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16. Abstract <p>This report describes the tasks conducted during the first year of a two-year study to develop guidelines for bicycle and pedestrian facilities on both existing and future roadways in Texas. The tasks were concentrated in four basic activity areas: 1) assessment of current practices; 2) collection of citizen and other agency recommendations; 3) assessment of various procedures and facilities; and 4) development of draft guidelines.</p> <p>Some of the first-year tasks include: interviews with selected officials and community leaders; a survey of individuals, agencies and organizations; collection of recommendations from four advisory panels; assessment of existing facilities and available planning procedures; an analysis of various planning factors; and the development of new guidelines for bicycle accommodations on roadways which are under or nearing construction.</p> <p>The first-year findings will be used to develop a draft of the preliminary guidelines, the primary product of this research study.</p>					
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**GUIDELINES FOR BICYCLE AND PEDESTRIAN FACILITIES:  
FIRST-YEAR ACTIVITIES**

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## **IMPLEMENTATION STATEMENT**

This report describes the activities conducted during the first year of a two-year study to develop guidelines for bicycle and pedestrian facilities. The findings from first-year activities will be used to develop the draft guidelines, a preliminary version of the primary product of this research study. In the second year of the study, the draft guidelines will be reviewed by the Texas Department of Transportation (TxDOT), citizens, and representatives of other agencies and organizations, and revised as necessary. The research study concludes with submittal of finalized guidelines. Implementation of the recommendations may be instituted through distribution of the final guidelines, as appropriate, as well as by revision of TxDOT Standard Sheets and TxDOT policies.



## **DISCLAIMER**

The contents of this report reflect the views of the authors who are responsible for the opinions, findings, and conclusions presented herein. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration or the Texas Department of Transportation. This report does not constitute a standard, specification, or regulation. This report is not intended for construction, bidding, or permit purposes.

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At the initiation of this study, TxDOT selected a Project Director (PD) and formed a Technical Panel (TP) for consultation, review, and approval of the research activities encompassed by this study. The PD and members of the TP were able to provide the researchers with valuable insights related to many different aspects of bicycle and pedestrian issues and TxDOT policies, procedures, and operations. The research team met with the PD and TP frequently throughout the study, and the assistance and comments received were instrumental in conducting the study activities. They acknowledge the following members of the TP for their time, efforts, and contributions:

### **Project Director**

- Mr. Paul Douglas, Multimodal Operations, Texas Department of Transportation.

### **Technical Panel**

- Ms. Maria Burke, Design Division, Texas Department of Transportation.
- Mr. Ed Pensock, Design Division, Texas Department of Transportation.
- Mr. Charles Veale, El Paso District, Texas Department of Transportation.
- Mr. Brian Swindell, Dallas District, Texas Department of Transportation.
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- Mr. Bill Ezzell, Houston District, Texas Department of Transportation, and
- Mr. Bob Musselman, Division Office, Federal Highway Administration.



# TABLE OF CONTENTS

SUMMARY .....	xi
CHAPTER 1: INTRODUCTION .....	1
STUDY METHODOLOGY .....	2
Assessment of Current Bicycle and Pedestrian Facility Practices .....	3
Collection of Citizen and Non-TxDOT Agency Recommendations .....	4
Assessment of Existing Facilities and Various Planning Procedures .....	4
Development of Draft Bicycle and Pedestrian Guidelines .....	5
CHAPTER 2: ASSESSMENT OF CURRENT PRACTICES .....	7
CURRENT TxDOT POLICIES AND GUIDELINES .....	7
Bicycle Facilities .....	7
Pedestrian Facilities .....	10
OTHER STATE DOT POLICIES AND NATIONAL GUIDELINES .....	11
SURVEY OF INDIVIDUALS, AGENCIES, AND ORGANIZATIONS .....	12
Survey Methodology and Results .....	12
CHAPTER 3: COLLECTION OF CITIZEN AND NON-TxDOT AGENCY RECOMMENDATIONS .....	19
ADVISORY PANEL METHODOLOGY AND RESULTS .....	19
CHAPTER 4: ASSESSMENT OF FACILITIES AND PROCEDURES .....	21
ASSESSMENT OF EXISTING FACILITIES .....	22
ASSESSMENT OF PROCEDURES .....	22
Available Bicycle Planning, Selection, and Design Procedures .....	23
NEW BICYCLE PLANNING AND SELECTION PROCEDURES .....	25

Qualitative Sensitivity Analysis .....	26
Guidance for Bicycle Accommodations on Roadways Under or Nearing Construction .....	26
AVAILABLE PEDESTRIAN PLANNING AND DESIGN PROCEDURES .....	27
CHAPTER 5: SUMMARY OF FUTURE STUDY ACTIVITIES .....	29
DESCRIPTION OF FUTURE STUDY ACTIVITIES .....	29
Develop Draft Version of Bicycle and Pedestrian Guide .....	29
Review Draft Guide .....	29
Develop Preliminary Bicycle and Pedestrian Guide .....	30
Present District Workshops .....	30
Develop Final Bicycle and Pedestrian Guide .....	31
ASSISTANCE BY TxDOT .....	31
CHAPTER 6: REFERENCES .....	33
APPENDIX A: TxDOT POLICY MEMORANDUM .....	35
APPENDIX B: SURVEY INSTRUMENTS .....	37
APPENDIX C: ADVISORY PANEL CORRESPONDENCE AND AGENDA .....	49

## SUMMARY

This report describes the first-year activities of a two-year study to develop guidelines for bicycle and pedestrian facilities. There were four major areas of activity in the first year: assessment of current practices, collection of citizen and agency recommendations, assessment of procedures and facilities, and development of draft guidelines.

The results of the first-year activities include a number of findings which indicate where potential recommendations could refine and clarify the difficulties associated with accommodating bicyclists and pedestrians on state highways. Some of the more significant findings are listed below.

- Despite a perception that bicycle and pedestrian facility planning, selection, design, and implementation are relatively simple, nonmotorized transportation planning is far more complex than much of traditional motorized transportation planning.
- TxDOT personnel express concern that a system of warrants or firm policies requiring provision of facilities, such as those for motorized transportation, does not exist for nonmotorized users. The resulting lack of justification for bicycle or pedestrian improvements causes many well-intentioned efforts to be discarded in roadway planning and design stages.
- There is a general lack of understanding of the two types of bicycle trip purposes (recreation and transportation), the two categories of design bicyclists, or type of bicyclists (A-advanced, and B-basic), and the different facility characteristics appropriate for each.
- While TxDOT districts are using a diversity of bicycle facility types overall, some districts rely upon a single facility type to more appropriately accommodate different uses.
- TxDOT district personnel express concern that current policies, particularly for pedestrian improvements, are restrictive given other directives for personnel to accommodate these nonmotorized users.

The findings from the first-year activities have to the development of several preliminary recommendations which will appear in the draft guidelines. These recommendations will be evaluated in future study activities.

## CHAPTER 1: INTRODUCTION

Bicycle transportation has been used since early in the last century; pedestrian transportation much longer. With the development of the automobile, American land use and urban development changed significantly. The resulting expansive development patterns nearly require the use of a private automobile. The new geographic importance of a private car as well as the freedom and convenience the private car brought to post-war Americans shaped attitudes toward transportation. Over time, motorized transportation became the societal ideal, and bicycle and pedestrian mobility were disadvantaged through the governmental failure to provide appropriate space and infrastructure for these modes along transportation corridors.

Urban areas are experiencing roadway congestion, decreased air quality, and unchecked sprawl at an unprecedented rate. The public is making known its desire for a quality of life which includes, among other things, revitalized transportation options such as bicycling and walking.

Recent federal legislation, such as the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Clean Air Act Amendments of 1990 (CAAA), addresses these concerns through requirements for bicycle and pedestrian planning, provision of special funding for new construction and improvement of existing roadways, and mandated schedules for the attainment of improved air quality. The Federal Highway Administration's (FHWA) National Bicycling and Walking Study calls upon cities, metropolitan planning organizations, and state departments of transportation to meet the following goals through implementation of comprehensive, multi-agency programs to encourage increased use of bicycling and walking for transportation (1):

- to double the current percentage (from 7.9% to 15.8%) of total trips made by bicycling and walking; and
- to simultaneously reduce by 10% the number of bicyclists and pedestrians killed or injured in traffic crashes.

Additionally, state legislation passed during the 72nd Legislative Session (Senate Bill 352, “The Sunset Bill”) directed the Texas Department of Transportation (TxDOT) to enhance the use of the state highway system by bicyclists (2).

The purpose of this study is to develop uniform guidelines for the planning, selection, and design of bicycle and pedestrian facilities in an effort to facilitate TxDOT’s attainment of these goals.

For this study, “bicycle facilities” refers to designated or undesignated operating space intended for either exclusive or shared use by primarily transportation bicyclists. Most bicycle transportation facilities (bike lanes, wide curb lanes, shoulders) are located directly on the roadway; rarely are they separated from motorized traffic by a buffer or physical barrier (bike paths, multi-use paths). “Pedestrian facilities” refers to sidewalks or multi-use trails running parallel to the roadway or to crossing locations which run perpendicular to the roadway. The terms “roadway” and “highway” are used interchangeably throughout this report, and describe any urban or rural roadway which is not an access-controlled highway.

## **STUDY METHODOLOGY**

This research study consists of a number of different activities that have been, or will be, conducted during the two-year study period. Although there is some overlap from one year to another, the first year of the study was intended to establish current practices, collect recommendations, assess procedures and facilities, and develop draft guidelines. The second year is intended to evaluate the draft guidelines, revise and finalize the guidelines, and assist in technology transfer through workshops at several district offices.

The research activities conducted during the first year fall into four major areas, with several different tasks being conducted for each area. Within each activity area, several different tasks were performed to collect the necessary information. Chapters 2 through 4 of this report describe the tasks and findings associated with each of the activity areas.

The four activity areas discussed in this document are listed below:

1. assessment of current TxDOT and other state department of transportation (DOT) practices;
2. collection of citizen and non-TxDOT agency recommendations;
3. assessment of existing facilities and various planning procedures; and
4. development of draft guidelines.

Chapter 5 describes future activities for the second year of the study.

### **Assessment of Current Bicycle and Pedestrian Facility Practices**

Three different tasks were conducted in the first year to assess the state-of-the-art for the planning, selection, and design of bicycle and pedestrian facilities both in Texas and throughout the country. The following tasks are described in Chapter 2.

1. Establishing the state-of-the-art for bicycle and pedestrian planning, selection, and design through a review of current literature and legislation; attendance at a national symposium on bicycling and walking; development of a list of contacts to be used throughout the research; and identification of major issues and information gaps concerning the planning, selection, and design of bicycle and pedestrian facilities.
2. Interviewing selected officials and leaders to provide information of use to researchers in the development of the survey instruments.
3. Conducting surveys of individuals, agencies, and organizations to identify additional information not identified in Task 1, additional contacts, and potential members for the advisory panels.

## **Collection of Citizen and Non-TxDOT Agency Recommendations**

Four advisory panels were created and convened to solicit citizen and agency recommendations regarding this study. This required selecting, through consultation with the Project Director (PD), citizens and representatives of agencies and organizations to review and comment on the research goals and objectives, suggest alternative actions or ideas (within the scope of the contract) for the research tasks, suggest additional information and contacts for researchers, assist in the identification of information gaps and research activities to fill in those gaps, and review and comment on research deliverables. Meetings of each advisory panels took place in Austin, Dallas, Houston, and San Antonio to undertake the desired panel activities. Chapter 3 describes the activities and results.

## **Assessment of Existing Facilities and Various Planning Procedures**

Researchers conducted four tasks during assessment of existing bicycle and pedestrian facilities and planning procedures. These four tasks are described in Chapter 4.

1. Assessing existing bicycle and pedestrian facilities in Texas, the United States, and Europe to identify successful facilities and determine the characteristics which make those facilities successful.
2. Assessing planning procedures applicable to bicycle and pedestrian facilities. Several methodologies are proposed for bicycle and pedestrian planning for both existing and future roadways. As the majority of roadways in the state transportation system are completed at this time, emphasis will be given to the planning and selection of a facility for existing roadways. This task is intended to assess the appropriateness of various methodologies for Texas conditions.
3. Conducting an assessment of the sensitivities of relationships between factors pertinent in the planning, selection, and design of different facilities. The findings in this assessment will assist researchers in developing a planning methodology appropriate for Texas conditions.



4. Developing guidance for TxDOT personnel charged with implementing bicycle and pedestrian accommodations on roadways which are under or nearing construction.

### **Development of Draft Bicycle and Pedestrian Guidelines**

The findings from the three activity areas described above will be used to develop a draft version of guidelines for planning, selecting, and designing bicycle and pedestrian facilities for both existing and future roadways. This draft will be evaluated and revised to create a preliminary version of the primary product of this research study.



## **CHAPTER 2: ASSESSMENT OF CURRENT PRACTICES**

Three tasks were conducted at the beginning of the study to assess the current state and national practices or state-of-the-art relative to bicycle and pedestrian facility planning, selection, and design. These three tasks included: 1) identifying current TxDOT and other state DOT practices through a review of literature, legislation, and attendance at a national symposium on bicycling and walking; 2) interviewing selected officials and leaders; and 3) surveying individuals, agencies, and organizations. The ongoing interviews have been useful in verifying the information presented below.

### **CURRENT TxDOT POLICIES AND GUIDELINES**

Identification of current TxDOT policies and guidelines was accomplished through workshops with the research study PD and TP, reviews of literature and legislation, interviews with agency and non-agency personnel, and a survey of district personnel and others.

#### **Bicycle Facilities**

TxDOT has officially adopted *Guide for the Development of Bicycle Facilities (3)* by the American Association of State Highway Transportation Officials (AASHTO) as guidance for district personnel and others involved in accommodating bicyclists on the state highway system. This document is widely used in the United States, and consists of basic discussion of different facility types, their geometric design criteria, and brief discussions of planning, maintenance, and operations issues. This document is currently undergoing revision in preparation for a new edition.

Some TxDOT district personnel are using a document published by the Federal Highway Administration (FHWA), *Selecting Roadway Design Treatments to Accommodate Bicycles (4)*, to provide additional guidance regarding bicyclist user types, bicycle planning principles, and selection of facilities under varying sets of traffic operational factors. This document has not

been adopted as an official guide for TxDOT for several reasons. The most significant reason is the document's reliance on average operating speed, a traffic measure not monitored on Texas highways, as a basis for recommendations for specific facilities.

Current TxDOT policy for the provision of bicycle accommodations on existing and future roadways is contained in a memorandum from Executive Director William G. Burnett to District Engineers dated February 7, 1994. The memorandum states that "every road, with a few exceptions, is a potential bicycle way. This concept requires full consideration on both new transportation projects, and to retrofit, over time, the backlog of roadways not currently scheduled for improvement. Accommodation for both bicycle and pedestrian traffic shall be considered on all projects, including those under construction where reasonably possible" (2). This memorandum is contained in Appendix A.

Aside from that brief policy memorandum and endorsement of the AASHTO guide containing geometric criteria, there are no TxDOT directives, guidelines, or standards for the planning, selection, and design of bicycle facilities on state highways. Bicycle coordinators in each district, as well as other TxDOT personnel involved in advance planning or other efforts, have relied on assistance from the state bicycle coordinator when questions pertaining to bicycle facilities arise.

Most bicycle facility planning in TxDOT takes place at the district level. In accordance with ISTEA, the majority of metropolitan planning organizations (MPOs) in Texas have formulated bicycle plans, usually in consultation with TxDOT district representatives to the MPO. The most common practice calls for TxDOT to provide a bicycle facility on the state roadways included in the plan, when possible, during construction or reconstruction. The success of this process depends on an understanding of and openness to providing bicycle facilities on the part of TxDOT personnel who often have not considered bicycle accommodations in the past.

Some districts strive to accommodate bicyclists on all state highways in their jurisdiction, whether or not these roadways are included in the plan of designated bicycleways.

Future roadways currently undergoing schematic design or review generally incorporate accommodations for bicycles when it is feasible to do so, although, once again, this depends on

the awareness of the need for bicycle accommodation on the part of the designer at the district level and the reviewing staff in the Design Division in Austin.

The bicycle facility issues and information gaps of concern to TxDOT district personnel are shown below.

### *Planning*

- What is an appropriate planning procedure to identify corridors in need of bicycle facilities?

### *Facility Selection*

- What facility types are available for use in accommodating bicycles?
- On what basis should a facility type be selected?

### *General Implementation*

- As warrant systems such as those for motorized transportation planning do not exist, on what basis can TxDOT personnel justify the recommendation of bicycle improvements for specific roads?

### *Implementation of Retrofits*

- Where is space to be found in an existing roadway for the addition of a bicycle facility?

### *Implementation of Pre-Construction Retrofits*

- What procedures should be used to implement the addition of a bicycle facility on a

roadway either under construction or nearing construction?

- Where is space to be found in a completed roadway design for the addition of a bicycle facility?

## **Pedestrian Facilities**

Current TxDOT policy is to provide for sidewalk construction along state highways under the following conditions (5):

- when replacing existing sidewalk;
- where highway construction severs an existing sidewalk system, the state will make connections within highway right-of-way to restore sidewalk system continuity; and
- where pedestrian traffic is causing or is expected to cause a safety conflict.

These three conditions appear jointly with a statement that all sidewalk construction is to conform to the requirements of the Americans with Disabilities Act (ADA).

Shoulders adjacent to highway travel lanes are sometimes used for pedestrian movement, particularly in rural areas. The researchers found no TxDOT planning or design policy statements, guidelines, or standards, however, which referred to this pedestrian use of shoulders.

Aside from the listing of conditions under which sidewalks are constructed, there are no TxDOT directives, guidelines, or standards for the planning, selection, and design of pedestrian facilities along state highways.

The pedestrian facility issues and information gaps of concern to TxDOT district personnel are shown below.

### *Planning*

- How can personnel plan for the construction of sidewalks when TxDOT policies allow for sidewalk construction only in a very few instances?

### *Implementation*

- As warrant systems such as those for motorized transportation planning do not exist for pedestrian facilities, and in light of currently restrictive pedestrian policies, on what basis can TxDOT personnel justify the recommendation of pedestrian improvements for specific roads?

### *Design*

- What design characteristics are essential on pedestrian facilities?

## **OTHER STATE DOT POLICIES AND NATIONAL GUIDELINES**

Identification of current policies and practices in other states and at the national level took place through literature and legislation review; attendance at a national symposium on bicycling and walking; interviews of selected agency and non-agency personnel; and use of two surveys.

Several states are recognized for their leadership in accommodating bicycle and pedestrian transportation. For bicycle transportation, key states include Oregon, North Carolina, and Florida. For pedestrian transportation, Oregon and Florida are considered progressive. Much of the success of these states is attributable to: 1) having personnel in place who have received training in bicycle or pedestrian transportation issues; 2) having guidelines in place to promote a comprehensive system of accommodations; and 3) institutionalizing bicycle and pedestrian issues into the everyday workings of agencies - through inclusion of pertinent design information in frequently referenced highway design manuals, for example.

Review of state guidelines for Oregon, North Carolina, and Florida and interviews with the state bicycle and pedestrian coordinators of many states have provided useful information for researchers.

Researchers identified several studies underway that offer valuable information, including

ongoing efforts by Alex Sorton of Northwestern University's Traffic Institute, Bill Hunter of the North Carolina Safety Research Center, and Kevin St. Jacques of Wilbur Smith Associates in Houston, Texas. The Sorton study is evaluating bicycle planning and facility selection measures, while the Hunter and St. Jacques studies are assessing applications for various types of bicycle facilities.

## **SURVEY OF INDIVIDUALS, AGENCIES, AND ORGANIZATIONS**

A survey of TxDOT district personnel, other state DOT personnel, researchers, individuals, and organizations was conducted during the first year to accomplish the following objectives:

- to identify current practices and additional legislation, guidelines, research, and contacts not identified through previous research tasks;
- to identify gaps or missing information in the current guidelines for bicycle and pedestrian facilities; and
- to identify potential members for the advisory panels.

### **Survey Methodology and Results**

Researchers developed two separate survey instruments in order to limit the length of time required by respondents, maximize the number of surveys returned, and enable researchers to formulate detailed questions on specific bicycle and pedestrian issues.

Nineteen questions comprised the bicycle survey, while the pedestrian survey consisted of twenty-four. Respondents were given opportunities to offer any comments or additional information which they felt would be appropriate or helpful to the research effort. The survey instruments are contained in Appendix B.



## *Bicycle Survey*

In consultation with the study PD, a total of 115 bicycle surveys were distributed primarily to individuals who typically handle bicycle facility-related issues as part of their daily job responsibilities. Some individuals who may not be familiar with all of the bicycle accommodation principles related to facility planning, selection, and design completed the survey. Bicycle surveys went to the following:

- the district bicycle coordinator for each TxDOT district;
- the bicycle coordinator for each state DOT;
- recognized governmental experts and consultants at the national level;
- the director of each MPO in Texas;
- the municipal bicycle coordinators in Texas;
- bicycle advocacy groups in Texas; and
- individual citizens known to have an interest in bicycle issues.

A total of 72 surveys were returned to the Texas Transportation Institute. The following paragraphs summarize the major findings of the survey.

The survey asked which bicycle facility guidelines the respondents are currently using. Nearly 83% are using AASHTO's *Guide for the Development of Bicycle Facilities*, while 39% are using FHWA's *Selecting Roadway Design Treatments to Accommodate Bicycles*. Other guidelines used include MPO or municipal guides, research reports, and other state DOT manuals.

When asked which bicycle facilities are planned and implemented in their areas, respondents indicated that:

- 31% are using shared travel lanes of standard width, primarily in residential areas, but also on collectors and arterials;
- 23% are using wide curb lanes on collectors and arterials;

- 24% are using striped bicycle lanes on collectors and arterials; and
- 15% are using bicycle paths separated from the roadway.

To a question asking respondents to rank the influences on planning, selection, and implementation of bicycle facilities, the results were (in order of descending influence) funding, agency policies, citizen advisory committees, and advocacy groups.

Seventy-one percent of respondents indicated their area has a bicycle plan, with 47% of the plans formulated by the MPO.

Respondents ranked the importance of various planning factors as follows.

- The following factors were rated “very important.”

*Factors given by researchers:*

funding.

*Factors suggested by respondents:*

route directness;  
public support for route;  
route proximity to local population;  
availability of right-of-way; and  
environmental impacts.

- The following factors were rated “important.”

*Factors given by researchers:*

type of bicyclist;  
volume of motor vehicles;  
volume of bicyclists;  
posted speed;  
motor vehicle operating speed;  
roadway classification; and  
adjacent land use.

*Factors suggested by respondents:*

public and political influence.

- The following factors were rated “somewhat important.”

*Factors given by researchers:*

percentage truck volume.

*Factors suggested by respondents:*

parking turnover.

While 76% of respondents indicated that their agency or a local agency monitors bicycle-related accident data, 59% stated that the data is not used in the planning, selection, and design of bicycle facilities.

The survey question inquiring whether the respondent uses a prioritization or ranking system to select roadways for bicycle improvement received a negative response from 61% of respondents. Of the 29% of positive responses, the following six models for roadway prioritization were described:

- quantitative ranking system;
- informal ranking system based on potential use, traffic volume, traffic speed, and feasibility;
- ranking system based on counts, cost, available right-of-way, and overcoming barriers;
- ranking system based on traffic volume, lane width, percent grade, on-street parking, and transit type;
- informal ranking system based on filling in a system’s missing link, adjacent land use, and potential usage; and
- ranking system based on cost-effectiveness ratio.

When asked to list problematic facility types, over one-half (59%) of survey respondents listed bike paths and over one-third (35%) listed bike lanes.

When respondents were asked what types of data, guidelines, or procedures would be helpful in bicycle planning, selection, and design, many documented difficulties regarding bicycle facility planning. Individuals charged with bicycle planning desire a system of warrants such as those established for motor vehicle planning and engineering. Respondents noted the need for data collection methods to obtain accurate data on facility usage, models to estimate future or expected use, and improved accident reporting forms to provide more reliable accident data.

In a question inquiring whether respondents had access to cost/benefit data, 91% responded negatively.

### *Pedestrian Survey*

Researchers experienced difficulty in identifying individuals with pedestrian facility expertise at the local and state level, since specialized pedestrian responsibilities do not currently exist at these levels. At the state DOT level, most bicycle coordinators also serve as pedestrian coordinators, in both tasks undertaken and in professional agency titles.

Because of the precedent at the state DOT level and because local personnel with bicycle responsibilities are sometimes involved in accommodations for other nonmotorized modes, TxDOT district bicycle coordinators received the pedestrian survey.

A total of 162 pedestrian surveys were distributed to individuals who may or may not consider pedestrian issues in their daily job responsibilities. Some surveys were completed by individuals who may not be familiar with specific pedestrian design issues. Pedestrian surveys were sent to the following:

- the pedestrian coordinator for each state DOT;
- the director of each MPO in Texas;
- selected municipal personnel;
- TxDOT personnel with recognized expertise in pedestrian issues;
- pedestrian advocacy groups; and
- individual citizens known to have an interest in pedestrian issues.

A total of 34 surveys were returned to the Texas Transportation Institute. The following paragraphs summarize the major findings of the survey.

The survey asked which pedestrian facility guidelines the respondents are currently using. Nearly 76% of respondents are using the *Americans with Disabilities Act (ADA) Handbook* (6). Nearly one-third (29%) are using FHWA's *Planning, Design, and Maintenance of Pedestrian Facilities* (7), while 21% are using municipal or other guidelines.

When asked if the respondent's area has formulated a pedestrian plan, 62% answered negatively.

Respondents installing pedestrian facilities based their actions on agency policy (38%) and land use (21%).

Nearly 79% of respondents knew of no pedestrian advocacy groups in their area.

Respondents ranked the importance of various planning factors as follows.

- The following factors were rated "very important."

*Factors given by researchers:*

- roadway traffic volume;
- motor vehicle operating speed;
- roadway classification;
- removal of physical barriers;
- funding; and
- ADA requirements.

- The following factors were rated "important."

*Factors given by researchers:*

- Type of pedestrian;
- volume of pedestrians;
- posted roadway speed;
- percentage truck volume;
- roadway width;

geometrics;  
roadway access; and  
adjacent land use.

*Factors suggested by respondents:*

requests from the public; and  
availability of right-of-way.

Regarding pedestrian accident data, while 73% of respondents indicate their agency or a local agency monitors this data, 47% stated that the data is not used in the planning, selection, or design of pedestrian facilities.

## **CHAPTER 3: COLLECTION OF CITIZEN AND NON-TxDOT AGENCY RECOMMENDATIONS**

Because bicycle and pedestrian transportation are topics of great interest to many Texas agencies, individuals, and organizations, researchers created and convened advisory panels, or focus groups, in four metropolitan cities to solicit input on the study. The various opinions, perspectives, comments, and recommendations offered in advisory panel discussions have provided researchers valuable insight regarding the complexity of bicycle and pedestrian considerations in Texas.

### **ADVISORY PANEL METHODOLOGY AND RESULTS**

The cities selected for advisory panel meetings are known both for their efforts to accommodate bicyclists and pedestrians and for their openness to involving the bicycling and walking communities in planning efforts. In a joint effort with the TP and PD, six to ten individuals were selected for membership on the advisory panels held in Austin, Dallas, Houston, and San Antonio. Prospective members were contacted by telephone and sent follow-up correspondence with full meeting details. This correspondence and a sample agenda are contained in Appendix C.

A total of 32 people participated in four panel meetings. Bicycle and pedestrian advocates joined TxDOT district bicycle coordinators, independent consultants, and representatives from county offices, parks departments, municipal offices, and MPOs for a discussion of topics suggested by researchers and related topics of particular interest to panel members.

The moderator (a member of the research team) began each meeting with a description of the research study goals and an explanation of the function of the advisory panel. The moderator emphasized that an informal discussion was desired, and that each panel member was

encouraged to participate in the following:

- review and comment on research goals and objectives;
- suggest alternative actions or ideas which should be evaluated (within the scope of the contract);
- identify additional information or contacts for researchers;
- assist in the identification of information gaps and research activities to fill in those gaps; and
- review and comment on research deliverables.

Additionally, the moderator requested that each panel member make a few summary comments before meeting adjournment. In addition to the requested activities for the advisory panels, several topics were discussed at length, including:

- key issues in bicycle and pedestrian planning;
- facility types commonly used in the community;
- the need for a comprehensive approach to removing barriers to bicycle and pedestrian mobility; and
- the importance of public involvement in efforts to accommodate the needs of transportation bicyclists and pedestrians.



## **CHAPTER 4: ASSESSMENT OF FACILITIES AND PROCEDURES**

A major concern of this research study is the adequacy of available procedures for planning, selecting, and designing bicycle and pedestrian facilities for Texas conditions, and of the usefulness, under varying conditions, of the facilities themselves.

Researchers undertook the following four tasks to assess existing bicycle and pedestrian facilities.

1. Assessing existing bicycle and pedestrian facilities in Texas, the United States, and Europe to identify successful facilities and determine the characteristics which make those facilities successful. This task was not intended to be an inventory of facilities, but an assessment and comparison of typical facility types.
2. Assessing planning procedures applicable to bicycle and pedestrian facilities. Several methodologies are proposed for bicycle and pedestrian planning for both existing and future roadways. As the majority of roadways in the state transportation system are completed at this time, emphasis will be given to the planning and selection of a facility for existing roadways. This task is intended to assess the appropriateness of various methodologies for Texas conditions.
3. Conducting an assessment of the sensitivities of relationships between factors pertinent in the planning, selection, and design of different facilities. The findings in this assessment will assist researchers in developing a planning methodology appropriate for Texas conditions.
4. Developing new guidelines and procedures for TxDOT personnel to use in implementing bicycle and pedestrian accommodations on roadways which are either under construction or nearing construction.

## **ASSESSMENT OF EXISTING FACILITIES**

Researchers assessed facilities in Texas through site visits and facilities in the rest of the United States and Europe primarily through reviews of descriptive and technical literature. Panel members listed local facility sites for the researchers to visit at the conclusion of the four advisory panel meetings held in Austin, Dallas, Houston, and San Antonio, and often provided personal opinions on the relative advantages or disadvantages of these facilities.

Facilities were assessed for types of users observed on the facility; geometric characteristics of the facility; location of the facility relative to traffic generators; directness; continuity; relative conflict level between different users and different modes; observed hazards; and unique features.

## **ASSESSMENT OF PROCEDURES**

Bicycle and pedestrian facility planning are new concepts for many transportation planners and engineers. Because efforts to accommodate bicyclists and pedestrians are of relatively recent origin when compared to planning for motor vehicles, the planning procedures are not yet finalized. Since ISTEA, developments in procedures are evolving rapidly.

Procedures for planning, selecting, and designing facilities for nonmotorized users is different in many ways from the accustomed motor vehicle planning. Established warrants for bicycle and pedestrian facilities do not exist, aside from test policies for a handful of states and some cities. Because bicycling populations vary greatly from one community to another, however, a system of warrants considered appropriate and effective for one city may be inappropriate for another.

Many agencies responsible for facilitating bicycle and pedestrian transportation have determined that a system of warrants is unworkable for these currently disadvantaged modes, and have instituted policies favoring nonmotorized facilities, when feasible, instead. This leaves planners and engineers with specific directives but little concrete guidance.

Neither approach has provided planners or engineers the guidance needed.

## Available Bicycle Planning, Selection, and Design Procedures

A synthesis based on the following available and new procedures is under consideration for recommendation to TxDOT to accommodate bicycle transportation on the state highway system:

- planning procedures adapted from the *North Carolina Bicycle Facilities Planning and Design Guidelines* (8);
- FHWA's facility selection principles contained in *Selecting Roadway Design Treatments to Accommodate Bicycles* (4);
- AASHTO's geometric criteria contained in *Guide for the Development of Bicycle Facilities* (3); and
- New research to develop guidance for implementing bicycle facilities on existing roadways as well as those under construction or nearing construction.

Several planning and facility selection methodologies, such as Alex Sorton's Bicycle Levels of Service, were assessed for applicability to Texas conditions but discarded upon finding that methodologies were dependent on a measure or condition not monitored in Texas. A description of potentially useful procedures follows.

One planning methodology of interest to researchers for its merits and applicability to Texas conditions is found in the *North Carolina Bicycle Facilities Planning and Design Guidelines* (8). This document is recognized for the completeness of its bicycle planning section, which involves an eight-step process as follows:

- develop goals and objectives;
- develop the planning framework;
- analyze local conditions;
- develop the problem statement;
- generate solution ideas;

- develop overall plan and select solutions;
- implement projects; and
- evaluate results and revise.

Using this comprehensive process and the FHWA recommendations discussed below, planners, engineers, and others are able to develop a comprehensive bicycle plan appropriate for the community. This plan identifies specific corridors needed for effective bicycle mobility as well as the roadway improvements or special bicycle facility type desired for each corridor.

FHWA's *Selecting Roadway Design Treatments to Accommodate Bicycles* is based on the following principles:

- Two types of design bicyclists are recognized: Type A (advanced), and Type B (basic adult and child);
- To paraphrase the AASHTO *Guide*, every roadway on which bicycles are permitted to operate is a "bicycle way" and should be designed and maintained to accommodate shared use by bicycles and motor vehicles. Thus, at a minimum, all roadways should include the design treatments recommended for Type A bicyclists.
- With a U.S. DOT goal to encourage increased use by Type B bicyclists, a supply-driven approach of providing bicycle facilities to encourage increased activity by Type B bicyclists is warranted.
- Selecting design treatments to accommodate Type B bicyclists involves two steps:
  - a planning process to identify key travel corridors along which bicycle access is important; and
  - a design decision to identify the most appropriate facility treatment for a given corridor.

The FHWA document calls for bicycle plans to accommodate two distinct groups of bicyclists, simply labelled Type A and Type B. Bicyclists possessing basic handling skills but lacking in confidence to operate in a vehicular manner on collectors and arterials - or Group B

bicyclists - should be provided a subnetwork of special, designated facilities on selected collectors and arterials. Special, designated facilities include striped bicycle lanes or roadways with occasional pavement symbols designed to remind motorists of the likelihood that bicyclists may be sharing the travel lane.

Advanced bicyclists with the skills, knowledge, and confidence to operate on roadways with relatively high speed and volume - Group A bicyclists - should be provided with, at a minimum, roadway improvements such as increased sweeping, smoothing of rough pavements, and removal of shoulder rumble strips. Federal policy encourages agencies to use the design treatments recommended for Type A bicyclists on every noncontrolled-access roadway, whether or not the roadway appears on a bicycle plan.

Using this combination of policies and procedures, both existing and future corridors should receive planning to determine expected use by type of bicyclist, and have specially designated facility types only when the expected design bicyclist is predominantly of Type B. Using the FHWA concept, if the corridor is not expected or shown to be of interest to predominantly Type B bicyclists, a designated facility is perhaps unnecessary, and only modest roadway improvements are indicated.

The design of the selected facility type is perhaps the simplest of the considerations, as AASHTO's document containing geometric criteria shows.

## **NEW BICYCLE PLANNING AND SELECTION PROCEDURES**

It was determined through consultation with the study PD that research activities should address, to the extent possible, two areas for which no useful existing information was found. The first information gap was a cost/benefit analysis, and the second was guidance for TxDOT personnel charged with selecting bicycle accommodations on roadways under construction or nearing construction.

## **Qualitative Sensitivity Analysis**

Bicycle facility planners and engineers need accurate cost/benefit information to assist in selecting corridors, selecting facility types, and prioritizing the implementation of bicycle facilities. A comprehensive literature review provided little data for researchers to use in an analysis of costs and benefits for various facility types.

One member of the research team, Dr. Pedro Hurtado of Texas A&M International University, performed a qualitative sensitivity analysis of various factors in planning and facility selection. This analysis was derived from the cost/benefit analysis proposed to demonstrate the cost-effectiveness of different facility types.

The principal result of this analysis is the determination that the selection of a facility type is extremely sensitive to the type of bicyclist expected, significantly sensitive to roadway speeds, and not very sensitive to roadway volumes. The traffic mix has little or no impact on the facility types desired by varying bicyclist types. This information will be incorporated into the facility selection portion of the draft guidelines.

## **Guidance for Bicycle Accommodations on Roadways Under or Nearing Construction**

The second information gap was suggested in the policy memo from William Burnett, TxDOT Executive Director, which stated that “accommodation for both bicycle and pedestrian traffic shall be considered on all projects, including those under construction where reasonably possible.”

Researchers assessed the factors required to address the selection of a facility type for such a corridor and constructed a system of flow charts to guide TxDOT personnel through the process for both bicyclists and pedestrians. Flow charts received extensive review and discussion through telephone and facsimile contact with the PD and through a meeting of the TP in Austin. The revised flow charts will be incorporated into the draft guidelines.

## AVAILABLE PEDESTRIAN PLANNING AND DESIGN PROCEDURES

Pedestrian facilities in urban areas are generally known as sidewalks and roadway crossings. While sidewalks have historically been a municipal concern, transportation agencies have been addressing pedestrian mobility issues since the 1991 ISTEA legislation.

Under ISTEA, MPOs are charged with the formulation of the regional pedestrian plan. The planning process adapted from North Carolina and outlined above may be used to derive the pedestrian plan. The process is considerably less complex than bicycle transportation planning, since pedestrian planning generally assumes one design pedestrian and facilities are comprised almost exclusively of only two types, the sidewalk and the crossing location.

Sidewalk design is largely a function of sidewalk width. Maintaining a useable, unobstructed width is a primary focus.

Florida and Oregon are recognized for their progressive policies to facilitate pedestrian mobility. Florida's program presents a model for the nation, and pedestrian coordinators from across the country attend training sessions offered by the Florida DOT.

Several documents comprise available procedures for pedestrian planning and design. Among these are the *Highway Capacity Manual Special Report (9)* and *Americans with Disabilities Act Handbook (6)*. *Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas (10)* by the Transportation Research Board is useful, as is AASHTO's *A Policy on Geometric Design of Highways and Streets (11)*. San Francisco's *Destination Downtown: The Downtown Streetscape Plan (12)* provides guidelines for urban amenities in the pedestrian environment.





## **CHAPTER 5: SUMMARY OF FUTURE STUDY ACTIVITIES**

The findings from research tasks described in the previous three chapters will be used to develop a draft version of the guide for planning, selecting, and designing bicycle and pedestrian facilities for both existing and future roadways. This guide will be evaluated and revised to create a preliminary version of the primary product of this research study.

### **DESCRIPTION OF FUTURE STUDY ACTIVITIES**

A description of the remaining tasks in the study follows.

#### **Develop Draft Version of Bicycle and Pedestrian Guide**

The information gained from completed research activities will be used to develop a draft version of a guide for selecting, planning, designing, and implementing bicycle and pedestrian facilities in Texas. The final guide is intended to provide TxDOT personnel with one comprehensive document containing the information needed to accommodate bicyclists and pedestrians within the state transportation system.

#### **Review Draft Guide**

The draft guide will be submitted to TxDOT for review and comment. In addition to review by the TP, the draft guide will be submitted to other individuals selected in consultation with the study's PD. Potential reviewers include the four advisory panels and individuals recognized as leaders in the field, many of whom responded to one or more of the survey instruments. The comments received as a result of this task will be used to develop the preliminary guide.

The review of the draft guide is a critical element in the overall objective of this research. As a part of this research study, the material contained in the preliminary guide - which is the

revised version of the draft guide - will be presented to district personnel. In order to remain on schedule, review activities will be limited to a two-month period.

### **Develop Preliminary Bicycle and Pedestrian Guide**

In this task, the comments received from the review of the draft guide will be evaluated and used to develop the preliminary bicycle and pedestrian guide. Upon completion, the preliminary guide will be distributed to the PD, the TP, the advisory panels, and a few districts selected in consultation with the PD.

### **Present District Workshops**

To optimize the implementation of research findings, this study includes a technology transfer task in which the research activities and results are presented to TxDOT personnel in selected districts. In this task, a key member of the research team will present the preliminary guide to district personnel in a workshop type of environment. A copy of the preliminary guidelines will be sent to workshop participants approximately two weeks prior to the workshop. The material will be presented in an informal workshop approximately four hours long, emphasizing interaction between the researcher and the participants. The workshop will be presented at the district offices in Austin, Dallas/Ft. Worth (one workshop for both districts), Houston, San Antonio, and Tyler. Up to three additional district offices will be selected in consultation with the PD.

One of the purposes of the workshops is to solicit comments from district personnel on the usefulness of the guide and identify portions of the guide requiring further revision. Therefore, workshop participants will be given an opportunity to comment on the guide and offer suggestions for improving it.

## **Develop Final Bicycle and Pedestrian Guide**

In the final task of this research, the comments received as a result of the workshop presentations will be evaluated and the guide will be revised as needed. The result of this task will be the final version of the guide for bicycle and pedestrian facilities. The guide will be a loose-leaf format so that future revisions can be incorporated with a minimum of difficulty. This will allow TxDOT to revise the guide in the future as experience and knowledge in this area increases.

## **ASSISTANCE BY TxDOT**

This research study includes a task in which the study findings will be presented to TxDOT personnel in a workshop format at selected districts. In order to present these workshops and develop the final guide before the study ends, a prompt review of the draft guide will be necessary. The schedule provides two months for TxDOT review of the draft guide. This short review period is necessary in order to accommodate the remaining tasks of the research study.



## CHAPTER 6: REFERENCES

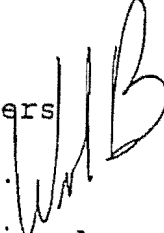
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2. Memorandum from William G. Burnett, Executive Director of the Texas Department of Transportation to District Engineers entitled “Bicycle and Pedestrian Accommodation,” dated February 7, 1994.
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12. *Destination Downtown: The Downtown Streetscape Plan*. Planning Department, City and County of San Francisco, San Francisco, California, February 1995.



## **APPENDIX A: TxDOT POLICY MEMORANDUM**

This appendix provides a representation of the memorandum establishing TxDOT policy for bicycle and pedestrian accommodation. This document is the only recognized statement of current TxDOT policies regarding bicycle and pedestrian facilities. A copy of the actual memorandum appears on the following page.

M E M O R A N D U M

TO: All District Engineers  DATE: February 7, 1994  
FROM: Wm. G. Burnett, P.E.  
SUBJECT: Bicycle and Pedestrian Accommodation

Two recently passed pieces of legislation have affected the way transportation projects are planned and built. Senate Bill 352 (Sunset Bill), which was passed during the 72nd Legislative Session, directs us to enhance the use of the state highway system by bicyclists. In December 1991, President George Bush signed the Intermodal Surface Transportation Efficiency Act. This law requires us to plan for both bicycle and pedestrian modes.

Many of you have projects within the Project Development Plan that are still several years from being let to contract. Most of these projects have been designed without consideration for bicyclists or pedestrians. Every road, with a few exceptions, is a potential bicycle way. This concept requires full consideration on both new transportation projects, and to retrofit, over time, the backlog of roadways not currently scheduled for improvement.

Accommodation for both bicycle and pedestrian traffic shall be considered on all projects, including those under construction where reasonably possible.

The AASHTO "Guide for the Development of Bicycle Facilities" is available for your use in selecting facility improvements that will enhance the roadways for use by bicyclists. Copies of the guide were furnished to your office in 1992. Many districts have a staff person who has completed the Bicycle Planning and Facility Workshops offered in 1993. Additional guidance and training will be offered in the coming months.

Your cooperation and attention to this matter is appreciated. If you have any questions or need additional information, please contact Mr. Paul Douglas, State Bicycle Coordinator, at (512) 416-3125 or Mr. Gary Trietsch at (512) 416-3200.

PD:cn  
cc: Senior Management Team  
Special Offices  
All Divisions



## **APPENDIX B: SURVEY INSTRUMENTS**

The following pages contain the two survey instruments used to identify practices related to bicycle and pedestrian facilities, respectively. The survey instruments were self-administered paper surveys which took approximately 45 minutes for a respondent to complete. The bicycle survey contained 19 questions, while the pedestrian survey contained 26. This appendix contains copies of the actual instruments used to administer the survey.



## TEXAS TRANSPORTATION INSTITUTE

Texas A&M University System College Station, Texas 77843-3135

Environmental  
Management Program

TEL 409 845-0133  
FAX 409 862-1759

March 8, 1995

Dear Selected Survey Participant:

The Texas Transportation Institute (TTI) is conducting a research study regarding bicycle and pedestrian facility selection and design for the Texas Department of Transportation (TxDOT). The primary objective of this study is to develop guidelines for TxDOT district personnel to use in accommodating bicyclists and pedestrians along state highways in both urban and rural areas.

You have been recognized by the study researchers for your expertise regarding bicycle transportation issues and related achievements at the municipal, regional, state, and/or national level.

We are seeking your help in determining the current practices and procedures used to select and design bicycle facilities. Please complete the enclosed survey and return it as soon as possible using the enclosed pre-addressed mailing label. Feel free to attach or identify any information which you think may be useful in this study. You may also call me at 409-845-4352 with any comments or suggestions you might have.

Your responses to the enclosed survey will assist TTI in developing state-of-the-art guidelines for accommodating bicyclists on Texas state highways. We thank you for your help.

Sincerely,

Danise S. Hauser, RLA  
Principal Investigator

## Survey of Bicyclist Accommodation

This survey is being conducted by the Texas Transportation Institute (TTI) for the Texas Department of Transportation (TxDOT) to determine the current practices for planning, selecting, and implementing bicycle facilities. Information collected will assist TTI in the production of guidelines for TxDOT bicycle facilities.

Some questions may not apply to all respondents. More than one answer is acceptable for multiple choice questions. Please use the space provided for written answers or additional comments, using the back of sheets or additional paper if needed.

Name: \_\_\_\_\_ Phone/Fax: \_\_\_\_\_  
 Title: \_\_\_\_\_ Mailing Address: \_\_\_\_\_  
 Agency/Organization: \_\_\_\_\_

1. Describe your role in bicycle facility selection and implementation.
  - Facility planner
  - Facility engineer
  - Bicycle program coordinator
  - Member of advocacy group
  - Other (please describe) \_\_\_\_\_
  
2. What guidelines or combination of guidelines does your agency use to plan, select, and design bicycle facilities?
  - Guide for the Development of Bicycle Facilities*, AASHTO 1991
  - Selecting Roadway Design Treatments to Accommodate Bicycles*, FHWA-RD-92-073
  - Other State DOT \_\_\_\_\_
  - Metropolitan Planning Organization (which MPO?) \_\_\_\_\_
  - City (please specify) \_\_\_\_\_
  - Other (please specify) \_\_\_\_\_
  
3. What planned bicycle facilities are used in your area? Please check all that apply.

Roadway Classification	Shared Standard Width Lanes	Wide Outside Lane	Striped Bike Lane	Separated Bike Path	Other (describe)
Residential					
Collector					
Minor Arterial					
Major Arterial					

4. Who has jurisdiction for bicycle facilities in your area? Please check all that apply.

Agency	Planning	Selection/Design	Review	Approval	Maintenance
Federal					
State					
City Public Works					
City Traffic Engr.					
City Parks Dept.					
County					
MPO					
Developer					

5. For the following existing and planned roadways, how is your organization/area accommodating bicyclists? Please check all that apply.

Roadway Status	Re-stripe (No Added Pavement)	Remove Parking	Redesign Within Existing ROW & Add Pavement	Redesign & Add ROW	Other (Please Use Space Below or on Reverse)	No Action
Existing						
Designed But Not Constructed						
Not Yet Designed						
Structures i.e. Bridges, Tunnels, etc.						

Comments: \_\_\_\_\_

6. Please rank the following in the order that they influence the planning, selection, and implementation of bicycle facilities in your area. (1-greatest influence, 7-least influence)

- Short-term public involvement (such as public meetings)
- Long-term public involvement (such as citizen advisory committees, task forces)
- Review process (such as DOT sends to MPO)
- Funding
- Members of advocacy groups
- Administrative directives
- Other (please describe) \_\_\_\_\_

7. Does your area have a bicycle plan? If yes, who developed it?  
 Yes \_\_\_\_\_  No

8. Briefly describe how the decision-making process is influenced by those outside your agency. Some influential groups might be advisory committees, the state DOT, municipalities, the MPO, bicycle advocacy groups or neighborhood groups.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

9. How does your agency fund bicycle accommodations? Please check all that apply.

Project Development Phase	ISTEA	City	State DOT	MPO	Grants	All Funding Outside of My Agency	Other (please specify)
Design							
Construction							
Operation							
Maintenance							

10. Please rate the following regarding importance in planning, selecting, and implementing bicycle facilities in your area. Please check all that apply.

	Very Important	Important	Somewhat Important	Not Important	Not Applicable to My Area	Comments
Design Cyclist						
Motor Vehicle Volume						
Percent Truck Volume						
Bicycle Volume						
Posted Speed						
Motor Vehicle Operating Speed						
Roadway Classification						
Adjacent Land Use						
Funding						
Other						

11. Does your agency or another local agency monitor bicycle-related accident data?  
 Yes       No       Unknown  
 If another agency, please identify: \_\_\_\_\_
12. Is this accident data used in the planning, selection, and design of bicycle facilities? If yes, how?  
 Yes                                       No  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
13. Transportation engineers and planners are familiar with systems to rank needs such as for a railroad grade crossing (based on accident data, potential use, traffic volume, etc.). Do you use a similar system to prioritize or schedule the installation of any type of specific, planned bicycle facilities?  
 Yes                                       No  
 If yes, please describe the system (including the factors used and their relative weight or importance). \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
14. Do you know of a specific bicycle facility or facility type implemented in your area which works very well? If so, please describe the system using the categories listed in questions 3 and 10, and any other categories that seem appropriate. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
15. Do you know of a specific bicycle facility or facility type implemented in your area which has not worked well? If so, please describe the system using the categories listed in questions 3 and 10, and any other categories that seem appropriate. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
16. What types of data, guidelines, or procedures would assist you in the planning, selecting, and design process? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

17. Do you know of or have access to data showing the relative cost/benefit ratios for different types of facilities to accommodate bicyclists and pedestrians? If so, please list below. \_\_\_\_\_

\_\_\_\_\_

18. Do you have interest in discussing survey's topics further with the researchers?

Yes  No

If yes, please describe: \_\_\_\_\_

\_\_\_\_\_

19. Do you have additional information that you would like to share?

Yes  No

If yes, please describe: \_\_\_\_\_

\_\_\_\_\_

# Survey of Pedestrian Accommodation

This survey is being conducted by the Texas Transportation Institute (TTI) for the Texas Department of Transportation (TxDOT) to determine the current practices for planning, selecting, and implementing pedestrian facilities. The information collected will assist TTI in the production of guidelines for pedestrian facilities.

Some questions may not apply to all respondents. More than one answer is acceptable for multiple choice questions. Please use the provided space for written answers or additional comments, using the back of the sheets or additional paper if needed.

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Agency/Organization: \_\_\_\_\_  
Phone/Fax: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
\_\_\_\_\_

1. Describe your role in pedestrian facility design, selection, and/or implementation.
  - Facility planner
  - Facility engineer
  - Pedestrian program coordinator
  - Member of advocacy group
  - Other (please describe) \_\_\_\_\_
  
2. What guidelines or combination of guidelines does your agency use to plan, select, and design pedestrian facilities?
  - Planning Design and Maintenance of Pedestrian Facilities*, FHWA IP-88-019
  - Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas*, NCHRP 294A/B
  - Americans with Disabilities Act Accessibility Guidelines*
  - Other State DOT Manuals (please specify) \_\_\_\_\_
  - Metropolitan Planning Organization (please specify) \_\_\_\_\_
  - City (please specify) \_\_\_\_\_
  - Other (please specify) \_\_\_\_\_
  - None
  
3. What documents are you using to design pedestrian facilities to meet ADA standards?  
\_\_\_\_\_  
\_\_\_\_\_
  
4. Does your area have a pedestrian plan? If yes, who developed it and when?
  - Yes \_\_\_\_\_
  - No



5. On what basis do you decide where to install pedestrian facilities (land use, pedestrian plan, major generator, policy, sidewalk retrofit program, other)? \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
6. Which agency(s) are responsible for the appropriate tasks? Please check all that apply.

Agency	Planning	Selection/Design	Review	Funding	Approval	Maintenance
Federal						
State						
City Public Works						
City Traffic Engr.						
City Parks Dept.						
County						
MPO						
Developer						

7. For existing and planned roadways, how is/will your organization/area accommodate pedestrians? Please indicate by (all, most, some, or none). For example: 1)If your agency has some sidewalks on both side of it's existing roadways put **some** under that column. 2)If most of the facilities designed but not constructed will have sidewalks on both sides indicate **most** under that column. 3)For the future facilities, if you intend to have sidewalks on both sides of all new designs please indicate **all**.

Existing Roadways	Designed but not Constructed	Future Facility	
_____	_____	_____	Sidewalks both sides of roadway
_____	_____	_____	Sidewalks one side only
_____	_____	_____	No sidewalks
_____	_____	_____	Single curb cut ramp at intersection corners
_____	_____	_____	Double curb cut ramps at intersection corners
_____	_____	_____	Pedestrian signal only
_____	_____	_____	Pedestrian signals with push buttons
_____	_____	_____	Crosswalks
_____	_____	_____	Pedestrian signals at signalized intersections with crosswalks
_____	_____	_____	Stop-controlled intersections with crosswalks
_____	_____	_____	Uncontrolled intersections with crosswalks
_____	_____	_____	Crosswalks at mid-block
_____	_____	_____	Intersections using all MUTCD-recommended signing



11. Please rank the following in the order that they influence the planning, selection, and implementation of pedestrian facilities in your area. (1-greatest influence, 7-least influence)
- Short-term public involvement (such as public meetings)
  - Long-term public involvement (such as citizen advisory committees, task forces)
  - Review process (such as DOT sends to MPO)
  - Funding
  - Members of advocacy groups
  - Administrative directives
  - Other (please describe) \_\_\_\_\_

12. What types of data, guidelines, or procedures would assist you in the planning, selecting, and design process? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

13. How would you improve all guidelines, or just ADA guidelines (format, content, other)?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

14. Do you have access to any economic data regarding bicyclists and pedestrians facilities? If so, please describe below. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

15. Please estimate the portion of roadways with any type of sidewalks in the categories below? (all, most, some, none)

Major Arterials	Minor Arterials	Collectors	Local Streets	CBD

16. What is the average unobstructed sidewalk width in your area (feet)?  
 3    4    5    6    7    8    9    >10

17. Does your agency provide utility strips between the street and sidewalk? If yes, what is average width in feet?  
 Yes \_\_\_\_\_ feet                       No

18. Do you use audible pedestrian signals?

Yes  No

If yes, please explain under what conditions audible signals are used: \_\_\_\_\_

---

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19. Do you use other pedestrian signal devices not described in the MUTCD?

Yes  No

If yes, please describe: \_\_\_\_\_

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20. What walking speed do you typically use to time pedestrian signals (feet per second)?

2    3    4    5    6    7    8    Other \_\_\_\_\_

21. How do you identify potentially hazardous defects in the sidewalk surface (cracks, shifts, uplifts, etc.) or obstructions placed on the sidewalk (trash cans, newsstands, etc.)?

Maintenance /  Complaint /  Other,  
Inspection Procedures    Report from public    please describe: \_\_\_\_\_

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22. Are you aware of any organized pedestrian groups within your jurisdiction?

Yes  No

If yes, please provide the name of the organization and contact person if available: \_\_\_\_\_

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23. Do you have interest in discussing survey's topics further with the researchers?

Yes  No

If yes, please describe: \_\_\_\_\_

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24. Do you have additional information that you would like to share?

Yes  No

If yes, please describe: \_\_\_\_\_

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## **APPENDIX C: ADVISORY PANEL CORRESPONDENCE AND AGENDA**

This appendix contains the correspondence mailed to potential advisory panel members and the agenda used to direct panel activities. Four advisory panels of six to ten members each were created in consultation with the study PD and conducted in Austin, Dallas, Houston, and San Antonio. This appendix contains copies of the actual instruments used for the advisory panels.



## TEXAS TRANSPORTATION INSTITUTE

Texas A&M University System College Station, Texas 77843-3135

Environmental  
Management Program

TEL 409 845-0133  
FAX 409 862-1759

March 14, 1995

Dear [name]:

Thank you for your interest in sharing with the Texas Transportation Institute (TTI) your suggestions for the bicycle and pedestrian guidelines currently being formulated for the Texas Department of Transportation (TxDOT). These guidelines will direct the development of future bicycle and pedestrian facilities in the state of Texas. Your experience is invaluable to the construction of guidelines appropriate for Texas conditions.

This informal meeting hosted by TTI researchers will be attended by citizens and representatives from agencies or groups with interest and/or responsibilities in the design and selection of bicycle and pedestrian facilities. The comments and suggestions collected from the four meetings being held in Austin, Dallas, Houston, and San Antonio will be used by researchers to help compile comprehensive guidelines for TxDOT's use in accommodating the needs of bicyclists and pedestrians in both urban and rural areas.

Agenda items may include the completion of a survey, a critique of other states' guidelines to stimulate discussion, and discussion among meeting attendees of Texas conditions and suggestions for the TxDOT guidelines. The researchers welcome any material you wish to suggest or submit for their review and consideration in the compilation of the TxDOT guidelines.

The meeting for the [city] area will be held on [date] at [time] in the TxDOT [city] District Office at [address]. You may telephone [contact name] for detailed directions.

I look forward to working with you on the [date]. Please feel free to call me with any questions or comments you may have.

Sincerely,

Danise Hauser, RLA  
Principal Investigator

***Texas Transportation Institute/TxDOT-hosted Advisory Panel Meeting  
Bicycle and Pedestrian Guidelines  
March [date], 1995 in [city]***

Agenda (estimated meeting length 2 hours)

- I. Welcome and introduction of TTI researchers
- II. Introduction of advisory panel attendees
- III. Background information regarding the research study underway which will culminate in guidelines for bicycle and pedestrian facility development for use by TxDOT district bicycle coordinators and others
- IV. Purpose of this advisory panel meeting
- V. Review of bicycle and pedestrian study goals and objectives; discussion
- VI. Review of sample state guidelines; discussion
- VII. Summary comments from each advisory panel attendee
- VIII. Adjournment - we thank you for taking the time to share your expertise with us today!

The researchers welcome additional comments, questions, or suggestions from the advisory panel. If you wish to discuss either bicycle or pedestrian issues or the research study with Danise Hauser (bicycle issues) or Robert Benz (pedestrian issues), you may reach them using the information provided below:

Danise Hauser, RLA  
Texas Transportation Institute  
College Station TX 77843-3135  
409-845-4352  
fax 409-862-1759  
email danise=hauser%eco%tti@ttiadmin.tamu.edu

Robert Benz  
Texas Transportation Institute  
701 N. Post Oak, Suite 430  
Houston TX 77024  
713-686-2971