

Multi-Use Path System Detailed Plan EXECUTIVE SUMMARY



 **Tempe**

August 2000

CITY OF TEMPE

MULTI-USE PATH SYSTEM
DETAILED PLAN
EXECUTIVE SUMMARY

Prepared by



and



August 2000



CITY OF TEMPE LIABILITY STATEMENT

Neither a public entity nor a public employee is liable for an injury arising out of a plan or design for construction or maintenance of or improvement to highways, roads, streets, bridges, or rights of way if the plan or design is prepared in conformance with generally accepted engineering or design standards in effect at the time of the preparation of the plan or design, provided, however, that reasonable adequate warning shall be given as to any unreasonably dangerous hazards which would allow the public to take suitable precautions.

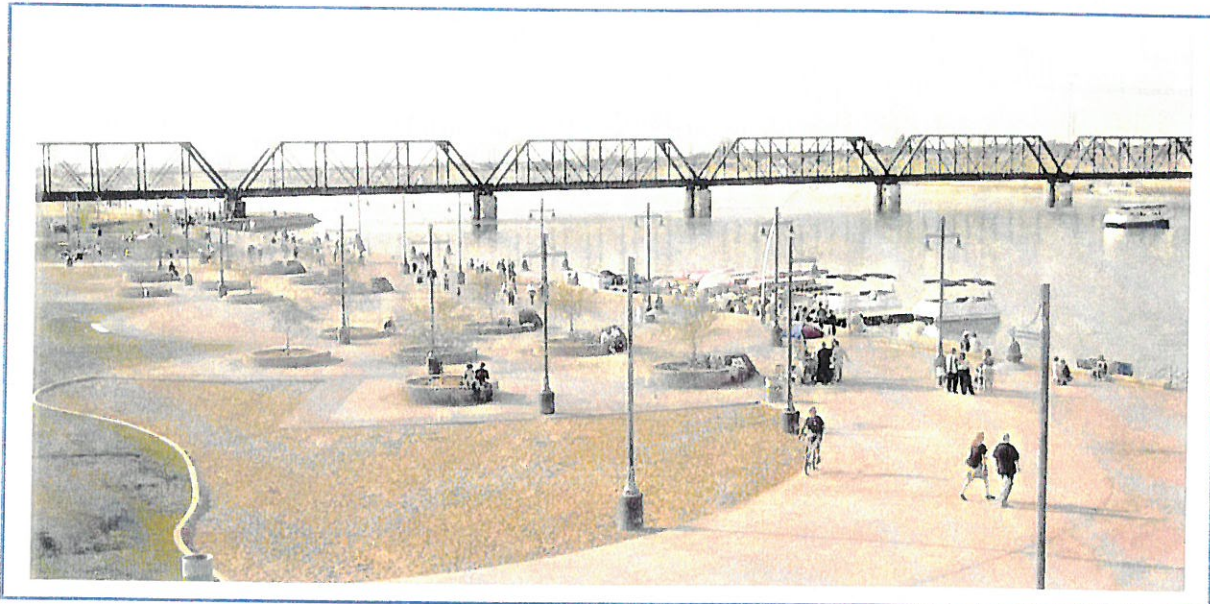
TABLE OF CONTENTS

TEMPE MULTI-USE PATH SYSTEM	1
PURPOSE	1
SIGNAGE GUIDELINES	2
DESIGN STANDARDS	4
LANDSCAPE GUIDELINES	6
COST ESTIMATES	8
MID-BLOCK CROSSINGS	8
PATH PLANS	9
GRAND CANAL PATH	11
CROSSCUT CANAL PATH	12
WESTERN CANAL PATH	13
HIGHLINE CANAL PATH	14
KYRENE CANAL PATH	15
TEMPE CANAL PATH	16
PHOENIX MAIN LINE RAILROAD PATH	17
CREAMERY BRANCH RAILROAD SPUR PATH	18
TEMPE INDUSTRIAL LEAD RAILROAD PATH	19
EL PASO GASLINE PATH	20
FREEWAY PATH AND CROSSINGS	21
HOHOKAM EXPRESSWAY PATH	22
RIO SALADO PATH SYSTEM	23
TEMPE CITY COUNCIL	24
TEMPE BIKE COMMITTEE	24

TEMPE MULTI-USE PATH SYSTEM

Multi-use or shared use paths are defined in the *1999 Guide for the Development of Bicycle Facilities*, published by the American Association of State Highway and Transportation Officials (AASHTO), as “a bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized uses.”

The 1991 Tempe Bicycle Plan and 1995 Tempe Bicycle Facilities Plan Update, both adopted by the Tempe City Council, identify canal, railroad, utility, freeway, and Rio Salado rights-of-way for the development of multi-use paths. These facilities complement existing transportation and recreation opportunities in Tempe, and will integrate with destinations throughout the City.



PURPOSE

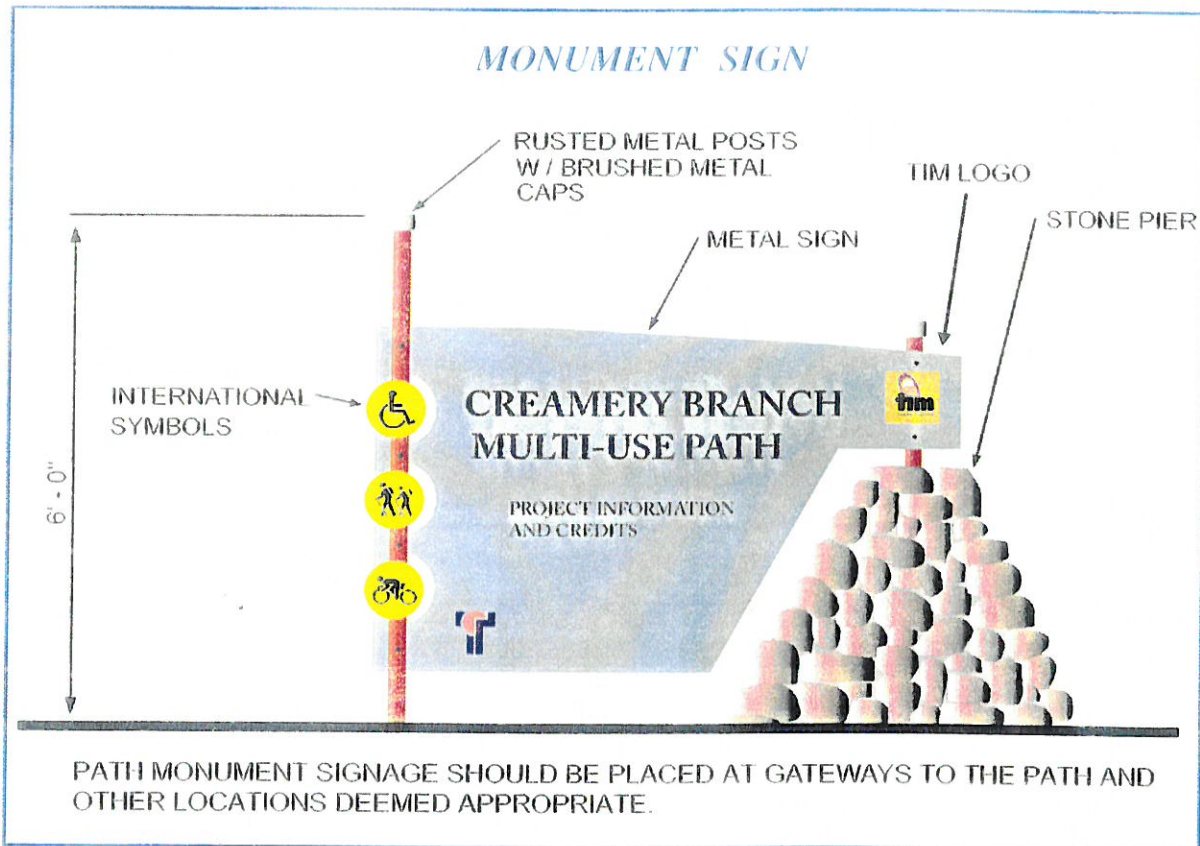
The purpose of the Tempe Multi-Use Path System Detailed Plan is to identify and recommend specific alignments for multi-use path locations and cross-sections for paths already identified in the 1995 Bicycle Plan, including along all canals, the Rio Salado, the Union Pacific Railroad right-of-way, the El Paso Gasline utility corridor, the Hohokam Expressway, and the Superstition and other freeways in Tempe. The Plan also includes cost estimates, design guidelines, recommended sign standards, and landscape guidelines.

All recommendations are subject to modifications that may be necessary based upon the public involvement process, neighborhood or developer input, and/or other agency considerations.

SIGNAGE GUIDELINES

The signage for multi-use paths is an important design component for the enjoyment and safety of the users. The sign package should have consistent elements that visually integrate all the paths in the system. The signage should have elements that work cohesively and complement the signage for paths already existing or under development such as the Rio Salado and Crosscut Canal paths.

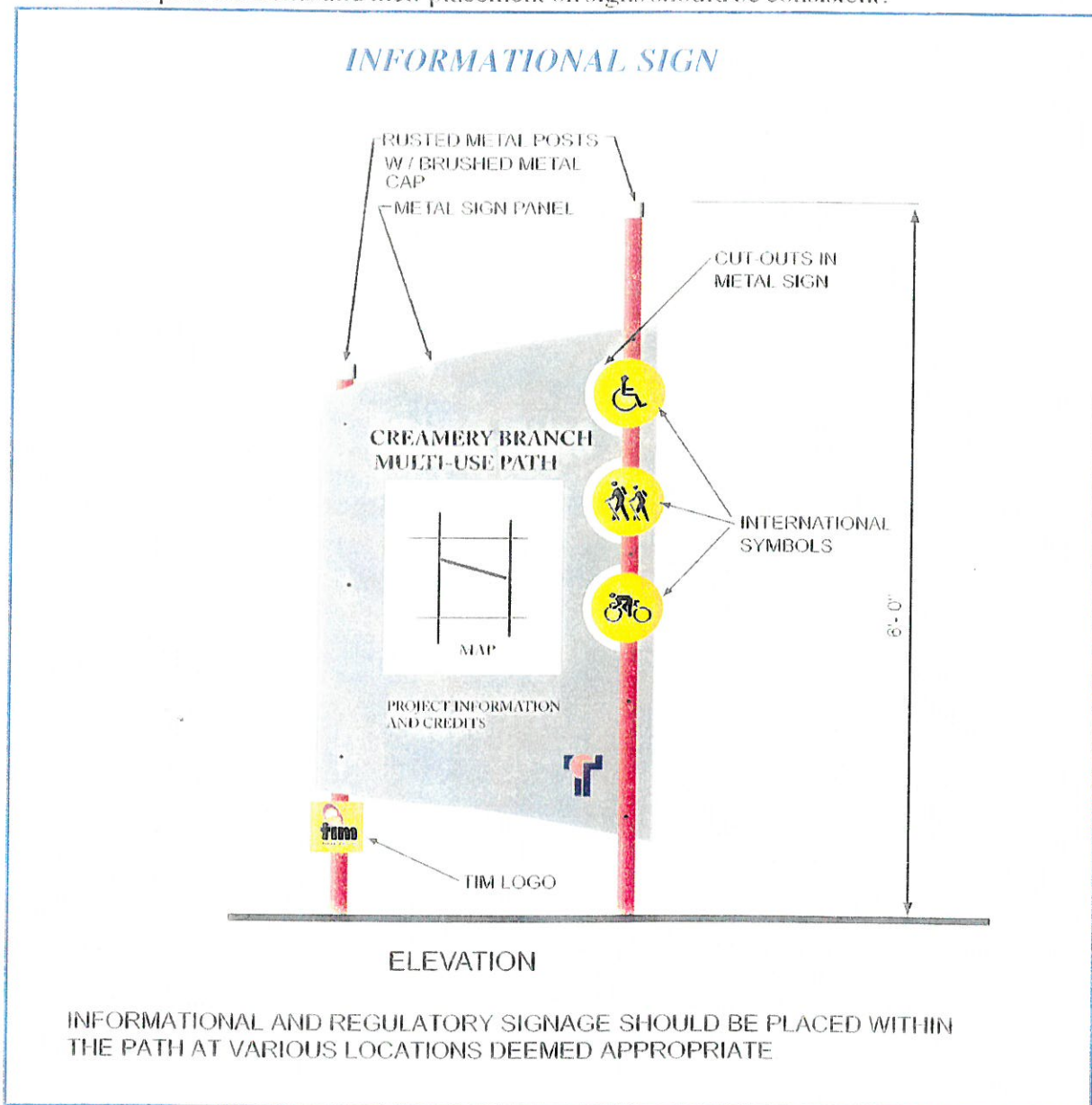
The sign criteria and monument and informational sign layouts presented here are recommendations, which may be modified based on funding availability or site-specific project concerns. The monument signs provide path identity and the informational signs are for regulations and way-finding.



SIGNAGE GUIDELINES

General Sign Criteria:

- Signs should be low maintenance.
- Signage should be modular to allow for the addition of informational elements and to allow the typical sign package to be adjusted in the field due to unforeseen circumstances.
- Signs should be as vandal-proof as possible.
- All signage must conform to the City of Tempe's Sign ordinance details.
- Graphic elements and their placement on signs should be consistent.



DESIGN STANDARDS



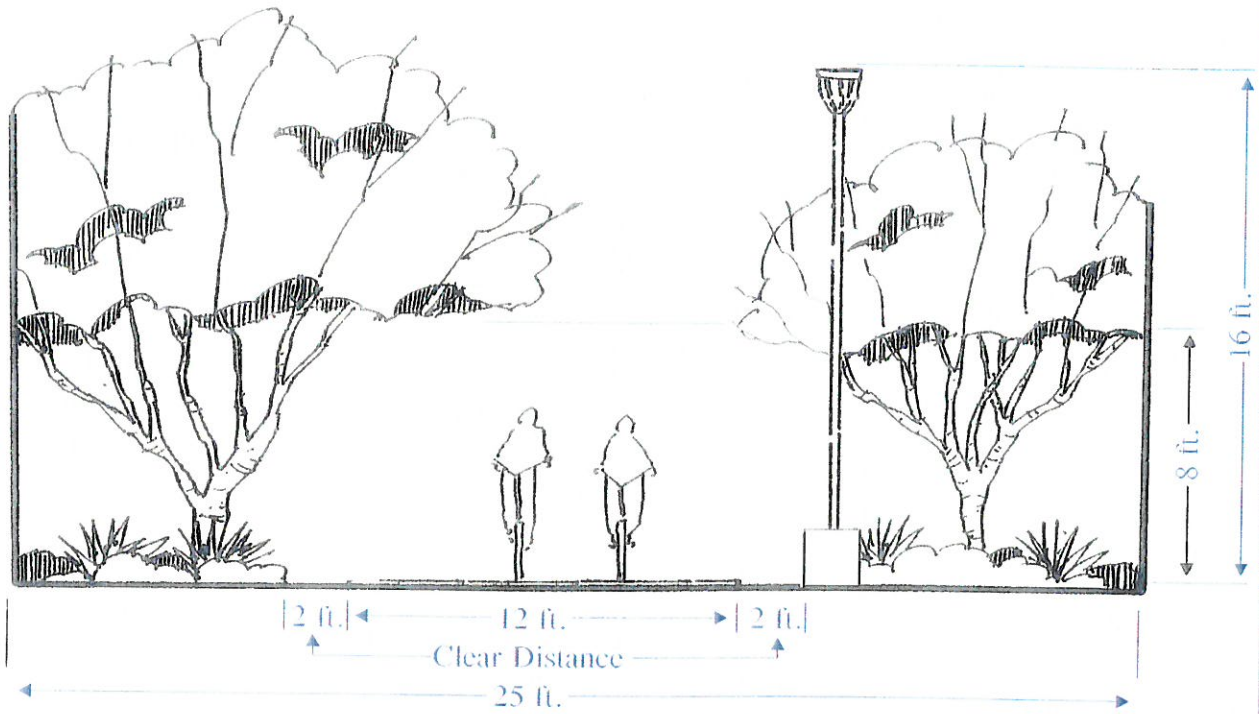
The City of Tempe endeavors to provide a safe, attractive, and functional multi-use path system for residents and visitors in the City. The recommended design standard for the paths is a 25-foot wide easement with a 12-foot wide concrete path and landscaping and lighting in the remaining 13 feet. Lighting shall comply with City of Tempe lighting standards. Additionally, the City strives to incorporate art elements into these projects.

Rest areas, each of which could include a bench, shade trees, bike racks, trash receptacles, and possibly a water fountain, will be located where feasible throughout the system. The locations and amenities for each rest area will be determined in the final design.

The City recognizes that in some areas, 25 feet of right-of-way will not be available to construct a path. In these cases, a minimum design of a 10-foot path with lighting on a 16-foot right-of-way will be allowable until additional right-of-way can be acquired.

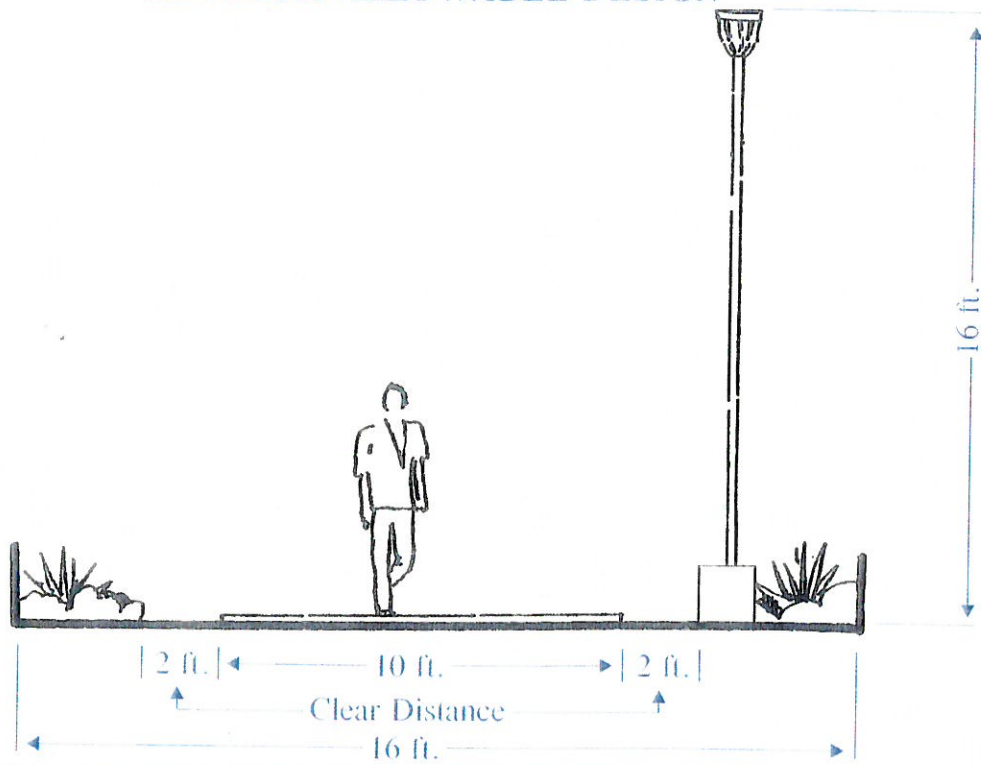
The *AASHTO Guide for the Development of Bicycle Facilities*, *City Standard Details for Multi-use Paths*, and the *Arizona Bicycle Facilities Planning and Design Guidelines* serve as the principal resources for the design of bicycle facilities in Tempe. These references should be consulted for design details during the preparation of plans for any multi-use path in the City. Design for all paths shall also be subject to the public involvement process.

RECOMMENDED DESIGN STANDARD



Source: Terrano Landscape Architecture Urban Design

MINIMUM ALLOWABLE DESIGN



LANDSCAPE GUIDELINES

Tempe path locations encompass a wide variety of community and landscape characteristics. The landscape theme developed for the path system must be sensitive to these characteristics. As the adjacent areas change, the landscape theme for the path should vary to be compatible. However, the various themes should retain consistent elements that visually integrate all paths in the system. A strong overall path landscape theme can help bond these divergent areas into a cohesive whole.

General Guidelines:

- Low maintenance, low water use plant materials should be used.
- Planting design should maximize safety by using low growing shrubs adjacent to path and avoid "hidden" areas created by tall shrubs.
- The use of turf in path development areas should be avoided except where deemed necessary.
- The ground plane should be topped with inorganic mulch such as decomposed granite.
- The use of indigenous plant materials is critical at paths adjacent to natural desert areas.
- Landscape plantings should safely screen undesirable views.
- Landscape planting should maintain view corridors.
- Landscape plantings should mitigate freeway, railroad, and utility structures.
- Plantings under power lines to follow the Salt River Project's "Approved Trees for Planting Near Electrical Lines" list.
- Planting design to follow the City of Tempe's CPTED guidelines.
- Plant materials not on the recommended plant list may be used in appropriate areas with approval of the City of Tempe.
- Landscape plantings shall not encroach on the path or impede movement along the path.
- Plant materials should maximize shade opportunities to provide a comfortable user environment.

LANDSCAPE GUIDELINES

RECOMMENDED PLANT LIST

TREES

Botanical Name	Common Name	Botanical Name	Common Name
Acacia species	Acacia	Chilopsis linearis	Desert Willow
anura	Mulga	Dahlbergia sissoo	Sissoo Tree
farnesiana	Sweet Acacia	Olneya tesota	Ironwood
salicina	Willow Acacia	Pistacia chinensis	Chinese Pistache
willardiana	Palo Blanco	Pithecellobium flexicaule	Texas Ebony
Brahea armata	Mexican Blue Plum	Prosopis species	Mesquite
Cercidium species	Palo Verde	chilensis	Chilean Mesquite
floridum	Blue Palo Verde	velutina	Honey Mesquite
praecox	Palo Brea	Ulmus parvifolia	Evergreen Elm

SHRUBS/ACCENTS

Botanical Name	Common Name	Botanical Name	Common Name
Buddleia narrubifolia	Wooly Butterfly Bush	Justicia californica	Chuparosa
Caesalpinia pulcherrima	Red Bird of Paradise	Hesperaloe species	Hesperaloe
Calliandra species	Fairy Duster	Larrea tridentata	Creosote
Dalea species	Dalea	Lecophyllum species	Texas Ranger
Dasyfrion wheeleri	Desert Spoon	Muhlenbergia species	Deer Grass
Dodonea viscosa	Hopbush	Ruellia species	Ruellia
Encelia farinosa	Brittlebush	Simmondsia chinensis	Jojoba
Ericameria laricifolia	Turpentine Bush	Tecoma stans	Arizona Yellow Bells
Agave species	Agave		

GROUNDCOVERS

Botanical Name	Common Name	Botanical Name	Common Name
Baccharis "Centennial"	Centennial Baccharis	Malephora lutea	Rocky Point Iceplant
Dalea species	Dalea	Lantana species	Lantana
Hymenoxys acaulis	Angelita Daisy	Verbena species	Verbena

COST ESTIMATES

The cost estimates for the Tempe multi-use path system include three elements: path construction including landscaping and lighting, at grade street crossings, and grade-separated crossings. The cost estimates will need to be refined through detailed location studies and environmental assessments to be completed prior to path implementation.

The City estimates that the cost to construct a basic path meeting local and national standards is \$1,200,000 per mile. An enhanced path, including art elements, enhanced signage, and rest areas, could increase the cost to \$1,600,000 per mile. The cost of a path bridge is estimated as \$150 to \$200 per square foot (\$200 is used for the estimates in this report).

The total cost of the 34-mile path system ranges from \$41,780,000 to \$54,780,000.

MID-BLOCK CROSSINGS

The multi-use paths presented in this report will require a number of mid-block street crossings. The concepts for, and costs of, mid-block crossings are based upon estimates developed in the report entitled, *Alternative Solutions to Pedestrian Mid-block Crossings at Canals*, prepared by Logan Simpson Design and A Dye Design for the Maricopa Association of Governments and the City of Tempe in July 1999.

The minimum-crossing standard includes a posted, concrete pedestrian refuge with curb cuts in the median and appropriate signs alerting motorists and path users of the crossing. The cost estimate for the minimum crossing is approximately \$41,000. The enhanced crossing would include signalization, landscaping, and identification signs. The cost estimate for the enhanced crossing is approximately \$280,000. Unless noted otherwise, the minimum crossing cost estimate of approximately \$40,000 per crossing is used in this report.

PATH PLANS

The following pages present a synopsis of each of the path alignments of this plan. A detailed discussion of each path is included in the Multi-Use Path System Detailed Plan.

PATH LOCATION GUIDELINES

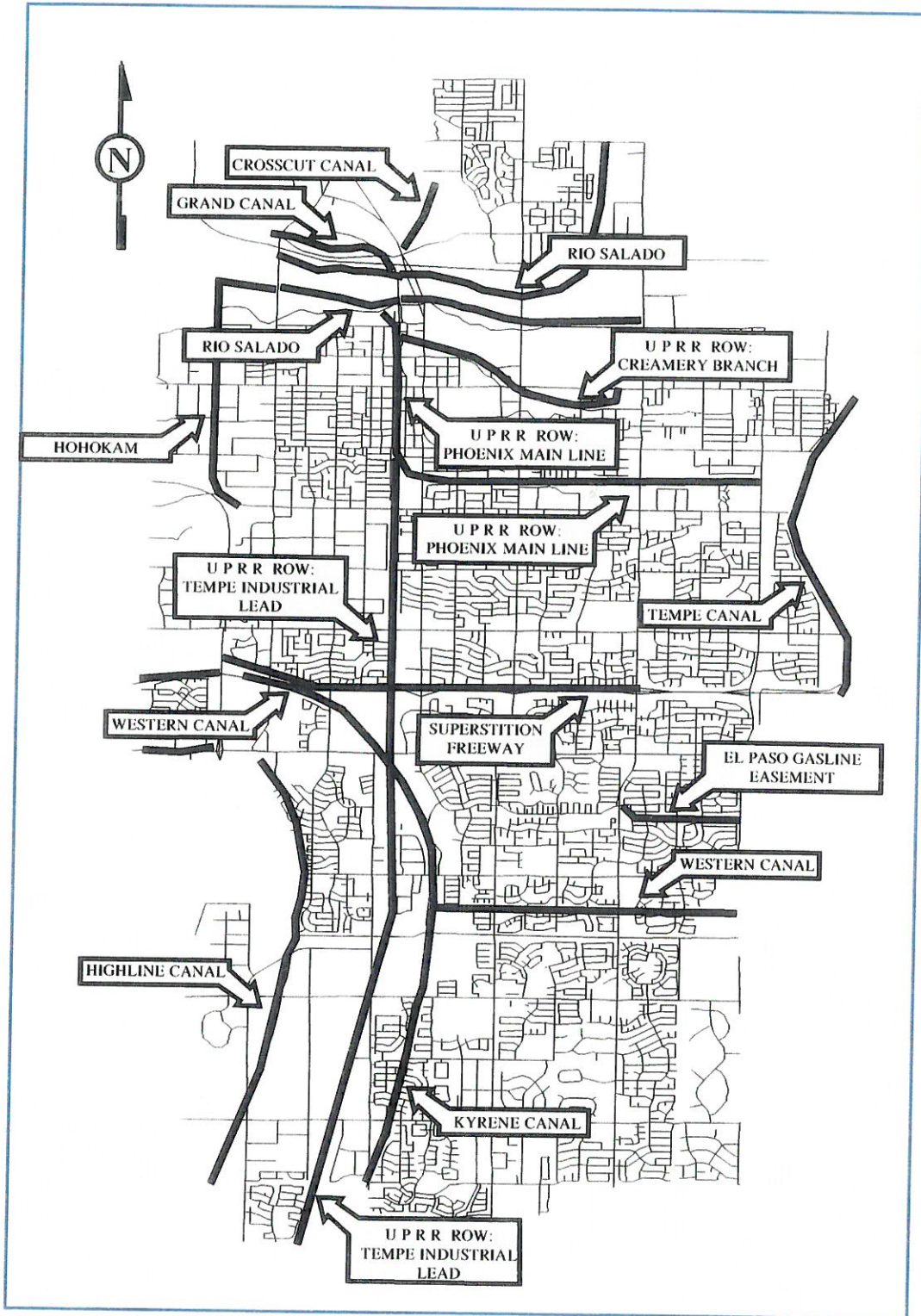
The following factors were considered when determining the recommended locations for the paths:

- Safety.
- Maximizing the distance from the edge of the canal to provide for Salt River Project maintenance vehicles.
- Maximizing the distance from the railroad tracks.
- Maintaining a minimum of four feet from the edge of the available space thus allowing room for light poles located two feet from the edge of the path.
- Creating access to adjoining significant activity centers (e.g., major parks, neighborhood parks, malls, schools).
- Avoiding conflicts with utility poles or railroad spurs.
- Providing connectivity to existing bike lanes and paths.
- Providing connectivity to transit service.
- Ensuring appropriate street, canal, freeway, and railroad crossing locations.
- Locating trees on the south or west side of the path to provide maximum shade.

COORDINATION AND MAINTENANCE

During the design phase of each path, maintenance of the path, landscaping, lighting, and street crossings, and liability issues associated with locating multi-use paths along canal banks, near railroad tracks, and within the freeway right-of-way will be addressed with the operating agencies. Prior to implementing any of the paths located in this report, the City will work with the Salt River Project on canal issues, the Union Pacific Railroad Company on rail issues, and ADOT on freeway issues to develop usage agreements covering these issues. Additionally, each path project will involve coordination with all neighborhoods or agencies adjacent to the path project.

LOCATION MAP



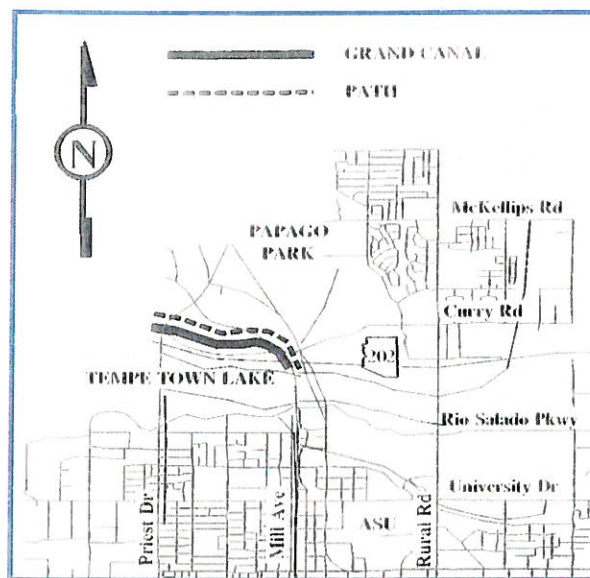
GRAND CANAL PATH

LOCATION

- Grand Canal, Priest Drive to Tempe Town Lake
- 1.5 miles

ALIGNMENT

- Priest Drive to Curry Road, north bank of canal
- Curry Road to Tempe Town Lake, east side of railroad tracks



CONNECTIONS

- Rio Salado Path System and Tempe Town Lake
- Red River Music Hall
- Papago and Moerur Parks
- Desert Botanical Gardens
- Phoenix Zoo

PROJECT ISSUES

- Barrier will be needed between path and railroad tracks.
- Coordinate with Union Pacific Railroad Company.
- Located in potential light rail corridor.

COST

- \$1.80 million for basic treatment
- \$2.40 million for enhanced treatment

CROSSCUT CANAL PATH

LOCATION

- Crosscut Canal, McDowell Road to Mill Avenue
- 2.0 miles

ALIGNMENT

- McDowell Road to Marigold Drive, west bank
- Marigold Drive to Mill Avenue, east of canal through Papago Park to Moeur Park

CONNECTIONS

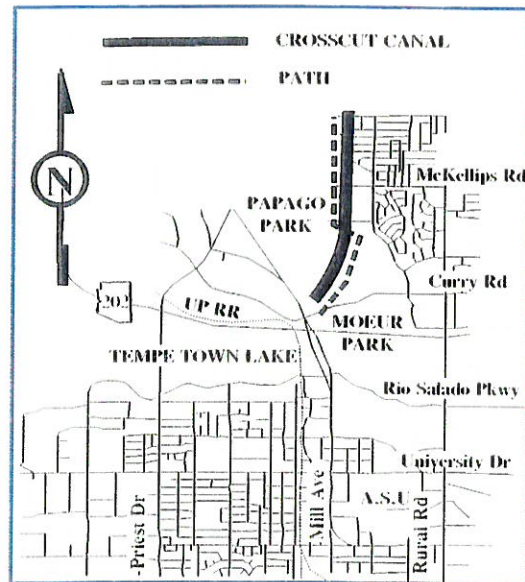
- Canal, Papago and Moeur Parks
- Desert Botanical Gardens
- Phoenix Zoo
- Tempe Town Lake
- Rio Salado Path System

PROJECT ISSUES

- Traverses Papago Park, therefore will require an environmental evaluation.

COST

- \$2.40 million for basic treatment
- \$3.20 million for enhanced treatment



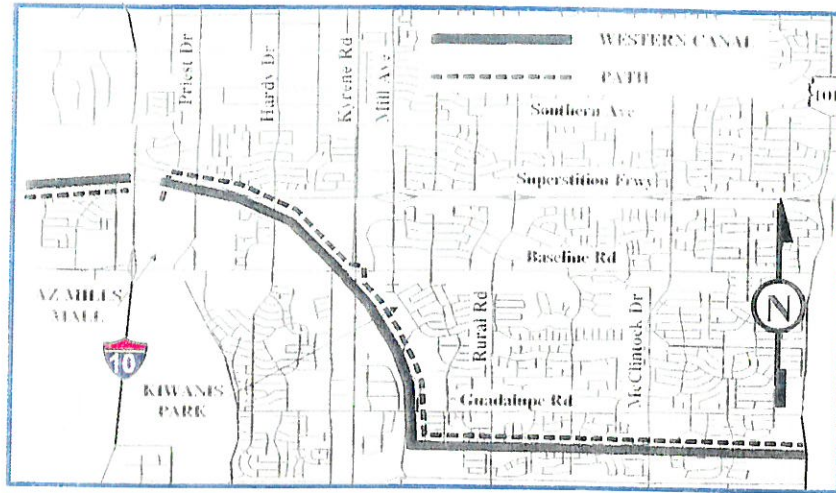
WESTERN CANAL PATH

LOCATION

- Western Canal, 48th Street to Price Freeway
- 6 miles

ALIGNMENT

- 48th Street to I-10, south bank
- I-10 to Ken McDonald Golf Course, east bank
- Ken McDonald Golf Course to Price Freeway, north bank



CONNECTIONS

- Kiwanis, Redden, and Stroud Parks
- Arizona Mills Mall
- Tempe Industrial Lead Railroad and Kyrene Canal Paths
- Ken McDonald Golf Course
- Kyrene Del Norte School

CROSSING TREATMENTS

At-Grade

- Priest Drive
- Hardy Drive
- Baseline Road
- Guadalupe Road
- Rural Road
- McClintock Drive

PROJECT ISSUES

- I-10/Superstition Freeway interchange precludes economical crossing of I-10.
- Price Freeway can be crossed at existing bridge south of the canal.
- Crossing of Baseline Road and connection with Tempe Industrial Lead Railroad Path will need further study.

COST

- \$7.44 million for basic treatment
- \$9.84 million for enhanced treatment

HIGHLINE CANAL PATH

LOCATION

- Highline Canal, 48th Street to Knox Road
- 3.5 miles

ALIGNMENT

- 48th Street to I-10, north bank
- I-10 to Grove Parkway, west bank
- Grove Parkway to Knox Road, east bank

CONNECTIONS

- Phoenix Highline Canal Path
- Tempe Autoplex
- Town of Guadalupe
- Arizona Mills Mall

CROSSING TREATMENTS

At-Grade

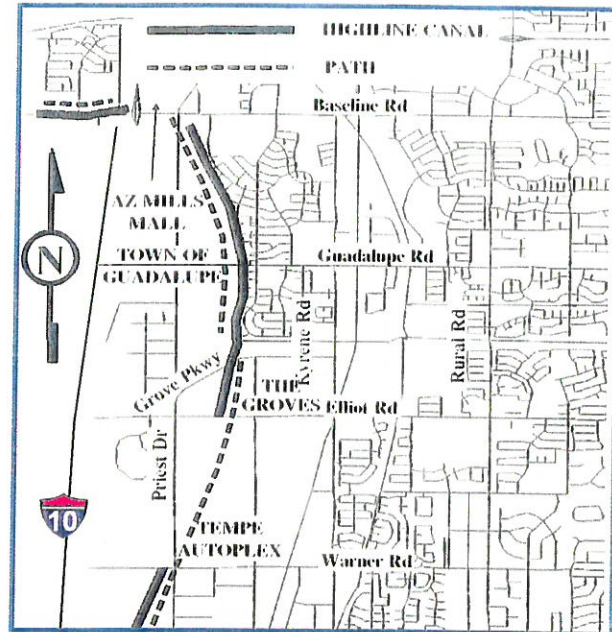
- 48th Street
- Grove Parkway
- Warner Road

PROJECT ISSUES

- I-10/Baseline Road interchange precludes economical crossing of I-10.
- Connects to existing paths between Grove Parkway and The Groves Shopping Center, and between Elliott Road and Auto Drive.
- I-10 to Grove Parkway segment currently under design and being funded by the Maricopa County Flood Control District in coordination with the Town of Guadalupe and the City of Tempe.

COST

- \$1.92 million for basic treatment
- \$2.52 million for enhanced treatment



KYRENE CANAL PATH

LOCATION

- Kyrene Canal, Western Canal to Kyrene Road
- 2 miles

ALIGNMENT

- Kyrene Road to Elliot Road, west bank
- Elliot Road to Western Canal, east bank

CONNECTIONS

- Western Canal Path
- Ken McDonald Golf Course

CROSSING TREATMENTS

At-Grade

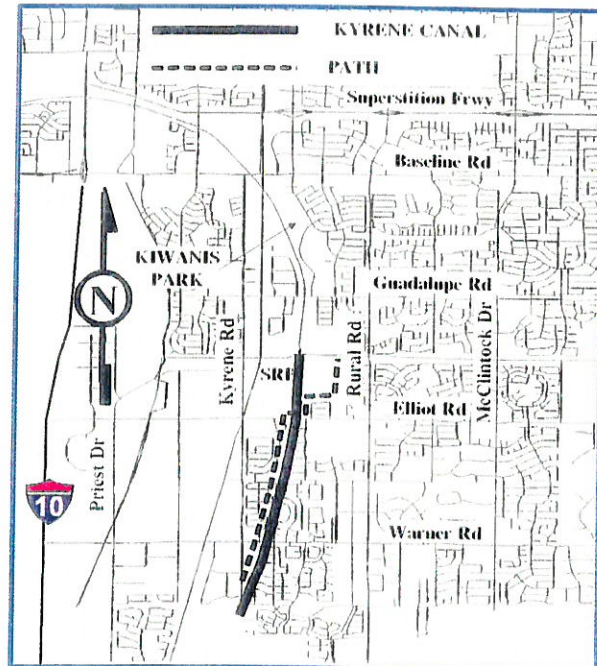
- Elliot Road
- Warner Road

PROJECT ISSUES

- Elliot Road to Warner Road segment completed in 1996.
- Coordinate with Salt River Project for path through Kyrene Substation north of Elliot Road.

COST

- \$1.28 million for basic treatment
- \$1.68 million for enhanced treatment



TEMPE CANAL PATH

LOCATION

- Tempe Canal, University Drive to Superstition Freeway
- 2.5 miles

ALIGNMENT

- University Drive to Superstition Freeway, west bank

CONNECTIONS

- Victory, Daumler, and Ehrhardt Parks
- Phoenix Mainline Railroad Path

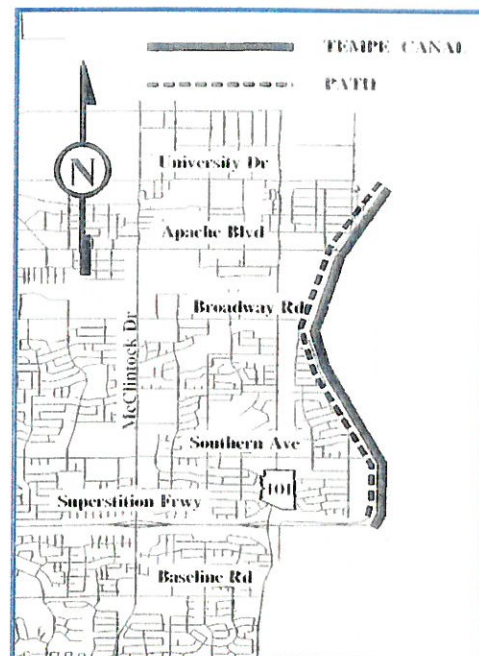
CROSSING TREATMENTS

At-Grade

- University Drive
- Apache Boulevard
- Broadway Road
- Southern Avenue

PROJECT ISSUES

- Coordinate with the City of Mesa for possible canal crossings.
- Apache Boulevard to Phoenix Mainline Railroad segment to be constructed by developer.



COST

- \$3.70 million for basic treatment
- \$4.90 million for enhanced treatment

PHOENIX MAIN LINE RAILROAD PATH

LOCATION

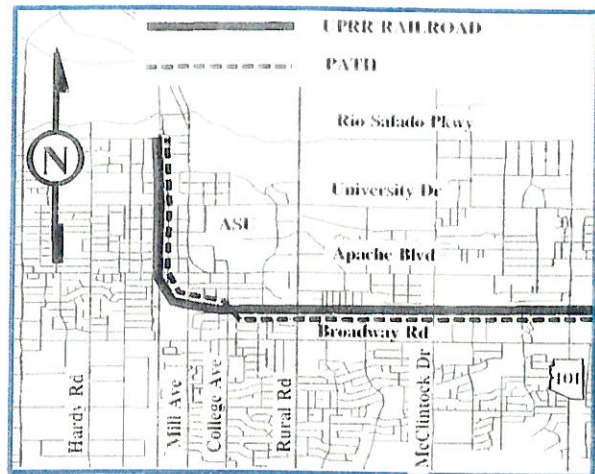
- Phoenix Subdivision Main Line Railroad, First Street to Tempe Canal
- 4 miles

ALIGNMENT

- First Street to 13th Street, east side of tracks
- 13th Street to College Avenue, north side of tracks
- College Avenue to Tempe Canal, south side of tracks

CONNECTIONS

- Downtown Tempe
- Tempe High School
- Daley, Hudson, and Tempe Beach Parks
- Arizona State University
- Tempe Canal Path
- Tempe Town Lake
- Rio Salado Path System



CROSSING TREATMENTS

- | At-Grade | Rail Crossings |
|--------------------|--------------------------------|
| • 5th Street | • Daley Park |
| • University Drive | • Bonarden Road |
| • 13th Street | • Kenneth Place |
| • College Avenue | • Dorsey Lane |
| • Rural Road | • McClintock Drive |
| Grade-Separated | • Encanto Drive railroad spurs |
| • Price Freeway | |

PROJECT ISSUES

- Located in potential light rail or commuter rail corridor and active rail freight corridor.
- Coordinate with Union Pacific Railroad Company.

COST

- \$4.96 million for basic treatment
- \$6.56 million for enhanced treatment

CREAMERY BRANCH RAILROAD SPUR PATH

LOCATION

- Creamery Branch Railroad Spur, Mill Avenue to University Drive
- 2 miles

ALIGNMENT

- Place on existing railroad right-of-way.

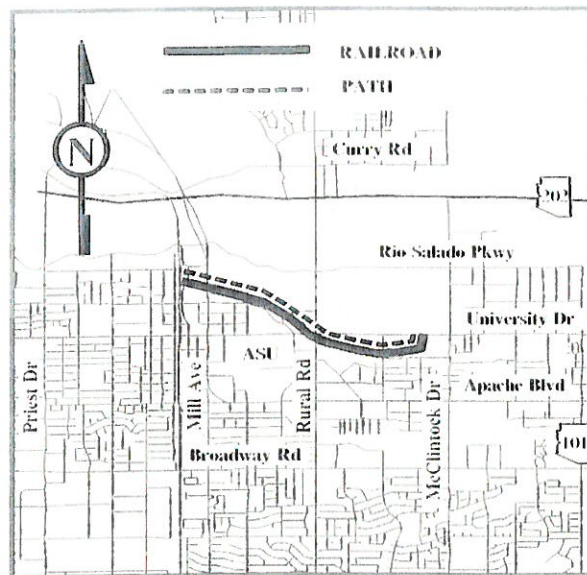
CONNECTIONS

- Downtown Tempe
- Arizona State University
- Phoenix Mainline Railroad Path
- Historic 8th Street
- Sun Devil Stadium
- Hayden Butte Park
- Creamery Park

CROSSING TREATMENTS

At-Grade

- University Drive
- Rural Road



PROJECT ISSUES

- Located in potential light rail corridor.
- City in process of purchasing this rail spur.

COST

- \$2.96 million for basic treatment
- \$3.76 million for enhanced treatment

TEMPE INDUSTRIAL LEAD RAILROAD PATH

LOCATION

- Tempe Industrial Lead Railroad, 13th Street to Ray Road
- 6 miles

ALIGNMENT

- 13th Street to Broadway Road, west side of tracks
- Broadway Road to Southern Avenue, east side of tracks
- Southern Avenue to Baseline Road, west side of tracks
- Baseline Road to Salt River Project (SRP) Kyrene Substation Access Road, east side of tracks
- SRP Kyrene Substation Access Road and Ray Road, west side of tracks

CONNECTIONS

- Phoenix Mainline Railroad Path
- Western Canal Path
- Superstition Freeway Path
- Tempe High School
- Kiwanis Community Park
- Benedict Sports Complex
- Tempe Sports Complex
- Aguilar Elementary School

CROSSING TREATMENTS

At-Grade

- Warner Road
- Guadalupe Road
- Baseline Road
- Southern Avenue
- Broadway Road

Grade-Separated

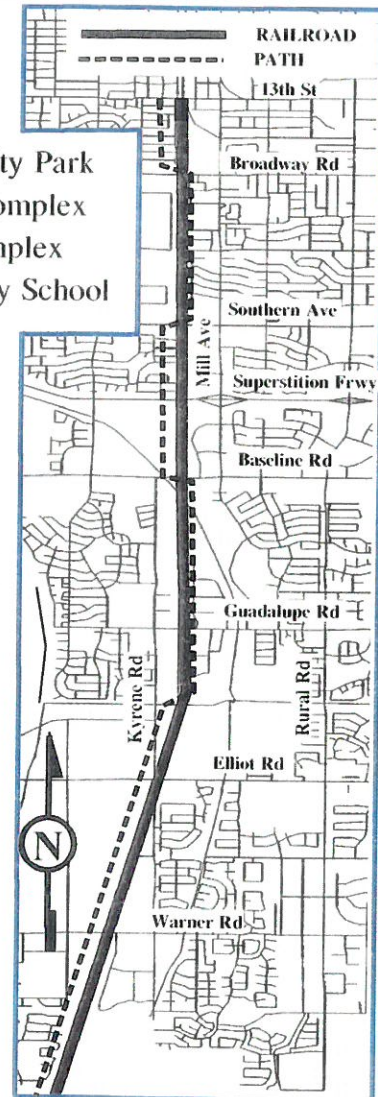
- Superstition Freeway

PROJECT ISSUES

- Coordinate with Union Pacific Railroad Company.
- Crossing of Baseline Road and connection with Western Canal Path requires further study.

COST

- \$7.56 million for basic treatment
- \$9.96 million for enhanced treatment



EL PASO GASLINE PATH

LOCATION

- El Paso Gasline Easement, McClintock Drive to Price Freeway, and Kiwanis Park to Rural Road
- 1.5 miles

ALIGNMENT

- Within an 88-foot wide utility easement

CONNECTIONS

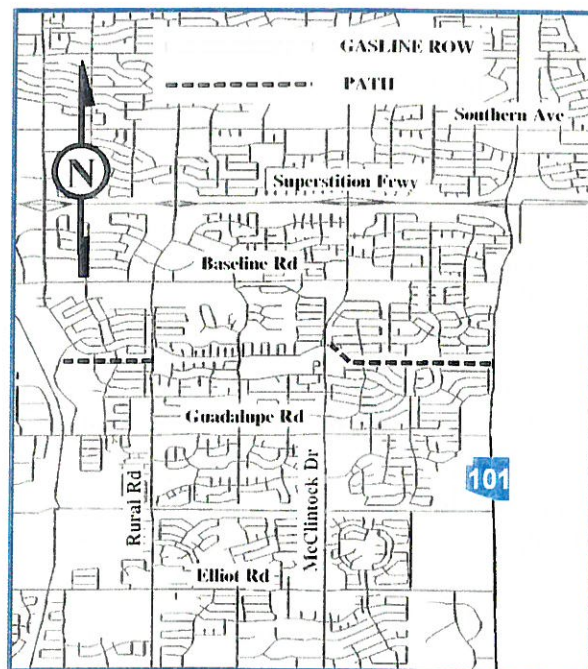
- Gaicki, Optimist, and Kiwanis Parks
- Fuller Elementary School

PROJECT ISSUES

- Existing neighborhood sidewalk between Price Frontage Road and McClintock Drive requires widening to meet path design standards.
- Segment from Kiwanis Park to Rural Road is new construction.

COST

- \$1.20 million for basic treatment
- \$1.40 million for enhanced treatment



FREEWAY PATH AND CROSSINGS

LOCATION

- Superstition Freeway (US 60), Priest Drive to McClintock Drive
- 3 miles

ALIGNMENT

- Freeway right-of-way, north side

CONNECTIONS

- Bustoz, Arredondo, Evans, Carminati, and Hudson Schools
- Rotary, Cole, Arredondo, Palmer, and Joyce Parks

CROSSING TREATMENTS

Freeway Crossings

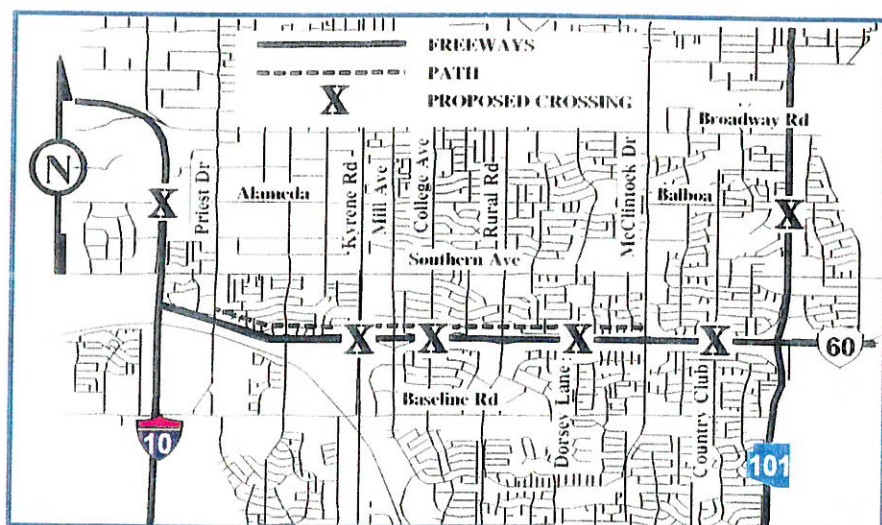
- US 60/College Avenue (reconstruct to meet current design standards)
- US 60/Country Club Way
- US 60/Dorsey Lane
- US 60/Kyrene Road (Tempe Industrial Lead Railroad Path)
- I-10/Alameda Drive
- SR 101/Balboa Drive

PROJECT ISSUES

- Coordinate with the Arizona Department of Transportation.

COST (excluding freeway crossings)

- \$3.60 million for basic treatment
- \$4.80 million for enhanced treatment



HOHOKAM EXPRESSWAY PATH

LOCATION

- Hohokam Expressway, Priest Drive to Broadway Road
- 2 miles

ALIGNMENT

- Broadway Road to Rio Salado, east side of Hohokam Expressway
- Hohokam Expressway to 52nd Street, south bank of Tempe Town Lake

CONNECTIONS

- Rio Salado Path System
- Lodging and employment centers

CROSSING TREATMENTS

At-Grade or Grade-Separated

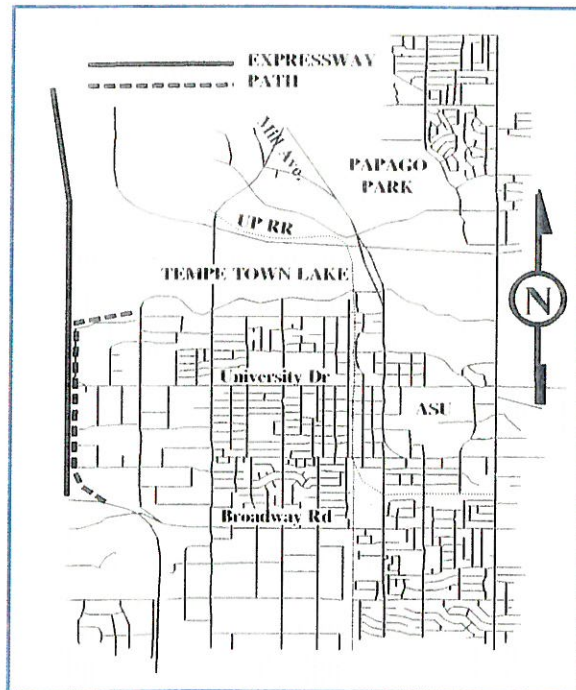
- 52nd Street
- University Drive

PROJECT ISSUES

- Will need to be coordinated with the Arizona Department of Transportation.
- Barriers will need to be constructed between the Hohokam Expressway and the path.
- More detailed study is needed at the 52nd Street and University Drive crossings.

COST

- \$2.96 million for basic treatment
- \$3.76 million for enhanced treatment



RIO SALADO PATH SYSTEM

LOCATION

- Rio Salado, Priest Drive to McClintock Drive
- 6 miles

ALIGNMENT

- North and south banks of Tempe Town Lake

CONNECTIONS

- Grand Canal Path
- Phoenix Main Line Railroad Path
- Hohokam Expressway Path
- Indian Bend Wash Path (Scottsdale)
- Moeur Park
- Downtown Tempe
- Hayden Butte Park
- Tempe Beach Park
- Papago Park

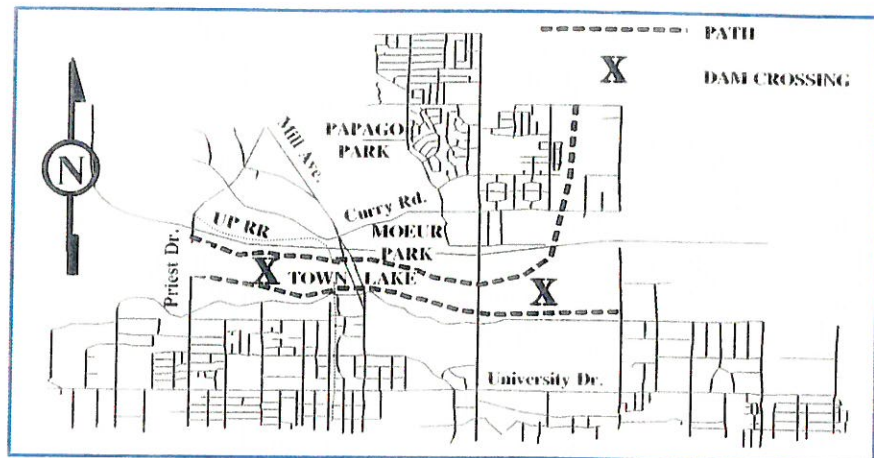
CROSSING TREATMENTS

Grade-Separated

- Up- and down stream dams

PROJECT ISSUES

- All path portions are completed and/or being designed as part of the amenity development around Tempe Town Lake.



COST

- Anticipated \$9.60 million cost being funded through City of Tempe Capital Improvement Program funds, federal grants, and developer contributions.

TEMPE CITY COUNCIL

Neil Giuliano, Mayor
Ben Arredondo, Vice-Mayor
Dennis Cahill
Barbara Carter
Leonard Copple
Hugh Hallman
Mark Mitchell

TEMPE BIKE COMMITTEE

Robin Arredondo, Chair
Robert Enderele, Vice-Chair
Edward Armstrong
Patricia Berning
Kirk Deem
Dan Durrenberger
Gary Ellefson
Roy Hoyt
Monica Kast
John Minett
Jonathan Reed
Margaret Tinsley
Roger Tornow





Prepared by



and

TERRANO
landscape architecture urban design