Austin Area Bicycle System

Interim Report

AUSTIN AREA BICYCLE SYSTEM

INTERIM REPORT

JOINT TRANSPORTATION STUDY OFFICE
Austin, Texas
May 1975

The preparation of this report has been financed in part through a grant for technical studies from the U. S. Department of Transportation, Urban Mass Transportation Administration, under provisions of Section 9 of the Urban Mass Transportation Act of 1964, as amended.

FOREWORD

Because of the desire to provide a diversity of transportation modes to satisfy the travel needs of the people and enable more flexibility in developing the urban landscape, the Austin City Council adopted the Proposed Austin Bicycle Plan in June of 1972. One of the major proposals embodied in the 1972 plan was the development of a citywide bicycle system. The system would connect the neighborhods with recreational areas, shopping areas, and other transportation facilities. The plan also pointed out the need to develop a bicycle network as part of the citywide system within the central area of the city.

The citywide bicycle system has been developed primarily through input from school P.T.A.'s, students, interested school officials, neighborhood organizations, and bicycle clubs throughout the city. Through the City of Austin's Urban Transportation Department and the Austin Transportation Study Office, the bicycle plan has been and will continue to be coordinated with the overall transportation planning process.

This plan, then, is the first step toward achievement of the long-range goal of a citywide bicycle system as previously outlined in the 1972 plan. It is also the tool to be used in programming the implementation of bicycle facilities as an integral part of the comprehensive transportation system currently being developed. It is recognized that some modifications may be necessary due to the development of the other major elements of the transportation system.

HIGHLIGHTS

- The bicycle is an integral element of Austin's transportation system; the provision of bicycle facilities will encourage its increased usage and will have many associated advantages and benefits.

- Nationwide, bicycles have outsold automobiles for the past three years.

- In Austin approximately 111,000 bicycle licenses have been issued since registration began in the early 1940's, and, since 1971, registrations have been averaging over 16,000 per year.

- The 1974 citywide sales figure for bicycles was 8,847, an increase of 63% over the 1973 figure.

- The planning and development of the citywide bicycle system was based on past experience with several bicycle pilot projects and on new information about bicycle usage and acceptance.

- Information from parents and school children was gathered by means of transportation survey in five elementary schools representative of all of Austin. The results indicated the average number of bicycles per household was 2.22 while the average number of automobiles per household was 1.87.

- Citizen input was used to develop the system network. In addition to the survey, suggestions for possible bike routes were requested of every Austin school and P.T.A. group. These route proposals were studied, evaluated, and refined by the Transportation Study Office. A tentative system was developed and submitted to the P.T.A. groups, neighborhood organizations, bicycle clubs, and other interested groups for their review and recommendations. These recommendations were then evaluated by the Study Office, and those determined to be applicable were incorporated into the interim proposal.

- Legal, safety, and design aspects are the interrelated key considerations that must be addressed in the planning and development of a bicycle system as well as in its implementation.

- Bikeway design criteria include facility warrants, horizontal and vertical clearance standards, applications to new and existing streets, grade standards, intersection channelization, bicycle parking, and route signs and markings. These criteria should be applied uniformly throughout the system.

- The citywide system has been designed for maximum integration with the Hike and Bike Trail networks to provide access to Austin's parks and recreational facilities.

HIGHLIGHTS (Cont.)

- The proposed network requires the utilization of bridges in several places including the reconstruction or modification of existing major structures, the addition of bicycle and pedestrian facilities to major structures currently in the planning stage, and the construction of a number of minor bridges to span creeks or small ravines.

- Funding sources for the implementation of the citywide system include the Capital Improvements Program of the City of Austin, the Road and Bridge Fund of Travis County, and funds budgeted in the future by the Texas Highway Department. The possibility of other funding sources at the state and federal level will be pursued as they become available.

- At present the 1973 Federal Aid Highway Act authorizes the limited use of existing highway funds for bicycle facility development. It is felt that a more effective way to develop these facilities is to commit local monies for this purpose and thus implement the system over a shorter time period while utilizing the federal monies for major roadway improvements that require more lead time.

- The proposed bicycle system is to be built over a six-year period at a projected cost (installation, 20% contingencies, and maintenance) of $9,175,300 for the same period. This total cost includes funds to cover engineering plans, inspections, surveying and administration. It does not include funds to cover the cost of major bridges, right-of-way purchase, or utility relocation.

- The bicycle plan is an integral part of the overall transportation plan which will be continually monitored and evaluated by the Transportation Study Office. Major reevaluations and updates of the overall plan will occur at five-year intervals; however, the bicycle element of the plan will be reviewed at yearly intervals to provide for efficient staging and the capability of being responsive to changes in priorities or unforeseen problems.

- For the bicycle to be used safely and effectively as a mode of transportation in Austin cooperation and mutual respect of bicyclists and motorists is critical. Through continuous public education concerning the interrelated legal, safety and design considerations associated with cycling and the relationship of the citywide system to the total transportation network, increased public awareness will help further the development of this cooperation and mutual respect.

- The proposed bicycle system is a sound economic investment. On a relative scale, the expenditures for bicycle facilities in relation to the expenditures for other modes of transportation is small and the resultant benefit is a complete network for another mode of transportation -- the bicycle. This, in turn, helps to provide a balanced transportation system in its overall approach to moving people and goods efficiently and safely.

RECOMMENDATIONS

Briefly, along with the development of the recommended network, the following supportive recommendations are needed to continue the integrations of the bicycle into the urban transportation system:

1. Use stenciled pavement messages in green where directions and warnings are needed for cyclists, especially at or within intersections (Chapter III, page 23).

2. Channelization of bicycle and automobile movements should be provided at major intersections (Chapter III, page 23).

3. Each route that contains on-street parking facilities should be carefully evaluated to determine what parking controls are necessary to provide adequate movement by automobiles and bicycles as well as needed parking space (Chapter III,page 24).

4. Supply bicycle parking facilities at strategic locations, provided through public agencies, service organizations, or by the institutions and firms adjacent to the bikeways (Chapter III, page 24).

5. Rebuild, modify, or construct bridges where necessary to fully implement the system (Chapter V, page 28).

6. Use monies available through the Federal Aid Highway Act for major City projects and utilize funds in the City of Austin's Capital Improvements Program and the Road and Bridge Fund of Travis County and future funds budgeted by the Texas Highway Department for the actual construction of bikeways (Chapter V, page 32).

7. Provide sufficient funding to allow for necessary expansion of the three city departments directly associated with implementing and maintaining the system: Public Works, Urban Transportation, and Parks and Recreation (Chapter V, page 32).

8. Amend the City Code to provide for additional safe and efficient interface of bicycle and motorized transportation, and adequate bicycle parking facilities (Chapter V, page 34).

9. Revise the master plan requirements (via the forthcoming Transportation Plan) concerning street rights-of-way in new subdivisions, to allow bicycle facilities to be developed concurrently with the subdivision (Chapter V, page 34).

RECOMMENDATIONS (Cont.)

10. Promote the adoption of an integrated statewide identification system to provide a means of identifying and returning stolen bicycles (Chapter V, page 34).

11. Promote information programs through the Traffic Safety Division of the Urban Transportation Department to reach persons already operating a motor vehicle in Austin, persons who currently or who would potentially use bicycles, and Austin Police Department recruits training with the Department (Chapter V, pages 35-36).

12. Where necessary, bicycle lanes on existing streets should bypass hazardous drainage inlets without intruding into motorized traffic lanes (Chapter VII, page 39).

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DEFINITION OF TERMS

1. Bicycle Route (bikeway) - A designated area utilized by bicycles and linking two or more known points. The terms route or bikeway are of a general usage to imply either a lane, path, or trail.

2. Bike Street - A public roadway which is designated as a bicycle route but does not have any specific areas reserved for the use of bicycles such as lanes, paths, or trails.

3. Bike Lane - A reserved area within a public roadway and designated for the use of bicycles. It may be a two-way or a one-way lane.

4. Bike Path - A reserved area along, but not within a roadway. It may also be used by pedestrians.

5. Bike Trail - A designated area within parks or recreational areas. It may also be used by pedestrians.

6. Roadway - A paved area within the street right-of-way to be utilized by traffic.

7. Traffic Lanes - Roadway segments which may be used by cyclists but are not reserved or designated for their exclusive use.

8. Neighborhood Routes - Routes within a small area which serve schools, churches, and playgrounds.

9. Area Routes - Routes which connect neighborhoods and serve shopping areas and regional parks.

10. Commuter Routes - Routes which serve relatively long distance bike travel and which connect neighborhoods and areas with major business districts and shopping areas.

AUSTIN AREA BICYCLE SYSTEM

INTERIM REPORT

CHAPTER I

INTRODUCTION

An integral element of Austin's transportation system is the bicycle. The favorable climate of the central Texas area promotes bike riding and supports the acceptance of the bicycle along with public transportation and the automobile as viable means of transportation. With this in mind, and recognizing the need to provide the people of Austin with a choice of transportation modes, a citywide system is proposed.

The provision of bicycle facilities will encourage the increased usage of the bicycle. Some of the advantages associated with this increased usage include reduction in auto traffic, parking congestion, energy consumption and air pollution, and a greater diversity and beauty of urban design. The implementation of the citywide system will also improve safety for both cyclists and motorists, and will help create a balanced, more coordinated transportation network in the urban area. Bikeways will add another dimension to the accessibility of work areas, recreation areas, shopping areas, and public transportation, and those who take advantage of the facilities will benefit from physical fitness aspects of cycling.

Types of Routes

The term "Bicycle Route", or Bikeway", refers to any area within a street right-of-way or park designated for the use of bicycles and linking two or more known points. A bicycle route may be designed as a street without lanes (bicycle street); a lane within a roadway (bicycle lane); a lane within a roadway protected by a barrier, a path adjacent to a roadway, or a trail through park lands (examples of bicycle paths). There are three

functional types of routes within the citywide system which serve different areas and which have slightly different characteristics. (See Figure 1)

Neighborhood routes are designed to serve schools, churches, playgrounds, parks, and other amenities within a small area. These routes are designated primarily along residential streets characterized by low traffic volumes and low automobile speed. Depending upon individual street characteristics, route markers and/or bicycle lanes will be installed where needed to identify the streets as "Bicycle Routes".

Area routes are designed to serve a larger geographic area, connecting several neighborhoods and serving local shopping areas and district parks. These routes are designated predominantly along collector streets by the installation of bicycle lanes and route markers. In some cases special action may be required to insure the safety of the cyclists; in addition to the posting of signs and the painting of lanes, traffic buttons may be installed along the lane markings to warn motorists against entering the bike lane. Where conditions dictate, these routes may require the removal of parking to develop the bicycle lanes.

Commuter routes are designed to serve relatively long distance bike travel, connecting neighborhoods and areas with major business districts and shopping areas. These routes will consist of on-street bicycle lanes or bicycle paths which are physically separated from vehicular traffic.

The citywide bicycle system has been designed for maximum integration with the Hike and Bike Trail system to provide access to the recreational facilities and parks of Austin. Besides being scenic recreational routes these trails can also be used in commuting since they intersect at frequent intervals with segments of the citywide system.

TYPES OF ROUTES

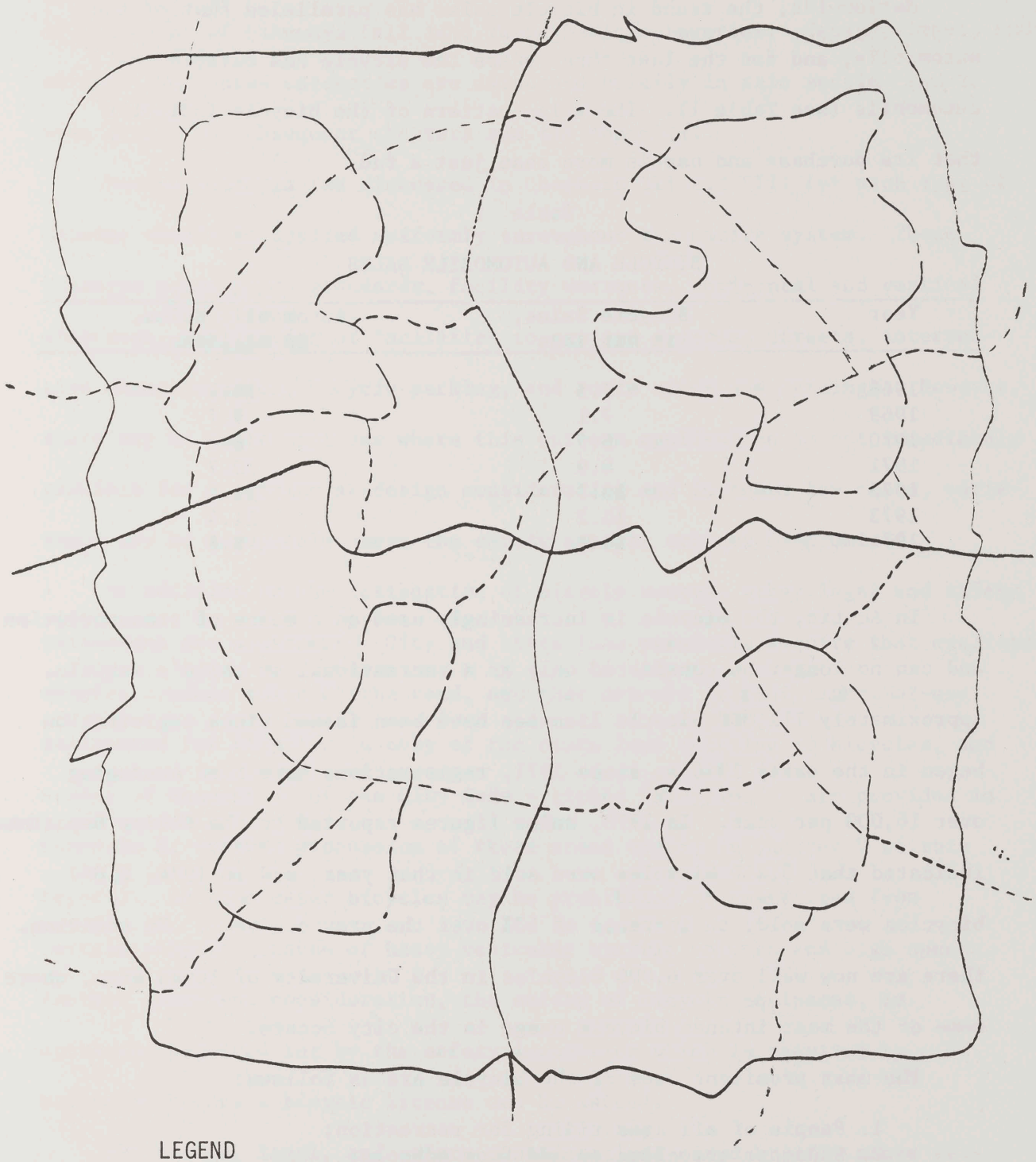


FIGURE 1

Bicycle Usage

Nationwide, the trend in bicycle sales has paralleled that of the automobile, and for the last three years the bicycle has outsold the automobile (see Table 1). The sales pattern of the bicycle indicates that its purchase and use is more than just a fad.

Table 1

BICYCLE AND AUTOMOBILE SALES

Year	Bicycle Sales, in millions	Automobile Sales, in millions
1968	7.5	10.0
1969	7.1	9.7
1970	6.9	8.1
1971	8.9	10.7
1972	13.7	11.0
1973	15.2	11.4
1974	14.1	8.8

In Austin, the bicycle is increasingly used as a means of transportation and can no longer be considered only as a recreational or child's vehicle. Approximately 111,000 bicycle licenses have been issued since registration began in the early 1940's; since 1971, registrations have been averaging over 16,000 per year. In 1973, sales figures reported to the Police Department indicated that 5,410 bicycles were sold in that year, and in 1974, 8,847 bicycles were sold, an increase of 63% over the previous year. In addition, there are now well over 6,000 bicycles in the University of Texas area, where some of the most intense bicycle usage in the city occurs.

The most prominent uses of the bicycle are as follows:

1. People of all ages riding for recreation;
2. Students traveling to and from schools;
3. Children and adults traveling to and from business and shopping centers in the community;
4. Citizens riding for better health and physical fitness;
5. People traveling to and from their places of employment.

Key Considerations

The primary considerations to insure the safe and efficient operation of all types of bikeways fall into three basic categories: design, legal, and safety. The three categories are discussed briefly in this section and in more detail in subsequent chapters and the Appendix.

Design criteria (as discussed in Chapters III and VII) for each type of bikeway should be applied uniformly throughout the entire system. These criteria cover grade standards, facility warrants, horizontal and vertical clearance, application of facilities to new and existing streets, intersection channelization, bicycle parking, and route signs and markings. However, there may be route sections where this uniform application is not immediately possible for a particular design consideration and in these few cases, variations may be acceptable where the safety aspects are not compromised.

In addition to the designation of bicycle routes, other legal and safety provisions are necessary. City and state laws presently require that cyclists observe certain rules of the road, and that drivers respect rights-of-way designated for bicycles (a copy of the state laws relating to bicycles, and a copy of Chapter VI of the City Code - titled "Bicycles" - are provided in Appendix E; further discussion of these areas occurs in Chapter V of this report). In some cases bicycles may be prohibited or restricted from certain streets because of heavy vehicular traffic volumes and high speeds. Another important consideration, the safety of bicycle equipment, is currently provided for by the safety inspection which is required by city ordinance before a bicycle license can be issued.

The design, legal, and safety considerations cited briefly above provide the basis for developing a safe and usable bicycle system. Periodic review and revision, where necessary, will continually provide for the legal and safety needs of the cyclist.

In order to enable the bicycle to be used safely and effectively as a mode of transportation in Austin, cooperation and mutual respect of bicyclists and motorists is critical. Through continuous public education concerning the interrelated design, legal, and safety considerations associated with cycling, and the relationship of the citywide system to the total transportation network, increased public awareness will help to further develop this cooperation and mutual respect.

CHAPTER II

PLANNING AND DEVELOPMENT OF THE CITYWIDE SYSTEM

The planning and development of the citywide bicycle system was based on past experience with several bicycle pilot projects and on new information about bicycle usage and acceptance. In soliciting citizen input in developing the system, information from parents and school children was gathered by means of a transportation survey, and suggestions for possible bike routes were requested of every Austin school and P.T.A. In planning, close consideration was given to integration of the bicycle routes with the Hike and Bike Trail system in order to form a citywide system that will meet the cycling needs of Austinites and blend with the natural environment of the city.

The Hike and Bike Trail System

Austin currently has one of the most comprehensive greenbelt bikeway systems in the country. The first hike and bike trail was initiated in 1961 by the Russell Fish family, running for a distance of 1.5 miles along the banks of Shoal Creek from Pease Park northward to 29th Street. This trail has since been extended by the City's Parks and Recreation Department southward to 9th Street and northward past the historic Seider's Springs, a pioneer picnic area, to join with a mile of trail on the State-owned special schools property.

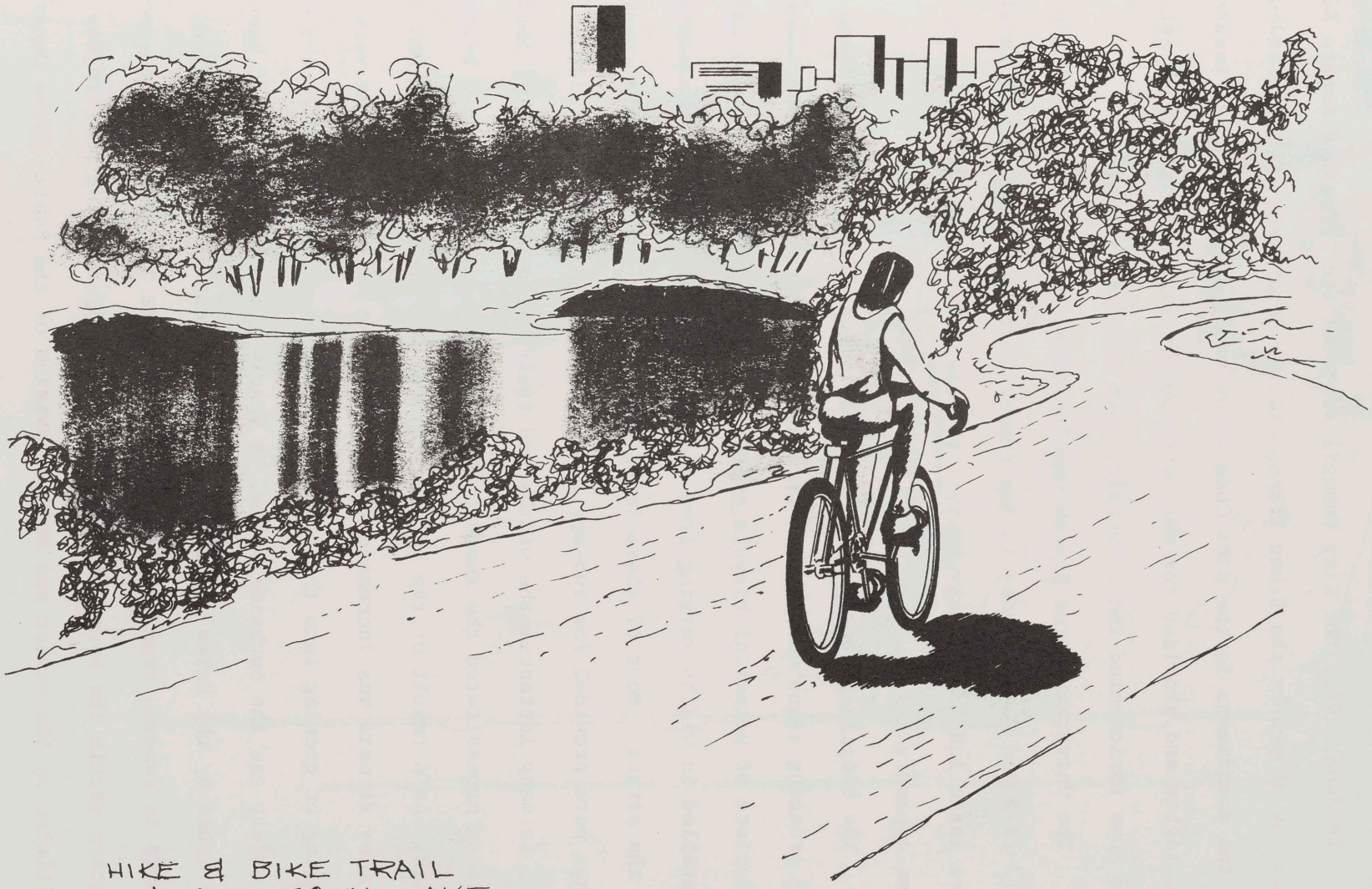
In 1967, the South Austin Lion's Club assisted the City with funds and manpower to construct a mile-long trail along Blunn Creek from Big Stacy Park, the site of a hot medicinal spring, northward to Little Stacy Park, almost to Town Lake.

In 1972, construction was begun by the Parks and Recreation Department on the first phase of the Town Lake Beautification Project which includes hike and bike trails on city-owned property. This project should be complete within a year.

Austin's hike and bike system presently includes over 13 miles of scenic off-street trails along Shoal Creek, Blunn Creek, and Town Lake, serving an estimated 15,000-20,000 hikers, joggers, and cyclists a year. Planned extensions of the system will join Longhorn and Tom Miller Dams at either end of the Town Lake Hike and Bike Trail, and extensions of the Shoal and Blunn Creek Trails will connect them with the Town Lake system in 1976. Trails are also proposed by the Parks and Recreation Department to be built on Waller Creek (a portion of which is under construction), Johnson Creek, Boggy Creek, Bull Creek, Barton Creek, part of Country Club Creek, Onion Creek, Williamson Creek, and Walnut Creek.

Prior to now these trails have been constructed of crushed granite to provide a surface which is appropriate to recreational hiking, cycling, and jogging. The portion of the trail along Waller Creek under construction will actually have two paths: one for pedestrians and one (hard surface) for cyclists. In the future there may be similar applications to existing or new trails.

The trails provide scenic and recreational outlets through areas of natural beauty. By connecting the citywide system of bike routes with the trails, they will now also serve a functional transportation purpose. Conversely, the citywide system provides a safe means for getting from almost anywhere to the parks and recreation areas served by the hike and bike trail system.



HIKE & BIKE TRAIL
ALONG TOWN LAKE

FIGURE 2

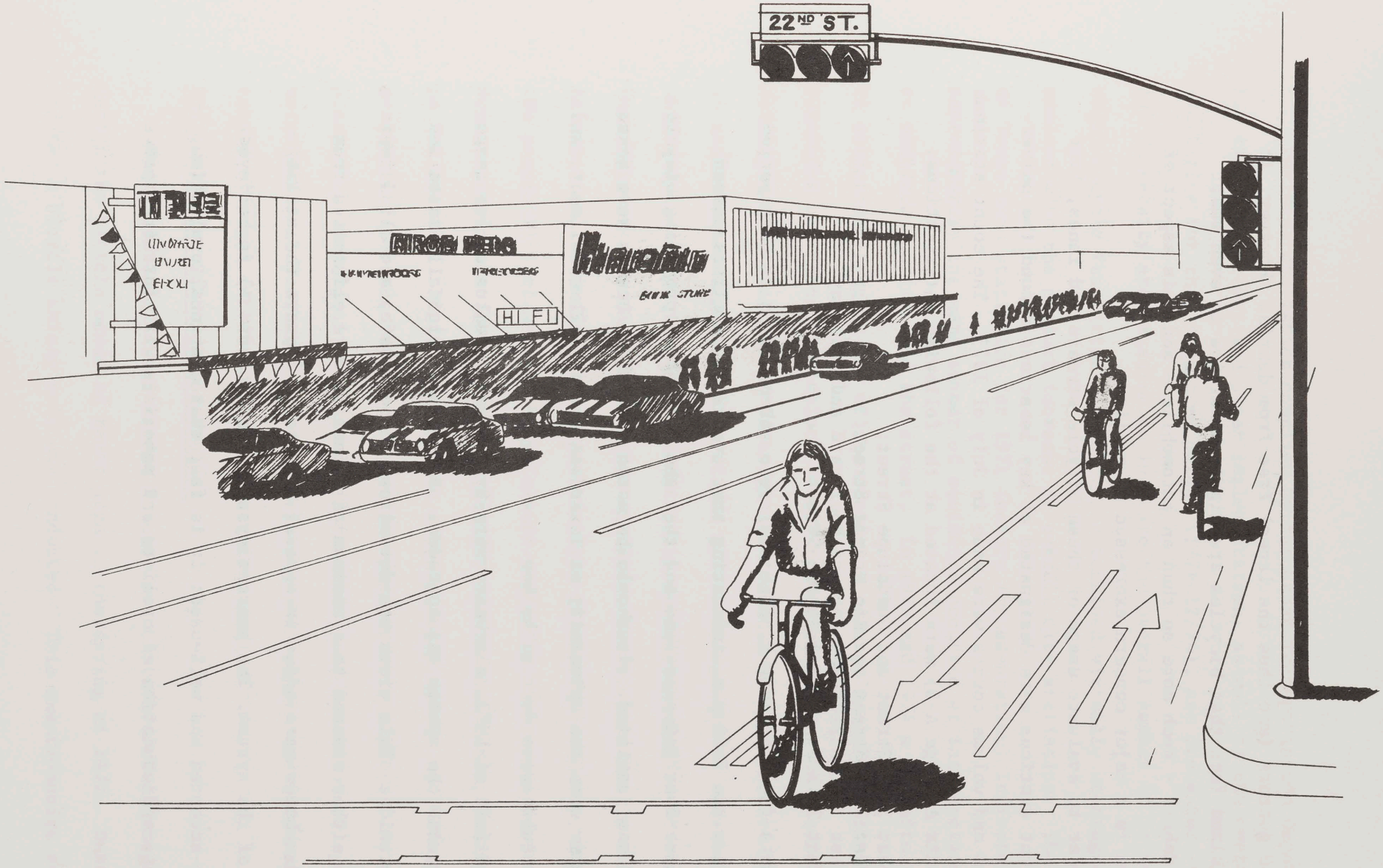
The University Pilot Project

In June, 1972, the City Council approved the "Proposed Austin Bicycle Plan" developed by the Urban Transportation Department which included many of the amendments to the City Code (previously mentioned) that insured the rights and provided for the safety of cyclists along city streets, and thus implemented the University Area Bicycle System.

The University Area System was installed in the fall and winter of 1972-1973 and was upgraded in the summer of 1973. Two types of facilities were installed in the university - bicycle lanes and bicycle streets. (See Appendix A.)

The bicycle streets were signed to indicate bicycle routes, and bicycle crossing signs were placed at non-signal-controlled intersections to warn motorists of potential bicycle cross traffic. Bicycle lanes were initially installed in widths varying from 3 to 5 feet depending on the characteristics of the street. Most of these lanes were one-way but on a few streets bike lanes were provided for two-way travel and were 8 to 10 feet wide.

In many instances the widths and traffic characteristics of individual streets necessitated the removal of parking in order to install bicycle lanes. As a result of the parking removal the overall capacity and safety of many streets was increased. In areas where trees and bushes were overhanging or growing into the street, they were trimmed to enable the cyclists to safely use the curbside lanes. A yearly trimming program has been established by the Parks and Recreation Department so that each spring the new growth is removed from the lanes to insure safe use. Due to the street gutters within the curbside lanes, a bi-monthly sweeping program has been initiated by the Street and Bridge Division of the Public Works Department



2-WAY BIKE LANE
ON GUADALUPE STREET

FIGURE 3

to keep the gutters (and thus the lanes) free from debris. However, it is a recognized fact that bicycles are highly sensitive to even small pieces of debris - much more so than an automobile - and this aspect of maintenance is a major concern expressed by cyclists.

In order to evaluate usage of these bicycle streets and lanes, four bicycle count stations were designated at key locations around the university campus and volume counts were made in July of 1973. The count stations (see Appendix A, page A-3) were located at the following intersections:

1. West 24th Street and Guadalupe Street;
2. West 22nd Street and Rio Grande Street;
3. East 30th Street-San Jacinto Boulevard and Speedway;
4. West 26th Street and Nueces Street.

Volume counts (see Appendix A, page A-4) were taken over a 12 hour period from 7:00 a.m. to 7:00 p.m. indicating that over 2,500 cyclists passed through these four intersections and that the concept of providing bicycle facilities was justified. It should be noted that these counts were taken in the summer when the University of Texas was not of full enrollment, and that the results were felt to be low.

In the fall of 1973, the University System was reevaluated for usage and safety, and the system was upgraded. Some lanes originally installed were 3 feet wide. This width was determined to be unsafe, and all 3 feet lanes were either widened to a minimum of 4 feet or were eliminated from the system. Lanes were added on several streets to improve the utility and usage of the system. The present system (see Appendix A) is believed to be well-accepted and well-used; it is felt that continual evaluation, improvement, and education of cyclists and motorists will further improve the system.

Accident statistics compiled by the Urban Transportation Department for that area before and after implementation, as well as the overall city statistics for that same time period (1/74-12/74), are presented in Appendix A. The university area statistics indicate the overall number of accidents where bicycle facilities now exist has remained virtually unchanged in comparison with the gradual increase in overall city statistics. The University of Texas area statistics for 1971 (before implementation) indicates that approximately the same number of accidents occurred at intersections as did at midblock portions of the street. In 1973 and 1974 a definite shift can be detected: roughly 70% of the accidents occured at intersections with the remainder occurring in midblock (a 20% reduction in midblock accidents). Although the statistics at first glance do not indicate a marked improvement in safety after implementation of the U.T. area system, it must be remembered that bicycle usage increased dramatically during that period of time, and that this area is the most intense attractor for bicycle use in the city. In addition, automobile usage in this area is also quite heavy, increasing the possibility of serious bicycle-auto conflicts. Nevertheless, each accident represents at least property damage, and in some cases, bodily injury to the cyclist. It is necessary to substantially reduce and eliminate the possibility for auto-cyclist or cyclist-pedestrian conflicts. As mentioned previously, continual evaluation, improvement, and education of cyclists and motorists will further improve the system; this report and proposal is intended to begin achievement of these safety goals.

The Wooldridge School Pilot Project

The Wooldridge School Parent Teacher Association (P.T.A.) began investigating the bicycle needs of their area in the spring of 1972. During April and May a bicycle safety poll was conducted. This questionnaire asked parents,

among other things, why children did not walk or ride bicycles to school and what intersection was considered to be the most dangerous. The information and suggestions from the poll prompted some changes in the parking and traffic patterns around the school. The P.T.A. then began a safety program which included information for students and parents about bicycle laws and safety. In January of 1973, the P.T.A., working in conjunction with the Urban Transportation Department, developed an area bicycle plan which consisted of bike streets (3) and bicycle lanes (2) in the neighborhood.

The facilities installed in the spring of 1973 (see Appendix A) placed the two bicycle lanes within two blocks of the school where usage was concentrated, and three bicycle streets in the outlying areas to guide the children to the lanes and safely to school. The bicycle lanes were two-way (6 feet wide) with parking restricted from 7-9 a.m. and from 2-4 p.m. The students rode one way in the lanes going to school in the morning and the opposite direction when leaving school in the afternoon.

As a result of the Wooldridge School P.T.A.'s efforts in this project, the Austin City Council of P.T.A.'s was presented with the Award of Merit at the Women's National Safety Conference in 1973.

The Bicycle Questionnaire

In the spring of 1974, the first information-gathering project was developed using a questionnaire (see Appendix A) which measured attitudes toward and actual usage of various modes of transportation, with specific emphasis on bicycle ownership and usage. The questionnaire was distributed to five elementary schools (T.A. Brown, Doss, Govalle, Odom and Pecan Springs) which were selected based on geographical location within the city to give a representative sample of Austin's entire population. Three thousand five hundred (3,500) questionnaires were distributed to the five elementary

schools and one thousand thirty-one (1,031) questionnaires, representing 20% of the households within the five school area surveyed, were returned and evaluated. P.T.A. committees did preliminary tabulations of the results; composite tabulations and detailed analyses were made by the Urban Transportation Department. Results indicated the most prominent use of bicycles to be for recreation, with secondary uses including shopping trips and trips to and from school, especially by children.

One question on the survey asked the respondent's attitude toward personal use of bicycles; nearly twice as many responses were positive as negative. Yet, the question concerning actual usage of bicycles that followed indicated that over 60% of the respondents never ride a bicycle.

There are, admittedly, various reasons why many of the respondents to this questionnaire feel positively about bicycles but yet never ride them. One that cannot be ignored is the lack of facilities providing safe and convenient bicycle travel. Comments received on the Wooldridge School P.T.A.'s survey (discussed earlier) indicated that many parents felt it too dangerous to allow children to ride bicycles to school. Comments, solicited and unsolicited, from numerous Austin citizens have indicated that those who ride bikes would ride much more if there were bicycle facilities, and that those who do not presently ride would consider biking if it were less hazardous than it currently appears to be.

From responses to the questionnaire, the average number of bicycles per household was found to be 2.22 while the average number of automobiles per household was 1.87. These statistics indicate the presence and popularity of bicycles citywide and emphaisze the need to provide facilities for an ever-increasing bicycle "population".

The School Proposals

The second information-gathering project, aimed at receiving preliminary input for the development of the citywide system, involved the solicitation of bicycle route proposals from each public school, elementary through high school, in the Austin area. School principals, P.T.A. committees, and student groups worked on developing proposed routes according to the general guidelines (see Appendix A, page A-12) provided by the Urban Transportation Department. Two thirds of the schools returned proposals and department personnel developed tentative route proposals for the remaining schools.

Each proposed route was entered on a large map of the city, producing a network of bicycle routes touching almost every part of Austin. The route proposals from the schools formed the basic system which was studied, evaluated and refined. In a large part the boundaries of the elementary schools defined a relatively small area and many of the proposals received from those schools became the neighborhood routes incorporated into the plan. As the school areas became larger (junior and senior high) and the route proposals covered many miles, the types of routes were more often on collector and arterial streets and became the area and commuter routes in the plan.

This "grass root" planning of the proposed system was very important, as it gave the people living in the neighborhood areas of Austin, who will ultimately use and benefit from the system, the chance to provide input for the new system. At the same time, this process also aided City personnel in being able to see what the desires for bicycle facilities were in the specific neighborhoods, and then be able to provide better planning to meet these desires: first, on the basis of a neighborhood and citywide bicycle system, and then in the overall context of a balanced transportation system.

CHAPTER III

BIKEWAY DESIGN CRITERIA

The design standards presented in this section were initially developed in conjunction with the basic school and P.T.A. proposals and were expanded during the second review process. Studies were made of the application of various facilities to existing and to new streets. Review was also made of the potential problems associated with intersection channelization, and recommendations were made for the general location and design of bicycle parking facilities as well as for stenciled pavement messages and other signing criteria.

Facility Warrants

Although route selection is predicated on the needs of the cyclists, each route must be evaluated to determine the specific type facility consistent with the individual streets. In order to safely provide for bicycle travel along designated routes bicycle facilities should be provided that are consistent with the traffic characteristics of each of these streets. As discussed previously, there are three different types of bicycle facilities that can be classed as follows:

Class I: A right-of-way completely separated from motor vehicles and designated for the exclusive use of bicycles. (Bicycle Path)

Class II: A restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles. Through travel by motor vehicles or pedestrians is not allowed; vehicle parking, however, may be allowed. (Bicycle Lane)

Class III: A shared right-of-way designated as such by signs placed on vertical posts or stenciled on the pavement. Any bicycle facility which shares its through-traffic right-of-way with motor vehicles. (Bicycle Street)

In order to determine which class of bicycle facility will blend properly with the vehicular traffic characteristics of a street designated as a bike

route, a set of general warrants were developed (see Table 2). These general warrants were used as guidelines in determining what type of facility was needed along the specific street segments that were designated as bike routes.

In applying the warrants, vehicular speed was normally used as the controlling factor in determining the type of facility to be installed. Since, from a safety standpoint, speed differential (difference between the speed of the motor vehicle and the speed of the bicycle) is a very significant factor in the potential severity of a collision between a bicyclist and motorist, the average speed along a street segment being considered for bicycles has been reviewed carefully.

If, for instance, the traffic volume along a certain street segment was 8,000 vehicles per day, but the average speed of the vehicles was above 35 miles per hour, then that segment of street would be considered for installation of bicycle paths.

TABLE 2

BICYCLE FACILITY WARRANTS

BICYCLE Class	FACILITY Type	STREET FACILITY GENERAL TYPE	VEHICULAR TRAFFIC VOLUME (24 Hr. A.D.T.)*	AVERAGE VEHICULAR SPEED (M.P.H.)**
I	Bicycle Path	Arterial	Greater than 10,000	Greater than 35
II	Bicycle Lane	Collector	Greater than 3,000	Greater than 30
III	Bicycle Street	Residential	Less than 3,000	Less than 30

* A.D.T. - Average Daily Traffic
** M.P.H. - Miles Per Hour

Grade

An important consideration in the evaluation of the system was the street grade along the proposed routes. While adverse grades were avoided where at all possible, it was recognized that, due to the hilly terrain characteristic of a large portion of Austin, there would be some segments of the citywide system with undesirable grades for cycling. In order to provide for route continuity and develop a citywide system, these sections were included where needed.

It is important to note that there are many variables which would determine maximum acceptable bikeway grades and the length such grades should be in effect: cyclist characteristics (age, weight, conditioning, etc.), bicycle characteristics (gear ratios, type of cycle, tires, weight, etc.), wind velocity, air resistance, and road service are the major determinants. While steep grades over a short run may be a hindrance to even a conditioned cyclist, it is the long climb that tires the unconditioned cyclist, although the climb may be a very gradual one.

The Parks and Recreation Department has developed grade standards for the hike and bike trails (shown in Appendix C, page C-2) which range up to a 20% grade for very short runs. The maximum recommended grade for a comfortable walking trail is a 10% grade, so that most segments of the trail system are governed by that criteria.

It would, therefore, seem appropriate to set a maximum of 10% grade as the desirable standard for the implementation of the citywide system, realizing that, due to Austin's topography, this standard may be exceeded when necessary on some routes.

Recommended Horizontal and Vertical Standards

Bicycle lanes and paths must be of proper design and width to provide an adequate space envelope for the cyclist's movement, and also to blend with

the other transportation needs along the route. A space envelope, shown in Figure 4, provides a basic width allotment for handlebar separation, plus allotments on either side to allow for adequate maneuvering. Path and lane width standards have been developed accordingly, and are shown in Table 3.

Where paths are constructed, the existing and projected pedestrian needs have also been considered in determining path widths in order to maximize the usefulness of the route being developed. In areas where lanes are being installed and there is existing curbside parking, the lanes will normally be designed to maintain the parking if it does not create an additional safety hazard. The minimum lane width has also been expanded to include adequate gutter clearance. In this manner, the most effective use can be made of the facilities developed.

In portions of the system, lanes and paths may be grade-separated from existing streets or highways. These bicycle facilities will normally be installed on streets with an existing grade-separated intersection where the minimum clearance for commercial vehicles is much greater than that necessary for a cyclist. There are cases, however, where a path or hike and bike trail may utilize an existing creek structure to avoid forcing a cyclist to cross a street at grade. In a situation such as this, the minimum vertical clearance to overhead obstructions should be no less than 1.0' (as shown in Figure 4). This space will permit adequate physical clearance (8.5' total) and retain desired visual perception through the passageway.

Route Signs and Markings

To insure the safe and efficient operation of all types of bikeways, adequate signing procedures are required. Depending on the type of bikeway and the nature of the route, signs may be necessary to warn cyclists of dangerous

BICYCLE SPACE ENVELOPE

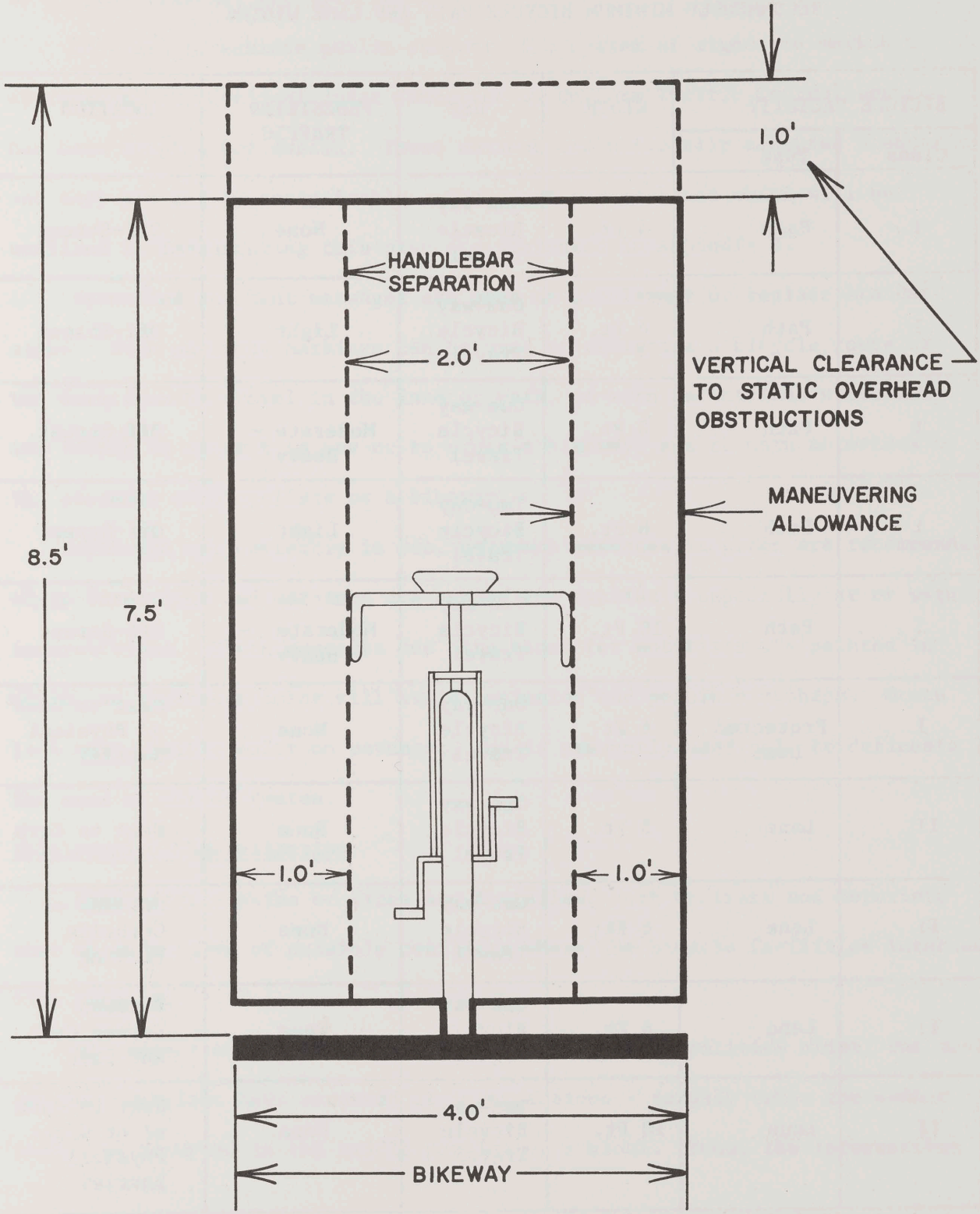


FIGURE 4

TABLE 3

RECOMMENDED MINIMUM BICYCLE PATH AND LANE WIDTHS

BICYCLE FACILITY		WIDTH	USE	PEDESTRIAN TRAFFIC	LOCATION
Class	Type				
I	Path	4 Ft.	One-way Bicycle Travel	None	Off-Street
I	Path	6 Ft.	One-way Bicycle Travel	Light	Off-Street
I	Path	8 Ft.	One-way Bicycle Travel	Moderate - Heavy	Off-Street
I	Path	8 Ft.	Two-way Bicycle Travel	Light	Off-Street
I	Path	10 Ft.	Two-way Bicycle Travel	Moderate - Heavy	Off-Street
I	Protected Lane	6 Ft.	One-way Bicycle Travel	None	Next to Curb w/ Physical Barrier
II	Lane	5 Ft.	One-way Bicycle Travel	None	Next to Curb
II	Lane	6 Ft.	One-way Bicycle Travel	None	Outside of Curbside Parking
II	Lane	6 Ft.	One-way Bicycle Travel	None	Between Parked Cars and Curb
II	Lane	10 Ft.	Two-way Bicycle Travel	None	Next to Curb w/ or w/out Physical Barrier

conditions, obstacles or hazards; to establish rights-of-way; to exclude motor vehicles from the bikeway; or to warn motorists and pedestrians of the presence of bicycle traffic, and vice versa.

In order to achieve public respect, the system of signs and markings approved by the National Joint Committee on Uniform Traffic Control Devices has been adopted for Austin. These devices are nationally accepted standards, and they are easily recognizable. The signs and markings which will be utilized in implementing this plan are presented in Appendix B.

Stenciled pavement messages are used to supplement or replace standard signs. Such pavement markings can be used to designate a bicycle route or the direction of travel in the lane or path, to warn pedestrians where they are likely to attempt to use or to cross a bikeway, and to warn motorists of the presence of bicyclists or a bikeway.

Although not currently in use, pavement messages in green are recommended where directions and warnings are needed for cyclists, especially at or within intersections. Since messages and directions for motorists are painted in white, an alternate color will avoid confusion and possible mishaps. Green is a very visible color on pavement, and is presently used only to delineate the area of parade routes.

Intersection Channelization

When bicycle paths or lanes are installed, both cyclists and motorists must be made aware of possible conflicts where the bicycle facilities intersect with streets.

At present accident statistics show that where facilities exist, the most serious conflicts have occurred at intersections - roughly twice the number that have occurred in the middle portion of a block. Thus, the intersection

is a critical area which must be addressed thoroughly, so as to provide the safest and most efficient cross-passage of these two types of vehicles. This can be accomplished by providing for the channelization of bicycles and a slight restriction of automobile turning movements at intersections. Examples of right-of-way designations for bicycles, proper turning maneuvers by cyclists at intersections, proper bicycle path treatment, intersection channelization that will be utilized when paths are installed, and lane intersection treatment are shown in Sections 3 and 4 of Appendix C.

Bicycle Parking

An essential part of the city bicycle system is facilities for parking bicycles. Such facilities should be strategically located along routes to serve heavy usage terminals such as transit stops, park and ride centers, parks, shopping centers and businesses. These parking facilities could be provided through public agencies, service organizations, or by the institutions and firms adjacent to the bikeway.

Bicycle parking facilities within public or private auto parking lots should also be encouraged. Approximately fourteen (14) bicycles can be parked in the space needed for one automobile, and marginal spaces in lots and garages might be used without affecting auto capacity or flow. Special bicycle parking lots will be provided where the number of potential parkers is great; such lots presently exist in several locations on the University of Texas campus.

Parking facility designs are outlined in Section 5 of Appendix C. The selection of a specific design depends on available space, parking demand and location. As bicycle routes are installed, the parking needs along the routes will be reviewed and specific parking improvements programmed.

CHAPTER IV

EVALUATION AND REFINEMENT OF THE CITYWIDE SYSTEM

The basic route network which resulted from the school and the P.T.A. proposals was evaluated and refined by the Transportation Study Office. Design standards (discussed in Chapter III) were developed in order to assure the safety of designated routes. A tentative system was developed and submitted to the P.T.A. groups, city neighborhood organizations, bicycle clubs, and other interested groups for their review and recommendations. These recommendations were then evaluated by the Transportation Study Office and incorporated into a final system plan.

Route Evaluation and Refinement of the School Proposals

The route proposals received from the schools were evaluated primarily on the basis of bicycle requirements since studies have shown that cyclists are not likely to deviate from direct routes to ride on streets with bicycle facilities. The relationship of the routes with the neighborhoods and surrounding activity centers such as parks, schools, and shopping areas, and the integration of the proposed routes into an overall system were the two primary factors considered in the development of the system. Design criteria were also developed to aid in translating the school proposals into the overall system.

Many of the routes proposed by schools were excluded from the system because of a saturation of routes in certain areas or the presence of other routes that provide for better integration into the overall system. Some street segments not initially proposed were included in the plan in order to provide route continuity and connect some areas that were not previously connected. The system was also evaluated with respect to possible locations where it

could be connected with the hike and bike trail system, and where extensions were needed to serve parks and playgrounds.

Review of the Tentative System

In October of 1974, maps of the tentative system were sent to the P.T.A organizations in the Austin Independent School District, neighborhood organizations throughout the city, bicycle clubs, and other interested organizations and individuals. These groups were asked to review the tentative system and provide recommendations for changes to the Urban Transportation Department. Approximately 30% of the groups responded to the request for review, and these recommendations were evaluated and refined in the same manner as with the original proposals. The resulting interim proposal is discussed in Chapter VII.

CHAPTER V

IMPLEMENTATION OF THE CITYWIDE SYSTEM

A total of over 380 miles of bicycle facilities are included in the plan for Austin's citywide bicycle system. Approximately 95 miles (25%) of off-street bicycle paths, including the hike and bike trails; 45 miles (12%) of protected bicycle lanes; 154 miles (40%) of regular bicycle lanes; and, 87 miles (23%) of bicycle streets are proposed to be installed as part of the twenty year transportation system. A map of the entire citywide system and a detailed tabulation of the specific facility recommendations are provided at the end of Chapter VII.

Implementation and Maintenance Costs

The costs associated with the implementation of this plan can be reduced to the basic elements involved. The installation of Class III - bicycle streets involves only the prices of the signs; Class II - bicycle lanes involve the cost of signs plus paint; and Class I - bicycle paths or protected lanes involve the cost of signs plus that of the path material or the cost of traffic buttons or concrete curbs for the protected lanes. These unit costs are presented in Table 4, a breakdown of the cost details is presented in Appendix D.

The maintenance costs associated with bikeway facilities vary according to the type of facility installed. Concrete requires virtually no maintenance, while crushed granite and asphalt, which are more subject to wear and tear, require periodic repair. Lanes have to be repainted twice a year and signs are subject to aging, vandalism, and occasional traffic accidents.

TABLE 4

BICYCLE FACILITY COSTS *

CLASS	TYPE	COMPOSITION	INSTALLATION (Cost per mile)	MAINTENANCE (per mile per year)
Class Ia_1	Bicycle Path (10' wide)	Crushed Granite	$ 50,700	$ 2,000
Class Ia_2	Bicycle Path (10' wide)	Asphalt	36,300	2,760
Class Ia_3	Bicycle Path (10' wide)	Concrete	86,500	240
Class Ib_1	Protected Lane (Two 1-way)	Barrier Buttons	9,200	470
Class Ib_2	Protected Lane (Two 1-way)	Continuous Barrier Curb Staggered Barrier Curb	27,600 5,400	910 760
Class II	Bicycle Lane	Paint/Signs Buttons/Signs	1,400 2,200	660 400
Class III	Bicycle Street	Signs	1,200	390

* For detailed explanation and documentation of costs, see Appendix E.

The proposed system requires the utilization of bridges in several places. Bicycle facilities are proposed on the Congress Avenue and Lamar Boulevard bridges as well as the Red Bud Trail low water crossing. In order to provide adequate bikeway facilities, these bridges require reconstruction or modification. A pedestrian/bicycle bridge on one of the future I-35 access road bridges across Town Lake, across Mopac Boulevard on 35th Street (separate facility), and far West Boulevard (included within the structure to be built) are proposed in order to provide safe and easy movement. A number of minor bridges is inherent in the proposal to provide biycle and pedestrian movement across

BICYCLE/PEDESTRIAN BRIDGE
ACROSS SHOAL CREEK

FIGURE 5

creeks and small ravines, and, although not recommended at this time, serious consideration should be given to a larger bicycle and pedestrian structure spanning Shoal Creek and Lamar Boulevard in the Windsor Road/24th Street area. This facility would allow the movement from west Austin to the U.T. area to be served by a decrease in travel time and energy output, and an increase in safety. Where larger bridges are required in the system, it is recommended that further study be made as to design, function, and cost. It should be noted that the cost of these proposed bridges or modifications to existing bridges is not included in the estimated total cost of the system because they do require further in-depth study.

Time-Phased Implementation of the Plan

Austin's citywide bicycle system is proposed to be built over a six-year period. The first year will involve the installation of approximately twenty miles of bicycle facilities in the five school areas which were surveyed at the beginning of planning plus needed facilities in other areas. Approximately 3.6 miles are planned in the T.A. Brown school area, 5.8 miles in the Doss school area, 4.5 miles in the Govalle school area, 2.7 miles in the Odom school area, and 3.0 miles in the Pecan Springs school area.

The projected installation cost of these facilities is $903,000. This figure includes 4.21 miles of Class Ia - hike and bike trails, 9.3 miles of Class Ia - bicycle paths, 7.5 miles of Class Ib - protected lanes, 25.7 miles of Class II - bicycle lanes, and 14.6 miles of Class III - bicycle streets.

The projected cost for the installation and maintenance of the entire proposed system over a six-year period is $9,175,300. This figure includes the installation costs and purchase cost of the three sweeping machines plus 20% contingencies and the maintenance costs for each year, outlined in Table 5.

The 20% contingency cost includes funds to cover engineering plans, inspections, surveying, and administration. It must be noted that the total cost quoted does not include the cost of major bridges, right-of-way purchases, or utility relocation, each of which might be sizeable.

A complete analysis and breakdown of the costs involved is presented in Appendix D.

TABLE 5

INSTALLATION AND MAINTENANCE COSTS

YEAR	INSTALLATION	CONTINGENCIES	MAINTENANCE	TOTALS
1	$ 903,000	$ 180,600	$ 36,060	$1,119,660
2	975,290	195,050	112,240 *	1,282,580
3	1,053,430	210,690	175,220 *	1,439,340
4	1,137,640	227,530	247,690 *	1,612,860
5	1,228,500	245,700	289,470	1,763,670
6	1,313,640	262,730	380,820	1,957,190
	$6,611,500	$1,322,300	$1,241,500	$9,175,300

* Includes the purchase cost of one sweeping machine per year.

Funding Sources for Implementation of the System

Funds to be used for the implementation of the citywide system are anticipated from the Capital Improvements Program of the City of Austin, and the road and bridge fund of Travis County for these facilities proposed in the county's jurisdiction. At the present time, both of these sources have funds budgeted for bicycle facility development. The Texas Highway Department has no funds budgeted for bicycle facility development at present;

however, funding will be pursued in future Texas Highway Department budgets for the proposed bicycle facilities within their jurisdiction. While the overall cost of the network system is high, the cost relative to other transportation improvements, such as street and highway construction, is low.

The possibility of other funding sources at the federal and state levels will be pursued as they become available. Presently, the 1973 Federal Aid Highway Act authorizes the limited use of existing highway funds for bicycle facility development. It is felt that a more effective way to develop these facilities is to commit local monies for this purpose and utilize federal monies for major roadway improvements. In this manner, bicycle facilities can be programmed and implemented more efficiently, leaving capital intensive roadway facilities that require more lead time for development to be programmed with federal monies.

Some City funds have already been approved through Capital Improvements Project number 75/79-01. This project provides $50,000 in fiscal year 1974-75 for the initial development of a citywide bicycle system and for construction of sidewalk ramps as part of the city's transportation system development. Additional appropriations are expected in future fiscal years to support the six-year bicycle facility installation program.

In order to support the different elements of the system, funding will be necessary from several city departments including the Parks and Recreation Department, the Urban Transportation Department, and Public Works. Public Works, for instance, will require more personnel and equipment to maintain the bicycle routes which are added every year; Urban Transportation will require more personnel and equipment to install the lanes and signs; and Parks and Recreation will require additional funds for its Hike and Bike Trail System.

Legal and Safety Considerations

In addition to the designation and implementation of bicycle routes, legal and safety provisions are necessary. Laws presently require that cyclists observe certain rules of the road and that drivers respect rights-of-way designated for bicycles. Provisions have also been made for safety inspections to protect cyclists from injuring themselves or others through faulty equipment.

The City Code also provides that all state laws relating to bicycles are applicable unless a similar city ordinance is more restrictive. City ordinances provide that motor vehicles observe certain rules in relation to bicycles and bicycle facilities. Motor vehicles may not be driven on or across a bicycle lane except to enter a driveway, building or alley, or to park or leave a parking space where parking is permissable. Motor vehicles making such movements as described above must first yield right-of-way to any bicycle traffic. Motor vehicles are not allowed to enter or drive upon any bicycle trail or path within a park or playground. A copy of the state laws relating to bicycles and a copy of Chapter VI of the City Code (titled "Bicycles") are provided in Appendix E.

Usage of the streets by various types of vehicles is also an important consideration. As well as providing specific protected areas for bicycle travel, bicycles should be prohibited or restricted during certain hours from certain streets with heavy vehicular traffic volumes and high speeds. Some of these streets are as follows: Guadalupe - 24th Street to Fruth; the main lanes of Interstate 35 and MoPac Boulevard; the South 1st Street Bridge; Oltorf Street - Congress to Schriber; U.S. 183 (Research and Ed Bluestein Boulevards); Burnet Road - South of Colfax Avenue; (currently) Red

River from 19th Street to 38th Street; and, Anderson Lane, Lamar Boulevard, Ben White Boulevard, and Koenig Lane. As the system is implemented and as vehicular traffic changes, continual evaluation will be necessary to determine any additions or deletions to this list.

The safety of bicycle equipment is another important aspect of the implementation of a citywide system. This is currently provided for by the safety inspection which is required by city ordinances before a bicycle license can be issued.

Some changes for the existing City Code are proposed to provide for safer and more efficient bicycle usage in Austin. These proposed changes are as follows:

1. Requiring motorists turning at intersections or alleys where bicycle lanes or paths are provided to carefully observe and yield right-of-way to a legally operated bicycle attempting to cross the intersecting street or alley in a prolongation of the lanes or paths.

2. Prohibiting at all times the stopping, standing, or parking of a motor vehicle within the space delineating a bicycle lane, except where specifically allowed or necessary for the operation of emergency vehicles.

3. Requiring certain types of land use which would attract persons using bicycles to provide parking facilities for bicycles in addition to, or in lieu of an appropriate fraction of present parking space requirements.

Proposed changes to the Master Plan (via the forthcoming recommended Transportation Plan) consist of revising the street rights-of-way required in new subdivisions as given in Section 2, Appendix C. These changes will allow bicycle facilities to be installed as the subdivision develops.

It is also recommended that an effort be made to support and promote the creation of an integrated identification system for bicycles on a statewide basis. Such a system would greatly expedite the identification and return of stolen bicycles throughout Texas - a problem which has grown in recent years and shows no signs of abating.

Educational programs to increase the public's awareness of safety and legal considerations associated with cycling and programs to outline the relationship of the citywide bicycle system to the total transportation network are of great importance. In order for the bicycle to be used safely and effectively as a mode of transportation in Austin, cooperation and mutual respect of bicyclists and motorists are critical.

Most elementary schools in the Austin Independent School District currently have a cyclist education program available. This program is directed toward imparting a working knowledge of the basic safety, legal and design considerations in operating a bicycle, and to aid in the instructions of students, the Austin Independent School District is completing a movie on bicycle safety in Austin.

The driver education program administered by the school district contains information and instruction on how to operate a motor vehicle appropriately in relation to bicyclists and bicycle facilities. This kind of program reaches those people in the process of learning to operate a motor vehicle. Unfortunately, no such programs exist for imparting this knowledge to the general public other than the existence and enforcement of city ordinances and state laws. The Citizen Traffic Safety Commission is developing several programs which can be undertaken or expanded to accomplish this goal. These recommended programs include:

1. Encourage the news media to promote public service announcements and information for the general public.

2. Conduct presentations, discussions, and information sharing meetings with neighborhood groups, civic organizations, bicycle clubs, and other interested groups.

3. Expand the current training sessions with Austin Police Department recruits to include legal, safety, and enforcement aspects of a bicycle system, considering the problems of both motorists and cyclists.

4. Expand the bicycle pamphlet to make a comprehensive booklet for both the cyclist and motorist;

5. Work with governmental agencies to promote the dissemination of this booklet at schools in the AISD, the Unversity of Texas, private universities, driver's license renewal stations, places where vehicle license plates are sold, and in other ways that would increase public awareness of the cooperation and mutual respect necessary for the safe and efficient use of both the automobile and the bicycle within the context of an overall transportation system.

CHAPTER VI

CONTINUING PLANNING

Upon completion of the initial planning and recommendation phase of the Austin Transportation Study, implementation of short-term and long-range strategies will begin. The function of the Joint Transportation Study Office will be to continually monitor and evaluate implementation of the overall transportation plan with major reevaluations and updates projected at five-year intervals to provide for changes in needs, desires, thrust, or technology.

The bicycle element of the overall plan will be included in this continual monitoring and evaluation process. It is expected that the review periods will occur yearly during the implementation of the bicycle system rather than at five-year intervals. This will allow the different parts of the bicycle system to be implemented efficiently in stages. The system will also have the capability of being responsive to changes in priority due to changing travel demands, transit interface, and safety or other considerations. In addition, as the system progresses towards completion unforeseen problems may occur which can be dealt with quickly in the context of a flexible and continuous planning process.

CHAPTER VII

RECOMMENDED BICYCLE SYSTEM

The Interim Proposal

In light of the review process, the tentative system was altered to integrate those recommendations which provided for a better overall system. A map of the entire recommended citywide system is presented in Figure 8, and a detailed tabulation of the specific facility recommendations is provided in Table 6.

These recommendations, however, should not be interpreted as "final". In the upcoming months, the Transportation Study Office will be engaged in a computer modeling process to determine the feasibility and applicability of various transit and roadway transportation elements for the Austin area. The outcome of this modeling process, along with a series of citywide public meetings at the neighborhood level, will lead to a final recommended transportation plan. With the additional information gained during this period, the route structure or individual route classifications may be altered to allow the bicycle system to be integrated completely into the overall transportation system.

Application of Bicycle Facilities to Existing Streets

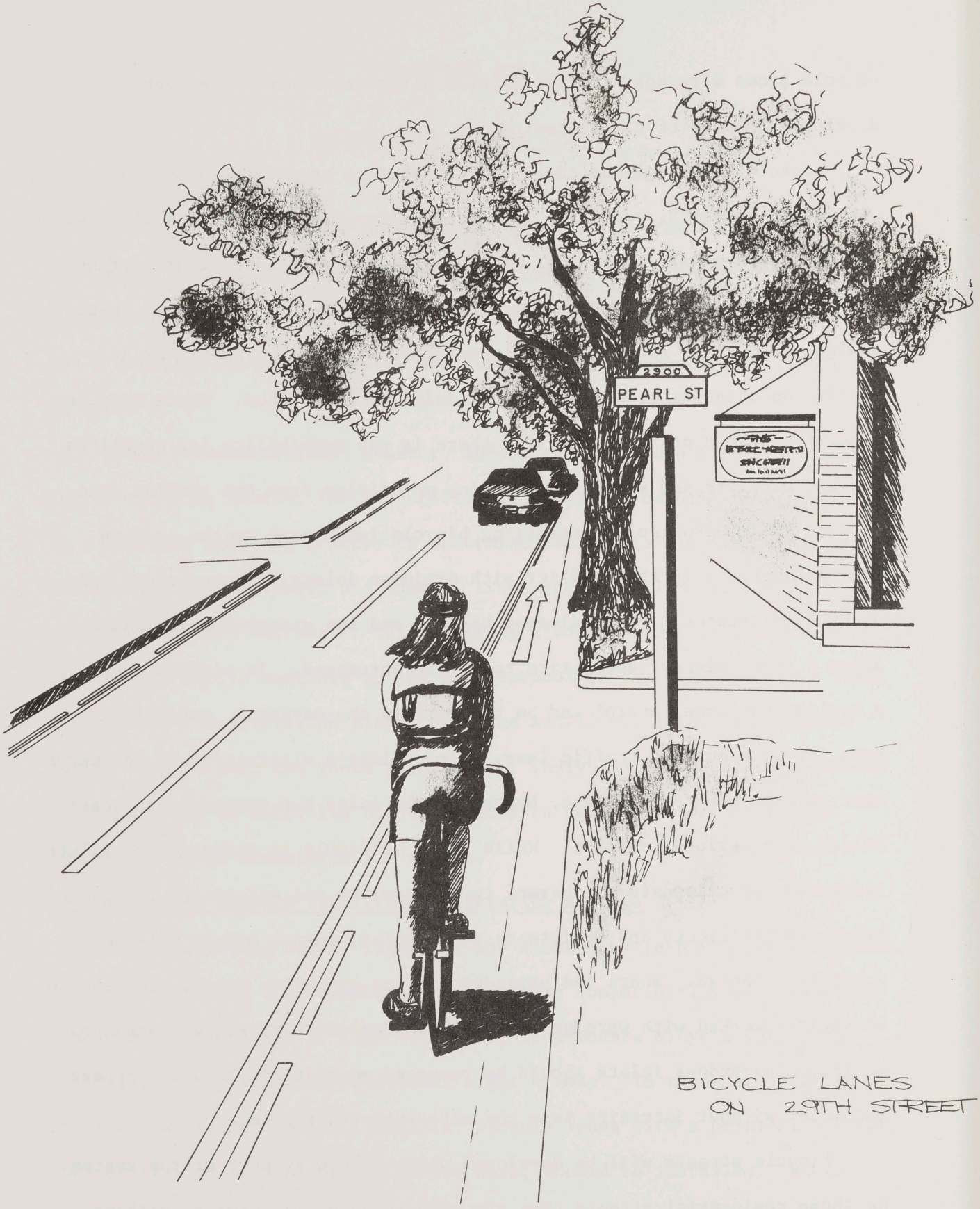
Within existing street rights-of-way where bicycle paths are warranted, field studies have been conducted to determine compatibility with abutting land use, availability of right-of-way to accommodate bicycle paths, and feasibility of purchasing additional right-of-way. In those areas where paths are warranted but not feasible, bicycle lanes with a physical barrier, such as traffic buttons or a concrete curb, should be installed. Where

bicycle lanes were not feasible, viable alternate routes have been developed as part of the system.

Bicycle lanes will be installed on existing streets as shown in Appendix C, pages 3, 4, and 5. Where curbside parking is needed along with the lanes, they will be striped either outside of the parking area or between the curb and the parking area. (See Appendix C.) Eigher of these designs will allow for free bicycle movement with enough space for an opening door (automobile)/bicycle collision to be avoided. Where bicycle lanes are placed outside, however, there is the possibility for conflicts between cyclists and motorists entering or exiting from the parking area.

One major problem in installing bicycle lanes next to the curb on existing streets is the conflict with drainage inlets. The pavement drawdown often creates a vertical-drop hazard, and the standard grate can allow a thin, high-pressure tire to become entrapped. In either case, a cyclist can lose control and be thrown onto the pavement, possible even into the nearest traffic lane. The cyclist's alternative is to swerve near or into the traffic lane, bypassing the inlet but creating the possibility of a serious conflict. While it is difficult to redesign the inlets and grates to eliminate the hazard to the cyclist and yet retain the grate's hydraulic efficiency and resistance to clogging, future models will be of a modified design. Where the hazardous grates or inlets exist, they should be clearly marked with warning stripes and supplementary signs. When possible the hazardous inlets should be recessed so that bicycles may bypass the inlet without intruding into the motorized traffic lanes.

Bicycle streets will be developed where needed as part of the system. On those residential streets that are heavily used bike routes, parking



BICYCLE LANES
ON 29TH STREET

FIGURE 6

controls may be instituted on at least one side of the street to provide sufficient street width for the safe flow of both automobiles and bicycles.

Application of Bicycle Facilities in New Areas

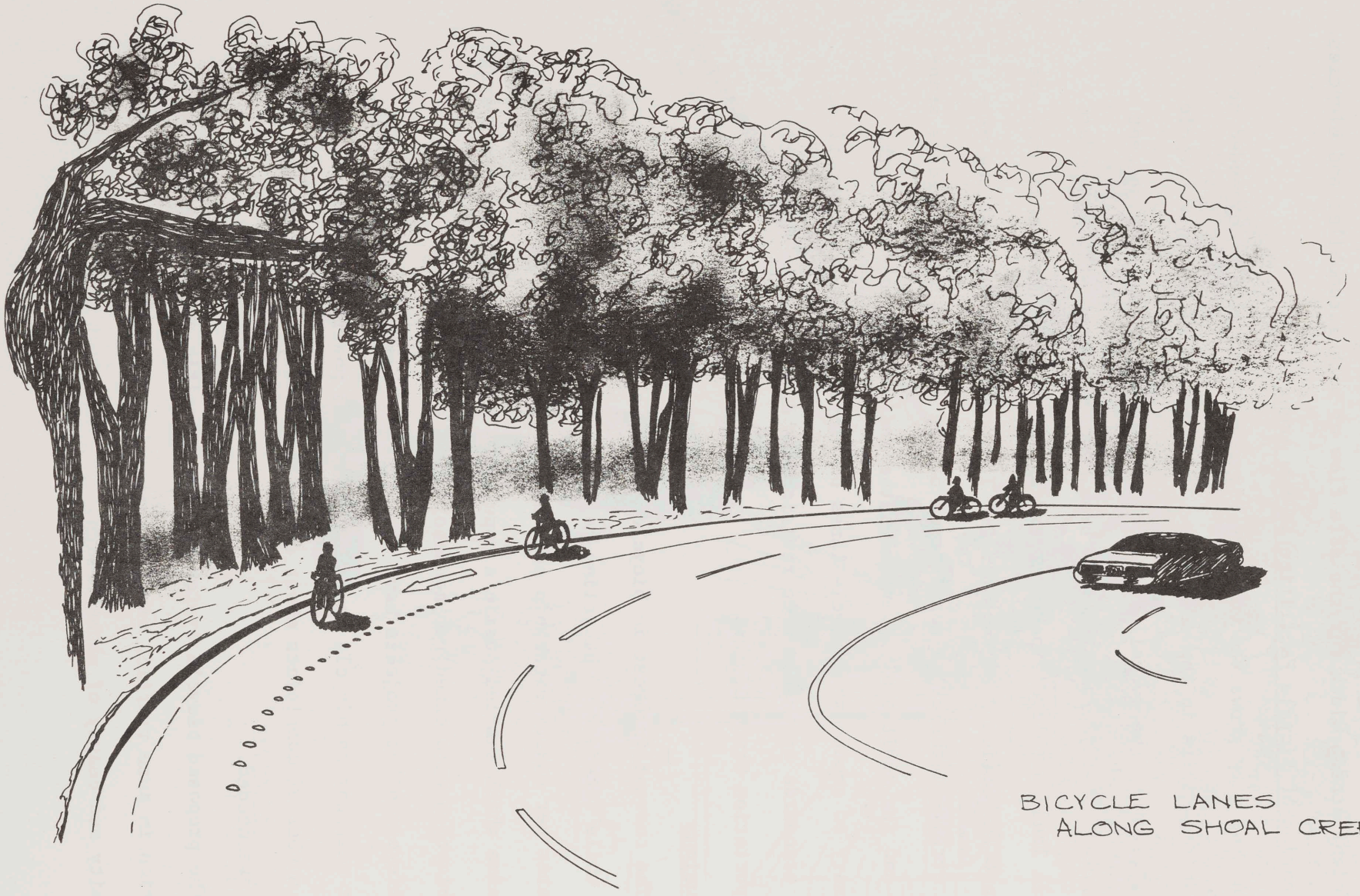
As the city grows the citywide bicycle system will be expanded to provide facilities in the new areas. In order to incorporate bicycle facilities into the overall design of a new area of the city, street width/right-of-way standards have been developed that will accomodate bicycle lanes or bicycle paths depending upon need. These standards are outlined in Section 2 of Appendix C. It should be noted that the proposed street-widths are a combination of the existing street-widths standards and the additional pavement widths and/or right-of-way widths necessary to accomodate bicycle lanes or bicycle paths, as appropriate. These standards are subject to revisions as determined by the Austin Transportation Study Office.

Conclusions

The current interest in bicycles is not a fad. There is evidence that, while interest in bicycling may vary, the overall trend is toward a greater per capita ownership and usage of bicycles. The bicycle questionnaire which sampled Austin's population indicated that, on the average, more bicycles were owned per household than automobiles.

Bicycle pilot projects have also yielded very favorable results. Public response to bicycle lanes has been very positive, with a relatively small number of complaints about upkeep and several complaints that more lanes are needed.

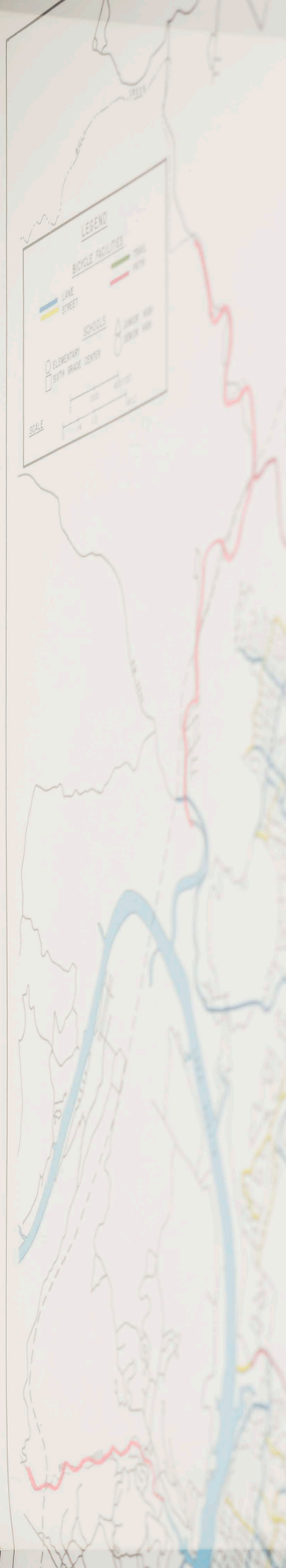
The proposed bicycle system has some specific advantages, including reduction in auto traffic, parking congestion, air pollution, and a greater diversity and beauty of urban design.



BICYCLE LANES
ALONG SHOAL CREEK BLVD.

FIGURE 7

The bicycle system is a sound economic investment. On a relative scale, the expenditures for bicycle facilities in relation to the expenditures for other modes of transportation is small and the result is a complete system for another mode of transportation -- the bicycle. (See Appendix E, page E-13). This in turn helps to provide an overall transportation network which is balanced in its approach to moving people and goods efficiently and safely.


LEGEND
BICYCLE FACILITIES
LANE
STREET
TRAIL
PATH
SCHOOLS
ELEMENTARY
SIXTH GRADE CENTER
SCALE

AUSTIN AREA BICYCLE SYSTEM

INTERIM PROPOSAL

LEGEND

BICYCLE FACILITIES

LANE / STREET

TRAIL / PATH

SCHOOLS

ELEMENTARY / SIXTH GRADE CENTER

JUNIOR HIGH / SENIOR HIGH

SCALE 0 2000 4000 FEET; 0 1/4 1/2 1 MILE

BULL CREEK
RM 2222
LOOP 360
US 183
MOPAC
SPICEWOOD SPRINGS RD.
FAR WEST BLVD.
LAKE AUSTIN
BEE CREEK
RED BUD TRAIL
RM 2244
WINDSOR RD.
ENFIELD RD.
BARTON CREEK
SHOAL CREEK BLVD.
SHOAL CREEK
BURNET RD.
ANDERSON LN.
KOENIG
LAMAR BLVD.
AIRPORT BLVD.
GUADALUPE
45TH ST.
BLUNN CREEK
WALLER CREEK
24TH ST.
6TH ST.
1ST ST.
E. 11TH ST.
E. 5IST
RIVERSIDE DR.
TOWN LAKE
E. BOULDIN CREEK
E. BAULDIN CREEK
PLEASANT VALLEY
COUNTRY CLUB CREEK
MUNICIPAL AIRPORT
MANOR RD.
MARTIN LUTHER KING, JR. BLVD.
SPRINGDALE RD.
ED BLUESTEIN BLVD.
FM 969
BOGGY CREEK
COLORADO RIVER
US 290
BEN WHITE BLVD.
MONTOPOLIS
SH 71
BERGSTROM AFB
ONION CREEK
WILLIAMSON CREEK
MANCHACA RD.
STASSNEY LN.
WILLIAM CANNON DR.
CONGRESS AVE.
FM 1325
WALNUT CREEK
BRAKER LN.
RUNDBERG LN.
I-35
CAMERON RD.
LITTLE WALNUT CREEK
ST. JOHNS AVE.
U.S. 290

TABLE 6 - SPECIFIC FACILITY RECOMMENDATIONS

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Academy Drive	Congress Ave-Blunn Crk	.47	30'	50'	III	
Alameda Drive	East Side Dr.-Riverside	.284	30'	40'	Ib	2-way path on west side
Anderson Lane	Wooten Park-Burrell Dr.	.12	40'	50-60'	Ia	Path on North Side
Anita Drive	Bluebonnet Ln.-Collier	.15	30'	50'	II	
Annie Street	Brackenridge-East Side Drive	.227	30'	60'	II	
Applegate Drive	IH 35 Service Rd. to Dessau Rd.	.946	25-20'	70-80'	III	
Ardath Street	Pegram Ave. to Ellise Ave.	.094	30'	50'	III	
Arpdale Street	Raedell Ave.-Bluebonnet Lane	.27	30'	50'	III	
Arroyo Seca	Theckla Terrace-Woodrow Avenue	1.23	2@28'	110-130'	II	
Arther Stiles Road	Mayhall Dr.-Lotus Ln.	.44	40'	60'	II	
Avenue B	38th St.-40th St.	.19	30'	30-80'	II	
Avenue G	46th St. (E)-47th St. (E)	.08	28-30'	60'	III	
Balcones Dr.	Perry Ln.-Hancock	.40	30'	50'	II	
	Hancock-Hart Lane	.95	44'	60-80'	Ia	
	Hart Ln.-Jollyville Rd.	2.45	44-48'	MoPac	Ib	Proposed.
Bannister Ln.	1st St.(S)-Redd St.	1.1	22-30'	40-70'	III	
Banton Road	Grayson-Manor Rd.	.19	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Barton Hills Dr.	Jasmine St. - Barton Skyway	1.1	44'	60-80'	II	Bad Downhill Turn at Jasmine St.
	Barton Skyway through Barton Hills Dr. Loop	1.14	44'	60-80'	III	
Barton Springs Road	Zilker Park to Congress Ave.	1.61	44-58'	60-80-100'	Ia	Path on North, west of Lamar;
					Ib	Traffic buttons Lamar to 1st St. (S)
					Ia	Sidewalk 1st St. (S) to Congress
Barton Skyway	Barton Crk.-Manchaca Rd	1.02	30-44'	0-90'	Ia	Sections to be built or improved.
Battle Bend Blvd.	Suburban Dr.-Fort Clark	.32	44'	60'	III	
Baxter Drive	Blarwood to Berkeley	.34	30'	50'	III	
Beacon Drive	Manor Rd. to Lazy Crk	.38	44'	70'	II	
	Lazy Crk.-Crystal Brook Drive	.45	44'	70'	III	
Bee Caves Road	Barton Springs Road-Columbus Drive	.78	40' 44' - 2@24'	90-650'	Ia	Wide section is along MoPac frontage road.
Berkeley Avenue	Westgate Blvd. to Manchaca Road	.76	44'	60'	III	
Berkman Drive	E. 51st St.- Glenhill Road	1.89	40-44'	60-90'	II	Study intersection at Briarcliff
Bethune Avenue	St. Johns (E) to Wheatley	.38	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Bland Street	Westover Rd.-Bonita	.04	30'	50'	III	
Blarwood Drive	Westgate - Berkeley	.57	44'	60'	III	
Bluebonnet Lane	Arpdale to Ashby Ave.	.76	44'	60'	II	
Bluff Bend Drive	Warrington Dr. to Applegate	.23	30'	50'	III	
Bolm Road	Springdale to Gardner Road	.95	30'	50-35'	II	
Brackenridge	Live Oak (E) - Monroe (E)	.47	30'	60'	III	
Brentwood	Laird Dr. - Lamar (N)	.04	30'	50'	II	
	Lamar (N) to Chesterfield Avenue	.38	30'	50'	III	
Briarcliff	Gaston Place to Westminster	.57	44'	70'	II	
Bridle Path	Meadowbrook-Exposition	.09	30'	50'	III	
Broadmoor	Cameron Rd.-Berkman Dr.	.72	30'	50-60'	II	
Brookfield Drive	Beech Dr.-Peyton Gin Rd	.40	30'	50'	III	
Brookview Road	Wilshire-38½th St.	.64	30'	35-50'	III	
Buffalo Pass	Jones Road-Village Cir.	.31	44'	60'	III	
Bullard Drive	Northland Dr.-Treadwell	.20	40'	60-70'	III	
	Treadwell-Great Northern	.65	40'	60-70'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Bull Creek Road	39th St. - 45th St.	.64	40'	50-60'	Ia	Path on East Side
	45th St.(W)-Hancock Dr.	.57	40'	60'	II	
	Northland Dr.-R.M.2222	.38	48'	100'	Ib	
Burbank Street	Laird Dr.-Hardy Dr.	.04	30'	50'	III	
Burleson Road	Oltorf (E)-Ben White	1.14	20-40'	60-70'	II	To be rebuilt.
	Pleasant Valley Rd. - Montopolis Drive	1.30	28-30'	60'	II	
Burney Drive	West Rim Dr.-Mesa Dr.	.38	44'	60'	III	
Burrell Drive	Ohlen Rd.-Anderson Ln.	.53	40'	60'	II	
Cameron Road	51st St. (E)-U.S. 290	1.23	40-44'	60'	Ia	
	U.S. 290-U.S. 183	.97	2@33'	120'	Ib	
	U.S. 183-Rundberg Ln.	1.50	20'	50'	II	Should be rebuilt.
Camp Craft Road	R.M.2244-Westlake High School	.38	30'	60'	Ia	Already constructed by Travis County.
Canadian	7th St. (E)-Holly St.	.72	40'	60'	II	
	Holly St.-Town Lake	.28	40'	60'	III	
Cardinal Lane	Garden Villa-5th St.(S)	.09	30'	40-45'	III	
Carnation Terrace	Grove Blvd.-Montopolis	.34	40'	60'	III	
Caswell Avenue	47th St.(E)-Clarkson	.44	30'	50'	III	
Catalina	Burleson Rd.-Mission Hill Drive	.63	30'	50-80'	III	
Cedar Avenue	Manor Road-12th St. (E)	.72	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Cherrywood Road	Manor Rd.-Wilshire Blvd	.93	30-40'	60-65'	II	
Chestnut Avenue	Manor Rd.-Pleasant Valley Road	.75	40'	50-65'	II	
	Pleasant Valley Rd.-Rosewood Avenue	.23	40'	50-60'	III	
Chicon Street	Manor Road-Town Lake	2.5	30'44'	60'	II	
Childress Drive	Warrington Dr-Dessau Road	.76	30'	50-60'	III	
Chimney Corners	Far West Blvd.-Rockpoint Drive	.57	40'	60'	III	
Churchill Drive	32nd St. (W)-Kerbey Ln.	.15	30'	50'	III	
Clarkson Avenue	53rd St.(E)-Red River	.3	30'	45'	III	
Clawson Road	Lightsey-Fortview Rd.	.8	30'	50'	III	
Clearfield Drive	Parkfield-Maine Drive	.05	30'	50'	III	
Club Terrace	Grove Blvd.-Montopolis	.24	30'	50'	III	
Colfax Avenue	Burnet R.-Hathaway	.14	30'	50'	III	
Collier	Anita Dr.-Lamar(S)	.31	30'	50-60'	II	
Collinfield	Little Elm Pk-Quail Park Drive	.1	30'	60'	III	
Colony Creek Drive	Hunters Trace-Parkfield	.19	44'	60'	III	
Comal Street	Rosewood Ave.-Town Lake	1.33	40'	40-60'	II	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Congress Avenue	Martin Luther King Blvd.-14th Street	.24	60'	120'	II	
	11th St.-Oltorf	2.42	60-94'	100-120'	Ib	Study needed of down-town parking situation.
	Oltorf - Woodward St.	.34	48-94'	100-120'	II	
Cooper Drive	Lamar (N)-Slayton Dr.	.19	30'	60'	III	
Cooper Lane	Eberhart Ln.-Matthews Lane	.66	44'	60'	II	
Cougar Drive	Turtle Crk.-Sahara Dr.	.09	30'	60'	III	
Crestmont Drive	Shoal Crk.Blvd.-Woodview	.05	40'	80'	III	
Crestway Drive	Mt. Barker-Balcones Dr.	.89	30'	50'	III	
Crestwood Road	Airport Blvd-Wilshire	.28	30'	50'	III	
Cripple Creek	Parkfield-Quail Valley Boulevard	.32	44'	60'	III	
Crystal Brook	Beacon Drive-Loyola	.68	44'	60'	III	
Dalton Lane	Riverside (E)-State Highway 71	.51	25'	45'	II	
Daugherty	Twin Oaks Dr.-Richcreek	.72	30'	50'	III	
Dawson Road	Riverside-5th St.(S)	.47	30'	50-80'	II	
Decker Lake Road	U.S. 183-Walnut Crk.	.44	35'	70'	II	
Dormarion Lane	Tower Dr.-Greenlee	.05	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Down Cove	Barton Hills Dr.-Barton Creek	.11	30'	50'	III	
Drake Avenue	Monroe Street-The Circle	.15	30'	50'	III	
Dry Creek Road	R.M.2244-Stratford Dr.	.27	20'	20'	Ia	Use old Zilker Park Rd. closed after construction of MoPac Bridge.
Dubuque	U.S. 183-Loyola	.57	30'	50'	III	
Duval Street	51st (E)-55th St.(E)	.18			III	
	San Jacinto Blvd.-51st Street (E)	1.94	27-40'	50-65'	II	
East Drive	29th St.-30th Street	.09	25'	25'	II	
Eberhart Lane	Cooper Ln-Congress (S)	.76	30'	60'	II	
Edgefield Drive	Knollwood Dr.-Far West Boulevard	.38	30'	50'	III	
Edgehill Way	Perry Lane-45th St.	.22	40'	50-80'	Ib	
Edgemont Drive	Balcones Dr.-Madrona Dr	.47	30'	50'	III	
Edgewood Avenue	Robinson Ave.-Cherrywood Road	.34	30'	60-50'	III	
(W) Elliot Street	Lamar (N)-Georgian Dr.	.27	30'	50'	III	
Ellise Avenue	Ardath St.-Daugherty	.19	30'	50'	III	
Emerald Forest Drive	Austin Highlands-Aberdeen Drive	1.42	44'	80'	II	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Enfield Road	Scenic Drive-Exposition Exposition-West Lynn	.76 1.1	33-37' 33-40'	50-60' 55-70'	II Ia	
Essex Avenue	Enfield Rd.-10th St.(W)	.28	15-30'	15-50'	III	
Exposition	Lake Austin-Woodmont Westover-Northwood	.78 .18	40-46' 40'	60-80' 60'	Ia Ia	
Fairfield Drive	Kromer - U.S. 183 U.S. 183 - Lamar (N)	.09 .95	44' 44'	60' 60'	III II	
Fairway Street	Grove Boulevard-Montopolis	.28	40-44'	60'	III	
Far West Boulevard	West Rim Dr.-Shoal Crk. Boulevard	1.55	40' 2@33'	90-100'	II	
Fawnridge Drive	Slayton Dr-Georgian Dr.	.06	30'	50'	III	
Flournoy Drive	1st St. (S)-Glen Meadow	.44	44'	60'	III	
Folts Avenue	Ashby Ave-Treadwell St.	.29	30'	50'	III	
Forest Trail	Enfield R.-Woodmont	.40	30'	40-45'	III	
Fort Clark	Battle Bend Blvd-Westmoreland	.28	44'	60'	III	
Fortview Road	Manchaca Rd.-Clawson Rd	.25	30-44'	35-50'	III	
Foster Lane	Great Northern Blvd.-Northcross Dr.	.47	30-44'	50-70'	II	
Garden Villa Lane	Banister Ln.-Cardinal Lane	.42	22-30'	40-50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Gardner Road	Bolm Rd.-Lotus Lane	.57	30'	60'	II	
Gaston Place	Westminster-North Hampton	.38	40'	70'	II	
Gault Street	Wooten Dr.-Morrow St.	.57	30'	50-60'	III	
Georgian Drive	Fawnridge Dr.-U.S. 183	1.23	25-30'	50-60'	II	Under construction to 44'
Glen Rose Drive	Madrona Dr.-Balcones	.05	30'	50'	III	
Gonzales Street	Springdale Rd-Shady Ln.	.38	30'	50'	III	
Govalle Ave.	Webberville Rd.-Springdale Rd.	.7	20-30'	60'	III	Street must be widened and improved.
Grayson Lane	38½ St.(E)-Manor Road	.11	30'	50'	III	
Great Northern Blvd.	Northland Dr.-Foster Ln	1.75	30'	50'	II	2-way bike lane in place from Foster Ln.-White Rock.
Greenbrook Parkway	Berkman Dr.-Westminster	.54	40'	60'	III	
Greenhaven Drive	Greenlawn Pkwy.-Silverway Drive	.28	30'	50'	III	
Greenlawn Parkway	Great Northern Blvd.-Daugherty St.	.7	44'	80'	II	
Greenlee Drive	Pecos-Dormarion Ln.	.76	30'	50'	III	
Greystone Drive	Valburn Dr.-Balcones Dr	2.05	40'	70-60'	II	
Griswald Lane	Sharon Ln.-Winsted	.1	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Grover Avenue	Woodrow Ave.-49th St.(W)	2.33	40'	45-65'	II	
Guadalupe Street	21st St.-24th Street	.23	60'	120'	Ib	2-way lane in place-add protective barriers
	29th St.(W)-45th St.(W)	1.23	60'	80-95'	Ib	
	45th St.-Morrow Street	2.7	40'	50-60'	II	
	Morrow St.-U.S. 183	.35	30'	60'	II	
Gunter Street	Lyons-200 ft.(S) of Airport Boulevard	.57	30'	50'	III	
Hancock Drive	Balcones Dr.-North Loop	1.14	30-40'	56-70'	Ia	Purchase additional ROW
Hardy Drive	Burbank St.-Morrow St.	.76	15-30'	20-50'	III	15' width for only one block btwn. Pasadena and Richcreek
Harris Avenue	Duval -Red River	.42	30-40'	60'	II	
Harris Boulevard	Windsor Rd.-32nd St.(W)	.89	30'	50-70'	II	
Hart Lane	North Hills Dr.-Greystone Drive	.51	44'	60'	III	
Harvey Street	Martin Luther King Blvd-12th Street (E)	.42	30'	50'	III	
Hathaway Drive	Colfax Ave.-Ohlen Rd.	.38	30'	50'	III	
Hearn Street	Lake Austin Blvd.-Johnson Street	.04	30'	50'	III	
Hemphill	29th St.-27th Street	.17	30'	50'	III	
Hether Street	Bluebonnet Ln.-Lamar (S)	.42	30'	50'	II	
Hidden Oaks Drive	Westgate Blvd-Whispering Oaks Drive	.19	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Highland Crest Drive	Ridge Oak Dr.-Northland Drive	.08	30'	50'	III	
Highland Hill Drive	Trailridge Dr-Highland Hill Terrace	.32	30'	60'	II	
Highland Hill Terrace	Highland Hill Drive-Tumbling Trail	.19	30'	50'	II	
Highland Mall Blvd.	200'(E) of Airport-1000'NW of Middle Fiskville Road	.42	2@24'	80'	II	
Hillview Road	Windsor Rd.-Westover Rd	.44	30'	50'	III	
Holly Street	IH 35-Canadian	.95	40'	60'	II	
Houston Street	Jeff Davis Ave.-Sunshine Drive	.49	30'	50'	III	
Hunters Trace	Norseman Terrace-Rundberg Lane	.30	44'	60'	III	
Huntland Drive	Isabell Dr.-Jonathan	.13	44'	80'	III	
Hyridge Drive	Mountain Ridge Dr.-Balcones	1.04	44'	70'	II	
Isabell Drive	Huntland Dr.-Rufus	.23	30'	50-55'	III	
Jamestown Drive	Maine Dr.-Peyton Gin Rd	.7	30'	60'	III	
Jasmine Street	Barton Hills Dr.-Robert E. Lee Rd.	.1	30'	70'	II	Too steep to ride uphill
Jeff Davis Avenue	North Loop-Houston St.	.19	30'	50-55'	III	
Jim Hogg Avenue	Houston St.-Arroyo Seca	.28	30'	50-40'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Joe Sayers Avenue	Thackla Terrace-Houston	.21	30'	70'	III	
Johnson Street	Hearn Street-Atlanta St	.27	30'	50'	III	
Jonathan Drive	Highland Mall Blvd.-Huntland Drive	.11	48'	80'	III	
Jones Road	City Limits (W)-Manchaca Road	1.0	30-44'	50-70'	II	Street must be improved west of Westgate Blvd.
Justin Lane	Burnet Rd.-Grover Ave.	.95	30-44'	50-81'	Ib	
Keats Drive	Prather Ln.-Panther Tr.	.19	30'	50'	III	
Kenwood Avenue	Woodland Ave.-East Live Oak	.44	30'	50'	III	
Kerbey Lane	32nd St.(W)-35th St. cutoff	.28	30'	60'	II	
Kingsbury Street	Shoal Crk.-Niles Road	.28	30'	50'	III	
Kinney Street	Barton Springs Rd.-Lamar (S)	1.14	30'	60'	II	Very steep hill and cutoff south of Barton Springs Road
Knollwood Drive	Edgefield Drive-Ponton Place	.12	30'	50'	III	
Koenig Ln./Allendale Rd.	Shoal Creek Blvd.-Ullrich Avenue	.68	40'	50-100'	Ia	
Kromer Street	Weyford Dr.-Fairfield Drive	.06	30'	50'	III	
Laird Drive	Ullrich Ave.-Burbank St	.53	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Lake Austin Blvd.	Enfield Rd.-Red Bud Tr.	.3	44-52'	100'	II	
	Red Bud Tr.-MoPac	1.5	57'	100'	II	
(S) Lakeshore Drive	Town Lake-Montopolis	1.7	44'	120'	II	Street to be built.
Lamar Boulevard	Panther Trail-Barton Skyway	.57	60'	100'	Ib	Add width on both sides of street;
	Barton Springs Rd.-6th Street (W)	.76	2@26' - 42-60'	80-200'	Ia	42' width is on bridge;
	Fairfield Drive-Rutland Drive	.78	60'	90-120'	Ia	
	Shoal Creek H&B Bridge to Martin Luther King Boulevard	.19	54	80'	Ia	West side-in Pease Park
Lazy Creek Drive	Beacon Dr.-Purple Sage Drive	.3	44'	70'	II	
Ledesma Road	Springdale Road-Lott Avenue	.57	30'	50-60'	III	
Leslie Avenue	Astor Pl.-Springdale Rd	.19	30'	50'	III	
Lightsey Road	Manchaca Rd.-Congress Avenue	1.56	0-44'	50-90'	Ia	Sections to be improved.
Little Elm Park	Collinfield Dr.-Quail Creek Drive	.13	40'	60'	III	
Live Oak Drive	Congress (S)-Oltorf St.	.95	30-44'	40-80'	II	
Long Bow Lane	Congress-Blunn Creek	.53	30	50'	III	Connection to future H&B Trail extension on Blunn Creek.
Lott Avenue	Prock Ln-Ledesma Rd.	.20	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Lotus Lane	Gardner Rd.-Arther Stiles Rd.	.1	40'	60'	II	
Loyola Lane	Northeast Dr.-Manor Rd.	1.33	40-44'	60'	II	
	Manor Rd.-U.S. 183	.60	44'	60-70'	II	
Lyons Road	Webberville Rd.-Springdale Road	.76	30'	50-60'	II	
Madrona Drive	Edgemont Drive-Glen Rose Drive	.13	30'	50'	III	
Maine Drive	Jamestown Dr.-Clearfield Drive	.13	30'	50'	III	
Manchaca Road	Barton Skyway-City Limits (S)	3.41	40-44'	40-100'	Ia	
Manor Road	Chicon St.-Banton Rd.	.91	36-44'	60-80'	Ib	
	Banton Rd.-Springdale Road	4.09	20-44'	80'	Ia	
	Springdale Rd.-U.S. 290	2.56	30'	50'	II	
Maplewood Avenue	East 38½-Wilshire Blvd.	.3	30'	50'	III	
Margranita Crescent	Dormarion Ln.-Bland St.	.38	30'	50'	III	
Martin Luther King, Jr. Boulevard	Lamar Blvd.-Nueces	.47	30-60'	80'	Ib	Street to be widened between Lamar and West Avenue.
Mary Street	South Lamar-Brackenridge	1.0	40-44'	60'	II	
Matthews Lane	Manchaca Rd.-Cooper Ln.	.87	30'	50-55'	II	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Mayhall Drive	Gardner Rd.-Arther Stiles Road	.10	30'	60'	II	
Meadowbrook Drive	Bridle Path-Windsor Rd.	.38	30'	50-60'	III	
Meadows Drive (S)	Parkfield Dr.-Plains Tr	.10	30'	50'	III	
Melridge Place	Robert E. Lee Rd.-Bluebonnet Lane	.19	40'	60'	II	
Mesa Drive	Sierra Dr.-Jollyville Road	2.65	44'	60-90'	II	
Metcalf Road	Burleson Road-Burleson Road	.76	30'	50-60'	II	Street needs to be rebuilt.
Middleham Place	King Edward Place-Turtle Creek Boulevard	.34	30'	50'	III	
Monroe Street	5th St.(S)-Drake Ave.	.8	30'	50-60'	III	
Monte Vista Dr.	Mt.Barker Drive-Crest-way Drive	.09	30'	50'	III	
Montopolis Drive	Riverside Dr. (E)-Crumley Lane	1.29	44'	40-70'	II	
Morrow Street	Mullen Drive-Guadalupe	1.06	30'	50'	II	
Mt. Barker Drive	Balcones Dr.-Monte Vista Drive	.28	30'	50'	III	
Mt. Vernon Drive	Redd Street to St. Elmo Road	.13	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Mountain Quail Road	Rundberg Ln-Cripple Crk	.66	44'	60'	III	
Mullen Drive	Morrow St.-Teakwood Dr.	.57	30-40'	50-60'	II	
Navasota Street	12th St. (E)-Rosewood Avenue	.28	30'	50'	III	
Newmont Trail	Sagebrush Trail-McPhaul	.14	30'	50'	III	
Niles Road	West Lynn-Windsor Road	.1-	40'	60'	III	
Norseman Terrace	Hunters Trace-Parkfield	.23	44'	60'	III	
North Hampton Drive	Gaston Place-Northeast Drive	.38	40'	60'	II	
North Hills Drive	Edgefield Dr.-Balcones	1.14	40'	60'	II	
North Loop Boulevard	Hancock Dr.-Clarkson Avenue	1.93	40-44'	50-80'	Ia	Purchase additional ROW.
Northcrest Boulevard	St. Johns (W)-U.S. 183	.66	44'	60-140'	II	
Northcross Drive	Foster Ln.-Burnet Rd.	.47	14 Med 2@24'	80'	Ia	Paths on north side.
Northeast Drive	200'(S)of U.S.290-Manor Road	1.48	44'	80'	II	
Northland Drive	Balcones-Shoal Crk.Blvd	.57	44'	100'	Ia	
	Balcones Dr.-Bull Crk. Road	.13	48'	100'	Ia	
Northledge Drive	North Hills Dr.-Far West Boulevard	.19	30'	50'	II	1-way street North.

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Northwestern Avenue	Rosewood Ave.-Webberville Road	.53	40'	50-60'	II	
Northwood Road	Pecos-Exposition	.41	30'	60-85'	III	
	Oakmont Blvd.-Wooldridge Drive	.38	30'	60'	III	
Nueces	Martin Luther King, Jr. Boulevard-Guadalupe St.	.91	40-50'	60-80'	II	
Oakmont Boulevard	Northwood R.-35th St.(W)	.59	30'	50-60'	III	
	35th St.(W)-39th St.(W)	.30			II	
Oak Springs Drive	Ridgeway Dr.-Springdale Road	.9	40-44'	60'	II	
Ohlen Road	Burnet Rd.-Peyton Gin Road	1.0	44'	80'	II	
Old Bull Creek Road	Laguna Gloria-Mt. Bonnell Road	.19	20-30'	40'	III	
	Mt.Bonnell Rd.-Foothill Drive	.19	30'	50'	Ia	
Old Castle Road	Westmorland-Sheraton Avenue	.38	30'	60'	III	
Old Jollyville Road	Balcones Dr.-Bell Ave.	3.11	48'	100'	III	
Old Manor Road	Manor Rd.-Westminster Drive	.23	30'	80'	III	
Oltorf Street	Lamar(S)-Congress (S)	1.27	40-44'	60-80'	Ia	Purchase ROW where necessary.
	Schreiber-Parker Ln.	.45	60'	80'	Ia	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Oltorf Street (CONT.)	Parker Lane-Pleasant Valley Road	.70	60'	80-60'	II	
Pack Saddle Pass	Round-up Trail-Redd	.38	44'	70-60'	III	
	Redd-Prather Lane	.34			II	
Panther Trail	Lamar (S)-Victory Dr.	.04	30'	50'	II	
	Victory Drive-Keats Dr.	.11			III	
Parker Lane	Riverside Dr.-Oltorf St	.89	40-44'	60-70'	Ib	Acquire necessary ROW.
	Oltorf Street-Woodward Street	1.04	44'	70'	II	
Parkfield Drive	Peyton Gin-Kramer Lane	1.67	44-50'	70'	II	
Parkwood Road	Airport Blvd.-Norwood Road	.23	30'	50'	III	
Pecan Springs Road	Manor Rd.-200'(N) of 51st St.(E)	.38	40'	60'	II	
Pecos Street	Enfield Rd.-35th St.(W)	1.61	30-40'	50-60'	II	
Pedernales	1st St.(E)-Canterbury	.14	28-32'	50'	III	
	1st St.(E)-Webberville Road	.73	30'	60'	II	
Pegram AVenue	Vine St.-Burnet Rd.	.38	40'	60'	II	
Perry Lane	Balcones-Edgehill Way	.63	44'	60-50'	II	
	Balcones Dr.-Crestway Drive	.08	44'	60'	III	
Peyton Gin Road	Redfield Ln.-Jamestown Drive	.47	44'	70-80'	Ia	
	Jamestown Dr.-Lamar (N)	.27	44'	70-80'	Ia	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Pleasant Valley Road	5th St.(E)-Longhorn Dam	.38	0-44'	60-120'	Ib	Must be repaved in places;
	Longhorn Dam-Nuckles Crossing Road	5.0	0-44'	0-120'	Ia	Portions to be constructed.
Ponca Street	1000'West of Montopolis-Vargas St.	.38	25-30'	40-50'	III	Must be paved west of Montopolis Drive.
Ponton Place	Sierra Drive-Knollwood Drive	.08	30'	50'	III	
Porter Street	Montopolis Dr.-Lawrence Street	.42	30'	50-55'	III	
Powell Street	5th St.(W)-6th St.(W)	.1	20'	30'	III	
Prather Lane	Victory Dr.-Manchaca Road	.28	40'	60'	II	
Prock Lane	Sara Drive-Lott Avenue	.19	30'	50'	III	
Prospect Avenue	East 11th St.-Webberville	.25	30'	50'	III	
Purnell Drive	U.S. 183-Wonsley Dr.	.17	44'	70'	III	
Purple Sage Drive	Lazy Crk-Crystalbrook	.36	40'	70'	II	
Quail Creek Drive	Peyton Gin-Little Elm Park	.19	30'	50'	III	
Quail Park Drive	Parkfield Dr.-Collinfield Drive	.34	44'	60'	III	
Quail Valley Boulevard	Rutland Drive-Cripple Creek	.38	44'	60-75'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Rabb Road	Rabb Glen-Melridge	.64	44'	60'	III	
Rae Dell Avenue	Barton Skyway-Rabb Glen	.5	30'	50'	III	
Ramsey Avenue	40th St.(W)-49th St.(W)	.8	30'	50'	III	
Red Bud Trail	Lake Austin Blvd.-Stratford Drive	.53	20-44'	25-100'	Ia	
	Stratford Drive-West Lake Drive	.47	30-44'	100'	Ib	
Red River	15th St.(E)-Martin Luther King Jr.Blvd.(E)	.28	40'	80'	Ia	
	Martin Luther King Jr. Blvd.(E)-32nd St.(E)	.95	35'	60-80'	II	Old portion will revert to a circulation function when Red River is completely re-routed.
	32nd St.(E)-Clarkson Avenue	1.52	30-60'	50-80'	Ib	
Redd Street	Western Trails-Mt. Vernon	1.0	30'	50'	II	
Reicher Drive	Manor Road-R gge Lane	.045	40'	60'	III	
Richcreek Road	Greenhaven Dr.-Daugherty	.27	44'	60'	III	
Ridge Oak Drive	Crestway Dr.-Highland Crest Drive	.44	30'	50'	III	
Ridgeway Drive	12th St.(E)-Rosewood Avenue	.27	0-30'	0-50'	III	
Rio Grande Street	5th St.(W)-29th St.(W)	1.90	40'	80'	II	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
River Street	Town Lake-IH 35	.47	30'	60-65	II	
Riverside Drive	IH 35-Ben White Blvd.	3.45	20-44'	50-175	Ia	Purchase additional ROW as required-street is to be rebuilt.
(E) Riverside Drive	Texas St. 71-Dalton Ln	.49	30'	60'	II	
Robert E. Lee Road	Melridge-Barton Springs Road	.76	30'	40-60'	II	
Rockwood Lane	Foster Ln.-Burnet	1.14	44'	60'	II	
Rogge Lane	Berkman Dr.-Springdale	1.52	40'	60'	II	
Rosewood Avenue	Navasota Street-Ridgeway	1.33	40'	60-70'	II	
Round-up Trail	Western Trails-Manchaca Road	.51	30'	50'	III	
Rufus Drive	Isabell Drive-St.Johns	.30	30'	50-60'	III	
Rundberg Lane	Lamar (N)-Dessau Rd. Mountain Quail-Hunters Trace	1.52 .08	2@24' 2@24'	50-90' 90'	Ia III	Road under construction
Rutherford Lane	IH 35-Cameron Road	.91	30'	50'	III	
Rutland Drive	Quail Valley-Lamar (N)	.57	30-40'	60'	II	
Sagebrush Drive	Plains Trail-Newmont Trail	.25	30'	50'	III	
St. Edwards Drive	Congress Ave.-IH 35 Service Road	.87	40'	60'	III	Street to be extended to Congress Ave.

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
St. Elmo Road	Mt. Vernon Dr.-1st St. (S)	.34	30'	30-60'	II	
St. Johns Avenue	Guadalupe Street-Berkman Drive	1.68	40-44'	50-85'	Ib	
St. Josephs Boulevard	Burnet Road-Mullen Dr.	.3	2@20'	50-100'	II	
Sahara Drive	Lybyan Drive-Turtle Creek Boulevard	.55	30'	60'	III	
Salina Street	Martin Luther King Jr. Boulevard-12th St.(E)	.42	30'	40-53'	III	
Samuel Huston Avenue	Webberville Rd.-500' East of Tannehill St.	.40	30'	50'	III	
San Gabriel St.	Martin Luther King Jr. Boulevard-26th St.	.49	25-30'	60'	III	
San Jacinto Boulevard	Martin Luther King Jr. Boulevard-5th St.	.81	56'	80'	II	Street to be closed between 26th St. and M.L.King Jr.,Boulevard.
	Martin Luther King Jr., Boulevard-Speedway	.97	55'	120'	II	
Santos Street	Montopolis Drive-Vargas	.15	30'	50'	III	
Sara Drive	Springdale Road-Prock Lane	.44	30'	40-60'	III	
Scenic Drive	River Rd.-Pecos	.53	44'	50-60'	II	
Schriber Street	Live Oak-Oltorf St.	.06	30'	50'	III	
Shadowood Drive	Teakwood Dr.-Ohlen Rd.	.19	30'	60'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING WIDTH	EXISTING R.O.W	FACILITY RECOMMENDED	REMARKS
Shady Brook Lane	Greenbrook Parkway-Bartholomew Park	.19	44'	60'	III	
Shady Lane	Gonzales St.-Bolm Rd.	.38	30'	40-50'	III	
Sharon Lane	Forest Trail-Griswald Street	.17	30'	30-40'	III	
Sheraton Avenue	Suburban Drive-Old Castle Road	.32	44'	70'	III	
Shoal Creek Boulevard	38th St.(W)-Northland Drive	2.05	40'	60-80'	II	
	Northland Dr.-North Park Drive	.81	44'	60-80'	II	
	North Park Drive-Greenlawn Parkway	.42	44'	60-80'	Ia	East Side.
Sierra Drive	Mesa Dr.-Ponton Place	.19	40'	60'	III	
Silverspring Drive	Mesa Dr.-Tallwood	.25	30'	50'	III	
Silverway Drive	Greenhaven Dr.-Northcross	.15	30'	0-60'	III	Pedestrian-bicycle bridge must be built over creek.
Slayton Drive	Cooper Dr.-Fawnridge Drive	.10	30'	50'	III	
Southridge Drive	Clawson Rd.-Bannister Lane	.44	44'	70'	III	
Speedway Street	30th St.-47th St.(E)	2.01	30-44'	50-95'	II	
	26th St.-27th St.	.20	30-44'	80'	III	
	27th St.-San Jacinto	.05	30-44'	80'	II	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Speedway Street (CONT.	Martin Luther King, Jr. Boulevard-21st St.	.19	30-44'	80'	III	
Speer Lane	Libyan Drive-Cooper Lane	.38	30'	60'	III	
Spicewood Springs Rd.	Balcones-Loop 360	2.42	60'	80'	Ia	Proposed.
Spring Lane	Windsor Road-Westover Road	.53	30'	50-60'	II	
Springdale R ad	1st St.(E)-Martin Luther King, Jr.,Blvd. (E)	2.65	22-40'	40-100'	II	
Stamford Lane	Woodmont Avenue-Windsor Road	.3	30'	40-50'	II	
Stassney Lane	Westgate Blvd-Manchaca Manchaca Rd.-IH 35	.83 1.52	2@24' 2@33-2@24'	60-80' 100'	II Ib	 Proposed
Steck Avenue	Mesa Dr.-Burnet	2.03	44'	60-80'	II	
Strass Dr ve	49th St.-Hancock Dr.	.31	30'	50'	III	
Stratford Drive	Dry Creek Rd.-Red Bud Trail	1.66	20-30'	50'	III	
Suburban Drive	Sheraton Ave.-Battle Bend Blvd.	.66	44'	60'	III	
Sunshine Drive	North Loop Dr.-Stark Street	.34	30'	60'	III	
Susquehanna Lane	Langston Dr.-Manor Rd.	.44	30'	60'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Tallwood Drive	100' south of Cima Serena-Silverspring Drive	.45	44'	60'	III	
Tannehill Lane	Webberville Rd.-F.M. 969	.16	30'	45-50'	II	
Tannehill Street	Samuel Huston Avenue-500' South	.10	30'	40-50'	III	
Teakwood Drive	Shadowood-Wooten	.15	40'	60'	III	
Teasdale Terrace	Rundberg Ln.-Childress	.47		60'	III	
The Circle	Drake Ave.-Academy Dr.	.15	30'	50'	III	Street must be paved.
Theckla Terrace	Arroyo Seca-Woodrow Avenue	.11	30'	50'	II	
Tillery Street	1st St.(E)-5th St.(E)	.28	40'	60'	II	
Tower Drive	Dormarion Ln.-Winsted Lane	.17	30'	50'	III	
Treadwell Boulevard	Bullard Dr.-Shoal Crk Boulevard	.38	40'	60'	III	
Treadwell Street	Folts Avenue-Josephine Street	.44	30'	50'	III	
Trinity Street	San Jacinto-5th Street	.82	40-60'	60-80'	II	
Tronewood Drive	Peyton Gin-Norseman Terrace	.15	40'	60'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Turtle Creek Boulevard	Emerald Forest-1st St. (S)	.49	44'	60'	II	
	Lybyan Dr.-Emerald Forest	.17	44'	60'	II	
Twin Oaks Drive	Vine Street-Daugherty Street	.34	30'	60'	III	
Ullrich Avenue	Koenig Ln.-Arroyo Seca	.28	30'	50'	III	
Vargas Road	Santos St.-300'SW of U.S. 183	.95	44'	60'	II	
Victory Drive	Prather Lane-Panther Trail	.19	40'	60'	II	
	Prather Lane-Pack Saddle Pass	.28	0'	0'	II	Street must be extended
Vine Street	Twin Oaks Dr.-Pegram Avenue	.25	30'	50'	III	
Vinson Drive	Aberdeen Dr.-St. Elmo Road	.47	20-44'	50-80'	II	Road must be improved.
Waterbrook Drive	51st St.(E)-Westminster Drive	.38	30'	50'	III	
Webberville Road	7th St.(E)-Rosewood Avenue	1.14	40'	60-70'	III	
	Springdale Road-Tannehill Street	1.25	30'	60'	II	
Wellington Drive	Westminster Drive-Manor Road	.85	30-40'	50-60'	II	
West Drive	30th St.-29th St.	.09	25'	25'	II	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
West Lynn St.	5th St. (W)-Niles Rd.	.89	15-28-40'	15-40-60'	II	15' width is between 5th St. and 6th St.
West Rim Drive	Far West Blvd.-Burney Drive	.85	40'	60'	III	
Western Trails Blvd.	Westgate Blvd.-Redd	.63	44'	70'	II	
Westgate Boulevard	U.S. 290-Berkeley Ave. Berkeley Drive-Oaks Drive	1.89 .39	44' 2@24'	90	II II	
Westminster Drive	Briarcliff Blvd.-Rogge Lane Rogge Lane-Manor Rd.	.40 .58	44' 44'	60' 60'	II III	
Westmorland Drive	Fort Clark-Old Castle Road	.04	44'	60'	III	
Westover Road	Hillview Rd.-Northwood Road	.63	44'	60-70'	II	
Weyford Drive	Burrell Dr.-Kromer	.19	30'	50'	III	
Whispering Oaks Drive	Redleaf-William Cannon Drive	.57	40'	60'	III	
White Rock Drive	Great Northern Blvd.-Allendale Road	.85	50'	60-70'	III	
Whitis Avenue	29th St.-24th St.	.43	30'	60'	III	
William Cannon Drive	Westgate Blvd.-IH 35	2.94	2@33'	0-120'	Ia	Sections remain to be built.

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Wilshire Boulevard	Bradwood R.-Crestwood Road	.28	30'	60'	III	
Windsor Road	Matthews Drive-Pecos Street	.40	30'	50-60'	III	
	Pecos Street-Niles Rd.	1.52	30-40'	30-50'	II	
	Niles Road-Kingsbury	.19			III	
Winsted Lane	Griswald Ln.-Margranita Crescent	.52	30'	50'	III	
Wonsley Drive	Purnell Drive-IH 35	.30	30'	40-45'	III	
Woodland Avenue	East Side Drive-Burton Drive	1.27	44'	50-80'	II	
Woodmont Avenue	Exposition Blvd.-Stamford Lane	.10	30'	30-40'	II	
	Stamford Lane-Forest Trail	.15	30'	40'	III	
Woodrow Avenue	Arroyo Seca-Wooten Park Drive	.66	40'	80'	II	
Woodward Street	Congress Ave.-Ben White Blvd.	1.40	20-44'	50-90'	Ia	
Wooldridge Drive	Northwood Rd.-29th St. (W)	.15	40'	60'	III	
Wooten Drive	Teakwood-Gault Street	.57	30'	50-60'	III	RR X-ing to be studied.
Wooten Park Drive	Mullen Dr.-Woodrow Ave.	.19	44'	60'	II	
1st Street	IH 35-Springdale Rd.	2.08	30-40'	60-100'	II	
	Waller Creek-IH 35	.12	40'	80'	Ia	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
(S) 1st Street	Town Lake-St. Elmo Rd.	3.18	42-44'	60-102	Ia	Acquire ROW where necessary.
	St. Elmo-City Limit	2.18	42-44'	80'	II	
2nd Street	Tillery-1st Street	1.75	30-40'	50-80'	II	
5th Street	MoPac-Waller Creek	2.08	40-60'	60-85'	Ib	
	Pedernales-Springdale Road	.76	40'	60'	II	
(S) 5th Street	Dawson-Oltorf St.	1.05	30'	50-80'	II	
	Oltorf St.-Cardinal Ln	.8	30'	50-55'	III	
6th Street	MoPac-Waller Creek	2.08	40-60'	60-80'	Ib	
9th Street	Shoal Creek-Waller Crk.	1.0	40-60'	80'	II	Street under construction
10th Street	Shoal Creek-Waller Crk	1.04	20-60'	30-80'	II	Street to be improved.
	Essex Avenue-West Lynn	.38	20	30-40'	III	Street must be paved.
11th Street	Navasota St.-Chicon St	.44	44'	60'	II	
	Chicon St.-Northwestern	.42	30'	40-60'	III	
	Essex Avenue-500'East	.1	30'	40'	III	Street must be paved.
12th Street	West Lynn-West Avenue	.72	30-55'	60-80'	III	
	West Avenue-Colorado St	.38	2@28'	120'	II	
	San Jacinto St.-Webberville Road	3.22	40-44'	120-60'	II	
14th Street	San Jacinto-Waller Crk.	.06	30'	80'	III	
16th Street	Delone St.-Astor Place	.34	0-30'	25-50'	III	Bridge must be built over creek.
17th Street	Salina-Miriam Avenue	.66	30'	50'	III	

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
21st Street	Rio Grande-University Avenue	.31	30'	60-80'	II	
	University Avenue-San Jacinto Boulevard	.34	40'	60'	III	
22nd Street	San Gabriel-Guadalupe	.38	30'	60'	III	
24th Street	Windsor Rd.-Guadalupe	.91	38-40'	60-65'	Ib	Lamar to Guadalupe changed from bike street
	Guadalupe-Whitis	.10	40'	40-80'	II	
25th Street	Longview St.-Rio Grande Street	.37	30-40'	60'	III	
26th Street	Whitis-San Jacinto	.36	66'	80-100'	Ib	Change from bike street.
	San Jacinto-Manor Rd.	.95	2@44'	120'	Ib	
	San Gabriel St.-Guadalupe Street	.37	30'	50'	III	
27th Street	Nueces St.-Speedway St.	.37	44'	80'	II	
29th Street	Harris Blvd.-Guadalupe	.72	30'	30-80'	II	
	East Drive-Guadalupe	.06	30'	60'	II	
	East Drive-Whitis	.11	30'	60'	II	
30th Street	Speedway-West Drive	.28	36'	60'	II	
32nd Street	Oakmont Blvd.-Harris Boulevard	.38	30'	50'	III	
34th Street	Guadalupe-Duval St.	.57	36'	60'	II	
	Guadalupe St.-Kerbey Ln	.76	36-40'	60'	III	
35th Street	Foothill Dr.-Jefferson Avenue	1.23	44'	50-80'	Ia	Purchase additional ROW Bicycle/Pedestrian bridge over MoPac Blvd.

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
38th Street	Jefferson Ave.-500' SW of Red River Street.	1.8	30-44'	50-85'	Ia	Purchase additional ROW; street to be widened.
38½ Street	500 SW of Red River St-IH 35	.34	30-40'	50-85'	Ia	Purchase additional ROW
	IH 35 - Grayson	.76	30-40'	50-80'	II	
39th Street	Avenue B - Guadalupe St	.13	30-40'	60'	II	
	Shoal Creek Blvd-Oakmont Blvd.	.27	30'	60'	III	Possible bridge over Shoal Creek.
40th Street	Shoal Creek Blvd.-Medical Parkway	.38	30'	50'	III	Possible bridge over Shoal Creek
	Avenue B - Guadalupe St	.13	40-45'	80'	II	
43rd Street	Ramsey Ave.-Rosedale Avenue	.06	30'	50'	III	
45th Street	Bull Creek Rd.-Burnet Road	.82	38-40'	60'	Ib	
	Burnet-Red River	1.5	40'	60-80'	Ia	Paths north side in park
	Edgehill Way-Bull Creek Road	.19			Ib	
46th Street	Guadalupe St.-Avenue G	.44	30'	40-50'	III	
47th Street	Avenue G-Red River	.44	28-30'	40-50'	III	
49th Street	Crestmont Dr.-Sunshine Dr.	.63	30'	50-80'	III	
	Caswell Avenue-Red River Street	.08	30'	50'	III	
	Shoal Creek Blvd.-Bull Creek Road	.25	30'	50'	III	Small bridge over Shoal Creek

STREET NAMES	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
51st Street	Berkman Drive-Waterbrook Drive	.61	44'	90-100'	Ia	
	Waterbrook Dr.-Old Manor Road	.12	40'	100'	III	
	Caswell-Cameron Road	.50	30'	50-60'	Ia	
55th Street	Duval-Guadalupe St.	.53	30'	50'	III	
IH 35 Service Road East	St. Johns Ave.(E)-Braker Lane	3.52	32'	300-440'	Ib	
	Riverside Drive-William Cannon Drive	4.56	24-32'	300-440'	Ib	24' from St. Elmo to William Cannon
IH 35 Service Road West	Braker Lane-St. Johns Avenue	3.52	32'	300-440'	Ib	
	Riverside Dr.-William Cannon Drive	4.56	24-32'	300-440'	Ib	24' from St. Elmo to William Cannon
U.S. 183	Guadalupe-Purnell	.18	2@40'	200'	Ia	Path on north side
U.S. 290	Westgate Blvd.-Road Runner Lane	1.95	54'	100'	II	extend and pave shoulders.
Texas St. 71	Brandt Drive-Onion Crk	3.86	2@36'	210'	II	Extend and pave shoulders.
	Brandt Dr.-Dalton Lane	.34	2@36'	210	Ia	South side.
	(E) Riverside-Riverside	.15	2@36'	210'	Ia	South side.
F.M.969	Tannehill Lane-Walnut Creek	.91	44'	100'	II	
R.M.2222	Bull Creek Rd-Loop 360	3.37	48'	100'	II	Extend and pave shoulders.
R.M.2244	Columbus Dr.-Loop 360	3.79	48'	80'	II	Extend and pave shoulders.

WATERWAY NAME	LIMITS	ESTIMATED LENGTH	EXISTING WIDTH	EXISTING R.O.W	FACILITY RECOMMENDED	REMARKS
Barton Creek	Barton Springs Rd.-Barton Skyway	1.48			Ia_1	Upper section between Campbell's Hole and Barton Skyway contains difficult terrain; connection with bikeway on Barton Skyway requires study.
Blunn Creek	Town Lake-St. Edwards Drive	1.82			Ia_1	Section from Monroe to Live Oak in place; difficult terrain from Riverside Drive to East Side Drive; ROW must be acquired from Live Oak to St. Edwards Drive.
Boggy Creek	Martin Luther King Jr. Boulevard-Ed Bluestein Boulevard	2.88			Ia_1	ROW must be acquired from Webberville to Bolm Road and from Walton Lane to Ed Bluestein.
Colorado River - South Bank	Longhorn Dam(Pleasant Valley Road) to U.S. 183	1.50			Ia_1	
Colorado River/Town Lake (South Bank)	Dry Creek-Longhorn Dam (Pleasant Valley Road)	5.15			Ia_1	Partially complete.
Colorado River/Town Lake (North Bank)	Red Bud Trail-Longhorn Dam(Pleasant Valley Rd	5.87			Ia_1	Partially complete.
Country Club Creek and Floodwater Bypass	East Riverside Drive-Colorado River	1.44			Ia_1	Route H&B Trail along proposed floodwater channel to Colorado R. in conjunction with future development.

WATERWAY NAME	LIMITS	ESTIMATED LENGTH	EXISTING		FACILITY RECOMMENDED	REMARKS
			WIDTH	R.O.W		
Johnson Creek	Colorado River/Town Lake to Enfield Road	1.40			Ia_1	MoPac interchange may present difficulty in implementation.
Shoal Creek	Colorado River/Town Lake - 45th Street	4.24			Ia_1	In place or programmed for implementation.
Waller Creek	Colorado River/Town Lake to 15th Street	1.29			Ia_1	Portions are under construction; separate pedestrian and bicycle trails require further study.
Walnut Creek	Manor Rd.-T.&N.O. R.R.	4.77			Ia_1	Some ROW must be acquired
Williamson Creek	Manchaca Rd.-Emerald Forest	0.61			Ia_1	ROW must be acquired.
	1st St.(S)-Onion Crk	6.63			Ia_1	Some ROW must be acquired.

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APPENDICES

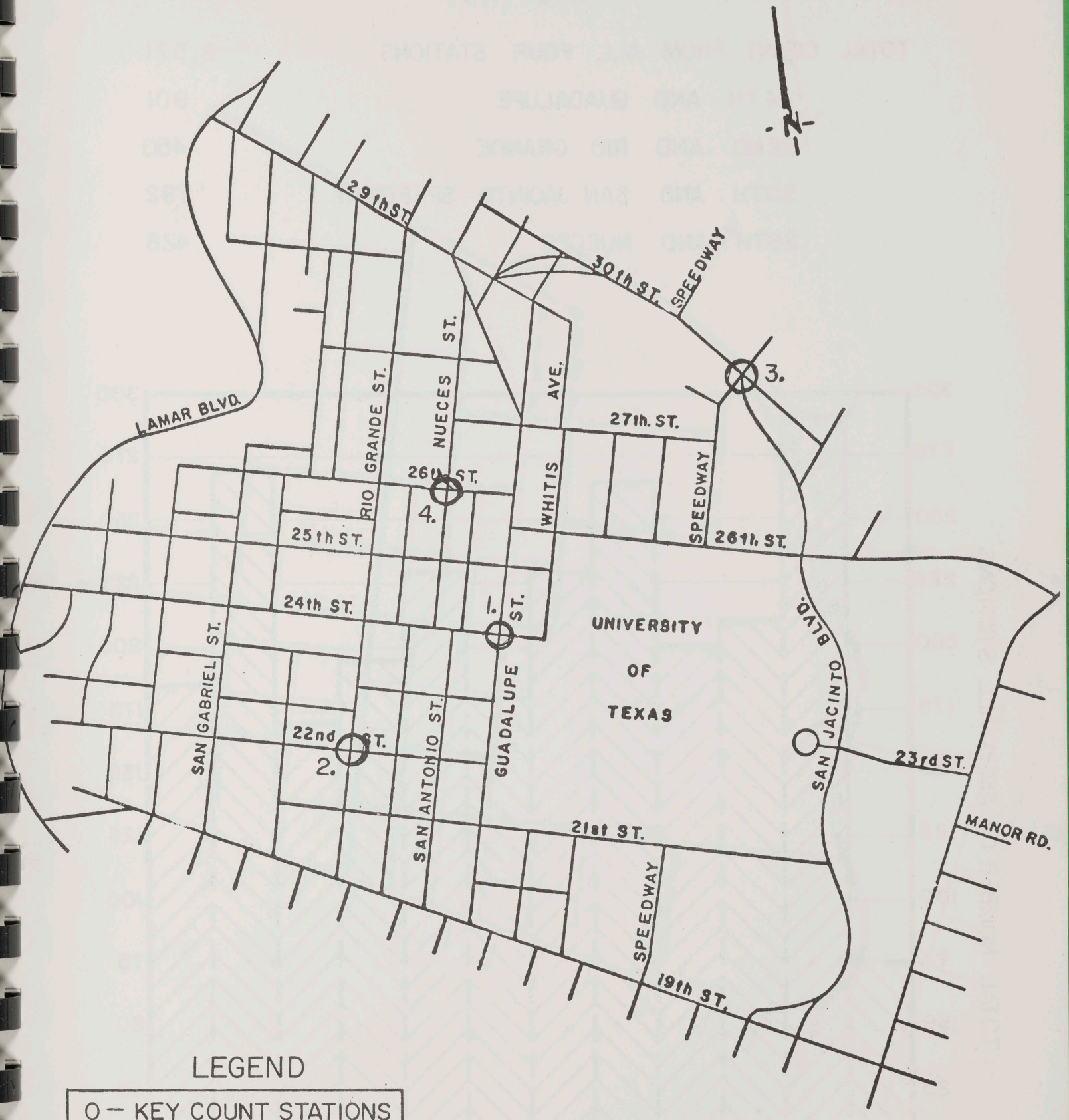
APPENDIX A

BICYCLE SYSTEM PLANNING INFORMATION

Past bicycle projects provided experience and information for planning the new citywide bicycle system. Some of that information is presented in the following figures, and tables.

1. UNIVERSITY AREA BICYCLE FACILITIES 1972

2. UNIVERSITY AREA BICYCLE KEY COUNT STATIONS SUMMER 1973

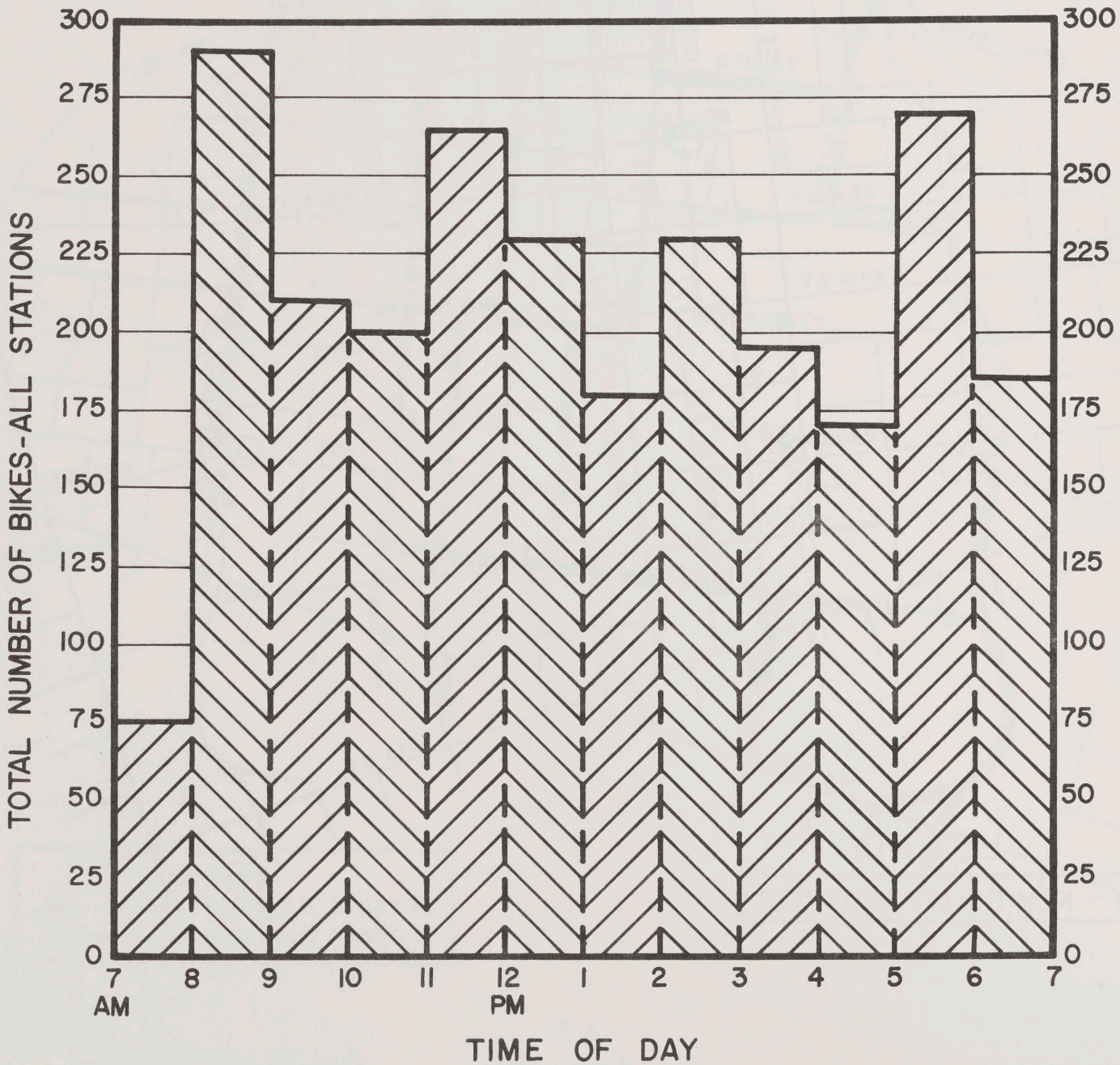


LEGEND

O — KEY COUNT STATIONS

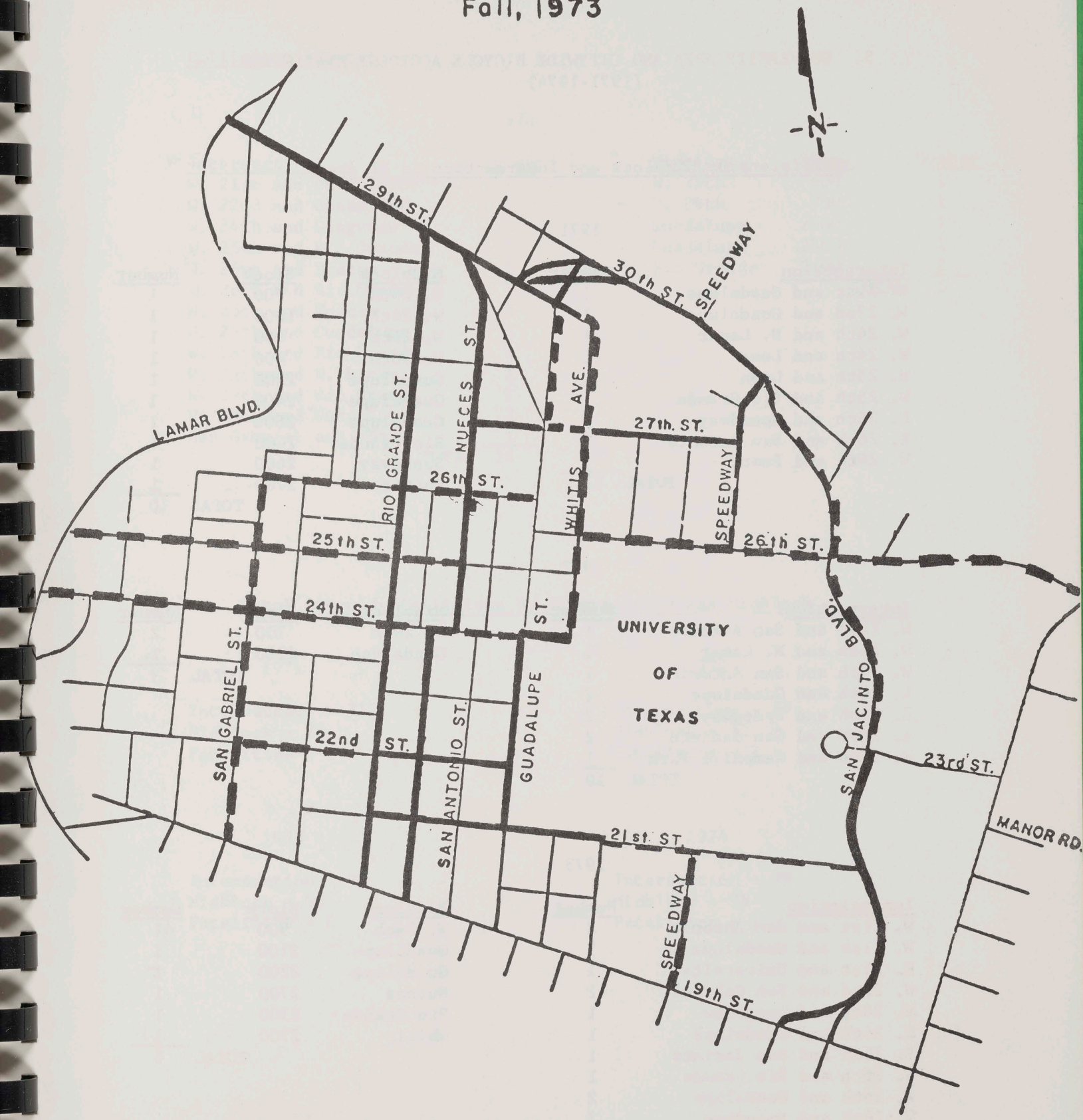
3. UNIVERSITY BICYCLE COUNT STATISTICS

TOTAL COUNT FROM ALL FOUR STATIONS	2,571
24TH AND GUADALUPE	901
22ND AND RIO GRANDE	450
30TH AND SAN JACINTO - SPEEDWAY	792
26TH AND NUECES	428



4. UNIVERSITY AREA BICYCLE ROUTE SYSTEM

Fall, 1973



LEGEND

= BICYCLE STREET

= BICYCLE LANES

5. UNIVERSITY AREA AND CITYWIDE BICYCLE ACCIDENT STATISTICS (1971-1974)

Collisions by Midblock and Intersection in UT Area

1971

Intersection	Number
W. 21st and Guadalupe	1
W. 22nd and Guadalupe	1
W. 24th and N. Lamar	1
W. 24th and Leon	1
W. 25th and Leon	1
W. 25th and Rio Grande	1
E. 26th and Speedway	2
E. 26th and San Jacinto	2
W. 26th and Pearl	1
TOTAL	11

Midblock	Block	Number
W. 24th	700	1
W. 24th	1000	1
W. 29th	800	1
W. 30th	400	1
Guadalupe	2200	1
Guadalupe	2400	1
Guadalupe	2600	1
Rio Grande	2400	1
Speedway	2600	1
Whitis	2700	1
TOTAL		10

1972

Intersection	Number
W. 21st and San Antonio	1
W. 24th and N. Lamar	1
W. 24th and San Antonio	1
W. 24th and Guadalupe	2
E. 26th and Speedway	2
E. 26th and San Jacinto	2
W. 30th and Hemphill Park	1
TOTAL	10

Midblock	Block	Number
W. 24th	700	2
Guadalupe	2200	1
TOTAL		3

1973

Intersection	Number
W. 21st and San Antonio	2
W. 21st and Guadalupe	1
W. 21st and University	1
W. 22nd and San Gabriel	1
W. 24th and Longview	1
W. 24th and Guadalupe	1
E. 26th and San Jacinto	1
W. 26th and Rio Grande	1
W. 26th and Guadalupe	2
W. 26th and Speedway	2
W. 27th and Guadalupe	1
W. 29th and Guadalupe	1
TOTAL	15

Midblock	Block	Number
W. 24th	900	1
Guadalupe	2100	1
Guadalupe	2200	1
Nueces	2700	1
Rio Grande	2300	1
Whitis	2700	1
TOTAL		6

Collisions (Cont.)

1974

Intersection	Number
W. 21st and University	1
W. 22nd and Guadalupe	1
W. 24th and Longview	1
W. 25th and Rio Grande	1
W. 25th and Nueces	1
W. 26th and Rio Grande	1
W. 26th and Nueces	1
W. 27th and Guadalupe	1
W. 28th and Rio Grande	1
W. 29th and N. Lamar	1
W. 29th and Rio Grande	1
W. 29th and Guadalupe	2
San Gabriel and 25½	1
TOTAL	14

Midblock	Block	Number
W. 29th	600	1
W. 29th	700	1
Guadalupe	2100	1
Guadalupe	2300	1
Rio Grande	2600	2
	TOTAL	6

Total Citywide Collisions by Intersection and Midblock

1971

Intersection - 71
Midblock - 74
Fatalities - 1

1972

Intersection - 59
Midblock - 93
Fatalities - 2

1973

Intersection - 70
Midblock - 93
Fatalities - 0

1974

Intersection - 79
Midblock - 78
Fatalities - 1

6. WOOLDRIDGE SCHOOL BICYCLE SYSTEM

LEGEND

------ BIKE LANE

--- BIKE ROUTE

7. TRANSPORTATION SURVEY: THE BICYCLE QUESTIONNAIRE AND SUMMARY RESULTS

DEPARTMENT OF URBAN TRANSPORTATION
TRANSPORTATION SURVEY
SPRING 1974

Please complete the following questionnaire honestly and to the best of your ability. No individual indentification is necessary. The information will help in future transportation planning which will effect you.

Parents: Please fill in only one copy of this questionnaire. If you have more than one child in elementary school, then fill in one copy and check the following box on any additional copies, making sure that each child completes the student section

I have already completed one copy of this questionnaire.

I. This section is for a parent (mother, father, or guardian) to complete.

1. Address _____
(Block Number) (Street Name)

2. Number of Occupants 2-23; 3-95; 4-341; 5-308; 6-126; 7-63; 8-35; 9-7; 10-10; Other-3.

3. Number of Automobiles 0-25; 1-276; 2-592; 3-106; Other-29.

4. Number of Motorcycles 0-701; 1-136; 2-27; Other-5.

5. Number of Bicycles 0-176; 1-189; 2-290; 3-207; 4-148; 5-53; Other-31.

6. What are your attitudes or feeling toward:

(Check one for each item)	Very Negative	Somewhat Negative	Indifferent	Somewhat Positive	Very Positive
a. Your use of public transportation (city buses)	180	122	274	252	192
b. Your participation in car pooling	120	128	186	306	280
c. Your use of bicycles	149	109	181	292	276
d. Walking to your destination	226	168	158	287	177
e. Use of your own private car	36	13	74	226	706

7. How often during the past seven days have you used the following:

(Check one for each item)

	Never	Less Than 3 Days a Week	More Than 3 Days a Week	Daily
a. Public Transportation	853	91	19	31
b. Car Pool	571	169	101	152
c. Bicycle	610	233	72	87
d. Walking	418	323	86	158
e. Private Car	43	63	123	758

8. If you ride a bicycle, please indicate about how often during a seven day period you use it for:

(Check one for each item)

	Never	Less Than 3 Days a Week	More Than 3 Days a Week	Daily
a. School	611	40	21	24
b. Work	677	9	9	7
c. Shopping	579	100	14	12
d. Recreation	244	290	112	107
e. Other (Please Specify): _____	165	17	5	27

9. Please indicate who has completed this section of the questionnaire. (Check one)

251 Father 751 Mother 6 Guardian

14 Other (Please Specify): _____

II. This section is for <u>each</u> student to complete.

1. If you ride a bike, please indicate below how often during a seven day week you use it for:

(Check one for each item)

	Never	Less Than 3 Days a Week	More Than 3 Days a Week	Daily
a. School	627	105	88	96
b. Work	707	19	9	8
c. Shopping	497	212	40	19
d. Recreation	131	153	210	415
e. Other (Please Specify): _____	120	23	14	44

2. Schools T.A. Brown, Doss, Govalle, Odom, Pecan Springs

Total Number Returned 1,031

Total Number Distributed 3,528

Percentage Returned $\frac{1,031}{3,528} = 30\%$

8. GENERAL GUIDELINES FOR BICYCLE PLANNING

The following guidelines were given to each school and P.T.A. to provide a basis for the initial route proposals:

1. Develop routes that connect the neighborhood to parks, schools, and other areas of interest to the people in the neighborhood.

2. If possible, develop one route which loops through the neighborhood and connects all of these areas of interest.

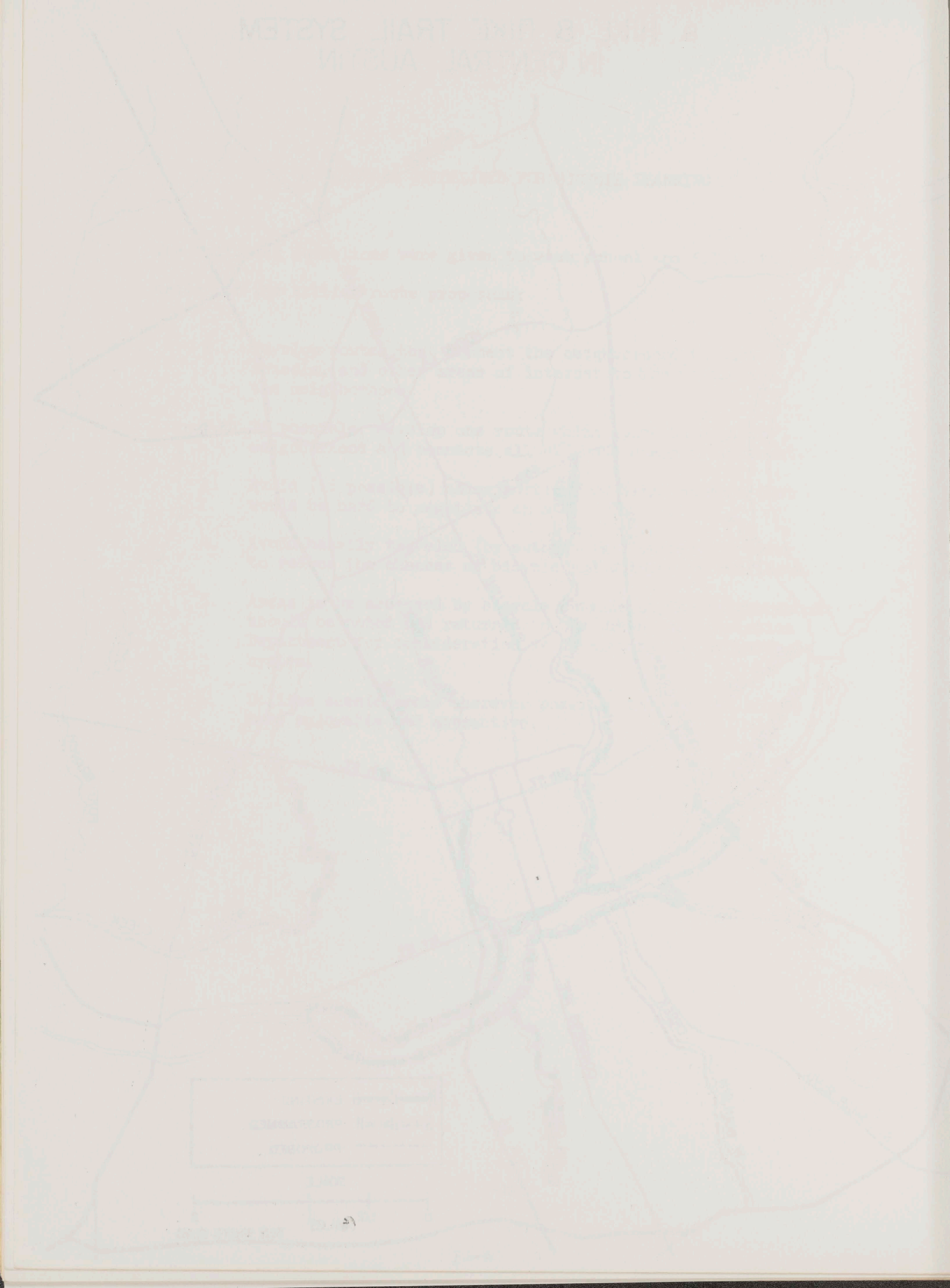
3. Avoid (if possible) using portions of hilly streets that would be hard to negotiate on a bicycle.

4. Avoid heavily traveled (by automobiles) streets in order to reduce the chances of bicycle and automobile conflicts.

5. Areas to be accessed by bicycle outside of the neighborhood should be noted and returned to the Urban Transportation Department for consideration in developing the citywide system.

6. Utilize scenic areas wherever possible to make the routes more enjoyable and attractive.

9. HIKE & BIKE TRAIL SYSTEM IN CENTRAL AUSTIN



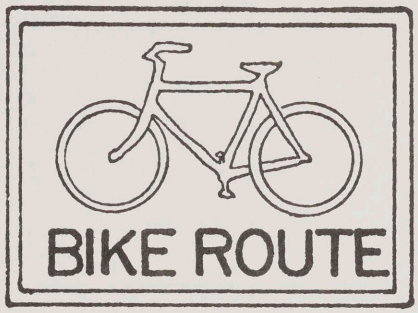
APPENDIX B

STANDARD BIKEWAY SIGNS AND MARKINGS

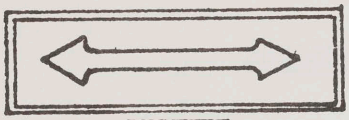
The following system of bicycle route signs and markings is approved by the National Joint Committee on Uniform Traffic Control Devices. The first three standard signs are already being used where bikeways currently exist in Austin. The two signs recommended for bicycle parking are adapted from approved standard signs and are recommended for use in Austin.

In addition to the standard signs, others which may be particularly relevant to bike paths or hike and bike trails include the "CURVE", "WINDING ROAD", "STOP AHEAD", "STOP", "YIELD AHEAD", and "YIELD" designations. These signs are reproduced 3/4 size and used in conjunction with the standard-sized bike route designation.

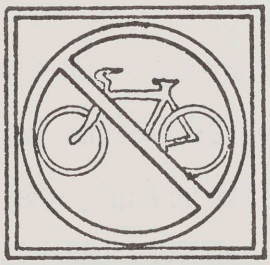
The signs which will be utilized in implementing Austin's Bicycle System are illustrated and described below.



Used for marking an officially designated on- or off-street bikeway. White symbol, lettering and border on green background. 24" x 18"



When necessary, supplementary directional arrows may be placed below the "Bike Route" sign. White symbol and border on green background. 18" x 6"



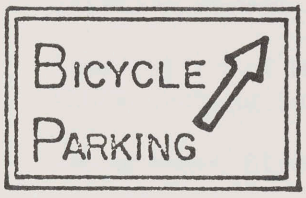
Selective exclusion sign used to regulate the types of traffic which may or may not enter a particular right-of-way. Black bicycle symbol, lettering and borders on white background with red slashed circle. 24" x 18"

Used for warning motorists in advance of a point where an officially designated bike route crosses a roadway.

Black symbol and lettering and border on yellow background. 30" x 30" mounted as a diamond, and 24" x 18".

Additional signs which may be required in some situations include: "BEGIN" or "END" Bike Route to inform cyclists of the origin or termination of a bikeway; and "NO MOTOR VEHICLES" or "MOTOR VEHICLES PROHIBITED" to exclude motor vehicles from bike facilities on streets or in parks.

The need for bicycle parking facilities can be expected to increase with the installation of facilities, and signs designating bicycle parking areas will be necessary. The following are recommended:



Adapted from recommended municipal parking sign, the bicycle sign should be 18" x 15" with white lettering and border on green background (colors reversed from municipal parking sign).

To reserve an automobile parking area within a street for the exclusive use of bicycles, green lettering and border on white. 12" x 18"

The pavement markings used to designate bicycle lanes within a roadway will be a four inch (4") solid white or yellow line, with a corresponding colored dashed line, to separate one-way and two-way bicycle traffic from vehicular traffic, respectively. In addition, pavement markings in green are recommended to provide the cyclist with supplementary information or warnings, such as the approachment of a pedestrian crossing, direction of movement in a bike lane, or the directions of movement at or within an intersection. Pavement stripes actually indicating pedestrian crosswalks or hazardous obstructions will continue to be painted in white.

APPENDIX C

BICYCLE FACILITY DESIGN STANDARDS

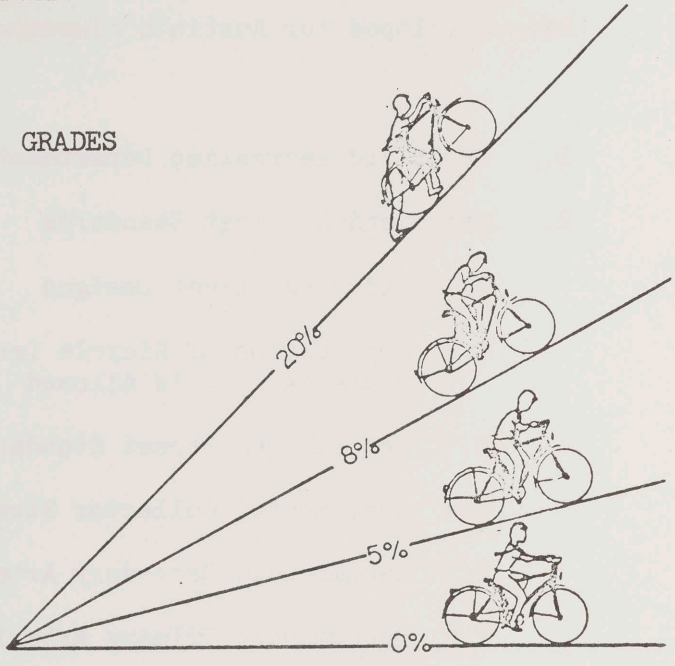
Standards for the design and installation of bicycle facilities have been developed for Austin's bikeways. They include the following:

PARKS AND RECREATION DEPARTMENT GRADE STANDARDS

DESIGN STANDARDS

Grades

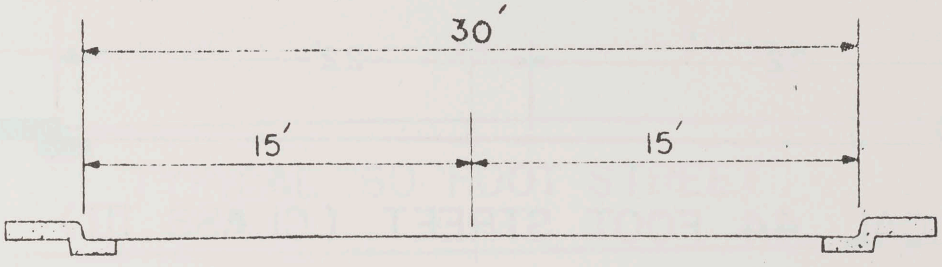
GRADES



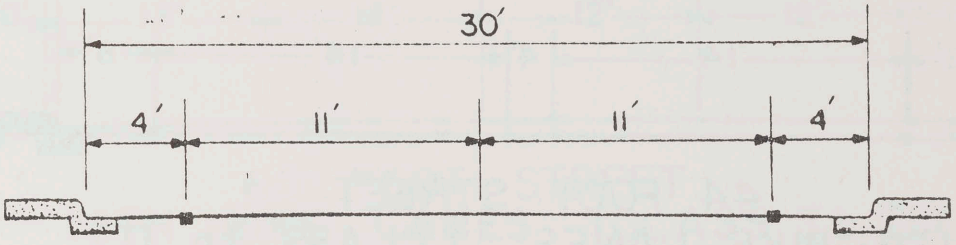
The maximum grade on a bicycle path is a relative matter as evidenced by the range of one to twenty percent now existing on bicycle trails. The length of the grades should also be considered when determining the percent of grade. It is the long climb that tires the unconditioned cyclist, even though the climb may be a very gradual one. Another guide that will be helpful in determining maximum grades is a ten (10) percent grade is the maximum recommended for a comfortable walking trail.

2. RECOMMENDED STREET STANDARDS

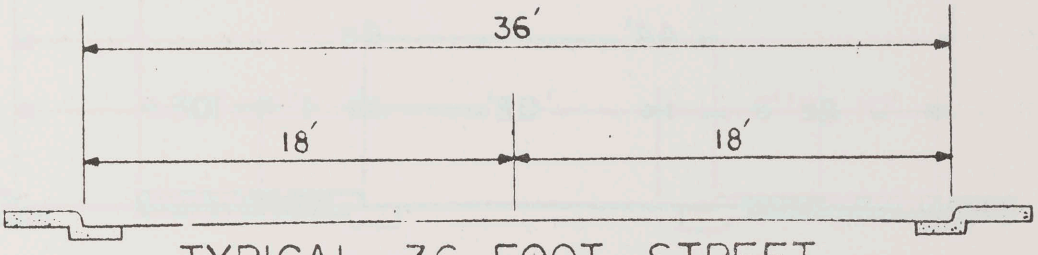
2.1 EXISTING STREET DESIGNS



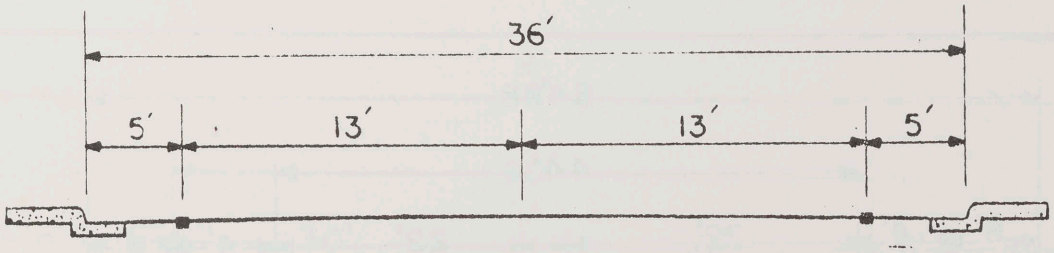
TYPICAL 30 FOOT STREET (CLASS III)



30 FOOT STREET
WITH BIKE LANES (CLASS II)

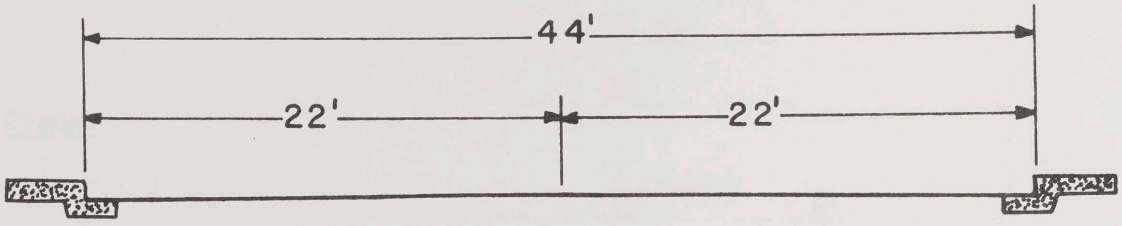


TYPICAL 36 FOOT STREET

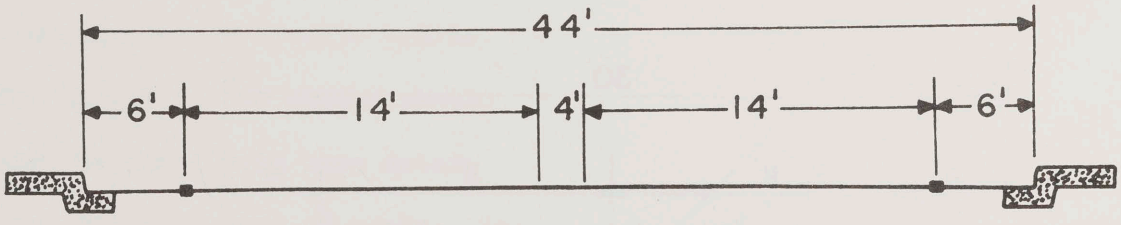


36 FOOT STREET
WITH BIKE LANES (CLASS Ib, II)

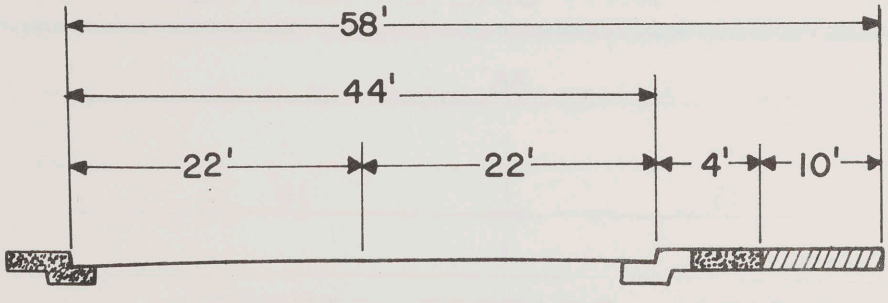
EXISTING STREET DESIGNS



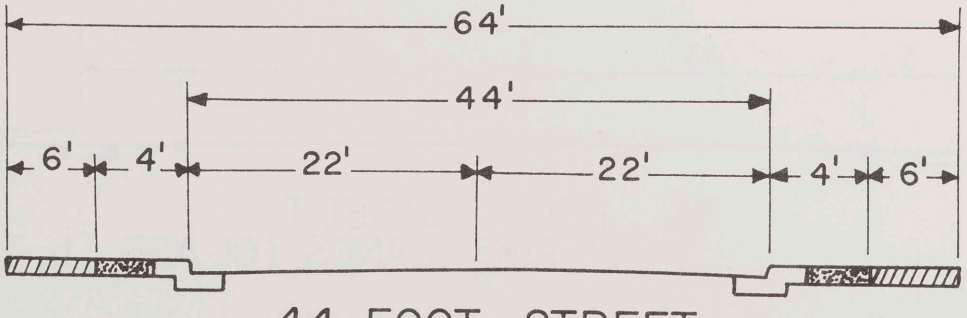
TYPICAL 44 FOOT STREET (CLASS III)



44 FOOT STREET
WITH BIKE LANES (CLASS Ib, II)

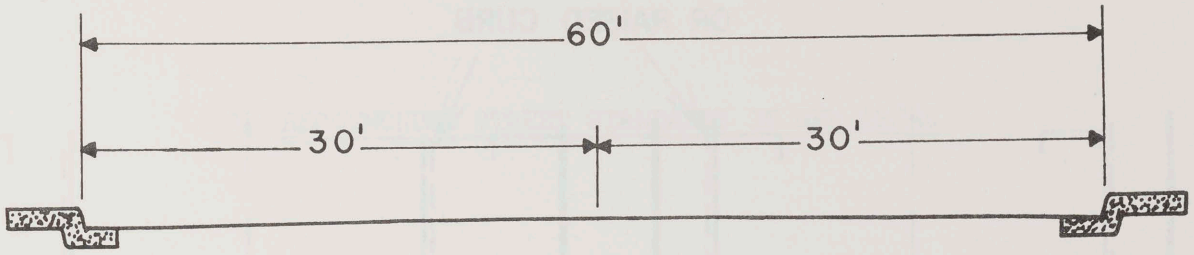


44 FOOT STREET
WITH BIKE PATH (CLASS Ia) ON ONE SIDE

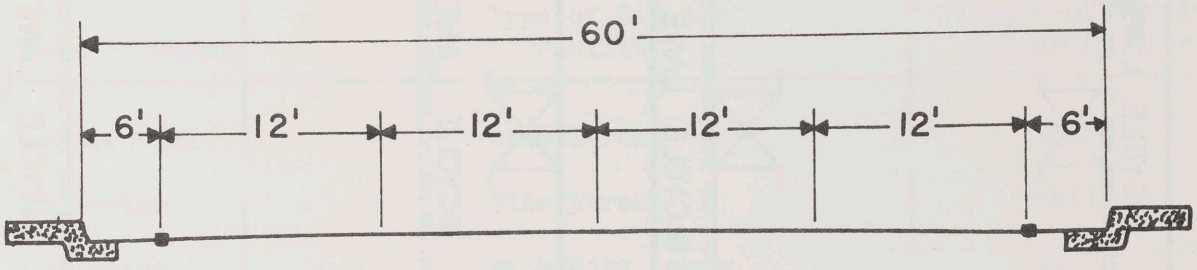


44 FOOT STREET
WITH BIKE PATHS (CLASS Ia) ON BOTH SIDES

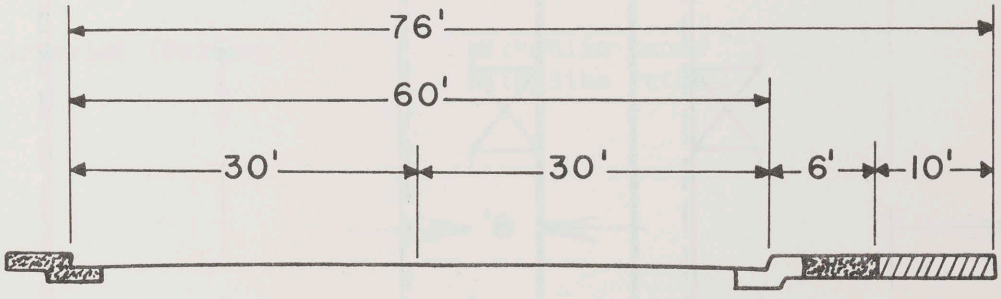
EXISTING STREET DESIGNS



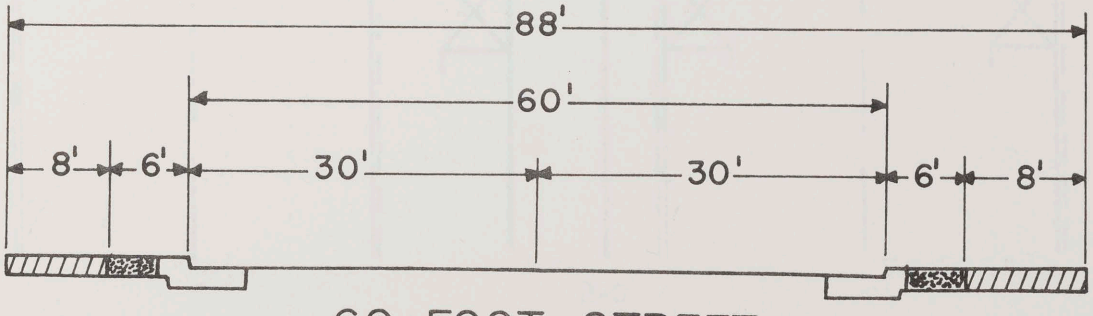
TYPICAL 60 FOOT STREET



60 FOOT STREET
WITH BIKE LANES (CLASS Ib, II)

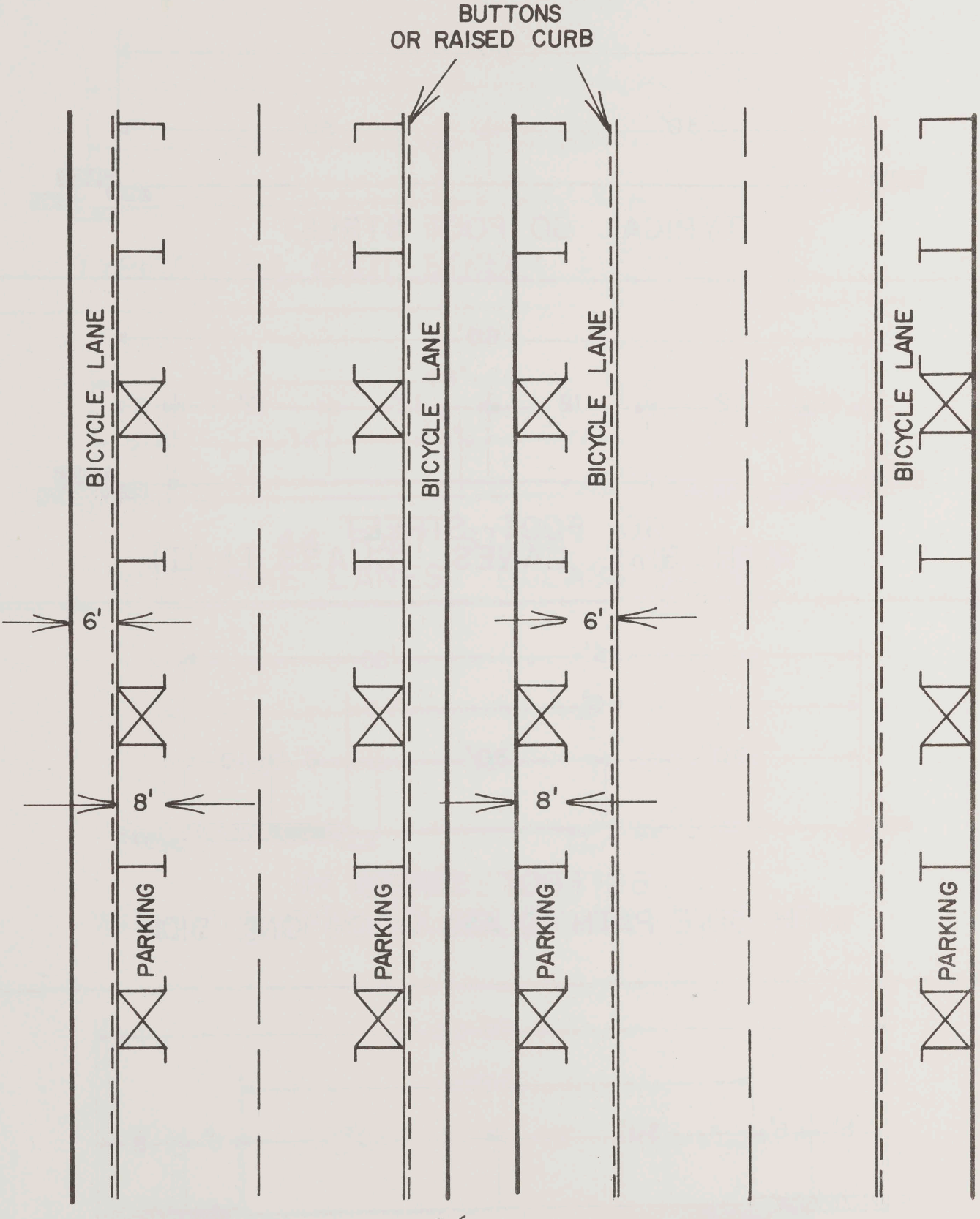


60 FOOT STREET
WITH BIKE PATH (CLASS Ia) ON ONE SIDE



60 FOOT STREET
WITH BIKE PATHS (CLASS Ia) ON BOTH SIDES

2.2 APPLICATION OF BICYCLE LANES ON STREETS WHERE PARKING IS ALLOWED

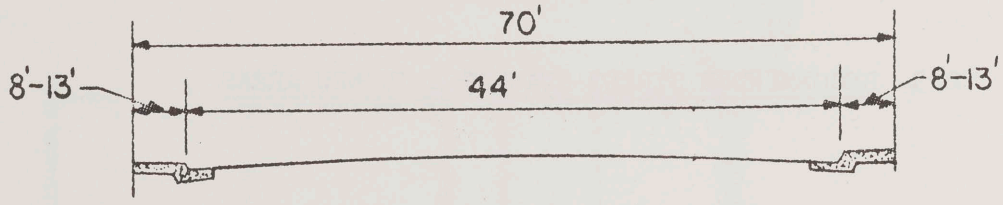


2.3 RECOMMENDED STREET STANDARDS IN NEW AREAS

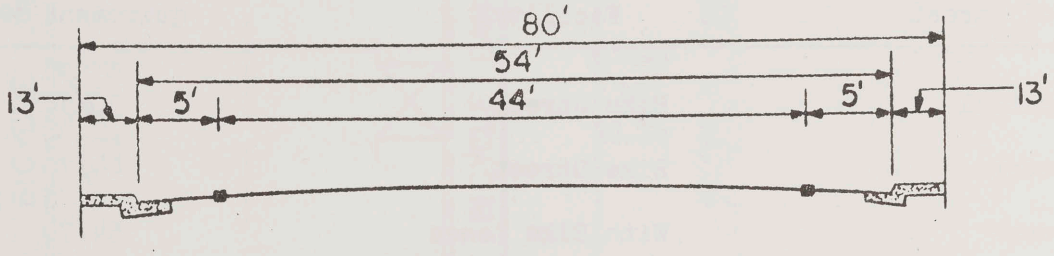
Type of Street	Type of Bicycle Facility	Street Width/ Right-of-Way Requirement (Feet)
Residential	Bike Street	30/50
Collector	Bike Street	44/70
Collector	With Bike Lanes	54/70
Collector	With Bike Paths	44/80
Arterial (Secondary)	With Bike Lanes	72/100
	With Bike Paths	60/100
Arterial (Primary)	With Bike Lanes	92/130
	With Bike Paths	80/130

2.4

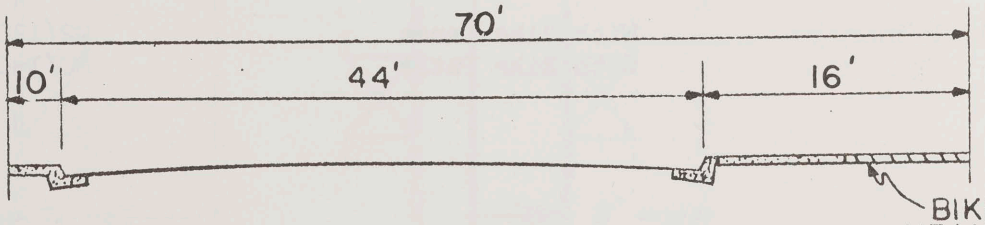
RECOMMENDED COLLECTOR STREET SECTIONS



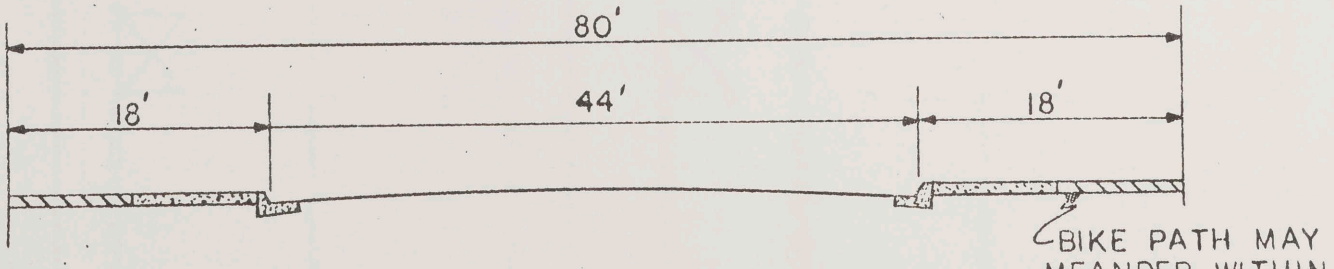
WITHOUT BIKE LANES OR BIKE PATHS



WITH BIKE LANES

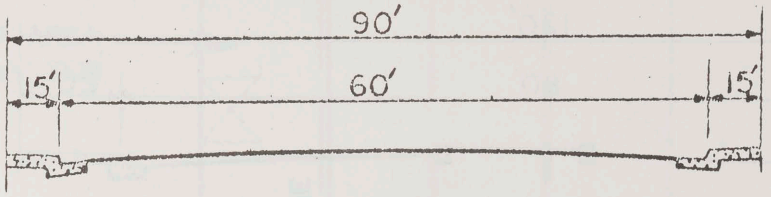


WITH BIKE PATH ON ONE SIDE

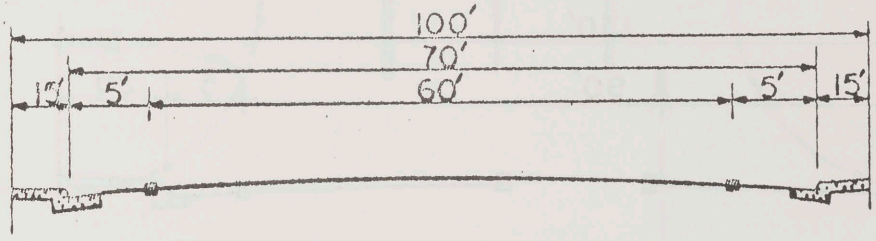


WITH BIKE PATHS ON BOTH SIDES

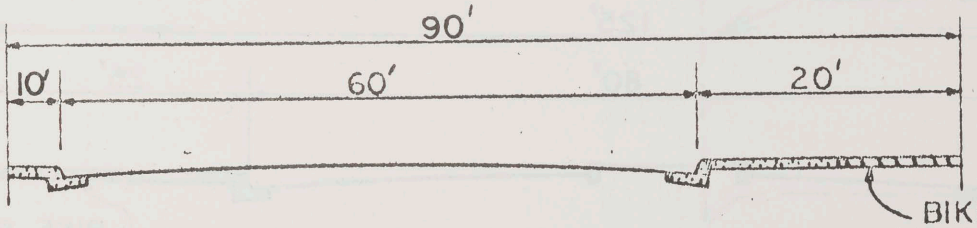
2.5 RECOMMENDED SECONDARY ARTERIAL STREET SECTIONS



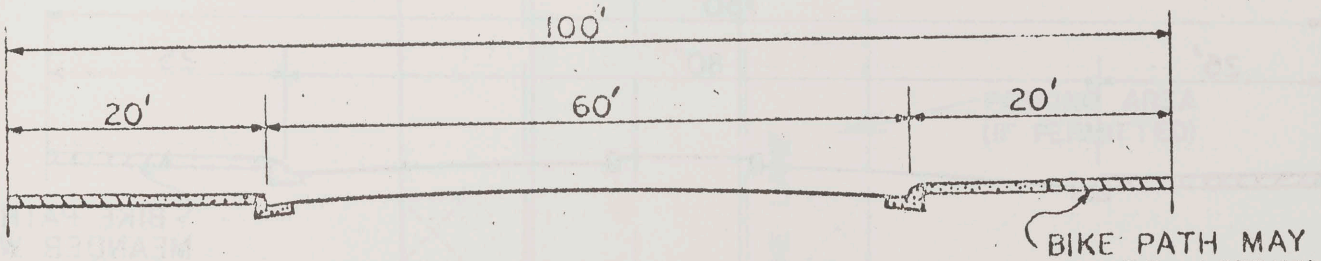
WITHOUT BIKE LANES OR BIKE PATHS



WITH BIKE LANES

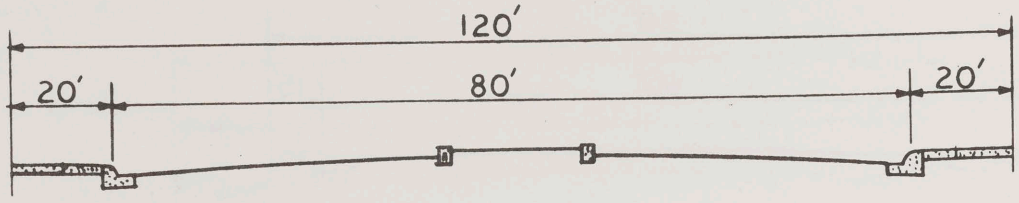


WITH BIKE PATH ON ONE SIDE

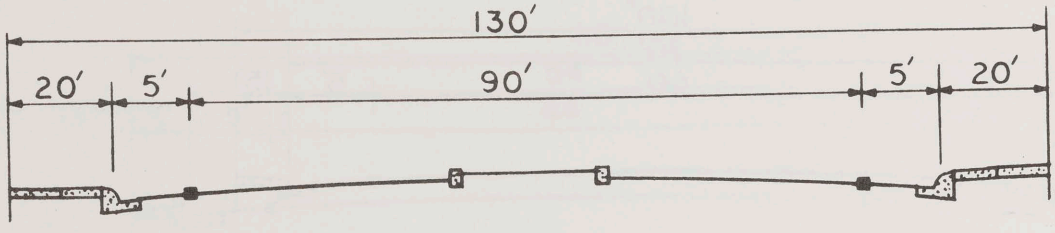


WITH BIKE PATHS ON BOTH SIDES

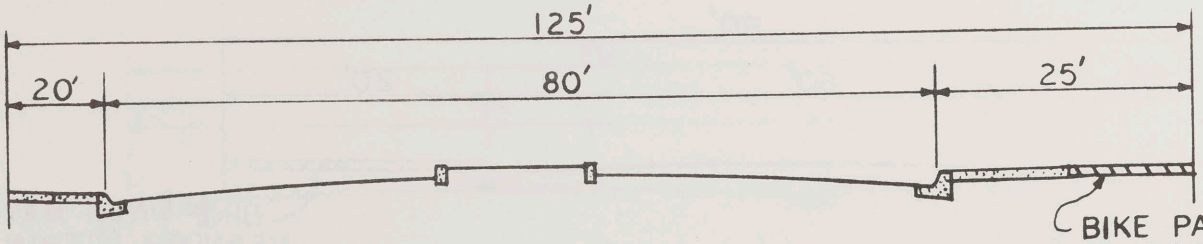
2.6 RECOMMENDED PRIMARY ARTERIAL STREET SECTIONS



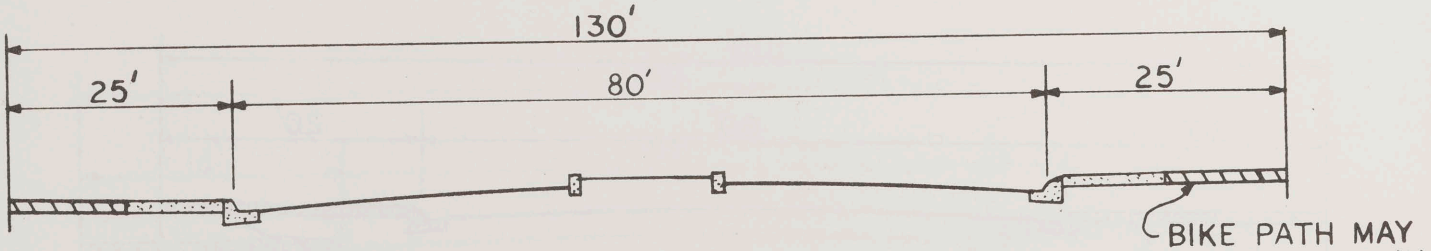
WITHOUT BIKE LANES OR BIKE PATHS



WITH BIKE LANES



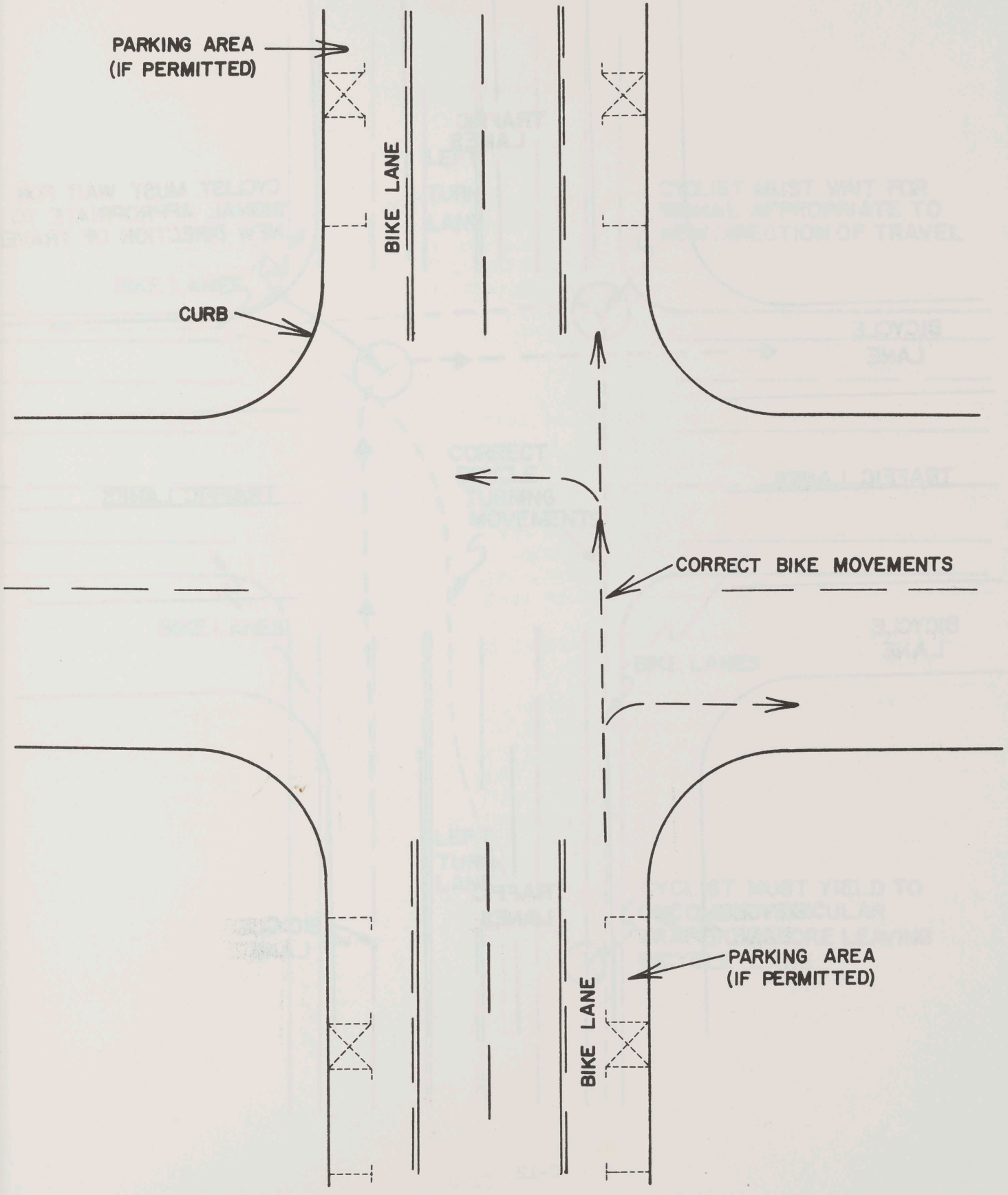
WITH BIKE PATH ON ONE SIDE



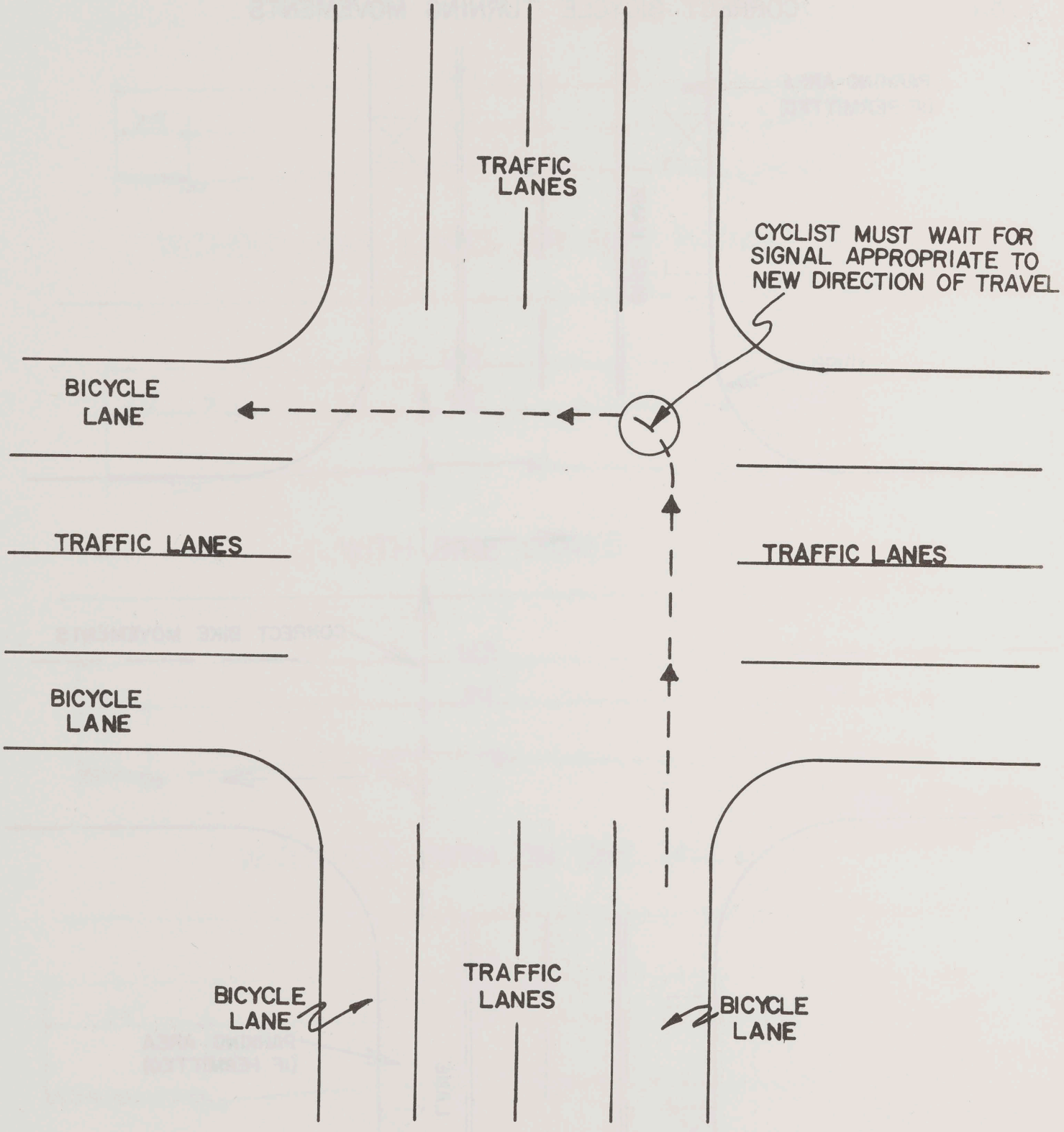
WITH BIKE PATHS ON BOTH SIDES

3. BICYCLE RIGHT-OF-WAY DESIGNATIONS AND TURNING MANEUVERS

3.1 CORRECT BICYCLE TURNING MOVEMENTS

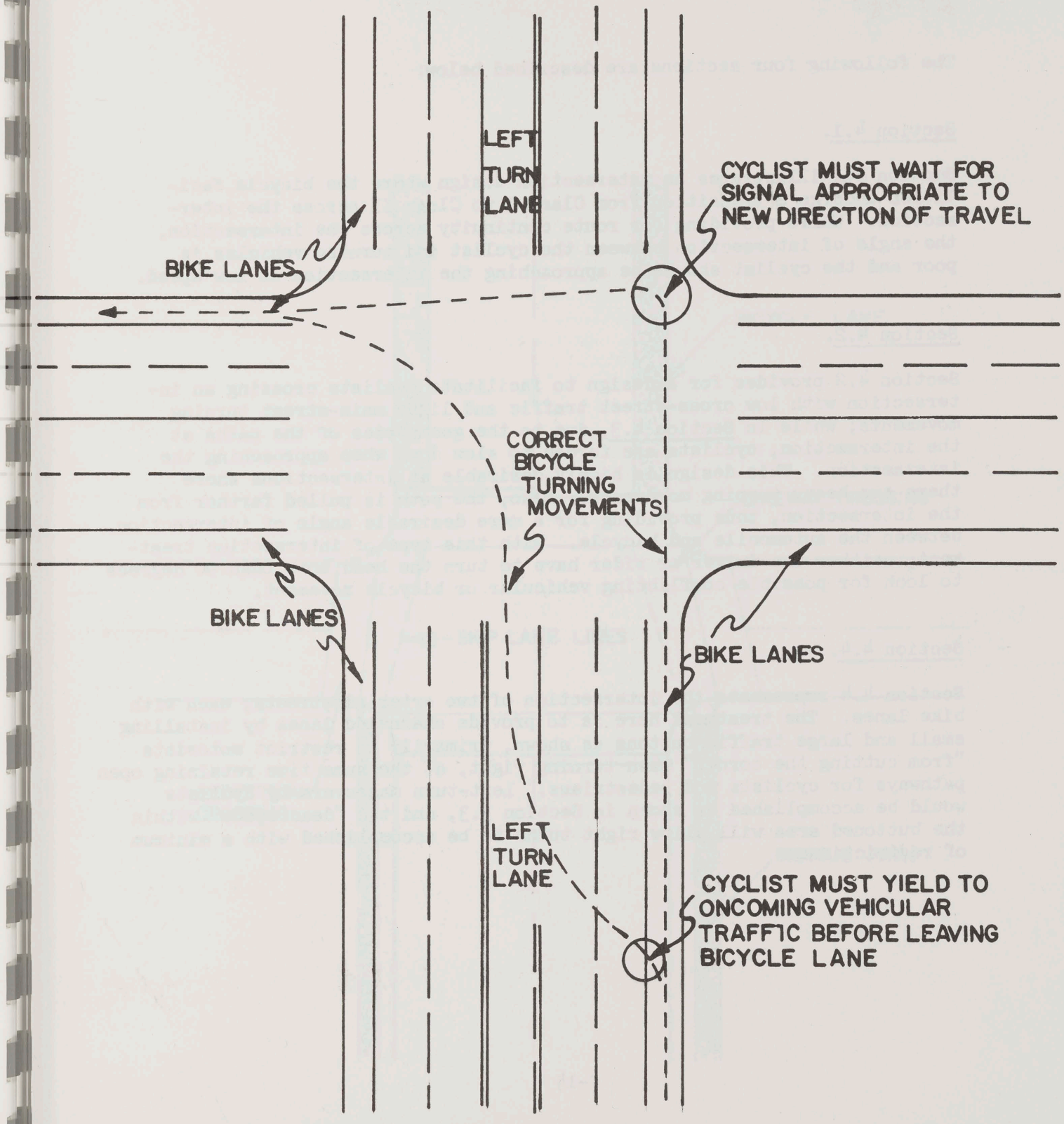


3.2 LEFT-TURN MANEUVER WITH BIKE LANES



3.3

LEFT TURN MANEUVER FROM VEHICULAR LEFT-TURN LANE



4. INTERSECTION DESIGNS

The following four sections are described below:

Section 4.1.

Section 4.1 illustrates an intersection design where the bicycle facilities undergo a transition from Class I to Class II across the intersection. While providing for route continuity across the intersection, the angle of intersection between the cyclist and turning vehicles is poor and the cyclist should be approaching the intersection at low speed.

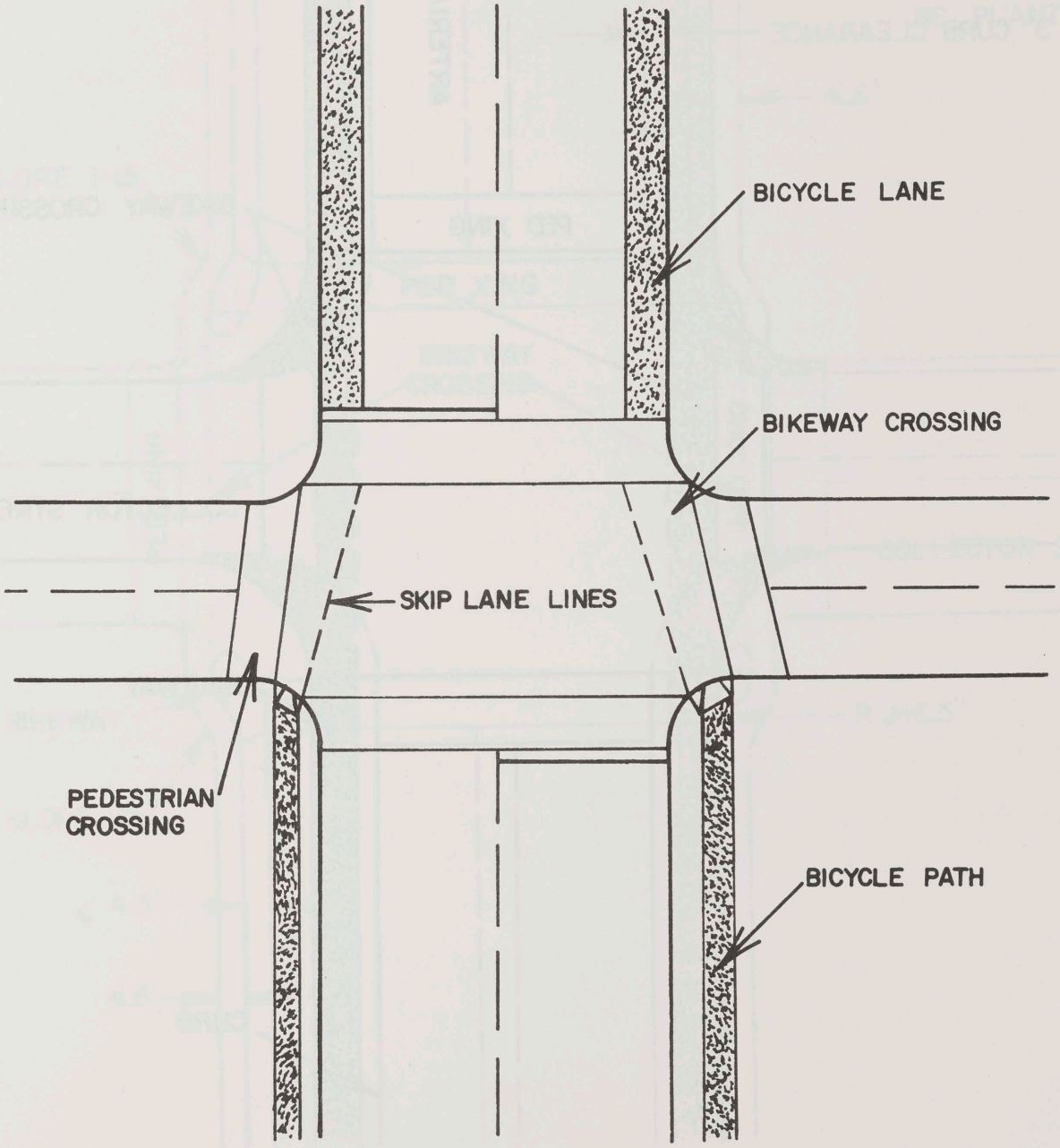
Section 4.2.

Section 4.2 provides for a design to facilitate cyclists crossing an intersection with low cross-street traffic and light main-street turning movements; while in Section 4.3, due to the geometrics of the paths at the intersection, cyclists are forced to slow down when approaching the intersection. This design is highly desirable at intersections where there are heavy turning movements. Also, the path is pulled farther from the intersection, thus providing for a more desirable angle of intersection between the automobile and bicycle. With this type of intersection treatment, neither the driver or rider have to turn the head more than 90 degrees to look for possible conflicting vehicular or bicycle movement.

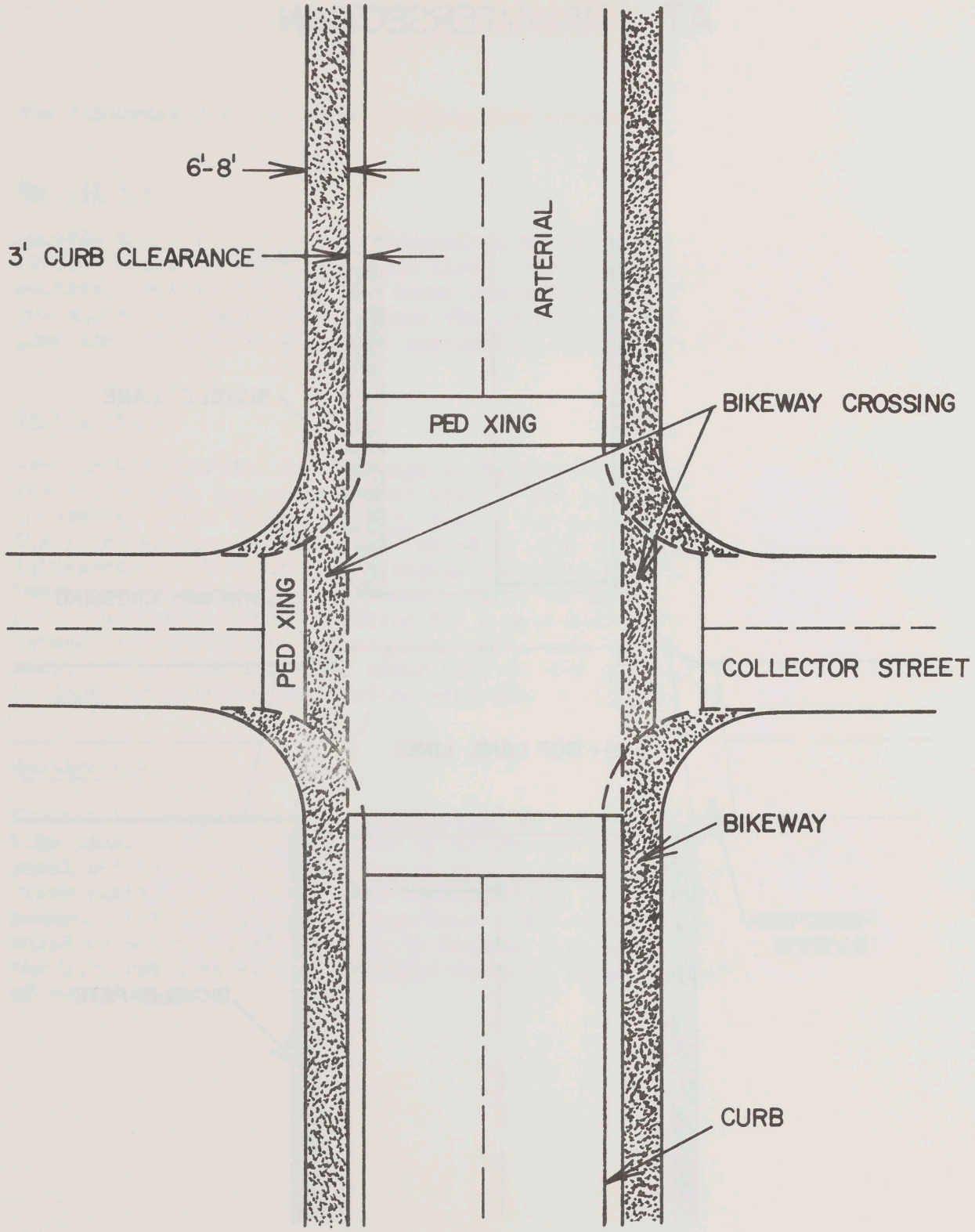
Section 4.4.

Section 4.4 represents the intersection of two arterial streets, each with bike lanes. The treatment here is to provide channeled lanes by installing small and large traffic buttons as shown, primarily to restrict motorists "from cutting the corner" when turning right, at the same time retaining open pathways for cyclists and pedestrians. Left-turn maneuvers by cyclists would be accomplished as shown in Section 3.3, and the "dead space" within the buttoned area will allow right turns to be accomplished with a minimum of restrictions.

4.1 INTERSECTION DESIGN WITH BIKEWAY CHANGE FROM PATH TO LANE AT THE INTERSECTION

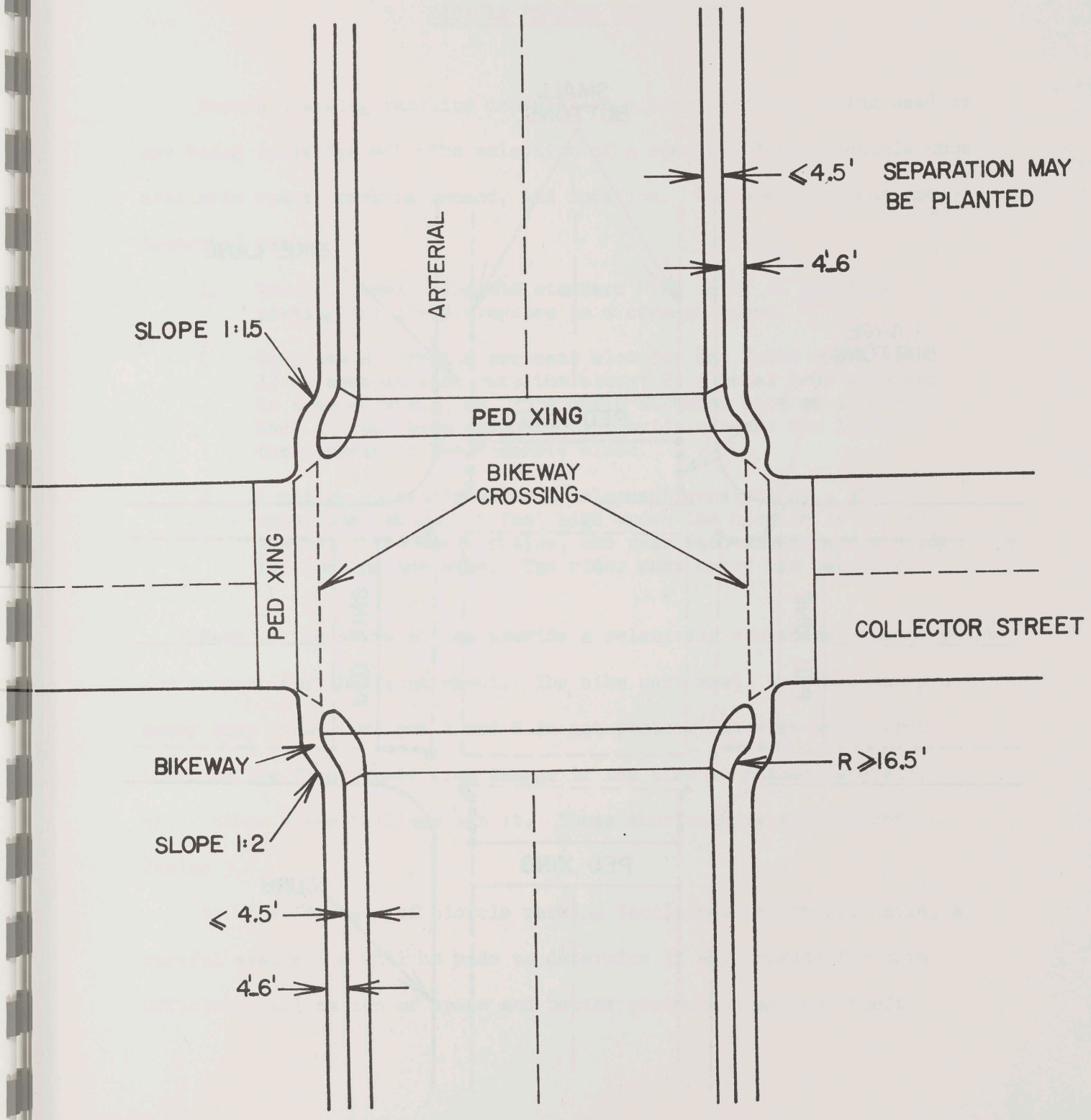


4.2 BIKEWAY CROSSING A COLLECTOR STREET



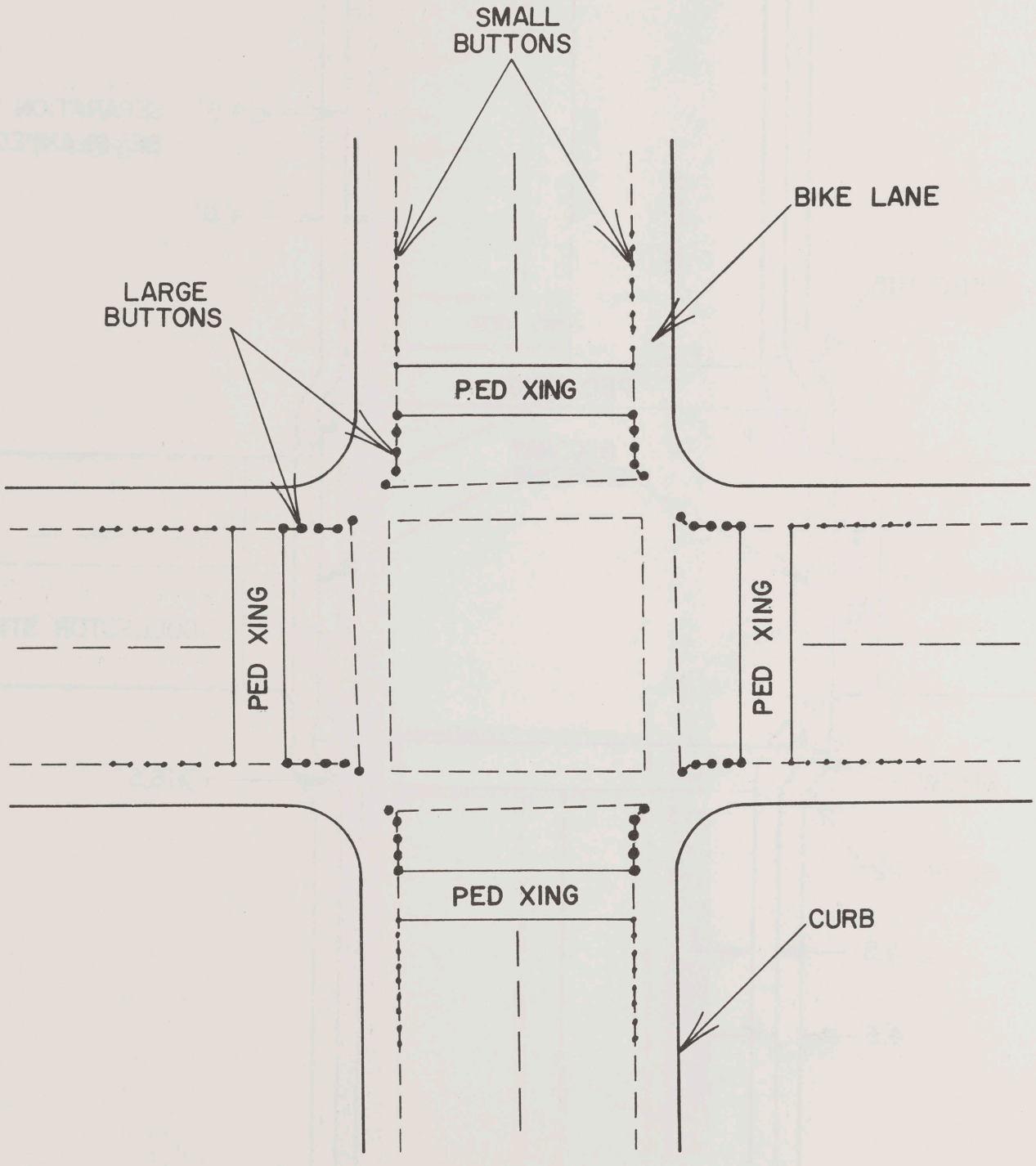
4.3

RECOMMENDED INTERSECTION DESIGN FOR PATHS ALONG ARTERIAL STREETS



BIKEWAY IS SEPARATED FROM MOTOR VEHICLE TRAFFIC BY A STRIP. THE PHYSICAL DESIGN OF THE BIKEWAY APPROACH (SHARP TURNS WITH SMALL RADII) FORCES CYCLISTS TO REDUCE THEIR SPEED BEFORE ENTERING THE INTERSECTION.

4.4 RECOMMENDED INTERSECTION DESIGN: TWO ARTERIAL STREETS WITH BIKE LANES



5. BICYCLE PARKING FACILITIES

Several parking facility designs are either currently being used or are being investigated. The selection of a specific design depends upon available space, parking demand, and location. The basic designs are described below:

1. Tubular Steel - The old standard bike rack; it provides parking for 10-15 bicycles in a compact space.

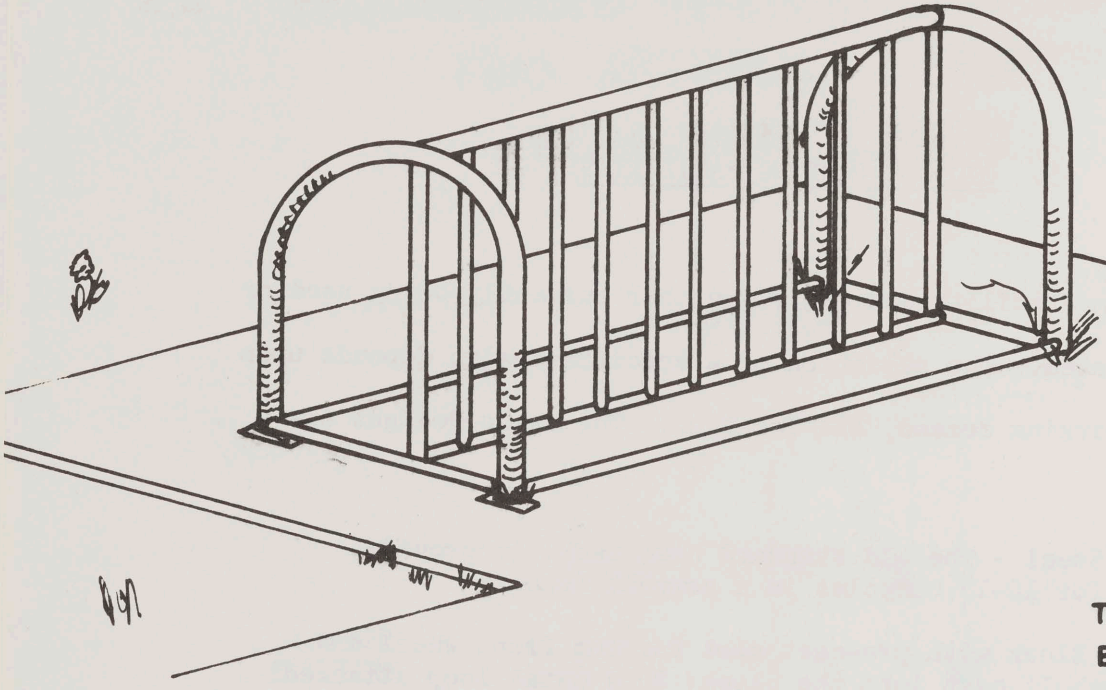
2. Concrete Block with pre-cast slot for the front wheel and 1) an eyebolt cast into the block; 2) a metal loop attached to a metal strip; or, 3) a chain attached to a metal strip. Each of the three attachments provide a means for locking the bicycle to the concrete block.

3. A design currently under development consists of a strong metal post about 3.5 feet high which the bicycle is leaned against. Two heavy chains, one near each wheel, are provided for locking the bike. The rider must carry his own lock.

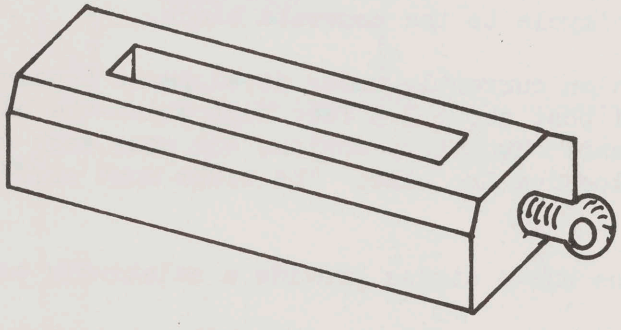
Each of the above styles provide a relatively convenient anchor point and support for the front wheel. The bike user must, however, carry a heavy duty lock. Designs 1 and 2 do not protect the rear wheel from theft or the front wheel from damage if the bike is pushed laterally or if other bikes fall against it. These shortcomings are avoided in design 3.

As other designs of bicycle parking facilities become available, a careful evaluation will be made to determine if any provide for more efficient utilization of space and better protection against theft.

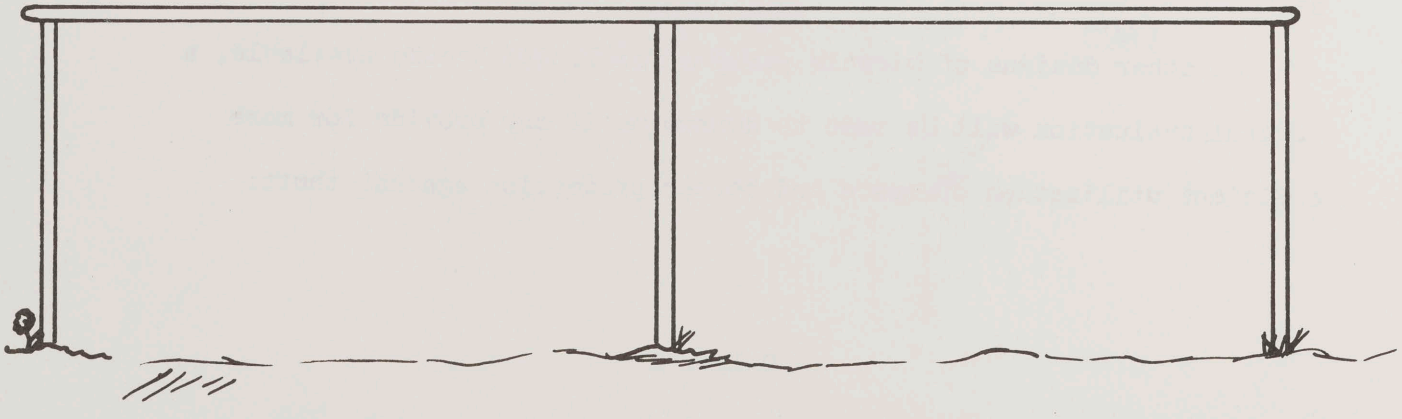
5. BICYCLE PARKING FACILITIES



TUBULAR STEEL
BIKE RACK



CONCRETE BLOCK
DESIGN



NEW DESIGN BIKE RACK

APPENDIX D

BICYCLE FACILITY DEVELOPMENT COSTS

The following detailed information concerning bicycle facility installation and maintenance cost is presented in support of the cost estimates presented in the body of this report.

1. METHODOLOGY FOR DEVELOPMENT OF SIX-YEAR COST ESTIMATES

In the development of the total six-year estimate of the bicycle system cost, several factors, explained below, were considered.

The total costs, as indicated in Table 4 in the text and E-4 and E-5 in the appendix, do not include several of the classifications detailed here. Class Ia_1 Crushed Granite Bicycle Paths were included in the estimates as a separate category due to unique characteristics; not enough accurate information is available about the maintenance these facilities require. The available information does indicate that such maintenance might be very costly due to frequent washouts of the surface and of the adjacent land during heavy rains; as a result, an estimated rough cost estimate from the Parks and Recreation Department was used to develop the total cost estimates. Class Ia figures, therefore, include only Asphalt Paths (Ia_2) and Concrete Sidewalks (Ia_3); costs are added equally and averaged to arrive at the given estimates. Class Ib_2 Continuous Barrier Curb Protected Lanes are eliminated from the total cost estimates because these facilities cause extensive engineering problems in allowing for proper drainage, and they would be extremely expensive if properly constructed. The installation cost estimate for this type facility, on E-10, does not allow for the engineering of and the installation of grates or inlets in the barrier curb to allow for water drainage. However, Class Ib_2 Staggered Barrier Curb Protected Lanes would allow proper drainage with no major engineering problems. Thus, where figures are given for Class I facilities, Asphalt and Concrete Paths, and Barrier Button and Staggered Barrier Curb Protected Lanes are included.

The figures for Class II facilities are an average of Class IIa and IIb facilities. Approximately half of those bicycle lanes installed on the busiest of Austin streets will be Class IIb - lanes with small traffic buttons to provide the added safety of warning motorists against crossing or veering into the lanes.

Class III facilities include only one classification which has not been averaged, nor has it been eliminated.

In all cases, an inflation cost factor equal to 8% per year was used as means of estimating the possible escalation of the system's cost over its implementation period. While previous inflation rates were greater than the used 8% (1973-1975), at this time it is considered to be the current rate (May, 1975).

Since January of 1975 the consumer price index has been steady while the wholesale price index has been decreasing significantly. In addition, a sliding twelve month cost index compiled by the Texas Highway Department (Re: reinforcing steel, structural steel, concrete, asphalt, asphaltic concrete, etc.) shows a significant decline in materials cost since December, 1974. Since no one can accurately predict what inflationary pressures will occur within a six-year period, 8% is considered the best "middle ground" estimate at this time.

For the detailed facility cost estimates installation cost figures have been rounded to the nearest hundred dollars, and maintenance cost figures have been rounded to the nearest ten dollars.

SIX YEAR INSTALLATION COSTS

YEAR #	Facility Type	Ia_1* Hike & Bike	Ia	Ib	II	III	TOTALS
	Miles	39.08	55.67	44.92	154.02	87.82	381.51
	Total Mileage (%)	10.24% (13.82% Exist.)	14.60%	11.77%	40.37%	23.02%	100%
1	Miles	4.21	9.3	7.5	25.7	14.6	61.31
	Cost/Mile/Yr.	$ 50,700	$ 61,400	$ 7,300	$ 1,800	$ 1,200	
(8%)	Total Cost	$ 213,450	$ 571,020	$ 54,750	$ 46,260	$ 17,520	$ 903,000
2	Miles	4.21	9.3	7.5	25.7	14.6	61.41
	Cost/Mile/Yr.	$ 54,760	$ 66,310	$ 7,880	$ 1,940	$ 1,300	
(8%)	Total Cost	$ 230,540	$ 616,680	$ 59,100	$ 49,860	$ 19,110	$ 975,290
3	Miles	4.21	9.3	7.5	25.7	14.6	61.21
	Cost/Mile/Yr.	$ 59,140	$ 71,620	$ 8,510	$ 2,100	$ 1,400	
(8%)	Total Cost	$ 248,980	$ 666,070	$ 63,830	$ 53,970	$ 20,580	$1,053,430
4	Miles	4.21	9.3	7.5	25.7	14.6	61.21
	Cost/Mile/Yr.	$ 63,870	$ 77,350	$ 9,200	$ 2,270	$ 1,510	
(8%)	Total Cost	$ 268,890	$ 719,360	$ 69,000	$ 58,340	$ 22,050	$1,137,640
5	Miles	4.21	9.3	7.5	25.7	14.6	61.21
	Cost/Mile/Yr.	$ 68,980	$ 83,530	$ 9,930	$ 2,450	$ 1,630	
(8%)	Total Cost	$ 290,410	$ 776,830	$ 74,480	$ 62,970	$ 23,800	$1,228,490
6	Miles	4.21	9.3	7.5	25.7	14.6	60.81
	Cost/Mile/Yr.	$ 74,490	$ 90,220	$ 10,730	$ 2,640	$ 1,760	
(8%)	Total Cost	$ 313,600	$ 827,320	$ 79,620	$ 67,370	$ 25,730	$1,313,640
	TOTALS	$1,565,870	$4,177,280	$400,780	$338,770	$128,790	$6,611,490

*Figures include materials and installation costs for sub-base, surface, drainage, bridges, retaining walls, and curb cuts.

Rounded to: $6,611,500

SIX YEAR MAINTENANCE COSTS

Year #	Facility Type	Ial Hike & Bike	Ia	Ib	II	III	TOTALS
1*	Miles Cost/Mile/Yr. Total Cost	13.82 $ 2,000.00 $36,060.00	Maintenance Costs for Facilities During the First Year will be Negligible				$ 36,060
2 (8%)	Miles Cost/Mile/Yr. Total Cost	18.03 $ 2,160.00 $38,944.00	9.3 $ 1,620.00 $ 15,066.00	7.5 $ 664.00 $ 4,980.00	25.7 $ 572.00 $ 14,700.00	14.6 $ 421.00 $ 6,148.00	$ 79,838
3 (8%)	Miles Cost/Mile/Yr. Total Cost	22.24 $ 2,330.00 $51,820.00	18.6 $ 1,750.00 $ 32,550.00	15.0 $ 717.00 $10,755.00	51.4 $ 618.00 $ 31,765.00	29.3 $ 455.00 $ 13,330.00	$ 140,220
4 (8%)	Miles Cost/Mile/Yr. Total Cost	26.45 $ 2,520.00 $66,654.00	27.9 $ 1,890.00 $ 52,731.00	22.5 $ 775.00 $17,438.00	77.1 $ 668.00 $ 51,502.00	44.0 $ 490.00 $ 21,560.00	$ 209,885
5 (8%)	Miles Cost/Mile/Yr. Total Cost	30.66 $ 2,720.00 $83,395.00	37.2 $ 2,040.00 $ 75,888.00	30.0 $ 837.00 $25,110.00	102.8 $ 720.00 $ 74,016.00	58.6 $ 530.00 $ 31,058.00	$ 289,467
6 (8%)	Miles Cost/Mile/Yr. Total Cost	34.87 $ 2,940.00 $102,518.00	46.5 $ 2,204.00 $102,486.00	37.5 $ 904.00 $33,900.00	128.5 $ 778.00 $ 99,973.00	73.2 $ 573.00 $ 41,943.00	$ 380,820
	TOTALS	$379,391.00	$278,721.00	$92,183.00	$271,956.00	$114,039.00	$1,136,290

* Year #1 - no inflation cost; Years 2-6, 8%.

(Rounded to -- $1,136,300)

4. CLASS Ia_1 - BICYCLE PATHS

Ia_1 CRUSHED GRANITE

$9.38 per linear foot - 10 feet wide installed.

- This figure from PARD includes materials for sub-base, drainage, bridges, retaining walls, and curb cuts where any of these are required, plus the cost of installation.
- This figure might be slightly lower for paths along street rights-of-way since drainage, bridges, and retaining walls will seldom be required.

$9.38 X 5280 = $49,526.40 per mile installed
1,217.22 per mile installed (signs)
$50,743.62

Total Class Ia_1 cost $50,743.62 installed.

(Rounded to $50,700.00 per mile.)

MAINTENANCE

Total Class Ial Maintenance $2,000.00 per mile per year.*

* Estimate - Parks and Recreation Department.

5. CLASS Ia_2 - BICYCLE PATHS

Ia_2 ASPHALT

Hot mix surface, 4" gravel base, 10' width (2-way path) - figure from Public Works Department includes excavation, base, surface, labor, equipment, and overhead.

4.00	per linear foot	**Ramps and Curb Cuts**
X 5280		
$21,120.00	per mile	$500.00 each
1,217.22	signs	2 per intersection = $1,000.00
$22,337.22		14 blocks per mile = $14,000.00/mile
14,000.00	curb cuts and ramps	
$36,337.22	per mile installed	

Total Class Ia_2 cost $36,337.22 per mile installed.

(Rounded to $36,300.00 per mile.)

MAINTENANCE

- Assume repair of 4% of total mileage per year
- Patching costs
  - Asphalt - $.75 per square yard
  - Labor - 3 men @ $12.00/hour (total); 2 sq.yd./hour = $6.00/sq.yd.
  - Equipment - $8.00/hour; 2 sq.yd./hour = $4.00/square yard
  - Total Cost - $10.75/square yard = $11.95/linear foot @ 10' width

Repair

$11.95 X 5280 X4 % = $2,523.84 per mile per year

Signs

$91.20 per mile per year

Sweeping

Sweeper - $ 8.75 per hour
Operator - 4.00 per hour
12.75 per hour @ 18 miles/8-hour day = $5.67/mile

Frequency - every two weeks - 26 times per year
Total Sweeping Cost = $147.42 per mile per year

Total Class Ia_2 Maintenance $2,762.46 per mile per year.

(Rounded to $2,760.00 per mile per year.)

6. CLASS Ia_3 - BICYCLE PATHS

Ia_3 CONCRETE (SIDEWALK) including installation

$1.35 per square foot = $13.50/linear foot @ 10' width

$71,280.00 per mile - installed

$14,000.00 per mile - curb cuts and ramps

$ 1,217.22 per mile - signs

$86,497.22 per mile total

Total Class Ia_3 cost $86,497.22 installed.

(Rounded to $86,500.00 per mile.)

MAINTENANCE

Virtually no repair on sidewalk

Signs - $91.20 per mile per year

Sweeping -$147.42 per mile per year
TOTAL $238.62 per mile per year

Total Class Ia_3 Maintenance $238.62 per mile per year.

(Rounded to $240.00 per mile per year.)

7. CLASS Ib_1 - PROTECTED LANES

Ib_1 BARRIER BUTTONS

P-19's = $1.47 each
Epoxy = $7.50/gallon
50 buttons/gallon - $0.15/button
$1.47 cost/button
.15
$1.62 total cost/button
2440 buttons/mile
$3,952.80 Total cost per mile

Installation
5 man crew = $15.76/hour (total)
5 miles/8-hour day
$126.08 = Total/8-hour day
$25.22 = Total/hour

$3,952.80 Materials
25.22 Labor
$3,978.02 Cost per mile installed
1,217.22 Signs per mile installed
$5,195.24 Total cost per mile installed

Total Class Ib_1 cost installed = $5,195.24 per mile (1-2 way).

(Rounded to $5,200.00 per mile)

$3,952.80 Materials
X 2
$7,905.60
50.44 Labor
1,217.22 Signs/mile
$9,173.26 Total cost per mile installed

$25.22 Labor
X 2
$50.44

Total Class Ib_1 cost installed = $9,173.26 per mile (2-1 way).

(Rounded to $9,200.00 per mile)

MAINTENANCE

1% per year -
buttons must be replaced every 7 years
no painting is necessary

	1-2 way		2-1 way
Buttons	$ 39.53 per mile per year	Buttons	$ 79.06 per mile per year
Signs	91.20	Signs	91.20
Sweeping	147.42	Sweeping	294.84
	$278.15 per mile per year		$465.10 per mile per year

Total Class Ib_1 maintenance/year = 278.15 (1-2 way).

(Rounded to $280.00)

Total Class Ib_1 maintenance/year = $465.10 (2-1 way).

(Rounded to $470.00)

8. CLASS Ib_2 - PROTECTED LANES

Ib_2 CONTINUOUS BARRIER CURB - including installation

$2.50 per linear foot = $13,200.00 cost per mile

1-2 way		2-1 way	
$13,200.00	cost per mile	$13,200.00	cost per mile
		X 2	
		$26,400.00	
1,217.22	signs	1,217.22	signs
$14,417.22	Total Cost	$27,617.22	Total Cost

Total Cost (1-2 way) - $14,417.22 per mile. (Rounded to $14,400.00.)

Total Cost (2-1 way) - $27,617.22 per mile. (Rounded to $27,600.00.)

MAINTENANCE

Accidents - 2% of total mileage replaced per year

1-2 way		2-1 way	
$264.00	per mile (repair)	$528.00	per mile (repair)
91.20	per mile (signs)	91.20	per mile (signs)
147.42	per mile (sweeping)	294.84	per mile (sweeping)
$ 502.62	Total Cost	$914.04	Total Cost

Total Maintenance Cost (1-2 way) - $502.62. (Rounded to $500.00.)

Total Maintenance Cost (2-1 way) - $914.04. (Rounded to $910.00.)

Ib_2 STAGGERED BARRIER CURB

6' X 10" X 4" Parking Bumpers (reinforced; 1½" dowels) = $6.00 each
With 6' spacings = 330/mile = $1,980.00 per mile
5 man crew = $15.76 per hour (total)
1 mile/8 hour day = $126.08 per mile

1-2 way		2-1 way	
$1,980.00	materials	$1,980.00	materials
126.08	labor	126.08	labor
$2,106.08	per mile installed	$2,106.08	
		X 2	
		$4,212.16	per mile installed
1,217.22	signs	1,217.22	signs
$3,323.30	Total Cost	$5,429.38	Total Cost

Total Cost (1-2 way) - $3,323.30 per mile. (Rounded to $3,320.00.)

Total Cost (2-1 way) - $5,429.38 per mile. (Rounded to $5,430.00.)

CLASS Ib_2 - PROTECTED LANES (Cont.)

MAINTENANCE

14 blocks/mile = 14 intersections/mile

1-2 way

14 intersections/mile @ 2 bumper curbs replaced/intersection/year
=28 bumper curbs replaced/year
28 bumper curbs @ $6.00 each = $168.00/mile/year

$168.00/mile/year
21.06 - Midblock replacement/year (1%)
147.42 - sweeping/year
91.20 - signs
$427.68 Total maintenance cost/mile/year

Total Maintenance Cost (1-2 way)/mile/year - $427.68.

(Rounded to $430.00/mile/year)

2-1 way

14 intersections/mile @ 4 bumper curbs replaced/intersection/year
= 56 bumper curbs replaced/year
56 bumper curbs @ $6.00 each = $336.00/mile/year

$336.00/mile/year
42.12 - Midblock replacement/year (1%)
294.84 - sweeping/year
91.20 - signs
$764.16 Total Maintenance cost/mile/year

Total Maintenance Cost (2-1 way)/mile/year - $764.16.

(Rounded to $760.00/mile/year)

9. CLASS IIa - BICYCLE LANES

IIa PAINT

$ 6.25 per gallon
X21 gallons per mile
$131.25 per mile

Installation
3 man crew = 11.80/hour (total)
8 hour day = 15 miles = $94.40/day
1 mile = $6.29

$ 131.25 paint
6.29 labor
137.54 per mile installed
1217.22 per mile (signs)
$1,354.76 Total Cost

Total Class IIa cost installed - $1,354.76. (2-1 way)

(Rounded to $1,400.00 per mile.)

MAINTENANCE

Paint - lanes must be painted twice a year
Signs - $12.00 per sign and approx. 20% of all signs.

Paint per mile per year X 2 = $275.08
Signs per mile maintained = 91.20
Sweeping per mile per year = 294.84
Total Cost $661.12

Total maintenance of Class IIa - $661.12 per mile per year.

(Rounded to $660.00 per mile per year.)

10. CLASS IIb - BICYCLE LANES

IIb BUTTONS

$0.22 each
$7.50/gal. - Epoxy

$.075/each = 100 buttons/gallon @ $7.50/gal.
.22 cost
$.295 Total each

Installation
5 man crew = $15.76/hour (total)
5 miles/8-hour day = $126.08/day
$25.22/mile - Total cost

$ 0.295
1597 buttons per mile (@ 3' center)
$ 471.12 Cost per mile

$ 471.12	Materials
25.22	Labor
$ 496.34	Cost per mile installed
X 2	
$ 992.68	Cost per mile installed (2 - 1 way)
1,217.22	Cost per mile - sign installation
$2,209.90	Total Cost per mile

Total Class IIb cost installed = $2,209.90 (2 - 1 way).

(Rounded to $2,200.00 per mile.)

MAINTENANCE

1% per year -
- buttons must be replaced every 7 years
- no painting is necessary

Buttons -	$ 9.92 per mile per year
Signs -	91.20 per mile per year
Sweeping -	294.84 per mile per year
	$395.96 Total (2 - 1 way)

Total maintenance of Class IIb - $395.96 per mile per year (2 - 1 way).

(Rounded to $400.00 per mile per year.)

11. CLASS III - BICYCLE STREET

III MATERIALS - Signs (including posts and hardware)

Bicycle Route Signs - $30.00 each - $33.83 installed
Bicycle X-ing Signs - $38.00 each - $41.83 installed
Directional Arrows - $ 3.75 each - $ 4.75 installed

INSTALLATION

$947.24 per mile = Bicycle Route Signs - 2 signs per block, 14 blocks per mile = 28 signs per mile @ $33.83 per sign installed.

$250.98 per mile = Bicycle X-ing Signs - 2 signs per corner, 3 intersections per mile = 6 signs per mile @ $41.83 per sign installed.

$ 19.00 per mile = Directional Arrows - 4 arrows per mile = 4 signs per mile @ $4.75 per sign installed.

1,217.22 per mile

Total cost for all signs (installed) per mile - $1,217.22.

(Rounded to $1,200.00 per mile.)

MAINTENANCE

Replace/repair 20% of all signs per year
$12.00 average cost per mile
20% of 38 signs per mile = 7.6 @ $12.00/sign = $91.20 per mile

$ 91.20 Maintenance per mile per year
294.84 Sweeping cost per mile per year

$386.04 Total maintenance per mile per year

Total maintenance = $386.04 per mile per year.

(Rounded to $390.00 per mile per year.)

12. BICYCLE FACILITY ECONOMICS

The bicycle system is a sound economic investment. On a relative scale, the expenditures for bicycle facilities in relation to the expenditures for other modes of transportation is small, and the resultant benefit is a complete system for another mode of transportation - the bicycle.

Statistics computed from the results on the bicycle questionnaire (see page 15) indicated that the average number of bicycles per household was 2.22, versus an average of 1.87 automobiles per household. These figures conincide with those for the sale of both types of vehicles nationwide (see Table 1, page 4).

At the same time, the amount spent on modes of tranportation other than the bicycle is estimated to be more than $14,000,000 - the approximate amount spent in Austin in fiscal year 1972-1973. From the cost projections in this report the average amount spent on bicycle facilities in a given year should be approximately $1,529,000. In comparison, about $8.00 would be spent each year for each bicycle in Austin while approximately $86.00 is already being spent each year on each automobile in Austin.

While these figures are only estimates, they give an idea of the relative expense of the bicycle system. Although statistics are not available, it should be noted that the number of vehicle trips per day for automobiles is several times more than that for bicycles. There is also a great difference in the purchase price of the two types of vehicles. These considerations might change the cost ratio of bicycle facilities to other transportation facilities, but probably not significantly. Therefore, the sound economic nature of bicycle facilities remains.

APPENDIX E

LAWS AND ORDINANCES CONCERNING BICYCLES

The following City and State ordinances concerning bicycles are presented in order to detail legal requirements for bicyclists and motorists.

AUSTIN CITY CODE
CHAPTER 6. BICYCLES

ARTICLE 1. IN GENERAL.

Sec. 6-1. Definitions.

For the purposes of this chapter, the following words and phrases shall have the meanings respectively ascribed to them in this section:

Bicycle. Any device propelled by human power upon which any person may ride, having two or more tandem wheels, either of which is more than fourteen inches in diameter.

Bicycle lane. An area within the roadway specifically designated for the use of bicycles.

Bicycle path. An area adjacent to a roadway specifically designated for the use of bicycles.

City manager. The term "city manager" shall include the city manager, his designate or any representative designated by him.

Prolongation. The unmarked extension of a bicycle lane at an intersection designed for the use of both vehicular and bicycle traffic. (Ord. No. 720629-F, pt. 2).

Sec 6-2. Applicability of state laws.

Except where otherwise provided in this chapter, all the provisions of the laws of the state relating to the regulation of bicycles shall, insofar as applicable, be the law of the city upon the same subject. In the event the city ordinance is more restrictive than state law, the city requirement shall be applicable. (Ord. No. 720629-F, pt. 2.)

Sec. 6-3. Applicability of regulations.

(a) It shall be unlawful for any person to do any act forbidden or fail to perform any act required in this chapter.
(b) The parent of any child and the guardian of any ward shall not authorize or knowingly permit any child or ward to violate any of the provisions of this chapter.
(c) The regulations applicable to bicycles in this chapter shall apply whenever a bicycle is operated upon any street or upon any public path set aside for the use of bicycles, subject to those exceptions specifically set out in this chapter. (Ord. No. 720629-F, pt.2.)

Sec. 6-4. Penalty for violation of chapter.

Every person convicted of a violation of any provision of this chapter shall be punished by a fine of not more than two hundred dollars. (Ord. No. 720629-F, pt.2.)

ARTICLE II. INSPECTIONS AND LICENSES.

Sec. 6-5. License--Required.

No person shall ride or propel a bicycle on any street, or upon any public path set aside for the use of bicycles, unless such bicycle has been licensed and a license plate is attached thereto as provided in this article. (Ord. No. 720629-F, pt.3)

Sec. 6-6. Same--Application.

Application for a bicycle license and license plate shall be made upon a form provided by the city. Each license plate issued shall be a permanent license and shall not be used for any bicycle other than the one for which issued. (Ord. No. 720629-F, pt. 3.)

Sec. 6-7. Same--Issuance.

Upon receipt of a proper application therefor, the city manager is authorized to issue a bicycle license. He shall not issue a license for any bicycle if he knows or has reasonable grounds to believe that the applicant is not the owner of or entitled to possession of such bicycle. (Ord. No. 720629-F, pt. 3.)

Sec 6-8. Same--Inspection of bicycle; refusal to issue.

The city manager shall cause each bicycle to be inspected before the same is licensed and shall refuse a license for any bicycle which he determines is in unsafe mechanical condition, or is not equipped with such signaling and braking devices of the type required by state law or by the terms of this article, or lighting and reflecting equipment required by State law for the operation of a bicycle at night.

The city manager may authorize any bicycle dealer to inspect and to issue a license for any bicycle sold.

It shall be unlawful for any person to issue, sell or transfer a bicycle license without having conducted an inspection as provided herein. (Ord. No. 720629-F, pt. 3.)

Sec. 6-9. Same--Records to be kept.

A record shall be kept of the number of each bicycle license, the date issued, the name and address of the person to whom issued and the number on the frame of the bicycle for which issued, together with such other information pertaining to such bicycle as the city manager deems necessary. (Ord. No. 720629-F, pt.3.)

Sec. 6-10. License plate--Issuance.

When a bicycle license is issued there shall also be issued a metal license plate bearing the license number assigned to the bicycle, and the name of the city. (Ord. No. 720629-F, pt. 3.)

Sec. 6-11. Same--Attachment to bicycle.

The city manager shall not transfer the license plate until it has been securely attached and sealed on the frame of the bicycle for which issued. Issuance of such license plate shall be complete and final upon the secure attachment of the license plate as provided herein. (Ord. No. 720629-F, pt. 3.)

Sec. 6-12. Same--Bicycle impounded for lack of license plate.

Any bicycle found on a public street or in a public place in the city without a license securely attached and sealed as provided in section 6-10 and 6-11 shall be in violation of such sections and may be impounded. (Ord. No. 720629-F, pt. 3.)

Sec. 6-13. Same--Replacement of lost, stolen, etc., plates.

The owner of a licensed bicycle may obtain from the city manager a replacement license plate for a bicycle by filing with the city manager an affidavit or other evidence acceptable to the city manager showing that such number plate has been lost, stolen or mutilated. Such affidavit or other showing shall state that such plate has been lost, stolen or mutilated and will not be used on any bicycle owned or operated by the person making the affidavit or showing. The city manager shall not issue replacement plates without requiring compliance with the provisions of this section. (Ord. No. 720629-F, pt. 3.)

Sec. 6-14. Serial numbers stamped on various parts of bicycle, serial number to be recorded.

Any applicant for a bicycle license may, at his option in his application, request the city manager to cause the several parts of the bicycle referred to in the application to be marked with a suitable engraving device or a die stamp bearing serial numbers for the purpose of identification of such parts, and such numbers when placed on the parts of such bicycle shall be recorded as provided for other information under section 6-6. The parts of a bicycle shall be die stamped as follows:

(a) Front and rear wheels, by the side of the valve hole.
(b) The front fork, on the right-hand side of the front fork tip.
(c) The handlebar post, on top.
(d) The handlebars, on the right-hand side of the post.
(e) The seat, on the right-hand side of the seat frame.
(f) The seat post, on the right-hand side near the middle.
(g) The frame, on the right-hand side of the back fork tip.
(h) The hanger sprocket, on the right-hand side.
(i) The hanger, on the right-hand side near the hanger sprocket.

(Ord. No. 720629-F, pt.3.)

Sec. 6-15. Transfer of ownership.

When any person sells a bicycle subject to registration and licensing under this article, such person shall endorse upon the bicycle license a written transfer of the same. The purchaser of such bicycle shall file with the city manager a record of such transfer with his full name and address, and he shall then be regarded as the owner thereof and amenable to the provisions of this chapter. The provisions of this section relating to the transfer of ownership shall not apply to sales of new bicycles by dealers, but in the case of the sale of a new bicycle by a dealer the purchaser shall within three days thereafter file with the city manager evidence of his title by such sale and make application for a proper license under this article. (Ord. No. 720629-F, pt. 3.)

Sec. 6-16. Reports required of bicycle dealers.

Every person engaged in the business of buying or selling new or secondhand bicycles shall make a report to the city manager of every bicycle purchased or sold by such dealer, giving the name and address of the person from whom purchased or to whom sold, a description of such bicycle by name or make, the frame number thereof and the number of the license plate, if any, found thereon; and when a bicycle part is bought or sold which bears a die stamp number as provided for in section 6-14, such sale or purchase shall be reported in the same manner as the sale or purchase of bicycles is reported, giving a description of such parts together with the die stamp number marked thereon. (Ord. No. 720629-F, pt.3.)

Sec. 6-17. Requirements for rental agencies.

A rental agency shall not rent or offer any bicycle for rent unless the bicycle is licensed and a license plate is attached thereto as provided by this article, and such bicycle is equipped with lighting and reflecting devices of the type required for operation at night and with other equipment required by law for operation upon a public street. (Ord. No. 720629-F, pt.3.)

Sec. 6-18. Distribution of information pertaining to chapter to dealers.

The city manager shall cause to be distributed to those engaged in the business of selling new or secondhand bicycles information pertaining to the requirements of this chapter, in such quantity that the same may be provided to every buyer, and no such dealer shall refuse to accept or distribute such information. (Ord. No. 720629-F, pt. 3.)

ARTICLE III. TRAFFIC RULES FOR BICYCLES.

Sec 6-19. Applicability of traffic rules to persons riding bicycles.

Every person riding a bicycle upon a street shall be subject to the provivisions of chapter 21 applicable to the driver of a vehicle, except as to special regulations in this article and except as to those provisions of the traffic regulations which by their nature can have no application to bicycles. (Ord. No. 720629-F, pt. 4.)

Sec. 6-20. Obedience to traffic-control devices.

Any person operating a bicycle shall obey the instructions of official traffic signals, signs and other control devices applicable to vehicles, unless otherwise directed by a police officer. Unless specifically designated otherwise, a bicycle lane shall bear bicycle traffic in the same direction as adjacent motor vehicles proceeding on the roadway.

Whenever authorized signs indicate that no right or left or "U" turn is permitted, no person operating a bicycle shall disobey the direction of such sign, except where such person dismounts from the bicycle to make such turn, in which event such person shall then obey the regulations applicable to pedestrians. (Ord. No. 720629-F, pt. 4.)

Sec. 6-21. Manner of riding on bicycles; carrying more than one rider.

No person operating a bicycle on a public street or path shall ride other than upon or astride the permanent and regular seat attached thereto, nor carry any other person on such bicycle other than on a firmly attached and regular seat thereon; nor shall any person ride upon a bicycle other than as above authorized.

No bicycle shall be used to carry more persons at one time than the number for which it is designed and equipped. (Ord. No. 720629-F, pt.4.)

Sec. 6-22. Riding on sidewalks.

No person shall ride a bicycle on a sidewalk within a business district. (Ord. 720629-F, pt. 4.)

Sec. 6-23. Emerging from alley, driveway or building.

The operator of a bicycle emerging from an alley, driveway or building shall, upon approaching a sidewalk or the sidewalk area extending across any alleyway, yield the right-of-way to all pedestrians approaching in close proximity on such sidewalk or sidewalk area, and upon entering the roadway shall yield the right-of-way to all approaching vehicles whose movement might be affected thereby. (Ord. No. 720629-F, pt. 4.)

Sec. 6-24. Parking.

No person shall park a bicycle upon a street other than upon the roadway against the curb or upon the sidewalk in a rack to support the bicycle, or against a building, or at the curb in such manner as to afford the least obstruction to pedestrian and vehicular traffic. No bicycle shall be parked within marked stall lines denoting spaces for motor vehicles, nor between same where vehicular stalls are separated by markings on the roadway. No bicycle shall be attached or secured to public or private property in such manner as to damage, impair or render inoperable such property. (Ord. No. 720629-F, pt. 4.)

Sec. 6-25. Walking Bicycles.

Any person may walk bicycles and shall then be subject to all provisions of the law applicable to pedestrians. (Ord. No. 720629-F, pt. 4.)

Sec. 6-26. Travel location within lanes.

Where no traffic control device or polic officer directs otherwise, the operator of a bicycle may proceed upon a due course within the rightmost lane available to vehicular traffic, and where parking of vehicles is lawful along the right curb of any such street, shall ride as close to the center of the lane, or of the right hand portion of an unlaned street, as is practicable. In no event shall a bicycle be driven between passenger vehicles standing or traveling in a single direction within marked lanes. (Ord. No. 720629-F, pt. 4.)

Sec. 6-27. Use of bicycle path or lane.

Wherever a usable bicycle lane or path has been provided, bicycle riders shall use such lane or path and shall not use the adjacent portion of the roadway; but the terms of this section shall not include sidewalks adjacent or sidewalk areas designed, dedicated or intended for the exclusive use of pedestrians. (Ord. No. 720629-F, pt. 4.)

Sec. 6-28. Operation at night.

No person shall operate a bicycle at night upon a public street or path without a reflecting device, nor without display of lighting equipment. (Ord. No. 720629-F, pt. 4.)

Sec. 6-29. Operation on streets.

No person shall operate a bicycle on any public street where such operation is prohibited or on any public street during specific hours when such operation is prohibited. (Ord. No. 720629-F, pt. 4.)

Sec. 6-30. Leaving bicycle lane.

Once within a bicycle lane, no person operating a bicycle shall leave such lane or its prolongation except as follows:

(a) Upon dismounting from a bicycle, walking the same.
(b) To turn into a driveway or alley or onto private property where the same is adjacent to the lane.
(c) After yielding to all vehicular traffic approaching from either direction in such proximity as to constitute an immediate hazard and after giving an appropriate signal where the movement of vehicular traffic might be affected by such turning movement:
    (1) To move across the roadway in order to enter alleys, driveways or private property between intersections, and
    (2) To turn right or left at intersections.

(Ord. No. 720629-F, pt. 4.)

Sec. 6-31. Turning movements.

Turning movements at intersections where bicycle lanes conjoin shall be made within the prolongations of the lanes; provided, however, that where a protected left turn or a mandatory left turn lane is available to vehicular traffic, the operator of a bicycle may enter and use such lane after approaching in the same manner provided in section 6-30.

When turning at the juncture of bicycle lanes, the operator of a bicycle shall, prior to crossing any further lanes of vehicular traffic, yield right-of-way to all vehicles approaching in such proximity as to constitute an immediate hazard, and shall not, where such an intersection is controlled by illuminated traffic-control signals, proceed from the juncture of lanes until faced with an appropriate illuminated signal for vehicles proceeding into the intersection in that direction of travel. (Ord. No. 720629-F, pt. 4.)

AUSTIN CITY CODE
CHAPTER 21. MOTOR VEHICLES AND TRAFFIC

ARTICLE II. GENERAL TRAFFIC REGULATIONS.

Sec. 21-25. Driving vehicles upon or across bicycle lanes.

No person shall drive a vehicle upon or across a bicycle lane except to enter a driveway, building or alley, or except to park such vehicle or to leave a parking space, if such parking is permissable. No person shall drive onto or cross a bicycle lane as permitted by this section without first yielding right-of-way as necessary to avoid collision or interference with bicycle traffic. (Ord. No. 720629-G, pt. 1.)

Sec. 21-29, Driving motor vehicles in public parks and playgrounds.

No person shall drive any motor vehicle, motorcycle, motor bike, motor scooter, or other motor-driven device or vehicle into, along or across any public park or public playground which is owned, operated or maintained by the city, except upon public roadways maintained by the city for the operation of such vehicles; no such vehicle shall be driven upon any hike and bike trail located therein, nor shall any such vehicle be driven on a footbridge spanning a creek, driveway or stream located therein; provided, that this section shall not apply to vehicles being used for the purpose of loading or unloading freight therein or in the construction, maintenance or repair of said parks or playgrounds. (Code 1954, 33.31; Ord. No. 720629-G; Ord. No. 730719-B, pt. 1.)

Sec. 21-37. Duties and authority of traffic engineer.

Whenever and wherever the congestion of traffic, the frequency of passage of vehicles or pedestrians, or both, the direction and volume of the flow of traffic, the dimensions and conditions of the streets and sidewalks, and the use of property abutting the streets are such that the traffic engineer finds it to be necessary for the free flow and the expeditious handling of traffic and the safety of persons and property, the traffic engineer, in compliance with this chapter is authorized as follows:

(r) To designate streets on which the operation of bicycles shall be prohibited at all times.
(s) To designate streets on which the operation of bicycles shall be prohibited during specific hours of the day.
(t) To designate areas upon public streets and in public parks to be used as bicycle lanes and paths.

V.C.S. 6701d UNIFORM ACT
ARTICLE XXI--OPERATION OF BICYCLES AND PLAY VEHICLES

Sec. 178. Effect of Regulations.

(a) It is a misdemeanor for any person to do any forbidden or fail to perform any act required in this Article. (S.B. 183, 62nd Leg.)
(b) The parent of any child and the guardian of any ward shall not authorize or knowingly permit any such child or ward to violate any of the provisions of this Act. (S.B. 183, 62nd Leg.)
(c) These regulations applicable to bicycles shall apply whenever a bicycle is operated upon any highway or upon any path set aside for the exclusive use of bicycles subject to those exceptions stated herein. (S.B. 183, 62nd Leg.)

Sec. 179. Traffic Laws Apply to Persons Riding Bicycles.

(a) Every person riding a bicycle upon a roadway shall be granted all of the rights and shall be subject to all of the duties applicable to the driver of a vehicle by this Act, except as to special regulations in this Article and except as to those provisions of this Act which by their nature can have no application. (S.B. 183, 62nd Leg.)

Sec. 180. Riding on Bicycles.

(a) A person propelling a bicycle shall not ride othern than upon or astride a permanent and regular seat attached thereto. (S.B. 183, 62nd Leg.)
(b) No bicycle shall be used to carry more persons at one time than the number for which it is designed and equipped. (S.B. 183, 62nd Leg.)

Sec. 181. Clinging to Vehicles.

(a) No person riding upon any bicycle, coaster, roller skates, sled or toy vehicle shall attach the same or himself to any streetcar or vehicle upon a roadway. (S.B. 183, 62nd Leg.)

Sec. 182. Riding on Roadways and Bicycle Paths.

(a) Every person operating a bicycle upon a roadway shall ride as near to the right side of the road as practicable, exercising due care when passing a standing vehicle or one proceeding in the same direction. (S.B. 183, 62nd Leg.)
(b) Persons riding bicycles upon a roadway shall not ride more than two abreast except on paths or parts of roadways set aside for the exclusive use of bicycles. (S.B. 183, 62nd Leg.)
(c) Wherever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway. (S.B. 183, 62nd Leg.)

Sec. 183. Carrying Articles.

No person operating a bicycle shall carry any package, bundle or article which prevents the driver from keeping at least one hand upon the handlebars. (S.B. 183, 62nd Leg.)

Sec. 184. Lamps and Other Equipment on Bicycles.

(a) Every bicycle when in use at nighttime shall be equipped with a lamp on the front which shall emit white light visible from a distance of at least five hundred (500) feet to the front and with a red reflector on the rear of a type approved by the department which shall be visible from all distances from fifty (50) feet to three hundred (300) feet to the rear when directly in front of lawful upper beams of head lamps on a motor vehicle. A lamp emitting a red light visible from a distance of five hundred (500) feet to the rear may be used in addition to the red reflector. (S.B. 183, 62nd Leg.)