

A REGIONAL BICYCLE AND PEDESTRIAN FACILITIES SYSTEM PLAN FOR SOUTHEASTERN WISCONSIN: 2010



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Special acknowledgement is due Ms. Nancy A. Holguin, SEWRPC Principal Planner, and Mr. Brian P. Zobel, SEWRPC Engineer, for their contributions to the preparation of this report.

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Special acknowledgement is due the following individuals who regularly served as alternate members during the course of the planning process: Timothy A. Hayes, Public Member, Milwaukee County; Stephen N. Kamuiru, Managing Engineer-Traffic, Milwaukee County; and Lawrence P. Kaplan, Engineer in Charge-Transportation, City of Milwaukee. Special acknowledgement is also due Mr. James E. Blake, a member of the City of New Berlin Park and Recreation Board, and Mr. William M. Lampiris, a member of the Bicycle Federation of Southeastern Wisconsin, for their contributions to the work of the Committee.

The recommended bicycle and pedestrian facilities system plan for Southeastern Wisconsin is intended to provide the various units and agencies of government in the Region with a framework for encouraging and facilitating increased levels of bicycle and pedestrian travel by providing appropriate facilities to accommodate such travel as integral parts of the regional transportation system. The left cover photograph depicts a highway segment with inadequate accommodation for bicyclists and pedestrians. The right computer image depicts the same highway segment with accommodation for bicycle and pedestrian travel, including a paved shoulder for use by adult bicyclists and an adjacent path for use by pedestrians and child bicyclists.

Cover photograph and VRSM (Virtual Reality Imaging) Computer Image by SEH courtesy of Short Elliott Hendrickson, Inc., St. Paul, Minnesota.

PLANNING REPORT NUMBER 43

**A REGIONAL BICYCLE AND PEDESTRIAN FACILITIES SYSTEM PLAN
FOR SOUTHEASTERN WISCONSIN: 2010**

Prepared by the
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The preparation of this publication was financed in part through planning funds provided by the Wisconsin Department of Transportation and the U. S. Department of Transportation, Federal Highway and Federal Transit Administrations.

December 1994

Inside Region \$10.00
Outside Region \$20.00

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December 21, 1994

STATEMENT OF THE CHAIRMAN

This report documents the first regional bicycle and pedestrian facilities system plan prepared for Southeastern Wisconsin. The recommended system is intended to encourage increased bicycle and pedestrian travel as alternatives to travel by automobile within the Region.

The plan includes a proposed regional bicycle-way system designed to provide connections between the Kenosha, Milwaukee, and Racine urbanized areas and between incorporated areas with a population of 5,000 or more located outside those urbanized areas. Bicycle ways proposed under adopted county park and open space plans, which are primarily off-street ways located in natural resource and utility corridors, served as the basis for the design of the regional bicycle-way system. The plan also includes a recommended network of bicycle ways for each of the three urbanized areas of the Region to serve major activity centers and transit stations within those areas. The recommended network of bicycle ways for the three urbanized areas is more dense than the recommended regional network of bicycle ways because of the greater concentrations of population, activity centers, and potential bicycle travel within the urbanized areas.

The pedestrian facilities element of the plan recommends that the various units and agencies of government responsible for the construction and maintenance of pedestrian facilities within the Region adopt and follow certain recommended policies and guidelines for the development of those facilities. Those policies and guidelines which are set forth herein are designed to facilitate safe and efficient pedestrian travel within the Region.

The regional bicycle and pedestrian facilities system plan thus seeks to facilitate additional trip making in these modes by providing a network of bicycle and pedestrian ways throughout the Region as an element of a balanced, multimodal transportation system, particularly in the urbanized areas of the Region. The plan also serves to provide recreational and resource-protection opportunities through the provision of a recommended network of bicycle and pedestrian ways within parkways and other natural resource corridors.

Respectfully submitted,



David B. Falstad
Chairman

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TABLE OF CONTENTS

	Page		Page
Chapter I—INTRODUCTION	1	Chapter IV—EXISTING	
Legislative Context	1	BICYCLE AND PEDESTRIAN	
Public Participation	2	PLANS AND POLICIES	29
Report Format	2	Introduction	29
Chapter II—BASIC CONCEPTS		Adopted Plans Calling for the	
AND PRINCIPLES	3	Provision of Bicycle Facilities	29
Introduction	3	Kenosha County	29
Scope of the Bicycle and Pedestrian		Milwaukee County	31
Facilities Plan Element	3	Ozaukee County	32
Basic Concepts	4	Racine County	32
Bicycle and Pedestrian Facilities	4	Walworth County	33
Trip Purposes	5	Washington County	33
Travel Distance	6	Waukesha County	34
User Groups	7	Existing Government	
Pedestrian and Bicycle Safety	7	Activities Affecting the	
Principles Guiding Planning for		Provision of Bicycle Facilities	36
Bicycle and Pedestrian Facilities	8	Adopted Plans Calling for the	
Planning Process	8	Provision of Pedestrian Facilities	37
Formulation of Objectives		Existing Government	
and Standards	8	Activities Affecting the	
Inventory and Analysis	9	Provision of Pedestrian Facilities	39
Plan Design	9	Summary and Conclusions	41
Development of Recommended		Chapter V—BICYCLE AND	
Plan Implementation Measures	10	PEDESTRIAN SAFETY	
Summary	10	AND OPERATIONAL	
Chapter III—EXISTING		CONSIDERATIONS	53
BICYCLE AND PEDESTRIAN		Introduction	53
FACILITIES AND SYSTEMS	15	Existing Bicycle Operational	
Introduction	15	and Safety Considerations	53
Bicycle Facilities	15	State Statutes Affecting	
Existing Bicycle Ways	15	Bicycle Operation	53
Off-Street Bicycle Paths	15	Local Government Regulations	
Bicycle Paths Located within		Affecting Bicycle Operation	55
Street Rights-of-Way	16	Collisions Involving Bicyclists	55
On-Street Bicycle Lanes	17	Existing Bicycle-Safety Programs	58
On-Street Bicycle Routes	17	Existing Pedestrian Operational	
Bicycle Systems Consisting of		and Safety Considerations	60
More than One Facility Type	17	The Americans with	
Bicycle Access to Transit	18	Disabilities Act	60
Bicycle Touring Routes	20	State Statutes	
Pedestrian Facilities	20	Affecting Pedestrians	60
Sidewalk Inventory	20	Local Government Regulations	
Pedestrian Access to Transit	20	Affecting Pedestrians	61
Existing Hiking Trails	25	Collisions Involving Pedestrians	61
Summary	25	Existing Pedestrian-Safety	
		Programs	64

	Page		Page
Summary	65	Grade	81
State and Local Regulations		Sight Distance	81
Affecting Bicyclists		Horizontal and	
and Pedestrians	65	Vertical Clearances	81
Bicycle-Motor Vehicle		Horizontal Curves	81
and Pedestrian-Motor		Horizontal Alignment	82
Vehicle Collisions	65	Bridges	82
Existing Bicycle- and		Bicycle Bridges	82
Pedestrian-Safety Programs	66	At-Grade Railway Crossings	82
Chapter VI—OBJECTIVES,		Lighting	82
PRINCIPLES, STANDARDS,		Overpasses	82
AND DESIGN GUIDELINES	67	Driveway Approaches	82
Introduction	67	Signing and Marking	82
Definitions	67	Bicycle-Way Identification	83
Objectives, Principles,		Maintenance	83
and Standards	67	Pavement Surfaces	83
Design Guidelines	71	Removal of Debris	83
Guidelines for Bicycle Facilities	71	Snow and Ice Removal	83
Planning Guidelines	71	Bicycle Parking	83
Introduction	71	Location	83
Arterial Streets and Highways	72	Accessibility	83
Land Access and		Security	83
Collector Streets	73	Bicycle Lockers	83
Bicycle Access within and		Usability	83
between Neighborhoods	73	Ease of Operation	83
Bicycle-Way Types and Roadway		Protection from Motor Vehicles	83
Improvements to Accommodate		Lighting	83
Bicycle Travel	73	Guidelines for	
Shared Roadways	73	Pedestrian Facilities	83
Bicycle Lanes	73	The Americans with	
Transit/Bicycle Lanes	74	Disabilities Act	83
Shoulder Bicycle Ways	74	Sidewalk Installation Guidelines	83
Bicycle Paths	74	Width	84
Intersections	78	Separation from	
Introduction	78	Motor-Vehicle Traffic	84
Signing and		Curb Ramps	84
Pavement Markings	78	Surfacing	84
Intersections Involving Exclusive		Longitudinal Slope	
Right-Turn Lanes	79	and Cross-Slope	84
Bicycle-Path-and-Roadway		Horizontal and Vertical	
Intersections	79	Clearances	84
Signal Timing	79	Amenities	84
Traffic Detectors	80	Lighting	85
Surfacing	80	Street Crossings	85
Pavement Surface	80	Signal Timing	85
Drainage Grates and		Crossing Orientation	85
Utility Covers	81	Right Turns on Red	85
Rumble Strips	81	Refuge Islands and Medians	85
Raised Pavement Markings	81	Pedestrian-Actuated Controls	85
Bicycle-Path Surfacing	81	Crosswalks	85
Design Guidelines	81	Crosswalk Width	86
Design Speed	81	Crosswalk Markings	86

	Page		Page
Sight Distance	86	Chapter VIII—FINAL	
Stop Lines	86	RECOMMENDED PLAN,	
Mid-Block Crossings	86	PLAN ADOPTION, AND	
Traffic Control Devices	86	PLAN IMPLEMENTATION	107
Traffic Controls for School Areas	86	Introduction	107
Maintenance	87	Public Reaction to	
Guidelines for Shared Bicycle		the Preliminary Plan	107
and Pedestrian Facilities	87	Public Hearing Comments	
Joint Sidewalk Use	87	and Correspondence	108
Shared Use of Bicycle and		Comments Regarding the	
Pedestrian Paths	88	Overall Plan	108
Guidelines for Street and Site		Comments Regarding Specific	
Design Measures to Facilitate		Off-Street Bicycle and	
Bicycle and Pedestrian Travel	88	Pedestrian Ways	108
Street Design	88	Comments Regarding Specific	
Site Design	88	On-Street Bicycle Ways	108
Guidelines for Bicycle		Advisory Committee	
and Pedestrian Access		Response to Public Comment	
to Public Transit	89	on the Preliminary Plan	109
Pedestrian Access to Transit	89	Kenosha County	110
Bicycle Access to Transit	89	Milwaukee County	111
Building Location and Orientation	91	Ozaukee County	111
Passenger Shelters	91	Racine County	112
		Walworth County	112
		Waukesha County	112
Chapter VII—PRELIMINARY		Final Recommended Bicycle and	
RECOMMENDED BICYCLE		Pedestrian Facilities System Plan	112
AND PEDESTRIAN		Final Recommended	
FACILITIES PLAN	93	Bicycle-Way System Plan	112
Introduction	93	Jurisdictional Responsibility	117
Plan Structure	94	On-Street Bicycle Ways	117
Preliminary Recommended		Off-Street Bicycle Ways	119
Regional Bicycle-Way System		Bicycle Accommodation	
Plan for Southeastern Wisconsin	95	on Arterial Streets and	
Preliminary Recommended		Highways Not Designated	
Bicycle-Way System Plan		as Bicycle Ways	130
for the Kenosha, Milwaukee,		Final Recommended	
and Racine Planning Areas	98	Pedestrian-Way System Plan	132
Preliminary Recommended		Plan Costs and Revenues	132
Bicycle-Way System Plan for the		Bicycle-Way System	132
Kenosha Planning Area	98	Bicycle Accommodation	
Preliminary Recommended		on Arterial Streets and	
Bicycle-Way System Plan for the		Highways Not Designated	
Milwaukee Planning Area	100	as Bicycle Ways	135
Preliminary Recommended		Pedestrian-Way System	135
Bicycle-Way System Plan for the		Existing Funding Programs	
Racine Planning Area	102	and Revenues	136
Evaluation of Recommended		Existing Funding Programs	
Planned Bicycle Ways	102	Administered by the	
Bicycle Accommodation on		Wisconsin Department of	
Arterial Streets and Highways		Transportation for Bicycle	
Not Designated as Bicycle Ways	104	and Pedestrian Projects	136
Recommended Pedestrian			
Facilities Plan	104		

	Page		Page
Existing Funding Programs		Federal-Level Agencies	147
Administered by the		Summary	147
Wisconsin Department of		Bicycle System Plan	147
Natural Resources for Bicycle		Bicycle Accommodation	
and Pedestrian Projects	137	on Arterial Streets and	
Proposed Funding Programs for		Highways Not Designated	
Bicycle and Pedestrian Projects	137	as Bicycle Ways	148
Recommendations	138	Pedestrian-Way System	148
Plan Adoption	139	Recommendations for Funding	
Local- and County-Level Agencies	139	Financial Shortfall Attendant	
State-Level Agencies	139	to Full Plan Implementation	148
Federal-Level Agencies	140	Plan Adoption and	
Subsequent Adjustment		Implementation	149
of the Plan	140		
Plan Implementation	140	Chapter IX—SUMMARY	151
Additional Planning Studies Related		Introduction	151
to Bicycle and Pedestrian Travel	140	Public Participation	151
Local-Level Agencies	140	Basic Concepts	151
County-Level Agencies	141	Recommended Bicycle-Way System	
State-Level Agencies	141	Plan for Southeastern Wisconsin	152
Design, Construction, and		The Recommended Regional	
Maintenance of Bicycle		Bicycle-Way System	152
and Pedestrian Facilities	143	The Recommended Bicycle-Way	
Local- and County-Level		Systems for the Kenosha,	
Agencies	143	Milwaukee, and Racine	
State-Level Agencies	145	Planning Areas	153
Provision of Support Facilities	145	Kenosha Area	153
Local-Level Agencies	145	Milwaukee Area	153
State-Level Agencies	145	Racine Area	154
Employers	145	Bicycle Accommodation	
Bicycle and Pedestrian Safety,		on Arterial Streets and	
Educational, and Public		Highways Not Designated	
Informational Materials		as Bicycle Ways	154
and Programs	145	Recommended Pedestrian Facilities	
Local- and County-Level		Plan for Southeastern Wisconsin	154
Agencies	145	Community and	
State-Level Agencies	146	Neighborhood Plans	155
Federal-Level Agencies	147	Other Plan Recommendations	155
Financial and		Plan Costs and Revenues	156
Technical Assistance	147	Plan Refinement, Adoption,	
State-Level Agencies	147	and Implementation	157

LIST OF APPENDICES

Appendix		Page
A	Existing and Planned Bicycle Ways in the Region by County Prior to Preparation of the Regional Bicycle and Pedestrian Facilities System Plan: 1993	161
	Map A-1 Existing and Planned Bicycle Ways in Kenosha County: 1993	162
	Map A-2 Existing and Planned Bicycle Ways in Milwaukee County: 1993	163

Map A-3	Existing and Planned Bicycle Ways in Ozaukee County: 1993	164
Map A-4	Existing and Planned Bicycle Ways in Racine County: 1993	165
Map A-5	Existing and Planned Bicycle Ways in Walworth County: 1993	166
Map A-6	Existing and Planned Bicycle Ways in Washington County: 1993	167
Map A-7	Existing and Planned Bicycle Ways in Waukesha County: 1993	168
B	Statistics on Reported Bicycle-Motor Vehicle and Pedestrian-Motor Vehicle Collisions Occurring within the Region by County: 1991 through 1993	169
Table B-1	Summary of Reported Bicycle-Motor Vehicle Collisions for Municipalities in Kenosha County: 1991 through 1993	169
Table B-2	Summary of Reported Bicycle-Motor Vehicle Collisions for Municipalities in Milwaukee County: 1991 through 1993	170
Table B-3	Summary of Reported Bicycle-Motor Vehicle Collisions for Municipalities in Ozaukee County: 1991 through 1993	171
Table B-4	Summary of Reported Bicycle-Motor Vehicle Collisions for Municipalities in Racine County: 1991 through 1993	172
Table B-5	Summary of Reported Bicycle-Motor Vehicle Collisions for Municipalities in Walworth County: 1991 through 1993	173
Table B-6	Summary of Reported Bicycle-Motor Vehicle Collisions for Municipalities in Washington County: 1991 through 1993	174
Table B-7	Summary of Reported Bicycle-Motor Vehicle Collisions for Municipalities in Waukesha County: 1991 through 1993	175
Table B-8	Summary of Reported Pedestrian-Motor Vehicle Collisions for Municipalities in Kenosha County: 1991 through 1993	176
Table B-9	Summary of Reported Pedestrian-Motor Vehicle Collisions for Municipalities in Milwaukee County: 1991 through 1993	177
Table B-10	Summary of Reported Pedestrian-Motor Vehicle Collisions for Municipalities in Ozaukee County: 1991 through 1993	178
Table B-11	Summary of Reported Pedestrian-Motor Vehicle Collisions for Municipalities in Racine County: 1991 through 1993	179
Table B-12	Summary of Reported Pedestrian-Motor Vehicle Collisions for Municipalities in Walworth County: 1991 through 1993	180
Table B-13	Summary of Reported Pedestrian-Motor Vehicle Collisions for Municipalities in Washington County: 1991 through 1993	181
Table B-14	Summary of Reported Pedestrian-Motor Vehicle Collisions for Municipalities in Waukesha County: 1991 through 1993	182

LIST OF TABLES

Chapter III

1	Availability of Bicycle Parking and Bicycle-Way Accessibility to Existing Transit Stations Serving Rapid and Express Transit Routes: 1993	19
2	Analysis of Sidewalks along Standard Arterial Streets and Highways in the Kenosha, Milwaukee, and Racine Bicycle and Pedestrian Facilities Planning Areas: 1990	25
3	Pedestrian Accessibility to Existing Transit Stations Serving Rapid and Express Transit Routes: 1993	26

Chapter IV

4	Sidewalk Requirements in County and Local Land Subdivision Control Ordinances in the Southeastern Wisconsin Region: 1985	42
5	Miles of Existing and Planned Bicycle Ways to Be Provided in Accordance with Adopted County and Local Plans: 1993	46

Chapter V

6	Types of Injuries Sustained by Bicyclists Involved in Reported Bicycle-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	57
7	Locations and Types of Reported Bicycle-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	57
8	Age and Sex of Bicyclists Involved in Reported Bicycle-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	58
9	Age of Drivers Involved in Reported Bicycle-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	58
10	Age of Drinking Drivers and Drinking Bicyclists Involved in Reported Bicycle-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	59
11	Types of Injuries Sustained by Pedestrians Involved in Reported Pedestrian-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	62
12	Locations and Types of Reported Pedestrian-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	62
13	Age and Sex of Pedestrians Involved in Reported Pedestrian-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	63
14	Age of Drivers Involved in Reported Pedestrian-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	63
15	Age of Drinking Drivers and Drinking Pedestrians Involved in Reported Pedestrian-Motor Vehicle Collisions in the Southeastern Wisconsin Region: 1991 through 1993	64

Chapter VI

16	Design Capacities for Selected Street Cross-Sections	72
17	Recommendations for Provision of Sidewalks in Areas of Existing or Planned Urban Development	72

Chapter VII

18	Number of Bicycle and Pedestrian Trips to Work for Selected Urbanized Areas as Reported by the U. S. Bureau of the Census: 1990	94
19	Number of Bicycle and Pedestrian Trips to Work for the Kenosha, Milwaukee, and Racine Urbanized Areas as Determined by the Regional Travel Survey: 1991	94

Chapter VIII

20	Miles of Bicycle Ways to Be Provided in Accordance with the Final Recommended Regional Bicycle-Way System Plan	117
21	Miles of 1993 Existing and 2010 Proposed Bicycle Ways to Be Provided in Each County in Accordance with the Final Recommended Regional Bicycle-Way System Plan	118

Table		Page
22	Miles of 1993 Existing and 2010 Proposed Bicycle Ways to Be Provided in the Kenosha, Milwaukee, and Racine Planning Areas and in Remainder of Region in Accordance with the Final Recommended Regional Bicycle-Way System Plan	119
23	Recommended Responsibility for Trail Development in Natural Resource or Utility Corridors in the Southeastern Wisconsin Region in Accordance with Adopted County Park and Open Space Plans	128
24	Cost Estimate for Constructing the Final Recommended Bicycle-Way System in Southeastern Wisconsin: 1995-2010	133
25	Summary of Recommended Implementation Measures Related to the Year 2010 Bicycle and Pedestrian Facilities System Plan	142

LIST OF FIGURES

Figure		Page
Chapter II		
1	Distribution of Trip Lengths for Work Trips Made by Bicycle on an Average Weekday in Southeastern Wisconsin: 1991	6
2	Distribution of Trip Lengths for Work Trips Made by Walking on an Average Weekday in Southeastern Wisconsin: 1991	6
Chapter IV		
3	Milwaukee Skywalk System: 1989	38
Chapter VI		
4	Desirable Cross-Sections for Roadways with Wide Outside Travel or Curb Lanes	76
5	Desirable Cross-Sections for Streets and Highways with Bicycle Lanes	76
6	Desirable Two-Lane Rural Arterial Cross-Section: Shoulder Bicycle Way	77
7	Desirable Two-Way Bicycle-Path Cross-Section: Paved Surface outside Street Right-of-Way	77
8	Desirable Cross-Sections for Bicycle Paths Located within a Street or Highway Right-of-Way	77
9	Bicycle Turning Movements	78
10	Typical Pavement Markings for Streets Having Bicycle Lanes and No Turning Lanes	79
11	Typical Pavement Markings for Streets Having Bicycle Lanes and Right-Turn Lanes	80
12	Widening of Shoulders to Accommodate Right-Angle Crossing of Railway Tracks	82
13	Guidelines for Crosswalk Installation at Uncontrolled Intersections and Mid-Block Crossings	86
14	Examples of Sidewalk Extensions to Improve Pedestrian Visibility	87
15	Selected Traffic-Calming Techniques	89
16	Examples of Site Designs Which Facilitate Bicycle and Pedestrian Travel	90

LIST OF MAPS

Map		Page
Chapter II		
1	Comparison of the 1990 Kenosha Urbanized Area Boundary and the 2010 Kenosha Bicycle and Pedestrian Facilities Planning Area Boundary	11
2	Comparison of the 1990 Milwaukee Urbanized Area Boundary and the 2010 Milwaukee Bicycle and Pedestrian Facilities Planning Area Boundary	12
3	Comparison of the 1990 Racine Urbanized Area Boundary and the 2010 Racine Bicycle and Pedestrian Facilities Planning Area Boundary	13
Chapter III		
4	Recommended On-Street Bicycle Touring Routes in Southeastern Wisconsin as Depicted on the Wisconsin Bicycle Map: 1993	21
5	Location of Sidewalks along Arterial Streets and Highways in the Kenosha Bicycle and Pedestrian Facilities Planning Area: 1990	22
6	Location of Sidewalks along Arterial Streets and Highways in the Milwaukee Bicycle and Pedestrian Facilities Planning Area: 1990	23
7	Location of Sidewalks along Arterial Streets and Highways in the Racine Bicycle and Pedestrian Facilities Planning Area: 1990	24
Chapter IV		
8	Selected Existing and Planned Bicycle and Hiking Trails in Southeastern Wisconsin: 1993	30
9	Location of the Ice Age Trail in the Southeastern Wisconsin Region: 1993	40
10	Existing and Planned Bicycle Ways in the Kenosha Bicycle and Pedestrian Facilities Planning Area: 1993	47
11	Existing and Planned Bicycle Ways in the Milwaukee Bicycle and Pedestrian Facilities Planning Area: 1993	48
12	Existing and Planned Bicycle Ways in the Racine Bicycle and Pedestrian Facilities Planning Area: 1993	50
Chapter V		
13	Freeways and Expressways in Southeastern Wisconsin Where Bicycle and Pedestrian Travel is Prohibited: 1994	54
Chapter VII		
14	Preliminary Recommended Regional Bicycle-Way System Plan, Excluding Kenosha, Milwaukee, and Racine Planning Areas: 2010	96
15	Preliminary Recommended Bicycle-Way System Plan for the Kenosha Bicycle and Pedestrian Facilities Planning Area: 2010	99
16	Preliminary Recommended Bicycle-Way System Plan for the Milwaukee Bicycle and Pedestrian Facilities Planning Area: 2010	101
17	Preliminary Recommended Bicycle-Way System Plan for the Racine Bicycle and Pedestrian Facilities Planning Area: 2010	103
Chapter VIII		
18	Final Recommended Bicycle-Way System Plan for the Southeastern Wisconsin Region outside Kenosha, Milwaukee, and Racine Planning Areas, But Including Major Routes through Those Areas: 2010	113

Map		Page
19	Final Recommended Bicycle-Way System Plan for the Kenosha Bicycle and Pedestrian Facilities Planning Area: 2010	114
20	Final Recommended Bicycle-Way System Plan for the Milwaukee Bicycle and Pedestrian Facilities Planning Area: 2010	115
21	Final Recommended Bicycle-Way System Plan for the Racine Bicycle and Pedestrian Facilities Planning Area: 2010	116
22	Levels of Government Having Jurisdiction over Existing On-Street Bicycle Ways in Southeastern Wisconsin and Their Associated Streets and Highways: 1993	120
23	Levels of Government Recommended to Have Jurisdiction over Streets and Highways Having a Recommended Bicycle Way in Kenosha County: 2010	121
24	Levels of Government Recommended to Have Jurisdiction over Streets and Highways Having a Recommended Bicycle Way in Milwaukee County: 2010	122
25	Levels of Government Recommended to Have Jurisdiction over Streets and Highways Having a Recommended Bicycle Way in Ozaukee County: 2010	123
26	Levels of Government Recommended to Have Jurisdiction over Streets and Highways Having a Recommended Bicycle Way in Racine County: 2010	124
27	Levels of Government Recommended to Have Jurisdiction over Streets and Highways Having a Recommended Bicycle Way in Walworth County: 2010	125
28	Levels of Government Recommended to Have Jurisdiction over Streets and Highways Having a Recommended Bicycle Way in Washington County: 2010	126
29	Levels of Government Recommended to Have Jurisdiction over Streets and Highways Having a Recommended Bicycle Way in Waukesha County: 2010	127
30	Levels of Government Having and Recommended to Have Jurisdiction over Existing and Recommended Off-Street Bicycle Ways in Southeastern Wisconsin: 1993 and 2010	129
31	Proposed Additions to and Deletions from the Off-Street System of Bicycle and Pedestrian Ways Included in the Adopted County Park and Open Space Plans: 2010	131

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Chapter I

INTRODUCTION

The Southeastern Wisconsin Regional Planning Commission (SEWRPC) is charged by law with the duty of preparing and adopting a comprehensive, long-range plan for the physical development of the seven-county Southeastern Wisconsin Region. Two key components of the comprehensive plan are a land use plan and a transportation system plan. The first regional land use and transportation system plan for the Region was adopted in 1966.¹ A second-generation regional land use and transportation system plan was adopted in 1977-1978.² In 1992, the Commission adopted a third-generation regional land use plan.³ That plan provides the basis for an accompanying third-generation regional transportation system plan.⁴

Significant changes have occurred in Federal transportation policy since the adoption of the second-generation transportation system plan. The most notable of these changes are reflected in the Federal Clean Air Act Amendments of 1990 and the Federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Both pieces of legislation emphasize the importance of

providing alternatives to single-occupancy-vehicle travel. ISTEA specifically requires that long-range transportation system plans be prepared and adopted for metropolitan areas; that such plans be fiscally constrained; and that such plans include provisions for the development of pedestrian and bicycle transportation facilities. In response to the new Federal requirements, the third-generation transportation system plan for the Southeastern Wisconsin Region includes a bicycle and pedestrian element. That plan element is documented in this report.

LEGISLATIVE CONTEXT

The Clean Air Act Amendments of 1990 specify ambient air quality standards, particularly for ozone-forming pollutants, and also specify steps that must be taken to decrease these pollutants in so-called "nonattainment areas" where pollution levels exceed the Federal air quality standards. Nonattainment areas for ozone and other pollutants are categorized by the Federal government on the basis of the severity of the air quality problem. Six of the seven counties in the Southeastern Wisconsin Region—Kenosha, Milwaukee, Ozaukee, Racine, Washington, and Waukesha—are categorized as having a "severe" ozone pollution problem. The seventh county, Walworth, is classified as having a "marginal" ozone pollution problem.

By November 1994, the State of Wisconsin must submit to the U. S. Environmental Protection Agency a State Implementation Plan describing the transportation control measures that will be used to achieve and maintain the clean air standards required by the new legislation. Transportation control measures that must be considered when formulating the State Implementation Plan include work-trip-reduction programs; the adoption of parking and pricing policies to make single-occupancy-vehicle travel less attractive; the adoption of land use and urban design practices that may be expected to reduce sprawl and encourage more compact land use development patterns that can be more readily served by transit, bicycle, and pedestrian modes of travel; and the promotion of bicycle and pedestrian travel as an alternative to single-occupancy-vehicle travel.

¹SEWRPC Planning Report No. 7, Land Use-Transportation Study, Volume One, Inventory Findings: 1963, May 1965; Volume Two, Forecasts and Alternative Plans: 1990, June 1966; and Volume Three, Recommended Regional Land Use and Transportation Plans: 1990, November 1966.

²SEWRPC Planning Report No. 25, A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin—2000, Volume One, Inventory Findings, April 1975; and Volume Two, Alternative and Recommended Plans, May 1978.

³SEWRPC Planning Report No. 40, A Regional Land Use Plan for Southeastern Wisconsin—2010, January 1992.

⁴SEWRPC Planning Report No. 41, A Regional Transportation System Plan for Southeastern Wisconsin: 2010, December 1994.

The Intermodal Surface Transportation Efficiency Act of 1991 reinforces the national policies for achieving and maintaining clean air that are set forth in the 1990 Clean Air Act Amendments. The development of the regional transportation system plan for Federally designated air quality non-attainment areas must be coordinated with the development of the State Implementation Plan, and any transportation control measures identified in the State plan as being necessary to achieve air quality standards must be incorporated into the regional transportation system plan. Transportation control measures implemented to help meet air quality standards are specifically identified as eligible for funding under ISTEA. Policies and facilities to promote increased bicycle and pedestrian travel are recognized as potential transportation control measures that may serve to improve air quality.

ISTEA also strengthens the Federal commitment to areawide transportation planning and programming. Federal law, since 1962, has required that transportation planning for urbanized areas be carried out on an areawide basis in a comprehensive, cooperative, and continuing manner. The Regional Planning Commission, since 1960, has conducted areawide transportation planning which fully meets these original Federal requirements, as well as subsequent new requirements. Moreover, the Commission's areawide transportation planning was initiated prior to Federal requirements in response to local concerns and interests and pursuant to State statutes.

ISTEA includes the renewal of a Federal commitment to areawide transportation planning, and adds several new Federal requirements with respect to areawide transportation. The Commission's continuing areawide transportation planning program is intended to meet the renewed and new Federal requirements. The bicycle and pedestrian facilities system plan documented in this report has been prepared, in part, to meet the new Federal requirements.

PUBLIC PARTICIPATION

This planning process was conducted under the guidance of a Technical and Citizen Advisory Committee on Regional Bicycle and Pedestrian Facilities System Planning established by the Regional Planning Commission. The Committee consists of representatives from bicycle and pedestrian advocacy groups, from environmental groups, and from governmental agencies with experience and staff expertise in the fields of transportation planning and engineering, public

safety, and recreation. A complete membership list of the Technical and Citizen Advisory Committee is provided on the inside front cover of this report.

In addition to the Advisory Committee, public participation in the planning process was achieved through a series of informational meetings held with bicycle advocates and other interested members of the public. These meetings were intended to provide an opportunity for the public to become familiar with the plan as it was being prepared and to allow individuals and groups to affect the decision-making process through their comments.

REPORT FORMAT

The bicycle and pedestrian facilities plan is documented in this report, which consists of nine chapters. Following this introductory chapter, Chapter II sets forth the scope of the plan, the basic concepts and principles underlying the preparation of the bicycle and pedestrian facilities plan, and the planning process. Chapter III provides an inventory of existing bicycle and pedestrian facilities within the Region. Chapter IV describes bicycle and pedestrian facilities that have been proposed as part of regional, county, and local planning efforts, and describes government policies affecting the provision of such facilities. Chapter V describes safety and operational considerations affecting pedestrian and bicycle travel. Chapter VI sets forth the objectives, principles, and standards established for preparation of the bicycle and pedestrian facilities system plan, and design guidelines related to bicycle and pedestrian facilities. Chapter VII sets forth the preliminary bicycle facilities system plan and the preliminary pedestrian facilities plan. Chapter VIII describes the final recommended bicycle and pedestrian facilities system plan and identifies those measures necessary to implement the plan. The bicycle facilities plan includes a recommended regional network of bicycle facilities which interconnects the urban centers of the Region and is composed principally of existing bicycle facilities and bicycle facilities recommended as part of adopted park and open space plans; recommended improvements for arterial facilities in each of the Region's three urbanized areas to better accommodate bicycle travel; and a network of bicycle ways at appropriate spacing within the urbanized areas to provide higher-quality facilities for bicycle travel. Chapter IX provides a summary of the plan.

Chapter II

BASIC CONCEPTS AND PRINCIPLES

INTRODUCTION

This chapter describes the basic approach taken in preparing the bicycle and pedestrian facilities element of the regional transportation system plan. Specifically, this chapter identifies the scope of the plan element; sets forth the basic concepts and principles on which the planning process was based; and describes the major steps of the planning process.

SCOPE OF THE BICYCLE AND PEDESTRIAN FACILITIES PLAN ELEMENT

The bicycle and pedestrian facilities system plan documented in this report is one element of the regional transportation system plan. "Transportation system" is defined by the Commission as the functionally related surface transportation facilities and management measures that enable the intraregional and interregional movement of people and goods. The physical components of the regional transportation system include arterial streets and highways, transit facilities, bicycle and pedestrian facilities, and such related terminal facilities as railway yards, seaports, and airports.

The regional transportation system is considered down to, but not including, the neighborhood level or major-activity-center level. As such, the bicycle and pedestrian facilities plan element addresses bicycle and pedestrian travel in relation to the transit system, the arterial street and highway system, and down to but not including the neighborhood units and major activity centers designated by the adopted year 2010 land use plan for the Southeastern Wisconsin Region.

The provision of neighborhood-level bicycle and pedestrian facilities is properly addressed by local units of government through the preparation of neighborhood unit development plans with a bicycle and pedestrian element that supplements the regional plan. Such local plans should provide facilities to accommodate bicycle and pedestrian travel within neighborhoods, providing for convenient travel between residential areas and shopping centers, schools, parks,

and transit stops within or adjacent to the neighborhood; and should also include provisions for bicycle and pedestrian facilities within activity centers. Local plans should also ensure that convenient bicycle and pedestrian access ways across neighborhood boundaries are provided to allow for travel between neighborhoods and to provide access to community-level activity centers.

The Regional Planning Commission has, almost since its inception in 1960, urged local plan commissions to consider the preparation of detailed neighborhood unit development plans as an important means of guiding and shaping urban land use development and redevelopment. The preparation of detailed neighborhood development plans is based on the concept that an urban area should be formed of, and developed in, a number of spatially organized and individually planned cellular units rather than as a single large, formless mass.

The areas in which people seek day-to-day services such as an elementary school, neighborhood park, and neighborhood shopping facilities form the basis of neighborhood delineation. As much as possible, each residential neighborhood should be bounded by arterial streets; major park, parkway, or institutional lands; bodies of water; or other natural or cultural features that serve to clearly define the neighborhood. The internal street pattern should be designed to facilitate circulation within the neighborhood, but to discourage the movement of heavy volumes of motor-vehicle traffic through the neighborhood. Each neighborhood should have ready access to the public transit and arterial street systems and, thereby, to major activity centers.

The plans developed for neighborhoods should be quite specific. Such plans should explicitly depict development patterns to address physical needs such as stormwater drainage, sanitary sewerage, water supply, circulation, and a sound arrangement of compatible land uses. Each neighborhood plan should designate future ultimate land uses, future collector and land access street locations and alignments, lot and block configurations, and the location of bicycle ways and pedestrian ways, including areas

where bicycle ways or pedestrian ways are needed outside of street rights-of-way to provide access to neighborhood activity centers and transit stops or stations, to provide convenient ways across blocks, or to provide for the convenient connection of adjacent subdivisions and cul-de-sac streets.

BASIC CONCEPTS

Currently, bicycle and pedestrian travel accounts for only a small percentage of travel within the Southeastern Wisconsin Region. The comprehensive travel survey conducted by the Commission in October and November of 1991 found that about 3,900, or 0.3 percent, of the total 1.3 million work trips made within the Region on an average weekday in 1991 were made exclusively by bicycle, and about 33,700, or 2.5 percent, of the total work trips were made exclusively by walking. In addition, approximately 58,000 of the estimated 170,000 transit trips made on an average weekday in 1991 in Southeastern Wisconsin required a walk to the transit stop of more than one "city block," while the remaining 112,000 transit users reported a walk of less than one block to the transit stop. Those transit users who walked more than one block walked an average length of about two blocks, or a distance ranging from about 660 to 1,320 feet. Approximately 114,000 of the estimated 170,000 average weekday transit users reported walking less than one block from the transit stop to the trip destination. The approximately 56,000 average weekday transit trips which required a walk from the transit stop to the trip destination of more than one block also resulted in an average length of walk of about two blocks.

The relatively small number of trips currently made by bicycling and walking may be attributed to a number of factors related to individual safety and convenience, including the physical ability to bicycle or walk; the need to transport personal items that cannot be easily carried by a pedestrian or bicyclist; inclement weather; the real or perceived lack of time to bicycle or walk; the real or perceived lack of a safe and secure travel route; lack of bicycling and walking facilities; poorly maintained facilities; the lack of a safe place to store a bicycle at the destination; and, for work trips, the lack of facilities for those who would prefer to shower or change clothes after walking or bicycling and before starting work. Dispersed, low-density land use develop-

ment patterns; zoning practices that segregate residential areas from service, retail, and industrial areas; and auto-oriented site design also serve to discourage bicycle and pedestrian travel.

The regional bicycle and pedestrian plan element is intended to recommend locations and design standards for bicycle and pedestrian facilities in order to remove or minimize existing impediments to bicycle and pedestrian travel related to the lack of facilities such as bicycle ways, walkways, and certain support facilities such as bicycle parking racks and storage lockers. The type and location of bicycle and pedestrian facilities recommended by the plan are dependent upon the type of trip the facilities are intended to serve. The following sections present information regarding types of bicycle and pedestrian facilities, trip purposes, travel distances, and user groups.

Bicycle and Pedestrian Facilities

The term "bicycle way" is defined for regional planning purposes as a generic term that includes any roadway, pathway, or other way that is specifically designated for bicycle travel, including facilities that are designated for exclusive or preferential bicycle travel and facilities that are shared with other travel modes. Facilities intended for exclusive or preferential use by bicycles include bicycle paths and bicycle lanes. Bicycle paths are defined as bicycle ways physically separated from motorized vehicles by open space or barriers. Bicycle paths may be located within the right-of-way of a street or highway, and separated from the roadway by a planting strip or barrier; or may be located in a separate right-of-way or easement along, for example, a river, a utility corridor, or an abandoned railway right-of-way. Bicycle lanes are defined as bicycle ways provided on streets and designated by striping, signing, and other pavement markings for bicycle use. On streets having an urban cross-section, bicycle lanes are typically located adjacent to the outside motor-vehicle travel lanes and to the inside of the parking lanes; on streets having a rural cross-section, bicycle lanes are typically located on the roadway shoulder. A bicycle route is defined as a bicycle way designated with directional and informational markers, and may consist of a combination of bicycle paths, bicycle lanes, and shared roadways; however, the term "bicycle route" will be used in this report to describe a shared roadway signed for bicycle use.

Shared roadways are streets that do not have a designated bicycle lane, but may legally be used for bicycle travel. Special provisions to accommodate bicycle travel, such as extra-wide curb lanes, may be provided on shared roadways. Shared roadways are not considered bicycle ways unless they are signed as bicycle routes. Many streets and highways where bicycling is permitted, including those with wide curb lanes and paved shoulders specifically designed to accommodate bicycling, will not be signed or marked as bicycle ways.

The type of bicycle facility to be provided is dependent upon several factors, including the type of trip the facility is intended to serve; related motor-vehicle speeds and volumes; the number of trucks and transit vehicles using a shared or related roadway; the presence and duration of on-street parking; the number of intersections and commercial driveways; pavement and right-of-way width; shoulder width and surfacing; and the availability of off-street corridors. The type of facility to be provided will also depend on the type of roadway cross-section. Shared roadways, extra-wide curb lanes, and bicycle lanes are generally appropriate for roadways with curb and gutter, while shoulder bicycle ways are appropriate for roadways without curb and gutter. It is also important to provide continuity and consistency in the type of bicycle way provided. For example, the use of short segments of bicycle lanes and bicycle paths on relatively short segments or reaches of the same street should be avoided.

Bicycle facilities other than bicycle ways and roadway improvements include signs and other traffic control devices intended to assist bicyclists, bicycle parking and storage devices, and racks and other devices to transport bicycles on transit vehicles.

Pedestrian facilities include sidewalks and other pedestrian walkways,¹ crosswalks, refuge islands, overpasses and underpasses, and signs and other traffic control devices intended to assist

pedestrians. Facilities intended to assist elderly and disabled pedestrians, such as curb ramps and audible pedestrian signals, are becoming increasingly common as the mobility of persons with disabilities is enhanced and as the number of elderly persons in the community increases. Facilities intended to improve the access of persons with disabilities to public and commercial buildings and services have also increased as government agencies and private companies begin to comply with the requirements of the Federal Americans with Disabilities Act. The Act, which was adopted in 1990, is designed to give Americans with disabilities equal access to jobs, transportation, public facilities, and services. Titles II and III of the Act have implications for the design and construction of pedestrian facilities. Title II of the Act requires that government services, including public transportation, be accessible to persons with disabilities. The transportation provisions of the Act require all new buses to be equipped with wheelchair lifts or ramps. Title III of the Act requires commercial and public buildings, such as office buildings, passenger terminals and stations, stores, and restaurants, to be accessible by persons with disabilities, which necessitates that exterior access routes such as parking spaces and aisles, curb ramps, and walks be of adequate width and surfacing to accommodate persons with disabilities.

Trip Purposes

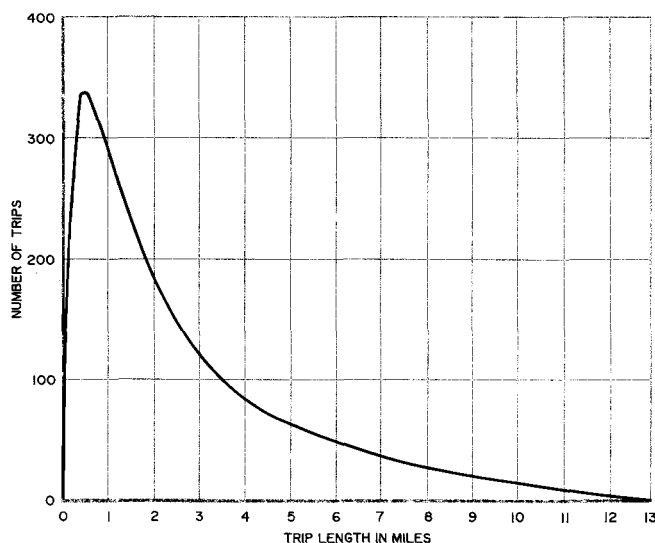
Bicycle riding can serve as both a mode of transportation and as a form of recreation. Recreational bicycle trips are generally taken for the primary purpose of enjoying the trip itself, or to maintain or improve physical fitness. Trip destinations for recreational bicyclists are of secondary importance compared to the enjoyment of the trip. Utilitarian bicycle use includes commuting trips to work or school, shopping trips, and trips to social or recreational events not related to bicycling, where the trip origins and destinations and the trip purpose are of primary importance and the bicycle serves as the vehicle for making the trip. In addition to trips completed entirely by bicycle, both recreational and utilitarian trips may be combined with another mode of transportation, as in the case of trips involving bicycling to or from a transit stop or station.

Quick, direct, and attractive routes are important to utilitarian bicyclists. Bicycle ways

¹For purposes of this report, pedestrian ways located along a roadway are referred to as sidewalks, and those located outside a street right-of-way are referred to as walkways.

Figure 1

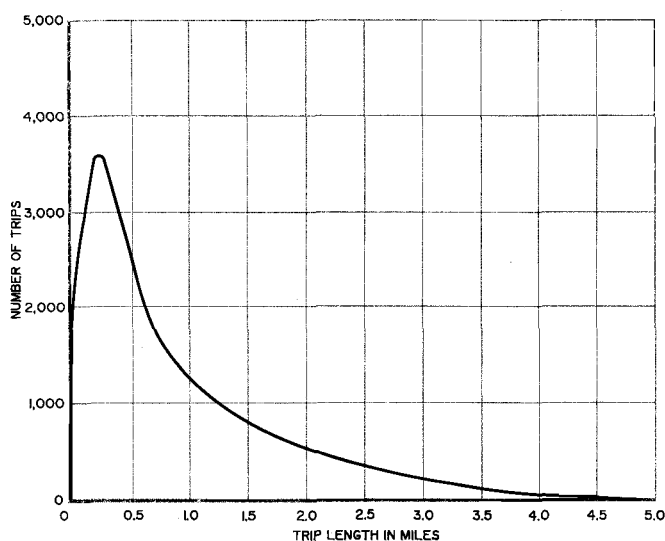
**DISTRIBUTION OF TRIP LENGTHS FOR
WORK TRIPS MADE BY BICYCLE ON AN AVERAGE
WEEKDAY IN SOUTHEASTERN WISCONSIN: 1991**



Source: SEWRPC.

Figure 2

**DISTRIBUTION OF TRIP LENGTHS FOR
WORK TRIPS MADE BY WALKING ON AN AVERAGE
WEEKDAY IN SOUTHEASTERN WISCONSIN: 1991**



Source: SEWRPC.

intended to serve utilitarian trips should therefore provide direct routes and minimize the need to stop at intersections. Frequent stops are a concern not only because they cause delay, but because they require an increased energy expenditure to regain speed.

For utilitarian trips, the existing street system provides the most extensive network of direct travel routes, and serves virtually all origins and destinations. Many land access and collector streets, because of low traffic volumes and speeds, are capable of accommodating bicycle travel with little or no improvements. Arterial streets and highways, particularly those with high-speed traffic or heavy volumes of truck or transit-vehicle traffic, may require improvements such as the provision of wide curb lanes, bicycle lanes, or paved shoulders in order to safely accommodate bicycle travel. In some cases, a separate bicycle path within a highway right-of-way may be needed to safely accommodate bicyclists.

Recreational bicyclists place a priority on routes that are aesthetically pleasing and where motor-vehicle traffic is minimal. Bicycle ways intended to serve such users should therefore be located in areas having a variety of attractive natural

or cultural features. Recreational bicycle ways should be located in off-street corridors or along parkway drives, rustic roads, and streets and highways with low volumes of motor-vehicle traffic. In some cases, a facility may serve both utilitarian and recreational trips.

Like bicycling, walking trips are made for both utilitarian and recreational purposes. In addition to trips completed entirely by walking, many trips combine walking with another mode of transportation, as in the case of trips involving walking to or from a transit stop or station, or from an automobile parking lot to a final destination. The same facilities that serve pedestrians walking for utilitarian purposes would also be expected to serve those walking for recreational purposes.

Travel Distance

Figures 1 and 2 set forth trip length frequency distribution for work trips made by bicycling and walking, respectively, as determined from the data collected in the comprehensive regional travel survey conducted by the Commission in 1991. The average length of bicycle commuting trips was found to be about 2.8 miles each way, while the median length was found to be about 1.7 miles. The average length of pedestrian

commuting trips was found to be about 1.1 miles each way, while the median length was found to be about 0.7 mile. This compares to an average length of about 9.0 miles and a median length of about 5.9 miles for commuting trips made by automobile, and an average length of about 5.9 miles and a median length of about 4.1 miles for commuting trips made by public transit. The average length of commuting trips made by bicycle and pedestrian modes are substantially shorter than those made by both automobile and public transit. The average and median trip lengths for nonwork trips by automobile are 5.3 miles and 2.8 miles, respectively, and for nonwork trips by public transit are 4.2 miles and 2.5 miles, respectively.

Travel distance may be expected to be a major consideration for utilitarian bicycle and pedestrian trips because of the physical effort and the travel time associated with relatively long trips. The potential for bicycle and pedestrian travel for utilitarian purposes is limited by the distance between origins and destinations, and is affected by the density and design of urban development and the proximity of residential areas to activity centers. Areas of concentrated urban development are located within the three urbanized areas of the Region; therefore, recommendations made in the plan for bicycle and pedestrian facilities intended to serve primarily utilitarian trips will be limited to such facilities within the urbanized areas.

User Groups

Bicyclists possess a wide range of abilities and skill levels which influence the type of facility preferred by the bicyclist and the bicyclist's competence to operate on a given facility. The Bicycle Federation of America has developed a classification system for bicyclists based on ability and skill level.

Bicyclists aged 16 or older, who generally hold driver's licenses and would therefore be expected to understand the rules of the road, are divided into two groups under the Bicycle Federation's classification system. Experienced adult riders who bicycle on a frequent and regular basis are classified as "Group A" bicyclists. Group A bicyclists generally prefer to travel on the arterial street system, where they can operate at maximum speed with minimum delay. Casual or new adult and teenage riders, who generally limit their riding to recreational purposes on a

weekly or less frequent basis, are classified as "Group B" bicyclists. Group B bicyclists generally prefer off-street bicycle paths or, if riding on the street system, prefer streets with low traffic volumes and speeds.

Bicyclists under the age of 16 are classified as "Group C" bicyclists. Child bicyclists should not be encouraged to bicycle on arterial or other busy streets because of their unfamiliarity with the rules of the road. Generally, children aged 10 or older are skilled at handling bicycles and are capable of soundly judging motor-vehicle speeds and distances, and may be capable of operating their bicycles on streets with low traffic volumes and speeds. Younger children generally lack the motor and cognitive skills necessary for safe bicycle operation on the street system, and should be encouraged to bicycle on the sidewalk or on off-street bicycle paths.

There is no classification system for pedestrians similar to the system used for bicyclists. When planning for pedestrian facilities, however, care must be taken to properly accommodate pedestrians with special needs such as the elderly, persons with disabilities, and school-age children.

Pedestrian and Bicycle Safety

Safety for all users of the transportation system is an important consideration in the development of the bicycle and pedestrian plan element. The development of safe bicycle and pedestrian facilities, based upon sound planning and design guidelines, is fundamental to assuring the safety of bicyclists, pedestrians, and, to a lesser extent, other users of the transportation system. Chapter VI of this report sets forth standards and design guidelines to assist in the development of safe bicycle and pedestrian facilities.

An increase in the number of trips made by bicycling may be expected to result in a corresponding increase in the number of bicycle-motor vehicle conflicts and accidents due to the traffic hazards associated with on-street bicycle travel. The total separation of bicycle and motor-vehicle traffic would eliminate such conflicts. The provision of totally separated facility networks, however, would be prohibitively costly to construct and maintain, particularly when the cost of constructing lane barriers along arterial streets or obtaining right-of-way for off-street corridors is considered. The construction of lane barriers along arterial streets would, moreover,

create significant operational problems relating to snow removal, street maintenance, and utility construction and maintenance as well as traffic safety hazards at intersections. Unless an off-street bicycle-way network were provided that was extensive enough to serve all potential trip origins and destinations, as the existing street system does, bicyclists could still be expected to use the street system to leave trip origins and access trip destinations not accessible by the off-street bicycle ways.

The existing street system provides the most extensive network of direct travel routes practicable, and serves to connect virtually all trip origins and destinations within the Region. As such, the existing street system must, as a practical matter, form the basis of a comprehensive network of bicycle facilities. Many land access and collector streets, because of low traffic volumes and speeds, are capable of accommodating bicycle travel with little or no improvements. Where possible, off-street bicycle ways should be provided as an alternative to bicycle facilities on arterial streets and highways, particularly those with high-speed traffic or heavy volumes of truck or transit-vehicle traffic. Pedestrian travel can best be accommodated by a network of sidewalks along all arterial and collector streets, and by the provision of sidewalks or off-street pedestrian ways parallel to land access streets.

The provision of bicycle and pedestrian facilities is an important means of enhancing bicycle and pedestrian safety; however, education and enforcement measures intended to avoid the more common types of bicycle and pedestrian accidents are equally important. Chapter V of this report contains a summary of the most common bicycle-motor vehicle and pedestrian-motor vehicle accidents, and Chapter VIII sets forth recommendations for education and enforcement programs to enhance the safety of bicyclists and pedestrians.

PRINCIPLES GUIDING PLANNING FOR BICYCLE AND PEDESTRIAN FACILITIES

The following principles have been developed to guide the preparation of the bicycle and pedestrian facilities element of the regional transportation system plan for Southeastern Wisconsin:

1. Bicycle and pedestrian facilities should be provided to encourage the increased use of bicycle and pedestrian travel modes as an alternative to motor-vehicle travel. As such, the bicycle and pedestrian facilities plan element should seek to remove existing impediments to bicycle and pedestrian travel, rather than to serve the existing or forecast demand for such travel.
2. Separate networks of bicycle ways generally should be provided to serve recreational and utilitarian bicycle travel.
3. Bicycle ways intended for recreational use should generally be located off-street in scenic areas of natural, cultural, or historical interest, and should maximize the use of environmental corridors.
4. Bicycle facilities intended for utilitarian travel should provide direct and continuous routes which minimize delay and maximize safety, and which facilitate convenient bicycle access to activity centers and to transit stops and stations.
5. Pedestrian facilities should provide direct and continuous routes that facilitate safe and convenient pedestrian access to activity centers and to transit stops and stations.
6. Planning for bicycle and pedestrian facilities should be conducted concurrently with land use planning, arterial street and highway system planning, and transit system planning.

PLANNING PROCESS

The bicycle and pedestrian facilities plan element presented in this report was developed through a planning process consisting of the following steps: 1) the formulation of objectives and standards; 2) inventory and analysis; 3) plan design; and 4) the development of recommended plan implementation measures.

Formulation of Objectives and Standards

An objective is defined as a goal or end, the attainment of which plans and policies are directed toward. Planning seeks to provide a rational process for establishing and meeting objectives. The objectives that are chosen guide

the preparation of the plan and, when converted to standards, provide the basis for evaluating the recommended plan.

Formulation of sound objectives is a crucial step in the planning process, because the objectives and supporting standards provide the basis for plan design. In order to be useful in plan design, the objectives must be stated clearly and must be clearly related to system development.

Inventory and Analysis

Reliable planning and engineering data are essential to the formulation of workable plans. Data collected as part of the bicycle and pedestrian planning effort included an inventory of existing and planned bicycle and pedestrian facilities, including bicycle ways, bicycle routes, and support facilities; information affecting bicycle and pedestrian safety and operation, such as the types and locations of bicycle-motor vehicle and pedestrian-motor vehicle accidents and traffic regulations affecting bicyclists and pedestrians; and an inventory of roadway conditions such as traffic volumes and operating speeds, pavement and right-of-way widths, and presence and duration of on-street parking on arterial streets and highways. This information was used to assist in the evaluation of suitable bicycle-way locations and design treatments.

Inventories provide factual information about existing conditions. Analysis of such data is then required in order to identify existing and potential problems and opportunities for the development or enhancement of bicycle and pedestrian facilities.

Plan Design

Plan design, or synthesis, is the crux of the planning process. The best-conceived objectives and the most sophisticated results of data collection and analyses are of little value if they do not ultimately result in a plan that meets system development objectives.

The regional bicycle and pedestrian facilities plan element is intended to assist public officials in making improvements to better accommodate bicycle and pedestrian travel as part of the existing and planned regional transportation system. The bicycle facilities plan includes a recommended regional network of bicycle facilities composed principally of existing bicycle ways and bicycle ways proposed as part of

adopted park and open space plans. Such facilities may be expected to serve both recreational and utilitarian bicyclists. The bicycle facilities plan also recommends design guidelines and cross-sections to accommodate bicycle travel on all arterial streets and highways in the three urbanized areas of the Region, as well as a network of bicycle ways at appropriate spacing in each of the urbanized areas to serve major activity centers and transit stations.

The plan does not propose the creation of two separate networks of bicycle ways on the arterial street and highway system to serve experienced and novice adult utilitarian bicyclists. For planning purposes, it was assumed that an adult bicyclist using an arterial facility will possess the minimum level of proficiency necessary to enable him or her to safely use an on-street bicycle way that is properly designed and maintained. Adult bicyclists who are uncomfortable operating on arterial facilities and child bicyclists are proposed to be accommodated within and between neighborhoods on land access or collector streets or on off-street bicycle ways. Neighborhood bicycle ways should be identified through the preparation of local government bicycle plans. Design guidelines included in this report were developed under this regional planning effort to assist local governments in the preparation of local bicycle plans.

Pedestrian travel is intended to be accommodated by sidewalks along streets and highways in areas of existing or planned urban development based upon the functional classification of the street or highway, adjacent land uses, the density of development, and the probable pattern of pedestrian movement. Pedestrian travel in neighborhoods and activity centers should be accommodated by a network of sidewalks and walkways within neighborhoods and activity centers, and the provision of convenient access points between neighborhoods and activity centers. Because the preparation of detailed development and redevelopment plans for neighborhoods and activity centers is outside the scope of the regional planning effort, design guidelines have been included in this report to assist local governments in the preparation of pedestrian circulation plans for neighborhoods and activity centers.

For plan preparation purposes, a bicycle and pedestrian facilities planning area was deline-

ated based upon the 1990 boundaries of the Kenosha, Milwaukee, and Racine urbanized areas as approved for transportation funding purposes² by the Wisconsin Department of Transportation and the Federal Highway Administration. The bicycle and pedestrian facilities planning areas vary from the 1990 urbanized area boundaries in two ways. The urbanized area boundaries were expanded for bicycle and pedestrian facilities planning purposes to include areas contiguous to the 1990 urbanized areas that are proposed by the adopted regional land use plan to be developed for urban use by the year 2010. The urbanized area boundaries were decreased for purposes of bicycle and pedestrian facilities planning to exclude areas of very-low-density residential development that are located more than five miles from a major activity center.

The limits of the Kenosha, Milwaukee, and Racine bicycle and pedestrian facilities planning areas in relation to the 1990 urbanized areas are shown on Maps 1 through 3. It should be noted

that the delineation of the bicycle and pedestrian facilities planning areas does not change the boundaries of the 1990 urbanized areas in any respect other than for use in this planning effort.

Development of Recommended Plan Implementation Measures

Preparation of a plan is not complete until the measures necessary for its implementation are specified. For the bicycle and pedestrian facilities planning effort, such measures include the roles of the various levels and agencies of government involved in implementing the plan; funds required for the design, construction, and maintenance of bicycle and pedestrian facilities; recommendations regarding education and enforcement programs to counter the most common types of pedestrian and bicycle accidents; recommended zoning ordinance provisions related to bicycle parking requirements; recommendations regarding other government ordinances and policies that would serve to facilitate bicycle and pedestrian travel; and guidelines for the preparation of local bicycle and pedestrian plans.

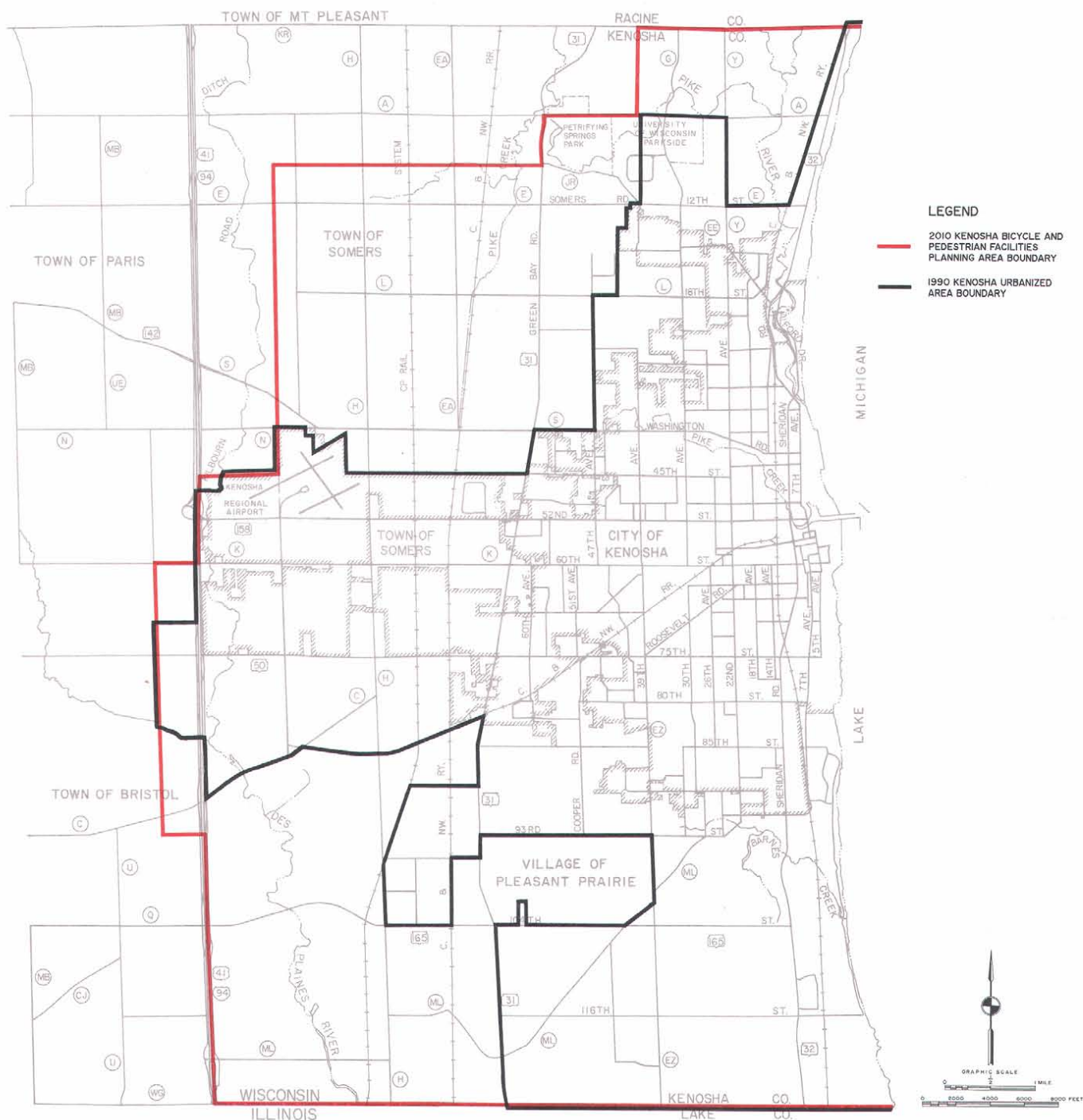
SUMMARY

This chapter has set forth the scope of the bicycle and pedestrian facilities element of the third-generation regional transportation system plan; the concepts and principles underlying the planning process; and the procedural steps followed by the Commission in conducting that process. The plan is designed to assist public officials in making improvements to better accommodate bicycle and pedestrian travel as part of the existing and planned transportation system. The plan addresses bicycle and pedestrian travel in relation to the transit system, the arterial street and highway system, and the major activity centers designated in the regional land use plan for the year 2010.

²Urbanized areas are delineated by the U. S. Bureau of the Census based upon the decennial Census and include a central city and adjacent areas having a combined population of 50,000 or more persons. The adjacent areas are generally contiguous to the central city and have a minimum population density of 1,000 persons per square mile. The urbanized area delineated by the Census Bureau may be modified for transportation funding purposes, with the approval of the State Department of Transportation and Federal Highway Administration, to avoid having small segments of an arterial highway passing in and out of an urbanized area.

Map 1

**COMPARISON OF THE 1990 KENOSHA URBANIZED AREA BOUNDARY AND THE
2010 KENOSHA BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA BOUNDARY**

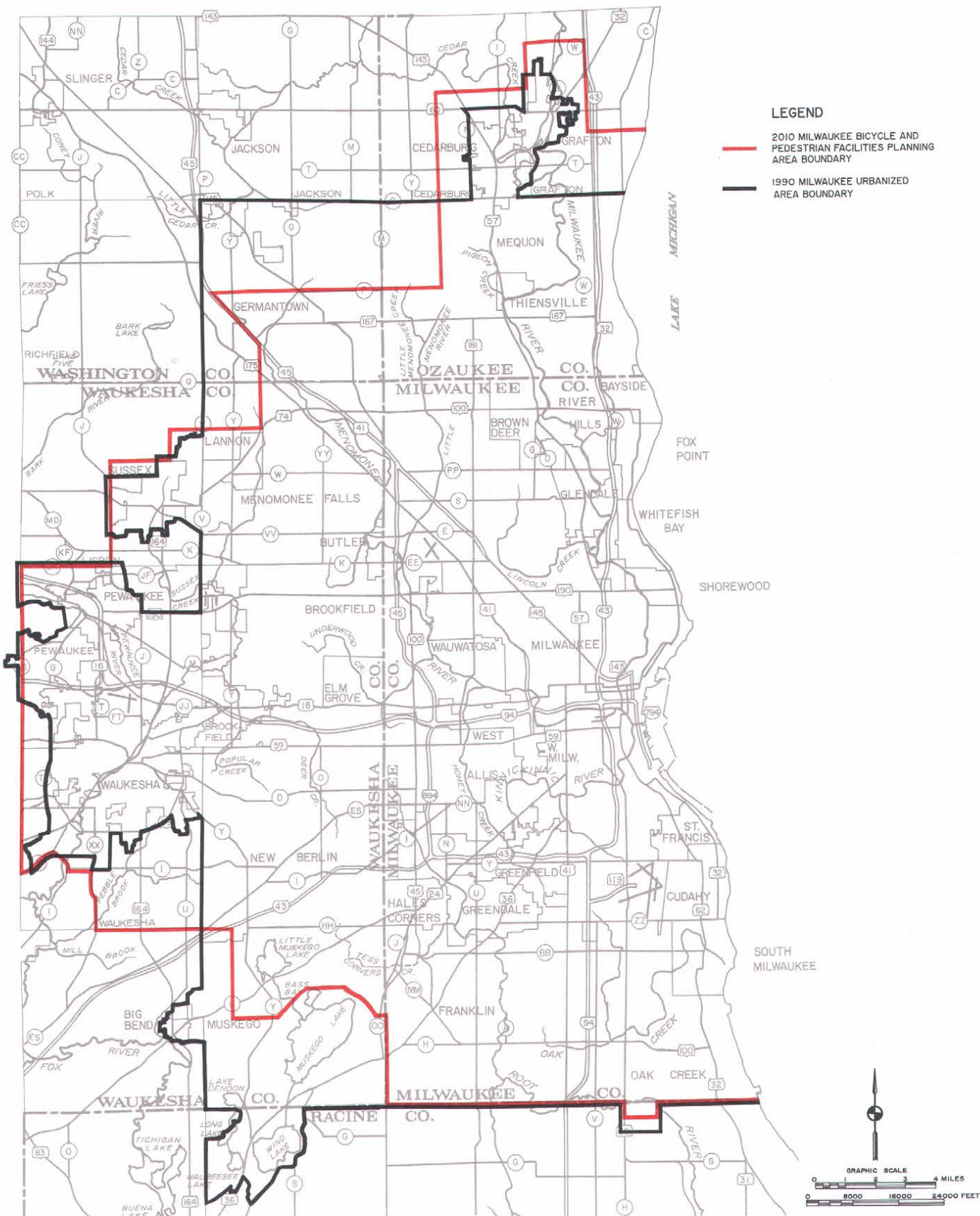


For plan preparation purposes, a bicycle and pedestrian facilities planning area was delineated based upon the 1990 boundaries of the Kenosha urbanized area as approved for transportation funding purposes by the Wisconsin Department of Transportation and the Federal Highway Administration. The bicycle and pedestrian facilities planning area boundaries vary from the 1990 urbanized area boundaries in two ways. The urbanized area boundaries were expanded for bicycle and pedestrian facilities planning purposes to include areas contiguous to the 1990 urbanized area that are proposed by the adopted regional land use plan to be developed for urban use by the year 2010. The urbanized area boundaries were decreased for purposes of bicycle and pedestrian facilities planning to exclude areas of very-low-density residential development that are located more than five miles from a major activity center.

Source: SEWRPC.

Map 2

**COMPARISON OF THE 1990 MILWAUKEE URBANIZED AREA BOUNDARY AND THE
2010 MILWAUKEE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA BOUNDARY**

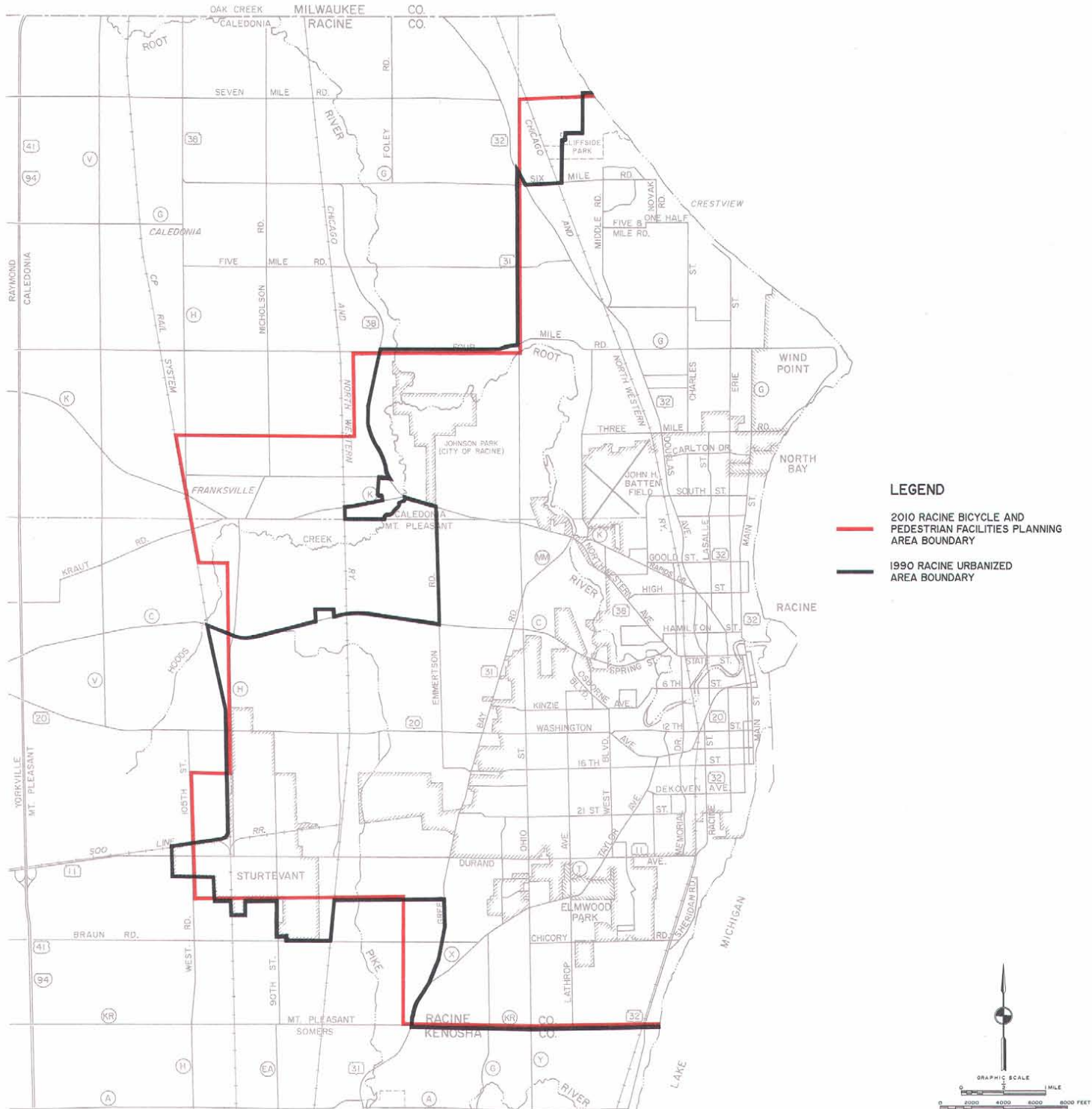


For plan preparation purposes, a bicycle and pedestrian facilities planning area was delineated based upon the 1990 boundaries of the Milwaukee urbanized area as approved for transportation funding purposes by the Wisconsin Department of Transportation and the Federal Highway Administration. The bicycle and pedestrian facilities planning area boundaries vary from the 1990 urbanized area boundaries in two ways. The urbanized area boundaries were expanded for bicycle and pedestrian facilities planning purposes to include areas contiguous to the 1990 urbanized area that are proposed by the adopted regional land use plan to be developed for urban use by the year 2010. The urbanized area boundaries were decreased for purposes of bicycle and pedestrian facilities planning to exclude areas of very-low-density residential development that are located more than five miles from a major activity center.

Source: SEWRPC.

Map 3

COMPARISON OF THE 1990 RACINE URBANIZED AREA BOUNDARY AND THE 2010 RACINE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA BOUNDARY



For plan preparation purposes, a bicycle and pedestrian facilities planning area was delineated based upon the 1990 boundaries of the Racine urbanized area as approved for transportation funding purposes by the Wisconsin Department of Transportation and the Federal Highway Administration. The bicycle and pedestrian facilities planning area boundaries vary from the 1990 urbanized area boundaries in two ways. The urbanized area boundaries were expanded for bicycle and pedestrian facilities planning purposes to include areas contiguous to the 1990 urbanized area that are proposed by the adopted regional land use plan to be developed for urban use by the year 2010. The urbanized area boundaries were decreased for purposes of bicycle and pedestrian facilities planning to exclude areas of very-low-density residential development that are located more than five miles from a major activity center.

Source: SEWRPC.

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Chapter III

EXISTING BICYCLE AND PEDESTRIAN FACILITIES AND SYSTEMS

INTRODUCTION

This chapter presents the findings of an inventory of existing bicycle and pedestrian facilities within the Region. It is important to note that bicycle use can and does legally occur on many public roadways in the Region that are not specifically designated for such use. State law permits bicycle use on all public roadways except expressways and freeways where signs have been posted prohibiting such use and on those roadways where the local governments concerned have specifically acted to prohibit bicycle use. Laws and regulations affecting bicycle operation are described in Chapter V of this report.

The inventory of bicycle facilities presented in this chapter is limited to facilities that are specifically designated for bicycle use, including existing bicycle paths, bicycle lanes, and signed bicycle routes; facilities providing bicycle access to transit stations and vehicles; and identified bicycle touring routes within the Region. Looped recreational trails within public parks or open space sites intended exclusively for recreational use were not included in the inventory, nor were public roadways that were not specifically designed for bicycle use, with the exception of bicycle touring routes identified by the State of Wisconsin.

The inventory of pedestrian facilities included an examination of each arterial street and highway within the Kenosha, Milwaukee, and Racine bicycle and pedestrian facilities planning areas to determine if sidewalks were provided along the facilities involved. Arterial streets and highways that did not have a sidewalk on either one or both sides of the facility were identified. Pedestrian access to transit stations was also inventoried. Lastly, existing hiking trails, with the exception of looped trails within park and open space sites, were inventoried.

BICYCLE FACILITIES

Existing Bicycle Ways

For inventory purposes, existing bicycle ways were grouped by the following four facility types: bicycle paths located outside street rights-of-

way; bicycle paths located within street rights-of-way; bicycle lanes; and bicycle routes. The location of bicycle ways within each of the seven counties in the Region as of December 31, 1993, is depicted on Maps A-1 through A-7 in Appendix A of this report.

Unless otherwise noted, the length of existing bicycle ways is given in route-miles rather than in lane-miles. For bicycle paths, the number of lane-miles will generally be twice the number of route-miles, as bicycle paths normally provide for two directions of travel. For bicycle ways located on two-way streets, the number of lane-miles will normally be approximately twice the number of route-miles, as both sides of the street will normally be signed or marked for bicycle travel. On one-way streets, the number of route-miles will generally be the same as the number of lane-miles.

Off-Street Bicycle Paths: To date, the focus of State, county, and most local government programs in Southeastern Wisconsin has been to provide bicycle ways as part of proposed multiple-use recreational trails intended to accommodate a variety of uses, including bicycling, hiking, cross-country skiing, and—on paved trails—roller-skating and roller-blading. Bicycling is generally the use that dictates the trail design. Trails designed and surfaced to accommodate bicycles, and located outside a street right-of-way, are referred to as “off-street bicycle paths” in this report. This terminology is intended to distinguish such bicycle ways from off-road trails, which are generally used to describe cleared but unsurfaced trails available for mountain biking.

Kenosha County maintains two off-street bicycle paths within the right-of-way of the now-defunct Chicago, North Shore & Milwaukee electric railway. The North Kenosha County Trail is approximately four miles in length and extends from the northern corporate limit of the City of Kenosha to the Kenosha-Racine County line, where the trail connects to the North Shore Trail in Racine County. The South Kenosha County Trail is approximately three miles in length, and extends from the southern corporate limit of the City of Kenosha to the Wisconsin-Illinois state

line, where the trail connects to the North Shore Trail in the State of Illinois.

In Ozaukee County, the City of Mequon and Village of Thiensville have developed an approximately four-mile-long off-street bicycle path located along a former electric interurban railway right-of-way—that of The Milwaukee Electric Railway & Light Company, now defunct—located between Cedarburg Road and the Wisconsin Central railway (former Chicago, Milwaukee, St. Paul & Pacific Railroad Company) right-of-way. The bicycle path extends from County Line Road on the south to Highland Road on the north. The Village of Grafton has developed a one-mile-long off-street bicycle path south of and parallel to Maple Drive from 7th Street west to the corporate limits of the Village. The Village has also completed an approximately one-mile-long off-street bicycle path extending from the intersection of North Street and 11th Avenue north to CTH O, near its intersection with Hickory Street, which provides access to the Village's Meadowbrook Park. Both bicycle paths are located along the former right-of-way of The Milwaukee Electric Railway & Light Company.

The City of Port Washington has developed an off-street bicycle path within the former right-of-way of The Milwaukee Electric Railway & Light Company. The bicycle path extends for about two miles from E. Jackson Street north to the Hales Trail.

Racine County has developed four off-street bicycle paths within former electric interurban railway rights-of-way: the Burlington Trail, the MRK (Milwaukee-Racine-Kenosha) Trail, the North Shore Trail, and the Waterford-Wind Lake Trail. The Burlington Trail extends four miles northward from the City of Burlington along the east side of STH 36 within the former right-of-way of The Milwaukee Electric Railway & Light Company. The North Shore Trail, which is three miles in length, is located in the southeastern corner of Racine County and connects with the North Kenosha County Trail. The bicycle path is located within the former right-of-way of the Chicago, North Shore & Milwaukee electric interurban railway. The MRK (Milwaukee-Racine-Kenosha) Trail is five miles long and is located in the northeastern portion of the County. The County has also completed a five-mile-long Waterford-Wind Lake Trail connecting those two communities. The latter two bicycle paths are

located within the former right-of-way of The Milwaukee Electric Railway & Light Company.

In Washington County, the City of West Bend has constructed an approximately one-mile-long off-street bicycle path along the south side of the Milwaukee River from Indiana Avenue to River Road. The path provides access to the City's Riverside Park.

A 17-mile portion of the Glacial Drumlin State Trail is located in western Waukesha County. The Glacial Drumlin Trail is located on an abandoned Chicago & North Western Transportation Company right-of-way and extends approximately 48 miles from the City of Waukesha on the east to the Village of Cottage Grove in Dane County on the west. That portion of the trail located in Waukesha County west of the City of Waukesha corporate limits is under the jurisdiction of the Wisconsin Department of Natural Resources. That portion of the trail located within the City of Waukesha is under City jurisdiction.

Waukesha County has developed two off-street bicycle paths. The first is the Bugline Trail, which extends about 12 miles on former Chicago, Milwaukee, St. Paul & Pacific Railroad Company right-of-way from STH 175 in the Village of Menomonee Falls to CTH VV in the Village of Merton. The New Berlin Trail extends six miles across the City of New Berlin within the former right-of-way of The Milwaukee Electric Railway & Light Company. The New Berlin Trail connects to the Milwaukee County "76" Trail at Greenfield Park in the City of West Allis.

Two off-street bicycle paths have been constructed in Waukesha County by local governments. The City of Muskego has constructed a two-mile-long bicycle path in a former electric interurban railway right-of-way—that of The Milwaukee Electric Railway & Light Company—between the Civic Center complex and CTH Y on the west and Woods Road on the east. The Village of Hartland has constructed an approximately two-mile-long bicycle path along the Bark River, which traverses the Village from its northern corporate limit south to the CP Rail System (former Chicago, Milwaukee, St. Paul & Pacific Railroad Company) right-of-way.

Bicycle Paths Located within Street Rights-of-Way: Bicycle paths located within street rights-of-way are separated from the motor-vehicle

travel way by a planting strip. Although signed as bicycle ways, such facilities generally serve pedestrians as well as bicyclists. Bicycle paths are located where high levels of recreational use are anticipated, or where motor-vehicle speeds and volumes on the adjacent street are considered too high for bicycles to safely share the roadway with motor vehicles.

There are currently three bicycle paths within street rights-of-way in the Region, two in Milwaukee County and one in Washington County. The first Milwaukee County bicycle path is approximately two miles in length and is located within the W. Bradley Road right-of-way from N. 94th Street, near the Little Menomonee River, to STH 145, adjacent to Dretzka Park, in the City of Milwaukee. The second Milwaukee County bicycle path is approximately one mile long and is located in the right-of-way of Shepard Avenue from approximately E. Puetz Road to Shepard Hill Drive in the City of Oak Creek. The Washington County bicycle path is approximately two miles in length and is located in the right-of-way of STH 60. It extends from Hoffman Drive in the City of Hartford eastward to Pike Lake State Park.

On-Street Bicycle Lanes: A bicycle lane is a portion of a roadway designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists. The City of Milwaukee provides combined bus and bicycle lanes on N. Prospect and N. Farwell Avenues—which are both one-way streets—between E. North Avenue and E. Ogden Avenue. These lanes have a total length of about three miles. The combined lanes are restricted to bus and bicycle use only during certain specified hours of the day, which are posted on signs above and along the street. At other times, the lanes are open to all traffic.

On-Street Bicycle Routes: A bicycle route is a bicycle way designated with directional and informational markers, and may consist of a combination of bicycle paths, bicycle lanes, and shared roadways signed for bicycle use. Bicycle-route signs are commonly installed to provide a connection between bicycle lanes or bicycle paths, or to mark a route recommended for bicycle travel based on more favorable roadway or traffic conditions. The term “bicycle route” is used in this report to describe a shared roadway signed for bicycle use.

The City of Milwaukee has designated approximately 30 lane-miles of bicycle routes along 15 miles of City streets, in addition to the combined bus and bicycle lanes described above. There are three primary routes. The first runs north from the central business district along E. Kilbourn Avenue, the N. Farwell-N. Prospect Avenues one-way pair, and N. Downer Avenue to the University of Wisconsin-Milwaukee campus. The route continues westward from the campus along E. Kenwood Boulevard, where it connects to the Milwaukee County “76” Trail along the former Chicago & North Western Transportation Company right-of-way on the east side of the Milwaukee River. The second route runs from the downtown area west to the City of Wauwatosa along W. Highland Boulevard and W. Vliet Street. The third route runs south from the downtown area along S. 2nd Street and S. Kinnickinnic Avenue to E. Oklahoma Avenue. The route then follows E. Oklahoma Avenue eastward, where it connects to the “76” Trail at the northern boundary of Bay View Park.

Racine County designated approximately 190 lane-miles of bicycle routes along 95 miles of county and local roads in the early 1970s. The bicycle route is located on a combination of county and local roads on the northern, western, and southern sides of the County. The bicycle route connects to the MRK Trail at the northern terminus of the trail at Seven Mile Road, approximately 0.25 mile east of STH 32, in the northeastern part of the County; and to the North Shore Trail at that trail’s southern terminus in Racine County at the Racine-Kenosha County line, approximately 0.25 mile east of Lathrop Avenue, in the southeastern part of the County.

Bicycle Systems Consisting of More than One Facility Type: Several local government bicycle systems are made up of a combination of bicycle paths, bicycle lanes, and shared roadways designated as bicycle routes. These systems are described in the following paragraphs.

The Pike Trail in the City of Kenosha extends approximately 9.5 route-miles along the Lake Michigan shoreline. The trail, which was developed by the City, connects to the North and South Kenosha County Trails. About three route-miles of the Pike Trail are located off-street on bicycle paths through City parks. About one route-mile of the trail consists of bicycle lanes on 7th Avenue on the south side of the City. The

remaining 5.5 route-miles of the trail consist of signed bicycle routes located along City streets.

Milwaukee County has developed the "76" Trail, which in 1993 included approximately 92 route-miles of bicycle ways. The bicycle-way system includes off-street bicycle paths located within the Menomonee River, Little Menomonee River, Milwaukee River, Root River, and Oak Creek Parkways; and along the Lake Michigan shoreline. Connecting segments have been provided through county parks, along public streets, and within the former Chicago & North Western Transportation Company lakefront main line right-of-way, to form a loop around the County. An east-west trail has also been provided within the Kinnickinnic River Parkway. In 1993, the "76" Trail system consisted of 28 route-miles of off-street bicycle paths in parks and parkway lands, bicycle routes along 62 route-miles of roadway, and two route-miles of bicycle paths within a street right-of-way, for a total of 154 bicycle-lane-miles. Thirty-one miles of the 64-mile on-street portion are located along parkway drives.

The Village of Germantown has developed bicycle ways extending from the intersection of STH 145 and Park Avenue south and west to the Village Library located on the southwest corner of the intersection of STH 167 and Western Avenue, consisting of a bicycle route along Park Avenue, a bicycle route along the north side of Main Street, and a shared bicycle and pedestrian path on the west side of Western Avenue in the street right-of-way, for a total of approximately one route-mile.

As of 1993, the City of Brookfield had developed bicycle ways along both sides of approximately 15 miles of roadway, and along one side of approximately five miles of roadway, for a total of about 20 bicycle-route-miles or about 35 bicycle-lane-miles.

The Village of Elm Grove has provided wide, paved shoulders signed for bicycle use along two streets for a combined distance of approximately 1.5 bicycle-route-miles. The bicycle ways are located on the north side of Watertown Plank Road from Highland Drive to Pilgrim Parkway, and along the east side of Pilgrim Parkway from Watertown Plank Road to Gebhardt Road.

The Village of Menomonee Falls has developed an approximately one-mile-long off-street bicycle

path along the Menomonee River from Lilly Road northwest to County Line Road. The Village has also developed bicycle paths within the right-of-way of N. Pilgrim Road for a total of five route-miles or 7.5 lane-miles. The bicycle path extends about five miles on the west side of N. Pilgrim Road from USH 41/45 to a point approximately one-half mile north of W. Lisbon Road. The bicycle path extends approximately 2.5 miles on the east side of N. Pilgrim Road from W. Good Hope Road south to the same terminus as the bicycle path on the west side of N. Pilgrim Road.

Bicycle Access to Transit

Facilities which would accommodate connections between bicycle and public transit lines were inventoried as part of this planning process. Bicycle-transit connections serve to combine the advantages of bicycle travel, which offers excellent flexibility and mobility for shorter-distance trips, with the advantages of the use of public transit facilities for longer-distance trips. Facilities which were inventoried included bicycle-way access to transit stations, bicycle parking at storage facilities at transit stations, and devices to transport bicycles on transit vehicles.

Currently, bicycle access is not provided directly to any of the transit stations in the Region, although the park-and-ride lots at Pilgrim Road and at State Fair Park as well as the Downtown Transit Center in Milwaukee are each located within 0.10 mile of an existing bicycle way. Table 1 sets forth the distances between existing bicycle ways and transit stations. The relationship between existing transit stations and bicycle ways is graphically displayed on Maps A-1 through A-7 in Appendix A of this report.

As of the end of 1993, there were no provisions for transporting bicycles on transit vehicles operated by the five public transit operators in the Region—Milwaukee County, Waukesha County, the City of Kenosha, the City of Racine, and the City of Waukesha. The Metra commuter trains, which provide service from the City of Kenosha to Chicago, do not allow bicycles on board. Bicycles may be transported on Amtrak passenger trains and Greyhound buses as checked baggage, provided the bicycles are dismantled and boxed.

As shown in Table 1, bicycle parking racks are provided at nine of the 23 park-and-ride lots (including shopping center lots) in the Region

Table 1

**AVAILABILITY OF BICYCLE PARKING AND BICYCLE-WAY ACCESSIBILITY TO
EXISTING TRANSIT STATIONS^a SERVING RAPID AND EXPRESS TRANSIT ROUTES: 1993**

Transit Station	Bicycle Parking Rack Available	Distance from Existing Bicycle Way
Public Transit Centers		
Downtown Transit Center (Milwaukee)	Yes	0.10 mile
N. 76th Street and W. Mill Road (Milwaukee)	No	0.30 mile
Park-and-Ride Lots		
IH 94 and W. College Avenue (Milwaukee)	Yes	2.20 miles
IH 94 and W. Ryan Road (Oak Creek)	No	2.00 miles
USH 45 and W. Watertown Plank Road (Wauwatosa)	Yes	0.20 mile
IH 43 and Silver Spring Road (Glendale)	No	0.40 mile
IH 43 and Brown Deer Road (River Hills)	No	1.00 mile
IH 94 and Barker Road (Brookfield)	Yes	1.75 miles
IH 94 and W. Holt Avenue (Milwaukee)	Yes	0.66 mile
IH 43 and S. 108th Street (Hales Corners)	Yes	0.30 mile
USH 41 and Pilgrim Road (Menomonee Falls)	No	< 100 feet
IH 94 and STH 67 (Summit) ^b	No	3.00 miles
State Fair Park (West Allis)	Yes	0.10 mile
Timmerman Field (Milwaukee)	Yes	2.00 miles
IH 894 and W. Loomis Road (Greenfield)	Yes	2.25 miles
Northridge (Milwaukee)	No	2.50 miles
IH 43 and STH 83 (Mukwonago) ^b	No	-- ^c
IH 43 and STH 164 (Big Bend) ^b	No	-- ^c
STH 16 and CTH C (Nashotah) ^b	No	-- ^c
IH 94 and CTH G (Pewaukee)	No	-- ^c
IH 43 and Moorland Road (New Berlin)	Yes	-- ^c
Shopping Center Lots		
Silver Mill-N. Teutonia Avenue (Milwaukee)	No	1.50 miles
Pick 'n Save-Capitol Drive (Brookfield)	No	1.00 mile
Southridge-S. 76th Street (Greendale)	No	0.38 mile
Kohl's-Green Bay Road (Brown Deer)	No	1.00 mile
Intercity Transit Stations^d		
Milwaukee Amtrak Station	No	0.30 mile
Sturtevant Amtrak Station	No	1.20 miles
Kenosha Transportation Center ^e	-- ^f	0.30 mile
Badger Bus Terminal-Milwaukee	No	0.40 mile
Greyhound Bus Terminal-Milwaukee	No	0.40 mile
Wisconsin Coach Lines Terminal-Waukesha	Yes ^g	1.00 mile
Greyhound Bus Terminal/Globe Travel-Waukesha	No	1.10 miles

^aA "transit station" is a facility located on a rapid or express transit route which is designed to serve passengers boarding, alighting, or transferring between rapid, express, or local feeder transit routes serving the location. Transit stations vary in size and design depending upon their intended purpose and passenger volume served, but generally provide for more passenger amenities than would be found at a local transit stop. Passenger amenities typically provided at transit station facilities include passenger loading platforms, passenger shelters, telephone service, posted route maps and timetables, and, where sufficient land is available, parking for passengers transferring between auto and transit. Where the station serves very high passenger volumes or bus and rail routes providing intercity service, an enclosed terminal with rest rooms may also be provided. In the future, such stations may provide facilities enabling transit users to access advanced transit information systems which will, among other things, provide real-time transit-vehicle location and scheduling information.

^bNot within an urbanized area.

^cNo existing bicycle way within three miles of station.

^dWisconsin Coach Lines provides scheduled service between Kenosha, Racine, and Milwaukee and between Oconomowoc, Pewaukee, Waukesha, and Milwaukee. Wisconsin Coach Lines maintains a bus station in Waukesha and stops at the Kenosha Transportation Center; the Milwaukee Badger Bus Terminal; the Greyhound Bus Terminals in Milwaukee and Kenosha; the central transit terminals operated by the Cities of Kenosha and Racine; selected park-and-ride lots; and selected local bus stops in the Cities of Waukesha, Milwaukee, Racine, and Kenosha.

^eThe Kenosha Transportation Center serves as the passenger terminal for the Metra commuter rail service.

^fBicycle lockers were scheduled to be installed in the spring of 1994.

^gBicycle racks are located within one block of the station.

Source: SEWRPC.

and at the Downtown (Milwaukee) Transit Center. There are no facilities for bicycle storage at any of these park-and-ride lots. None of the intercity transit stations in the Region provides bicycle parking or storage facilities; however, bicycle storage lockers were planned to be installed at the Kenosha Transportation Center (Metra station) in the spring of 1994, and bicycle parking racks are available within one block of the Wisconsin Coach Lines terminal in the City of Waukesha.

Bicycle Touring Routes

In May 1992, the Wisconsin Division of Tourism, in cooperation with the Wisconsin Department of Transportation and the Federal Highway Administration, published a new edition of the Wisconsin Bicycle Map. The map consists of four map sheets depicting bicycle travel routes throughout the State. The map indicates streets and highways recommended for bicycle travel based on an evaluation of roadway conditions, including average daily traffic, amount of truck traffic, sight distance, number of lanes, pavement width, and shoulder width and roadway surface. The map also identifies highway segments where above-average caution should be exercised as well as routes deemed unsuitable for bicycle travel. The map was produced to assist recreational bicyclists, particularly long-distance touring bicyclists, in selecting the most appropriate streets and highways for bicycle travel. Although the map is intended primarily for use by recreational bicyclists, the map can also assist utilitarian bicyclists in choosing suitable travel routes. The routes recommended by the Wisconsin Bicycle Map are not signed as bicycle routes unless they are part of another jurisdiction's bicycle-way system. Map 4 depicts recommended bicycle touring routes in the Southeastern Wisconsin Region as shown on the Wisconsin Bicycle Map.

A review of Map 4 indicates that no recommended bicycle touring routes have been designated on the Wisconsin Bicycle Map for Milwaukee County. The map scale and the method developed to evaluate a roadway's suitability for bicycle travel, which was designed to apply to two-lane roads with a rural cross-section, limited the ability to designate recommended routes in Milwaukee County. The map, however, does include a list of organizations that may be contacted to obtain detailed route information for urban areas, including Milwaukee.

PEDESTRIAN FACILITIES

Sidewalk Inventory

As part of this planning effort, each arterial street and highway, with the exception of freeways, within the Kenosha, Milwaukee, and Racine bicycle and pedestrian facilities planning areas was examined to determine if sidewalks were provided along the facility. The inventory was limited to the planning areas associated with the three urbanized areas of the Region because such areas have substantial areas of adequate densities and have the larger activity centers needed to support significant levels of pedestrian travel, and further because of the need to coordinate the provision of pedestrian facilities between numerous local governments within the urbanized areas. The sidewalk inventory information was obtained from aerial photographs taken in the spring of 1990. Map 5 indicates those arterial streets and highways in the Kenosha planning area having sidewalks along at least one side of the facility and arterial segments lacking sidewalks in 1990. Maps 6 and 7 provide information regarding sidewalks along arterial streets and highways in, respectively, the Milwaukee and Racine planning areas in 1990.

As shown in Table 2, there were approximately 1,409 miles of standard arterial streets and highways within the Kenosha, Milwaukee, and Racine bicycle and pedestrian facilities planning areas in 1990, including 144 miles in the Kenosha area, 120 miles in the Racine area, and 1,145 miles in the Milwaukee area. Sidewalks were located along at least one side of about 37 miles, or about 26 percent, of the standard arterial facilities in the Kenosha area; along about 50 miles, or about 42 percent, of the standard arterial facilities in the Racine area; and along about 569 miles, or about 50 percent, of the standard arterial facilities in the Milwaukee area. Arterial streets and highways in Milwaukee County were the most likely to have sidewalks located along the facility, with sidewalks located along almost 71 percent of arterial streets and highways in the County.

Pedestrian Access to Transit

Pedestrian access to rapid and express transit stations, including park-and-ride lots, was inventoried as part of this planning effort. The area surrounding each transit station was examined to determine if pedestrian facilities were in place to provide access to the transit station from residential areas or activity centers

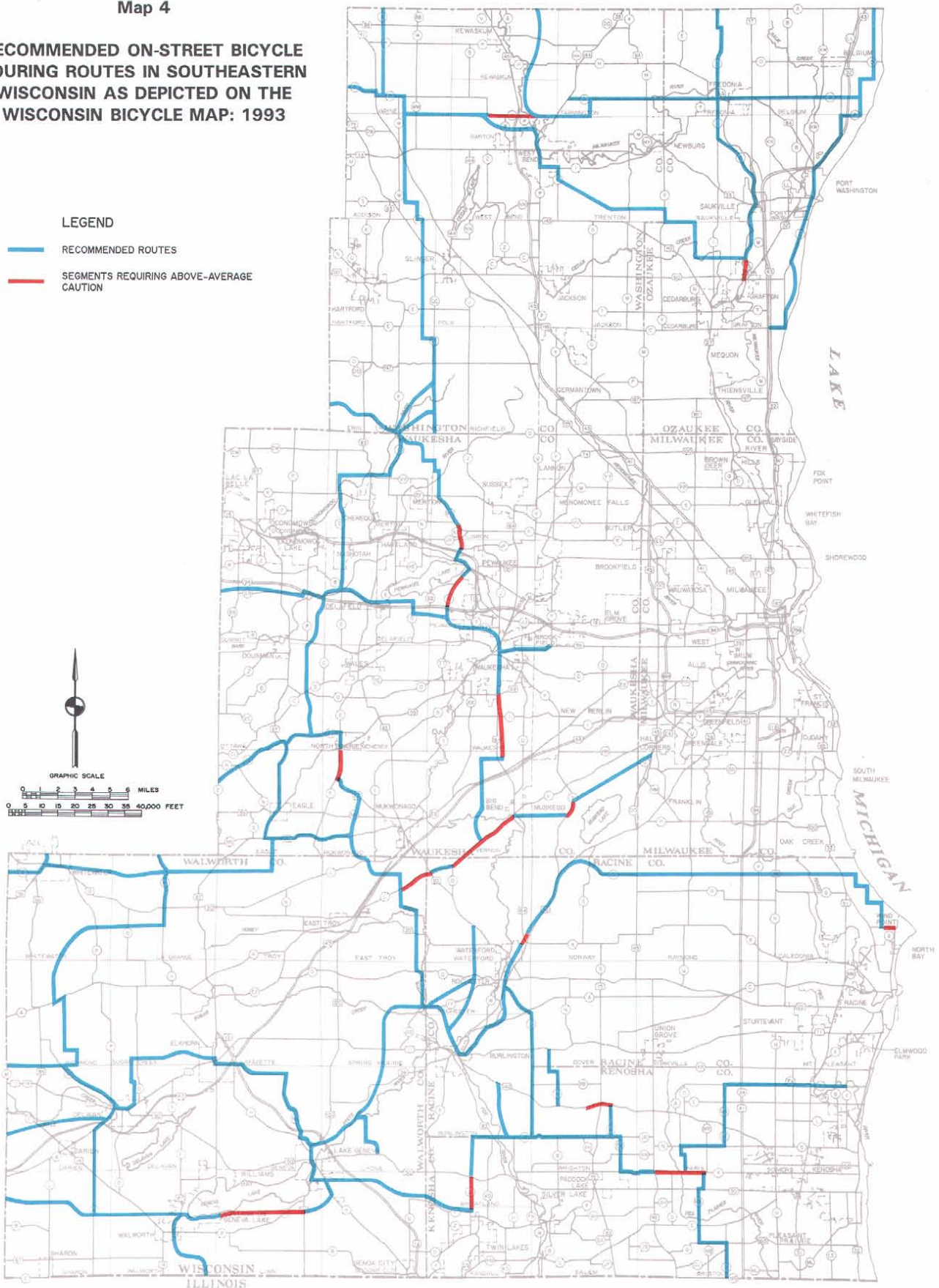
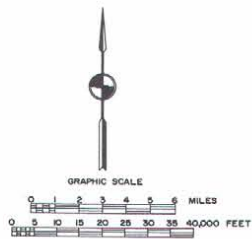
Map 4

**RECOMMENDED ON-STREET BICYCLE
TOURING ROUTES IN SOUTHEASTERN
WISCONSIN AS DEPICTED ON THE
WISCONSIN BICYCLE MAP: 1993**

LEGEND

— RECOMMENDED ROUTES

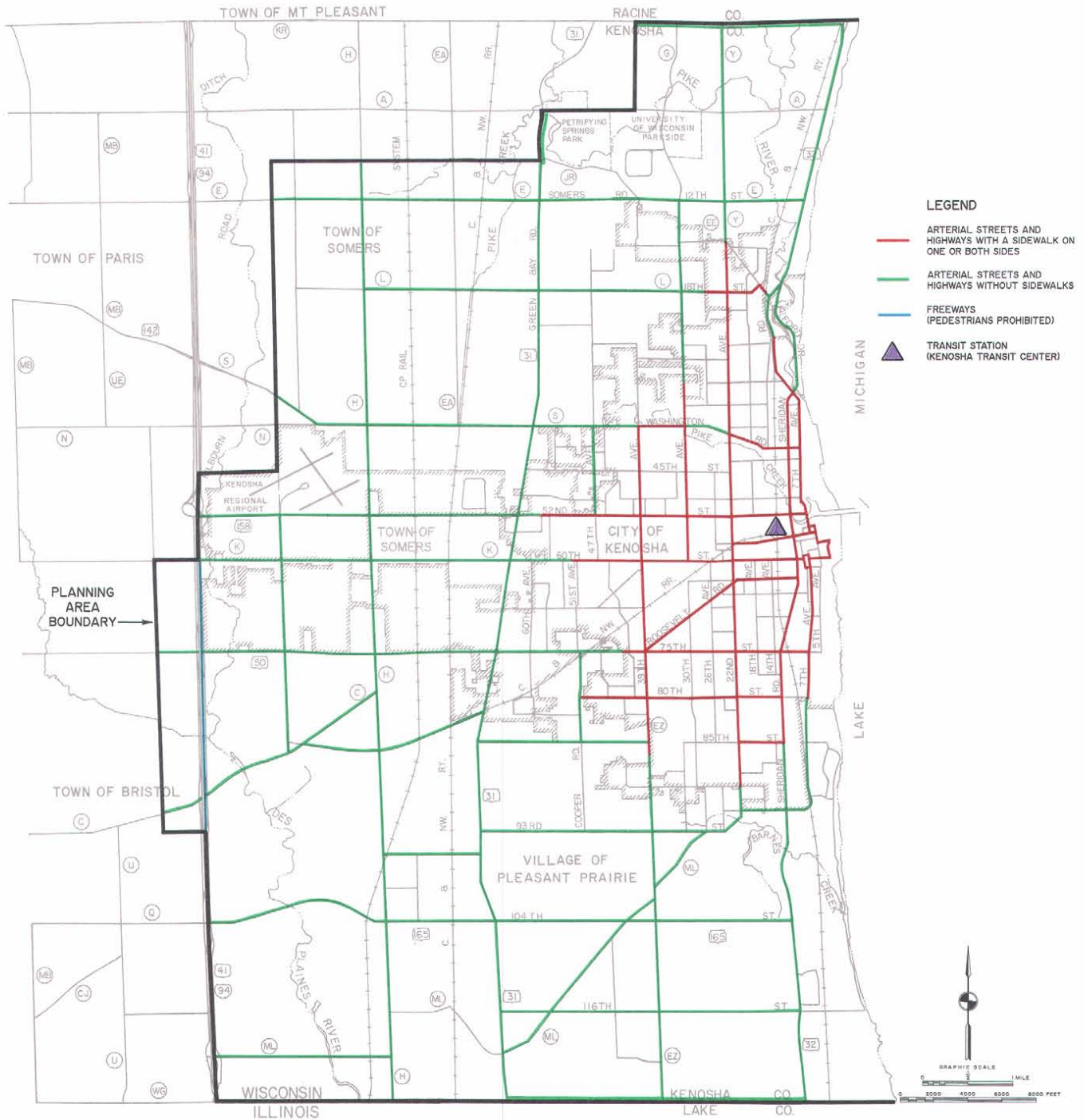
— SEGMENTS REQUIRING ABOVE-AVERAGE CAUTION



The Wisconsin Bicycle Map, prepared by the Wisconsin Division of Tourism in cooperation with the Wisconsin Department of Transportation and the Federal Highway Administration, indicates streets and highways recommended for bicycle travel based on an evaluation of roadway conditions, including average daily traffic, amount of truck traffic, sight distance, number of lanes, pavement width, and shoulder width and roadway surface. The map also identifies highway segments where above-average caution should be exercised as well as routes deemed unsuitable for bicycle travel. The map was produced to assist recreational bicyclists, particularly long-distance touring bicyclists, in selecting the most appropriate streets and highways for bicycle travel. Although the map is intended primarily for use by recreational bicyclists, the map can also assist utilitarian bicyclists in choosing suitable travel routes.

Map 5

LOCATION OF SIDEWALKS ALONG ARTERIAL STREETS AND HIGHWAYS IN THE KENOSHA BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 1990

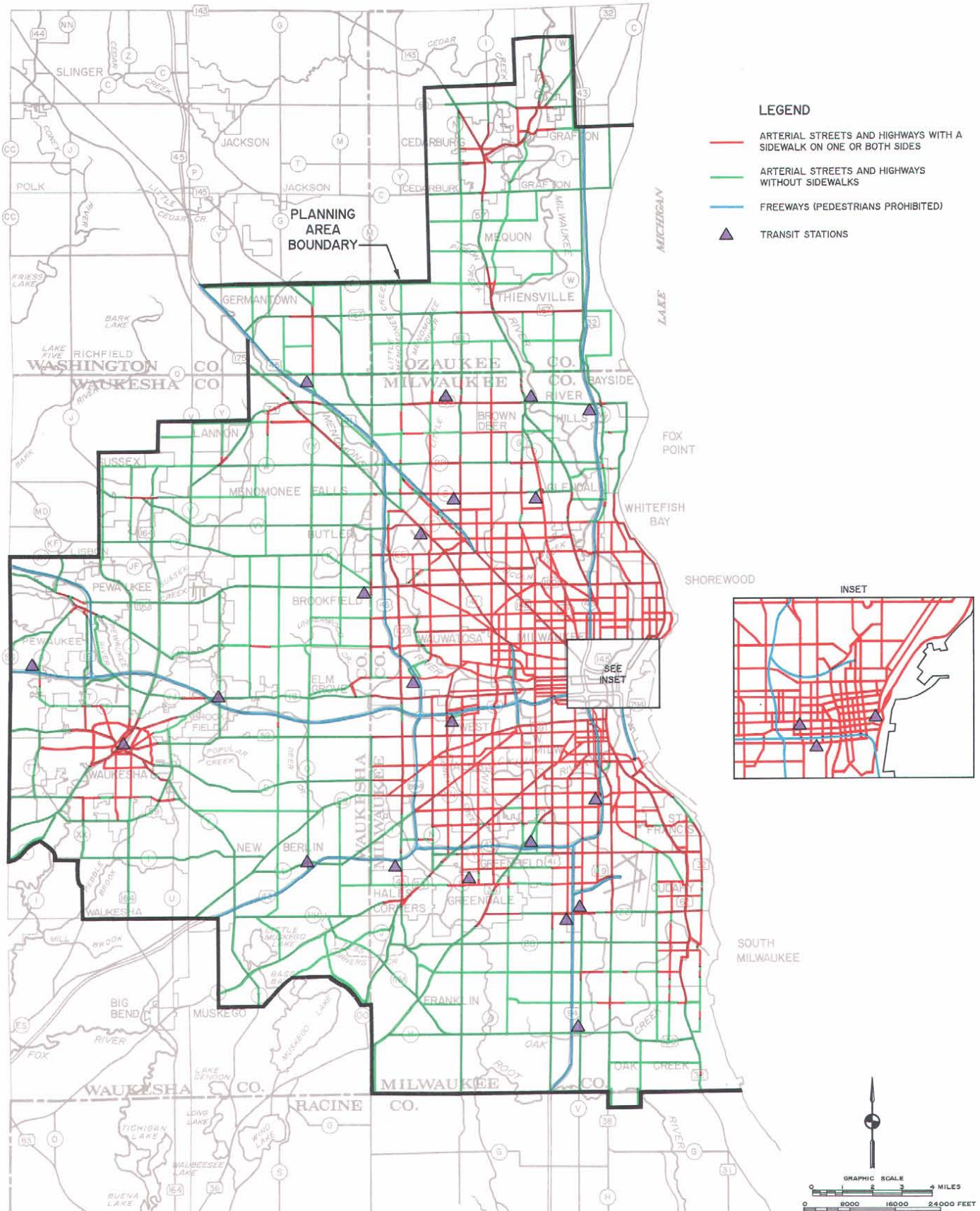


In 1990, there were approximately 144 miles of standard arterial streets and highways within the Kenosha bicycle and pedestrian facilities planning area. Sidewalks were located along at least one side of about 37 miles, or about 26 percent, of the standard arterial facilities in the Kenosha area.

Source: SEWRPC.

Map 6

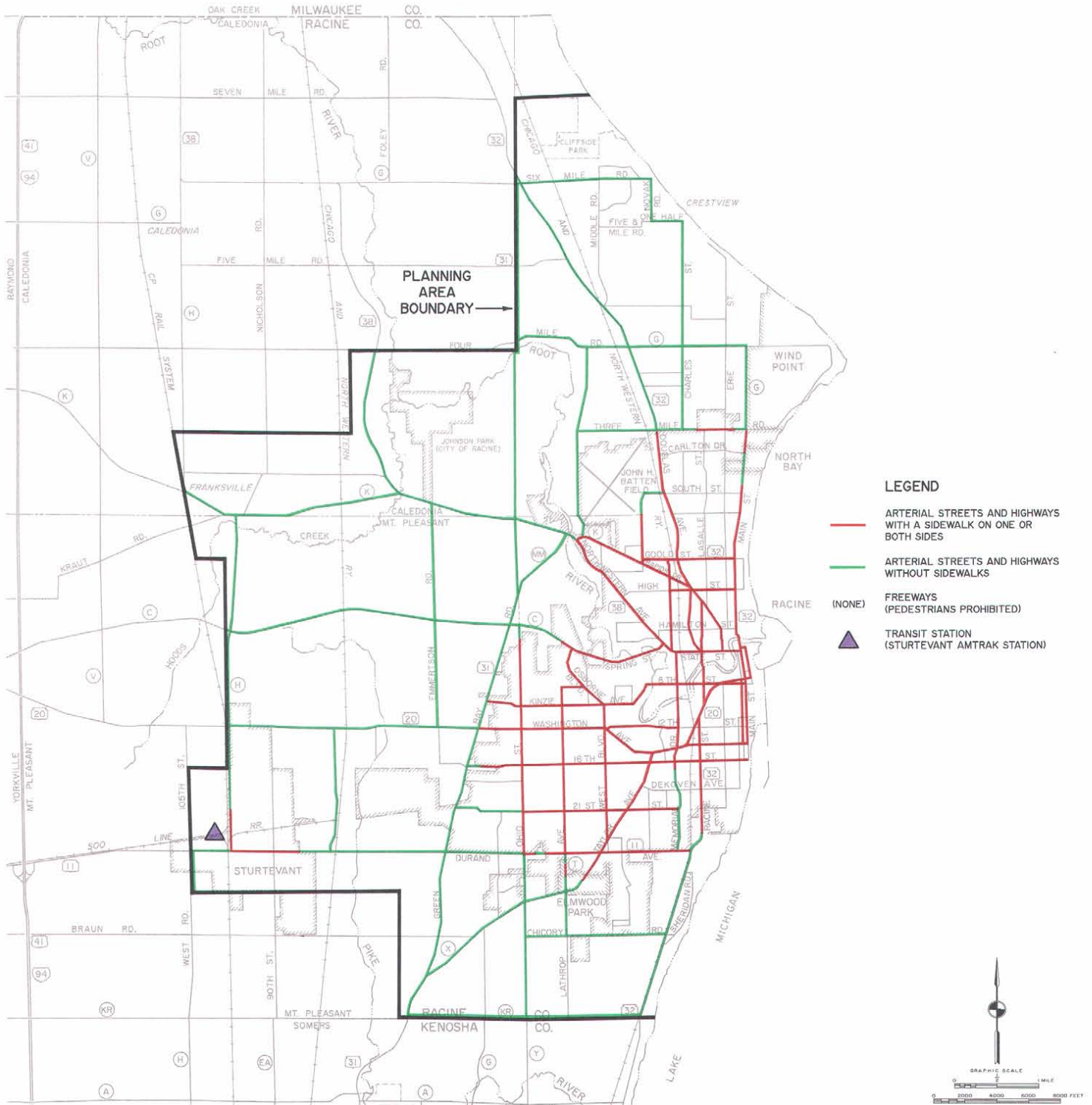
LOCATION OF SIDEWALKS ALONG ARTERIAL STREETS AND HIGHWAYS IN THE MILWAUKEE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 1990



In 1990, there were approximately 1,145 miles of standard arterial streets and highways within the Milwaukee bicycle and pedestrian facilities planning area. Sidewalks were located along at least one side of about 569 miles, or about 50 percent, of the standard arterial facilities in the Milwaukee area. Arterial streets and highways in Milwaukee County were the most likely to have sidewalks located along the facility, with sidewalks located along almost 71 percent of arterial streets and highways in the County.

Map 7

**LOCATION OF SIDEWALKS ALONG ARTERIAL STREETS AND HIGHWAYS IN
THE RACINE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 1990**



In 1990, there were approximately 120 miles of standard arterial streets and highways within the Racine bicycle and pedestrian facilities planning area. Sidewalks were located along at least one side of about 50 miles, or about 42 percent, of the standard arterial facilities in the Racine area.

Source: SEWRPC.

Table 2

**ANALYSIS OF SIDEWALKS ALONG STANDARD ARTERIAL STREETS AND HIGHWAYS^a IN THE
KENOSHA, MILWAUKEE, AND RACINE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREAS: 1990**

Location	Arterial Facilities Having a Sidewalk on One or Both Sides		Arterial Facilities Having No Sidewalks		Total Miles
	Miles	Percent	Miles	Percent	
Kenosha Planning Area Kenosha County	37	25.7	107	74.3	144
Milwaukee Planning Area					
Milwaukee County	500	70.7	207	29.3	707
Ozaukee County	20	19.4	83	80.6	103
Racine County	0	0.0	1	100.0	1
Washington County	3	13.0	20	87.0	23
Waukesha County	46	14.8	265	85.2	311
Subtotal	569	49.7	576	50.3	1,145
Racine Planning Area					
Racine County	50	41.7	70	58.3	120
Total	656	46.6	753	53.4	1,409

^aDoes not include freeways.

Source: SEWRPC.

located within one-half mile of the station. Currently, sidewalk access is provided to 17 of the 28 existing transit stations with residential areas or activity centers located within one-half mile of the station. Sidewalk access to existing transit stations is summarized in Table 3.

Existing Hiking Trails

All of the off-street bicycle paths described earlier in this chapter accommodate pedestrians as well as bicyclists. In addition to these multiple-use off-street facilities, about 48 miles of the Ice Age Trail, which has been designed as a hiking trail, were completed and open to use as of the end of 1993. When completed, the Ice Age Trail will extend approximately 92 miles within the Southeastern Wisconsin Region in the western portions of Walworth, Waukesha, and Washington Counties. Two segments of the existing 48 miles of completed Ice Age Trail are open to bicyclists: that portion of the Ice Age Trail that follows the Glacial Drumlin State Trail for about two miles just west of the Village of Wales; and that portion of the Ice Age Trail that follows the joint pedestrian and bicycle path along the Bark River in the Village of Hartland for a distance of approximately 1.5

miles. The location of the Ice Age Trail is shown on Map 9 in Chapter IV of this report (see page 40).

SUMMARY

This chapter presents the results of inventories of existing bicycle and pedestrian facilities within the Region. Bicycle facilities inventoried included bicycle paths, bicycle lanes, and bicycle routes; facilities providing bicycle access to transit; and identified bicycle touring routes. Existing bicycle ways in the Region include 16 off-street bicycle paths providing about 72 bicycle-route-miles; three bicycle paths located within street rights-of-way providing about five bicycle-route-miles; two combined bus and bicycle lanes providing three bicycle-route-miles; two systems of on-street bicycle routes providing about 110 bicycle-route-miles; and six bicycle-way systems consisting of a combination of bicycle paths, bicycle lanes, and bicycle routes, which together account for about 129 bicycle-route-miles. Together, these existing bicycle ways within the Region account for a total of about 319 bicycle-route-miles.

Table 3

**PEDESTRIAN ACCESSIBILITY TO EXISTING TRANSIT
STATIONS^a SERVING RAPID AND EXPRESS TRANSIT ROUTES: 1993**

Transit Station	Residential Area or Activity Center Located within 0.5 Mile of Station	Existing Sidewalk Access to Station	Comments
Public Transit Centers			
Downtown Transit Center (Milwaukee)	Yes	Yes	--
N. 76th Street and W. Mill Road (Milwaukee)	Yes	Yes	--
Park-and-Ride Lots			
IH 94 and W. College Avenue (Milwaukee)	Yes	Yes	--
IH 94 and W. Ryan Road (Oak Creek)	Yes	No	Few residences located near station; area sparsely developed
USH 45 and W. Watertown Plank Road (Wauwatosa)	No	Yes	--
IH 43 and Silver Spring Road (Glendale)	Yes	Yes	Sidewalk access provided from south and east; IH 43 and Milwaukee River are barriers to access from the west
IH 43 and Brown Deer Road (River Hills)	Yes	No	Station located in predominantly low-density residential area
IH 94 and Barker Road (Brookfield)	Yes	No	Surrounding area predominantly nonresidential
IH 94 and W. Holt Avenue (Milwaukee)	Yes	Yes	--
IH 43 and S. 108th Street (Hales Corners)	Yes	No	--
USH 41 and Pilgrim Road (Menomonee Falls)	Yes	No	Limited amount of residential development near station
IH 94 and STH 67 (Summit) ^b	No	No	--
State Fair Park (West Allis)	Yes	Yes	--
Timmerman Field (Milwaukee)	Yes	Yes	--
IH 894 and W. Loomis Road (Greenfield)	Yes	No	Opportunity to provide pedestrian access from residential area to east
Northridge-Beatrice Court (Milwaukee)	Yes	Yes	Surrounding area predominantly nonresidential
IH 43 and STH 83 (Mukwonago) ^b	No	No	--
IH 43 and STH 164 (Big Bend) ^b	Yes	No	Limited amount of residential development near station
STH 16 and CTH C (Nashotah) ^b	Yes	No	Limited amount of residential development near station
IH 94 and CTH G (Pewaukee)	Yes	No	Limited amount of residential development near station
IH 43 and Moorland Road (New Berlin)	No	No	--
Shopping Center Lots			
Silver Mill-N. Teutonia Avenue (Milwaukee)	Yes	Yes	Direct connection lacking from residential area west of shopping center
Pick 'n Save-Capitol Drive (Brookfield)	Yes	No	--
Southridge-S. 76th Street (Greendale)	Yes	Yes	--
Kohl's-Green Bay Road (Brown Deer)	Yes	No	--
Intercity Transit Stations^c			
Milwaukee Amtrak Station	Yes	Yes	--
Sturtevant Amtrak Station	Yes	Yes	--
Kenosha Transportation Center ^d	Yes	Yes	--
Badger Bus Terminal-Milwaukee	Yes	Yes	--
Greyhound Bus Terminal-Milwaukee	Yes	Yes	--
Wisconsin Coach Lines Terminal-Waukesha	Yes	Yes	--
Greyhound Bus Terminal/Globe Travel-Kenosha	Yes	Yes	--

^aA "transit station" is a facility located on a rapid or express transit route which is designed to serve passengers boarding, alighting, or transferring between rapid, express, or local feeder transit routes serving the location. Transit stations vary in size and design depending upon their intended purpose and passenger volume served, but generally provide for more passenger amenities than would be found at a local transit stop. Passenger amenities typically provided at transit station facilities include passenger loading platforms, passenger shelters, telephone service, posted route maps and timetables, and, where sufficient land is available, parking for passengers transferring between auto and transit. Where the station serves very high passenger volumes or bus and rail routes providing intercity service, an enclosed terminal with rest rooms may also be provided. In the future, such stations may provide facilities enabling transit users to access advanced transit information systems which will, among other things, provide real-time transit-vehicle location and scheduling information.

^bNot within an urbanized area.

^cWisconsin Coach Lines provides scheduled service between Kenosha, Racine, and Milwaukee and between Oconomowoc, Pewaukee, Waukesha, and Milwaukee. Wisconsin Coach Lines maintains a transit station in Waukesha and stops at the Kenosha Transportation Center; the Milwaukee Badger Bus Terminal; the Greyhound Bus Terminals in Milwaukee and Kenosha; the central transit terminals operated by the Cities of Kenosha and Racine; selected park-and-ride lots; and selected local transit stops in the Cities of Waukesha, Milwaukee, Racine, and Kenosha.

^dThe Kenosha Transportation Center serves as the passenger terminal for the Metra commuter rail service.

Source: SEWRPC.

An inventory of bicycle access to transit stations and transit vehicles serving rapid and express transit routes shows that, as of the end of 1993, no direct bicycle access was provided to any of the 32 transit stations within the Region, and that there were no provisions for transporting bicycles on local and suburban transit vehicles; however, bicycles may be transported on some intercity transit vehicles if the bicycles are boxed. Bicycle parking racks were available at nine of the Region's 23 park-and-ride lots (including shopping center lots) and at the Downtown (Milwaukee) Transit Center. No bicycle parking or storage facilities were available at the intercity transit stations in the Region; however, bicycle storage lockers were planned to be installed at the Kenosha Transportation Center (Metra station) in the spring of 1994, and bicycle parking racks are available within one block of the Wisconsin Coach Lines terminal in the City of Waukesha.

An inventory of sidewalks along standard arterial streets and highways within the Kenosha, Milwaukee, and Racine bicycle and pedestrian facilities planning areas in 1990 indicated that sidewalks were provided along at least one side of about 656 miles, or about 47 percent, of the total 1,409 miles of arterial facilities within the three planning areas. Sidewalks were located along at least one side of about 37 miles, or about 26 percent, of the standard arterial facilities in the Kenosha area; along about 50 miles, or about 42 percent, of the standard arterial facilities in the Racine area; and along about 569 miles, or about 50 percent, of the standard arterial facilities in the Milwaukee area. An inventory of sidewalk access to transit stations serving rapid and express transit routes shows that, as of the end of 1990, sidewalk access was provided to 17 of the 28 transit stations with residential areas or activity centers located within one-half mile of the station.

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Chapter IV

EXISTING BICYCLE AND PEDESTRIAN PLANS AND POLICIES

INTRODUCTION

This chapter presents the findings of an inventory of planned bicycle and pedestrian facilities and of county and local government policies and ordinance provisions relating to the construction of bicycle and pedestrian facilities within the Region.

ADOPTED PLANS CALLING FOR THE PROVISION OF BICYCLE FACILITIES

A number of plans calling for the provision of bicycle facilities have been prepared within the Region. The majority of these planned bicycle facilities have been included as parts of park and open space plans. Such plans have been prepared and adopted by the Commission for the Southeastern Wisconsin Region; by each of the seven counties in the Region; and by several local units of government. In addition to park and open space plans, the construction of bicycle facilities has been recommended in some local land use plans, comprehensive plans, and bicycle facility plans.

The regional park and open space plan, adopted by the Regional Planning Commission in 1977, recommended the development of an approximately 440-mile network of hiking and bicycling trails.¹ Most of the trails recommended in the regional plan were proposed to be located in areas having natural resource values of regional significance, such as the Lake Michigan shoreline, the Kettle Moraine, and the riverine areas of the Milwaukee, Fox, and Root Rivers. The regional park and open space plan was subsequently refined through the preparation and adoption of park and open space plans by each

of the counties in the Region.² The county plans incorporate the natural resource-based trails recommended under the regional plan, and also include some nonresource-related trail corridors, such as abandoned railway rights-of-way. Map 8 shows the approximately 500-mile regional trail network recommended in the seven adopted county park and open space plans. Map 8 also reflects off-street trails included in plans adopted by local governments in the Region. With the exception of the Ice Age Trail, all of the trails in the Region allow bicycle use, and many are designed and designated as bicycle routes.

A description of planned bicycle ways in each of the seven counties in the Southeastern Wisconsin Region is presented in the following sections. The following inventory of planned bicycle ways does not include proposed looped trails within public parks or open space sites that are intended exclusively for recreational use.

Kenosha County

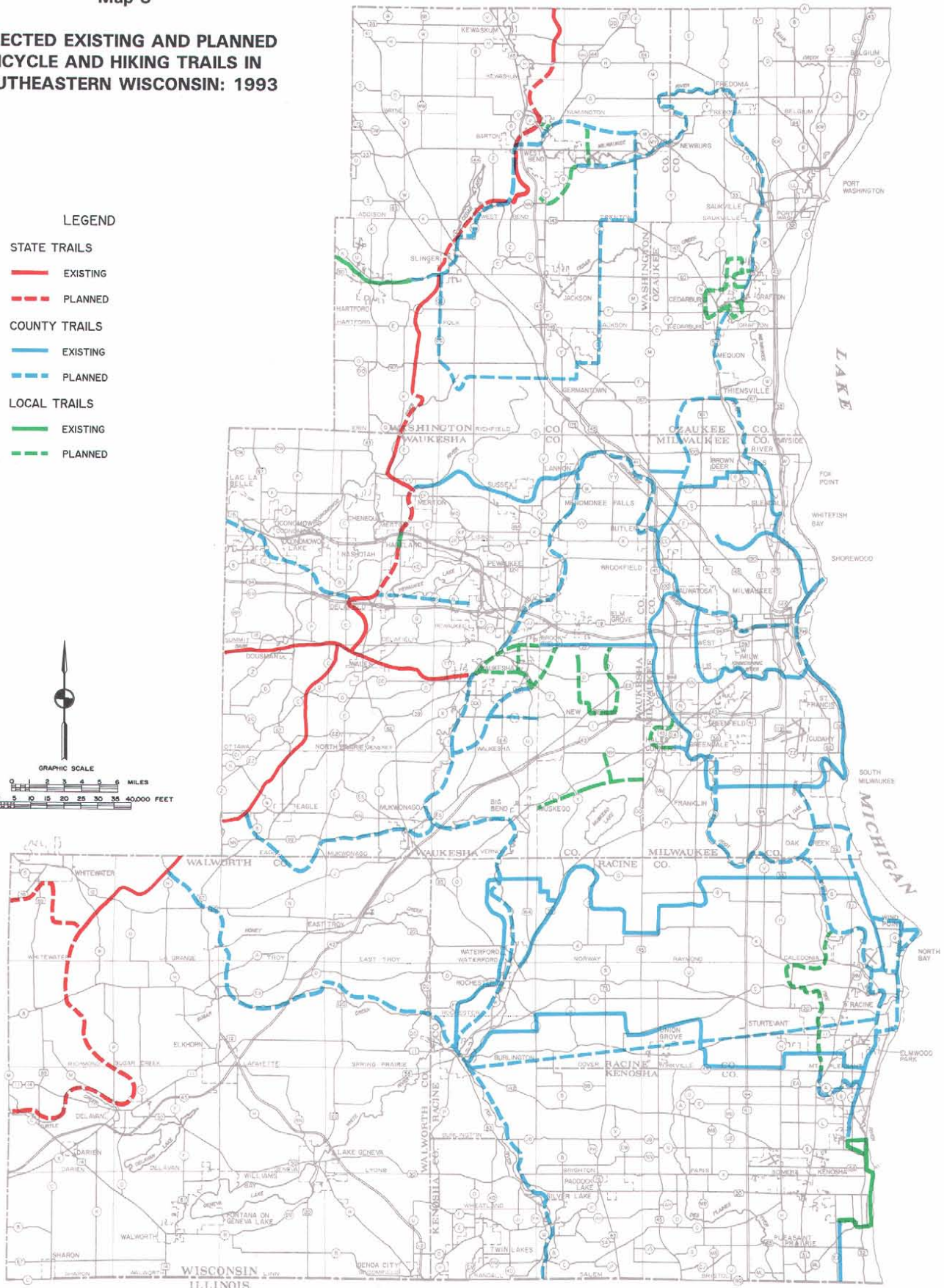
Existing and planned bicycle ways in Kenosha County are shown on Map A-1 in Appendix A of

¹The regional park and open space plan is documented in SEWRPC Planning Report No. 27, *A Regional Park and Open Space Plan for Southeastern Wisconsin: 2000*, November 1977.

²The seven county park and open space plans are respectively documented in SEWRPC Community Assistance Planning Report No. 131, *A Park and Open Space Plan for Kenosha County*, November 1987; SEWRPC Community Assistance Planning Report No. 132, *A Park and Open Space Plan for Milwaukee County*, November 1991; SEWRPC Community Assistance Planning Report No. 133, *A Park and Open Space Plan for Ozaukee County*, July 1987; SEWRPC Community Assistance Planning Report No. 134, *A Park and Open Space Plan for Racine County*, September 1988; SEWRPC Community Assistance Planning Report No. 135, *A Park and Open Space Plan for Walworth County*, February 1991; SEWRPC Community Assistance Planning Report No. 136, *A Park and Open Space Plan for Washington County*, March 1989; and SEWRPC Community Assistance Planning Report No. 137, *A Park and Open Space Plan for Waukesha County*, December 1989.

Map 8

**SELECTED EXISTING AND PLANNED
BICYCLE AND HIKING TRAILS IN
SOUTHEASTERN WISCONSIN: 1993**



The regional park and open space plan, adopted by the Regional Planning Commission in 1977, recommended the development of an approximately 440-mile network of hiking and bicycling trails to be located mostly in areas having natural resource values of regional significance, such as the Lake Michigan shoreline, the Kettle Moraine, and the riverine areas of the Milwaukee, Fox, and Root Rivers. The regional park and open space plan was subsequently refined through the preparation and adoption of park and open space plans by each of the counties in the Region, which incorporated the natural resource-based trails recommended by the regional plan and also included nonresource-related trail corridors, such as abandoned railway rights-of-way. This map shows the approximately 500-mile regional trail network recommended by the seven adopted county park and open space plans, as well as off-street trails included in plans adopted by local governments in the Region.

this report. The existing North and South Kenosha County Bicycle Trails and the City of Kenosha Pike Trail together form the Kenosha County portion of the Lake Michigan Trail recommended in the Kenosha County park and open space plan. In addition to the Lake Michigan Trail, the Kenosha County plan calls for the County to develop two new multi-use trails: the Pike River Trail, which would extend five miles from the Lake Michigan Trail on the east to Petrifying Springs Park on the west; and the Fox River Trail, which would extend about 10 miles along the River throughout its length in Kenosha County, and connect to the proposed Fox River Trail in Racine County.

Milwaukee County

Existing and planned bicycle ways in Milwaukee County are shown on Map A-2 in Appendix A of this report. Milwaukee County has developed the "76" Trail, which in 1993 included approximately 92 bicycle-route-miles. The Milwaukee County park and open space plan calls for an additional 39 route-miles of bicycle ways. Of this total, 23 miles would consist of off-street multi-use trails within three parkways, including 15 miles within the Root River Parkway south of W. Loomis Road and four miles each in the Oak Creek and Little Menomonee River Parkways. In some cases, the trails are proposed to serve in lieu of parkway drives to provide access to and through the parkway system. The plan recommends extending the Milwaukee River Trail two miles north along public streets to connect to the Milwaukee River Trail in Ozaukee County. The plan recommends the construction of a bicycle way along two miles of W. Cleveland Avenue, which would connect the northern portion of the Root River Trail to the East-West (Kinnickinnic River) Trail.

The Milwaukee County plan also recommends the construction of bicycle ways through the Menomonee River Valley and across the Daniel Webster Hoan Memorial Bridge. The proposed Hoan Bridge bicycle way would replace an existing on-street segment of the "76" Trail. The proposed Menomonee River Valley bicycle way would connect the existing "76" Trail in Hoyt Park, north of the Milwaukee County Institutions grounds in the City of Wauwatosa, to the Milwaukee central business district. Milwaukee County has received funding from the Wisconsin Department of Transportation to complete that portion of the bicycle way from Hoyt Park to the

Milwaukee County Stadium grounds. The Wisconsin Department of Natural Resources, in cooperation with the National Park Service and an advisory committee, is conducting a study to determine the feasibility of establishing a Menomonee Valley Greenway between Hoyt Park and the Lake Michigan shoreline. The committee conducting the study has endorsed constructing a bicycle way through the proposed corridor.

The City of Milwaukee Common Council adopted a bicycle plan for the City³ in May 1993. The plan calls for the development of approximately 140 miles of bicycle facilities along 70 miles of City streets. The plan assigns first priority to the provision of bicycle routes connecting the central business district to the University of Wisconsin-Milwaukee and Marquette University campuses. The City had designated bicycle routes along 18 miles of City streets—for a total of 33 miles of bicycle facilities, including three miles along one-way streets and 15 miles along both sides of two-way streets—by the end of 1993. The City eventually plans to extend the bicycle facilities system to serve the entire City, and to link the central business district to the Milwaukee County Institutions grounds and the Milwaukee Regional Medical Center in the City of Wauwatosa.

The Hales Corners corridor plan⁴ calls for the development of a bicycle and pedestrian path approximately 2.5 miles in length that would traverse the Village of Hales Corners along Whitnall Park Creek; within the street right-of-way of S. 116th Street and W. Edgerton Avenue; and within the former right-of-way of the now-defunct The Milwaukee Electric Railway & Light Company. The bicycle and pedestrian path would connect to the Milwaukee County "76" Trail at two locations, one on the northeast and one on the southeast side of the Village, and

³*Documented in the report entitled Bicycle Milwaukee, prepared by the City of Milwaukee in 1993.*

⁴*Documented in SEWRPC Community Assistance Planning Report No. 195, A Land Use, Urban Design, and Transportation Plan for Selected Arterial Street Corridors in the Village of Hales Corners, Milwaukee County, Wisconsin, May 1993.*

would serve several existing schools and parks in the Village.

The City of Oak Creek adopted a bicycle-way plan in 1985.⁵ Proposed bicycle ways are located primarily on residential land access streets with connections to the Milwaukee County "76" Trail within the Oak Creek and Root River Parkways. About 23 miles of bicycle ways are recommended in the plan. As of 1993, a bicycle path had been developed in the right-of-way of S. Shepard Avenue for a distance of approximately 1.5 miles.

Ozaukee County

Existing and planned bicycle ways in Ozaukee County are shown on Map A-3 in Appendix A of this report. The Ozaukee County park and open space plan calls for the County to develop two multi-use trails. The first is the Milwaukee River Trail, with a proposed length of 34 bicycle-route-miles, including 12 miles located off-street in parkway lands, six miles off-street in the former right-of-way of The Milwaukee Electric Railway & Light Company, and 16 miles on-street. The second is the Little Menomonee River Trail, having a length of four bicycle-route-miles, including one mile off-street and three miles on-street, for a total of seven bicycle-lane-miles. This trail would connect the Little Menomonee River Trail in Milwaukee County to the Milwaukee River Trail in the City of Mequon to the north.

The City of Cedarburg development plan⁶ recommends that the City develop a system of bicycle and pedestrian paths that would link all City neighborhood and community parks and would also connect to the proposed Milwaukee River Trail. The pathway system would include eight miles of off-street paths within City parks and parkways and on-street facilities along nine miles of street, for a total of 17 bicycle-route-miles.

⁵*Documented in the report entitled Proposed Sidewalks-Bikeways Policy Plan, adopted by the City of Oak Creek Plan Commission in February 1985.*

⁶*Documented in SEWRPC Community Assistance Planning Report No. 144, A Development Plan for the City of Cedarburg: 2010, February 1991.*

The transportation element of the City of Mequon comprehensive plan,⁷ adopted in 1985, calls for the City to extend the existing off-street bicycle path approximately two miles to the northern City limits, and to develop approximately 15 bicycle-route-miles of bicycle ways on arterial and collector streets and approximately 18 bicycle-route-miles of bicycle ways on residential land access streets, for a total of approximately 35 bicycle-route-miles or 70 bicycle-lane-miles.

A one-mile segment of the Milwaukee River Trail has been developed by the Village of Grafton south of and parallel to Maple Drive. This trail segment will eventually become part of the countywide trail recommended in the County park and open space plan. The Village of Grafton park and open space plan⁸ calls for the development of two Village trails. The first trail would be approximately two miles in length and would connect three neighborhood parks to the Milwaukee River Trail; the other would be an approximately four-mile-long trail located within the Cedar Creek and Mole Creek Parkways that would connect to the City of Cedarburg trail system. The Village has completed a one-mile section of the longer trail.

Racine County

Existing and planned bicycle ways in Racine County are shown on Map A-4 in Appendix A of this report. Racine County designated an approximately 95-mile bicycle route circling the County along low-volume public roads in the early 1970s. The County prepared a master bicycle route development plan⁹ in 1975 that called for the development of approximately 30 additional miles of bicycle routes, 19 miles of

⁷*Documented in the report entitled Comprehensive Plan-Transportation Plan, prepared by the City of Mequon in 1985.*

⁸*Documented in SEWRPC Community Assistance Planning Report No. 178, A Park and Open Space Plan for the Village of Grafton, Ozaukee County, Wisconsin, March 1989.*

⁹*Documented in the report entitled Racine County Master Bike Route Development Plan, prepared by Barton-Aschman Associates, Inc., for the Racine County Bicycle Committee in October 1975.*

bicycle lanes, and 46 miles of off-street trails for bicycling and walking. The plan has been partially implemented through the development of four trails that connect to the on-street bicycle-way system. All of the trails are located off-road within former electric interurban railway system rights-of-way.

The Racine County park and open space plan calls for the County to develop a 14-mile-long trail within the Root River Parkway, and to develop an approximately 23-mile-long trail within the former Chicago, Milwaukee, St. Paul & Pacific Railroad right-of-way should the right-of-way become available. Development of a trail within the railway right-of-way would provide an opportunity to link the Root River and Lake Michigan Trails in the eastern portion of the County to the Fox River Trail in the western portion of the County.

The Racine County park and open space plan also calls for the Wisconsin Department of Natural Resources to develop a 10-mile trail within the Honey Creek Parkway, which would connect to the Fox River Trail on the north and south, forming a loop trail north of the City of Burlington. The plan further recommends that the Department develop a three-mile trail to connect the Bong Recreation Area in Kenosha County to the Fox River Trail in Racine County.

The Town of Mt. Pleasant park and open space plan,¹⁰ adopted in 1991, calls for the Town to construct a 13-mile multi-use trail that would connect on the north to the Root River Trail in the Town of Caledonia and on the south to the Pike River Trail. About eight miles of this proposed trail would be located in the Pike River Parkway, about four miles in the Hoods Creek Parkway, and about one mile would be located on-road.

Walworth County

There are no existing bicycle ways in Walworth County other than looped mountain bike trails located within the Kettle Moraine State Forest.

The Walworth County park and open space plan calls for the County to develop the Sugar Creek Trail, a 27-mile trail, of which 18 miles would be located off-road in parkway lands and nine miles would be located on-road. The trail would connect with the Honey Creek Trail in Racine County on the east and with the Ice Age Trail on the west.

The Walworth County plan also calls for the Wisconsin Department of Natural Resources to develop trails along the Mukwonago River and Turtle Creek. The Mukwonago River Trail would extend approximately six miles in Walworth County and continue into Waukesha County, and would connect the Ice Age and Fox River Trails. The Turtle Creek Trail would extend approximately 22 miles from the Ice Age Trail southwest to Rock County. The proposed trail locations are shown on Map A-5 in Appendix A of this report.

Washington County

Existing and planned bicycle ways in Washington County are shown on Map A-6 in Appendix A of this report. The Washington County Park and Planning Commission in 1978 prepared an outdoor recreation plan for the County which proposed a 57-mile bicycle route on public streets and highways, connecting the City of West Bend and the Villages of Slinger and Germantown with major parks within the County. The Washington County park and open space plan incorporates the recommended County bicycle route and also recommends the development of a multi-use trail within the Milwaukee River Parkway. The trail would extend 20 miles in the County and would connect to the Milwaukee River Trail in Ozaukee County on the east and with the Ice Age Trail on the north.

The Wisconsin Department of Transportation, at the request of the City of Hartford, recently completed a two-mile bicycling and walking path on the east side of the City. The path is located off-street in the right-of-way of STH 60, and extends from Hoffman Drive eastward to Pike Lake State Park. The Department plans to extend the bicycle path westward in 1995 to Rural Street as part of the reconstruction of STH 60. The City plans to construct a bicycle path that will extend from the STH 60 bicycle path north and west along the Rubicon River to the western City limits in Dodge County.

¹⁰*Documented in SEWRPC Community Assistance Planning Report No. 199, A Park and Open Space Plan for the Town of Mt. Pleasant, Racine County, Wisconsin, November 1991.*

The City of West Bend park and open space plan¹¹ calls for the City to develop multi-use trails within four parkway corridors. The City trails would connect to the proposed Milwaukee River Trail to be developed by Washington County and the Ice Age Trail to be developed by the State of Wisconsin in cooperation with the Ice Age Park and Trail Foundation. The four City trails include the five-mile-long Quaas Creek Trail, which would connect six proposed park sites to the proposed Milwaukee River Trail; the three-mile-long Silverbrook Trail, which would connect four existing parks to the Ice Age Trail on the west and the Milwaukee River Trail on the east; the Sunset Trail, a two-mile-long trail that would connect to the Ice Age Trail on the north and to the Silverbrook and Milwaukee River Trails on the south; and the two-mile-long Wingate Trail, which would connect one existing and two proposed parks to the Milwaukee River Trail. The City has constructed an approximately one-mile portion of the Milwaukee River Trail between Indiana Avenue and River Road.

The Village of Germantown has developed a bicycle route approximately one mile long from the intersection of STH 145 and Park Avenue south and west to the Village Library located on the southwest corner of the intersection of STH 167 and Western Avenue. The Village plans to construct approximately 16 miles of additional bicycle ways along streets within the Village.

Waukesha County

Existing and planned bicycle ways in Waukesha County are shown on Map A-7 in Appendix A of this report. The County had developed the Bugline and New Berlin Trails as of the end of 1993. The Waukesha County park and open space plan calls for the development of seven additional trails which would accommodate bicycling. They include the 37-mile-long Fox River Trail, which would be located primarily within parkway lands; the Menomonee River Trail, which would extend six miles between the Milwaukee County portion of the Menomonee River Trail on the east and the Bugline Trail on

the west; the Tamarack Trail, which would extend six miles between the Milwaukee County portion of the Menomonee River Trail on the east to the Fox River Trail on the west; the Pebble Brook Trail, a 12-mile trail which would link the Fox River Trail to the New Berlin Trail; the Mill Creek Trail, a five-mile trail which would link the Fox River Trail to a proposed County park in the southwestern portion of the City of New Berlin; the Mukwonago River Trail, which would extend 14 miles in Waukesha County and connect the Ice Age and Fox River Trails; and the Lake Country Trail, which would extend about 15 miles from the northern limits of the City of Waukesha westward to the City of Oconomowoc. The County initiated construction of the first phase of the Lake Country Trail in 1993, which will extend about eight miles from the City of Waukesha to Cushing Park in the City of Delafield. The trail will be located primarily within the former right-of-way of The Milwaukee Electric Railway & Light Company, with limited segments located on-street.

The City of Brookfield adopted a bicycle-way master plan¹² in 1988. The plan calls for the development of 111 miles of bicycle ways within the City, including 43 miles of bicycle paths to be located within street rights-of-way; 27 miles of bicycle lanes; 31 miles of bicycle routes; and 10 miles of off-street multi-use trails. The City of Brookfield park and open space plan,¹³ adopted in 1992, incorporates the bicycle ways recommended by the bicycle-way master plan, and recommends the development of an additional bicycle way along Poplar Creek. As of 1993, the City had completed approximately 20 miles of the proposed bicycle-way system, consisting primarily of bicycle lanes and bicycle paths along arterial streets.

¹¹*Documented in SEWRPC Community Assistance Planning Report No. 104, A Park and Open Space Plan for the City of West Bend, Washington County, Wisconsin, June 1985.*

¹²*Documented in the report entitled Bikeway Master Plan, Brookfield, Wisconsin, prepared by R. A. Smith & Associates, Inc., for the Brookfield Bicycle and Pedestrian Safety Committee, April 1988.*

¹³*Documented in SEWRPC Community Assistance Planning Report No. 108, A Park and Open Space Plan for the City of Brookfield, Waukesha County, Wisconsin, August 1991.*

The Village of Elm Grove adopted a bicycle and pedestrian pathway plan¹⁴ in 1989. The plan provides for approximately nine miles of bicycle ways within the Village, including approximately 3.5 miles of existing pathways for shared bicycle and pedestrian use. Approximately five miles of the recommended bicycle ways would be on-road on paved shoulders; the remainder would be pathways for both bicyclists and pedestrians located within street rights-of-way.

The City of Muskego park and open space plan¹⁵ calls for the development of 23 miles of trails, including 10 miles within the former right-of-way of The Milwaukee Electric Railway & Light Company; two miles within existing parks; and 11 miles on-street. Approximately two miles of the on-street bicycle way is proposed to be constructed along the Moorland Road extension from Durham Road north to the City limits at College Avenue. A two-mile portion of the City trail system has been constructed within the former electric interurban railway right-of-way between the Civic Center complex and CTH Y on the west and Woods Road/Bay Lane Terrace on the east. It is envisioned that the City of Muskego trail system would eventually connect to the existing Root River Trail in Milwaukee County to the east, to the existing Waterford-Wind Lake Trail in Racine County to the south, and to the proposed Fox River Trail in Waukesha County on the west.

The City of New Berlin park and open space plan¹⁶ calls for the development of two multi-use trails totaling 15 miles in length. One of the trails would be two miles in length, primarily off-

street, and would connect the County's New Berlin Trail to Minooka Park. The other trail is proposed to be 13 miles in length and would form a loop through the central portion of the City, connecting four community parks. Approximately four miles of this latter trail would be along public streets and the remainder would be off-street.

Prior to the adoption of the City park and open space plan, the City of New Berlin Plan Commission adopted a bicycle plan which recommended the establishment of both on- and off-street bicycle ways. The plan, which was first adopted in April 1980, has been periodically updated by the City.

The Village of Menomonee Falls land use and transportation system plan¹⁷ recommends that the Village develop an approximately three-mile-long bicycling and walking trail on the periphery of the Tamarack Swamp, and an approximately three-mile-long trail along the Menomonee River, from Lilly Road northwest to County Line Road. This trail segment will eventually become part of the countywide trail recommended in the County park and open space plan. The Village has also developed an approximately five-route-mile-long bicycle path along Pilgrim Road within the street right-of-way, from USH 45 to a point approximately one-half mile north of Lisbon Road. The Village plans to construct a bicycle way along Lilly Road between Good Hope and Lisbon Roads.

The City of Waukesha land use plan¹⁸ recommends that bicycle routes be established on approximately three miles of City streets, for a total of six bicycle-lane-miles, in order to link the Glacial Drumlin Trail on the west side of the City to the New Berlin Trail on the east side of the City. The City plans to establish the bicycle routes in 1994.

¹⁴*Documented in the report entitled Bicycle/Pedestrian Pathway Plan for the Village of Elm Grove, prepared by R. A. Smith & Associates, Inc., for the Village of Elm Grove, November 1989.*

¹⁵*Documented in SEWRPC Community Assistance Planning Report No. 202, A Park and Open Space Plan for the City of Muskego, Waukesha County, Wisconsin, January 1992.*

¹⁶*Documented in SEWRPC Community Assistance Planning Report No. 66, A Park and Open Space Plan for the City of New Berlin, Waukesha County, Wisconsin, October 1981.*

¹⁷*Documented in SEWRPC Community Assistance Planning Report No. 162, A Land Use and Transportation System Plan for the Village of Menomonee Falls: 2010, April 1990.*

¹⁸*Documented in SEWRPC Community Assistance Planning Report No. 169, A Land Use Plan for the City of Waukesha Planning Area: 2010, Waukesha County, Wisconsin, September 1993.*

The Village of Hartland has developed approximately 1.5 miles of the approximately two-mile portion of the Ice Age Trail that traverses the Village from north to south along the Bark River. Both bicycling and walking are permitted on the Village trail. The Village land use and circulation plan¹⁹ calls for the trail to be extended southward approximately 0.5 mile to the southern corporate limits of the Village.

EXISTING GOVERNMENT ACTIVITIES AFFECTING THE PROVISION OF BICYCLE FACILITIES

Existing government activities relating to the provision of bicycle facilities may be grouped into three general categories: 1) system planning; 2) facility planning, design, construction, and maintenance; and 3) regulation of privately advanced development projects.

Completed system-level planning efforts related to bicycle facilities have been described earlier in this chapter. Those efforts include park and open space plans developed at the regional and county levels of government; a modest number of local plans that have addressed bicycle facilities as a component of land use, park and open space, or other planning efforts; and local bicycle-way system plans developed by Racine County, the Cities of Brookfield and Milwaukee, and the Village of Elm Grove.

Activities related to the planning, design, construction, and maintenance of bicycle facilities and streets used for bicycle travel are carried out by State, county, and local units of government. Transportation officials within these agencies typically rely on standards and guidelines developed by nationally recognized organizations when designing bicycle facilities and roadways, including the Guide for the Development of Bicycle Facilities developed by the American Association of State Highway and Transportation Officials (AASHTO); the

AASHTO Policy on Geometric Design of Highways and Streets—also known as the “Green Book”; and the Manual on Uniform Traffic Control Devices produced by the Federal Highway Administration. These documents address design-related aspects of bicycle facility construction such as signing, striping, width, and similar details. However, no national standards have yet been developed regarding the appropriate design treatment—for example, a wide curb lane, bicycle lane, or separate bicycle path—to be provided on a specific roadway segment based upon roadway characteristics such as motor-vehicle speeds and volumes, adjacent land uses, roadway cross-section, and related factors.

The Wisconsin Department of Transportation, on December 30, 1993, revised its Facilities Development Manual to include warranting criteria for bicycle facilities and guidelines for the design of bicycle facilities. The State’s policy, as set forth in the Facilities Development Manual, calls for the Department to provide bicycle accommodation on streets and highways designated as bicycle ways in an adopted regional or local bicycle facilities plan, as well as on streets and highways where the average daily traffic volume exceeds 1,000 vehicles and the street or highway carries 25 or more bicycles per day during the peak three months of the bicycling season. On highways having an urban cross-section, the Department will provide a curb lane of 14 feet measured from the edge of the gutter. On highways having a rural cross-section, the Department will provide a minimum five-foot-wide paved shoulder.

In addition to bicycle facilities provided directly by government agencies, the provision of such facilities may be required as a condition of approval for privately advanced development projects which require review and approval by a government agency. Private development projects are often regulated by county and local units of government through zoning and land subdivision control ordinances. Zoning regulations that could benefit bicycle travel, such as the inclusion of requirements for bicycle parking in zoning ordinances, have not been adopted by any of the county or local governments within the Region.

Five local units of government and one county government within the Region have included provisions for bicycle facilities in their land subdivision control ordinances. The Racine

¹⁹Documented in SEWRPC Community Assistance Planning Report No. 49, A Land Use and Traffic Circulation Plan for the Village of Hartland: 2000, Village of Hartland, Waukesha County, Wisconsin, July 1981.

County, Town of Dover, and Town of Mt. Pleasant land subdivision control ordinances include provisions that allow the County or Town government to require bicycle facility improvements within a proposed land subdivision where such improvements are recommended in the Racine County bicycle-way system plan. The City of Delafield land subdivision control ordinance requires that bicycle facilities be provided in new land subdivisions in accordance with the City official map; however, the City has adopted the Waukesha County Highway Width Map as its official map, and no trail alignments are shown on that map.

The City of Oak Creek land subdivision control ordinance requires that a \$50 bicycle-way fee be paid to the City for each lot or residential unit within a proposed subdivision. The bicycle-way fee is deposited in an account to be used only for the construction of bicycle ways in the City.

The City of Brookfield land subdivision control ordinance contains the most extensive requirements related to bicycle facilities of any such ordinance in the Region. The Brookfield ordinance requires subdividers to construct all portions of a bicycle way shown on the City bicycle-way plan encompassed in or adjacent to the land undergoing development or to pay fees in lieu of the bicycle-way construction. If the City Board of Public Works determines that construction of the bicycle way is not necessary due to the size of the project or the lack of adjacent bicycle ways in the area, or if the proposed development does not encompass a bicycle way, the developer must pay a fee. For a residential subdivision, the fee is equal to \$200 per proposed dwelling unit. For a nonresidential subdivision, the fee is based on \$20 per each 1,000 square feet of lot area or fraction thereof. These fees are placed in a special account to be used exclusively for the development of bicycle ways within the City.

ADOPTED PLANS CALLING FOR THE PROVISION OF PEDESTRIAN FACILITIES

A number of plans calling for the provision of pedestrian facilities have been prepared within the Region. Recommendations for such facilities have been included as a component of several park and open space plans, land use plans, and central business district development or redevelopment plans adopted by local governments

within the Region, including central business district plans prepared for the Cities of Kenosha, Milwaukee, Racine, Waukesha, and West Bend. The plans generally propose design guidelines and improvements intended to facilitate and promote pedestrian movement in the "downtown" areas by providing, in addition to pedestrian walkways, amenities such as landscaping and street furniture and by recommending measures that reduce pedestrian-vehicular conflicts.

Plans that have included the provision of pedestrian facilities as a primary plan objective include the City of Milwaukee plans for the Milwaukee River walkways and the City skywalk system, as well as the Village of Elm Grove bicycle and pedestrian pathway plan.

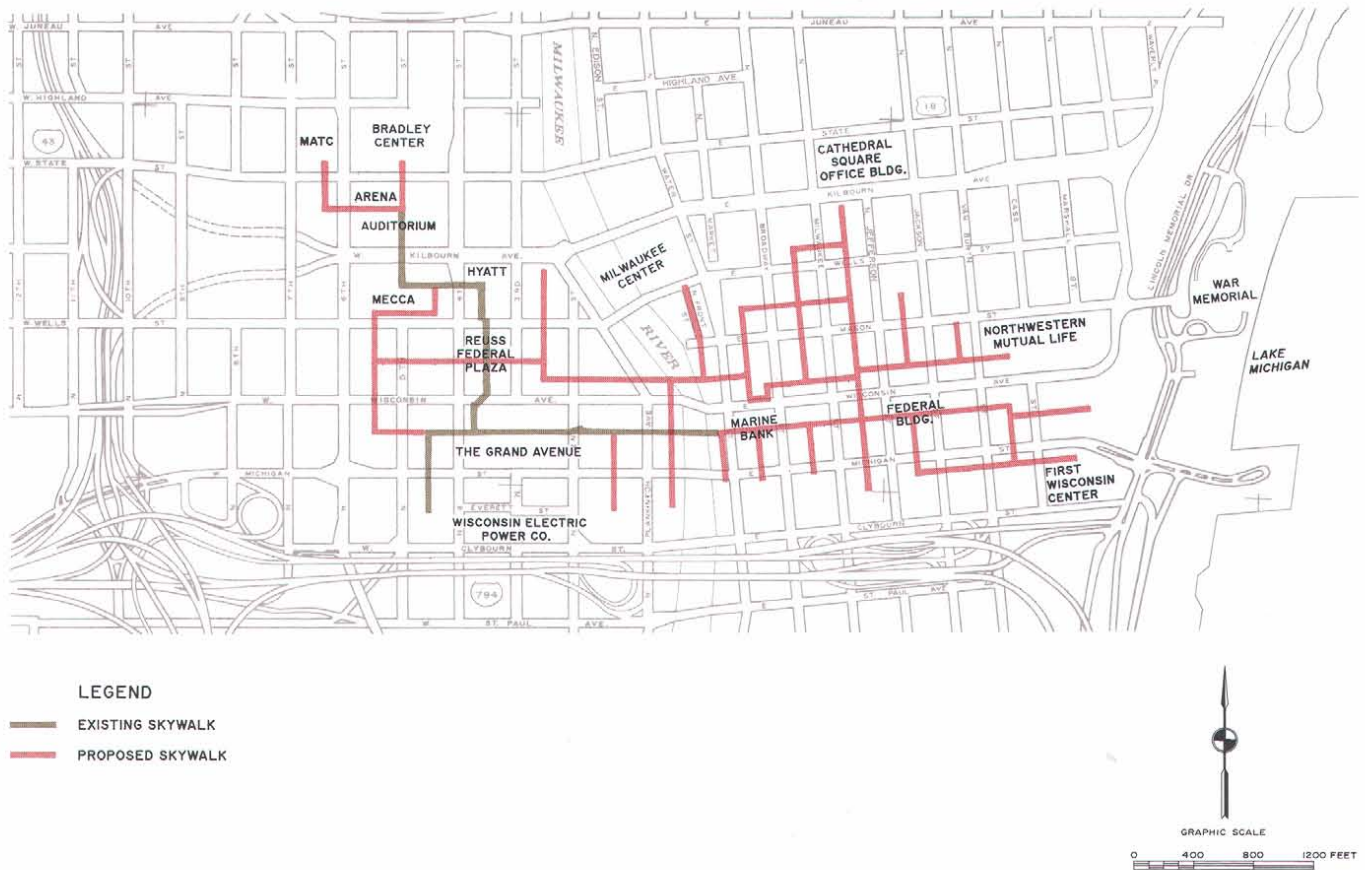
The Milwaukee River walkway plan²⁰ was developed to assist in the restoration of the Milwaukee River as a recreational amenity in the City. The plan proposes the establishment of a Riverwalk along both sides of the Milwaukee River from the North Avenue dam to the Milwaukee Harbor entrance in order to facilitate public access to the River. The Riverwalk is proposed to be a public, pedestrian-oriented facility accessible from adjacent streets, buildings, and parks.

The development of a skywalk system in the City of Milwaukee began with the construction of elevated pedestrian walkways over N. Plankinton Avenue and N. 2nd Street as part of the development of the Grand Avenue Mall in the Milwaukee central business district in the late 1970s and early 1980s. Prior to the completion of the Grand Avenue Mall, the City of Milwaukee retained the firm of Barton-Aschman Associates, Inc., to evaluate the potential for creating a system of elevated pedestrian ways in the central business district. The Barton-Aschman study determined that such a system would be

²⁰*Documented in the document entitled Milwaukee Riverlink Guidelines, prepared by the Milwaukee Department of City Development, March 1992.*

Figure 3

MILWAUKEE SKYWALK SYSTEM: 1989



Source: City of Milwaukee.

feasible, and the resulting report²¹ recommended a proposed skywalk system, design guidelines, and financial and organizational strategies to implement the system plan.

In 1988, the City Plan Commission directed the Department of City Development to undertake a comprehensive review of the City skywalk plan for the central business district. The report²² produced by the City staff as a result of that

review recommended modifications to the skywalk system proposed in the Barton-Aschman report; recommended revised design, construction, operational, and maintenance standards; and recommended the formation of a Skywalk Design Review Committee. Figure 3 depicts the modified skywalk system as recommended in the 1989 City report. It should be noted that the City Plan Commission adopted the City staff report but did not endorse the skywalk system presented in that report.

The Village of Elm Grove bicycle and pedestrian pathway plan²³ was developed to facilitate bicycle and pedestrian access from residential areas of the Village to the Village center and

²¹ Documented in the report entitled *Plan for a Skywalk System, Milwaukee, Wisconsin*, prepared by Barton-Aschman Associates, Inc., June 1982.

²² Documented in the report entitled *A Planning Guide for Milwaukee's Downtown Skywalk Network*, prepared by the Milwaukee Department of City Development, January 1989.

²³ Documented in the report entitled *Bicycle/Pedestrian Pathway Plan for the Village of Elm Grove*, prepared by R. A. Smith & Associates, Inc., November 1989.

Village central business district. The plan recommends the construction of approximately two miles of pedestrian sidewalks and walkways as well as the construction of a pedestrian bridge across Underwood Creek just south of the terminus of San Fernando Drive.

As described earlier in this chapter, park and open space plans containing recommendations for the development of off-street bicycle paths have been prepared and adopted by the Commission for the Southeastern Wisconsin Region; by each of the seven counties in the Region; and by several local units of government. All of the off-street bicycle paths recommended in the regional, county, and local park and open space plans are intended for joint use by bicyclists and pedestrians. In addition to the proposed joint-use facilities, the Ice Age Trail, located partly in the western portions of Washington, Waukesha, and Walworth Counties, has been developed for use as primarily a hiking trail.

The Ice Age Trail, which is planned to extend approximately 1,000 miles across the State of Wisconsin along the terminus of the most recent glaciation, was designated as a National Scenic Trail by the United States Congress in 1980. The trail is administered by the National Park Service in cooperation with the Wisconsin Department of Natural Resources, the Ice Age Trail Council, and the Ice Age Park and Trail Foundation. Development and management of the Ice Age Trail is accomplished through these and many other cooperating Federal, State, and local agencies of government as well as private organizations.

Hiking is permitted on all completed segments of the trail. Other nonmotorized uses, including bicycling, horseback riding, and cross-country skiing, may be permitted on some segments in accordance with the policies of the agency responsible for management of the segments involved. Snowmobiling is also permitted on certain segments during the winter months. In Southeastern Wisconsin, two segments of the existing 48 miles of completed Ice Age Trail are open to bicyclists: that portion of the trail that follows the joint pedestrian and bicycle path along the Bark River in the Village of Hartland for a distance of approximately 1.5 miles; and that portion of the trail that follows the Glacial Drumlin State Trail for about two miles just west of the Village of Wales. Snowmobiling is also permitted on the Glacial Drumlin State Trail

with the exception of that portion located within the City of Waukesha.

Map 9 shows the location of that portion of the Ice Age Trail located within the Southeastern Wisconsin Region. Approximately 48 miles of the proposed total 92-mile length of the trail within the Region had been completed by the end of 1993.

EXISTING GOVERNMENT ACTIVITIES AFFECTING THE PROVISION OF PEDESTRIAN FACILITIES

Existing government activities relating to the provision of pedestrian facilities may be grouped into three general categories: 1) system planning; 2) facility planning, design, construction, and maintenance; and 3) regulation of privately advanced development projects.

Completed system-level planning efforts related to pedestrian facilities have been described earlier in this chapter. Those efforts include park and open space plans developed at the regional and county levels of government; a modest number of local plans that have addressed pedestrian facilities as a component of land use, park and open space, central business district improvement, or other planning efforts; and sidewalk plans prepared by local public works officials. In some cases, the local governing body may direct the Public Works Department or City Engineer to develop a plan showing those streets and highways along which sidewalks must be provided as streets are constructed or reconstructed.

Activities related to the planning, design, construction, and maintenance of pedestrian facilities are carried out by State, county, and local units and agencies of government. Public works officials concerned with pedestrian facility development typically rely on standards and guidelines developed by nationally recognized organizations when designing pedestrian facilities and associated streets and highways, including manuals developed by the American Association of State Highway and Transportation Officials,²⁴ by the Federal Highway Admin-

²⁴ *A Policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials, Washington, D. C., 1990.

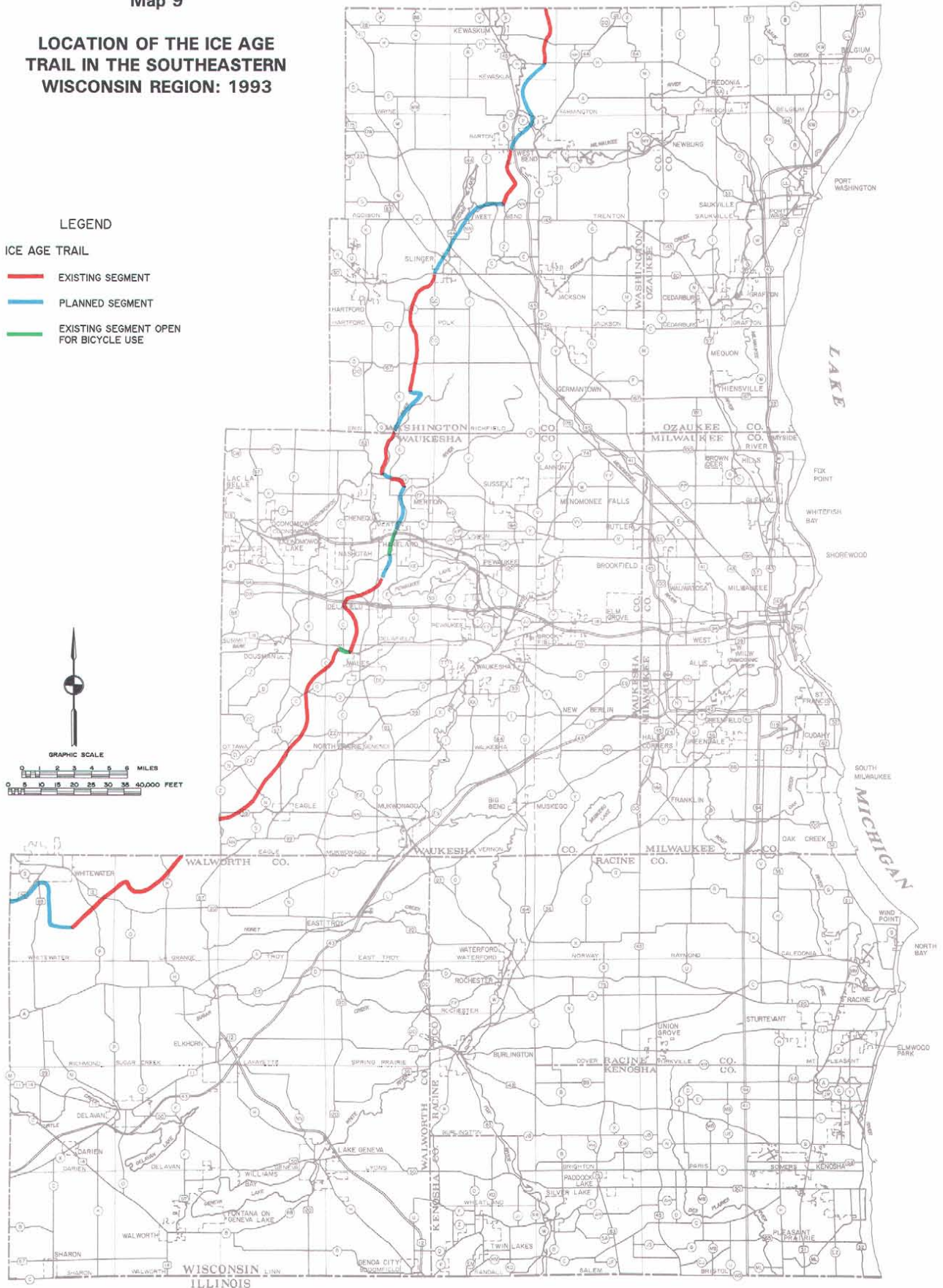
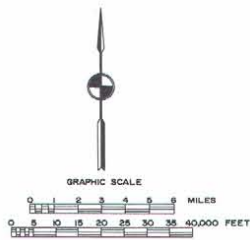
Map 9

LOCATION OF THE ICE AGE TRAIL IN THE SOUTHEASTERN WISCONSIN REGION: 1993

LEGEND

ICE AGE TRAIL

- EXISTING SEGMENT
- PLANNED SEGMENT
- EXISTING SEGMENT OPEN FOR BICYCLE USE



The Ice Age Trail, which is planned to extend approximately 1,000 miles across the State of Wisconsin along the terminus of the most recent glaciation, was designated as a National Scenic Trail by the United States Congress in 1980. The trail is administered by the National Park Service in cooperation with the Wisconsin Department of Natural Resources, the Ice Age Trail Council, and the Ice Age Park and Trail Foundation. When completed, the trail will extend 92 miles in Southeastern Wisconsin through the western portions of Washington, Waukesha, and Walworth Counties. A total of 48 miles of the trail were open for use as of the end of 1993. Hiking is permitted on all completed segments of the trail. Other uses, including bicycling, horseback riding, cross-country skiing, and snowmobiling, may be permitted on some segments in accordance with the policies of the agency responsible for management of the segments involved.

Source: SEWRPC.

istration,²⁵ and by the Wisconsin Department of Transportation.²⁶

Section 66.615 of the Wisconsin Statutes authorizes the governing bodies of cities, villages, and towns to determine where sidewalks are to be constructed and to determine the width of such walks and the materials to be used in their construction. The local governing body may direct the laying of sidewalks, as well as the repair, removal, or replacement of sidewalks, by ordinance or by resolution. Many local governments specify those street segments along which sidewalks must be provided in the community's "Streets and Highways" ordinance.

Section 66.616 of the Wisconsin Statutes requires that curb ramps be provided when curbs or sidewalks are constructed or replaced within five feet of a crosswalk. The Statutes set forth standards for curb-ramp construction, and those standards have been incorporated into the design standards for pedestrian facilities set forth in Chapter VI of this report.

Communities with extensive sidewalk networks generally include a provision in the land subdivision control ordinance requiring the construction of sidewalks when land is subdivided. Land subdivision control ordinances adopted by counties and local governments within the Region were reviewed as part of this planning effort to determine the requirements related to the provision of sidewalks. The results are presented in Table 4. As this table shows, six of the seven counties in the Region—all except Milwaukee County—had adopted a land subdivision control ordinance as of 1985. Milwaukee County did not have such an ordinance because all of the land within the County lies within the boundaries of the 19 municipalities which together comprise the County. None of the six County subdivision ordinances required sidewalks to be constructed in proposed subdivisions; however, each ordinance except the

Ozaukee County ordinance included a provision that allowed the Town Board of the civil town in which the subdivision was to be located to require the construction of sidewalks.

Of the 147 cities, villages, and towns within the Region, 118 had adopted a local subdivision control ordinance as of 1985. Table 4 shows that 22, or about 19 percent, of these local subdivision ordinances required sidewalks to be provided in all new subdivisions; that 10, or about 8 percent, of the ordinances required that sidewalks be provided only in certain types of subdivisions, such as in residential subdivisions but not in commercial or industrial subdivisions; that 44, or about 37 percent, of local subdivision ordinances provided that sidewalks may be required at the discretion of the Plan Commission, City Council, Village or Town Board, or other government agency such as a Board of Public Works; and that 42, or 36 percent, of local subdivision ordinances did not include a requirement for the installation of sidewalks in new subdivisions.

Several local government land subdivision control ordinances included requirements for the provision of pedestrian ways other than sidewalks. Of the 118 adopted local subdivision ordinances within the Region, 35, or about 30 percent, included a provision allowing the governing body or Plan Commission to require walkways across long blocks, with a block length of 900 feet or more most commonly specified. Thirty-seven, or about 31 percent, of the ordinances included a provision that allows the Plan Commission or governing body to require that a walkway be constructed if one is needed to provide safe pedestrian access to community facilities such as schools, parks, or shopping areas.

SUMMARY AND CONCLUSIONS

This chapter presents the results of inventories of planned bicycle and pedestrian facilities within the Region. As of the end of 1993, the County of Racine, the Cities of Brookfield, Milwaukee, New Berlin, and Oak Creek, and the Village of Elm Grove had adopted bicycle-way system plans. In addition, park and open space plans containing a bicycle-way element had been adopted by the Regional Planning Commission; each of the seven counties in the Region; the Cities of Muskego, New Berlin, and West Bend; the Village of Grafton; and the Town of

²⁵*Manual on Uniform Traffic Control Devices*, U. S. Department of Transportation, Washington, D. C., 1989.

²⁶*Facilities Development Manual*, Wisconsin Department of Transportation, Madison, Wisconsin, 1993.

Table 4

**SIDEWALK REQUIREMENTS IN COUNTY AND LOCAL LAND SUBDIVISION
CONTROL ORDINANCES IN THE SOUTHEASTERN WISCONSIN REGION: 1985**

Governmental Unit	Governing Body Has Adopted a Subdivision Control Ordinance	Sidewalk Requirements
Kenosha County		
County	Yes	Sidewalks not required by County; ordinance specifically provides that Town Boards may require sidewalks for subdivisions within their jurisdictions
Cities		
Kenosha	Yes	Sidewalks required in residential subdivisions
Villages		
Paddock Lake	Yes	Sidewalks required on both sides of street except in residential subdivisions where lot widths exceed 100 feet, in which case sidewalks are only required on one side of the street. The sidewalk requirement may be waived in residential subdivisions where lot widths exceed 150 feet
Pleasant Prairie	Yes	Sidewalks required
Silver Lake	Yes	Sidewalks may be required at the discretion of the Village Board
Twin Lakes	Yes	Sidewalks required
Towns		
Brighton	No	N/A
Bristol	Yes	No sidewalk requirement
Paris	Yes	No sidewalk requirement
Randall	No	N/A
Salem	Yes	Sidewalks required on both sides of street except in residential subdivisions where lot widths exceed 100 feet, in which case sidewalks are only required on one side of the street. The sidewalk requirement may be waived in residential subdivisions where lot widths exceed 150 feet
Somers	Yes	Sidewalks required
Wheatland	No	N/A
Milwaukee County		
County	No	N/A
Cities		
Cudahy	Yes	Sidewalks required
Franklin	Yes	Sidewalks required
Glendale	Yes	No sidewalk requirement
Greenfield	Yes	No sidewalk requirement
Milwaukee	Yes	Sidewalks required along both sides of the street in residential subdivisions and at least one side of the street in other subdivisions
Oak Creek	Yes	Sidewalks may be required at the discretion of the Common Council
St. Francis	Yes	Sidewalks required
South Milwaukee	Yes	Sidewalks required
Wauwatosa	Yes	Sidewalks may be required at the discretion of the Common Council
West Allis	Yes	No sidewalk requirement
Villages		
Bayside	Yes	No sidewalk requirement
Brown Deer	Yes	Sidewalks required in nonresidential subdivisions; may be required in residential subdivisions at the discretion of the Village Board
Fox Point	Yes	No sidewalk requirement
Greendale	Yes	Sidewalks may be required at the discretion of the Village Board
Hales Corners	Yes	No sidewalk requirement
River Hills	Yes	No sidewalk requirement
Shorewood	Yes	No sidewalk requirement
West Milwaukee	No	N/A
Whitefish Bay	Yes	No sidewalk requirement

Table 4 (continued)

Governmental Unit	Governing Body Has Adopted a Subdivision Control Ordinance	Sidewalk Requirements
Ozaukee County		
County	Yes ^a	No sidewalk requirement
Cities		
Cedarburg	Yes	Sidewalks may be required at the discretion of the Department of Public Works
Mequon	Yes	No sidewalk requirement
Port Washington	Yes	Sidewalks may be required at the discretion of the Board of Public Works
Villages		
Belgium	Yes	Sidewalks may be required at the discretion of the Village Board
Fredonia	Yes	Sidewalks may be required at the discretion of the Village Board
Grafton	Yes	Sidewalks required
Saukville	Yes	Sidewalks required in subdivisions having lots smaller than one acre; sidewalks may be required in other subdivisions at the discretion of the Village Board
Thiensville	Yes	Sidewalks may be required at the discretion of the Village Board
Towns		
Belgium	No	N/A
Cedarburg	Yes	No sidewalk requirement
Fredonia	Yes	No sidewalk requirement
Grafton	No	N/A
Port Washington	No	N/A
Saukville	Yes	No sidewalk requirement
Racine County		
County	Yes	Sidewalks not required by County; ordinance specifically provides that Town Boards may require sidewalks for subdivisions within their jurisdictions
Cities		
Burlington	Yes	Sidewalks required for subdivisions in urban areas; sidewalks may be required at the discretion of the Common Council in rural subdivisions
Racine	Yes	Sidewalks required
Villages		
Elmwood Park	Yes	Sidewalks may be required at the discretion of the Village Board
North Bay	Yes	Sidewalks may be required at the discretion of the Village Board
Rochester	Yes	Sidewalks may be required at the discretion of the Village Board
Sturtevant	Yes	Sidewalks required
Union Grove	Yes	Sidewalks may be required at the discretion of the Village Board
Waterford	Yes	Sidewalks required
Wind Point	Yes	No sidewalk requirement
Towns		
Burlington	No	N/A
Caledonia	Yes	No sidewalk requirement
Dover	Yes	Sidewalks may be required at the discretion of the Town Board
Mt. Pleasant	Yes	Sidewalks may be required at the discretion of the Town Board
Norway	Yes	No sidewalk requirement
Raymond	Yes	Sidewalks may be required at the discretion of the Town Board
Rochester	No	N/A
Waterford	Yes	Sidewalks may be required at the discretion of the Town Board
Yorkville	Yes	No sidewalk requirement

Table 4 (continued)

Governmental Unit	Governing Body Has Adopted a Subdivision Control Ordinance	Sidewalk Requirements
Walworth County County	Yes	Sidewalks not required by County; ordinance specifically provides that Town Boards may require sidewalks for subdivisions within their jurisdictions
Cities		
Delavan	Yes	Sidewalks may be required at the discretion of the Common Council
Elkhorn	Yes	Sidewalks required
Lake Geneva	Yes	Sidewalks required in business and manufacturing subdivisions; sidewalks may be required in residential subdivisions at the discretion of the Common Council
Whitewater	Yes	Sidewalks required
Villages		
Darien	Yes	No sidewalk requirement
East Troy	Yes	No sidewalk requirement
Fontana-on-Geneva Lake ...	Yes	Sidewalks may be required at the discretion of the Village Board
Genoa City	Yes	Sidewalks may be required at the discretion of the Village Board
Sharon	Yes	Sidewalks may be required at the discretion of the Plan Commission
Walworth	Yes	Sidewalks required for subdivisions in urban areas; sidewalks may be required at the discretion of the Village Board in rural subdivisions
Williams Bay	Yes	Sidewalks may be required at the discretion of the Village Board
Towns		
Bloomfield	No	N/A
Darien	No	N/A
Delavan	Yes	Sidewalks may be required at the discretion of the Town Board
East Troy	Yes	Sidewalks may be required at the discretion of the Town Board
Geneva	No	N/A
Lafayette	No	N/A
LaGrange	No	N/A
Linn	No	N/A
Lyons	No	N/A
Richmond	No	N/A
Sharon	No	N/A
Spring Prairie	No	N/A
Sugar Creek	No	N/A
Troy	No	N/A
Walworth	Yes	No sidewalk requirement
Whitewater	No	N/A
Washington County County	Yes	Sidewalks not required by County; ordinance specifically provides that Town Boards may require sidewalks for subdivisions within their jurisdictions
Cities		
Hartford	Yes	Sidewalks may be required at the discretion of the Common Council
West Bend	Yes	Sidewalks required
Villages		
Germantown	Yes	Sidewalks may be required at the discretion of the Village Board
Jackson	Yes	Sidewalks required
Kewaskum	Yes	Sidewalks required
Newburg	Yes	Sidewalks required
Slinger	Yes	Sidewalks required in subdivisions with lot sizes smaller than one acre; sidewalks may be required in other subdivisions at the discretion of the Village Board

Table 4 (continued)

Governmental Unit	Governing Body Has Adopted a Subdivision Control Ordinance	Sidewalk Requirements
Washington County (continued)		
Towns		
Addison	No	N/A
Barton	Yes	No sidewalk requirement
Erin	Yes	No sidewalk requirement
Farmington	No	N/A
Germantown	No	N/A
Hartford	No	N/A
Jackson	Yes	No sidewalk requirement
Kewaskum	Yes	Sidewalks may be required at the discretion of the Town Board
Polk	Yes	No sidewalk requirement
Richfield	Yes	Sidewalks may be required at the discretion of the Town Board
Trenton	Yes	Sidewalks may be required at the discretion of the Town Board
Wayne	No	N/A
West Bend	Yes	Sidewalks may be required at the discretion of the Town Board
Waukesha County		
County	Yes ^a	Sidewalks not required by County; ordinance specifically provides that Town Boards may require sidewalks in subdivisions within their jurisdictions
Cities		
Brookfield	Yes	No sidewalk requirement
Delafield	Yes	Sidewalks may be required at the discretion of the Plan Commission
Muskego	Yes	Sidewalks may be required at the discretion of the Common Council
New Berlin	Yes	Sidewalks may be required at the discretion of the Common Council
Oconomowoc	Yes	Sidewalks required
Waukesha	Yes	Sidewalks required
Villages		
Big Bend	Yes	Sidewalks may be required at the discretion of the Village Board
Butler	Yes	Sidewalks required in nonresidential subdivisions; may be required in residential subdivisions at the discretion of the Village Board
Chenequa	No	N/A
Dousman	Yes	No sidewalk requirement
Eagle	Yes	Sidewalks may be required at the discretion of the Village Board
Elm Grove	Yes	No sidewalk requirement
Hartland	Yes	Sidewalks required
Lac La Belle	Yes	No sidewalk requirement
Lannon	No	N/A
Menomonee Falls	Yes	Sidewalks may be required at the discretion of the Village Board
Merton	Yes	Sidewalks required
Mukwonago	Yes	Sidewalks may be required at the discretion of the Village Board
Nashotah	Yes	Sidewalks may be required at the discretion of the Village Board
North Prairie	Yes	No sidewalk requirement
Oconomowoc Lake	Yes	No sidewalk requirement
Pewaukee	Yes	Sidewalks required
Sussex	Yes	Sidewalks may be required at the discretion of the Village Board
Wales	Yes	No sidewalk requirement
Towns		
Brookfield	Yes	No sidewalk requirement
Delafield	Yes	No sidewalk requirement
Eagle	Yes	Sidewalks may be required at the discretion of the Town Board
Genesee	Yes	Sidewalks may be required at the discretion of the Town Board
Lisbon	Yes	No sidewalk requirement
Merton	Yes	No sidewalk requirement
Mukwonago	Yes	Sidewalks may be required at the discretion of the Plan Commission
Oconomowoc	Yes	Sidewalks may be required at the discretion of the Town Board
Ottawa	Yes	No sidewalk requirement
Pewaukee	Yes	Sidewalks may be required at the discretion of the Town Board
Summit	Yes	No sidewalk requirement
Vernon	Yes	No sidewalk requirement
Waukesha	Yes	No sidewalk requirement

^a Ordinance applies only to land divisions in shoreland areas.

Table 5

**MILES^a OF EXISTING AND PLANNED BICYCLE WAYS TO BE PROVIDED
IN ACCORDANCE WITH ADOPTED COUNTY AND LOCAL PLANS:^b 1993**

Planning Area	On-Street Bicycle Ways			Off-Street Bicycle Ways			Total On- and Off-Street Bicycle Ways		
	Existing	Planned	Total	Existing	Planned	Total	Existing	Planned	Total
Kenosha	7	0	7	10	5	15	17	5	22
Milwaukee	108	258	366	52	117	169	160	375	535
Racine	4	13	17	8	23	31	12	36	48
Region outside Planning Areas ...	94	277	371	36	329	365	130	606	736
Total	213	548	761	106	474	580	319	1,022	1,341

^a The length of existing and planned bicycle ways is given in route-miles. The number of bicycle-lane-miles will normally be approximately twice the number of route-miles, as bicycle lanes or bicycle routes would be located along both sides of a street; and bicycle paths would provide for two directions of travel.

^b Not all of the existing and planned bicycle-way mileages reflected on this table are included in the final recommended bicycle-way system plan described in Chapter VIII of this report. Although many existing bicycle ways and bicycle ways proposed as part of park and open space and other county and local plans were incorporated into the regional bicycle-way system plan, the mileages on this table include certain bicycle ways intended to serve neighborhood- and community-level activity centers. Such bicycle ways, while serving a worthwhile local transportation purpose, are beyond the scope of a regional plan and therefore are not included as part of the recommended regional bicycle-way system.

Source: SEWRPC.

Mt. Pleasant. A bicycle-way element had also been included in the City of Cedarburg development plan, the City of Mequon comprehensive plan, the Village of Hartland land use and circulation plan, and the Village of Hales Corners land use, urban design, and transportation plan for selected arterial street corridors within the Village.

As shown in Table 5, existing plans propose a total of about 1,341 route-miles of bicycle ways within the Region. Of this total, about 580 route-miles consist of bicycle ways proposed to be located in off-street corridors and about 761 route-miles consist of bicycle ways proposed to be located on-street or within street rights-of-way. Of the 1,341 route-miles of bicycle ways proposed in existing plans, about 319 route-miles, or about 24 percent, were open to use as of the end of 1993.

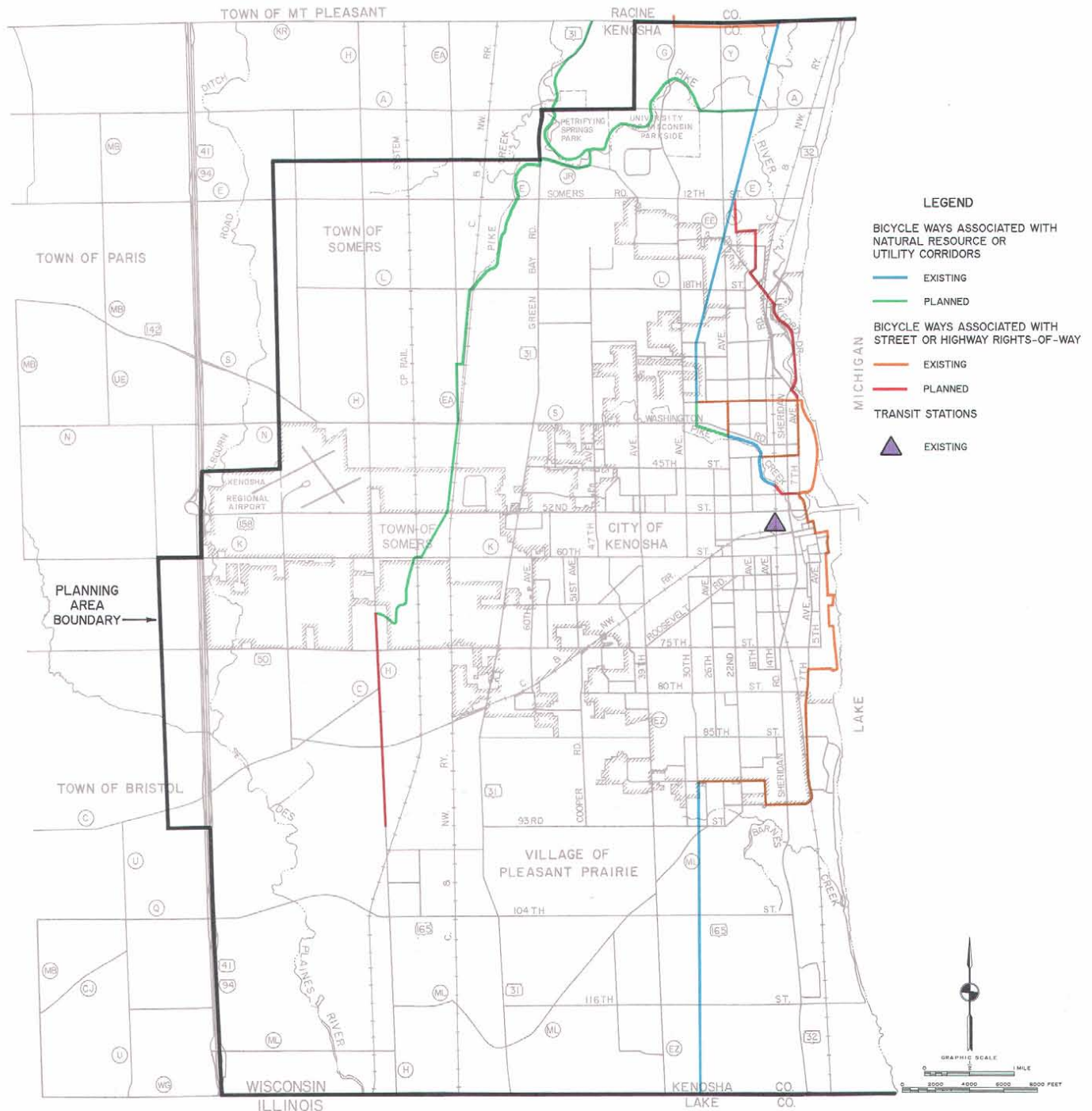
Five local units of government and one county government had included provisions for bicycle facility development in land subdivision control ordinances. None of the county or local governments in the Region had included specific provisions for bicycle facilities in their zoning ordinances.

Map 8, which depicts the regional trail network recommended in the seven adopted county park and open space plans, indicates that the development of the planned bicycle-way system would provide a comprehensive regional bicycle-way network. The regional bicycle-way system, as currently proposed, provides a major north-south route through each county in the Region with the exception of Walworth County, and provides a major east-west route through each county in the Region with the exception of Kenosha and Ozaukee Counties. The proposed bicycle-way system, if completed, would serve to interconnect the three urbanized areas of the Region and would also interconnect the three urbanized areas with all incorporated cities and villages with a resident population of 5,000 or more persons with the exception of the Cities of Elkhorn, Lake Geneva, and Port Washington. These three cities could be served through minor extensions of the proposed regional trail system.

Existing and proposed bicycle ways in each of the three bicycle and pedestrian facilities planning areas of the Region are shown on Maps 10 through 12. Each map indicates those bicycle ways located or proposed to be located on-street

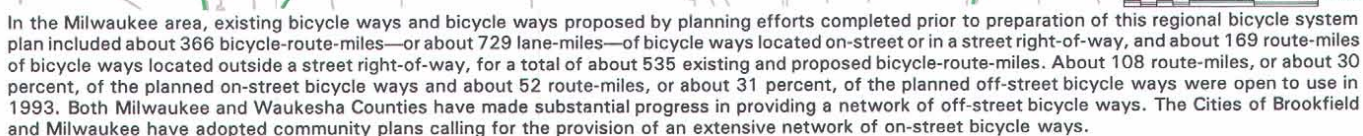
Map 10

**EXISTING AND PLANNED BICYCLE WAYS IN THE KENOSHA
BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 1993**



In the Kenosha area, existing bicycle ways and bicycle ways proposed by planning efforts completed prior to preparation of this regional bicycle system plan included about seven bicycle-route-miles—or 14 lane-miles—of bicycle ways located on-street or in a street right-of-way, and about 15 route-miles of bicycle ways located outside a street right-of-way, for a total of about 22 existing and proposed bicycle-route-miles. All of the planned on-street bicycle ways and about 10 route-miles, or about 67 percent, of the planned off-street bicycle ways were open to use in 1993. Existing bicycle ways include the North and South Kenosha County Trails and the City of Kenosha Pike Trail, which together provide for travel in a north-south direction along the Lake Michigan lakefront.

Source: SEWRPC.



or within a street right-of-way, and those bicycle ways located or proposed to be located in a right-of-way not associated with a street, such as a river corridor or an abandoned railway corridor.

Existing and proposed bicycle ways in the Kenosha bicycle and pedestrian facilities planning area are shown on Map 10. Existing and proposed bicycle ways in the Kenosha area include about seven route-miles—or 14 lane-miles—of bicycle ways located on-street or in a street right-of-way, and about 15 route-miles of bicycle ways located outside a street right-of-way, for a total of about 22 existing and proposed bicycle-route-miles. All of the planned on-street bicycle ways and about 10 route-miles, or about 67 percent, of the planned off-street bicycle ways were open to use in 1993. The existing off-road North and South Kenosha County Trails and the City of Kenosha Pike Trail, which includes both on- and off-street segments, together provide for travel in a north-south direction along the Lake Michigan lake-front. Additional off-street bicycle ways will likely be recommended as a result of this planning effort to provide connections between the Kenosha central business district and activity centers located west of the central business district. In addition, this planning effort will likely result in recommendations calling for the development of additional on-street bicycle ways in specific locations to supplement the off-street network.

Existing and proposed bicycle ways in the Milwaukee bicycle and pedestrian facilities planning area are shown on Map 11. Existing and proposed bicycle ways in the Milwaukee area include about 366 bicycle-route-miles—or about 729 lane-miles—of bicycle ways located on-street or in a street right-of-way, and about 169 route-miles of bicycle ways located outside a street right-of-way, for a total of about 535 existing and proposed bicycle-route-miles. About 108 bicycle-route-miles, or about 30 percent, of the planned on-street bicycle ways and about 52 route-miles, or about 31 percent, of the planned off-street bicycle ways were open to use in 1993.

The existing and planned network of off-street bicycle ways in the Milwaukee area provides a sound foundation for the development of an on-street network of bicycle ways to provide access to and supplement the off-street network. In certain municipalities, most notably the Cities of Brookfield and Milwaukee, substantial

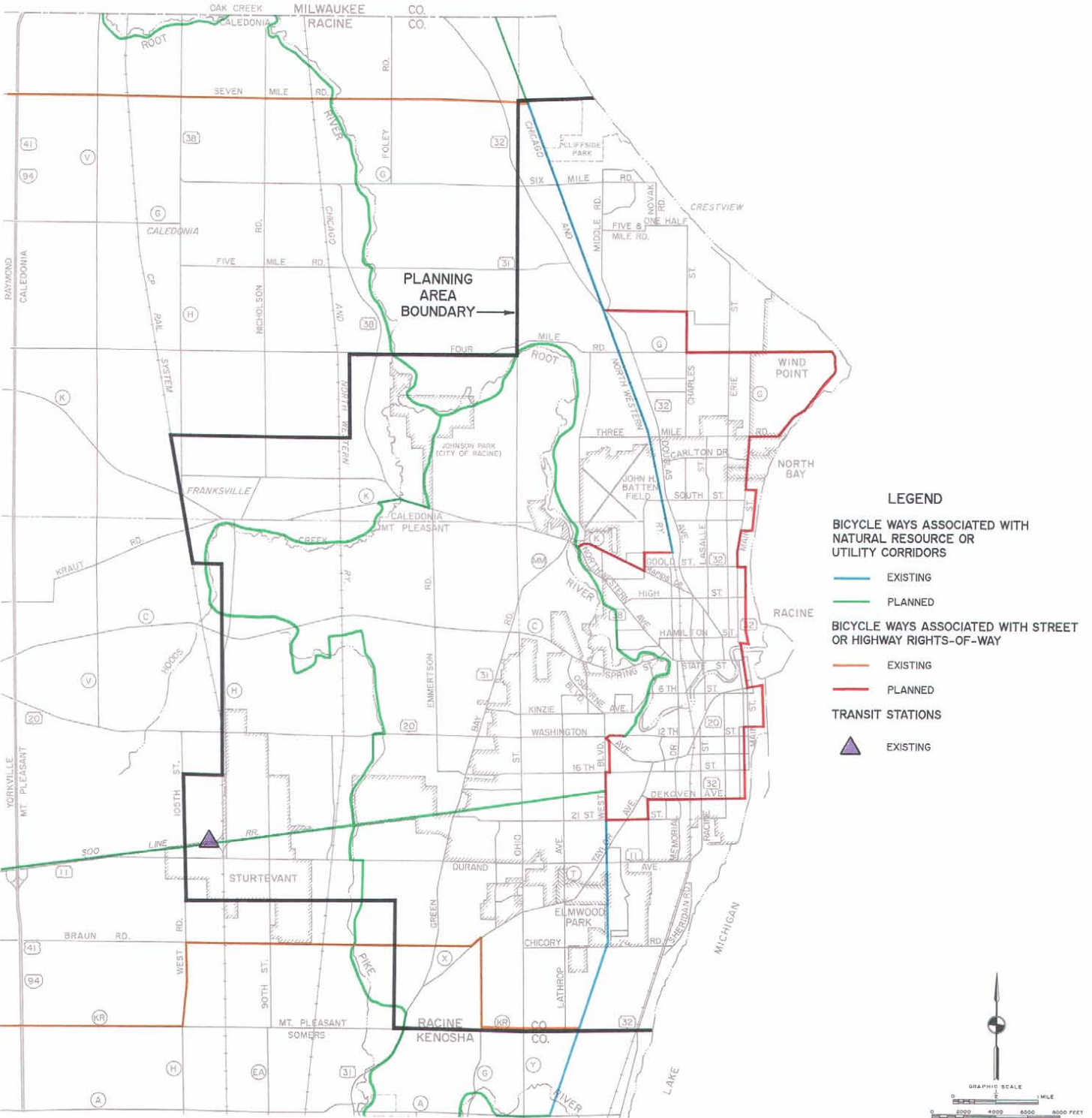
progress has been made in planning for and developing such an on-street bicycle-way network. This regional bicycle facilities planning effort will thus build upon the existing and proposed bicycle-way network by recommending the extension of bicycle ways into and through adjoining municipalities, by recommending bicycle ways where necessary to link existing or proposed bicycle ways, and by recommending radial routes from the Milwaukee central business district to outlying activity centers and suburban communities.

Existing and proposed bicycle ways in the Racine bicycle and pedestrian facilities planning area are shown on Map 12. Existing and proposed bicycle ways in the Racine area include about 17 route-miles—or about 34 lane-miles—of bicycle ways located on-street or within a street right-of-way, and about 31 route-miles of bicycle ways located outside a street right-of-way, for a total of about 48 existing and proposed bicycle-route-miles. About four route-miles, or about 24 percent, of the planned on-street bicycle ways and about eight route-miles, or about 26 percent, of the planned off-street bicycle ways were open to use in 1993. As is the case in the Milwaukee area, the existing and proposed network of off-street bicycle ways provides a sound foundation for the development of an on-street bicycle-way network. Unlike the case in the Milwaukee area, however, there is no existing or proposed network of on-street bicycle ways in the Racine area. This planning effort will therefore focus on recommendations for the development of an on-street bicycle-way network to supplement the off-street network.

A number of plans calling for the provision of pedestrian facilities have been prepared within the Region. Recommendations for such facilities have been included as a component of several park and open space plans, land use plans, and central business district development or redevelopment plans adopted by local governments within the Region, including central business district plans prepared for the Cities of Kenosha, Milwaukee, Racine, Waukesha, and West Bend. The plans generally propose design guidelines and improvements intended to facilitate and promote pedestrian movement in the “downtown” areas by providing, in addition to pedestrian walkways, amenities such as landscaping and street furniture and by recommending measures that reduce pedestrian-vehicular con-

Map 12

**EXISTING AND PLANNED BICYCLE WAYS IN THE RACINE
BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 1993**



In the Racine area, existing bicycle ways and bicycle ways proposed by planning efforts completed prior to preparation of this regional bicycle system plan included about 17 route-miles—or about 34 lane-miles—of bicycle ways located on-street or within a street right-of-way, and about 31 route-miles of bicycle ways located outside a street right-of-way, for a total of about 48 existing and proposed bicycle-route-miles. About four route-miles, or about 24 percent, of the planned on-street bicycle ways and about eight route-miles, or about 26 percent, of the planned off-street bicycle ways were open to use in 1993.

Source: SEWRPC.

flicts. Plans that have included the provision of pedestrian facilities as a primary plan objective include the City of Milwaukee plans for the Milwaukee River walkways and the City skywalk system, as well as the Village of Elm Grove bicycle and pedestrian pathway plan.

Communities with extensive sidewalk networks generally include a provision in their land subdivision control ordinances requiring the construction of sidewalks when land is subdivided. Land subdivision control ordinances adopted by counties and local governments within the Region were reviewed as part of this planning effort to determine the requirements related to the provision of sidewalks. The results are presented in Table 4. Of the 147 cities,

villages, and towns within the Region, 118 had adopted a local subdivision control ordinance as of 1985. Table 4 shows that 22, or about 19 percent, of these local subdivision ordinances required sidewalks to be provided in all new subdivisions; that 10, or about 8 percent, of the ordinances required that sidewalks be provided only in certain types of subdivisions, such as in residential subdivisions but not in commercial or industrial subdivisions; that 44, or about 37 percent, of local subdivision ordinances provided that sidewalks may be required at the discretion of the Plan Commission, City Council, Village or Town Board, or other government agency such as a Board of Public Works; and that 42, or 36 percent, of local subdivision ordinances did not include a requirement for the installation of sidewalks in new subdivisions.

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Chapter V

BICYCLE AND PEDESTRIAN SAFETY AND OPERATIONAL CONSIDERATIONS

INTRODUCTION

This chapter describes existing bicycle and pedestrian safety and operational considerations. It includes a description of State and local traffic laws and regulations affecting bicycle and pedestrian travel, a description of bicycle and pedestrian collisions, and information regarding bicycle- and pedestrian-safety programs within the Region.

EXISTING BICYCLE OPERATIONAL AND SAFETY CONSIDERATIONS

State Statutes Affecting Bicycle Operation

Traffic laws affecting the operation of motor vehicles, bicycles, and pedestrians on the street and highway system are set forth in Chapter 346 of the Wisconsin Statutes. Traffic laws have been enacted to provide for a safe and orderly flow of traffic and to prevent collisions and conflict among users of the street system, including motor vehicles, bicyclists, and pedestrians. Traffic laws enacted at the State level are based upon the Uniform Vehicle Code developed by the National Committee on Uniform Traffic Laws and Ordinances.

Chapter 340 of the Wisconsin Statutes defines a "bicycle" as "every device propelled by the feet acting upon pedals and having wheels any 2 of which are not less than 14 inches in diameter" and a "vehicle" as "every device in, upon or by which any person or property is or may be transported or drawn upon a highway, except railroad trains. A snowmobile shall not be considered a vehicle except for purposes made specifically applicable by statute." The traffic laws or "rules of the road" set forth in Chapter 346 of the Wisconsin Statutes grant bicyclists all of the rights and subject them to all of the responsibilities granted or expected of motor-vehicle operators, with a limited number of exceptions. One such exception prohibits bicycling on expressways and freeways where signs have been posted prohibiting such use. Map 13 shows the expressways and freeways in Southeastern Wisconsin where bicycle use is prohibited.

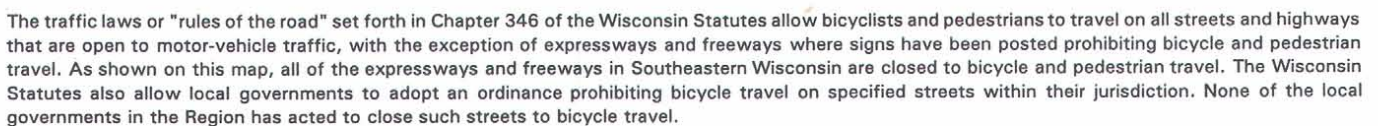
Other provisions of the State Statutes relating specifically to bicycle operation on the street system include the following: bicyclists must travel only one way in bicycle lanes, in the same direction as adjoining motor-vehicle traffic, unless two-way riding is specifically permitted by local ordinance; bicyclists must ride as near as practicable to the right edge of the roadway, unless preparing to make a left-hand turn; and bicyclists must allow at least three feet of clearance when passing a standing or moving motor vehicle. Motor-vehicle operators must also allow at least three feet of clearance when passing a bicycle on the roadway. Bicyclists are required to ride single file along roadways, except when riding on roads without centerlines or lane lines in incorporated municipalities, where bicyclists may ride two abreast.

The State Statutes allow local governments to designate bicycle ways, including bicycle paths, bicycle lanes, and bicycle routes. As noted above, the governing body of a county, city, village, or town is authorized under State law to allow two-way bicycle traffic in a bicycle lane; however, such two-way operation is contrary to the normal rules of the road and is discouraged in the 1991 Guide for the Development of Bicycle Facilities, prepared by the American Association of State Highway and Transportation Officials.

The State Statutes also authorize local governments to permit bicycle travel on sidewalks, and further provide that bicyclists operating on a sidewalk or on a designated bicycle way must exercise due care and give an audible signal when passing a bicyclist or pedestrian traveling in the same direction.

The State Statutes require bicyclists to obey all traffic signals and signs along a roadway running parallel and adjacent to a bicycle way. Such a requirement is consistent with safe operation on the street and highway system. However, Section 346.37(1)(c)(2) of the Statutes appears to exempt bicyclists and pedestrians from obeying traffic signals on streets and highways which are not designated as bicycle ways. This provision states that "[n]o pedestrian or bicyclist facing [a red] signal shall enter the roadway unless he or she can do so safely and

**FREEWAYS AND EXPRESSWAYS
IN SOUTHEASTERN WISCONSIN
WHERE BICYCLE AND PEDESTRIAN
TRAVEL IS PROHIBITED: 1994**



54

without interfering with any vehicular traffic." This provision does not require a bicyclist to remain stopped until the green signal appears, as motor-vehicle operators are required to do.

Chapter 349 of the Wisconsin Statutes sets forth the powers of local governments to adopt traffic regulations. The State Statutes provide that any county, city, village, or town may prohibit bicycle use on roads under their jurisdiction, provided the governing body holds a public hearing and adopts an ordinance prohibiting such use. Conversely, a local government may, by ordinance, designate any roadway under its jurisdiction as a bicycle way. Local governments may also designate sidewalks as bicycle ways, and may establish the use and rights-of-way on bicycle ways and sidewalks. Unless otherwise posted, bicyclists using sidewalks must yield the right-of-way to pedestrians.

Cities, villages, and towns are also authorized by State Statutes to require bicycles to be registered and to charge a registration fee. A county may require the registration of bicycles if registration is not required by a city, village, or town.

Local Government Regulations Affecting Bicycle Operation

As described above, the Wisconsin Statutes allow local governments to enact ordinances regulating where bicyclists may and may not operate within the local jurisdiction. All cities and villages within the three urbanized areas of the Southeastern Wisconsin Region and all cities and villages having a population of 5,000 or greater within the Region but outside an urbanized area—a total of 45 communities—were contacted by the Commission in April 1994 as part of this planning effort in order to determine local government regulations affecting bicycle operation within the Region. Although State Statutes allow a local government to prohibit bicycle riding on any street within the corporate limits of the community, none of the communities surveyed had limited bicycle riding on the street system. The State Statutes also allow a local government to authorize two-way bicycle operation on bicycle ways located on or immediately adjacent to a street. The survey of local communities in the Region indicates that such two-way operation was permitted only in the Village of Elm Grove.

Of the 45 communities surveyed, 22 allow bicyclists of all ages to ride on all sidewalks.

Bicyclists of all ages are prohibited from riding on sidewalks in the Cities of Mequon, Oconomowoc, Waukesha, Wauwatosa, and West Allis, and in the Villages of Menomonee Falls and River Hills. Bicyclists of all ages are prohibited from riding on the sidewalks in the central business districts of the Cities of Burlington, Cedarburg, Cudahy, Delavan, Elkhorn, Hartford, Kenosha, West Bend, and Whitewater, and in the Village of Hartland. Bicyclists over the age of 10 years are prohibited from riding on the sidewalks of the Cities of Milwaukee and Port Washington, while bicyclists over the age of 12 years are prohibited from riding on sidewalks in the Cities of Racine and South Milwaukee and the Village of Shorewood. The Village of Thiensville prohibits the operation on sidewalks of any bicycle with a wheel diameter greater than 20 inches.

With the exception of the Cities of New Berlin and Racine, all of the communities surveyed require registration of bicycles. Of the remaining 43 communities, 22 register bicycles for the lifetime of the bicycle. Registration fees vary from a low of free registration for the lifetime of the bicycle in the City of Burlington to a high of \$10 for the lifetime of the bicycle in the City of Waukesha and the Villages of Fox Point and Whitefish Bay. The remaining communities surveyed require periodic registration of bicycles, with registration periods ranging from one to five years and fees ranging from a low of 50 cents to a high of \$5.00.

Collisions Involving Bicyclists

Bicycle-related collisions include bicycle collisions with motor vehicles; bicycle collisions with fixed objects such as trees and utility posts; and bicycle collisions with other bicyclists, pedestrians, or animals. In addition, bicyclists may lose control of their bicycles and fall for a variety of reasons, including loss of control due to excessive speed or hazardous roadway conditions such as potholes, gravel, ice, or oil patches. Although it is generally recognized that bicycle collisions that do not involve a motor vehicle are more common than bicycle-motor vehicle collisions, little data are available on the incidence, consequences, and causes of such collisions. Bicycle-motor vehicle collisions have been given greater attention because such collisions generally result in more serious injuries to the bicyclist and because collisions which do not involve a motor vehicle are not routinely reported to a central record-keeping agency, as are motor-vehicle-related collisions.

The most comprehensive study of bicycle collisions to date was conducted in the mid-1970s by Kenneth D. Cross and Gary Fisher, working in cooperation with the National Highway Traffic Safety Administration.¹ The Cross-Fisher study classified bicycle-motor vehicle collisions into 36 specific types within seven major classes and developed potential education and training measures for both bicyclists and motorists to counter each type of collision.

The seven major classes of bicycle-motor vehicle collisions identified by the Cross-Fisher study were: 1) situations where a bicyclist rides out from an alley, driveway, or other mid-block location into the path of a motor vehicle, which accounted for 15.1 percent of fatal and 13.9 percent of nonfatal collisions; 2) situations where a bicyclist rides out at a controlled intersection into the path of a motor vehicle, which accounted for 12.0 percent of fatal and 17.0 percent of nonfatal collisions; 3) situations where a motorist drives, backs, or turns into the path of a bicycle, which accounted for 2.4 percent of fatal collisions and 18.7 percent of nonfatal collisions; 4) situations where a motorist overtaking a bicyclist strikes the bicyclist, which accounted for 37.8 percent of fatal and 10.5 percent of nonfatal collisions; 5) situations where a bicyclist turns or swerves unexpectedly into the path of a motorist, which accounted for 16.2 percent of fatal and 14.2 percent of nonfatal collisions; 6) situations where a motorist turns unexpectedly into the path of a bicyclist, which accounted for 2.4 percent of fatal and 14.5 percent of nonfatal collisions; and 7) all other types of collisions, including head-on collisions and collisions involving motorists colliding with a bicyclist while leaving an on-street parking space; these were grouped together and accounted for 14.1 percent of fatal and 11.2 percent of nonfatal collisions.

The State of Wisconsin maintains records of reported bicycle-motor vehicle collisions throughout the State. Reported collisions include only

those that involved at least one bicycle and one motor vehicle, occurred on a public street or highway, and resulted in either 1) bodily injury or death; 2) damage of \$200 or more to government-owned property, except government-owned vehicles; or 3) damage of \$500 or more to any property owned by any one person or to a government-owned vehicle. The Cross-Fisher study estimated that approximately two-thirds of bicycle-motor vehicle collisions go unreported. Possible reasons for not reporting such collisions include the lack of apparent injuries at the time of the collision; the occurrence of some collisions on private property, such as a parking lot; or the cost of damage to bicycles or other personal property not being properly evaluated.

A summary of reported bicycle-motor vehicle collisions occurring within the Southeastern Wisconsin Region during the three-year period from 1991 through 1993 is presented in Tables 6 through 10. A summary of such collisions for each county within the Region is presented in Tables B-1 through B-7 in Appendix B of this report. There was a total of 1,990 reported collisions between bicycles and motor vehicles in the Region between 1991 and 1993, which involved a total of 2,056 bicyclists. Of this total, 130 bicyclists, or about 6 percent of those involved in a reported collision with a motor vehicle, suffered no injuries. The extent of injuries was not reported or was not known for 636, or about 31 percent, of the bicyclists involved in a collision. A total of 1,280 bicyclists, or about 62 percent of all bicyclists involved in a collision, was reported to have received nonfatal injuries, of which 282, or about 22 percent of injured bicyclists and about 14 percent of all bicyclists involved in a collision, suffered incapacitating injuries. Incapacitating injuries include nonfatal injuries which prevent the performance of activities such as walking or bicycling which were performed prior to the collision. A plurality of bicyclists involved in collisions within the Region, 998, or about 49 percent, suffered nonincapacitating injuries, which include injuries other than fatal and incapacitating injuries. Ten of the 2,056 bicyclists involved in a collision with a motor vehicle suffered fatal injuries.

A total of 866 bicyclists, or about 42 percent of the bicyclists involved in collisions, included bicyclists in the 10-through-15-year-old age

¹Kenneth D. Cross and Gary Fisher, *A Study of Bicycle/Motor Vehicle Accidents: Identification of Problem Types and Countermeasure Approaches*, U. S. Department of Transportation, 1977.

Table 6

TYPES OF INJURIES SUSTAINED BY BICYCLISTS INVOLVED IN REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993

County	Total Bicyclists	Injury Type									
		None		Unknown		Nonincapacitating		Incapacitating		Fatal	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	180	9	5.0	49	27.2	97	53.9	23	12.8	2	1.1
Milwaukee	1,197	85	7.1	408	34.1	550	45.9	151	12.6	3	0.3
Ozaukee	64	3	4.7	19	29.7	26	40.6	14	21.9	2	3.1
Racine	288	17	5.9	99	34.4	136	47.2	35	12.2	1	0.3
Walworth	63	4	6.3	16	25.4	32	50.8	11	17.5	0	0.0
Washington	56	1	1.8	11	19.6	35	62.5	9	16.1	0	0.0
Waukesha	208	11	5.3	34	16.3	122	58.7	39	18.8	2	1.0
Region	2,056	130	6.3	636	30.9	998	48.6	282	13.7	10	0.5

Source: Wisconsin Department of Transportation and SEWRPC.

Table 7

LOCATIONS AND TYPES OF REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993

County	Location		Type of Collision ^a										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Kenosha	99	77	5	118	14	6	9	4	2	0	0	18	176
Milwaukee	664	487	10	755	76	46	55	35	11	7	1	155	1,151
Ozaukee	37	25	0	45	5	6	1	1	0	1	0	3	62
Racine	146	132	3	195	14	16	9	13	1	6	0	21	278
Walworth	39	24	5	41	6	3	2	2	3	0	0	1	63
Washington	31	25	2	38	5	4	4	1	0	0	0	2	56
Waukesha	108	96	1	112	12	4	9	8	2	1	1	54	204
Region	1,124	866	26	1,304	132	85	89	64	19	15	2	254	1,990

^aThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—bicyclist is struck by a motorist traveling in a perpendicular direction; Side Same—bicyclist is sideswiped by an overtaking motor vehicle; Rear End—bicyclist strikes rear of stopped motor vehicle, or rear of bicyclist is struck by front end of overtaking motor vehicle; Left Turn—straight-through bicyclist is struck by a motorist turning left across his or her path, or vice versa; Head On—front of bicyclist is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—bicyclist is sideswiped by motor vehicle traveling in the opposite direction; Off Right—bicyclist is struck by a motor vehicle driving off the right side of the road; Off Left—bicyclist is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

group. This is consistent with the findings of the Cross-Fisher study, which found that collision involvement of 12-through-15-year-old bicyclists is more than twice as great as would be expected from the number of bicyclists in this age group. A disproportionate number of the bicyclists involved in collisions throughout the Region, 1,498, or about 73 percent, were males. This trend was consistent throughout each of the seven counties, with a low of about 67 percent in Ozaukee County and a high of about 77 percent in Washington County, and is consistent with the findings of the Cross-Fisher study.

The number of collisions that occurred at intersections, 1,124, or about 56 percent, was somewhat higher than those that occurred in mid-block. This trend was also consistent throughout the seven counties, with a low of about 53 percent in Racine and Waukesha Counties and a high of about 62 percent in Walworth County. The most common type of collision by far within the Region was the "angle" type, in which a bicyclist is struck by a motorist traveling in a direction perpendicular to the bicyclist's. Such collisions include situations where a bicyclist rides out from a driveway, alley, or intersect-

Table 8

**AGE AND SEX OF BICYCLISTS INVOLVED IN REPORTED BICYCLE-MOTOR
VEHICLE COLLISIONS IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993**

County	Total Bicyclists	Age of Bicyclist									
		Unknown		1 to 4		5 to 9		10 to 15		16 to 24	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	180	6	3.3	7	3.9	37	20.5	68	37.8	28	15.6
Milwaukee	1,197	45	3.8	9	0.7	202	16.9	481	40.2	200	16.7
Ozaukee	64	0	0.0	0	0.0	10	15.6	29	45.3	9	14.1
Racine	288	11	3.8	3	1.1	61	21.2	119	41.3	45	15.6
Walworth	63	2	3.2	0	0.0	9	14.3	27	42.9	17	27.0
Washington	56	0	0.0	0	0.0	11	19.7	34	60.7	4	7.1
Waukesha	208	1	0.5	2	1.0	34	16.3	108	51.9	25	12.0
Region	2,056	65	3.2	21	1.0	364	17.7	866	42.1	328	16.0

County	Total Bicyclists	Age of Bicyclist						Sex of Bicyclist					
		25 to 44		45 to 64		65 and Older		Male		Female		Not Reported	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	180	27	15.0	7	3.9	0	0.0	127	70.6	49	27.2	4	2.2
Milwaukee	1,197	212	17.7	35	2.9	13	1.1	878	73.4	289	24.1	30	2.5
Ozaukee	64	13	20.3	3	4.7	0	0.0	43	67.2	21	32.8	0	0.0
Racine	288	38	13.2	7	2.4	4	1.4	219	76.0	63	21.9	6	2.1
Walworth	63	6	9.5	1	1.6	1	1.6	44	69.8	17	27.0	2	3.2
Washington	56	7	12.5	0	0.0	0	0.0	43	76.8	13	23.2	0	0.0
Waukesha	208	29	13.9	7	3.4	2	1.0	144	69.2	63	30.3	1	0.5
Region	2,056	332	16.1	60	2.9	20	1.0	1,498	72.9	515	25.0	43	2.1

Source: Wisconsin Department of Transportation and SEWRPC.

Table 9

**AGE OF DRIVERS INVOLVED IN REPORTED BICYCLE-MOTOR VEHICLE
COLLISIONS IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993**

County	Total Drivers	Age of Drivers Involved in Bicycle-Motor Vehicle Collisions											
		Unknown		10 to 15		16 to 24		25 to 44		45 to 64		65 and Older	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	176	21	11.9	0	0.0	46	26.1	61	34.7	29	16.5	19	10.8
Milwaukee	1,151	154	13.4	2	0.2	213	18.5	467	40.6	220	19.1	95	8.2
Ozaukee	62	6	9.7	0	0.0	13	21.0	22	35.5	13	21.0	8	12.9
Racine	278	36	12.9	0	0.0	48	17.3	125	45.0	47	16.9	22	7.9
Walworth	63	3	4.8	0	0.0	11	17.5	29	46.0	14	22.2	6	9.5
Washington	56	6	10.7	1	1.8	15	26.8	22	39.3	7	12.5	5	8.9
Waukesha	204	15	7.4	0	0.0	57	27.9	79	38.7	32	15.7	21	10.3
Region	1,990	241	12.1	3	0.2	403	20.2	805	40.5	362	18.2	176	8.8

Source: Wisconsin Department of Transportation and SEWRPC.

ing street into the path of a motorist, or where a motorist pulls or backs out of a driveway, alley, or intersecting street into the path of a bicyclist. Angle collisions accounted for 1,304, or about 66 percent, of the total 1,990 bicycle-motor vehicle collisions in Southeastern Wisconsin during 1991 through 1993. This again was consistent

throughout the seven counties, with a low of about 55 percent in Waukesha County and a high of about 73 percent in Ozaukee County.

Existing Bicycle-Safety Programs

A survey of local government programs promoting safe bicycle operation was also conducted by

Table 10

AGE OF DRINKING DRIVERS AND DRINKING BICYCLISTS INVOLVED IN REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS^a IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993

County	Drinking Drivers	Age of Drinking Drivers Involved in Bicycle-Motor Vehicle Collisions									
		Unknown		16 to 24		25 to 44		45 to 64		65 and Older	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	8	0	0.0	2	25.0	4	50.0	2	25.0	0	0.0
Milwaukee	15	0	0.0	2	13.3	7	46.7	6	40.0	0	0.0
Ozaukee	3	0	0.0	0	0.0	1	33.3	1	33.3	1	33.3
Racine	3	0	0.0	0	0.0	3	100.0	0	0.0	0	0.0
Walworth	4	1	25.0	1	25.0	1	25.0	1	25.0	0	0.0
Washington	2	0	0.0	0	0.0	2	100.0	0	0.0	0	0.0
Waukesha	3	0	0.0	1	33.3	1	33.3	1	33.3	0	0.0
Region	38	1	2.6	6	15.8	19	50.0	11	28.9	1	2.6

County	Drinking Bicyclists	Age of Drinking Bicyclists Involved in Bicycle-Motor Vehicle Collisions					
		16 to 24		25 to 44		45 to 64	
		Number	Percent	Number	Percent	Number	Percent
Kenosha	5	1	20.0	4	80.0	0	0.0
Milwaukee	23	1	4.3	19	82.6	3	13.0
Ozaukee	0	0	0.0	0	0.0	0	0.0
Racine	11	0	0.0	10	90.9	1	9.1
Walworth	0	0	0.0	0	0.0	0	0.0
Washington	1	0	0.0	1	100.0	0	0.0
Waukesha	5	1	20.0	3	60.0	1	20.0
Region	45	3	6.7	37	82.2	5	11.1

^aIncludes collisions where the reporting police officer noted on the accident report that a person involved in a collision "had been drinking." Such person may or may not have been legally drunk.

Source: Wisconsin Department of Transportation and SEWRPC.

the Commission in April 1994 of all cities and villages within the three urbanized areas and of all cities and villages with a population of 5,000 or greater outside of an urbanized area. Of the 45 communities in Southeastern Wisconsin that fall into these categories, 15 of the communities had bicycle-safety programs which consisted of holding at least one "bicycle rodeo" event for elementary-school children each year. Five of these communities offer a bicycle-safety program consisting of a bicycle-safety talk and/or video presentation for elementary-school children. Nineteen of the communities have a bicycle-safety program which consists of both "bicycle rodeos" and bicycle-safety presentations for elementary-school children. The safety programs are generally developed by the community police department in cooperation with the school district.

The Bicycle Federation of America has developed a "Basics of Bicycling" curriculum for school-age children. The program, which was originally developed for the fourth-grade level, has been expanded to include separate programs for children ages five through eight, nine through 12, and 13 through 15. Subjects addressed by the program include traffic laws, bicycle-riding and bicycle-handling techniques, and proper bicycle maintenance and equipment.

The Wisconsin Department of Transportation efforts toward safe bicycling include promoting bicycle-safety classes, providing safety-program materials, and funding bicycle-safety programs for high-risk areas. Grants of up to \$1,000 are available to communities with unusually high bicycle-accident and severe-injury rates. Kenosha County participated in the program in 1994.

The Department has a number of safety-related publications that are available to interested groups. The Department also offers a one-day class three times each year entitled "Teaching Safe Biking" which is intended for police officers, teachers, and other interested individuals.

Southeastern Wisconsin also has several organizations which provide various types of bicycle-safety training and information. The League of American Bicyclists—formerly the League of American Wheelmen—offers approximately three "Effective Cycling" courses per year through the Bicycle Federation of Southeastern Wisconsin, which are open to any interested individual. The courses are several weeks in duration and consist of both classroom and on-bicycle training. The American Automobile Association also develops and supplies materials concerning bicycle safety. These materials are provided to police departments, schools, and other interested parties on request, and address such subjects as conducting "bicycle rodeos," purchasing bicycles for children, and safe-bicycling tips for children and adults. A limited number of materials have also been developed by the Wisconsin Department of Transportation and the American Automobile Association to assist motor-vehicle operators in safely sharing the road with bicyclists.

EXISTING PEDESTRIAN OPERATIONAL AND SAFETY CONSIDERATIONS

The Americans with Disabilities Act

The Federal Americans with Disabilities Act, which was adopted in 1990, is intended to provide Americans with disabilities equal opportunities for access to jobs, transportation, public facilities, and services. The regulations implementing Title II of the Act require a public entity having responsibility over streets and walkways to prepare a schedule for providing curb ramps where pedestrian ways cross curbs, giving priority to pedestrian ways serving State and local government offices and facilities, transportation stations and stops, places of public accommodation such as stores and restaurants, and places of employment. Newly constructed or reconstructed streets must provide curb ramps at street intersections. Accessible routes leading from public parking facilities or transit stops to public or commercial buildings must also meet the requirements of the Act and its implementing regulations with regard to walkway width, surfacing, and slope.

State Statutes Affecting Pedestrians

Chapter 340 of the Wisconsin Statutes defines a pedestrian as "any person afoot or any person in a wheelchair, either manually or mechanically propelled, or other low-powered, mechanically propelled vehicle designed specifically for use by a physically disabled person." Chapter 346 of the Wisconsin Statutes bars pedestrians from traveling on expressways and freeways where signs have been posted prohibiting such use (see Map 13). Unless traveling on a sidewalk, pedestrians are required to travel along the left side of a roadway, and, where practical, to step to the extreme outer edge of the traveled portion of the roadway when approached by a motor vehicle.

The Statutes set forth a number of provisions related to street crossings. At signalized intersections, vehicle operators must yield the right-of-way to pedestrians who are crossing on the green phase of a traffic signal or on a "walk" signal. At unsignalized intersections, vehicle operators must yield to a pedestrian crossing in either a marked or unmarked crosswalk. Motorists must also yield the right-of-way to pedestrians who are crossing within a marked crosswalk, including marked crosswalks that are not located at intersections (commonly referred to as "mid-block crossings"). A marked crosswalk is a portion of a street clearly indicated for pedestrian crossing with signs or pavement markings. An unmarked crosswalk is that part of a street at an intersection—except an intersection of an alley with a street—which would be formed by extending the sidewalk across the roadway. Pedestrians must yield the right-of-way to vehicles when crossing a street outside a marked or unmarked crosswalk.

As noted in the above section on State statutes affecting bicycle operation, Section 346.37(1)(c)(2) of the Statutes appears to exempt pedestrians as well as bicyclists from obeying traffic signals on streets and highways without pedestrian "walk/don't walk" indicators by stating that "[n]o pedestrian or bicyclist facing [a red] signal shall enter the roadway unless he or she can do so safely and without interfering with any vehicular traffic."

Chapter 349 of the Statutes allows local governments, by order, ordinance, or resolution, to prohibit pedestrian crossings at any location otherwise permissible for pedestrian crossings by posting signs indicating such a prohibition.

Chapter 66 of the Statutes allows the governing body of a city or village, after holding a public hearing on the matter, to designate any street or public way within its jurisdiction as a pedestrian mall and prohibit or limit the use of vehicular traffic within the area so designated.

Local Government

Regulations Affecting Pedestrians

Local government regulations restricting pedestrian travel are generally limited to the authority of local governments to prohibit pedestrian crossings at identified locations by posting signs indicating such prohibition. Crossing prohibitions are used selectively in many communities to prohibit pedestrians from crossing a street or highway at a location which is considered hazardous.

Collisions Involving Pedestrians

As is the case with bicycle collisions, available information on pedestrian collisions is focused on pedestrian-motor vehicle collisions, which generally result in the most severe injuries to pedestrians. A study conducted by the National Highway Traffic Safety Administration² determined that the five most common types of pedestrian-motor vehicle collisions, accounting for over half of all such collisions, were: 1) the "dart-out," in which a pedestrian suddenly appears in the path of a motorist in a mid-block location, often from between parked cars, which accounts for about 33 percent of pedestrian-motor vehicle collisions; 2) the "intersection dash," in which a pedestrian suddenly appears in the path of a motorist at an intersection, which accounts for about 8 percent of collisions; 3) the "vehicle turn or merge," in which a motorist, concentrating upon turning or merging into traffic, fails to see a pedestrian, which accounts for about 6 percent of collisions; 4) the "multiple threat," in which a vehicle stops for a pedestrian who is crossing and the stopped vehicle blocks the pedestrian from the view of the operator of an overtaking vehicle, which accounts for about 3 percent of collisions; and 5) the "bus-stop-related," in which a pedestrian crosses in front of a stopped transit vehicle,

which blocks the pedestrian from the view of the operator of an overtaking vehicle, which also accounts for about 3 percent of collisions.

The State of Wisconsin maintains records of reported pedestrian-motor vehicle collisions throughout the State. Reported collisions include only those that involved at least one pedestrian and one motor vehicle, occurred on a public street or highway, and resulted in either 1) bodily injury or death; 2) damage of \$200 or more to government-owned property, except government-owned vehicles; or 3) damage of \$500 or more to any property owned by any one person or to a government-owned vehicle.

A summary of reported pedestrian-motor vehicle collisions occurring within the Southeastern Wisconsin Region during the three-year period from 1991 through 1993 is presented in Tables 11 through 15. A summary of such collisions for each county within the Region is presented in Tables B-8 through B-14 in Appendix B of this report. There was a total of 3,731 reported collisions between pedestrians and motor vehicles in the Region between 1991 and 1993, which involved a total of 3,878 pedestrians. Of this total, 2,391, or about 62 percent of the pedestrians involved in a collision with a motor vehicle, were injured. Of the 2,391 injured pedestrians, 66, or about 2 percent of all pedestrians involved in a collision with a motor vehicle, suffered a fatal injury. Of the 3,878 pedestrians involved in a collision, 98, or about 2 percent, were not injured. The extent of injuries was not reported or was not known for 1,389, or about 36 percent, of the pedestrians.

A total of 1,414, or about 37 percent of all pedestrians involved in reported pedestrian-motor vehicle collisions within the Region, suffered nonincapacitating injuries. Such injuries include injuries other than fatal and incapacitating injuries. The percentage of pedestrians suffering incapacitating injuries, which include nonfatal injuries which prevent the performance of activities, such as walking, which were performed prior to the collision, varied from a low of about 36 percent of pedestrians for whom injuries were reported in Racine and Walworth Counties to a high of about 54 percent in Ozaukee County.

The number of pedestrians aged 16 or older who were involved in collisions, 2,012, was about

²*Pedestrian Accident Reduction Guide, U. S. Department of Transportation, National Highway Traffic Safety Administration, November 1981.*

Table 11

TYPES OF INJURIES SUSTAINED BY PEDESTRIANS INVOLVED IN REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993

County	Total Pedestrians	Injury Type									
		None		Unknown		Nonincapacitating		Incapacitating		Fatal	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	224	3	1.3	70	31.3	86	38.4	63	28.1	2	0.9
Milwaukee	2,987	76	2.5	1,118	37.4	1,090	36.5	659	22.1	44	1.5
Ozaukee	42	3	7.1	15	35.7	10	23.8	13	31.0	1	2.4
Racine	316	5	1.6	110	34.8	124	39.2	73	23.1	4	1.3
Walworth	69	2	2.9	9	13.0	30	43.5	21	30.4	7	10.2
Washington	65	4	6.1	23	35.4	18	27.7	18	27.7	2	3.1
Waukesha	175	5	2.9	44	25.1	56	32.0	64	36.6	6	3.4
Region	3,878	98	2.5	1,389	35.8	1,414	36.5	911	23.5	66	1.7

Source: Wisconsin Department of Transportation and SEWRPC.

Table 12

LOCATIONS AND TYPES OF REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993

County	Location		Type of Collision ^a										Number of Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Kenosha	72	142	3	97	13	8	2	7	4	2	4	74	214
Milwaukee	1,165	1,713	60	1,428	112	81	61	153	29	38	18	898	2,878
Ozaukee	15	26	2	18	2	2	1	1	0	1	0	14	41
Racine	97	202	9	133	13	3	10	14	7	3	3	104	299
Walworth	19	49	5	27	3	6	1	5	3	0	0	18	68
Washington	20	44	3	28	3	0	0	3	2	1	2	22	64
Waukesha	60	107	4	43	10	8	1	6	3	12	2	78	167
Region	1,448	2,283	86	1,774	156	108	76	189	48	57	29	1,208	3,731

^aThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—pedestrian is struck by a motorist traveling in a perpendicular direction; Side Same—pedestrian is sideswiped by an overtaking motor vehicle; Rear End—pedestrian is struck from behind by the front end of an overtaking motor vehicle; Left Turn—pedestrian crossing intersection is struck by a motorist turning left across his or her path; Head On—front of pedestrian is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—pedestrian is sideswiped by motor vehicle traveling in the opposite direction; Off Right—pedestrian is struck by a motor vehicle driving off the right side of the road; Off Left—pedestrian is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

equal to the number of pedestrians younger than 16 involved in collisions, 1,767. However, the percentage of children aged five through nine involved in collisions was approximately three times the percentage of children aged five through nine in the general population; the percentage of children aged 10 through 15 involved in collisions was more than twice the percentage of children aged 10 through 15 in the general population. The overrepresentation of children in the number of collisions may be attributable to the lack of cognitive skills on the

part of children, such as the lack of ability to judge gaps in traffic and motor-vehicle speeds, and to distinguish motor vehicles from surrounding objects. Because of their lack of skill and experience, special attention should be given to designing and conducting safety programs for young children.

Only a slight majority of the pedestrians involved in collisions throughout the Region, 2,201, or about 57 percent, were males. This trend was consistent throughout each of the

Table 13

**AGE AND SEX OF PEDESTRIANS INVOLVED IN REPORTED PEDESTRIAN-MOTOR
VEHICLE COLLISIONS IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993**

County	Total Pedestrians	Age of Pedestrian									
		Unknown		1 to 4		5 to 9		10 to 15		16 to 24	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	224	9	4.0	13	5.8	40	17.9	44	19.6	32	14.3
Milwaukee	2,987	69	2.3	221	7.4	635	21.3	514	17.2	427	14.3
Ozaukee	42	1	2.4	2	4.8	6	14.3	10	23.8	6	14.3
Racine	316	11	3.5	28	8.9	63	19.9	76	24.1	36	11.4
Walworth	69	4	5.8	3	4.3	10	14.5	11	15.9	17	24.6
Washington	65	0	0.0	3	4.6	13	20.0	13	20.0	13	20.0
Waukesha	175	5	2.9	2	1.1	24	13.7	36	20.6	38	21.7
Region	3,878	99	2.6	272	7.0	791	20.4	704	18.1	569	14.7

County	Total Pedestrians	Age of Pedestrian						Sex of Pedestrian					
		25 to 44		45 to 64		65 and Older		Male		Female		Not Reported	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	224	54	24.1	19	8.5	13	5.8	126	56.2	94	42.0	4	1.8
Milwaukee	2,987	708	23.7	237	7.9	176	5.9	1,722	57.6	1,239	41.5	26	0.9
Ozaukee	42	6	14.3	5	11.9	6	14.3	21	50.0	21	50.0	0	0.0
Racine	316	60	19.0	25	7.9	17	5.4	166	52.5	145	45.9	5	1.6
Walworth	69	15	21.7	4	5.8	5	7.2	31	44.9	36	52.2	2	2.9
Washington	65	13	20.0	8	12.3	2	3.1	41	63.1	24	36.9	0	0.0
Waukesha	175	30	17.1	23	13.1	17	9.7	94	53.7	77	44.0	4	2.3
Region	3,878	886	22.8	321	8.3	236	6.1	2,201	56.7	1,636	42.2	41	1.1

Source: Wisconsin Department of Transportation and SEWRPC.

Table 14

**AGE OF DRIVERS INVOLVED IN REPORTED PEDESTRIAN-MOTOR VEHICLE
COLLISIONS IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993**

County	Total Drivers	Age of Drivers Involved in Pedestrian-Motor Vehicle Collisions											
		Unknown		10 to 15		16 to 24		25 to 44		45 to 64		65 and Older	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	214	21	9.8	1	0.5	73	34.1	79	36.9	23	10.7	17	7.9
Milwaukee	2,878	446	15.5	6	0.2	651	22.6	1,169	40.6	430	14.9	176	6.1
Ozaukee	41	3	7.3	0	0.0	15	36.6	15	36.6	5	12.2	3	7.3
Racine	299	35	11.7	3	1.0	81	27.1	119	39.8	44	14.7	17	5.7
Walworth	68	1	1.5	0	0.0	26	38.2	21	30.9	14	20.6	6	8.8
Washington	64	9	14.1	0	0.0	11	17.2	23	35.9	17	26.6	4	6.2
Waukesha	167	10	6.0	0	0.0	48	28.7	77	46.1	23	13.8	9	5.4
Region	3,731	525	14.1	10	0.3	905	24.2	1,503	40.3	556	14.9	232	6.2

Source: Wisconsin Department of Transportation and SEWRPC.

seven counties except Walworth and Ozaukee Counties. In Walworth County, about 52 percent of the pedestrians involved in collisions were females, and in Ozaukee County, the number of pedestrians involved in collisions was equally divided between males and females. Mid-block collisions were more common than collisions at

intersections, with 2,283, or about 61 percent of all reported pedestrian-motor vehicle collisions, occurring at mid-block. This trend was again consistent throughout the seven counties, with a low of about 60 percent in Milwaukee County and a high of about 72 percent in Walworth County. As was the case for bicycle-motor

Table 15

AGE OF DRINKING DRIVERS AND DRINKING PEDESTRIANS INVOLVED IN REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS^a IN THE SOUTHEASTERN WISCONSIN REGION: 1991 THROUGH 1993

County	Drinking Drivers	Age of Drinking Drivers Involved in Pedestrian-Motor Vehicle Collisions									
		Unknown		16 to 24		25 to 44		45 to 64		65 and Older	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	8	0	0.0	2	25.0	5	62.5	1	12.5	0	0.0
Milwaukee	102	4	3.9	23	22.5	57	55.9	16	15.7	2	2.0
Ozaukee	3	0	0.0	0	0.0	1	33.3	1	33.3	1	33.3
Racine	9	1	11.1	1	11.1	5	55.6	1	11.1	1	11.1
Walworth	11	0	0.0	2	18.2	8	72.7	1	9.1	0	0.0
Washington . . .	1	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
Waukesha	17	0	0.0	6	35.3	11	64.7	0	0.0	0	0.0
Region	151	5	3.3	35	23.2	87	57.6	20	13.2	4	2.6

County	Drinking Pedestrians	Age of Drinking Pedestrians Involved in Pedestrian-Motor Vehicle Collisions									
		Unknown		16 to 24		25 to 44		45 to 64		65 and Older	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Kenosha	18	1	5.6	3	16.7	12	66.7	2	11.1	0	0.0
Milwaukee	227	6	2.6	45	19.8	136	59.9	32	14.1	8	3.5
Ozaukee	3	0	0.0	0	0.0	2	66.7	1	33.3	0	0.0
Racine	12	0	0.0	0	0.0	11	91.7	1	8.3	0	0.0
Walworth	7	0	0.0	2	28.6	4	57.1	0	0.0	1	14.3
Washington . . .	9	0	0.0	5	55.6	4	44.4	0	0.0	0	0.0
Waukesha	9	0	0.0	1	11.1	5	55.6	2	22.2	1	11.1
Region	285	7	2.5	56	19.6	174	61.1	38	13.3	10	3.5

^aIncludes collisions where the reporting police officer noted on the accident report that a person involved in a collision "had been drinking." Such person may or may not have been legally drunk.

Source: Wisconsin Department of Transportation and SEWRPC.

vehicle collisions, the most common single type of pedestrian-motor vehicle collision was the "angle" type, in which a pedestrian was struck by a motorist traveling in a direction perpendicular to the pedestrian's. Such collisions accounted for 1,774, or about 48 percent, of the total 3,731 pedestrian-motor vehicle collisions reported in Southeastern Wisconsin during 1991 through 1993. This, again, was consistent throughout the seven counties, with a low of about 26 percent in Waukesha County and a high of about 50 percent in Milwaukee County.

Existing Pedestrian-Safety Programs

Many studies of pedestrian safety have been conducted by various government agencies, particularly the National Highway Traffic Safety Administration. A variety of materials related to pedestrian safety has been developed by this and other agencies, including the Wisconsin Department of Transportation. These

materials focus primarily on school-age children, although materials for older adult pedestrians and for motor-vehicle operators have also been developed.

To promote safe walking and to reduce the number of accidents involving pedestrians, the National Highway Traffic Safety Administration, Federal Highway Administration, American Automobile Association, and a number of local agencies and community groups recently created a national pedestrian-safety program known as "Walk Alert." The Walk Alert program was developed to assist communities in developing local pedestrian-safety programs. The program recommends the use of a comprehensive approach to creating a safe environment for pedestrians, including education, enforcement, and engineering components with involvement and assistance from a broad range of local agencies and community organizations. A Walk Alert program guide

is available from the National Highway Traffic Safety Administration.

As is the case with bicycle-safety programs, a number of community police departments and school districts in the Region have developed and carry out pedestrian-safety programs. These programs include safety instruction for school-age children, safety programs for senior-citizen groups, and public awareness campaigns concerning pedestrian safety. Many communities also retain and train school crossing guards and have instituted "safe-route-to-school" programs to promote the safety of children on their way to school.

The Wisconsin Department of Transportation offers grants of up to \$1,000 to communities with unusually high pedestrian-accident and severe-injury rates. The Southeastern Wisconsin communities that participated in this program in 1994 are the Cities of Cudahy, Lake Geneva, Milwaukee, and West Allis, and the Counties of Kenosha and Racine.

The American Automobile Association develops and supplies materials concerning pedestrian safety on request to police departments and schools. These brochures include information on preschool children in traffic, older-adult-pedestrian safety, and assistance in identifying safe routes to school.

SUMMARY

This chapter describes existing bicycle and pedestrian safety and operational considerations, including a description of State and local traffic laws and regulations affecting bicycle and pedestrian travel, a description of the bicycle and pedestrian collision experience within the Region, and information regarding bicycle- and pedestrian-safety programs within the Region.

State and Local Regulations

Affecting Bicyclists and Pedestrians

Traffic laws affecting the operation of motor vehicles, bicycles, and pedestrians on the street and highway system are set forth in Chapter 346 of the Wisconsin Statutes. Provisions of the State Statutes relating specifically to bicycle operation on the street system include the following: bicyclists must travel only one way in bicycle lanes, in the same direction as adjoining

motor-vehicle traffic, unless two-way riding is specifically permitted by local ordinance; bicyclists must ride as near as practicable to the right edge of the roadway, unless preparing to make a left-hand turn; and bicyclists must allow at least three feet of clearance when passing a standing or moving motor vehicle. The State Statutes also provide that any county, city, village, or town may prohibit bicycle use on roads under their jurisdiction, provided the governing body holds a public hearing and adopts an ordinance prohibiting such use. Conversely, a local government may, by ordinance, designate any roadway under its jurisdiction as a bicycle way.

A survey of all cities and villages within the three urbanized areas of the Region and of all cities and villages having a population of 5,000 or greater within the Region but outside of an urbanized area was conducted by the Commission in April 1994. Of the 45 communities in Southeastern Wisconsin surveyed, none had limited bicycle riding on the street system. The survey also indicated that two-way operation on bicycle ways located on or immediately adjacent to a street was permitted only in the Village of Elm Grove.

The State Statutes set forth a number of provisions related to pedestrian travel. Unless traveling on a sidewalk, pedestrians are required to travel along the left side of a roadway, and, where practical, to step to the extreme outer edge of the traveled portion of the roadway when approached by a motor vehicle. At signalized intersections, vehicle operators must yield the right-of-way to pedestrians who are crossing on the green phase of a traffic signal or on a "walk" signal. At unsignalized intersections, vehicle operators must yield to a pedestrian crossing in either a marked or unmarked crosswalk. Motorists must also yield the right-of-way to pedestrians who are crossing within a marked crosswalk, including marked crosswalks not located at intersections (commonly referred to as "mid-block crossings").

Bicycle-Motor Vehicle and

Pedestrian-Motor Vehicle Collisions

Bicycle-related collisions include bicycle collisions with motor vehicles; bicycle collisions with fixed objects such as trees and utility posts; and bicycle collisions with other bicyclists, pedestrians, or animals. In addition, bicyclists may lose control of their bicycles and fall for a

variety of reasons, including loss of control due to excessive speed or hazardous roadway conditions such as potholes, gravel, ice, or oil patches. Although it is generally recognized that bicycle collisions that do not involve a motor vehicle are more common than bicycle-motor vehicle collisions, little data are available on the incidence, consequences, and causes of such collisions. Bicycle-motor vehicle collisions have been given greater attention because such collisions generally result in more serious injuries to the bicyclist and because collisions which do not involve a motor vehicle are not routinely reported to a central record-keeping agency, as are motor-vehicle-related collisions.

A summary of bicycle-motor vehicle collisions occurring within the Region is presented in Tables 6 through 10 in this chapter and in Tables B-1 through B-7 in Appendix B of this report. There was a total of 1,990 reported collisions between bicycles and motor vehicles in the Region between 1991 and 1993, which involved a total of 2,056 bicyclists. Of this total, 130 bicyclists, or about 6 percent of those involved in a reported collision with a motor vehicle, suffered no injuries. The extent of injuries was not reported or was not known for 636, or about 31 percent, of the bicyclists involved in a collision. A total of 1,280 bicyclists, or about 62 percent of all bicyclists involved in a collision, was reported to have received nonfatal injuries. Ten of the 2,056 bicyclists involved in a collision with a motor vehicle suffered fatal injuries.

As is the case with bicycle collisions, available information on pedestrian collisions is focused on pedestrian-motor vehicle collisions, which generally result in the most severe injuries to pedestrians. A summary of pedestrian-motor vehicle collisions occurring within the Region is presented in Tables 11 through 15 in this chapter and in Tables B-8 through B-14 in Appendix B of this report. There was a total of 3,731 reported collisions between pedestrians and motor vehicles in the Region between 1991 and 1993, which involved a total of 3,878 pedestrians. Of this total, 2,391, or about 62 percent of the pedestrians involved in a reported collision with a motor vehicle, were injured. Of the 2,391 pedestrians reported to have been injured, 66, or about 2 percent of all pedestrians involved in a reported collision with a motor vehicle, suffered a fatal injury. Of the 3,878 pedestrians involved in a collision, 98, or about 2 percent, were not

injured. The extent of injuries was not reported or was not known for 1,389, or about 36 percent, of the pedestrians involved in reported collisions.

Existing Bicycle- and Pedestrian-Safety Programs

A survey of local government programs promoting safe bicycle operation was conducted by the Commission in April 1994. Of the 45 communities in Southeastern Wisconsin surveyed, 15 of the communities had bicycle-safety programs which consisted of holding at least one "bicycle rodeo" event for elementary-school children each year. Five of these communities offer a bicycle-safety program consisting of a bicycle-safety talk and/or video presentation for elementary-school children. Nineteen of the communities have a bicycle-safety program which consists of both "bicycle rodeos" and bicycle-safety presentations for elementary-school children. The safety programs are generally developed by the community police department in cooperation with the school district.

Southeastern Wisconsin has several organizations and agencies which provide various types of bicycle-safety training and information. These include the League of American Bicyclists, the Bicycle Federation of Southeastern Wisconsin, the American Automobile Association, and the Wisconsin Department of Transportation.

Many studies of pedestrian safety have been conducted by various government agencies, particularly the National Highway Traffic Safety Administration. A variety of materials related to pedestrian safety has been developed by this and other agencies and organizations, including the Wisconsin Department of Transportation and the American Automobile Association. These materials focus primarily on school-age children, although materials for older adult pedestrians and for motor-vehicle operators have also been developed.

To promote safe walking and to reduce the number of accidents involving pedestrians, the National Highway Traffic Safety Administration, Federal Highway Administration, American Automobile Association, and a number of local agencies and community groups recently created a national pedestrian-safety program known as "Walk Alert." The program was developed to assist communities in developing local pedestrian-safety programs. A Walk Alert program guide is available from the National Highway Traffic Safety Administration.

Chapter VI

OBJECTIVES, PRINCIPLES, STANDARDS, AND DESIGN GUIDELINES

INTRODUCTION

Planning is a rational process for formulating and meeting objectives. The formulation of objectives is, therefore, an essential task which must be undertaken before a plan can be prepared and evaluated. Objectives guide the preparation of plans and, when converted to specific measures of plan effectiveness—termed standards—provide the structure for evaluating how well the plan meets planning objectives. Because planning objectives provide this basis for plan preparation and evaluation, the formulation of objectives is a particularly important step in the planning process.

Recognizing that any set of planning objectives implicitly reflects an underlying value system, the Commission, since its inception, has provided for the involvement of interested and knowledgeable public officials, technicians, and private citizens in its planning programs. This participation by elected and appointed officials and by citizen leaders in the planning process, particularly in the formulation of objectives, is implicit in the structure and organization of the Southeastern Wisconsin Regional Planning Commission itself. Moreover, through the establishment of advisory committees to assist the Commission and its staff in the conduct of regional planning programs, the Commission has attempted to provide an even broader opportunity for the active participation of public officials and private interest groups in the regional planning process.

The Advisory Committee established by the Commission for the preparation of the bicycle and pedestrian facilities system plan has been described in Chapter I of this report. One of the major tasks of the Advisory Committee was to assist in the formulation of objectives and supporting planning principles and standards to guide the preparation of the bicycle and pedestrian facilities elements of the regional transportation system plan.

DEFINITIONS

The terms "objective," "principle," "standard," "guidelines," "plan," "policy," and "program"

are subject to a range of interpretations. In order to clarify their meanings, the Regional Planning Commission has defined these terms as follows for use in this planning effort:

1. Objective: a goal or end toward the attainment of which plans and policies are directed.
2. Principle: a fundamental, generally accepted tenet used to support objectives and prepare standards and plans.
3. Standard: a criterion used to evaluate the adequacy of plan proposals to attain objectives.
4. Guidelines: a body of information intended to provide guidance for the location, design, and maintenance of bicycle and pedestrian facilities.
5. Plan: a design which seeks to achieve agreed-upon objectives.
6. Policy: a rule or course of action used to ensure plan implementation.
7. Program: a coordinated series of policies and actions to carry out a plan.

Although this chapter deals only with the first four of these terms, an understanding of the interrelationship among the foregoing definitions and the basic concepts which they represent is essential to the following discussion of objectives, principles, and standards.

OBJECTIVES, PRINCIPLES, AND STANDARDS

In order to be useful in physical system planning, objectives must be logical, stated clearly, and, to the extent feasible, derived from local values. The quantification of objectives for plan design and evaluation is facilitated by complementing each objective with a set of quantifiable standards. These standards are, in turn, directly related to a planning principle which supports the objective. Planning objectives for the bicycle and pedestrian facilities system plan are set forth below:

1. To provide bicycle and pedestrian facilities which, through their location and design, will encourage increased levels of utilitarian bicycle and pedestrian travel.
2. To provide bicycle and pedestrian ways that reduce accident exposure and provide for increased travel safety and personal security.
3. To provide bicycle and pedestrian facilities that facilitate intermodal travel, particularly among bicycle, pedestrian, and transit modes.

Complementing each of the foregoing objectives is a planning principle and a set of planning standards. Each of the objectives, together with its supporting principle and standards, is set forth below. Each set of standards serves to facilitate quantitative application of the objective in plan design and evaluation.

The standards are intended to guide preparation of the regional bicycle and pedestrian facilities system plan. As such, the standards are directed to facilities and activity centers of regional significance, including arterial streets and highways, transit stations serving rapid and express transit routes, and the major commercial, industrial, recreational, and governmental and institutional centers designated by the adopted regional land use plan for the year 2010.

The provision of neighborhood- and community-level bicycle and pedestrian facilities to supple-

ment the regional plan is properly addressed by local units of government through the preparation of community bicycle and pedestrian plans and neighborhood unit development plans containing a bicycle and pedestrian element. Such local plans should provide facilities to accommodate bicycle and pedestrian travel within neighborhoods, providing for convenient travel between residential areas and community- and neighborhood-level activity centers such as local shopping centers; elementary, middle, and high schools; neighborhood and community parks; transit stops; and community services such as local government office centers, libraries, and post offices. Providing safe access to schools, particularly to elementary and middle schools which attract a large number of bicycle and pedestrian trips by children, warrants particular attention in the design of community and neighborhood bicycle and pedestrian plans.

Although the objectives, principles, and standards set forth in this chapter are intended to direct the preparation of the regional bicycle and pedestrian facilities system plan, many are relevant to the preparation of community or neighborhood plans as well, or can be readily modified to apply more directly to local planning efforts. For example, Standard No. 3 of Objective No. 1, which calls for providing bicycle and pedestrian ways to connect residential areas to major activity centers within a reasonable bicycling or walking distance, could be modified for local use to address bicycle and pedestrian access to community and neighborhood activity centers.

OBJECTIVES, PRINCIPLES, AND STANDARDS

OBJECTIVE NO. 1

Bicycle and pedestrian facilities which, through their location and design, will encourage increased levels of utilitarian bicycle and pedestrian travel.

PRINCIPLE

A transportation system that provides for reasonably fast, convenient travel is essential to support the everyday economic and social activities of the Region. Personal automotive vehicle travel, while offering a high degree of personal mobility, comfort, and convenience, can result in traffic congestion, excessive air pollutant emissions, and fuel consumption, especially in corridors with high travel demand. Effective and attractive bicycle and pedestrian facilities have the potential to reduce automotive vehicle use and reduce traffic congestion and associated personal delay, energy consumption, and air pollution, and to encourage a healthy lifestyle through daily walking or bicycle trips.

STANDARDS

1. Bicycle and pedestrian ways intended for utilitarian travel should provide direct and continuous routes which minimize delay and maximize safety.

2. Bicycle ways should be provided to interconnect the Kenosha, Milwaukee, and Racine urbanized areas with each other and with urban areas having a resident population of 5,000 or more persons.

3. Bicycle ways¹ should be provided to connect medium- and high-density residential areas with public transit stations,² park-and-pool lots, and major activity centers located within five miles of such residential areas. Pedestrian ways should be provided to connect medium- and high-density residential areas with public transit stations, park-and-pool lots, and major activity centers located within one mile of such residential areas. Major activity centers include:

- Major office and retail centers, including the Kenosha, Milwaukee, and Racine central business districts;
- Major industrial centers;
- Major parks and recreational facilities;
- Major governmental and institutional centers, including libraries, government administrative centers, medical centers, universities, and technical and vocational schools.

4. On-street bicycle ways needed to provide access between residential areas and the major activity centers listed in Standard No. 3 under Objective No. 1 should be located on streets and highways meeting the following criteria:

- a. No more than four travel lanes for motor vehicles;
- b. The average weekday motor-vehicle traffic includes no more than 10 percent commercial vehicles;³
- c. No grades in excess of 5 percent for segments of more than 500 feet in length;
- d. No more than 30 public street intersections or commercial driveways per mile;
- e. Adequate separation can be provided between bicycles and vehicles parked along the street or highway to avoid bicyclists being obstructed by opening car doors, or on-street parking is prohibited or restricted during peak travel periods;
- f. There is an outside travel lane of at least 14 feet in width or a paved shoulder at least four feet in width;
- g. Motor-vehicle operating speeds do not exceed 35 miles per hour; and

¹A "bicycle way" has been defined for regional planning purposes as any roadway, pathway, or other way that is specifically designated for bicycle travel, including facilities that are designated for exclusive or preferential bicycle travel and facilities that are shared with other travel modes. Facilities intended for exclusive or preferential use by bicycles include bicycle paths and bicycle lanes. Bicycle paths are physically separated from motorized vehicular traffic by open space or barriers, and are typically located within the right-of-way of a street or highway or in an independent right-of-way or easement such as one along a river or utility corridor. Bicycle lanes are portions of roadways that are designated by striping, signing, and pavement markings for bicycle use. A "bicycle route" is a bicycle way designated with directional and informational markers, and may consist of a combination of bicycle paths, bicycle lanes, and shared roadways; however, the term "bicycle route" is used in this report to describe a shared roadway signed for bicycle use.

²A "transit station" is a facility located on a rapid or express transit route which is designed to serve passengers boarding, alighting, or transferring between rapid, express, or local feeder transit routes serving the location. Transit stations vary in size and design depending upon their intended purpose and passenger volume served, but generally provide for more passenger amenities than would be found at a local transit stop. Passenger amenities typically provided at transit stations include passenger loading platforms, passenger shelters, telephone service, posted route maps and timetables, and, where sufficient land is available, parking for passengers transferring between auto and transit. Where the station serves very high passenger volumes or bus and rail routes providing intercity service, an enclosed terminal with rest rooms may also be provided. In the future, such stations may provide facilities enabling transit users to access advanced transit information systems which will, among other things, provide real-time transit-vehicle location and scheduling information.

³"Commercial vehicles" include heavy trucks and transit vehicles.

- h. The number of motor vehicles per average weekday does not exceed the design capacity of the street. Design capacities for various street cross-sections are set forth in Table 16.

The construction of bicycle paths, or the designation of bicycle routes on collector or land access streets, should be considered as parallel facilities to serve freeway or other arterial corridors which do not meet the above criteria.

5. All bridges and underpasses, except bridges and underpasses carrying freeway and expressway facilities, should be designed to safely accommodate bicycle and pedestrian movements.

6. Consideration should be given to locating bicycle and pedestrian ways in off-street corridors where suitable alternatives to on-street locations exist. Off-street corridors should offer adequate separation from motor-vehicle traffic and provide reasonably direct as well as safe and aesthetically attractive routes.

7. Off-street bicycle and pedestrian ways should be used to provide connections between and within residential areas and activity centers.

8. A regional system of off-street bicycle paths and hiking trails should be provided in accordance with the recommendations set forth in the adopted park and open space plans for each of the seven counties in the Region.⁴

9. Support facilities such as rest rooms, drinking fountains, and information kiosks should be provided along off-street bicycle paths and hiking trails at intervals of no more than 15 miles.

OBJECTIVE NO. 2

Bicycle and pedestrian ways that reduce accident exposure and provide for increased travel safety and personal security.

PRINCIPLE

Collisions take a heavy toll in life, property damage, and human suffering; contribute substantially to overall transportation costs; and increase public costs for police, emergency rescue services, and other social services. Therefore, every attempt should be made to reduce both the incidence and severity of collisions. At the same time, it is important to underscore the relative safety of bicycling and walking to avoid perpetuating the view that these are inherently dangerous activities. The real and perceived risk of exposure to criminal activity hampers the mobility of those who must travel by bicycle or walk within or through areas deemed unsafe. Therefore, every attempt should be made to reduce the incidence of crime where it hampers mobility and access to the transportation system and to increase actual and perceived personal security in the operation of the transportation system.

STANDARDS

1. All arterial streets and highways in areas of existing or planned urban industrial, commercial, and residential development, except freeways and expressways, should provide accommodation for bicyclists whenever a street or highway is constructed, reconstructed, or—for arterial facilities having a rural cross-section—resurfaced. On two-lane streets and highways having a rural cross-section, a paved shoulder with a minimum width of four feet should be provided. On four-or-more-lane streets and highways with a rural cross-section, a paved shoulder with a minimum width of eight feet should be provided. On streets and highways having an urban cross-section, the outside travel lane should have a minimum usable width of 14 feet. On streets and highways without parking lanes, the usable lane width should be measured from the inside edge of the lane to the edge of the gutter section. Consideration should be given to prohibiting on-street parking where bicycle ways are to be provided.

⁴The seven county park and open space plans are documented in SEWRPC Community Assistance Planning Report No. 131, *A Park and Open Space Plan for Kenosha County*, November 1987; SEWRPC Community Assistance Planning Report No. 132, *A Park and Open Space Plan for Milwaukee County*, November 1991; SEWRPC Community Assistance Planning Report No. 133, *A Park and Open Space Plan for Ozaukee County*, July 1987; SEWRPC Community Assistance Planning Report No. 134, *A Park and Open Space Plan for Racine County*, September 1988; SEWRPC Community Assistance Planning Report No. 135, *A Park and Open Space Plan for Walworth County*, February 1991; SEWRPC Community Assistance Planning Report No. 136, *A Park and Open Space Plan for Washington County*, March 1989; and SEWRPC Community Assistance Planning Report No. 137, *A Park and Open Space Plan for Waukesha County*, December 1989.

2. Sidewalks should be provided in areas of existing or planned urban industrial, commercial, and residential development in accordance with the criteria set forth in Table 17.

3. Sidewalks should not be designated as bicycle ways except in those circumstances where there is a need to provide bicycle-way continuity and there are no reasonable alternatives to the sidewalk location.

OBJECTIVE NO. 3

Bicycle and pedestrian facilities that facilitate intermodal travel, particularly among bicycle, pedestrian, and transit modes.

PRINCIPLE

An intermodal transportation system provides for efficient interchange among appropriate modes of transportation to facilitate effective passenger movement. Bicycle-transit and pedestrian-transit connections serve to combine the advantages of bicycle and pedestrian travel, which offers flexibility and mobility for shorter-distance trips, with the advantages of access to public transit facilities for longer-distance trips.

STANDARDS

1. All transit stations should be readily accessible by bicyclists and pedestrians. All transit stops⁵ should be served by sidewalks or walkways.

2. Secure bicycle parking and storage facilities should be provided at all transit stations and park-and-pool lots.

3. Provision should be made for transporting bicycles on transit vehicles.

⁵A "transit stop" is an area usually designated by distinctive signs or by curb or pavement markings at which passengers wait for, and board or alight from, public transit vehicles.

DESIGN GUIDELINES

This chapter also sets forth a number of design guidelines intended to provide guidance to State, county, and local officials for the location, design, and maintenance of bicycle, pedestrian, and shared bicycle and pedestrian facilities. Because the level of bicycle and pedestrian activity is dependent in part on the density and design of land use and transportation facilities, this chapter also sets forth guidelines related to the design of streets, residential areas, and activity centers which may be expected to enhance opportunities for bicycle and pedestrian travel.

GUIDELINES FOR BICYCLE FACILITIES⁶

Planning Guidelines

Introduction: The type of bicycle facility that should be provided in a specific location is dependent upon a number of factors. For bicycle ways proposed to be located within a street or highway right-of-way, factors that should be considered include motor-vehicle speeds and volumes; the number of trucks and buses using

the roadway; the presence and duration of on-street parking; the number of intersections and commercial driveways; pavement and right-of-way width; and shoulder width and surfacing. The type of facility that should be provided will also depend on the type of roadway cross-section. Shared roadways, wide outside travel lanes, and bicycle lanes are generally appropri-

⁶The design guidelines set forth in this chapter are not intended to serve as a comprehensive guide to the design of streets and highways to accommodate bicycles, but are intended to suggest the general type of design treatments that may be appropriate in certain situations. Design specifications should be determined during engineering studies for specific street and highway projects, and should be based upon recommendations contained in the Guide for the Development of Bicycle Facilities, published by the American Association of State Highway and Transportation Officials (AASHTO) and referred to hereafter in this chapter as the "AASHTO Bicycle Guide."

Table 16

DESIGN CAPACITIES FOR SELECTED STREET CROSS-SECTIONS

Type of Facility	Average Weekday Traffic Volume	
	Urban	Rural
Two-Lane Arterials Undivided	13,000	7,000
Four-Lane Arterials Undivided	17,000	- -
Divided	25,000	22,000

Source: SEWRPC.

Table 17

RECOMMENDATIONS FOR PROVISION OF SIDEWALKS IN AREAS OF EXISTING OR PLANNED URBAN DEVELOPMENT

Roadway Functional Classification	Land Use	New Streets ^a	Existing Streets ^a
Arterial Streets ^b	Industrial Commercial Residential	Both sides Both sides Both sides	Both sides Both sides Both sides
Collector Streets	Industrial Commercial Residential	Both sides Both sides Both sides	Both sides Both sides At least one side
Land Access Streets ^c	Industrial Commercial Residential (medium- and high-density) Residential (low-density)	Both sides Both sides Both sides At least one side	Both sides Both sides At least one side At least one side

^a Sidewalks may be omitted on one side of streets where there are no existing or anticipated uses that would generate pedestrian trips on that side.

^b Where there are marginal access control or service roads, the sidewalk along the main road may be eliminated and replaced by a sidewalk along the service road on the side away from the main road.

^c Sidewalks need not be provided along courts and cul-de-sac streets less than 600 feet in length, unless such streets serve multi-family development; or along streets served by parallel off-street walkways.

Source: SEWRPC.

ate for roadways with curb and gutter, while shoulder bicycle ways are appropriate for roadways without curb and gutter. It is also important to provide continuity and consistency in the type of bicycle way provided.

Arterial Streets and Highways: Arterial streets are designed to carry high volumes of through traffic at relatively high speeds. Arterial streets are attractive for use by longer-distance utilitarian bicyclists because they are continuous, generally direct in alignment, and allow the bicyclist to maintain momentum because traffic

control devices generally give priority to the arterial street over intersecting streets. In addition, activity centers such as shopping and office centers are often located on arterial streets.

Because of the high volumes and speeds of motor vehicles operating on arterial streets and highways, it will generally be necessary to provide a wide outside travel lane, a bicycle lane, or a paved shoulder to accommodate bicyclists on arterial facilities. In some cases, a separate bicycle path within a highway right-of-way may be needed to safely accommodate bicyclists.

Land Access and Collector Streets: Land access streets are intended to provide access to individual building sites. Land access streets generally have low traffic volumes and operating speeds, and can safely accommodate bicyclists of all ages and skill levels, except young children, without widening of the roadway. Such streets may provide an alternative to bicycle travel on nearby arterial streets, particularly for children and adult bicyclists who are uncomfortable operating on busy streets.

Collector streets connect to arterial streets, serving to collect traffic from and distribute traffic to land access streets. Such streets are not intended to serve high-speed or long-distance through traffic and can generally accommodate bicycle travel without special roadway geometrics.

Bicycle Access within and between Neighborhoods: Land access and collector streets without bicycle lanes or wide outside travel lanes are generally adequate to accommodate bicycle travel within residential neighborhoods and major activity centers. Off-street bicycle ways should be provided to connect adjacent subdivisions that lack direct street access, or to connect cul-de-sac streets within a subdivision. Off-street bicycle ways within a neighborhood should also be considered to provide access from residences to a school, park, or neighborhood shopping center.

Safe bicycle access should be provided between residential neighborhoods, between residential neighborhoods and major activity centers, and across barriers such as arterial streets, streams, and railway rights-of-way. Such access may require the provision of crosswalks or traffic control devices or the construction of bicycle underpasses or overpasses.

Bicycle-Way Types and Roadway

Improvements to Accommodate Bicycle Travel

Shared Roadways: On a shared roadway, bicyclists and motorists share a travel lane. Standard travel lane widths of 10 to 12 feet on arterial streets are generally inadequate to accommodate bicycles and motor vehicles side by side in the same lane, and motor vehicles must cross the centerline or move into another travel lane to safely pass a bicyclist. Shared lanes are generally adequate to accommodate bicyclists on streets with low motor-vehicle traffic volumes and speeds and little truck traffic, such as collector and land access streets. On streets with

higher volumes of motor-vehicle traffic, such as arterial streets, or with significant truck traffic, shared-lane bicycle travel may decrease the capacity of the roadway and create a hazardous situation for bicyclists.

Outside travel lanes wider than the standard 10 to 12 feet are desirable to accommodate bicyclists on arterial streets. Wider lanes allow a motorist overtaking a bicyclist to pass the bicyclist without changing lanes or encroaching into an adjacent motor-vehicle lane. Wider lanes also accommodate shared bicycle and motor-vehicle use without reducing the roadway capacity for motor-vehicle traffic.

Outside travel lanes should provide a minimum usable width of 14 feet, with usable width measured from the inside edge of the travel lane to the longitudinal joint between the pavement and gutter section on streets without on-street parking. On streets that allow parking, an outside travel lane of at least 14 feet should be provided. The parking lane should be striped to ensure that parked vehicles do not encroach into the bicycle travel path.

Lane widths of more than 16 feet should be used with caution because they may encourage the unsafe operation of two motor vehicles in one lane. If lanes wider than 16 feet from lane stripe to curb face are provided, a bicycle lane or an edge stripe should be provided. Desirable cross-sections for roadways having wide outside travel or curb lanes are shown in Figure 4.

Bicycle Lanes: A bicycle lane is a portion of a roadway designated for the exclusive or preferential use of bicyclists by signing and pavement markings. Recommendations for signing and pavement markings for bicycle lanes are set forth in the Manual on Uniform Traffic Control Devices. Bicycle lanes should always be one-way facilities carrying traffic in the same direction as adjacent motor-vehicle traffic. Desirable cross-sections for streets and highways with bicycle lanes are shown in Figure 5.

On streets where parking is prohibited, a minimum bicycle-lane width of five feet should be provided, with at least four feet located to the left of the longitudinal joint between the pavement and gutter section. The width of the bicycle lane should be increased to six feet on streets where motor-vehicle operating speeds exceed 35 miles per hour and on streets carrying significant

numbers of transit vehicles or trucks. A pavement stripe is generally not necessary on the curb side of the bicycle lane if street parking is not permitted.

On streets where parking is permitted, bicycle lanes should be located between the outside motor-vehicle travel lane and the parking lane. Both sides of the bicycle lane should be marked. A left-hand pavement stripe should be used to differentiate the motor-vehicle travel lane from the bicycle lane and a right-hand pavement stripe should be used to separate the bicycle lane from the parking lane. A minimum bicycle-way width of five feet should be provided; however, a bicycle-lane width of six feet is recommended in order to provide bicyclists with additional separation from parked motor vehicles and the danger presented by opening vehicle doors. Bicycle lanes should not be located between the curb and the parking lane. Such a location reduces the visibility of bicyclists at intersections and increases the potential for bicycle-motor vehicle conflicts and collisions.

Bicycle lanes should not be separated from motor-vehicle travel lanes by curbing or other barriers. Such barriers prevent motor-vehicle drivers and bicyclists from executing proper merging maneuvers in advance of intersections and limit the ability of bicyclists to take evasive action at driveways. The construction of lane barriers along arterial streets would, moreover, create significant operational problems relating to snow removal, street maintenance, and utility construction and maintenance.

Bicycle lanes can complicate turning movements at intersections because they encourage bicyclists to keep right and motorists to keep left, regardless of their turning intentions. Bicyclists turning left from a bicycle lane and motorists turning right from the left of the bicycle lane are both maneuvering contrary to the generally accepted rules of the road. Design guidelines for intersection treatments intended to encourage proper merging maneuvers are included in a later section of this chapter.

Transit/Bicycle Lanes: A travel lane on an arterial street or highway intended to be shared by bicycles and transit vehicles should be 16 feet wide. Where bicycle traffic is significant, consideration should be given to delineating a 12-foot lane for transit vehicles adjacent to the curb and

a four-foot lane for bicycles between the transit-vehicle lane and the motor-vehicle travel lane. The bicycle lane should not be placed between the transit-vehicle lane and the curb because doing so puts embarking and disembarking transit passengers at risk of being hit by a bicyclist and puts bicyclists at risk of being caught between the curb and a transit vehicle pulling over to a bus stop.

Shoulder Bicycle Ways: A shoulder is that portion of a roadway contiguous to the traveled way on streets and highways. Shoulders are generally constructed on streets and highways without curbs and gutters. The shoulder is intended for emergency use and also provides support for the traveled portion of the roadway.

Adding or improving shoulders can be a cost-effective way to accommodate bicyclists on streets and highways having a rural cross-section. In such cases, shoulders should be paved to a minimum width of four feet on two-lane streets and highways and eight feet on four-or-more-lane streets and highways. If shoulders wider than eight feet are needed, the additional area should not be paved. This is to discourage motor-vehicle operators from using the shoulders for passing. A pavement stripe should be used to visually separate the motor-vehicle travel way from the shoulder. Figure 6 shows a desirable cross-section for a shoulder bicycle way on a two-lane rural arterial.

Bicycle Paths: A bicycle path is a bicycle way that is physically separated from motor-vehicle traffic by distance or a barrier. A bicycle path may be located within a highway right-of-way or within a separate corridor such as a parkway, an abandoned railway corridor, or a utility right-of-way. Bicycle paths are normally two-way facilities, and often accommodate pedestrians as well as bicyclists.

Bicycle paths should not be located immediately adjacent to a roadway. The AASHTO Bicycle Guide lists the following problems commonly encountered with such a location:

- Unless paired, bicycle paths require one direction of bicycle traffic to ride against motor-vehicle traffic, contrary to the rules of the road.

- When the bicycle path ends, bicyclists going against traffic will tend to continue traveling on the wrong side of the street. Likewise, bicyclists approaching a bicycle path often travel on the wrong side of the street to access the path. Wrong-way travel by bicyclists is a major cause of bicycle-motor vehicle accidents and should be discouraged at every opportunity.
- At intersections, motorists entering or crossing the roadway often will not notice bicyclists coming from their right, as they are not expecting contraflow vehicles.
- Many bicyclists will use the roadway instead of the bicycle path because they find the roadway to be safer, more convenient, or better maintained. Bicyclists using the roadway are often harassed by motorists who feel that bicyclists should be using the path.
- Bicyclists using the bicycle path generally are required to stop or yield at all cross-streets and driveways, while bicyclists using the roadway usually have priority over cross-traffic, because they have the same right-of-way as motorists.
- Because of the proximity of motor-vehicle traffic to opposing bicycle traffic, barriers are often necessary to keep motor vehicles out of bicycle paths and bicyclists out of traffic lanes. These barriers can represent an obstruction to bicyclists and motorists, and complicate maintenance of the bicycle path.

The construction of bicycle paths as parallel facilities to serve freeway or other arterial corridors should be considered where it is not feasible to locate a bicycle way on the arterial due to high posted motor-vehicle speeds or high volumes. Generally, bicycle ways should not be provided on streets and highways with vehicle operating speeds of more than 35 miles per hour or with traffic volumes in excess of those set forth in Standard No. 4 under Objective No. 1. Bicycle paths can be a valuable addition to the bicycle-way system in situations where the bicycle path offers good separation between bicycles and motor vehicles and where there are few at-grade intersections. Bicycle paths can also serve as important links between cul-de-sac streets or subdivisions.

Bicycle paths are commonly used to provide recreational opportunities through parks and natural resource corridors. Bicycle paths can also serve utilitarian bicyclists if they offer a more pleasant route than on-street bicycle ways without compromising speed, directness, or safety.

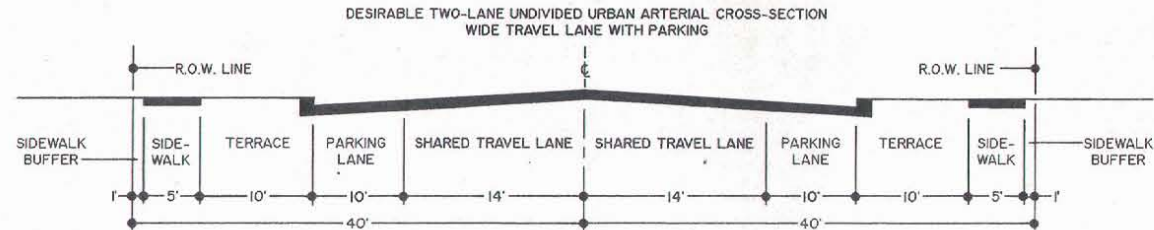
Figure 7 shows a desirable cross-section for bicycle paths in rights-of-way independent from street and highway rights-of-way. A one-way bicycle path should be a minimum of five feet wide if built of concrete and six feet wide if built of asphalt concrete. The minimum six-foot-width requirement for an asphalt concrete path is based on the economics of paving. The smallest width a standard asphalt paving machine can pave is six feet. A path smaller in size is more expensive to build due to equipment and labor costs. With either a concrete or asphalt path, a stone base with a minimum width of 10 feet should be provided. The 10-foot width is necessary to accommodate and prevent damage due to construction equipment and maintenance vehicles.

Two-way bicycle paths should be a minimum of 10 feet wide with a minimum two-foot clearance on each side; however, a minimum width of eight feet may be adequate when the amount of bicycle and pedestrian traffic is expected to be low, there will be good horizontal and vertical alignment providing safe and frequent passing opportunities, and the path will not be subjected to maintenance-vehicle loading conditions that would cause pavement edge damage. In areas where higher volumes of pedestrian and bicycle use are anticipated—generally more than 25 pedestrians and 25 bicyclists per peak hour—consideration should be given to providing a 12-foot-wide path or separate paths for pedestrians and bicyclists. A centerline stripe and stripes indicating areas intended for bicyclists and those intended for pedestrians should be used to keep bicycles from straying outside the proper lane on sharp curves or in other areas with poor sight distance where it is not possible to reconstruct the curve or improve sight distance.

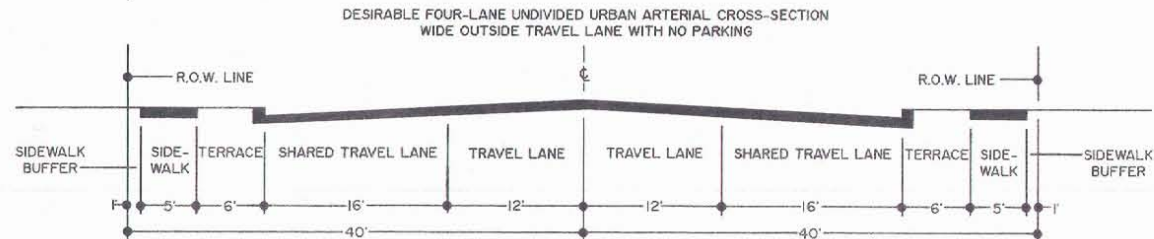
Desirable cross-sections for bicycle paths located within a street or highway right-of-way are shown in Figure 8. A minimum separation of five feet is recommended between the bicycle path and the edge of the pavement in such situations. Use of a fence or concrete divider should be considered to offer additional protection to bicyclists from motor-vehicle traffic. The

Figure 4

DESIRABLE CROSS-SECTIONS FOR ROADWAYS WITH WIDE OUTSIDE TRAVEL OR CURB LANES



NOTE: A 4-INCH-WIDE SOLID WHITE STRIPE OR MARKED PARKING STALLS SHOULD BE USED TO DISTINGUISH THE TRAVEL LANE FROM THE PARKING LANE.

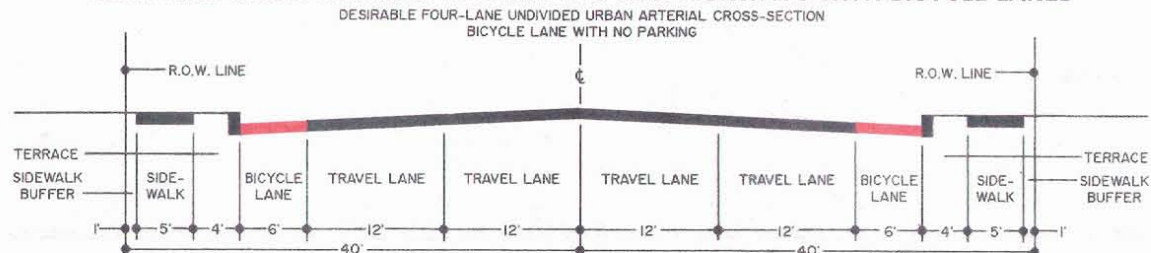


NOTE: THE ABOVE CROSS-SECTION ASSUMES THAT THE ROADWAY INCLUDES A TWO-FOOT GUTTER SECTION ON EACH SIDE. THE USABLE WIDTH OF THE OUTSIDE TRAVEL LANE IS THEREFORE 14 FEET. THE TERRACE SHOULD BE WIDENED TO 11 FEET IF ADEQUATE RIGHT-OF-WAY IS AVAILABLE.

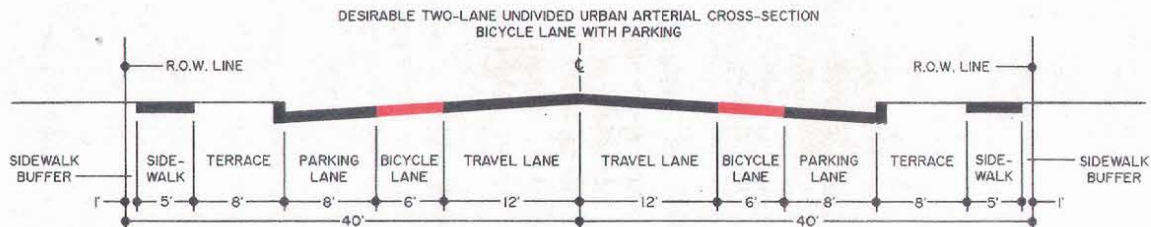
Source: SEWRPC.

Figure 5

DESIRABLE CROSS-SECTIONS FOR STREETS AND HIGHWAYS WITH BICYCLE LANES



NOTE: A 6-INCH-WIDE SOLID WHITE STRIPE SHOULD BE USED TO DISTINGUISH THE OUTSIDE TRAVEL LANE FROM THE BICYCLE LANE. THE TERRACE SHOULD BE WIDENED TO NINE FEET IF ADEQUATE RIGHT-OF-WAY IS AVAILABLE.

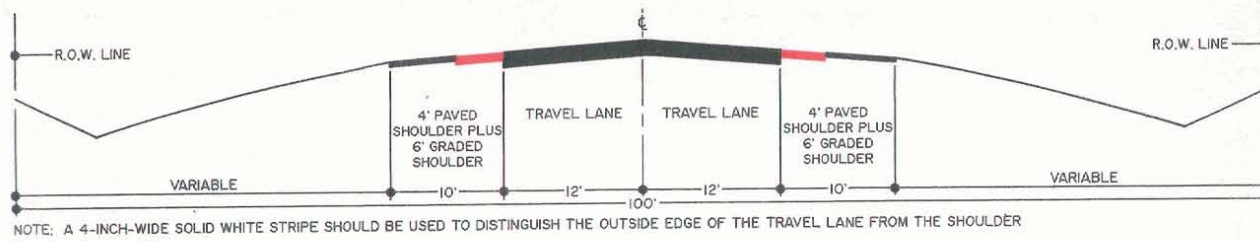


NOTE: A 6-INCH-WIDE SOLID WHITE STRIPE SHOULD BE USED TO DISTINGUISH THE TRAVEL LANE FROM THE BICYCLE LANE. A 4-INCH-WIDE SOLID WHITE STRIPE OR MARKED PARKING STALLS SHOULD BE USED TO DISTINGUISH THE BICYCLE LANE FROM THE PARKING LANE.

Source: SEWRPC.

Figure 6

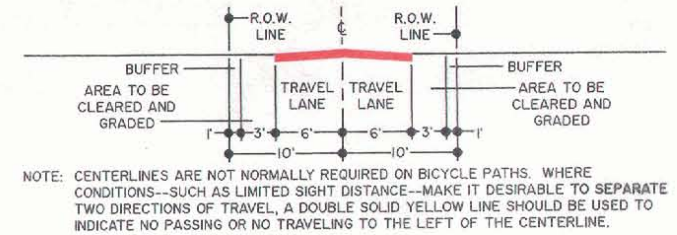
DESIRABLE TWO-LANE RURAL ARTERIAL CROSS-SECTION: SHOULDER BICYCLE WAY



Source: SEWRPC.

Figure 7

DESIRABLE TWO-WAY BICYCLE-PATH CROSS-SECTION
PAVED SURFACE OUTSIDE STREET RIGHT-OF-WAY

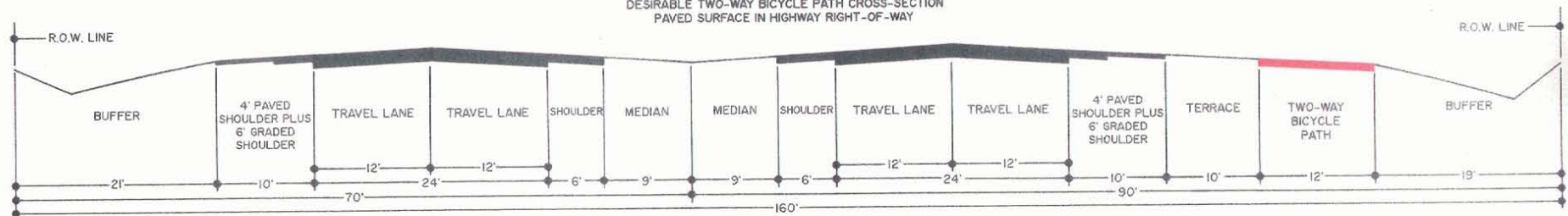


Source: SEWRPC.

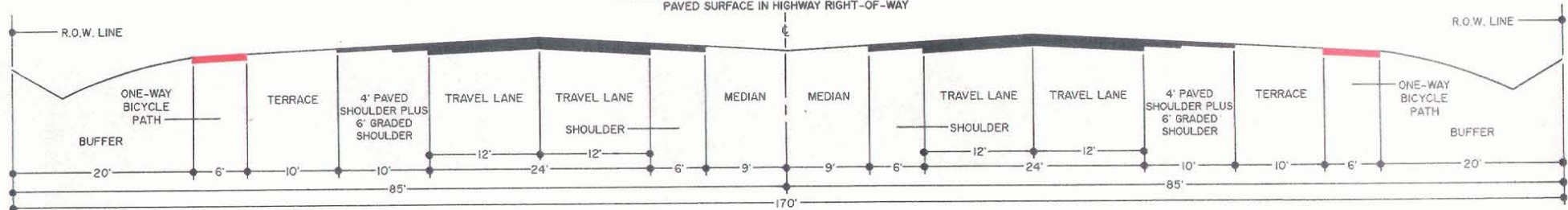
Figure 8

DESIRABLE CROSS-SECTIONS FOR BICYCLE PATHS LOCATED WITHIN A STREET OR HIGHWAY RIGHT-OF-WAY

DESIRABLE TWO-WAY BICYCLE PATH CROSS-SECTION
PAVED SURFACE IN HIGHWAY RIGHT-OF-WAY



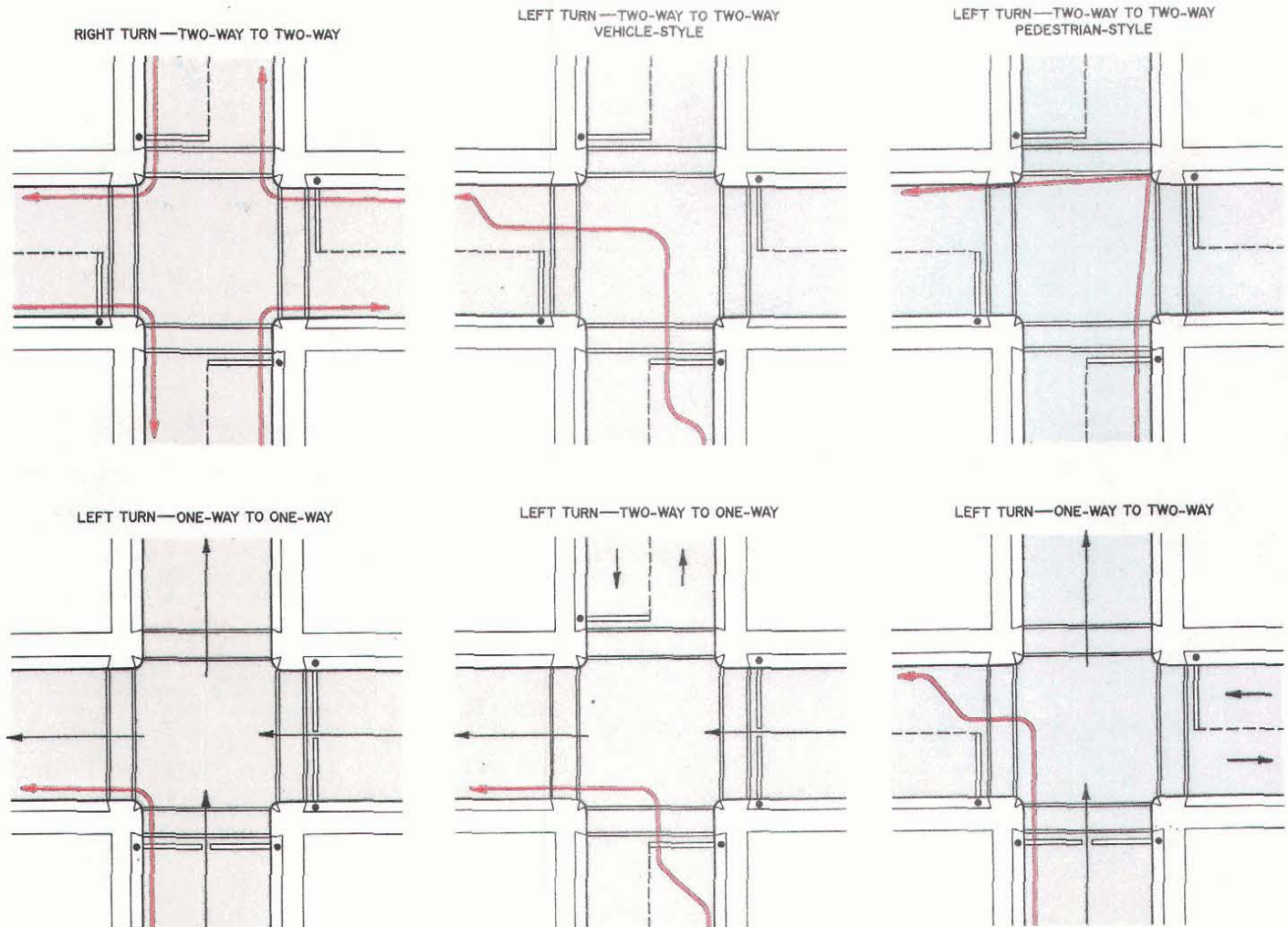
DESIRABLE PAIRED ONE-WAY BICYCLE PATH CROSS-SECTION
PAVED SURFACE IN HIGHWAY RIGHT-OF-WAY



Source: SEWRPC.

Figure 9

BICYCLE TURNING MOVEMENTS^a



^aBicyclists should use proper hand signals to indicate their intended direction of travel to motorists, other bicyclists, and pedestrians.

Source: Wisconsin Department of Transportation and SEWRPC.

barrier should be no less than 4.5 feet in height to avoid the possibility of bicyclists falling over the barrier and into motor-vehicle traffic.

A barrier should be provided wherever a bicycle path intersects a roadway to prevent unauthorized motor-vehicle use of the bicycle path. A removable post that prevents unauthorized entry but allows access by maintenance and emergency vehicles is commonly used. The post should be brightly painted to improve its visibility for both motorists and bicyclists. Separating the path at the street intersection and installing low landscaping that can be crossed by maintenance and emergency vehicles also serve to discourage motor-vehicle use of the bicycle path.

Intersections

Introduction: A high percentage of bicycle-motor vehicle collisions occur at intersections. The presence of bicycle lanes and shoulder bicycle ways tends to further complicate turning movements at intersections because the bicycle ways separate bicycle and motor-vehicle traffic and tend to discourage merging and lane changes that should occur in advance of the intersection. Proper bicycle turning maneuvers are illustrated in Figure 9. Wisconsin law provides bicyclists with the option of making either a pedestrian-style or a vehicle-style left turn, both of which are illustrated in Figure 9.

Signing and Pavement Markings: The AASHTO Bicycle Guide recommends that signing and

striping configurations, in accordance with recommendations contained in the Manual on Uniform Traffic Control Devices, be used to encourage and guide bicycle and motor-vehicle crossings in advance of an intersection. The clear demarcation of lanes and lane destinations can assist both bicyclists and motorists in choosing the proper lane.

Figure 10 illustrates typical pavement markings at intersections on streets having bicycle lanes but no exclusive turning lanes. The Manual on Uniform Traffic Control Devices recommends that the solid stripes delineating the bicycle lane end at least 50 feet before the intersection. Dashed lines that delineate the bicycle lane for through bicyclists, but allow turning motor vehicles to merge across the bicycle lane, may be provided across the intersection. Another accepted option is to discontinue all bicycle-lane markings in the vicinity of the intersection.

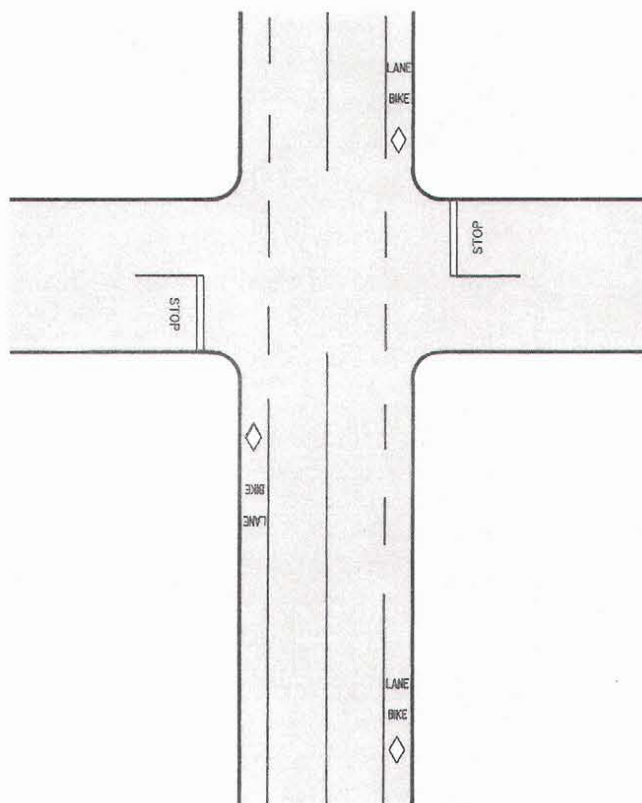
Intersections Involving Exclusive Right-Turn Lanes: On a street having both a bicycle lane and an exclusive right-turn lane, care must be taken to channelize through bicycle traffic to the left of the right-turn lane. The bicycle-lane stripe should be dashed or ended before the intersection to allow motor-vehicle and bicycle traffic to cross paths prior to the intersection. The striped bicycle lane may be resumed to the left of the right-turn lane at the intersection. In cases where an optional right-turn/through lane is provided, a bicyclist traveling straight ahead must be positioned in the center of the lane to avoid colliding with motorists turning right. Figure 11 presents examples of pavement markings for bicycle lanes approaching motorist right-turn-only lanes.

On streets having exclusive right-turn lanes and no bicycle lanes, efforts should be made to encourage bicyclists traveling straight through an intersection to position themselves in a through travel lane, rather than remaining on the right side of an exclusive right-turn lane. If possible, the right-turn lane should be designed so that the through bicyclist continues straight ahead, and the motorist turning right must merge to the right.

Bicycle-Path-and-Roadway Intersections: Bicycle-path intersections and approaches should be on relatively flat grades. Stopping sight distances should be adequate to allow bicyclists to stop before reaching the intersection. Formulas for

Figure 10

TYPICAL PAVEMENT MARKINGS FOR STREETS HAVING BICYCLE LANES AND NO TURNING LANES



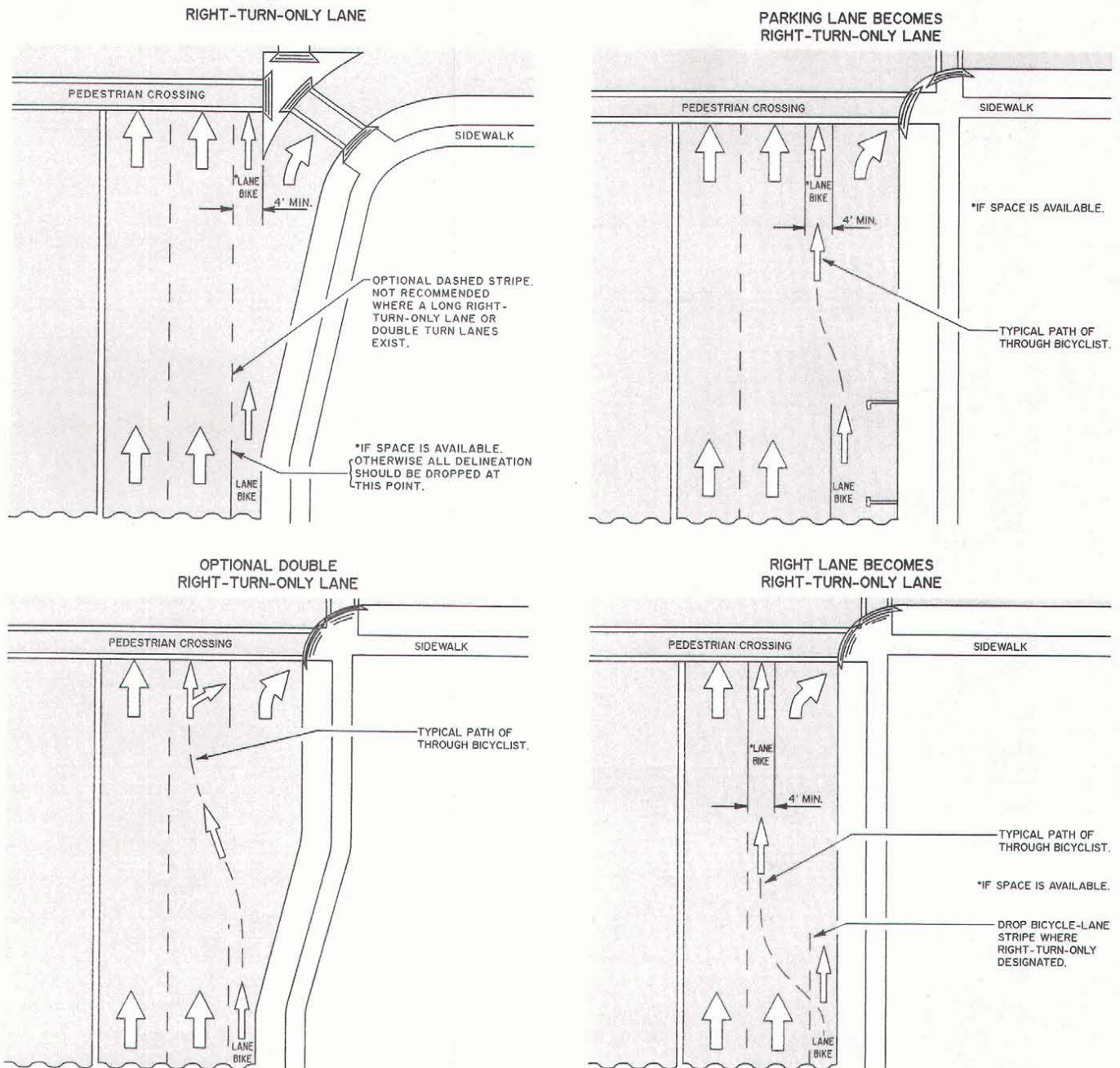
Source: U. S. Department of Transportation and SEWRPC.

calculating stopping sight distances are provided in the most recent edition of the AASHTO Bicycle Guide. Traffic control devices, including signage on both the roadway and the bicycle path, should be provided in accordance with the Manual on Uniform Traffic Control Devices. Where a bicycle path crosses a high-volume, multi-lane arterial and signals or grade separations are not warranted, consideration should be given to providing a median refuge area for bicyclists. Such areas should have a minimum width of 10 feet.

Signal Timing: Signalized intersections should provide an adequate green phase and/or a longer all-red phase to allow bicyclists sufficient time to clear the intersection. To check the clearance interval, the most current (1991) edition of the AASHTO Bicycle Guide recommends that a bicyclist speed of 10 miles per hour and a perception-reaction-braking time of 2.5 seconds be used.

Figure 11

TYPICAL PAVEMENT MARKINGS FOR STREETS HAVING BICYCLE LANES AND RIGHT-TURN LANES



Source: American Association of State Highway and Transportation Officials and SEWRPC.

Traffic Detectors: Both bicycle-sensitive loop detectors and push-button controls that can be accessed by bicyclists without their having to dismount or make unsafe maneuvers should be provided at signal-light intersections located on bicycle ways. The detector should be located in the expected bicycle travel path. In some cases,

it may be necessary to provide a mark on the pavement to indicate the area where the bicyclist must be positioned to trip the signal.

Surfacing

Pavement Surface: Bicycle-way pavement surfaces should be maintained in good condition.

Pavement irregularities such as cracks, holes, or bumps can cause a bicyclist to lose control of the bicycle and either fall or swerve into motor-vehicle traffic. Cracks and holes should be filled promptly and utility manhole and handhole covers should be maintained flush with the pavement surface.

Drainage Grates and Utility Covers: Wherever possible, drainage grates and utility manhole and handhole covers should be located outside the travel path of bicyclists. Grates and utility covers should be flush with the pavement surface. Bicycle-safe drainage grates should be used on all streets and highways where bicycles are legally permitted to operate.

Rumble Strips: Rumble strips present a hazard to bicyclists. As such, they should be used only as a specific counter measure to an identified safety problem. If rumble strips are needed, they should either be located outside the travel path of bicyclists, or perpendicular openings wide enough for bicycles to pass through should be provided. Rumble strips should not be located near intersections or driveways, because bicyclists may need to merge into the motor-vehicle travel lanes at these locations to begin their turning movements.

Raised Pavement Markings: Pavement reflectors or other raised pavement markings present a hazard to bicyclists because they can deflect a wheel and cause a fall or a turn into motor-vehicle traffic or another obstacle. Raised pavement markings should be avoided as much as possible. In cases where they must be used, they should be located outside the travel path of bicyclists.

Bicycle-Path Surfacing: A smooth riding surface should be constructed and maintained on bicycle-path surfaces. The type of surface should be chosen based on the anticipated number and type of users. Bituminous or portland cement concrete surfaces provide a higher level of service than crushed-rock surfaces, and are, therefore, more appropriate for bicycle paths expected to receive heavy use or use by utilitarian bicyclists. Bicycle-path surfaces and structures should be of adequate width and strength to support emergency, patrol, maintenance, and other motor vehicles that may be expected to use or cross the path.

Design Guidelines

Design Speed: Bicycle facilities should be designed to accommodate speeds attained by experienced bicyclists. In level or gently rolling terrain, a design speed of at least 20 miles per hour should be used. The design speed should be increased to 30 miles per hour when a descending grade exceeds 3 percent for a distance of 500 feet or more.

Grade: Grades on bicycle facilities should be kept to a minimum. The maximum desirable grade should be 5 percent on paved surfaces and 3 percent on crushed-stone surfaces. Steeper grades are acceptable for short distances; however, grades should not exceed 5 percent for more than 500 feet. The width of the bicycle facility should be increased on steep slopes to compensate for bicycle sway on the uphill side and to accommodate faster speeds on the downhill side.

Sight Distance: Bicycle facilities must be designed to provide adequate sight distance for bicyclists to avoid striking an unexpected object or person in their travel path. Formulas for calculating stopping sight distances for horizontal and vertical curves for various design speeds are provided in the AASHTO Bicycle Guide.

Horizontal and Vertical Clearances: Guardrails, signposts, utility posts, and similar obstructions should be set back a minimum of two feet, and preferably three feet, from the edge of a bicycle way to allow a clear zone for bicyclists. Clearance to overhead obstructions should be a minimum of eight feet, with 10 feet preferred.

Tree and shrub trimming should provide a minimum vertical clearance of eight feet and a minimum horizontal clearance of two feet on both sides of a bicycle way at all times. Additional horizontal clearances should be provided in secluded areas to minimize places where would-be attackers could conceal themselves.

Horizontal Curves: Radii of horizontal curvature for streets with bicycle ways, which streets are designed for higher-speed motor vehicles, may be expected to be adequate for bicycles. The AASHTO Bicycle Guide provides a formula for determining minimum radii of horizontal curvature on bicycle paths on the basis of design speed and other factors. Where existing substandard-radius curves cannot be reconstructed because of right-of-way or other factors,

curve-warning signs and pavement markings, including a centerline stripe, should be used. The width of the bicycle path should be increased through the curve.

Horizontal Alignment: The AASHTO Bicycle Guide provides a formula for determining super-elevations on bicycle paths on the basis of design speed and other factors. A 2 percent cross-slope is recommended on tangent sections.

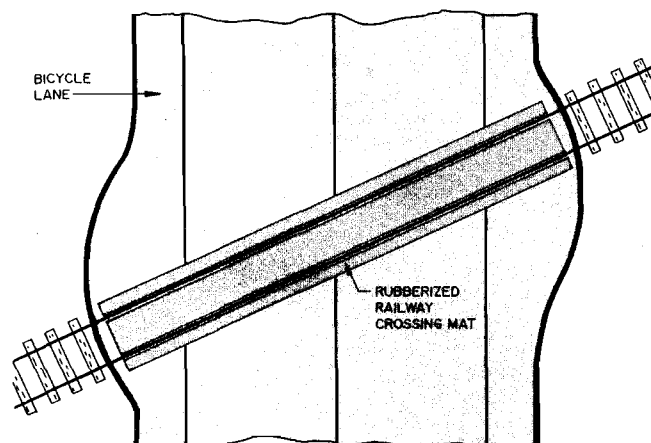
Bridges: Bridges often present obstacles to bicyclists because of high traffic volumes, narrow widths, open grate decking, and expansion joints. It is often necessary to accommodate bicycles on such structures to provide access across major barriers and to assure bicycle-way continuity. When designing or retrofitting bridges and similar structures for bicycle use, bicycle-safe decking and expansion joints should be used. In some cases, it may be necessary to direct bicycle traffic to use sidewalks when crossing the bridge. In such cases, the sidewalk should be widened to a minimum of eight feet, with 10 feet preferred, to accommodate joint bicycle and pedestrian use. A wider bicycle-pedestrian way should be provided if the bridge or its approaches have a gradient of 6 percent or more for more than 500 feet, if needed to match the width of the bicycle way providing access to the bridge, or if bicycle and pedestrian use is expected to be high. Railings or other barriers with a minimum height of 4.5 feet should be provided on the outside of the bicycle way. If a separate bicycle path or sidewalk bicycle way is provided, a minimum 4.5-foot-high barrier should be provided to separate motor-vehicle and bicycle traffic.

Bicycle Bridges: Where separate bicycle or bicycle-pedestrian bridges are provided, the bridge should be at least as wide as the approaching bicycle way, but no less than eight feet wide, with an additional minimum two-foot clear zone on each side. Ramp grades should not exceed a rise-to-run ratio of 1:12. A railing or fence with a minimum height of 4.5 feet should be provided along both sides of the bridge. A smooth rub rail should also be provided at handlebar height (3.5 feet).

At-Grade Railway Crossings: Where possible, a bicycle way should cross railway tracks at or near a right angle to minimize the potential for a bicyclist's front wheel becoming trapped in the flangeway and causing loss of steering control.

Figure 12

WIDENING OF SHOULDERS TO ACCOMMODATE RIGHT-ANGLE CROSSING OF RAILWAY TRACKS



Source: Wisconsin Department of Transportation and SEWRPC.

If the crossing angle is less than approximately 45 degrees, consideration should be given to widening the outside lane, shoulder, or bicycle lane to improve the angle of approach, as illustrated in Figure 12. It is also important that the roadway surface be at the same elevation as the rails. Rubberized railway crossing mats, which offer a good combination of smoothness and traction, should be used where bicycle ways cross railway tracks.

Lighting: The needs of bicyclists should be considered when designing lighting for streets and highways. Adequate lighting should be provided for on-street bicycle ways, bicycle paths, and at bicycle-path-and-street intersections.

Overpasses: Bicycle-way overpasses are preferred to underpasses where personal security may be a concern. The greater visibility provided by an overpass will offer better security to bicyclists than underpasses. Where underpasses must be used, they should be well lit and designed so bicyclists can see potential hazards before entering the underpass.

Driveway Approaches: Where possible, gravel driveway approaches should be paved a distance of 10 feet back from the edge of the pavement to decrease the amount of loose gravel that migrates into the bicyclists' travel path.

Signing and Marking: Bicycle ways should be signed and marked in accordance with the Manual on Uniform Traffic Control Devices.

Bicycle-Way Identification: Signs spaced at appropriate intervals should be used to identify bicycle routes, lanes, and paths.

Maintenance

Pavement Surfaces: Street and bicycle-way surfaces should be smooth and free from irregularities. Cracks and potholes, particularly in the bicycle travel path, should be promptly repaired.

Removal of Debris: Routine maintenance programs should be established to remove sand, gravel, glass, and other debris from streets and bicycle ways. Particular attention should be given to sweeping and maintaining streets signed as bicycle ways.

Snow and Ice Removal: Bicycle ways intended to serve primarily utilitarian travel should be kept clear of snow and ice.

Bicycle Parking

Location: Bicycle parking areas should be located close to bicyclists' destinations. Where possible, bicycle parking areas should be located near building entrances. In addition to offering convenience, such a location provides added security due to higher visibility.

Accessibility: Bicycle parking and storage areas should be accessible from driveways or ramps designed to accommodate bicycle travel.

Security: Bicycle parking devices should be designed so that bicyclists can lock the frame and front wheel, at a minimum, to a stable, upright structure that does not damage the bicycle frame, components, or finish; and designed so that the bicycle cannot twist or be knocked over.

Bicycle Lockers: Both bicycle racks and bicycle lockers should be provided at places where long-term, secure bicycle parking is needed, such as major employment centers, transit stations, and park-and-pool lots.

Usability: Bicycle parking devices should accommodate all types of bicycle frames and bicycle locks, including the high-security "U" locks.

Ease of Operation: Bicycle parking devices should be easy to operate and understandable to both children and adults. Bicycle parking devices should be spaced so that bicycles can be easily secured.

Protection from Motor Vehicles: Bicycle and motor-vehicle parking areas should be separated by distance or by a physical barrier to prevent bicycles from being damaged by motor vehicles.

Lighting: Bicycle parking areas should be well lit for security and safety purposes.

GUIDELINES FOR PEDESTRIAN FACILITIES

The Americans with Disabilities Act

Facilities intended to facilitate the access of disabled persons to public and commercial buildings and services are required as part of the Federal Americans with Disabilities Act of 1990. The Act requires commercial and public buildings, such as office buildings, passenger terminals and stations, stores, and restaurants to be accessible by persons with disabilities. This necessitates that exterior routes leading from streets, transit stops, and accessible parking areas to such buildings be designed and constructed to accommodate persons with disabilities.

The U. S. Department of Justice promulgated regulations in July 1991 to implement those portions of the Act that apply to public and commercial buildings and sites. Regulations implementing requirements related to transportation facilities were promulgated in September 1991. Regulations are pending which would set forth requirements related to public rights-of-way, such as the use of audible pedestrian crossing signals and requirements for the construction and location of sidewalks.

Americans with Disabilities Act requirements are referenced or included in the following guidelines where appropriate. Due to the extent of the regulations, it is not possible to include all relevant requirements in this report. The Americans with Disabilities Act regulations should be consulted before designing or reconstructing public or commercial facilities.

Sidewalk Installation Guidelines

Sidewalks should be provided in areas of existing or planned urban industrial, commercial, and residential development in accordance with the criteria set forth in Table 17 earlier in this chapter.

Width

The width of sidewalks along streets in a central business district should be based upon pedestrian volumes and the desired level of service in accordance with the procedures set forth in the most recent edition of the Transportation Research Board's Highway Capacity Manual. Sidewalks should be a minimum of five feet in width along all streets in commercial and industrial areas outside the central business district, and along arterial and collector streets in residential areas. Sidewalks along land access streets should be a minimum of five feet in width in areas of medium- or high-density residential development, and a minimum of four feet in width in areas of low- or suburban-density residential development.

An unobstructed sidewalk width of no less than three feet should be provided. The Americans with Disabilities Act requires that passing areas at least five feet in width and five feet in length be provided at intervals of no more than 200 feet where sidewalks are less than five feet in width.

Separation from Motor-Vehicle Traffic

Sidewalks located immediately adjacent to motor-vehicle travel lanes discourage pedestrian travel because of noise and the perception of hazard. A landscaped or surfaced area, referred to as a "terrace" in this report, should be provided between the curb or edge of pavement and the inside edge of the sidewalk to provide additional separation between motor-vehicle and pedestrian traffic. Terraces provide a more pleasant pedestrian environment by providing an area off the sidewalk for signposts, streetlights, utility poles, trash cans, and other street furniture; provide an area for street trees and other landscaping; allow driveway aprons to be located outside of the sidewalk area; provide additional area for snow storage; and reduce splashing of pedestrians by passing motor vehicles operating on wet pavements. A desirable terrace width of 10 feet is recommended in commercial and industrial areas, and of six to nine feet in residential areas.

Curb Ramps

Curb ramps should be provided in accordance with the requirements of the Americans with Disabilities Act and with Section 66.616 of the Wisconsin Statutes.

Surfacing

Walking surfaces should be skid-resistant, sloped for proper drainage, and offer a level and mud-free surface.

Longitudinal Slope and Cross-Slope

The longitudinal slope of a sidewalk should not exceed the grade of the adjacent street. The grade of a pedestrian way outside a street right-of-way should not exceed 12 percent unless steps are provided. The cross-slope of sidewalks and other pedestrian ways should not exceed 2 percent.

The maximum longitudinal slope and cross-slope of an accessible route permitted by the Americans with Disabilities Act are 5 percent and 2 percent, respectively. An accessible route with a longitudinal slope greater than 5 percent is considered a ramp. The longitudinal slope of the ramp must not exceed a rise-to-run ratio of 1:12, and the maximum permitted rise between landings is 30 inches. Landings must be provided at the bottom and top of each ramp. The landing must be at least as wide as the ramp leading to it, but no less than three feet in width, and a minimum of five feet in length. Handrails must be provided along both sides of any ramp which rises more than 0.5 feet or runs more than six feet.

Horizontal and Vertical Clearances

Signs, utility posts, and similar obstructions should be set back a minimum of two feet from the edge of a pedestrian way. Clearance to overhead obstructions should be a minimum of seven feet. Tree and shrub trimming should also provide a minimum vertical clearance of seven feet and a minimum horizontal clearance of two feet. Additional horizontal clearances should be provided in secluded areas to minimize places where would-be attackers could conceal themselves.

Amenities

Street trees and other landscaping should be provided in street rights-of-way to enhance the pedestrian environment. Street furniture and other amenities such as benches, waste receptacles, and drinking fountains should be provided in terraces adjacent to sidewalks in commercial areas to serve pedestrian needs and add visual interest. Street vending machines and mailboxes should be placed in the terrace or in another location that does not interfere with pedestrian movement along the sidewalk.

Lighting

The needs of pedestrians should be considered when designing lighting for streets and highways. Adequate lighting should be provided for sidewalks and other pedestrian ways, and at street intersections.

Street Crossings

Signal Timing: The timing of pedestrian phases for traffic signals should incorporate safe crossing intervals based upon an average walking speed of four feet per second. This speed may need to be modified at busy intersections where pedestrian crowding and vehicle turning movements may lengthen crossing time, and at crossings commonly used by elderly or disabled pedestrians who may require additional time to cross the street.

Crossing Orientation: Pedestrian ways should be oriented toward intersection crossings rather than mid-block crossings.

Right Turns on Red: Although the right-turn-on-red rule has generally resulted in time and fuel savings for motorists, it presents a hazard to pedestrians due to motorists who fail to notice or yield the right-of-way to pedestrians crossing the street in front of them. It may be necessary to prohibit right turns on red at intersections that present substantial conflicts between pedestrians and right-turning motorists, or to prohibit right turns on red during those times of the day when large numbers of schoolchildren or other pedestrians are present.

Refuge Islands and Medians: A raised refuge island or median should be provided where the roadway to be crossed is 65 feet or more in width or has five or more traffic lanes; at signalized intersections where the street cannot be crossed within the walk cycle using a walking speed of four feet per second and the signal timing cannot be lengthened; and at complex or irregularly shaped intersections where pedestrians may need a safe place to stop and orient themselves. A raised refuge island or median should also be provided in roadways having four traffic lanes where such roadways are located adjacent to or near activity centers or in areas frequented by elderly, disabled, or child pedestrians. Refuge islands should be a minimum of six feet wide and 12 feet long, and easily recognizable by motorists to minimize the hazard to both motorists and pedestrians. Design criteria for refuge islands are contained in the American

Association of State Highway and Transportation Officials' Policy on Geometric Design of Highways and Streets.

Raised median islands should have curb ramps at both sides leading to a level area at least four feet long. A level area is needed to provide a safe place for wheelchair users to wait for traffic to clear without fear of rolling down into the traffic lane. If the refuge island is too narrow to provide a four-foot-long level area, the crosswalk should continue through the island at street level.

Pedestrian-Actuated Controls: Pedestrian-actuated controls to activate "walk" signals—generally push buttons—should be located in areas that can be conveniently accessed by pedestrians, and such areas should be kept clear of snow and stormwater. Push-button controls should be easy to understand and use. Where two crosswalks, oriented in different directions, end at or near the same location, push buttons should be positioned to clearly indicate which crosswalk signal is actuated by each push button. Additional push-button activators may be required on islands or medians where a pedestrian might become stranded, and should always be provided when a street cannot be crossed within one walk cycle based on an average walking speed of four feet per second. The provision of push-button activators to extend the crossing interval should be considered at intersections which are frequently used by pedestrians with slower-than-average walking speeds.

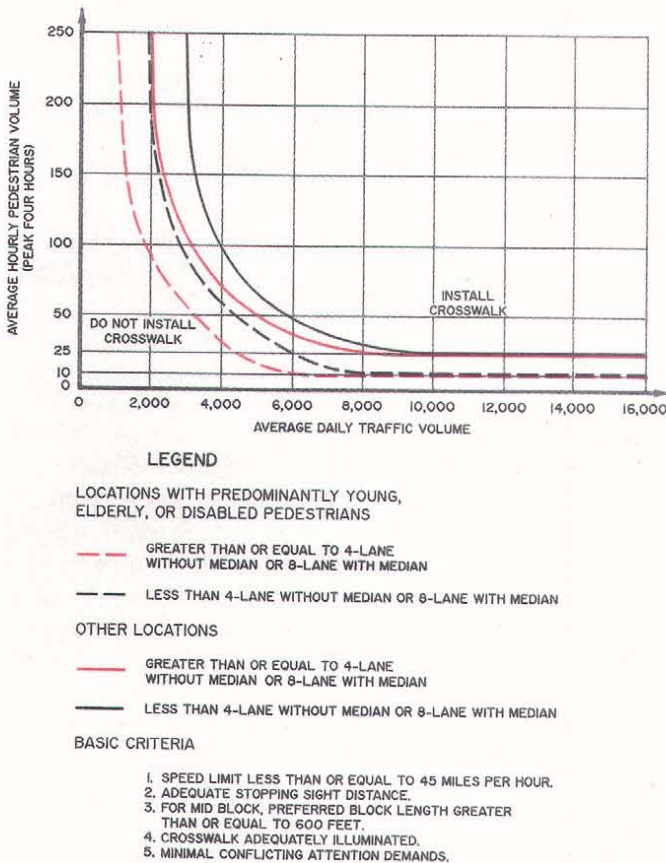
Crosswalks

Marked crosswalks are intended to alert motorists to the possible presence of pedestrians and to mark a preferred location for pedestrians to cross the street. However, unwarranted marked crosswalks and advance pedestrian crossing signs may increase motorist noncompliance with these traffic control devices. Marked crosswalks may also give pedestrians a false sense of security, particularly when they are provided at unsignalized crossings. Marked crosswalks should therefore be used judiciously.

Crosswalk markings should be installed at all signalized intersections with pedestrian signal indicators; where needed to delineate the preferred crossing location at a confusing intersection or to channelize multiple crossings; at all locations where a school crossing guard is normally stationed; and at intersections and

Figure 13

GUIDELINES FOR CROSSWALK INSTALLATION AT UNCONTROLLED INTERSECTIONS AND MID-BLOCK CROSSINGS



Source: Federal Highway Administration.

mid-block crossings meeting the minimum pedestrian and motor-vehicle volume criteria shown in Figure 13.

Crosswalk Width: Crosswalks should be a minimum of six feet in width, with eight feet desirable. The width of the crosswalk should be increased beyond eight feet if necessary to equal that of the approaching sidewalk or walkway; or if needed to provide an acceptable level of service in accordance with the procedures set forth in the most recent edition of the Transportation Research Board's Highway Capacity Manual.

Crosswalk Markings: Crosswalk markings should be provided in accordance with the recommendations set forth in the Manual on Uniform Traffic Control Devices.

Sight Distance: Crosswalks should be located where they are in clear view of approaching motorists and where motorists have adequate stopping sight distance. Visual obstructions such as vegetation and street furniture between motorists and pedestrians using or entering the crosswalk should be removed or relocated. Curb parking should be prohibited near the crosswalk to provide adequate sight distance for pedestrians using the crosswalk and for motorists approaching the crosswalk, with parking prohibited within a minimum of 15 feet of a crosswalk. Extending the sidewalk at crosswalk locations, as illustrated in Figure 14, can improve pedestrian visibility and prevent parked vehicles from blocking the crosswalk.

Stop Lines: The installation of stop lines at crosswalk locations controlled by signals or stop signs is effective in reducing vehicle encroachment into the crosswalk. Such encroachments may create a physical barrier for pedestrians and reduce the ability of adjacent motor-vehicle operators to see crossing pedestrians. Stop lines should be placed four feet in advance of and parallel to the crosswalk.

Mid-Block Crossings: Proper design of mid-block crossings requires that special consideration be given to providing adequate sight distance for both pedestrians and motorists and providing advance notice to motorists of the presence of a mid-block crossing. Advance crossing signs should be provided as set forth in the Manual on Uniform Traffic Control Devices. The width of the crosswalk lines may be increased up to two feet and the area within the crosswalk may be painted with diagonal or longitudinal lines on streets and highways with vehicle operating speeds of 35 miles per hour or more or where safety concerns warrant the added visibility.

Traffic Control Devices

Traffic control devices such as traffic signals, signs, and pavement markings have been designed to enhance the safety and mobility of both pedestrians and motorists. Such devices should be provided in accordance with the recommendations set forth in the Manual on Uniform Traffic Control Devices.

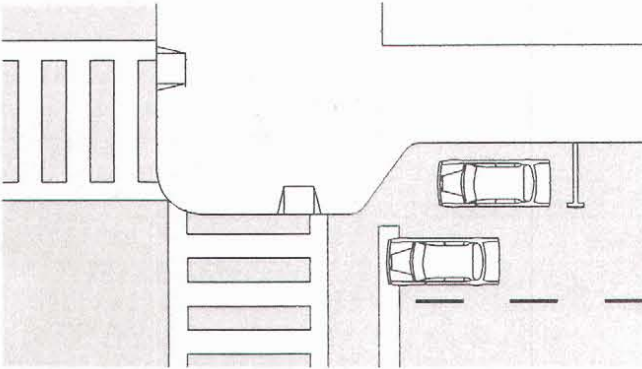
Traffic Controls for School Areas

Traffic controls for school areas should be provided in accordance with the recommendations set forth in the most recent edition of the Manual on Uniform Traffic Control Devices. The

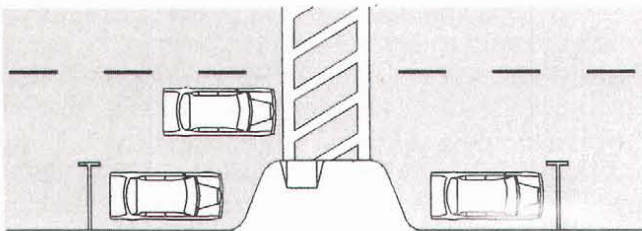
Figure 14

**EXAMPLES OF SIDEWALK EXTENSIONS
TO IMPROVE PEDESTRIAN VISIBILITY**

AT INTERSECTIONS



AT MID-BLOCK CROSSINGS



Source: Federal Highway Administration.

development of a school route plan for each school serving elementary-school and kindergarten students is useful for identifying and evaluating safe walking routes to school and safe and effective traffic control in school areas. The publication entitled School Trip Safety Program Guidelines, published by the Institute of Traffic Engineers (ITE) in 1984, sets forth a process for identifying safe school routes and related traffic control measures. The process relies on a committee of parents, schoolteachers and school administrators, traffic engineers, and police officers to prepare and distribute maps showing recommended school routes and school crossings. The committee also identifies areas and issues of concern and evaluates potential corrective measures. The planning process facilitates the orderly review of school-area traffic needs and provides a means of coordinating school pedestrian-safety education with engineering

studies and improvements. It is recommended that the ITE process or a similar process be instituted in locations where safe routes to school are a concern.

Maintenance

Well-maintained pedestrian facilities encourage pedestrian use, reduce the potential for injury, enjoy prolonged facility life-spans, and enhance community image. Special attention should be given to keeping pedestrian facilities free of snow, ice, mud, and water; repairing cracks in sidewalks and other pedestrian ways; and maintaining signs, pavement markings, and other traffic control devices intended to assist pedestrians.

**GUIDELINES FOR SHARED BICYCLE
AND PEDESTRIAN FACILITIES**

Joint Sidewalk Use

Sidewalks generally should not be designated as bicycle ways due to the potential for conflicts between bicyclists and pedestrians. The conflicts can be attributed primarily to the difference in speed between the two modes. The average pedestrian may be expected to travel at approximately three miles per hour, while average and experienced adult bicyclists may be expected to travel at approximately 10 and 20 miles per hour, respectively. The difference in travel speeds can lead to bicycle-pedestrian collisions. Pedestrians may also misjudge a bicyclist's speed and braking or maneuvering ability, increasing the potential for collisions. Providing wider sidewalks with the intention of decreasing pedestrian-bicycle conflicts may encourage bicyclists to increase their travel speed and inadvertently lead to more serious conflicts than those that existed prior to the sidewalk widening.

In addition to pedestrian-bicycle conflicts, sidewalks designated as bicycle ways may present bicyclists with danger related to fixed objects such as signposts, fire hydrants, and mailboxes located on or along the sidewalk, and with motor-vehicle operators who may not expect to encounter a relatively fast-moving bicyclist at driveways and intersections. Sight distances along the sidewalk may be inadequate to allow the bicyclist adequate time to stop before encountering a motor vehicle or other hazard.

In spite of the potential for conflicts inherent with bicycle use of sidewalks, there may be certain situations, such as bridge crossings or narrow

street rights-of-way, where there is no reasonable alternative to routing bicycle traffic onto a sidewalk. In such situations, use of signs and pavement markings should be considered to warn bicyclists and pedestrians that the facility is open to both types of users, and to direct bicyclists to yield to pedestrians. Provision must also be made at each end of the sidewalk to safely route bicycle traffic to and from the sidewalk.

Although sidewalk bicycling by adults should be strongly discouraged, young children should be allowed to bicycle on the sidewalks near their homes until they develop the knowledge and skills needed to operate on the street.

Shared Use of Bicycle and Pedestrian Paths

Some off-street bicycle and pedestrian paths within the Region have been designed for shared use by bicyclists and pedestrians. Other users, such as joggers and in-line skaters, may also use off-street bicycle and pedestrian paths, although such uses may not have been anticipated at the time the path was designed and constructed. Shared use may be acceptable provided the path is wide enough to safely accommodate all users.

Bicycle and pedestrian paths intended for shared use should be a minimum of 12 feet in width if more than 50 users are expected during the peak-use hour. A minimum 10-foot-wide path should be provided for shared use where fewer users are anticipated. A right-of-way width of 20 feet is recommended for off-street bicycle and pedestrian paths.

Consideration should be given to providing separate bicycle and pedestrian paths in areas that receive heavy use by both bicyclists and pedestrians. If separate paths cannot be provided, existing shared facilities could be striped to delineate separate areas for pedestrians and bicyclists. Where separate paths are provided, activities with comparable speeds and maneuverabilities should be combined, such as in-line skating with bicycling and jogging with walking. Equestrians and bicyclists should not be accommodated on the same facility.

Off-street paths intended to accommodate bicycle travel should be developed in accordance with the most recent edition of the AASHTO Bicycle Guide. Facilities that do not meet AASHTO guidelines should be signed as recreational trails rather than as bicycle paths.

GUIDELINES FOR STREET AND SITE DESIGN MEASURES TO FACILITATE BICYCLE AND PEDESTRIAN TRAVEL

Street Design

Many bicyclists and pedestrians choose to travel on nonarterial streets because it is more convenient or more pleasant than travel along arterial streets. In some cases, a bicycle way may be designated on a nonarterial street paralleling an arterial street where right-of-way or other limitations or conditions make it impractical to provide a bicycle way on the arterial street. Conditions may be improved for bicyclists and pedestrians on nonarterial streets by slowing motor-vehicle traffic and preventing such streets from being used by through motor-vehicle traffic.

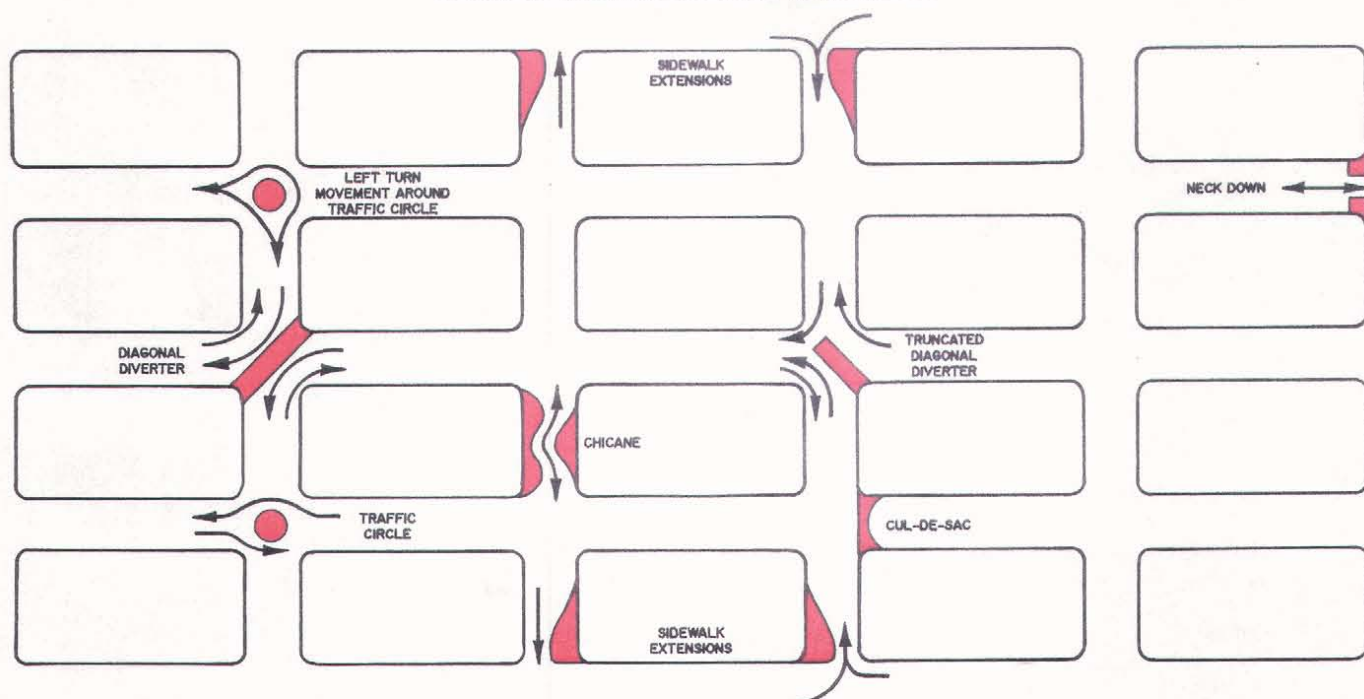
The term "traffic-calming" has been applied to a variety of measures intended to slow motor-vehicle speeds, to discourage through motor-vehicle traffic on nonarterial streets, and to make such streets more pleasant for both motorized and nonmotorized travel. Traffic-calming measures include the use of median strips, traffic diverters or semi-diverters, widened sidewalks at intersections, textured pavements, reduced speed limits, narrowed traffic lanes, limitation of vehicle turning movements, traffic circles, cul-de-sacs, and street closings. Selected traffic-calming techniques are illustrated in Figure 15. Implementation of such measures requires the preparation of a traffic engineering study to identify traffic problems and evaluate the effectiveness of potential traffic control measures, as well as the potential effects on other streets in the area, the effect on bicycle and pedestrian travel, the potential increase in circuitous travel, and the implications for the provision of emergency and maintenance services.

Site Design

Typical routes in residential neighborhoods often require a bicyclist or pedestrian to travel along the arterial street system or to follow a circuitous route to reach a desired destination. Bicycle and pedestrian access through residential blocks and across subdivision boundaries can provide more direct connections between homes and activity centers, and may encourage more people to bicycle or walk by decreasing distances and providing a longer portion of the trip along quieter nonarterial streets or off-street bicycle and pedestrian ways. Off-street bicycle and pedestrian ways should be provided to connect cul-de-sac streets and adjacent streets across

Figure 15

SELECTED TRAFFIC-CALMING TECHNIQUES



Source: Federal Highway Administration and SEWRPC.

blocks of 900 feet or longer, and should be provided to connect adjacent subdivisions and subdivisions and activity centers where alternative on-street routes are unduly circuitous.

Compact and mixed-use forms of development serve to encourage bicycle and pedestrian travel by decreasing the distance between residential areas, employment centers, and other activity centers. For example, restaurants, banks, and convenience shopping centers should be located on a common site or within walking distance of major employment centers, and bicycle and pedestrian facilities should be provided to accommodate bicycling and walking trips between activity and employment centers. Local governments should promote a neighborhood unit concept of development where homes are located within bicycling or walking distance of such facilities as schools, parks, shopping centers, and transit stops, and should encourage the location of high-density residential areas near activity centers and transit stops and stations.

Activity centers should be designed to encourage bicycle and pedestrian travel within and to the center. Internal circulation and design should maintain ease of access for bicyclists and pedestrians from adjoining streets and transit

stops. Where possible, buildings should be located close to the street with automobile parking lots located behind the buildings. Where this is not possible, designated bicycle and pedestrian routes should be provided between buildings and adjoining streets.

Openings should be provided in walls, berms, and landscaping around subdivisions and activity centers to provide convenient bicycle and pedestrian access to adjacent streets and transit stops.

Examples of site designs which facilitate bicycle and pedestrian travel are illustrated in Figure 16.

GUIDELINES FOR BICYCLE AND PEDESTRIAN ACCESS TO PUBLIC TRANSIT

Pedestrian Access to Transit

Sidewalks should be constructed on both sides of streets within 0.25 mile of existing or planned transit routes, and along at least one side of streets within 0.50 mile of existing or planned transit routes.

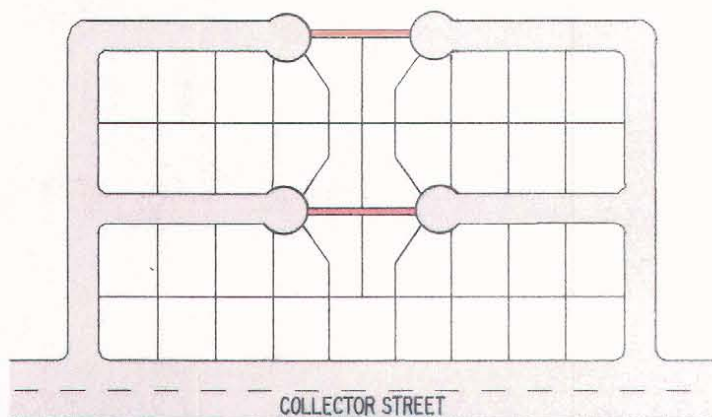
Bicycle Access to Transit

Bicycle accommodation should be provided on streets within one mile of existing or planned

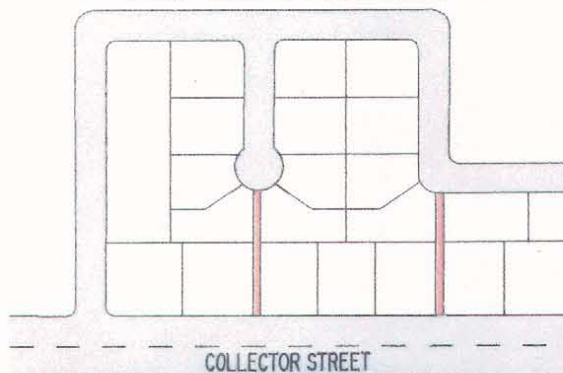
Figure 16

EXAMPLES OF SITE DESIGNS WHICH FACILITATE BICYCLE AND PEDESTRIAN TRAVEL

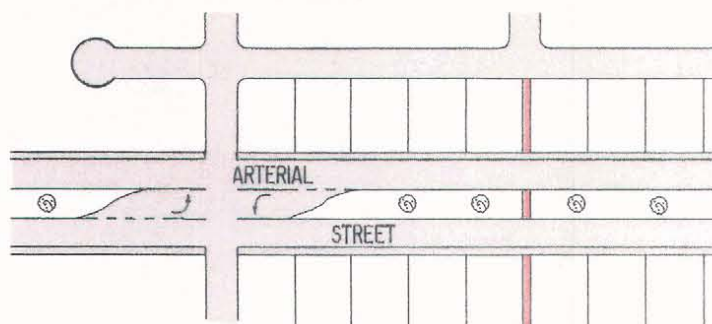
BICYCLE AND PEDESTRIAN CONNECTIONS BETWEEN CUL-de-SAC STREETS



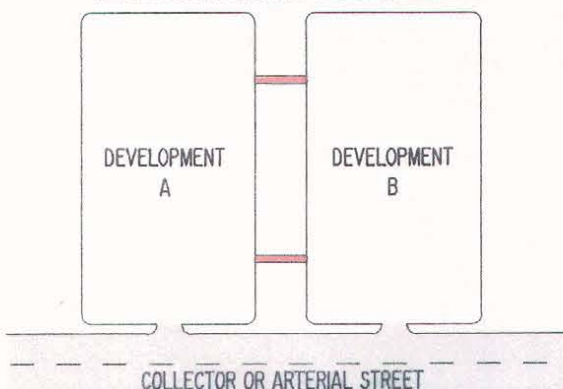
BICYCLE AND PEDESTRIAN CONNECTIONS ACROSS BLOCKS



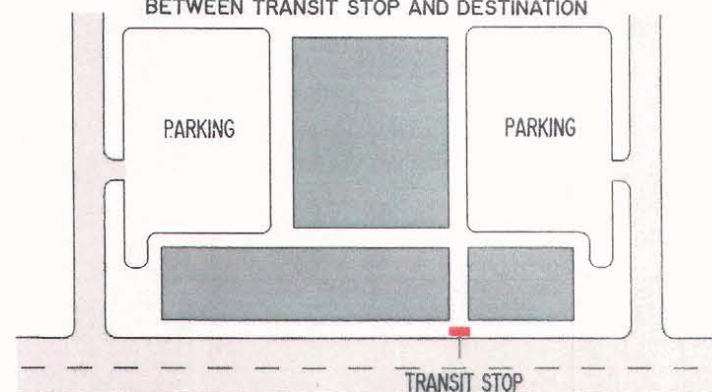
BICYCLE AND PEDESTRIAN CONNECTIONS ACROSS BLOCKS AND MEDIANS



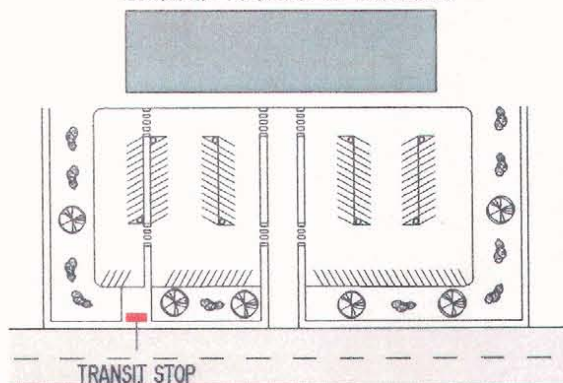
BICYCLE AND PEDESTRIAN CONNECTIONS BETWEEN ADJACENT DEVELOPMENTS



SITE DESIGN TO FACILITATE PEDESTRIAN ACCESS TO TRANSIT BY SHORTENING DISTANCE BETWEEN TRANSIT STOP AND DESTINATION



DESIGN OF PARKING LOT TO FACILITATE BICYCLE AND PEDESTRIAN ACCESS (WHERE PARKING CANNOT BE LOCATED TO REAR OF BUILDING)



Source: Oregon Department of Transportation and SEWRPC.

transit routes. The provision of bicycle parking facilities at transit stops should be considered where the stop has a boarding-passenger volume of 50 or more passengers per day or where the stop is a major passenger transfer point between transit routes. Bicycle parking facilities should also be provided adjacent to transit-passenger shelters.

Building Location and Orientation

Buildings should be clustered around and entrances oriented toward existing or planned transit stops, and building entrances should be located to minimize the distance between the entrance and a transit stop. Automobile parking lots should not be located between building entrances and transit stops. In keeping with the

requirements of the Americans with Disabilities Act, at least one accessible route must be provided between a building entrance and a transit stop on an adjoining street.

Passenger Shelters

The construction of passenger shelters at transit stops should be considered where one or more of the following conditions exist: the stop is designed specifically for the use of, or is frequently used by, elderly or disabled persons; the stop has a boarding-passenger volume of 50 or more passengers per day; the stop is a major passenger transfer point between transit routes; or the location of the stop affords no protection to waiting passengers from harsh weather conditions.

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Chapter VII

PRELIMINARY RECOMMENDED BICYCLE AND PEDESTRIAN FACILITIES PLAN

INTRODUCTION

This chapter describes the preliminary recommended bicycle and pedestrian facilities system plan for Southeastern Wisconsin. The preliminary recommended plan was reviewed at a series of public hearings held during the fall of 1994. Changes that were made to the preliminary recommended plan as a result of public reaction received during that public review and comment period are described in Chapter VIII of this report. That chapter also describes the final bicycle and pedestrian facilities system plan approved by the Advisory Committee and recommended to the Regional Planning Commission for its adoption. The final recommended bicycle-way system plans for the Southeastern Wisconsin Region and the Kenosha, Milwaukee, and Racine planning areas are depicted on Maps 18 through 21 in Chapter VIII (see pages 113, 114, 115, and 116).

The bicycle and pedestrian facilities system plan documented in this report is one element of the regional transportation system plan. The "transportation system" is defined by the Commission as the functionally related surface transportation facilities and management measures that enable the intraregional and interregional movement of people and goods. The physical components of the regional transportation system include arterial streets and highways, transit facilities, bicycle and pedestrian facilities, and such related terminal facilities as railway yards, seaports, and airports.

The regional transportation system is considered down to, but not including, the major-activity-center level or neighborhood level. As such, the bicycle and pedestrian facilities system plan addresses bicycle and pedestrian travel in relation to the transit system and the arterial street and highway system, and down to, but not including, the neighborhood units and major activity centers designated in the adopted year 2010 regional land use plan for Southeastern Wisconsin.

Currently, bicycle and pedestrian travel accounts for only a small percentage of travel within the Southeastern Wisconsin Region. The

comprehensive travel survey conducted by the Commission in October and November of 1991 found that about 3,900, or 0.3 percent, of the approximately 1.3 million work trips made within the Region on an average weekday in 1991 were made exclusively by bicycle, and that about 33,700, or 2.5 percent, of the total work trips were made exclusively by walking, for a combined total of about 37,600 trips, or 2.8 percent of all work trips, made by bicycling or walking. This compares to a combined total of about 23,600 trips, or 2.6 percent of the total 895,900 work trips, made by bicycling or walking on an average weekday in 1963, and a combined total of about 32,400 trips, or 3.0 percent of the total 1,064,500 work trips, made by bicycling or walking on an average weekday in 1972. These figures were determined from the regional travel surveys conducted by the Commission in 1963 and 1972.

Information from the 1990 U. S. Census and the Commission travel surveys regarding travel to work by bicycling and walking in the three urbanized areas of the Region was compared to work-travel modes in cities with recognized bicycle programs. The results are provided in Tables 18 and 19. A review of the tables indicates that the numbers of bicycle commuting trips reported in the Minneapolis-St. Paul, Portland (Oregon), and Seattle urbanized areas were approximately at least double those reported in the Kenosha, Milwaukee, and Racine urbanized areas taken together; however, the combined percentages of bicycling and walking trips were approximately similar for all six urbanized areas, with the Milwaukee urbanized area having the highest percentage of combined bicycle and walking trips to work as reported to the U. S. Bureau of the Census.

The regional bicycle and pedestrian facilities plan is intended to recommend locations and design standards for bicycle and pedestrian facilities in order to remove or minimize existing impediments to bicycle and pedestrian travel related to the lack of facilities such as bicycle and pedestrian ways and certain support facilities such as bicycle parking racks and storage lockers. The regional bicycle and pedestrian

Table 18

**NUMBER OF BICYCLE AND PEDESTRIAN TRIPS TO WORK^a FOR SELECTED
URBANIZED AREAS AS REPORTED BY THE U. S. BUREAU OF THE CENSUS: 1990**

Urbanized Area	Total Workers ^b	Work Trips Made by Bicycle		Work Trips Made by Walking		Combined Bicycle and Pedestrian Commuters	
		Number	Percent	Number	Percent	Number	Percent
Kenosha	42,189	176	0.4	1,484	3.5	1,660	3.9
Milwaukee	582,205	1,589	0.3	24,676	4.2	26,265	4.5
Racine	55,596	261	0.5	1,895	3.4	2,156	3.9
Minneapolis-St. Paul	1,116,683	5,287	0.5	36,311	3.2	41,598	3.7
Portland, Oregon	582,478	3,879	0.7	19,308	3.3	23,187	4.0
Seattle	927,316	5,698	0.6	31,963	3.4	37,661	4.1

^aIncludes trips where bicycling or walking was the principal mode of travel to get from home to work during the week before the Census questionnaire was completed (generally the last week in March).

^bIncludes persons 16 years of age and older who were both employed and at work during the week before the Census questionnaire was completed.

Source: U. S. Bureau of the Census.

Table 19

**NUMBER OF BICYCLE AND PEDESTRIAN TRIPS TO WORK FOR THE KENOSHA, MILWAUKEE,
AND RACINE URBANIZED AREAS AS DETERMINED BY THE REGIONAL TRAVEL SURVEY: 1991**

Urbanized Area	Total Workers	Work Trips Made by Bicycle		Work Trips Made by Walking		Combined Bicycle and Pedestrian Commuters	
		Number	Percent	Number	Percent	Number	Percent
Kenosha	45,375	300	0.7	1,176	2.6	1,476	3.3
Milwaukee	598,044	1,728	0.3	18,946	3.2	20,674	3.5
Racine	58,313	115	0.2	1,045	1.8	1,160	2.0

Source: SEWRPC.

facilities system plan is further intended to assist public officials in making improvements to better accommodate bicycle and pedestrian travel as part of the existing and planned regional transportation system. A reasonable projection of the potential future bicycle and pedestrian use that may occur as a result of undertaking the improvements recommended by this plan would approximate a doubling of the percentage of bicycle and pedestrian trips in the urbanized portions of the Region.

PLAN STRUCTURE

The regional bicycle-way system plan is designed to provide connections between the

three urbanized areas of the Region; a total of 11 cities and villages with a resident population of 5,000 or more persons located outside an urbanized area—which cities and villages are referred to hereafter as “small urban areas”; and transit stations and major activity centers located outside an urbanized or small urban area. Existing bicycle ways and bicycle ways proposed as part of adopted park and open space plans, consisting primarily of bicycle paths located in natural resource and utility corridors, served as the basis for the design of the regional bicycle-way system plan. Supplemental on-street bicycle ways are recommended where necessary to provide direct connections to small urban areas or activity centers not served by off-street bicycle facilities.

In addition to the regionwide network of bicycle ways, a network of bicycle ways at appropriate spacing was identified for the planning areas associated with the Kenosha, Milwaukee, and Racine urbanized areas to serve major activity centers and transit stations within the planning areas. The network of bicycle ways recommended within the three planning areas is more dense than the regionwide network in recognition of the greater potential for significant levels of bicycle travel in the planning areas due to the concentration of population and activity centers in such areas.

Although beyond the scope of this report, a necessary third component of the bicycle-way system plan is the preparation of detailed community bicycle plans to identify neighborhood-level bicycle facilities needed to serve neighborhood and community parks, schools, shopping centers, and other community- and neighborhood-level activity centers.

The bicycle-way system plan does not propose the creation of two separate networks of bicycle ways on the arterial street and highway system to serve experienced and novice adult bicyclists. For planning purposes, it was assumed that an adult bicyclist using an arterial facility will possess the level of proficiency necessary to enable him or her to safely use an on-street bicycle way that is properly designed and maintained. Adult bicyclists who are uncomfortable operating on arterial facilities and child bicyclists are proposed to be accommodated within and between neighborhoods on land access or collector streets or on off-street bicycle ways. Neighborhood bicycle ways should be identified through the preparation of community bicycle plans. Design guidelines included in this report were developed under this regional planning effort to assist local governments in the preparation of community bicycle plans.

PRELIMINARY RECOMMENDED REGIONAL BICYCLE-WAY SYSTEM PLAN FOR SOUTHEASTERN WISCONSIN

As noted above, the preliminary recommended bicycle-way system plan includes a regional network of bicycle facilities composed of existing bicycle ways, bicycle ways proposed as part of adopted park and open space plans, and recommended on-street bicycle ways which together are intended to interconnect the Kenosha, Milwau-

kee, and Racine planning areas and the 11 defined small urban areas located outside such planning areas. The small urban areas within the Region are the Cities of Burlington, Delafield, Delavan, Elkhorn, Hartford, Lake Geneva, Oconomowoc, Port Washington, West Bend, and Whitewater, and the Village of Hartland. The regional bicycle-way system plan also provides bicycle access to transit stations and major activity centers located outside a planning or small urban area. There are 14 existing and proposed major parks or open space sites and four existing transit stations located outside a planning or small urban area. All existing and proposed major commercial, industrial, and governmental and institutional centers are located within a planning or small urban area.

The preliminary recommended regional bicycle-way system plan for Southeastern Wisconsin, except within the Kenosha, Milwaukee, and Racine planning areas, is shown on Map 14. The preliminary recommended plan proposes a total of about 605 miles of bicycle ways exclusive of those within the Kenosha, Milwaukee, and Racine planning areas. Of this total, about 248 miles, or about 41 percent, are proposed to be located off-street in natural resource or utility corridors, and about 357 miles, or about 59 percent, are proposed to be located within a street right-of-way. Bicycle ways within street rights-of-way may consist of a bicycle route designated on the street or highway; an exclusive bicycle lane provided on the street or highway; a paved shoulder signed or marked for bicycle use; or a separate bicycle path located within the street or highway right-of-way. Of the recommended 357 miles of bicycle ways associated with street rights-of-way, about 57 miles, or 16 percent, have been developed, while about 28 miles, or about 11 percent, of the recommended 248 miles of off-street bicycle ways have been developed.

As described in Chapter IV of this report, the regional park and open space plan adopted by the Regional Planning Commission in 1977¹

¹ *The regional park and open space plan is documented in SEWRPC Planning Report No. 27, A Regional Park and Open Space Plan for Southeastern Wisconsin: 2000, November 1977.*

Map 14

**PRELIMINARY RECOMMENDED
REGIONAL BICYCLE-WAY SYSTEM PLAN,
EXCLUDING KENOSHA, MILWAUKEE,
AND RACINE PLANNING AREAS: 2010**

LEGEND

● INCORPORATED AREAS WITH 5,000 RESIDENT
POPULATION OR MORE OUTSIDE OF KENOSHA,
MILWAUKEE, AND RACINE BICYCLE AND
PEDESTRIAN FACILITIES PLANNING AREAS

■ KENOSHA, MILWAUKEE, AND RACINE BICYCLE
AND PEDESTRIAN FACILITIES PLANNING AREAS

BICYCLE WAYS ASSOCIATED WITH
NATURAL RESOURCE OR UTILITY CORRIDORS

— EXISTING

— PROPOSED

BICYCLE WAYS ASSOCIATED WITH
STREET OR HIGHWAY RIGHTS-OF-WAY

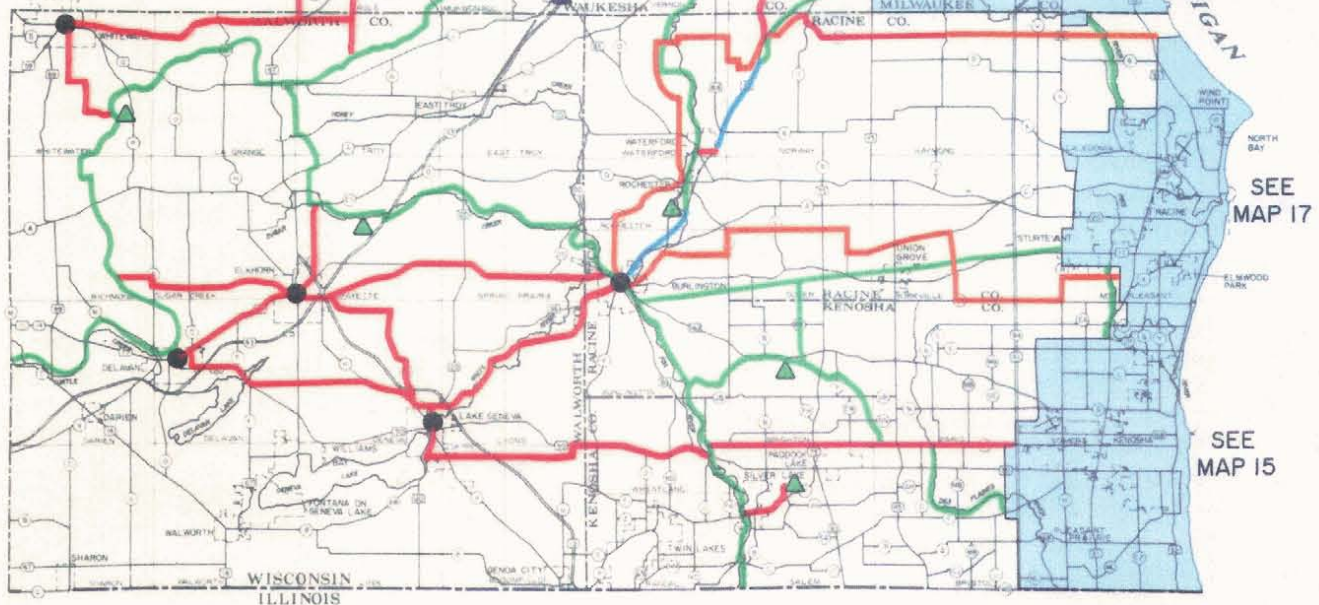
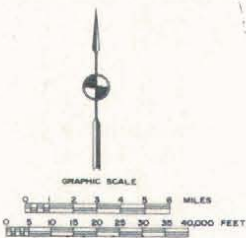
— EXISTING

— PROPOSED

ACTIVITY CENTERS LOCATED
OUTSIDE AN URBAN OR PLANNING
AREA

▲ MAJOR PARK

▲ TRANSIT STATION



The preliminary recommended bicycle-way system plan provides a network of bicycle ways which interconnect the planning areas associated with the Kenosha, Milwaukee, and Racine urbanized areas and the 11 small urban areas—cities and villages of 5,000 or more residents—located outside a planning area. The preliminary plan also provides bicycle access to transit stations and major parks located outside a planning area or a small urban area. The final recommended bicycle-way system plan for the Region outside the Kenosha, Milwaukee, and Racine planning areas is shown on Map 18 in Chapter VIII of this report (see page 113).

Source: SEWRPC.

recommended the development of an approximately 440-mile network of multi-use trail facilities intended for hiking, bicycling, and other, primarily nonmotorized, uses. The trails recommended in the regional plan were proposed to be located in areas having natural resource values of regional significance, such as the Lake Michigan shoreline, the Kettle Moraine, and riparian areas associated with major rivers and streams. Riparian areas are particularly well suited to the establishment of bicycle paths and other trails due to their linear nature, their natural resource protection and aesthetic values, and physical characteristics such as high water tables and a high likelihood of flooding which make them generally unsuitable for urban development. It is important to recognize that while it is desirable to locate trail facilities within areas having significant natural resource amenities, care must be taken in the location and design of such facilities to avoid or minimize disturbance of the natural resource base. It should also be noted that the trail locations shown along rivers and streams on the bicycle-way system map are not intended to be precise locations, and that the trail locations shown on the map will need to be refined through site-specific studies.

The recommendations made in the regional park and open space plan were subsequently refined through the preparation and adoption of park and open space plans by each of the counties in the Region.² The county plans incorporate the natural resource-based trails recommended by the regional plan, and also recommend the development of trails within many rights-of-way formerly used for the operation of electric interurban or main-line freight railways. Such rights-of-way have characteristics, such as minimal grades and large curve radii, that are well suited for the development of bicycle paths. In some cases, former railway rights-of-way are now used as utility transmission corridors; however, joint use of such corridors for trail purposes can generally be accommodated. Map 8 in Chapter IV of this report (see page 30) shows the approximately 500-mile regional trail network recommended in the seven adopted county park and open space plans.

The preliminary recommended regional bicycle-way system plan includes a number of additions to the trail network contained in the adopted

regional and county park and open space plans. Those additions are described in the following chapter of this report, and are depicted on Map 31 in that chapter (see page 131).

The regional park and open space plan, when adopted in 1977, envisioned that bicycling as well as hiking would be accommodated within the Ice Age Trail corridor; however, few segments of the Ice Age Trail are open to bicycle use. Because of the importance of providing for bicycle access to the park and open space sites located along the Ice Age Trail corridor, including the Northern and Southern Units of the Kettle Moraine State Forest and several State and county parks, the regional bicycle-way system plan designates on-street bicycle ways in the western portions of Walworth, Washington, and Waukesha Counties paralleling the route of the Ice Age Trail.

Where possible, routes for on-street bicycle ways were based upon recommended and suitable routes as depicted on the Wisconsin Bicycle Map, prepared by the Wisconsin Division of Tourism in cooperation with the Wisconsin Department of Transportation and the Federal Highway Administration. As described in Chapter III, the map indicates streets and highways recommended for bicycle travel based on an evaluation of roadway conditions, including average daily

²*The seven county park and open space plans are documented in SEWRPC Community Assistance Planning Report No. 131, A Park and Open Space Plan for Kenosha County, November 1987; SEWRPC Community Assistance Planning Report No. 132, A Park and Open Space Plan for Milwaukee County, November 1991; SEWRPC Community Assistance Planning Report No. 133, A Park and Open Space Plan for Ozaukee County, July 1987; SEWRPC Community Assistance Planning Report No. 134, A Park and Open Space Plan for Racine County, September 1988; SEWRPC Community Assistance Planning Report No. 135, A Park and Open Space Plan for Walworth County, February 1991; SEWRPC Community Assistance Planning Report No. 136, A Park and Open Space Plan for Washington County, March 1989; and SEWRPC Community Assistance Planning Report No. 137, A Park and Open Space Plan for Waukesha County, December 1989.*

traffic, amount of truck traffic, sight distance, number of lanes, pavement width, and shoulder width and roadway surface. The map also identifies highway segments where above-average caution should be exercised as well as routes deemed unsuitable for bicycle travel. Certain highway segments shown on the Wisconsin Bicycle Map as unsuitable for bicycle travel are proposed as bicycle ways under the regional bicycle system plan because such highways provide the most direct and continuous connection between urban areas and activity centers. Such highway segments will likely require improvements, such as the addition of wider paved shoulders, to make them more suitable for bicycle travel. These segments include: STH 33 between the City of Port Washington and the Ozaukee-Washington County line; CTH K between the communities of Lac La Belle and Stonebank; CTH VV between the Villages of Sussex and Merton; STH 164 between STH 59 and Tichigan Lake; STH 11 from its intersection with Bray Road east to the City of Burlington; STH 50 from the Walworth-Kenosha County line east to its intersection with STH 83; and three segments of CTH K between the Village of Silver Lake and the City of Kenosha.

PRELIMINARY RECOMMENDED BICYCLE-WAY SYSTEM PLAN FOR THE KENOSHA, MILWAUKEE, AND RACINE PLANNING AREAS

A system of bicycle ways was designed for each of the three urbanized areas within the Region. The urbanized area boundaries were expanded for bicycle and pedestrian facilities planning purposes to include areas contiguous to the 1990 urbanized areas that are proposed under the adopted regional land use plan to be developed for urban use by the year 2010. The urbanized area boundaries were decreased for purposes of bicycle and pedestrian facilities planning to exclude areas of low-density residential development that are located more than five miles from a major activity center. The limits of the three urbanized areas in relation to their corresponding bicycle and pedestrian facilities planning areas are depicted on Maps 1 through 3 in Chapter II of this report (see pages 11 through 13).

The bicycle-way system plans for the Kenosha, Milwaukee, and Racine bicycle and pedestrian facilities planning areas are intended to provide

bicycle access to the major activity centers and transit stations shown under the regional land use plan for the year 2010 and located within the planning areas. The location of existing and planned activity centers and of existing transit stations are shown on the bicycle-way system plan maps.

Where appropriate, existing and planned bicycle ways included in adopted community bicycle facilities plans were incorporated into the bicycle-way system plans for the Kenosha, Milwaukee, and Racine areas. Adopted community bicycle plans are described in Chapter IV of this report. Community bicycle facilities designed to serve neighborhoods or neighborhood facilities are outside the scope of the regional planning effort and are therefore not included as part of the bicycle-way system plans.

Preliminary Recommended Bicycle-Way System Plan for the Kenosha Planning Area

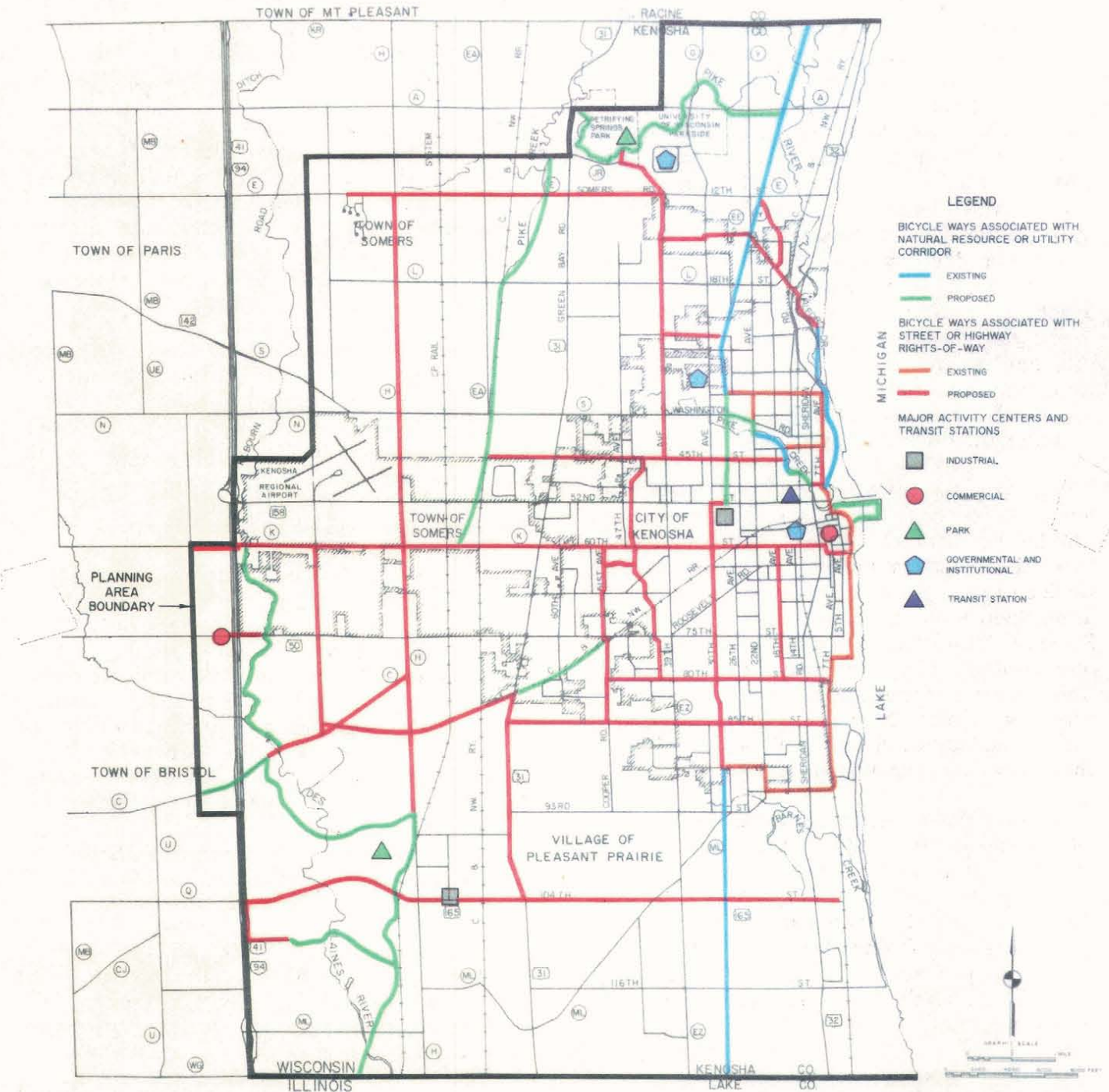
The preliminary recommended bicycle-way system plan for the Kenosha planning area is shown on Map 15. The preliminary recommended plan proposes a total of about 100 miles of bicycle ways. Of this total, about 32 miles, or about 32 percent, are proposed to be located off-street in natural resource or utility corridors, and about 68 miles, or about 68 percent, are proposed to be located on-street or on a separate bicycle path within a street right-of-way. Of the recommended 68 miles of on-street bicycle ways, about seven miles, or about 10 percent, have been developed, while about nine miles, or about 28 percent, of the recommended 32 miles of off-street bicycle ways have been developed.

The preliminary recommended plan provides for bicycle access to the major activity centers located within the Kenosha area: Petrifying Springs and Pleasant Prairie Parks, the Kenosha Transit Center, the major retail center located at the intersection of IH 94 and STH 50, LakeView Corporate Park, the University of Wisconsin-Parkside, Gateway Technical College-Kenosha, and the office, retail, governmental, institutional, and industrial development located within or adjacent to the Kenosha central business district.

The preliminary recommended bicycle-way system plan for the Kenosha area incorporates the existing North and South Kenosha County Trails, which are located on the former Chicago,

Map 15

**PRELIMINARY RECOMMENDED BICYCLE-WAY SYSTEM PLAN FOR THE
KENOSHA BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 2010**



The preliminary recommended bicycle-way system plan for the Kenosha planning area provides for bicycle access to the major activity centers located within the planning area, including Petrifying Springs and Pleasant Prairie Parks, the Kenosha Transit Center, the major retail center located at the intersection of IH 94 and STH 50, LakeView Corporate Park, the University of Wisconsin-Parkside, Gateway Technical College-Kenosha, and the office, retail, governmental, institutional, and industrial development located within or adjacent to the Kenosha central business district. The final recommended bicycle-way system plan for the Kenosha area is shown on Map 19 in Chapter VIII of this report (see page 114).

Source: SEWRPC.

North Shore & Milwaukee electric interurban railway right-of-way. The North Kenosha County Trail is approximately four miles in length and extends from the northern corporate limit of the City of Kenosha to the Kenosha-Racine County line, where it connects to the North Shore Trail in Racine County. The South Kenosha County Trail is approximately three miles in length, and extends from the southern corporate limit of the City of Kenosha to the Wisconsin-Illinois state line. At that point, the trail connects to the North Shore Trail in the State of Illinois. The Pike Trail connects the North and South Kenosha County Trails through the City of Kenosha. The Pike Trail, which was developed by the City, is approximately 9.5 miles in length and consists of a combination of bicycle paths through City parks and signed on-street bicycle routes. Together, the City and County bicycle ways described above form the Kenosha County portion of the Lake Michigan Trail recommended in the Kenosha County park and open space plan.

The preliminary recommended bicycle-way system plan for the Kenosha area also incorporates the development of a bicycle path within the Pike River corridor which would extend from Racine County through Petrifying Springs Park in northern Kenosha County to CTH K near the Kenosha Municipal Airport. Development of a bicycle and hiking path within the Pike River corridor was recommended as a component of the Pike River watershed plan amendment which was approved by the Pike River Watershed Advisory Committee in February 1994.

The Kenosha bicycle-way system plan also reflects the development of a bicycle path along that portion of the Des Plaines River located in the planning area. The proposed Des Plaines River bicycle and hiking path would serve to connect the Des Plaines River Trail in Illinois, the Bong Recreation Area in Kenosha County, and the proposed Fox River Trail in western Kenosha County.

Preliminary Recommended Bicycle-Way System Plan for the Milwaukee Planning Area

The preliminary recommended bicycle-way system plan for the Milwaukee planning area is shown on Map 16. The preliminary recommended plan proposes a total of about 720 miles of bicycle ways. Of this total, about 175 miles, or about 24 percent, are proposed to be located

off-street in natural resource or utility corridors, and about 545 miles, or about 76 percent, are proposed to be located on-street or on a separate bicycle path within a street right-of-way. Of the recommended 545 miles of on-street bicycle ways, about 55 miles, or about 10 percent, have been developed, while about 80 miles, or about 46 percent, of the recommended 175 miles of off-street bicycle ways have been developed.

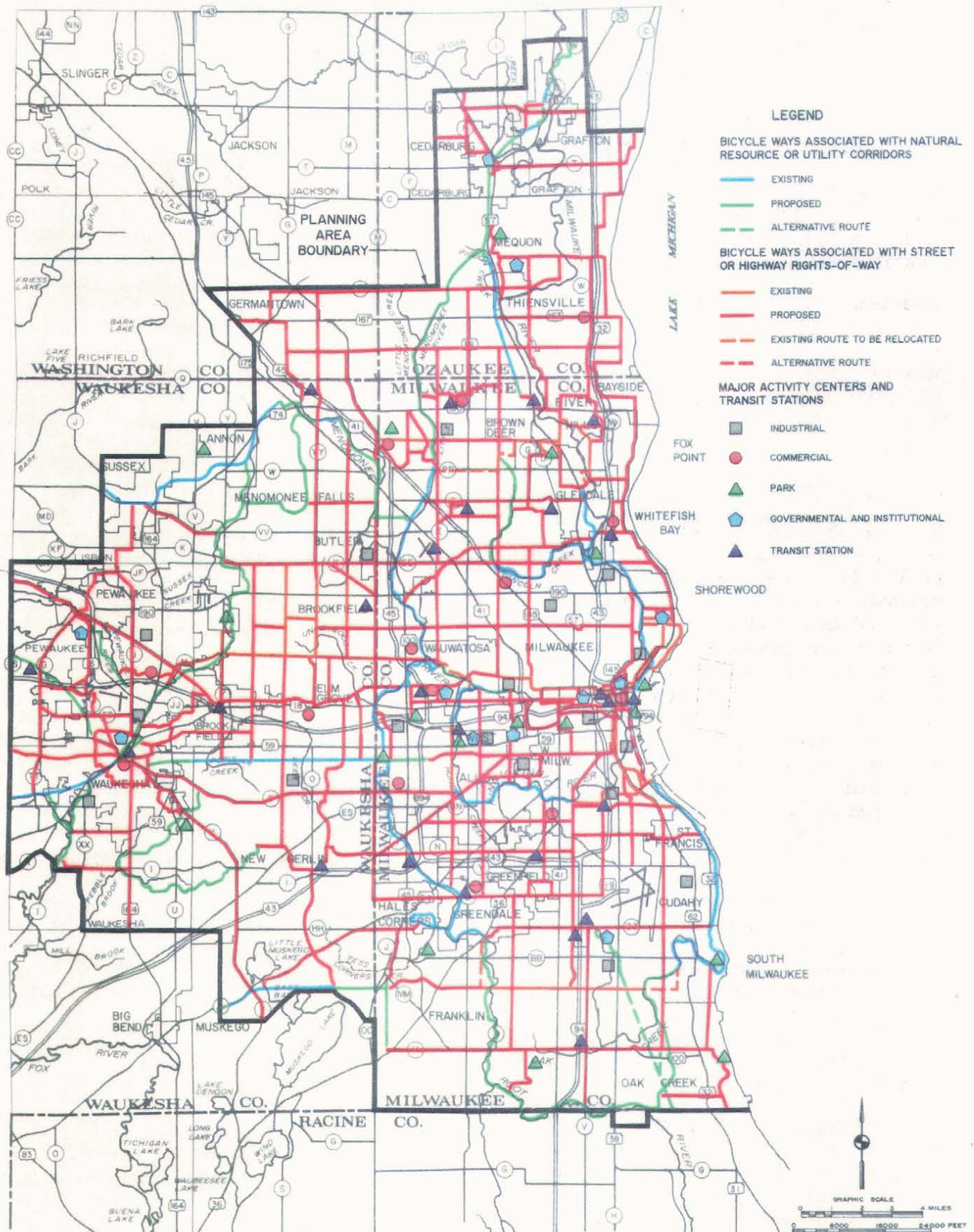
The preliminary recommended bicycle-way system plan provides a network of bicycle ways at a spacing of no more than two miles. Denser networks are provided in areas of concentrated development, such as the Milwaukee central business district, and where needed to provide access to major activity centers or transit stations.

The preliminary recommended bicycle-way system plan incorporates the recommendations for bicycle facilities contained in the adopted park and open space plans for each of the counties having lands within the planning area and in the bicycle plans adopted by the Cities of Brookfield and Milwaukee, with the additions described in the following paragraphs.

The Milwaukee County park and open space plan proposes the development of a multi-use trail along Oak Creek and the Root River from South Milwaukee south to the Milwaukee-Racine County line. A former interurban railway right-of-way now owned by Milwaukee County approximately parallels the proposed Oak Creek-Root River Trail from the Milwaukee Area Technical College campus in Oak Creek south to the Milwaukee-Racine County line, and offers an alternative location for the trail. The former railway right-of-way is shown as an alternative bicycle-way location to the Oak Creek-Root River Trail on Map 16.

The Milwaukee County park and open space plan also recommends that an approximately four-mile segment of the Milwaukee County "76" Trail currently located on surface streets be relocated conditionally onto a bicycle way over the Daniel Webster Hoan Memorial Bridge. A bicycle way on the Hoan Bridge would provide a more direct connection from the South Shore communities to downtown Milwaukee, and would also provide a more direct connection between the existing segments of the Milwaukee County "76" Trail along the lakefront on the north and south sides of the bridge.

**PRELIMINARY RECOMMENDED BICYCLE-WAY SYSTEM PLAN FOR THE
MILWAUKEE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 2010**



The preliminary recommended bicycle-way system plan for the Milwaukee planning area proposes a network of bicycle ways spaced no more than two miles apart. Denser networks are envisioned in areas of concentrated development, such as the Milwaukee central business district, and where needed to provide access to major activity centers or to transit stations. The plan also incorporates the recommendations for bicycle facilities development contained in the adopted park and open space plans for each of the counties having lands within the planning area as well as the recommendations in the bicycle plans adopted by the Cities of Brookfield and Milwaukee. The final recommended bicycle-way system plan for the Milwaukee area is shown on Map 20 in Chapter VIII of this report (see page 115).

It is recommended that a preliminary engineering study of the proposed Hoan Bridge bicycle way be undertaken by Milwaukee County following adoption of the regional bicycle and pedestrian facilities system plan. The preliminary engineering study should evaluate the costs and benefits of locating a bicycle way on the Hoan Bridge, comparing such costs and benefits to those attendant to alternative bicycle-way locations, thus either revalidating the proposed location over the Hoan Bridge or adopting an alternative location over surface streets.

Additions to the adopted City of Milwaukee plan are recommended to provide bicycle access to transit stations and to provide additional east-west and north-south routes, including a crossing of the Menomonee River Valley on 27th Street and establishment of bicycle ways along 60th Street and along Mill Road.

Preliminary Recommended Bicycle-Way System Plan for the Racine Planning Area

The preliminary recommended bicycle-way system plan for the Racine planning area is shown on Map 17. The preliminary recommended plan proposes a total of about 79 miles of bicycle ways. Of this total, about 27 miles, or about 34 percent, are proposed to be located off-street in natural resource or utility corridors, and about 52 miles, or about 66 percent, are proposed to be located on-street or on a separate bicycle path within the street right-of-way. Of the recommended 52 miles of on-street bicycle ways, about three miles, or about 6 percent, have been developed, while about eight miles, or about 30 percent, of the recommended 27 miles of off-street bicycle ways have been developed.

The preliminary recommended plan provides for bicycle access to the major activity centers located within the Racine planning area: Cliffside and Johnson Parks, the Regency Mall, the Sturtevant Amtrak railway passenger station, the Mt. Pleasant industrial center, and the office, retail, governmental, institutional, and industrial development located within or adjacent to the Racine central business district.

The preliminary recommended bicycle-way system plan for the Racine area incorporates the recommendations for bicycle facilities contained in the adopted park and open space plans for Racine County and the Town of Mt. Pleasant, including proposed bicycle ways along the Pike and Root Rivers. The proposed Pike and Root

River bicycle ways would connect to proposed bicycle ways in Milwaukee and Kenosha Counties, forming part of the regional bicycle-way system.

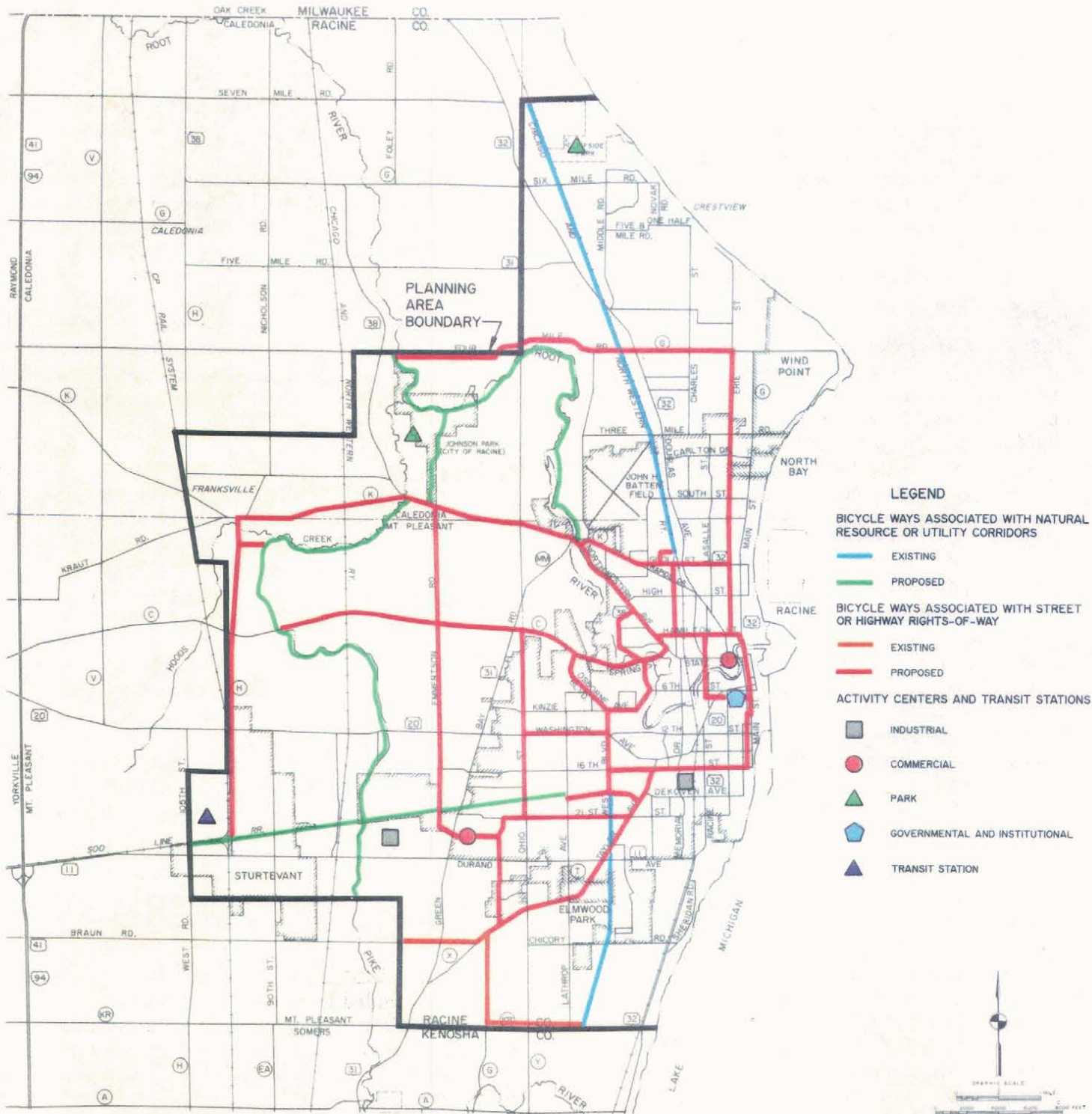
The preliminary recommended bicycle-way system plan for the Racine area also includes two existing bicycle paths developed by Racine County within former electric interurban railway rights-of-way: the North Shore Trail, which extends about three miles from the intersection of 19th Street and West Boulevard in the City of Racine south to the Racine-Kenosha County line, where it connects to the North Kenosha County Trail; and the MRK (Milwaukee-Racine-Kenosha) Trail, which extends about five miles from near the intersection of STH 32 and South Street in the City of Racine north to Seven Mile Road between STH 32 and Michina Road in the Town of Caledonia. The North Shore Trail is located within the former right-of-way of the Chicago, North Shore & Milwaukee electric interurban railway, and the MRK Trail is located within the former right-of-way of The Milwaukee Electric Railway & Light Company. The recommended plan proposes extending the MRK Trail north to connect with a proposed bicycle path which would connect to Bender Park and the "76" Trail in Milwaukee County, and provides for a connection between the North Shore and MRK Trails through the City of Racine.

The Racine County park and open space plan calls for the County to develop a bicycle way within the former Chicago, Milwaukee, St. Paul & Pacific railway right-of-way between the Cities of Burlington and Racine should the right-of-way become available.³ Development of such a bicycle way is reflected in the recommended bicycle-way system plan for the Racine area. The proposed bicycle way would serve to provide a connection between the City of Racine and the Village of Sturtevant.

³*That portion of the former right-of-way east of the existing Chicago & North Western Transportation Company right-of-way has been abandoned. That portion of the right-of-way west of the Chicago & North Western Transportation Company right-of-way is now owned by CP Rail System, and remains in active service.*

Map 17

**PRELIMINARY RECOMMENDED BICYCLE-WAY SYSTEM PLAN FOR THE
RACINE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 2010**



The preliminary recommended bicycle-way system plan for the Racine planning area provides for bicycle access to the major activity centers located within the planning area, including Cliffside and Johnson Parks, the Regency Mall, the Sturtevant Amtrak railway passenger train station, the Mt. Pleasant industrial center, and the office, retail, governmental, institutional, and industrial development located within or adjacent to the Racine central business district. The final recommended bicycle-way system plan for the Racine area is shown on Map 21 in Chapter VIII of this report (see page 116).

Source: SEWRPC.

EVALUATION OF RECOMMENDED PLANNED BICYCLE WAYS

The location of recommended bicycle ways was based on a preliminary evaluation of such factors as the potential for bicycle travel based on the location of residential areas in relation to major activity centers and transit stations; the location of existing bicycle facilities and those proposed by State, county, and local units of government; the presence and availability of natural resource and other off-street corridors for the development of bicycle facilities; route directness and connectivity across municipal boundaries; motor-vehicle operating speeds on arterial streets and highways; and the relationship between motor-vehicle traffic volumes and the design capacity of arterial streets and highways.

A more detailed evaluation of the proposed location of bicycle ways should be conducted by the implementing agency in each case before bicycle ways are designed and constructed. Factors to be considered during the detailed evaluation include the availability of right-of-way for street widenings associated with the bicycle facility; the number and type of structures and vegetation that may need to be removed or relocated to provide the bicycle facility; the effect of the bicycle way on environmentally sensitive areas, including wetlands; the cost of providing the bicycle facility on a specific street or location in relation to providing the bicycle improvement on a parallel street or off-street corridor; and the quality of the alternative locations and the likelihood that bicyclists would use those alternatives. The location and design treatment of the proposed bicycle facility should also be coordinated with the location and design treatment of nearby bicycle facilities.

If the detailed evaluation process indicates that the recommended bicycle-way location is not feasible due to site constraints, excessive costs, the characteristics of the roadway, or other factors, the implementing agency should identify an alternative location and evaluate the feasibility of providing a bicycle way on the alternative route. The evaluation of the recommended bicycle-way location, and, if necessary, the identification and evaluation of alternative locations, must be conducted during the preliminary engineering phase of project design. In order to be consistent with this plan, the design of improvements on streets and highways recommended as bicycle ways must include the bicycle

way as part of the project design, or a commitment to provide an alternative bicycle way on a parallel street or off-street corridor.

BICYCLE ACCOMMODATION ON ARTERIAL STREETS AND HIGHWAYS NOT DESIGNATED AS BICYCLE WAYS

Bicyclists are permitted to operate on all streets and highways in the Region except expressways and freeways that have been posted with signs prohibiting bicycle use. The existing street system provides the most extensive network of direct travel routes, and serves virtually all destinations. Many land access and collector streets, because of low traffic volumes and speeds, are capable of accommodating bicycle travel with little or no improvements. Arterial streets and highways, particularly those with high-speed traffic or heavy volumes of truck or transit-vehicle traffic, may require improvements such as extra-wide outside travel lanes or paved shoulders in order to safely accommodate bicycle travel.

Accordingly, the plan recommends that consideration be given to providing extra-wide outside travel lanes or paved shoulders along all arterial streets and highways which are not designated in the plan as bicycle ways but which are located in one of the three planning areas associated with the urbanized areas of the Region or in one of the 11 incorporated areas of 5,000 or more residents located outside a planning area. Improvements to accommodate bicycle travel, if feasible, would be made at the time a street or highway is constructed, reconstructed, or—in the case of arterial facilities having a rural cross-section—resurfaced.

RECOMMENDED PEDESTRIAN FACILITIES PLAN

The pedestrian facilities element of the preliminary recommended bicycle and pedestrian facilities system plan for Southeastern Wisconsin is a policy, rather than a system, plan. It is recommended that the various units and agencies of government within the Region responsible for the construction and maintenance of pedestrian facilities adopt and follow the standards and guidelines set forth in Chapter VI of this report with regard to those facilities. These standards and guidelines are designed to facili-

tate safe and efficient pedestrian travel within the Region.

Perhaps most importantly, the standards recommend that sidewalks be provided along streets and highways in areas of existing or planned urban industrial, commercial, and residential development in accordance with the criteria set forth in Table 17 in Chapter VI of this report

(see page 72); and that all bridges and underpasses, except those carrying freeway and expressway facilities, be designed to safely accommodate pedestrian travel.

As is the case with recommended bicycle-way improvements, it is recommended that sidewalks and other pedestrian facilities be provided at the time a street or highway is constructed or reconstructed.

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Chapter VIII

FINAL RECOMMENDED PLAN, PLAN ADOPTION, AND PLAN IMPLEMENTATION

INTRODUCTION

The preliminary recommended bicycle and pedestrian facilities system plan for the South-eastern Wisconsin Region is described in the previous chapter of this report. The plan was prepared under the guidance of a Technical and Citizen Advisory Committee established by the Regional Planning Commission. The membership of this Committee includes broad representation from agencies and organizations with an interest in bicycle and pedestrian facilities planning, including representatives of governmental agencies responsible for public safety, recreation, and transportation planning and engineering; and representatives of bicycle and pedestrian advocacy and environmental groups.

Public review of and comment on the preliminary recommended plan began with its presentation at a Regional Planning Conference held in Milwaukee on June 27, 1994. An informational meeting and hearing was held in each of the three urbanized areas of the Region during the autumn of 1994 to provide an opportunity for the public to become familiar with the plan and to allow individuals and groups to comment on the plan. Written comments regarding the preliminary plan were accepted through October 16, 1994, and were given the same consideration as comments received at the public hearings.

This chapter summarizes the public review comments received regarding the preliminary plan; describes the changes made to the preliminary plan in response to the comments received; and describes the final design year 2010 regional bicycle and pedestrian facilities system plan recommended for adoption. This chapter also identifies the costs associated with implementing the plan and the revenues which may be anticipated to become available for implementing the plan. In addition, this chapter describes the actions recommended to be taken in both the public and private sectors in order to implement the plan.

PUBLIC REACTION TO THE PRELIMINARY PLAN

The above-referenced Regional Planning Conference and public hearings were attended by a total of 497 persons; and 27 written comments pertaining to the preliminary recommended plan were received for the record at and following the Conference and the public hearings. In addition to the Conference and the public hearings, the July-August 1994 issue of the Commission Newsletter (Vol. 34, No. 4) was devoted to a summary of the preliminary recommended bicycle and pedestrian plan. This Newsletter issue was widely distributed to local and county units of government, State and Federal agencies, and private individuals.

The preliminary plan received attention from the mass media in the form of newspaper articles and radio and television announcements, some of which were based upon Commission news releases. The record of the public hearings, together with attendant correspondence and supporting materials, was published by the Commission and provided for review to each member of the Commission Technical and Citizen Advisory Committee on Regional Bicycle and Pedestrian Facilities System Planning, as well as to each member of the Regional Planning Commission. The full record is on file at the Commission offices.¹

The following summarizes the public reaction to the preliminary recommended plan as expressed at the public hearings and through the written comments received by the Commission. The

¹See Record of Public Informational Meetings and Public Hearings, Preliminary New Regional Bicycle and Pedestrian Facilities System Plan for Southeastern Wisconsin: 2010, September 29, 1994, to October 6, 1994.

Advisory Committee response to the public reaction is then described.

Public Hearing Comments and Correspondence

The comments received at the public hearings and in correspondence following the hearings may be divided into comments with respect to the overall plan and comments with respect to specific bicycle ways, including both off-street and on-street bicycle ways.

Comments Regarding the Overall Plan: A number of comments were received expressing support and approval of the preliminary plan, particularly for those recommendations that streets and highways be designed, constructed, and maintained to better accommodate bicycle and pedestrian travel. Two comments were received objecting to the overall plan: one on the basis that the money needed to implement the plan would be better spent on street improvements to better accommodate motor-vehicle travel, and one stating that the plan did not go far enough to discourage motor-vehicle travel and encourage bicycle and pedestrian travel. A comment was also received requesting that the plan recommend the provision of paved shoulders on all streets and highways having a rural cross-section, particularly county trunk highways. In addition, a request was made that a table be included in the plan report to clearly summarize the roles and responsibilities of government and private agencies in implementing the plan. The Wisconsin Electric Power Company (WEPCo) expressed its support for the plan, specifically the development of bicycle and pedestrian ways within its rights-of-way.

Comments Regarding Specific Off-Street Bicycle and Pedestrian Ways: Comments were received from two local governments recommending the addition of three off-street bicycle and pedestrian ways to the plan. The Walworth County Highway Commissioner requested that the plan reflect development of a bicycle and pedestrian way within the abandoned railway corridor—formerly the Chicago, Milwaukee, St. Paul & Pacific Railroad Company right-of-way—between Burlington and Elkhorn. The City of Kenosha Planning Director requested that the plan include a bicycle and pedestrian way within the Wisconsin Electric Power Company right-of-way between 56th Avenue and 28th Avenue north of 45th Street and another off-street way within another such right-of-way between 45th Street and 75th Street lying

generally east of 56th Avenue. The latter two proposed bicycle and pedestrian ways would be located within the City of Kenosha, the Town of Somers, and the Village of Pleasant Prairie.

A number of objections were raised in regard to the bicycle and pedestrian ways proposed to be located along the Pike River in Kenosha County and along the Pike River, Root River, and Hoods Creek in Racine County. Many of the comments were expressed by property owners who objected to having a bicycle-pedestrian way located on or adjacent to their property because of concerns related to privacy and security. Concerns were also expressed relating to the impact of bicycle- and pedestrian-way construction and use on water quality and wildlife habitat. Two persons suggested that the off-street bicycle ways in question be relocated to nearby streets.

Comments Regarding Specific On-Street Bicycle Ways: The majority of comments received in regard to specific on-street bicycle ways were related to the proposed bicycle way over the Daniel Webster Hoan Memorial Bridge. The proposed Hoan Bridge bicycle way has been the most controversial issue associated with the preparation of the bicycle and pedestrian plan, and was the subject of much debate in the Milwaukee news media. The majority of comments received by the Commission regarding the Hoan Bridge bicycle way, including a letter received from the City of Milwaukee Bicycle Task Force and testimony at the October 6, 1994, public hearing in Milwaukee—including comments from two Milwaukee County Board Supervisors—supported the preliminary plan recommendation that a detailed study evaluating the costs and benefits of the proposed Hoan Bridge bicycle way be undertaken following adoption of the bicycle and pedestrian plan. The Milwaukee County Executive submitted a letter recommending that the Hoan Bridge bicycle way be removed from the plan.

Subsequent to the preparation of the preliminary recommended plan, the City of Milwaukee requested that an additional bicycle route be included on the plan from Mitchell Park eastward along W. Pierce Street to W. Reynolds Place; then east-northeast on W. Reynolds Place to W. Bruce Street; then east on W. Bruce Street to W. Virginia Street; then east-northeast and east on W. Virginia Street to connect to an existing City bicycle route on S. 2nd Street. Milwaukee County requested that the proposed

bicycle way on N. 43rd Street (N. Sherman Boulevard) between W. Calumet Road and W. Mill Road be relocated to N. Range Line Road. The segment of N. 43rd Street between W. Mill and W. Good Hope Roads was recently reconstructed and because of right-of-way constraints, the County was unable to provide additional pavement width for bicycle accommodation. These requested changes to the preliminary plan were described in the July-August 1994 issue of the SEWRPC Newsletter (Vol. 34, No. 4).

Subsequent to the public hearings, the City of Milwaukee requested that the following existing bicycle ways be added to the plan: N. Cambridge Avenue between E. Providence Avenue and E. Locust Street; N. Terrace Drive between E. North Avenue and N. Lincoln Memorial Drive; S. 2nd Street between W. Maple Street and W. Mitchell Street; and W. Maple Street between S. Kinnickinnic Avenue and S. 2nd Street. The City also requested the deletion of the following proposed bicycle ways: N. 84th Street between W. Florist Avenue and W. Mill Road; W. Bender Road between N. 84th and N. 77th Streets; and W. Oklahoma Avenue between S. 6th and S. 20th Streets.

The City of Oak Creek recommended that the proposed bicycle way in the vicinity of the intersection of S. Howell and Rawson Avenues be rerouted from private land to public streets. The Village of Hales Corners recommended that a proposed bicycle way along the extension of W. College Avenue also be rerouted to public streets.

The City of Kenosha requested the addition of bicycle ways along the following street segments: 1st Avenue from 85th Street to the Wisconsin-Illinois state line; 85th Street from 3rd Avenue to STH 31; 80th Street from Sheridan Road to 7th Avenue; CTH T from STH 31 to CTH H; Washington Road from 30th Avenue to 47th Avenue; Lincoln Boulevard from 22nd Avenue to 80th Street; 22nd Avenue from Lincoln Road to 63rd Street; CTH A from STH 31 to CTH D; CTH L from 37th Avenue to 100th Avenue; CTH N from IH 94 to USH 45; 116th Street from 1st Avenue to Springbrook Road; Springbrook Road from 116th Street to IH 94; CTH H from CTH KR to CTH L; 128th Avenue from CTH K to CTH N; CTH MB from CTH A to the Wisconsin-Illinois state line; 60th and 63rd Streets from 20th Avenue to 23rd Avenue; and

20th and 23rd Avenues from 60th Street to 63rd Street. The City also requested that the bicycle way on 80th Street between 22nd and 39th Avenues be removed from the plan.

The City of New Berlin requested the addition of bicycle ways along the following street segments: CTH ES from Crowbar Drive to 124th Street; 132nd Street from CTH ES to CTH D; CTH HH from Martin Road to Sunnyslope Road; Sunnyslope Road from CTH HH to STH 59; STH 59 from 124th Street to Springdale Road; Springdale Road from STH 59 to the New Berlin Trail; CTH O from STH 59 to the New Berlin Trail; Martin Drive from CTH HH to Egofskes Road; Egofskes Road from Martin Drive to CTH ES; Observatory Road from CTH ES to CTH Y; and a number of on-street routes along residential land access streets.

A comment was received at the public hearing held in Racine on October 3, 1994, recommending that a bicycle way along public streets adjacent to the Lake Michigan lakefront from the Racine central business district to CTH G in northern Racine County be added to the plan. A suggestion was made during the "open house" period preceding the Racine hearing to relocate the proposed bicycle way on STH 20 between Ohio Street and West Boulevard to Kinzie Avenue. A written request was made to designate a bicycle way on Sheridan Road (STH 32) from Carthage College to CTH A in Kenosha County.

ADVISORY COMMITTEE RESPONSE TO PUBLIC COMMENT ON THE PRELIMINARY PLAN

After careful study of the comments received, the Advisory Committee concluded that several modifications to the preliminary plan were warranted. The modifications made are described in the following paragraphs.

In response to the comment recommending that paved shoulders be required along all streets and highways having a rural cross-section, the Committee noted that the preliminary plan calls for the provision of paved shoulders on all arterial streets and highways having a rural cross-section and either designated by the plan as a bicycle way or located in an urbanized or small urban area. To expand this requirement to all streets and highways would result in an undue expense, in view of the low levels of

bicycling anticipated to occur outside of the urbanized and small urban areas. This determination should not be interpreted as precluding the construction of paved shoulders to accommodate bicycle travel where a county or local unit of government determines that a paved shoulder is warranted.

A table summarizing implementation roles and responsibilities on the part of government and private agencies has been included as Table 25 in this chapter.

In response to comments received regarding the feasibility and desirability of constructing off-street bicycle ways in riverine corridors, the Advisory Committee determined that, with the exceptions described below in the list of specific plan changes, the need to relocate such off-street bicycle ways would be determined during the detailed preliminary engineering studies that would be conducted prior to the construction of such bicycle and pedestrian ways.

The Advisory Committee gave careful consideration to the comments made concerning the potential provision of a bicycle way over the Daniel Webster Hoan Memorial Bridge. The Committee took particular note that political sentiment regarding this proposal was sharply divided within Milwaukee County. The Committee noted that even the support for the proposal was conditioned upon the conduct of further studies of the cost and effectiveness of the proposal and of alternatives thereto. Consideration was also given to the fact that the Wisconsin Congressional delegation had secured substantial Federal funds for the construction of the proposed bicycle way, with the potential to use those funds either for the construction of a bicycle way over the bridge as originally proposed or—should further studies find that a surface route would be preferable—to utilize the funding to provide such a surface route.

Finally, the Committee took note of the deliberations of a separate Advisory Committee created by the Regional Planning Commission to guide preparation of the Federally required transportation improvement program. That Committee, meeting on November 4, 1994, recommended that a project be included in the 1995 through 1997 regional transportation improvement program that would allow for the conduct early in that period of a detailed alternatives analysis

using some of the Federal funds reserved for the bicycle way concerned. The envisioned alternatives analysis would specifically address the feasibility of constructing a bicycle way across the Hoan Bridge, comparing the benefits and costs associated with that location with the benefits and costs associated with alternative, and perhaps supplemental, bicycle ways both along the alignment of the Hoan Bridge and extending westward from the north end of the Hoan Bridge in the IH 794-IH 94 Freeway corridor as envisioned in the demonstration grant provided under the Federal Intermodal Surface Transportation Efficiency Act.

Given all of the foregoing considerations, the Advisory Committee guiding preparation of the bicycle and pedestrian plan determined to let stand the preliminary plan recommendation that a bicycle way across the Hoan Bridge be provisionally included in the final recommended plan, subject to confirmation in a supplemental alternatives analysis. The Committee further recommended that this study be sponsored by the Wisconsin Department of Transportation and be undertaken as soon as possible.

The specific changes recommended by the Advisory Committee with respect to the public comments received are described in the following paragraphs. All of the changes requested during the public comment period were accepted by the Advisory Committee with the exception of those pertaining to a limited number of bicycle ways requested by the Cities of Kenosha and New Berlin. Those proposed bicycle ways did not serve to connect areas of urban development to a major activity center, and thus were not incorporated into the regional bicycle-way system plan. The requested bicycle ways may be suitable for inclusion in a community bicycle-way system plan, which would be designed to supplement the regional plan by identifying bicycle and pedestrian facilities to connect residential neighborhoods to community- and neighborhood-level activity centers.

The specific modifications are set forth by county below.

Kenosha County

- The modification of the plan to reroute the proposed off-street bicycle way along the Pike River north of CTH A to an on-street bicycle way on CTH A.

- The addition to the plan of an off-street bicycle way in the Wisconsin Electric Power Company right-of-way along the extension of 56th Avenue from 45th Street to 67th Street.
- The addition to the plan of an on-street bicycle way along 22nd Avenue from CTH K to 89th Street.
- The addition to the plan of an on-street bicycle way along Lincoln Road from 22nd Avenue to 80th Street.
- The addition to the plan of an on-street bicycle way along 1st Avenue from the intersection of 85th Street and 1st Avenue to the Prairie Harbor Yacht Club at the Wisconsin-Illinois state line.
- The addition to the plan of an on-street bicycle way along Sheridan Road from Carthage College to CTH A.
- The addition to the plan of an on-street bicycle way on CTH A from Sheridan Road to CTH H.
- The addition to the plan of an on-street bicycle way along Washington Road (STH 142) from 28th to 39th Avenues.
- The addition to the plan of an on-street bicycle way along CTH H from CTH E to CTH KR.
- The deletion from the plan of an on-street bicycle way along 19th Avenue from CTH K to 80th Street.
- The deletion from the plan of an on-street bicycle way along 80th Street from Lincoln Road to CTH T.

Milwaukee County

- The addition to the plan of an on-street bicycle way from Mitchell Park to S. 2nd Street along W. Pierce Street, W. Reynolds Place, W. Bruce Street, and W. Virginia Street.
- The addition to the plan of the following existing on-street bicycle ways: N. Cambridge Avenue between E. Providence Avenue and E. Locust Street; N. Terrace Drive between E. North Avenue and N. Lincoln Memorial Drive; S. 2nd Street between W. Maple Street and W. Mitchell Street; and

W. Maple Street between S. Kinnickinnic Avenue and S. 2nd Street.

- The addition to the plan of an on-street bicycle way on S. Kurtz Road from W. Grange Avenue to W. Janesville Road.
- The deletion from the plan of an on-street bicycle way along N. 84th Street from W. Florist Avenue to W. Mill Road.
- The deletion from the plan of an on-street bicycle way along W. Bender Road from N. 84th to N. 77th Streets.
- The deletion from the plan of an on-street bicycle way along W. Oklahoma Avenue from S. 6th to S. 20th Streets.
- The modification of the plan to relocate the on-street bicycle way on N. 43rd Street (N. Sherman Boulevard) from W. Calumet Road to W. Mill Road to N. Range Line Road.
- The modification of the plan to relocate the proposed off-street bicycle way in the former right-of-way of the Chicago, North Shore & Milwaukee Railway Company in the vicinity of the intersection of S. Howell and Rawson Avenues to an on-street bicycle way located on streets within the Milwaukee Area Technical College (MATC) campus and S. Howell Avenue.
- The modification of the plan to relocate the off-street bicycle way along the extension of W. College Avenue west of S. 108th Street to an off-street bicycle way along Whitnall Creek from S. 108th Street to W. Janesville Road, and then on-street on W. Janesville Road southwest to College Avenue (CTH HH) in Waukesha County.

Ozaukee County

- The modification of the plan to reroute the proposed off-street bicycle way along the Milwaukee River from STH 60 to STH 33 to an on-street bicycle way on CTH O from STH 60 to STH 33.
- The addition to the plan of an on-street bicycle way on Cedar-Sauk Road from CTH O to CTH I.
- The addition to the plan of an on-street bicycle way along STH 181 from Sherman Road to CTH C.

- The addition to the plan of an on-street bicycle way along CTH C from STH 181 to Green Bay Road.
- The addition to the plan of an on-street bicycle way along Green Bay Road from CTH C to CTH T.
- The addition to the plan of an on-street bicycle way along CTH O from STH 33 to W. Hawthorne Drive and along W. Hawthorne Drive from CTH O to STH 33 as interim bicycle ways until such time as the off-street bicycle way along the Milwaukee River between Saukville and Newburg is completed.

Racine County

- The modification of the plan to relocate that portion of the off-street bicycle way along the Root River between Northwestern Avenue and Four Mile Road to N. Green Bay Road.
- The modification of the plan to relocate that portion of the on-street bicycle way along Washington Avenue (STH 20) between Ohio Street and West Boulevard to Kinzie Avenue.
- The addition to the plan of an on-street bicycle way on 11th Street from Main Street to Pershing Drive; on Pershing Drive from 11th Street to 6th Street; on 6th Street from Pershing Drive to Lake Avenue; on Lake Avenue from 6th Street to State Street; on State Street from Lake Avenue to STH 32; on STH 32 from State Street to Hamilton Street; on Hamilton Street from STH 32 to Michigan Boulevard; on Michigan Boulevard from Hamilton Street to Goold Street; on Goold Street from Michigan Boulevard to Erie Street; on Erie Street from Goold Street to Three Mile Road; on Three Mile Road from Erie Street to Lighthouse Drive; on Lighthouse Drive from Three Mile Road to Four Mile Road; and on Four Mile Road from Lighthouse Drive to the intersection of Four Mile Road and Erie Street.

Walworth County

- The addition to the plan of an off-street bicycle way on the abandoned railway corridor—the former right-of-way of the Chicago, Milwaukee, St. Paul & Pacific Railroad Company—between Burlington and Elkhorn.

Waukesha County

- The addition to the plan of an on-street bicycle way on National Avenue (CTH ES) from CTH Y to 132nd Street.
- The addition to the plan of an on-street bicycle way on 132nd Street from CTH ES to Cleveland Avenue (CTH D).
- The modification of the plan to relocate the off-street bicycle way between Observatory Road and Lawnsdale Road (CTH I) to an on-street bicycle way on Observatory Road.
- The modification of the plan to relocate the proposed on- and off-street bicycle way on the east side of Moorland Road from the New Berlin Trail to W. Beloit Road (CTH I) to Moorland Road.

FINAL RECOMMENDED BICYCLE AND PEDESTRIAN FACILITIES SYSTEM PLAN

In accordance with the Committee determinations noted above, a final recommended regional bicycle and pedestrian facilities system plan was developed.

Final Recommended Bicycle-Way System Plan

The final recommended bicycle-way system plan is shown on Maps 18 through 21. This plan envisions the development of a total of approximately 1,527 miles of recommended bicycle ways within the Region by the year 2010. Table 20 summarizes the number of miles of existing and proposed bicycle ways by type of bicycle way. Table 21 provides similar information for each county in the Region, as well as information regarding the recommended jurisdictional responsibility for existing and proposed bicycle ways.

Map 18 shows the final recommended regional bicycle-way system for Southeastern Wisconsin outside of the planning areas associated with the Kenosha, Milwaukee, and Racine urbanized areas, but including major routes through those areas. The recommended plan includes a proposed system of bicycle ways for each of the planning areas associated with the three urbanized areas of Southeastern Wisconsin. For bicycle and pedestrian facilities system planning purposes, the Kenosha, Milwaukee, and Racine planning areas were delineated to include those areas adjacent to the urbanized areas which are proposed to be developed for urban use by the

Map 18

FINAL RECOMMENDED BICYCLE-WAY SYSTEM PLAN FOR THE SOUTHEASTERN WISCONSIN REGION OUTSIDE KENOSHA, MILWAUKEE, AND RACINE PLANNING AREAS, BUT INCLUDING MAJOR ROUTES THROUGH THOSE AREAS: 2010

LEGEND

● INCORPORATED AREAS WITH 5,000 RESIDENT POPULATION OR MORE OUTSIDE OF KENOSHA, MILWAUKEE, AND RACINE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREAS

□ KENOSHA, MILWAUKEE, AND RACINE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREAS

BICYCLE WAYS ASSOCIATED WITH NATURAL RESOURCE OR UTILITY CORRIDORS

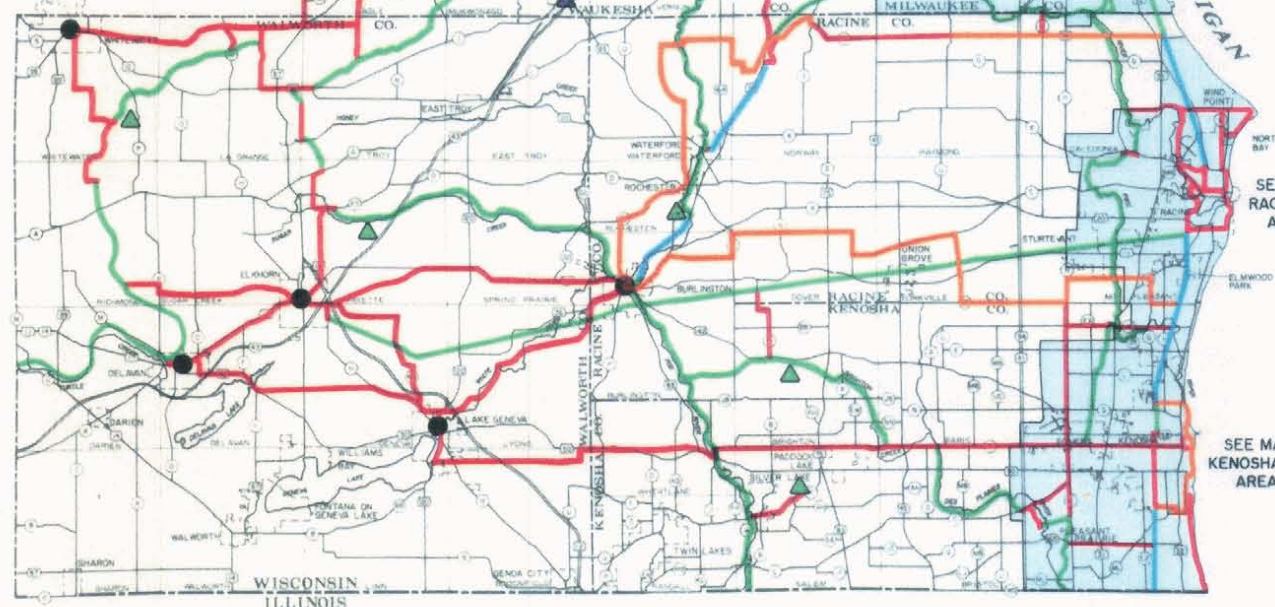
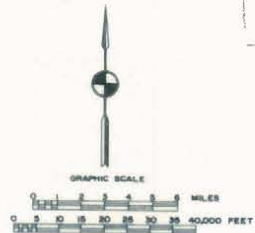
— EXISTING
— PROPOSED
— ALTERNATIVE ROUTE

BICYCLE WAYS ASSOCIATED WITH STREET OR HIGHWAY RIGHTS-OF-WAY

— EXISTING
— PROPOSED
— ALTERNATIVE ROUTE

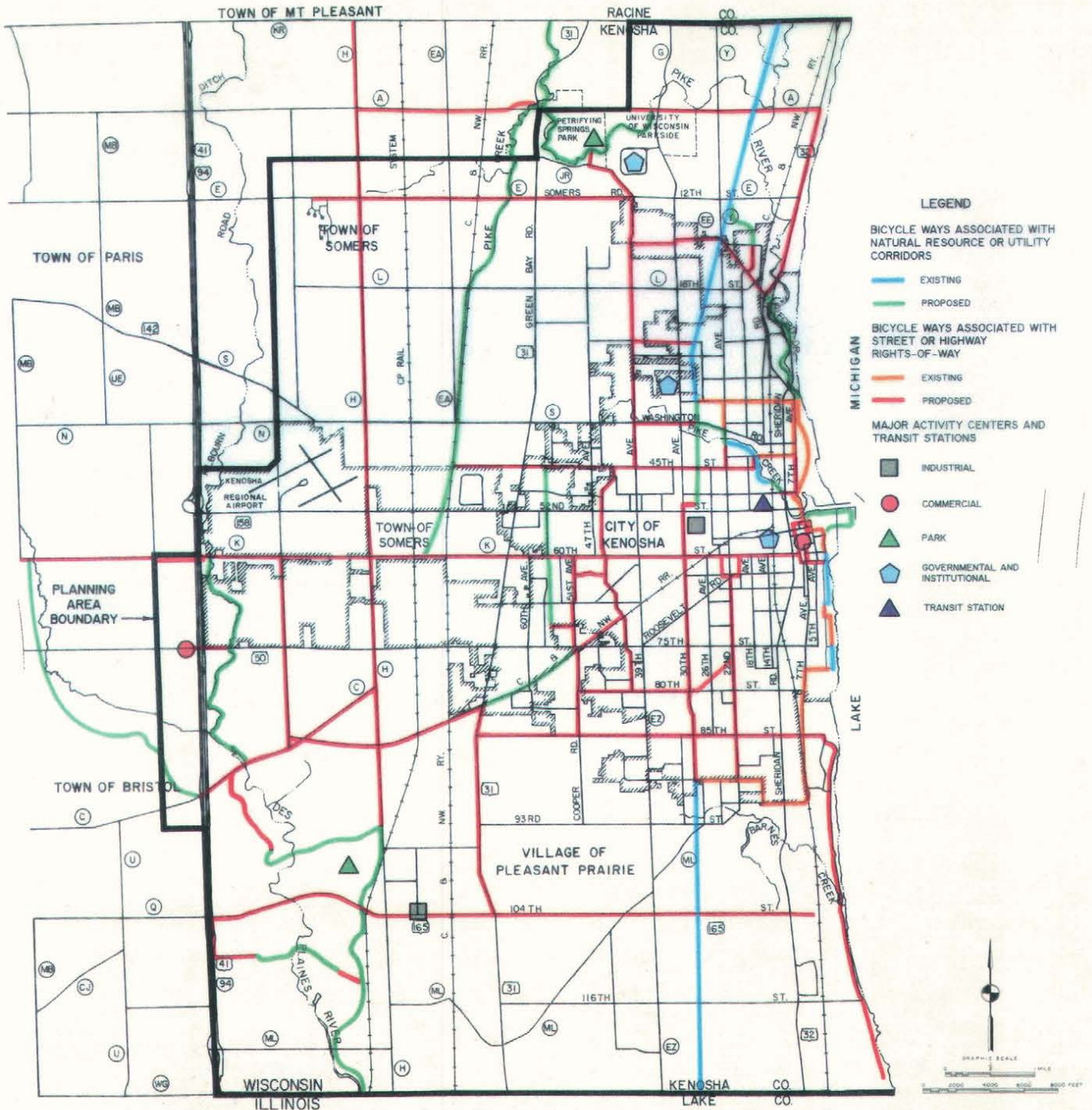
MAJOR ACTIVITY CENTERS LOCATED OUTSIDE AN URBAN OR PLANNING AREA

▲ PARK
▲ TRANSIT STATION



The final recommended bicycle-way system plan provides for a network of bicycle ways which interconnect the Kenosha, Milwaukee, and Racine planning areas and the 11 defined small urban areas—cities and villages of 5,000 or more residents—located outside a planning area. The plan also provides for bicycle access to transit stations and major parks located outside a planning or small urban area.

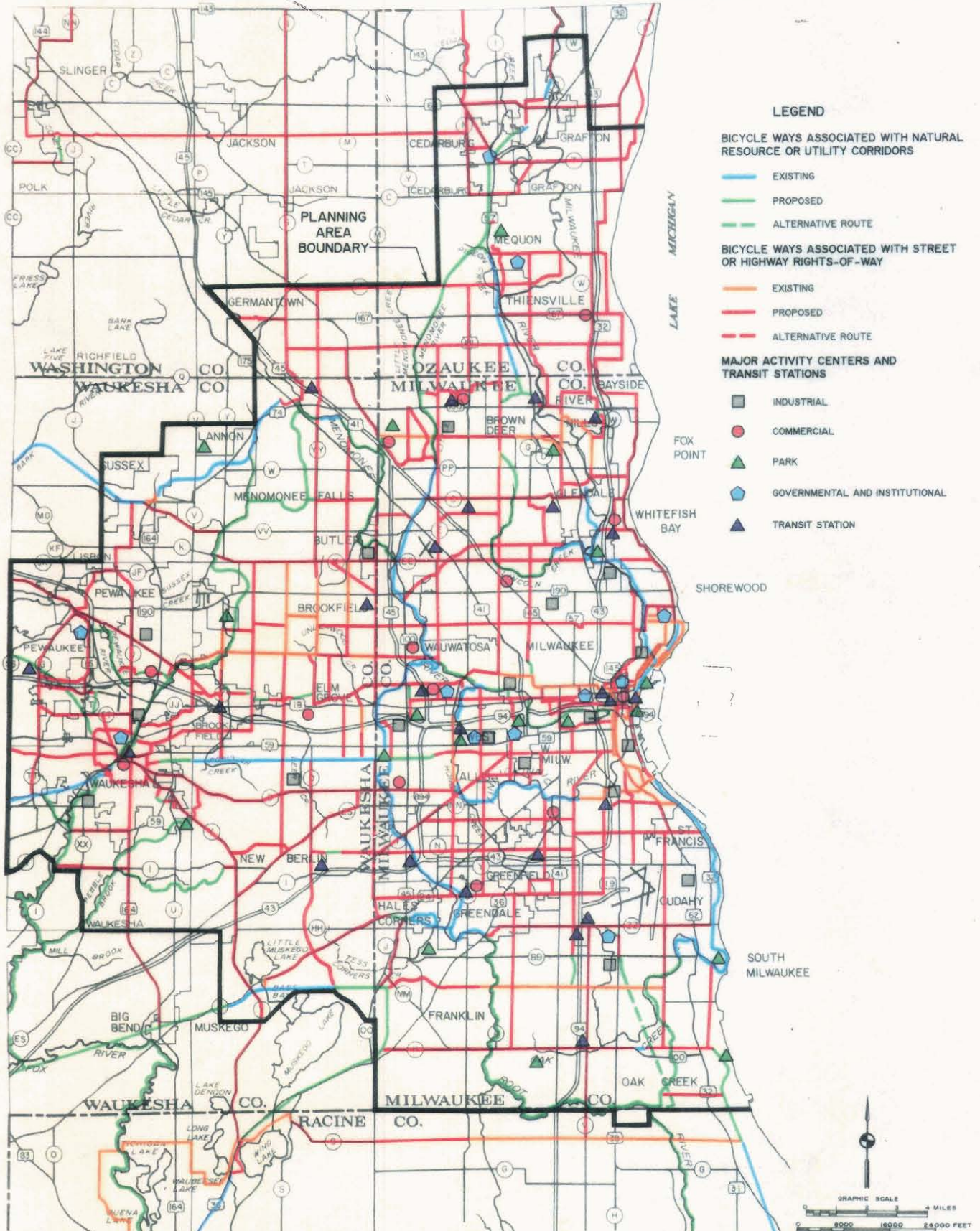
FINAL RECOMMENDED BICYCLE-WAY SYSTEM PLAN FOR THE KENOSHA BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 2010



The final recommended bicycle-way system plan for the Kenosha planning area provides for bicycle access to the major activity centers and transit stations located within the planning area, including Petrifying Springs and Pleasant Prairie Parks, the Kenosha Transit Center, the major retail center located at the intersection of IH 94 and STH 50, LakeView Corporate Park, the University of Wisconsin-Parkside, Gateway Technical College-Kenosha, and the office, retail, governmental, institutional, and industrial development located within or adjacent to the Kenosha central business district.

Source: SEWRPC.

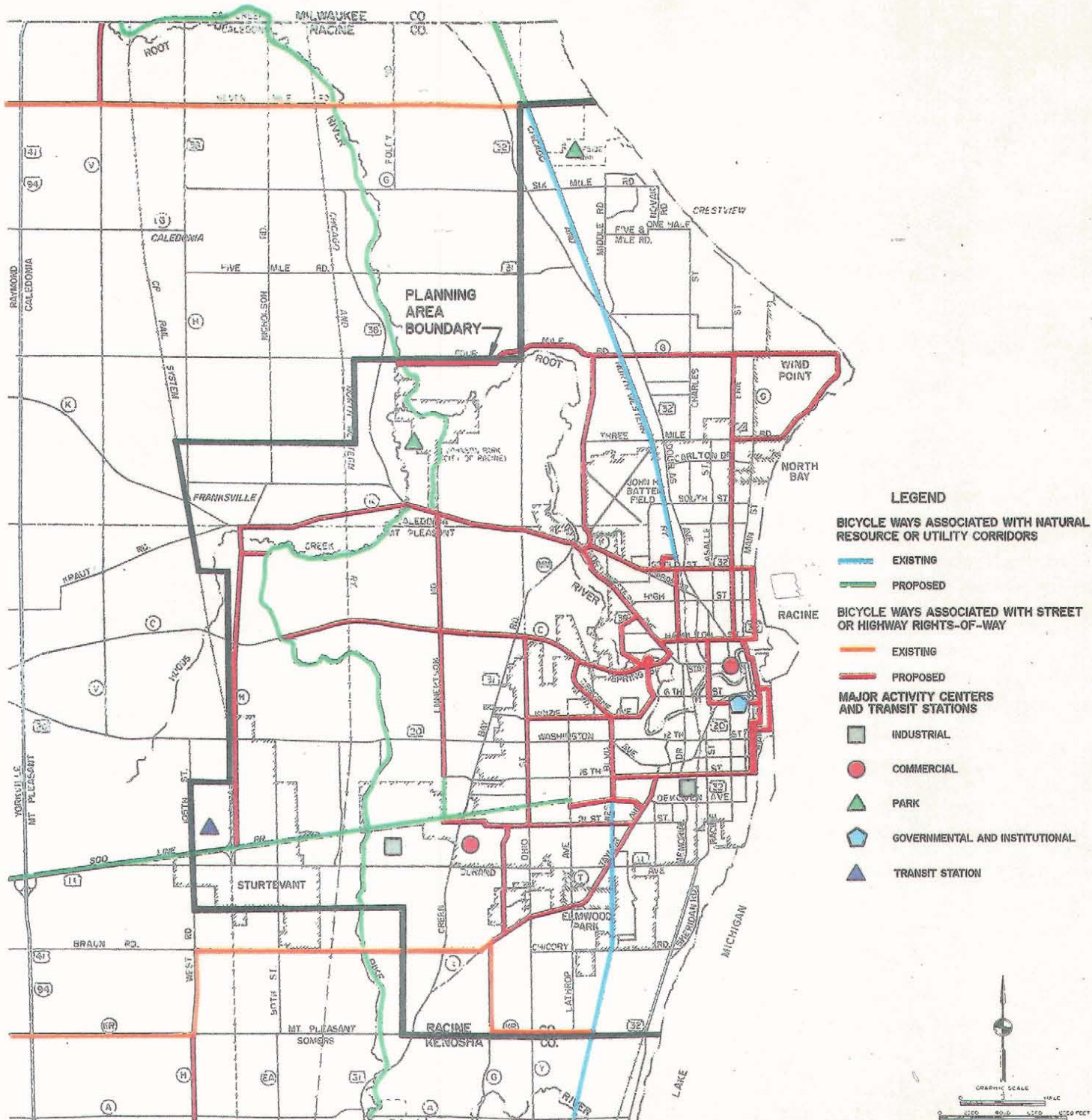
FINAL RECOMMENDED BICYCLE-WAY SYSTEM PLAN FOR THE MILWAUKEE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 2010



The final recommended bicycle-way system plan for the Milwaukee planning area generally proposes a network of bicycle ways spaced no more than two miles apart. Denser networks are envisioned in areas of concentrated development, such as the Milwaukee central business district, and where needed to provide access to major activity centers or to transit stations. The plan also incorporates the recommendations for bicycle facilities development contained in the adopted park and open space plans for each of the counties with lands within the planning area and in the bicycle plans adopted by the Cities of Brookfield and Milwaukee.

Map 21

**FINAL RECOMMENDED BICYCLE-WAY SYSTEM PLAN FOR THE RACINE
BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREA: 2010**



The final recommended bicycle-way system plan for the Racine planning area provides for bicycle access to the major activity centers and transit stations located within the planning area, including Cliffside and Johnson Parks, the Regency Mall, the Sturtevant Amtrak railway passenger train station, the Mt. Pleasant industrial center, and the office, retail, governmental, institutional, and industrial development located within or adjacent to the Racine central business district.

Source: SEWRPC.

Table 20

**MILES^a OF BICYCLE WAYS TO BE PROVIDED IN ACCORDANCE
WITH THE FINAL RECOMMENDED REGIONAL BICYCLE-WAY SYSTEM PLAN**

Bicycle-Way Status	Bicycle Ways on Arterial Streets	Bicycle Ways on Nonarterial Streets	Off-Street Bicycle Ways	Total
Existing	89	39	130	258
Proposed	644	274	351	1,269
Total	733	313	481	1,527

^aThe length of bicycle ways is given in route-miles. The number of bicycle-lane-miles will normally be approximately twice the number of bicycle-route-miles, as bicycle lanes and bicycle routes would be located along both sides of a street, and bicycle paths would generally accommodate two-way bicycle travel.

Source: SEWRPC.

year 2010 under the adopted regional land use plan, and to exclude areas which are developed for low-density residential uses and which are located more than five miles from any major activity center.

As appropriate, existing and planned bicycle ways identified in adopted community bicycle facilities plans were incorporated into the recommended plan for the planning areas. The identification of community-level bicycle facilities designed to serve neighborhoods or neighborhood facilities, however, was considered to be outside of the scope of the regional planning effort, and, therefore, such facilities were not included in the bicycle-way system plans for the three planning areas.

The final recommended bicycle-way system plans for the Kenosha, Milwaukee, and Racine planning areas are shown on Map 19, Map 20, and Map 21, respectively. Table 22 provides a summary of the mileages and types of existing and proposed bicycle ways in each of the three planning areas and in that portion of the Region outside those planning areas.

It should be noted that the proposed bicycle ways shown on Maps 18 through 21 depict recommended locations for bicycle ways and, in the case of bicycle ways located along existing streets and highways, do not necessarily indicate streets and highways that are currently suitable for bicycle travel. It is anticipated that many of the streets and highways designated as planned bicycle ways will require improvements such as widened shoulders or the provision of bicycle lanes to make them more suitable for bicycle travel.

Jurisdictional Responsibility

On-Street Bicycle Ways: For those bicycle and pedestrian facilities recommended in this plan to be provided within the right-of-way of a street or highway, the unit of government responsible for constructing and maintaining each street or highway in question should also have responsibility for constructing and maintaining the associated bicycle or pedestrian facility, or for entering into operating or maintenance agreements with other units or agencies of government to perform maintenance activities. Accordingly, the Wisconsin Department of Transportation should assume responsibility for constructing bicycle and pedestrian facilities along State trunk highways and connecting streets; the appropriate county highway, transportation, or public works department should in each applicable case assume responsibility for constructing and maintaining bicycle and pedestrian facilities located along county trunk highways; and the various cities, villages, and towns should assume responsibility for constructing and maintaining bicycle and pedestrian facilities located along streets and highways under their respective jurisdictions. An exception to this assignment of jurisdictional responsibility would involve those situations where a portion of an off-street bicycle or pedestrian facility of regional scale is located along a street or highway for a relatively short portion of its length. In such cases, the agency responsible for the trail should assume responsibility for constructing and maintaining the bicycle or pedestrian facility, or for making arrangements for construction and/or maintenance with the unit of government having jurisdiction over the street or highway.

Table 21

MILES^a OF 1993 EXISTING AND 2010 PROPOSED BICYCLE WAYS TO BE PROVIDED IN EACH COUNTY IN ACCORDANCE WITH THE FINAL RECOMMENDED REGIONAL BICYCLE-WAY SYSTEM PLAN

Recommended Year 2010 Bicycle-Way Classification and Jurisdiction	Kenosha County			Milwaukee County			Ozaukee County			Racine County		
	Existing	Proposed	Total	Existing	Proposed	Total	Existing	Proposed	Total	Existing	Proposed	Total
Arterial Streets and Highways												
State Trunk Highway	0	17	17	10	26	36	0	25	25	0	8	8
County Trunk Highway	0	42	42	0	57	57	0	26	26	31	18	49
Local Trunk Highway	3	14	17	23	117	140	0	29	29	6	21	27
Subtotal	3	73	76	33	200	233	0	80	80	37	47	84
Nonarterial Streets and Highways												
State Jurisdiction	0	0	0	0	0	0	0	0	0	0	0	0
County Jurisdiction	0	0	0	1	0	1	0	0	0	0	0	0
Local Jurisdiction	5	24	29	7	58	65	0	30	30	24	18	42
Subtotal	5	24	29	8	58	66	0	30	30	24	18	42
Off-Street												
State Jurisdiction	0	6	6	0	5	5	0	0	0	0	2	2
County Jurisdiction	7	41	48	56	37	93	0	22	22	17	52	69
Local Jurisdiction	3	8	11	0	1	1	6	0	6	0	9	9
Subtotal	10	55	65	56	43	99	6	22	28	17	63	80
Total	18	152	170	97	301	398	6	132	138	78	128	206

Recommended Year 2010 Bicycle-Way Classification and Jurisdiction	Walworth County			Washington County			Waukesha County			Region		
	Existing	Proposed	Total	Existing	Proposed	Total	Existing	Proposed	Total	Existing	Proposed	Total
Arterial Streets and Highways												
State Trunk Highway	0	11	11	2	11	13	0	25	25	12	123	135
County Trunk Highway	0	30	30	0	23	23	12	98	110	43	294	337
Local Trunk Highway	0	2	2	0	7	7	2	37	39	34	227	261
Subtotal	0	43	43	2	41	43	14	160	174	89	644	733
Nonarterial Streets and Highways												
State Jurisdiction	0	0	0	0	0	0	0	0	0	0	0	0
County Jurisdiction	0	0	0	0	0	0	0	0	0	1	0	1
Local Jurisdiction	0	44	44	0	48	48	2	52	54	38	274	312
Subtotal	0	44	44	0	48	48	2	52	54	39	274	313
Off-Street												
State Jurisdiction	0	29	29	0	3	3	17	0	17	17	45	62
County Jurisdiction	0	37	37	0	11	11	18	80	98	98	280	378
Local Jurisdiction	0	0	0	1	3	4	5	5	10	15	26	41
Subtotal	0	66	66	1	17	18	40	85	125	130	351	481
Total	0	153	153	3	106	109	56	297	353	258	1,269	1,527

^a The length of bicycle ways is given in route-miles. The number of bicycle-lane-miles will normally be approximately twice the number of bicycle-route-miles, as bicycle lanes and bicycle routes would be located along both sides of a street, and bicycle paths would generally accommodate two-way bicycle travel.

Source: SEWRPC.

Map 22 shows the levels of government having jurisdiction in 1993 over on-street bicycle ways and the associated streets and highways. It should be noted that because of agreements between the governments concerned, the level of government having jurisdiction over a bicycle way may not be the same as that which has jurisdiction over the associated street or highway. For example, the Wisconsin Department of Transportation has jurisdiction over STH 60, but the City of Hartford has accepted responsibility

for maintaining the bicycle path located in the highway right-of-way.

Maps 23 through 29 show the recommended system of on-street bicycle ways—including both existing and recommended new bicycle ways—for each of the seven counties in the Region and the levels of government recommended under the new regional transportation system plan to have jurisdiction over the associated streets and highways by the year 2010.

Table 22

**MILES^a OF 1993 EXISTING AND 2010 PROPOSED BICYCLE WAYS TO BE PROVIDED IN
THE KENOSHA, MILWAUKEE, AND RACINE PLANNING AREAS AND REMAINDER OF REGION
IN ACCORDANCE WITH THE FINAL RECOMMENDED REGIONAL BICYCLE-WAY SYSTEM PLAN**

Area	On-Street Bicycle Ways on Arterial Streets			On-Street Bicycle Ways on Nonarterial Streets			Off-Street Bicycle Ways			Total On- and Off-Street Bicycle Ways		
	Existing	Proposed	Total	Existing	Proposed	Total	Existing	Proposed	Total	Existing	Proposed	Total
Kenosha Planning Area	3	53	56	5	21	26	10	21	31	18	95	113
Milwaukee Planning Area	47	376	423	10	115	125	84	95	179	141	586	727
Racine Planning Area	2	39	41	1	20	21	9	16	25	12	75	87
Region outside Planning Areas	37	176	213	23	118	141	27	219	246	87	513	600
Total	89	644	733	39	274	313	130	351	481	258	1,269	1,527

^a The length of bicycle ways is given in route-miles. The number of bicycle-lane-miles will normally be approximately twice the number of bicycle-route-miles, as bicycle lanes and bicycle routes would be located along both sides of a street, and bicycle paths would generally accommodate two-way bicycle travel.

Source: SEWRPC.

Off-Street Bicycle Ways: The levels of government having and recommended to have responsibility for constructing and maintaining existing and recommended off-street bicycle ways are shown on Map 30. Bicycle and pedestrian ways recommended under the regional bicycle and pedestrian facilities system plan to be located within natural resource, utility, or other off-street corridors are consistent with those included in the adopted park and open space plans for each county,² except for certain recommended additions and deletions described below. Table 23 provides a summary of the recommended off-street bicycle and pedestrian

ways and the agencies proposed in the county park and open space plans to be responsible for developing each facility.

The regional bicycle and pedestrian facilities system plan recommends the construction of eight off-street bicycle and pedestrian ways by county agencies, for a total of 70 miles, in addition to those recommended in the adopted county park and open space plans. The recommended new bicycle and pedestrian ways are depicted on Map 31 and are described in the following paragraphs. Map 31 also depicts three segments of off-street bicycle and pedestrian ways included in the county park and open space plans which are proposed to be relocated from off-street to on-street locations through the adoption of this bicycle and pedestrian facilities system plan. The plan proposes the relocation of the proposed off-street bicycle way along the Pike River north of CTH A to an on-street bicycle-way route on CTH A in Kenosha County; the relocation of the proposed off-street bicycle way along the Milwaukee River from STH 60 to STH 33 to an on-street bicycle-way route on CTH O from STH 60 to STH 33 in Ozaukee County; and the relocation of that portion of the proposed off-street bicycle way along the Root River between Northwestern Avenue and Four Mile Road to an on-street bicycle-way route on N. Green Bay Road in Racine County.

The regional bicycle and pedestrian plan recommends the development of a bicycle and pedestrian path along the Des Plaines River and Brighton Creek from the Wisconsin-Illinois state line to and through the Bong State Recreation Area in Kenosha County to the Fox River Trail

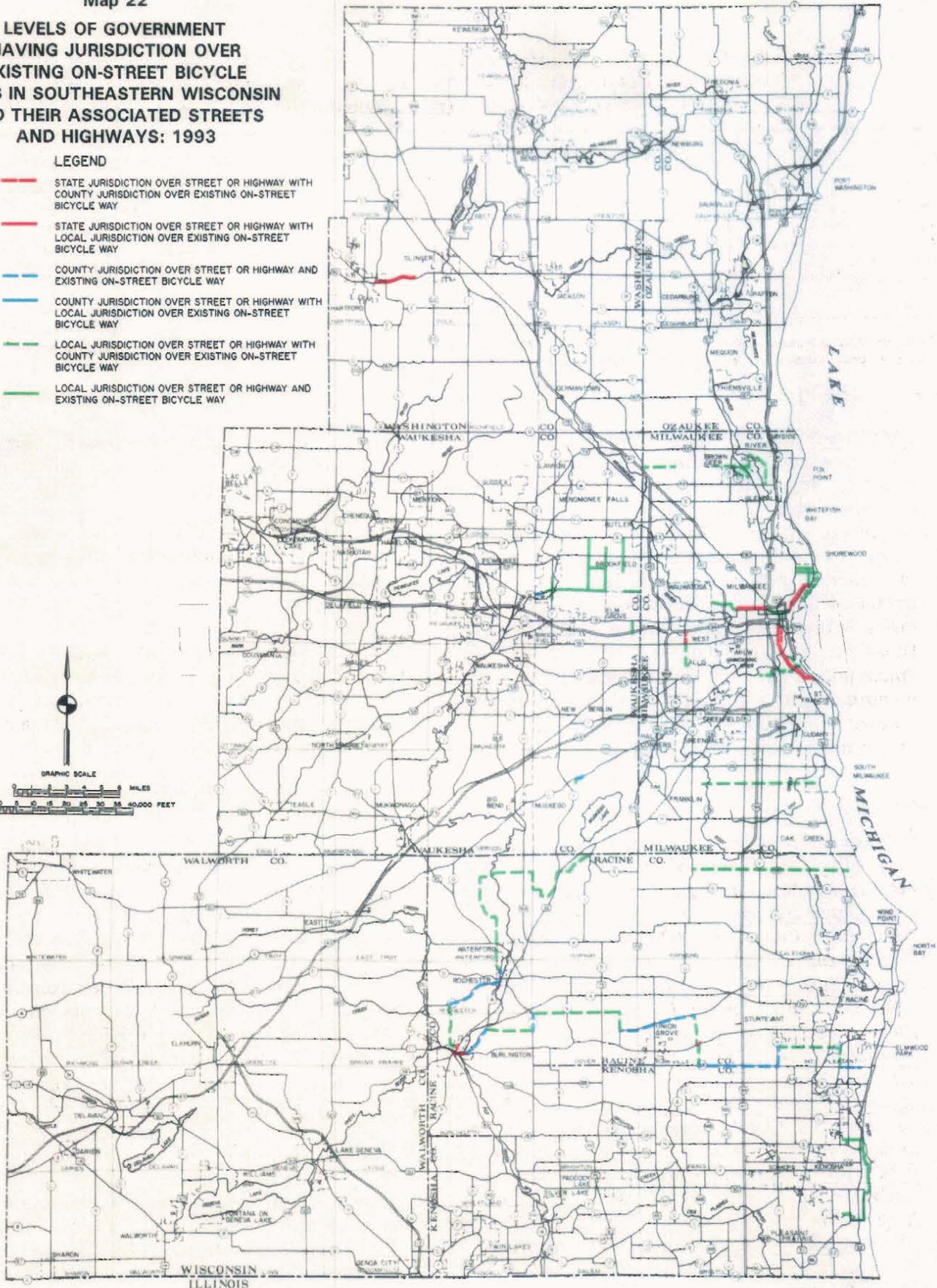
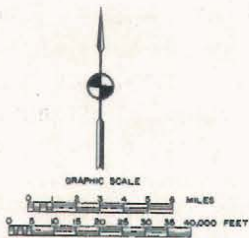
² The seven county park and open space plans are respectively documented in SEWRPC Community Assistance Planning Report No. 131, *A Park and Open Space Plan for Kenosha County*, November 1987; SEWRPC Community Assistance Planning Report No. 132, *A Park and Open Space Plan for Milwaukee County*, November 1991; SEWRPC Community Assistance Planning Report No. 133, *A Park and Open Space Plan for Ozaukee County*, July 1987; SEWRPC Community Assistance Planning Report No. 134, *A Park and Open Space Plan for Racine County*, September 1988; SEWRPC Community Assistance Planning Report No. 135, *A Park and Open Space Plan for Walworth County*, February 1991; SEWRPC Community Assistance Planning Report No. 136, *A Park and Open Space Plan for Washington County*, March 1989; and SEWRPC Community Assistance Planning Report No. 137, *A Park and Open Space Plan for Waukesha County*, December 1989.

Map 22

**LEVELS OF GOVERNMENT
HAVING JURISDICTION OVER
EXISTING ON-STREET BICYCLE
WAYS IN SOUTHEASTERN WISCONSIN
AND THEIR ASSOCIATED STREETS
AND HIGHWAYS: 1993**

LEGEND

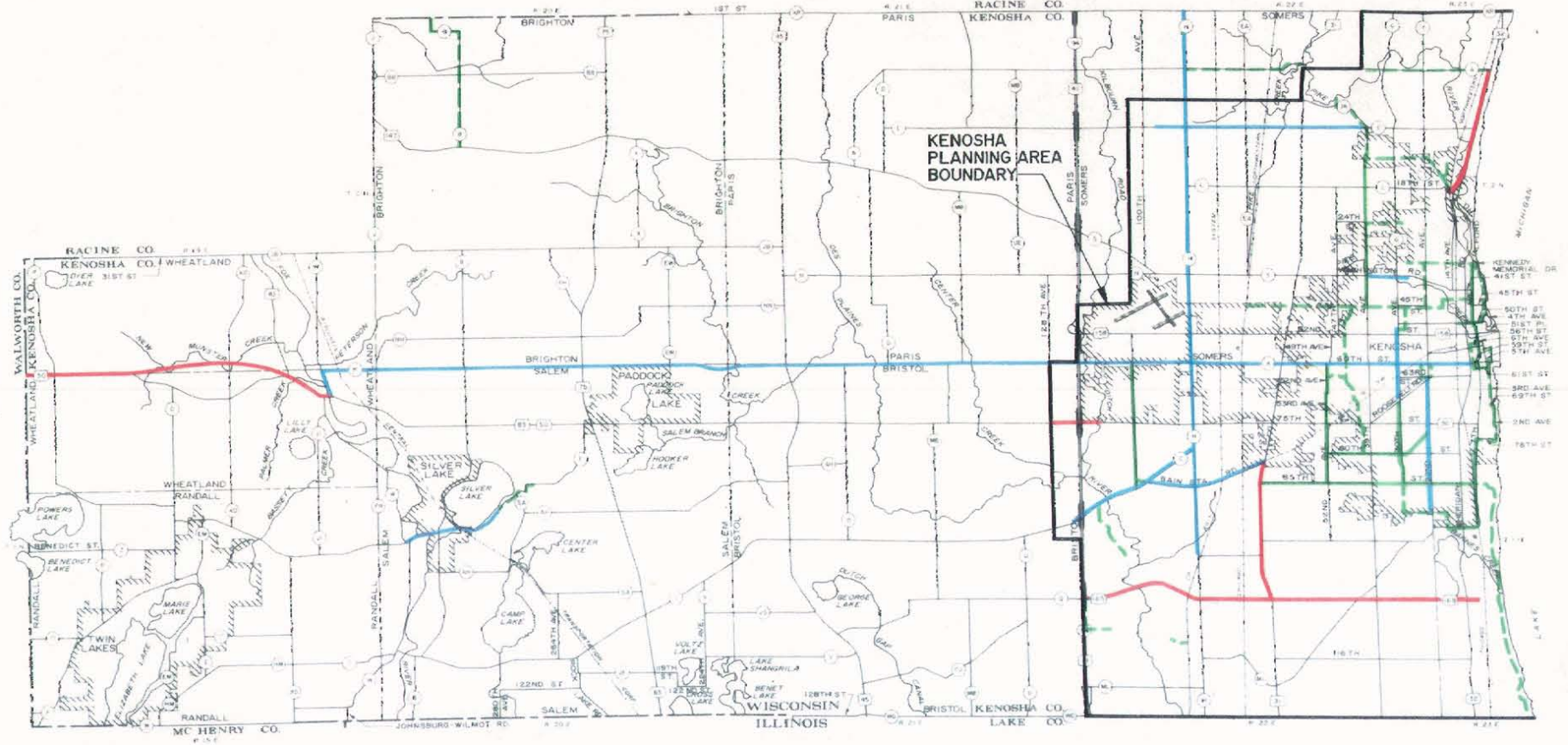
- STATE JURISDICTION OVER STREET OR HIGHWAY WITH COUNTY JURISDICTION OVER EXISTING ON-STREET BICYCLE WAY
- STATE JURISDICTION OVER STREET OR HIGHWAY WITH LOCAL JURISDICTION OVER EXISTING ON-STREET BICYCLE WAY
- COUNTY JURISDICTION OVER STREET OR HIGHWAY AND EXISTING ON-STREET BICYCLE WAY
- COUNTY JURISDICTION OVER STREET OR HIGHWAY WITH LOCAL JURISDICTION OVER EXISTING ON-STREET BICYCLE WAY
- LOCAL JURISDICTION OVER STREET OR HIGHWAY WITH COUNTY JURISDICTION OVER EXISTING ON-STREET BICYCLE WAY
- LOCAL JURISDICTION OVER STREET OR HIGHWAY AND EXISTING ON-STREET BICYCLE WAY



This map shows the levels of government with jurisdiction in 1993 over on-street bicycle ways in the Region, and the levels of government with jurisdiction in 1993 over the associated streets and highways. The level of government with jurisdiction over a given bicycle way may not always be the one which has jurisdiction over the associated street or highway due to operating and maintenance agreements between the governments concerned.

Source: SEWRPC.

LEVELS OF GOVERNMENT RECOMMENDED TO HAVE JURISDICTION OVER STREETS AND HIGHWAYS HAVING A RECOMMENDED BICYCLE WAY IN KENOSHA COUNTY: 2010



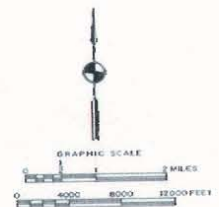
LEGEND

ARTERIAL STREETS AND HIGHWAYS

- STATE TRUNK HIGHWAY
- COUNTY TRUNK HIGHWAY
- LOCAL TRUNK HIGHWAY

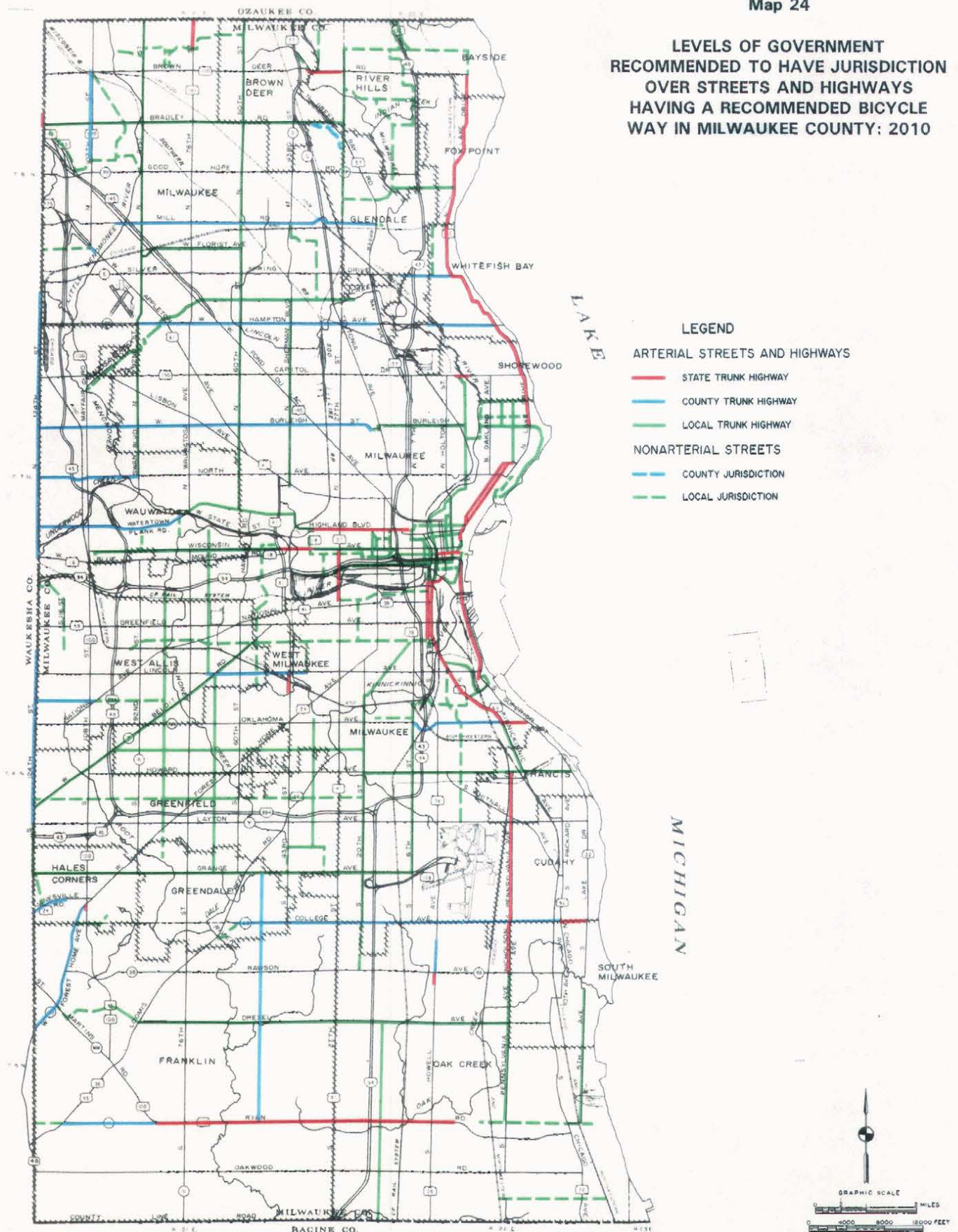
NONARTERIAL STREETS

- - - LOCAL JURISDICTION



The recommended bicycle-way system plan recommends a total of 105 miles of existing and new on-street bicycle ways in Kenosha County. Of this total, 17 miles, or about 16 percent, of the bicycle ways are proposed to be located on streets or highways under recommended State jurisdiction in the year 2010; 42 miles, or about 40 percent, of the bicycle ways are proposed to be located on streets or highways under recommended County jurisdiction in the year 2010; and 46 miles, or about 44 percent, of the bicycle ways are proposed to be located on streets or highways under recommended local jurisdiction by the year 2010.

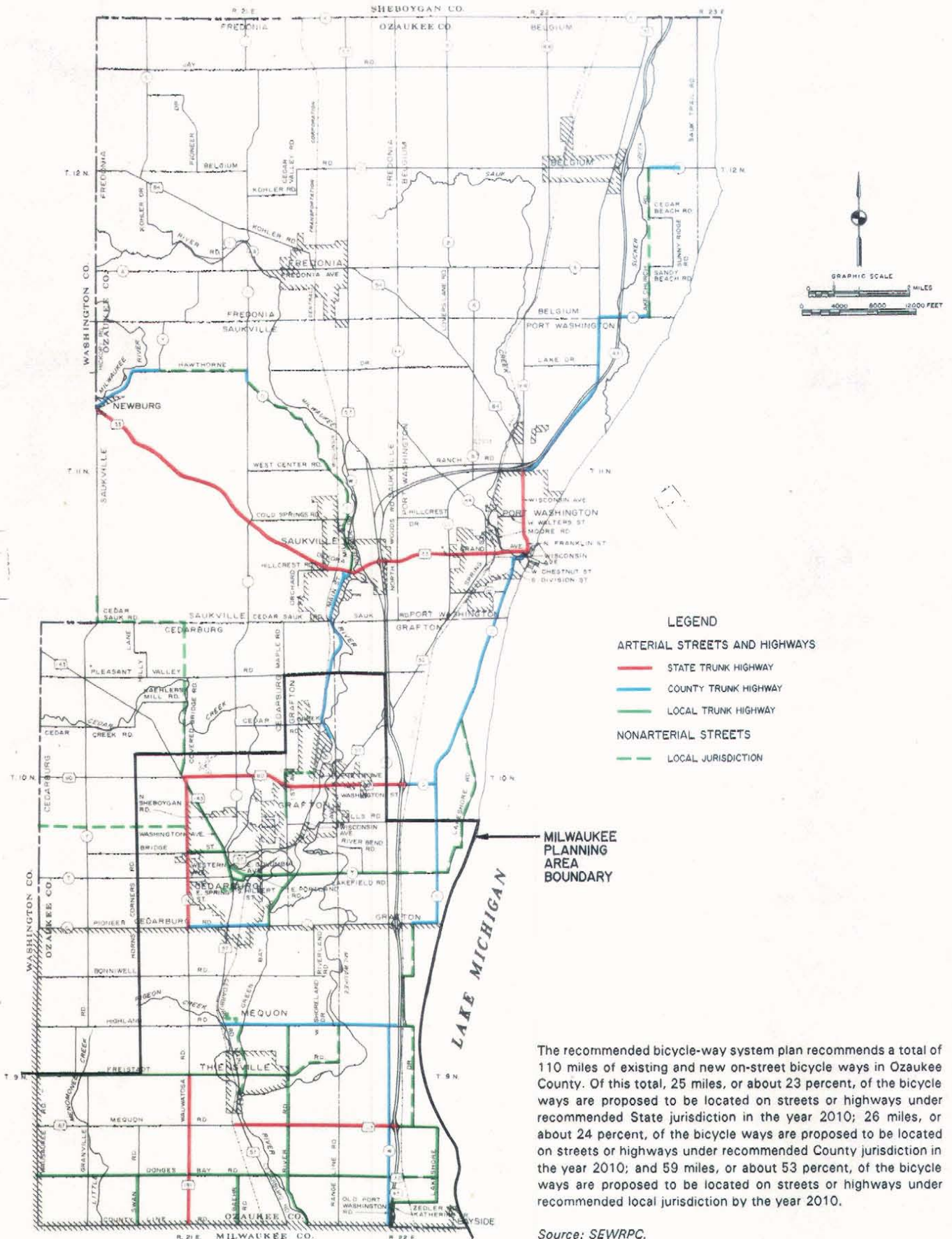
**LEVELS OF GOVERNMENT
RECOMMENDED TO HAVE JURISDICTION
OVER STREETS AND HIGHWAYS
HAVING A RECOMMENDED BICYCLE
WAY IN MILWAUKEE COUNTY: 2010**



The recommended bicycle-way system plan recommends a total of 299 miles of existing and new on-street bicycle ways in Milwaukee County. Of this total, 36 miles, or about 12 percent, of the bicycle ways are proposed to be located on streets or highways under recommended State jurisdiction in the year 2010; 58 miles, or about 19 percent, of the bicycle ways are proposed to be located on streets or highways under recommended County jurisdiction in the year 2010; and 205 miles, or about 69 percent, of the bicycle ways are proposed to be located on streets or highways under recommended local jurisdiction by the year 2010.

Source: SEWRPC.

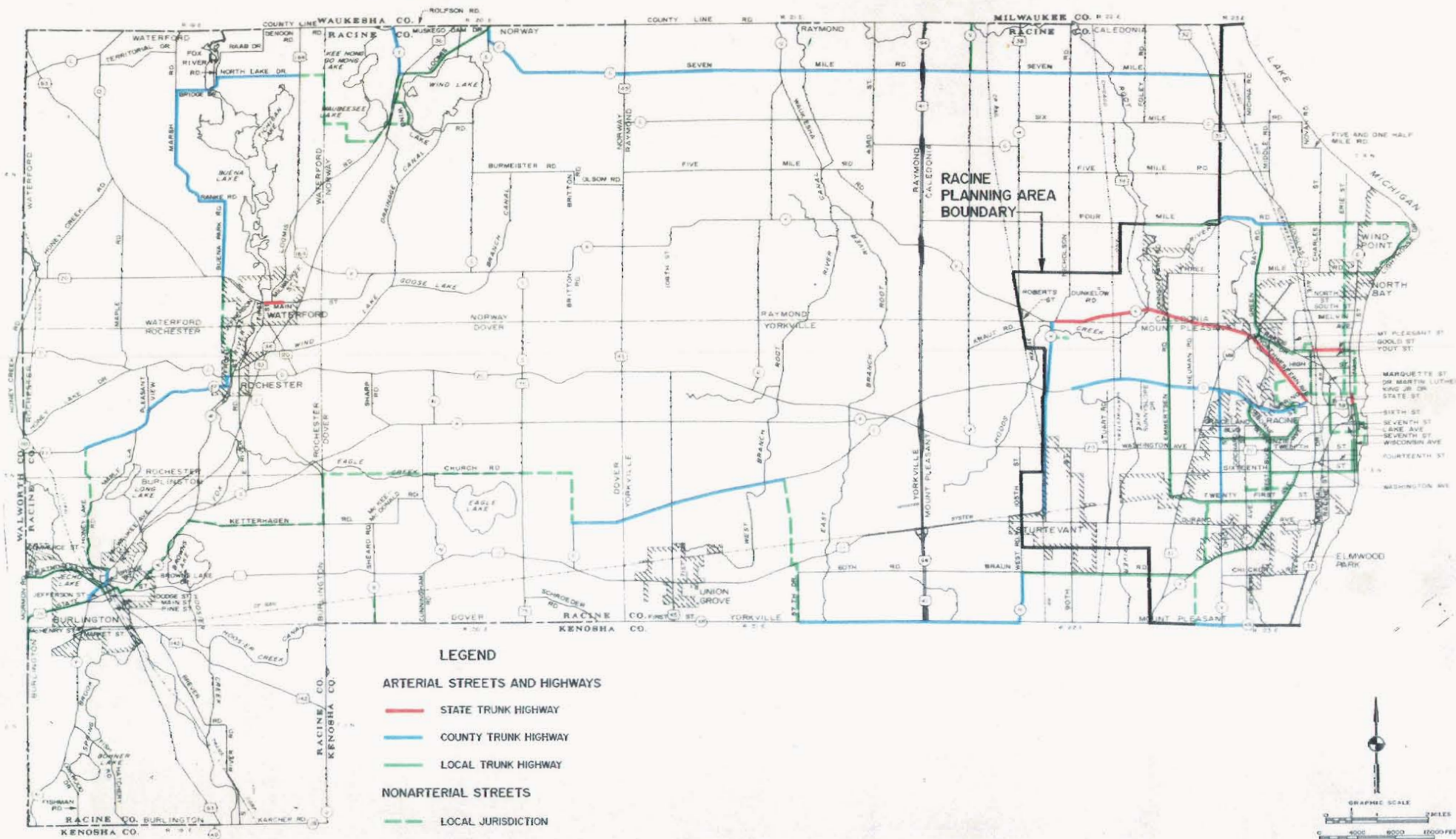
LEVELS OF GOVERNMENT RECOMMENDED TO HAVE JURISDICTION OVER STREETS AND HIGHWAYS HAVING A RECOMMENDED BICYCLE WAY IN OZAUKEE COUNTY: 2010



The recommended bicycle-way system plan recommends a total of 110 miles of existing and new on-street bicycle ways in Ozaukee County. Of this total, 25 miles, or about 23 percent, of the bicycle ways are proposed to be located on streets or highways under recommended State jurisdiction in the year 2010; 26 miles, or about 24 percent, of the bicycle ways are proposed to be located on streets or highways under recommended County jurisdiction in the year 2010; and 59 miles, or about 53 percent, of the bicycle ways are proposed to be located on streets or highways under recommended local jurisdiction by the year 2010.

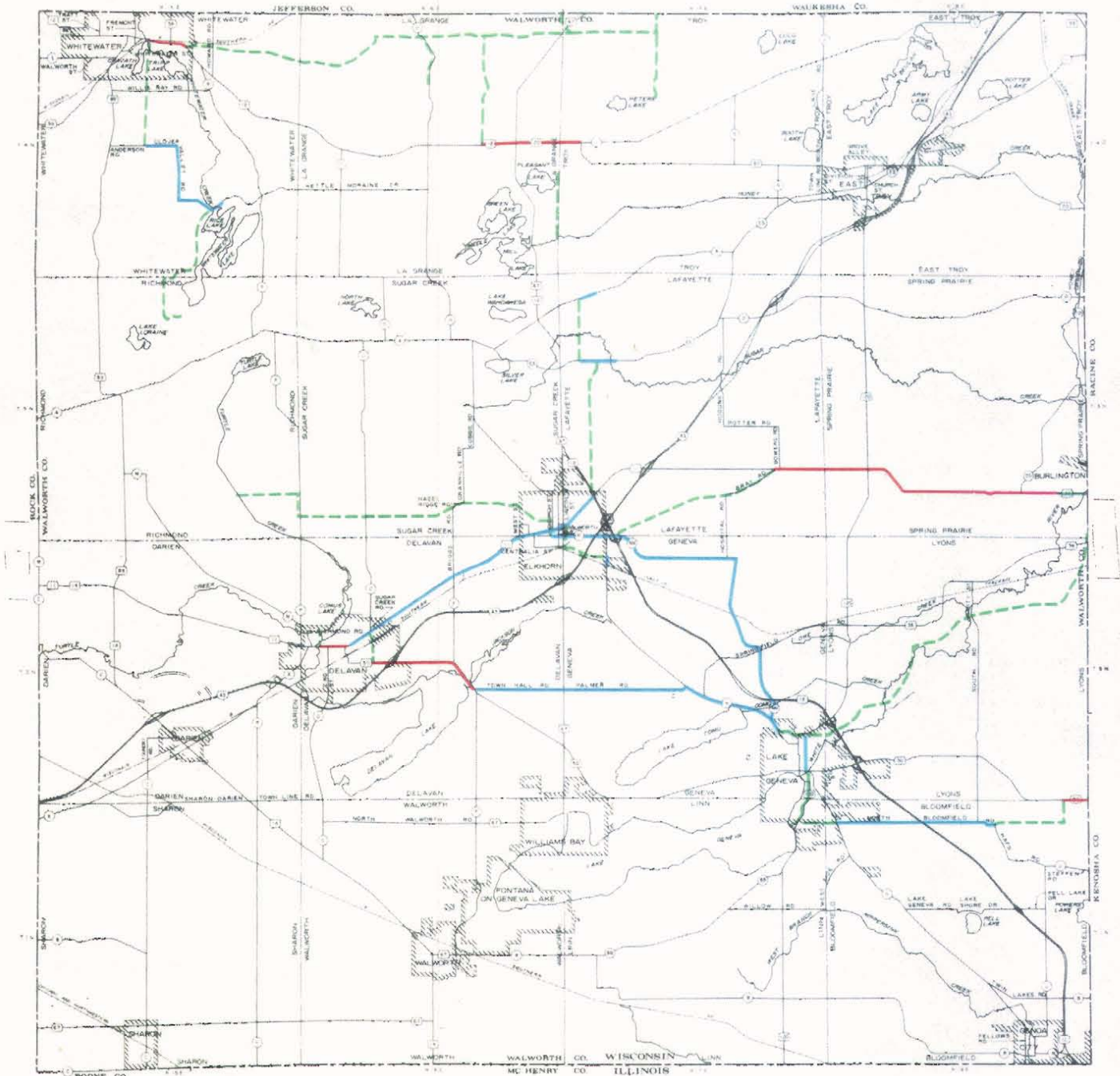
Source: SEWRPC.

LEVELS OF GOVERNMENT RECOMMENDED TO HAVE JURISDICTION OVER STREETS AND HIGHWAYS HAVING A RECOMMENDED BICYCLE WAY IN RACINE COUNTY: 2010



The recommended bicycle-way system plan recommends a total of 126 miles of existing and new on-street bicycle ways in Racine County. Of this total, eight miles, or about 6 percent, of the bicycle ways are proposed to be located on streets or highways under recommended State jurisdiction in the year 2010; 49 miles, or about 39 percent, of the bicycle ways are proposed to be located on streets or highways under recommended County jurisdiction in the year 2010; and 69 miles, or about 55 percent, of the bicycle ways are proposed to be located on streets or highways under recommended local jurisdiction by the year 2010.

LEVELS OF GOVERNMENT RECOMMENDED TO HAVE JURISDICTION OVER STREETS AND HIGHWAYS HAVING A RECOMMENDED BICYCLE WAY IN WALWORTH COUNTY: 2010



LEGEND

ARTERIAL STREETS AND HIGHWAYS

- STATE TRUNK HIGHWAY
- COUNTY TRUNK HIGHWAY
- LOCAL TRUNK HIGHWAY

NONARTERIAL STREETS

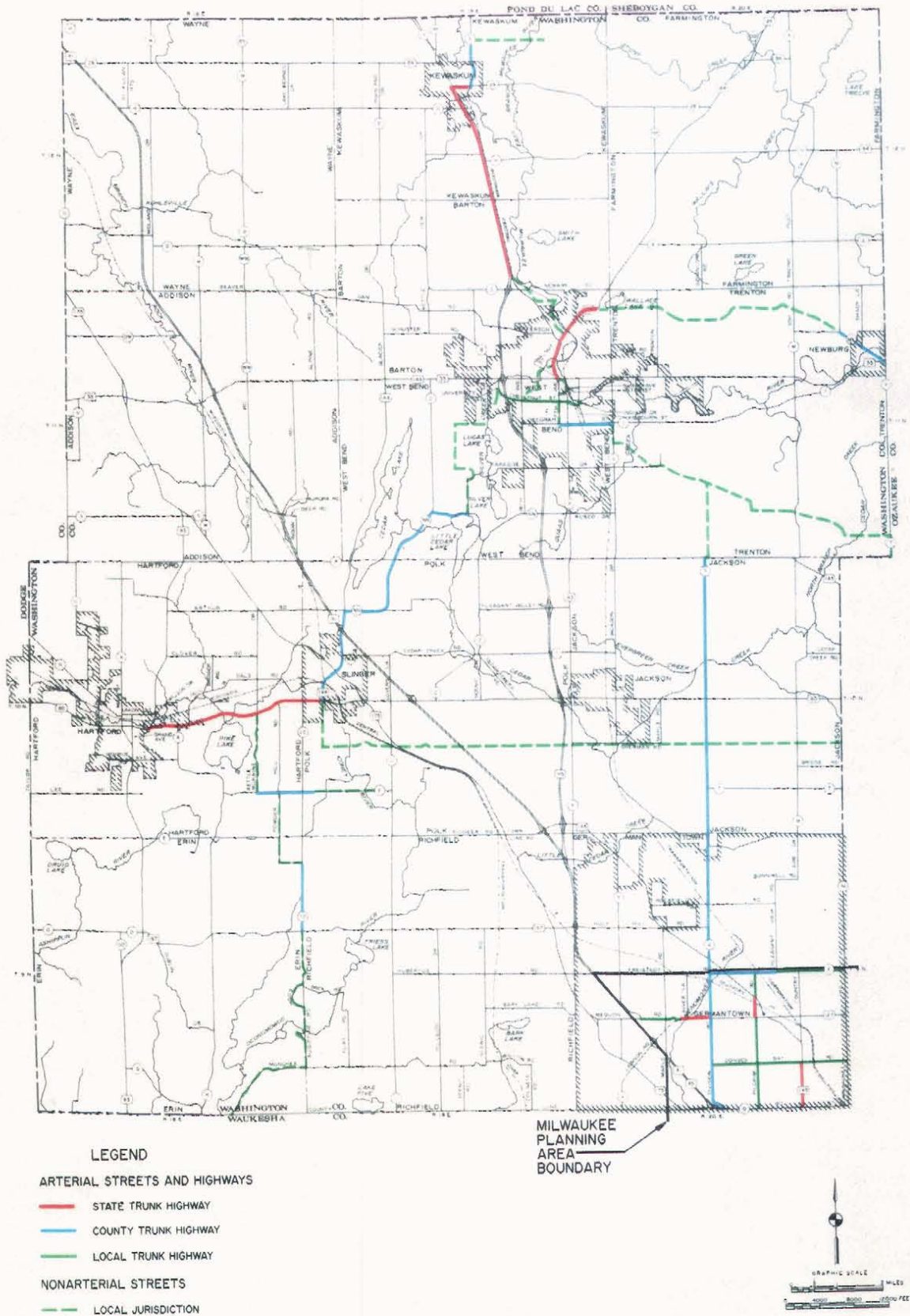
- LOCAL JURISDICTION

The recommended bicycle-way system plan recommends a total of 87 miles of existing and new on-street bicycle ways in Walworth County. Of this total, 11 miles, or about 13 percent, of the bicycle ways are proposed to be located on streets or highways under recommended State jurisdiction in the year 2010; 30 miles, or about 34 percent, of the bicycle ways are proposed to be located on streets or highways under recommended County jurisdiction in the year 2010; and 46 miles, or about 53 percent, of the bicycle ways are proposed to be located on streets or highways under recommended local jurisdiction by the year 2010.

Source: SEWRPC.

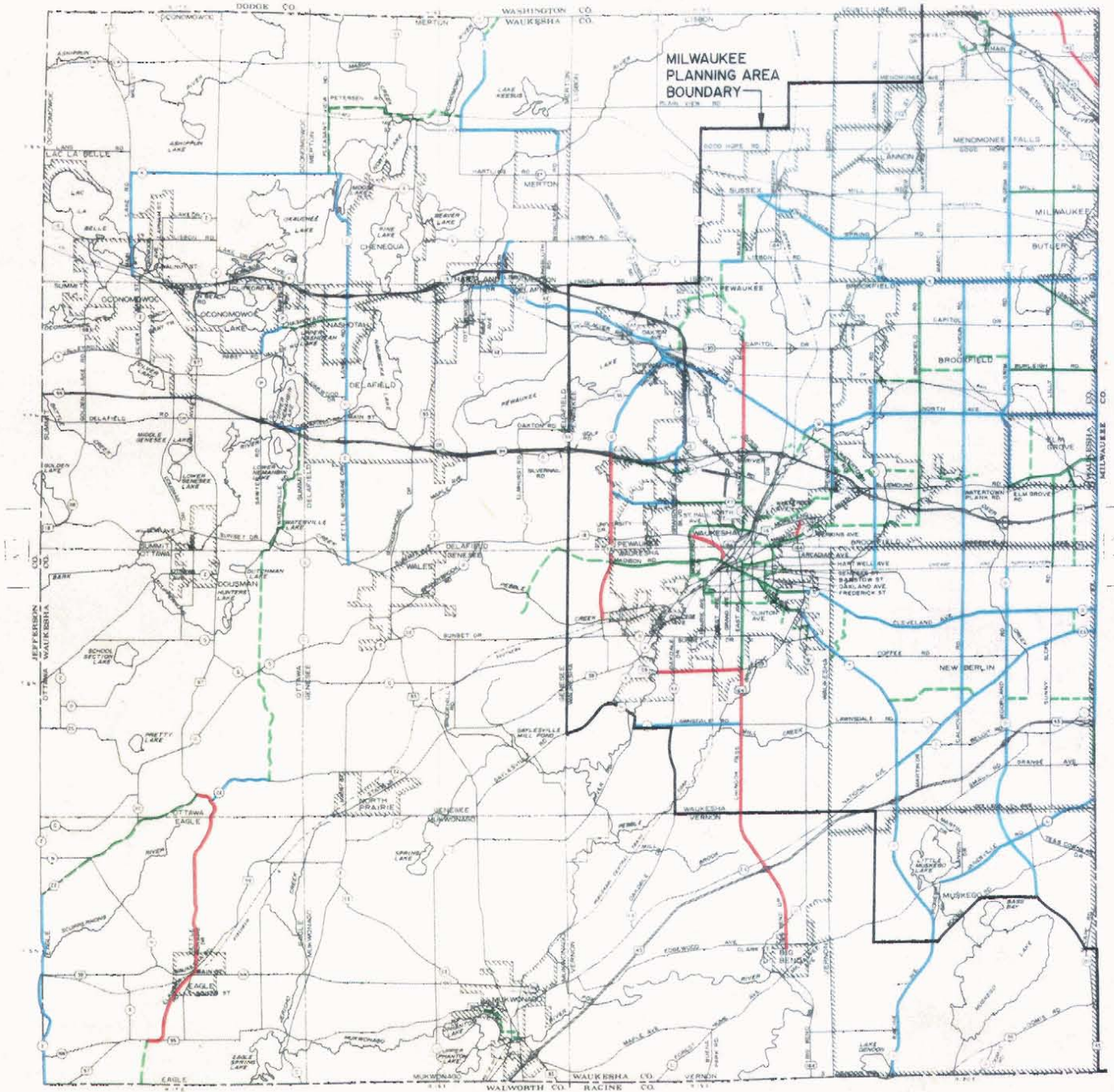


LEVELS OF GOVERNMENT RECOMMENDED TO HAVE JURISDICTION OVER STREETS AND HIGHWAYS HAVING A RECOMMENDED BICYCLE WAY IN WASHINGTON COUNTY: 2010



The recommended bicycle-way system plan recommends a total of 91 miles of existing and new on-street bicycle ways in Washington County. Of this total, 13 miles, or about 14 percent, of the bicycle ways are proposed to be located on streets or highways under recommended State jurisdiction in the year 2010; 23 miles, or about 25 percent, of the bicycle ways are proposed to be located on streets or highways under recommended County jurisdiction in the year 2010; and 55 miles, or about 61 percent, of the bicycle ways are proposed to be located on streets or highways under recommended local jurisdiction by the year 2010.

LEVELS OF GOVERNMENT RECOMMENDED TO HAVE JURISDICTION OVER STREETS AND HIGHWAYS HAVING A RECOMMENDED BICYCLE WAY IN WAUKESHA COUNTY: 2010



LEGEND

ARTERIAL STREETS AND HIGHWAYS

- STATE TRUNK HIGHWAY
- COUNTY TRUNK HIGHWAY
- LOCAL TRUNK HIGHWAY

NONARTERIAL STREETS

- LOCAL JURISDICTION



The recommended bicycle-way system plan recommends a total of 228 miles of existing and new on-street bicycle ways in Waukesha County. Of this total, 25 miles, or about 11 percent, of the bicycle ways are proposed to be located on streets or highways under recommended State jurisdiction in the year 2010; 110 miles, or about 48 percent, of the bicycle ways are proposed to be located on streets or highways under recommended County jurisdiction in the year 2010; and 93 miles, or about 41 percent, of the bicycle ways are proposed to be located on streets or highways under recommended local jurisdiction by the year 2010.

Table 23

**RECOMMENDED RESPONSIBILITY FOR TRAIL^a DEVELOPMENT IN NATURAL
RESOURCE OR UTILITY CORRIDORS IN THE SOUTHEASTERN WISCONSIN REGION
IN ACCORDANCE WITH ADOPTED COUNTY PARK AND OPEN SPACE PLANS^b**

Corridor	Responsible Agency
Kenosha County Des Plaines River ^c Fox River Lake Michigan Pike River	Kenosha County Kenosha County Kenosha County Kenosha County
Milwaukee County Lake Michigan Little Menomonee River Menomonee River Milwaukee River Oak Creek Root River	Milwaukee County Milwaukee County Milwaukee County ^d Milwaukee County Milwaukee County Milwaukee County
Ozaukee County Little Menomonee River Milwaukee River	Ozaukee County Ozaukee County
Racine County Fox River Lake Michigan Root River	Racine County Racine County Racine County
Walworth County Ice Age Mukwonago River Sugar Creek Turtle Creek	Wisconsin Department of Natural Resources and Ice Age Park and Trail Foundation, Inc. Wisconsin Department of Natural Resources Walworth County Wisconsin Department of Natural Resources
Washington County Ice Age Milwaukee River	Wisconsin Department of Natural Resources and Ice Age Park and Trail Foundation, Inc. Washington County
Waukesha County Bugline Fox River Glacial Drumlin Ice Age Lake Country Menomonee River Mill Creek Mukwonago River New Berlin Pebble Brook Tamarack	Waukesha County Waukesha County Wisconsin Department of Natural Resources Wisconsin Department of Natural Resources and Ice Age Park and Trail Foundation, Inc. Waukesha County Waukesha County Waukesha County Waukesha County Waukesha County Waukesha County Waukesha County

^aAll trails, with the exception of the Ice Age Trail, are intended to accommodate hiking and bicycling. The Ice Age Trail is not open to bicycle use.

^bThe seven county park and open space plans are respectively documented in SEWRPC Community Assistance Planning Report No. 131, *A Park and Open Space Plan for Kenosha County*, November 1987; SEWRPC Community Assistance Planning Report No. 132, *A Park and Open Space Plan for Milwaukee County*, November 1991; SEWRPC Community Assistance Planning Report No. 133, *A Park and Open Space Plan for Ozaukee County*, July 1987; SEWRPC Community Assistance Planning Report No. 134, *A Park and Open Space Plan for Racine County*, September 1988; SEWRPC Community Assistance Planning Report No. 135, *A Park and Open Space Plan for Walworth County*, February 1991; SEWRPC Community Assistance Planning Report No. 136, *A Park and Open Space Plan for Washington County*, March 1989; and SEWRPC Community Assistance Planning Report No. 137, *A Park and Open Space Plan for Waukesha County*, December 1989.

^cApplies to only that portion of the Des Plaines River corridor east of IH 94.

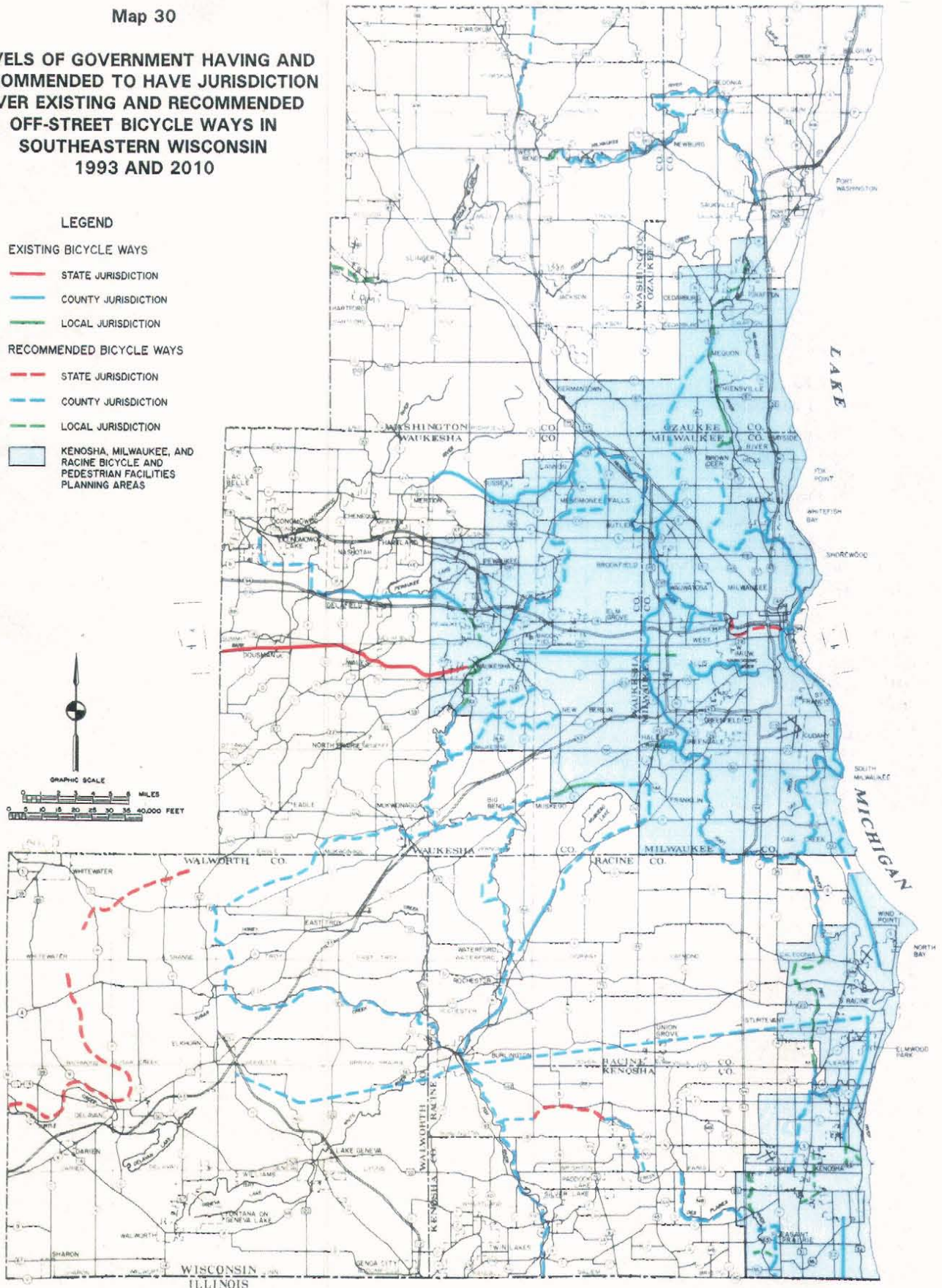
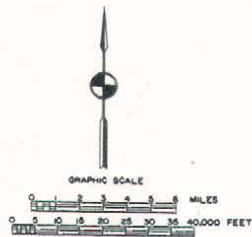
^dSubsequent to the adoption of the Milwaukee County park and open space plan, the Wisconsin Department of Natural Resources, in cooperation with the National Park Service and an Advisory Committee, conducted a study to determine the feasibility of establishing a recreation corridor and trail within the Menomonee River Valley. The draft *Menomonee Valley Greenway Feasibility Study*, prepared by the Department in July 1994, recommends that the Department assume the lead responsibility for development of an approximately five-mile-long trail within the Menomonee River Valley.

Source: SEWRPC.

Map 30

**LEVELS OF GOVERNMENT HAVING AND
RECOMMENDED TO HAVE JURISDICTION
OVER EXISTING AND RECOMMENDED
OFF-STREET BICYCLE WAYS IN
SOUTHEASTERN WISCONSIN
1993 AND 2010**

- LEGEND**
- EXISTING BICYCLE WAYS**
- STATE JURISDICTION
 - COUNTY JURISDICTION
 - LOCAL JURISDICTION
- RECOMMENDED BICYCLE WAYS**
- - - STATE JURISDICTION
 - - - COUNTY JURISDICTION
 - - - LOCAL JURISDICTION
- KENOSHA, MILWAUKEE, AND RACINE BICYCLE AND PEDESTRIAN FACILITIES PLANNING AREAS



The levels of government having and recommended to have responsibility for constructing and maintaining existing and recommended off-street bicycle and pedestrian ways in the Region are shown on this map. Bicycle and pedestrian ways recommended under the regional bicycle and pedestrian facilities system plan to be located within natural resource, utility, or other off-street corridors are consistent with those included in the adopted park and open space plans for each of the counties of the Region, with the exception of the recommended additions and deletions shown on Map 31.

in Racine County. The Kenosha County park and open space plan recommends that Kenosha County acquire primary environmental corridor lands along the Des Plaines River east of IH 94. The bicycle and pedestrian facilities system plan recommends that the County also acquire land and develop a bicycle-pedestrian path along the Des Plaines River from IH 94 west and north to CTH K, and along Brighton Creek from CTH K north and west to the Bong State Recreation Area. It is also recommended that the Wisconsin Department of Natural Resources develop the bicycle-pedestrian path through the Bong Recreation Area and westward to the Fox River corridor. The connection from the Bong Recreation Area to the Fox River corridor is included in the adopted Racine County park and open space plan.

As alluded to in Chapter VII of this report, the recently amended Pike River watershed plan recommends that Kenosha County acquire primary environmental corridor lands along the Pike River and Pike Creek in Kenosha County, and that a bicycle and pedestrian path be constructed within the parkway. That recommendation is reflected in this bicycle and pedestrian facilities system plan. The bicycle and pedestrian facilities system plan also reflects the development of a path along Hoods Creek and the Pike River in Racine County from Johnson Park to the Racine-Kenosha county line, to be constructed by the Town of Mt. Pleasant in accordance with the adopted Town park and open space plan and the amended Pike River watershed plan.

It is recommended that a bicycle and pedestrian way be developed between the Milwaukee County "76" Trail in Whitnall Park and the Waterford-Wind Lake Trail in Racine County. The proposed path would be located in the right-of-way of Forest Home Avenue from Whitnall Park south to the Wisconsin Electric Power Company right-of-way near the Milwaukee-Waukesha county line, and is then proposed to be located within the WEPCo right-of-way through the City of Muskego and Town of Norway to the Waterford-Wind Lake Trail. It is recommended that Milwaukee County assume responsibility for developing that portion of the bicycle-pedestrian way to be located within Milwaukee County; that Waukesha County be responsible for developing that portion of the facility to be located through Waukesha County; and that Racine County be responsible for

providing that portion of the bicycle-pedestrian way to be located within Racine County.

The regional bicycle and pedestrian facilities system plan also recommends that a bicycle and pedestrian way be constructed from Drexel Avenue west to the WEPCo right-of-way beginning near the Milwaukee-Waukesha county line and continuing westward in the WEPCo right-of-way through the City of Muskego and the Village of Big Bend, where the bicycle and pedestrian way would connect to a proposed bicycle and pedestrian way within the Fox River corridor. It is recommended that Waukesha County be responsible for constructing that portion of the facility to be located within Waukesha County and that Milwaukee County be responsible for constructing that portion of the facility to be located in Milwaukee County. It is also recommended that Waukesha County assume responsibility for maintaining the two-mile portion of the bicycle path that has already been developed by the City of Muskego.

The bicycle and pedestrian facilities system plan recommends the development of two additional bicycle and pedestrian ways in Walworth County. The first would connect the Mukwonago River bicycle and pedestrian way recommended in both the Walworth and Waukesha County park and open space plans to the Sugar Creek bicycle and pedestrian way recommended in the Walworth County park and open space plan. It is also recommended that the abandoned railway corridor—the former right-of-way of the Chicago, Milwaukee, St. Paul & Pacific Railroad Company—between Burlington and Elkhorn be developed as an off-street bicycle and pedestrian way. It is recommended that Walworth County assume responsibility for providing the recommended new facilities.

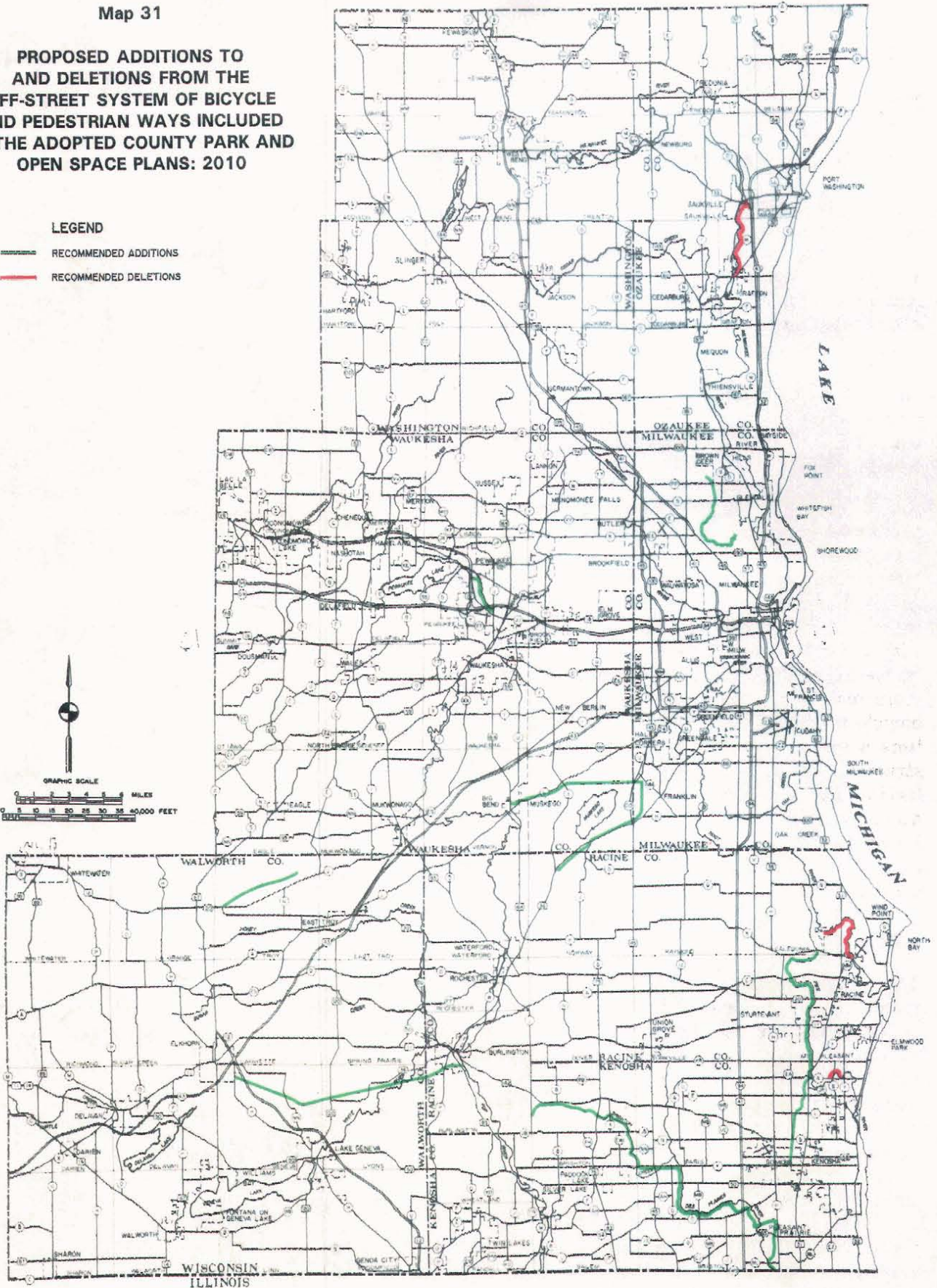
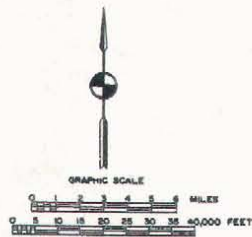
The bicycle and pedestrian plan also recommends that Waukesha County develop a bicycle and pedestrian way in the Pewaukee River Parkway between CTH J and CTH T. The plan also recommends that Milwaukee County develop a bicycle and pedestrian way adjacent to Lincoln Creek from the terminus of the existing bicycle and pedestrian way at 30th Street to 60th Street.

Bicycle Accommodation on Arterial Streets and Highways Not Designated as Bicycle Ways
Bicyclists are permitted to operate on all streets and highways in the Region except expressways

Map 31

**PROPOSED ADDITIONS TO
AND DELETIONS FROM THE
OFF-STREET SYSTEM OF BICYCLE
AND PEDESTRIAN WAYS INCLUDED
IN THE ADOPTED COUNTY PARK AND
OPEN SPACE PLANS: 2010**

LEGEND
 RECOMMENDED ADDITIONS
 RECOMMENDED DELETIONS



The regional bicycle and pedestrian facilities system plan recommends the construction of eight off-street bicycle and pedestrian ways in addition to those recommended in the adopted county park and open space plans. The regional bicycle and pedestrian facilities system plan also recommends the deletion of three segments of off-street bicycle and pedestrian ways included in the adopted county park and open space plans. It is recommended that these three segments be relocated from off-street to on-street locations.

and freeways that have been posted with signs prohibiting bicycle use. State statutes allow local governments to adopt ordinances prohibiting bicycle travel on specified streets; however, none of the local governments in the Region has adopted such an ordinance.

The existing street system provides the most extensive network of direct travel routes, and serves virtually all destinations. Many land access and collector streets, because of low traffic volumes and speeds, are capable of accommodating bicycle travel with little or no improvement. Arterial streets and highways, particularly those with high-speed traffic or heavy volumes of truck or transit-vehicle traffic, may require improvements such as extra-wide outside travel lanes or paved shoulders in order to safely accommodate bicycle travel.

Accordingly, the plan recommends that consideration be given to providing extra-wide outside travel lanes or paved shoulders along all arterial streets and highways which are not designated in the plan as bicycle ways but which are located in one of the three planning areas associated with the urbanized areas of the Region or in one of the 11 defined small urban areas of 5,000 or more residents. Improvements to accommodate bicycle travel, if feasible, would be made at the time a street or highway is constructed, reconstructed, or—in the case of arterial facilities having a rural cross-section—resurfaced. In all, approximately 1,160 miles of arterial streets and highways in the planning and small urban areas are not designated as bicycle ways under the plan.

Final Recommended

Pedestrian-Way System Plan

The pedestrian system element of the final recommended bicycle and pedestrian facilities system plan for Southeastern Wisconsin is a policy, rather than a system, plan. It recommends that the various units and agencies of government within the Region responsible for the construction and maintenance of pedestrian facilities in Southeastern Wisconsin adopt and follow certain recommended policies and guidelines with regard to the development of those facilities. These policies and guidelines are designed to facilitate safe and efficient pedestrian travel within the Region. One of the more important recommendations, set forth in Table 17 in Chapter VI of this report (see

page 72), calls for sidewalks to be provided along most arterial, collector, and land access streets in areas of urban industrial, commercial, and high-, medium-, and low-density residential development. It is recommended that the sidewalks be installed at the time that a street is constructed or reconstructed.

PLAN COSTS AND REVENUES

Bicycle-Way System

The cost of constructing the bicycle-way system recommended in this plan over the 16-year plan implementation period from 1995 to 2010, expressed in constant 1994 dollars, is estimated at \$75.4 million, including approximately \$51.9 million in construction costs for bicycle ways located on or within street rights-of-way and approximately \$23.5 million in construction costs for off-street bicycle ways. Table 24 provides a summary of the estimated cost of constructing the recommended bicycle ways within each of the seven counties in the Region.

A major portion—approximately \$71.5 million, or 95 percent—of the \$75.4 million in total capital costs for the bicycle system plan has been accounted for in other plans prepared and adopted by the Commission. The cost of providing bicycle ways on arterial streets and highways has been accounted for in the cost of the highway element of the regional transportation system plan. Most of the costs of the off-street bicycle ways recommended under this bicycle and pedestrian plan have been accounted for in the costs of the seven adopted county park and open space plans.³ The eight additional off-street

³The regional park and open space plan, adopted by the Regional Planning Commission in 1977, recommended the development of an approximately 440-mile network of multi-use trail facilities intended for hiking, bicycling, and other, primarily nonmotorized, uses. The recommendations made in the regional park and open space plan were subsequently refined through the preparation of park and open space plans by each of the seven counties in the Region. The county plans identify specific responsibilities for the acquisition and development of park and

(Footnote Continued on Page 133)

Table 24

**COST ESTIMATE^a FOR CONSTRUCTING^b THE FINAL RECOMMENDED
BICYCLE-WAY SYSTEM IN SOUTHEASTERN WISCONSIN: 1995-2010**

County	Costs for Constructing On-Street Bicycle Ways on Arterial Streets (thousands of dollars)	Costs for Constructing On-Street Bicycle Ways on Nonarterial Streets (thousands of dollars)	Costs for Constructing Off-Street Bicycle Ways (thousands of dollars)	Total (thousands of dollars)
Kenosha	6,022	12	3,936	9,970
Milwaukee	9,923	29	3,481	13,433
Ozaukee	6,364	15	1,505	7,884
Racine	2,858	9	4,716	7,583
Walworth	4,272	22	4,333	8,627
Washington	3,960	24	1,093	5,077
Waukesha	18,363	26	4,453	22,842
Total	51,762	137	23,517	75,416

^aAll figures are expressed in constant 1994 dollars.

^bIncludes construction costs and associated right-of-way acquisition costs.

Source: SEWRPC.

bicycle and pedestrian ways described earlier in this chapter are additions to those included in the adopted county park and open space plans. These eight new bicycle and pedestrian ways total an additional 70 miles, with an estimated supplemental cost of \$3.8 million. The cost of providing bicycle ways on nonarterial streets—about \$140,000—is a new expense not included in any previous planning efforts. Thus, the new construction costs associated with the new bicycle system plan total about \$3.9 million.

As previously noted, the bicycle-way system plan envisions the development of a total of approximately 1,527 miles of recommended bicycle ways

within the Region by the year 2010, including bicycle ways to be located on selected arterial streets, on selected nonarterial streets, and within selected off-street corridors. The recommended bicycle ways could include bicycle paths located off-street or in a street right-of-way but separate from the roadway; bicycle lanes signed and marked on streets and highways; and bicycle routes signed on streets and highways.

The State, county, and local units of government charged with implementing the plan will ultimately be responsible for determining an appropriate design treatment—that is, bicycle-path, bicycle-lane, or bicycle-route designation—to be provided on a specific street or highway segment upon due consideration of the recommendations in this plan. Because arterial streets and highways generally carry relatively heavy volumes of motor-vehicle traffic, as well as traffic traveling at relatively high speeds, the plan recommends that bicycle lanes be provided on streets and highways having an urban cross-section and that paved shoulders having a minimum width of four feet be provided on streets and highways having a rural cross-section. The cost estimate for the plan assumed that the recommended bicycle lanes and paved shoulders would be provided along all arterial streets and highways designated as bicycle ways under the plan; however, it is recognized that actual imple-

(Continued from Page 132)

open space sites within each county, including the acquisition of recreation corridors and the development of trails within such corridors. If fully implemented, the county plans would result in a system of recreation corridors and trails along the Lake Michigan shoreline and along each of the major rivers in the Region. Acceptance and support for the recommendations contained in the seven county plans were demonstrated by adoption by each County Board concerned of the plan for its County.

mentation costs may vary somewhat and may, in fact, be less than those estimated if less expensive design treatments than those recommended under the plan are selected by implementing agencies. For example, it may not be feasible to provide a bicycle lane on an arterial street where curb parking is permitted for part of the day but prohibited during peak travel periods, because the bicycle lane would be located between two lanes of motor-vehicle traffic during the peak period.

The cost estimate also assumed that nonarterial streets would be capable of accommodating bicycle travel without additional pavement width, owing to the relatively low volume and speed of motor-vehicle traffic on such streets. Accordingly, it was assumed that the only cost associated with designating such streets as bicycle ways would be the cost of installing bicycle-route signs.

Cost estimates were prepared by applying a unit improvement cost⁴ to the estimated mileage of proposed future facility improvements, including acquisition of right-of-way where necessary. For purposes of developing cost estimates, it was assumed that a six-foot-wide bicycle lane—an additional four feet of pavement plus the standard two-foot-wide gutter section—would be provided on streets and highways having an urban cross-section and that paved shoulders—four-foot-wide paved shoulders along county or local arterial streets and five-foot-wide shoulders along State trunk highways⁵—would be provided on streets and highways having a two-lane rural cross-section where such streets are designated as bicycle ways on the bicycle-system plan map. It was assumed that a separate bicycle-pedestrian path would be constructed in the street right-of-way along four-lane rural streets and highways designated as bicycle ways and proposed to be constructed or reconstructed for additional capacity during the planning period.

It was also assumed that bicycle ways proposed to be located on-street or within a street right-of-way would be accommodated within existing street and highway rights-of-way or, for new construction, could be accommodated within the otherwise recommended street and highway rights-of-way, with the exception of separate bicycle paths proposed to be constructed within the right-of-way of rural four-lane highways. In such cases, it was assumed that an additional

30 feet of right-of-way, for a total right-of-way width of 160 feet, would be required. It was also assumed that a 20-foot-wide right-of-way would be needed for off-street bicycle ways. No right-of-way acquisition costs were assigned, however, for bicycle paths proposed to be located within existing parks or other publicly owned lands or for bicycle paths proposed to be located within Wisconsin Electric Power Company rights-of-way.

The cost estimates reflect costs associated with the bicycle-related improvement only, such as the costs of providing additional pavement width, pavement markings, and signing. The costs of removing and reinstalling curbs and gutters as part of a street widening, for example, were assumed to be a normal part of the cost of street reconstruction, and were not calculated as part of the bicycle-related improvement cost. On

⁴The unit improvement costs used for developing bicycle-way improvement costs were \$100,000 per mile for the construction of four-foot-wide bicycle lanes or four-foot-wide paved shoulders along both sides of a street; \$50,000 per mile for the construction of a 10-foot-wide asphalt bicycle path; \$25,000 per mile for the construction of a 10-foot-wide bicycle path surfaced with limestone screenings; and \$500 per mile to establish an on-street bicycle route. It was assumed that off-street bicycle ways located within WEPCo rights-of-way would be surfaced with limestone screenings and that all other off-street bicycle ways would be surfaced with asphalt. The cost of acquiring right-of-way was assumed to be \$40,000 per acre for on-street bicycle ways and \$10,000 per acre for off-street bicycle ways.

⁵A four-foot-wide paved shoulder is recommended to be provided on streets and highways under county or local jurisdiction. The State of Wisconsin *Facilities Development Manual* calls for the State Department of Transportation to provide five-foot-wide paved shoulders for bicycle travel on streets and highways under State jurisdiction 1) having a rural cross-section and 2) where bicycle accommodation is called for by an adopted regional or local bicycle plan or where the average daily traffic volume exceeds 1,000 vehicles and the street or highway carries 25 or more bicycles per day during the peak three months of the bicycling season.

State trunk highways, a three-foot-wide paved shoulder is now provided as a matter of course; therefore, only the cost of providing an additional two feet of paved shoulder on each side of the highway was calculated as a bicycle-related improvement cost.

It is proposed that on-street bicycle ways recommended under this regional bicycle-way system plan be constructed or established at the time the street or highway is constructed, reconstructed, or—in the case of arterial facilities having a rural cross-section—resurfaced. As such, the staging of bicycle-way improvements is largely dependent upon the schedule for street and highway improvements. It is recognized, however, that there may be situations where it will be desirable to provide a bicycle improvement independent of a street improvement, particularly in situations where the amount of bicycle traffic warrants an improvement and no street improvement is scheduled for several years, or a small segment is needed to connect two existing bicycle ways.

It is recognized that it will not be possible in all cases to obtain the right-of-way needed to provide extra pavement width for bicycle accommodation. In such cases, and in the case of streets and highways which are designated as bicycle ways but are not proposed to be constructed or reconstructed during the planning period, it is recommended that the unit of government having jurisdiction consider the following options: 1) signing the street or highway as a bicycle route; 2) consideration of removing parking from one side of the street and re-striping the street to provide additional space for bicycles; or 3) consideration of signing a parallel street as a bicycle route.

Bicycle Accommodation on Arterial Streets and Highways Not Designated as Bicycle Ways

As noted above, bicyclists are permitted to operate on all streets and highways in the Region except expressways and freeways that have been posted with signs prohibiting bicycle use. The existing street system provides the most extensive network of direct travel routes, and serves virtually all destinations. Arterial streets and highways, particularly those with high-speed traffic or heavy volumes of truck or transit-vehicle traffic, may require improvements such as extra-wide outside travel lanes or paved shoulders in order to safely accommodate bicycle travel.

Accordingly, the final recommended plan recommends that consideration be given by the unit of government having jurisdiction in each applicable case to providing extra-wide outside travel lanes or paved shoulders along arterial streets and highways⁶ located in planning and small urban areas as those arterial facilities are constructed or reconstructed. It is not envisioned that such streets and highways would be signed as bicycle ways. The need for and feasibility of providing additional pavement width or paved shoulders to accommodate bicycle travel should be determined by the implementing agency during the preliminary engineering phase of street construction or reconstruction. Factors to be considered during the evaluation include the availability of any additional right-of-way needed to provide the bicycle-related improvement and the number and type of structures and vegetation—including street trees and terraces—that would need to be removed or relocated to provide the bicycle-related improvement.

It is intended that improvements to accommodate bicycle travel, where feasible, would be made at the time a street or highway is constructed, reconstructed, or—in the case of arterial facilities having a rural cross-section—resurfaced. The cost of providing the recommended bicycle accommodation on streets having an urban cross-section—an additional two feet of pavement in each outside travel lane—is estimated at \$50,000 per mile for both directions of travel. The cost of providing the recommended bicycle accommodation on streets having a rural cross-section—a four-foot-wide paved shoulder—is estimated at \$100,000 per mile for both directions of travel.

Pedestrian-Way System

Sidewalks should be provided along streets and highways in areas of existing or planned urban development based upon consideration of the functional classification of the street or highway; the type and density of adjacent land uses; and the probable pattern of pedestrian movement in accordance with the criteria set forth in Table 17 in Chapter VI of this report (see

⁶*The planned system of arterial streets and highways is identified on Map 124 (page 535) of SEWRPC Planning Report No. 41, A Regional Transportation System Plan for Southeastern Wisconsin: 2010, December 1994.*

page 72). It is recommended that the sidewalks be installed at the time a street is constructed or reconstructed. The costs developed for implementing the highway element of the regional transportation system plan include the cost of constructing sidewalks when a street is constructed or reconstructed with an urban cross-section. Urban cross-sections are generally recommended for streets and highways located in areas of urban development. The costs of providing pedestrian facilities in accordance with this plan are included in the highway element of the regional transportation system plan, and therefore are not included in this regional bicycle and pedestrian facilities system plan.

Existing Funding Programs and Revenues

Funding for the construction of bicycle and pedestrian facilities is available through local and county appropriations for transportation improvements; through the Wisconsin Department of Transportation for transportation improvements, including funds provided directly by the State and "pass-through" funds provided by the Federal government; and through the Wisconsin Department of Natural Resources for the development of off-street bicycle and pedestrian ways.

Existing Funding Programs Administered by the Wisconsin Department of Transportation for Bicycle and Pedestrian Projects: The Federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) established several programs which provide a potential source of Federal funds for projects intended to encourage or accommodate bicycle and pedestrian travel. These programs include the Surface Transportation Program, the Surface Transportation Program-Enhancement program, the National Highway System program, the Congestion Mitigation and Air Quality Improvement Program, and the National Recreational Trails program. With the exception of the National Recreational Trails program,⁷ funding for each

⁷The National Recreational Trails Fund Act, also known as the Symms Act, was intended to provide money to each State for developing and maintaining recreational trails. The Wisconsin Department of Natural Resources administers these funds in the State of Wisconsin; however, Congress appropriated funds for this program only in 1993. A local match of 50 percent was required for receipt of the funds awarded in 1993.

of these programs is available on a reimbursable 80 percent Federal-20 percent State or local cost-share basis, with funds administered by the Wisconsin Department of Transportation. The following paragraphs describe each of these remaining funding programs.

The Surface Transportation Program provides funding to State, county, and local governments to construct, reconstruct, and resurface facilities on the planned arterial street and highway system, including streets and highways under State, county, and local jurisdiction. Funds from the Surface Transportation Program may be used to provide bicycle and pedestrian improvements as part of a street construction or reconstruction project. Funds from this program may also be used to fund nonconstruction projects, such as the preparation of bicycle and pedestrian plans or bicycle-route maps.

The State of Wisconsin has used a portion of the funds it receives under the Surface Transportation Program to establish the State Surface Transportation Discretionary Program,⁸ which is intended to promote alternatives to automobile travel, particularly single-occupancy-vehicle travel. Eligible projects include facilities for bicyclists and pedestrians; transportation demand management projects; and transit capital projects.

Ten percent of the annual Federal Surface Transportation Program (STP) funds appropriated to each State must be set aside for 10 categories of

⁸The Wisconsin Department of Transportation in 1994 established the "Statewide Multi-Modal Improvement Program" using a portion of the State's ISTEA funding. Three separate programs were established by the Department under the Statewide Multi-Modal Improvement Program: the Statewide Transportation Enhancements Program; the Bicycle and Pedestrian Facilities Program; and the Surface Transportation Discretionary Program. A single form was developed by the Department to solicit applications for funding under all three programs. The Statewide Transportation Enhancements Program and the Bicycle and Pedestrian Facilities Program are funded by the Federal Surface Transportation Program-Enhancement program. The Wisconsin Surface Transportation Discretionary Program is funded by the Federal Surface Transportation Program.

projects termed "transportation enhancements." Transportation enhancements include such activities as landscaping, preservation of historic transportation buildings and structures, and bicycle and pedestrian facilities. Bicycle and pedestrian facilities funded under the enhancement program may be located along arterial or nonarterial streets, or in off-street corridors.

The State of Wisconsin allocates a portion of the Federal funds it receives for transportation enhancements to two State programs which provide funding to State agencies and to county and local governments for bicycle and pedestrian facilities: the Statewide Transportation Enhancements Program and the Bicycle and Pedestrian Facilities Program. The former program is intended to provide funding for the categories of projects identified by the Intermodal Surface Transportation Efficiency Act of 1991 as transportation enhancement activities. The latter program is intended to provide funding for bicycle and pedestrian facilities and for the preparation of local plans for such facilities. Both communitywide plans and site-specific plans for neighborhoods or activity centers are eligible for funding. Funding priority is given to local and county governments located in urban or urbanizing areas, and to applications for the development of local bicycle and pedestrian plans.

National Highway System funds may be used to construct bicycle and pedestrian ways on or adjacent to any highway on the National Highway System, with the exception of those highways on the Interstate Highway system. The bicycle and pedestrian ways must be intended principally for transportation rather than recreation purposes to be eligible for funding under the National Highway System program.

In Southeastern Wisconsin, funding for bicycle and pedestrian projects is available under the Congestion Mitigation and Air Quality Improvement Program (CMAQ), which is directed to areas of the country which fail to meet air quality standards for ozone and carbon monoxide. Projects which provide alternatives to travel by single-occupancy vehicles, including facilities for bicycle and pedestrian travel, are eligible for such funding.

A Wisconsin Transportation Demand Management grant program was created in 1991. The program is supported solely with State funds. Eligible projects include those involving trans-

portation demand management measures to be undertaken in areas of Wisconsin—such as the Southeastern Wisconsin Region—which are experiencing significant air quality or traffic congestion problems. Projects which promote alternatives to automobile travel—including travel by bicycling and walking—are eligible for funding under this program. State funds are available under the program to cover up to 80 percent of project costs. The minimum 20 percent applicant matching share may include any combination of Federal, local, or private funds.

Existing Funding Programs Administered by the Wisconsin Department of Natural Resources for Bicycle and Pedestrian Projects: Funds for the development of off-street bicycle and pedestrian ways are available from the Wisconsin Department of Natural Resources through the Aids for the Development of Local Parks Program and through the Land and Water Conservation (LAWCON) Program. The former program is funded solely by the State of Wisconsin, and the latter is a Federal program administered by the State. Both programs provide funds for the acquisition of land for recreational purposes and for the development of bicycle and pedestrian ways. Funds are provided on a reimbursable basis with a required 50 percent local match.

Proposed Funding Programs for Bicycle and Pedestrian Projects

The draft Statewide Intermodal Transportation Plan prepared by the Wisconsin Department of Transportation—also termed TRANSLINKS 21⁹—recommends that the State provide an additional \$100 million statewide over the next 25-year period for bicycle and pedestrian projects. This funding would supplement existing Federal funds for bicycle and pedestrian projects. The draft TRANSLINKS 21 report also calls for the Department to provide the bicycle improvement recommended by the applicable regional bicycle plan when constructing or reconstructing a street or highway on the State trunk highway system.

⁹*Documented in the draft report entitled Wisconsin TRANSLINKS 21 Draft Intermodal Transportation Plan, published by the Wisconsin Department of Transportation, September 1994.*

Recommendations

As previously noted, the cost of constructing the bicycle-way system recommended by this plan over the 16-year plan implementation period from 1995 to 2010, expressed in constant 1994 dollars, is estimated at \$75.4 million, including about \$51.8 million in construction costs for bicycle ways located on or within arterial street rights-of-way; about \$140,000 for establishing bicycle ways on nonarterial streets; and about \$23.5 million in construction costs for off-street bicycle ways.

The cost of providing recommended bicycle ways on nonarterial streets would primarily involve the signing of such streets as bicycle ways. The cost for such improvements has not been included in any earlier plans prepared by the Regional Planning Commission. It is recommended that the relatively small cost associated with providing bicycle ways on nonarterial streets—estimated at \$140,000—be incorporated into public works budgets by the local governments concerned. It should be noted that the costs of providing bicycle improvements along nonarterial streets which are designated as bicycle ways by this plan are eligible for Federal transportation funding. Such funding could be used to supplement or offset the cost to local governments of providing such facilities.

Of the estimated costs of providing off-street bicycle and pedestrian ways, all but approximately \$3.8 million—the cost of providing the eight new off-street bicycle and pedestrian ways described earlier in this chapter—have been included in the adopted park and open space plans for each of the seven counties in the Region. It is recommended that the additional bicycle and pedestrian ways recommended by this plan be incorporated into the appropriate county park and open space plans as those plans are updated and revised.

It is recommended that transportation enhancement funds be used to supplement funding from the Department of Natural Resources for the development of off-street bicycle and pedestrian ways which serve both transportation and recreation purposes. It should be noted, however, that bicycle and pedestrian projects will be competing with several other categories of projects which are also eligible for transportation enhancement program funding. The schedule for development of off-street bicycle and pedestrian ways will be largely dependent on the

availability of Federal and State funding to assist in their development.

The costs of providing the recommended bicycle- and pedestrian-way improvements on arterial streets and highways, which respectively constitute approximately 69 percent of the total capital cost of implementing the bicycle-way system plan and virtually all of the cost of implementing the regional component of the pedestrian-way system plan, have been accounted for in the highway element of the regional transportation system plan. It is recommended that the cost of providing bicycle and pedestrian facilities on or along arterial streets and highways be funded primarily through programs intended to be used for street and highway improvements, such as the Federal National Highway System program or Surface Transportation Program, and through the proposed supplemental funding for bicycle and pedestrian projects proposed as part of the State's TRANSLINKS 21 program. Street and highway improvements intended to accommodate bicycle and pedestrian travel should, to the extent practicable, be made at the time a street or highway is constructed, reconstructed, or, in the case of arterial facilities having a rural cross-section, resurfaced; and the bicycle- or pedestrian-related improvement should be accomplished as a component of the overall street or highway project.

The key to implementation of the bicycle and pedestrian facilities system plan will thus be obtaining sufficient funds to implement the highway element of the regional transportation system plan. Additional sources of revenue are anticipated to be available through the initiatives proposed by TRANSLINKS 21; however, a shortfall in funding the recommended improvements of the county and local arterial street and highway systems is still anticipated.¹⁰ The

¹⁰Given current and anticipated Federal, State, and local revenues available for transportation purposes, including the additional sources of revenue proposed under TRANSLINKS 21, the anticipated shortfall in funding the county and local arterial street and highway system improvements recommended under the highway element of the year 2010 regional transportation system plan is about \$28 million, in constant 1994 dollars, on an average annual basis over the 16-year plan implementation period from 1995 through 2010.

regional transportation system plan recommends that an additional source of revenue, other than the property tax, be identified to cover the anticipated funding shortfall. That plan recommends that the seven counties in the Region, in cooperation with the cities, villages, and towns and the Wisconsin Department of Transportation, collectively work through the State legislative delegation from the Region to secure enabling legislation that would permit the counties to impose either a transportation user fee, such as a motor-fuel tax, or a general sales tax, or some combination thereof, at a level sufficient in each county to raise the revenue required to fund the anticipated plan implementation shortfall.

PLAN ADOPTION

Upon adoption of the regional bicycle and pedestrian facilities system plan as an element of the new regional transportation system plan by the Southeastern Wisconsin Regional Planning Commission, in accordance with Section 66.945(10) of the Wisconsin Statutes, the Commission will transmit the adopted plan to all of the constituent county and municipal governments within the Region and to the concerned State and Federal agencies for consideration and adoption.

Endorsement, adoption, or formal acknowledgement and integration of the plan by the counties and municipalities and affected State and Federal agencies is highly desirable to assure a common understanding among the several levels of government and among the various government agencies at each level to facilitate the programming of the plan implementation projects. It is important that the Federal Highway Administration, Federal Transit Administration, and the Wisconsin Department of Transportation adopt the regional bicycle and pedestrian facilities system plan and use the plan as a guide for reviewing and funding not only proposed bicycle and pedestrian projects but also proposed street and highway projects, and to ensure that such projects are consistent with and implement the recommended plan.

It is important to understand that adoption of the recommended plan by any unit or agency of government pertains only to the statutory duties and functions of the adopting agency; such adoption does not and cannot in any way

preempt or co-opt action by another unit or agency of government within its jurisdiction.

Local- and County-Level Agencies

1. It is recommended that the seven constituent county boards of the Region formally adopt the regional bicycle and pedestrian facilities system plan as that plan affects each county, as authorized by Section 66.945(12) of the Wisconsin Statutes, after recommendation by the respective county park and planning agency and transportation committee as a guide to future bicycle and pedestrian facilities development within the county.
2. To supplement the above-recommended county actions, it is suggested that the plan commissions of cities, villages, and towns in the Region adopt the regional bicycle and pedestrian facilities system plan, as authorized by Section 66.945(12) of the Wisconsin Statutes, as a guide to physical development in their respective areas of jurisdiction. The plan should be adopted by the local plan commissions as a component of the local master plan pursuant to Section 62.23(3)(b) of the Wisconsin Statutes. While the Wisconsin Statutes do not require adoption of local master plans by the local governing body, the Regional Planning Commission recommends that city councils, village boards, and town boards adopt such local master plans as a matter of endorsing the local plan commission action.
3. It is recommended that the public transit operators for Milwaukee and Waukesha Counties and for the Cities of Kenosha, Racine, and Waukesha adopt the regional bicycle and pedestrian facilities system plan as a guide to the development of public transit facilities and services related to bicycle and pedestrian facilities.

State-Level Agencies

1. It is recommended that the Wisconsin Department of Transportation adopt the regional bicycle and pedestrian facilities system plan as it relates to and affects the planning and development functions of the Department, incorporating the plan into the State transportation plan.
2. It is recommended that the Wisconsin Natural Resources Board adopt the

regional bicycle and pedestrian facilities system plan as it relates to and affects the planning and development functions of the Department of Natural Resources.

Federal-Level Agencies

1. It is recommended that the U. S. Department of Transportation, Federal Highway Administration, formally acknowledge the regional bicycle and pedestrian facilities system plan for use in the administration and granting of Federal aids for highway-transportation-facility development within the Region.
2. It is recommended that the U. S. Department of Transportation, Federal Transit Administration, formally acknowledge the regional bicycle and pedestrian facilities system plan for use in the administration and granting of Federal aids for transit-facility development and operations within the Region.

Subsequent Adjustment of the Plan

No plan can be permanent in all its aspects or precise in all its elements. The very definition and characteristics of "regional planning" suggest that a regional plan, to be viable and useful to local, county, State, and Federal units and agencies of government, be continually adjusted through formal amendments, extensions, additions, and refinements to reflect changing conditions. The Wisconsin Legislature clearly foresaw this when it gave to regional planning commissions the power to "amend, extend or add to the master plan or carry any part or subject matter into greater detail" under Section 66.945(9) of the Wisconsin Statutes.

Amendments, extensions, and additions to the regional bicycle and pedestrian facilities system plan will be forthcoming, not only from the work of the Commission under the continuing regional land use-transportation planning program, but also from the planning and development work of local, county, State, and Federal agencies. Adjustments may be expected to come from county and local planning programs which, of necessity, should be prepared in greater detail and thereby result in refinement of the regional plan. Such adjustments and refinements will require cooperation between local, county, State, and Federal agencies, as well as coordination by the Southeastern Wisconsin Regional Planning Commission, which is empowered under Section 66.945(8) of the

Wisconsin Statutes to act as a coordinating agency for programs and activities of the local units of government as those programs and activities relate to the Commission's objectives.

To achieve this coordination between local, county, State, and Federal programs most effectively and efficiently and, therefore, assure the timely adjustment of the bicycle and pedestrian facilities system plan, it is recommended that all of the concerned local, county, State, and Federal agencies having various planning and plan implementation powers transmit all subsequent planning studies, plan proposals and amendments, and plan implementation devices affecting the provision of bicycle and pedestrian facilities to the Southeastern Wisconsin Regional Planning Commission for consideration as to integration into, and adjustment of, the adopted regional bicycle and pedestrian facilities system plan.

PLAN IMPLEMENTATION

For plan implementation purposes, the recommended regional bicycle and pedestrian facilities system plan may be subdivided into the following five major elements: 1) the conduct of additional planning studies related to bicycle and pedestrian travel; 2) the design, construction, and maintenance of bicycle and pedestrian facilities; 3) the provision of support facilities, including such facilities as bicycle parking racks and storage lockers; 4) the development and implementation of bicycle and pedestrian safety, educational, and public informational materials and programs; and 5) financial and technical assistance for bicycle and pedestrian facilities and related activities. A summary of plan implementation measures and of the roles and responsibilities of government and private entities in implementing the plan is presented in Table 25.

Additional Planning Studies Related to Bicycle and Pedestrian Travel

Local-Level Agencies: The regional bicycle and pedestrian facilities system plan addresses bicycle and pedestrian travel in relation to the transit and the arterial street and highway systems down to but not including the neighborhood units and major activity centers identified in the adopted design year 2010 land use plan for the Southeastern Wisconsin Region. It is recommended that community- and neighborhood-level development plans having a bicycle

and pedestrian transportation component be prepared by the local units of government concerned to identify and provide for bicycle and pedestrian facilities internal to neighborhoods and major activity centers and properly related to regional facilities. Such local plans should provide for facilities to accommodate bicycle and pedestrian travel within neighborhoods and major activity centers, providing for convenient travel within and between residential areas and shopping centers, schools, parks, and transit stops and stations within or adjacent to the neighborhoods or centers.

The planning process should involve all local agencies with an interest in bicycle and pedestrian travel, including planning, parks and recreation, engineering, and police departments, and should also designate a lead agency or staff member with primary responsibility for implementing the plan.

It is also recommended that local units of government consider the preparation and implementation of land use plans that encourage more compact and dense development patterns, in order to facilitate pedestrian and bicycle travel. Promotion of mixed-use development projects, where shopping and employment opportunities are located close to residences, would also serve to encourage pedestrian and bicycle travel.

Local ordinances should include a requirement for site plan review by the local plan commission of major industrial, commercial, and multi-family residential development or redevelopment projects. The review process should be used to ensure that appropriate facilities are provided for bicyclists and pedestrians. Land subdivision plats should also be reviewed by the plan commission to ensure that facilities are provided for bicycle and pedestrian travel, including, as may be appropriate, bicycle and pedestrian ways across blocks or across subdivision boundaries to provide more direct travel paths for bicyclists and pedestrians between homes, transit stops and stations, and activity centers.

It is also recommended that local units of government designate a staff member or a knowledgeable volunteer from the community to act as a bicycle and pedestrian program coordinator. Typical responsibilities of the coordinator could include program planning, policy development, facility design, accident analysis, development of safety programs, coordination among municipal departments and with other

government agencies, public relations, educational support, and development of local legislation. Local coordinators could also be expected to review and comment upon capital improvement projects, plans, and designs related to pedestrian and bicycle facilities.

County-Level Agencies: It is recommended that, where necessary, the seven counties in the Region amend their adopted park and open space plans to reflect the changes recommended in this plan. Recommended changes were described earlier in this chapter.

County zoning ordinances should include a requirement for site plan review by the county plan commission of major industrial, commercial, and multi-family residential development or redevelopment projects. The review process should be used to ensure that appropriate facilities are provided for bicyclists and pedestrians. Land subdivision plats should also be reviewed by the plan commission to ensure that facilities are provided for bicycle and pedestrian travel, including, as may be appropriate, bicycle and pedestrian ways across blocks or across subdivision boundaries to provide more direct travel paths for bicyclists and pedestrians between homes, transit stops and stations, and activity centers.

County units of government should also consider designating a staff member or knowledgeable volunteer to act as a bicycle and pedestrian program coordinator. The duties of the coordinator would be similar to those described above for local government coordinators.

State-Level Agencies: It is recommended that the Wisconsin Department of Transportation assume responsibility for coordinating activities related to bicycle and pedestrian travel among State agencies, including the Department of Transportation, the Department of Natural Resources, and the Division of Tourism Development in the Department of Development.

It is further recommended that the Wisconsin Department of Transportation promptly notify the Wisconsin Department of Natural Resources, the affected County Surveyor, affected local governments, and the Regional Planning Commission of any railway abandonments proposed within the Region. The Department should work with the aforementioned agencies to evaluate the feasibility of acquiring the railway right-of-way proposed to be abandoned for transportation or

Table 25

**SUMMARY OF RECOMMENDED IMPLEMENTATION MEASURES RELATED TO
THE YEAR 2010 BICYCLE AND PEDESTRIAN FACILITIES SYSTEM PLAN**

Recommended Implementation Measures	Federal-Level Agencies	State-Level Agencies	County-Level Agencies	Local-Level Agencies	Private Organizations
Adoption of Plan	X	X	X	X	--
Additional Planning and Coordination Activities					
1. Prepare and Adopt County and Community Land Use Plans	--	--	X	X	--
2. Prepare and Adopt Community and Neighborhood Bicycle and Pedestrian Plans	--	--	--	X	--
3. Include Recommended Off-Street Bicycle and Pedestrian Ways in County Park and Open Space Plan Updates	--	--	X	--	--
4. Integrate Consideration of Bicyclists and Pedestrians Into Subdivision and Site Plan Review Process	--	--	X	X	--
5. Assign an Agency or Individual to Coordinate Planning and Design of Bicycle and Pedestrian Facilities	--	X	X	X	--
Design, Construction, and Maintenance of Bicycle and Pedestrian Facilities					
1. Adopt American Association of State Highway and Transportation Officials (AASHTO) <u>Guide for the Development of Bicycle Facilities</u>	--	--	X	X	--
2. Incorporate Design Specifications for Bicycle and Pedestrian Facilities into Subdivision Ordinances and Design Manuals	--	--	X	X	--
3. Provide Bicycle and Pedestrian Facilities Called for in Adopted Regional, County, or Community Plans When Constructing, Reconstructing, or, in the Case of Streets and Highways Having a Rural Cross-Section, Resurfacing Streets and Highways	--	X	X	X	--
4. Establish Street Maintenance and "Spot Improvement" Programs to Maintain Streets and Bicycle and Pedestrian Facilities so that They Remain Safe for Bicyclists and Pedestrians	--	--	X	X	--
5. Establish a Program to Identify and Replace Unsafe Drainage Grates	--	X	X	X	--
6. Establish a Program to Acquire Natural Resource and Utility Corridors and Develop Associated Off-Street Bicycle and Pedestrian Ways as Recommended in Adopted Regional, County, or Community Plans	--	X	X	X	--
Provision of Support Facilities					
1. Include Requirements for Bicycle Parking in County and Community Zoning Ordinances	--	--	X	X	--
2. Provide Bicycle Parking Facilities at Transit Stations	--	X	X	X	--
3. Provide Means to Transport Bicycles on Transit Vehicles	--	--	X	X	--
4. Provide Showers and Locker Rooms for Employees Who Bicycle or Walk to Work	X	X	X	X	X
5. Provide Bicycle Parking Racks or Storage Lockers for Employees Who Bicycle to Work	X	X	X	X	X

Table 25 (continued)

Recommended Implementation Measures	Federal-Level Agencies	State-Level Agencies	County-Level Agencies	Local-Level Agencies	Private Organizations
Bicycle and Pedestrian Safety, Educational, and Public Informational Materials and Programs					
1. Develop and Distribute Maps and Other Informational Materials Regarding Bicycle Ways and Other Programs	--	X	X	X	X
2. Develop and Conduct Educational Programs, Including Programs for Motor-Vehicle Operators, Intended to Improve Safety for Bicyclists and Pedestrians	X	X	X	X	X
3. Develop and Conduct Programs to Better Enforce Traffic Laws Related to Bicycle and Pedestrian Safety	X	X	X	X	X
4. Clarify the Wisconsin Statutes and Administrative Code as They Relate to Bicyclists and Pedestrians	--	X	--	--	--
5. Include Information Regarding the Rights and Responsibilities of Motorists, Bicyclists, and Pedestrians in the State Driver-Licensing Booklet	--	X	--	--	--
6. Develop a Statewide Curriculum on Bicycle and Pedestrian Safety for All Grade Levels, and Incorporate Such Information in Driver-Education Courses	--	X	--	--	--
7. Promote Education for Adult Bicyclists	--	X	X	X	X
8. Collect and Analyze More Detailed Information Regarding Collisions Involving Bicyclists and Pedestrians	X	X	X	X	--
Financial and Technical Assistance					
1. Conduct Surveys of Bicycle and Pedestrian Travel, Including Surveys of Specific Facilities	--	X	X	X	--
2. Provide Funding for the Development of Bicycle and Pedestrian Facilities and Programs	X	X	X	X	--
3. Provide Technical Assistance and Training in the Interpretation and Implementation of Transportation-Related Legislation and Regulations	X	X	--	--	--

Source: SEWRPC.

recreation purposes, including use as off-street bicycle and pedestrian ways.

Design, Construction, and Maintenance of Bicycle and Pedestrian Facilities

Local- and County-Level Agencies: Local and county agencies of government should adopt and comply with the guidelines for bicycle-facility development set forth in the most current (1991) edition of the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities. The AASHTO guidelines should be incorporated into county and community design manuals. County and municipal street cross-

section design guidelines should include specifications for wide curb lanes, bicycle lanes, bicycle paths, and other bicycle and pedestrian facilities. County and local subdivision ordinances should include requirements for the construction of bicycle and pedestrian ways called for in the regional, county, or local bicycle and pedestrian plans.

For bicycle ways recommended to be provided within the right-of-way of a street or highway by this plan or a county- or locally adopted bicycle plan, the bicycle way should be provided at the time the street or highway is constructed or reconstructed. The level of government having

jurisdiction over a street or highway should be responsible for providing bicycle or pedestrian ways recommended within the street or highway right-of-way. It is recognized that major bicycle-related improvements, such as the addition of bicycle lanes, may not be able to be accommodated at the time a street is simply resurfaced. However, consideration should be given to restriping the street or making other improvements to better accommodate bicycle travel. The paving of highway shoulders to accommodate bicycle travel should be accomplished at the time that a street or highway is resurfaced.

A more detailed evaluation of the proposed location of bicycle ways shown on Maps 18 through 21 should be conducted by the implementing county or local agency before bicycle ways are designed and constructed. Factors to be considered during the detailed evaluation include the availability of right-of-way for street and highway widenings associated with the bicycle facility; the number and type of structures and vegetation that may need to be removed or relocated to provide the bicycle facility; the effect of the bicycle way on environmentally sensitive areas, including wetlands; the cost of providing the bicycle facility on a specific street or highway in relation to providing the bicycle improvement on a parallel street or off-street corridor; and the quality of the alternative locations and the likelihood that bicyclists would use those alternatives. The location and design treatment of the proposed bicycle facility should also be coordinated with the location and design treatment of nearby bicycle facilities.

If the detailed evaluation process indicates that the recommended bicycle-way location is not feasible due to site constraints, excessive costs, the traffic and operating characteristics of the roadway, or other factors, the implementing agency should identify an alternative location and evaluate the feasibility of providing a bicycle way on the alternative route. The evaluation of the recommended bicycle-way location, and, if necessary, the identification and evaluation of alternative locations, must be conducted during the preliminary engineering phase of project design. In order to be consistent with the regional plan, the design of improvements on streets and highways recommended as locations for bicycle ways must include the bicycle way as part of the project design, or a commitment to provide an alternative bicycle way on a parallel street or off-street corridor.

The decision regarding the appropriate design treatment—bicycle lane, bicycle route, or separate bicycle path within the street right-of-way—to be used when providing a recommended bicycle way should also be determined during the preliminary engineering phase for street and highway projects. Guidelines for selecting an appropriate design treatment, based primarily on motor-vehicle traffic volumes and speeds, have been prepared by the Federal Highway Administration¹¹ and should be used in conjunction with the standards and guidelines set forth in Chapter VI of this report.

Sidewalks should be installed along streets and highways in areas of urban development in accordance with the guidelines set forth in Table 17 in Chapter VI of this report (see page 72) whenever a street or highway is constructed or reconstructed. County and local governments should establish a program for retrofitting sidewalks along streets and highways located near transit stops, schools, parks, shopping centers, and other activity centers, as well as along other streets and highways where frequent pedestrian use has worn a path in the area adjacent to the street.

Section 66.615 of the Wisconsin Statutes authorizes any local government to establish, by ordinance or resolution, where sidewalks are to be constructed, and to assess the cost of sidewalk construction to the abutting property owner. This provision also allows local governments to require abutting property owners to maintain and repair sidewalks, or to perform necessary repair and maintenance work at the property owner's expense. Local governments should, as may be necessary or desirable, enact ordinances or establish policies calling for the construction and maintenance of sidewalks and requiring abutting property owners to pay the cost or a portion of the cost for such construction or maintenance, and to assume responsibility for performing routine maintenance tasks, such as snow and ice removal.

County and local governments should develop a routine program to maintain streets, bicycle ways, and walkways so that they remain safe for

¹¹ U. S. Department of Transportation, *Federal Highway Administration, Selecting Roadway Design Treatments to Accommodate Bicycles*, Publication No. FHWA-RD-92-073, January 1994.

bicyclists and pedestrians, including filling cracks and regular street sweeping to remove sand, gravel, and other debris from the street. Local governments should consider implementing a "spot improvement program" whereby funds and staff would be available to correct potentially hazardous conditions, such as potholes, that are reported by citizens or agency staff. Local governments should develop a program and schedule to identify and replace drainage grates that present a hazard for bicycle travel.

It is recommended that all seven counties within the Region implement the recommendations of the regional plan and of the adopted county park and open space plans as they relate to the acquisition of lands within natural resource or utility corridors and the development of trails within such corridors by each county.

State-Level Agencies: It is recommended that the Wisconsin Department of Transportation construct the bicycle ways recommended by this plan to be provided within the right-of-way of a State trunk highway or connecting street at the time the street or highway is constructed or reconstructed. It is recognized that major bicycle-related improvements, such as the addition of bicycle lanes, may not be able to be accommodated at the time a street is simply resurfaced. However, consideration should be given to re-striping the street or making other improvements to better accommodate bicycle travel. It is anticipated that paving highway shoulders to accommodate bicycle travel will be accomplished at the time a street or highway is resurfaced. The State should make proper arrangements to provide for the maintenance of bicycle facilities, including, if necessary, entering into operating or maintenance agreements with other units or agencies of government.

It is recommended that the Wisconsin Department of Natural Resources implement the recommendations of the regional plan and of the adopted county park and open space plans as they relate to the acquisition of lands within natural resource or utility corridors and the development of trails within such corridors by the Department.

Provision of Support Facilities

Local-Level Agencies: Safe, secure, and conveniently located bicycle parking facilities are essential for increasing bicycle travel. It is

recommended that local governments amend their zoning ordinances to include requirements for bicycle parking facilities. It is recommended that high-security facilities, such as bicycle storage lockers, be required in addition to standard bicycle racks, with higher-security parking to be provided at employment centers, transit stations, and other locations where all-day parking is anticipated. It is also recommended that all bicycle racks be capable of accommodating a high-security "U" lock and of supporting a bicycle by its frame rather than by its wheel. Guidelines for developing bicycle parking ordinances are set forth in a 1994 report by the League of American Bicyclists entitled How to Get a Bicycle Parking and Amenities Ordinance Passed: Ordinance Guidelines.

Local transit operators should facilitate combined bicycle and transit trips by providing bicycle parking facilities at transit stations and by making provisions for transporting bicycles on transit vehicles.

State-Level Agencies: The Wisconsin Department of Transportation should provide bicycle parking facilities at all State-operated transit stations, including park-and-ride and park-and-pool lots.

Employers: It is recommended that both public and private employers provide facilities such as showers, changing areas, and lockers for the storage of clothing, helmets, and other gear during the work day for employees who bicycle or walk to work. Such facilities could be provided on-site, or the employer could arrange with a nearby employer or health club to make the facilities available.

Facilities which would serve to encourage increased levels of commuting by bicycling and walking may lead to a decrease in the number of work trips made by single-occupant vehicles, and help the employer meet the specified goals for increased average vehicle occupancy required by the Employee Commute Option (ECO) program.

Bicycle and Pedestrian Safety, Educational, and Public Informational Materials and Programs

Local- and County-Level Agencies: Local and county governments should develop and distribute bicycle- and pedestrian-related public information, including maps of existing trails and bicycle ways and recommended routes for bicyclists. Local and county governments

should make use of the "Walk Alert" pedestrian safety program developed by the U. S. Department of Transportation.

It is recommended that local and county law enforcement agencies collect and analyze information related to collisions involving bicyclists and pedestrians and, in cooperation with traffic engineers, planners, and other affected agencies and organizations, develop programs to improve the safety of bicyclists and pedestrians. Such programs may involve engineering improvements to correct hazardous roadway conditions; enforcement actions to combat violations on the part of bicyclists, pedestrians, and motor-vehicle operators; and educational programs to inform bicyclists, pedestrians, and motor-vehicle operators of their responsibilities regarding safe use of the street and highway system.

Local and county law enforcement agencies should also identify areas where bicyclists and pedestrians are subjected to harassment and assault, and consider using police or sheriff's bicycle or foot patrols to improve security in such areas.

It is further recommended that local police departments work with local schools and civic organizations to develop and provide bicycle and pedestrian safety classes, including on-bicycle training, to school-age children. Development of procedures to address safety violations by children should be considered in areas where there are high numbers of children involved in pedestrian or bicycle collisions.

State-Level Agencies: The Wisconsin Department of Transportation should work with the State Legislature to clarify State statutes and regulations related to bicyclists and pedestrians. The Wisconsin Statutes should clearly authorize bicyclists to operate on the shoulders of streets and highways; should clearly require that bicyclists and pedestrians comply with all traffic control devices and signals; and should prohibit two-way bicycle operation on bicycle ways located on one side of a street or highway unless the bicycle way is separated from the street or highway by a barrier or open space.

It is recommended that the Wisconsin Department of Transportation develop and promote educational and enforcement programs for all street and highway users—including motor-vehicle operators—relating to the rights and

responsibilities of bicyclists and pedestrians. Such information should be disseminated through local print and broadcast media. The Department should consider the development of public service announcements emphasizing that motor-vehicle operators need to respect the rights of other users of the street and highway system. It is also recommended that the Department include information regarding the rights and responsibilities of motorists, bicyclists, and pedestrians in its driver-licensing booklet.

It is further recommended that the Wisconsin Department of Transportation, in cooperation with the Wisconsin Department of Public Instruction, develop a statewide curriculum on bicycle and pedestrian safety for all grade levels, and that driver-education courses include instruction on responsible behavior toward bicyclists and pedestrians on the part of motor-vehicle operators.

It is also recommended that the University of Wisconsin-Extension consider offering the League of American Bicyclists' "Effective Cycling" course or similar instruction for adult bicyclists. Arrangements for taking the Effective Cycling course can now be made through the Bicycle Federation of Southeastern Wisconsin.

The Wisconsin Department of Transportation should collect and maintain detailed information regarding collisions involving bicyclists and pedestrians. It may be helpful, for example, to classify such collisions into the categories identified in the Cross-Fisher study (for bicyclists) or the Snyder-Knoblauch report (for pedestrians), or in subsequent updates of these studies. More detailed information would assist State, county, and local agencies in identifying common types and causes of collisions, and in identifying appropriate educational and enforcement programs to attempt to reduce the number of such collisions.

The data on motor-vehicle collisions currently maintained by the Department are obtained from the official motor-vehicle accident report form completed by the police officer at the scene of the accident. It is recommended that the accident report form be revised so that more detailed information regarding bicycle and pedestrian collisions may be collected and analyzed.

It is also recommended that the State continue to publish and distribute maps depicting the location of existing trails, bicycle ways, and recommended routes for bicyclists.

Federal-Level Agencies: It is recommended that the National Highway Traffic Safety Administration develop a model for the collection of data related to bicycle and pedestrian collisions, including collisions that do not involve motor vehicles. Existing studies related to bicycle and pedestrian collisions should be updated and broadened to include nonmotor-vehicle collisions; and common types of collisions should be identified and potential countermeasures developed and tested.

It is also recommended that the U. S. Department of Transportation develop a bicycle-safety program for use by local governments, similar to the "Walk Alert" pedestrian-safety program.

Financial and Technical Assistance

State-Level Agencies: It is recommended that the Wisconsin Department of Transportation conduct, or provide funding for county and local agencies or metropolitan planning organizations to conduct, surveys of bicycle and pedestrian travel, including bicycle and pedestrian traffic counts of specific streets and exclusive bicycle and pedestrian facilities. Such information will assist local, county, and regional agencies in planning for appropriate bicycle and pedestrian facilities.

The Wisconsin Department of Transportation should use the regional bicycle and pedestrian facilities system plan as a guide in the administration and granting of Federal aids for transportation-system development within the Region.

Federal-Level Agencies: It is recommended that the U. S. Department of Transportation and Environmental Protection Agency provide technical assistance and training to Federal, State, metropolitan planning organization, county, and local agency staff in the interpretation and implementation of Federal transportation and transportation-related legislation and regulations, including the requirements of the Intermodal Surface Transportation Efficiency Act of 1991 and the Clean Air Act Amendments of 1990, as well as funding programs available for

the construction of bicycle and pedestrian facilities and the development of programs for bicycle and pedestrian travel.

The Federal Highway Administration and the Federal Transit Administration should use the regional bicycle and pedestrian facilities system plan as a guide in the administration and granting of Federal aids for transportation system development within the Region.

SUMMARY

The regional year 2010 bicycle and pedestrian facilities system plan recommended for adoption is described in this chapter. This chapter also describes changes made to the preliminary recommended plan in response to the comments made during the public review period; identifies the costs associated with implementing the plan and revenues which may be anticipated to become available for implementing the plan; and describes actions recommended to be taken by public agencies and the private sector in order to implement the plan.

Bicycle System Plan

The bicycle-way system plan envisions the development of a total of approximately 1,527 miles of bicycle ways within the Region by the year 2010. This recommended system would entail the development of approximately 1,269 miles of new bicycle ways in addition to the approximately 258 miles of bicycle ways existing in the Region at the end of 1993. The total recommended system of bicycle ways includes bicycle ways to be located on or within the right-of-way of about 733 miles of arterial streets and highways; bicycle ways to be located on about 313 miles of nonarterial streets; and about 481 miles of bicycle ways in off-street corridors.

For bicycle ways recommended by this plan to be provided within the right-of-way of a street or highway, the unit of government responsible for constructing and maintaining each street or highway in question should usually also have responsibility for constructing and maintaining the associated bicycle way, or for entering into operating or maintenance agreements with other units or agencies of government to perform maintenance activities. Off-street bicycle ways should be developed by the agency of government identified in the applicable county park and open space plan or in this regional plan as the responsible agency.

The cost of constructing the bicycle-way system recommended by this plan over the 16-year plan implementation period from 1995 to 2010, expressed in constant 1994 dollars, is estimated to be \$75.4 million, including approximately \$51.9 million in estimated construction costs for bicycle ways located on or within street rights-of-way and approximately \$23.5 million in estimated construction costs for off-street bicycle ways.

A major portion—approximately \$71.5 million, or 95 percent—of the approximately \$75.4 million in total capital costs for the bicycle system plan has been included in other plans prepared and adopted by the Commission. The cost of providing bicycle ways on arterial streets and highways has been included in the cost of the highway element of the regional transportation system plan. Most of the cost of the off-street bicycle ways recommended by this bicycle and pedestrian plan has been included in the costs of the seven adopted county park and open space plans. The eight additional off-street bicycle and pedestrian ways described earlier in this chapter are additions to those included in the adopted county park and open space plans. These eight new bicycle and pedestrian ways constitute an additional 70 miles, with an estimated additional cost of \$3.8 million, to those previously included in the park and open space plans. The cost of providing bicycle ways on nonarterial streets is a new expense not included in any previous planning efforts. It is recommended that the relatively small cost associated with providing bicycle ways on nonarterial streets—estimated at \$140,000—be incorporated into public works budgets by the local governments concerned.

Bicycle Accommodation on Arterial Streets and Highways Not Designated as Bicycle Ways

In addition to the recommended bicycle-way system, this plan also recommends that consideration be given by the unit of government having jurisdiction to providing extra-wide outside travel lanes or paved shoulders to better accommodate bicycle travel on arterial streets and highways located in the planning areas associated with one of the three urbanized areas and in the defined small urban areas as those arterial facilities are constructed or reconstructed. It is not envisioned that such streets and highways would be signed as bicycle ways. The need for and feasibility of providing additional pavement width or paved shoulders on

arterial facilities should be determined by the implementing agency during the preliminary engineering phase of street construction or reconstruction.

Pedestrian-Way System

The pedestrian system element of the recommended bicycle and pedestrian facilities system plan for Southeastern Wisconsin is a policy, rather than a system, plan. In other words, the plan recommends that the various units and agencies of government within the Region responsible for the construction and maintenance of pedestrian facilities adopt and follow certain recommended policies and guidelines with regard to the development of those facilities. One of the more important policies calls for sidewalks to be provided along arterial streets in areas of urban development. The cost estimates developed for implementing the highway element of the regional transportation system plan include the cost of constructing sidewalks in accordance with the recommendations of this bicycle and pedestrian plan.

Recommendations for Funding Financial Shortfall Attendant to Full Plan Implementation

The costs of providing the recommended bicycle- and pedestrian-way improvements on arterial streets and highways, which respectively constitute approximately 69 percent of the total capital cost of implementing the bicycle-way system plan and virtually all of the cost of implementing the regional component of the pedestrian-way system plan, have been included in the highway element of the regional transportation system plan. The key to implementing the bicycle and pedestrian facilities system plan will thus be obtaining sufficient funds to implement the highway element of the regional transportation system plan. Additional sources of revenue are anticipated to be available through the initiatives proposed by TRANSLINKS 21; however, a shortfall in funding the recommended improvements of the county and local arterial street and highway systems is still anticipated. The regional transportation system plan recommends that an additional source of revenue, other than the property tax, be identified to cover the anticipated funding shortfall. That plan recommends that the seven counties in the Region, in cooperation with the cities, villages, and towns and the Wisconsin Department of Transportation, collectively work through the State legislative delegation from the Region to

secure enabling legislation that would permit the counties to impose either a transportation user fee, such as a motor-fuel tax, or a general sales tax, or some combination thereof, at a level sufficient in each county to raise the revenue required to fund the anticipated plan implementation shortfall.

Plan Adoption and Implementation

The recommended bicycle and pedestrian facilities system plan is intended to promote improvements that will facilitate bicycle and pedestrian travel within the Region. Toward that end, a number of implementation actions have been recommended which are intended to encourage the provision of improved facilities for bicycling and walking, including support facilities such as bicycle parking racks and storage lockers; to encourage land use planning and site design techniques which would better accommodate bicycling and walking trips; and to encourage the development and implementation of bicycle and pedestrian safety, education, and public informational materials and programs.

An important first step in plan implementation is the formal adoption of the plan by the Regional Planning Commission and by affected Federal, State, county, and local agencies and units of government. Adoption of the plan by the various governmental agencies will help to

assure a common understanding of the recommended improvements and facilitate the programming of the plan implementation projects.

The plan recommends that local units of government prepare community bicycle and pedestrian plans to supplement the regional plan. The local plans should provide for facilities to accommodate bicycle and pedestrian travel within neighborhoods, providing for convenient travel between residential areas and shopping centers, schools, parks, and transit stops within or adjacent to the neighborhood. The standards, guidelines, and system plans set forth in the regional plan should be used as the basis for the preparation of community and neighborhood plans. It is also recommended that local units of government consider the preparation and implementation of land use plans that encourage more compact and dense development patterns in order to facilitate pedestrian and bicycle travel.

It is also recommended that local, county, and State agencies work to develop and carry out educational programs for all street and highway users—including motor-vehicle operators—relating to the rights and responsibilities of bicyclists and pedestrians. Where necessary, such programs should be supplemented with enforcement programs designed to improve the safety of bicyclists and pedestrians.

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Chapter IX

SUMMARY

INTRODUCTION

This report documents the design year 2010 bicycle and pedestrian facilities system plan for Southeastern Wisconsin. It is the first such plan to be prepared by the Commission. The bicycle and pedestrian facilities system plan is designed to comprise the bicycle and pedestrian elements of the design year 2010 regional transportation system plan and to address the requirements of the Federal Clean Air Act Amendments of 1990 and the Federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). The Clean Air Act Amendments and ISTEA both emphasize the importance of providing alternatives to single-occupancy-vehicle travel. ISTEA specifically requires that long-range transportation system plans be prepared and adopted for metropolitan areas, and that such plans include provisions for the development of bicycle and pedestrian transportation facilities.

The Regional Planning Commission, since 1960, has, through its continuing areawide transportation planning program, sought to help the local units and agencies of government within and the citizens of the Region meet current and anticipated future transportation needs. In keeping with this mission, the bicycle and pedestrian facilities system plan is intended to encourage the use of the bicycle and pedestrian modes of travel as alternatives to motor-vehicle travel.

Over the years, the Commission has prepared a number of plans which recommend the provision of facilities for bicycle and pedestrian travel, including the park and open space plans for the Region and for each of the seven counties of the Region, and a number of neighborhood plans and park plans prepared for local governments. This current planning effort, however, marks the first time that bicycle and pedestrian travel for primarily nonrecreational purposes has been addressed on a comprehensive basis as part of the regional transportation system plan.

PUBLIC PARTICIPATION

The recommended plan was prepared under the guidance of a Technical and Citizen Advisory Committee on Regional Bicycle and Pedestrian

Facilities System Planning established by the Regional Planning Commission. The Advisory Committee, a full roster of which appears on the inside front cover of this report, consists of representatives of governmental agencies dealing with transportation planning and engineering, public safety, and recreation, as well as representatives of environmental groups and of bicycle and pedestrian advocacy groups. The recommended plan has been prepared in accord with the objectives, principles, and standards approved by the Advisory Committee and documented in Chapter VI of this report.

The preliminary recommended regional bicycle and pedestrian facilities system plan was presented at a Regional Planning Conference held on June 27, 1994, and at a series of three public informational meetings and public hearings held in each of the three urbanized areas of the Region during the autumn of 1994. The Conference and public hearings were attended by a total of 497 persons; and 27 written comments were received for the record as part of the plan review process. In addition to the Conference and public hearings, the July-August 1994 issue of the Commission Newsletter (Vol. 34, No. 4) was devoted to a summary of the preliminary recommended bicycle and pedestrian plan. This Newsletter issue was widely distributed to local and county units of government, State and Federal agencies, and private individuals.

The public reaction to the preliminary recommended plan as expressed at the public hearings, including the written comments received by the Commission at and following the Conference and the hearings, is summarized in the previous chapter of this report. The Advisory Committee response to the public reaction is also documented in that chapter, as is the final recommended bicycle and pedestrian facilities system plan approved by the Advisory Committee.

BASIC CONCEPTS

Bicycle riding and walking can serve both as modes of transportation and as forms of recreation. Recreational bicycle and walking trips are taken for the primary purpose of enjoying the trip or to improve physical fitness. Bicycle and

pedestrian trips for transportation purposes include trips made for work, school, shopping, personal business, and social events.

Transportation-oriented bicycle and walking trips tend to follow more regular and predictable patterns than do recreational trips, with origins and destinations similar to those of trips taken by motorized vehicles. As such, the existing street system often provides the most direct and desirable travel routes for nonrecreational bicycle and pedestrian travel. The proposed bicycle and pedestrian plan therefore seeks to provide safe facilities for bicyclists and pedestrians as integral parts of the street and highway system, with consideration given to locating bicycle and pedestrian ways in off-street corridors where suitable alternatives to on-street locations exist.

The term "bicycle way" has been defined for regional planning purposes as a pathway or portion of a roadway that is specifically designated for exclusive or preferential bicycle travel. The term includes bicycle paths, bicycle lanes, and bicycle routes. Bicycle paths are physically separated from motorized vehicular traffic by open space or barriers, and may be located off-street in natural resource corridors, utility corridors, or abandoned railway corridors; or they may be located within a street right-of-way but separated from motor-vehicle traffic by a planting strip. Bicycle lanes are portions of roadways that are designated by striping, signing, and pavement markings for bicycle use. A "bicycle route" is a bicycle way designated with directional and informational markers, and is often located along a roadway and shared with motor-vehicle traffic.

RECOMMENDED BICYCLE-WAY SYSTEM PLAN FOR SOUTHEASTERN WISCONSIN

The regional bicycle-way system plan is intended to assist public officials in considering improvements to better accommodate bicycle travel as part of the existing and planned regional transportation system. The plan seeks to remove existing impediments to bicycle travel related to the lack of bicycle paths, the lack of safe bicycle accommodation on streets and highways, and the lack of support facilities such as bicycle parking racks and storage lockers. The plan recommends that improvements such as extra-wide outside travel lanes or paved

shoulders be considered whenever an arterial street or highway in an area of existing or planned urban development is constructed or reconstructed to better accommodate shared roadway use by bicycles and motor vehicles. The plan also recommends the provision of a network of bicycle paths, bicycle lanes, and bicycle routes in accordance with a bicycle-way system plan designed to provide convenient bicycle access to transit stations and to major activity centers identified in the adopted regional land use plan.

The plan includes a proposed regional bicycle-way system designed to provide connections between delineated planning areas associated with the three urbanized areas of the Southeastern Wisconsin Region—the Kenosha, Milwaukee, and Racine urbanized areas; between small urban areas of the Region—cities and villages with a population of 5,000 or more and located outside a planning area; and between transit stations and major activity centers. Existing bicycle ways and bicycle ways proposed under adopted park and open space plans, which are primarily off-street ways located in natural resource and utility corridors, served as the basis for the design of the proposed regional bicycle-way system. Supplemental on-street bicycle ways are recommended where necessary to provide direct connections to small urban areas or activity centers not served by off-street bicycle facilities.

In addition to a regional network of bicycle ways, the recommended plan envisions a network of bicycle ways for each of the Region's three bicycle and pedestrian facilities planning areas to serve major activity centers and transit stations within those areas. The recommended network of bicycle ways for these three areas is more dense than the recommended regional network of bicycle ways because of the greater concentrations of population, activity centers, and potential bicycle travel within the planning areas.

The Recommended Regional Bicycle-Way System

The bicycle-way system plan envisions the development of a total of approximately 1,527 miles of recommended bicycle ways within the Region by the year 2010. The total recommended system of bicycle ways includes bicycle ways to be located on or within the right-of-way of about 733 miles of arterial streets and highways;

bicycle ways to be located on about 313 miles of nonarterial streets; and about 481 miles of bicycle ways in off-street corridors.

To the extent possible, recommendations regarding routes for on-street bicycle ways were based upon routes set forth on the Wisconsin Bicycle Map, prepared by the Wisconsin Division of Tourism in cooperation with the Wisconsin Department of Transportation and the Federal Highway Administration. The map identifies streets and highways recommended for bicycle travel based on an evaluation of roadway traffic and safety conditions, as well as highway segments which either warrant above-average caution or are deemed unsuitable for bicycle travel. Certain highway segments shown on the Wisconsin Bicycle Map as unsuitable for bicycle travel are proposed as bicycle ways under the recommended regional bicycle-way plan because such highways provide the most direct and continuous connections between urban areas and activity centers. These highway segments will require improvements, such as the addition of wider paved shoulders, to make them more suitable for bicycle travel.

Map 18 in Chapter VIII (see page 113) shows the final recommended regional bicycle-way system for Southeastern Wisconsin outside the Kenosha, Milwaukee, and Racine planning areas, but including major routes through those areas.

The Recommended Bicycle-Way Systems for the Kenosha, Milwaukee, and Racine Planning Areas

The recommended plan also includes a proposed system of bicycle ways for each of the planning areas associated with the three urbanized areas of Southeastern Wisconsin. For bicycle and pedestrian facilities planning purposes, the Kenosha, Milwaukee, and Racine urbanized areas were modified to include those areas contiguous to the urbanized areas and proposed to be developed for urban use by the year 2010 under the adopted regional land use plan, and to exclude areas which are developed for very-low-density residential uses and which are located more than five miles from any major activity center.

As appropriate, existing and planned bicycle ways identified in adopted community bicycle facilities plans were incorporated into the recommended plans for the Kenosha, Milwaukee, and

Racine planning areas. The identification of community-level bicycle facilities designed to serve neighborhoods or neighborhood facilities, however, was considered to be outside of the scope of the regional planning effort, and was therefore not included in the bicycle-way system plans for the three planning areas.

Kenosha Area: The final recommended bicycle-way system plan for the Kenosha planning area is shown on Map 19 in Chapter VIII (see page 114). The recommended plan proposes a total of about 113 miles of bicycle ways within that area. Of this total, about 31 miles, or about 27 percent, are proposed to be located off-street in natural resource or utility corridors, and about 82 miles, or about 73 percent, are proposed to be located on-street or on a separate bicycle path within a street right-of-way. Of the recommended 82 miles of on-street bicycle ways, about eight miles, or about 10 percent, have been developed, while about 10 miles, or about 32 percent, of the recommended 31 miles of off-street bicycle ways have been developed.

The plan provides for bicycle access to the major activity centers located within the Kenosha planning area, including Petrifying Springs and Pleasant Prairie Parks, the Kenosha Transit Center, the major retail center located at the intersection of IH 94 and STH 50, LakeView Corporate Park, the University of Wisconsin-Parkside, Gateway Technical College-Kenosha, and the office, retail, governmental, institutional, and industrial development located within or adjacent to the Kenosha central business district.

Milwaukee Area: The final recommended bicycle-way system plan for the Milwaukee planning area is shown on Map 20 in Chapter VIII (see page 115). The recommended plan proposes a total of about 727 miles of bicycle ways within that area. Of this total, about 179 miles, or about 25 percent, are proposed as off-street bicycle ways to be located in natural resource or utility corridors. The remaining 548 miles, or about 75 percent, are proposed to be located on-street or on a separate bicycle path within a street right-of-way. About 84 miles, or about 47 percent, of the recommended 179 miles of off-street bicycle ways have been developed. About 57 miles, or about 10 percent, of the recommended 548 miles of bicycle ways associated with street rights-of-way have been developed.

The plan for the Milwaukee planning area generally proposes a network of bicycle ways spaced no more than two miles apart. Denser networks are envisioned in areas of concentrated development, such as the Milwaukee central business district, and where needed to provide access to major activity centers or transit stations. The plan also incorporates the recommendations for bicycle facilities development contained in the adopted park and open space plans for Milwaukee, Ozaukee, Racine, Washington, and Waukesha Counties and in the bicycle plans adopted by the Cities of Brookfield and Milwaukee.

Racine Area: The final recommended bicycle-way system plan for the Racine planning area is shown on Map 21 in Chapter VIII (see page 116). The recommended plan proposes a total of about 87 miles of bicycle ways within that area. Of this total, about 25 miles, or about 29 percent, are proposed to be located off-street in natural resource or utility corridors, and about 62 miles, or about 71 percent, are proposed to be located on-street or on a separate bicycle path within a street right-of-way. Of the recommended 62 miles of on-street bicycle ways, about three miles, or about 5 percent, have been developed, while about nine miles, or about 36 percent, of the recommended 25 miles of off-street bicycle ways have been developed.

The recommended plan provides for bicycle access to the major activity centers located within the Racine planning area, including Cliffside and Johnson Parks, the Regency Mall, the Sturtevant Amtrak railway passenger train station, the Mt. Pleasant industrial center, and the office, retail, governmental, institutional, and industrial development located within or adjacent to the Racine central business district.

Bicycle Accommodation on Arterial Streets and Highways Not Designated as Bicycle Ways

Bicyclists are permitted to operate on all streets and highways in the Region except expressways and freeways that have been posted with signs prohibiting bicycle use. The existing street system provides the most extensive network of direct travel routes, and serves virtually all destinations. Many land access and collector streets, because of low traffic volumes and speeds, are capable of accommodating bicycle travel with little or no improvement. Arterial streets and highways, particularly those with high-speed traffic or heavy volumes of truck or

transit-vehicle traffic, may require improvements such as extra-wide outside travel lanes or paved shoulders in order to safely accommodate bicycle travel.

Accordingly, the plan recommends that consideration be given to providing extra-wide outside travel lanes or paved shoulders along all arterial streets and highways which are not designated in the plan as bicycle ways but which are located in one of the three bicycle and pedestrian planning areas of the Region or in one of its 11 designated "small urban areas"—incorporated areas of 5,000 or more residents located outside a planning area. Improvements to accommodate bicycle travel, if feasible, would be made at the time a street or highway is constructed, reconstructed, or—in the case of arterial facilities having a rural cross-section—resurfaced. In all, approximately 1,160 miles of arterial streets and highways in the delineated planning and small urban areas are not designated as bicycle ways by the plan.

RECOMMENDED PEDESTRIAN FACILITIES PLAN FOR SOUTHEASTERN WISCONSIN

The pedestrian facilities element of the recommended bicycle and pedestrian facilities system plan for Southeastern Wisconsin is a policy, rather than a system, plan. In other words, it recommends that the various units and agencies of government within the Region responsible for the construction and maintenance of pedestrian facilities in Southeastern Wisconsin adopt and follow certain recommended policies and guidelines with regard to the development of those facilities. These policies and guidelines are designed to facilitate safe and efficient pedestrian travel within the Region.

The policies and guidelines set forth in the plan include the following recommendations:

- That sidewalks be provided along streets and highways in areas of existing or planned urban development based upon consideration of the functional classification of the street or highway; the type and density of adjacent land uses; and the probable pattern of pedestrian movement in accordance with the criteria set forth in Table 17 in Chapter VI of this report (see page 72). Specifically, it is recommended that sidewalks be provided to connect

medium- and high-density residential areas with public transit stations and major activity centers located within one mile of such residential areas. State law allows local governments to require that the cost of constructing and maintaining sidewalks be assessed to abutting property owners. Local governments may also require abutting property owners to assume responsibility for performing routine maintenance tasks such as snow and ice removal.

- That all pedestrian facilities be designed and constructed in accordance with the requirements of the Federal Americans with Disabilities Act and its implementing regulations.
- That sidewalks be designed and constructed using widths and clearances appropriate for the levels of pedestrian and vehicular traffic in any given area, including the provision of terraces, curb lawns, or other buffer areas, between sidewalks and the roadways paralleling them.
- That trees and other landscaping be provided in street rights-of-way to enhance the pedestrian environment. In commercial areas, benches, trash receptacles, drinking fountains, and other pedestrian amenities should be provided adjacent to sidewalks.
- That efforts be made to maximize pedestrian safety at street crossings, including the timing of the "walk" phases of traffic signals to provide for safe pedestrian crossings; the provision of control devices, such as push buttons, by which pedestrians can activate "walk" signals; the provision of pedestrian "islands" and medians in wide, heavily traveled, or otherwise hazardous roadways; and the provision of roadway markings designed to maximize pedestrian safety.

COMMUNITY AND NEIGHBORHOOD PLANS

The regional bicycle and pedestrian facilities system plan addresses bicycle and pedestrian travel in relation to the transit system and the arterial street and highway system down to, but not including, the neighborhood units and major activity centers identified in the adopted regional land use plan.

The provision of neighborhood-level bicycle and pedestrian facilities is more properly addressed by the local units of government concerned through the preparation of community bicycle and pedestrian plans designed to supplement the regional plan, and through the preparation of neighborhood unit development plans with a bicycle and pedestrian facilities element. Such local plans should provide for facilities to accommodate bicycle and pedestrian travel within and between neighborhoods, providing for convenient travel between residential areas and shopping centers, schools, parks, and transit stops within or adjacent to the neighborhood. The standards, guidelines, and system plans set forth in the regional plan should be used as the basis for the preparation of the community and neighborhood plans.

OTHER PLAN RECOMMENDATIONS

The above description of the bicycle and pedestrian facilities system plan has focused on the provision of bicycle ways, sidewalks, and other facilities as a means of encouraging increased bicycle and pedestrian travel. While such facilities are important, the pattern of land use and the design of land subdivisions and other land development projects also have a significant effect on bicycle and pedestrian travel. Travel distance may be expected to be a major consideration for nonrecreational bicycle and pedestrian trips because of the physical effort and the travel time associated with relatively long trips. The potential for bicycle and pedestrian travel is limited by dispersed, low-density land use development patterns which needlessly increase the distance between origins and destinations. Compact land use development patterns serve to increase the potential for bicycle and pedestrian travel, in addition to many other benefits, such as preservation of agricultural land and reduced cost of providing transit and other urban services.

The plan recommends that activity and employment centers, neighborhood units, and public transit facilities and routes be designed to accommodate and encourage bicycle and pedestrian access and circulation. For example, typical routes in residential neighborhoods often require a bicyclist or pedestrian to travel a circuitous route to reach a desired destination. Bicycle and pedestrian access through residential blocks and across subdivision boundaries can provide more direct connections between

homes and activity centers, and may encourage people to bicycle or walk rather than drive.

The recommended plan also urges consideration, where appropriate, of "traffic-calming" measures on nonarterial streets to facilitate safe bicycle and pedestrian travel, as well as safer motor-vehicle travel. Such traffic-calming measures include the use of traffic diverters, widened sidewalks at intersections, reduced speed limits, narrowed traffic lanes, limitation of vehicle turning movements, and limitations of through motor-vehicle traffic movements.

The importance of providing safe and convenient pedestrian access to transit facilities is also recognized. The bicycle and pedestrian facilities system plan recommends that greater efforts be made to provide bicycle access to transit as well, including efforts to provide bicycle parking and storage facilities at transit stations and the means to conveniently transport bicycles on transit vehicles.

PLAN COSTS AND REVENUES

The cost of constructing the bicycle-way system recommended by this plan over the 16-year plan implementation period from 1995 to 2010, expressed in constant 1994 dollars, is estimated at \$75.4 million, including nearly \$51.9 million in construction costs for bicycle ways located on or within street rights-of-way and about \$23.5 million in construction costs for off-street bicycle ways.

A major portion—approximately \$71.5 million, or 95 percent—of the approximately \$75.4 million in total capital costs for the bicycle-way system plan has been accounted for in other plans prepared by the Commission. The cost of providing bicycle ways on arterial streets and highways has been accounted for in the cost of the highway element of the regional transportation system plan. Most of the costs of constructing the off-street bicycle ways¹ recommended by this bicycle and pedestrian plan have been accounted for in the costs of the seven adopted

county park and open space plans, with the exception of the eight new off-street bicycle and pedestrian ways described in the previous chapter of this report. These eight new bicycle and pedestrian ways total an additional 70 miles, with an estimated supplemental cost of \$3.8 million. The cost of providing bicycle ways on nonarterial streets—about \$140,000—is a new expense not included in any previous Commission plans. Thus, the new construction costs associated with the new bicycle-way system plan total about \$3.9 million.

It is recommended that the new off-street bicycle and pedestrian ways included in this plan be incorporated into the appropriate county park and open space plans as those plans are updated and revised. It is also recommended that the relatively small cost associated with providing bicycle ways on nonarterial streets—estimated at \$140,000 over the life of the plan—be incorporated into public works budgets by the local governments concerned. The off-street bicycle ways and bicycle ways located on nonarterial streets included as part of this regional bicycle-way system plan are eligible to receive Federal transportation funds for their construction.

The costs of providing the recommended bicycle- and pedestrian-way improvements on arterial streets and highways, which respectively constitute approximately 69 percent of the total capital cost of implementing the bicycle-way system plan and virtually all of the cost of implementing the regional component of the pedestrian-way system plan, have been accounted for in the highway element of the regional transportation system plan. The key to implementing the bicycle and pedestrian facilities system plan will thus be obtaining sufficient funds to implement the highway element of the regional transportation system plan. Additional sources of revenue will be available through the initiatives proposed by the draft Statewide Intermodal Transportation Plan—also known as TRANSLINKS 21²—prepared by the Wisconsin Department of Transportation. However, a shortfall in funding the recommended improvements of the county and

¹All of the off-street bicycle ways recommended under this bicycle and pedestrian plan are also proposed to be open to pedestrian use.

²Documented in the draft report entitled *Wisconsin TRANSLINKS 21 Draft Intermodal Transportation Plan*, published by the Wisconsin Department of Transportation, September 1994.

local arterial street and highway systems is anticipated. The regional transportation system plan recommends that an additional source of revenue, other than the property tax, be identified to cover the anticipated funding shortfall. That plan recommends that the seven counties in the Region, in cooperation with the cities, villages, and towns and the Wisconsin Department of Transportation, collectively work through the State legislative delegation from the Region to secure enabling legislation that would permit the counties to impose either a transportation user fee, such as a motor-fuel tax, or a general sales tax, or some combination thereof, at a level sufficient in each county to raise the revenue required to fund the anticipated plan implementation shortfall.

PLAN REFINEMENT, ADOPTION, AND IMPLEMENTATION

The recommended bicycle and pedestrian facilities system plan for Southeastern Wisconsin is

intended to provide the various units and agencies of government in the Region with a framework for encouraging increased bicycle and pedestrian travel as viable alternatives to single-occupancy-vehicle travel in the Region, thus helping the Region meet Federal and State transportation and air quality objectives.

But the plan is not complete until it is refined, adopted, and implemented. An important first step in plan implementation is the formal adoption of the plan by the Regional Planning Commission and by affected Federal, State, county, and local agencies and units of government. Upon adoption of a final version of the plan by the Commission, the plan will become an official guide to the making of decisions by the various units and agencies of government in the Region with regard to bicycle and pedestrian facilities as a key aspect of a balanced, multi-modal transportation system for Southeastern Wisconsin.

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APPENDICES

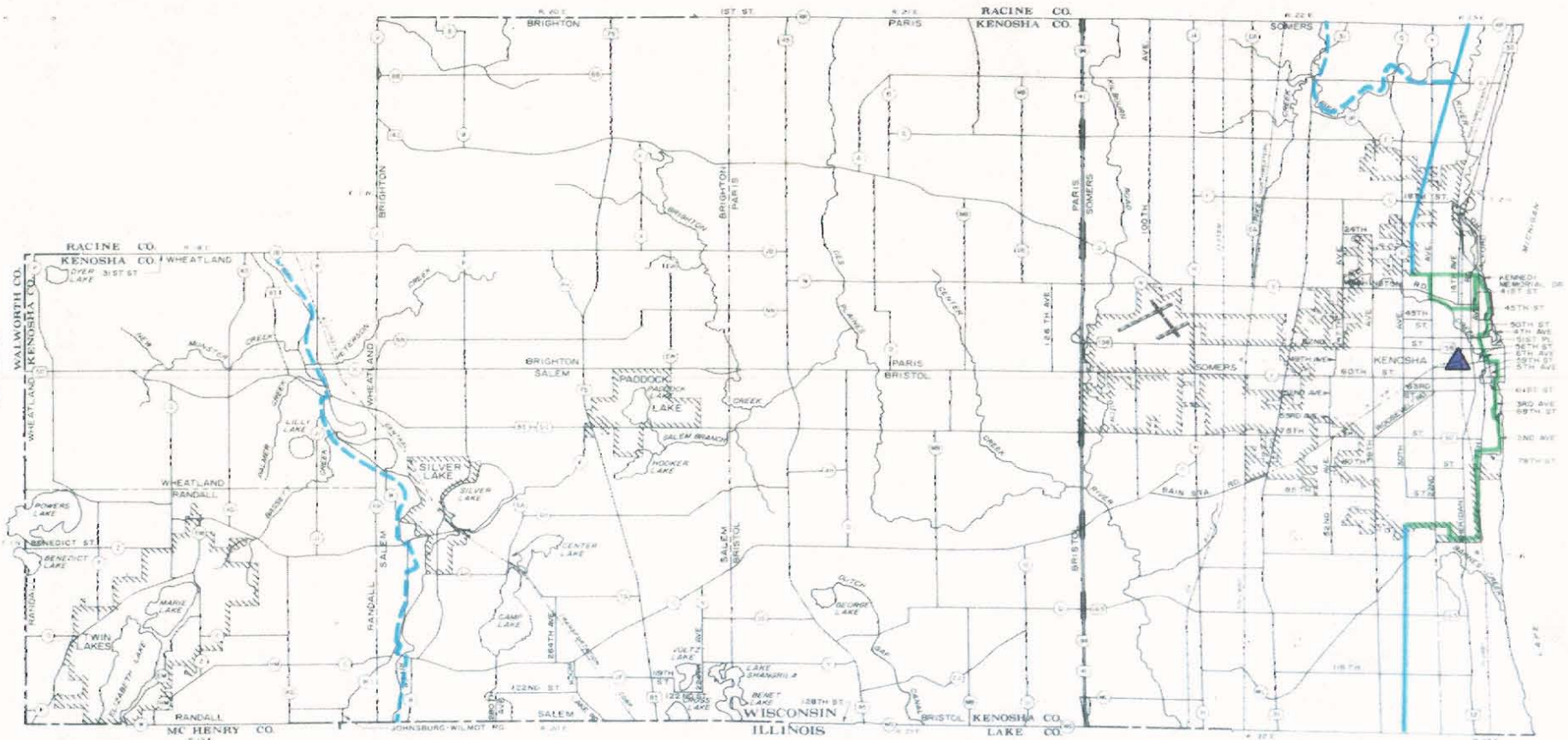
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Appendix A

EXISTING AND PLANNED BICYCLE WAYS IN THE REGION BY COUNTY PRIOR TO PREPARATION OF THE REGIONAL BICYCLE AND PEDESTRIAN FACILITIES SYSTEM PLAN: 1993

Map A-1

EXISTING AND PLANNED BICYCLE WAYS IN KENOSHA COUNTY: 1993



LEGEND

COUNTY BICYCLE WAYS

- EXISTING
- - - PLANNED

LOCAL BICYCLE WAYS

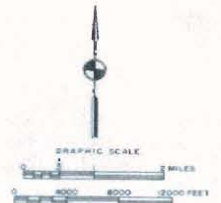
- EXISTING
- - - PLANNED

TRANSIT STATIONS

- ▲ EXISTING

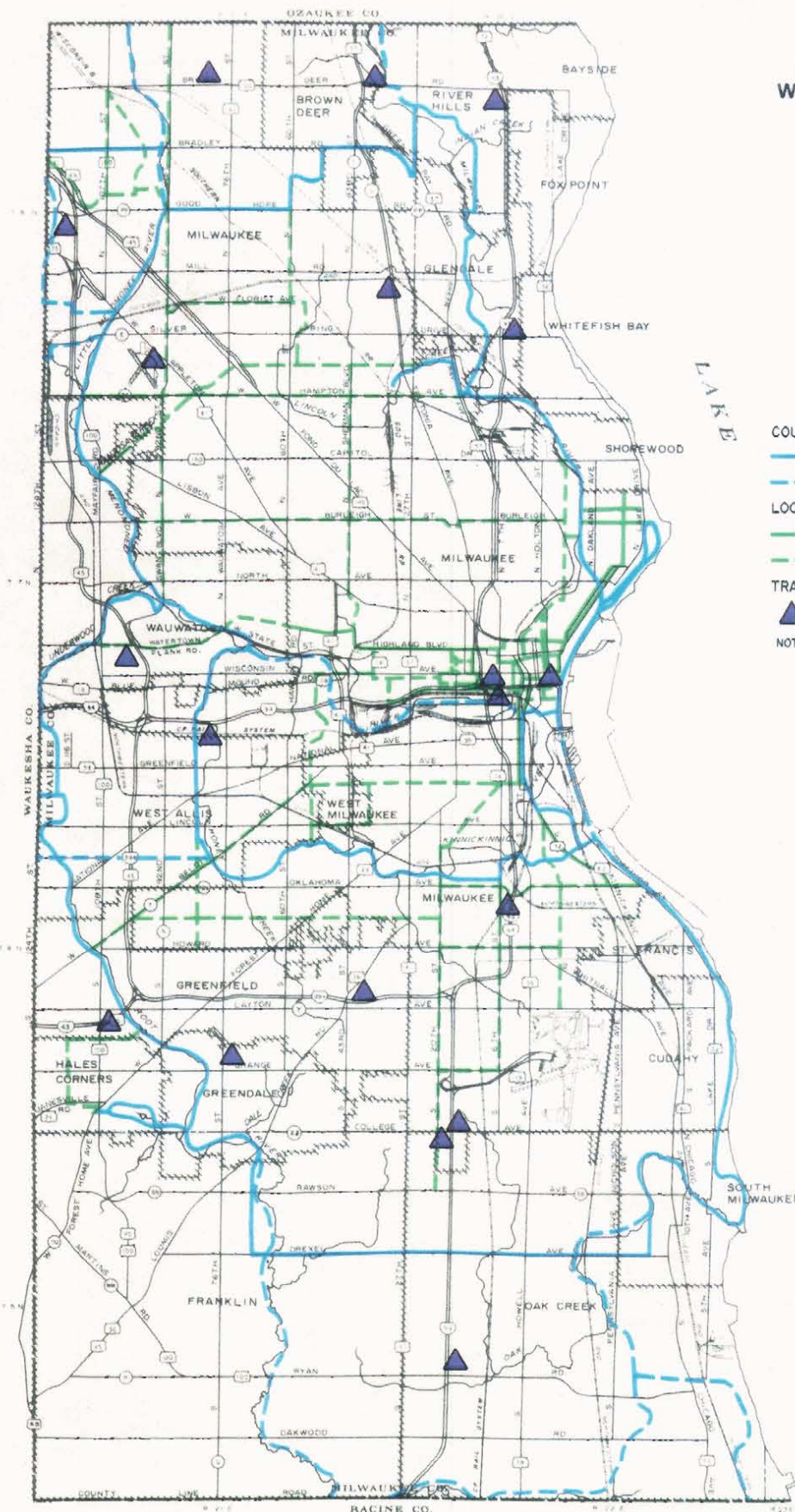
NOTE: THERE ARE NO EXISTING OR PLANNED STATE BICYCLE WAYS IN KENOSHA COUNTY

BICYCLE WAYS SHOWN AS PLANNED ON THIS MAP WERE PROPOSED PRIOR TO THE COMPLETION OF THE REGIONAL BICYCLE-WAY SYSTEM PLAN DOCUMENTED IN THIS REPORT. SOME OF THE PLANNED ROUTES WERE MODIFIED THROUGH THIS PLANNING EFFORT. PLEASE CONSULT MAPS 18 AND 19 IN CHAPTER 8 OF THIS REPORT (SEE PAGES 113 AND 114) FOR UPDATED INFORMATION REGARDING EXISTING AND PLANNED BICYCLE WAYS.



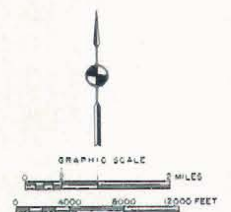
Map A-2

EXISTING AND PLANNED BICYCLE WAYS IN MILWAUKEE COUNTY: 1993



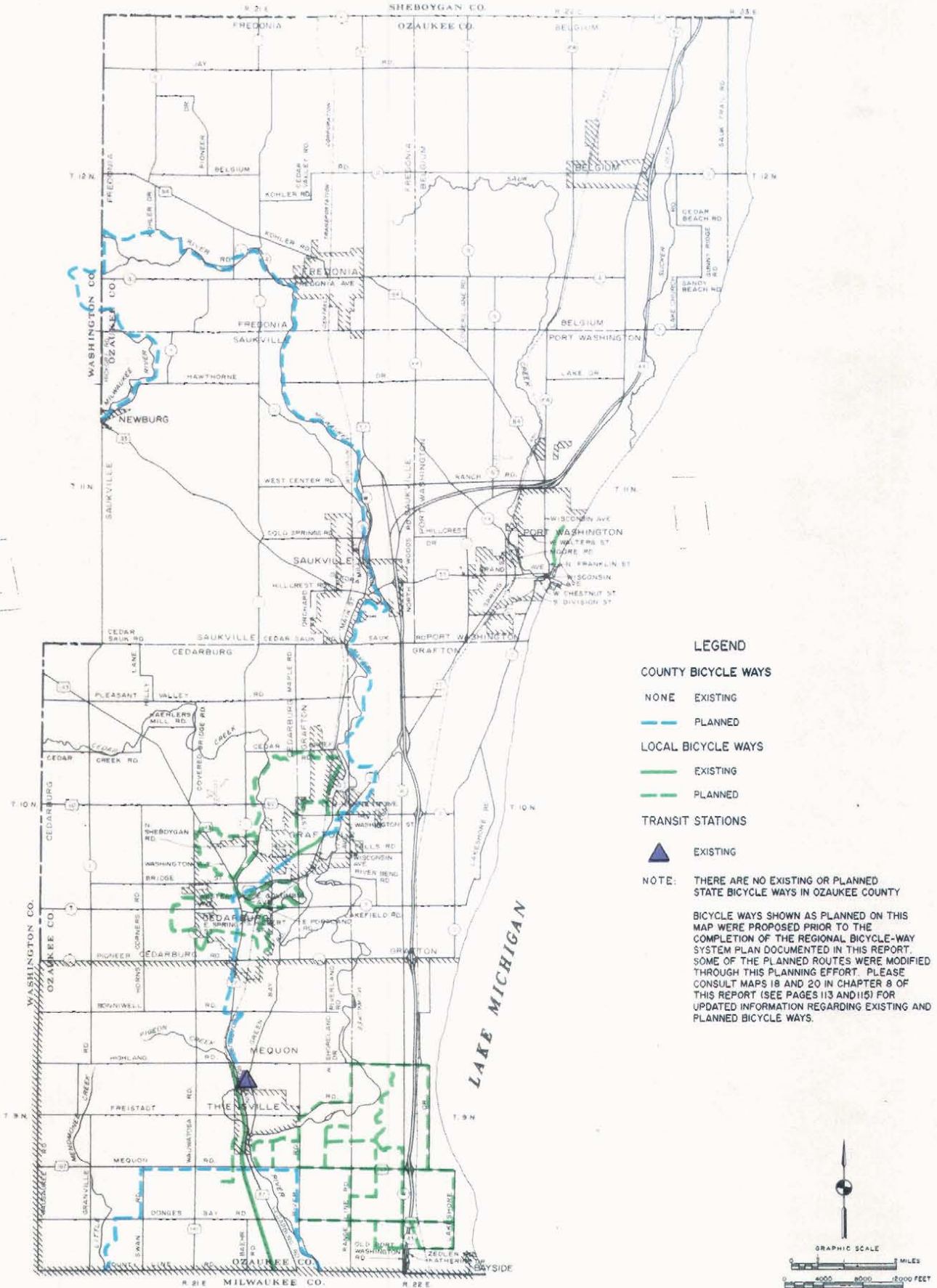
- LEGEND**
- COUNTY BICYCLE WAYS
 - EXISTING
 - PLANNED
 - LOCAL BICYCLE WAYS
 - EXISTING
 - PLANNED
 - TRANSIT STATIONS
 - EXISTING
- NOTE: THERE ARE NO EXISTING OR PLANNED STATE BICYCLE WAYS IN MILWAUKEE COUNTY

BICYCLE WAYS SHOWN AS PLANNED ON THIS MAP WERE PROPOSED PRIOR TO THE COMPLETION OF THE REGIONAL BICYCLE-WAY SYSTEM PLAN DOCUMENTED IN THIS REPORT. SOME OF THE PLANNED ROUTES WERE MODIFIED THROUGH THIS PLANNING EFFORT. PLEASE CONSULT MAPS 18 AND 20 IN CHAPTER 8 OF THIS REPORT (SEE PAGES 113 AND 115) FOR UPDATED INFORMATION REGARDING EXISTING AND PLANNED BICYCLE WAYS.



Map A-3

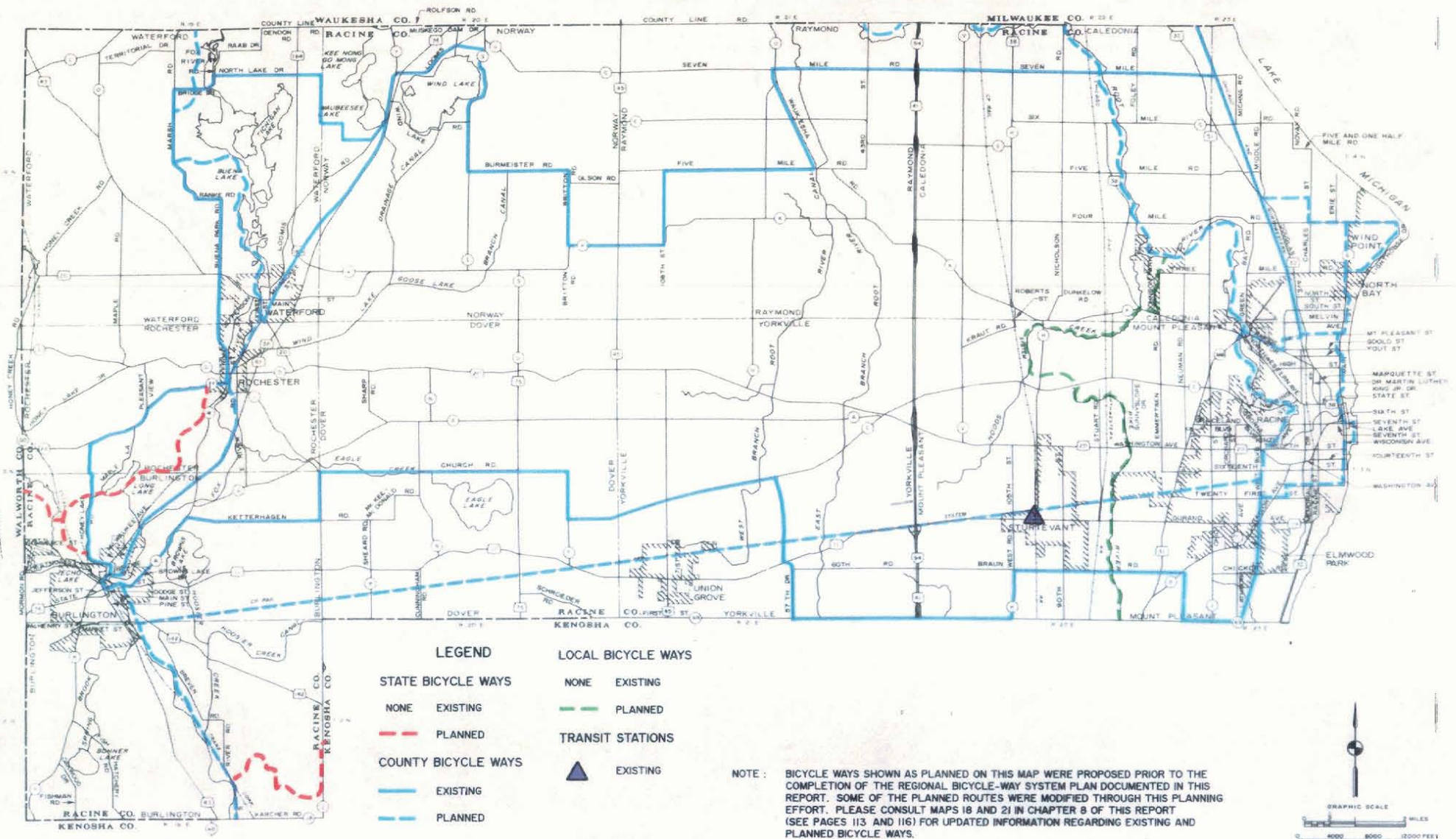
EXISTING AND PLANNED BICYCLE WAYS IN OZAUKEE COUNTY: 1993



Source: SEWRPC.

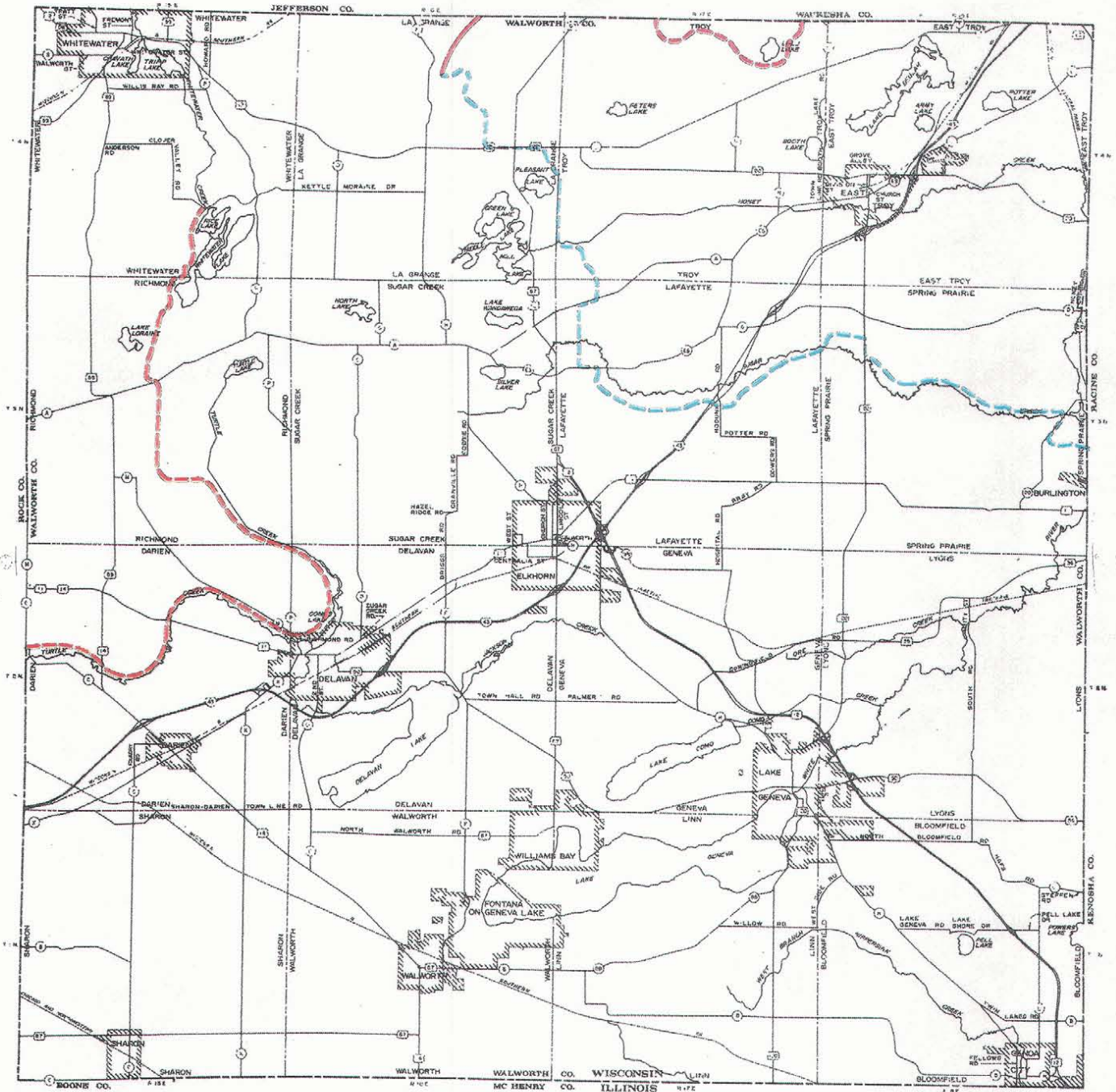
Map A-4

EXISTING AND PLANNED BICYCLE WAYS IN RACINE COUNTY: 1993



Map A-5

EXISTING AND PLANNED BICYCLE WAYS IN WALWORTH COUNTY: 1993



LEGEND

STATE BICYCLE WAYS

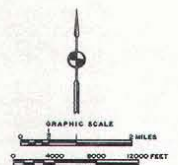
- EXISTING
- PLANNED

COUNTY BICYCLE WAYS

- NONE
- EXISTING
- PLANNED

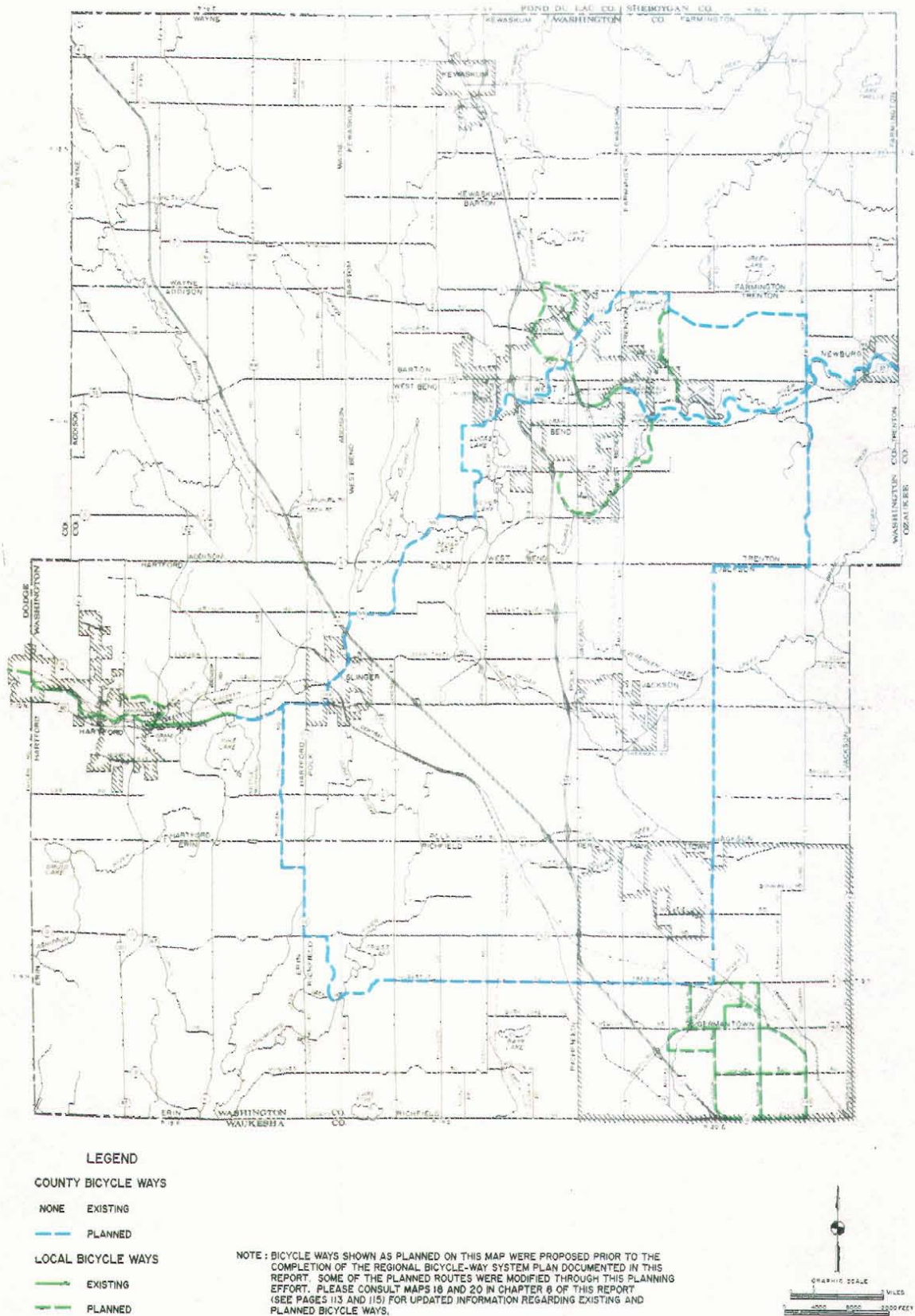
Source: SEWRPC.

NOTE: BICYCLE WAYS SHOWN AS PLANNED ON THIS MAP WERE PROPOSED PRIOR TO THE COMPLETION OF THE REGIONAL BICYCLE-WAY SYSTEM PLAN DOCUMENTED IN THIS REPORT. SOME OF THE PLANNED ROUTES WERE MODIFIED THROUGH THIS PLANNING EFFORT. PLEASE CONSULT MAP 18 IN CHAPTER 8 OF THIS REPORT (SEE PAGE 113) FOR UPDATED INFORMATION REGARDING EXISTING AND PLANNED BICYCLE WAYS.



Map A-6

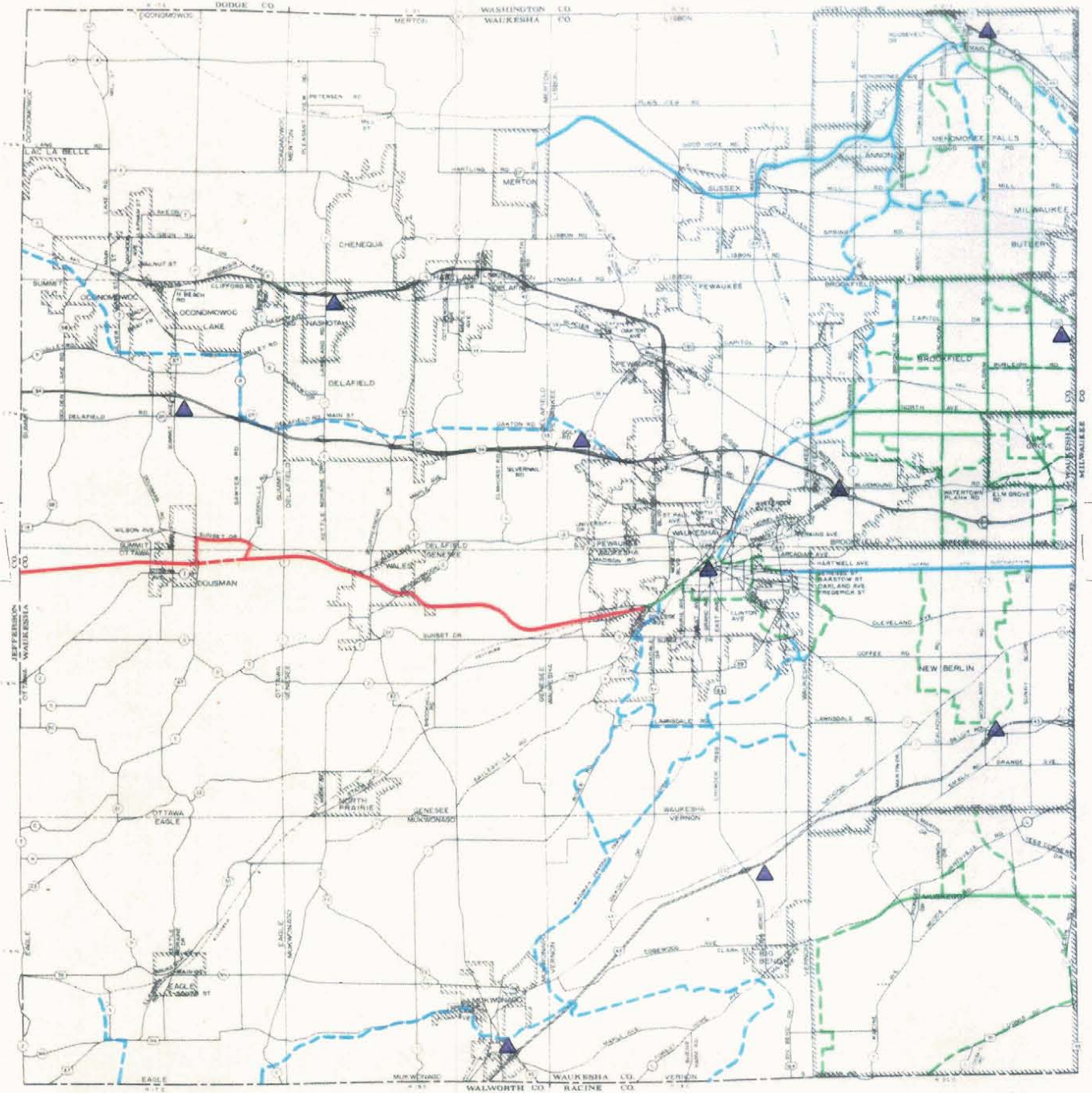
EXISTING AND PLANNED BICYCLE WAYS IN WASHINGTON COUNTY: 1993



Source: SEWRPC.

Map A-7

EXISTING AND PLANNED BICYCLE WAYS IN WAUKESHA COUNTY: 1993



LEGEND

STATE BICYCLE WAYS

- EXISTING
- - - PLANNED

COUNTY BICYCLE WAYS

- EXISTING
- - - PLANNED

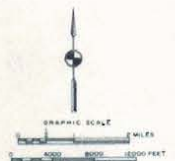
LOCAL BICYCLE WAYS

- EXISTING
- - - PLANNED

TRANSIT STATIONS

- ▲ EXISTING

NOTE: BICYCLE WAYS SHOWN AS PLANNED ON THIS MAP WERE PROPOSED PRIOR TO THE COMPLETION OF THE REGIONAL BICYCLE-WAY SYSTEM PLAN DOCUMENTED IN THIS REPORT. SOME OF THE PLANNED ROUTES WERE MODIFIED THROUGH THIS PLANNING EFFORT. PLEASE CONSULT MAPS 18 AND 20 IN CHAPTER 8 OF THIS REPORT (SEE PAGES 113 AND 115) FOR UPDATED INFORMATION REGARDING EXISTING AND PLANNED BICYCLE WAYS.



Appendix B

STATISTICS ON REPORTED BICYCLE-MOTOR VEHICLE AND PEDESTRIAN-MOTOR VEHICLE COLLISIONS OCCURRING WITHIN THE REGION BY COUNTY: 1991 THROUGH 1993

Table B-1

SUMMARY OF REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS FOR MUNICIPALITIES IN KENOSHA COUNTY: 1991 THROUGH 1993

Municipality ^a	Total Bicyclists	Injury Type					Age of Bicyclist								Sex of Bicyclist		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported
Cities																	
Kenosha	144	8	44	74	17	1	5	4	32	55	22	20	6	0	100	41	3
Villages																	
Paddock Lake	3	0	0	2	1	0	0	0	1	1	1	0	0	0	0	3	0
Pleasant Prairie	10	0	1	8	1	0	0	1	1	4	3	1	0	0	7	3	0
Twin Lakes	3	0	0	3	0	0	0	0	1	1	0	1	0	0	3	0	0
Towns																	
Bristol	2	0	0	0	1	1	0	0	0	1	0	0	1	0	2	0	0
Randall	2	0	1	1	0	0	0	0	0	1	0	1	0	0	2	0	0
Salem	4	0	1	1	2	0	0	0	1	1	1	1	0	0	4	0	0
Somers	6	0	1	4	1	0	0	0	0	2	1	3	0	0	4	2	0
Wheatland	6	1	1	4	0	0	1	2	1	2	0	0	0	0	5	0	1
Total	180^b	9	49	97	23	2	6	7	37	68	28	27	7	0	127	49	4

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Kenosha	83	57	4	95	9	4	9	4	1	0	0	14	140
Villages													
Paddock Lake	1	2	0	3	0	0	0	0	0	0	0	0	3
Pleasant Prairie	4	6	1	8	0	1	0	0	0	0	0	0	10
Twin Lakes	2	1	0	3	0	0	0	0	0	0	0	0	3
Towns													
Bristol	2	0	0	2	0	0	0	0	0	0	0	0	2
Randall	1	1	0	2	0	0	0	0	0	0	0	0	2
Salem	1	3	0	2	2	0	0	0	0	0	0	0	4
Somers	1	5	0	2	2	1	0	0	0	0	0	1	6
Wheatland	4	2	0	1	1	0	0	0	1	0	0	3	6
Total	99	77	5	118	14	6	9	4	2	0	0	18	176^b

^aNo bicycle-motor vehicle collisions were reported in the Village of Silver Lake and the Towns of Brighton and Paris.

^bThe number of collisions differs from the number of bicyclists because more than one bicyclist may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—bicyclist is struck by a motorist traveling in a perpendicular direction; Side Same—bicyclist is sideswiped by an overtaking motor vehicle; Rear End—bicyclist strikes rear of stopped motor vehicle, or rear of bicyclist is struck by front end of overtaking motor vehicle; Left Turn—straight-through bicyclist is struck by a motorist turning left across his or her path, or vice versa; Head On—front of bicyclist is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—bicyclist is sideswiped by motor vehicle traveling in the opposite direction; Off Right—bicyclist is struck by a motor vehicle driving off the right side of the road; Off Left—bicyclist is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-2

**SUMMARY OF REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN MILWAUKEE COUNTY: 1991 THROUGH 1993**

Municipality	Total Bicyclists	Injury Type					Age of Bicyclist								Sex of Bicyclist		
		None	Unknown	Noninca- paci- tating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported
Cities																	
Cudahy	17	0	5	8	4	0	0	0	3	10	1	3	0	0	12	5	0
Franklin	8	0	2	4	2	0	0	0	1	6	0	0	0	1	6	2	0
Glendale	17	0	2	14	1	0	0	0	3	6	4	2	2	0	11	6	0
Greenfield	33	0	11	20	2	0	1	0	5	10	10	6	1	0	24	8	1
Milwaukee	843	72	306	369	94	2	35	8	149	337	138	151	19	6	631	186	26
Oak Creek	4	0	0	2	2	0	1	0	0	1	0	2	0	0	3	1	0
St. Francis	8	0	0	5	3	0	0	0	1	3	1	3	0	0	7	1	0
South Milwaukee	31	5	15	9	2	0	1	0	9	18	2	1	0	0	19	12	0
Wauwatosa	42	1	7	24	9	1	1	1	5	19	4	9	3	0	27	15	0
West Allis	101	2	35	48	16	0	4	0	21	41	18	12	4	1	72	28	1
Villages																	
Bayside	6	0	4	2	0	0	0	0	0	0	3	3	0	0	5	1	0
Brown Deer	8	0	2	6	0	0	0	0	0	3	3	2	0	0	5	3	0
Fox Point	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0
Greendale	11	4	1	5	1	0	1	0	1	3	3	1	2	0	7	3	1
Hales Corners	13	0	2	7	4	0	0	0	0	4	5	3	1	0	7	6	0
River Hills	2	0	1	1	0	0	0	0	0	1	1	0	0	0	2	0	0
Shorewood	29	1	5	19	4	0	1	0	3	11	4	7	0	3	20	8	1
West Milwaukee	12	0	7	3	2	0	0	0	1	4	0	5	1	1	11	1	0
Whitefish Bay	11	0	3	4	4	0	0	0	0	4	2	2	2	1	8	3	0
Total	1,197^a	85	408	550	151	3	45	9	202	481	200	212	35	13	878	289	30

Municipality	Location of Collision		Type of Collision ^b										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Cudahy	11	6	0	12	1	0	1	0	0	0	0	3	17
Franklin	1	7	0	2	2	0	0	0	0	0	0	4	8
Glendale	8	8	1	12	2	0	0	0	1	0	0	0	16
Greenfield	18	15	0	19	5	5	1	1	0	0	0	2	33
Milwaukee	482	324	6	539	47	29	44	32	9	5	1	94	806
Oak Creek	2	2	0	3	1	0	0	0	0	0	0	0	4
St. Francis	3	5	0	4	2	1	0	0	0	1	0	0	8
South Milwaukee	18	10	0	26	1	1	0	0	0	0	0	0	28
Wauwatosa	22	20	1	27	5	3	1	1	0	0	0	4	42
West Allis	48	50	1	57	3	1	4	1	0	1	0	30	98
Villages													
Bayside	3	3	0	5	0	0	0	0	0	0	0	1	6
Brown Deer	5	3	0	2	1	0	0	0	0	0	0	5	8
Fox Point	1	0	0	0	1	0	0	0	0	0	0	0	1
Greendale	5	5	1	7	1	1	0	0	0	0	0	0	10
Hales Corners	7	6	0	2	0	1	0	0	0	0	0	10	13
River Hills	1	1	0	2	0	0	0	0	0	0	0	0	2
Shorewood	15	14	0	19	2	3	4	0	0	0	0	1	29
West Milwaukee	6	5	0	9	1	0	0	0	1	0	0	0	11
Whitefish Bay	8	3	0	8	1	1	0	0	0	0	0	1	11
Total	664	487	10	755	76	46	55	35	11	7	1	155	1,151^a

^aThe number of collisions differs from the number of bicyclists because more than one bicyclist may have been involved in a collision.

^bThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—bicyclist is struck by a motorist traveling in a perpendicular direction; Side Same—bicyclist is sideswiped by an overtaking motor vehicle; Rear End—bicyclist strikes rear of stopped motor vehicle, or rear of bicyclist is struck by front end of overtaking motor vehicle; Left Turn—straight-through bicyclist is struck by a motorist turning left across his or her path, or vice versa; Head On—front of bicyclist is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—bicyclist is sideswiped by motor vehicle traveling in the opposite direction; Off Right—bicyclist is struck by a motor vehicle driving off the right side of the road; Off Left—bicyclist is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-3

**SUMMARY OF REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN OZAUKEE COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Bicyclists	Injury Type					Age of Bicyclist								Sex of Bicyclist		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported
Cities																	
Cedarburg	8	0	4	2	2	0	0	0	1	2	3	2	0	0	8	0	0
Mequon	11	1	4	5	1	0	0	0	0	8	1	2	0	0	8	3	0
Port Washington	11	0	1	6	4	0	0	0	1	3	1	4	2	0	5	6	0
Villages																	
Fredonia	4	0	2	1	0	1	0	0	2	0	2	0	0	0	2	2	0
Grafton	11	1	4	5	1	0	0	0	2	8	1	0	0	0	7	4	0
Saukville	8	0	3	1	4	0	0	0	3	4	1	0	0	0	5	3	0
Thiensville	3	0	1	2	0	0	0	0	0	1	0	2	0	0	2	1	0
Towns																	
Cedarburg	3	0	0	2	1	0	0	0	0	2	0	0	1	0	2	1	0
Fredonia	1	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Grafton	3	0	0	2	0	1	0	0	0	1	0	2	0	0	3	0	0
Port Washington	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0
Total	64^b	3	19	26	14	2	0	0	10	29	9	13	3	0	43	21	0

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Cedarburg	3	5	0	4	2	2	0	0	0	0	0	0	8
Mequon	6	4	0	7	1	0	0	0	0	0	0	2	10
Port Washington	7	3	0	6	1	1	1	0	0	0	0	1	10
Villages													
Fredonia	4	0	0	2	0	1	0	1	0	0	0	0	4
Grafton	8	3	0	9	0	2	0	0	0	0	0	0	11
Saukville	6	2	0	8	0	0	0	0	0	0	0	0	8
Thiensville	0	3	0	2	0	0	0	0	0	1	0	0	3
Towns													
Cedarburg	2	1	0	3	0	0	0	0	0	0	0	0	3
Fredonia	1	0	0	1	0	0	0	0	0	0	0	0	1
Grafton	0	3	0	2	1	0	0	0	0	0	0	0	3
Port Washington	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	37	25	0	45	5	6	1	1	0	1	0	3	62^b

^aNo bicycle-motor vehicle collisions were reported in the Village of Belgium and the Towns of Belgium and Saukville.

^bThe number of collisions differs from the number of bicyclists because more than one bicyclist may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—bicyclist is struck by a motorist traveling in a perpendicular direction; Side Same—bicyclist is sideswiped by an overtaking motor vehicle; Rear End—bicyclist strikes rear of stopped motor vehicle, or rear of bicyclist is struck by front end of overtaking motor vehicle; Left Turn—straight-through bicyclist is struck by a motorist turning left across his or her path, or vice versa; Head On—front of bicyclist is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—bicyclist is sideswiped by motor vehicle traveling in the opposite direction; Off Right—bicyclist is struck by a motor vehicle driving off the right side of the road; Off Left—bicyclist is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-4

**SUMMARY OF REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN RACINE COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Bicyclists	Injury Type					Age of Bicyclist									Sex of Bicyclist		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported	
Cities																		
Burlington	13	0	5	6	2	0	0	0	3	6	1	3	0	0	10	3	0	
Racine	212	13	75	104	19	1	9	2	50	81	36	25	7	2	166	42	4	
Villages																		
North Bay	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	
Rochester	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	
Sturtevant	5	0	2	3	0	0	0	0	0	4	1	0	0	0	4	1	0	
Union Grove	7	0	1	6	0	0	0	1	1	5	0	0	0	0	5	2	0	
Waterford	4	0	3	0	1	0	1	0	0	3	0	0	0	0	2	1	1	
Wind Point	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	
Towns																		
Burlington	3	0	1	2	0	0	0	0	3	0	0	0	0	0	1	2	0	
Caledonia	14	1	2	5	6	0	0	0	3	5	2	3	0	1	12	2	0	
Mt. Pleasant	24	3	7	8	6	0	1	0	1	9	5	7	0	1	17	6	1	
Norway	1	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	
Raymond	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	
Waterford	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	
Total	288 ^b	17	99	136	35	1	11	3	61	119	45	38	7	4	219	63	6	

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Burlington	9	4	0	12	0	0	0	0	0	1	0	0	13
Racine	110	92	3	151	8	11	6	8	0	2	0	13	202
Villages													
North Bay	0	1	0	1	0	0	0	0	0	0	0	0	1
Rochester	0	1	0	0	1	0	0	0	0	0	0	0	1
Sturtevant	2	3	0	2	1	0	1	1	0	0	0	0	5
Union Grove	4	3	0	1	0	1	1	0	0	0	0	4	7
Waterford	2	2	0	4	0	0	0	0	0	0	0	0	4
Wind Point	1	0	0	0	1	0	0	0	0	0	0	0	1
Towns													
Burlington	2	1	0	1	0	0	0	0	0	1	0	2	3
Caledonia	2	12	0	8	2	2	0	1	0	1	0	0	14
Mt. Pleasant	13	11	0	13	1	2	1	3	1	1	0	2	24
Norway	1	0	0	1	0	0	0	0	0	0	0	0	1
Raymond	0	1	0	1	0	0	0	0	0	0	0	0	1
Waterford	0	1	0	0	0	0	0	0	0	1	0	0	1
Total	146	132	3	195	14	16	9	13	1	6	0	21	278^b

^aNo bicycle-motor vehicle collisions were reported in the Village of Elmwood Park and the Towns of Dover, Rochester, and Yorkville.

^bThe number of collisions differs from the number of bicyclists because more than one bicyclist may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—bicyclist is struck by a motorist traveling in a perpendicular direction; Side Same—bicyclist is sideswiped by an overtaking motor vehicle; Rear End—bicyclist strikes rear of stopped motor vehicle, or rear of bicyclist is struck by front end of overtaking motor vehicle; Left Turn—straight-through bicyclist is struck by a motorist turning left across his or her path, or vice versa; Head On—front of bicyclist is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—bicyclist is sideswiped by motor vehicle traveling in the opposite direction; Off Right—bicyclist is struck by a motor vehicle driving off the right side of the road; Off Left—bicyclist is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-5

**SUMMARY OF REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN WALWORTH COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Bicyclists	Injury Type					Age of Bicyclist									Sex of Bicyclist		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported	
Cities																		
Delavan	6	0	2	3	1	0	1	0	0	4	1	0	0	0	6	0	0	
Elkhorn	5	1	0	2	2	0	0	0	1	2	1	0	0	1	3	2	0	
Lake Geneva	12	0	7	4	1	0	0	0	1	6	5	0	0	0	8	3	1	
Whitewater	15	2	2	9	2	0	0	0	2	5	6	1	1	0	9	6	0	
Villages																		
Darien	1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	
East Troy	2	0	1	1	0	0	0	0	0	2	0	0	0	0	0	2	0	
Fontana-on- Geneva Lake	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	
Sharon	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	
Walworth	3	0	1	2	0	0	0	0	1	1	1	0	0	0	1	2	0	
Williams Bay	4	1	1	2	0	0	1	0	0	1	2	0	0	0	3	0	1	
Towns																		
Bloomfield	3	0	1	2	0	0	0	0	1	2	0	0	0	0	3	0	0	
Delavan	2	0	0	1	1	0	0	0	1	0	0	1	0	0	2	0	0	
East Troy	2	0	0	1	1	0	0	0	0	1	0	1	0	0	2	0	0	
Geneva	1	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	
Linn	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	
Lyons	1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	
Sugar Creek	2	0	0	1	1	0	0	0	0	2	0	0	0	0	1	1	0	
Whitewater	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	
Total	63	4	16	32	11	0	2	0	9	27	17	6	1	1	44	17	2	

Municipality ^a	Location of Collision		Type of Collision ^b										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Delavan	3	3	2	4	0	0	0	0	0	0	0	0	6
Elkhorn	4	1	0	3	0	1	1	0	0	0	0	0	5
Lake Geneva	7	5	1	11	0	0	0	0	0	0	0	0	12
Whitewater	11	4	1	11	1	0	0	0	1	0	0	1	15
Villages													
Darien	1	0	0	1	0	0	0	0	0	0	0	0	1
East Troy	2	0	0	2	0	0	0	0	0	0	0	0	2
Fontana-on- Geneva Lake	1	0	0	0	1	0	0	0	0	0	0	0	1
Sharon	1	0	0	0	0	0	0	0	1	0	0	0	1
Walworth	3	0	0	3	0	0	0	0	0	0	0	0	3
Williams Bay	1	3	0	2	0	1	0	1	0	0	0	0	4
Towns													
Bloomfield	2	1	0	1	1	0	1	0	0	0	0	0	3
Delavan	0	2	0	0	1	0	0	0	1	0	0	0	2
East Troy	0	2	1	0	1	0	0	0	0	0	0	0	2
Geneva	0	1	0	0	0	0	0	1	0	0	0	0	1
Linn	0	1	0	0	0	1	0	0	0	0	0	0	1
Lyons	1	0	0	1	0	0	0	0	0	0	0	0	1
Sugar Creek	1	1	0	1	1	0	0	0	0	0	0	0	2
Whitewater	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	39	24	5	41	6	3	2	2	3	0	0	1	63

^aNo bicycle-motor vehicle collisions were reported in the Village of Genoa City and the Towns of Darien, Lafayette, LaGrange, Richmond, Sharon, Spring Prairie, Troy, and Walworth.

^bThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—bicyclist is struck by a motorist traveling in a perpendicular direction; Side Same—bicyclist is sideswiped by an overtaking motor vehicle; Rear End—bicyclist strikes rear of stopped motor vehicle, or rear of bicyclist is struck by front end of overtaking motor vehicle; Left Turn—straight-through bicyclist is struck by a motorist turning left across his or her path, or vice versa; Head On—front of bicyclist is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—bicyclist is sideswiped by motor vehicle traveling in the opposite direction; Off Right—bicyclist is struck by a motor vehicle driving off the right side of the road; Off Left—bicyclist is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-6

**SUMMARY OF REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN WASHINGTON COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Bicyclists	Injury Type					Age of Bicyclist								Sex of Bicyclist		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported
Cities																	
Hartford	5	0	0	4	1	0	0	0	0	4	1	0	0	0	3	2	0
West Bend	31	1	5	20	5	0	0	0	6	18	3	4	0	0	25	6	0
Villages																	
Germantown	6	0	3	1	2	0	0	0	1	3	0	2	0	0	3	3	0
Jackson	2	0	0	2	0	0	0	0	1	1	0	0	0	0	1	1	0
Newburg	2	0	0	1	1	0	0	0	0	2	0	0	0	0	2	0	0
Towns																	
Addison	2	0	0	2	0	0	0	0	0	2	0	0	0	0	2	0	0
Erin	1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0
Polk	2	0	1	1	0	0	0	0	0	2	0	0	0	0	1	1	0
Richfield	4	0	1	3	0	0	0	0	2	2	0	0	0	0	4	0	0
West Bend	1	0	1	0	0	0	0	0	0	2	0	1	0	0	1	0	0
Total	56	1	11	35	9	0	0	0	11	34	4	7	0	0	43	13	0

Municipality ^a	Location of Collision		Type of Collision ^b										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Hartford	5	0	0	4	0	0	1	0	0	0	0	0	5
West Bend	17	14	1	23	0	2	2	1	0	0	0	2	31
Villages													
Germantown	4	2	0	3	3	0	0	0	0	0	0	0	6
Jackson	1	1	0	1	0	0	1	0	0	0	0	0	2
Newburg	1	1	0	2	0	0	0	0	0	0	0	0	2
Towns													
Addison	2	0	0	2	0	0	0	0	0	0	0	0	2
Erin	0	1	0	0	1	0	0	0	0	0	0	0	1
Polk	1	1	0	1	1	0	0	0	0	0	0	0	2
Richfield	0	4	1	2	0	1	0	0	0	0	0	0	4
West Bend	0	1	0	0	0	1	0	0	0	0	0	0	1
Total	31	25	2	38	5	4	4	1	0	0	0	2	56

^aNo bicycle-motor vehicle collisions were reported in the Villages of Kewaskum and Slinger and the Towns of Barton, Farmington, Germantown, Hartford, Jackson, Kewaskum, Trenton, and Wayne.

^bThe definitions of the collision types used in this table are as follows: *Unknown*—collision type is unknown; *Angle*—bicyclist is struck by a motorist traveling in a perpendicular direction; *Side Same*—bicyclist is sideswiped by an overtaking motor vehicle; *Rear End*—bicyclist strikes rear of stopped motor vehicle, or rear of bicyclist is struck by front end of overtaking motor vehicle; *Left Turn*—straight-through bicyclist is struck by a motorist turning left across his or her path, or vice versa; *Head On*—front of bicyclist is struck by front of motor vehicle traveling in the opposite direction; *Side Opposite*—bicyclist is sideswiped by motor vehicle traveling in the opposite direction; *Off Right*—bicyclist is struck by a motor vehicle driving off the right side of the road; *Off Left*—bicyclist is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-7

**SUMMARY OF REPORTED BICYCLE-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN WAUKESHA COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Bicyclists	Injury Type					Age of Bicyclist									Sex of Bicyclist		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported	
Cities																		
Brookfield	30	1	4	19	6	0	0	1	4	17	4	3	0	1	21	9	0	
Delafield	3	0	0	2	1	0	0	0	0	2	0	1	0	0	1	2	0	
Muskego	8	2	3	3	0	0	0	0	1	6	0	1	0	0	5	3	0	
New Berlin	21	1	4	7	8	1	0	0	6	9	0	4	2	0	13	8	0	
Oconomowoc	9	1	2	5	1	0	0	0	2	5	0	2	0	0	4	5	0	
Waukesha	50	1	13	30	6	0	1	0	7	27	3	7	4	1	35	14	1	
Villages																		
Big Bend	2	0	1	1	0	0	0	0	1	0	0	1	0	0	1	1	0	
Butler	2	1	0	1	0	0	0	0	0	1	1	0	0	0	1	1	0	
Eagle	1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	
Elm Grove	11	0	1	7	3	0	0	0	1	6	1	3	0	0	8	3	0	
Hartland	10	1	2	6	1	0	0	0	0	4	5	1	0	0	8	2	0	
Lannon	1	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	
Menomonee Falls	16	0	3	7	6	0	0	0	2	10	2	2	0	0	11	5	0	
Merton	3	0	0	2	1	0	0	0	1	2	0	0	0	0	2	1	0	
Mukwonago	4	0	0	3	1	0	0	0	0	1	3	0	0	0	4	0	0	
Pewaukee	8	1	1	5	1	0	0	1	1	3	2	1	0	0	6	2	0	
Sussex	4	0	0	3	1	0	0	0	1	3	0	0	0	0	3	1	0	
Towns																		
Brookfield	2	1	0	0	0	1	0	0	0	1	0	0	1	0	2	0	0	
Lisbon	3	0	0	3	0	0	0	0	1	2	0	0	0	0	2	1	0	
Mukwonago	3	0	0	2	1	0	0	0	0	2	0	1	0	0	3	0	0	
Oconomowoc	4	0	0	3	1	0	0	0	1	2	1	0	0	0	4	0	0	
Ottawa	1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	
Pewaukee	3	1	0	2	0	0	0	0	1	0	1	1	0	0	2	1	0	
Summit	2	0	0	2	0	0	0	0	1	1	0	0	0	0	1	1	0	
Vernon	2	0	0	2	0	0	0	0	1	1	0	0	0	0	2	0	0	
Waukesha	5	0	0	4	1	0	0	0	0	3	1	1	0	0	2	3	0	
Total	208 ^b	11	34	122	39	2	1	2	34	108	25	29	7	2	144	63	1	

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Brookfield	14	15	0	16	1	0	4	1	0	1	0	6	29
Delafield	2	1	0	1	1	0	0	0	0	0	0	1	3
Muskego	4	3	0	5	0	0	0	0	1	0	1	0	7
New Berlin	11	10	1	12	2	0	2	2	1	0	0	1	21
Oconomowoc	4	5	0	8	0	1	0	0	0	0	0	0	9
Waukesha	34	15	0	17	1	0	1	0	0	0	0	30	49
Villages													
Big Bend	0	2	0	1	1	0	0	0	0	0	0	0	2
Butler	1	1	0	1	1	0	0	0	0	0	0	0	2
Eagle	0	1	0	1	0	0	0	0	0	0	0	0	1
Elm Grove	6	5	0	7	1	0	1	1	0	0	0	1	11
Hartland	5	5	0	8	1	0	0	1	0	0	0	0	10
Lannon	1	0	0	0	0	0	0	0	0	0	0	1	1
Menomonee Falls	9	7	0	6	1	0	0	1	0	0	0	8	16
Merton	0	3	0	2	0	0	0	1	0	0	0	0	3
Mukwonago	3	1	0	1	1	0	0	1	0	0	0	1	4
Pewaukee	1	6	0	7	0	0	0	0	0	0	0	0	7
Sussex	2	2	0	4	0	0	0	0	0	0	0	0	4
Towns													
Brookfield	1	1	0	0	0	1	0	0	0	0	0	1	2
Lisbon	1	2	0	2	0	0	0	0	0	0	0	1	3
Mukwonago	1	2	0	2	0	0	0	0	0	0	0	1	3
Oconomowoc	1	3	0	2	1	0	0	0	0	0	0	1	4
Ottawa	0	1	0	1	0	0	0	0	0	0	0	0	1
Pewaukee	0	3	0	3	0	0	0	0	0	0	0	0	3
Summit	1	1	0	1	0	1	0	0	0	0	0	0	2
Vernon	2	0	0	2	0	0	0	0	0	0	0	0	2
Waukesha	4	1	0	2	0	1	1	0	0	0	0	1	5
Total	108	96	1	112	12	4	9	8	2	1	1	54	204 ^b

^aNo bicycle-motor vehicle collisions were reported in the Villages of Chenequa, Dousman, Lac La Belle, Nashotah, North Prairie, Oconomowoc Lake, and Wales, and the Towns of Delafield, Eagle, Genesee, and Merton.

^bThe number of collisions differs from the number of bicyclists because more than one bicyclist may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—bicyclist is struck by a motorist traveling in a perpendicular direction; Side Same—bicyclist is sideswiped by an overtaking motor vehicle; Rear End—bicyclist strikes rear of stopped motor vehicle, or rear of bicyclist is struck by front end of overtaking motor vehicle; Left Turn—straight-through bicyclist is struck by a motorist turning left across his or her path, or vice versa; Head On—front of bicyclist is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—bicyclist is sideswiped by motor vehicle traveling in the opposite direction; Off Right—bicyclist is struck by a motor vehicle driving off the right side of the road; Off Left—bicyclist is struck by a motor vehicle driving off the left side of the road.

Table B-8

**SUMMARY OF REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN KENOSHA COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Pedestrians	Injury Type					Age of Pedestrian								Sex of Pedestrian		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported
Cities																	
Kenosha	177	2	55	70	50	0	5	12	38	38	24	32	16	12	97	78	2
Villages																	
Paddock Lake	2	0	1	1	0	0	0	0	0	0	1	1	0	0	2	0	0
Pleasant Prairie	14	0	3	5	5	1	2	1	0	2	2	6	0	1	10	4	0
Silver Lake	2	0	0	2	0	0	0	0	1	1	0	0	0	0	0	2	0
Twin Lakes	2	0	0	2	0	0	0	0	0	1	0	1	0	0	0	2	0
Towns																	
Bristol	5	1	3	0	1	0	1	0	0	0	1	2	1	0	2	2	1
Paris	4	0	2	0	2	0	0	0	0	0	1	3	0	0	4	0	0
Randall	4	0	0	1	2	1	0	0	0	1	0	1	2	0	4	0	0
Salem	7	0	3	2	2	0	0	0	0	0	2	5	0	0	4	3	0
Somers	6	0	2	3	1	0	1	0	1	1	1	2	0	0	3	2	1
Wheatland	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Total	224^b	3	70	86	63	2	9	13	40	44	32	54	19	13	126	94	4

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Kenosha	66	103	2	85	7	1	2	5	2	0	1	64	169
Villages													
Paddock Lake	0	2	0	0	1	0	0	0	0	1	0	0	2
Pleasant Prairie	3	10	1	6	1	2	0	0	0	0	1	2	13
Silver Lake	0	2	0	0	0	0	0	0	0	0	0	2	2
Twin Lakes	0	2	0	2	0	0	0	0	0	0	0	0	2
Towns													
Bristol	1	4	0	1	2	0	0	0	0	0	1	1	5
Paris	0	3	0	0	0	0	0	1	0	1	0	1	3
Randall	0	4	0	0	0	2	0	0	1	0	0	1	4
Salem	1	6	0	1	1	2	0	1	1	0	0	1	7
Somers	1	5	0	2	1	0	0	0	0	0	1	2	6
Wheatland	0	1	0	0	0	1	0	0	0	0	0	0	1
Total	72	142	3	97	13	8	2	7	4	2	4	74	214^b

^aNo pedestrian-motor vehicle collisions were reported in the Town of Brighton.

^bThe number of collisions differs from the number of pedestrians because more than one pedestrian may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—pedestrian is struck by a motorist traveling in a perpendicular direction; Side Same—pedestrian is sideswiped by an overtaking motor vehicle; Rear End—pedestrian is struck from behind by the front end of an overtaking motor vehicle; Left Turn—pedestrian crossing intersection is struck by a motorist turning left across his or her path; Head On—front of pedestrian is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—pedestrian is sideswiped by motor vehicle traveling in the opposite direction; Off Right—pedestrian is struck by a motor vehicle driving off the right side of the road; Off Left—pedestrian is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-9

**SUMMARY OF REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN MILWAUKEE COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Pedestrians	Injury Type					Age of Pedestrian									Sex of Pedestrian		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported	
Cities																		
Cudahy	33	4	9	13	7	0	1	1	5	2	10	7	2	5	19	14	0	
Franklin	10	0	3	5	2	0	0	0	0	3	1	5	1	0	9	1	0	
Glendale	10	0	3	5	2	0	0	0	1	3	1	4	1	0	6	4	0	
Greenfield	30	2	8	6	13	1	2	0	2	8	5	4	2	7	17	11	2	
Milwaukee	2,610	67	1,005	943	557	38	61	204	581	446	370	625	196	127	1,513	1,074	23	
Oak Creek	18	0	5	5	7	1	0	1	5	2	3	3	2	2	8	10	0	
St. Francis	7	0	1	3	3	0	0	1	2	2	1	1	0	0	7	0	0	
South Milwaukee	19	0	9	2	8	0	1	1	5	4	3	3	0	2	11	8	0	
Wauwatosa	40	1	5	15	18	1	1	2	8	5	6	8	5	5	22	17	1	
West Allis	139	1	44	68	24	2	1	6	15	27	19	34	20	17	74	65	0	
Villages																		
Brown Deer	3	0	1	0	2	0	0	0	0	0	0	1	1	1	1	2	0	
Fox Point	1	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	
Greendale	7	0	1	4	2	0	0	2	0	3	2	0	0	0	3	4	0	
Hales Corners	5	0	1	2	1	1	0	0	1	1	0	1	0	2	2	3	0	
Shorewood	28	1	14	6	7	0	0	2	7	3	4	3	4	5	13	15	0	
West Milwaukee	14	0	4	6	4	0	0	0	3	2	0	6	2	1	10	4	0	
Whitefish Bay	13	0	5	6	2	0	2	1	0	3	2	2	1	2	6	7	0	
Total	2,987 ^b	76	1,118	1,090	659	44	69	221	635	514	427	708	237	176	1,722	1,239	26	

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Cudahy	13	19	2	9	0	3	1	4	0	2	1	10	32
Franklin	2	8	0	2	2	1	0	0	1	1	0	3	10
Glendale	4	5	1	3	0	1	0	1	0	0	0	3	9
Greenfield	9	18	1	8	1	1	2	0	1	0	0	13	27
Milwaukee	1,003	1,515	43	1,283	101	69	50	140	26	34	17	755	2,518
Oak Creek	7	10	2	9	3	0	0	0	0	0	0	3	17
St. Francis	2	5	0	7	0	0	0	0	0	0	0	0	7
South Milwaukee	7	12	0	8	2	0	1	1	0	0	0	7	19
Wauwatosa	15	24	5	18	0	1	0	3	0	1	0	11	39
West Allis	65	66	4	40	2	4	3	2	1	0	0	75	131
Villages													
Brown Deer	3	0	0	1	0	0	0	0	0	0	0	2	3
Fox Point	1	0	0	1	0	0	0	0	0	0	0	0	1
Greendale	2	5	0	4	0	0	0	1	0	0	0	2	7
Hales Corners	2	3	0	0	0	0	0	0	0	0	0	5	5
Shorewood	20	7	2	15	0	1	3	0	0	0	0	6	27
West Milwaukee	6	8	0	11	0	0	0	1	0	0	0	2	14
Whitefish Bay	4	8	0	9	1	0	1	0	0	0	0	1	12
Total	1,165	1,713	60	1,428	112	81	61	153	29	38	18	898	2,878^b

^aNo pedestrian-motor vehicle collisions were reported in the Villages of Bayside and River Hills.

^bThe number of collisions differs from the number of pedestrians because more than one pedestrian may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—pedestrian is struck by a motorist traveling in a perpendicular direction; Side Same—pedestrian is sideswiped by an overtaking motor vehicle; Rear End—pedestrian is struck from behind by the front end of an overtaking motor vehicle; Left Turn—pedestrian crossing intersection is struck by a motorist turning left across his or her path; Head On—front of pedestrian is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—pedestrian is sideswiped by motor vehicle traveling in the opposite direction; Off Right—pedestrian is struck by a motor vehicle driving off the right side of the road; Off Left—pedestrian is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-10

**SUMMARY OF REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN OZAUKEE COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Pedestrians	Injury Type					Age of Pedestrian								Sex of Pedestrian		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported
Cities																	
Cedarburg	10	1	5	2	2	0	0	0	1	1	2	3	0	3	4	6	0
Mequon	4	0	1	1	2	0	0	0	0	2	1	1	0	0	3	1	0
Port Washington	15	0	6	5	4	0	0	1	3	3	2	1	4	1	6	9	0
Villages																	
Belgium	2	0	1	0	1	0	0	0	1	1	0	0	0	0	1	1	0
Fredonia	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0
Grafton	2	1	0	0	1	0	0	0	0	1	0	1	0	0	2	0	0
Newburg	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0
Saukville	2	0	1	0	1	0	1	0	0	0	1	0	0	0	1	1	0
Thiensville	2	0	1	1	0	0	0	1	1	0	0	0	0	0	0	2	0
Towns																	
Belgium	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
Cedarburg	1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0
Fredonia	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0
Total	42^b	3	15	10	13	1	1	2	6	10	6	6	5	6	21	21	0

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Cedarburg	5	5	1	4	0	1	1	1	0	0	0	2	10
Mequon	0	3	0	1	0	1	0	0	0	0	0	1	3
Port Washington	4	11	0	9	0	0	0	0	0	0	0	6	15
Villages													
Belgium	2	0	0	0	0	0	0	0	0	0	0	2	2
Fredonia	0	1	0	0	0	0	0	0	0	0	0	1	1
Grafton	2	0	0	1	1	0	0	0	0	0	0	0	2
Newburg	0	1	0	0	0	0	0	0	0	0	0	1	1
Saukville	1	1	0	2	0	0	0	0	0	0	0	0	2
Thiensville	0	2	1	1	0	0	0	0	0	0	0	0	2
Towns													
Belgium	0	1	0	0	0	0	0	0	0	1	0	0	1
Cedarburg	1	0	0	0	1	0	0	0	0	0	0	0	1
Fredonia	0	1	0	0	0	0	0	0	0	0	0	1	1
Total	15	26	2	18	2	2	1	1	0	1	0	14	41^b

^aNo pedestrian-motor vehicle collisions were reported in the Towns of Grafton, Port Washington, and Saukville.

^bThe number of collisions differs from the number of pedestrians because more than one pedestrian may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—pedestrian is struck by a motorist traveling in a perpendicular direction; Side Same—pedestrian is sideswiped by an overtaking motor vehicle; Rear End—pedestrian is struck from behind by the front end of an overtaking motor vehicle; Left Turn—pedestrian crossing intersection is struck by a motorist turning left across his or her path; Head On—front of pedestrian is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—pedestrian is sideswiped by motor vehicle traveling in the opposite direction; Off Right—pedestrian is struck by a motor vehicle driving off the right side of the road; Off Left—pedestrian is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-11

**SUMMARY OF REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN RACINE COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Pedestrians	Injury Type					Age of Pedestrian								Sex of Pedestrian		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported
Cities																	
Burlington	17	0	4	10	3	0	0	0	4	5	1	1	6	0	9	8	0
Racine	251	3	91	104	52	1	10	25	55	59	26	46	14	16	125	122	4
Villages																	
Sturtevant	3	0	1	0	2	0	0	0	0	1	1	0	1	0	0	3	0
Union Grove	3	0	3	0	0	0	0	0	0	1	1	1	0	0	3	0	0
Towns																	
Burlington	2	0	0	2	0	0	0	0	0	0	1	1	0	0	0	2	0
Caledonia	12	0	2	3	5	2	0	2	1	4	1	4	0	0	9	3	0
Dover	1	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0
Mt. Pleasant	15	1	6	3	5	0	1	1	3	2	3	4	1	0	10	4	1
Norway	4	0	3	0	1	0	0	0	0	2	1	1	0	0	3	1	0
Raymond	4	1	0	0	2	1	0	0	0	0	0	0	3	1	3	1	0
Rochester	1	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0
Yorkville	3	0	0	1	2	0	0	0	0	1	1	1	0	0	2	1	0
Total	316^b	5	110	124	73	4	11	28	63	76	36	60	25	17	166	145	5

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Burlington	4	13	1	10	1	0	2	1	0	0	0	2	17
Racine	83	153	5	110	7	1	8	8	5	3	2	87	236
Villages													
Sturtevant	2	1	0	2	0	0	0	0	0	0	0	1	3
Union Grove	1	2	0	0	1	0	0	0	0	0	0	2	3
Towns													
Burlington	1	1	0	0	0	0	0	1	0	0	0	1	2
Caledonia	0	12	0	4	1	1	0	1	2	0	0	3	12
Dover	0	1	0	0	0	0	0	1	0	0	0	0	1
Mt. Pleasant	5	8	2	4	0	1	0	2	0	0	1	3	13
Norway	1	3	0	1	0	0	0	0	0	0	0	3	4
Raymond	0	4	0	1	2	0	0	0	0	0	0	1	4
Rochester	0	1	0	0	1	0	0	0	0	0	0	0	1
Yorkville	0	3	1	1	0	0	0	0	0	0	0	1	3
Total	97	202	9	133	13	3	10	14	7	3	3	104	299^b

^aNo pedestrian-motor vehicle collisions were reported in the Villages of Elmwood Park, North Bay, Rochester, Waterford, and Wind Point, and the Town of Waterford.

^bThe number of collisions differs from the number of pedestrians because more than one pedestrian may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—pedestrian is struck by a motorist traveling in a perpendicular direction; Side Same—pedestrian is sideswiped by an overtaking motor vehicle; Rear End—pedestrian is struck from behind by the front end of an overtaking motor vehicle; Left Turn—pedestrian crossing intersection is struck by a motorist turning left across his or her path; Head On—front of pedestrian is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—pedestrian is sideswiped by motor vehicle traveling in the opposite direction; Off Right—pedestrian is struck by a motor vehicle driving off the right side of the road; Off Left—pedestrian is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-12

**SUMMARY OF REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN WALWORTH COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Pedestrians	Injury Type					Age of Pedestrian								Sex of Pedestrian		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported
Cities																	
Delavan	9	1	3	4	1	0	0	2	3	0	3	1	0	0	6	3	0
Elkhorn	5	0	0	2	2	1	1	0	1	1	0	0	0	2	2	3	0
Lake Geneva	18	1	3	7	7	0	2	0	2	3	2	7	2	0	8	8	2
Whitewater	11	0	3	4	4	0	0	0	1	0	8	1	1	0	4	7	0
Villages																	
East Troy	4	0	0	4	0	0	0	0	1	1	0	2	0	0	3	1	0
Fontana-on- Geneva Lake	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0
Walworth	3	0	0	2	1	0	0	0	0	0	1	1	0	1	1	2	0
Towns																	
Bloomfield	4	0	0	0	4	0	0	1	1	1	1	0	0	0	2	2	0
Delavan	2	0	0	1	0	1	0	0	0	0	1	0	0	1	0	2	0
East Troy	2	0	0	2	0	0	0	0	0	1	0	1	0	0	0	2	0
Geneva	2	0	0	1	1	0	0	0	0	2	0	0	0	0	1	1	0
Lyons	3	0	0	2	1	0	0	0	0	1	0	1	1	0	2	1	0
Sugar Creek	1	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0
Troy	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0
Whitewater	3	0	0	0	0	3	1	0	1	0	1	0	0	0	0	3	0
Total	69^b	2	9	30	21	7	4	3	10	11	17	15	4	5	31	36	2

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Delavan	2	7	0	4	0	0	0	1	1	0	0	3	9
Elkhorn	0	5	0	2	0	1	0	0	0	0	0	2	5
Lake Geneva	4	14	1	8	1	2	0	0	0	0	0	6	18
Whitewater	3	8	0	7	0	1	1	1	0	0	0	1	11
Villages													
East Troy	3	1	1	0	0	0	0	1	0	0	0	2	4
Fontana-on- Geneva Lake	0	1	0	1	0	0	0	0	0	0	0	0	1
Walworth	3	0	0	0	0	0	0	1	0	0	0	2	3
Towns													
Bloomfield	2	2	2	1	0	0	0	0	0	0	0	1	4
Delavan	0	2	0	0	1	0	0	1	0	0	0	0	2
East Troy	0	2	0	1	0	1	0	0	0	0	0	0	2
Geneva	1	1	1	0	0	0	0	0	1	0	0	0	2
Lyons	1	2	0	2	0	0	0	0	0	0	0	1	3
Sugar Creek	0	1	0	0	0	0	0	0	1	0	0	0	1
Troy	0	1	0	0	0	1	0	0	0	0	0	0	1
Whitewater	0	2	0	1	1	0	0	0	0	0	0	0	2
Total	19	49	5	27	3	6	1	5	3	0	0	18	68^b

^aNo pedestrian-motor vehicle collisions were reported in the Villages of Darien, Genoa City, Sharon, and Williams Bay, and the Towns of Darien, Lafayette, LaGrange, Linn, Richmond, Sharon, Spring Prairie, and Walworth.

^bThe number of collisions differs from the number of pedestrians because more than one pedestrian may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—pedestrian is struck by a motorist traveling in a perpendicular direction; Side Same—pedestrian is sideswiped by an overtaking motor vehicle; Rear End—pedestrian is struck from behind by the front end of an overtaking motor vehicle; Left Turn—pedestrian crossing intersection is struck by a motorist turning left across his or her path; Head On—front of pedestrian is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—pedestrian is sideswiped by motor vehicle traveling in the opposite direction; Off Right—pedestrian is struck by a motor vehicle driving off the right side of the road; Off Left—pedestrian is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-13

**SUMMARY OF REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN WASHINGTON COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Pedestrians	Injury Type					Age of Pedestrian									Sex of Pedestrian		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported	
Cities																		
Hartford	16	0	5	5	6	0	0	1	5	2	3	2	1	2	11	5	0	
West Bend	20	3	6	7	4	0	0	1	3	6	3	3	4	0	12	8	0	
Villages																		
Germantown	5	0	2	0	2	1	0	0	1	1	1	2	0	0	3	2	0	
Jackson	3	0	1	1	1	0	0	0	0	2	0	1	0	0	2	1	0	
Kewaskum	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	
Slinger	5	0	3	1	1	0	0	0	1	1	1	1	1	0	2	3	0	
Towns																		
Addison	1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	
Barton	2	1	0	1	0	0	0	0	0	0	2	0	0	0	1	1	0	
Farmington	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	
Hartford	1	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	
Polk	6	0	5	0	1	0	0	0	0	0	2	2	2	0	5	1	0	
Trenton	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	
West Bend	3	0	1	1	1	0	0	0	0	0	1	2	0	0	3	0	0	
Total	65 ^b	4	23	18	18	2	0	3	13	13	13	13	8	2	41	24	0	

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Hartford	7	9	1	10	0	0	0	1	0	1	0	3	16
West Bend	6	14	1	9	1	0	0	2	2	0	0	5	20
Villages													
Germantown	2	3	0	2	0	0	0	0	0	0	0	3	5
Jackson	2	1	0	3	0	0	0	0	0	0	0	0	3
Kewaskum	0	1	0	1	0	0	0	0	0	0	0	0	1
Slinger	0	5	1	1	0	0	0	0	0	0	0	3	5
Towns													
Addison	0	1	0	0	0	0	0	0	0	0	0	1	1
Barton	0	2	0	0	0	0	0	0	0	0	1	1	2
Farmington	0	1	0	1	0	0	0	0	0	0	0	0	1
Hartford	0	1	0	0	0	0	0	0	0	0	0	1	1
Polk	3	2	0	1	2	0	0	0	0	0	0	2	5
Trenton	0	1	0	0	0	0	0	0	0	0	1	0	1
West Bend	0	3	0	0	0	0	0	0	0	0	0	3	3
Total	20	44	3	28	3	0	0	3	2	1	2	22	64^b

^aNo pedestrian-motor vehicle collisions were reported in the Towns of Erin, Germantown, Jackson, Kewaskum, Richfield, and Wayne. One collision, which occurred in the Village of Newburg, is reported in Table B-10, which summarizes collisions in Ozaukee County. The Village of Newburg encompasses lands within both Ozaukee and Washington Counties.

^bThe number of collisions differs from the number of pedestrians because more than one pedestrian may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—pedestrian is struck by a motorist traveling in a perpendicular direction; Side Same—pedestrian is sideswiped by an overtaking motor vehicle; Rear End—pedestrian is struck from behind by the front end of an overtaking motor vehicle; Left Turn—pedestrian crossing intersection is struck by a motorist turning left across his or her path; Head On—front of pedestrian is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—pedestrian is sideswiped by motor vehicle traveling in the opposite direction; Off Right—pedestrian is struck by a motor vehicle driving off the right side of the road; Off Left—pedestrian is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.

Table B-14

**SUMMARY OF REPORTED PEDESTRIAN-MOTOR VEHICLE COLLISIONS
FOR MUNICIPALITIES IN WAUKESHA COUNTY: 1991 THROUGH 1993**

Municipality ^a	Total Pedestrians	Injury Type					Age of Pedestrian								Sex of Pedestrian		
		None	Unknown	Noninca- pacitating	Incapaci- tating	Fatal	Unknown	1 to 4	5 to 9	10 to 15	16 to 24	25 to 44	45 to 64	65 and Older	Male	Female	Not Reported
Cities																	
Brookfield	16	0	5	5	5	1	0	0	1	3	2	5	3	2	9	7	0
Delafield	4	0	0	1	2	1	0	0	1	1	1	0	1	0	3	1	0
Muskego	4	0	0	1	2	1	0	0	1	0	0	0	2	1	3	1	0
New Berlin	17	2	3	3	8	1	2	0	1	1	7	4	0	2	11	5	1
Oconomowoc	13	1	4	5	3	0	1	0	1	6	1	2	0	2	6	6	1
Waukesha	52	0	20	19	13	0	0	1	10	12	11	6	7	5	29	23	0
Villages																	
Butler	4	0	1	1	2	0	0	0	1	0	1	0	0	2	1	3	0
Dousman	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0
Elm Grove	2	0	1	0	1	0	0	0	0	1	1	0	0	0	0	2	0
Hartland	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1
Lannon	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0
Menomonee Falls	15	0	4	6	5	0	0	1	1	2	0	6	3	2	4	11	0
Mukwonago	7	1	0	4	2	0	1	0	1	2	2	1	0	0	4	2	1
Pewaukee	3	0	1	2	0	0	0	0	1	2	0	0	0	0	2	1	0
Sussex	3	0	0	1	2	0	0	0	0	1	2	0	0	0	1	2	0
Wales	2	0	0	0	2	0	0	0	0	2	0	0	0	0	1	1	0
Towns																	
Brookfield	3	0	1	0	2	0	0	0	0	1	1	1	0	0	2	1	0
Delafield	3	0	0	1	2	0	0	0	0	0	1	1	1	0	1	2	0
Geneseo	3	0	1	1	1	0	0	0	1	1	1	0	0	0	2	1	0
Lisbon	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0
Merton	2	0	0	1	1	0	0	0	0	0	1	1	0	0	2	0	0
Mukwonago	2	0	0	0	1	1	0	0	1	0	0	1	0	0	0	2	0
Oconomowoc	2	0	0	1	1	0	0	0	1	0	0	0	1	0	0	2	0
Pewaukee	10	1	1	3	5	0	0	0	2	0	3	2	2	1	8	2	0
Summit	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0
Vernon	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0
Waukesha	2	0	1	0	0	1	0	0	0	1	0	0	1	0	1	1	0
Total	175^b	5	44	56	64	6	5	2	24	36	38	30	23	17	94	77	4

Municipality ^a	Location of Collision		Type of Collision ^c										Total Collisions
	Intersection	Mid-Block	Unknown	Angle	Side Same	Rear End	Left Turn	Head On	Side Opposite	Off Right	Off Left	Other Maneuver	
Cities													
Brookfield	5	10	0	6	0	0	0	0	0	2	0	7	15
Delafield	0	3	0	2	0	0	0	0	0	0	0	1	3
Muskego	0	4	0	1	0	0	0	0	0	0	0	3	4
New Berlin	5	9	0	1	1	1	1	2	0	2	0	6	14
Oconomowoc	7	6	2	7	1	1	0	0	0	1	0	1	13
Waukesha	28	23	0	6	1	0	0	0	0	1	0	43	51
Villages													
Butler	1	3	0	3	1	0	0	0	0	0	0	0	4
Dousman	1	0	0	1	0	0	0	0	0	0	0	0	1
Elm Grove	0	2	0	0	1	0	0	0	1	0	0	0	2
Hartland	0	1	0	1	0	0	0	0	0	0	0	0	1
Lannon	1	0	0	1	0	0	0	0	0	0	0	0	1
Menomonee Falls	3	12	0	3	1	2	0	2	1	0	0	6	15
Mukwonago	3	4	0	3	1	0	0	0	1	2	0	0	7
Pewaukee	1	2	1	2	0	0	0	0	0	0	0	0	3
Sussex	1	2	1	0	0	0	0	0	0	0	0	2	3
Wales	1	1	0	2	0	0	0	0	0	0	0	0	2
Towns													
Brookfield	0	3	0	0	0	1	0	0	0	0	0	2	3
Delafield	0	3	0	0	0	0	0	0	0	2	1	0	3
Geneseo	0	3	0	0	1	0	0	0	0	1	0	1	3
Lisbon	0	1	0	0	0	0	0	0	0	0	0	1	1
Merton	1	1	0	0	0	0	0	1	0	0	1	0	2
Mukwonago	0	2	0	1	0	1	0	0	0	0	0	0	2
Oconomowoc	2	0	0	0	0	0	0	0	0	0	0	2	2
Pewaukee	0	8	0	2	2	2	0	1	0	0	0	1	8
Summit	0	1	0	0	0	0	0	0	0	0	0	1	1
Vernon	0	1	0	0	0	0	0	0	0	0	0	1	1
Waukesha	0	2	0	1	0	0	0	0	0	1	0	0	2
Total	60	107	4	43	10	8	1	6	3	12	2	78	167^b

^aNo pedestrian-motor vehicle collisions were reported in the Villages of Big Bend, Chenequa, Eagle, Lac La Belle, Merton, Nashotah, North Prairie, and Oconomowoc Lake, and the Towns of Eagle and Ottawas.

^bThe number of collisions differs from the number of pedestrians because more than one pedestrian may have been involved in a collision.

^cThe definitions of the collision types used in this table are as follows: Unknown—collision type is unknown; Angle—pedestrian is struck by a motorist traveling in a perpendicular direction; Side Same—pedestrian is sideswiped by an overtaking motor vehicle; Rear End—pedestrian is struck from behind by the front end of an overtaking motor vehicle; Left Turn—pedestrian crossing intersection is struck by a motorist turning left across his or her path; Head On—front of pedestrian is struck by front of motor vehicle traveling in the opposite direction; Side Opposite—pedestrian is sideswiped by motor vehicle traveling in the opposite direction; Off Right—pedestrian is struck by a motor vehicle driving off the right side of the road; Off Left—pedestrian is struck by a motor vehicle driving off the left side of the road.

Source: Wisconsin Department of Transportation and SEWRPC.