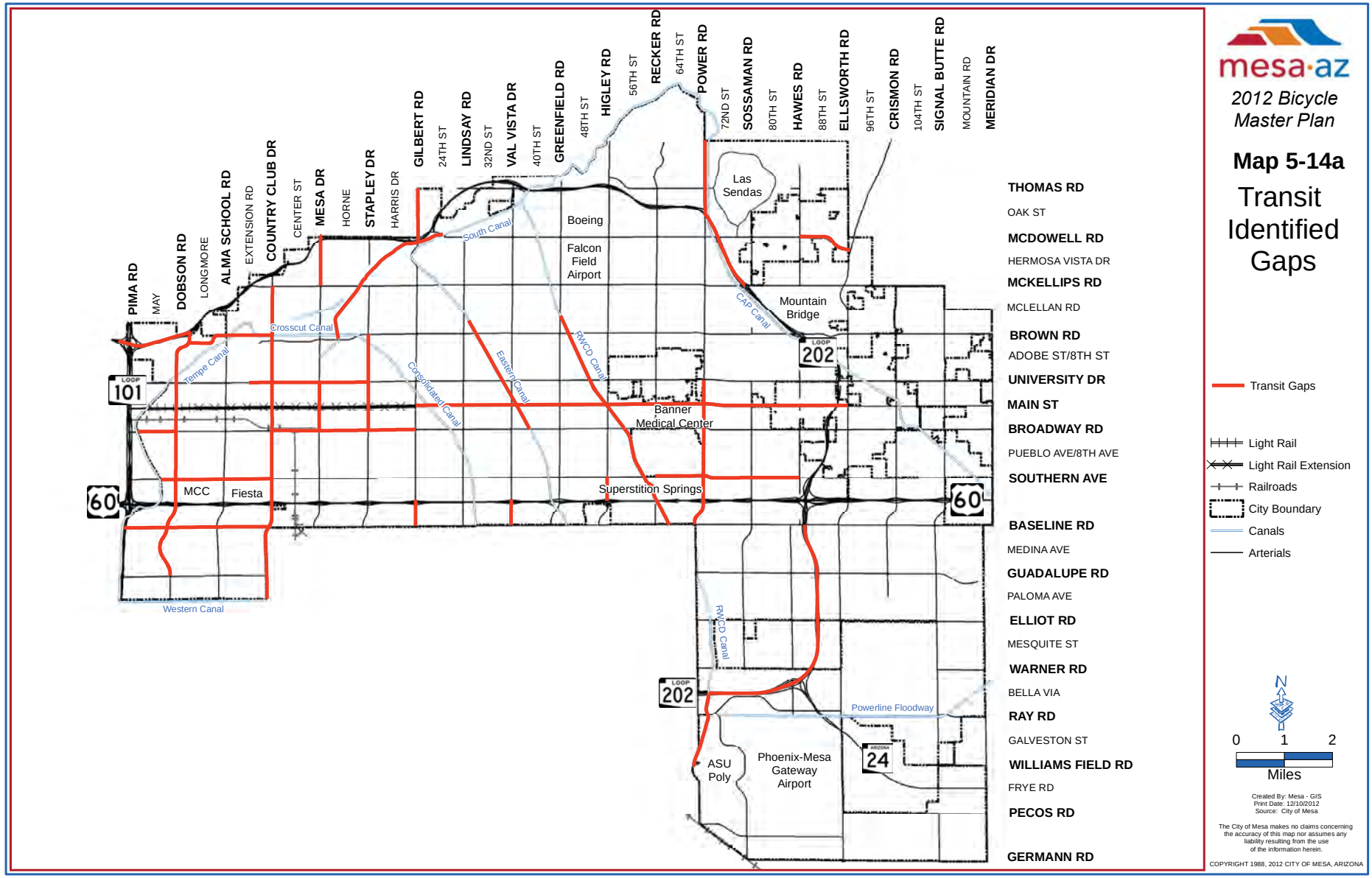
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Powerline Floodway
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2012 Bicycle Master Plan
Map 5-14a
Transit Identified Gaps
Transit Gaps
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials
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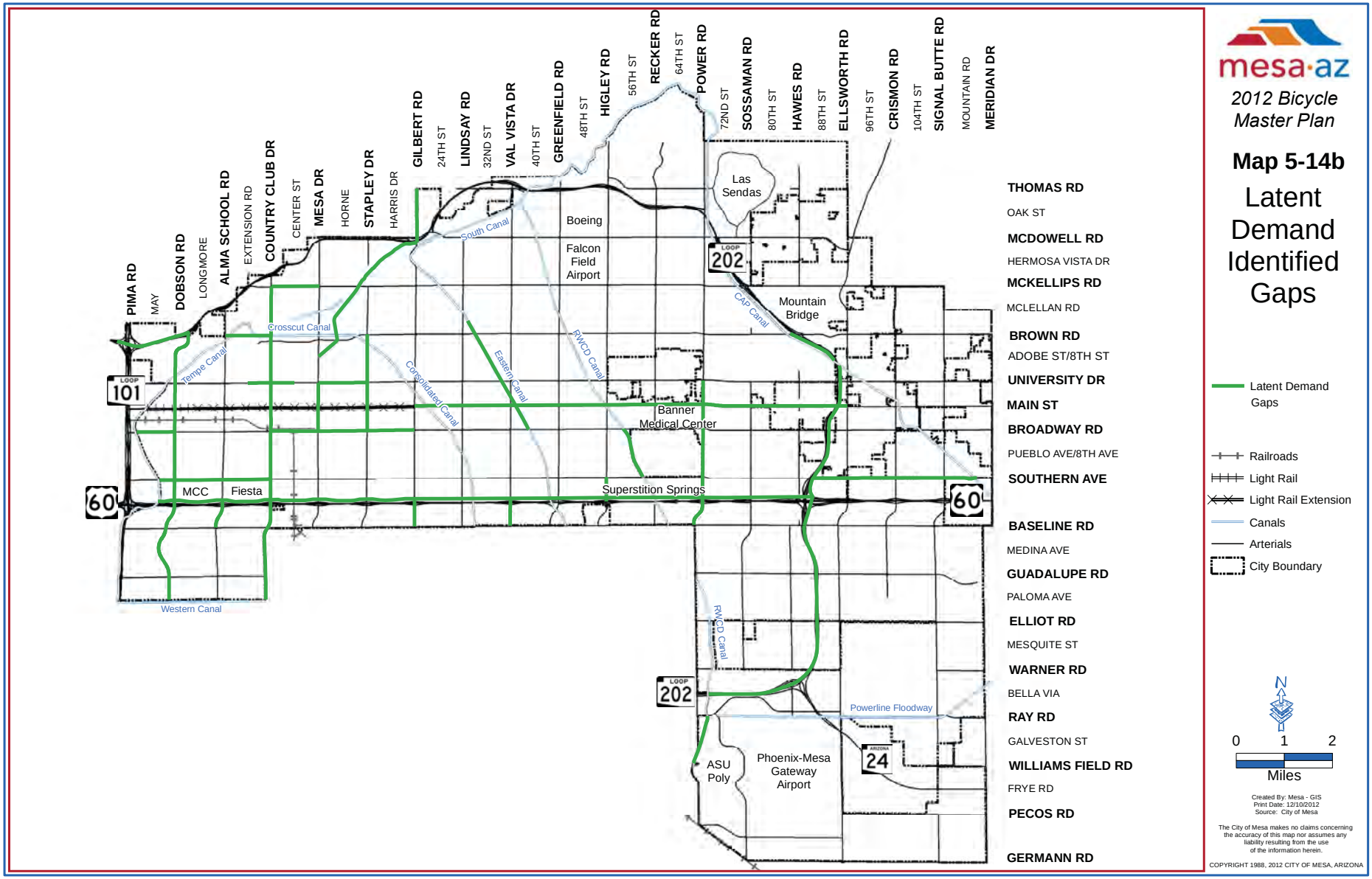
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Map 5-14b
Latent Demand Identified Gaps
Latent Demand Gaps
Railroads
Light Rail
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Canals
Arterials
City Boundary
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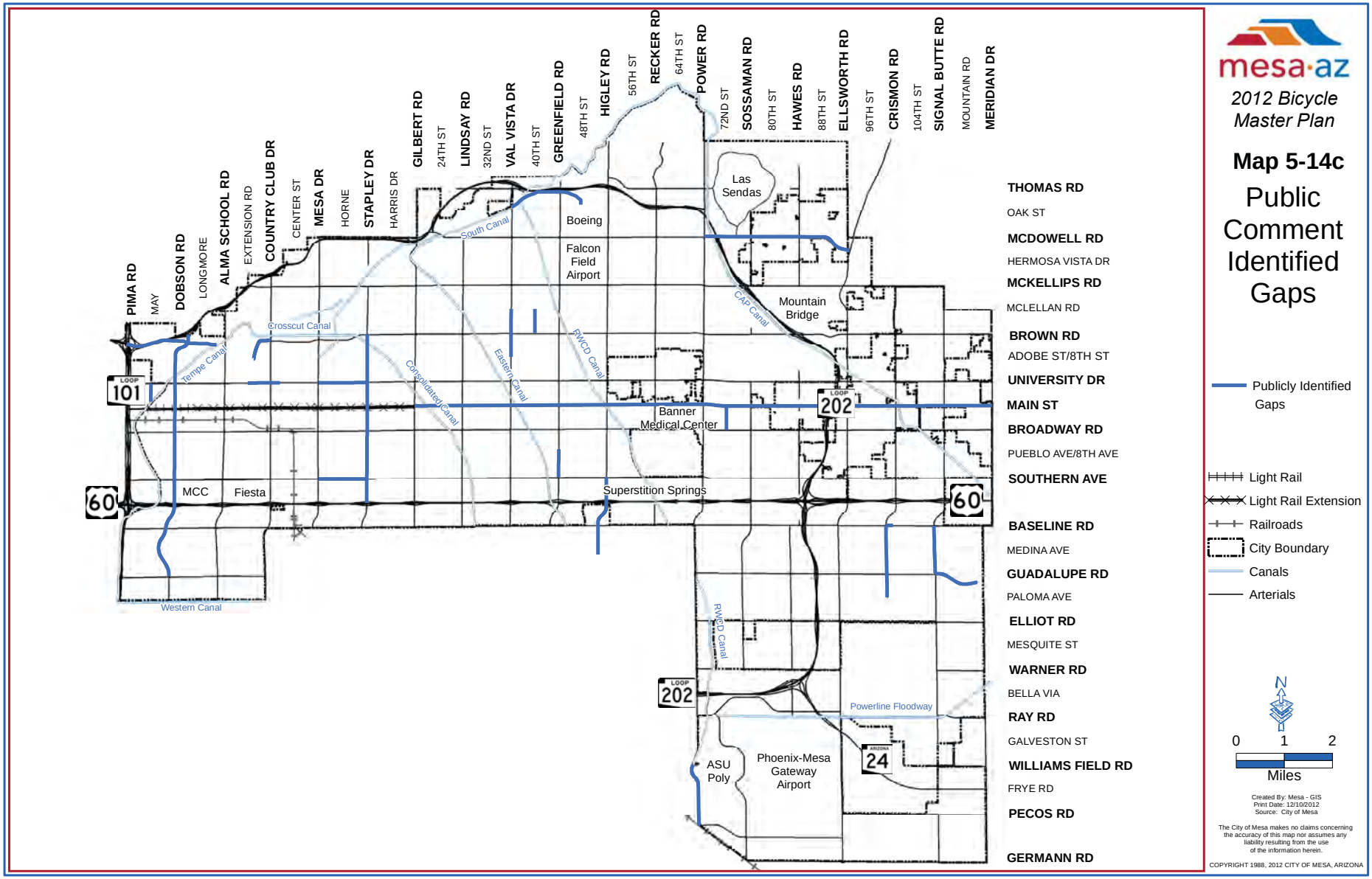
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Map 5-14c
Public Comment Identified Gaps
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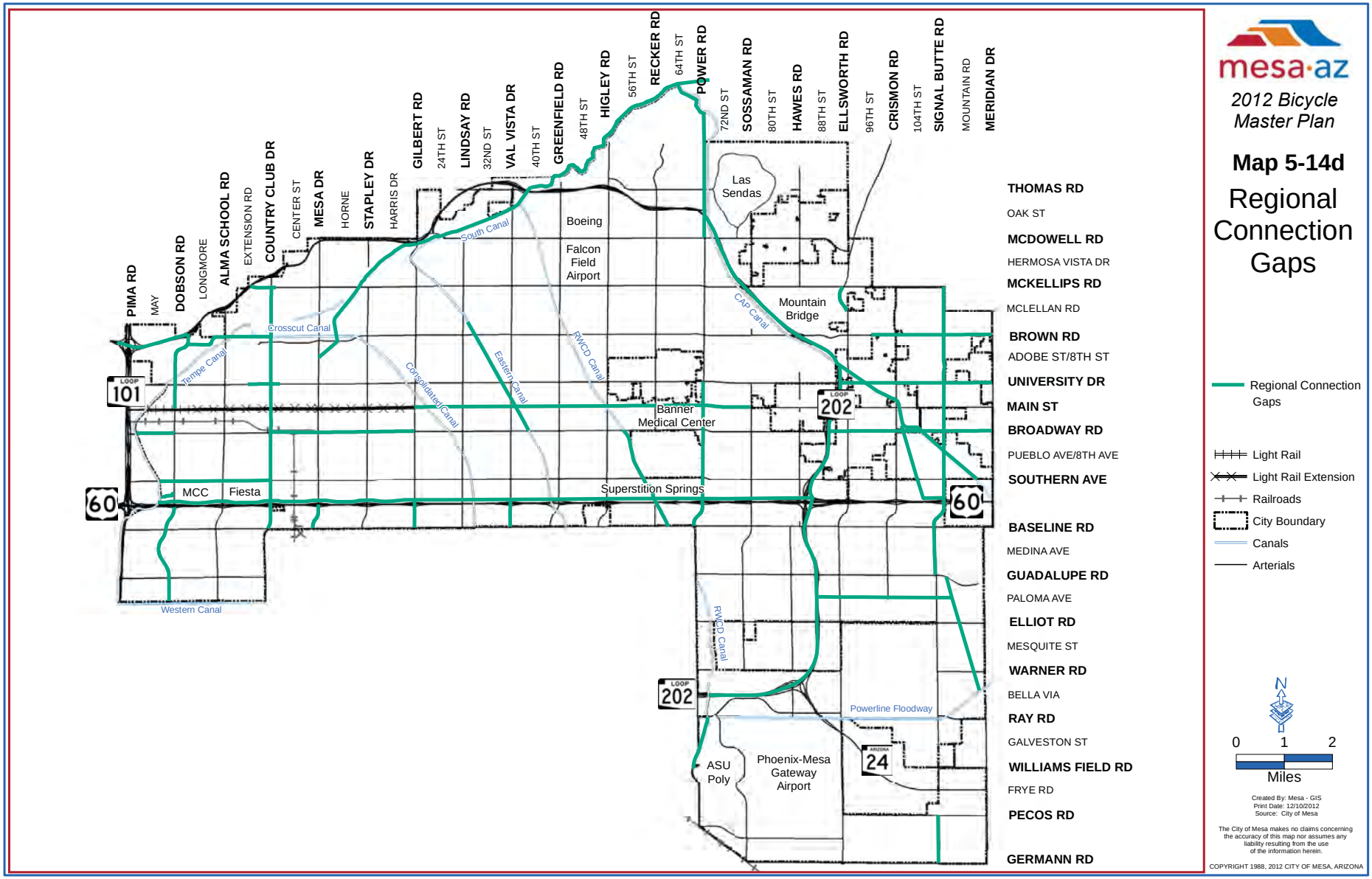
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Map 5-14d
Regional Connection Gaps
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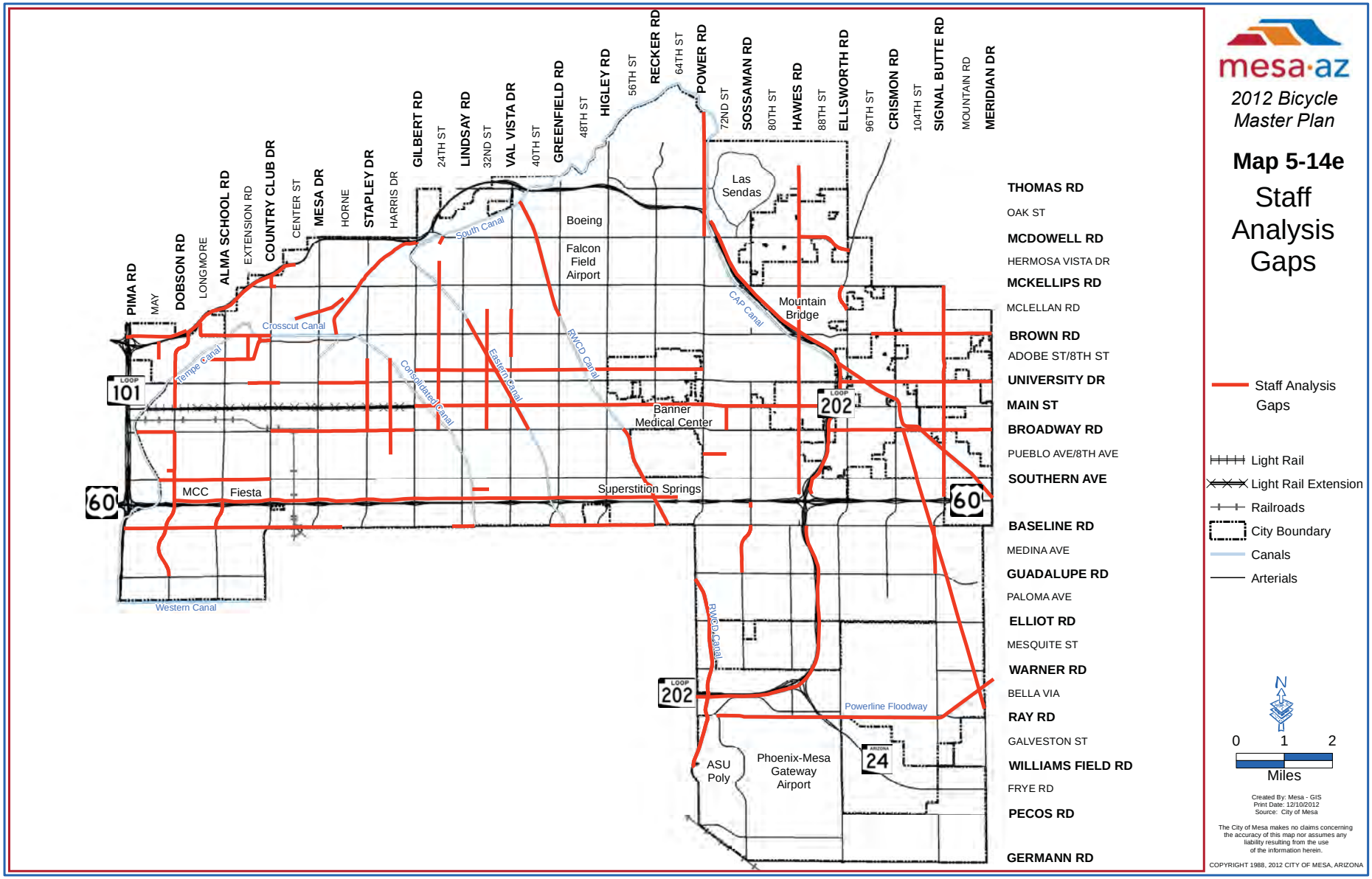

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Map 5-14e

Staff Analysis Gaps

Staff Analysis Gaps

Light Rail

Light Rail Extension

Railroads

City Boundary

Canals

Arterials

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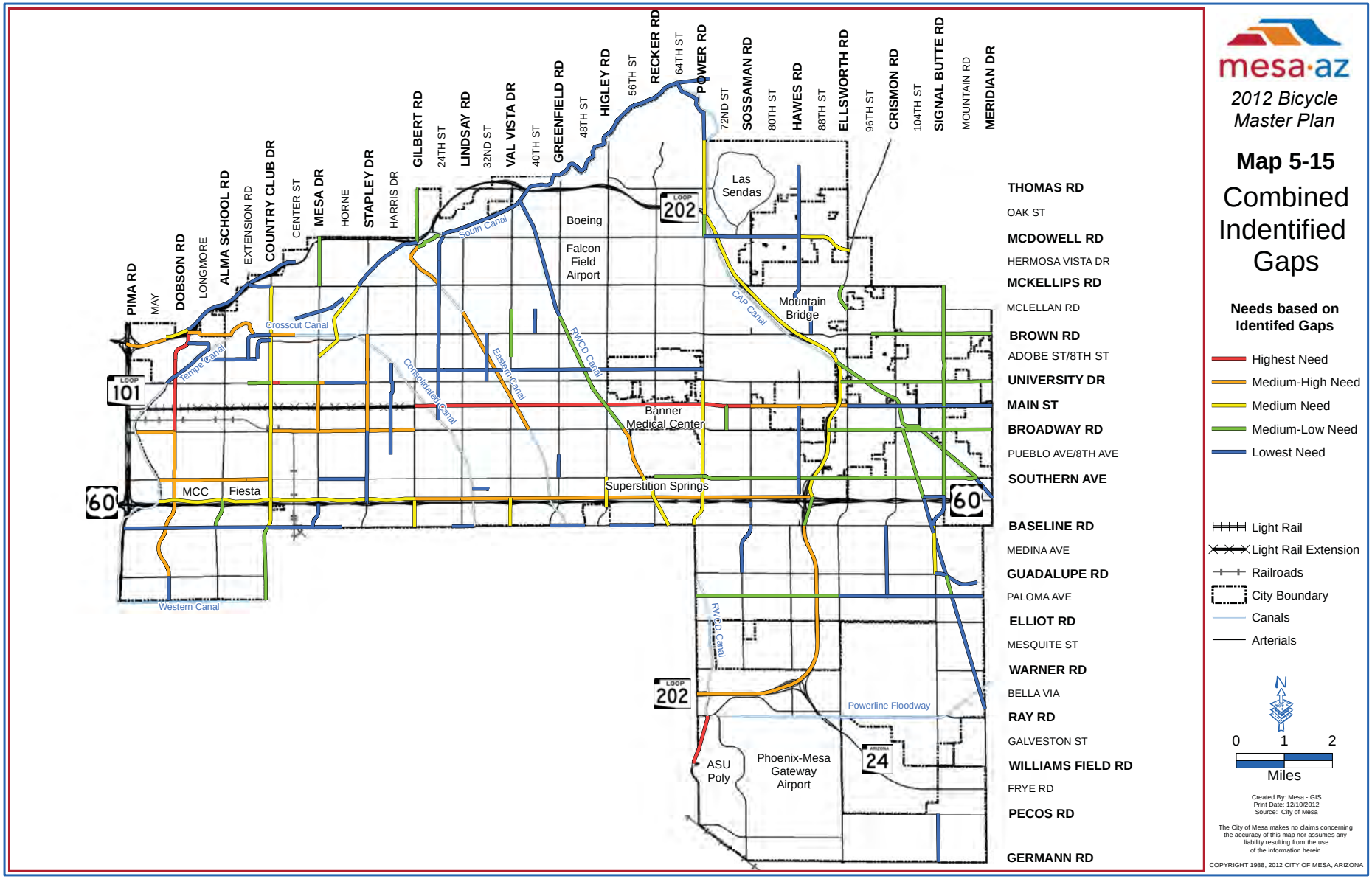
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Map 5-15
Combined Indentified Gaps
Needs based on Identifed Gaps
Highest Need
Medium-High Need
Medium Need
Medium-Low Need
Lowest Need
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
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CHAPTER SIX

IMPLEMENTATION, EVALUATION, AND FUNDING

INTRODUCTION

This chapter will consider all available information, materials, budgetary issues, identified infrastructure and facility needs, as well as public input that has been gathered and described throughout this plan. Recommendations will be provided throughout the City by council district and an implementation strategy will delineate an effective implementation plan to the planning horizon year. This chapter will help to achieve the vision outlined in the plan for both facilities and programs to be instituted. It is necessary to establish a strategy for implementation that will consider both current funding opportunities, as well as future opportunities. These opportunities may result from the adoption of the recommendations in the Plan.

The purpose of this implementation strategy will be to guide and ensure that plan elements and projects, and programs are effectively carried out and implemented in a timely manner.

The overall needs list determined in Chapter 5 is processed further in this chapter in order to establish priority for the projects on a citywide basis. All proposed future projects are shown on Map 6-1 and listed in Table 6-2.

Consolidated Canal Phase 2 Construction

Prioritization of the projects is based on a set of implementation criteria. The implementation criteria are explained later in this chapter. Once a final, total prioritization score was determined for each project, the list was sorted by the total score. This gives a final prioritized list of bike facility projects for the entire City.

Finally, the top 40 projects are featured as key projects to consider during the earlier stages of the planning period. These featured projects are listed and mapped by council district.

IMPLEMENTATION APPROACH

The implementation approach must be tailored to be both manageable and realistic while taking into account funding, the changing environment, and needs of the City's citizens. The approach that is taken toward implementation is heavily dependent on the ability to secure funding and adapt to changing costs and benefits. When developing the implementation plan of the bicycle network and programs, Mesa will focus on achieving a balance between signature projects and projects that will benefit the most residents as soon as possible. These efforts will create a positive, low stress environment for cyclists.

GEOGRAPHIC EQUITY

Geographic equity applies to the development of Mesa's bicycle network with an approach that would concentrate on the uniformity and equality of projects throughout the City.

Gap, socioeconomic and user bicycling analysis, crash statistics, and survey data have identified several areas of the City that are underserved while other areas have benefitted from network improvements that have increased the bikeability of the surrounding area. Through the implementation process, Mesa will focus on those areas of the City that are poorly served by existing bicycle facilities. Additionally, priority is given to areas that would significantly benefit from the addition of bicycle amenities connecting services with neighborhoods and employment. While the addition of new bicycle facilities and signature projects send out the message that Mesa is a premier bicycling community, it is important to remember that the improvement and connectivity of existing and fragmented facilities helps to serve a wide range of cycling residents. The proposed program improvements generally apply citywide.

EXISTING FACILITY IMPROVEMENTS

Mesa will devote a significant portion of its efforts on improving network facilities that currently exist, but do not necessarily meet current standards or best practices. Improvements to these bicycle network corridors will be targeted based on deficiencies within facilities and regularly scheduled maintenance that is being conducted.

DEVELOPMENT OF NEW FACILITIES

Mesa is continually evaluating and looking for opportunities to incorporate additional bicycle facilities into roadway projects that are currently scheduled. Every transportation project offers a potential opportunity to implement bicycle facilities that have been identified in this Bicycle Master Plan. Therefore, institutionalizing bicycle expansion will be fundamental for successful implementation of this Plan. New facilities that are identified within the Bicycle Master Plan provide opportunities for Mesa to further its progress toward build out.

IMPLEMENTATION STRATEGY

The duty of the City of Mesa Bicycle Program Manager is to ensure methodologies outlined in this Plan are developed through a well-formulated and precise method as outlined in this Implementation Strategy. The building of the bicycle network is only part of the overall goal set forth in the plan. In order to effectively build a bicycle network that is utilized to its full potential, it is also important to update policies and procedures which provide proper guidance for the development of the network facilities. Also as part of this implementation strategy, it will be vital to expand encouragement and education programs linked to the expansion of the bicycle network.

The implementation priority of infrastructure and programs will be ranked according to the criteria laid out in the following section and as shown in Figure 6-1. By following the criteria outlined in this Plan, Mesa will ensure that projects expanding the bicycle network throughout are well-balanced and appropriate for the overall connectivity of the City.

These strategies offer a degree of precision that will ensure proper implementation of projects and programs identified in this Plan. It is also important to discuss the process for new concepts and ideas to be evaluated as pilot projects.

Pilot projects will be introduced if those projects meet a specific criterion that deems the concept to have a valid possibility to alleviate an issue or improve upon an existing concept.

For an idea to be administered as a pilot project it must meet the following criteria:

- The project must address a current issue or problem that exists within the City.
- A report must be written to outline the current issue and provide justification for addressing the issue.
- Once the report is evaluated and accepted as a proper need, the pilot project is instituted at a designated location as determined through the prior analysis.
- After a determined time of monitoring to determine if the pilot method alleviated the specific problem, the findings will be presented to the Transportation Advisory Board (TAB) and the concept, if approved by the TAB, will then be programmed to be instituted citywide.

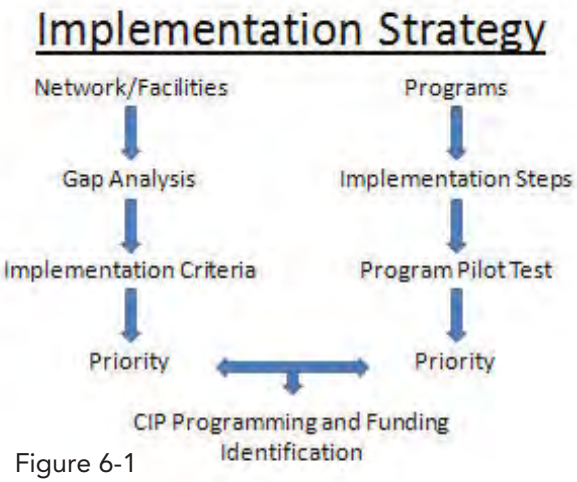


Figure 6-1

IMPLEMENTATION CRITERIA

The City of Mesa Bicycle Master Plan provides a framework for an aggressive implementation strategy which offers a priority to projects and programs that will be put into operation over the term of the Plan.

When deciding how Mesa will incorporate new bicycle facilities and improve on the facilities already in place, staff identified an additional set of criteria that may be used to determine the qualitative relevance for each project. The intent of these additional "implementation criteria" is to ensure that projects are correctly identified and prioritized to provide the greatest amount of benefit for residents in a realistic and sensible manner. Being mindful of these additional criteria will help develop an inclusive and well-used bicycle network for residents.

EQUITY

Equity makes sure that projects are prioritized according to how well they serve an area of the City deficient in bicycle facilities and how well the proposed facility provides equality of bicycle amenities throughout the entire City.

ACCESSIBILITY AND BARRIER REDUCTION

Accessibility to key destinations and reduction of barriers that prevent users from having the ability to travel from one destination to another within a reasonable route of travel will be given precedence over projects that do not.

CONNECTIVITY

Projects that reduce network gaps by adding connectivity to existing facilities and provide access to a greater number of users in underserved areas of Mesa will be given higher priority than projects that do not.

COMMUNITY SUPPORT AND "BUY IN"

Projects being evaluated for priority determination must be supported by the neighborhood residents, business owners, stakeholders, and elected officials.

LEVERAGE AND INVESTMENT RETURN

Projects that leverage local funds by using them to match grant funds and projects that have an anticipated increase in potential usage or safety will receive a higher priority than those that do not.

INNOVATION

Proposed projects being considered for prioritization should demonstrate innovative treatments that highlight national best practices, illustrate new design types, and exhibit bicycle facility applications that will expand the region's recognition of Mesa as a premier bicycling community.

PROJECT PRIORITY RANKING

City of Mesa Transportation Department staff has developed the six criteria above to develop scores for each project. Each criterion was scored between one and five, with one being more favorable. The implementation criteria scores were totaled for one score, and then added to the project's need as determined in Chapter Five for a final score. The final score helps to reveal a project's attractiveness beyond the pure gap analysis conducted in Chapter Five. Therefore, the total implementation criteria score is helpful as another layer to consider when selecting projects. Additionally, the score helps to determine higher priority projects that can be considered sooner.

When applying these criteria, staff will remain sensitive to the overall needs of the community and take into account variables within the criteria that may skew the intended outcome. This implementation plan must provide considerable flexibility to respond to adjustments in funding climate and transformations in community and stakeholder support.

All the projects listed in Table 6-2 have been prioritized based on this methodology. The top 40 projects were then featured as those that can be pursued during the early stages of the plan. The top 40 projects are illustrated on Map 6-2.

The top 40 prioritized projects are shown by council district on Maps 6-3 through 6-8. Each map is accompanied by a table describing the project, its priority, and a planning level cost analysis based on the general cost estimates shown in Table 6-1.

Finally, Map 6-9 illustrates the ultimate "build-out" bicycle network for the City of Mesa. This map combines existing facilities with facilities likely to be built with future road improvements, as well as the facilities determined as needed through the gap analysis.

EXPLANATION OF PROJECT COST ASSUMPTIONS

With the exception of when bicycle facilities, such as bicycle lanes, are included in other projects included in the CIP, the total costs of the projects included in the City of Mesa Bicycle Master Plan were estimated based on a general unit cost per mile utilizing 2012 dollars. These cost assumptions as prescribed by the University of North Carolina, Highway Safety Research Center for each facility type are shown in Table 6-1. Assumed costs, through planning level estimates, are comparable to current project costs being paid by the City of Mesa for projects that are currently under design and construction. These costs generally include:

- Design 10%*
- Right-of-way acquisition 20%**
- Contingency 30%**
- O&M $6,500 mi/yr.

*Percentage of sum of construction plus contingency costs.

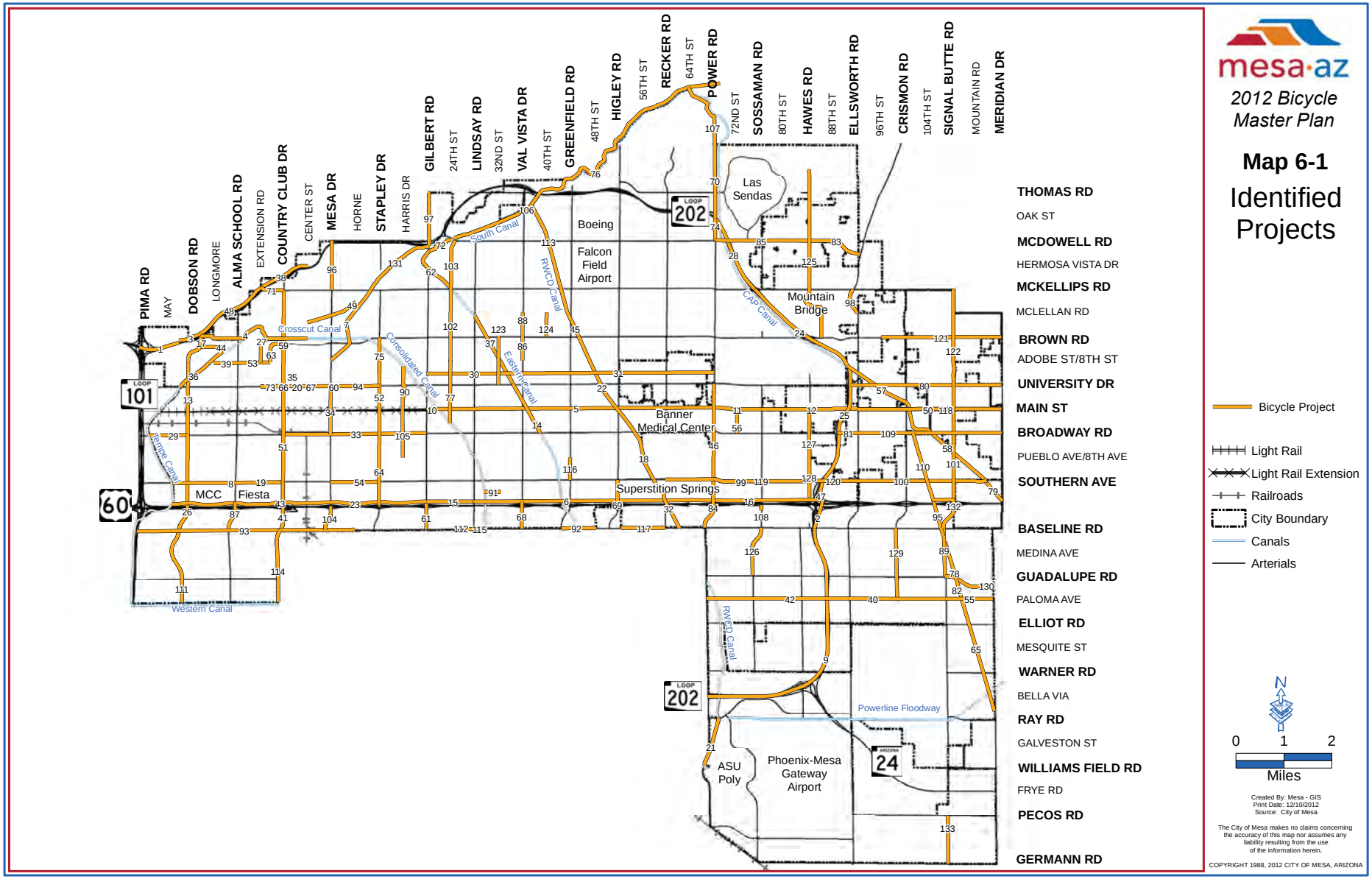
**Percentage of total construction costs.

Projects that are incorporated into a larger project that includes several facility types are estimated by the sum of each specific facility type and then multiplied by the overall length of the project. In cases of undetermined facility type, a cost for the most expensive facilities is applied. These estimates are provided for the purpose of future project fiscal year planning only and may not be the actual project completion costs.

Table 6-1 Assumptive Costs by Facility Type

Bicycle Facility Type	Cost/Mile Assumption
Bicycle Lane	$250,000
Bicycle Shared Use Pathway – No Lighting.	$750,000
Bicycle Shared Use Pathway – Lighting	$1,000,000
Separated In Roadway Shared Use Pathway	$1,000,000
Bicycle Boulevard	$1,500,000
Enhanced Shared Roadway	$250,000
Cycle Track	$1,250,000
Off Road Trail	$125,000

Estimated project type costs as prescribed by the University of North Carolina, Highway Safety Research Center, for Phoenix Metro research data 2010.



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2012 Bicycle Master Plan

Map 6-1

Identified Projects

- Bicycle Project
- Light Rail
- Light Rail Extension
- Railroads
- City Boundary
- Canals
- Arterials

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0 1 2

Miles

Created By: Mesa - GIS
Print Date: 12/10/2012
Source: City of Mesa

Proposed Bicycle Facility Projects

Table 6-2

Priority	Project Location and Description	Facility Type	District	Length	GAP Evaluation	Implementation Criteria Score		Estimated Costs			Estimated ROW Costs	Estimated O&M Costs/yr
					Need Score	Criteria Total Score	Need + Criteria Score	Design	Construction	30% Contengency		
1	Riverview/Rio Salado Pathway - Wrigleyville West to Tempe Rio Salado Pathway	Shared-Use Path	2	0.9	2	7	9	$85,803	$858,025	$257,408	$0	$5,577
2	Loop 202 San Tan Freeway R.O.W. - Baseline Road to U.S. 60	Shared-Use Path	6	0.6	4	6	10	$61,905	$619,054	$185,716	$0	$4,024
3	Riverview/Rio Salado Pathway - Wrigleyville West to Dobson Road	Shared-Use Path	1	0.5	3	8	11	$48,603	$486,029	$145,809	$0	$3,159
4	West Mesa Connector - Center Street to Dobson Road	Shared-Use Path	1	2.0	2	9	11	$399,760	$3,997,601	$1,199,280	$0	$13,111
5	Main Street - Consolidated Canal to Power Road	Cycle Track	2	5.8	1	10	11	$720,029	$7,200,291	$2,160,087	$ 1,440,058	$37,442
6	US 60 R.O.W. - Lindsay Road to Recker Road	Shared-Use Path	2	4.0	2	10	12	$399,760	$3,997,601	$1,199,280	$0	$25,984
7	Porter Park Pathway - Mesa Drive to McKellips Road	Shared-Use Path	1	1.8	3	10	13	$181,392	$1,813,916	$544,175	$0	$11,790
8	Southern Avenue - West City Limit (Fiesta District) to Extension Road	Shared-Use Path	3	1.8	2	11	13	$180,000	$1,800,000	$540,000	$360,000	$11,700
9	Loop 202 San Tan Freeway - Power Road to Baseline Road (Gateway Shared-Use Pathway Project)	Shared-Use Path	6	5.6	2	11	13	$556,312	$5,563,116	$1,668,935	$0	$36,160
10	Main Street - Gilbert Road to the Consolidated Canal	Cycle Track	4	0.2	1	13	14	$29,386	$293,865	$88,159	$58,773	$1,528
11	Main Street - Power Road to Sossaman Road	Bike Lane	5	1.0	1	13	14	$24,728	$247,278	$74,184	$49,456	$6,429
12	Main Street - Sossaman Road to Ellsworth Road	Bike Lane	5	2.0	2	13	15	$50,447	$504,471	$151,341	$100,894	$13,116
13	Dobson Road - Broadway Road to Rio Salado Parkway/8th Street	Bike Lane	6	1.5	1	14	15	$65,000	$650,000	$195,000	$130,000	$9,786
14	Eastern Canal - University Drive to Broadway Road	Shared-Use Path	5	1.1	2	13	15	$114,812	$1,148,120	$344,436	$0	$7,463
15	US 60 R.O.W. - Gilbert Road to Lindsay Road	Shared-Use Path	6	1.0	2	13	15	$99,266	$992,663	$297,799	$0	$6,452
16	US 60 R.O.W. - Recker Road to the Loop 202 San Tan Freeway	Shared-Use Path	6	3.3	2	13	15	$330,668	$3,306,685	$992,005	$0	$21,493
17	Dobson Road - Rio Salado Parkway to the Loop 202 Red Mountain Freeway	Bike Lane	1	0.7	1	14	15	$17,221	$172,208	$51,662	$34,442	$4,477
18	RWCD/EMF - Broadway Road to Southern Avenue	Shared-Use Path	2	1.1	2	14	16	$143,000	$1,430,000	$429,000	$0	$6,967
19	Southern Avenue - Country Club Drive to Extension Road	Cycle Track	4	0.5	2	14	16	$61,938	$619,381	$185,814	$123,876	$3,221
20	University Drive - Country Club Drive to Robson	Bike Lane	1	0.2	1	15	16	$4,000	$40,000	$12,000	$10,000	$1,040
21	RWCD/EMF - Ray Road to Williams Field Road	Shared-Use Path	6	1.0	1	15	16	$103,190	$1,031,899	$309,570	$0	$6,707
22	RWCD Canal SUP - Brown Road to Broadway Road	Shared-Use Path	2	2.3	4	12	16	$231,781	$2,317,812	$695,344	$0	$15,066
23	US 60 R.O.W. - Country Club Drive to Gilbert Road	Shared-Use Path	4	3.0	3	13	16	$300,404	$3,004,039	$901,212	$0	$19,526

Proposed Bicycle Facility Projects

Table 6-2

Priority	Project Location and Description	Facility Type	District	Length	GAP Evaluation	Implementation Criteria Score		Estimated Costs			Estimated ROW Costs	Estimated O&M Costs/yr
					Need Score	Criteria Total Score	Need + Criteria Score	Design	Construction	30% Contengency		
24	Loop 202 Red Mountain Freeway - McKellips Road to University Drive	Shared-Use Path	5	2.5	3	13	16	$253,832	$2,538,317	$761,495	$0	$16,499
25	Loop 202 Red Mountain Freeway - University Drive to Southern Avenue	Shared-Use Path	5	2.5	3	13	16	$253,978	$2,539,779	$761,934	$0	$16,509
26	Dobson Road - Broadway Road to Guadalupe Road	Bike Lane	3	3.1	2	14	16	$100,750	$1,007,500	$302,250	$201,500	$20,316
27	Utah Canal Connection - Rio Salado Parkway to the West Mesa Connector	Shared-Use Path	1	0.9	5	12	17	$68,857	$688,572	$206,572	$0	$5,968
28	Loop 202 Red Mountain/CAP - Power Road to McKellips Road	Shared-Use Path	5	1.7	3	14	17	$171,165	$1,711,652	$513,496	$0	$11,126
29	Broadway Road - Dobson Road to West City Limit	Bike Lane	3	0.8	2	15	17	$19,614	$196,137	$58,841	$39,227	$5,100
30	Highline Trail - Gilbert Road to Val Vista Drive	Shared-Use Path	1	2.0	5	13	18	$199,352	$1,993,518	$598,055	$0	$12,958
31	Highline SRP Powerline Easement - Val Vista Drive to Power Road	Shared-Use Path	2	4.0	5	13	18	$399,880	$3,998,799	$1,199,640	$0	$25,992
32	RWCD/EMF - Southern Avenue to Baseline Road	Shared-Use Path	2	1.2	3	15	18	$117,225	$1,172,254	$351,676	$0	$7,620
33	Broadway Road - Country Club Drive to Gilbert Road	Bike Lane	4	3.0	2	16	18	$74,762	$747,621	$224,286	$149,524	$19,438
34	Mesa Drive - Broadway Road to University Drive	Bike Lane	4	1.0	2	16	18	$25,124	$251,240	$75,372	$50,248	$6,532
35	University Drive - Robson to Macdonald	Bike Lane	4	0.2	1	17	18	$4,757	$47,566	$14,270	$9,513	$1,237
36	Tempe Canal - University Drive to Rio Salado Parkway/8th Street	Shared-Use Path	3	0.8	5	13	18	$77,804	$778,043	$233,413	$0	$5,057
37	Eastern Canal Trail - Lindsay Road to University Drive	Shared-Use Path	1	1.6	2	16	18	$143,000	$1,430,000	$429,000	$0	$10,719
38	Salt River Basin Shared-Use Path - McKellips Road to Center Street	Shared-Use Path	1	1.1	5	14	19	$143,000	$1,430,000	$429,000	$0	$7,208
39	Rio Salado Parkway/8th Street - Longmore to Alma School Road	Bike Lane	3	0.5	5	14	19	$12,646	$126,463	$37,939	$25,293	$3,288
40	Powerline Easement - Ellsworth Road to Signal Butte Road	Bike Lane	6	2.0	5	14	19	$50,450	$504,499	$151,350	$100,900	$13,117
41	Country Club Drive - Southern Avenue to Baseline Road	Bike Lane	3	1.0	3	16	19	$25,341	$253,409	$76,023	$50,682	$6,589
42	Powerline Easement - Power Road to Ellsworth Road	Shared-Use Path	6	3.0	4	14	19	$296,769	$2,967,693	$890,308	$0	$19,290
43	US 60 R.O.W. - West City Limit to Country Club Drive	Shared-Use Path	3	2.3	3	16	19	$232,934	$2,329,341	$698,802	$0	$15,141
44	Bass Pro Shop Drive Connection to the Tempe Canal Path - Dobson Road to Rio Salado Parkway	Bike Lane	1	0.9	3	16	19	$88,950	$889,496	$266,849	$0	$5,782
45	RWCD Canal - Greenfield Road to Brown Road	Shared-Use Path	5	0.4	5	15	20	$9,570	$95,701	$28,710	$32,500	$2,488
46	Power Road - Southern Avenue to University Drive	Bike Lane	5	2.0	4	16	20	$198,455	$1,984,545	$595,364	$0	$12,900

Proposed Bicycle Facility Projects

Table 6-2

Priority	Project Location and Description	Facility Type	District	Length	GAP Evaluation	Implementation Criteria Score		Estimated Costs			Estimated ROW Costs	Estimated O&M Costs/yr
					Need Score	Criteria Total Score	Need + Criteria Score	Design	Construction	30% Contengency		
47	Loop 202 Red Mountain Freeway R.O.W. - Southern Avenue through the US 60 Interchange	Shared-Use Path	6	0.4	3	17	20	$10,417	$104,174	$31,252	$ 20,835	$2,709
48	Salt River Basin Shared-Use Path - Dobson Road to McKellips Road	Shared-Use Path	1	1.6	3	17	20	$40,003	$400,033	$120,010	$80,007	$10,401
49	Hohokam Trail - Horne to Center Street	Shared-Use Path	1	1.1	3	17	20	$110,924	$1,109,238	$332,771	$221,848	$7,210
50	Main Street - Ellsworth Road to Crismon Road	Bike Lane	5	1.0	5	15	20	$25,000	$250,000	$75,000	$0	$6,500
51	Country Club Drive - US 60 to University Drive	Bike Lane	4	2.5	5	15	20	$187,494	$1,874,941	$562,482	$0	$16,249
52	Stapley Drive - Broadway Road to Rio Salado Parkway/8th Street	Bike Lane	4	1.5	5	15	20	$37,500	$375,000	$112,500	$75,000	$9,750
53	Rio Salado Parkway - Alma School Rd to Date	Bike Lane	1	0.7	3	17	20	$16,747	$167,472	$50,242	$33,494	$4,354
54	Southern Avenue - Mesa Drive to Stapley Drive	Bike Lane	4	1.0	2	18	20	$25,244	$252,439	$75,732	$50,488	$6,563
55	Powerline Easement - Signal Butte Road to Meridian Road	Shared-Use Path	6	1.0	5	16	21	$24,719	$247,194	$74,158	$136,500	$6,427
56	Maricopa Country Flood Control District Canal - Broadway Road to Main Street	Shared-Use Path	5	0.5	5	16	21	$12,564	$125,644	$37,693	$25,129	$3,267
57	CAP Canal - Loop 202 Red Mountain Freeway to Main Street	Shared-Use Path	5	1.6	5	16	21	$160,788	$1,607,882	$482,365	$0	$10,451
58	CAP Canal - Main Street to Southern Avenue	Shared-Use Path	6	2.4	4	17	21	$235,661	$2,356,609	$706,983	$0	$15,318
59	Country Club Drive - McKellips Road to University Drive	Bike Lane	1	2.0	4	17	21	$200,262	$2,002,618	$600,785	$0	$13,017
60	University Drive - Mesa Drive to Lesueur	Bike Lane	4	0.1	4	17	21	$12,608	$126,081	$37,824	$0	$820
61	Gilbert Road - Baseline Road to Shared-Use Path - US 60 R.O.W.	Bike Lane	3	0.5	3	18	21	$13,492	$134,925	$40,477	$104,000	$3,508
62	South Canal - McKellips Road to Gilbert Road	Shared-Use Path	1	1.1	2	19	21	$26,977	$269,773	$80,932	$53,955	$7,014
63	North Date - Rio Salado Parkway to Country Club Drive	Bike Lane	1	0.6	3	19	22	$15,354	$153,536	$46,061	$30,707	$3,992
64	Stapley Drive - US 60 to Broadway Road	Bike Lane	4	1.5	2	20	22	$149,596	$1,495,955	$448,787	$0	$9,724
65	WAPA Easement - Powerline Easement to Meridian Road	Shared-Use Path	6	2.4	5	17	22	$60,973	$609,726	$182,918	$50,000	$15,853
66	University Drive - Country Club Drive to Extension Road	Bike Lane	1	0.5	5	17	22	$11,958	$119,585	$35,875	$23,917	$3,109
67	University Drive - Robson to Mesa Drive	Bike Lane	4	0.8	5	17	22	$79,714	$797,142	$239,143	$0	$5,181
68	Val Vista Drive - US 60 to Baseline Road	Bike Lane	2	0.6	4	18	22	$14,279	$142,793	$42,838	$58,500	$3,713
69	Higley Road - Southern Avenue to South City Limit	Bike Lane	2	0.6	4	18	22	$15,613	$156,125	$46,838	$31,225	$4,059

Proposed Bicycle Facility Projects

Table 6-2

Priority	Project Location and Description	Facility Type	District	Length	GAP Evaluation	Implementation Criteria Score		Estimated Costs			Estimated ROW Costs	Estimated O&M Costs/yr
					Need Score	Criteria Total Score	Need + Criteria Score	Design	Construction	30% Contengency		
70	Power Road - Loop 202 Red Mountain Freeway to North City Limit	Bike Lane	5	1.5	3	19	22	$38,565	$385,648	$115,694	$ 77,130	$10,027
71	McKellips Road - Country Club Drive to West City Limit	Bike Lane	1	0.5	3	19	22	$12,099	$120,986	$36,296	$ 24,197	$3,146
72	South Canal - Gilbert Road to 24th Street	Shared-Use Path	1	0.5	3	19	22	$12,960	$129,601	$38,880	$25,920	$3,370
73	University Drive - Country Club Drive to Extension Road	Bike Lane	4	0.5	5	18	23	$11,958	$119,585	$35,875	$39,000	$3,109
74	Power Road - McDowell Road to Loop 202 Red Mountain Freeway	Bike Lane	5	0.5	4	19	23	$45,821	$458,212	$137,464	$0	$2,978
75	Stapley Drive - Brown Road to 8th Street/Rio Salado Parkway	Bike Lane	1	0.8	4	19	23	$18,946	$189,456	$56,837	$ 37,891	$4,926
76	South Canal - McDowell Road to Granite Reef Dam	Shared-Use Path	1	7.0	4	19	23	$175,643	$1,756,433	$526,930	$351,287	$45,667
77	24th Street - Consolidated Canal to University Drive	Bike Lane	2	0.8	4	19	23	$20,058	$200,581	$60,174	$40,116	$5,215
78	WAPA Easement - Signal Butte Road to Guadalupe Road	Bike Lane	6	0.8	2	21	23	$19,974	$199,744	$59,923	$45,500	$5,193
79	CAP Canal - Southern Avenue to Meridian Road	Bike Lane	6	0.5	5	18	23	$54,794	$547,938	$164,381	$0	$3,562
80	University Drive - Loop 202 Red Mountain Freeway to Meridian Road	Bike Lane	5	3.1	5	18	23	$78,687	$786,873	$236,062	$ 157,375	$20,459
81	Broadway Road - Loop 202 Red Mountain Freeway to Ellsworth Road	Bike Lane	6	0.4	5	18	23	$10,000	$100,000	$30,000	$20,000	$2,600
82	WAPA Easement - Guadalupe Road to Powerline Easement	Shared-Use Path	6	0.4	5	18	23	$11,032	$110,320	$33,096	$22,064	$2,868
83	McDowell Road - Hawes Road to Ellsworth Road	Bike Lane	5	1.1	4	19	23	$28,504	$285,043	$85,513	$57,009	$7,411
84	Power Road - Baseline Road to Southern Avenue	Bike Lane	6	1.1	4	19	23	$26,863	$268,633	$80,590	$53,727	$6,984
85	McDowell Road - Power Road to Hawes Road	Bike Lane	5	2.0	4	19	23	$196,835	$1,968,345	$590,504	$0	$12,794
86	Val Vista Drive - Adobe Road to Brown Road	Bike Lane	1	0.5	3	20	23	$12,554	$125,540	$37,662	$25,108	$3,264
87	Alma School Road - US 60 R.O.W. to Baseline Road	Bike Lane	3	0.6	3	20	23	$15,009	$150,089	$45,027	$30,018	$3,902
88	Val Vista Drive - Brown Road to McLellan Road	Bike Lane	5	0.5	5	19	24	$12,518	$125,179	$37,554	$25,036	$3,255
89	Signal Butte Road - Guadalupe Road to Baseline Road	Bike Lane	6	1.0	4	20	24	$25,016	$250,156	$75,047	$104,000	$6,504
90	Harris Drive - Consolodated Canal to Main St	Bike Lane	2	0.9	4	20	24	$23,556	$235,563	$70,669	$47,113	$6,125
91	Hampton Avenue - 32nd Street to Consolidated Canal Shared-Use Path	Bike Lane	2	0.4	4	20	24	$8,787	$87,868	$26,360	$17,574	$2,285
92	Baseline Road - Greenfield Road to 48th Street	Bike Lane	2	0.7	3	21	24	$18,133	$181,326	$54,398	$36,265	$4,714

Proposed Bicycle Facility Projects

Table 6-2

Priority	Project Location and Description	Facility Type	District	Length	GAP Evaluation	Implementation Criteria Score		Estimated Costs			Estimated ROW Costs	Estimated O&M Costs/yr
					Need Score	Criteria Total Score	Need + Criteria Score	Design	Construction	30% Contengency		
93	Baseline Road - West City Limit to Horne Road	Bike Lane	3	4.5	5	19	24	$113,603	$1,136,031	$340,809	$ 227,206	$29,537
94	University Drive - Lesueur to Stapley Drive	Bike Lane	1	0.9	5	19	24	$22,200	$221,996	$66,599	$ 44,399	$5,772
95	WAPA Easement - US 60 to Signal Butte	Bike Lane	6	0.8	5	19	24	$19,566	$195,659	$58,698	$ 39,132	$5,087
96	Mesa Drive - McKellips Road to McDowell Road	Bike Lane	1	1.0	5	19	24	$25,858	$258,580	$77,574	$51,716	$6,723
97	Gilbert Road - McDowell Road to Thomas Road	Bike Lane	1	1.1	5	19	24	$28,083	$280,826	$84,248	$56,165	$7,301
98	Ellsworth Road - McLellan Road to McKellips Road	Bike Lane	5	0.6	5	19	24	$13,860	$138,604	$41,581	$27,721	$3,604
99	Southern Avenue - Recker Road to Power Road	Bike Lane	6	1.0	4	20	24	$25,000	$250,000	$75,000	$104,000	$6,500
100	Southern Avenue - Ellsworth Road to CAP Canal	Bike Lane	6	1.4	4	20	24	$35,000	$350,000	$105,000	$71,500	$9,100
101	Signal Butte Road - US 60 to Main Street	Bike Lane	6	1.9	4	20	24	$47,097	$470,973	$141,292	$94,195	$12,245
102	24th Street - Hermosa Vista Drive to University Drive	Bike Lane	1	2.5	4	20	24	$62,918	$629,180	$188,754	$125,836	$16,359
103	24th Street - McDowell Road to Hermosa Vista Road	Bike Lane	1	0.5	4	20	24	$13,037	$130,368	$39,110	$26,074	$3,390
104	Mesa Drive - Baseline Road to US 60	Bike Lane	3	0.5	4	20	24	$13,072	$130,722	$39,217	$26,144	$3,399
105	Harris Drive - 8th Avenue to Main Street	Bike Lane	1	1.0	5	20	25	$81,250	$250,844	$75,253	$162,500	$6,522
106	South Canal - Thomas Road to McDowell Road	Shared-Use Path	5	2.0	5	20	25	$49,957	$499,571	$149,871	$13,000	$12,989
107	Power Road - North City Limit to Granite Reef Dam	Bike Lane	5	1.5	5	20	25	$37,500	$375,000	$112,500	$75,000	$9,750
108	Sossaman Road - US 60 to Inverness Avenue	Bike Lane	6	0.1	5	20	25	$2,810	$28,102	$8,431	$5,620	$731
109	Broadway Road - Ellsworth Road to East City Limit	Bike Lane	5	3.0	5	20	25	$300,000	$3,000,000	$900,000	$0	$19,500
110	WAPA Easement - Broadway Road to US 60	Bike Lane	6	1.5	5	20	25	$147,662	$1,476,619	$442,986	$295,324	$9,598
111	Dobson Road - Guadalupe Road to South City Limit	Bike Lane	3	0.5	5	20	25	$12,289	$122,887	$36,866	$0	$3,195
112	Baseline Road - Lindsay Road to Glenview Avenue	Bike Lane	3	0.2	4	21	25	$5,180	$51,795	$15,539	$10,359	$1,347
113	RWCD Canal - South Canal to Greenfield Road	Shared-Use Path	5	2.5	4	21	25	$63,727	$637,267	$191,180	$127,453	$16,569
114	Country Club Drive - Baseline Road to Western Canal	Bike Lane	3	1.5	5	20	25	$38,017	$380,168	$114,050	$76,034	$9,884
115	Baseline Road - Consolidated Canal Shared-Use Pathway to Lindsay Road	Bike Lane	2	0.2	5	20	25	$6,080	$60,798	$18,239	$12,160	$1,581

Proposed Bicycle Facility Projects

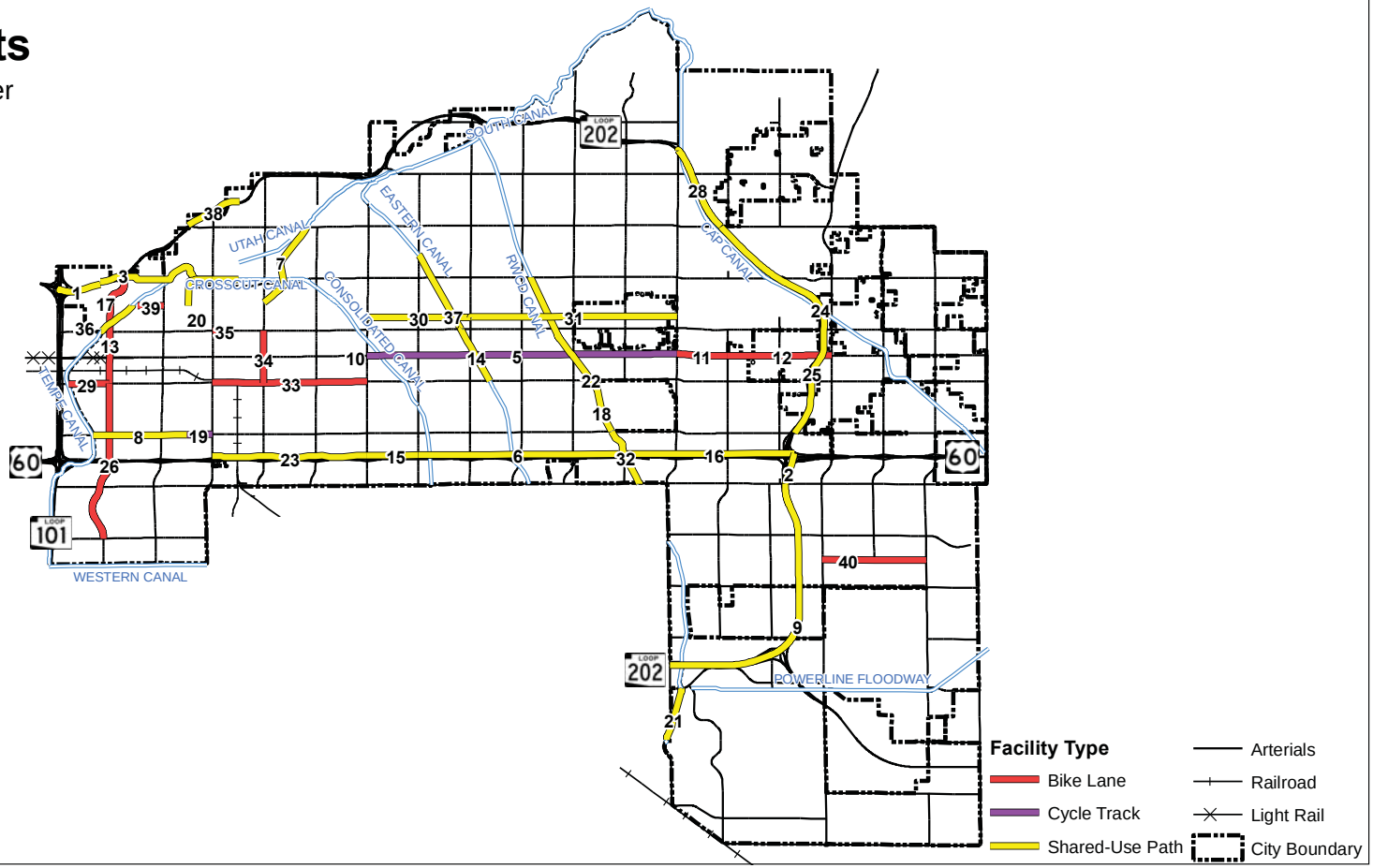
Table 6-2

Priority	Project Location and Description	Facility Type	District	Length	GAP Evaluation	Implementation Criteria Score		Estimated Costs			Estimated ROW Costs	Estimated O&M Costs/yr
					Need Score	Criteria Total Score	Need + Criteria Score	Design	Construction	30% Contengency		
116	Greenfield Road - Southern Avenue to Pueblo Avenue	Bike Lane	2	0.5	5	20	25	$11,852	$118,524	$35,557	$0	$3,082
117	Baseline Road - Higley Road to Recker Road	Bike Lane	2	0.9	4	21	25	$23,071	$230,714	$69,214	$46,143	$5,999
118	Main Street - Crismon Road to Meridian Road	Bike Lane	6	2.0	5	21	26	$50,000	$500,000	$150,000	$ 100,000	$13,000
119	Southern Avenue - Power Road to Hawes Road	Bike Lane	5	2.0	5	21	26	$50,142	$501,416	$150,425	$ 100,283	$13,037
120	Southern Avenue - Hawes Road to Ellsworth Road	Bike Lane	5	1.0	5	21	26	$25,107	$251,065	$75,320	$ 50,213	$6,528
121	Brown Road - 96th Street to Meridian Road	Bike Lane	5	2.5	5	21	26	$250,179	$2,501,787	$750,536	$0	$16,262
122	Signal Butte Road - Main Street to McKellips Road	Bike Lane	5	2.5	4	22	26	$62,548	$625,482	$187,645	$125,096	$16,263
123	32nd Street - Brown Road to University Drive	Bike Lane	1	1.0	4	22	26	$25,177	$251,773	$75,532	$50,355	$6,546
124	40th Street - Brown Road to McLellan Road	Bike Lane	5	0.5	4	22	26	$12,593	$125,929	$37,779	$25,186	$3,274
125	Hawes Road - Brown Road to Las Sendas Mountain Drive	Bike Lane	5	3.8	5	21	26	$94,361	$943,606	$283,082	$97,500	$24,534
126	Sossaman Road - Baseline Road to Guadalupe Road	Bike Lane	6	1.0	5	21	26	$26,209	$262,090	$78,627	$52,418	$6,814
127	Hawes Road - Southern Avenue to Main Street	Bike Lane	5	1.5	5	22	27	$37,503	$375,029	$112,509	$0	$9,751
128	Hawes Road - US 60 to Southern Avenue	Shared-Use Path	6	0.3	5	22	27	$8,466	$84,660	$25,398	$16,932	$2,201
129	Crismon Road - Powerline to Baseline Road	Bike Lane	6	1.5	5	22	27	$36,806	$368,064	$110,419	$73,613	$9,570
130	Guadalupe Road - Signal Butte Road to Meridian Road	Bike Lane	6	0.9	5	22	27	$23,177	$231,773	$69,532	$46,355	$6,026
131	South Canal - McDowell Road to Gilbert Road	Shared-Use Path	5	1.6	5	22	27	$158,148	$1,581,483	$474,445	$0	$10,280
132	Signal Butte Road - Baseline Road to US 60	Shared-Use Path	6	1.1	5	22	27	$27,466	$274,657	$82,397	$54,931	$7,141
133	Signal Butte Road - Pecos Road to Germann Road	Shared-Use Path	6	1.0	5	22	27	$24,959	$249,587	$74,876	$49,917	$6,489

Top 40 Projects

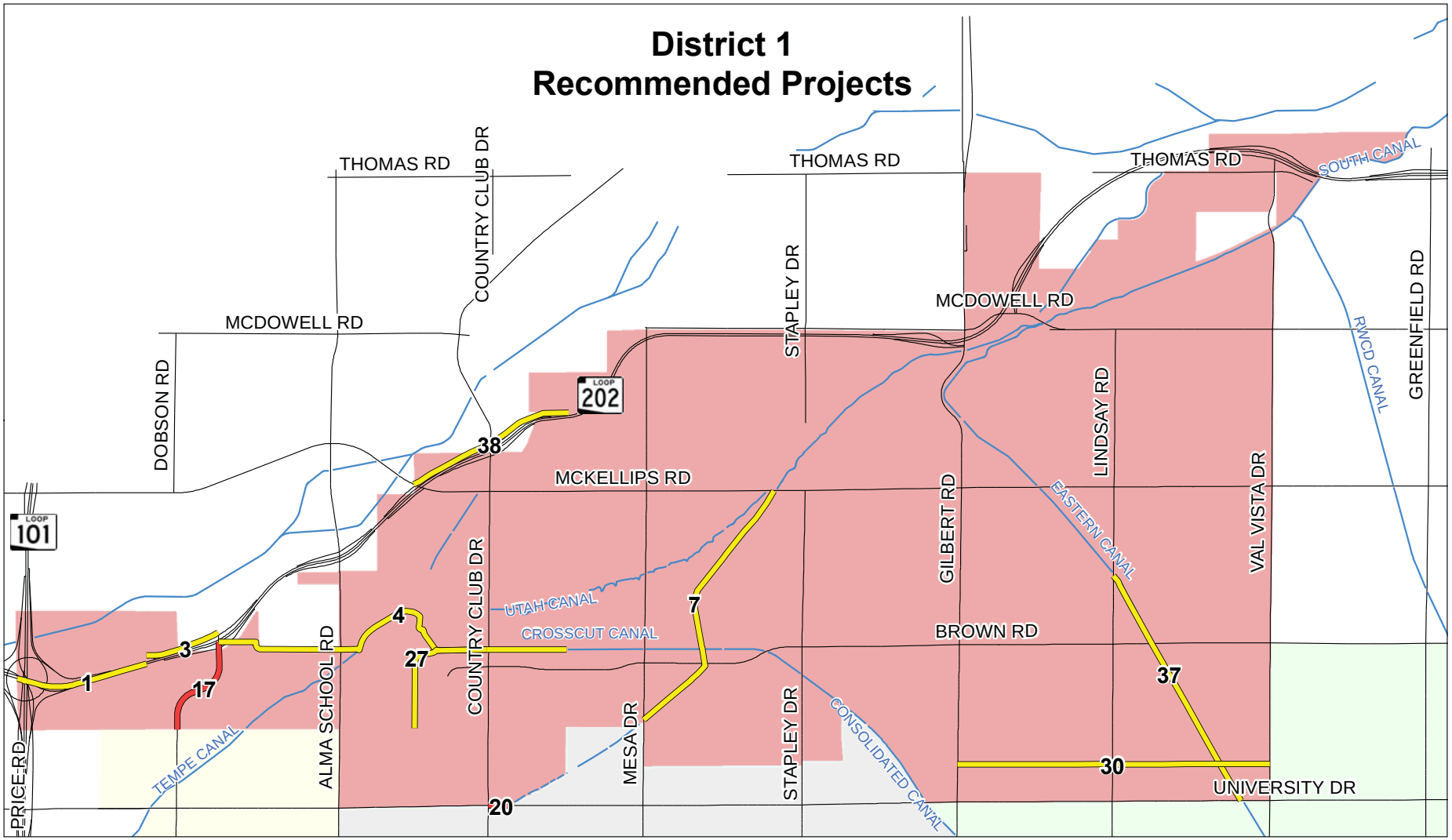
Labeled in Priority Order

Map 6-2



Priority	District	Project Location and Description	Facility Type	Multiple District Project
1	One	Riverview/Rio Salado Pathway - Wrigleyville West to Tempe Rio Salado Pathway	Shared-Use Path	
2	Six	Loop 202 San Tan Freeway R.O.W. - Baseline Road to U.S. 60	Shared-Use Path	
3	One	Riverview/Rio Salado Pathway - Wrigleyville West to Dobson Road	Shared-Use Path	
4	One	West Mesa Connector - Center Street to Dobson Road	Shared-Use Path	
5	Two	Main Street - Consolidated Canal to Power Road	Cycle Track	
6	Two	US 60 R.O.W. - Lindsay Road to Recker Road	Shared-Use Path	
7	One	Porter Park Pathway - Mesa Drive to McKellips Road	Shared-Use Path	
8	Three	Southern Avenue - Extension Road to West City Limit (Fiesta District)	Shared-Use Path	
9	Six	Loop 202 San Tan Freeway R.O.W. - Power Road to Baseline	Shared-Use Path	
10	Four	Main Street - Gilbert Road to the Consolidated Canal	Cycle Track	
11	Five	Main Street - Power Road to Sossaman Road	Bike Lane	
12	Five	Main Street - Sossaman Road to Ellsworth Road	Bike Lane	
13	Three	Dobson Road - Broadway Road to Rio Salado Parkway/8th Street	Bike Lane	
14	Two	Eastern Canal - University Drive to Broadway Road	Shared-Use Path	
15	Three	US 60 R.O.W. - Gilbert Road to Lindsay Road	Shared-Use Path	
16	Six	US 60 R.O.W. - Recker Road to the Loop 202 San Tan Freeway	Shared-Use Path	
17	One	Dobson Road - Rio Salado Parkway to the Loop 202 Red Mountain Freeway	Bike Lane	
18	Two	RWCD/EMF - Broadway Road to Southern Avenue	Shared-Use Path	
19	Four	Southern Avenue - Country Club Drive to Extension Road	Cycle Track	Three
20	One	University Drive - Country Club Drive to Robson	Bike Lane	Four

Priority	District	Project Location and Description	Facility Type	Multiple District Project
21	Six	RWCD/EMF - Ray Road to Williams Field Road	Shared-Use Path	
22	Two	RWCD Canal SUP - Brown Road to Broadway Road	Shared-Use Path	
23	Four	US 60 R.O.W. - Country Club Drive to Gilbert Road	Shared-Use Path	
24	Five	Loop 202 Red Mountain Freeway - McKellips Road to University Drive	Shared-Use Path	
25	Five	Loop 202 Red Mountain Freeway - University Drive to Southern Avenue	Shared-Use Path	
26	Three	Dobson Road - Broadway Road to Guadalupe Road	Bike Lane	
27	One	Utah Canal Connection - Rio Salado Parkway to the West Mesa Connector	Shared-Use Path	
28	Five	Loop 202 Red Mountain /CAP - Power Road to McKellips Road	Shared-Use Path	
29	Three	Broadway Road - Dobson Road to West City Limit	Bike Lane	
30	One	Highline Trail - Gilbert Road to Val Vista Drive	Shared-Use Path	
31	Two	Highline SRP Powerline Easement - Val Vista Drive to Power Road	Shared-Use Path	
32	Two	RWCD/EMF - Southern Avenue to Baseline Road	Shared-Use Path	Six
33	Four	Broadway Road - Country Club Drive to Gilbert Road	Bike Lane	
34	Four	Mesa Drive - Broadway Road to University Drive	Bike Lane	
35	Four	University Drive - Robson to Macdonald	Bike Lane	
36	Three	Tempe Canal - University Drive to Rio Salado Parkway/8th Street	Shared-Use Path	
37	One	Eastern Canal Trail - Lindsay Road to University Drive	Shared-Use Path	
38	One	Salt River Basin - McKellips Road to Center Street	Shared-Use Path	
39	Three	Rio Salado Parkway/8th Street - Longmore Road to Alma School Road	Bike Lane	One
40	Six	Powerline Easement - Ellsworth Road to Signal Butte Road	Bike Lane	

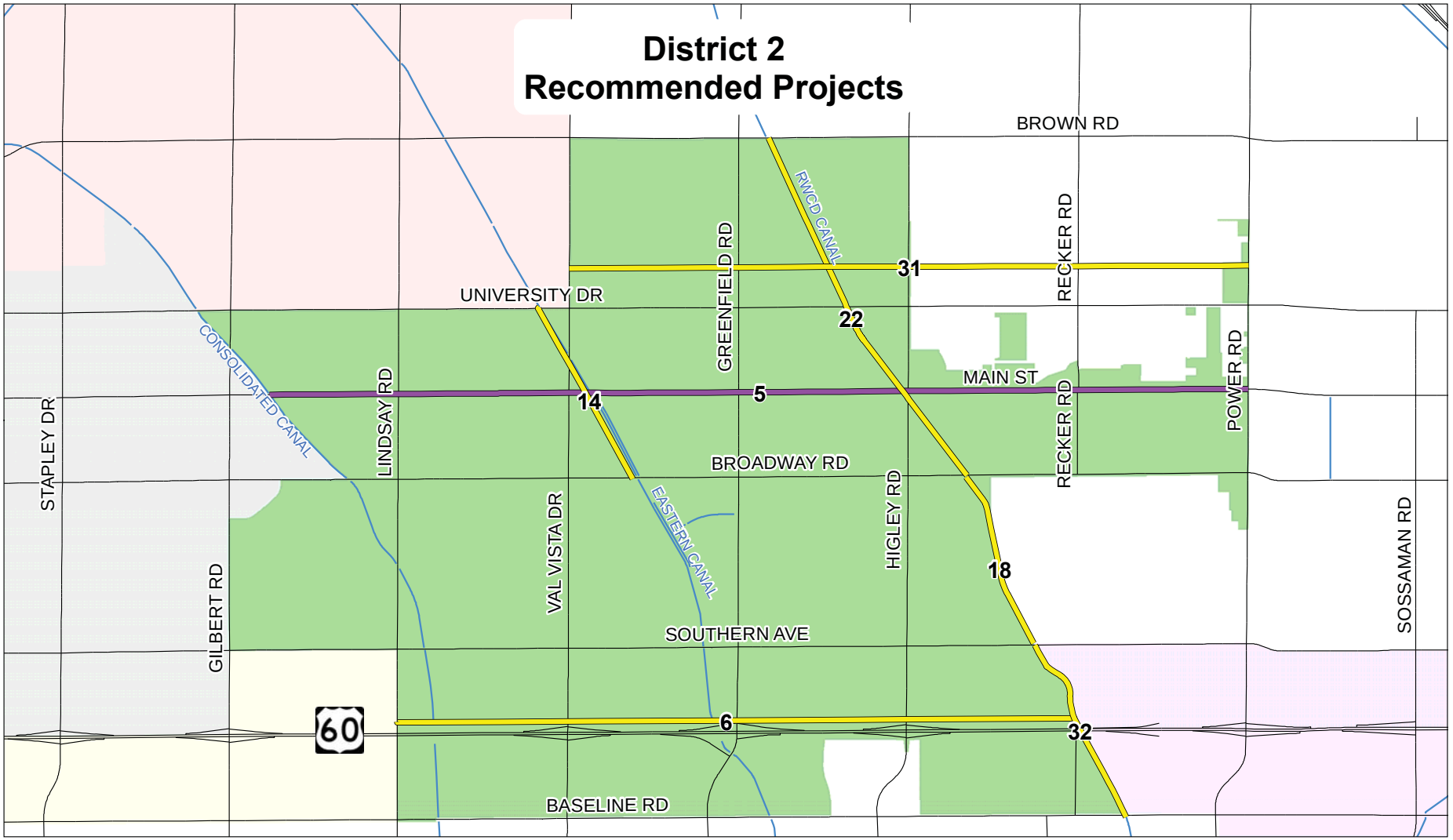


Priority	District	Project Location and Description	Facility Type	Multiple District Project
1	One	Riverview/Rio Salado Pathway - Wrigleyville West to Tempe Rio Salado Pathway	Shared-Use Path	
3	One	Riverview/Rio Salado Pathway - Wrigleyville West to Dobson Road	Shared-Use Path	
4	One	West Mesa Connector - Center Street to Dobson Road	Shared-Use Path	
7	One	Porter Park Pathway - Mesa Drive to McKellips Road	Shared-Use Path	
17	One	Dobson Road - Rio Salado Parkway to the Loop 202 Red Mountain Freeway	Bike Lane	
20	One	University Drive - Country Club Drive to Robson	Bike Lane	Four
27	One	Utah Canal Connection - Rio Salado Parkway to the West Mesa Connector	Shared-Use Path	
30	One	Highline Trail - Gilbert Road to Val Vista Drive	Shared-Use Path	
37	One	Eastern Canal Trail - Lindsay Road to University Drive	Shared-Use Path	
38	One	Salt River Basin - McKellips Road to Center Street	Shared-Use Path	

Facility Type
- Bike Lane
- Shared-Use Path

- DISTRICT 1
- DISTRICT 2
- DISTRICT 3
- DISTRICT 4
- DISTRICT 5
- DISTRICT 6
- Streets
- Railroad
- Light Rail
- Canals

Map 6-3



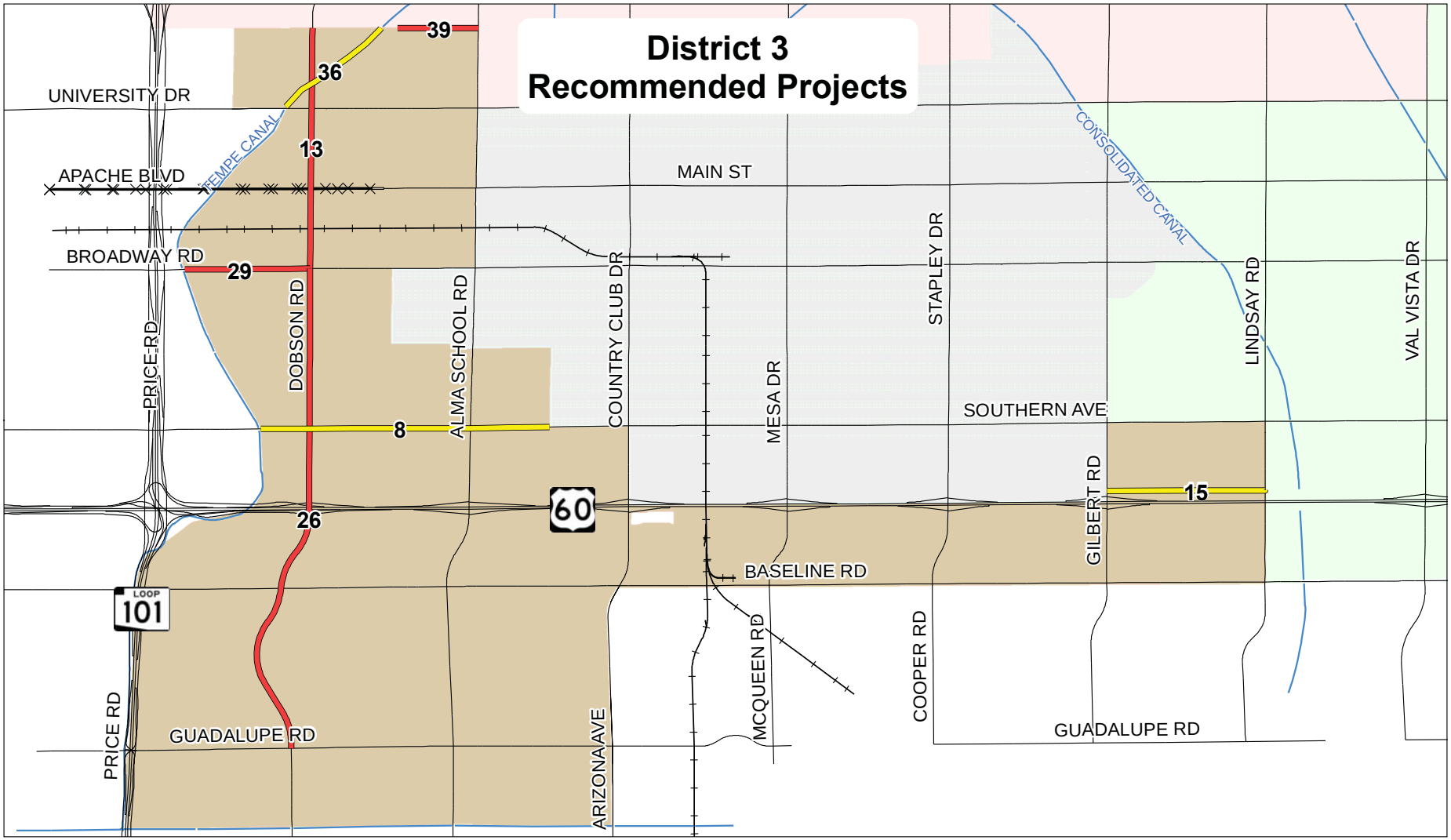
Priority	District	Project Location and Description	Facility Type	Multiple District Project
5	Two	Main Street - Consolidated Canal to Power Road	Cycle Track	
6	Two	US 60 R.O.W. - Lindsay Road to Recker Road	Shared-Use Path	
14	Two	Eastern Canal - University Drive to Broadway Road	Shared-Use Path	
18	Two	RWCD/EMF - Broadway Road to Southern Avenue	Shared-Use Path	
22	Two	RWCD Canal SUP - Brown Road to Broadway Road	Shared-Use Path	
31	Two	Highline SRP Powerline Easement - Val Vista Drive to Power Road	Shared-Use Path	
32	Two	RWCD/EMF - Southern Avenue to Baseline Road	Shared-Use Path	Six

Facility Type

- Cycle Track
- Shared-Use Path

- DISTRICT 1
- DISTRICT 2
- DISTRICT 3
- DISTRICT 4
- DISTRICT 5
- DISTRICT 6
- Streets
- Railroad
- Light Rail
- Canals

Map 6-4

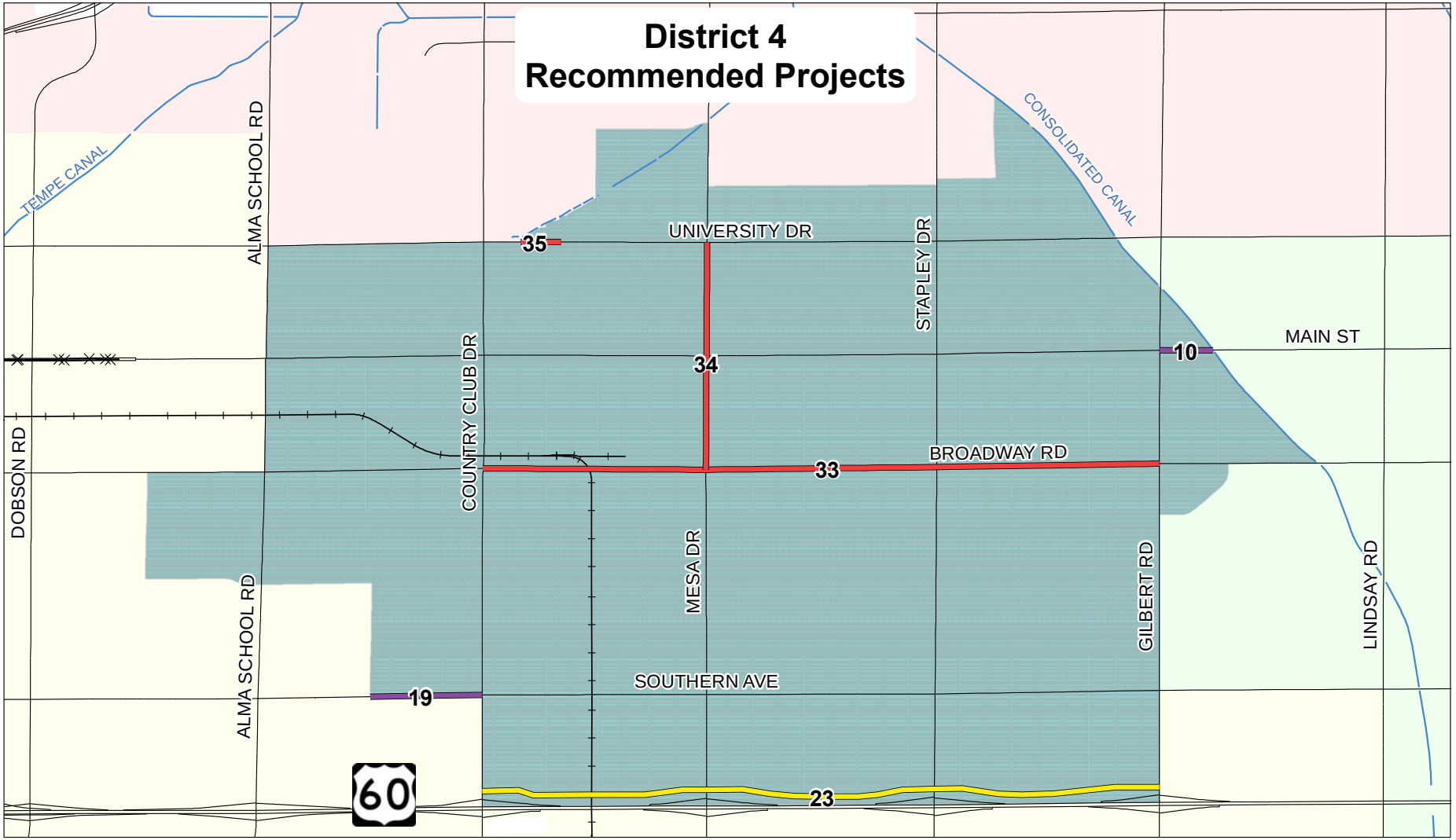


Priority	District	Project Location and Description	Facility Type	Multiple District Project
8	Three	Southern Avenue - Extension Road to West City Limit (Fiesta District)	Shared-Use Path	
13	Three	Dobson Road - Broadway Road to Rio Salado Parkway/8th Street	Bike Lane	
15	Three	US 60 R.O.W. - Gilbert Road to Lindsay Road	Shared-Use Path	
26	Three	Dobson Road - Broadway Road to Guadalupe Road	Bike Lane	
29	Three	Broadway Road - Dobson Road to West City Limit	Bike Lane	
36	Three	Tempe Canal - University Drive to Rio Salado Parkway/8th Street	Shared-Use Path	
39	Three	Rio Salado Parkway/8th Street - Longmore Road to Alma School Road	Bike Lane	One

Facility Type
- Bike Lane
- Shared-Use Path

- DISTRICT 1
- DISTRICT 2
- DISTRICT 3
- DISTRICT 4
- DISTRICT 5
- DISTRICT 6
- Streets
- Railroad
- Light Rail
- Canals

Map 6-5



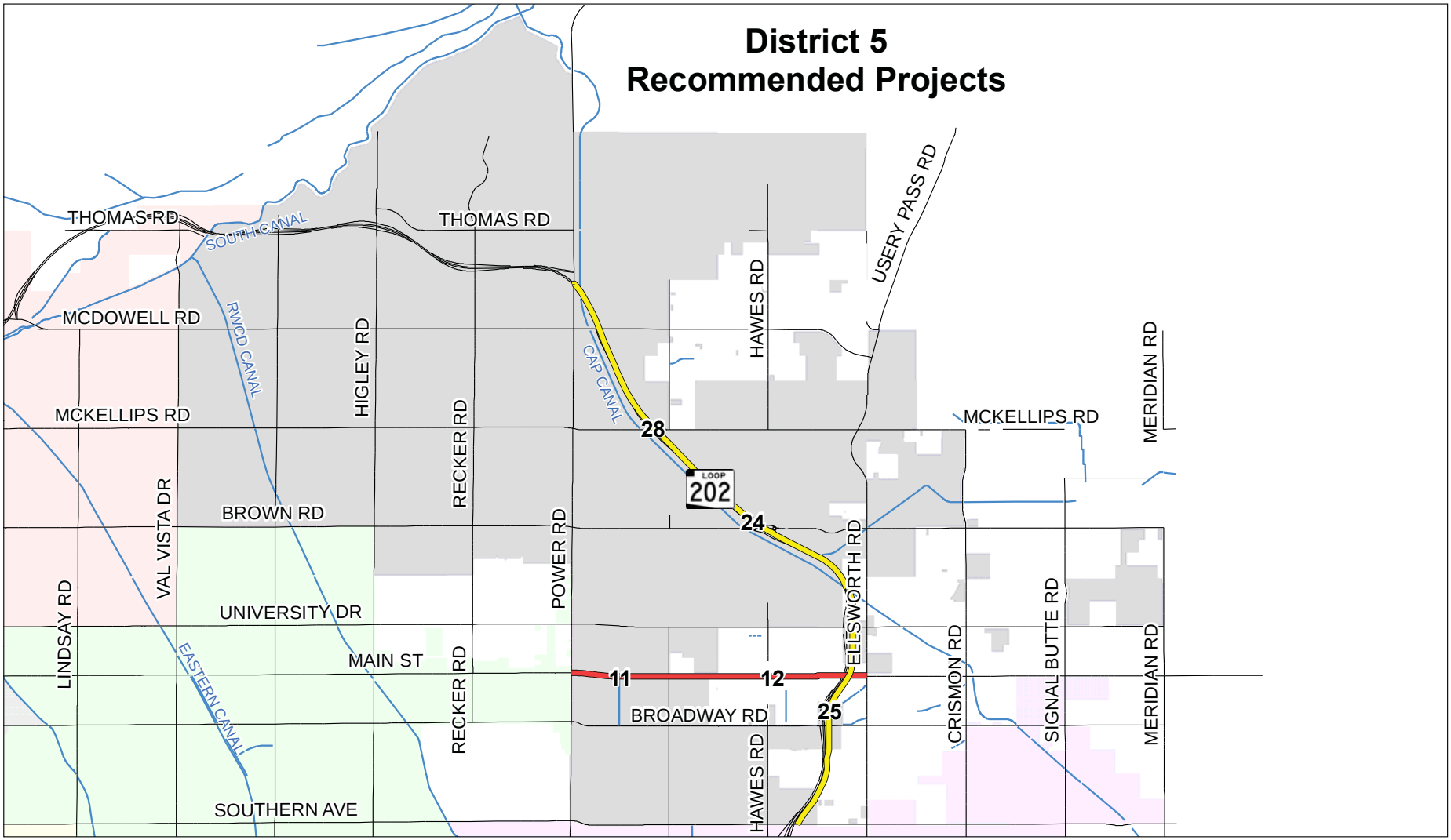
Priority	District	Project Location and Description	Facility Type	Multiple District Project
10	Four	Main Street - Gilbert Road to the Consolidated Canal	Cycle Track	
19	Four	Southern Avenue - Country Club Drive to Extension Road	Cycle Track	Three
23	Four	US 60 R.O.W. - Country Club Drive to Gilbert Road	Shared-Use Path	
33	Four	Broadway Road - Country Club Drive to Gilbert Road	Bike Lane	
34	Four	Mesa Drive - Broadway Road to University Drive	Bike Lane	
35	Four	University Drive - Robson to Macdonald	Bike Lane	

Facility Type
- Bike Lane
- Cycle Track
- Shared-Use Path

- DISTRICT 1
- DISTRICT 2
- DISTRICT 3
- DISTRICT 4
- DISTRICT 5
- DISTRICT 6

- Streets
- Railroad
- Light Rail
- Canals

Map 6-6



Priority	District	Project Location and Description	Facility Type	Multiple District Project
11	Five	Main Street - Power Road to Sossaman Road	Bike Lane	
12	Five	Main Street - Sossaman Road to Ellsworth Road	Bike Lane	
24	Five	Loop 202 Red Mountain Freeway - McKellips Road to University Drive	Shared-Use Path	
25	Five	Loop 202 Red Mountain Freeway - University Drive to Southern Avenue	Shared-Use Path	
28	Five	Loop 202 Red Mountain /CAP - Power Road to McKellips Road	Shared-Use Path	

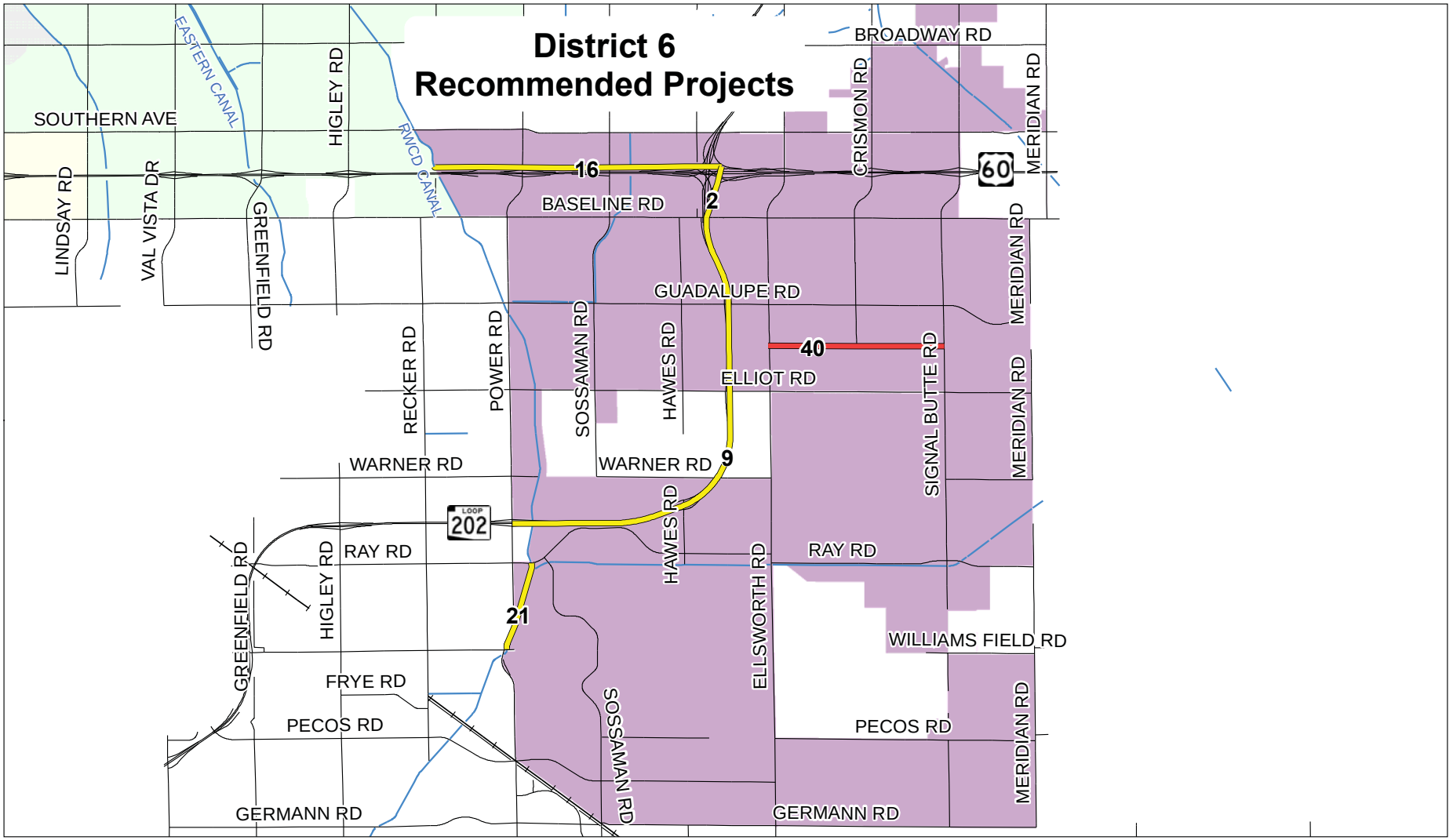
Facility Type

- Bike Lane
- Shared-Use Path

- DISTRICT 1
- DISTRICT 2
- DISTRICT 3
- DISTRICT 4
- DISTRICT 5
- DISTRICT 6

- Streets
- Railroad
- Light Rail
- Canals

Map 6-7



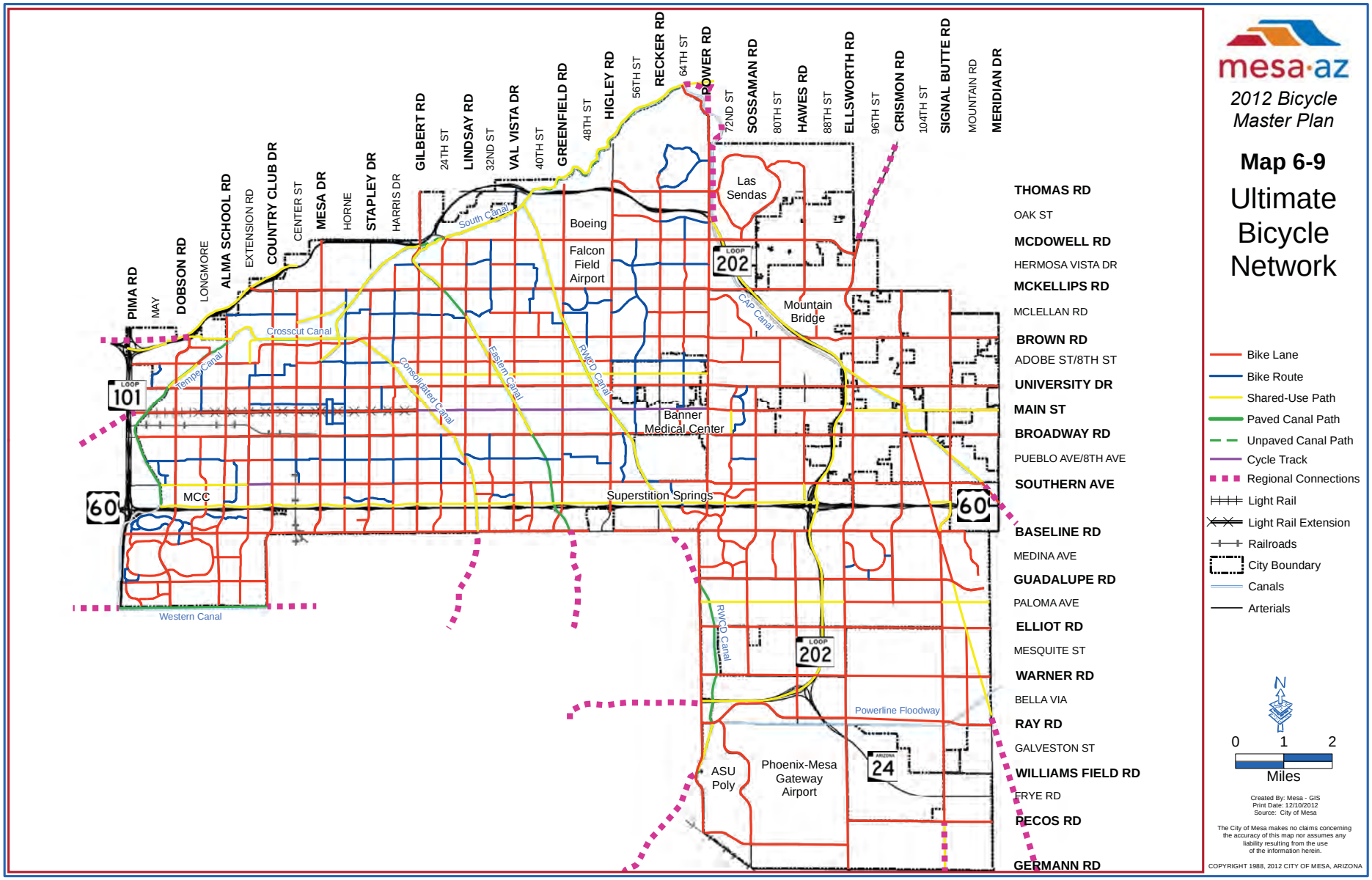
Priority	District	Project Location and Description	Facility Type	Multiple District Project
2	Six	Loop 202 San Tan Freeway R.O.W. - Baseline Road to U.S. 60	Shared-Use Path	
9	Six	Loop 202 San Tan Freeway R.O.W. - Power Road to Baseline	Shared-Use Path	
16	Six	US 60 R.O.W. - Recker Road to the Loop 202 San Tan Freeway	Shared-Use Path	
21	Six	RWCD/EMF - Ray Road to Williams Field Road	Shared-Use Path	
40	Six	Powerline Easement - Ellsworth Road to Signal Butte Road	Bike Lane	

Facility Type
- Bike Lane
- Shared-Use Path

- DISTRICT 1
- DISTRICT 2
- DISTRICT 3
- DISTRICT 4
- DISTRICT 5
- DISTRICT 6

- Streets
- Railroad
- Light Rail
- Canals

Map 6-8


PIMA RD
MAY
DOBSON RD
LONGMORE
ALMA SCHOOL RD
EXTENSION RD
COUNTRY CLUB DR
CENTER ST
MESA DR
HORNE
STAPLEY DR
HARRIS DR
GILBERT RD
24TH ST
LINDSAY RD
32ND ST
VAL VISTA DR
40TH ST
GREENFIELD RD
48TH ST
HIGLEY RD
56TH ST
RECKER RD
64TH ST
POWER RD
72ND ST
SOSSAMAN RD
80TH ST
HAWES RD
88TH ST
ELLSWORTH RD
96TH ST
CRISMON RD
104TH ST
SIGNAL BUTTE RD
MOUNTAIN RD
MERIDIAN DR
THOMAS RD
OAK ST
MCDOWELL RD
HERMOSA VISTA DR
MCKELLIPS RD
MCLELLAN RD
BROWN RD
ADOBE ST/8TH ST
UNIVERSITY DR
MAIN ST
BROADWAY RD
PUEBLO AVE/8TH AVE
SOUTHERN AVE
BASELINE RD
MEDINA AVE
GUADALUPE RD
PALOMA AVE
ELLIOT RD
MESQUITE ST
WARNER RD
BELLA VIA
RAY RD
GALVESTON ST
WILLIAMS FIELD RD
FRYE RD
PECOS RD
GERMANN RD
Las Sendas
Boeing
Falcon Field Airport
Mountain Bridge
Banner Medical Center
Superstition Springs
MCC
ASU Poly
Phoenix-Mesa Gateway Airport
South Canal
Crosscut Canal
Tempe Canal
Consolidated Canal
Eastern Canal
RWCD Canal
CAP Canal
Western Canal
Powerline Floodway
LOOP 101
LOOP 202
60
24
mesa·az
2012 Bicycle Master Plan
Map 6-9
Ultimate Bicycle Network
Bike Lane
Bike Route
Shared-Use Path
Paved Canal Path
Unpaved Canal Path
Cycle Track
Regional Connections
Light Rail
Light Rail Extension
Railroads
City Boundary
Canals
Arterials
N
0 1 2
Miles
Created By: Mesa - GIS
Print Date: 12/10/2012
Source: City of Mesa
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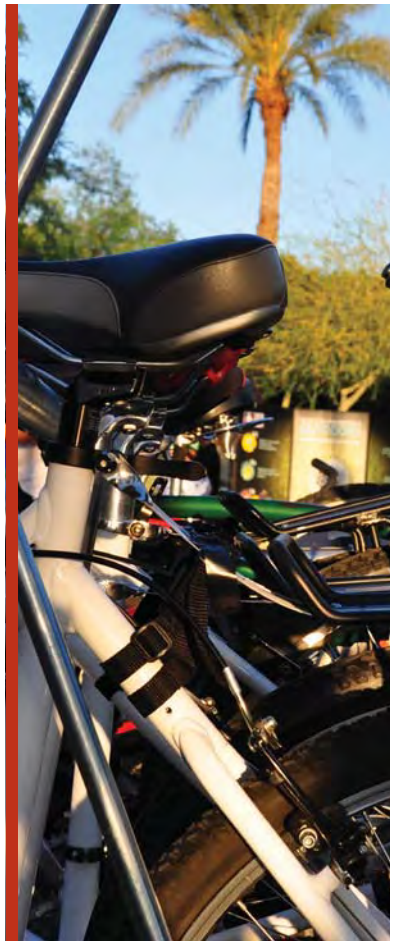


RECOMMENDATIONS FOR PROGRAM EXPANSION

This section explains the expansion of Bicycle Programs that will be developed in direct correlation to the Goals and Objectives that were outlined in Chapter Two of this Master Plan. Along with these programs and the implementation of the facilities that were previously discussed in this chapter, the City of Mesa will continue to align itself with the objectives and standards that have been set forth by the League of American Bicyclists Bicycle Friendly Communities Program. The objectives for programs discussed in this chapter are listed in Table 6-3.

TRANSPORTATION ADVISORY BOARD – BICYCLE ELEMENT

The Transportation Advisory Board is an 11 member board of civic-minded citizens wishing to become involved in their local government and make recommendations to the Mesa City Council. This board meets monthly to oversee and make recommendations to the Mayor and City Council regarding transportation-related issues and policies involving multiple modes of transportation, including bicycling.

Role of the Transportation Advisory Board on bicycling includes:

- Advise the City Council on bicycle policy issues.
- Interact with citizens on bicycle issues and mediate when necessary.
- Act as a sounding board for staff on bicycle operational matters.
- Be knowledgeable about the benefits bicycling provides within a community.
- Be ongoing citizen/neighborhood contact within member's area of influence and liaison to staff.
- View issues from a "big picture" and "greater good" perspective.
- Be a cheerleader for bicycling in the community.

PROGRAMS FOR ADULT BICYCLISTS

The City of Mesa will be incorporating a citywide adult education program in coordination with the Maricopa Association of Governments (MAG) and the Arizona Coalition of Bicyclist through federal funding secured by the Regional Bicycle and Pedestrian Committee. This program will be offered free of charge. The curriculum will follow the League of American Bicyclists "Smart Cycling" Traffic Skills course set, which will be taught by League of American Bicyclists certified instructors. These adult education classes will be offered throughout the City as a combined effort between the City of Mesa Parks, Recreation, and Commercial Facilities Department and Transportation Department.

BICYCLE DIVERSION PROGRAM

Institution of bicycle diversion classes will be pursued by the City of Mesa Bicycle Program in coordination with the City of Mesa Police Department and Municipal Court. A bicycle offender diversion program must be established in the current system. Specific details of the program and its administration have yet to be developed, but it will be modeled on the program that allows drivers with certain traffic citations to attend traffic school in lieu of paying a fine, and prevents the traffic offense from appearing on the driver's record.

Those receiving citations pertaining to a bicyclist's responsibility and rules of the road would be eligible for the program. Riding at night without lights, wrong way riding, standard traffic violations (failure to stop at a red light or stop sign), and riding under the influence are some of the violations for which cyclists may be eligible for a diversion program.

SAFE ROUTES TO SCHOOL

Through efforts to continually expand and enhance the current City of Mesa Safe Routes to School (SRTS) program, the following will be addressed:

- Creation of a new vision statement for City staff that will outline the direction and proposed advancement of the SRTS program strategies related to engineering, enforcement, education, encouragement, and evaluation.
- The addition of new programs in schools with walking and bicycling students.
- Established SRTS programs with champions in place will continue to be supported, but will be encouraged to be self-sustaining.
- Additional schools will be added each year to International Walk to School Day.
- Additional schools will be added to Valley Bike Month Bicycle to School Day events.

BICYCLE MEDIA CAMPAIGN

Delivering information promoting the Bicycle Program is vital for the bicycle program to thrive in the public eye.

The key elements of the media campaign will facilitate strategic communications designed to identify a variety of opportunities and challenges for the City of Mesa Bicycle Program through the MyMesa Smart Phone app. Identifying, highlighting and celebrating the accomplishments of the bicycle program are imperative. Fortunately, numerous successes do exist, and very exciting projects, programs, and events are happening throughout the year. The campaign will include consistent messages explaining how the bicycle program works and highlighting accomplishments.

BICYCLE TOURISM PACKET

The Mesa Convention & Visitors Bureau (Mesa CVB) supports the City of Mesa in on-going efforts to boost the City's presence as a bicycle-friendly community. The Mesa CVB sees value in helping to build the City's reputation and promote Mesa as a destination and a cycling community.

The Mesa CVB supports those efforts through:

- Communications
- Media and Promotions
- Online and Email Marketing
- Advertising
- Mesa Sports & Tourism Development

The Mesa CVB also attends several trade shows and sports industry events where they market Mesa as a destination suitable for bicycle-related sporting competitions.

Proposed Bicycle Programs

Citywide

Program and Description	Objective One	Objective Two	Objective Three	Objective Four
Adult Education - Establish an adult education program utilizing League of American Bicyclist Cirriculum to be administered Citywide	Scope of work	Set course curriculum	Set up course schedule and registration proceedure	Purchase class materials
Diversion Program - Program that would be instituted to provide an educational alternative to traffic offenders of bicycle related offenses.	Feasability study	Set legal process for diversion classes	Determine managing Department and Assign Duties	Institute program
Safe Routes to School Program - Creation of a new vision statement that will outline the direction and proposed advancement with the SRTS program	Re-evaluate Mesa's goals for SRTS and determine pilot schools for first 3 years	Create agreements with schools chosen to participate. Notify parents by including information about the program	Meet with the principal and teachers at the beginning of the year to plan in-classroom activities for the year	Institute program
Bicycle Media Campaign - Establish a consistent message explaining how the Bicycle Program works and what it has accomplished, deliver information vital for the Bicycle Program to thrive in the public eye.	Establish campaign goals and objectives	Launch MesaRides! facebook page, program webpage, and public service announcment campaign		
Bicycle Tourism Campaign - Establish an effective tourism campaign that will effectively promote Mesa as a bicycling destination and encourage travel to Mesa for bicycling.	Establish campaign goals and objectives	City of Mesa Tourism Center will provide the tourism coordination and oversight		

Table 6-3

BICYCLE ANNUAL REPORT

The City of Mesa bicycle program annual report will be presented to the Transportation Advisory Board and be made available each year during the life of this Bicycle Master Plan. The report may include the following:

- Infrastructure project updates
- Street maintenance improvements affecting the bicycle program
- Program updates
- Bike Month events
- Special events supported
- Adult education efforts
- Child education efforts
- Bicycle counts
- Customer satisfaction survey results
- Trip reduction and mode share reports

ADDITIONAL STAFF REQUIREMENTS

The implementation of these platforms into the City of Mesa bicycle program will require additional staff to implement and prevent the reduction in productivity and efficiency of the program. Additional staff will be assigned specific duties in each of the areas discussed in this chapter including but not limited to education, Safe Routes to School, enforcement, and promotion of the Bicycle Program. By providing staff who specialize in each of the program areas the City will ensure that it is in on par with other Cities of similar size and is effectively progressing towards its goal of Bicycle Friendly Community "Platinum" status.

PERFORMANCE MEASUREMENT

Performance measures and benchmarks fall under five major categories, which are used to gather and evaluate information that will be utilized to guide future decisions regarding expansion and funding. These five major categories include:

1) Measuring Mode Share

U.S. Census Bureau, 2009 American Community Survey (ACS) data as shown in Figure 6-2, identifies Mesa's current bicycle mode share as of 2009 to be 0.9%, which is well above the current national average of 0.38%. Mesa's Bicycle Master Plan lays out a vision that intends to increase bicycle trips to work and school mode share to 5% within the life of the plan. Annual data will be collected to monitor mode share progression through the development of local annual surveys that will be distributed in the City utility bill insert "Openline" and the continuation of data collection from the ACS.

2) Network Evaluation and Asset Management

Evaluation of Mesa's bicycle network is approached in three ways to provide a comprehensive overview of assets and facilities managed by the City of Mesa Transportation Department. This evaluation is imperative to the success of the program and offers a fiscal analysis for purposes of budgeting justification.

The three areas that assess the network are:

a. Asset Inventory — Successful inventory management of bicycle facilities is vital to fulfilling Mesa's multi-modal mission. Establishing, inventorying, operating, and maintaining assets of Mesa's bicycle program will maintain an up-to-date account of bicycle facilities.

b. Facility Condition — Ongoing evaluation of bicycle facilities will take place to maintain favorable conditions for users to ensure they are not discouraged by unserviceable and/or unclean conditions.

c. Usage — This measurement is key for assessing the bicycle network. Annual screen-line counts and user surveys of off-street facilities in conjunction with counts conducted on-street can provide verification of several determining factors of the network including connectivity, cleanliness, security, and user friendliness.

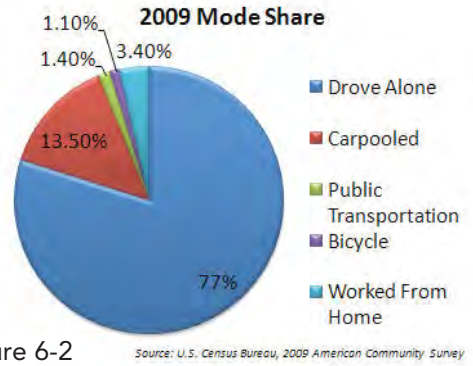
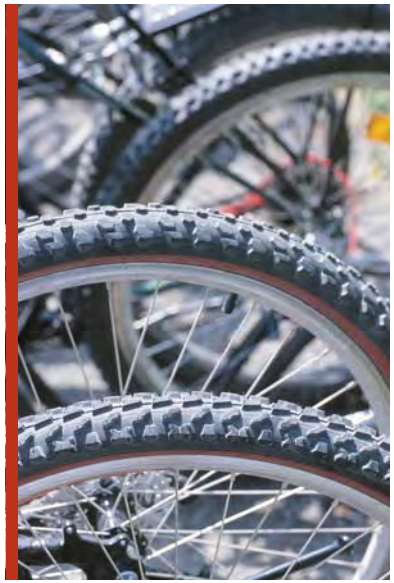


Figure 6-2

3) Assessing Feedback and Reporting Achievements

The continued improvement and creation of new assessment techniques contributes to cutting-edge bicycle program analysis. Mesa works to incorporate innovative new bicycle assessment tools that will help Mesa's analysis of its bicycle infrastructure. Mesa's bicycle data also contributes to regional, state, and national research on bicycle movement and usage. Following are assessment and reporting tools being developed pertaining to infrastructure and the use of bicycle facilities, as well as programs planned to be instituted by the City of Mesa.



INFRASTRUCTURE AND FACILITY USAGE ASSESSMENT TOOLS

Bike Counts

Bicycle and pedestrian usage of specific intersections and screen line locations throughout the City will be counted and documented, similar to the National Documentation Project. Just like motor vehicle counts, counting bicyclists and pedestrians at specific locations will help Mesa to more accurately estimate demand, measure the benefits of investments, and design projects.

By developing and conducting bicycle counts throughout Mesa utilizing automated and volunteer counters, baseline usage will effectively track the positive benefits of investments made to bicycle infrastructure compared to the other transportation modes. These bicycle counts will be published in a Bicycle and Pedestrian Annual Report that will be presented to the Transportation Advisory Board and made available to the general public.

With the increasing need to provide tools that measure performance and provide information indicating an increase in mode shift and air quality, the City of Mesa plans to institute manual counts and a number of automated counters. These counters will produce data needed to substantiate the federal funding and justify investment decisions, which are going to be the focus of upcoming grant opportunities.

The City will use a combination of available technologies which include:

- Manual Counts
- Video Recording and Replay
- Passive or Active Infrared
- Inductive Loops

The product of these count stations will provide the City with automated raw data that will be utilized for prioritization and trend analysis that will provide a snapshot of before-and-after studies for project types and locations.

By operating count stations staff will be able to:

- Prioritize work on facilities by usage
- Evaluate use of facilities over time
- Justify investments
- Understand user circulation patterns
- Modify infrastructure according to need
- Measure usage of a specific facility
- Assess the impacts of an investment
- Plan maintenance priorities
- Monitor seasonal variations
- Evaluate the impact of new facilities

The City of Mesa Bicycle Program is working in cooperation with the Maricopa Association of Governments and the partnering agencies to develop a uniform process that will be used throughout the region to incorporate the bicycle count information obtained into the current MAG traffic demand model (TDM).

Annual Satisfaction Surveys

Every year Mesa will set goals to increase user satisfaction of bicycle facilities throughout the City. The information Mesa gathers will measure high level relationships with users and will draw attention to areas where Mesa needs to focus more attention.

Annual Customer Satisfaction Surveys will be conducted via the Internet allowing staff to collect feedback from users citywide each fiscal year. Information collected through these annual satisfaction surveys will then be compiled, analyzed, and published in a Bicycle and Pedestrian Annual Report that will be presented to the Bicycle Advisory Committee and made available to the general public.

Interactive User Reporting of Maintenance Issues

Bicycle issues regarding on-street bike lane maintenance, shared use paths, danger areas, and end of line facility concerns at public buildings and transit centers will be able to be reported immediately utilizing the "MyMesa" smart phone app. Users will be able to select from a list of different issues related to bicycling along with a variety of issues that currently include graffiti, potholes, street sweeping, and a number of other areas that may need attention. The "MyMesa" app guides the user through a few questions about the item being reported and then prompts the user to take a picture to submit along with the request. The "MyMesa" app also automatically collects the location of the request using the smart phones' built in GPS so crews can be dispatched to the exact location.

BICYCLE PROGRAM ASSESSMENT TOOLS

Class Registration and Attendance

Percent of capacity for bicycle and pedestrian programs will be based on actual registered participants compared to maximum number allowed in each program. Programs offered will be measured through the above described protocol and will have a target of 80% annually. This measurement tool will be compiled and presented in the Bicycle and Pedestrian Annual Report.

Satisfaction Surveys Distributed to Class Attendees

At the completion of each class, instructors will conduct a survey that will help measure the satisfaction and understanding of materials utilized in order to maintain quality assurance of each curriculum. Customers will be given a survey regarding their satisfaction with the class, with a target of 90% satisfaction rate annually for all classes provided.

Trip Reduction and Mode Share Increase

Over time, one long-term measurement that is provided by US Census data and contributed to League of American Bicyclists Bicycle Friendly Community (BFC) Status is increased mode share. Currently, Mesa's mode share is 0.9%, which has been one of the determining factors awarding the City BFC Bronze level status. Over the life of this plan, mode share will be evaluated on an annual basis through trip reduction reported by Maricopa County Trip Reduction Survey reports. The Maricopa County Air Quality Department is a regulatory agency whose goal is to ensure that federal clean air standards are achieved. The Maricopa County Air Quality Department is governed by the Maricopa County Board of Supervisors and follows air quality

standards set forth by the federal Clean Air Act.

The data that is collected by the Maricopa County Air Quality Department will be compiled by the City of Mesa and reported to the Transportation Advisory Board in the Bicycle and Pedestrian Annual Report. Mesa's goal for mode share will run in line with the goal of BFC Gold level status with a target of 4.0% by the year 2020 and 5.0% by the year 2022.

4) Measuring Accident Reduction and Safety

Bicycle crash rates directly reflect bicycle safety. Mesa has been measuring and analyzing bicycle accidents for many years. When analyzing bicycle related accidents, Mesa measures those crashes annually, tracking crashes involving bicycles and motor vehicles identified in Police Accident Reports (PARs) investigated and reported by the City of Mesa Police Department.

The purpose of analyzing bicycle crashes is to better understand the underlying causes of collisions between bicycles and motor vehicles. Analysis of the crashes reveals facts about the types of streets where crashes happened, behavior of bicyclists and motorists that caused the crashes, the times of day and year crashes occur, and age and gender of bicyclists involved in bicycle/motor vehicle collisions. Once an understanding of the root causes of bicycle crashes is gained, the Transportation Department can do further analysis to determine if the traffic environment in the City of Mesa can be made safer for bicyclists. Analysis of bicycle crashes also helps in developing appropriate messages for educating the public on safer bicycling habits and how bicyclists and motorists can best share the streets in the City of Mesa.

The number of bicycle crashes has fluctuated over the past five years. Crashes are normalized by looking at how many bicycle crashes occur per every 1,000 people in Mesa's population in a given year. Normalization puts into perspective an increase or decrease in the number of bicycle crashes when there is a concurrent rise in the number of drivers, cyclists and automobiles due to population growth.

These reports are conducted annually and can be reviewed at:

http://www.mesaaz.gov/transportation/

Bicycle Related Police Citations

Citations related to bicycles issued to either bicyclists or motorists will be reviewed on an annual basis through the bicycle diversion program that the City is considering offering as described previously. Violators would have the option to enroll in a League of American Bicyclists certified four hour bicycle safety education course in lieu of a fine and including the benefit of having those charges dismissed from the violator's record one time per 12-month period. By reviewing court records we are able to retrieve information about how many overall bicycle related citations were issued for any given year and the percentage of those citations that were deferred to diversion classes and how many elected to pay the citation. By retrieving these numbers we can not only analyze how many citations related to bicycles are being written, but also the geographic locations of those citations.

5) Funding Acquisition

The Bicycle Program is continually searching for funding avenues for projects in the City of Mesa. Completion of Mesa's implementation plan will be dependent on the ability of the City to identify and obtain funding and provide staffing to manage and implement each of the items included in the implementation strategy. Mesa receives the majority of its funding opportunity information through MAG and ADOT, which are the administrators of several federal grants that are offered in the region. Periodically, funding opportunities become available through professional associations such as the League of American Bicyclists, the Association of Pedestrian and Bicycle Professionals and Pro Bike/Pro Walk that administer grant monies that are donated to these non-profit agencies for the betterment of walking and bicycling in America.

Until recently the primary federal source from which Mesa received surface transportation funding, which includes bicycle facilities, was SAFETEA-LU, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users. The $286.5 billion SAFETEA-LU bill passed in 2005 and authorized Federal surface transportation programs for the five-year period between 2005 and 2009. As of September 30, 2009, SAFETEA-LU expired, although the bill's programs have been kept alive at a 30% reduction in funding by Congress through a series of continuing resolutions. Administration of SAFETEA-LU funding occurs through the State (ADOT) and through (MAG) regional planning agency.

Beginning on October 1, 2012 "Moving Ahead for Progress in the 21st Century" (MAP-21) replaces SAFETEA-LU. MAP-21 will modernize and reform our current transportation system to help create jobs, accelerate economic recovery, and build the foundation for long-term prosperity.

Specific funding programs under MAP-21 include, but are not limited to, the following programs:

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

Congestion Mitigation and Air Quality improvement funds are programmed for projects likely to contribute to the attainment of a national ambient air quality standards and reduce congestion. The funds can be used for construction projects or for other projects related to bicycling such as maps and educational materials. The MAG Regional Transportation Plan dedicates 17% of MAG CMAQ funding for bicycle pedestrian project costs at a maximum 70% federal funding rate with a 30% local contribution.

Safe Routes to School (SRTS) Program

The Safe Routes to School (SRTS) Program came into effect in August, 2005. Consistent with other federal-aid programs, the Arizona Department of Transportation (ADOT) is responsible for the development and implementation of grant funds made available to the states through this program. Seventy percent of each year's appointed funds are made available for infrastructure projects and up to 30 percent for non-infrastructure projects.

Transportation, Community and System Preservation Program (TCSP)

TCSP Program grants are intended to provide financial resources to carry out activities that address transportation efficiency while meeting community preservation and environmental goals.

Transportation Enhancement (TE) Activities

Transportation Enhancement (TE) Activities are a subset of the federal Surface Transportation Program. TE funds aim to help expand travel choices and enhance the transportation experience. Bicycle facilities and the provision of bicycle safety and educational activities are eligible under these activities.

MAG Design Assistance (DA) Program

The MAG Design Assistance Program was originated in 1996 to encourage the development of designs for pedestrian facilities according to the MAG Pedestrian Policies and Design Guidelines. In 2006, MAG initiated the Bicycle Facilities Design program encouraging MAG members and private sector professionals involved in transportation and land use design to utilize the AASHTO Guide for the Development of Bicycle Facilities.

Economic Vitality and Flexibility

With the current fluctuation in the US economy, Mesa is approaching bicycle and pedestrian design and construction with the point of view that future funding to support bicycle facility development may be limited, or not readily accessible, depending on political climate and economic stability. The availability of funding will significantly affect Mesa's future bicycle network, facilities, and program development. Therefore Mesa is making every effort to prioritize projects and programs in this plan to ensure that if and when funding becomes available, the City is prepared to effectively and efficiently compete and advance those projects for that funding.

SUMMARY

This final chapter of the City of Mesa Bicycle Master Plan presented an implementation strategy to build out the bicycle network and program for the future. In a way, this vision is the culmination of everything the bike plan has delivered – addressing goals and objectives, implementing education, encouragement and enforcement, improving facilities and building the network, and finally, laying out a plan for continuous evaluation once the Plan is adopted. Chapter Five established a raw map of gaps in the bike network across the entire City. That chapter also developed a methodology to prioritize the missing segments. Chapter Six continued the process by developing another layer of prioritization through implementation criteria. Finally, an attempt was made to show funding requirements for each project so they can be considered realistically in future budgets. By following the strategy for building the network and programs as suggested in this chapter, the City of Mesa will create a more livable community that its residents will enjoy for many years.

APPENDIX A

THE PUBLIC INVOLVEMENT PLAN PROCESS

PURPOSE OF THE PUBLIC INVOLVEMENT PLAN

The Mesa 2012 Bicycle Plan was created over the past two years with input from hundreds of residents through public input meetings, surveys, email, and phone calls. This public involvement plan was designed to ensure that staff, elected officials, stakeholders, and the general public had ample time to be involved in the development of the Bicycle Master Plan. Effective public participation facilitates understanding and improves planning by bringing all issues and perspectives to the table. Sustainable plans are technically feasible, economically viable, environmentally compatible, and publicly acceptable.

The purpose of this public involvement plan was to:

1. Ensure a clear understanding of the level of public participation in determining the direction of the Plan.
2. Identify the specific goals of the public involvement process for the Plan.
3. Establish a process for collecting and analyzing information from staff, elected officials, stakeholders, and the general public.
4. Identify appropriate communication tools and techniques for use during the planning and development of the Bicycle Master Plan.

This process was continually evaluated and altered to best meet the needs of stakeholders, the general public, elected officials, and City staff.

PUBLIC INVOLVEMENT PROGRAM AND COMMUNITY INPUT PROCESS

Public involvement is an essential element of preparing a planning document that will provide direction and guidance for future bicycle facilities. To ensure that the proposed Bicycle Master Plan reflects the priorities and vision of Mesa's residents, a community-outreach program was a key element.

The outreach process was designed to gather input from a variety of people through the City of Mesa in the effort to provide a comprehensive plan reflecting the direction and vision of the citizens of Mesa.

BENEFITS OF THE PUBLIC INVOLVEMENT PROGRAM (PIP)

There are several benefits of involving the public in the planning process. First, it creates an opportunity for the community to share ideas and concerns early in the development process of the Bicycle Master Plan. Public involvement also greatly reduces the probability of delays in implementing elements of the Bicycle Master Plan by identifying potential community concerns early, so that these issues may be addressed and/or resolved. Finally, public involvement improves decisions and garners support for the Bicycle Master Plan.

The purpose of this public involvement program (PIP) was to inform the community about the Bicycle Master Plan and to actively seek and incorporate input from the public into the plan. The PIP was developed using the following principles:

- Adequate opportunities for public input should be provided as well as sufficient time allocated for public review and comment.
- The public should be provided reasonable access to technical information about the Bicycle Master Plan.
- The Bicycle Master Plan should clearly demonstrate the consideration of and responsiveness to the public input obtained. A clear record of all comments received will be maintained throughout the Bicycle Master Plan planning process.

DEVELOPMENT OF THE PUBLIC INVOLVEMENT PROGRAM (PIP) PLAN

This public involvement plan was developed through a cooperative effort involving Transportation planning, technical (engineers), and public involvement (Public Information Office) staff from the City of Mesa. The plan was based, in part, on current and recent public outreach efforts conducted for projects and studies throughout the City and region, as well as on the collective knowledge and experience of those responsible for drafting the plan.

The goal of outreach was to inform and involve people residing in the City of Mesa of the engineering, construction, and planning process leading to a recommendation on future bicycle facility projects. This outreach plan supported Transportation, Engineering, Planning, and the public in working collaboratively toward the identified goals.

The outreach plan had specific objectives:

Raising awareness and understanding of bicycling issues in Mesa by informing residents about the plan.

Creating opportunities for Mesa residents to get involved in planning efforts that shape the future bicycling environment.

The Public Information Program helped answer the following questions:

- What is the Bicycle Master Plan?
- Why does it matter?
- What is the schedule?
- How will it affect me (my job/businesses, utility rates, recreational opportunities, etc.)?
- What will the plan cost?
- Who will make the final decisions?
- How can I learn more/get involved/be heard?

The Program also helped accomplish the following:

- Develop a Bicycle Master Plan that best serves the community and encourages bicycle ridership as an alternative transportation option.
- Engage stakeholders throughout the City of Mesa.
- Create a Bicycle Working Group comprised of community bicycle advocates, students, community and business organizations, city staff, non –profit organizations and residents to meet periodically on the Bicycle Master Plan.
- Create opportunities for the public to participate in the feedback process by participating in events at local educational facilities, transit centers, neighborhood meetings, etc.
- Conduct two on-line surveys to gather information on the bicycle riding habits and needs of the community.

Meetings of the Mesa Bicycle Master Plan Citizens Working Group	
MEETING DATE	**AGENDA ITEMS COVERED**
Meeting #1 January 11, 2009	• Plan Outline • Scope of Work and Schedule • Survey Number One • Mesa Community Inventory Process
Meeting #2 June 11, 2009	• Existing Conditions Working Paper • Bicycle Planning Projects and Events • Community Outreach Process • Bicycle Planning Session
Meeting #3 September 24, 2009	• Bicycle Planning Questionnaire from Meeting #2 • Safety and Education Chapter Review • Design Guidelines Chapter Review • Community Survey #2 • Vision Statement Work Session
Meeting #4 February 24, 2010	• Review of Updated Project Schedule • Discussion of Community Outreach Process • Discussion of Community Survey #2 • Review of Goals and Objectives Overview of Bicycle Plan Vision Statement
Meeting #5 August 18, 2010	• Introduction of New Staff Member taking over project • Round Table Discussion about Direction of Plan Document • Mapping "Gap" Exercise • Next Meeting Date Set
Meeting #6 March 30, 2011	• Plan Update • Facilities Power Point Presentation • Chapter Three Discussion • Chapter Four Discussion

MESA BICYCLE MASTER PLAN CITIZENS WORKING GROUP

The Mesa Bicycle Master Plan Citizens Working Group was set up to serve as an oversight group to the planning process and be responsible for overseeing the development of the plan and assuring close adherence to the proposed project outline and scope of work.

The Working Group was also responsible for chapter reviews; assisting in the development of the plan's vision, and key goals and objectives, strategies and policies; providing input and expertise on all planning elements; assisting in community outreach and coordination of scheduled and proposed events; and for providing recommendations, advice, and input in order to ensure a quality planning process and subsequent planning documents.

The Working Group was made up of interested parties and individuals who realize that the future of Mesa's bicycle network is important. The people chosen to be included in the Bicycle Working Group were asked based on a variety of factors including age group, profession, type of riding they typically did, and organization affiliation. The public's comments and concerns were collected about the proposed elements of the Bicycle Plan during 14 community forums in all six districts throughout the City. Citizens were encouraged to provide input regarding bicycling in Mesa including those areas in which Mesa excels, as well as the areas where they feel the City falls short.

Citizens were asked their opinions and thoughts on a number of topics including: high usage areas, areas in need of improvement, where they would like to see additional bicycle facilities, and what direction they would like to see the City head in when considering future bicycle amenities. These forums had an open format which provided materials and information educating the public about the proposed bicycle plan, current projects, and events that are being planned.

PUBLIC OPPORTUNITIES TO PROVIDE INPUT ON THE DRAFT CITY OF MESA 2012 BICYCLE MASTER PLAN

One of the greatest challenges of governance is finding a balance between the interests of the community as a whole and those who have a special stake in a particular issue. Citizens help strike that balance by looking for solutions that work for the entire community, not just a small group.

Although participating does not always mean prevailing, it does make government a partnership effort. That's something positive, because when citizens are actively involved in their government, decisions can better reflect the will of the people.

As part of the public involvement plan, Transportation Planning staff provided the public with the opportunity to interact and comment on the plan in each of the six council districts throughout the City. In addition to these open forums, districts, staff provided the opportunity for public review of each segment of the plan on a webpage specifically designed for this effort. The webpage was updated weekly to ensure that all chapter drafts were up-to-date and all processes of the plan were available for comment.

Plan Public Meeting Schedule		
Meeting Date	**Public Event**	**Council District**
Meeting #1 – October 10, 2010	District One – Pancake Breakfast	1
Meeting #2 – October 17, 2010	District Four – Pancake Breakfast	4
Meeting #3 – December 5, 2010	District Three – Pancake Breakfast	3
Meeting #4 – January 5, 2011	Superstition Springs Transit Center	6
Meeting #5 – January 28, 2011	Adventure Bicycle Shop	2
Meeting #6 – February 12, 2011	DNA Cycle	5
Meeting #7 – April 17, 2011	Bike4Life Community Ride	5
Meeting #8 – May 18, 2011	Ride of Silence	5

COMMUNITY FEEDBACK

All comments directed to the study team about the Bicycle Master Plan became a part of the permanent record. A form was developed to record public comments received via email, fax, mail, and telephone. The form recorded the type of communication, listed the actions taken, and became part of the permanent record of the study. Feedback forms and comment cards were distributed at group presentations, public meetings, and events. These were also recorded and follow-up action (e.g., response to questions) taken when appropriate.

MESA CITY COUNCIL ADOPTION

When complete, the Bicycle Master Plan will be presented to the Mesa City Council for review and adoption. It will then serve as the guide for making Mesa an even better community for bicycling.

APPENDIX B

BICYCLE MASTER PLAN COMMUNITY SURVEYS

THE CITY OF MESA BICYCLE MASTER PLAN COMMUNITY SURVEYS

This appendix summarizes responses to Surveys One and Two for the City of Mesa Bicycle Plan. The surveys were distributed to all bike shops, libraries, and public facilities. They were handed out at several public events held throughout Mesa. The purpose of this method of distribution was to achieve a wide cross-section of respondents who currently ride their bicycles in Mesa.

MESA COMMUNITY BICYCLE SURVEY ONE

June to September of 2008

Total Respondents: 378

GENERAL RESPONDENT INFORMATION

What is your age?	Under 18	19 to 30	31-40	41-50	51-60	Over 60	Total Responses
	3	35	34	116	83	33	304
	1.0%	11.5%	11.2%	38.2%	27.3%	10.9%	100.0%

What is the highest level of education that you have completed?	Elementary School	High School	Some College	College	Post Graduate Degree		Total Responses
	2	15	68	178	108		371
	0.5%	4.0%	18.3%	48.0%	29.1%		100.0%

What is your profession?	Profession	Number of Respondents	Percentage				Total Responses
	Student	9	2.4%				378
	Non-Profit	2	0.5%				100.0%
	Government	66	17.5%				
	Private Business	47	12.4%				
	Professional	185	48.9%				
	Self-Employed	21	5.6%				
	Unemployed	7	1.9%				
	Retired	29	7.7%				
	Other	12	3.2%				

Are you?	Male	Female					Total Responses
	297	71					368
	80.7%	19.3%					100.0%

Do you belong to any bike clubs or bike advocacy groups in the region?	Yes	No					Total Responses
	187	181					368
	50.8%	49.2%					100.0%

Do you own a car?	Yes	No					Total Responses
	353	12					365
	96.7%	3.3%					100.0%

MESA COMMUNITY BICYCLE SURVEY ONE

June to September of 2008

Total Respondents: 378

GENERAL CYCLING QUESTIONS

What is your primary mode of transportation?	Drive Alone in Car	Carpool/Vanpool	Public Transit	Bicycle	Walk		Total Responses
	271	34	6	57	0		368
	73.6%	9.2%	1.6%	15.5%	0.0%		100.0%

Are you a current bike rider?	Yes	No					Total Responses
	367	6					373
	98.4%	1.6%					100.0%

Which is the phase that best describes you as a cyclist?	Advanced	Intermediate	Beginner				Total Responses
	233	110	31				374
	62.3%	29.4%	8.3%				100.0%

How often do you ride your bike?	1-2 Days a Week	3-4 Days a Week	5-7 Days a Week	1-2 Times a Month	Less than Once a Month	Not at All	Total Responses
	62	160	119	21	7	4	373
	16.6%	42.9%	31.9%	5.6%	1.9%	1.1%	100.0%

In general, what type of riding do you do? *	Recreation/ Fitness	Commuting to work or school	Errands or other local destinations	Other			Total Responses
	343	185	108	24			660
	52.0%	28.0%	16.4%	3.6%			100.0%

MESA COMMUNITY BICYCLE SURVEY ONE

June to September of 2008

Total Respondents: 378

BICYCLE FACILITY QUESTIONS

On which types of streets do you prefer to riding on for your level of comfort?	Major Arterials	Collectors	Local Streets				Total Responses
	116	168	88				372
	31.2%	45.2%	23.7%				100.0%

What type of facility do you prefer to ride on?	Shared-Use Path	Bike Lane - Major Arterial	Bike Route - Major Arterial	Local Street	Sidewalks	Other	Total Responses
	64	246	19	20	9	15	373
	17.2%	66.0%	5.1%	5.4%	2.4%	4.0%	100.0%

What type of facility is most needed along your regular routes?	Shared-Use Path	Bike Lane - Major Arterial	Bike Route - Major Arterial	Bike Route - Local Street	Sidewalks	Other	Total Responses
	59	228	26	18	8	21	360
	16.4%	63.3%	7.2%	5.0%	2.2%	5.8%	100.0%

Traffic and safety concerns. *	Too many cars on the street	Motorists drive too Fast	Motorists are not considerate of cyclists	Traffic signals are not set for bikes	I don't feel safe biking on roads	I don't feel safe biking on paths	Total Responses
	126	147	256	77	92	17	715
	17.6%	20.6%	35.8%	10.8%	12.9%	2.4%	100.0%

* - For this question, respondents were requested to check more than one box on the survey.

MESA COMMUNITY BICYCLE SURVEY TWO

March to June of 2010

Total Respondents: 313

GENERAL RESPONDENT INFORMATION

What is your gender?	Male	Female								Total Responses
	207	97								304
	68.1%	31.9%								100.0%

What is your age?	Under 25	26-35	36-45	46-55	Over 55					Total Responses
	14	59	85	97	49					304
	4.6%	19.4%	28.0%	31.9%	16.1%					100.0%

Do you ride a bike in Mesa?	Yes	No								Total Responses
	303	10								313
	96.8%	3.2%								100.0%

How often do you ride your bike in Mesa?	Several times a month	Several times a week	Once a week	Very seldom						Total Responses
	61	196	26	23						306
	19.9%	64.1%	8.5%	7.5%						100.0%

Which describes your confidence ability Level?										Total Responses
Confidence level	No Way No How	Interested but Concerned	Confident and Enthused	Strong and Fearless						
Number of respondents	7	74	151	72						304
Percentage	2.3%	24.34%	49.7%	23.68%						100.0%

How many miles do you bicycle per week?	0-20 Miles	21-40 Miles	41-60 Miles	61-80 Miles	81 or more Miles					Total Responses
	91	66	42	28	79					306
	29.7%	21.6%	13.7%	9.2%	25.8%					100.0%

Do you use the City of Mesa bike map to plan your routes?	Yes	No	Not aware of bike map							Total Responses
	69	97	139							305
	22.6%	31.8%	45.6%							100.0%

How would you rate the usefulness of the bike map?	Excellent	Very good	Good	Fair	Poor					Total Responses
	22	38	66	28	11					165
	13.3%	23.0%	40.0%	17.0%	6.7%					100.0%

Do you own a bike helmet?	Yes	No								Total Responses
	266	39								305
	87.2%	12.8%								100.0%

How often do you wear your helmet?	100 percent of the time	75-99 percent of the time	74-50 percent of the time	Less than 50 percent of the time	Never					Total Responses
	197	37	7	22	41					304
	64.8%	12.2%	2.3%	7.2%	13.5%					100.0%

MESA COMMUNITY BICYCLE SURVEY TWO

March to June of 2010

Total Respondents: 313

GENERAL CYCLING TRIP CHARACTERISTICS QUESTIONS

What best describes your type of bicycle trip?	Commuting to work	Going to a recreation facility	Going to school	Running errands	Exercise and leisure					Total Responses
	61	5	4	15	220					305
	20.0%	1.6%	1.3%	4.9%	72.1%					100.0%

Do you commute to work or school?	Yes	No								Total Responses
	108	196								304
	35.5%	64.5%								100.0%

If you do not commute to work or school, why not? *	My work is too far from my home	Roadway surface conditions are poor	No safe storage facilites	Too much traffic	No showers	No bike lanes	Too Hot	Other		Total Responses
	59	36	30	69	67	35	34	154		484
	12.2%	7.4%	6.2%	14.3%	13.8%	7.2%	7.0%	31.8%		100.0%

Please rate your reasons for not commuting by bicycle. *	I work /attend school close to home	It is healthy and good exercise	It is environmentally friendly	It is faster that car or transit	I have shower and change facilities at work	I can park my bicycle indoors	Bicycle facilties provide a direct route	It is economically beneficial	Other	Total Responses
	33	131	84	13	34	27	9	85	87	503
	6.6%	26.0%	16.7%	2.6%	6.8%	5.4%	1.8%	16.9%	17.3%	100.0%

While commuting, what particular problems do you regularly encounter on your bicycle route? *	Vehicles parked in bike lane	Vehicles driving in bike lane	Vehicles not sharing the roadway	Other unauthorized use of bike lanes	Poor road surface conditions	Worn out bike lane markings	Difficulty crossing intersections	N/A		Total Responses
	56	65	130	36	123	47	74	62		593
	9.4%	11.0%	21.9%	6.1%	20.7%	7.9%	12.5%	10.5%		100.0%

BICYCLE FACILITY QUESTIONS

Do you park your bicycle at racks?	Yes	No						Other		Total Responses
	133	152						21		306
	43.5%	49.7%						6.9%		100.0%

Would you like more bicycle racks?	Yes	No						I don't feel safe biking on paths		Total Responses
	171	108						17		296
	57.8%	36.5%						5.7%		100.0%

If yes where?	Curbside throughout the City	Lightrail stations	Park and Ride lots	Bus stops	Workplace locations	Schools	Other	N/A		Total Responses
	87	71	54	43	85	37	36	64		477
	18.2%	14.9%	11.3%	9.0%	17.8%	7.8%	7.5%	13.4%		100.0%

Would you support reductions in roadway lane widths and speeds to provide more accessibility fo bicycles?	Yes	No								Total Responses
	233	59								292
	79.8%	20.2%								100.0%

* - For this question, respondents were requested to check more than one box on the survey.

CITY OF MESA: TRANSPORTATION

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