

MEMORANDUM

COMMUNITY DEVELOPMENT DEPARTMENT Planning Division

TO: Parks, Recreation and Open Lands Committee
FROM: Richard E. Lewis, City Planner
DATE: February 9, 2006
SUBJECT: Trail, Drainage, & Wildlife Corridor Standards

Background:

The City's adopted Parks, Recreation and Trails Master Plan establishes goals and policies for trail development in the City. The Goal Statements are:

1. Provide a comprehensive trail system in West Jordan.
2. Support implementation and extension of the citywide network through the land development, transportation infrastructure development process, and road construction projects.
3. Facilitate trail development with the use of diverse funding sources and partnership opportunities.
4. Promote use of trails as an alternative transportation mode.

The Master Plan contains a proposed master trail plan showing the location of future equestrian trails, multi-use trails, bike lanes and multi-use/equestrian trails. The Plan, however, does not provide details for the actual design and width of these trails.

Fortunately, the City has had several studies completed over the years that provide recommendations for preserving corridors throughout the City for trails, natural drainage channels and wildlife corridors. Those studies include:

- a. Barney's Creek Greenway -- Trail System Study
- b. West Jordan Open Land Plan
- c. Wildlife Evaluation of the West Jordan Open Lands Corridors

These studies provide recommendations for the desired width of open corridors for wildlife habitat and design criteria for various types of trail systems. At least three types of open space functions have been identified that can be accommodated along stream corridors and along canals. Those are:

1. Multi-Use Trail – Pedestrian
2. Multi-Use Trail – Pedestrian and Equestrian
3. Natural Habitat Greenway

To date, the open areas dedicated for future trail systems along our stream corridors have ranged from about 50 feet to over 800 feet in width depending on flood plain conditions. The average width of corridors, however, appears to be about 100 feet. The Planning

staff has prepared recommendations for the cross-section width for the various types of desired corridors. Once the cross-sections, including standards for trails, buffers, and waterways are completed, they should be adopted as part of the City's Parks, Recreation and Trails Master Plan as well as in the Official Public Improvement Standards, Specifications, and Plans.

The following policy decisions, however, will need to be addressed as part of the adoption of these standards:

1. What portion of the stream corridor outside the actual waterway should be required to be dedicated to the City as part of new subdivisions?
2. Should the developer be required to install the trails and other improvements as part of the subdivision process?
3. How will the long-term maintenance of trails and landscaping be managed?
4. Will the developer be required to pay for the corridor enhancements or will they be reimbursed for this cost?
5. Is it desirable to design these corridors as wildlife corridors with proper habitat or is the long-term function of the corridors an urban trail system?
6. Should there be some type of residential density bonus given for enhancement of the corridors beyond the minimum requirement?
7. Who installs and maintains needed temporary or permanent irrigation systems in the corridors?
8. What restrictions should be required for use of the corridors? Should they be lighted for nighttime use? Should equestrian and multi-use trails be separated by the streambed or shall they be adjacent to each other?

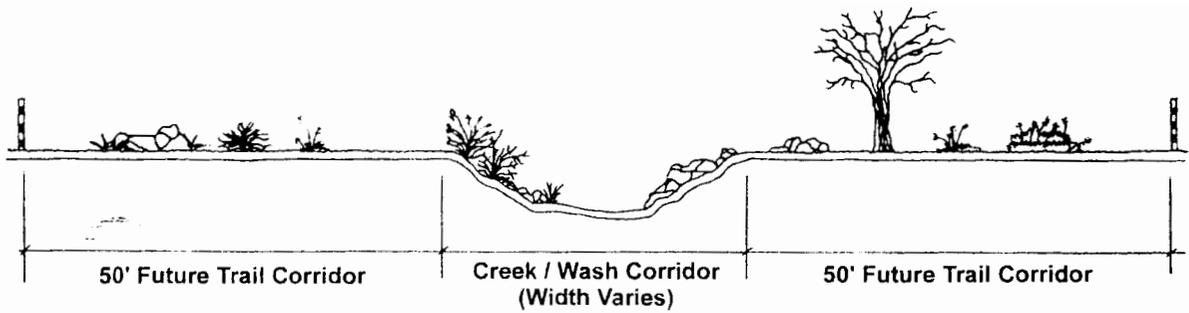
Summary:

There is a great opportunity for the City to create a unique trail system in the western portion of the City as development occurs over the next 10 years. It is critical, however, that standards and policies for the trail program be developed and adopted in the next few months. The studies and Trails Plan have already created the basic framework for the location and type of trails desired and all that is lacking for implementation is the trail design criteria. Perhaps even more important, however, is that policy decisions be made as to the extent of the financial and staff resources to be directed to maintaining a comprehensive trail system. It is unreasonable to expect homeowner associations or developers to maintain the trail systems over the long term. Funding options including a City wide-open space and trail improvement district should be investigated for long term funding sources.

Recommendation:

Review the proposed trail and corridor cross sections as well as the policy issues identified and make recommendations for consideration by the Planning Commission and City Council.

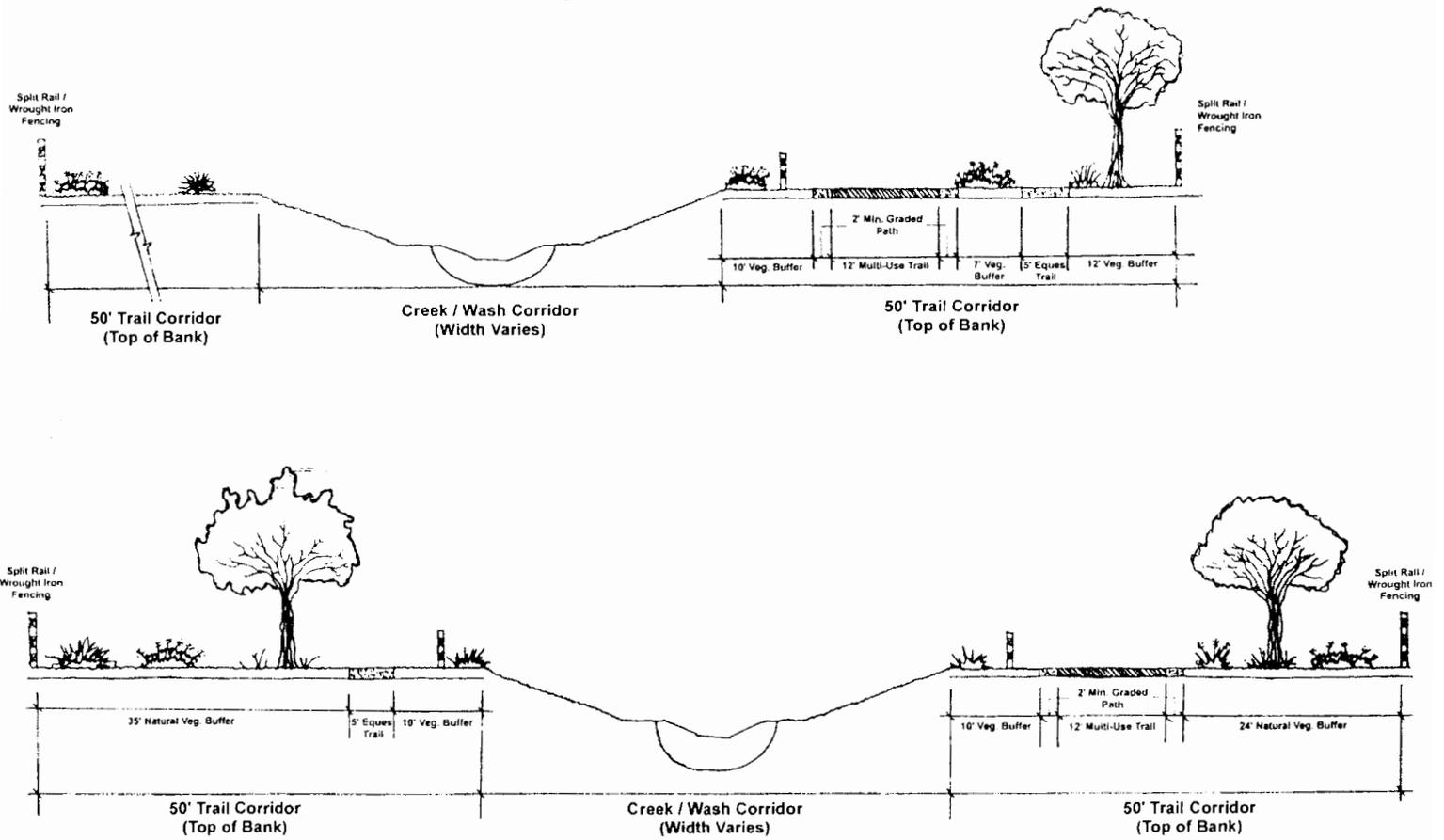
Split Rail /
Wrought Iron
Fencing



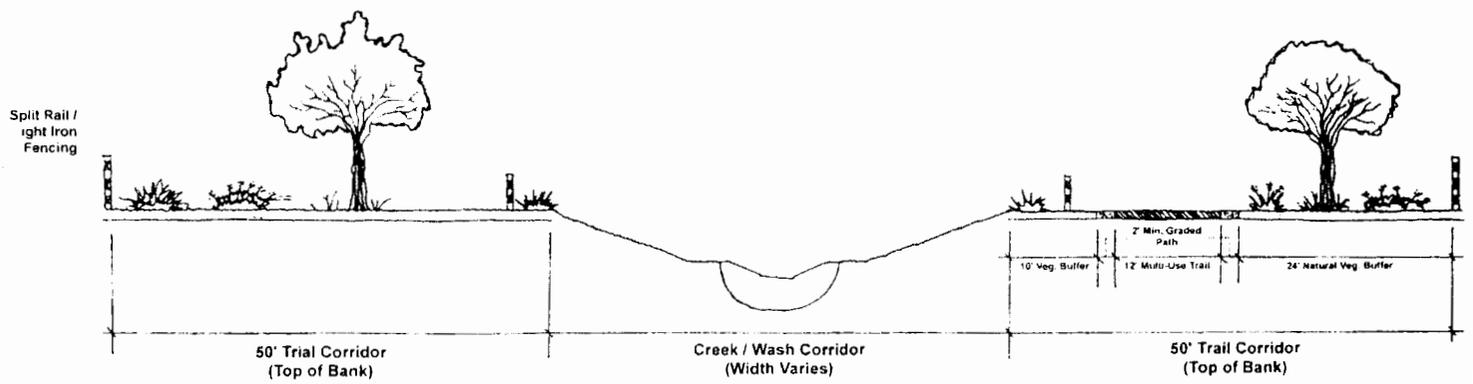
Split Rail /
Wrought Iron
Fencing

Future Trail / Wildlife Corridor

Multi-Use / Equestrian Trail Cross Sections

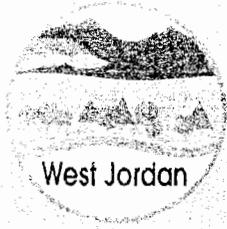


Barney's Creek Multi-Use Trail Cross Section



6 or 7 feet

4
o
r
5
f
e
e
t



Barney's Creek Multi-Use Trail System

User Information



Respect the Privacy of land & ownership along the trail system. Please leave no trace of your passage. place all trash in trash receptacles. Respect trail closures implemented to protect visitors & natural resources.



Be aware that you are sharing the trail with cyclists & equestrians. Please yield to equestrians, & allow ample space for their passage.



Please use a helmet & gloves. Ride at a safe & controlled speed. Yield to hikers & equestrians. Alert other trail users with a bell, or other audible signal when approaching from behind.



6 or 7 feet

4
o
r
5
f
e
e
t

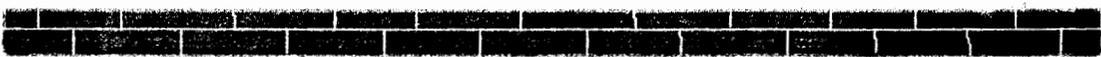
West Jordan City Barney's Creek

Multi-Use Trail System

Trail User Information and Regulations

All Visitors: Respect the privacy of land and homeowners along the trail system. Please leave no trace of your passage. place all trash in trash receptacles. Respect trail closures implemented to protect visitors and natural resources. Please use a helmet and gloves when riding cyclists or other forms of human-powered transportation. Share the trail.

Brick base



Base height of 18 inches

Base depth of 24 inches

8 or 9 feet

6 or 7 feet

4
o
r
5
f
e
e
t

Barney's Creek Multi-Use Trail System

All Visitors

Hikers & Pedestrians

Cyclist

Respect the Privacy of land & homeowners along the trail system.
Please leave no trace of your passage, place all trash in trash receptacles.
Respect trail closures implemented to protect visitors & natural resources.

Be aware that you are sharing the trail with cyclists & equestrians.
Please yield to equestrians, & allow ample space for their passage.

Please use a helmet & gloves.
Ride at a safe & controlled speed.
Yield to hikers & equestrians.
Alert other trail users with a bell, or other audible signal when approaching from behind.

West Jordan



1 or 1 1/2 feet

4
o
r
5
f
e
e
t

Barney's Creek Trail



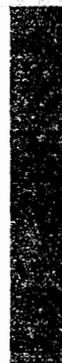
Remember
To
Share
The
Trail



2 or 3 feet

3
o
r
4
f
e
e
t

Barney's Creek Trail



Wendell Rigby

From: Tim Peters
Sent: Tuesday, September 05, 2006 3:14 PM
To: Brian Clegg
Cc: Richard Lewis; Bill Baranowski; Joe Morgan; Tom Burdett; Wendell Rigby; Nate Nelson
Subject: RE: Trail Head Signage

Those are nice looking signs.

For a trailhead sign, I would consider using something similar to the signs in place on the Jordan River Trail as opposed to having different signs at the different trails and parks throughout the City. We need to adopt a standard and then "stick with it." I recommend keeping the signs as similar as possible throughout the City. In addition, I would **strongly** recommend using anti graffiti sealant regardless of what sign you select...

-----Original Message-----

From: Peter Simmons
Sent: Tuesday, September 05, 2006 2:50 PM
To: Brian Clegg
Cc: Richard Lewis; Tim Peters; Bill Baranowski; Joe Morgan; Tom Burdett; Wendell Rigby; Nate Nelson
Subject: Trail Head Signage

Brian,

Here are some sample trail head signs. Please review and get me any comments. We have not looked into material or cost, which will be the next step once we choose a design. I will be forwarding this information over to Rick Lewis to see who else should be contacted. I would appreciate your comments as soon as possible.

Thanks,
Pete

Wendell Rigby

From: Peter Simmons
Sent: Tuesday, September 05, 2006 2:50 PM
To: Brian Clegg
Cc: Richard Lewis; Tim Peters; Bill Baranowski; Joe Morgan; Tom Burdett; Wendell Rigby; Nate Nelson
Subject: Trail Head Signage

Brian,

Here are some sample trail head signs. Please review and get me any comments. We have not looked into material or cost, which will be the next step once we choose a design. I will be forwarding this information over to Rick Lewis to see who else should be contacted. I would appreciate your comments as soon as possible.

Thanks,
Pete

P+T *Standards*

Wendell Rigby

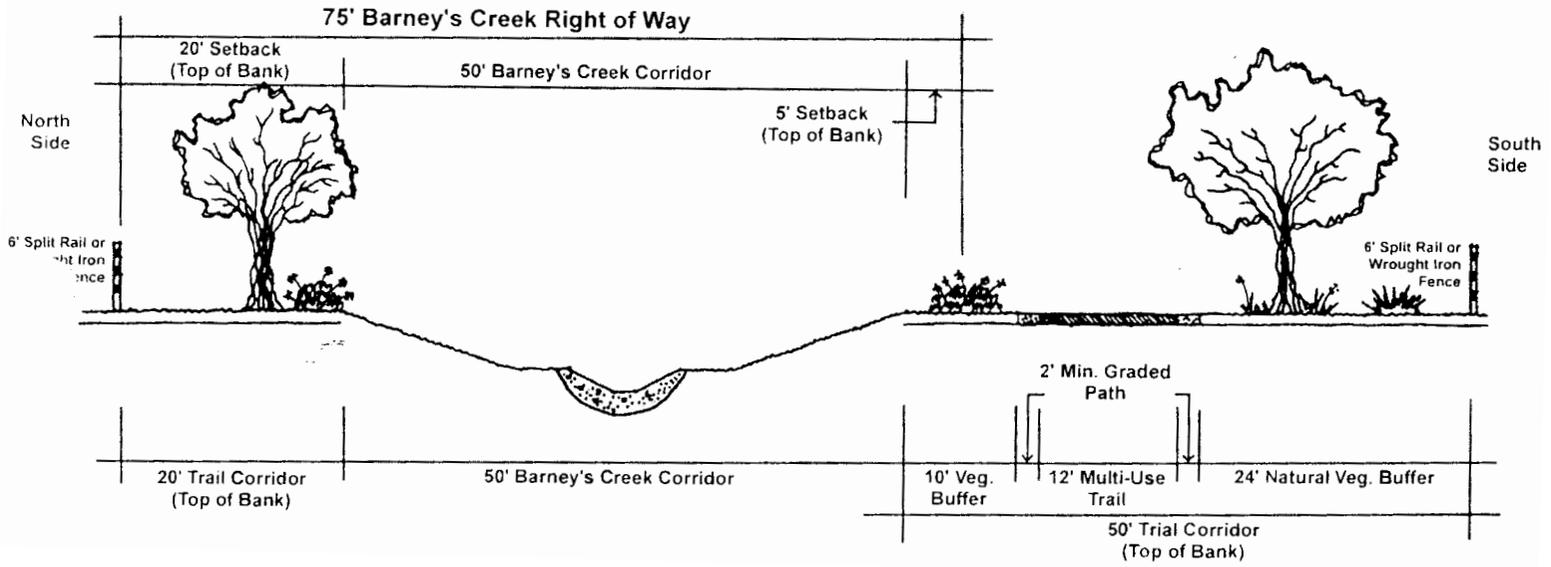
From: Peter Simmons
Sent: Friday, February 17, 2006 2:40 PM
To: Richard Lewis; Tom Burdett; Wendell Rigby
Cc: Brian Clegg; Greg Davenport; Nate Nelson; Paul Coates
Subject: Three Forks Corridor Determination

Rick & Tom,

Here is a copy of the memo to Peterson regarding the creek corridor determination. I will forward this onto Wendell & Brian. If you have any revisions please let me know and I will incorporate them.

Pete

Barney's Creek Alignment & Proposed Barney's Creek Multi-Use Trail Cross Section



City of West Jordan
Planning and Zoning Division
February 17, 2006



MEMORANDUM

TO: Justin Peterson
FROM: Peter Simmons, Associate Planner
SUBJECT: Northside of Barney's Creek
PROJECT: 3 Forks Phase 3 - 5

Planning Staff has met with Engineering, Parks and the Fire Department to discuss the design of north side of Barney's Creek as it pertains to 3 forks Phases 3 – 5. We have discussed in the past keeping the creek corridor consistent throughout the 3 Forks development. Staff has mentioned the multi-use trail will be placed on the south side of Barney's Creek for consistency as the trail comes through Ivory's Development and 3 Forks.

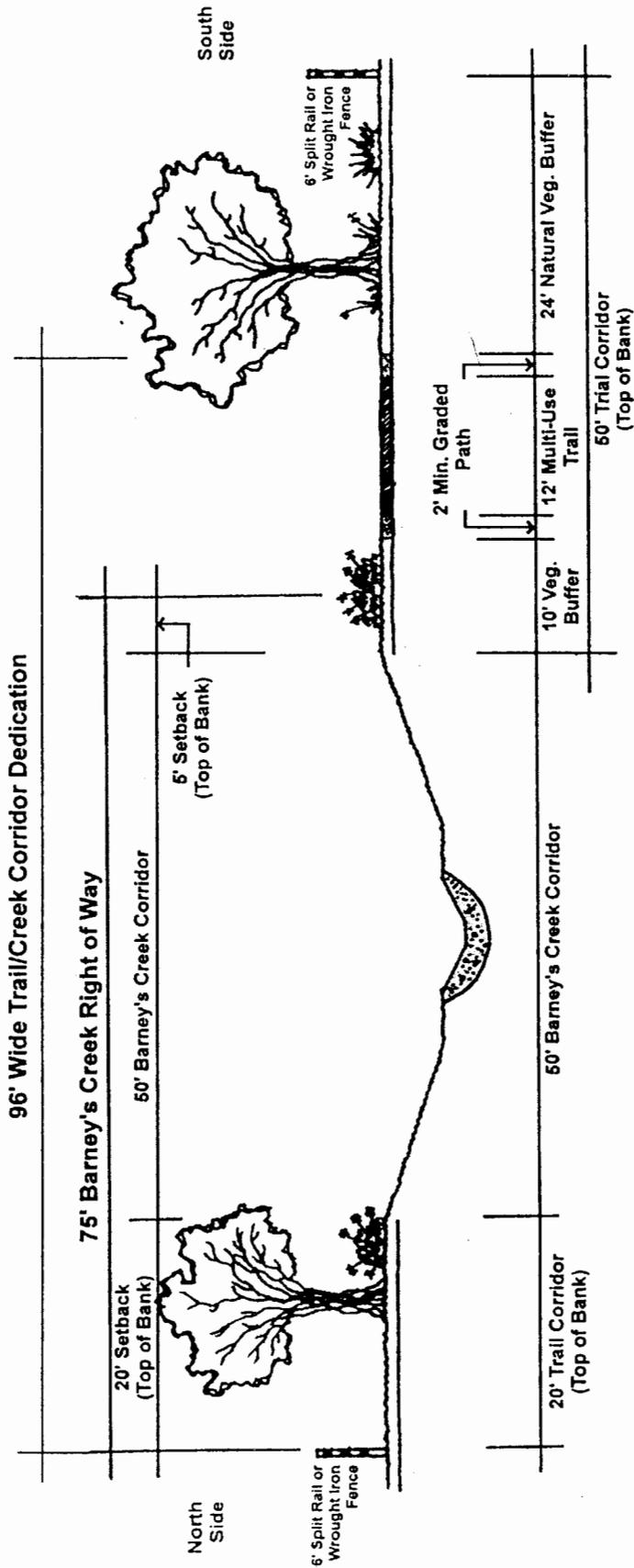
As staff prepares the trail specifications for the Multi-Use Trail, we are proposing a minimum 50' setback from the top of bank of Barney's Creek. However, the approved construction drawings for the Barney's Creek realignment show a 20' setback from top of bank along the north side. Staff is willing to keep the design layout as approved with the 20' setback and keeping that setback consistent through phases 3 - 5. Staff will be proposing that an additional 45' be dedicated along the south side of the Barney's Creek, which will be a total of 50' from top of bank. The 50' will allow for the installation of the needed maintenance road/ multi-use trail. Staff has attached a copy of the typical cross section for this area.

Staff is available to meet to discuss the enclosed comments, once your design team has reviewed them, so please contact me at 569-5098.

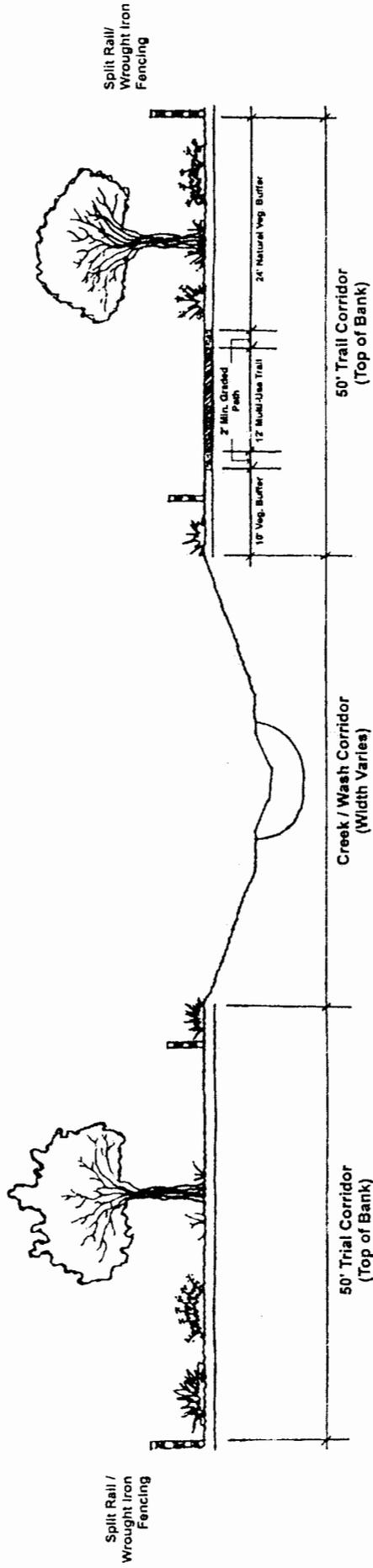
Signature:

Peter Simmons
Associate Planner

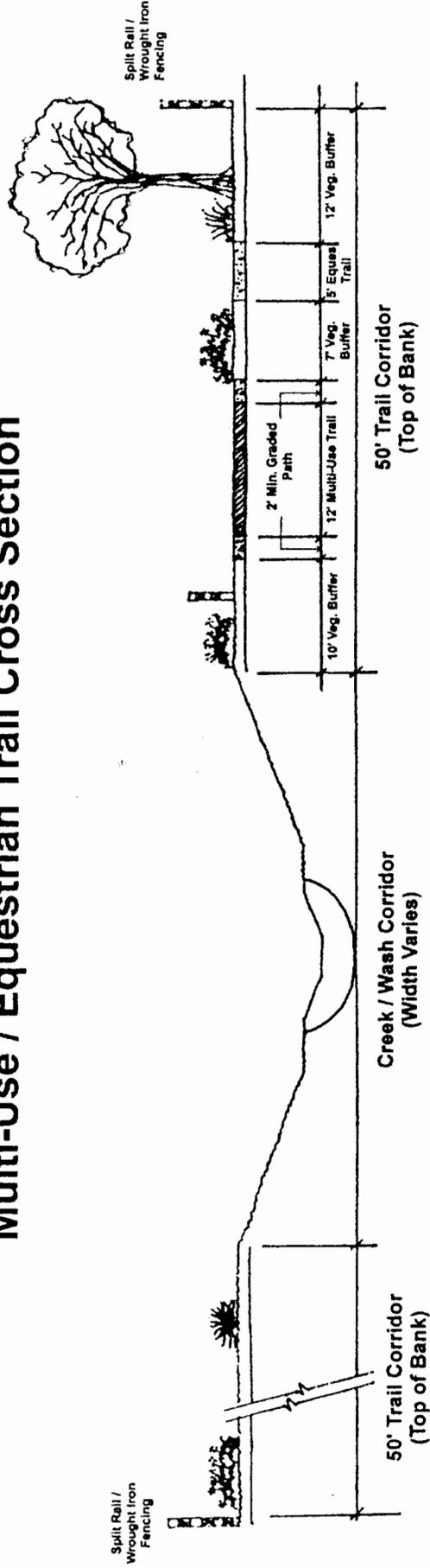
Multi-Use Trail Cross Section through 3 Forks Subdivision



Barney's Creek Multi-Use Trail Cross Section



Multi-Use / Equestrian Trail Cross Section



CITY OF WEST JORDAN

BARNEY'S CREEK GREENWAY - TRAIL SYSTEM STUDY

March 23, 1998

Prepared for:

City of West Jordan
9000 South Redwood Road
West Jordan, Utah 84088

Prepared By:

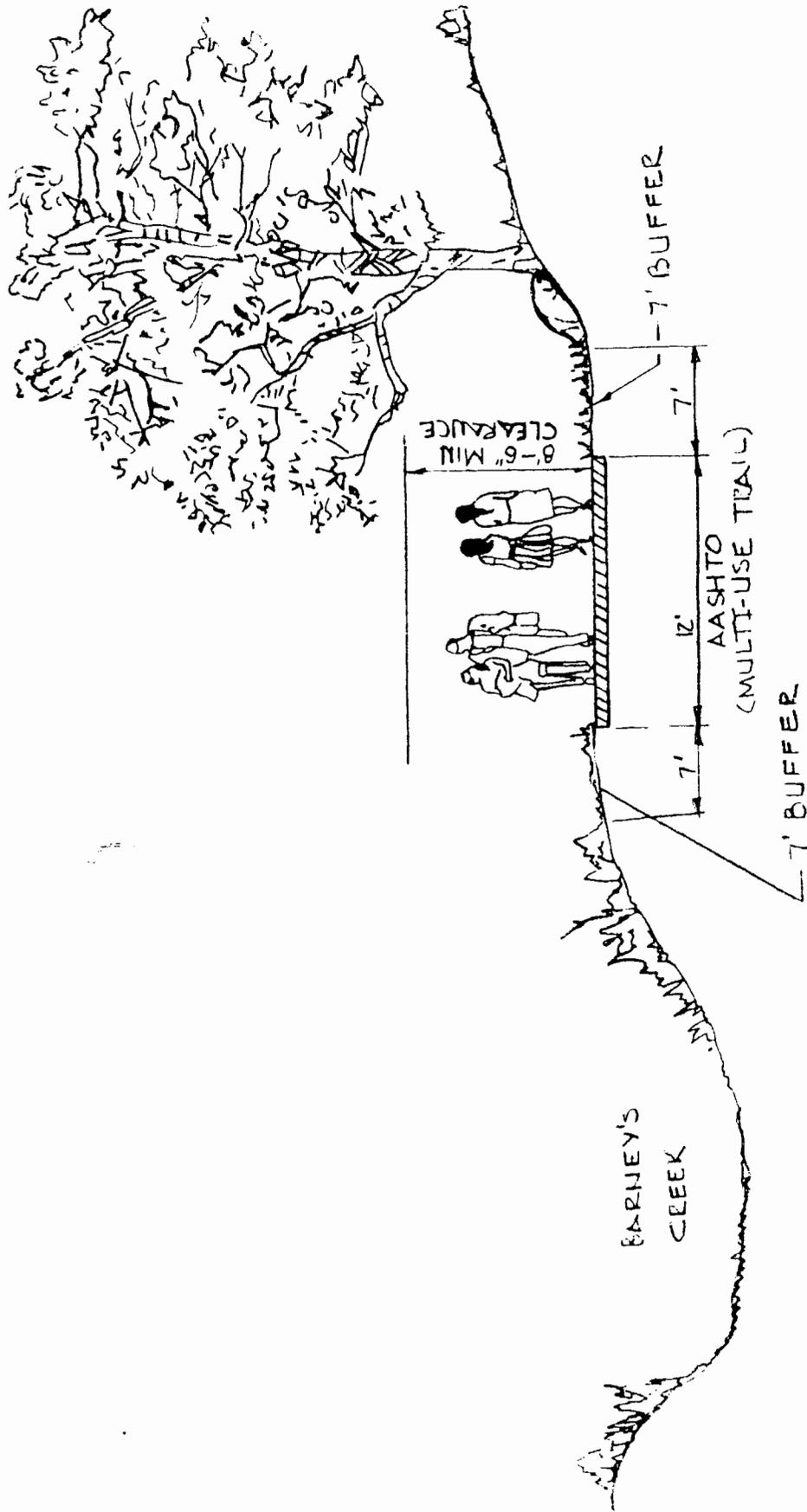
Thompson-Hysell, Inc.
2496 West 4700 South
Taylorsville, Utah 84118

Tully Design Group, Inc.
977 East Yale Avenue
Salt Lake City, Utah 84015

V. GREENWAY-TRAIL SYSTEM PLANNING GUIDE DETAILS

As part of this study, a series of preliminary greenway standards have been developed, referred to as *Planning Guide Details*. The intention of these planning guide details is to assist the City of West Jordan in the establishment of greenway parameters for the Study Area and for future expansion of the greenway system as it expands to the west. The planning guide details are listed below and presented at the end of this section.

- | | |
|-------------------------------------|--|
| <i>Planning Guide Detail No 1:</i> | Detail of trail pathway. |
| <i>Planning Guide Detail No 2:</i> | Detail establishing the parameters for the correlation of the greenway with a roadway along one side and residential backyards on the other. |
| <i>Planning Guide Detail No. 3:</i> | Detail establishing the parameters for the correlation of the greenway with backyards along both sides. |
| <i>Planning Guide Detail No 4:</i> | Detail establishing design criteria for trail user underpasses beneath roadway bridges. |



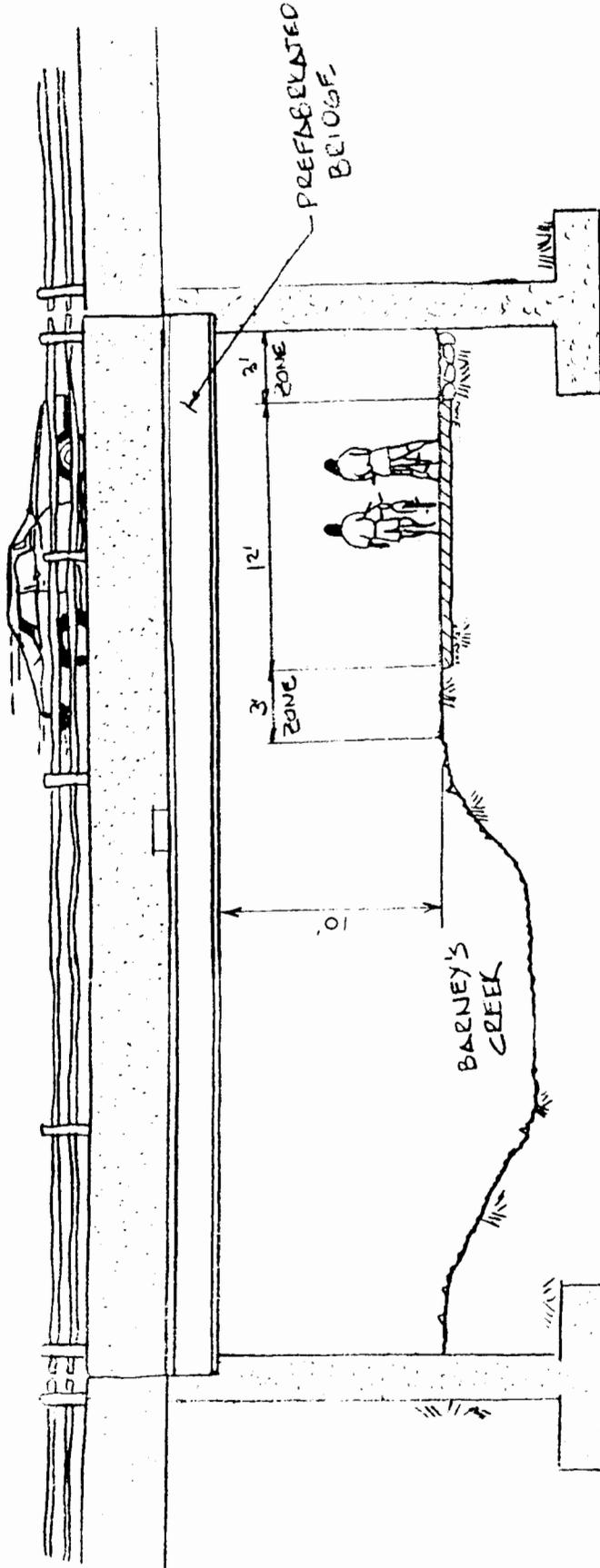
Planning Guide
Detail No.
1

Barney's Creek
Greenway - Trail System
Study

City of
West Jordan
Engineering Division
600 South Redwood Road
West Jordan, Utah 84088

Tully Design Group, Inc.
Landscape Architecture
Land Planning
977 East Yale Avenue
Salt Lake City, Utah 84106
(801) 388-7900

THOMPSON-HYSELL, INC.
2496 West 4700 South, Taylorsville, UT 84118



Planning Guide
Detail No.
4

Barney's Creek
Greenway - Trail System
Study



City of
West Jordan
Engineering Division
9000 South Redwood Road
West Jordan, Utah 84088

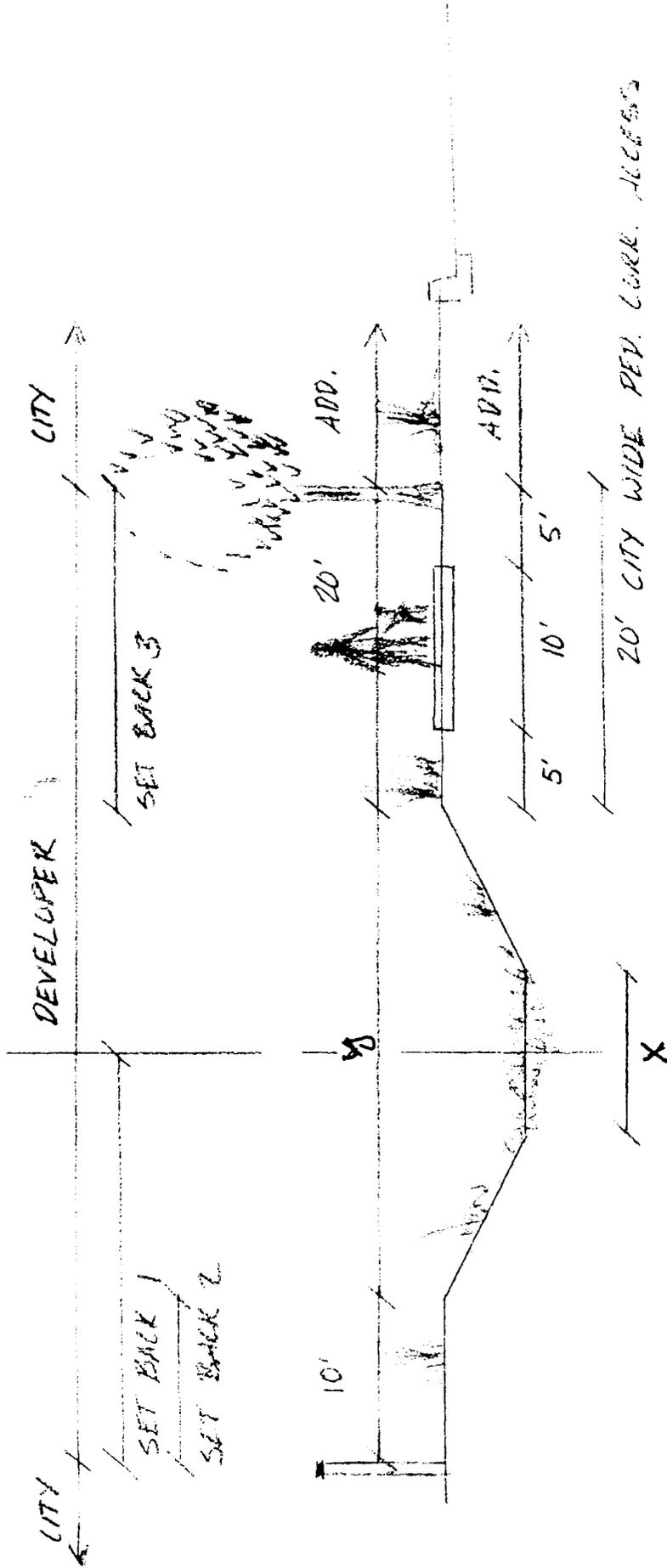


Tully Design Group, Inc.
Landscape Architecture
Land Planning
977 East Yale Avenue
Salt Lake City, Utah 84108
(801) 365-9940



THOMPSON-HYSELL, INC.
2496 West 4700 South, Taylorsville, UT 84118

W. ST JORDAN TRAILS CROSS SECTION



X = LOW FLOW
Y = HIGH FLOW

Park Trails (Types I, II, and III)

Park trails are multipurpose trails located within greenways, parks, and natural resource areas.

General Description: Park trails are multipurpose trails located within greenways, parks, and natural resource areas. They are the most desirable type of trail because they:

- Emphasize harmony with the natural environment.
- Allow for relatively uninterrupted pedestrian movement to and through the city's park system and development areas, including, where possible, through commercial and industrial parks.
- Effectively tie the various parks and recreation areas together to form a comprehensive park and trail system.
- Protect users from urban development and associated vehicular traffic.

The three types of park trails illustrated are intended to accommodate walkers, bicyclists, and in-line skaters.

Given their attributes, park trails are at the top of the trail classification hierarchy. They should be considered the preferred trail type and used to the greatest extent possible.

Development Parameters: Important steps in developing park trails are:

- Preparing a comprehensive park and trail system plan that clearly defines the routing of park trails, especially those within greenways.
- Acquiring the desired land or establishing trail easements at an early stage of community development.
- Establishing appropriate development policies (backed by city ordinance) requiring land developers to incorporate greenways and park trail corridors into their development plans in accordance with the trail system plan.
- Establishing design standards that define how park trails are to be built. Trail design should coincide with standards adopted by local and state departments of transportation and AASHTO (American Association of State Highway Transportation Organizations), as appropriate. All trails should comply with ADA (Americans with Disabilities Act) design criteria.

In previously developed cities, abandoned railroad beds, run-down waterfronts, utility rights-of-way, and scenic/historic routes provide the greatest opportunity for park trails.

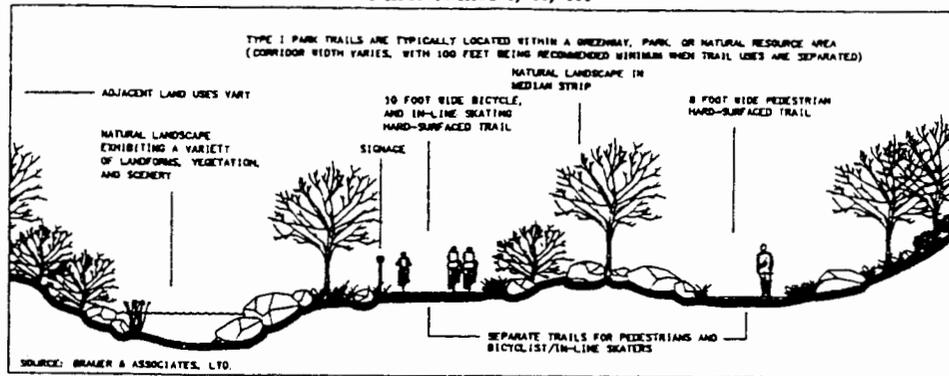
Types of Trails: There are three types of trail under the park trail classification:

- Type I trails are used in situations where use patterns dictate separate paths for pedestrians and bicyclists/in-line skates. An example would be a trail around an inter-city lake or along a riverfront.
- Type II trails are more suited to lighter use patterns, such as from a housing subdivision to a natural resource area.
- Type III trails are suited for areas requiring minimum impact, such as nature preserves.

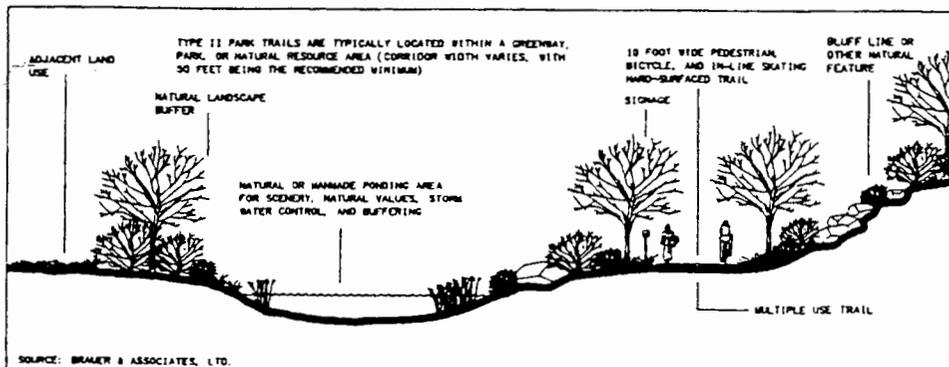
The type used depends on application. *Figure 4.8 - Park Trail Types* illustrates a typical cross-section of each type.

Commuter Linkages: Park trails can certainly be used for bicycle commuting purposes. The type of trail used and its design should reflect the anticipated magnitude of commuter use. On the high end, Type I trails as shown may not be adequate to safely accommodate a “bicycle freeway” type of use. In such a case, wider or directional trails may be appropriate.

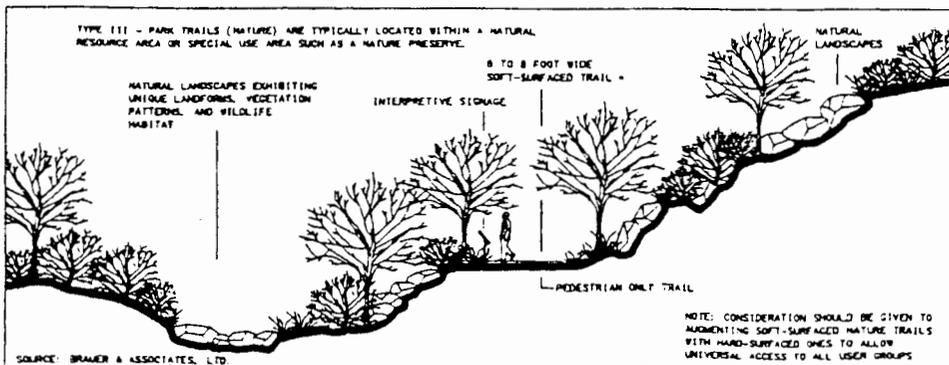
Figure 4.8
Park Trails I, II, III



TYPE I PARK TRAIL



TYPE II PARK TRAIL



TYPE III PARK TRAIL (NATURE TRAIL)

Connector Trails (Types I, and II)

Connector trails are multipurpose trails that emphasize safe travel for pedestrians to and from parks and around the community.

General Description: The significant difference between connector and park trails lies largely in their location. Park trails emphasize a strong relationship with the natural environment within a park-like setting, while connector trails or recreation connectors emphasize safe travel for pedestrians and bicyclists to and from parks and around the community. In general, connector trails are located within existing road rights-of-way and utility easements or along artificial drainageways. The two classes of connector trails illustrated are intended to accommodate walkers, horseback riders, bicyclists, and in-line skaters.

Development Parameters: Important steps in developing connector trails are:

- Preparing a comprehensive park and trail system plan that clearly defines the routing of connector trails.
- Establishing trail rights-of-way and easements at an early stage of community development.
- Establishing design standards that define how connector trails are to be built. Trail design should coincide with standards adopted by local and state departments of transportation and AASHTO, as appropriate.

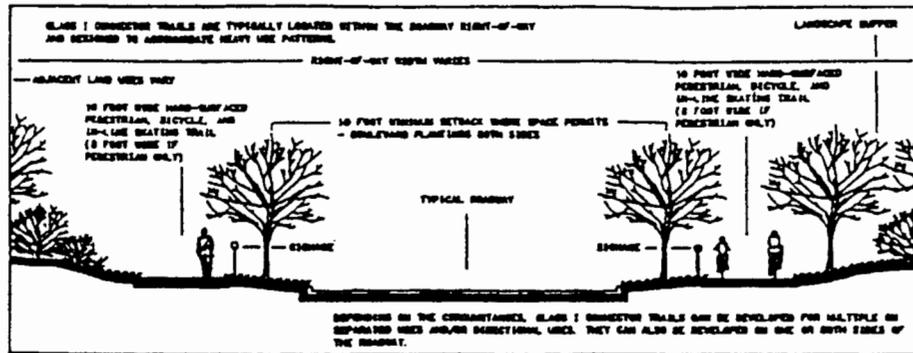
Types of Trails: There are two types of trail under the connector trail classification:

- Type I trails are used in situations where use patterns dictate separate paths for pedestrians, bicyclists and, if necessary, in-line skaters. An example would be a trail within the shoulder of right of way of a collector street or parkway.
- Type II trails are suited to lighter use patterns, such as a link between a parkway or thoroughfare and a nearby housing development.

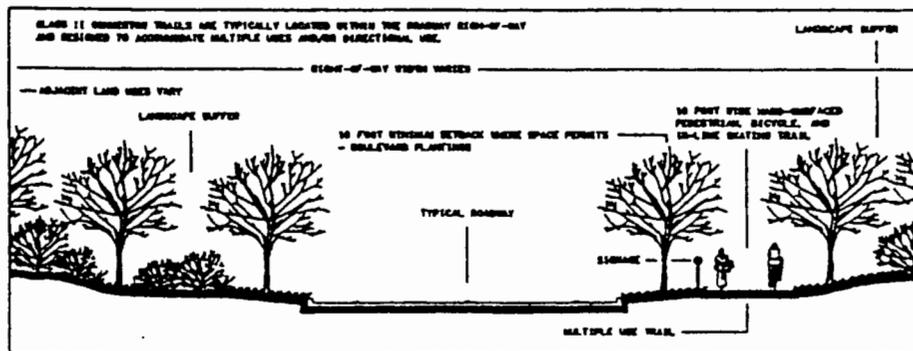
The type used depends on application. **Figure 4.9 - Connector Trail Types** illustrates a typical cross-section of each type.

Commuter Linkages: Connector trails can be used for bicycle commuting purposes. The type of trail used and its design should reflect the anticipated magnitude of commuter use. As was with Type I Park Trails, Type I Connector Trails may not be adequate to safely accommodate a "bicycle freeway" type of use. In such a case, wider or directional trails may be appropriate.

Figure 4.9
Connector Trail Types
Type I, II



TYPE I CONNECTOR TRAIL



TYPE II CONNECTOR TRAIL

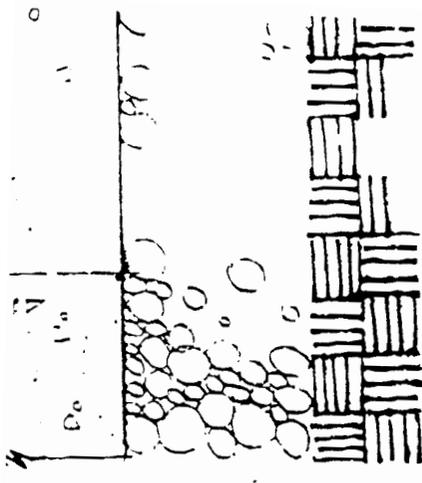
Bikeways (Bike Routes and Lanes)

Bikeways are paved segments of roadways that serve to safely separate bicyclists from traffic.

General Description: Bikeways are paved segments of roadways that serve to safely separate bicyclists from traffic. They come in the form of bike routes and bike lanes. The distinction between the two is a matter of exclusivity. While bike routes are essentially paved shoulders or segments of the roadway that serve to separate bicyclists from traffic, bike lanes are designated portions of the roadway for the preferential or exclusive use of bicyclists.

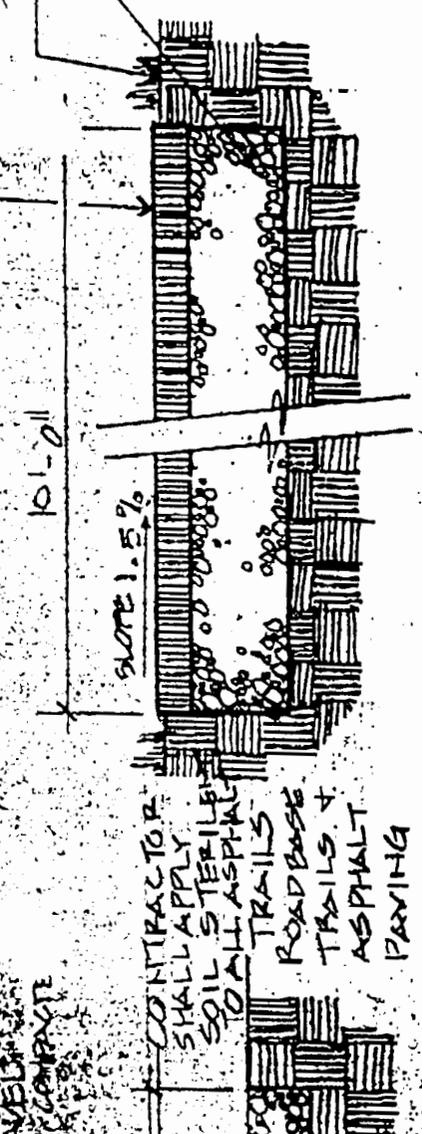
It is important to recognize that bikeways serve distinct user groups, including:

- Commuters—those who use their bicycle as a means to get from point A to B as expeditiously as possible. Their trips can be viewed as substitutes for vehicle trips when planning light transportation ways.
- Fitness enthusiasts—those who cycle for fitness as well as recreation.
- Competitive athletes—those who bicycle competitively.



C CONCRETE

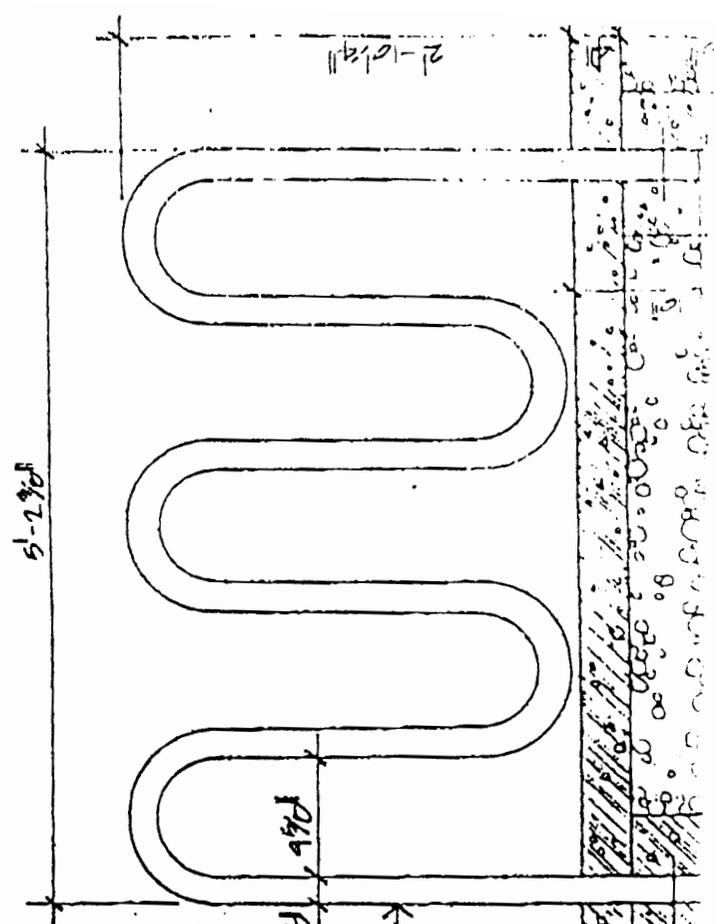
FINISH GRADE
 1/2" COMPACTED
 UNTREATED BASE
 COURSE
 COMPACTION FOR
 WALKWAY TO BE 90%



B Asphalt Walk Detail
 1" = 1'-0"

CONTRACTOR
 SHALL APPLY
 SOIL STABILIZER
 TO ALL ASPHALT
 TRAILS
 ROADBASE &
 TRAILS &
 ASPHALT
 PAVING

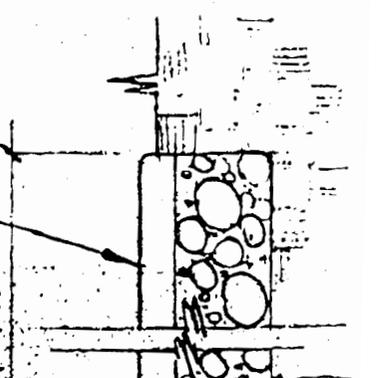
Detail



5'-2 3/8"
 2 1/2"
 4 1/2"
 RIBBON RACK MADE FROM
 ASTM 50 SCHEDULE 40
 GALVANIZED STEEL PIPE
 (2.975" OD X .154" WALL)
 BRANIK RIBBON RACK
 MODEL RB-7 OR
 APPROVED EQUIVALENT
 4" CONCRETE
 7" X 7" PAD
 6" GRAVEL

PEDESTRIAN PATH
 CUT W/ PEDESTRIAN
 LOCATION (SEPARATE W/
 RAIL FENCE

ASPHALT PAVING
 SERIES
 E PLAN





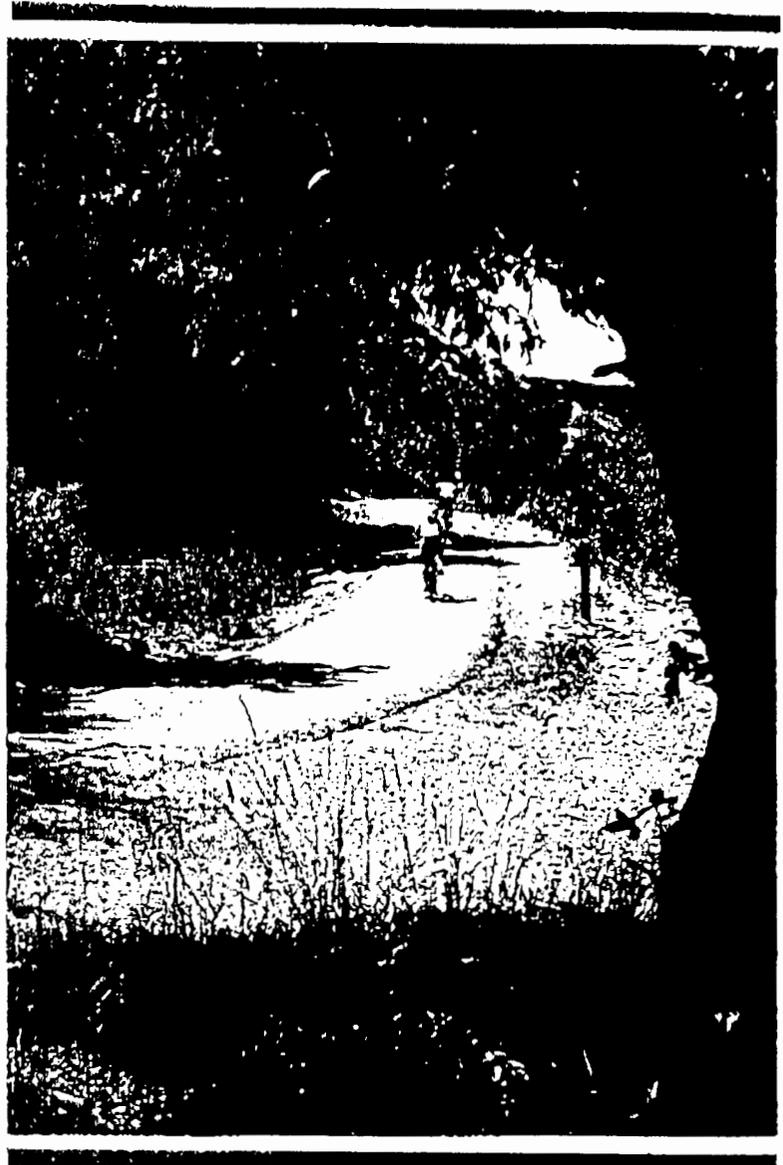
"Nature is the basis, but man is the goal..."

--George Santayana

Trail Development Standards

Chapter 4

SALT LAKE COUNTY REGIONAL TRAILS PLAN



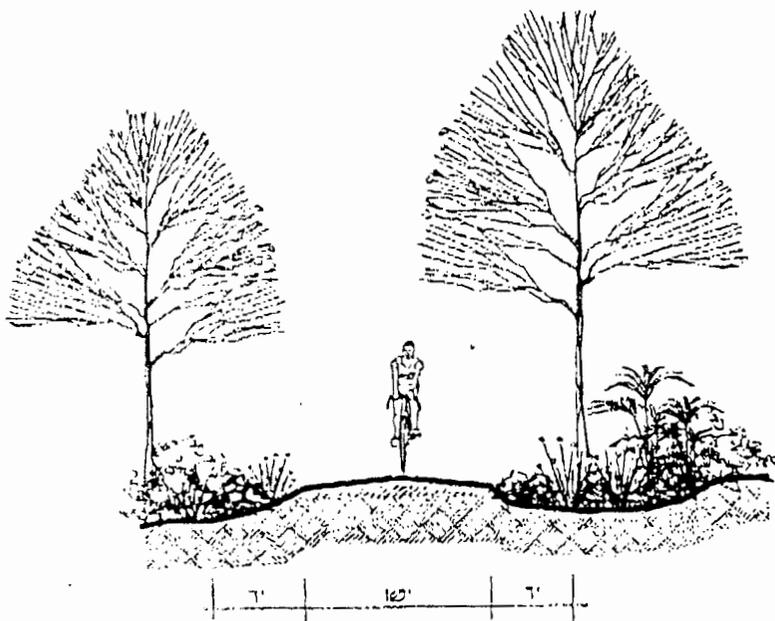
Prepared for Salt Lake County Parks & Recreation Division
Prepared by AE Intra Group

PURPOSE OF TRAIL DEVELOPMENT STANDARDS

Construction standards for the development of trails will help encourage uniformity throughout the entire regional trails system. While standards serve as a convenient guide to encourage the uniformity of trail construction, deviation from standards will be necessary when conditions or preferences dictate.

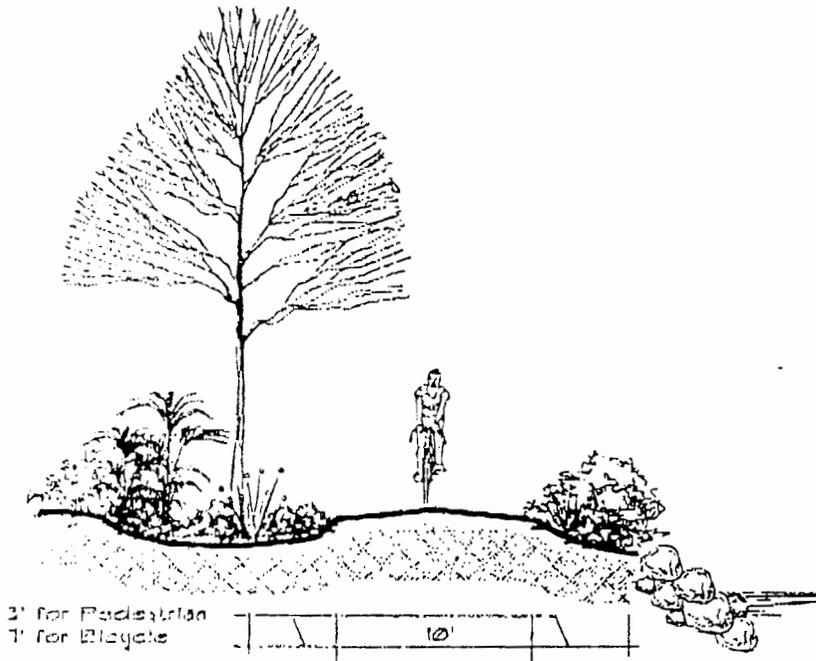
TRAIL CLASSIFIED BY USE AND FUNCTION

Trail classes designate the type of construction and the admissible use(s) on an individual trail. The question, "Who has the trail been built for" mandates trail classification. This Regional Trails Plan identifies four types or classes of trail: 1) Paved Surface, for pedestrians and bicycles; 2) Gravel Surface, for pedestrians and bicycles; 3) Primitive, for pedestrians only; 4) Equestrian, for horses only.



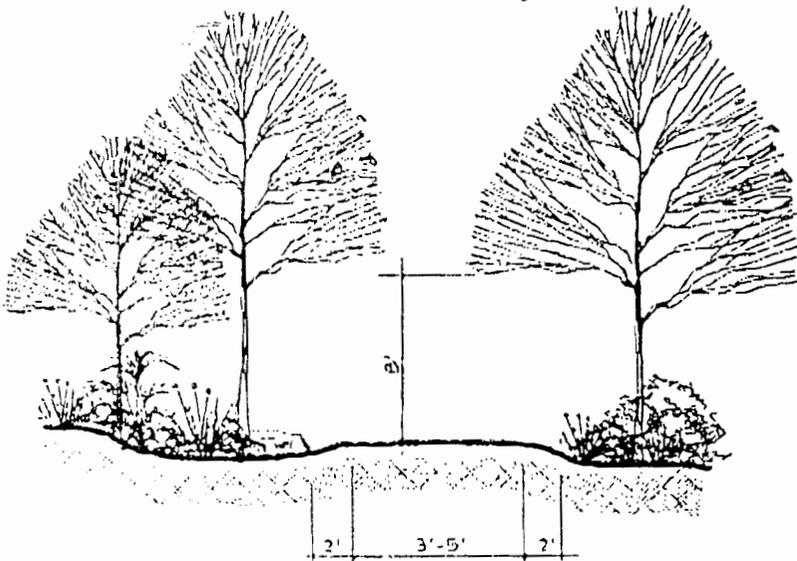
■ PAVED SURFACE TRAIL

- 10' Wide surface ■ Sub-grade preparation ■ Concrete (preferred), Asphalt (Alt)
- Vertical gradient range - up to 3% slope is desirable, 10% slope is maximum, 15% slope is allowable for short distances only ■ Clearances - 7' horizontal, 8' vertical
- Horizontal alignment - as per plan ■ Pedestrian/Bicycle uses only



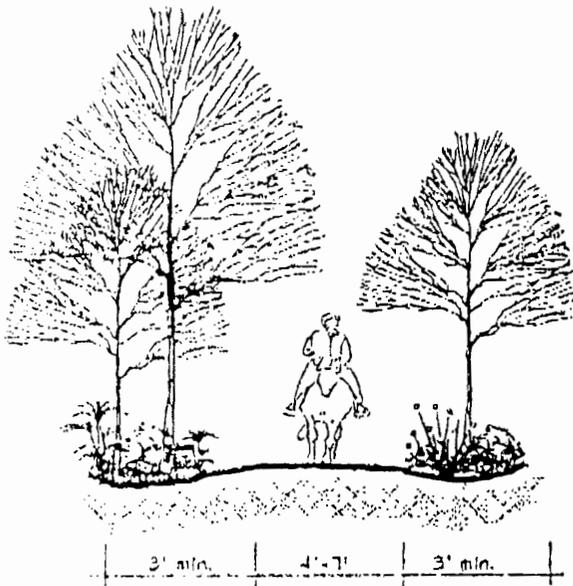
■ GRAVEL SURFACE TRAIL

- 10' Wide surface ■ Sub-grade preparation ■ 1/2" crushed gravel surface ■ Clearances for pedestrian use - 3' horizontal, 8' vertical ■ Clearances for bicycle use - 7' horizontal, 8' vertical ■ Horizontal alignment - as per plan ■ Vertical gradient range - up to 10% slope is desirable, 12% slope is maximum, 15% slope is allowable for short distances only. ■ Pedestrian/Bicycle use only .



■ PRIMITIVE TRAIL

- 3-5' Wide surface ■ Un-surfaced ■ Clearances - 2' horizontal, 8' vertical ■ Vertical gradient range - up to 10% slope is desirable, 20% slope is maximum, 25% slope is allowable for short distances only. ■ Pedestrian uses only.



■ EQUESTRIAN TRAIL

4-7' Wide soft surface: sand, un-crushed gravel, wood chips ■ Vertical gradient range - up to 10% desirable, 15% is maximum. ■ Clearances - 2' horizontal, 8' vertical ■ Horse use only

Chapter 7

BICYCLES

States and communities of all sizes throughout the country are undertaking significant investments in facilities to encourage bicycle and pedestrian transportation. Why should cities encourage bicycle transportation? Non-motorized travel has benefits in a number of areas, as outlined below:

1. Personal reasons

- Offers least expensive mode of travel (except for walking).
- Reduces travel time compared to walking or where parking is scarce.
- Provides door-to-door access.
- Provides cardiovascular fitness.

2. Environmental reasons

- Reduces air pollution/global warming/acid rain.
- Decreases reliance on petroleum products.
- Decreases noise pollution from automobiles.
- Decreases land area devoted to parking.
- Most energy-efficient mode of transportation.

3. Societal reasons

- Reduces vehicle trips.
- Improves public health through a cleaner environment, more exercise.
- Provides mobility for citizens without cars or those too young to drive.
- Improves overall quality of life.
- Increases 5-minute catchment area of public transit from ¼-mile by walking to 1-mile by biking.

Additionally, federal policy through the Transportation Equity Act for the 21st Century (TEA-21) legislation strongly supports such activities, and significant sources of funding for these types of projects have been made available through the Transportation Enhancement Program and, in non-attainment areas, through the Congestion Mitigation and Air Quality (CMAQ) improvement program of TEA-21.

7.1 FACILITY DESCRIPTIONS

7.1.1 Types of Bicyclists

The primary objective of the citywide trails and bikeway network is to serve the needs of all types of bicyclists. There are many types of bicyclists with varying levels of skill and willingness

7.1.2 Bikeway Types

The following descriptions of bicycle-related terms are provided to assist readers who are unfamiliar with bicycle terminology. The terms bicycle and bike are interchangeable.

- **Bikeway** - A thoroughfare suitable for bicycles - it may either exist within the right-of-way of other modes of transportation, such as highways, or along a separate and independent corridor.
- **Bicycle Facilities** - A general term denoting improvements and provisions to accommodate or encourage bicycling, including parking facilities, maps, all bikeways and shared roadways.
- **Bicycle or Multi-use Path (Bike Path or Class 1)** - A bikeway physically separated from motorized vehicular traffic and either within the highway right-of-way or within an independent right-of-way. Bike path facilities are often excellent recreational routes and can be developed where right-of-way is available. Typically, bike paths are a minimum of 10 feet to 12 feet wide, with an additional graded area maintained on each side of the path.
- **Bicycle Lane (Bike Lane or Class 2)** - A portion of a roadway that has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes are ideal for minor thoroughfares or collectors. Under certain conditions, bike lanes may be beneficial on streets with significant traffic volumes and/or speeds. Under ideal conditions, minimum bike lane width is four feet.
- **Signed Bike Route (Class 3)** - A segment of a system of bikeways designated by appropriate directional and/or informational signs. In this plan, a Class 3 signed bike route may be a local or residential street, bicycle boulevard, an arterial with wide outside lanes, or a roadway with a paved shoulder.
- **Paved Shoulder** - The part of the highway that is adjacent to the regularly traveled portion of the highway, is on the same level as the highway, and when paved can serve as a bikeway. Paved shoulders should be at least four feet wide, and additional width is desirable in areas where speeds are high and/or a large percentage of trucks use the roadway.
- **Wide Outside Lane** - An outside (curb) lane on a roadway that does not have a striped bike lane, but is of sufficient width for a bicyclist and motorist to share the lane with a degree of separation. A width of 14 feet is recommended to safely accommodate both motor vehicles and bicycles.
- **Bicycle Boulevard** - A residential street that has been modified for bicyclist safety and access.

7.1.3 Bicycles on Sidewalks

Bicycles traveling on sidewalks is not a recommended practice and may cause significant safety hazards for both bicyclists and pedestrians. Although bicyclists and pedestrians can safely share separated trails and pathways, the shared use of a sidewalk is subject to behavior patterns not found on shared trails and pathways. First, a minimum 10-foot width is recommended for shared trails and pathways; sidewalks are not usually that wide and may also have obstructions such as posts, benches, trash containers, and newspaper racks which further reduce the travel width. Second, bicyclists are generally not expected to be on the sidewalk; consequently, pedestrians are less likely to watch for bicyclists and may be more prone to colliding with a bicycle. It is especially hazardous for persons exiting a store or business directly into the path of a bicycle. Third, intersections pose a significant hazard to bicyclists especially from right-turning vehicles; although right-turning motorists may be watching for pedestrians in the crosswalk, they may not see the bicyclist traveling at a higher and unexpected speed through the intersection.

7.1.4 Design Guidelines

There are various items to be considered when installing a bicycle lane. One of the first decisions to be made is the width of the bicycle lane. A bike lane should be at a minimum 4' wide with 5' being preferred. Generally, the higher the speed of the roadway facility the wider the bike lane needs to be. Wider lanes provide a greater feeling of comfort for the cyclists using the facility. Figure 7.1.1 illustrates bicycle lane widths versus posted vehicle speed limits.

The width of multi-use paths also needs to be considered. The use of the path and the expected volume of users need to be considered. Most pedestrians and bicyclists prefer a hard surface while equestrian users and some joggers prefer a soft surface. Wider paths are preferred when high volumes are expected. If a very high volume of users is expected, it may be necessary to separate the two travel directions by a small median. Figure 7.1.2 shows recommended path widths for various volumes of users.

When striping a bicycle lane decisions need to be made on how to handle the interaction between vehicles turning right and bicyclists. When no exclusive right turn lane for vehicles is provided, it is recommended that the bike lane be a dashed rather than solid line beginning 200' from the intersection. When exclusive right turn lanes are provided the bike lane should go between the right turn lane and the inside through lane. As the bike lane crosses the beginning of the right turn lane dashed striping should again be utilized. These concepts are illustrated in Figure 7.1.3, which shows various options for striping bicycle lanes on streets with and without on-street parking.

The striped line between the edge of the right vehicle travel lane and the bicycle lane should be 6" wide as opposed to the typical 4" wide, which serves to emphasize the importance of vehicles not crossing the line. The dashed lines used for bicycle lanes should also be 6" wide and should have short dashes about 4' long with 8' between dashes.

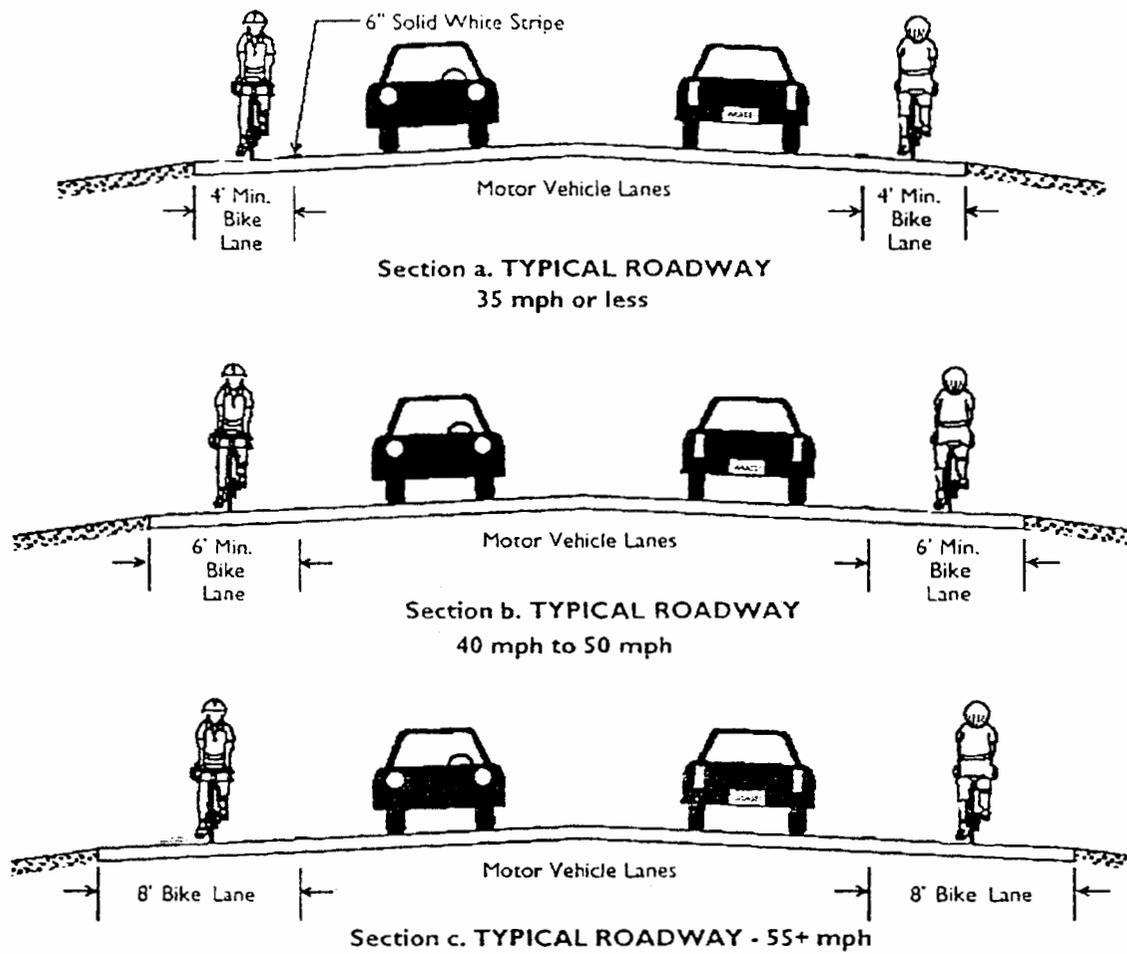
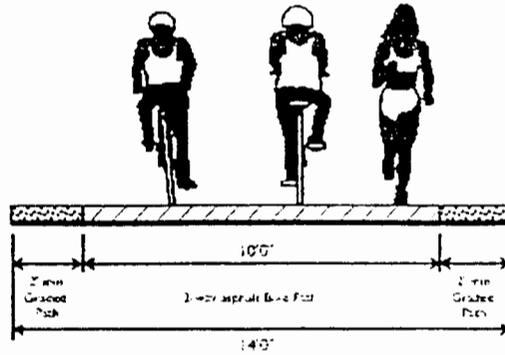
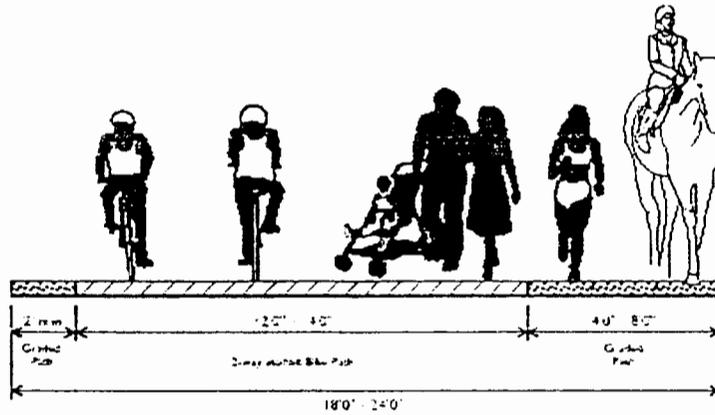


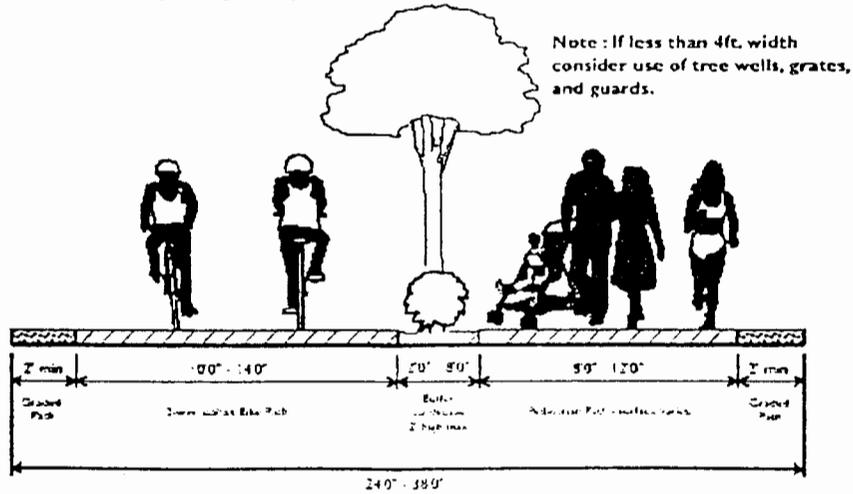
Figure 7.1.1 – Bicycle Lane Widths vs. Posted Speed Limits



1a. BIKE PATH WITH PEDESTRIAN TRAFFIC OF LESS THAN 50 PER PEAK HOUR



1b. MULTI-USE TRAIL - 50 TO 400 PEDESTRIANS PER PEAK HOUR



1c. SEPARATE PATHS FOR BIKES AND PEDESTRIANS MORE THAN 400 PEDESTRIANS PER PEAK HOUR

Figure 7.1.2 – Multi-Use Path Cross Sections