W.P.
Michigan Department of Natural Resources

18307
1981

West Riverfront Bicycle / Pedestrian Route

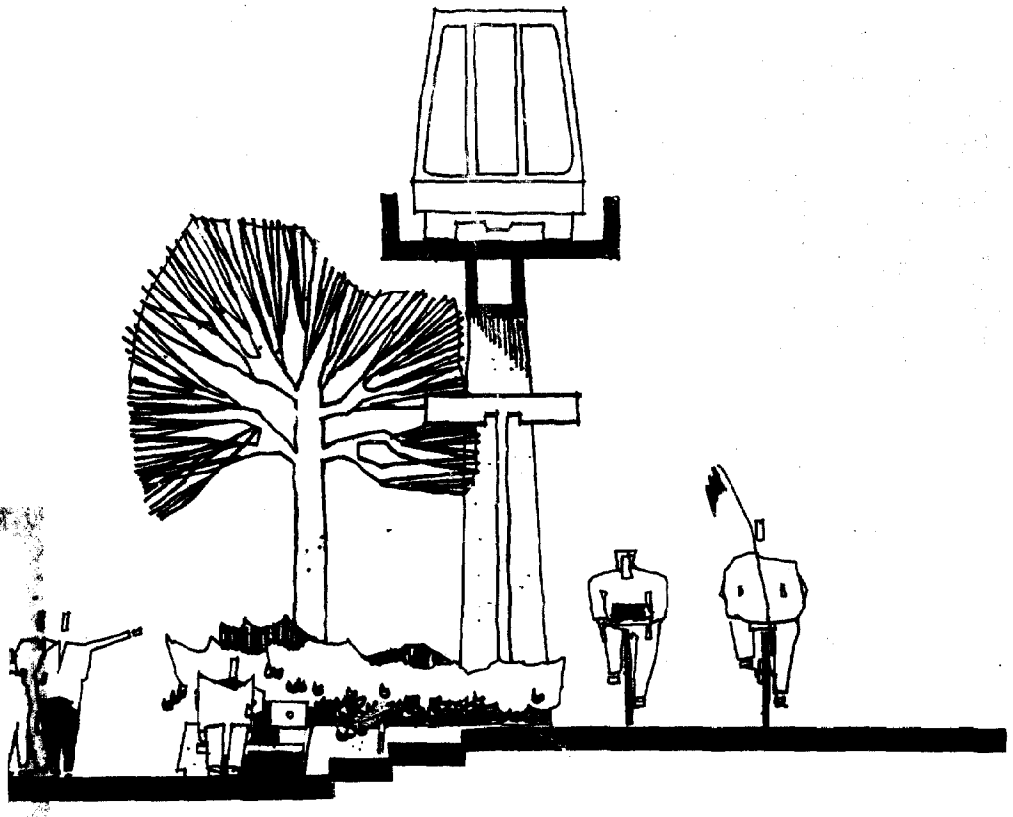
MICHIGAN
OCZM GRANT #04-8-M01-334
Subtask

City of Detroit Recreation Department

funded through

Coastal Zone Management Program

land planning bjr inc and site consultants



TE
301
.W47
1980

The report was prepared for:

City of Detroit

Coleman A. Young, Mayor

Recreation Department

Daniel Krichbaum, Director
Theodore Jordan, Deputy Director
Harriet Saperstein, Principal Planner
Edward Viall, Chief Landscape Architect
Betsy Reich, Planning Intern

The report was prepared by:

BJR, Inc., Landscape Architects and Site Planners

William M. Jackson, Principal
Constance C. Dimond, Associate

With the participation of the West Riverfront Design Review Committee:

Samuel Lawson, Department of Transportation
Robert Hoffman, Planning Department
Harold Smith, Planning Department
Ronald Flies, Community and Economic Development Department
William Lawson, Community and Economic Development Department
John Conway, Civic Center Department
Al Praeger, Engineering Department

This report was funded in part through financial assistance provided by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, United States Department of Commerce, through funds provided under the Coastal Zone Management Act of 1972 (PL 92-583) and administered by:

Michigan Department of Natural Resources
Division of Land Resource Programs

Chris Shafer, In Charge, Coastal Zone Management Unit

David Warner, Project Representative

18307

Michigan, Department of Natural Resources

TE301 .W47 1980
8808826

MAR 25 1997

Property of CSC Library

U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

land planning
bjr inc
and
site consultants

Michigan Square, 330 E. Liberty, Suite 3D
Ann Arbor, Michigan 48104/(313) 665-9146

ACKNOWLEDGEMENTS

BJR, Inc. is grateful to personnel of the following agencies and organizations who contributed information in the preparation of this report:

Recreation Department
Transportation Department
Planning Department
Community and Economic Development Department
Engineering Department
Civic Center Department
Police Department, Special Events Division
City Planning Commission

Detroit Free Press
Norfolk and Western Railroad
Chessie Systems
Union Belt Railroad
Riverfront Associates
International Bridge Corporation
Detroit-Canada Tunnel Corporation
American Youth Hostels, Bicycle Committee

Table of Contents

I. INTRODUCTION

II. STUDY AREA ANALYSIS AND IDENTIFICATION OF ROUTE POTENTIALS

III. ROUTE PLANNING AND DESIGN CONSIDERATIONS

IV. ROUTE DESCRIPTION AND DESIGN ALTERNATIVES

V. IMPLEMENTATION

Introduction

Planning Background

The West Riverfront bicycle/pedestrian route is part of a larger plan to develop a continuous pathway linking recreational facilities and other activity centers along Detroit's ten-mile riverfront. This pathway linkage system is, in turn, one component of a framework of policies for revitalizing the Detroit riverfront to increase its recreational and economic value to the city and the metropolitan region.

Although increased public access to and recreational use of the riverfront has long been a planning goal in the city of Detroit, historical patterns of development have emphasized industrial use and, as a result, have limited public access to and enjoyment of the river. A series of recent planning studies and policy statements concerning riverfront land use and circulation have re-emphasized the necessity of utilizing the valuable resource which the river represents more effectively in helping to achieve a Detroit renaissance.[1] Over the past several years, planning policies have been established which re-affirm the city's commitment to provide an increased number and variety of riverfront recreational opportunities and to improve public access to and along the river. At the same time, these policies recognize the need to maintain water-oriented industrial and transportation functions which are vital to the city's economic well-being and to encourage renewed private investment through residential and commercial redevelopment on the riverfront. As a result, this policy framework recommends a compatible mixture of land uses, including new, high intensity residential, commercial, and recreational development, new water-related industrial use, and the improvement (or long-term relocation) of existing industry which is environmentally or perceptually detrimental to other riverfront development objectives.

RIVERFRONT RECREATION

The City's riverfront recreational concept is to utilize the entire riverfront zone as a recreation area "consisting of a system of linked recreational facilities woven into the existing

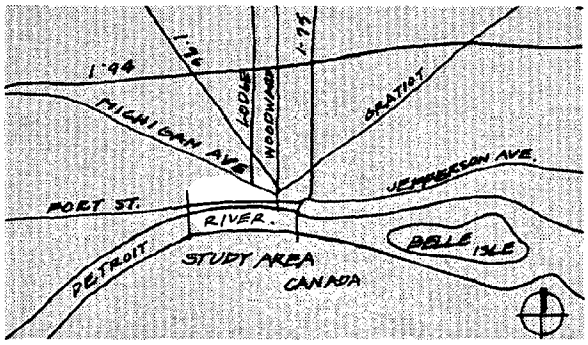
fabric of land and river uses."[2] This broad definition of recreation includes not only the use of public parks, but any place where people go for the enjoyment of leisure time in recreation, education, or entertainment. To ensure that new and existing riverfront recreational opportunities are perceptually and functionally accessible, they are to be linked together in a continuous chain by a bicycle/pedestrian pathway. This pathway linkage system will not only improve access to and along the river, but will also create a unifying physical design element which coordinates and ties together the mixture of riverfront land uses and establishes a clear and positive identity for the riverfront zone. Finally, the pathway linkage system creates new recreational opportunities for linear activities such as bicycling, walking, and jogging and for a series of educational "trails" which take advantage of the riverfront's unique potential for environmental, historic, and industrial interpretation.

The West Riverfront Bicycle Pedestrian Pathway

This study of alternatives for the development of a bicycle/pedestrian pathway in Detroit's West Riverfront area is the third in a series of detailed planning projects which have been funded with the assistance of the Coastal Zone Management Program to begin the implementation of the City's riverfront recreational strategy.[3] The two previous studies, Linked Riverfront Parks Project and Engel and Reid Parks, concerned the East Riverfront area (Hart Plaza to Conner Creek) and focused primarily on the development of new recreational activity centers. This is the first study to focus on the area to the west of Hart Plaza and to emphasize the detailed planning and design issues which must be addressed in developing the bicycle/pedestrian pathway linkage system.

Figure 1-1

REGIONAL CONTEXT



STUDY AREA OVERVIEW

The West Riverfront study area extends from Hart Plaza, a major riverfront special events area located in Detroit's downtown Civic Center, to Riverside Park, a 20-acre recreational facility including a boat launch, playfield, and open space areas, located two miles to the west. These two major recreational attractions form the termini of this segment of the pathway linkage system. Located on the riverfront in the area between these two major recreational facilities are Cobo Hall, Joe Louis Arena, the proposed Riverfront West hotel/retail and housing development sites, the new Free Press printing plant, and the rail yards of the Norfolk and Western Railroad (serving the rail freight ferry to Canada) and Chessie Systems. Jefferson Avenue, which is being reconstructed from Third to Twelfth Streets, borders these land uses on the north, running parallel to the river.

The study area extends north from the river to Porter Street. A portion of the central business district, the Westside Industrial I and II redevelopment areas, the Fort Street corridor, the Hubbard-Richard residential community, and the entrance to the Ambassador Bridge are located in this portion of the study area.

STUDY INTENT

The intent of the study is to evaluate route location and design alternatives for the development of a bicycle/pedestrian pathway from Hart Plaza to Riverside Park. To capitalize on the opportunity to provide an international bike route linking Detroit and Canada, the scope of the study also includes the development of a route segment north from Riverside Park to the Ambassador Bridge.

The study has been structured to evaluate route development potentials and to evolve design recommendations for two principal time frames:

- a short-term plan which can be implemented within the existing framework of land ownership and circulation conditions, with minimal physical changes
- a long-term plan which illustrates optimum feasible route location and design solutions

THE STUDY PROCESS

The pathway planning and design process includes five principal stages:

- an inventory and analysis of existing study area conditions and proposed development plans
- a review of bicycle and pedestrian route planning criteria and design guidelines
- an analysis of the major problems and potentials for route location and design and the development and evaluation of conceptual route alternatives
- the identification of a recommended route, the development of design alternatives for critical areas, and the development of cross-sections for typical route segments
- the development of a phasing strategy for route implementation and the preparation of preliminary cost estimates

The inventory and analysis phase of the study included interviews with the staff of a number of City departments and regional agencies to identify and discuss riverfront planning objectives and issues, available information on existing land use and circulation conditions, and proposed development plans and scheduling. Field studies of traffic volumes and turning movements were also conducted to supplement data provided by the City in evaluating roadways identified as potential candidates for on-street bike use. Because weekday traffic volumes (and the percentage of truck and bus traffic) on the major east-west streets in the study area are high, the concept of signing on-street route segments for weekend and holiday use only was investigated. The Detroit Department of Transportation cooperated in providing machine counts of weekend traffic volumes on a number of study area roadways; no weekend machine counts were possible on the streets located within the central business district. However, information on events scheduling and attendance in the Civic Center area, provided by the Police Department, Special Events Division, suggested that weekend traffic volumes (and volumes of pedestrian traffic) in the eastern portion of the study area are periodically high.

This initial data gathering phase also included interviews with representatives of the Detroit Free Press, the Norfolk and Western Railroad, and Chessie Systems, three of the four owners of riverfront property in the study area.[4] These meetings focused on the operational plans and requirements of private property owners and their attitudes and concerns regarding the proposed development of the bicycle/pedestrian route.

City staff involved in continued planning for the proposed Riverfront West hotel/retail and housing developments (located on the river edge between Third and Eighth Streets) provided

information on the status of on-going negotiations for easements on the inland edges of these privately owned parcels and on the proposed development programs. Because these projects have not yet reached the final planning stages, no detailed information on site plans, development scheduling, or easement dimensions was available.

This phase of the study also included contacts with the International Bridge Corporation (Ambassador Bridge) and the Detroit and Canada Tunnel Corporation (Windsor Tunnel) to discuss the possibility of facilitating bicycle crossings from Detroit to Canada.

Coincident with the inventory and analysis of study area conditions and the exploration of private property owner attitudes concerning the bicycle/pedestrian route, bicycle and pedestrian planning criteria and design standards were reviewed and urban area bicycle use patterns were investigated. Because little information is available on Detroit area bicycle participation and user characteristics, an informal survey of Detroit area cyclists was prepared.[5] This clip-board survey was administered by staff of the Detroit Recreation Department at the May, 1980 Belle Isle Bicycle Marathon. Although limited in scope and sophistication, the results of this survey provide the only information now available on local cyclists' interest in an urban riverfront route and provide valuable information on potential users' perceptions of the characteristics which are most important in encouraging the route's use.

Detroit area members of the American Youth Hostels bicycle committee also offered assistance in evaluating the problems and potentials involved in developing a bicycle route in the West Riverfront area by surveying the study area on bicycle. Additional bike field survey comments were provided by Recreation Department staff and Tom Pendleton, Bicycle Coordinator for the City of Ann Arbor, Michigan.

On the basis of information gathered during these two preliminary study tasks, major potentials and problems concerning route development were identified and conceptual location and design alternatives were developed and evaluated. These analysis conclusions and conceptual alternatives were presented to the West Riverfront Design Review Committee made up of representatives from a number of city departments. A recommended route alignment was then established and design alternatives were refined on the basis of the review comments received. A recommended phasing strategy, which includes three sets of priority tasks, was developed and preliminary cost estimates were prepared.

THE REPORT

Structure

This report documents the planning and design process outlined above. The report is structured in five sections; these are briefly described below.

I. Introduction: The planning background for the study is discussed; the planning process and major findings and recommendations, are described.

II. Study Area Analysis and Identification of Route Potentials: The three major study area zones, defined on the basis of their land use and circulation characteristics, are described in detail. The particular problems and potentials which each zone presents in the development of the bicycle/pedestrian pathway are identified.

III. Route Planning and Design Considerations: The planning objectives and primary use of the bicycle/pedestrian pathway system are reviewed, user characteristics are discussed, and potential use levels in different zones of the study area are described to focus planning and design priorities. Design techniques which can be used to minimize bicycle and pedestrian conflicts in a shared use

pathway are proposed. Design standards for bike paths and pedestrian walkways are reviewed and criteria for determining roadway suitability for on-street bike use are presented.

IV. Route Description and Design Alternatives: A primary riverfront route alignment and a supplementary inland loop are described. A summary of planning and design issues, descriptions of design and management alternatives, and a summary of planning and design recommendations is presented for each major route segment.

V. Implementation: A sequence of phasing priorities is defined and development tasks are grouped in three priority categories. Each implementation phase is described and cost estimates for the development tasks within each phase are provided. Summary descriptions of potential sources of funding assistance are also provided.

Major Findings and Recommendations

The major findings and recommendations of the study are summarized below.

- Riverfront access and a strong riverfront orientation are primary goals of the pathway linkage system; proximity and visual access to the river are, therefore, primary route location criteria.

- The primary emphasis will be on recreational use of the pathway system; off-street bicycle facilities are preferred and perceived as safest by recreational cyclists and should be developed wherever possible to increase route use potential. Every effort should be made to provide continuous bicycle access.

- Emphasis on bicycle and pedestrian use will vary in different segments of the study area. Major pedestrian activity generators are concentrated in the eastern zone (Hart Plaza to Third) and high pedestrian use volumes are to be anticipated. The remainder of the route is likely to receive only low to moderate pedestrian use.

- Almost half of the riverfrontage in the study area will not be available for the development of the bicycle/pedestrian pathway in the short and long term; the pathway segments located adjacent to Riverfront West (Third to Eighth Streets) and in the rail yard area (Twelfth to Twenty-first Streets) must follow Jefferson Avenue.

- Opportunities which do exist for direct river edge access in the Civic Center area, at the Free Press site, and in Riverside Park, must be emphasized and effectively used. Pathway turning points and "entrances" to the river edge must be clearly defined; river edge plazas can be developed as intermediate nodes of activity between Hart Plaza and Riverside Park.

- Municipal ownership of river frontage in the Civic Center area (Hart Plaza to Third Street) presents an important opportunity to develop this critical segment of the bicycle/pedestrian pathway. An off-street combined use pathway is possible, but competing demands for the use of limited riverfront land exist. Emphasis on pedestrian use, bus parking, and peak vehicular traffic needs may require limitations on through bicycle riding; continuous access can be provided, however.

- Unresolved questions concerning the construction schedule and extent of construction disturbance for the proposed Downtown People Mover system may limit the short-term feasibility of pathway development on the riverfront in the Civic Center area; on-street bicycle use, except during peak traffic periods, can provide access in the short term, if necessary.

- As yet unresolved questions concerning the dimensions and timing of availability of public access easements on the inland edges of the Riverfront West parcels (Third Street and Jefferson Avenue from Third to Eighth Streets) preclude final solutions to pathway design in this area. These easements are critical linkages in developing a continuous, direct, and safe pathway system.

- Special design treatments are recommended in the eastern zone of the study area where high volumes of pedestrian traffic are combined with bicycle use in a shared pathway; expanded walkways and physical separation between pedestrian and bicycle use zones will minimize the potential for conflicts between users. Separation between bikes and pedestrians is also recommended where possible in the vicinity of the Free Press.

- The improvement of access from the river edge to Jefferson Avenue on Twelfth Street is necessary if the riverfront Free Press easement is to be incorporated into a continuous pathway system. The development of a 14' wide off-street pathway is possible within the existing 50' right-of-way.

- Bicycle access from Twelfth Street to Riverside Park must be provided within the Jefferson Avenue right-of-way in the short term. Improvements to pavement conditions and to rail crossings are recommended from Twelfth to Eighteenth Streets. Rail use of the river edge is expected to continue in the long term; however, easement negotiations with Chessie Systems and Chrysler Trucking should be initiated to determine the feasibility of developing an off-street pathway within the rail yard area adjacent to Jefferson Avenue.

- Because vehicular traffic is substantial and the condition of the existing rail crossing is unsatisfactory for cyclists, an improved entrance to Riverside Park is recommended. In the short term, these improvements may be limited to the development of a new pathway immediately to the east of the West Grand Boulevard vehicular entrance. In the long term, however, park expansion to Jefferson Avenue may make it possible to develop a new park entrance and bicycle/pedestrian rail crossing at Twenty-fourth Street.

- Bicycle access to Riverside Park's restroom facility should be provided; bicycle parking and a bicycle rental concession can also be provided at this location. Bicycle access to the river edge and the development of a river edge plaza, with informational displays on Great Lakes shipping, focusing on the existing mail and fire boat docks, are also recommended.

- Weekend and holiday on-street bike routes to the Hubbard-Richard neighborhood and to the entrance to the Ambassador Bridge (at Porter Street) can be provided on West Grand Boulevard, the I-75 Service Drive, the Twenty-first Street. Bicycle crossings to Canada are expected to be prohibited in the short term during the proposed bridge reconstruction project. The bridge management has taken a negative position concerning improvements to facilitate bicycle access in the long term; a specially equipped van can be provided to transport cyclists if short- or long-term demand warrants.

- The development of a supplementary on-street bike loop signed for weekend and holiday use is recommended using Lafayette Boulevard; connections to Riverside Park and Hart Plaza (on Woodward) can also be established. This on-street loop will improve bicycle access to the riverfront pathway from nearby residential areas and will expand the

variety of recreation cycling opportunities at minimum additional cost. Limited bike access (walking bikes) is required within Hart Plaza.

- A municipal commitment to provide adequate maintenance and supervision for the bicycle/pedestrian pathway will be an important factor in encouraging the cooperation of private landowners and in facilitating development of the bicycle/pedestrian pathway. The creation of a task force made up of City staff and representatives of private interests has been suggested to ensure effective continuing management of the route.

- Informational and directional route signing at pathway turning points, Hart Plaza, and Riverside Park will be an important element in ensuring route legibility and promoting use of the pathway.

NOTES

1. These planning studies and policy statements include: The Land and the River, Interagency Taskforce for Detroit/Wayne County Riverfront Development (1976); The People and the River, Wayne County Planning Commission (1977); Proposed Policies and Possible Futures for the Riverfront, City of Detroit Planning Department (1978); and Riverfront Recreation Planning Kit, City of Detroit Recreation Department (1978).

2. Riverfront Recreation Planning Kit, 1978, n.p.

3. A more general evaluation of techniques to enhance the riverfront resources of the city of Detroit through riverfront expansion was also funded with the assistance of the Coastal Zone Management Program. Riverfront Capabilities Expansion Analysis, (1979).

4. The manager of the Union Belt Railroad, a switching railroad jointly owned by the Norfolk and Western, Chessie, and Conrail, was also interviewed.

5. The results of a 1974 survey of bicycle ownership and participation in Pennsylvania have been applied to Detroit area population statistics to estimate local bicycle use. (Barton-Aschman Associates, Inc., Technical Aids for Bikeway Planning, January, 1978. Prepared for the Southeast Michigan Council of Governments.)

A copy of the Riverfront Recreational Bike Use Survey, administered at the Belle Isle Marathon, is provided in Section III, Appendix A. Two hundred and eighty surveys were completed. Thirty-two percent of the survey respondents indicated that they would be likely to "use a bicycle route in Detroit's riverfront area" frequently. Another 49 percent indicated that they would use such a route occasionally; 17 percent of the respondents would use such a route only "rarely." Two percent of the cyclists surveyed gave no answer.

Study Area Analysis and Identification of Route Potentials

The West Riverfront study area extends from Hart Plaza, a major urban park and special events area located on the riverfront in Detroit's downtown Civic Center, to Riverside Park, a city-wide boat launch facility and passive use park located approximately two miles to the west.

Three major zones can be defined within the study area on the basis of their principal land use and circulation characteristics:

- The eastern zone, which extends from Hart Plaza and Woodward Avenue west to Third Street
- The central zone, which includes the area from Third to Twelfth Streets
- The western zone, which extends from Twelfth Street to West Grand Boulevard

A brief overview of these zones is presented below. This overview is followed by a more detailed description of each zone and an analysis of the particular problems and potentials which each presents in the planning and development of the West Riverfront bicycle/pedestrian pathway.

Study Area Overview

The eastern boundary of the study area extends north from Hart Plaza along Woodward and Michigan Avenues. Porter Street forms the northern boundary of the study area and West Grand Boulevard defines its eastern edge.

EASTERN ZONE

Land Use

This portion of the study area incorporates a segment of Detroit's central business district and the city's riverfront Civic Center area,

including Hart Plaza, Cobo Hall and Arena, the Veteran's Memorial Building, and the new Joe Louis Arena. The docking site of the Lansdowne, a ferry boat which has been converted to a restaurant, is located immediately to the west of Hart Plaza and adjacent to a City-owned parking area located on the river edge behind Cobo Hall. Further west on Civic Center Drive, at the foot of Third Street, is the Boblo boat dock. The site of the proposed Riverfront West hotel/retail complex is located on the west side of Third Street at the river edge. This area is now used for surface parking. The entrance to the Windsor Tunnel (which links Detroit to Canada) and the Renaissance Center complex are located just to the east of the study area.[1]

Circulation

The Lodge Freeway provides regional vehicular access to the eastern portion of the study area. East Jefferson Avenue, located immediately to the north of the Civic Center, provides access to the east. However, the principal east-west through streets are Fort and Lafayette, located several blocks further north. First, Third, Cass, Washington Boulevard, Griswold, and Woodward Avenue are the principal north-south streets in this portion of the study area; no through vehicular access from the central business district to the river edge is available, however.

Pedestrian access to the riverfront is available at Hart Plaza and at Third Street. A sidewalk is available on the north side of Civic Center Drive; however, no direct access along the riverfront is now possible in the study area's eastern zone. Vehicular access to the riverfront is possible at Third Street and along Civic Center Drive (Atwater). However, the Civic Center's riverfront area can be reached by car from the north and west only via Cavacier and West Jefferson Avenue.

CENTRAL ZONE

Land Use

The proposed Riverfront West housing development site, located immediately adjacent to the site of the hotel/retail complex, extends west along the riverfront to Eighth Street. These development parcels are bounded by West Jefferson Avenue on the north. The new Joe Louis Arena garage and a newly constructed exit ramp from the Lodge Freeway are located immediately to the north of Jefferson. The downtown campus of Wayne County Community College is located north of the Arena garage, facing Fort Street.

The new Detroit Free Press printing plant, parking lot, and a nine-acre development expansion parcel are located on the river edge between Eighth and Twelfth Streets. A riverfront walkway has been provided along the entire length of the Free Press parcel; access to this riverfront easement is possible at the foot of Eighth Street and at Twelfth.

The main branch of the U.S. Post Office and a mixture of commercial, industrial, and warehousing establishments are located to the north of the Free Press along West Jefferson Avenue and Fort Street. The Westside Industrial I and II redevelopment areas, which include office, commercial, and light industrial uses, are located to the north of Lafayette.

Circulation

The principal east-west circulation route in this portion of the study area is Fort Street. Lafayette Boulevard (located to the north of Fort) and Jefferson Avenue (located near the river edge) provide secondary east-west access. The principal north-south streets in this area are Trumbull and Twelfth Street (Rosa Parks Boulevard); only Twelfth Street provides direct access to the river edge, however.

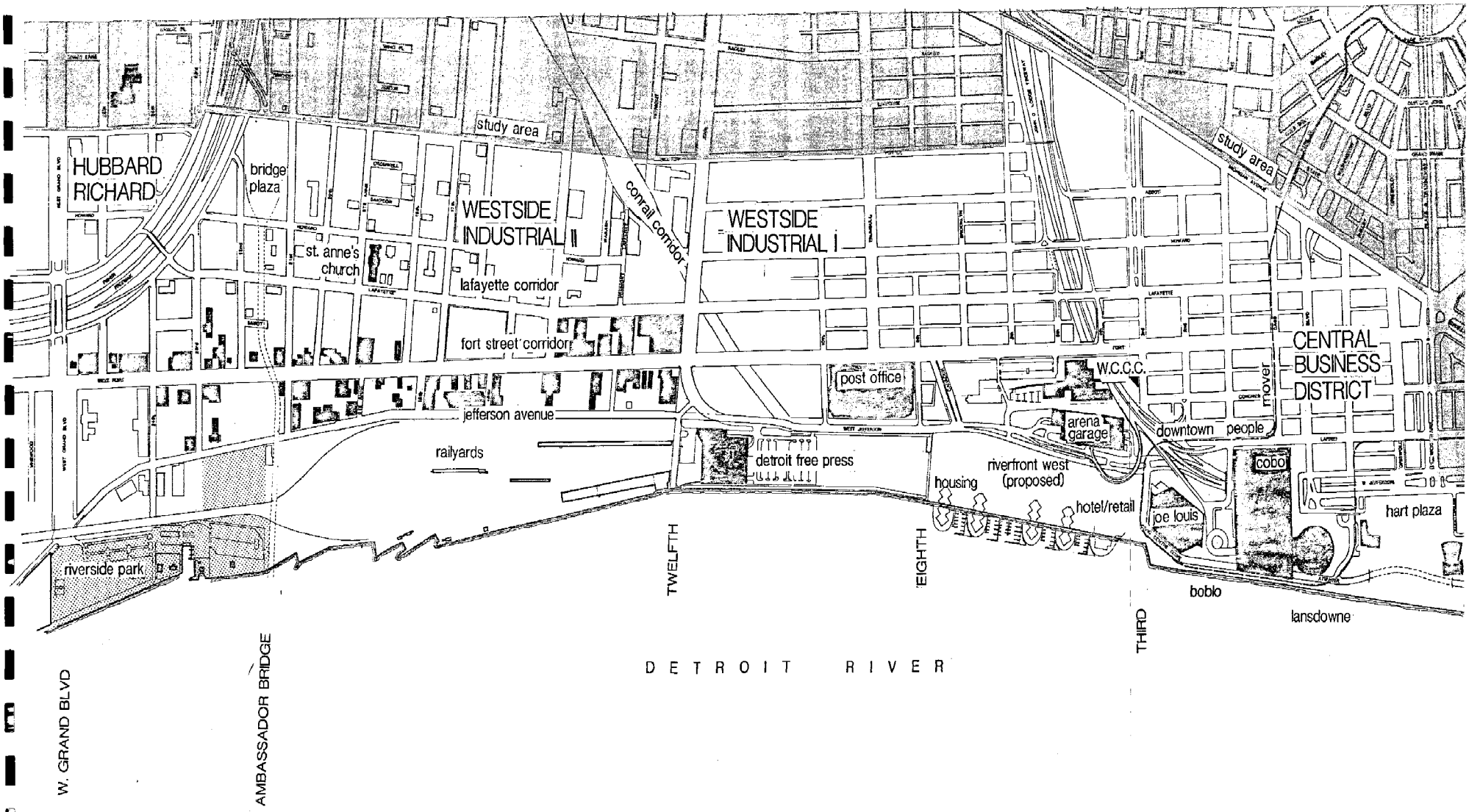


Figure 2-1

WEST RIVERFR

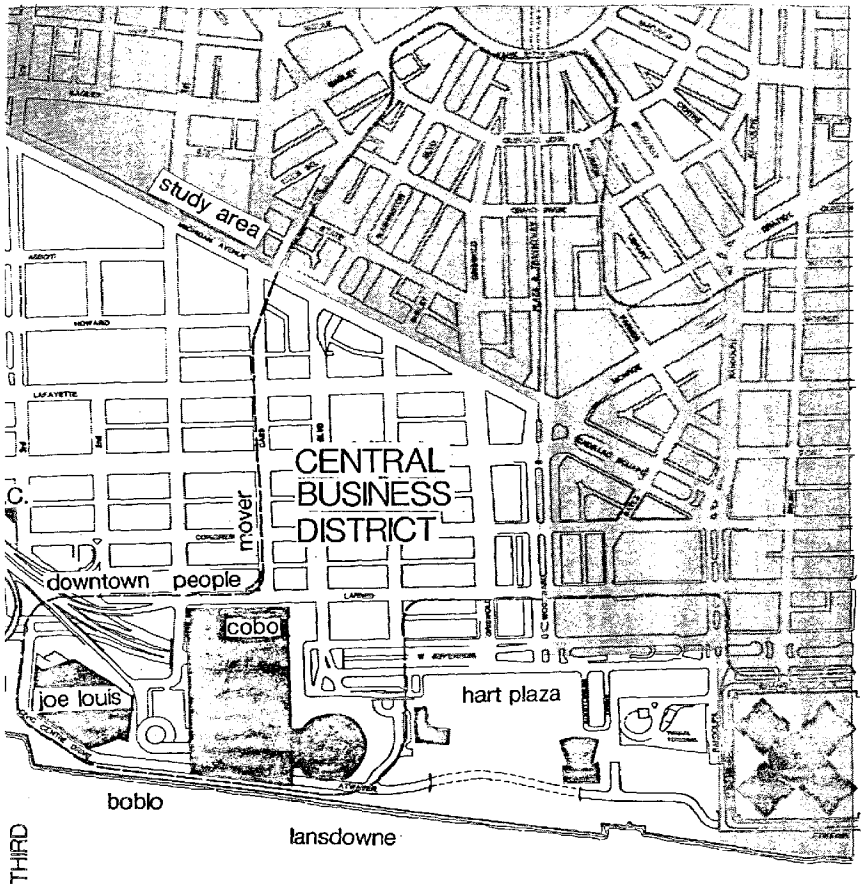


Figure 2-1

WEST RIVERFRONT STUDY AREA

bjr inc.

A Conrail rail corridor enters the central portion of the study area from the northwest. This corridor provides underground rail access to the U.S.-Canadian freight tunnel. Surface rail tracks, running from the Conrail corridor to a SEMTA commuter terminal which will be located behind the Arena parking garage, are to be constructed on the northern side of Jefferson Avenue.

WESTERN ZONE

Land Use

The Norfolk and Western (N&W) and Chessie Systems rail yards are located on the river edge to the west of Twelfth Street. This rail yard area, which extends west to Riverside Park, is the site of the U.S.-Canadian rail ferry operation. No riverfront access is available through this area.

Rail tracks serving the N&W and Chessie yards enter the study area from the west, crossing West Grand Boulevard at the entrance to Riverside Park. Spur tracks are also located within West Jefferson Avenue.

To the north of the rail yard is an area of mixed industrial, warehousing, and commercial uses located on West Jefferson Avenue and Fort Street. Further to the north is the Hubbard-Richard residential community and the entrance to the Ambassador Bridge (at Porter Street).

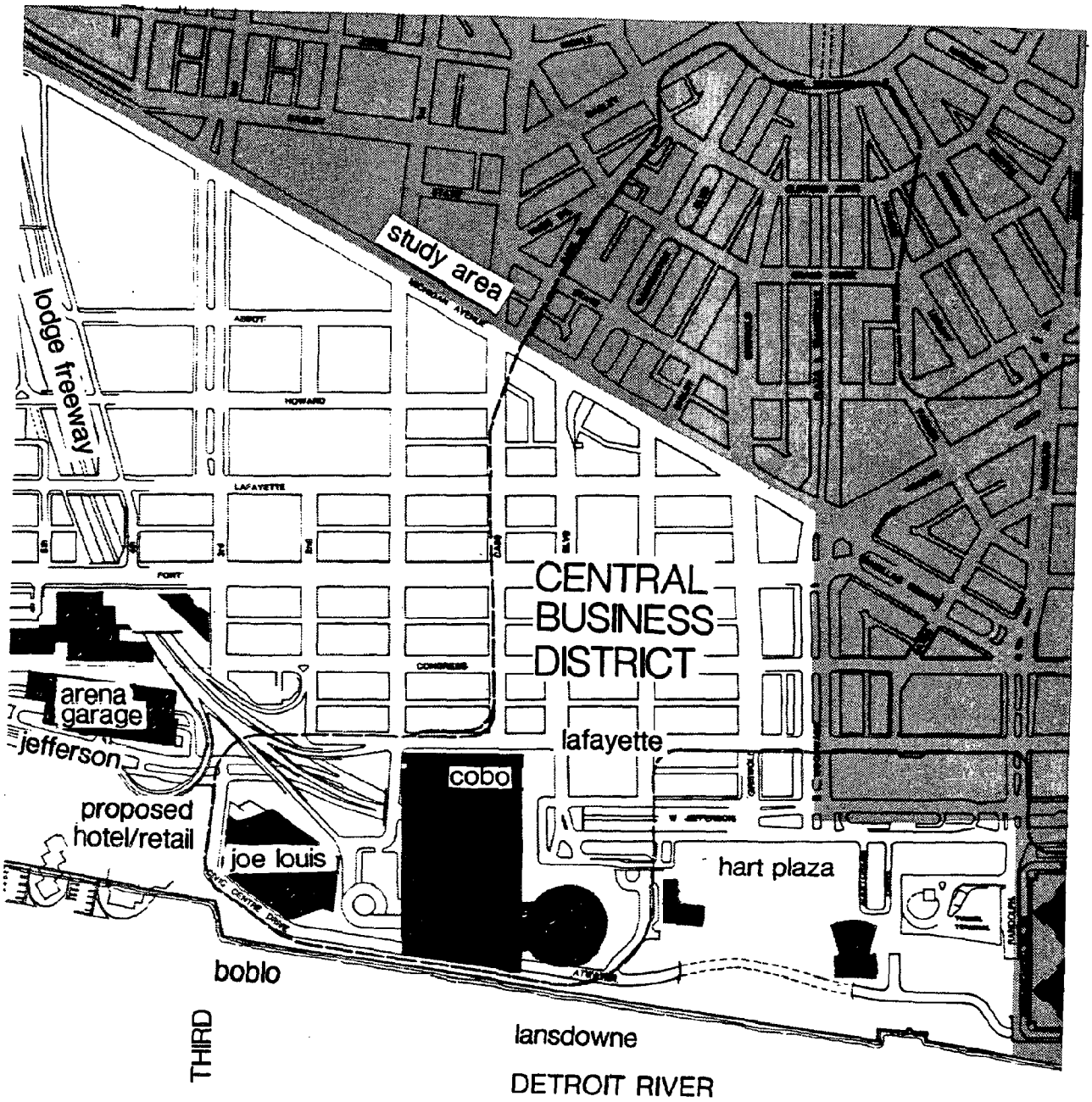
Riverside Park, the western terminus of this segment of the proposed bicycle/pedestrian route, is located at the foot of West Grand Boulevard. The park includes a boat launch ramp, riverfront promenade, passive use lawn areas, and parking. Park expansion to the east and north is planned.

Circulation

Regional freeway access to the Ambassador Bridge and the western portion of the study area is provided on the I-75 Freeway which bisects the Hubbard-Richard residential area. Fort Street continues as the major east-west circulation route in this portion of the study area, while West Jefferson Avenue serves primarily as a local access street. Because through truck traffic is prohibited on Lafayette Avenue between Sixteenth and the I-75 Freeway, Lafayette is not considered a major traffic carrier in this area. The major north-south circulation routes are Twenty-first Street (which serves as a truck route connecting Fort to Vernor Highway) and West Grand Boulevard.

Figure 2-2

EASTERN ZONE



Detailed Analysis and Identification of Route Potentials

EASTERN ZONE

Description and Analysis

The Civic Center Area:

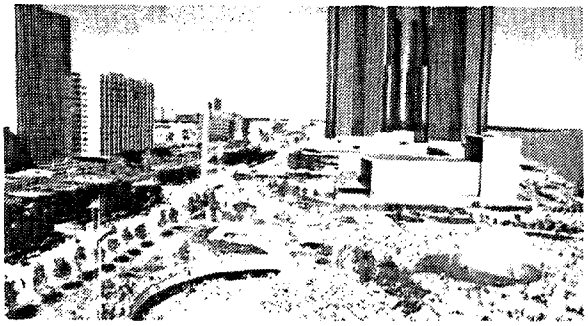
The Civic Center attracts large numbers of people to the riverfront in the eastern portion of the study area. Hart Plaza, located at the foot of Woodward between Jefferson Avenue and the river edge, is the chief outdoor recreational attraction in the downtown area. Outdoor events, including the Ethnic Festivals, which attract hundreds of thousands of visitors each weekend, are scheduled in the plaza from April through September. Hart Plaza is also used by noon-hour picnickers and strollers during the work week. Joe Louis Arena (maximum seating capacity 23,000), Cobo Arena (12,000 capacity), and Cobo Hall also generate significant amounts of pedestrian and vehicular traffic throughout the week for conventions, sports events, concerts, and special exhibitions.

Weekend event's scheduling in the Civic Center area is particularly heavy during the summer months; one hundred seventy individual events were scheduled during May, 1980. On many occasions, the scheduling of events in the different components of the Civic Center area (Cobo Hall, Joe Louis Arena, Hart Plaza) overlap and as many as fifteen events drawing over 125,000 visitors can occur in one day.[2]

Hart Plaza's major outdoor use area is elevated above the river edge. Stairs lead down from the plaza to a riverfront promenade. This promenade is 24' wide at its western end and over 40' wide on the east. Bicycle use within the plaza and on the riverfront promenade is prohibited because of the potential for conflicts with pedestrians.

Figure 2-3

HART PLAZA



The Lansdowne:

The Lansdowne restaurant, a converted ferry boat which is to be docked at the southwest corner of Hart Plaza, will attract increased pedestrian and vehicular traffic to the riverfront. The proposed seating capacity of the restaurant is 600 persons; banquet and entertainment (night club) facilities may also be added. The opening of the Lansdowne, originally scheduled for June, 1980, has been delayed until sometime later in the summer. The restaurant will be open year-round for lunch and dinner.

A valet parking area, serving Lansdowne patrons, is to be located between Civic Center Drive and the river edge just to the west of the Atwater tunnel (which passes under Hart Plaza). The Lansdowne's frontage on Civic Center Drive is approximately 110'. Negotiations between the restaurant's owners and the City have resulted in a tentative agreement to provide a 15' wide walkway connecting Hart Plaza to the City-owned land located behind Cobo Hall, thus ensuring the availability of a through public access along the riverfront.[3] Given the volumes of pedestrian traffic to be expected in this area, this walkway is not likely to be adequate to serve both cyclists and pedestrians, unless a walk-your-bike policy can be established.

The Downtown People Mover:

The route of the proposed Downtown People Mover (DPM), an elevated guideway transit system which will form a three-mile loop around the central business district, enters the riverfront portion of the Civic Center area on Shelby Street (between Hart Plaza and Cobo Hall). The DPM then turns west along the south side of Civic Center Drive to Third Street and north on the west side of Third to the Arena station, located opposite the Joe Louis Arena near the corner of Jefferson Avenue.

Recently announced plans for the possible expansion of Cobo Hall north to Congress Street have resulted in some modifications to the originally proposed DPM route and the relocation of the Cobo Hall station (originally to be located on Larned Street). It is now anticipated that the Cobo station will be located on the south side of Cobo Hall near its eastern edge. It is anticipated that this DPM station will be constructed at the second story level with direct access from Cobo Hall.

The right-of-way for the DPM is approximately 10' wide, with 4' x 4' piers supporting the guideway at 70' to 100' intervals. These piers are located at varying distances from the edge of Civic Center Drive and may further complicate the problem of providing adequate space for a shared use bicycle/pedestrian pathway in the Civic Center area.

Figure 2-4

LANSDOWNE SITE AND COBO HALL

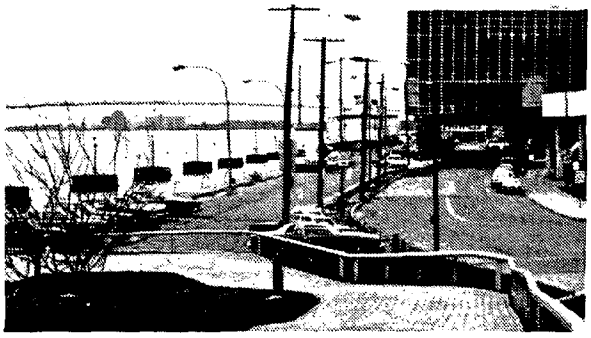
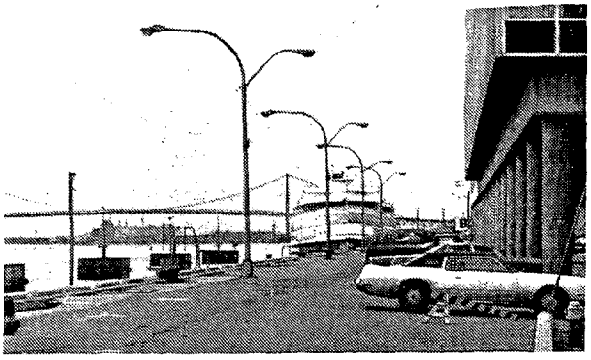


Figure 2-5

COBO AREA RIVERFRONT PARKING



Riverfront Parking:

The 50' wide area located immediately to the west of the Lansdowne site between Civic Center Drive and the river edge is owned by the City and is currently leased for use as a parking lot. This lease will expire at the time that the Joe Louis Arena garage is opened. This 1,000' of river frontage will then become available for re-use. It is anticipated that this area, which provides ample width for the development of an off-street bicycle and pedestrian pathway, will be incorporated into the riverfront pathway linkage system.

Boblo Boat Dock:

The Boblo boat, which docks at the foot of Third Street, attracts approximately 500,000 visitors during its summer operating season. The ferry boats, which carry passengers to and from the Boblo Island amusement park (located to the south of Detroit) operate from 10:00 A.M. to 10:00 P.M. daily; special evening cruises are also scheduled.

Boblo patrons approach the dock site along Third Street; waiting areas are provided to the east of the Boblo entrance (within a fenced area) and between Civic Center Drive and the river edge at the foot of Third Street. At the present time the fence which surrounds the Boblo site's passenger waiting area is located only 6' from the edge of Civic Center Drive. (This narrow walkway also contains light standards.) An easement agreement negotiated between the new Boblo management and the City[4] has established that an additional 8' will be made available to facilitate the development of the riverfront bicycle/pedestrian pathway system; as a result, a total of approximately 14' will be available. It is proposed that piers for the DPM guideway system be located within this easement, however. As currently planned, the proposed pier locations will bisect the easement, leaving 5' to either side of each pier. The possibility of relocating the piers, in order to provide a wider unobstructed pathway, is under discus-

Figure 2-6

BOBLO ENTRY

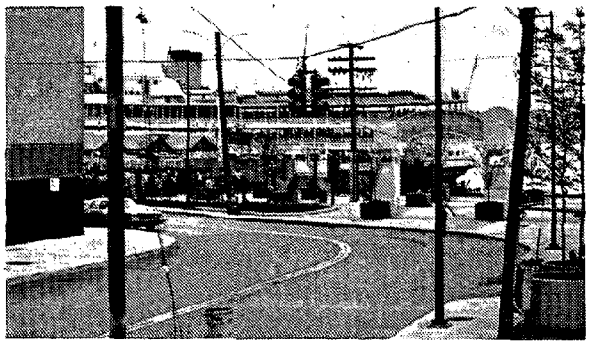
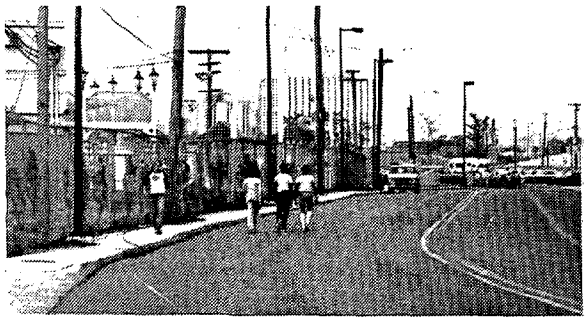


Figure 2-7

BOBLO WALKWAY



sion. Even if this is possible, the narrow width of the pathway in the Boblo area will create a "bottleneck" in the bicycle/pedestrian route.

The new Boblo management has already made a number of improvements to the boat dock area, including landscaping along the existing fence line and at the foot of Third Street, the construction of an entrance arcade on Civic Center Drive at Third,[5] and general facade improvements. The construction of a food and gift concession building is also being planned and changes in the current ticket selling and taking admissions procedure are being considered. The current system for admissions to the Boblo boat requires the maintenance of a fenced area to accommodate ticket holders waiting to board. An alternate system which will allow the entire dock site to be opened up for public access may be possible in the future, however. In this event, an increased pathway width may be available and access past the Boblo site may be somewhat improved. The locations of the existing structures on the Boblo site will continue to restrict the width available for through movement along the river edge, however.

Riverfront West Hotel/Retail Development:

The Riverfront West hotel/retail development site is located immediately to the west of the Boblo boat dock on Third Street. This development parcel extends approximately 500' west along the river edge and north to West Jefferson Avenue. A 1,000-room hotel and 50,000 square feet of retail space (including a supermarket and other shops) are planned.

Although detailed site plans have not yet been prepared, it is anticipated that parking facilities will be located below street level, with principal access to the hotel located near the foot of Third Street. The retail segment of the development is expected to be located in the central and northern portions of the parcel, surrounding a plaza area which will open onto Third Street. No building construction is planned for the area underneath the freeway off-ramp which swings out over the northern part of the development parcel. Service access to the retail area from Jefferson Avenue may be located in this area, however.

The hotel/retail development will be linked to the DPM Arena station and ramp by an elevated pedestrian "skyway" system located at the second level. The skyway system will also provide access from the Riverfront West housing site to the hotel/retail area, the DPM ramp, the Joe Louis Arena, and the Arena garage. The skyway system will also include a connection across the Lodge Freeway to the central business district (at Second and Larned).

Recent negotiations between the City and the Riverfront West development group have resulted in a tentative agreement to provide a 10' wide, 200' long public access easement along the river edge in the hotel/retail area. No continuous through access along the river edge will be possible, however. The City is also negotiating an agreement with the developers of Riverfront West to provide a public access easement for the bicycle/pedestrian pathway on the Third Street and West Jefferson Avenue edges of the hotel/retail parcel. (This easement agreement will also apply to the Riverfront West housing development parcel.) While no final agreement has been reached on the width of this easement, City staff have recommended that a minimum width of at least 16' be provided where technically feasible and a wider easement be provided wherever possible.

In addition, the City is investigating the possibility of developing a street end plaza at the foot of Third by extending the 60' wide right-of-way from the existing river edge to the harbor line. This plaza development would be undertaken in conjunction with the fill and seawall construction planned for the Riverfront West hotel/retail site.

Because the Riverfront West hotel/retail development is located in such close proximity to Hart Plaza and the Civic Center's other convention and special events facilities,[6] the Riverfront West restaurants and retail shops can be expected to attract significant numbers of users from these areas. As a result, pedestrian traffic along the Civic Center Drive and and Third Street portions of the bicycle/pedestrian pathway is likely to be heavy, especially during weekend and evening periods. The specific arrangement of uses at the Riverfront West hotel/retail site, the location of pedestrian, vehicular, and service access areas, and the specific widths of the easements to be provided will have a significant impact on pedestrian use patterns and the configuration of the bicycle/pedestrian pathway in this portion of the study area.

DPM Arena Station:

Construction of the access ramp to the pedestrian skyway system (and proposed DPM Arena station) which is located at the intersection of Third and Jefferson is almost complete. The ramp is located approximately 50' from Jefferson Avenue, immediately adjacent to the retail portion of the proposed Riverfront West development. Because no detailed development plans for Riverfront West are yet available, it is not clear whether through access between the ramp structure and the retail area will be possible at street level. Through access to the west of the ramp appears particularly critical because the walkway which has been constructed on the street side of the ramp structure is only 13' wide. This walkway will also be bisected by the (proposed) location of the DPM piers.

It appears that this relatively narrow walkway was designed on the basis of the assumption that the great majority of pedestrians will use the second-level skyway system to reach the Arena garage located to the north of Jefferson; as a result, little pedestrian traffic would be likely to occur to the north of the ramp entrance. Although these assumptions may be correct, the space requirements of the bicycle/pedestrian pathway system and the need for continuous access from Third Street to the west along Jefferson Avenue were evidently not considered.

Civic Center Drive:

Civic Center Drive parallels the river edge in the area between Hart Plaza and Third Street.[7] At the western edge of the Joe Louis Arena, Civic Center Drive terminates at Third Street which turns north (away from the river) for one block to Jefferson Avenue. No through access to the central business district is possible on Third Street.

The Civic Center Drive and Third Street rights-of-way are 60' wide, with a paved roadway of 40' divided into four 10' wide traffic lanes. A 15' wide walkway is located on the northern edge of the roadway; a 5' walkway is located on the south. The two outside traffic lanes are used for parking charter buses bringing spectators, convention

Figure 2-8

THIRD STREET (NORTH)

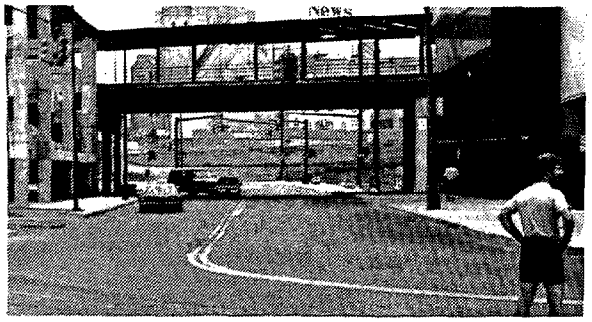
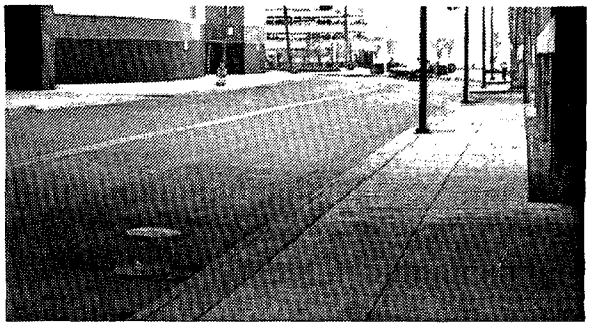


Figure 2-9

DPM/SKYWAY RAMP



participants, and Boblo patrons to the Civic Center area. Weekend afternoon and evening occupancy of these bus lanes is reported to be quite high. Moreover, the importance of this conveniently located, free bus parking is considered to be an important factor in ensuring continued high attendance at conventions and special events in the Civic Center area.

The availability of on-street bus parking obviously serves an important support function for the Civic Center. Maintaining its availability reduces the flexibility available in planning for the bicycle/pedestrian pathway in the Civic Center area, however, where severe constraints exist in some areas on the space available between the roadway and the river edge. The use of a portion of the roadway for the development of on-street bike lanes presents an attractive route planning alternative in this area because it reduces the amount of space required at river edge (and along Third Street) and provides a complete separation of bicycle and pedestrian use zones in an area where high pedestrian traffic volumes are anticipated.[8]

It may be possible to relocate this bus parking and alternative strategies for doing so should be investigated. The use of sites which are located close to the entrance to the pedestrian skyway system (at Second and Larned, Wayne County Community College, and the Arena parking garage) will maintain convenient access to the Civic Center area. In the short term, the use of the SEMTA parking area at the Arena garage may be possible. In the long term, bus parking might be provided at the proposed site of the DPM maintenance and storage yard located on Larned between Second and Cass. West Jefferson Avenue (west of the Arena garage) and Jefferson Avenue, north of the Civic Center, might also be considered as alternate bus parking sites.

Central Business District:

The portion of the central business district which is located within the study area is dominated by office development. Parking facilities serving these office uses are concentrated on the western edge of the downtown area, adjacent to the Lodge Freeway.

The current employee population of the study area portion of the central business district totals approximately 38,000 (1978); the number of employees in the study area south of Fort Street is approximately 18,600.[9]

In contrast to the significant employee population in the downtown portion of the study area, the residential population is very small (an estimated 88 residents in 1978). The downtown residential population outside the study area, but within less than one mile of Hart Plaza, has been estimated to be approximately 890 residents (1978). Significant increases in the overall downtown residential population are expected over the next five to ten years, however. The residential developments which are being planned include:[10]

- Washington Boulevard (an estimated 1,530 residents by 1985 and 2,100 residents by 1990)
- Renaissance Center (an estimated 700 residents by 1985 and 1,275 residents by 1990)
- Millender Center (an estimated 570 residents by 1985 and 900 residents by 1990)
- Edison Area (an estimated 1,590 residents by 1990)
- Grand Circus Park North (an estimated 1,100 residents by 1990)

As a result of this new development, the downtown population living withon one mile of Hart Plaza is expected to increase to 5,400

residents in 1985 and 6,700 residents in 1990.

These downtown area residents represent an important group of potential users of the bicycle/pedestrian route. Providing links to the riverfront from the areas where residential development is planned will increase the use potential of the bicycle/pedestrian system and improve access to other riverfront recreational opportunities.

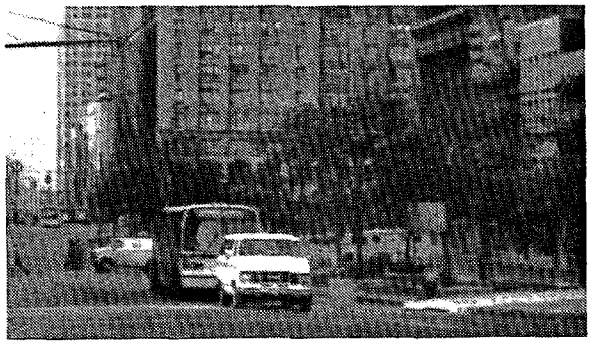
Access from the downtown area to the riverfront for bicyclists and pedestrians is limited, however. Hart Plaza is, of course, the major pedestrian access point; the proposed pedestrian skyway, linking Second Avenue (at Larned) to the DPM ramp at Jefferson and Third, provides a second point of access. Bicycle access from the CBD to the riverfront is even more difficult because no bike use is now permitted in Hart Plaza and will probably be prohibited on the pedestrian skyway system. Bicyclists must, therefore, approach the riverfront area on the existing street system.

On-street bicycle access to the riverfront portion of the Civic Center area is also difficult, however. Bicyclists can approach from the north on Washington Boulevard (to the vehicular drop-off area in front of Cobo Hall) and then proceed down a steep sharply curving vehicular ramp to Civic Center Drive. This approach has a number of disadvantages, including:

- periodically heavy traffic volumes on Washington Boulevard and fully occupied on-street parking, even on weekends
- inadequate roadway width to provide a separate bike lane
- steep grades
- poor visibility

Alternatively, cyclists approaching from the central business district can travel west on Fort or Lafayette to Cabacier, Eighth, or Twelfth Streets and then double back toward the Civic Center area. This alternative is also relatively unattractive because it requires extensive out-of-direction travel. Finally, cyclists can approach the Civic Center area on Woodward. Access from East Jefferson Avenue to the riverfront will only be possible, however, if a walk-your-bike policy can be established in Hart Plaza.

Figure 2-10
WOODWARD AVENUE (NORTH)



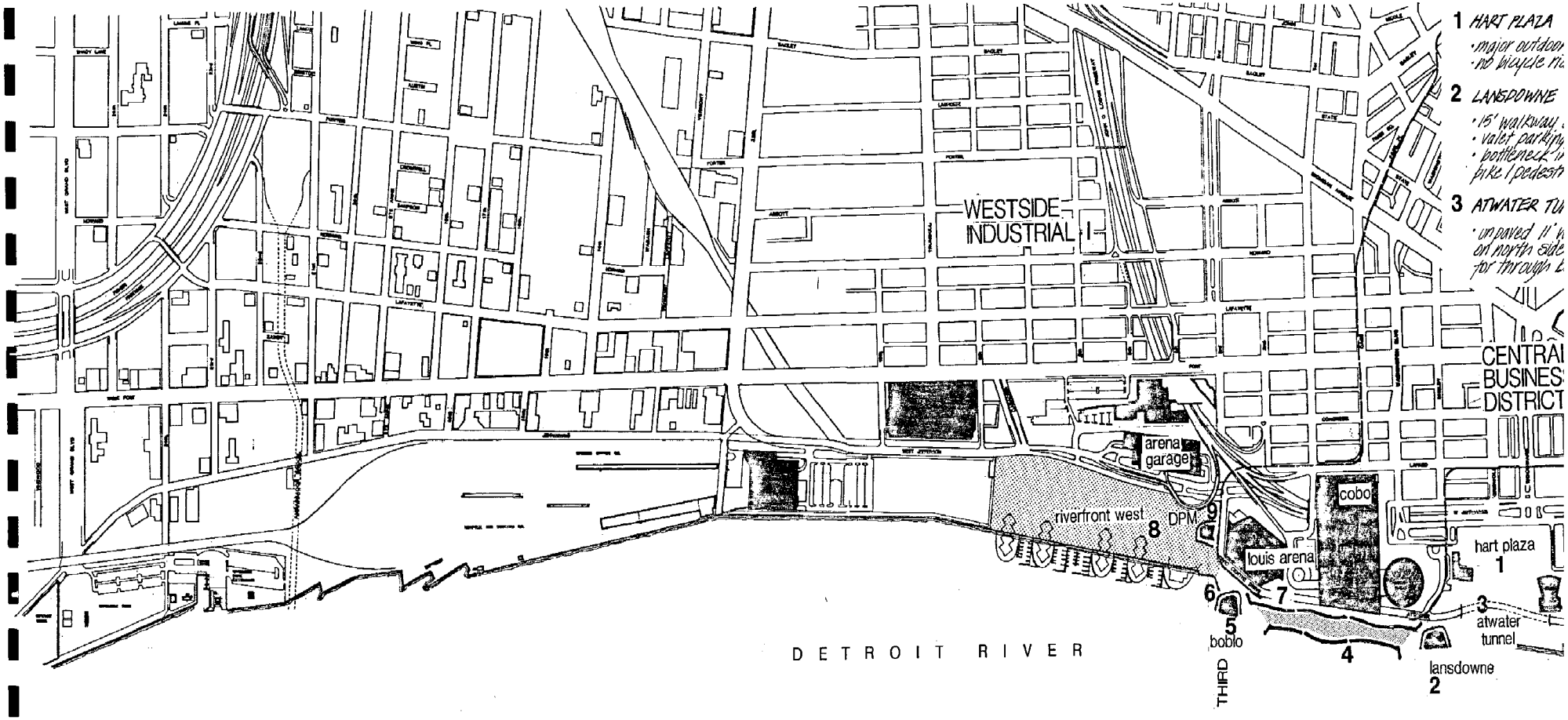
Route Potentials and Problems

The concentration of a number of major city and regional attractions in the Civic Center area indicates that the use potential of this portion of the bicycle/pedestrian pathway is extremely high. This area represents an opportunity to introduce a large number of potential users to the concept of the continuous riverfront linkage system and to the West Riverfront bicycle/pedestrian route. Displays in or near Hart Plaza describing the alignment of the riverfront bicycle/pedestrian route and its major attractions can help to capitalize on this use potential.

While the emphasis in this area will inevitably be placed on pedestrian movement, the availability of bicycle access to and through the Civic Center area is a critical requirement in developing a continuous riverfront pathway system. Hart Plaza and the Civic Center area are major attractions, not only on the West Riverfront portion of the bicycle/pedestrian pathway, but also within the context of the entire riverfront linkage system.

Although space is available for the development of a bicycle/pedestrian pathway on the riverfront in this portion of the study area, a number of "bottlenecks" exist. These include Hart Plaza itself, the Lansdowne area, and the Boblo site. Additional space can be created to relieve these bottlenecks and facilitate bicycle/pedestrian movement. In the long term this may be possible by extending the river edge. In the short term, however, space must be taken from the roadway if the recommended widths for pedestrian and bicycle pathways are to be achieved. The availability of adequate pathway widths is especially important in this area because the volume of use is likely to be high. At the very least, bicycle access to and through this area must be provided on pedestrian walkways under a walk-your-bike policy.

The Riverfront West hotel/retail development area on Third Street (and the Riverfront West



1 HART PLAZA
- major outdoor
- no bicycle ra

2 LANSDOWNE
- 15' walkway
- valet parking
- bottleneck in bike/pedestr

3 ATWATER TU
- unpaved 11' w on north side for through b

8 RIVERFRONT WEST HOTEL/RETAIL
- limited riverfront access possible; no through movement
- major pedestrian traffic generator
- easement to be provided on THIRD

9 PEOPLE MOVER STATION
- pedestrian volumes high during arrivals/departures from major events; separation between bicycle/pedestrian zones to minimize conflict is suggested. Limited sidewalk width presents potential bottleneck

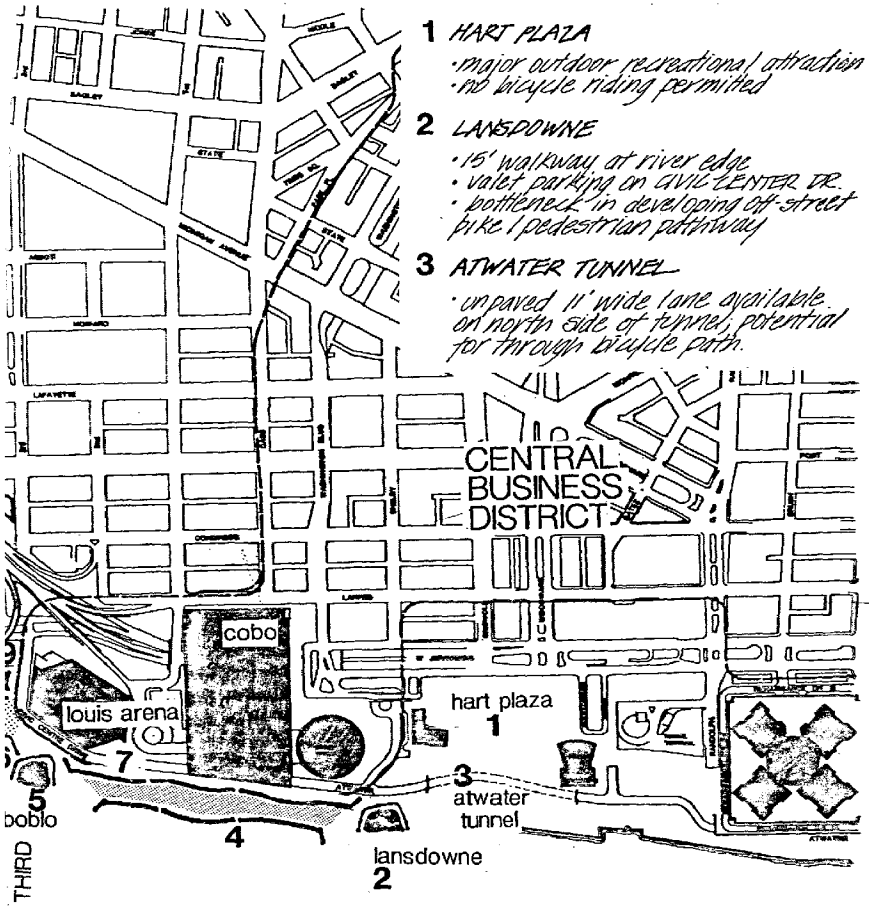
6 END OF THIRD
- potential for river edge access by proposed extension of THIRD ST. r.o.w. to harbor line and development of river edge mini-park.

7 CIVIC CENTER DRIVE
- four 10' wide traffic lanes
- two outside lanes for bus storage for weekend and evening events; limits potential for on-street bike lane

4 COBO HALL
- area to becom
- ample space bicycle and p

5 BOBLO BOA
- 300' frontage now fenced.
- 14' easement by DPM prev. bottleneck in

Figure 2-11
EASTERN ZON



1 HART PLAZA
- major outdoor recreational attraction
- no bicycle riding permitted

2 LANSDOWNE
- 15' walkway at river edge
- valet parking on CIVIC CENTER DR.
- bottleneck in developing off-street bike / pedestrian pathway

3 ATWATER TUNNEL
- unpaved 11' wide lane available on north side of tunnel; potential for through bicycle path.

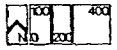
HIRD
or river edge access by
xtension of THIRD ST.
harbor line and develop-
er edge mini-park.

TER DRIVE
de traffic lanes
de lanes for bus storage
d and evening events;
ntial for on-street

4 COBO HALL / EXISTING PARKING
- area to become available for re-use
- ample space to develop riverfront bicycle and pedestrian pathway

5 BOBLO BOAT DOCK
- 300' frontage along CIVIC CENTER DR. now fenced.
- 14' easement available; bisected by DPM piers. off-street pathway bottleneck in this area.

Figure 2-11
EASTERN ZONE ANALYSIS



bjr inc.

housing site located to the west) have a significant influence on the planning and design of the bicycle/pedestrian pathway. Most importantly, the lack of through river edge access will require that the bicycle/pedestrian pathway turn away from the riverfront on Third Street and proceed north to Jefferson before continuing west. This area may also present some space constraints in developing an off-street pathway shared by bicyclists and pedestrians. Continued negotiation with the developer is required to ensure that adequate space is available for accommodating bicycle and pedestrian movement.[11] The intersection of Jefferson and Third and the area adjacent to the DPM Arena station and pedestrian skyway ramp are of particular concern.

Because the Riverfront West hotel/retail development and the uses in the Civic Center area are complementary, facilitating pedestrian and bicycle movement along the riverfront between the two areas will be of benefit to both. This mutual benefit, as well as the City's commitment to contribute substantially to improving the visual and functional character of the riverfront link between the two areas, may be influential factors in the continuing easement negotiations.

Because Civic Center facilities attract large numbers of users and are of economic, as well as recreational, importance to the city of Detroit, conflicts concerning the utilization of the limited amount of space which is available on the riverfront are inevitable. Because this riverfront area is municipally owned, however, it presents a significant opportunity to demonstrate that these functional conflicts can be resolved and that the City has a commitment to improve recreational access to the riverfront. In addition, by taking the initiative in developing this critical segment of the bicycle/pedestrian route, the City can demonstrate to potentially dubious private property owners (who will be asked to cooperate in making the route possible) that the pathway linkage system can be attractive, functional, and well maintained.

Figure 2-12

CENTRAL ZONE

CENTRAL ZONE

Description and Analysis

The Riverfront West housing development parcel and the new Free Press printing plant are located on the river edge in the central portion of the study area; Jefferson Avenue borders these riverfront uses on the north.

Jefferson is now being widened and reconstructed from Third to Eighth Streets in conjunction with the development of the new Joe Louis Arena parking garage (3,000 cars) and the construction of an off-ramp from the Lodge Freeway. Widening and reconstruction of Jefferson from Eighth to Twelfth Streets and north to Fort is scheduled for 1981.

In addition to the Arena garage, the area to the north of Jefferson Avenue includes the downtown campus of Wayne County Community College and the main branch of the U.S. Post Office. Several wholesaling operations are also located on West Jefferson between Tenth and Twelfth Streets.

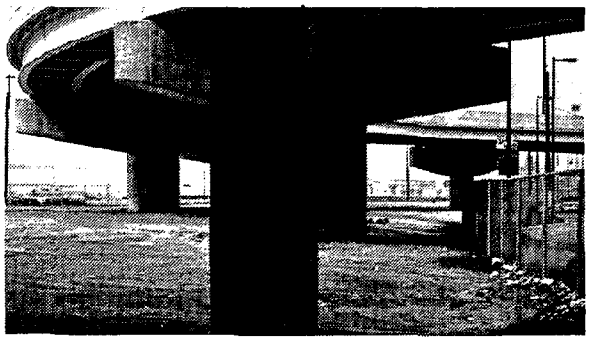
Fort Street is the major east-west through street in this portion of the study area. The area between Fort and Lafayette contains a mix of wholesaling, warehousing, and commercial uses. To the north of Lafayette is the Westside Industrial redevelopment area.

Riverfront West:

The Riverfront West housing development parcel is located on the river edge to the south of Jefferson Avenue, directly to the west of the hotel/retail site. The first phase of housing development is expected to include two high-rise apartment structures (720 units) with marina facilities located along the riverfront. One hundred forty-nine duplex condominium units (in mid-rise structures) will also be developed in the central portion of the parcel.[12] These housing components are linked by a central pedestrian spine located at the second-story level. This enclosed and elevated walkway system also links the housing parcel to

Figure 2-13

JEFFERSON AVENUE/LODGE OFF-RAMP



the adjacent Riverfront West hotel/retail site. A four-story parking structure is to be located on the Jefferson Avenue edge of the parcel with a ramp providing an elevated vehicular entrance to the development from Fort Street. (This ramp is to be located at Sixth Street.)

As noted in the description of the Riverfront West hotel/retail site, no public riverfront access will be available through the housing parcel. It is anticipated, however, that the developer will provide an easement along the northern (Jefferson Avenue) and western edges of the site for the bicycle/pedestrian pathway. City staff have recommended that this easement be at least 16', although a wider easement should be made available in most areas. The developer has already agreed to provide an 8' wide easement along the northern edge of the parcel in conjunction with the reconstruction of Jefferson Avenue. As a result, a total width of at least 24' should be available for the bicycle/pedestrian pathway. It is also anticipated that an easement will be made available on the western (Eighth Street) edge of the Riverfront West housing parcel.

While the residents of Riverfront West represent a group of potentially intensive users of the adjacent bicycle/pedestrian pathway, the second-story enclosed pedestrian walkway which links the housing site to the hotel/retail area and the Civic Center is likely to absorb most of the pedestrian movement. For this reason (and because no other major generators of pedestrian traffic are located nearby) the volume of pedestrian traffic on the Jefferson Avenue portion of the bicycle/pedestrian pathway in this part of the study area is likely to be quite low.[13]

The Free Press:

The Detroit Free Press site is located on the riverfront between Twelfth and Eighth Streets. A new printing plant and parking area (420 spaces) have been developed on the western portion of the site; approximately nine acres at the eastern end of the parcel remain vacant.

The Free Press has indicated that they have no plans for the development of this vacant parcel in the near future and would be willing to consider proposals for its interim use as a recreational site. As a result, a certain degree of flexibility may be available in planning for the development of the bicycle/pedestrian pathway in this area. Moreover, this parcel represents an opportunity to provide significantly increased recreational access and new recreational opportunities in this near downtown riverfront area. Such interim recreational development is also likely to increase the use potential of the central portion of the bicycle/pedestrian route.

Figure 2-14

ENTRY TO EIGHTH STREET EASEMENT

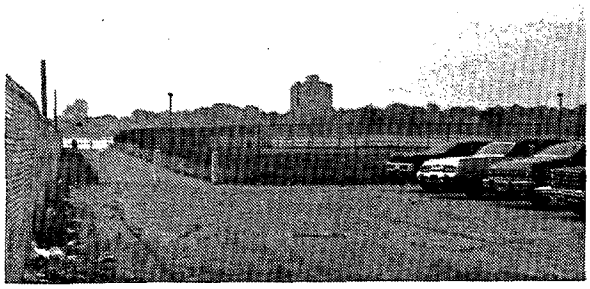
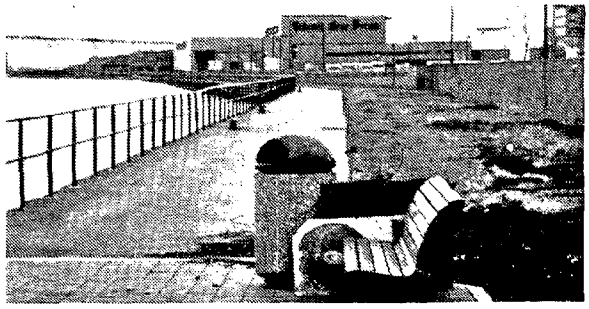


Figure 2-15

FREE PRESS RIVERFRONT WALKWAY



At the time that the zoning ordinance defining permitted uses in the riverfront Civic Center area (Woodward to Twelfth Street) was amended to allow the development of the printing plant, the Free Press agreed to develop public access easements along the site's river edge and eastern boundary to guarantee adequate access to the river. These public easements have been dedicated[14] and the river edge walkway has been constructed (and is maintained) by the Free Press.

Access to the eastern end of the riverfront walkway is available through a 20' wide north-south easement located at the foot of Eighth Street; an 11' wide asphalt walk has been constructed in this easement. A small off-street parking area (100' x 40') has also been made available at the northern end of the Eighth Street easement to provide parking for fishermen.

Figure 2-16

FREE PRESS WALKWAY AT TWELFTH STREET

The river edge walkway includes a handrail, 10' wide bituminous walk, a 12' lawn area, and a 7' planting strip. A chain link fence separates the walkway from the Free Press plant and parking area; beyond this fence is an 8' planting strip with light standards and shade trees.[15]

Fencing along the walkway narrows the entrance to the western end of the easement to 1' to 2', discouraging access by bicyclists and pedestrians from Twelfth Street. This effort to discourage access from the west is apparently based on a concern for the safety of the users of the Free Press walkway. There are, in fact, a number of potential conflicts which make pedestrian access from Twelfth Street appear "highly undesirable" to the Free Press management. For example, the rail tracks which serve the Free Press plant cross the foot of Twelfth Street at the entrance to the riverfront walkway. The Free Press receives five to six cars per day on a five-day-per-week schedule; no weekend deliveries are made, however. In addition, the on-street parking which is available on the eastern edge of Twelfth Street[16] is heavily used on weekdays by the employees of the motor freight companies located in the adjacent rail

Figure 2-17

FOOT OF TWELFTH STREET

yard area. This parking is used just as heavily on weekends by fishermen who find the direct vehicular access to the river edge particularly attractive. Finally, the weekday volume of truck traffic entering and leaving the adjacent rail yard truck terminals presents a potential hazard for cyclists and pedestrians. The trucking firms located in this area report that they are closed on weekends, however. Truck traffic exiting the Free Press plant also presents a potential traffic conflict. These truck operations are concentrated in the evening and nighttime hours.

On the basis of these considerations, it can be concluded that weekday conditions may well pose some potential risks for pedestrians and cyclists on Twelfth Street. In contrast, it appears that during weekends (the period when the use of the bicycle/pedestrian pathway is likely to be heaviest) rail and truck traffic conflicts will be relatively minor. The potential for conflicts between parked cars, cyclists, and pedestrians does exist on weekends, however. These conflicts can be reduced by providing a clearly defined non-vehicular zone at the foot of Twelfth Street and by developing an off-street bicycle/pedestrian pathway linking the Free Press river edge easement to the western continuation of the route.

Jefferson Avenue:

The widening and reconstruction of Jefferson Avenue between Third and Eighth Streets is now being completed. In the vicinity of the Arena garage (Third to Cabacier), eastbound and westbound lanes are separated by a median on which the supports for the new Lodge off-ramp are located. This portion of Jefferson will have no on-street parking with two to three travel lanes in each direction; as a result, no excess roadway width is available for use in developing on-street bike lanes. In addition, the volume of traffic to be expected in the area immediately surrounding the garage and the number of potential turning conflicts which cyclists would encounter, make this portion of Jefferson Avenue unsatisfactory as a candidate bicycle route.

The widening and reconstruction of Jefferson from Eighth to Twelfth Streets is scheduled for 1981. Five 11' wide lanes are to be constructed with a 16' wide walkway area located on the south side of the right-of-way. The reconstruction of this portion of Jefferson Avenue includes the widening of Twelfth Street north to Fort. The proposed roadway realignment will significantly reduce the volume of through traffic on Jefferson Avenue west of Twelfth Street. The realignment will also create a small triangular area of excess right-of-way on the southeast edge of the roadway at Jefferson and Twelfth.[17] This area can be incorporated into the West Riverfront bicycle/pedestrian pathway at a point where directional signing may be needed.

Fort Street and the West Side Industrial Area:

A mix of industrial, commercial, and warehousing uses are located on Fort Street to the north of the Free Press site. The main branch of the U.S. Post Office is located between Eighth and Tenth Streets. To the east of the Post Office, facing Fort, is the downtown campus of Wayne County Community College.

Weekday traffic volumes on Fort Street (the major east-west arterial in this portion of the study area) are heavy; weekend traffic volumes are significantly lower, however, with average daily volumes ranging from 7,500 to 9,000 vehicles.[18]

The Westside Industrial I and II redevelopment areas are located to the north of Fort Street. These areas are zoned light industrial and include a variety of office, manufacturing, and warehousing uses. The 20-story State of Michigan office building located at Sixth and Howard dominates the area.

With the exception of the reconstruction of the Twelfth Street and Lafayette Boulevard

bridges crossing the Conrail corridor, redevelopment and public infrastructure improvements in the West Side Industrial I area are essentially complete. Although the bridge reconstruction projects are ready to be advertised for bids, they will be delayed until the amount of Federal Aid Highway funding for the City of Detroit for the next fiscal year is determined. Funding cutbacks may require the postponement of these improvements. In the interim the bridges are closed to vehicular traffic (although they can be used by bicyclists and pedestrians). As a result, the volumes of traffic on Twelfth Street and Lafayette are now substantially lower than they will be when the bridges are reopened. Average weekend traffic volumes on these roadways now range from 900 to 1,500 vehicles per day.[19]

Route Potentials

Riverfront West:

The easement which is to be made available on the south side of Jefferson Avenue on the edge of the Riverfront West development parcels is being provided for the specific purpose of developing the bicycle/pedestrian pathway. This easement will provide direct access to the existing easement located at Eighth Street which links Jefferson Avenue to the river edge.

While the width of the easement along Jefferson Avenue adjacent to the Riverfront West development site has not yet been finally determined, it appears that adequate area will be available to provide an off-street, bi-directional bike path and enough additional space to accommodate the low volumes of pedestrian traffic which are anticipated. Service access from Jefferson Avenue to the retail portion of the Riverfront West development may present a potential hazard for cyclists and pedestrians, however. In addition, screening of the service area will be required. The location of the piers supporting the Lodge off-ramp on the northern edge of the Riverfront West hotel/retail parcel will also affect the alignment of the bicycle/pedestrian pathway; however, these piers are not expected to limit the feasibility of pathway development.[20] It appears that the easement to be provided on the south side of Jefferson adjacent to the Riverfront West housing parcel will not be crossed by a major vehicular entry to the development. The width available for pathway development in this area may be restricted at some points, however, and the pathway will be bordered by the housing development's four-story parking structure.

The Free Press:

The Free Press river edge easement (located between Eighth and Twelfth Streets) is the only portion of the proposed West Riverfront bicycle/pedestrian route which is already available and developed for use. Both the short- and the long-term routes must be planned to take maximum advantage of this opportunity for direct access to the river edge. To increase its value and useability, however, the Free Press easement must be strongly linked to the eastern and western segments of the pathway. Because Riverfront West and the rail yard area located between Twelfth Street and Riverside Park effectively bar riverfront access, it will be necessary to establish a well-developed link from Jefferson Avenue to the riverfront not only in the Eighth Street easement, but at Twelfth Street as well. In the short term it may be possible to utilize the existing 10' wide Free Press river edge walkway for bicycle and pedestrian access, despite the fact that this pathway width is significantly narrower than desirable. Because this area is also a popular fishing site, walkway widening will clearly be required in the future to accommodate through pedestrian and bicycle movement while minimizing conflicts with fishermen.

Eighth Street Easement:

Because the change in route direction from Jefferson Avenue to the river edge at Eighth Street is relatively abrupt and may be unexpected, a well-defined and highly visible "turning point," or node, must be developed at this location on the bicycle/pedestrian route. The development of this entrance node (which can include a widened pathway pavement, directional signing, and special landscaping) and the expansion and improvement of the Eighth Street easement can help to effectively integrate the Free Press river edge easement into the remainder of the pathway system.

The off-street parking area which has been provided at the point where the bicycle/pedestrian pathway turns south toward the river limits the flexibility available in developing this entrance node, however, and presents a potential safety hazard to cyclists and pedestrians. The pre-emption of this parking area to make the development of a well-defined turning point possible is likely to be highly unpopular because the Free Press riverfront walkway has been used primarily as a fishing access site. Alternative strategies for maintaining the available parking while creating a well-defined entrance to the river and clearly separating vehicular and non-vehicular use zones must be explored. The added easement width to be made available by the Riverfront West developers may provide adequate area to satisfy these competing objectives. Alternatively, the Free Press may agree to provide the additional space needed at the north end of the Eighth Street easement to realign the parking area.

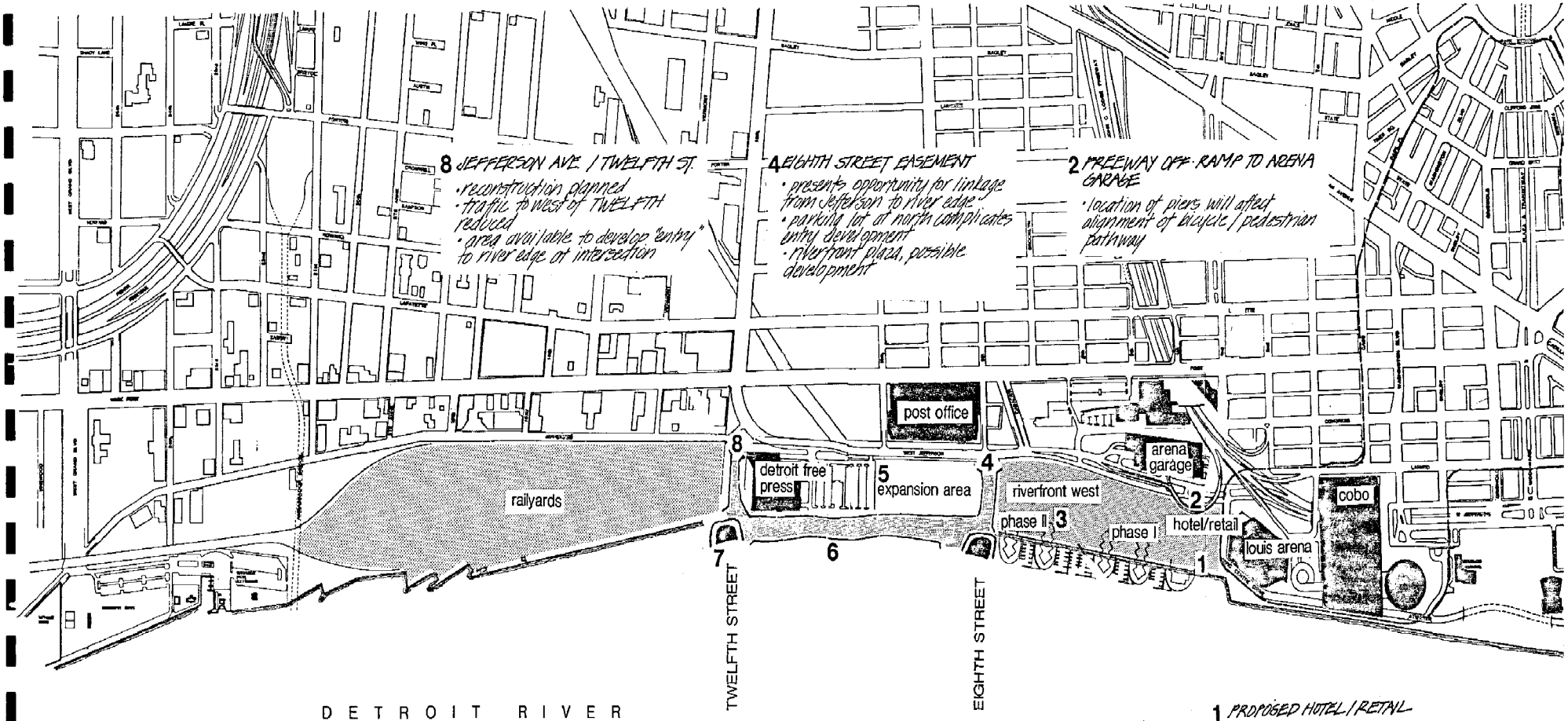
The Eighth Street easement also presents the opportunity to create a small plaza at the river edge. Widening the easement at this point will facilitate turning movements and provide an opportunity for cyclists and pedestrians to pause to enjoy the river view. This pathway node may be more extensively developed than the Jefferson Avenue entrance to the easement with seating areas, bicycle parking, and informational displays in addition to widened pavement and special landscape treatment.

Twelfth Street:

Because no riverfront access is possible through the rail yard area located to the west of the Free Press site, through access along the existing riverfront walkway can only be provided if a north-south link is developed on Twelfth Street between the river and the western continuation of the bicycle/pedestrian pathway. Without this north-south connection the Free Press riverfront easement will be a cul-de-sac (and optional detour), rather than an integral part of the West Riverfront bicycle/pedestrian route. Because the 50' wide Twelfth Street right-of-way is municipally owned, the potential for developing this critical link is high. A number of factors will complicate the design and development of this portion of the bicycle/pedestrian route, however, and may limit the flexibility available in creating a well-defined river edge node at this turning point in the pathway.

The opportunity exists to create a small riverfront plaza at the foot of Twelfth Street. While similar in purpose to the river edge node proposed at the foot of the Eighth Street easement, the development of this plaza must take into consideration the limited width of the available right-of-way, the existing rail tracks, and the possible need to maintain limited vehicular access to the Norfolk and Western parking area located at the foot of Twelfth Street.[21] At a minimum, some separation can be provided between the roadway and the river edge to create an expanded pedestrian use zone; it may also be possible to include informational signing, special landscaping, and some seating.

The development of a separate bicycle/pedestrian pathway within the Twelfth Street right-of-way may also encounter some difficulties. The direct vehicular access to the river edge which is now available on Twelfth



1 PROPOSED HOTEL / RETAIL
- location of service access and orientation of retail will significantly affect pedestrian / vehicular volumes
- width of easement unknown; 16' min. proposed

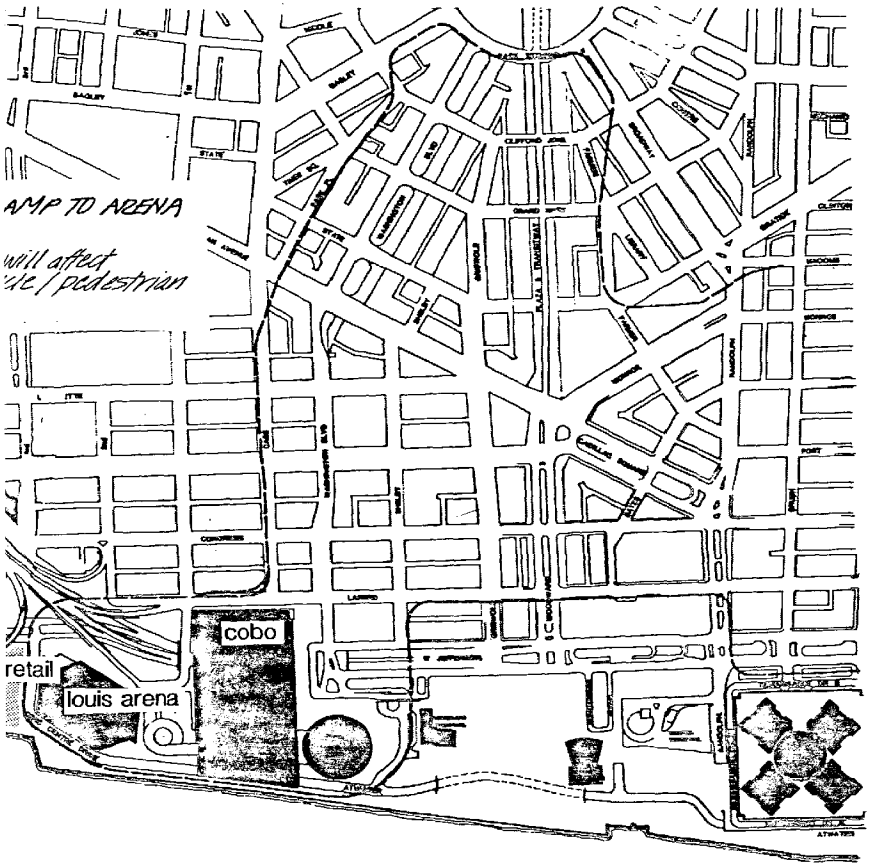
3 RIVERFRONT WEST / PROPOSED HOUSING
- no riverfront access
- easements to be provided on inland edges of parcel
- widths unknown; 16' min. proposed

5 FREE PRESS EXPANSION PARCEL
- possibility of interim recreational development

6 FREE PRESS RIVEREDGE EASEMENT
- includes existing 10' asphalt path
- used primarily by fishermen

7 TWELFTH STREET
- no through access along riverfront to west; strong pathway link to JEFFERSON blocked
- limited r.o.w. width and on-street parking pose constraints for off-street pathway
- river views together with vehicular pedestrian access suggest plaza or park space at terminus

Figure 2-1
CENTRAL



1 PROPOSED HOTEL / RETAIL

- location of service access and orientation of retail will significantly affect pedestrian / vehicular volumes
  width of easement unknown; 16' min. proposed

3 RIVERFRONT WEST / PROPOSED HOUSING

- no riverfront access
- easements to be provided on inland edges of parcel
- widths unknown; 16' min. proposed

Figure 2-18

CENTRAL ZONE ANALYSIS

N 0 100 200 400

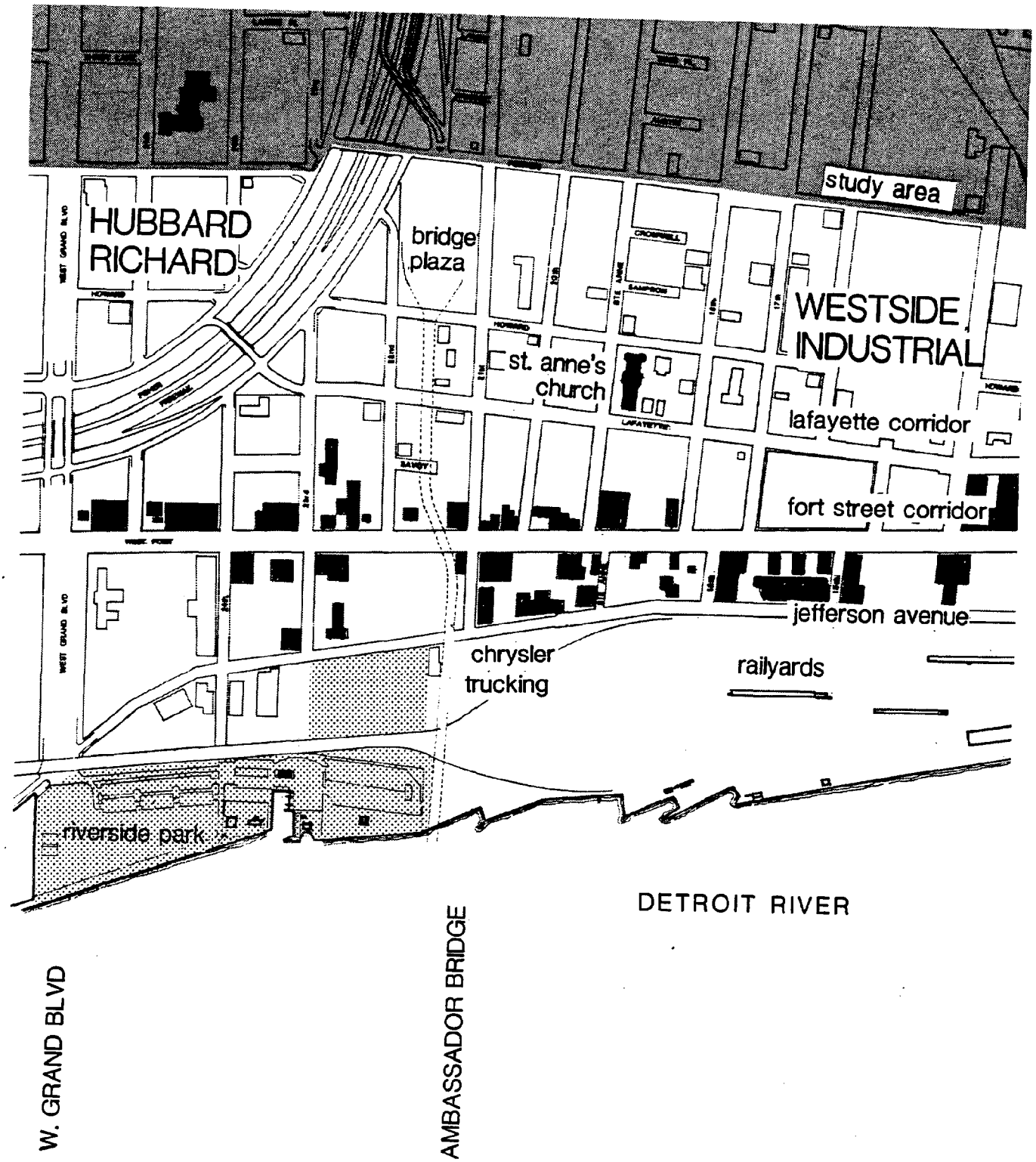
bjr inc.

Street is only possible if parking continues to be available in the right-of-way. While the maintenance (and enhancement) of this river edge parking for fishermen may be desirable, it requires the use of limited available space which might otherwise be devoted to the development of an off-street bicycle/pedestrian pathway. Because there appears to be no possibility of acquiring an easement along the western edge of the Free Press site,[22] a trade-off will have to be made between these two competing functions. The use of on-street bike lanes, while less desirable from the point of view of safety, may make it possible to maintain most of the existing on-street parking.

The reconstruction and realignment of Jefferson Avenue and Twelfth Street (north of Jefferson) will make available a triangular area on the southeast corner of the intersection. This area can be developed as a node or turning point on the bicycle/pedestrian route. As at the entrance to the Eighth Street easement widened pavement, special landscaping, and directional signing will help to define this entrance to the river edge.

Figure 2-19

WESTERN ZONE



WESTERN ZONE

Description and Analysis

Riverside Park and the Norfolk and Western and Chessie Systems rail yard area are located on the river edge (to the south of Jefferson Avenue) in the western portion of the study area. The area north of Jefferson and the Fort Street corridor contain a mixture of wholesale, industrial, and commercial uses. To the north of Fort is the Hubbard-Richard community, the I-75 Freeway, and the entrance to the Ambassador Bridge.

The Rail Yards:

The Norfolk and Western and Chessie rail yards are located on the river and extend from Twelfth Street to Riverside Park. A portion of the railyard area (immediately adjacent to the bridge) is now used as a Chrysler Corporation trucking facility.

The Norfolk and Western Railroad manages the rail facilities located in the southern half of the yard area. N&W's operations include the rail ferry to Canada; customs tracks where cars are held for inspection; trucking terminals and warehousing facilities located at the eastern end of the yard area; and the old Wabash office building located at the foot of Twelfth Street.

Chessie's operations are located in the northern half of the rail yard and include the classification and storage of cars carrying materials to the GM Fleetwood plant located at West End Avenue; Chessie's Through Bulk System facility, where materials are shipped into Detroit by rail and transferred to trucks for local delivery; and two additional trucking operations to which Chessie leases space.

The Union Belt Railroad (jointly owned by Conrail, Chessie, and Norfolk and Western) also operates in this area. The Union Belt is a switching railroad which makes deliveries to

several industrial customers located to the north of Jefferson Avenue between Fifteenth and Twelfth Streets. The Union Belt utilizes spur tracks located within the Jefferson Avenue right-of-way.

Norfolk and Western operates six to eight trains each day. Most of the rail activity is related to the rail ferry operation which carries between 500 and 800 cars across the Detroit River daily. The ferry operates seven days a week and 24 hours a day; ferry traffic peaks during the weekend period (Friday through Monday). While the arrival and departure schedules of the N&W trains vary, three trains usually enter and leave the yard between 10:00 A.M. and 4:00 P.M. and three to five trains between 8:00 P.M. and 5:00 A.M.

In contrast to Norfolk and Western's heavy volume of rail traffic, the Chessie rail yard area is reported to receive only one train per day. Chessie does not, therefore, appear to use its rail facilities intensively. The Through Bulk Systems operation does, however, depend on a rail truck interface and the two remaining trucking operations located in the Chessie area may benefit from their rail yard location.

Chessie controls the land immediately to the south of Jefferson Avenue. An abandoned viaduct (running from Twelfth to Fifteenth Streets), which reaches a height of about 15' at its eastern end, is located on the edge of the Chessie yard. The viaduct is a remainder of the elevated rail system which once provided rail access to the Fort Street passenger terminal. While tracks have been removed for most of the viaduct's length, it is still used occasionally in switching cars out onto the Jefferson Avenue spur.[23]

The Union Belt Railroad currently serves four customers located to the north of Jefferson Avenue and east of Fifteenth Street. Rail cars are not delivered on a regular schedule, but it is reported that approximately four deliveries are made each week. Most frequent service occurs at the Union Paper and Twine Plant located at the foot of Fourteenth Street. Union Belt operations on the northern edge of the Chessie rail yard and within the Jefferson Avenue right-of-way can occur any day except Saturday; deliveries are usually made between 10:30 A.M. and 3:30 P.M.

Jefferson Avenue:

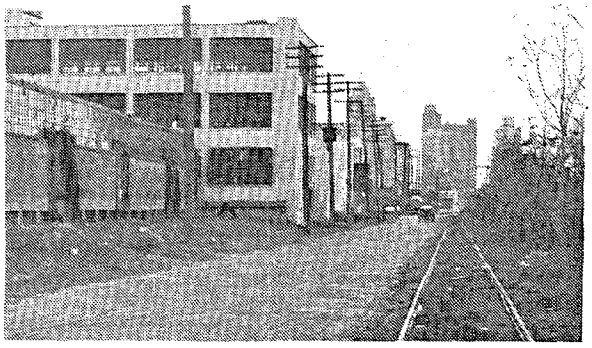
In contrast to the reconstructed portion of Jefferson Avenue located to the east of Twelfth Street, Jefferson to the west of Twelfth serves as a local street only. Traffic volumes on this portion of Jefferson are relatively low on weekdays (under 1,000 ADT)[24] and even lower on weekends. While the weekday traffic mix contains a significant percentage of trucks, no trucking firms appear to operate in this area on weekends.

Figure 2-20

RAIL VIADUCT/JEFFERSON AVENUE

Figure 2-21

JEFFERSON AVENUE/EIGHTEENTH STREET



The Jefferson Avenue right-of-way is 46' wide; the roadway pavement occupies 34' of the right-of-way with 6' wide margins to the north and south. Sidewalks are available only on the north side of Jefferson (from Twelfth to Twenty-fourth Streets); these walkways are somewhat discontinuous, relatively narrow (4'), and in a general state of disrepair, however. The abandoned rail viaduct which extends from Fifteenth to Twelfth Streets is located at the southern right-of-way line. To the west of Fifteenth Street, however, 12' to 20' are available between the pavement edge and the fenceline of the Chessie yard and the Chrysler truck facility. (Only 6' of this area is within the public right-of-way, however.)

The spur tracks used by the Union Belt Railroad are located within (and parallel to) the Jefferson Avenue right-of-way between Twelfth and Eighteenth Streets. These tracks are located approximately 4' from the southern edge of the roadway pavement and are about 3' wide. Six spur tracks also cross the roadway between Eighteenth Street and Twelfth Street; only three of these spurs are in regular use, however. In addition, the roadway pavement is quite poor between Twelfth and Eighteenth Streets; west of Eighteenth, the pavement is in better repair.

Riverside Park:

Riverside Park is the western terminus of this segment of the proposed West Riverfront bicycle/pedestrian route. The park is now being expanded to slightly over 20 acres and includes three major use areas.

The original 10.5-acre park facility is located at the foot of West Grand Boulevard at the intersection of Jefferson Avenue and the east-west rail corridor. This portion of the park includes a substantial lighted parking area (180 cars), an open passive use area with a comfort station and limited play equipment, and an intensively used river edge which is paved with asphalt and lined with planters.

The principal recreational uses in this area of the park include fishing, river watching (both from the open space area and parked cars), and picnicking.

On the river edge, immediately to the east of Twenty-fourth Street are the docking areas for the J.W. Wescott (a mail boat serving freighters passing through Detroit) and the Detroit fireboat. Both of these uses add activity and interest for river watchers and may have potential for interpretive development.

Riverside Park is to be expanded to the east and north. Facility development between the rail corridor and the river will include seawall construction, the improvement of the existing boat launch ramp, an expanded car and boat-trailer parking area, and a passive recreation area with a river edge promenade. Vehicular entry to this portion of the park will be limited to boat launch users; a control building will be located at the launch area entrance.

Although acquisition is complete, funding has been committed, and plans for this portion of the park expansion have been developed, construction has been somewhat delayed as a result of higher than anticipated development costs. In addition, development has been divided into two phases. The first phase (which is expected to be underway by the spring of 1981) will include the construction of the seawall and the improvement of the boat launch ramp. The expansion and improvement of the parking area, the construction of the control

Figure 2-22

RIVERSIDE PARK

building, and the development of the river edge passive area and promenade will be included in Phase II; this second phase of development is expected to take place in 1982-83.

The area to the north of the rail corridor (from Twenty-third Street to the Ambassador Bridge) is to be developed as a neighborhood playfield facility. The playfield will include two softball diamonds, a soccer/football practice field, and a basketball court; construction is scheduled for summer of 1980.

River edge access from the playfield area in the park's northeast extension is barred by the rail corridor. While no rail crossing (other than the park entrance at West Grand Boulevard) is now available, there are three potential crossing locations: a 30' wide easement on the western edge of the park expansion area granted to Michigan Consolidated Gas Company (the previous property owner) by Norfolk and Western; the State Department of Highways and Transportation sewer easement; and the Twenty-fourth Street right-of-way.[25] The Norfolk and Western/Michigan Consolidated easement agreement specifies that a crossing (suitable for trucks) is to be provided and maintained at the railroad's expense at the request of the property owner (now the City of Detroit). Some question as to the railroad's responsibility to provide a crossing for public rather than private use exists. In addition, the suitability of a grade crossing at this location is open to question.[26] It seems clear, however, that bicycle/pedestrian access to Riverside Park at a location other than the existing vehicular park entrance is desirable. The West Grand Boulevard entrance is likely to be found to be particularly unsafe for pedestrians and bicyclists because of the angle at which the rail tracks must be crossed, the poor surface quality of the crossing, the heavy volumes of weekend traffic in and out of the park, and the poor visibility at the intersection.

Long-range plans for the future development of Riverside Park include possible expansion north to Fort Street. Expansion to Jefferson Avenue (between West Grand Boulevard and Twenty-third Street) may be possible in the mid-term because this area is already owned by the City. The municipal uses located in this area include an incinerator (recently demolished), the Health Department's Animal Control Center, and the Environmental Protection and Maintenance Department's solid waste and truck storage facility. While no planning has yet been initiated for the relocation of these uses, it appears likely that a second rail crossing will be needed in this area at the time that the park is expanded.

Figure 2-23

RIVERSIDE PARK/J.W. WESCOTT AND FIRE BOAT DOCKS

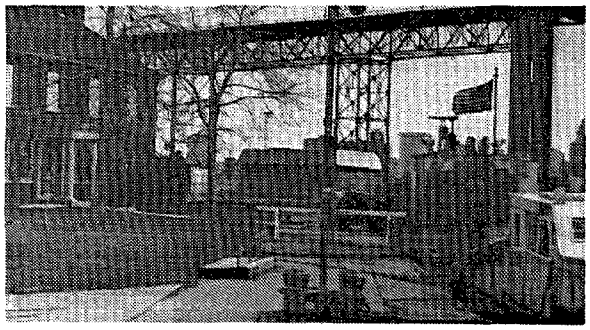


Figure 2-24

ENTRANCE TO RIVERSIDE PARK

Hubbard-Richard:

The Hubbard-Richard community is located to the north of Fort Street between Junction and Sixteenth Streets. Land uses along Fort include a mixture of commercial, manufacturing, and warehousing activities. Motor freight terminals, a truck rental facility, and the Greyhound bus storage area are also located on Fort. Heavy truck use on the Ambassador Bridge to Canada has encouraged the development of transportation-related land uses along Twenty-first, Twenty-second, and Twenty-third Streets. A truck terminal which is to be used as a secondary customs inspection station is located on Twenty-first Street at Porter, adjacent to the Ambassador Bridge Plaza.

Residential development is concentrated to the north and west of the Fisher Freeway and between Sixteenth and Twentieth Streets, north of Lafayette. St. Anne's Church, the major community focus within the boundaries of the study area, is located on Lafayette between St. Anne and Eighteenth Streets. Although other areas of historic interest exist throughout Hubbard-Richard, St. Anne's is the most outstanding architectural and historic landmark within this portion of the community.

Plans have been completed for the development of an urban park/plaza immediately to the north of the church. In addition, a housing redevelopment area is located to the east (between Sixteenth and Eighteenth Streets); the development of sixty townhouse units is planned. This housing redevelopment effort may be expanded to the north in the future.

The community's principal shopping area is located just to the north of the study area on Bagley. A revitalization strategy for both the eastern and western sections of the Bagley commercial area is being prepared.

Because of its location between the Westside Industrial I and II redevelopment area and the Ambassador Bridge and Fisher Freeway, truck traffic moving through the Hubbard-Richard neighborhood has been a continuing problem. To minimize these circulation conflicts, through east-west truck traffic is directed to Fort Street; local traffic only is permitted between Sixteenth and Twentieth Streets.

Hubbard-Richard is an integrated, multi-ethnic community with approximately 4,400 residents (1977). A 1977 survey of the community showed that 55% of Hubbard-Richard households had incomes of $8,999 or less.[27] This is a relevant factor in evaluating the extent to which the neighborhood will use (and benefit from) the riverfront bicycle/pedestrian route because low income is considered to be an indicator of low bicycle ownership and low overall cycling participation.[28]

While no firm conclusions about potential use of the bicycle/pedestrian pathway by Hubbard-Richard residents can be drawn on the basis of this information, it does suggest three possible implications for the implementation of the West Riverfront route:

- The scheduling of bicycle safety education programs and special cycling events and tours in conjunction with the development of the West Riverfront bicycle/pedestrial route may help to promote community interest in cycling and create a positive attitude about the route's local recreational benefit.

- The availability of a bicycle rental concession at Riverside Park could promote interest in cycling and encourage increased participation.

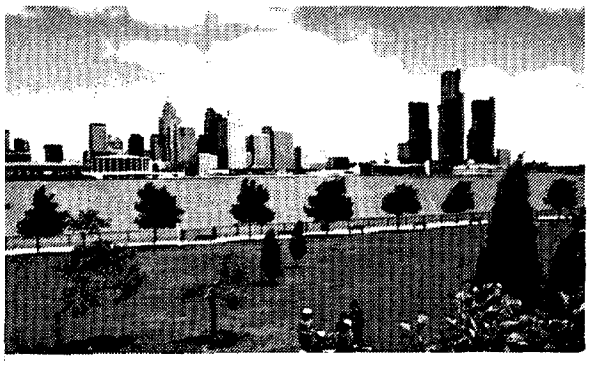
- Local recreational needs and preferences must be considered in planning the bicycle/pedestrian pathway. Facilities or uses which are highly valued by local residents (e.g., parking at fishing access sites or at the new playfield facility) should not be pre-empted without community support.

Ambassador Bridge:

The Ambassador Bridge is a dramatic and dominant visual element in the West Riverfront area. Like the Renaissance Center towers at the eastern end of the study area, the Ambassador Bridge represents a landmark and major point of orientation. The Ambassador Bridge also presents a unique opportunity to link the West Riverfront bicycle/pedestrian pathway to the riverfront bike paths which are already available in Canada, providing an international dimension to Detroit's riverfront pathway system. The potential also exists to develop an international loop, using the bridge at the western end of the study area and the Windsor Tunnel, located adjacent to Hart Plaza, on the east.[29]

Figure 2-25

WINDSOR BIKE PATH

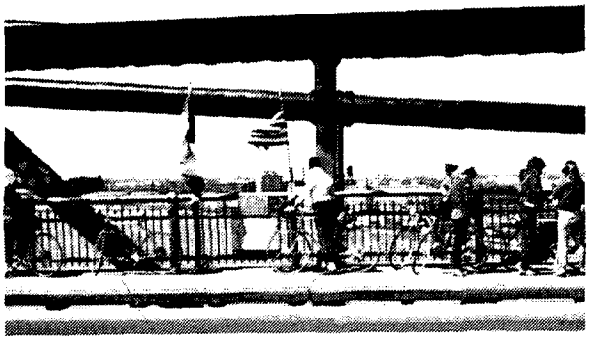


Contacts with the privately-held corporation which owns and operates the bridge concerning the possibility of facilitating bicycle use have been discouraging, however. Although bicycle and pedestrian crossings are not prohitibed, they are certainly not encouraged.

An 8' wide walkway exists on the west side of the bridge. Access to the walkway is complicated by the heavy volumes of car and truck traffic in the bridge plaza. The bridge management feels that the traffic conflicts which might result from increased bicycle use in the bridge plaza and on the bridge itself are unresolvable. These problems may, in fact, be difficult to overcome given the limited width of the walkway, the absence of a railing separating the walkway from the traffic lanes, and the need for bicyclists to cross traffic lanes in order to gain access to the walkway and to check in with customs officials on the Canada-U.S. return trip. Despite these difficulties, bicyclists do use the Ambassador Bridge on a fairly regular basis because no alternative bicycle link to Canada exists. Nonetheless, the bridge management was unwilling to discuss any possible solutions to these problems despite the fact that they will begin a major two to three year, $6.5 million program to improve the bridge roadway. These improvements might have incor-

Figure 2-26

AMBASSADOR BRIDGE WALKWAY



porated the modifications necessary to facilitate safe bicycle use. In addition, the bridge management reports that during this construction period, bicycle and pedestrian use on the bridge will be prohibited.

Alternative methods for accommodating bicycle crossings have been used in other areas of the country where bridge traffic conditions or structural characteristics have made bicycle use inadvisable. For example, regularly scheduled transit vehicles have been equipped with bike racks to allow bicyclists to cross San Diego's Coronado Bay Bridge. (No public or private transit routes cross the Ambassador Bridge, however.) In other locations, vans have been equipped to carry bicycles and riders; bridge maintenance and patrol vehicles have been used to transport cyclists in still other locations. While the bridge management will not use their own maintenance vehicles for this purpose, there are no objections to bicycles being carried on other vehicles. As a result, it appears that while solutions to the problem of facilitating bike access to Canada do exist, these solutions (e.g., specially-equipped vans) must be provided by bicycle interest groups and/or the City. In addition, implementation of these alternatives may be relatively costly.

The visual character of the bridge plaza and the area immediately surrounding the bridge is poor. In an effort to improve the image of this international "gateway" and to aid in orienting visitors to the Detroit area, the development of a Travel Information Center (to be located near the bridge plaza) has been proposed. Three alternative sites are being considered; the preferred location is immediately north of Porter opposite the bridge plaza. Final site selection is expected this fall (1980) with construction to begin in 1983. The planning of vehicular approaches to and from this facility can take bicycle use into consideration. If vehicle transport of bicyclists across the bridge is to be provided, the Travel Information Center could be used as a staging area.

Because the Ambassador Bridge is a major traffic generator and the volume of truck use is high, conflicts exist between bridge traffic and the surrounding community. In response to these conflicts DDOT has sponsored a study of methods for improving access to and from the bridge and for routing truck traffic through the Hubbard-Richard community.[30] This study takes several objectives into consideration:

- maintain access between the two parts of the Hubbard-Richard community (east and west of the Fisher Freeway)
- improve conditions at the bridge plaza, Porter Street, and freeway ramps to reduce congestion and confusion and to improve pedestrian traffic safety
- maintain a continuous truck route between the Michigan-Vernor corridor and Fort Street
- facilitate the development of the proposed Travel Information Center and the customs inspection station (to be located on Twenty-first Street)

The alternatives which have been proposed designate Twenty-second and Twenty-first Streets and the Fisher Freeway Service Drives (north of Porter Street) as the access routes to and from the bridge. Because weekend truck activity and overall traffic volumes appear to be quite low on weekends, the use of these routes in creating an on-street bicycle link to the bridge is likely to be feasible.

A number of alternative routes to the bridge are available. These include:

- West Grand Boulevard to the I-75 service drive (northbound only)
- Twenty-fourth Street to the I-75 service drive (northbound only)
- Twenty-first Street[31]

The selection of a route for the bicycle link to the bridge will depend to a great extent on the location of the bicycle/pedestrian path entrance to Riverside Park. However, the availability of signalized crossings at Fort Street on West Grand Boulevard and Twenty-first Street make these alternate routes appear preferable to the use of Twenty-fourth Street.

Route Potentials

Because the Norfolk and Western rail ferry operation provides an essential transportation link to Canada and is expected to remain in active use in the long term, bicycle/pedestrian access along the river edge in this area will not be possible. As a result, a bicycle/pedestrian link along Twelfth Street is essential in connecting the river edge easement available on the Free Press property to the western continuation of the bicycle/pedestrian route. At the intersection of Twelfth and Jefferson, the bicycle/pedestrian route can either turn west on Jefferson Avenue or continue farther north on Twelfth to a western continuation on Fort or Lafayette.

Plans for the widening and reconstruction of Twelfth Street (from Jefferson to Fort) include the development of four 11' wide lanes northbound and three 11' southbound lanes. Adequate space to provide on-street bike lanes on this portion of Twelfth Street may be available, but only if the existing lane configuration is altered. The widths of the sidewalks to the east and west of this portion of Twelfth (10' wide on the east, 16' wide on the west) also make the use of sidewalk bike paths possible. Crossings at Jefferson, Fort, and Lafayette are signalized and weekend traffic volumes on Twelfth, Fort, and Lafayette appear to be relatively low.[32]

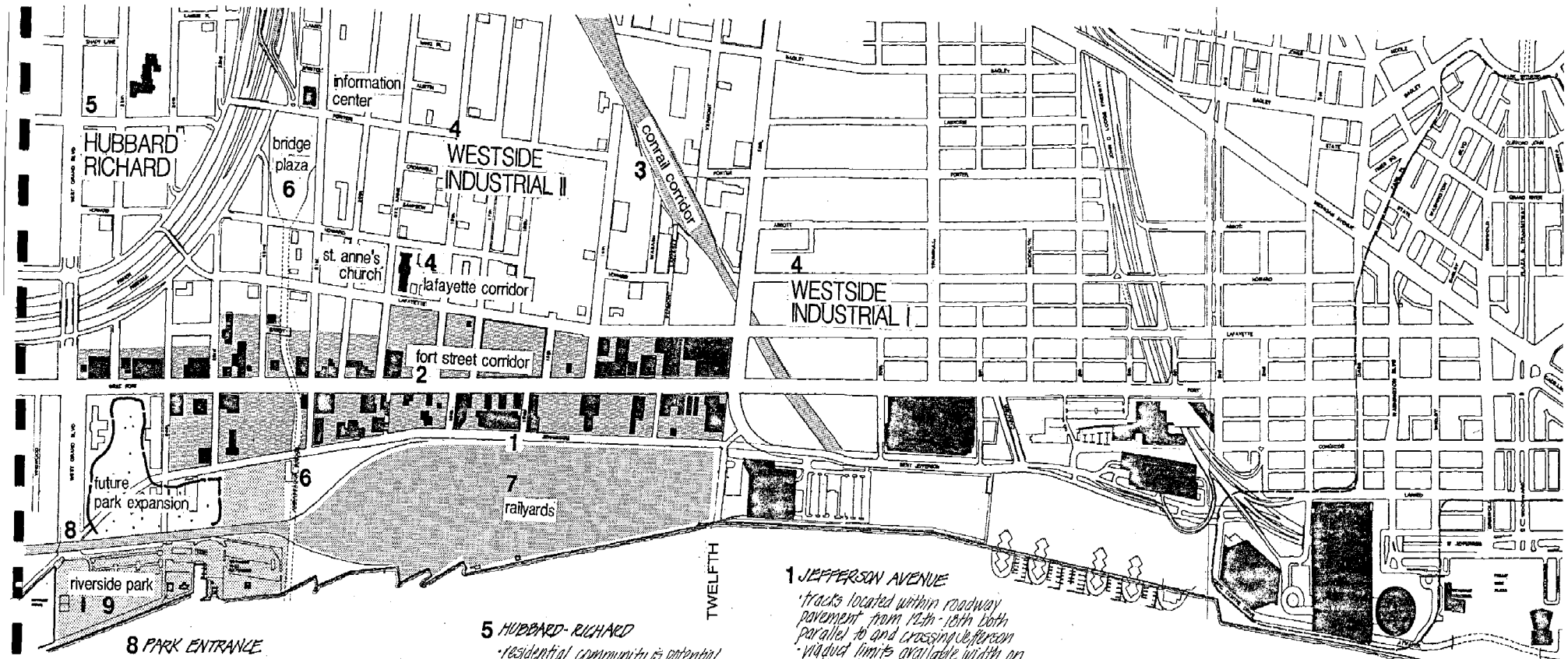
Although this alternative bicycle/pedestrian route appears to be technically feasible, it does not meet other route planning criteria. Most importantly, it has little (or no) riverfront orientation. In addition, it requires that cyclists and pedestrians travel several blocks out of the primary east-west travel path. The lack of riverfront orientation and the indirectness of this route make it appear less attractive than a continuation west on Jefferson Avenue.

The use of Jefferson also presents a number of problems, however, especially in the short term. In the area between Twelfth and Eighteenth Streets, the presence of rail tracks in the right-of-way, the narrow useable pavement width, the poor overall pavement quality, and the possibility of encountering rail traffic in the roadway will complicate use by cyclists.[33] Because weekend traffic volumes are very low, however, and pavement surface problems are at least partially resolvable in the short term, the Jefferson Avenue route is likely to appear most attractive to the majority of potential route users.

In the long term it may be possible to develop a strategy for consolidating Chessie's rail lines on the Jefferson Avenue edge of the rail yard to make a bicycle/pedestrian easement available. Such a strategy will require joint public-private cooperation and can take advantage of state and federal funding sources for rail consolidation and improvement.[34]

The City's planning framework for future development in the rail yard area is consistent with this approach, indicating that an effort will be made over the long term to relocate non-essential rail operations and to consolidate rail activity to make available additional land for residential and commercial development.[35] In the event that progress is made in implementing this long-term strategy, the flexibility available in developing the bicycle/pedestrian route in this portion of the study area, as well as its use potential, will be greatly enhanced.

Riverside Park, the western terminus of the bicycle/pedestrian route, is both a potential generator and attractor of bicycle and pedestrian activity in the West Riverfront area. As the park's facilities are expanded, an increased number of users with a variety of re-



8 PARK ENTRANCE

- heavy traffic on weekends; poor visibility, rail crossing difficult for cyclists. Improvements needed

9 RIVERSIDE PARK

- major riverfront recreational site
- potential river edge interpretive area with fireboat, mailboat, and boat launch

Park Expansion

- opportunity to create new park entry
- railroad tracks limit access to river; new crossing needed in long-term

5 HUBBARD-RICHARD

- residential community is potential bike use generator
- North-South link to RIVERSIDE PARK needed

6 AMBASSADOR BRIDGE

- dominant visual element
- potential bike link to Canada
- bicycle use on BRIDGE discouraged and bicycle / pedestrian use prohibited during bridge reconstruction

7 RAILYARDS

- Norfolk and Western, Chessie system and rail ferry launch area
- no river edge access available for bicycle / pedestrian system

1 JEFFERSON AVENUE

- tracks located within roadway pavement from 12th - 18th both parallel to and crossing Jefferson
- viaduct limits available width on south side of Jefferson to 6-7 ft

2 FORT STREET CORRIDOR

- mixed commercial, industrial and warehousing uses with high traffic volumes. Designated as east-west truck route

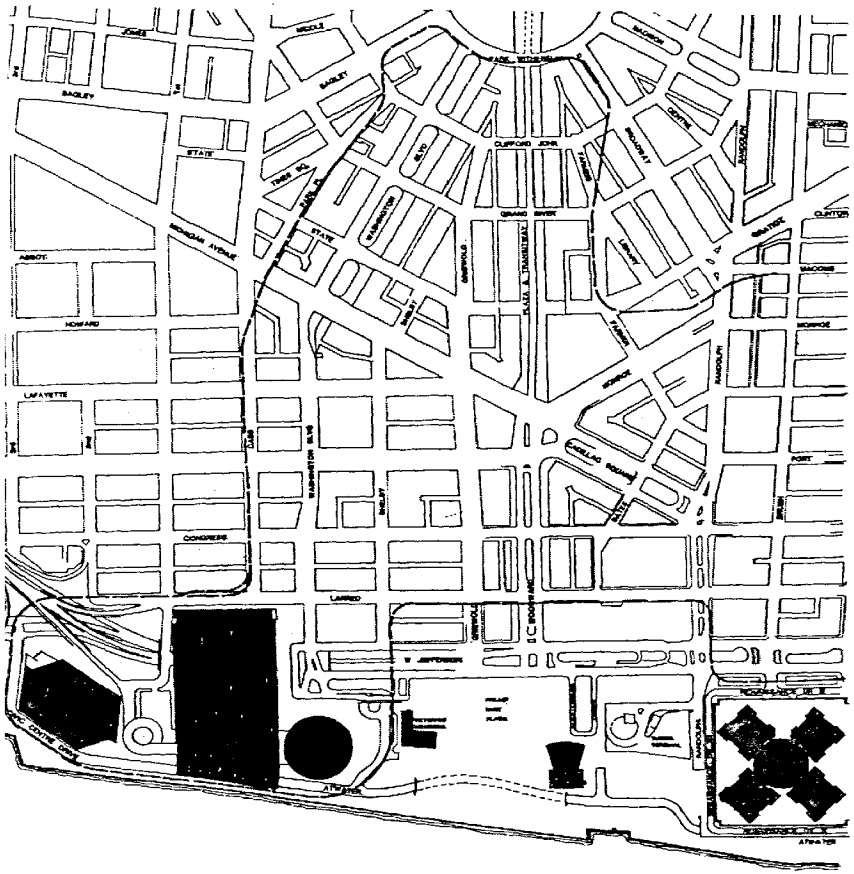
3 CONRAIL CORRIDOR

- access to rail tunnel to CANADA, future access to SEMTA West commuter

4 WESTSIDE I + II / LAFAYETTE CORRIDOR

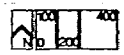
- mixed manufacturing office, warehousing uses in recently redeveloped area. Lends clean, attractive character to LAFAYETTE CORRIDOR
- traffic volumes low due to temporary bridge closures

Figure 2-27
WESTERN ZONE



R I V E R

Figure 2-27
WESTERN ZONE ANALYSIS



bjr inc.

creational objectives will be drawn to riverfront and will become familiar with the recreational linkage system which is to be developed.

The park's ample parking facilities make it a possible "transport-and-ride" location. It may also be possible to establish a bicycle rental concession at Riverside Park to encourage use of the bicycle/pedestrian route.

Because Riverside Park is likely to be a major starting point on the bicycle/pedestrian path, displays which illustrate the route and describe the recreational and interpretive opportunities which occur along its length should be provided at this location. The use of such directional displays here and at Hart Plaza can play an important part in the overall route implementation strategy. Additional information explaining bicycle safety "rules of the road," potential hazards or problems which may be encountered along the route, and the limitations on recommended hours of use (e.g., weekends, off-peak traffic periods) should also be included in these displays. In addition, planning for future development in Riverside Park should give consideration to the potential for developing interpretive displays focusing on Great Lakes shipping activities and the variety of port and industrial activities which form an integral part of the nearby riverfront scene.

Neither the existing park or the planned park expansion include features which will facilitate use by bicyclists. Secure bike parking areas, preferably located so as to be under regular observation by park attendants (e.g., the boat launch area's control building), will be needed. In addition, designated bicycle movement pathways through parking lots and active and passive recreational use areas will be needed to minimize conflicts between users.

The principal immediate barrier to the successful development of the bicycle/pedestrian route in the Riverside Park area is the need to provide a safe entrance to the Park. A number of alternatives for separating vehicular and bicycle/pedestrian traffic and facilitating access to the park have been proposed and are explored further in the following section.

Given the restrictions on bicycle use on the Ambassador Bridge in the short term, the immediate development of a bicycle link from Riverside Park north to the bridge may not be considered worthwhile. The development of a bicycle/pedestrian link between the Hubbard-Richard community and the park may still be desirable, however. This link can be created by developing an on-street bicycle loop on West Grand Boulevard, the I-75 Service Drive, and Twenth-first Street. This route might also continue east on Lafayette to St. Anne's Church. By extending further east into the downtown area, an addditional on-street route segment could be created, providing a loop system rather than a linear route in the West Riverfront area.

NOTES

1. The Renaissance Center complex includes retail, entertainment, and office uses. Future plans for Renaissance Center include the construction of additional office towers and the development of riverfront housing. Preliminary plans for this residential development indicate that a riverfront promenade, extending east from Hart Plaza, will be included.

2. Detroit Police Department, Central Events Division records. These Civic Center attendance figures can be compared to the total downtown area employee population of 105,000 in order to evaluate their significance.

3. The Lansdowne's valet parking and entry area is leased to the restaurant owners by the City of Detroit.

4. The boat dock site is owned by the City and leased to Boblo.

5. Public access to the area located within the Third Street right-of-way, between Civic Center Drive and the river edge, is possible.

6. The distance between Hart Plaza and the Riverfront West hotel/retail development parcel is approximately 1,500'.

7. Civic Center Drive also continues to the east of Hart Plaza (as Atwater Street), passing under the Plaza to the Renaissance Center area. An 11' wide separated right-of-way, originally intended as part of the DPM route, is available on the northern side of the tunnel. This right-of-way may be available for bicycle use, providing a connection to the eventual eastern continuation of the bicycle/pedestrian pathway.

8. It has also been suggested that the removal of bus parking from Civic Center Drive and Third Street (or a reduction in the amount of parking) would significantly improve the visual character of this important riverfront area.

9. City of Detroit Planning Department, November 9, 1978.

10. Ibid.

11. The proposed 16' minimum easement width will not be adequate to accommodate off-street bicycle and pedestrian movement because pedestrian volumes are likely to be quite high. Because of this high intensity of use and the potential for bicycle/pedestrian conflicts, substantial physical separation (e.g., planters or landscaped areas) between use zones is recommended; pedestrian crossing areas must also be well defined.

12. A second phase of housing development in the area between Sixth and Eighth Streets is also planned. This second development phase may bring the total number of housing units at Riverfront West to 2,000.

13. Other potential generators of pedestrian activity on this portion of the bicycle/pedestrian pathway include the Riverfront West retail development and the Arena garage. The currently available conceptual site plans for the Riverfront West hotel/retail site indicate that the retail development will not be oriented toward Jefferson Avenue and that no street level ped-

estrian access to the development will be provided to the west of Third Street. As a result, this development is not likely to generate pedestrian activity on Jefferson Avenue. It is also generally assumed that pedestrians moving from the Arena garage to the Civic Center area and hotel/retail site will use the second-level pedestrian skyway system rather than street-level sidewalks. It appears that any street-level pedestrian activity in the vicinity of the garage will be concentrated on the north side of Jefferson Avenue with a crossing to the Civic Center area located at Third Street only. If this is the case, visitors parking in the Arena garage will not utilize the proposed bicycle/pedestrian pathway on the south side of Jefferson Avenue.

Transport-and-ride cyclists may, however, desire to park in the Arena garage and begin their riverfront bicycle trip at this point. If these cyclists are to be encouraged to use the Arena garage, well marked crossings must be provided on Jefferson Avenue (e.g., at Sixth Street) and directional signing must be made available. Alternatively, transport-and-ride cyclists can begin their trip at Riverside Park. This appears to be a preferable location for transport-and-ride activity.

14. Ownership of these easements remains with the Free Press.

15. Correspondance documenting the easement negotiations between the City and the Free Press suggests that this 8' to 9' planting strip is included in the width of the easement even though the existing fencing limits the area which is accessible to the public to 29'.

In addition, it should be noted that the official (documented) width of the Eighth Street easement is 10'; the actual width of this easement (the area between the Free Press and Riverfront West fence lines) is 20', however.

16. There are no curbs on the eastern edge of the Twelfth Street roadway pavement and the 12' wide excess right-of-way on the eastern side of the street is used for diagonal parking. Cars are also frequently parked at the foot of Twelfth and along the western side of the street. This parking is somewhat haphazard as no parking stalls are marked.

17. This area totals approximately 11,800 square feet or .3 acres.

18. Detroit Department of Transportation machine counts made on May 19, 1980. These volumes are well within the (conservative) guidelines which have been proposed for determining roadway suitability for the development of on-street bike lanes (see Section III).

19. Ibid.

20. These piers are approximately 4' x 6' and are located a minimum of 18' from the south curb of Jefferson Avenue. Light poles and signal control boxes are being installed along the south side of Jefferson and will be centered approximately 3' from the curb face. These obstructions will pre-empt approximately 4' to 5' of the available easement width.

21. Alternatively, it may be possible to incorporate a portion of this parking area into the plaza.

22. It is unlikely that any additional area will be made available by the Free Press for the development of a river edge plaza because the building expansion area for the printing plant is located on the western edge of the site adjacent to Twelfth Street.

23. Views to the river from the viaduct are blocked by the freight sheds located in the rail yard area.

24. Detroit Department of Transportation records.

25. Although the crossing is not signalized, park users have been observed to cross the rail tracks at Twenty-fourth Street. A grade crossing did exist at this location at one time, but was legally closed in the 1950's at the time the West Grand Boulevard entrance to the park was developed.

26. A formal evaluation of the feasibility of providing an additional rail crossing to link the northern and southern portions of Riverside Park can be requested from the Michigan Department of Transportation, Railroad Safety Division. Such an evaluation is not likely to be scheduled until the City reaches a decision on the preferred long-term route alignment.

27. Market Opinion Research, Hubbard-Richard Citizens' District Survey, December, 1977.

28. Barton-Aschman Associates, Inc., Technical Aids in Bikeway Planning, January, 1978, p. 35, Table 9. Only 25% of households with annual incomes under $8,000 are estimated to be cycling participants based on the results of a 1974 survey of bicycling activity in Pennsylvania.

29. The initial response of the Detroit and Windsor Tunnel Corporation to the proposal that bike racks be provided on the tunnel's commuter buses was negative. Liability risks, delays in loading and unloading, regulatory approval of a new fare structure, and the corporation's responsibility for returning illegal aliens to point of origin were cited as reasons why the bike racks were infeasible.

30. Detroit Department of Transportation, "Hubbard-Richard/Ambassador Bridge Traffic Study," Draft Report, December, 1979.

31. Bicyclists approaching the bridge from the south on Twenty-first Street must turn west on Howard to the I-75 Service Drive to approach the bridge plaza; left turns at Twenty-first and Porter and from Porter to the bridge plaza are not recommended.

32. Traffic volumes on Twelfth and Lafayette are now considerably lower than they will be when the bridges crossing the Conrail corridor are re-opened. However, weekend traffic volumes on Fort indicate that these roadways will all be acceptable for bike use on the basis of the volume/capacity guidelines cited in Section III. The opening of the Arena garage may alter peak traffic volumes in this area, however.

33. While the operational supervisor of the Union Belt feels that improved access for bicyclists and pedestrians could be made available along West Jefferson with no adverse impact on rail operations, representatives of Chessie Systems report that safety considerations would preclude the use of an easement on the south side of the Jefferson right-of-way as long as Union Belt continues to serve its current industrial customers.

34. For example, Michigan's P.A. 51 of 1951 provides financial assistance in consolidating and improving existing rail lines.

35. City of Detroit Planning Department, Policies and Possible Futures for the Riverfront, March, 1977, p. 17.

Route Planning and Design Considerations

The Planning Framework

Three primary considerations must be addressed in the planning and design of the West Riverfront bicycle/pedestrian route. These are:

- the purpose which the route is intended to fulfill and the primary type of use (recreational vs. utilitarian) which the route will accommodate
- the characteristics of potential route users
- the use potential of different segments of the route

The definition of these fundamental route characteristics will help to identify the factors which will be most important in developing and evaluating route location and design alternatives.

PLANNING OBJECTIVES AND PRIMARY USE

This study of alternatives for developing a bicycle/pedestrian pathway from Hart Plaza to Riverside Park is part of a larger long-range plan to develop a continuous "linkage" system along the Detroit riverfront. This bicycle/pedestrian pathway linkage system is intended to increase public access to the riverfront, thereby increasing an awareness of the Detroit River as the city's most significant natural asset, as well as its foremost recreational resource.

The pathway linkage system has three interrelated functions:[1]

- to connect existing and proposed "nodes" of recreational development, as well as other activity centers, thereby increasing their accessibility and use potential and providing users with a greater number and variety of recreational choices

- to establish a distinctive unifying physical design element within the varied existing urban fabric of riverfront uses

- to create new linear recreational opportunities such as bicycling, walking, urban interpretive trails, and to increase the potential for the development of smaller nodes of recreational use between major facilities

Riverfront Orientation

The goals and objectives which have been defined for the pathway linkage system clearly express the riverfront orientation of the proposed bicycle/pedestrian route. Physical proximity and visual access to the river can, therefore, be established as the most important route location criteria. The preceding description of existing conditions has shown that the potential for locating the bicycle/pedestrian pathway on or near the river edge varies, however, depending on the land use and ownership characteristics in different segments of the study area and the location of existing public rights-of-way. In the short term, these constraints will be important factors in determining the alignment of the bicycle/pedestrian route.

Recreational Emphasis

This summary of the intended functions of the bicycle/pedestrian pathway system also clearly indicates that its primary use will be recreational. Defining recreational use as the principal function of the West Riverfront bicycle/pedestrian pathway helps to establish the relative priority of desired route location and design characteristics. These characteristics include directness, continuity, legibility, attractiveness, amenity, and safety and are described in figure 3-1.

Characteristics such as directness and minimum delay are generally given the highest priority in planning utilitarian bicycle routes. Destination-oriented users are willing to "trade" maximum safety and a high level of amenity in order to optimize these functional service characteristics. On the other hand, recreational bicycle(and pedestrian) trips are made for the enjoyment of the trip itself; as a result, route location characteristics such as attractiveness, scenic and historic interest, and level of amenity (including the availability of rest stops) are given a higher priority by recreational users.[2]

Figure 3-1

GENERAL ROUTE PLANNING CONSIDERATIONS

Location and Design Criteria	Description
Directness:	The route provides access links between activity generators and attractors in as direct a manner as possible; out-of-direction travel is minimized; stops and starts, delays, and congestion are minimized.
Continuity:	The route provides logical connections to other bicycle and pedestrian routes and smooth transitions between route segments; shifts in route classification (e.g., on-street to off-street) are minimized.
Safety:	The potential for conflicts between vehicles, pedestrians, and cyclists is minimized.
Legibility:	Route alignment is clearly defined and easy to follow; design treatment is consistent; directional signing is provided.
Attractiveness:	Adverse environmental conditions such as high volumes of truck and bus traffic, noise, and poor visual quality are avoided; positive conditions such as scenic, architectural, and historic interest are emphasized.
Amenity:	Rest stops with shade, seating, bicycle parking, directional and interpretive signing are provided.
Design Feasibility:	Adequate pathway widths can be provided to accommodate users with minimum possible conflict and delay; grades are negotiable; pavement surface quality is good or can be improved.
Implementation Criteria	**Description**
Cost:	Costs are politically realistic; route provides potential to obtain federal and state funding assistance; development can be phased to spread costs.
Competing Uses:	Route minimizes the pre-emption of needed parking or travel lanes; route is responsive to private interests and local values.
Maintenance:	Planning and design facilitate maintenance; maintenance levels can be guaranteed.
Security:	Route is open to regular visual surveillance; supervision of use can be provided.

An informal survey of over 280 Detroit area cyclists[3] confirmed that these route location and design characteristics will be important factors in encouraging use of the riverfront pathway linkage system. Over 90 percent of the survey respondents felt that rest stops, good sightseeing potential, and opportunities "to stop, watch the river, and picnic" were "important."[4]

In addition, the location and design of a recreational bicycle and pedestrian route must give high priority to safety considerations. Research done for the Federal Highway Administration (FHWA)[5] on user satisfaction and perceptions of safety for four types of bikeways (see figure 3-2) shows that recreational cyclists prefer off-street (separated paths or sidewalk bikeways) to on-street bike lanes or signed routes. Utilitarian cyclists, on the other hand, showed a definite preference for on-street lanes over sidewalk routes.[6] Users' safety ratings for the four major bikeway facility types showed that signed on-street routes are generally considered the least safe and off-street facilities (either independant pathways or sidewalks) are considered safest (see figure 3-3).

Figure 3-2

BICYCLE FACILITY CLASSIFICATION

Separated Bikeway:	A completely separate right-of-way intended for the exclusive use of bicyclists (Class I). A number of separated bikeway types can be defined: exclusive bike use; pathway shared with pedestrians (pedestrian and bicycle use zones separated by physical barriers or lane markings); pathway shared with pedestrians (no definition of use areas provided).
Sidewalk Bikeway:	A bikeway located within the public right-of-way, and adjacent to the roadway; curbs separate the bikeway and roadway. Sidewalk bikeways can be further categorized depending on the characteristics cited above.
Bike Lanes:	A restricted right-of-way designated for exclusive bike use located within the roadway (Class II). A variety of bike lane configurations are in use: bike lane located between the parking lane and travel lane, delineated by pavement markings; bike lane between the curb and travel lane (no parking permitted) delineated by pavement markings; bike lane located between curb and travel lane and "protected" or physical separated from vehicular traffic by a curb or other barrier.
Signed Route:	A street signed for bicycle use and shared with motor vehicle traffic; no exclusive bike use area delineated (Class III).

Source: Adapted from Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, October, 1975, pp. 6-7.

Figure 3-3

USER RATINGS OF BICYCLE FACILITY CLASSIFICATIONS

Safety Ratings at Four Types of Bikeways

	Median Safety Rating: (1 = Very Safe; 10 = Very Dangerous)
Separated Bikeways (Class I):	2.80
Sidewalk Bikeways:	3.13
Bike Lanes (Class II):	3.87
Signed Routes (Class III):	5.10

Ratings of Protection from Cars Afforded by the Bikeway

	Good:	OK:	Poor:
Separated Bikeways:	72%	19%	9%
Sidewalk Bikeways:			
Cars in the street	70%	24%	6%
Cars in driveways	19%	39%	42%
Bike Lanes:	32%	39%	29%
Signed Routes:	17%	24%	59%

Source: Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, October, 1975, p. 14.

These conclusions are supported by the results of the survey of Detroit area cyclists; this survey showed that "conflicts with cars and trucks" was considered to be the most important factor in discouraging use of the proposed riverfront bicycle/pedestrian pathway. Seventy-five percent of the respondents classified this condition as "very discouraging."

These findings suggest that an off-street bicycle/pedestrian route is likely to be the preferred facility type given the primary emphasis on recreational use in the West Riverfront area. The anticipated volumes of pedestrian use in certain segments of the study area and the availability of adequate space to provide an off-street route may limit the feasibility of implementing this preferred alternative, however, especially in the short term.

Long-Term Utilitarian Use Potential

Despite the primary emphasis on recreational use, it is evident that when the riverfront linkage system is complete it will form a potential commuter route which connects near-riverfront residential areas (e.g., Delray, Hubbard-Richard, Lafayette-Elmwood, and Jefferson-Chalmers) to the central business district. Thus, in the long term, it is possible that the West Riverfront portion of the bicycle/pedestrian pathway will facilitate utilitarian trip making, especially for cyclists.

The limitations which exist on bicycle access to the central business district from the riverfront pathway in the Civic Center area are likely to discourage potential bicycle commuters, however. In addition, weekday traffic volumes on major downtown arterials may be considered to be too high to encourage on-street bicycle commuting by providing bike lanes on Fort Street or Lafayette, the major east-west streets in the study area. As a result, the best available strategy for overcoming these barriers to commuter bicycle use may be to provide secure, long-term bicycle parking in the Joe Louis Arena garage. This method for encouraging commuter cycling is likely to become even more attractive when the DPM system becomes operational.

USER CHARACTERISTICS

Both pedestrians and bicyclists are to be accommodated in the riverfront pathway linkage system.[7] Bicyclists may be experts, casual adult cyclists, or children. The needs, preferences, and capabilities of these potential users and their implications for planning and design are briefly discussed below.

Bicyclists and Pedestrians

The differences which exist between these two major user groups in maneuvering capabilities, speeds of movement, and typical travel distances must be taken into consideration in evaluating alternative routes and in developing design alternatives.

Speed and Maneuverability:

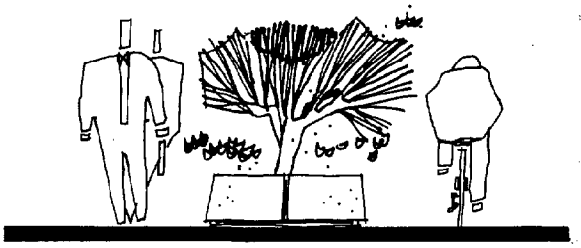
Mean pedestrian walking speeds are in the range of 2.5 to 3.0 miles per hour.[8] In contrast, average cycling speed on a Class I recreational bikeway is estimated to be 11 miles per hour.[9] This difference in speeds has two design implications. First, shared use pathways must be designed to meet the more restrictive bikeway engineering standards governing required curve radii and sight stopping distances (see Appendix B). Second, adequate space must be available for passing and/or use areas must be clearly defined if bicycle and pedestrian use is combined.

Pedestrians have a much greater capability than bicyclists for lateral and reverse changes of direction and sudden stops. Because pedestrians exercise these capabilities frequently and unpredictably, the possibility of conflicts between bicyclists and pedestrians must be anticipated where bicycle and pedestrian use is combined.[10]

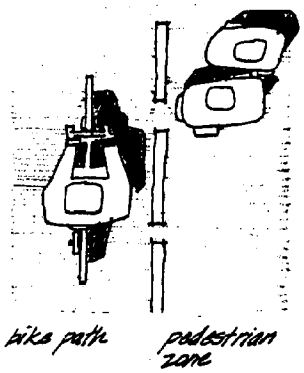
Bicycle and pedestrian conflicts on a shared use pathway are most likely to occur in areas where pedestrian volumes are high. Design techniques which help to normalize pedestrian behavior and to make both pedestrian and bicycle movements more predictable can be used to minimize the potential for conflicts, however.[11] For example, different pavement surface treatments can be used to clearly delineate bicycle and pedestrian use areas. Changes in elevation can also be used to separate pedestrians and bicyclists. In addition, physical separation and barriers to cross movement can be established by locating bollards, planters, or planting areas between bicycle and pedestrian use zones. A number of these design techniques are illustrated in figure 3-4.

Figure 3-4

DESIGN TECHNIQUES FOR MINIMIZING BICYCLE/PEDESTRIAN CONFLICTS

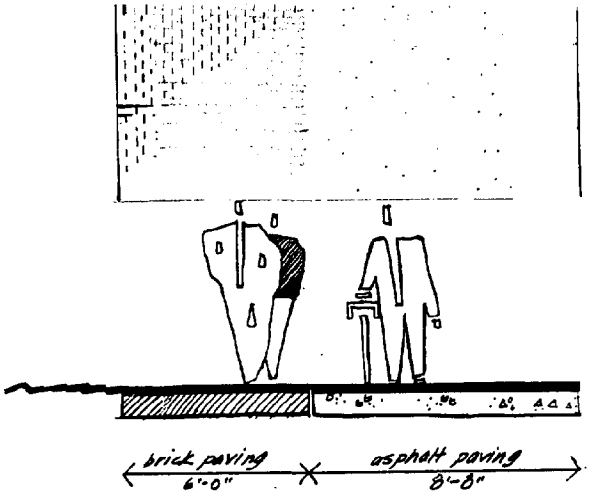


RAISED PLANTERS

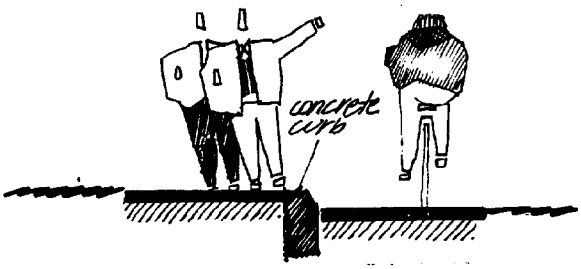


LANE MARKINGS

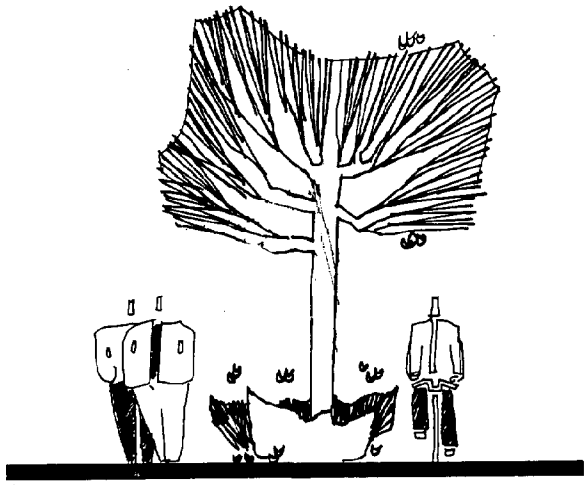
GRADE SEPARATIONS



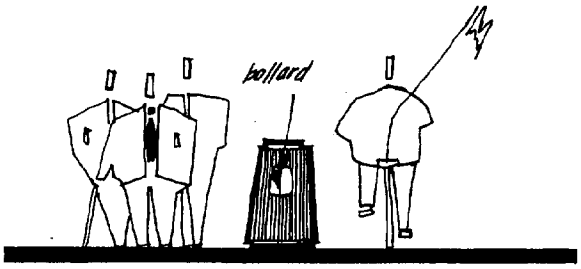
MATERIAL CHANGES



CURBS



FLUSH LANDSCAPING



BOLLARDS

The greater the physical separation between use zones, the greater the reduction in conflicts is likely to be. As a result, substantial separation, in the form of raised planting areas, is recommended on shared use pathways in those areas where pedestrian volumes and the potential for pedestrian cross movements are likely to be high. The Civic Center area, the riverfront Free Press easement, and Riverside Park's riverfront promenade are examples. In areas where low pedestrian volumes are anticipated, bicycle and pedestrian use areas can simply be delineated by using different pavement treatments.

The potential for conflicts between bicyclists and pedestrians can be almost totally eliminated by providing on-street bike lanes. While this alternative design solution has the advantage of guaranteeing a low incidence of bicycle/pedestrian conflicts, its use may be precluded in some situations by existing traffic volumes, limited roadway width, and on-street parking requirements. In addition, existing roadways may not follow the desired pathway alignment. Finally, as noted above, recreational cyclists generally perceive on-street lanes to be less safe than off-street paths. The extensive use of on-street lanes may, therefore, reduce the attractiveness and potential use of the riverfront pathway system for cyclists.

Trip Length:

Differences in speed of movement influence the distances that cyclists and pedestrians are likely to travel. Studies of the distribution of pedestrian trip lengths show that 50 percent of all "pleasure" walking trips in urban areas are less than 1,000' in length (approximately four minutes); 95 percent are shorter than one mile (approximately 20 minutes).[12] Other sources[13] suggest that the average distance a pedestrian is willing to travel between attractions is as little as 400'; pedestrians can be encouraged to travel further, however, if the pathway itself is attractive enough to stimulate interest and/or another attractive "goal" is located within sight.

Surveys of bicycle trip lengths show that 75 to 95 percent of all trips to recreation sites are four miles (or approximately 20 minutes) or less in length. Fifty percent of all "to recreation" bicycle trips are between .5 and 2.5 miles.[14] It is likely that these data do not accurately reflect the average length of "for recreation" bicycle trips, however; these trips may be significantly longer.

These data on typical pedestrian and bicycle trip lengths suggest that as the distance from major attractions increases, the volume of pedestrian use on the bicycle/pedestrian pathway will decrease. As a result, it is likely that pedestrian volumes in the Civic Center area, where a number of major attractions are clustered, will be significant. Pedestrian use in Riverside Park, the second major recreational attraction within the study area, may also be periodically high.[15] However, because the distance between the Civic Center area and Riverside Park is substantial (approximately two miles) and no intermediate recreational attractions (or other major generators of pedestrian activity) now exist, the level of pedestrian use between these two points is likely to be quite low.

The substantial distance between Hart Plaza and Riverside Park and the negative implication of this "gap" between major attractions on the potential use of the bicycle/pedestrian pathway in the West Riverfront area has been noted in the Department of Recreation's Riverfront Planning Kit (1978). As noted in the preceding description of existing conditions, however, several possibilities do exist for creating "intermediate" recreational attractions along the West Riverfront pathway. These include opportunities to enhance the attractiveness of the existing riverfront easement at the Free Press by developing river edge plazas at Eighth and Twelfth Streets and the possibility of interim recreational use of the vacant nine-acre parcel located between Eighth and Tenth Streets on the Detroit Free Press site. Such development could attract increased pedestrian (and bicycle) use on the pathway segments located between Third and Twelfth Streets.

Age, Experience, and Other Cyclist Characteristics

The mix of users on a recreational bikeway is likely to contain a greater variety of age groups and skill levels than a commuter-oriented utilitarian route. The age and experience characteristics of users are important considerations in planning the bicycle/pedestrian pathway because different types of cyclists can be expected to prefer and to operate more safely on different types of bikeway facilities.

Because an expert cyclist is likely to travel at high speeds, attempt to maintain momentum, and be more aggressive at traffic intersections, this type of user is likely to prefer an on-street traffic lane to an off-street sidewalk bikeway and to be "safer" using this type of facility. In contrast, a young cyclist, who has limited experience in judging traffic situations and limited knowledge of "rules of the road" is likely to be safer using an off-street bike path.[16] Similarly, an inexperienced rider, especially one who is unfamiliar with the route, may prefer an off-street riding situation.

Other bicyclist behavioral characteristics, such as the desire to maintain momentum and the reluctance to leave bicycles unattended, suggest additional planning and design considerations.

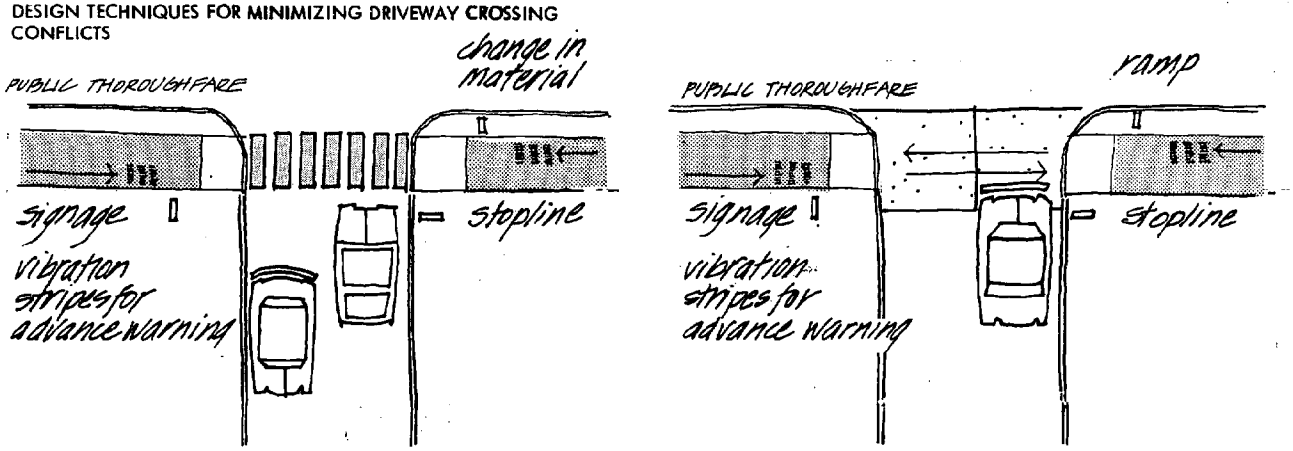
Because of the extra work effort involved in decelerating, stopping, and re-starting, bicyclists tend to slow down rather than come to a full stop at intersections and when approaching other potentially hazardous riding situations. Bicyclists also generally prefer not to dismount once stopped and not to leave their bicycles, especially in areas where they cannot be kept under surveillance.

These characteristics suggest that signing of potential route hazards (e.g., driveways, high traffic volume vehicular and pedestrian crossings) may not be adequate to ensure "safe" behavior. Where cyclists must be required to slow or stop, design techniques such as the use of roughened pavement surface ("rumble strips") and/or the placement of bollards across the pathway can be used to "enforce" desired behavior (see figure 3-5). In addition, if cyclists are to take advantage of the recreational opportunities and attractions which are available along the bicycle/pedestrian pathway, easily visible and secure bike parking facilities must be made available.

The importance of secure bicycle parking in encouraging use of the riverfront pathway system is underlined by the results of the survey of Detroit area cyclists performed in conjunction with this study. Over 70 percent of survey respondents classified this route design

Figure 3-5

DESIGN TECHNIQUES FOR MINIMIZING DRIVEWAY CROSSING CONFLICTS



characteristic as "very important" in encouraging use of the proposed route.[17] Another planning consideration related to parking was raised as a result of this survey of Detroit area cyclists. A surprisingly large percentage of respondents (69.4 percent) reported that the availability of "safe places to park a car at route ends" was a "very important" characteristic in encouraging use of the riverfront pathway system.[18] This suggests that a significant percentage of potential route users may transport their bikes by car to areas where recreational cycling opportunities are available.

User Perceptions

A large percentage of potential route users may be unfamiliar with the West Riverfront area and unaware of the existence of the pathway and the recreational opportunities which are available along its length. It will therefore be necessary to introduce the bicycle/pedestrian route, to promote its use, and to provide directional assistance to those who are unfamiliar with its alignment. Directional and informational signing will be an important factor in the successful implementation of the riverfront pathway linkage system.[19]

Special emphasis should be placed on signing at those locations where significant numbers of potential users will come into contact with the pathway (Hart Plaza, along Jefferson Avenue at Third, Eighth, and Twelfth Streets, and Riverside Park) and at points where the route alignment must change direction. Signing at these pathway turning points will help to ensure that the route is clearly legible.

Because it will not be possible to provide a continuous riverfront alignment for the development of an off-street bicycle/pedestrian pathway throughout the West Riverfront area, shifts in route treatment (e.g., off-street to on-street) are likely to be necessary. While these shifts (and changes in pathway alignment) may adversely affect users' perceptions of route continuity and directness, the consistent use of design elements (e.g., paving materials, planting, lighting, and signage) can help to maintain a clear route identity.

POTENTIAL USE LEVELS

Estimating Bicycle Use

A number of techniques are available for estimating general bike travel potentials. Those techniques which are based on readily available information (e.g., regional traffic data, traffic volume counts, and the identification of major travel generators and attractors) are useful in assessing the types and magnitudes of bicycle activity which are likely to occur within alternative route location corridors. These estimates of bicycle travel potential can be used to determine where facility planning and development efforts might best be concentrated and what types of facilities are most appropriate. In the context of this study, however, the "priority" corridor has been pre-defined as the riverfront and recreational use has been established as the predominant type of cycling activity.

Survey and statistical analysis techniques can also be used to evaluate the general magnitude of bicycling activity. While no detailed survey of Detroit bicycle ownership and use has been performed, survey results from Pennsylvania, a state similar to Michigan in climate and extent of industrialization, have been applied to the southeast Michigan region and the city of Detroit's population characteristics (using 1975 data) to estimate ownership and bicycle participation rates.[20]

This analysis estimated that 47 percent of all Detroit households (for a total of 226,000 households) owned bicycles and 32 percent of the Detroit population (or 427,000 persons) participated in bicycling in 1974. The estimated average number of days bicycled per month was estimated to be 3.7 per capita for a total of 4,936 bicycle days per month in the city overall.

The estimated frequency of bicycle riding by trip purpose was also estimated (see figure 3-6). Over 60 percent of the total cycling days per month were for recreation-related purposes (trips to recreational activity, long distance riding, and riding around the neighborhood).

Transport-and-ride participation for Detroit was also estimated. Approximately 30 percent of all bicycling households carried bikes by car to a cycling location. About 40 percent of these transport-and-ride trips were estimated to take place in urban parks, 11 percent on urban streets, and the remainder in rural locations.[21]

Figure 3-6

ESTIMATED FREQUENCY OF BICYCLE RIDING BY TRIP PURPOSE (OCTOBER, 1974)
Estimated Mean Days Ridden Per Capita/Per Month

To work	0.10
To school	0.01
To personal business	0.38
To recreational activity	0.59
To visit friends	0.64
Long distance	0.22
Neighborhood	1.71
Total average bicycle days/capita/month:	3.65

Source: Excerpted from Barton-Aschman Associates, Inc., Technical Aids for Bicycle Planning, January, 1978, table 14, p. 41.

Although these survey data provide a helpful picture of the extent of cycling activity in Detroit in the mid 1970's, they do not reflect increases in cycling activity over the past five years. While the extent of increase in bicycle use in the Detroit area is difficult to document, nation-wide estimates prepared by the Bicycle Manufacturers of America indicate that the number of bike users may have increased by as much as 25 percent.[22] In addition, Detroit bicycle shop managers report that they estimate that cycling participation has increased by 15 to 25 percent over just the past three years. This increase in cycling participation has been observed to be primarily in the 20- to 45-year-old age group.[23] Finally, visual surveys of Detroit neighborhoods and the downtown area confirm that cycling activity has increased on both weekdays and weekends.

Generalized survey data are difficult to apply in predicting potential levels of bicycle use on the West Riverfront bicycle/pedestrian route. Unlike pedestrian facility planning, no trip demand models are available for accurately projecting the levels of use to be expected on a proposed bikeway. Accurate modeling of bicycle use levels is complicated by the fact that, in addition to objectively quantifiable factors such as bike ownership, a number of attitudinal factors significantly influence bicycle participation. Measuring these attitudinal factors (such as perceptions of safety and attractiveness, knowledge or perception of transportation options, valuation of time) is difficult. In addition, their relationships to bicycle use are almost impossible to define because they are by nature subjective and change over time.[24]

Given the current minimal level of bicycle facility available in Detroit, it is likely that a significant latent recreational bicycling demand exists. This latent demand, in combination with the recreational attractions and scenic values which the riverfront area provides, ensures that the West Riverfront bicycle/pedestrian pathway will have a positive effect in increasing recreational bicycling opportunities. The pathway is likely to be increasingly heavily used as additional route segments are completed and the other components of Detroit's riverfront recreational strategy are implemented.

While it is impossible to predict the extent of bicycle use which will occur on the West Riverfront pathway, this type of information is likely to be required in establishing the priority of the proposed project in the context of competing demands for the use of limited riverfront land area and scarce financial resources. Unfortunately, the lack of specific data documenting local demand for recreational bicycle facilities is likely to foster a somewhat reluctant attitude toward the development of the riverfront pathway linkage system and may result in the assignment of a low priority to this project. At the same time, it will be difficult to assemble accurate and convincing

data on the use potential of the bicycle/pedestrian route unless a commitment is made to improve bicycle and pedestrian access along the riverfront by providing an attractive, continuous pathway. These contradictory requirements suggest that a pathway development strategy which does not immediately require the resolution of competing demands for riverfront land use and which can be implemented at relatively low cost will be most feasible in the short term. While this short-term strategy may result in a number of sub-optimal design solutions from the point of view of pathway users (and may actually depress potential use levels), it will at least allow the pathway linkage concept to be "tested" and will provide an opportunity to collect data which can be used to justify an increasing commitment to the improvement and extension of the pathway system. A program for monitoring bicycle use, to be implemented in conjunction with the first phase of development of the pathway system, is recommended.

Pedestrian Activity

A high intensity of pedestrian use is anticipated in the eastern zone of the study area where a number of major traffic generators are located. Walkway widths of 15' to 20' are generally recommended in areas with a high concentration of pedestrian activity.[25] These widths will accommodate peak pedestrian volumes in the range of 5,000 to 8,000 pedestrians per hour.[26] Even higher peak volumes may occur for short periods in the Civic Center area, however, especially during departures from major events.

It should be noted that new walkways proposed as part of the bicycle/pedestrian pathway need not be designed to carry the entire peak pedestrian flow in the Civic Center area. Pedestrian use of the existing 12' to 15' wide walkways located on the north side of Civic Center Drive and the east side of Third Street will reduce the required peak volume capacity of the riverfront walkways provided as part of the bicycle/pedestrian system. These riverfront walkways should be designed to encourage and facilitate pedestrian access to and along the river edge, however. As a result, the use of a minimum walkway width of 15' is suggested in designing the bicycle/pedestrian pathway segments located in the eastern zone of the study area.

Outside of the Civic Center area, pedestrian volumes on the bicycle/pedestrian pathway are expected to be quite low. This assumption is based on the fact that no major pedestrian travel generators or attractors are located outside of the eastern zone of the study area. In low volume use areas, the recommended walkway width is 6'; this width will allow two persons to walk abreast or to pass each other comfortably.[27]

Design Standards

Two primary issues must be considered in evaluating the technical design feasibility of pathway location and design alternatives in the context of this study. These are:

- the recommended and minimum pathway widths required for combined bicycle/pedestrian use in an off-street pathway
- the suitability of study area roadways for on-street bike use

OFF-STREET COMBINED PATHWAYS

Recommended Bikeway Widths

Bikeway width requirements are made up of three components:

- basic lane width
- boundary clearances (shy distance)
- space for pedestrians, if present

Basic lane width is determined to some degree by the quality of service which is considered desirable, appropriate, and/or feasible. Site specific conditions (available space, boundary conditions) and anticipated type of use are elements which may influence the selection of the appropriate level of service.

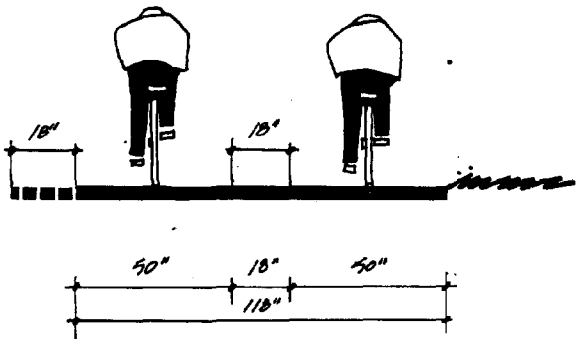
Research done for the FHWA[28] has defined six levels of service for bikeway design which parallel those which have been established for motor vehicles and pedestrians (see figures 3-7 and 3-8). Each level of service is associated with a specific minimum lane width. As a result of these research findings, level of service C has been recommended as the basic service minimum.

In addition to the basic lane width requirement (a recommended minimum of 43" per cyclist per direction), conditions on the boundaries of the bike path must be considered. Research

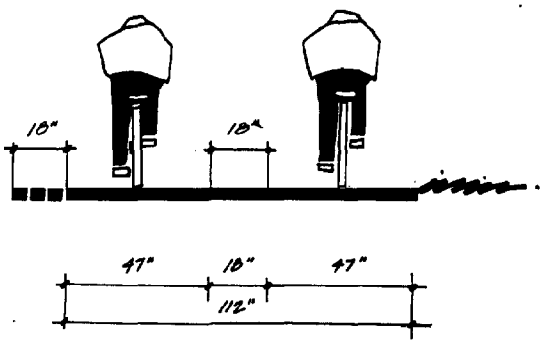
Figure 3-7

BICYCLE PATH WIDTHS BY LEVEL OF SERVICE

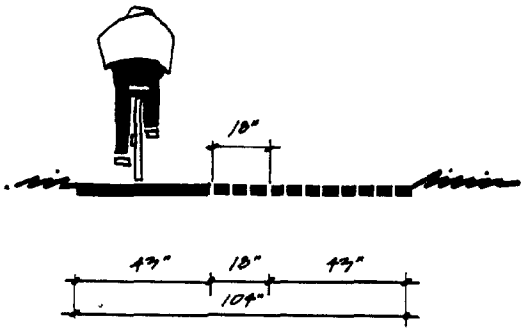
LEVEL OF SERVICE A



LEVEL OF SERVICE B



LEVEL OF SERVICE C



LEVEL OF SERVICE D

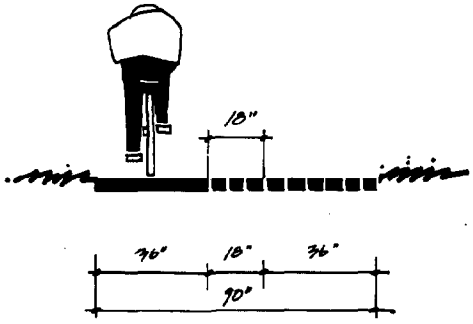


Figure 3-8

LEVEL OF SERVICE CLASSIFICATIONS AND REQUIRED WIDTHS

Level of Service	Description	Minimum Lane Width*
A	Free flow, low volumes, full choice of speed, and lateral lane position Average Speed: 11.0 mph Level of User Satisfaction: 88 - 100%	50" (100")**
B	Stable flow, significant volumes, slight slowing, but full choice of speeds Average Speed: 10.5 - 11.0 mph Level of User Satisfaction: 74 - 88%	47" (94")**
C	Stable flow, lower speeds, maneuverability restricted, speed determined by stream velocity rather than choice (recommended minimum design standard) Average Speed: 9.5 - 10.5 mph Level of User Satisfaction: 58 - 74%	43"
D	Speed depressed, maneuverability highly restricted Average Speed: 8.0 - 9.5 mph Level of User Satisfaction: 24 - 58%	36"
E	Very low speed; maintaining balance is a problem Average Speed: 6.0 - 8.0 mph Level of User Satisfaction: 6 - 24%	30"

*Each minimum lane width serves one bicyclist.
**Assumes minimum of two lane widths.

Source: Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, User Manual II, Design and Safety Criteria, February, 1976, pp. 26-28.

LEVEL OF SERVICE E

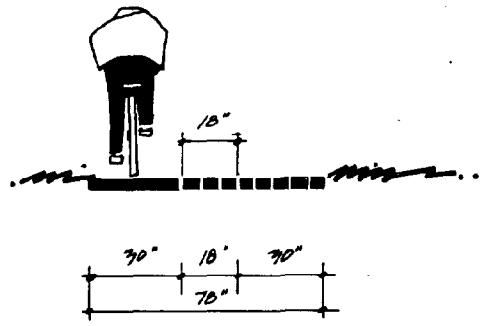
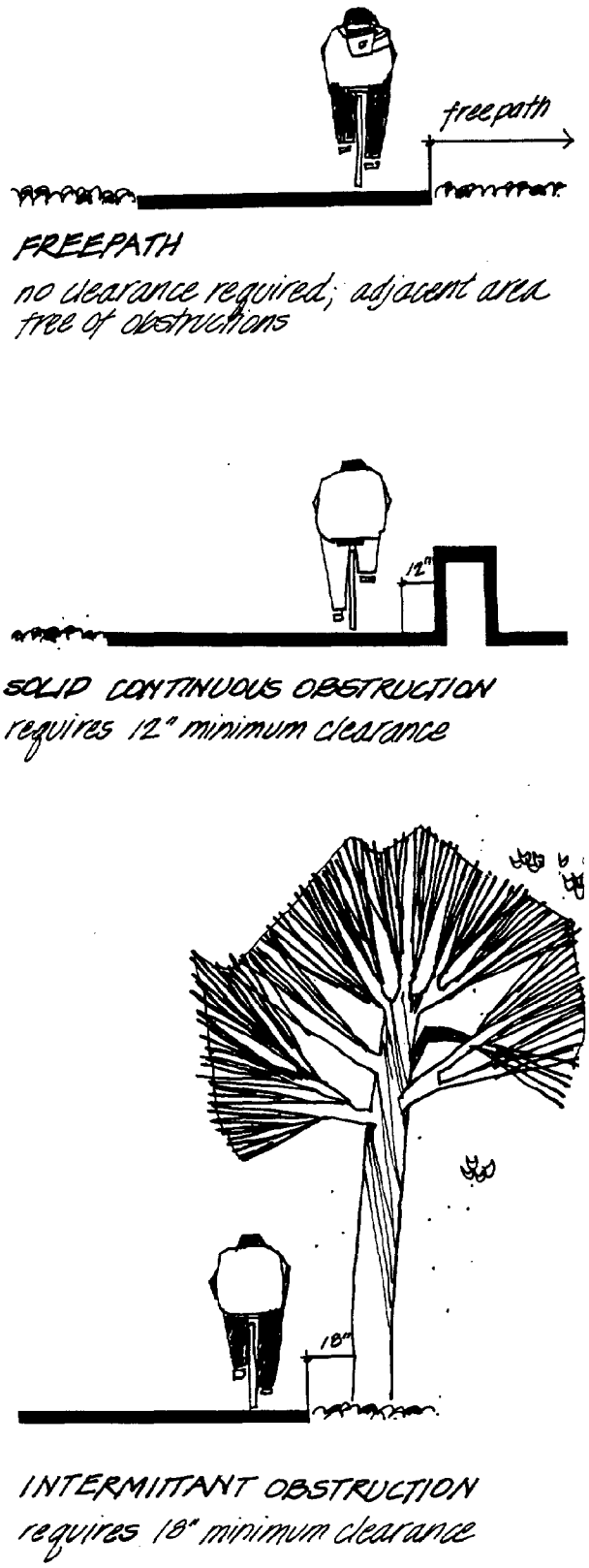


Figure 3-9

LATERAL CLEARANCE



sponsored by the Federal Highway Administration has also established boundary clearances which should be used to adjust lane widths to determine total bikeway width (see figures 3-9 and 3-10).

On the basis of this information, recommended widths for a bi-directional off-street bikeway under varying boundary conditions can be established. For example, the recommended width of a bi-directional, off-street bike path with no lateral obstructions is 8'-8". Forty-three inches are required for each bike lane and an 18" clearance between lanes is recommended. If intermittant or continuous lateral obstructions exist on either edge of the bikeway, the recommended width will be increased to 11'-8". (It should be noted that boundary clearances do not always require additional pavement width.)

Figure 3-10

LANE ADJUSTMENTS FOR BOUNDARY CONDITIONS

Boundary Condition	Clearance
Bike lane line	- 9.5 inches
Free path	0 (by definition)
Continuous lateral obstruction	+12.0 inches
Curb/gutter	+12.0 inches (or width of gutter if unrideable)
Parked car	+14.5 inches
Intermittant lateral obstruction	+18.0 inches

Source: Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, User Manual II, Design and Safety Criteria, February, 1976, p. 28.

Where the width available for bike path development is limited and no other acceptable alternative for providing bicycle access is available, an 8' path can be used. This 8' minimum has, in fact, been used as a standard bi-directional bike path width in many areas of the country in the past.[29]

Pedestrian Width Requirements

If a bicycle facility also accommodates occasional pedestrian traffic, a minimum addition of 6' (for bi-directional pedestrian movement) should be made to the width allowed

for bicyclists. The addition of an 18" lateral clearance between bicyclists and pedestrians is also recommended.

As a result, the recommended width of a bi-directional shared use bicycle/pedestrian pathway is 16'. It should be noted that this 16' width assumes that no boundary clearances are required and does not allow extra width to provide buffering between the pathway and an adjacent roadway.

If pedestrian use is expected to be substantial (over 600 pedestrians per hour) additional width must be made available to accommodate the anticipated volume of pedestrian traffic. Recommended walkway width standards can be determined based on hourly peak flows using the level of service concept (see figures 3-11 and 3-12).

Figure 3-11

WALKWAY LEVEL OF SERVICE CLASSIFICATIONS

Level of Service	Description
A	Virtually unrestricted choice of speed; minimum maneuvering to pass; crossing and reverse movements unrestricted; flow is approx. 25% of maximum capacity Average Flow: 7 PFM* (or less) Average Speed: 260 ft/min Average Area Occupancy: 35 sf/person (or greater)
B	Normal walking speeds only occasionally restricted; occasional interference in passing; crossing and reverse movements possible with occasional conflict; flow is approx. 35% of maximum capacity Average Flow: 7 - 10 PFM Average Speed: 250 - 260 ft/min Average Area Occupancy: 25 - 35 sf/person
C	Walking speeds partially restricted; passing restricted but possible with maneuvering; crossing and reverse movements restricted and require significant maneuvering to avoid conflict; flow is reasonably fluid and is about 40-65% of maximum capacity Average Flow: 10 - 15 PFM Average Speed: 230 - 250 ft/min Average Area Occupancy: 15 - 25 sf/person
D	Walking speeds restricted and reduced, passing rarely possible without conflict; crossing and reverse movements are severely restricted with multiple conflicts; some probability of momentary flow stoppages when critical densities might be intermittently reached; flow is approx. 65-80% of maximum capacity Average Flow: 15 - 20 PFM Average Speed: 200 - 230 ft/min Average Area Occupancy: 10 - 15 sf/person
E	Walking speeds restricted and frequently reduced to shuffling; frequent adjustment of gait required; passing is impossible without conflict; crossing and reverse movements severely restricted with unavoidable conflicts; flows attain maximum capacity under pressure, but with frequent stoppages and interruptions of flow Average Flow: 20 - 25 PFM Average Speed: 110 - 200 ft/min Average Area Occupancy: 5 - 10 sf/person
F	Walking speed reduced to shuffling; passing is impossible; crossing and reverse movements impossible; physical contact is frequent and unavoidable; flow is sporadic and on the verge of complete breakdown and stoppage Average Flow: 25 PFM (or more) Average Speed: 0 - 110 ft/min Average Area Occupancy: 5 sf/person (or less)

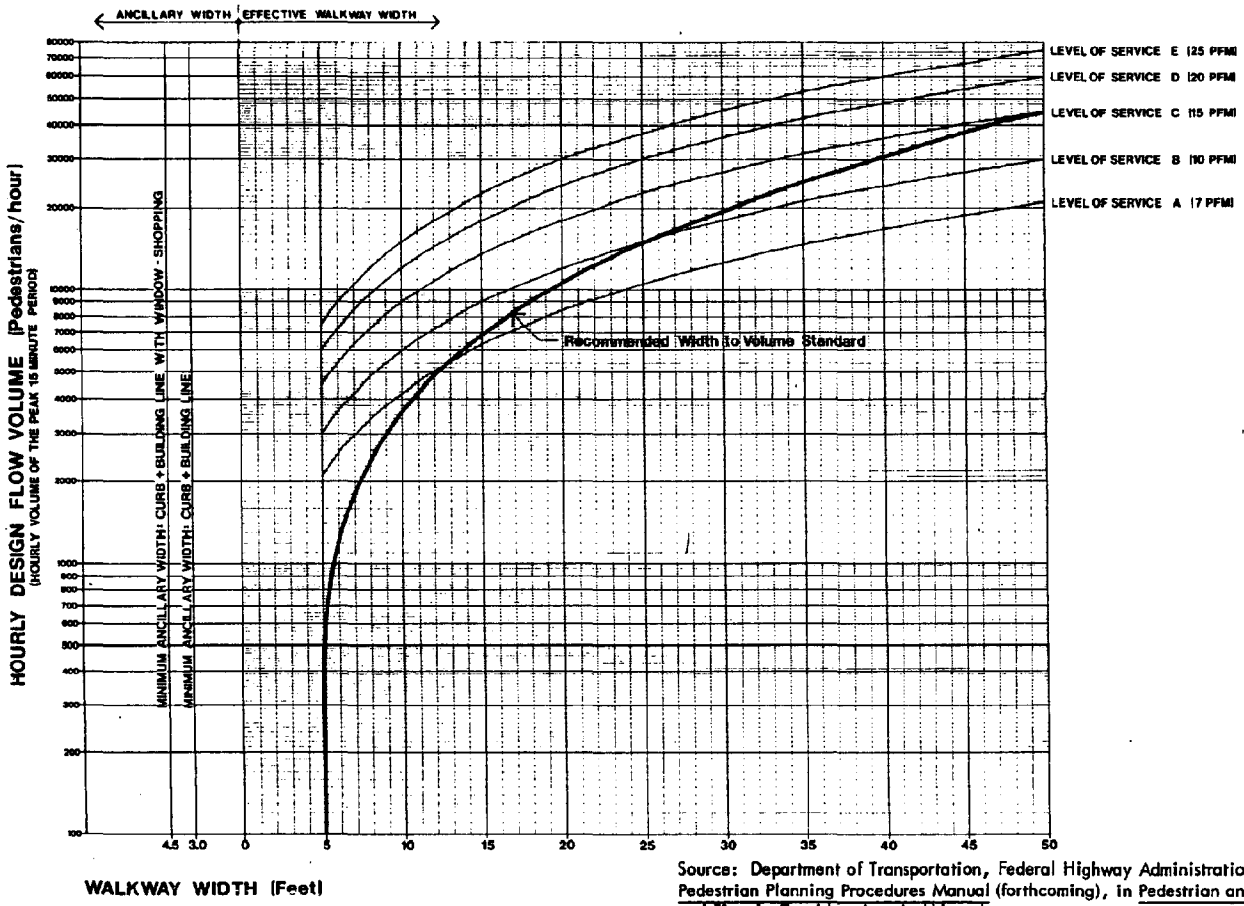
*PFM = Pedestrians per foot width of walkway, per minute.

Source: Adapted from Fruin, John J., Pedestrian Planning and Design, MAUDEP Inc., 1971.

Figure 3-12

RECOMMENDED WALKWAY WIDTH STANDARDS

RECOMMENDED WALKWAY WIDTH STANDARDS



Source: Department of Transportation, Federal Highway Administration, Pedestrian Planning Procedures Manual (forthcoming), in Pedestrian and and Bicycle Considerations in Urban Areas.

These effective walkway widths represent actual useable walkway area. Ancillary widths should be added to the effective walkway width to determine the total width of the pedestrian zone. These ancillary widths include lateral clearances to buildings or curbs (1.5') and other sidewalk obstructions such as fire hydrants or parking meters (2.0'), as well as the space required to accommodate the obstruction itself (see figure 3-13).[30]

Based on this information, it can be estimated that the total recommended pedestrian walkway width in a high pedestrian use area is likely to be between 15' and 20' and the total recommended width of the bi-directional off-street bicycle/pedestrian pathway will

Figure 3-13

WALKWAY OBSTRUCTIONS

Obstruction	Walkway Width Lost (curb face to edge of obstruction)
Light poles	2.5' - 3.5'
Traffic signal poles and boxes	3.0' - 4.0'
Fire hydrants	2.5' - 3.0'
Parking meters	2.0'
Mailboxes	3.2' - 3.7'
Phone booths	4.0'
Benches	5.0'
Waste baskets	3.0'
Trees	3.0' - 4.0'
Trees with pavement cut	5.0' - 6.0'
Planting boxes	5.0'
News stands	4.0' -13.0'
Awning poles	2.5'

Source: Department of Transportation, Federal Highway Administration, Pedestrian and Bicycle Considerations in Urban Areas, from Pushkarev and Zupan, Pedestrian Space, n.d.

by 25' to 32'.[31] Physical separation between areas can be of minimal width (e.g., bollards, curb) where available space is severely limited or can be more extensive (incorporating planting, lighting, and directional or informational signing) where space permits. Separation between the pathway and an adjacent roadway may also be desirable.

Where adequate space is not available to meet these recommended standards, the space allocation for bicyclists and pedestrians may be reduced; the level of service will be reduced as a result, however. If such a substandard facility is found to operate poorly under shared use conditions, consideration should be given to requiring a walk-your-bike policy for those periods when congestion is severe.[32]

ROADWAY SUITABILITY FOR ON-STREET BIKE USE

Although on-street bike lanes are not the type of bicycle facility preferred by recreational cyclists, they may represent the only method of providing riverfront bicycle access in certain segments of the study area, especially in the short term. It is, therefore, necessary to establish the criteria which determine a roadway's suitability for on-street bike use.[33] Five primary factors must be considered:

- pavement widths
- traffic volumes and capacity conditions
- traffic conflicts at intersections
- pavement conditions
- grades

Pavement Width

The availability of adequate roadway width for the development of an on-street bike lane is the primary criterion in evaluating the feasibility of on-street bicycle use. Based on the standards developed for bicycle facility width (see figure 3-10), it can be determined that a minimum of 4' must be available between the curb (or parking lane) and vehicular travel lane to allow the development of an on-street bike lane. Where this required width is not available, it may be possible to remove a parking lane, reduce the number of travel lanes, or even widen the roadway (i.e., by paving the shoulder or relocating the curb) to provide space for bike lane development. (Reducing the width of parking or travel lanes to less than the recommended traffic engineering standard is not an acceptable solution. Such a strategy would only create safety hazards as vehicles would be likely to encroach on the bike lane.) In some circumstances, the elimination of parking or travel lanes may be viewed as an unacceptable "cost" for providing bicycle access, however.

Traffic Volumes and Capacity Conditions

Tentative guidelines for identifying streets which are suitable for use in developing on-street bike lanes have been proposed based on the relationship of traffic volumes to roadway capacity.[34] This relationship is described by various levels of service for vehicular traffic (see figure 3-14).

Figure 3-14

LEVEL OF SERVICE FOR VEHICULAR TRAFFIC

Level of Service	Traffic Flow Condition	Volume to Capacity Ratio
A	Free Flow	Less than or equal to 0.60
B	Stable Flow	0.60 - 0.70
C	Stable Flow	0.70 - 0.80
D	Approaching Unstable Flow	0.80 - 0.90
E	Unstable Flow	0.90 - 1.00
F	Forced Flow	Greater than 1.00

Source: Barton-Aschman Associates, Inc., Harrisburg Area Pilot Bikeway Program, 1976.

Because some delays and congestion are to be expected at level of service C, it is anticipated that motorists will begin to search for alternate routes or lanes under these traffic flow conditions; thus, encroachment into adjacent

bike lanes may occur when traffic flow conditions fall below level of service B.

Figure 3-15 illustrates the general range of traffic volumes which occur at level of service B for three urban roadway types. These volumes can be used as general guidelines in determining which roadways are most suitable for on-street bike lane development. It should be noted that these guidelines are considered to be highly conservative.

Figure 3-15

TRAFFIC VOLUME GUIDELINES FOR ON-STREET BICYCLE LANES

Roadway Type	Peak Hour/Peak Direction	ADT
Two-lane urban arterial with parking	480	5,300
Four-lane urban arterial with parking	760	8,500
Four-lane urban arterial with turn lanes and parking	920	10,200

Source: Barton-Aschman Associates, Inc., Harrisburg Area Pilot Bikeway Program, 1976.

Note: These guidelines also suggest that four-lane roadways with average daily traffic volumes of 4,000 vehicles or less per day are suitable for use as signed Class III bike routes (i.e., no line is used to define the bicycle movement lane).

Because traffic conditions on arterial streets in urban areas rarely meet level of service A and B volume/capacity ratios, the use of these standards is likely to preclude the development of on-street bike lanes. As a result, these tentative standards are likely to be modified in the future on the basis of information gathered on on-street bike use in urban traffic situations. In the interim, a possible solution is to sign roadways for on-street bike use during low traffic volume weekend and holiday periods. This is the strategy which has been proposed by the Detroit Department of Recreation in developing the on-street portions of the West Riverfront bicycle/pedestrian pathway.

The limited amount of information which was available on weekend traffic in the study area confirmed the supposition that traffic volumes were below the levels specified in the guidelines described above.[35] No weekend traffic volume data was available for the central business district portion of the study area; however, it is likely that weekend traffic in this area is periodically high, notably during arivals and departures from major events in the Civic Center. While on-street bicycle use may not be advisable in this area during these peak traffic periods, it may be entirely appropriate during other weekend hours. As a result, temporary restrictions on on-street bike use may be required in the Civic Center area (Civic Center Drive and Third Street) and in nearby portions of the central business district.

Traffic Conflicts at Intersections

Because intersections are inherently points of significant traffic conflict, this is the location of the great majority of bicycle/vehicle accidents. Potential intersection conflicts can be divided into three categories: right turning, left turning, and crossing conflicts. In general, the heavier the volume of turning movements at an intersection, the higher the potential for bicycle/vehicle conflicts. Other factors which influence the degree of safety hazard to cyclists are summarized below.[36]

Right Turning Conflicts: Intersections with free right turning lanes (or right turn on red) or with exclusive double right turn lanes are considered to be the most hazardous to the through cyclist.

Left Turning Conflicts: Intersections with left turn phase signalization present no hazards to cyclists.

Crossing Conflicts: Signalized intersections provide the greatest degree of safety to cyclists from crossing traffic. Stop or yield signs along the cyclists' path are considerably more hazardous, since they imply a higher level of traffic on street crossing the cyclists' path.

The design of on-street bicycle facilities can help to reduce the potential for accidents at intersections by providing positive direction to cyclists and motorists. Two approaches are possible:

- to channel bicycle traffic into specific and desirable locations at intersections by varying bike lane treatments

- to alert motorists to potential conflicts through the use of signs and pavement markings (e.g., crosswalks)

A number of bike lane intersection treatments are illustrated in figure 3-16.

Pavement Surface

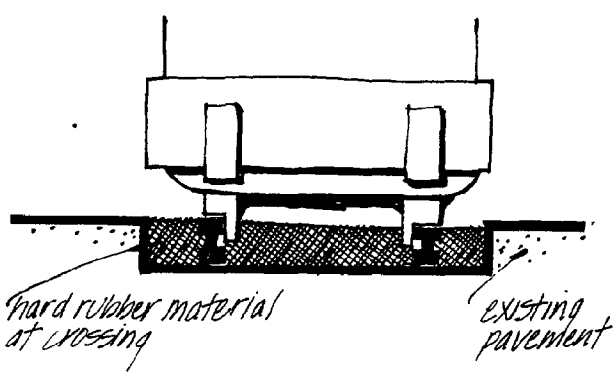
Normal roadway pavement surfaces are generally acceptable for bicycle use. However, the collection of dirt and debris at the curb edge of the roadway can pose a hazard to cyclists. Potholes and areas of poor pavement condition should, of course, be repaired before a roadway is designated for on-street bicycle use.

Drainage grates can also pose hazards for cyclists. Parallel slotted grates can "catch" a bicycle tire causing accidents which may injure cyclists and damage bicycles. Parallel grates should be replaced with grid grates where on-street bicycle use is planned.

Rail tracks crossing the path of a cyclist can present a serious hazard. Right angle track crossings are preferred to ensure that the bicycle wheel does not catch in the track's flangeway. A number of crossing treatments are available which can significantly improve surface conditions at rail crossings for cyclists (see figure 3-17).

Figure 3-17

RAILROAD CROSSING SURFACE IMPROVEMENT

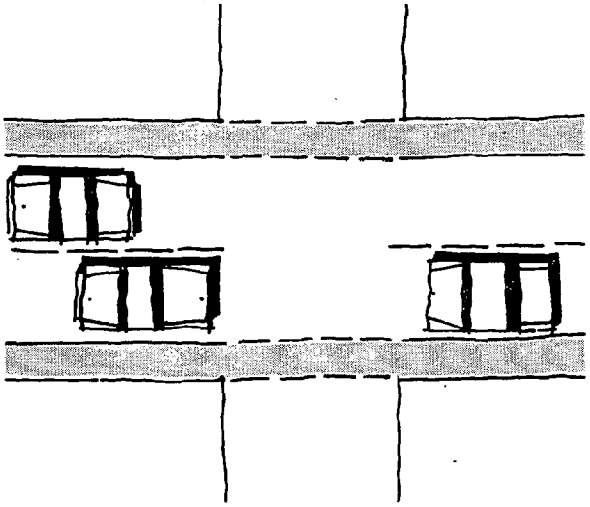


Grades

The maximum recommended grade for bikeways is 5 percent; however, a 10 percent grade can be used for short distances.

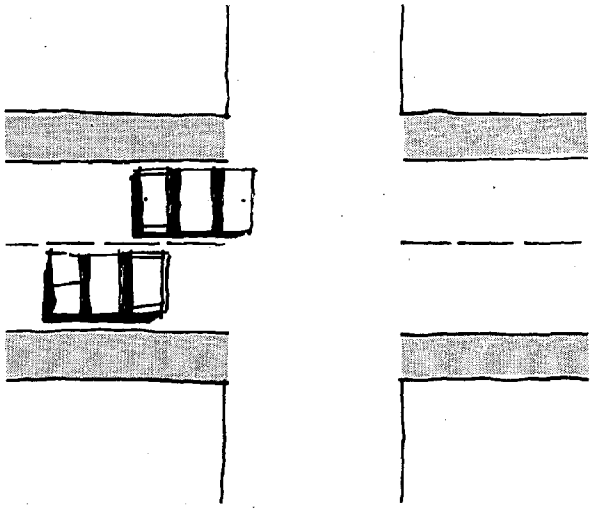
Figure 3-16

BIKE LANE TREATMENTS AT INTERSECTIONS



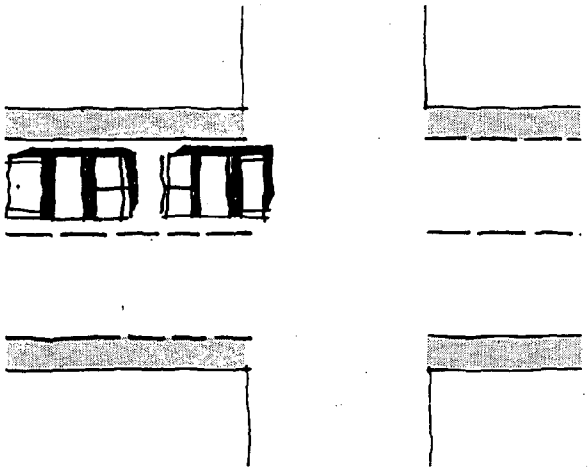
LANE CONTINUATION

Reinforces through bicyclists right-of-way over traffic emerging from minor street; alerts right turning motorist to possibility of through cyclists. Recommended where right turn volumes are minimal.



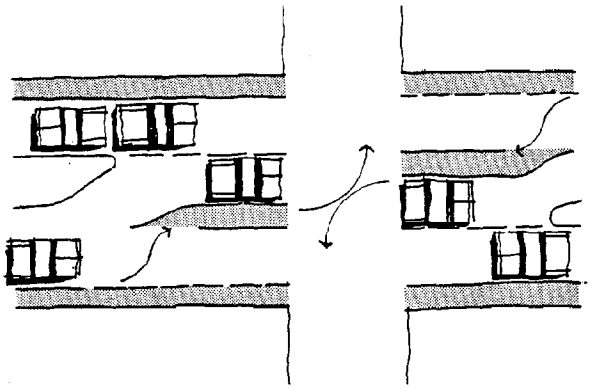
LANE TERMINATION

Used where cyclist weaving for through and left turn movements is potentially more hazardous than conflicts with right turning motorists; cyclist turns left in two stages as a pedestrian; solid line discourages lane changing.



BROKEN STRIPE

Broken stripe delineates space from vehicle. Cyclists initiate weaving movements to establish normal positional relationships with motorists for left turns and through movement; protected areas for right turns available; broken lines permit lanes changes "with care."



DESIGNATED DIRECTIONAL LANES

Used where substantial left turning bicycle traffic is present and designating queuing space for left turn appears appropriate.

Planning and Design Constraints

The development of the West Riverfront bicycle/pedestrian pathway will require a series of compromises and trade-offs between the planning and design objectives which have been outlined above and competing demands for the use of riverfront land. For example, land use conditions in the study area will preclude the development of a pathway which is consistently located at the river edge; even where direct riverfront access is possible, competing demands for the use of the limited area available may complicate the development of an off-street pathway which can accommodate both bicyclists and pedestrians. As a result, two primary route planning objectives--proximity to the river and the use of the off-street bicycle path treatment preferred by recreational cyclists--must be compromised if a continuous route is to be developed in the short term.

The land use conditions and intense pressure for use of the riverfront in the eastern zone of the study area focus a number of trade-offs and compromises which must be made in developing the bicycle/pedestrian route. Both public and private objectives present demands for the use of the river edge zone which are in direct competition with route planning and design objectives. These competing objectives include:

- control of access and security for private development versus public riverfront access

- minimum congestion and delay for vehicular traffic and convenient parking for Civic Center patrons versus use of roadway space for the development of bicycle facilities

- maximum ease of movement and minimum conflicts for pedestrians versus the use of off-street space for bike path development

Because these demands are contradictory and require more space than is available, they cannot all be satisfied; priorities must be assigned to competing uses and compromises must be negotiated.

Because the bicycle/pedestrian pathway concept has not yet been established as a high priority, these issues are not likely to be resolved in a manner which optimizes route design objectives at the expense of competing demands. Moreover, in this portion of the study area, the requirements for bicycle facility development are likely to receive a lower priority than pedestrian access. At a minimum, however, continuous access can be provided for both cyclists and pedestrians even though the route may be located away from the river edge in some areas, through bicycle access may be provided on on-street facilities, and/or bicycle riding may be restricted during peak traffic periods.

Some flexibility may also be required in applying recommended design standards. In the Civic Center area, for example, where space may not be available to provide the recommended widths for an off-street bike path and the walkway width recommended for peak pedestrian traffic, the dimensions of the bicycle and pedestrian path may be reduced. While such sub-optimal design solutions may result in congestion, delay, and an increased level of conflict between cyclists and pedestrians during peak use periods, they can be adopted where no other acceptable alternative exists. As noted above, however, the functioning of facilities which are not designed to recommended standards must be carefully monitored; if unacceptable levels of service result, controls over use (e.g., walking bikes during peak use periods) may be required.

NOTES

1. Detroit Department of Recreation, Riverfront Planning Kit, 1978, n.p.

2. Department of Transportation, Federal Highway Administration, Office of Research and Development, Safety and Locational Criteria for Bicycle Facilities, User Manual II: Design and Safety Criteria (Washington, D.C.: 1976), pp. 35-36.

3. Riverfront Recreational Bike Use Survey. This clip-board survey was administered by Detroit Recreation Department staff and volunteers at the Belle Isle Marathon, May, 1980. A copy of the survey is included as appendix A.

4. The responses to these three survey items were tabulated as follows:

	Very Important	Somewhat Important	Not Important	No Answer
Pleasant places to stop, watch the river, picnic, etc., along the route	65.1%	31.7%	2.5%	.7%
Reststops (with rest rooms, drinking fountains) along the route	62.0%	31.0%	5.3%	1.7%
Good sight-seeing potential, places of historic interest along the route	42.6%	48.9%	7.4%	1.1%

5. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities (Washington, D.C.: 1975), pp. 8-21.

6. Ibid., p. 16. The "commute" cyclist appears to be more sensitive than a recreational cyclist to the problems typically encountered on a sidewalk bikeway. These problems include: intersection conflicts, driveway conflicts, conflicts with pedestrians, poorly constructed curb ramps, and poor pavement quality.

7. In addition to pedestrians and cyclists, provisions must be made in certain locations along the bicycle/pedestrian pathway for stationary users (e.g., fishermen, window shoppers in retail areas, people enjoying the view or consulting directional displays).

8. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, p. 33.

9. Ibid., p. 31. Average cycling speeds on shared use pathways have been observed to be somewhat lower at 8 mph (Department of Transportation, Federal Highway Administration, Office of Research and Development, "An Investigation of the Potential for Pathways Shared by Pedestrians and Bicyclists," January, 1978, Appendix W of the Pedestrian Planning and Procedures Manual (forthcoming).

10. The potential conflicts between pedestrians and cyclists on a shared use pathway is an important consideration for two reasons. First, ease of movement for both pedestrians and cyclists will be enhanced where conflicts are minimized. Second, and perhaps more important, the potential for accidents and injuries will be reduced.

11. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, p. 35.

12. Pedestrian and Bicycle Considerations in Urban Areas, p. 7-15, from Pushkarev and Zupan, Urban Space for Pedestrians, 1975.

13. Detroit Department of Recreation, Riverfront Planning Kit, 1978, n.p. This 400' walking distance appears to be based on average parking to destination trip lengths, rather than typical recreational walking distances.

14. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities: User Manual I: Bicycle Facility Location Criteria, 1976, p. 59, figure 5.

15. Almost all Riverside Park users appear to arrive by car rather than on foot. Pedestrian volumes on approaches to the park are, therefore, likely to be quite low.

16. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, User Manual I, p. 41.

17. A total of 90.5 percent of survey respondents characterized secure bike parking as "important."

18. A total of 93.7 percent of survey respondents classified this as an important route characteristic.

19. The results of the Riverfront Recreational Bike Use Survey underline the importance of directional signing in encouraging use of the riverfront pathway system. Almost 91 percent of the survey respondents characterized "clear directional signing and route mapping" as an important route characteristic.

20. Barton-Aschman Associates, Inc., Technical Aids for Bikeway Planning, January, 1978. Prepared for the Southeast Michigan Council of Governments.

21. As noted above, the Belle Isle survey also suggests that the potential for transport-and-ride bicycling participation in the Detroit area is high.

22. U.S. Environmental Protection Agency, Office of Transportation and Land Use Policy, Bicycling and Air Quality Information Document (Washington, D.C.: 1978), figure 1-4, p. 11. The number of bicycle users is estimated to have increased from 70,000,000 to 90,000,000 in the period from 1974 to 1978.

23. Telephone survey of nine Detroit bike shops by Detroit Department of Recreation, July, 1980. While bicycle sales are not reported to have increased substantially over the past three years, an increasing number of older bicycles have been brought in for parts replacement and repair. This repair activity is assumed to indicate increased rates of participation.

24. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, User Manual I, appendix A.

25. American Association of State Highway and Transportation Officials, A Policy on the Design of Urban Highways and Arterial Streets, 1973.

26. If it is assumed that the total walkway width is 15' to 20', the effective walkway width (the area actually available for pedestrian movement) is likely to be 12' to 17'. At the recommended width to volume standard (level of service C) a walkway which is 12' to 17' wide will accommodate peak hourly volumes in the range of 5,000 to 8,000 pedestrians.

27. If bicycle and pedestrian use are not to be accommodated in a shared pathway, the width of the pedestrian portion of the route may be increased, regardless of traffic flows, to ensure that it is visually prominent.

28. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities. These levels of service have been defined based on speeds achievable under differing bikeway width conditions and a statistical analysis of user satisfaction with a given speed based on naturally occuring free-flow velocity distributions.

29. The American Association of State Highway and Transportation Officials' A Guide for Bicycle Routes (1974) suggests 7'-0" as the minimum width of a two-lane Class I bike path; an 8'-0" width is recommended as desirable. This document represents the FHWA's current official design and construction standards for bikeways. Revised standards are being developed by the FHWA, but have not yet been published.

30. Department of Transportation, Federal Highway Administration, Bicycle and Pedestrian Considerations in Urban Areas, pp. 10A-8 and 10A-9.

31. Width calculated as follows:

18" clearance from bike lane 1 to boundary 1
43" width of bike lane 1
18" clearance to bike lane 2
43" width of bike lane 2
18" clearance to pedestrian zone
12' - 18' pedestrian zone (5,000 - 9,000 pedestrians/hour at level of service C)
2' clearance to boundary 2

32. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, User Manual II, p. 29.

33. This evaluation methodology was developed by Barton-Aschman Associates, Inc., and reported in Technical Aids for Bikeway Planning, January, 1978, prepared for the Southeast Michigan Council of Governments.

34. Barton-Aschman Associates, Inc., Harrisburg Area Pilot Bikeway Program, 1976.

35. Weekend traffic volume counts were taken at the following locations: Twenty-first Street north of Howard, West Grand Boulevard north of Jefferson, West Jefferson west of

Twelfth, Fort Street west of Twelfth, Fort Street west of Twenty-fourth, Twelfth Street (Rosa Parks) north of Fort, and Lafayette west of Eighteenth.

36. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, User Manual II, pp. 61-68.

DETROIT RECREATION DEPARTMENT

5/80

RIVERFRONT RECREATIONAL BIKE USE SURVEY

Planning is now underway for the development of a bicycle/pedestrian route in Detroit's riverfront area linking Belle Isle, Hart Plaza, and Riverside Park. In the short-term, the route will be primarily an on-street, signage-based system, although separate riveredge easements will eventually be incorporated. Weekend and holiday use of the bike path is anticipated; week day use will be limited because of high traffic volumes in the downtown riverfront area.

Your comments on the recreational use potential of the proposed route and the major barriers to use will be of enormous help in planning a route that is responsive to potential users needs and objectives. Please take a few minutes to respond to the following questions.

1. How important to you are the following characteristics in encouraging bicyclists to use a riverfront route in the downtown area?

	Very Important	Somewhat Important	Not Important
- pleasant places to stop, watch the river, picnic, etc. along the route	____	____	____
- good sightseeing potential, places of historic interest along the route	____	____	____
- connection to other bike paths	____	____	____
--within Detroit	____	____	____
--in Windsor, Canada	____	____	____
- reststops (with restrooms, drinking fountains) along the route	____	____	____
- restaurant/café or food stores along the route	____	____	____
- clear directional signage and route mapping	____	____	____
- informational signing on historical areas and activites	____	____	____
- secure parking facilities at stopping points	____	____	____
- safe places to park a car at route ends	____	____	____
- access to route ends by public transit	____	____	____

2. It is now difficult to bicycle along the riverfront in this area. Which of the following conditions would most discourage you from bicycling here?

	Very Discouraging	Somewhat Discouraging	Not Discouraging
- conflicts with pedestrians	____	____	____
- conflicts with cars and trucks	____	____	____
- poor pavement condition	____	____	____
- railroad crossings and tracks parallel to the road	____	____	____
- feelings of being unsafe	____	____	____
- need to stop and start in response to traffic signals/signs when using an on-street route	____	____	____
- length of route (6miles) is too long	____	____	____
is too short.	____	____	____
- the area surrounding the route is unattractive	____	____	____
uninteresting	____	____	____
- difficulty in getting to the route from where you live			
Detroit	____	____	____
Detroit suburbs	____	____	____
other area	____	____	____

3. Are you an expert or casual cyclist? (Circle one)

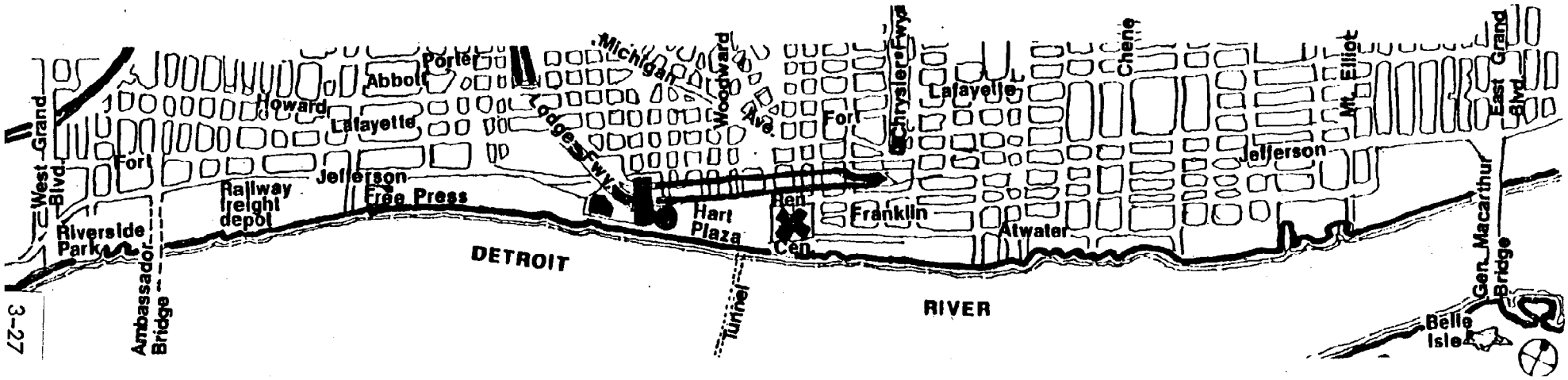
4. Do you use your bike for
   - Commuting ____
   - Shopping, visits ____
   - Recreation ____

5. Would you be likely to use a bicycle route in the Detroit riverfront area?
   - Frequently ____
   - Occasionally ____
   - Rarely ____

If you are interested in participating in the planning of recreational bicycle routes in Detroit please write your name and address on the survey form.

Please drop completed survey in box or mail to:

Recreation Department
Bike Survey, 20th Floor
735 Randolph
Detroit, Michigan



APPENDIX B

RECOMMENDED BIKE PATH DESIGN AND ENGINEERING STANDARDS

Stopping Sight Distance

A recommended formula for determining required stopping sight distances for bicyclists has been developed through research done for the Federal Highway Administration.[1] This formula is as follows:

$$S = \frac{V^2}{30(f+G)} + 3.67V$$

S = stopping sight distance
V = speed in mph[2]
f = coefficient of friction (0.25)
G = grade (as rise/run)

Horizontal Curves

Empirical studies of adult cyclists making 180 degree unbraked turns at various speeds have resulted in the following bikeway horizontal curve formula:[3]

$$R = 1.528V + 2.2$$

R = curve radius in feet
V = design speed in mph

Curve Widening

Curve widening is recommended on two-way bikeways and bikeways shared with pedestrians on short radius curves of less than 100'. Maximum widening is limited to 4'.[4] The formula for curve widening is shown in figure 1.

Grades

Optimum design standards for bikeway grades have been proposed based on acceptable work effort demands. These grade/distance criteria are illustrated in figure 2.[5]

Drainage

A minimum cross slope of .02'/foot is required on Class I bikeway facilities.[6]

Signing

Guidelines for bicycle facility sign placement are illustrated in figures 3-5.

NOTES

1. Department of Transportation, Federal Highway Administration, Safety and Locational Criteria for Bicycle Facilities, User Manual II: Design and Safety Criteria, p. 37.

2. The recommended design speed is 20 mph. Ibid., p. 35.

3. Ibid., pp. 35-36.

4. Department of Transportation, Federal Highway Administration, A Bikeway Criteria Digest, April, 1979, p. 47.

5. Ibid., p. 42.

6. Ibid., p. 51.

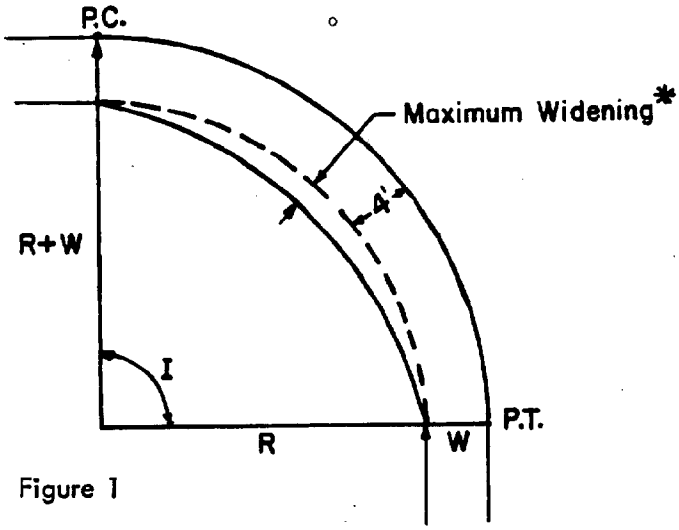


Figure 1

$$\text{Maximum Widening}^{*} = W - \frac{W}{\cos \frac{I}{2}}$$

R = Radius Of Curvature

W = Width Of Bikeway

I = Deflection Angle Between Tangents

P.C. = Point Of Curvature

P.T. = Point Of Tangency

*Maximum Widening Shall Not Exceed 4 Feet

CURVE WIDENING
Source: Department of Transportation, Federal Highway Administration, A Bikeway Criteria Digest, April, 1979, p. 48.

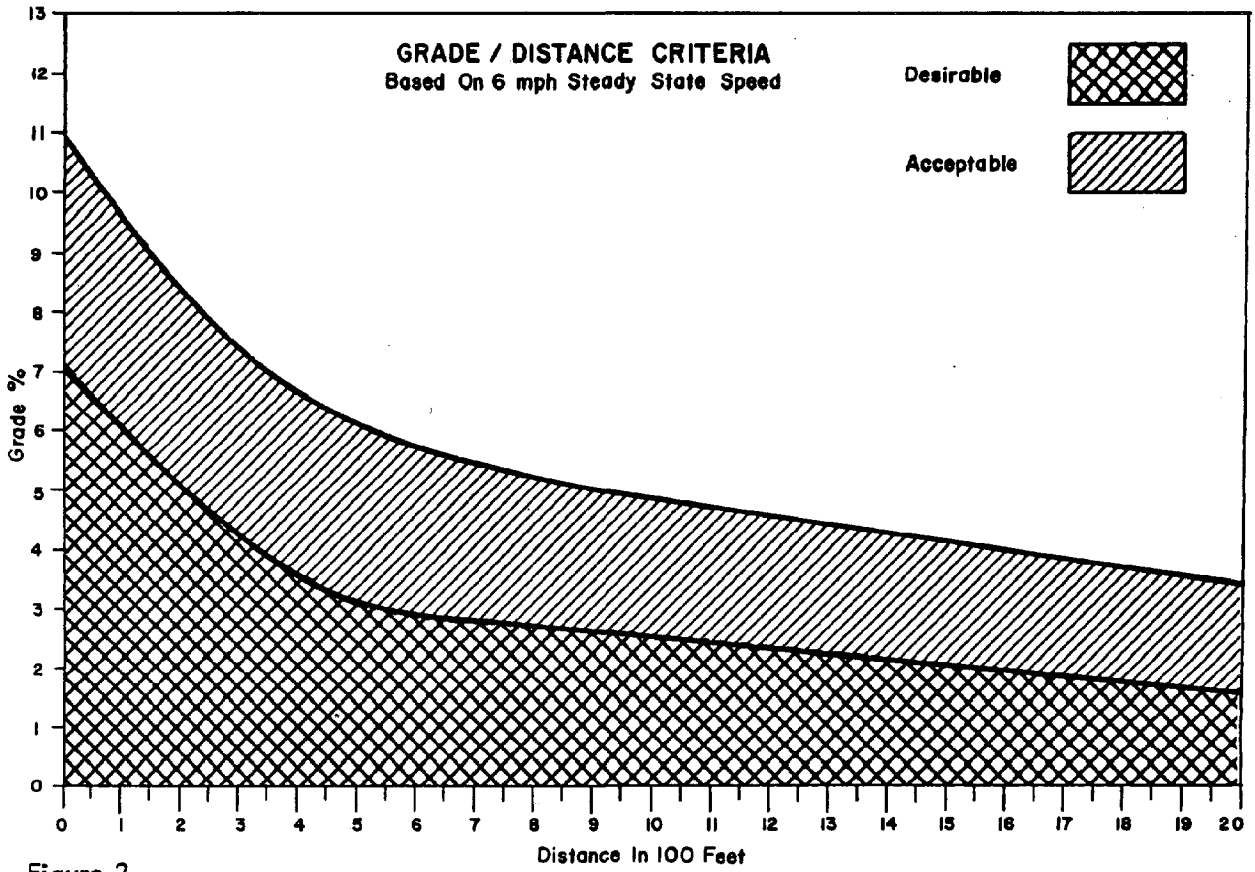


Figure 2

GRADE/DISTANCE CRITERIA
Source: Department of Transportation, Federal Highway Administration, A Bikeway Criteria Digest, April, 1979, p. 43.

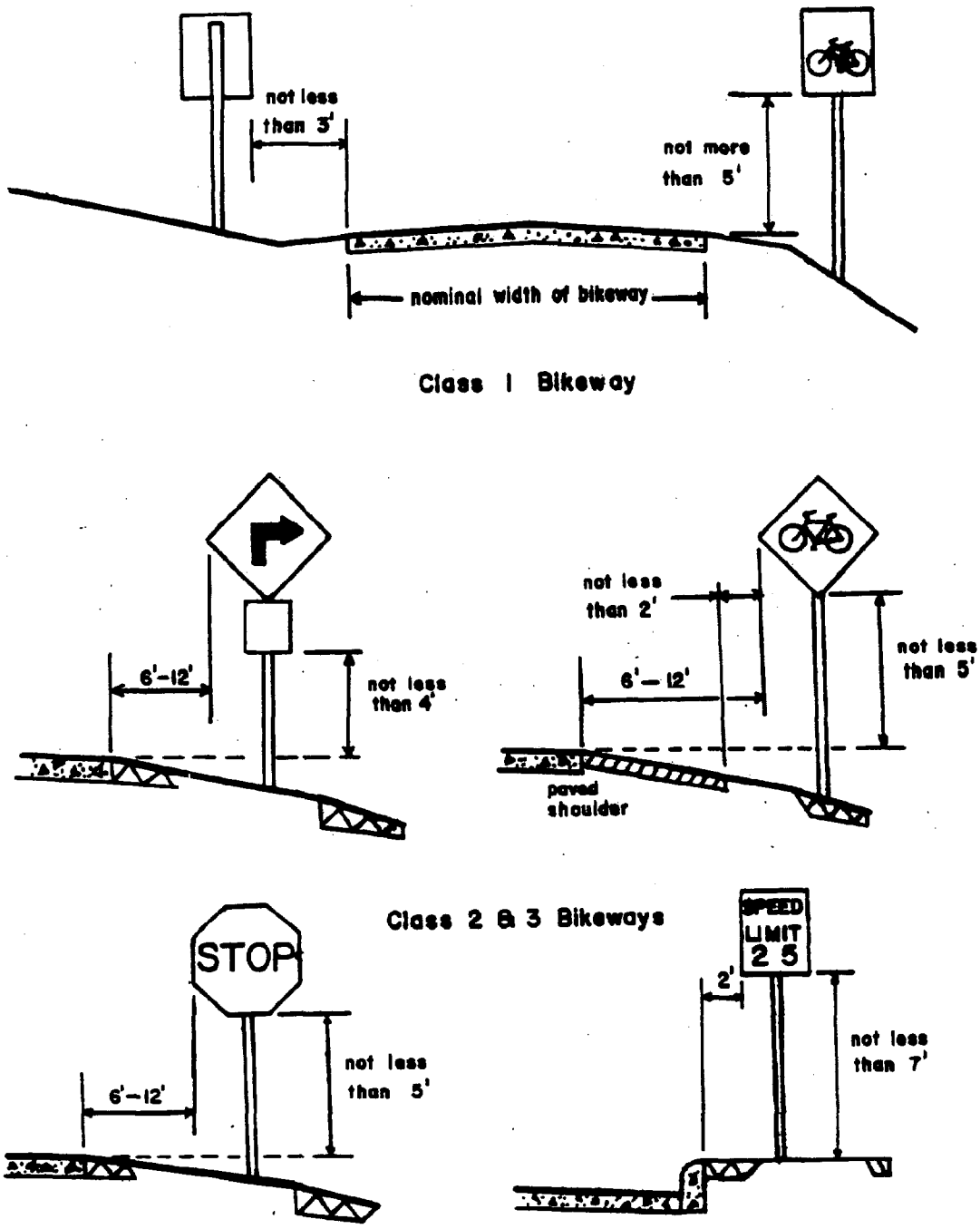


Figure 3

BIKEWAY SIGNING

Source: Department of Transportation, Federal Highway Administration, A Bikeway Criteria Digest, April, 1979, p. 59.

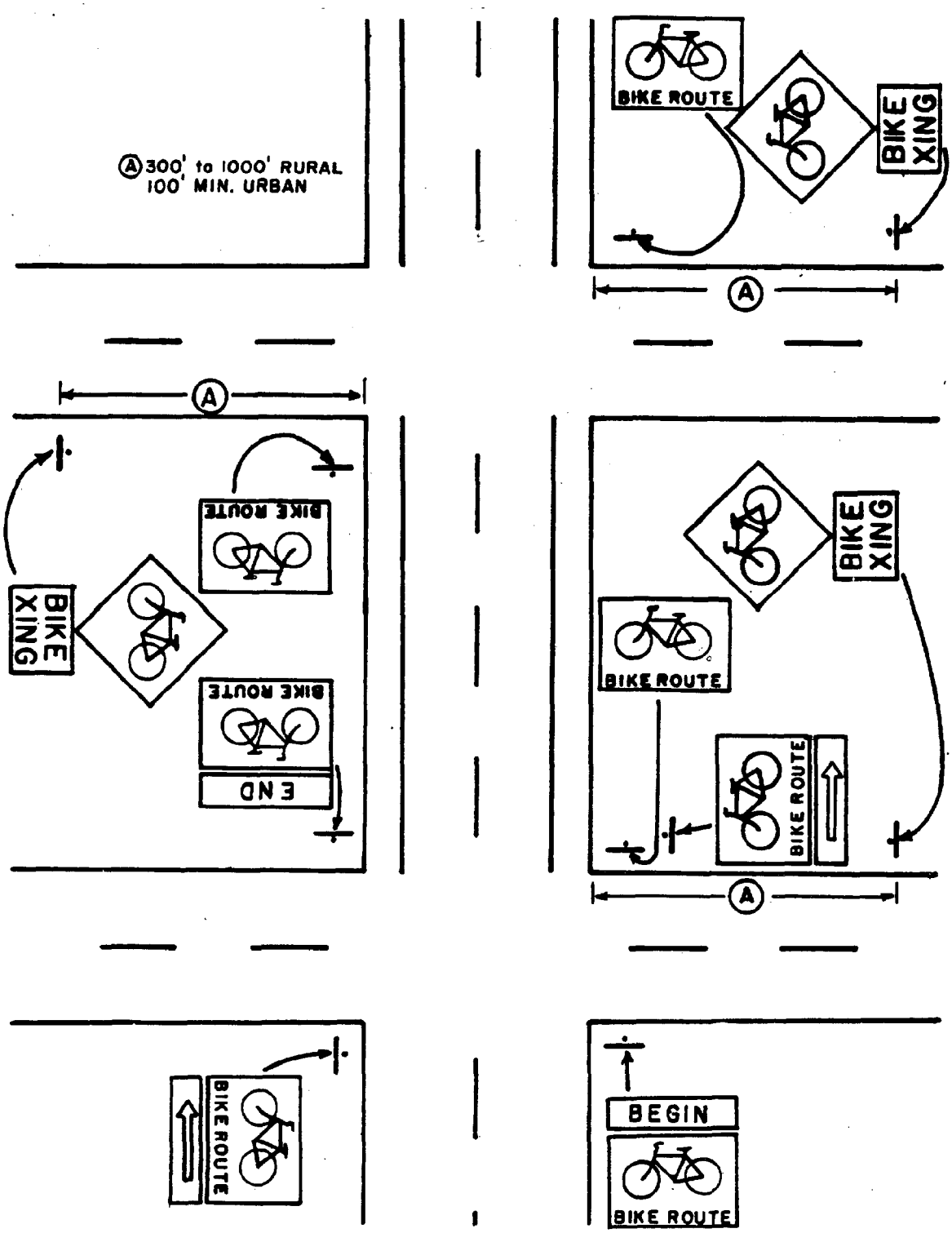


Figure 4

ON-STREET BICYCLE FACILITY SIGN PLACEMENT
Source: Department of Transportation, Federal Highway Administration, A Bikeway Criteria Digest, April, 1979, p. 62.

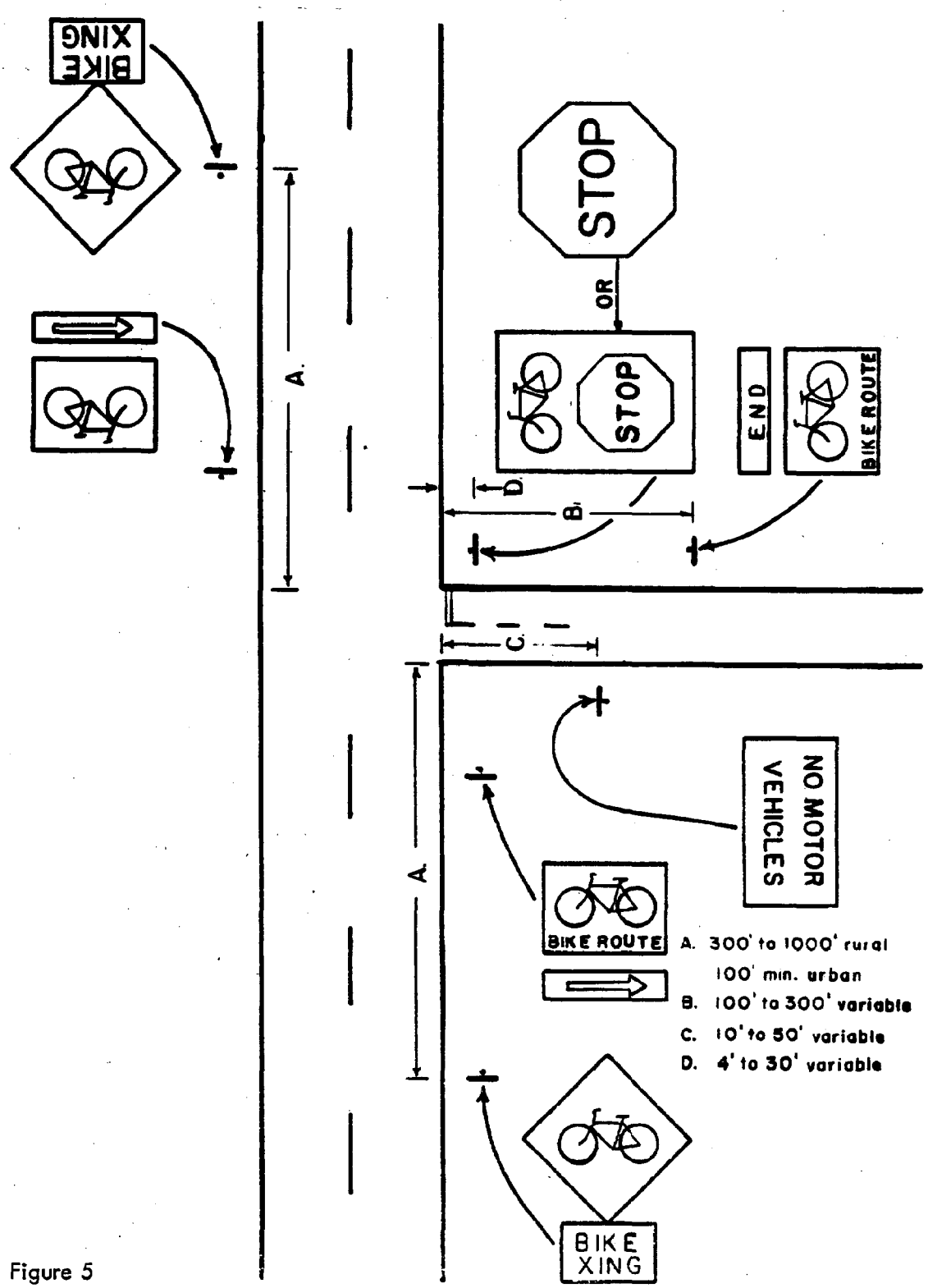


Figure 5

OFF-STREET BICYCLE FACILITY SIGNING
Source: Department of Transportation, Federal Highway Administration, A Bikeway Criteria Digest, April, 1979, p. 63.

Route Description and Design Alternatives

Overview

The description and analysis of existing conditions and the preceding discussion of route planning and design considerations have established the framework for defining a recommended route alignment for the West Riverfront bicycle/pedestrian pathway. This recommended route is illustrated in figure 4-1.

The proposed route includes both a primary riverfront alignment and a supplementary land-based loop. The primary east-west route is located on the river edge where access is available and on (or adjacent to) Jefferson Avenue where direct proximity to the river is not possible. The supplementary route is located on Lafayette Boulevard and is linked to the riverfront route on the eastern and western edges of the study area at Hart Plaza and Riverside Park, the route termini.

RIVERFRONT ROUTE

Both the Riverfront West hotel/retail and housing sites and the Norfolk and Western rail yard and ferry operation will block through access along the river edge in both the short and the long term.[1] As a result, almost half of the river frontage in the study area will not be available for use in developing the bicycle/pedestrian pathway. For this reason, it is critical that those opportunities which do exist for access to and along the river (the municipally-owned Civic Center, the Free Press easements, Twelfth Street, and Riverside Park) be used effectively to ensure a strong riverfront orientation for the bicycle/pedestrian route.

Opportunities for direct river contact in the Civic Center area, at the Free Press site, and at Riverside Park can be maximized by establishing well-defined and clearly visible pathway linkages from Jefferson Avenue to the river and by developing small plazas on the riverfront where space can be made available. Opportunities to develop "entrances" to the river edge exist on Jefferson Avenue at the foot of Eighth Street, at Twelfth Street, and at the entrance to Riverside Park. Special

river edge development may be possible in the area behind Cobo Hall, at the foot of Third Street, at the foot of the Free Press' Eighth Street easement, and at Twelfth Street. Future development in Riverside Park can also take advantage of the opportunities which exist for special river edge interpretive displays.

Because through access along the river will not be possible at the Riverfront West sites (and views to the river are likely to be almost entirely blocked by new development), a strong riverfront orientation will be impossible to achieve along the portion of the bicycle/pedestrian pathway between Third and Eighth Streets. Nevertheless, the easements which are to be provided on the eastern, northern, and western edges of the hotel/retail and housing sites are critical elements in developing a direct, legible, and continuous pathway system.

Because adequate roadway width does not appear to be available to allow the use of on-street bike lanes on (reconstructed) Jefferson Avenue between Third and Cabacier, it may not be possible to develop this portion of the pathway system without the Riverfront West easements. In addition, an off-street easement adjacent to the hotel/retail site will make it possible to develop a clearly defined pathway linkage from the river edge to Jefferson Avenue. The design character of this segment will be an influential factor in encouraging users to continue beyond the major attractions located in the Civic Center area to the western continuation of the bicycle/pedestrian route and in ensuring that the overall route alignment is both continuous and legible.

In the long term it may be possible to increase the riverfront orientation of the pathway segment located adjacent to the rail yard area by initiating easement negotiations with Chessie Systems and encouraging the consolidation of their rail related operations and the relocation of non-rail dependant trucking activity. In this way, land may be made available to develop a pathway which overlooks the remaining rail area and which is more directly related to the river itself.

INLAND ROUTE

The supplementary route segment illustrates the potential which exists for developing a loop system in the West Riverfront area. The development of an on-street bicycle link from Riverside Park to the Ambassador Bridge (and Hubbard-Richard) and from Hart Plaza to the recently redeveloped segments of Woodward Avenue and Washington Boulevard are proposed. By developing these north-south links, access to the riverfront can be improved for the residents of Hubbard-Richard, for the increasing downtown residential population, and for the residential areas located to the northeast of the central business district. Finally, an east-west connection on Lafayette Boulevard can be established to create a pathway loop. This loop system will greatly increase the variety of recreational options made available to potential route users.

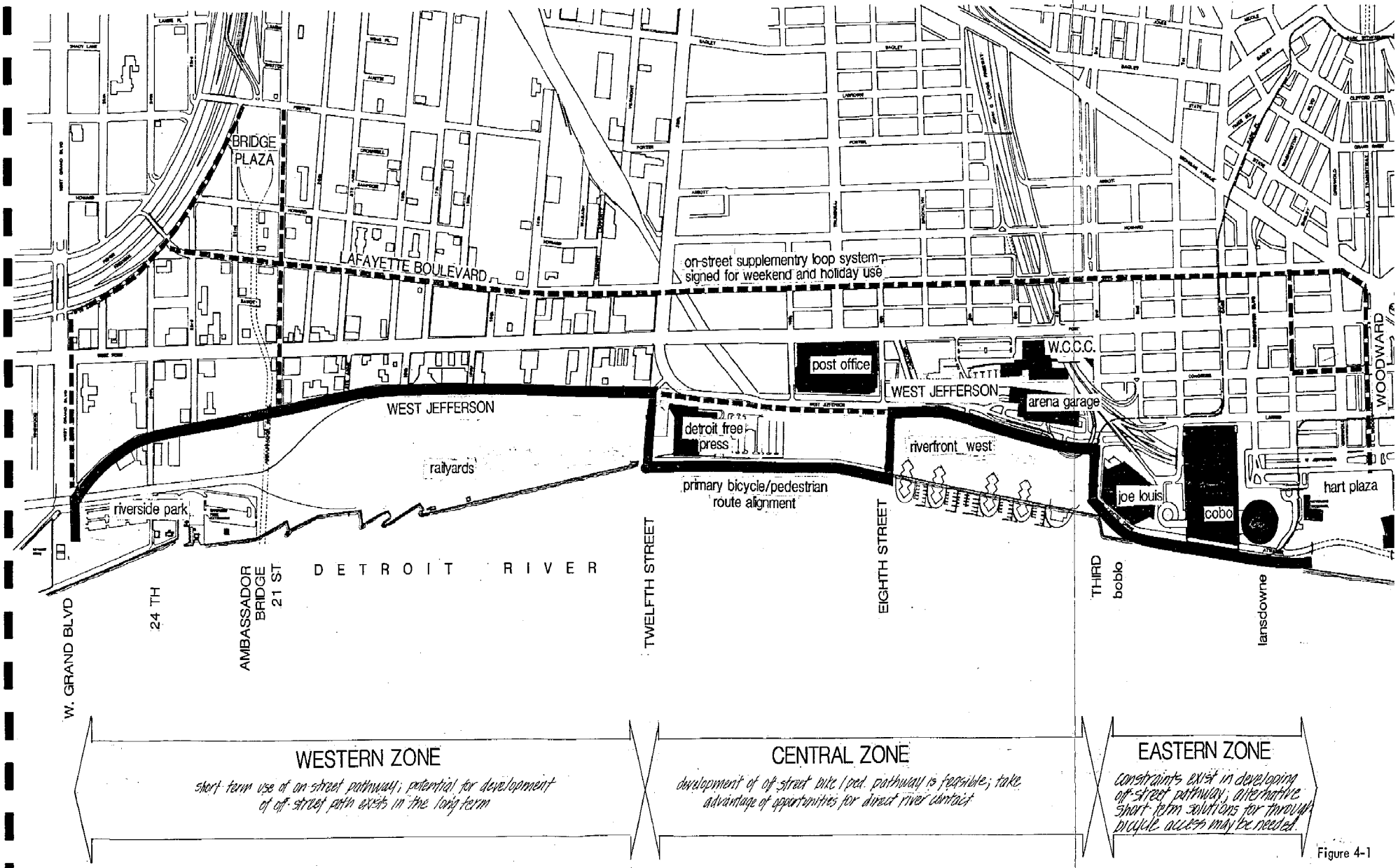
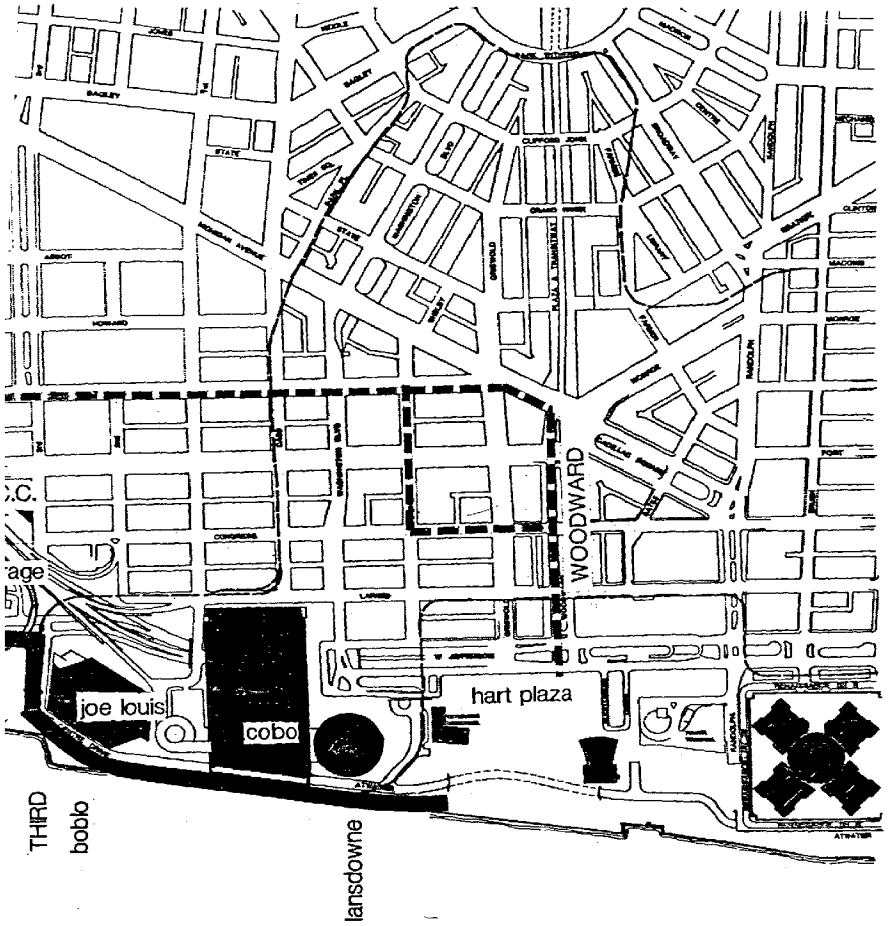


Figure 4-1
OVERALL BIC



EASTERN ZONE

constraints exist in developing off-street pathway; alternative short-term solutions for through bicycle access may be needed.

Figure 4-1

OVERALL BICYCLE ROUTE

bjr inc.

Design and Management Alternatives

A number of issues and problems which may be encountered in the design and development of the West Riverfront bicycle/pedestrial pathway have been introduced in the preceding analysis. In the following pages, specific design alternatives for key portions of the route are described and graphically illustrated. A number of management alternatives are also discussed. These management alternatives suggest administrative strategies and policies for facilitating the implementation of the bicycle/pedestrian pathway system; these alternatives can be used in conjunction with (and, in some instances, in place of) physical design and development solutions.

EASTERN ZONE

Summary of Planning and Design Issues

The area between Hart Plaza and the intersection of Jefferson and Third will be the most intensively used portion of the West Riverfront bicycle/pedestrian pathway. Although efforts have been made to ensure that public access is available to and along the riverfront, the heavy anticipated volume of pedestrian use and the competition between uses for the limited space available in this area pose a number of constraints in developing the bicycle/pedestrian route.

Based on estimates of peak pedestrian volumes in the Civic Center area, the recommended width of the pedestrian walkway between Hart Plaza and Third Street has been determined to be 15' to 20'. In addition, between 8' and 11' will be required if a bidirectional off-street bike path is to be provided.[2]

Because pedestrian use will be intense in this portion of the study area, physical separation between bicycle and pedestrian use zones is recommended to minimize the potential for conflicts. A number of techniques for delineating and separating use areas have been suggested (see figure 3-4). These separation techniques can require only minimal additional

pathway width (as with bollards) or can be quite wide (e.g., planting areas which may incorporate lighting, informational signage, and seating).[3] The possibility of bicycle/pedestrian conflicts can also be effectively eliminated if provisions are made for bicycle use in the roadway.

Given these recommended pathway widths, two "bottlenecks" can be identified in developing an off-street bicycle/pedestrian route in the eastern zone of the study area: the Lansdowne site, where a 15' walkway is to be provided; and the Boblo area, where only 14' will be available for the development of the bicycle/pedestrian pathway. While the widths available in these areas provide enough space to accommodate the anticipated heavy volume of pedestrian traffic, the development of an off-street route shared by cyclists and pedestrians will not be possible unless additional pathway width can be created.

In contrast to the Boblo and Lansdowne sites, the area between Civic Center Drive and the river edge behind Cobo Hall provides an ideal location for the development of an off-street bicycle/pedestrian pathway. The 50' width available in this area allows adequate space to develop a 20' wide pedestrian zone at the river edge, a planting area to separate bicycle and pedestrian use zones, and an 11' wide bicycle path. A commitment to convert this municipally-owned parking area to bicycle and pedestrian use will be a significant first step forward in developing the bicycle/pedestrian pathway.

The width of the easements to be provided at the Riverfront West hotel/retail site (located to the west of the Boblo boat dock on Third Street) will significantly affect the potential for developing an off-street bicycle/pedestrian route in this portion of the study area. Although it is likely that adequate width can be provided to meet the recommended pathway standards, the dimensions of the easement to be made available have not yet been determined. It should be noted that if the easement provided does not exceed the minimum width of 16' recommended by City department staff, it will be difficult to develop an off-street bicycle and pedestrian route in this area.

Summary of Design and Management Alternatives

Three design alternatives for developing the bicycle/pedestrian pathway in the eastern zone of the study area are described and illustrated below. The design alternatives which are proposed include:

- reducing roadway width by one lane (10') in those areas where bottlenecks exist to provide the recommended widths needed for the development of a continuous, off-street bicycle/pedestrian pathway (This pathway is located to the south of Civic Center Drive and to the west of Third Street.)

- extending the existing river edge to provide the recommended width needed to develop a shared use, off-street pathway

- pre-empting one roadway lane on Civic Center Drive and on Third Street to provide the width needed to create on-street bike lanes; pedestrian walkways are located off-street

Two management alternatives are also proposed:

- establishing a walk-your-bike policy in those portions of the eastern study area zone where adequate space will not be available for the development of an off-street bike path; pedestrian walkways will be used to provide through access for cyclists

- establishing a Class III bicycle route on Third Street and Civic Center Drive, signed for use only during non-

Figure 4-2

DRIVEWAY CROSSING TREATMENT

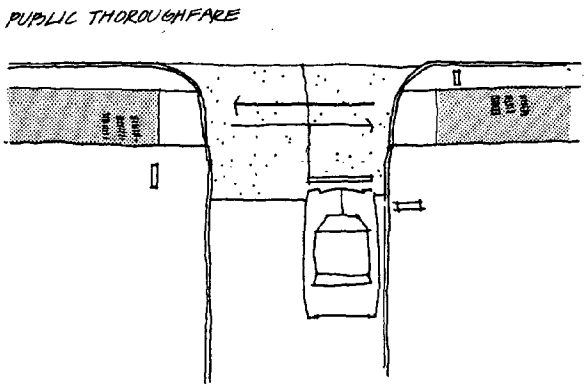


Figure 4-3

DRIVEWAY CROSSING TREATMENT

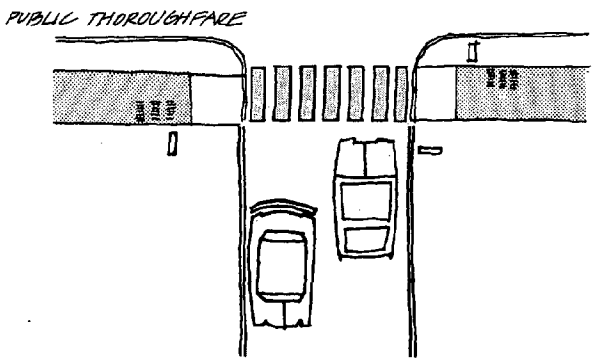
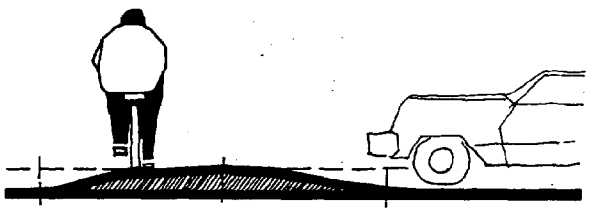


Figure 4-4

DRIVEWAY RAMP



peak traffic periods; during heavy traffic volume periods (e.g., arrivals and departures from major events), cyclists will be required to use pedestrian walkways under a walk-your-bike policy

Description of Design Alternatives

The Off-street Bicycle/Pedestrian Pathway:

Off-street pedestrian access can be made available through the eastern portion of the study area to Hart Plaza, the eastern terminus of the West Riverfront pathway. In the short term, however, it is likely to be necessary to locate the bicycle terminus of the pathway to the west of the plaza in the area behind Cobo Hall; ample space will be available at this location to provide bicycle parking. This may be the most logical terminus for the bicycle route in the short term because neither the Lansdowne walkway (15' wide) nor Hart Plaza's riverfront promenade (24' wide on its eastern end) are wide enough to provide the pathway widths recommended for both bicycle and pedestrian use. In the long term, however, the riverfront bicycle/pedestrian pathway will continue to the east of Hart Plaza and through bicycle access past the bottleneck which exists at the Lansdowne site will be required.

The Lansdowne: The extra width which can be made available by pre-empting 10' of the roadway at the entrance to the Lansdowne site will provide adequate space to accommodate bi-directional bike movement.[4] In implementing this design alternative, however, it is important that cyclists be given advance warning of the potential cross traffic conflicts at the entrance and exit drives to the Lansdowne's valet parking area. Signs, "rumble" strips, and driveway pavement markings can be used to alert motorists and cyclists to potential hazards. Several alternative driveway crossing treatments are illustrated in figures 4-2 - 4-4.

As at the Lansdowne, the 14' pathway width available at the Boblo site, located to the west of Cobo Hall, will not allow the development of an off-street shared use bicycle/pedestrian pathway. In contrast to the Lansdowne area, however, the bottleneck which exists at the Boblo site poses an immediate, short-term limitation on the feasibility of developing an off-street pathway.

Two options are available for creating the additional pathway width needed to develop an off-street bicycle/pedestrian route in these areas:

- relocating the existing curb on the south side of Civic Center Drive, preempting 10' of the roadway

- extending the river edge

Once past the Lansdowne, cyclists can continue east through the Atwater tunnel which passes under Hart Plaza.[5] An 11' wide separated right-of-way (originally intended for use as part of the DPM system) is available on the north side of the tunnel and can be converted to bicycle use.[6] In order to reach this right-of-way, however, cyclists will be required to cross Civic Center Drive approximately 145' to the west of the tunnel entrance (see figure 4-5). Marked crosswalks are likely to be necessary and demand activated traffic signals may also be needed to provide a safe and convenient crossing. In addition, the fence enclosing the Ethnic Festival staging and committee parking lot, which is located on the north side of Civic Center Drive, must be relocated to allow bicycle access to the tunnel's separated right-of-way.[7]

The proposed 10' reduction of roadway width on the south side of Civic Center Drive in the vicinity of the Lansdowne site is not likely to have a major impact on on-street bus parking capacity at the Civic Center. Because on-street parking would severely limit visibility at the Lansdowne's entrance and exit drives, no bus parking is likely to be permitted in this area.

Figure 4-5

ATWATER TUNNEL

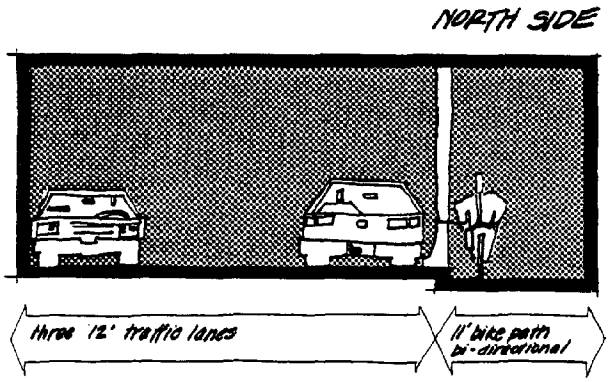
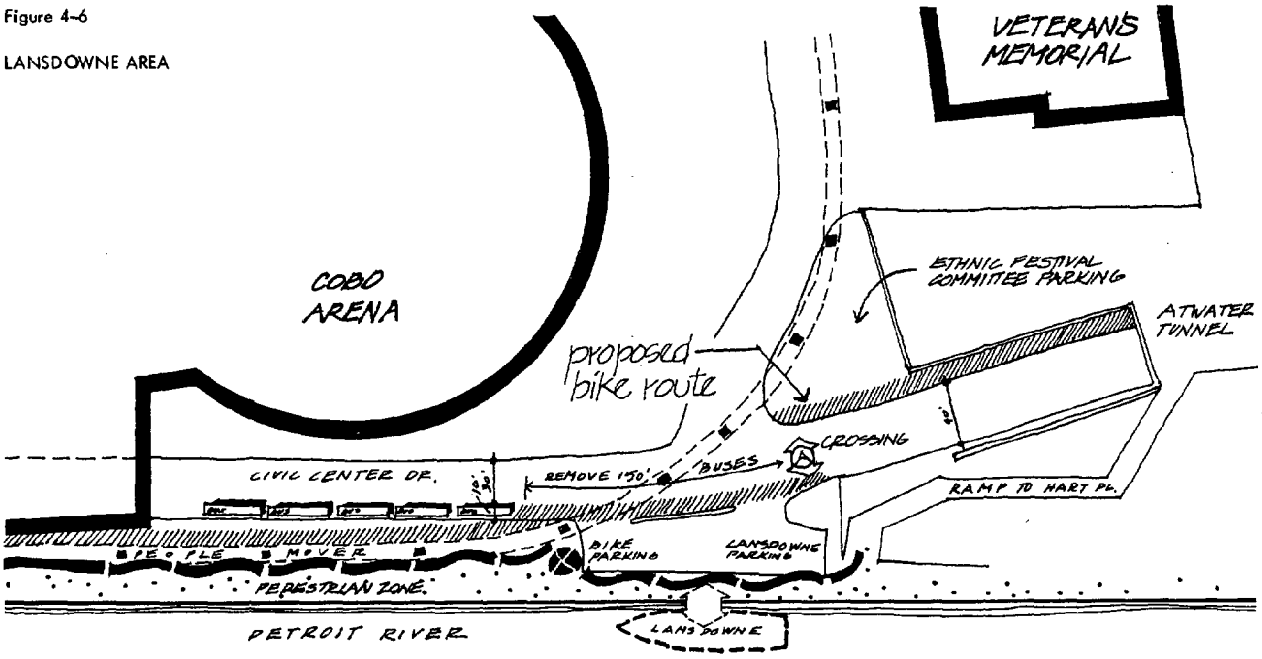


Figure 4-6

LANSDOWNE AREA



PEDESTRIAN RIVEREDGE

· Extend pedestrian treatment along DETROIT RIVER from BOBLO to HART PLAZA. Incorporate 15' LANSDOWNE walkway into overall river edge pedestrian treatment. Bicyclists may park bikes to west of LANSDOWNE area or walk bikes through plaza.

BICYCLE PATHWAY

· To provide bikepath past LANSDOWNE "bottleneck" reduce width of CIVIC CENTER DRIVE by 10ft and extend curb. Some bus parking area preempted.

ATWATER TUNNEL

North Side Bike Lane · utilize existing 11 ft. separated easement for bi-directional bike lane

Boblo: The 14' wide easement available at the Boblo boat dock can be expanded to a total width of 24' by incorporating the southernmost lane on Civic Center Drive into the bicycle/pedestrian route. Because 11' should be provided for bi-directional bicycle use,[8] the width of the pedestrian zone in this area will be 13', somewhat less than the recommended walkway width. In the long term, however, it may be possible to increase the width of the pedestrian zone in this area if Boblo is encouraged to institute a ticket selling and taking procedure which will allow the removal of the fence enclosing the ticketholder waiting area.

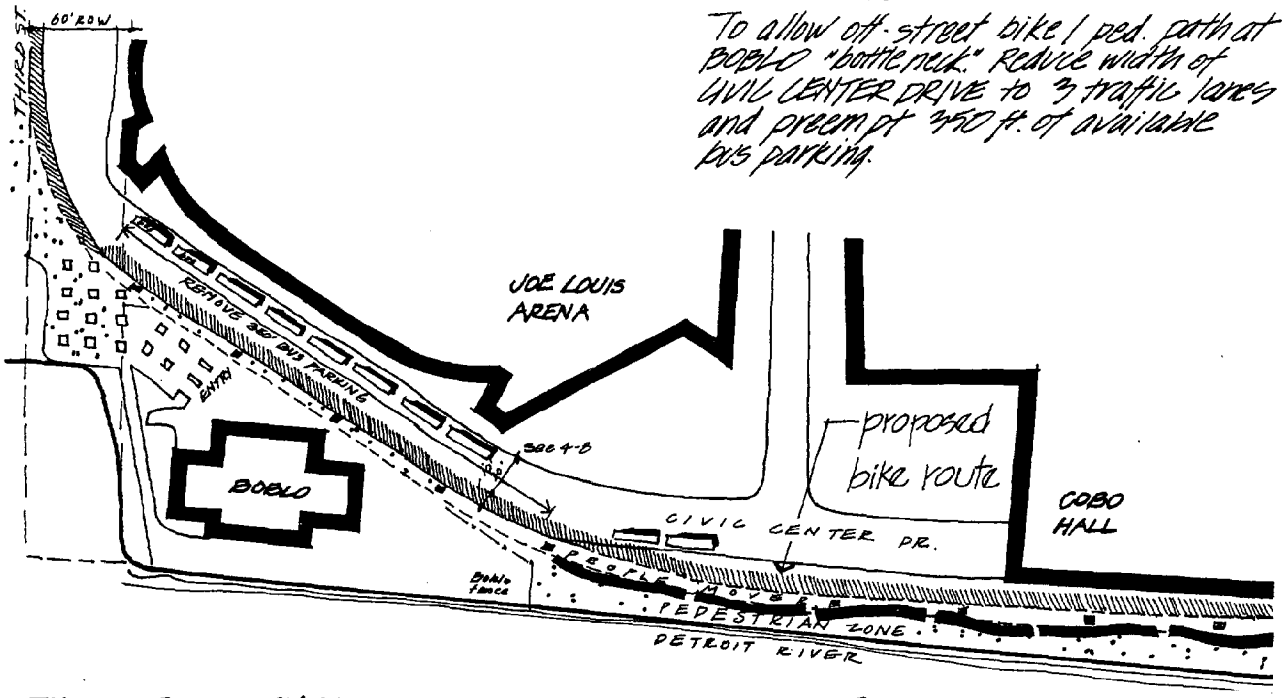
Only minimal separation between bicycle and pedestrian use areas will be possible in the Boblo area because only limited pathway width will be available and because the pathway must accommodate the 4' x 4' piers supporting the DPM guideway. The boundary between bicycle and pedestrian use zones can be more clearly defined if the proposed location of the DPM piers is altered to separate the use areas as illustrated in figure 4-8.

Because continuous riverfront access will not be possible to the west of the Boblo site, the bicycle/pedestrian pathway must turn north on Third Street. Directional signing, widened pavement, and special landscaping can be used at the foot of Third Street to define this pathway turning point. The development of this minor node on the pathway is likely to require the relocation of the arcade which has been constructed by Boblo at the foot of Third Street.

Pre-empting 10' of Civic Center Drive in the Boblo area to allow the development of an off-street bicycle/pedestrian pathway will eliminate approximately 350' of the on-street bus parking now available on the south side of the roadway. This length is equivalent to approximately seven bus parking spaces.

Figure 4-7

BOBLO AREA



THIRD STREET EXTENSION

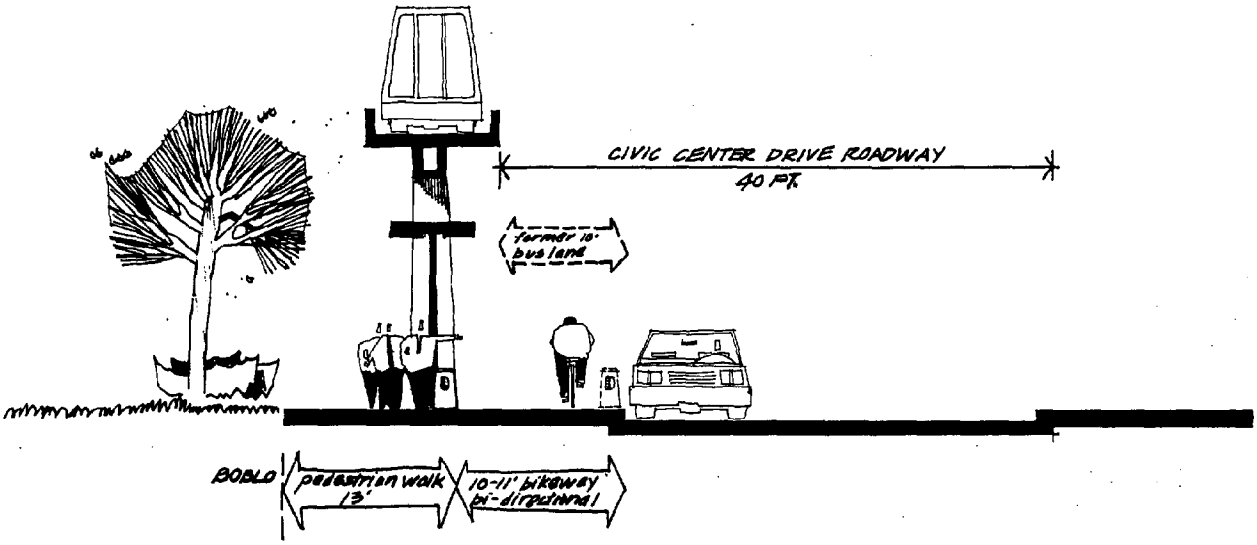
Proposed extension of THIRD STREET right-of-way to harbor line provides opportunity for special river edge plaza.

BOBLO EASEMENT

14 ft wide bike / pedestrian pathway available; relocation of DPM piers to separate use zones is possible.

Figure 4-8

BOBLO: OFF-STREET BICYCLE/PEDESTRIAN PATH



Cobo Hall: Few design constraints exist in developing an off-street bicycle/pedestrian pathway between the Boblo and Lansdowne sites in the area behind Cobo Hall and Arena. The 45' wide, 1,000' long parking area which is located between Civic Center Drive and the river edge provides ample space for the development of a 20' wide pedestrian walkway and an 11' bike path. Additional space is available to establish a planting area to separate the two use zones (see figure 4-10).

A number of design considerations should be addressed in developing this portion of the bicycle/pedestrian pathway. These include the need for pedestrian crossings and the alignment and construction timetable of the DPM.

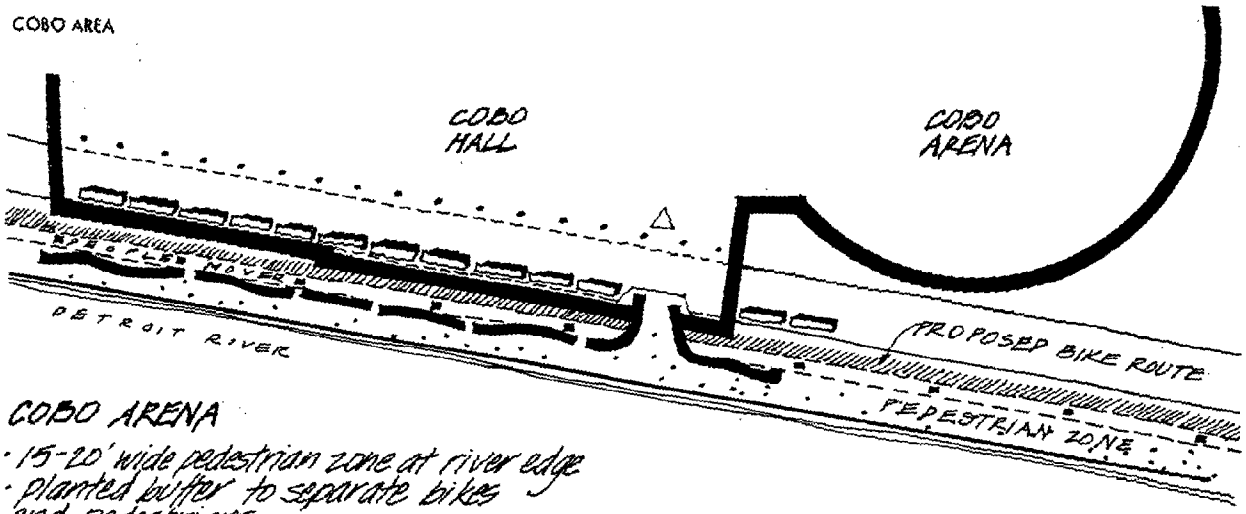
Because the bicycle path is to be located adjacent to Civic Center Drive with the pedestrian walkway at the river edge, pedestrians moving from the riverfront to the entrances to the Joe Louis Arena and Cobo Hall must cross the bike use zone. It is therefore recommended that several well-defined crossings be developed to facilitate pedestrian access to these major Civic Center attractions while minimizing the potential for pedestrian conflicts with cyclists and motorists. Bike path crossing areas can be defined by a change in pavement surface (or by pavement markings) and can be signed to alert cyclists to cross traffic conflicts. "Rumble" strips, located on the bike path to either side of the crossing area, can also be used.

Pedestrian crosswalks are also likely to be required on Civic Center Drive. Curb extensions into the parking lane can be constructed to ensure that the entrances to these crosswalks are not blocked by parked vehicles and to improve roadway visibility.

Modifications to the DPM guideway alignment in the Civic Center's riverfront area and the construction of a DPM station near the southeastern corner of Cobo Hall have recently been proposed. Under the modified alignment plan, the piers supporting the guideway are to be located immediately adjacent to Cobo.[9] It is anticipated that the DPM station will be located to the north of Civic Center Drive at Cobo Hall's second story level. While these alterations to the proposed DPM route may influence bike path alignment in this area, they are not expected to affect the feasibility of developing an off-street, shared use pathway. Pier locations must be taken into consideration in planning any short-term pathway improvements, however, to ensure that these investments are not lost. It will also be necessary to determine whether the area behind Cobo Hall is to be used for construction staging and to establish the extent of the area to be disturbed during the construction period before short-term improvements are made. If construction disturbances will be extensive, they may delay the development of an off-street pathway throughout the eastern zone of the study area.[10]

Figure 4-9

COBO AREA

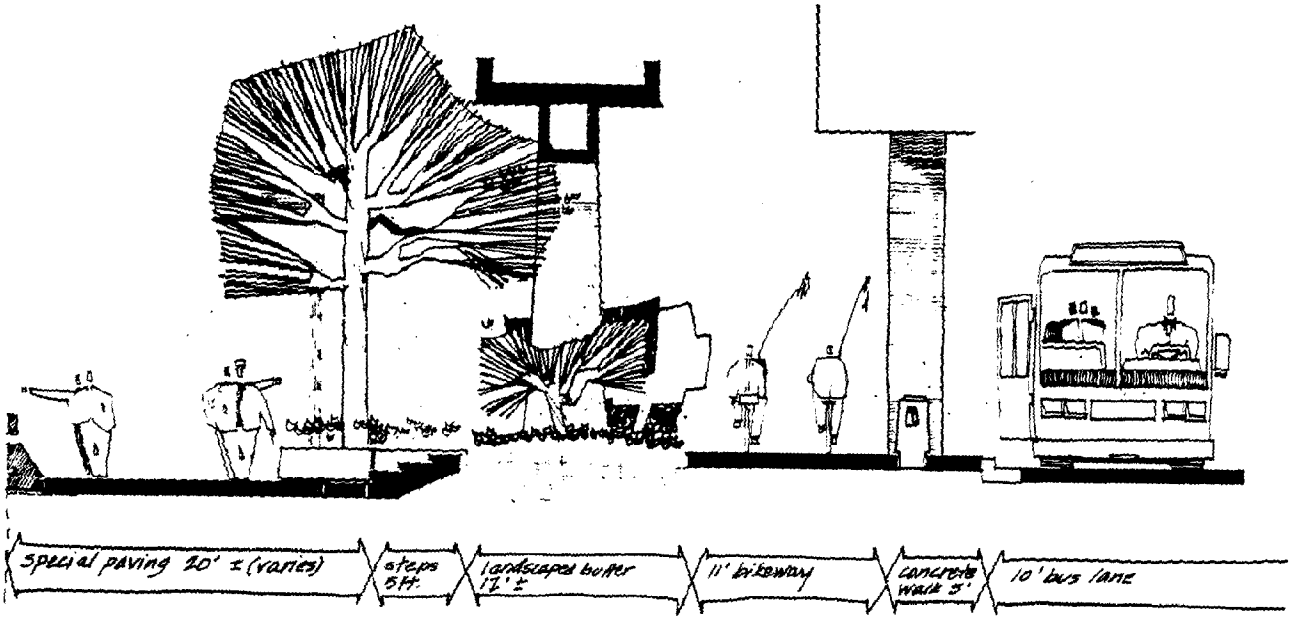


COBO ARENA

- 15-20' wide pedestrian zone at river edge
- planted buffer to separate bikes and pedestrians
- 11' wide bi-directional bike path
- pedestrian crossing to COBO HALL entrance

Figure 4-10

COBO RIVERFRONT PROMENADE



Bulkhead cap and railing - repair ex. bulkhead and cap with pour-in-place concrete edge with integral railing

Raised planters with canopy trees and ground cover - extend into pedestrian walkway

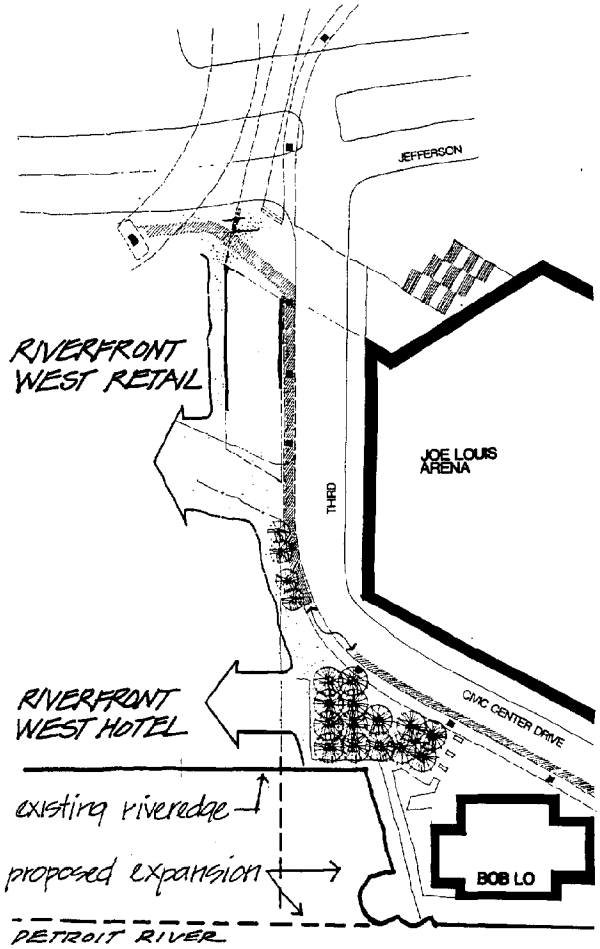
Provide stepped areas for sitting and viewing of river and pedestrians

Riverfront West: The site plan for the Riverfront West hotel/retail development and the outcome of the on-going easement negotiations between the City and the developer will have a significant influence on the feasibility of developing an off-street bicycle/pedestrian pathway in the eastern zone of the study area. At this time neither the width of the easement to be provided on Third Street nor the configuration of development on the hotel/retail site has been established.

Based on the recommended minimum pathway width standards outlined in Section III, the width of this easement should not be less than 26' to 32' to allow the development of a shared use, off-street pathway in this high intensity pedestrian traffic area. It should be noted that these dimensions assume that only minimal separation (e.g., pavement markings or bollards) will be provided between bicycle and pedestrian use areas. These minimum widths do not allow the extra area needed for

Figure 4-11

THIRD STREET



• width of easement unknown

• driveway entrance to hotel likely to be located at the foot of THIRD; bike path alignment can shift to the side of existing curbline alignment

• major pedestrian volumes at hotel entry retail entry and DPM entries

the development of more substantial physical separation between use zones (e.g., planters or planting areas), nor do they provide the extra space which may be required to accommodate street trees, light poles, traffic signs, or other obstructions on the curb edge of the pathway. A recommended treatment for this segment of the pathway is shown in figure 4-12.

If the easement which is to be made available along the Third Street edge of the Riverfront West hotel/retail site is no greater than the minimum 16' width recommended by City staff, it will be necessary to pre-empt the western 10' of the adjacent roadway to provide the space necessary for the development of an off-street bicycle/pedestrian pathway. As noted above, however, a 26' width can only satisfy recommended pathway standards if minimal separation (bollards, pavement markings) is provided between bicycle and pedestrian use zones. It may be particularly important to develop a well-defined separation between cyclists and pedestrians in this area, however, because pedestrian use is likely to be intense and the potential for conflicts resulting from cross movements by pedestrians is likely to be high. A reduction in the width of the pedestrian use zone to provide this clear separation between use areas may be the only option available in minimizing the risk of bicycle/pedestrian conflicts. The development of a landscaped separation between bicycle and pedestrian use areas has the added advantage of establishing an attractive visual character at this major entrance to the Riverfront West hotel/retail development.

The relationship of the retail portion of the Riverfront West development to the skyway (and DPM) ramp located on Third at Jefferson will also influence the feasibility of developing a shared use off-street route. If no street level access is provided between the retail and ramp structures, it will again be necessary to pre-empt 10' of the roadway to make through bicycle and pedestrian access possible (see figure 4-13).

Figure 4-12

RIVERFRONT WEST: OFF-STREET BICYCLE/PEDESTRIAN PATH

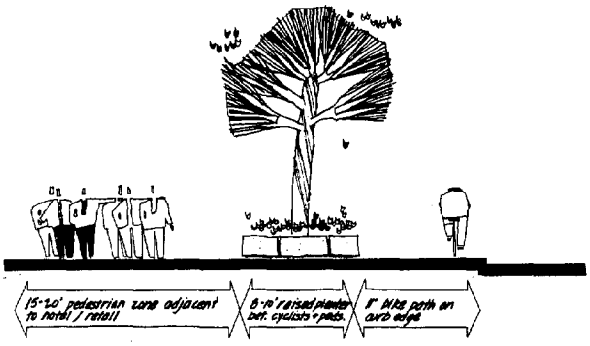
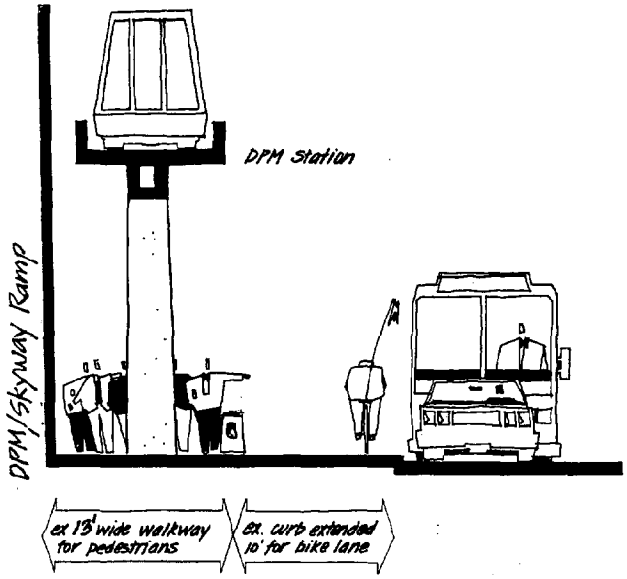


Figure 4-13

DPM/SKYWAY RAMP



Even if an easement is provided to the west of the ramp structure, this area will present a number of difficult design problems. If the off-street bike path is located at the curb edge (continuing the treatment proposed on Civic Center Drive), conflicts will occur with pedestrians at the intersection of Third and Jefferson (see figure 4-14). In addition, the walkway which has been provided on the curb side of the ramp is only 13' wide and will be bisected by the proposed location of the DPM piers. Only 4.5' will be available to either side of the piers. This 4.5' width is somewhat less than the recommended minimum width of a single bike lane with lateral clearances.[11]

Although it may be possible to provide the recommended width of 11' if the bike path is located to the west of the ramp structure (see figure 4-15), this option is likely to result in substantially greater bicycle/pedestrian conflicts. The incidence of conflicts is expected to be greater because the volume of pedestrian traffic to the south of (and approaching) the ramp structure is likely to be significantly higher than in the area to the north of the ramp entrance.

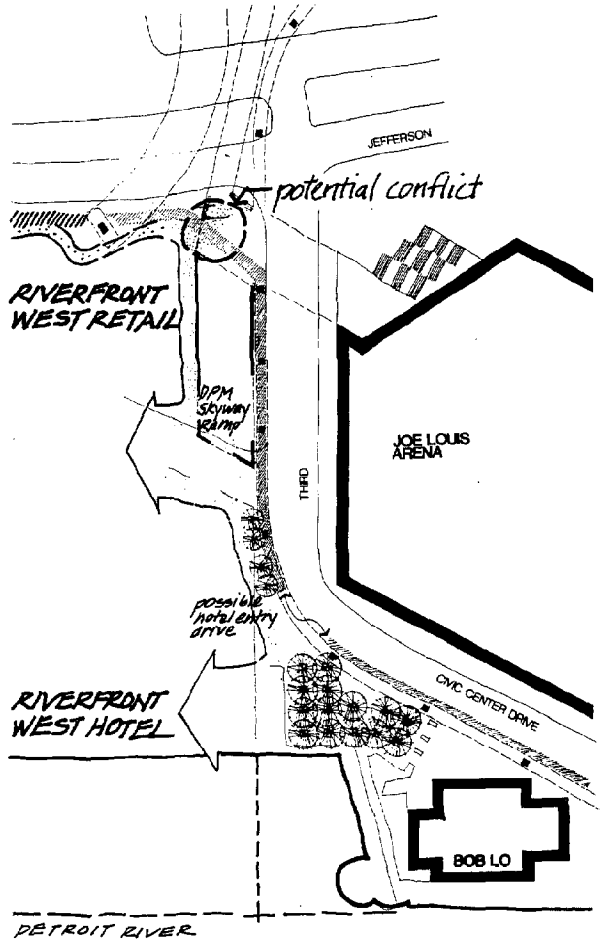
As at other "turning points" along the route, directional signing should be provided at the intersection of Jefferson and Third. This signing can be mounted on the piers supporting the skyway bridges.

It has not yet been determined if public access easements will be made available on the

Figure 4-14

DPM/SKYWAY RAMP: BIKE PATH AT CURB

- provide node development and directional signing at Jefferson + Third
- conflicts may occur at Jefferson and Third
- bike path continues at curb edge conflicts with pedestrians minimized in hotel / retail and ramp entrance area.

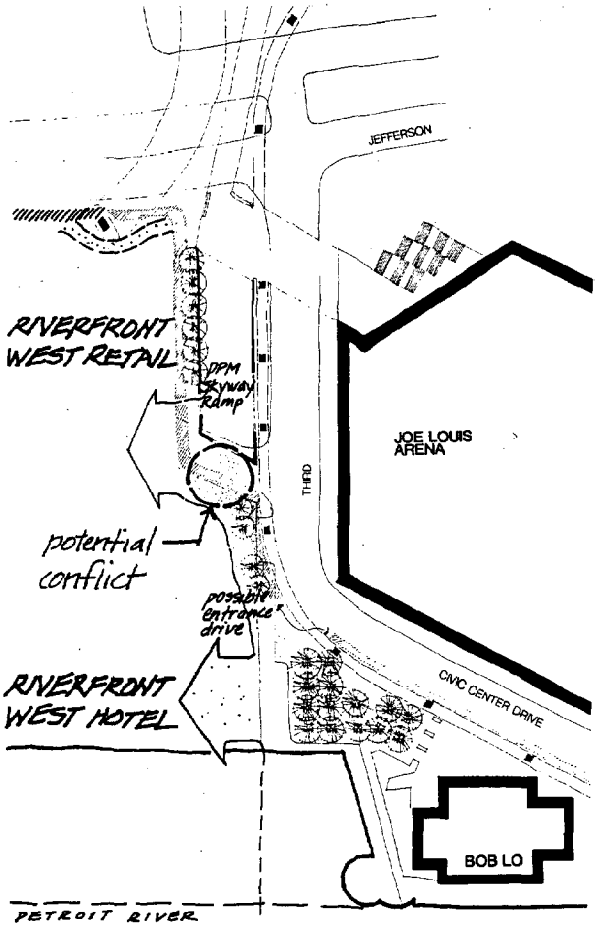


Riverfront West development parcels before construction is complete. If no interim easement agreement can be negotiated, it will not be possible to develop a continuous off-street bicycle/pedestrian pathway in the short term. The developer may agree to allow the relocation of the fence enclosing the existing surface parking area to allow the development of a temporary, 26' wide off-street pathway along Third Street, however.[12]

The old Jefferson Avenue roadway (now unused) can be utilized as the western continuation of the pathway (from Third to Eighth Streets) in the short term. During the construction period, however, this area is likely to be actively used for equipment access and storage; it may therefore be necessary to construct a new paved pathway adjacent to Jefferson Avenue at the time construction at the hotel/retail site begins.

Figure 4-15

DPM/SKYWAY RAMP: ALTERNATE BIKE PATH



Riverfront Expansion: The design alternatives described above provide for the development of an off-street bicycle/pedestrian pathway in the eastern zone of the study area in the short to mid-term. In the long term, however, it may be possible to create additional space along the riverfront in this area to relieve the bottlenecks at the Boblo and Lansdowne sites (and at Hart Plaza) by extending the river edge.

A range of riverfront "expansion" techniques have been described in a recent study jointly sponsored by the City of Detroit and the Coastal Zone Management Program.[13] The

• significant conflict may occur as cyclists cross major ped. traffic areas

expansion techniques which are described in this report include the use of off-shore "pedways"[14] supported by dolphins, piers, or pontoons; walkway areas which are joined to the shoreline and which are created by landfill or supported on wood piles or concrete piers; cantilevered balcony-style walkways; and elevated walkways which can be free-standing or attached to structures.

In considering the alternative riverfront expansion techniques which might be particularly appropriate for use in the Civic Center area, this study proposed the development of an off-shore pedway (taking advantage of the existing dolphins located behind Cobo Hall) from the eastern edge of Hart Plaza to the east of the Boblo site. The development of a cantilevered concrete "balcony" was proposed in the Boblo boat dock area.

Although these alternatives for creating additional space along the riverfront would facilitate the development of an off-street bicycle/pedestrian pathway, their implementation cost is significantly greater than that of converting a portion of the existing roadway to bicycle/pedestrian use.[15] These riverfront expansion techniques do have some advantages, however, including the elimination of the need to pre-empt on-street bus parking capacity and the creation of additional space for the development of observation areas (e.g., at the foot of Third Street) and/or commercial and retail development on the riverfront (including the expansion of Boblo's boat dock site).

On-street Bike Lanes:

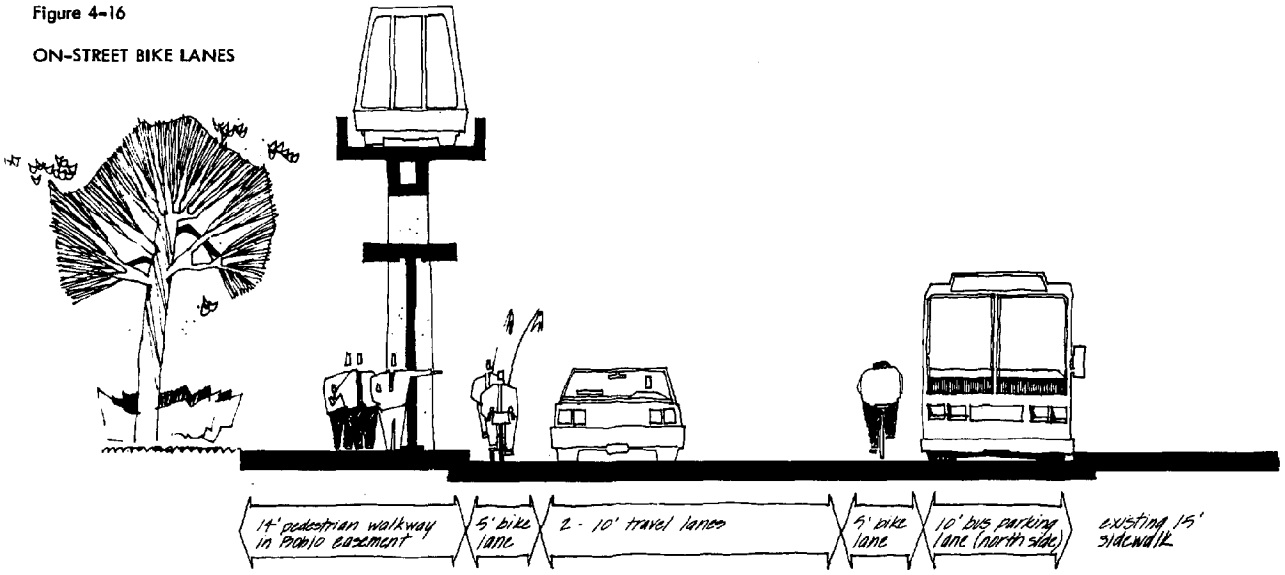
The use of on-street bike lanes provides a third design alternative for the riverfront bicycle and pedestrian system in the eastern portion of the study area. Five foot wide bike lanes can be established on either side of Civic Center Drive and Third Street by eliminating one on-street parking lane (10' wide) and converting this space to bike use by re-striping the roadway (see figure 4-16).

The principal advantages of this alternative are summarized below.

- Immediate implementation is possible at minimum cost; implementation does not depend on private easement negotiations.
- Recommended width standards for both cyclists and pedestrians can be met despite the bottlenecks which

Figure 4-16

ON-STREET BIKE LANES



exist at the Boblo and Lansdowne sites (and those which may potentially exist along Third Street adjacent to the Riverfront West hotel/retail site).

- Bicycle and pedestrian use zones can be effectively separated, eliminating the potential for conflicts.

This alternative also has several disadvantages, however. First, on-street lanes are not the preferred bikeway type for casual, recreational riders and are percieved to be less safe than off-street facilities by this user group. Because casual cyclists are likely to represent the great majority of potential users of the bicycle portion of the riverfront linkage system, the use of on-street lanes as the long term design solution to providing bicycle access in this portion of the study area may limit the route's potential to attract a high level of use. On the basis of the argument that on-street bicycle access is better than no through access, this alternative appears to be entirely appropriate as a short-term design solution, however.[16]

Some potential does exist for conflicts between cyclists and vehicular traffic if on-street bike lanes are used. While no recent traffic data is available for Civic Center Drive and Third Street, extreme peak volumes are likely to occur in this area during arrivals and departures from major events. Some potential, therefore, exists for vehicular traffic to encroach on designated bike lanes at these times. Unlike other portions of the study area, the volume of weekend traffic in the Civic Center is likely to be as great (if not greater) than weekday volumes. As a result, peak use periods for cyclists and motorists are likely to coincide and signing bike lanes for off-peak hour use only may not be adequate to guarantee through bicycle access unless cyclists may walk their bikes on pedestrian sidewalks during peak traffic periods.

In order to implement this alternative it will be necessary to pre-empt almost half of the currently available bus parking in the Civic Center area. Parking for approximately 28 buses is now available on the south side of Civic Center Drive between Third Street and the Lansdowne site. Another 8 to 10 bus parking spaces are available along the west side of Third Street between Jefferson Avenue and Civic Center Drive.[17]

This loss of bus parking capacity (as well as the loss of roadway traffic carrying capacity) may be considered an unacceptable "cost" for providing through bicycle access unless an alternative bus parking site can be made available. The relative importance of these competing uses and alternative solutions for replacing bus parking capacity (and/or alternative methods of maintaining convenient access to the Civic Center for patrons arriving by public transit and charter) must be carefully evaluated by City departments before a policy decision can be made on this issue.

Description of Management Alternatives

Two additional alternatives for providing continuous bicycle and pedestrian access in the eastern portion of the study area have been suggested in the preceding discussion:

- instituting a walk-your-bike policy in those areas where adequate space cannot be made available to provide both recommended pedestrian walkway widths and a bi-directional off-street bike path[18]

- allowing on-street bike use during low volume vehicular traffic periods without designating an exclusive bike use lane (i.e., Class III bike route); a sidewalk walk-your-bike policy will be in force during peak traffic periods and periods when bus parking limits the roadway width available for through traffic movement

These management alternatives may be seen as interim solutions which at least provide limited bicycle access while allowing added time to resolve the space constraints that now exist in the eastern portion of the study area. The use of these management alternatives may also allow the time needed to develop an increasing body of evidence documenting the demand for (and potential for use of) recreational bicycling facilities in Detroit. Documentation of the functional and recreational value of a continuous riverfront bicycle system may be a necessary step in making the often difficult decision to commit scarce riverfront land resources and City funds in implementing a concept which is relatively new to local decision makers.[19]

These management alternatives must be used in conjunction with the development of a riverfront pedestrian walkway system in the Civic Center area if any progress is to be made in improving riverfront recreational access. This pedestrian walkway system may utilize existing walkways where necessary in the short term (e.g., the Riverfront West area), but should incorporate the walkway to be developed at the Lansdowne and the Boblo easement. Most importantly, this pedestrian system should incorporate the riverfront area located behind Cobo Hall.

Summary of Planning and Design Recommendations

A number of recommendations for the development of the West Riverfront bicycle/pedestrian pathway in the eastern zone of the study area have been suggested in the preceding description of design and management alternatives. In addition, a number of issues have been raised which must be resolved before alternatives for short- and long-term route implementation can be selected.[20] The selection of a route alternative will also depend on the outcome of public and private development plans which have not yet been finalized. As a result, the recommendations summarized below place greater emphasis on tasks for continued planning than on specific design solutions.

Recommendations for Inter-departmental Action:

- Pursue an inter-departmental commitment to utilize the municipally-owned area located behind Cobo Hall for bicycle/pedestrian pathway development
- Investigate alternative bus parking sites and strategies for maintaining convenient access for Civic Center patrons; evaluate the feasibility of reducing on-street bus parking to make roadway space available for the bicycle/pedestrian pathway
- Pursue an inter-departmental agreement to establish a walk-your-bike policy in Hart Plaza to allow access from the north and along the riverfront promenade
- Pursue an agreement to dedicate the separate right-of-way in the Atwater Tunnel to through bicycle use
- Continue to investigate the potentials for development of a street-end plaza at the foot of Third Street by extending the existing river edge to the harbor line
- Pursue an agreement to provide route information displays in or near Hart Plaza to take advantage of the opportunity which exists to introduce potential users to the riverfront pathway system

Recommendations for City Negotiations with Private Landowners (and Lessees):

- Investigate the possibility of negotiating an interim easement agreement with Riverfront West for the short-term development of the portion of the bicycle/pedestrian pathway on Third Street (and Jefferson Avenue)

- Give particular attention to the following considerations in reviewing proposed Riverfront West hotel/retail development plans

  - number and location of points of vehicular access (including service access)

  - number and location of major points of street level pedestrian access

  - availability of through street level access to the west of the DPM/skyway ramp structure

- Continue negotiations with Riverfront West's developers concerning the width of the permanent easements to be established stressing:

  - the need for providing the widths recommended for a pedestrian walkway (15' to 20'), an off-street bike path (11'), and separation between use zones

  - the potential value of the bicycle/pedestrian pathway in improving the visual character of the riverfront area and in facilitating access to and from the hotel/retail area for Civic Center visitors

- Encourage Boblo to investigate the potential for "opening up" the boat dock site for public access by establishing a new ticket selling and taking system; relocate the arcade located at the foot of Third Street to provide adequate width for directional signing and through bicycle/pedestrian movement

- Finalize the agreement to provide a minimum 15' wide walkway being negotiated with Lansdowne owners; expand pathway width in this area when conditions permit

Recommendations for City Negotiations with Other Public Agencies:

- Investigate the potential for altering proposed DPM pier locations to facilitate bicycle/pedestrian pathway development and to reinforce separation between bicycle and pedestrian use zones

- Determine the areal extent of DPM construction disturbance, the timing and duration of construction, and whether the Cobo Hall riverfront area must be used for construction staging

CENTRAL ZONE

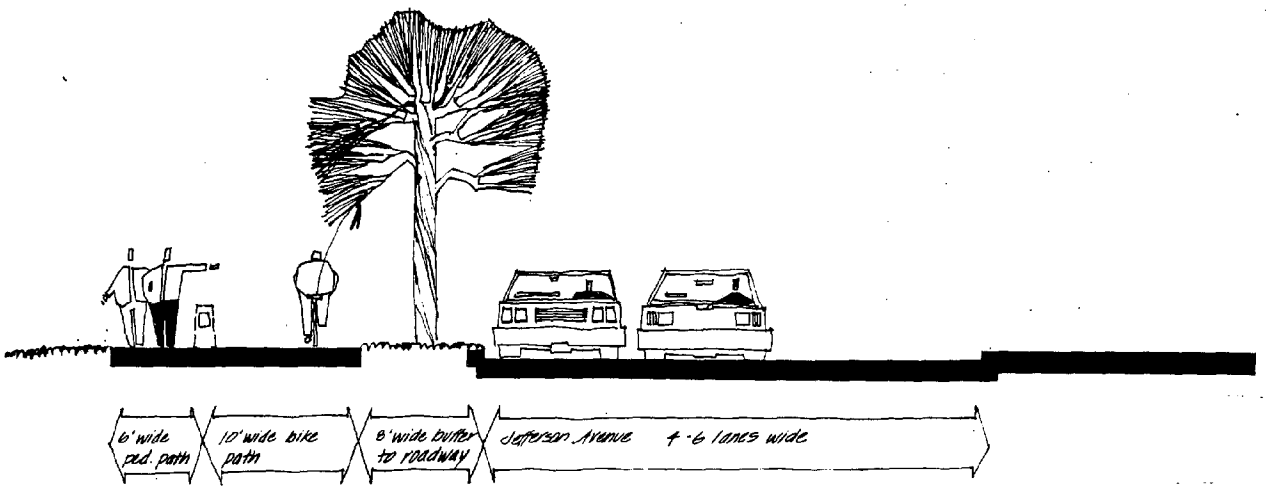
Summary of Planning and Design Issues

Because no through riverfront access is available at the Riverfront West development site, the continuation of the bicycle/pedestrian pathway to the west of the Civic Center area must be located to the north of these parcels, adjacent to Jefferson Avenue. An easement is to be provided between Third and Eighth Streets for this purpose. The dimensions of this easement have not yet been determined; however, it appears that the width required for the development of an off-street bicycle/pedestrian pathway in this area will be significantly less than in the eastern zone of the study area. This reduced pathway width is possible because it is anticipated that the volume of pedestrian traffic between Third and Eighth Streets will be quite low.

The Free Press site, located to the west of Eighth Street, is the only location between Hart Plaza and the Riverside Park where direct access along the river edge is now available.[21] In order to effectively incorporate this river edge easement into the West Riverfront bicycle/pedestrian system, it will be

Figure 4-17

JEFFERSON AVENUE/RIVERFRONT WEST



necessary to develop well-defined connections between the river and the eastern and western continuations of the route located on Jefferson Avenue. The development of highly visible "entrances" to the river on Jefferson at Eighth and Twelfth Streets and maximum use of the opportunities for special river edge development which are available at the eastern and western ends of the Free Press easement will contribute substantially to the attractiveness and recreational use potential of the West Riverfront bicycle/pedestrian pathway. As in the Civic Center, however, conflicting pressures for the use of limited river frontage present constraints in the design and development of these key areas.

Description of Design Alternatives

Riverfront West:

It appears that few major constraints exist in the development of an off-street bicycle/pedestrian pathway from Third to Eighth Streets on the northern edge of the Riverfront West hotel/retail and housing parcels. Because an 8' wide easement (granted in conjunction with the reconstruction of Jefferson Avenue) has already been established along Jefferson Avenue, the total width of the bicycle/pedestrian pathway in this area will be at least 24', even if only the minimum easement width of 16' recommended by City staff for the bicycle/pedestrian pathway is made available by the developer. Although it may be possible to dedicate additional space for the development of the bicycle/pedestrian pathway in this area, this 24' wide easement will be adequate to accommodate both bicycle and pedestrian use and to provide an 8' wide buffer between Jefferson Avenue and the pathway.[22] Because the volume of pedestrian activity in this area is expected to be low, only a 6' wide pedestrian zone is necessary; the width of the bicycle path will be 10'.[23]

The piers supporting the freeway off-ramp, which are located to the north of the proposed hotel/retail development, will limit the pathway width available at the roadway edge at two points.[24] Although it may be possible to eliminate (or reduce) the buffer area at these two points to maintain the recommended bicycle/pedestrian pathway width, it may be preferrable to separate the bicycle and pedestrian paths and to locate the pedestrian walkway to the south of the piers. If this design alternative is adopted, a minimum easement width of 32' will be required.[25] (This width is measured from the south curb of Jefferson Avenue to the south edge of the pedestrian walkway.)

The service area for the retail development may be located at the northern edge of the Riverfront West parcel under the freeway ramp. If this is the case, screening between the pathway and the service area will be required and a special design treatment at access drives will be necessary. This design treatment can include the use of signs and "rumble" strips and driveway pavement marking to alert cyclists to potential crossing hazards (see figures 4-3 - 4-4).

An interim easement agreement must be negotiated between the City and the Riverfront West developers if the development of this portion of the bicycle/pedestrian pathway is to be feasible in the short term. As noted in the preceding description of route alternatives for the Civic Center area, it may be possible to utilize the old Jefferson Avenue roadway to provide a short-term pathway link between Third and Eighth Streets.

The use of on-street bike lanes on Jefferson Avenue does not appear to be a feasible alternative in the area between Third and Cabacier; the width of the roadway (two to three 11' wide travel lanes with no parking) does not provide enough area to establish on-street lanes. Moreover, traffic volumes and turning conflicts at the entrances/exits to the Arena garage are likely to present hazards to cyclists. As a result, a transition to an off-street pathway will be required at Third and Jefferson if on-street bike use (either bike

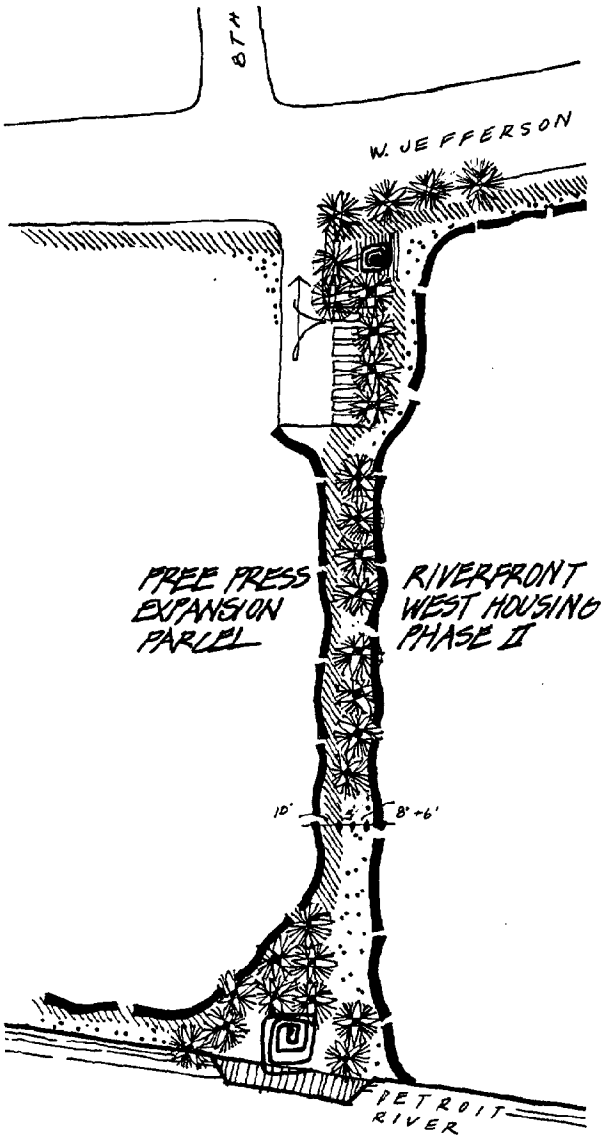
lanes or a Class III signed route) is selected as the route alternative to be implemented in the Civic Center area. This shift in the treatment of the bikeway will adversely affect the continuity and legibility of the pathway for cyclists. These overall route planning considerations underline the importance of providing an adequate easement width along Third Street to allow the continuous development of an off-street bike path.

The Free Press:

The off-street bicycle/pedestrian pathway which can be developed in the easement to be provided on the northern edge of the Riverfront West hotel/retail and housing parcels will allow direct and continuous access along Jefferson Avenue to the Eighth Street easement where a link can be established to the river edge. It will also be possible for cyclists and pedestrians to continue west on the

Figure 4-18

EIGHTH STREET EASEMENT



EIGHTH STREET NODE

• Provide adequate space for "decision point." Develop as major entry to river edge with appropriate pavement, landscaping, seating, and lighting.

PARKING LOT

• Realign parking to allow free flow of ped./bikes from JEFFERSON to RIVER along easement

COMBINED BIKE / PEDESTRIAN PATH

• Anticipated width approx. 30'. Provide center landscaping to separate bikes from pedestrians.

RIVERWATCH

• opportunity to develop special use area at end of 8th with RIVER contact.
• additional easement provided by RIVERFRONT WEST; FREE PRESS may also expand easement.
• informational and directional kiosks, rest area, benches, lighting, and paving.
• potential long-term river edge expansion

south side of Jefferson Avenue on the 10' wide sidewalk which is to be constructed adjacent to the Free Press site in conjunction with the reconstruction of Jefferson Avenue. During the construction period, however, cyclists must turn south at Eighth Street to continue west in the Free Press' riverfront easement. In order to clearly mark this change in route direction and to emphasize the opportunity which exists to travel along the river edge, a well-defined turning point must be developed at the entrance to the Eighth Street easement.

Figure 4-19

ENTRY TO EIGHTH STREET EASTMENT

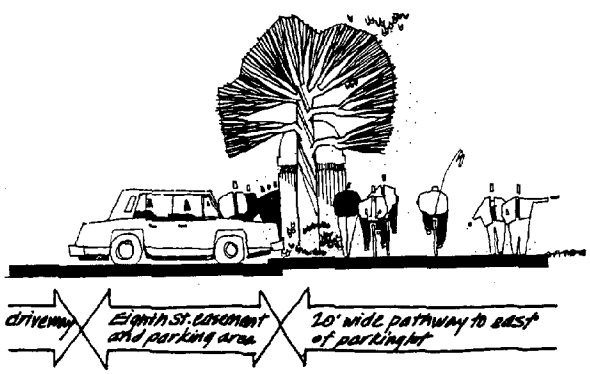
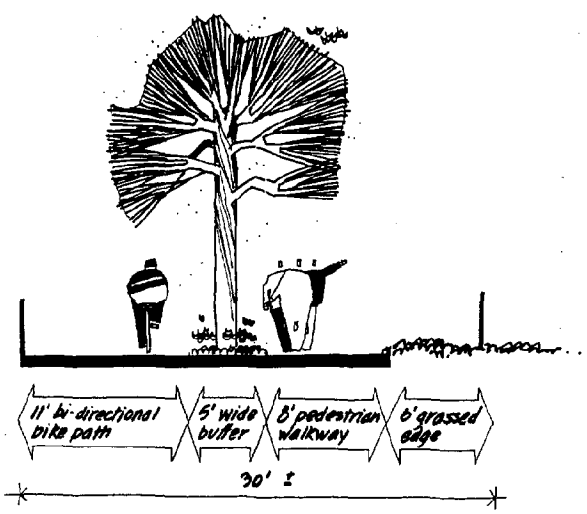


Figure 4-20

EIGHTH STREET EASEMENT



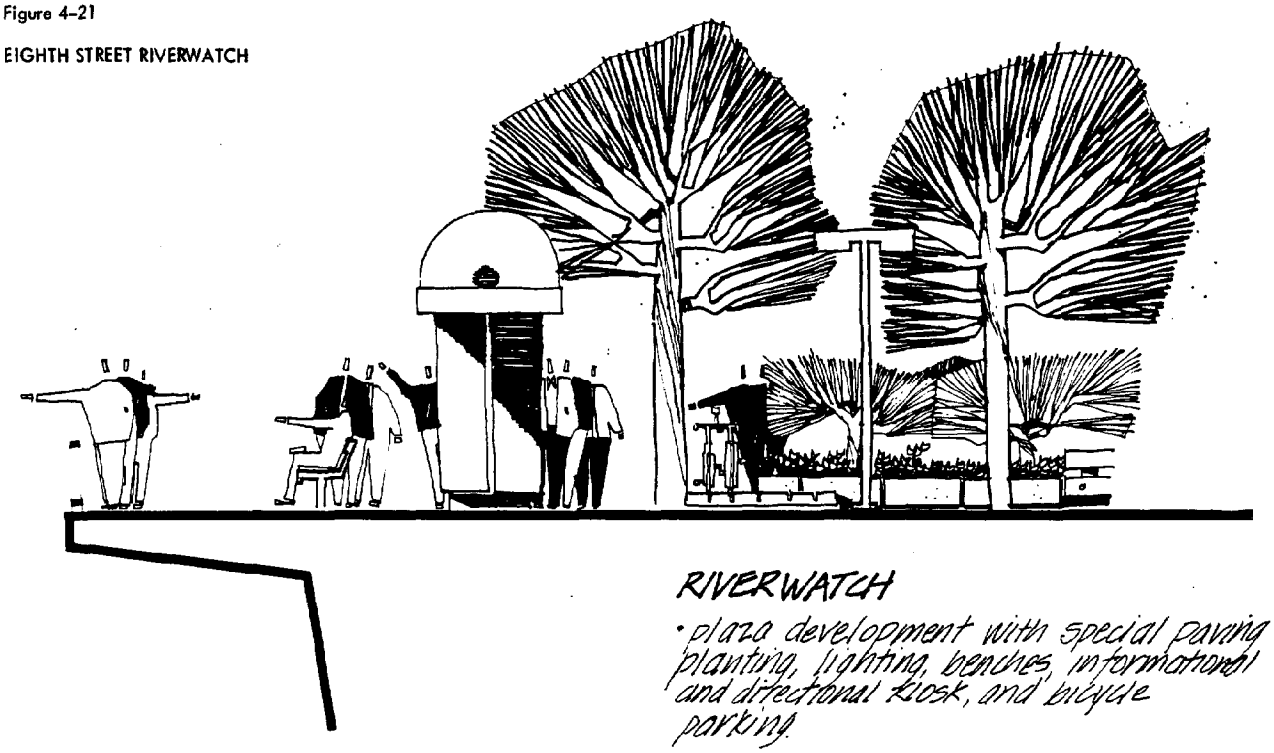
Eighth Street Easement: The maintenance of the fisherman's parking area which is located on the south side of Jefferson at the entrance to the Eighth Street easement limits the flexibility available in developing a well-defined "entry" to the river edge. In order to allow the development of a clear pathway turning point and to separate vehicular and bicycle/pedestrian traffic at the entrance to this easement, it may be necessary to reduce the amount of parking available (see figure 4-18).[26]

The development of this intermediate node on the pathway can include widened pavement, special landscaping, and a kiosk with directional signing. The additional easement width to be made available by the Riverfront West developers on the Eighth Street edge of the Phase II housing parcel should make it possible to locate the bicycle/pedestrian pathway to the east of the existing parking area. Because cross pedestrian movements are to be expected in the vicinity of the parking lot, a paved pathway width in excess of the minimum of 16' is recommended to allow added room for maneuvering. The Free Press may also be willing to expand the width of the easement which they have provided to allow the realignment of the existing parking area.

The width of the existing Eighth Street easement to the south of the parking lot is 20'. An additional 10' in width (provided by Riverfront West) will allow the separation of bicycle and pedestrian paths with a planting strip (see figure 4-20). While the existing 11'

Figure 4-21

EIGHTH STREET RIVERWATCH



RIVERWATCH

- plaza development with special paving planting, lighting, benches, informational and directional kiosk, and bicycle parking.
- possible future expansion cantilevered beyond existing seawall

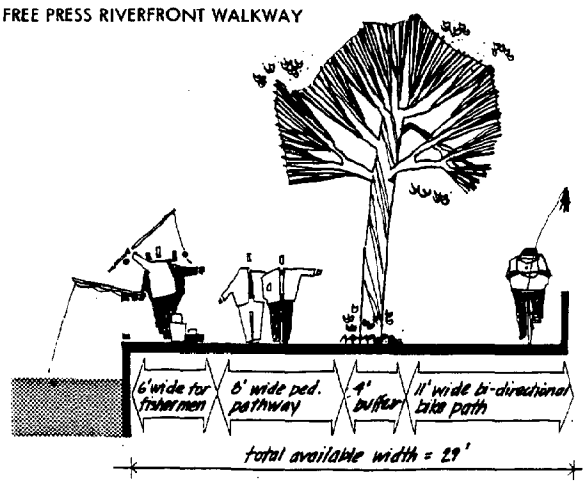
wide paved pathway does not meet recommended width standards for joint bicycle and pedestrian use, it is likely to be adequate in the short term; separation between use areas will become increasingly important, however, as the volume of through bicycle traffic increases.

The volume of pedestrian and bicycle use in the vicinity of the Free Press site is likely to increase substantially if an agreement can be reached with the Free Press to make the nine-acre expansion parcel (located to the west of Eighth Street) available for interim recreational development. Representatives of the Free Press management have indicated that they are willing to consider such interim public use proposals as there are no plans to use this parcel for development in the near future.

The potential for special river edge development at the foot of the Eighth Street easement is limited by the width now available. The Free Press may also agree to expand the width of the easement at this location, however. This expansion, in combination with the easement to be provided by the developers of Riverfront West, will allow the development of a small plaza with special landscaping, seating, informational signing, and bicycle parking. A cantilevered extension of the river edge toward the harbor line may also be possible in the long term. This plaza development will define this pathway turning point and take maximum advantage of the opportunity which exists for direct river contact.

Figure 4-22

FREE PRESS RIVERFRONT WALKWAY



Riverfront Easement: Although the existing 10' wide riverfront walkway may be adequate in the short term, increased pavement width and separation between bicycle and pedestrian use areas is recommended. An increased pavement width is especially important in this area because the walkway is heavily used by fishermen. A total pathway width of 29' is recommended to provide the space needed to accommodate through bicycle and pedestrian movement, separation between bicycle and pedestrian zones, and adequate space for fishermen at the river edge (see figure 4-22).

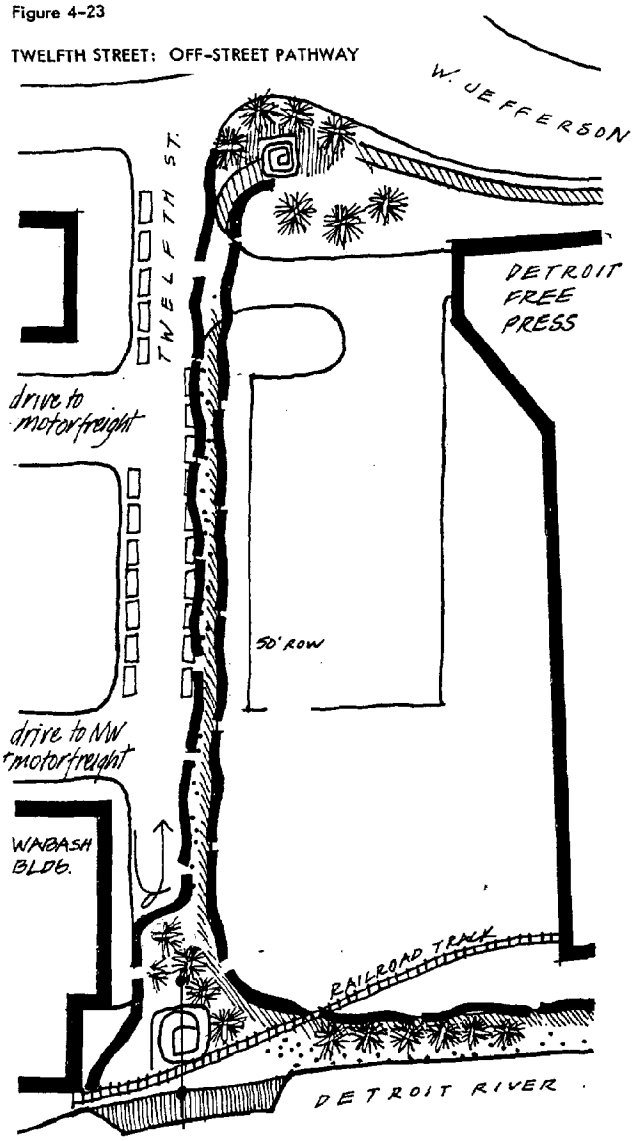
Twelfth Street: The development of a north-south bicycle/pedestrian link on Twelfth Street is needed if the Free Press river edge walkway is to be integrated into the larger pathway system. Although an off-street pathway can be provided within the Twelfth Street right-of-way, its width (14') will be less than the recommended minimum for combined bicycle/pedestrian use if existing on-street parking is maintained; some reduction in the amount of parking available will be necessary (see figure 4-23).

In contrast to the Eighth Street easement, there appears to be little flexibility in expanding the limited width available for developing the bicycle/pedestrian pathway and the river edge activity area on Twelfth Street.

The acquisition of an easement adjacent to Twelfth Street on the Free Press property does not appear to be possible because this western edge of the plant site is to be used for future expansion.

Figure 4-23

TWELFTH STREET: OFF-STREET PATHWAY



TWELFTH STREET NODE

- excess r.o.w. presents opportunity to develop minor node on bicycle / ped. pathway. users have movement options here:
  - to river edge plaza or
  - through movement along W. JEFFERSON
- site improvements include:
  - widened pavement
  - informational and directional signage
  - landscaping
  - lighting

COMBINED BIKEWAY + PEDESTRIAN PATH

- 14 ft. combined bike / ped. pathway to river can be provided if on-street parking is maintained.

VEHICULAR TURNAROUND

- limited turnaround capability, prohibit parking at street end to facilitate turning.

RIVERWATCH

- opportunity to develop special use area at end of TWELFTH with river contact; design limited by track location.
- information and directional kiosk rest area with benches, lighting, paving; improve rail crossing.
- maintain limited vehicular access to WABASH BLDG. through west side of plaza.
- harbor line is at existing seawall so expansion into river is a less likely long-term option

While these constraints limit the area available to develop a street end plaza, some improvements to the foot of Twelfth Street can be made; for example, vehicular access can be blocked by a curb or bollards to provide a pedestrian use area within the 50' right-of-way; special pavement, shade trees, and limited seating can be provided. Improvement of the surface condition of the rail crossing at the foot of Twelfth Street is also recommended to minimize hazards for cyclists.

It may also be possible to negotiate an easement agreement with the N & W railroad, whose Detroit office headquarters are located to the west of Twelfth Street, to allow expanded plaza development. The extension of the river edge at the foot of Twelfth Street may also be possible in the long term; it should be noted, however, that the harbor line is located at the existing seawall.

No design constraints appear to exist in the development of an "entrance" to the river (similar to that proposed on Jefferson at entry to the Eighth Street easement) at the intersection of Jefferson and Twelfth because this area is within the public right-of-way. The development of this turning point on the pathway can include pavement widening, special planting, and a directional signing display.

Management Alternatives

The reduction in parking capacity on Twelfth Street which will be required to allow the development of the river edge plaza and off-street bicycle/pedestrian pathway may receive some opposition from weekend fishermen and area employees.[27] To avoid this reduction in parking capacity, Twelfth Street could be designated as a weekend/holiday only Class III bike route. In this event, the sidewalk area on the west side of Twelfth must be extended to Jefferson Avenue to accommodate pedestrians.

This management alternative has a number of disadvantages, however, including:

- possible safety hazards to on-street cyclists in an area where parking turnover may be high
- the loss of an opportunity to develop an emphatic and legible pathway link to the river edge from Jefferson Avenue
- the loss of the opportunity to provide a well-defined turning point and entrance to the river edge at the intersection of Twelfth and Jefferson
- a less attractive pathway for both cyclists and pedestrians

A management issue which is likely to be a major consideration in the implementation of the bicycle/pedestrian pathway system has been raised in conversations with representatives of the Free Press management. The Free Press has expressed some concern over the impacts of increased use which the development of the continuous bicycle/pedestrian pathway is likely to create.[28] These concerns which relate to littering, property damage, and public safety, are likely to be shared by many property owners along the riverfront pathway system, especially on those portions of the route which receive intensive use. In order to address these issues, the implementation strategy for the pathway system must include a public commitment to maintenance and supervision. In addition, the Free Press has recommended that a task force with continuing management responsibility for the pathway system be established and that private property owners be represented on this committee.

Summary of Planning and Design Recommendations

The principal design recommendations suggested in the preceding discussion concern the

need to take maximum advantage of the riverfront public access which is available in the Free Press easement. The development of strongly defined links from Jefferson Avenue to the river edge at Eighth and Twelfth Streets has been proposed. These pathway links include the development of entrance "nodes" on Jefferson Avenue and small river edge plazas.

A number of planning tasks which are necessary steps in ensuring the successful implementation of these recommendations and in ensuring the feasibility of developing an off-street bicycle/pedestrian pathway in the Riverfront West area are summarized below.

Recommendations for Inter-departmental Action:

- Pursue an inter-departmental agreement to develop a river edge plaza within the Twelfth Street right-of-way and to realign parking to allow the development of an off-street bicycle/pedestrian pathway on the eastern edge of Twelfth

- Pursue an agreement to develop an intermediate pathway "node" (an entry to the river edge) within the Jefferson Avenue right-of-way at Twelfth Street

- Pursue an inter-departmental commitment to provide regular maintenance and police supervision on the bicycle/pedestrian pathway

Recommendations for City Negotiations with Private Landowners:

- Investigate the potential for providing an interim easement on the edges of the Riverfront West parcels to allow pathway development in the short term

- Continue to negotiate permanent easement widths stressing:

  - the need for a total width of at least 24' along Jefferson Avenue with added width adjacent to the Lodge off-ramp piers

  - the need for a 20' wide easement on the western edge of the Phase II housing parcel (at Eighth Street) in the area adjacent to Jefferson Avenue and as wide an easement as possible at the river edge; a 10' wide easement (when added to the width of the existing Free Press easement) will provide ample width for joint bicycle/pedestrian use on the remainder of this pathway link

- Review proposed Riverfront West site plans and development proposals with particular attention to:

  - the location and number of vehicular access points from Jefferson Avenue

  - screening of service areas

- Initiate planning efforts to define alternative interim recreational uses for the nine-acre vacant Free Press expansion parcel; request Free Press review and negotiation

- Introduce requests for additional easement width on the Free Press site at the entrance to and foot of the Eighth Street easement to allow the development of pathway nodes on Jefferson Avenue and at the river edge

- Request relocation of the existing fence at the western end of the Free Press riverfront easement (at Twelfth Street) to improve through access; request additional easement width at Twelfth Street to allow more extensive river edge plaza development; propose the installation of a rubberized rail crossing at the foot of Twelfth

- Request an easement at foot of Twelfth from Norfolk and Western railroad to allow expanded river edge plaza development incorporating the historic Wabash building

Recommendations for City Negotiations with Other Public Agencies:

- Request preliminary evaluation of feasibility of river edge extensions at the foot of the Eighth Street easement and at the foot of Twelfth Street from MDNR and U.S. Army Corps of Engineers

- Request financial assistance in developing plans for the interim recreational use of the vacant Free Press expansion parcel

WESTERN ZONE

Summary of Design Issues

Because no riverfront access is available through the rail yard area located to the west of Twelfth Street, the continuation of the bicycle/pedestrian pathway must be located further north on Jefferson, Fort, or Lafayette. The use of West Jefferson Avenue as the western continuation of the bicycle/pedestrian pathway has been proposed because this route provides the most direct access to Riverside Park. In addition, the development of an off-street route with increased visual access to the river appears to be possible in the long term. In the short term, however, westbound cyclists may be required to shift from an off-street route to on-street use at the intersection of Twelfth and Jefferson. While this change in route treatment may adversely affect perceptions of route continuity, this alignment will minimize the necessity of out-of-direction travel. The development of an intermediate node at Twelfth and Jefferson, incorporating directional signing, will help to ensure route legibility.

A number of adverse conditions, including the existence of rail tracks in the roadway, a narrow right-of-way, poor pavement conditions, and on-street parking requirements, must be overcome in developing the bicycle/pedestrian pathway on this portion of Jefferson Avenue in the short term. The width of the right-of-way is 46'. The roadway pavement is 34' wide with 6' excess right-of-way to the north and south. The rail tracks which are located within the roadway pavement from Twelfth to Eighteenth Streets reduce the useable roadway width to 27', thus limiting the feasibility of developing two on-street bike lanes in this area. Sidewalks are located on the north side of Jefferson Avenue from Twelfth to Twenty-first Streets and on both sides of the roadway from Twenty-first to West Grand Boulevard; these sidewalks are generally in poor repair, however.

The development of an alternate entrance to Riverside Park through the new playfield area has also been proposed. This entry will facilitate access to the park and encourage use of the bicycle/pedestrian route by separating bicycle and pedestrian movement from vehicular traffic and providing a more attractive approach to the river's edge. Because the development of a rail crossing will be necessary, it may not be possible to develop this new bicycle/pedestrian entrance to the park in the short term. It will therefore be necessary to improve the existing vehicular entrance at West Grand Boulevard. These improvements may include the development of a pathway and improved rail crossing immediately to the east of the park entry/exit drive.

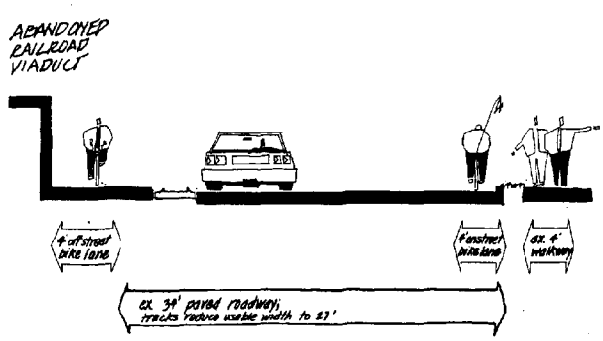
Design Alternatives

Jefferson Avenue:

The rail tracks which are located in the Jefferson Avenue right-of-way from Twelfth to Eighteenth Streets limit the roadway width available for developing on-street bike lanes. In the short term it will be necessary to construct an asphalt bike path on the south side of Jefferson Avenue to accommodate eastbound cyclists. This one-way off-street bike path will be located in the 6' wide excess right-of-way available between the rail tracks and the abandoned rail viaduct retaining wall which is located at the right-of-way edge. A westbound on-street bike lane can be established on the north side of Jefferson Avenue between Twelfth and Twenty-first Streets (see figure 4-24).

Figure 4-24

JEFFERSON AVENUE: TWELFTH TO EIGHTEENTH STREETS



Some improvements in roadway surface condition are likely to be required in the area between Twelfth and Eighteenth Streets. Two options are available:

- The entire roadway can be resurfaced, removing unused tracks and installing rubberized crossings at the locations where rail spurs crossing Jefferson must be maintained.

- The westbound bike lane only can be resurfaced in conjunction with the construction of the eastbound, off-street bike path; improved rail crossings will also be necessary in these bike lanes.

Sidewalk improvements along the entire length of West Jefferson Avenue are also desirable. Because the volume of pedestrian use in this area is expected to be quite low, these improvements may be a low priority in the short term.

At Twenty-first Street it is likely to be necessary for westbound cyclists to shift to a sidewalk bike path in the vicinity of the Riverside Park playfield expansion area. It is anticipated that playfield users will arrive by car, as well as by bike and on foot. Subsequently, on-street parking will be required on the south side of Jefferson Avenue between Twenty-first and Twenty-third Streets to serve these park users. Because only limited roadway width is available (34') in this area, only 6' will be available for on-street bike use if parking is provided. Two alternative configurations are possible for providing the needed parking and allowing through bike movement.

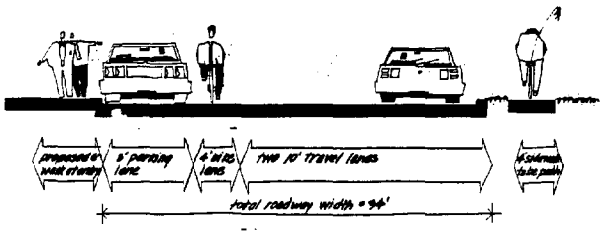
- An on-street bike lane, located adjacent to the parking lane, can be

provided from West Grand Boulevard to Twenty-first Street for eastbound cyclists; the westbound bike lane will be located on the sidewalk on the north side of Jefferson Avenue.

- An expanded sidewalk width can be provided in the vicinity of the playfield to accommodate both pedestrians entering the park and through (eastbound) cyclists; an on-street bike lane can be provided for westbound cyclists.

Figure 4-25

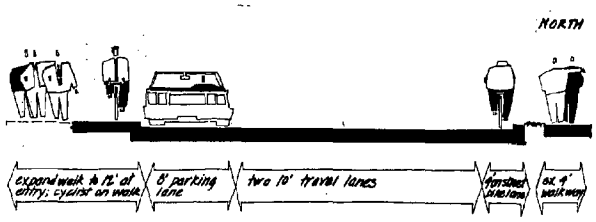
JEFFERSON AVENUE: TWENTY-FIRST TO TWENTH-FOURTH STREETS



Because conflicts between pedestrians entering the park and through bicyclists will be a problem in this area, the use of an on-street eastbound bike lane may be considered preferable.

Figure 4-26

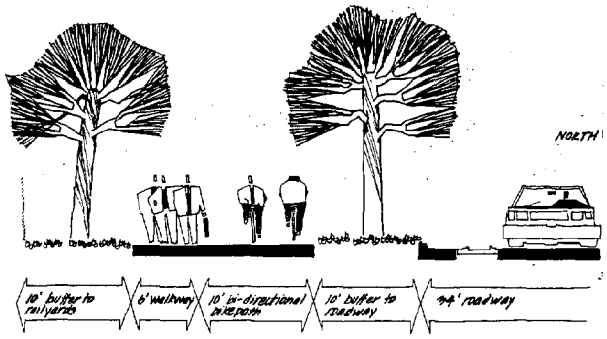
TWENTH-FIRST TO TWENTY-FOURTH STREETS: ALTERNATE SECTION



In the long term it may be possible to negotiate an easement agreement with Chessie Systems (and the Chrysler Corporation truck terminal) for the use of 40' adjacent to Jefferson Avenue.[29] This area will include the abandoned rail viaduct which must be removed or reconstructed to allow the development of a bicycle/pedestrian pathway. Regrading of the area between Eighteenth and St. Anne is also likely to be necessary between the roadway and the rail yard. An observation deck could be constructed to take advantage of this elevated viewpoint. Informational displays on the functioning of the rail yard and the ferry operation could be provided.

Figure 4-27

JEFFERSON AVENUE: LONG-TERM BIKE PATH



If the expansion of Riverside Park north to Jefferson is complete at this time, it will be possible to continue the off-street pathway to a new park entrance in the park expansion area or to the existing park entrance at West Grand Boulevard. If the Environmental Protection and Maintenance and Animal Control facilities remain, transitions will be necessary to an on-street lane and sidewalk bikeway at Twenty-third Street.

Riverside Park:

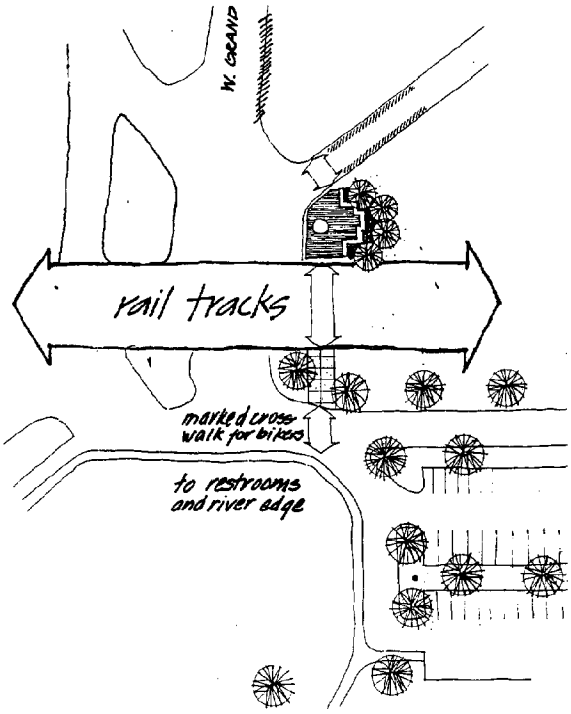
The bicycle/pedestrian pathway can enter Riverside Park at several alternate locations:

- the new playfield area, with a rail crossing developed at Twenty-third Street
- at Twenty-fourth Street, with a new rail crossing
- immediately east of the existing vehicular entrance at West Grand Boulevard

While the development of a new bicycle/pedestrian entrance to the park is recommended in the long term, a number of questions remain concerning the feasibility and cost of developing a second rail crossing for cyclists and pedestrians in the area to the east of the existing West Grand Boulevard park entrance.[30] At the time that the existing City Health Department and Environmental Protection and Maintenance Department facilities are relocated and

Figure 4-28

PARK ENTRANCE AT WEST GRAND BOULEVARD



- marked crosswalk to facilitate cyclist crossing
- possible inland bike link to Lafayette loop and Ambassador Bridge on West Grand Boulevard
- entry development with directional and informational signing kiosk. Special paving, landscaping and lighting
- improved surface for 10' bicycle / pedestrian crossing; existing crossing signals.

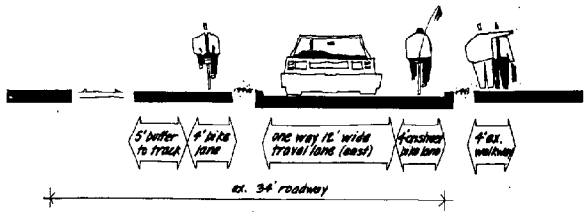
the park is expanded north to Jefferson Avenue, a second rail crossing is likely to be required and expenditures for its development may be considered more timely. The existing park entry is likely to be used as the bicycle/pedestrian entrance to Riverside Park in the short term, however.

The safety and convenience of the West Grand Boulevard entrance for cyclists and pedestrians can be improved by developing a new, well-defined entry area on West Jefferson on the now vacant municipal incinerator parcel. This entry development can include directional signing, widened pavement, and special landscaping in a design treatment similar to that used on Jefferson Avenue at Eighth and Twelfth Streets. More extensive information on the overall bicycle/pedestrian route, its alignment and attractions, bicycling "rules of the road," potential hazards, and recommended hours of use could also be provided at this location or within the park itself.

The bicycle/pedestrian pathway will cross the rail tracks immediately to the east of the existing park driveway, utilizing the existing crossing signals. Stop signs and marked crosswalks on the driveway will help to ensure a safe crossing even during weekend periods when the volume of traffic entering and leaving the park can be substantial. The development of this new bicycle/pedestrian entrance will also allow cyclists and pedestrians to cross the rail tracks at a 90 degree angle and will allow the improvement of surface conditions at the rail crossing in a limited area (rather than requiring resurfacing of the entire vehicular entry).

Figure 4-29

JEFFERSON AVENUE: ALTERNATE SECTION



Within the park, the existing walkways leading to the restroom facility and the river edge promenade can be widened to allow joint bicycle and pedestrian use. Bicycle parking can also be provided in the vicinity of the comfort station; the development of a bicycle rental concession may also be possible.

Bicycle riding can be accommodated on the existing riverfront promenade by designating the northernmost 10' for bicycle use. The existing planters provide some separation between bicycle and pedestrian use zones; this separation can be improved by relocating benches to the area between the planters. It may also be necessary to install bollards at the edge of the paved promenade area to minimize cross pedestrian movements and to clearly designate crossing areas.

An opportunity exists to develop a special river edge plaza at the foot of Twenty-fourth Street adjacent to the J.W. Wescott mail boat dock. This plaza development could include interpretive displays focusing on the mail and fire boats and Great Lakes shipping activity.

Management Alternatives

Jefferson Avenue:

Because the roadway width available for developing on-street bike lanes is limited to 27' between Twelfth and Eighteenth Streets, it will be necessary to construct an eastbound off-street bike path in this area. Instituting a one-way traffic pattern on Jefferson Avenue in this area provides a management alternative which will also allow the development of bike lanes. This alternative also provides enough area within the existing roadway to develop a 5' wide separation between the rail

tracks located on the south side of the roadway and the eastbound bike lane; it is anticipated that a curb separation will be needed between the traffic lane and the opposing bike lane.

This reduction in roadway capacity and accessibility may be strongly opposed by those industries located between Twelfth and Eighteenth Streets. Such opposition may be reinforced by the fact that the peak periods of bike use (weekends and holidays) will not coincide with periods of peak vehicular traffic. On the other hand, it is likely that the railroad would favor this alternative because it minimizes the potential for conflicts between cyclists and rail operations.

It may also be possible to designate Jefferson Avenue as a Class III bike route between Twelfth Street and West Grand Boulevard; no exclusive bike use lanes would, therefore, be required. Because the traffic volume on Jefferson is very low on weekends, this less costly alternative may be found most attractive in the short term.[31]

Summary of Planning and Design Recommendations

On-street bike use (on a Class III signed route or bike lane and off-street path) is possible on Jefferson Avenue in the short term. In the long term, a more attractive and functional bidirectional off-street path can be developed by acquiring an easement on the south side of Jefferson Avenue from Chessie Systems. This extension of the off-street bicycle/pedestrian pathway treatment to be used in the Central Zone of the study area will increase the continuity, legibility, and safety of the route. In addition, a well-defined and attractive bicycle/pedestrian entrance to Riverside Park, which is separated from vehicular traffic and signed to promote the pathway system, will augment the route's use potential.

A number of specific recommendations for action are summarized below.

Recommendations for Inter-departmental Action:

- Pursue the development of a new bicycle/pedestrian entry to Riverside Park immediately to the east of West Grand Boulevard on vacant municipal property
- Pursue the development of bike paths, a bike rental concession, and interpretive displays within Riverside Park
- Pursue the relocation of the Health and Environmental Protection and Maintenance Departments' facilities to allow park expansion to Jefferson Avenue
- Investigate the feasibility of a one-way traffic system on Jefferson Avenue between Twelfth and Eighteenth Streets

Recommendations for City Negotiations with Private Landowners:

- Initiate negotiations with Chessie Systems and Chrysler trucking for the donation or sale of a 40' easement on the south side of Jefferson Avenue from Twelfth to Twenty-first Streets

Recommendations for City Negotiations with Other Public Agencies.

- Investigate funding availability for rail consolidation under P.A. 51 of 1951 with the Michigan Department of Transportation
- Pursue an evaluation of the safety requirements and costs for the development of a second rail crossing in Riverside Park (Michigan Department of Transportation Rail Safety Division)

THE SUPPLEMENTARY INLAND LOOP

The development of an inland bicycle link from Riverside Park to the Ambassador Bridge has been suggested as a desirable addi tion to the West Riverfront bicycle/pedestrian pathway in order to facilitate bicycle access from Detroit to Windsor's riverfront bike paths. In the short term, it appears that bridge reconstruction will prohibit continued bicycle access across the bridge, making the development of this link inappropriate unless a bike transport system using vans or trailers can be provided. A bicycle link providing improved access from the Hubbard-Richard neighborhood to Riverside Park may still be desirable in the short term, however.

The proposed inland loop also includes a connection east to the central business district on Lafayette Boulevard and a second north-south, on-street link from Lafayette Boulevard to Hart Plaza on Woodward Avenue. These inland on-street segments of the West Riverfront system can help to improve access to the downtown riverfront area for an increasing residential population and for residents of existing neighborhoods located to the north and northeast. Finally, the loop provides an expanded variety of recreational cycling opportunities for potential users. In the short term, when the West Riverfront route may be the only segment of the continuous riverfront bicycle/pedestrian pathway system which is available, this loop configuration may be especially attractive.

Alternatives

Ambassador Bridge/Hubbard-Richard Link:

The location of the on-street bicycle link to Hubbard-Richard and the Ambassador Bridge will depend in large part on the location of the bicycle/pedestrian entrance to Riverside Park. As it appears likely that this entrance will be located at West Grand Boulevard in the short term, the designation of the Boulevard as a bike route appears to be the most desirable alternative. Recent traffic counts indicate that weekend traffic on West Grand Boulevard is well within the range which is acceptable for on-street bike lanes.[32] In addition, much of the roadway has ample width to allow on-street bike use. The area between Fort Street and the north I-75 Service Drive is an exception, however. In this area sidewalk bike paths may be preferred to an on-street route or bike lanes.

Continued access to the Ambassador Bridge can be provided via the (south) I-75 Service Drive for the northbound cyclist. Although weekend traffic volumes appear to be low enough to allow on-street use, it may be preferable to provide a sidewalk route in this area, thereby developing a continuous northbound sidewalk system from Fort Street to Porter.

Cyclists returning from Canada via the bridge must be provided an alternate route to Riverside Park. The use of Twenty-first Street appears to provide the best alternative. Although observed weekend traffic volumes were very low, machine counts recorded by the Detroit Department of Transportation show an average weekend traffic volume of 3,660 to 4,870 vehicles, with a peak hour flow (both directions) of 315 vehicles. While these volumes exceed the standards proposed for determining roadway suitability for Class III bike routes, they are within those proposed for Class II bike lanes.[33] Although these standards are acknowledged to be conservative (and perhaps overly restrictive for application in most urban areas), it may be considered advisable to designate on-street parking lanes for bike use only during weekend/holiday periods to provide added protection for cyclists. Because on-street parking occupancy appears to be very low, this alternative is likely to be generally acceptable.

The proposed inland loop system also includes an on-street bicycle connection east to the central business district on Lafayette and south on Woodward Avenue to Hart Plaza. For the northbound/westbound cyclist, access from Woodward to Lafayette past Kennedy

Square is difficult; as a result, it may be preferable to route these cyclists west on Fort to Shelby and then north to Lafayette.

No weekend traffic volume data is available for streets within the central business district. As a result, the suitability of Lafayette Boulevard, Woodward, Fort, and Shelby for use as on-street routes cannot be evaluated on the basis of the proposed traffic volume and capacity standards which are cited in Section III. Weekend riding experience indicates that these streets will be suitable for on-street bike use and, with the exception of Washington Boulevard, the width of roadway pavement appears to be adequate to accommodate bike lanes. Because it is anticipated that weekend/holiday use only will be recommended on this on-street loop, the use of a Class III bike route appears more appropriate than the designation of on-street lanes, however.

Summary of Planning and Design Recommendations

The opportunity to develop an inland, on-street bike loop with north-south connections from Lafayette Boulevard to Hart Plaza and Riverside Park is available in implementing the West Riverfront bicycle/pedestrian pathway. The development of this supplementary bike route, signed for weekend and holiday use, will increase the accessibility of existing major riverfront attractions and the riverfront segment of the pathway system itself. In addition, the loop system will provide an increased variety of recreational cycling choices.

Several specific recommendations for facilitating the implementation of this supplementary portion of the West Riverfront bicycle/pedestrian route are summarized below.

Recommendations for Inter-departmental Action:

- Pursue the designation of Lafayette Boulevard, Woodward, and West Grand Boulevard as a Class III route signed for weekend and holiday use only
- Pursue the designation of sidewalks on the east side of West Grand Boulevard and the south I-75 Service Drive for bike use; install curb ramps
- Investigate the potential for establishing van service to transport cyclists across the Ambassador Bridge during the short term reconstruction period

Recommendations for City Negotiations with Private Landowners:

- Continue to encourage cooperation from the International Bridge Corporation in facilitating bike crossings in the long term

Recommendations for City Negotiations with Other Public Agencies:

- Establish laisons with Canadian agencies responsible for riverfront bikeway planning; encourage cooperation in working towards an international bike route

NOTES

1. While some possibility exists for a reduction in the area devoted to rail use in the western portion of the study area, it appears that the continuing requirement for rail access to the river edge (in conjunction with the U.S.-Canadian rail ferry operation) will effectively preclude recreational access in the forseeable future.

2. The desired width of a bi-directional bike path is 8'-8". The width of the bike use zone often exceeds this dimension, however, to provide the desired lateral clearances to boundary obstructions. Where extreme space constraints exist, an 8' wide bi-directional bike path can be used if no other preferable alternatives for providing bicycle access are available.

3. In areas where the intensity of use is high, the potential for conflicts between cyclists and pedestrians in a shared, off-street pathway is likely to decrease as the physical separation between use areas is increased; however, some encroachment on the bicycle use zone by pedestrians may occur despite the fact that use areas are clearly designated and separated from one another. In the Civic Center area, extreme peak volumes of pedestrian traffic are likely to occur as spectators depart from major events at Cobo and Joe Louis Arena. During these periods, pedestrians may utilize the bicycle portion of the pathway, periodically limiting through bicycle access. At these times, cyclists are likely to be required to walk their bikes through the Civic Center area. Because of the extreme density of pedestrian traffic which is likely to occur during these periods, this temporary walk-your-bike policy is likely to be largely self-enforcing.

4. This 10' width provides adequate space for two 43" bike lanes, an 18" clearance between lanes, and an 18" clearance to the roadway/curb edge. No lateral clearance is necessary on the south side of the path, adjacent to the parking lot.

5. It should be noted that a walk-your-bike (management) policy may be an equally attractive solution to the problem of providing bicycle access through Hart Plaza to the continuation of the bicycle/pedestrian route located to the east.

6. This separated right-of-way must be paved and the concrete block walls at its entrances must be removed.

7. The width of the existing sidewalk in this area is only 4'.

8. Two 43" travel lanes, an 18" clearance between lanes, and an 18" clearance on either boundary (or 11'-8") should be provided to meet the bike path width standards established for level of service C; 10'-6" are required at level of service D (36" travel lanes).

9. The original proposed location of the DPM piers (as shown in figure 4-10) was 18' from the edge of the Cobo Hall overhang.

10. While no final commitment has been made to fund the construction of the DPM system, SEMTA anticipates that (if approved) construction will begin in 1981 and be complete in 1984. The precise timing of construction in the Civic Center area has not yet been established, however.

11. With a 43" travel lane, an 18" clearance to the DPM piers, and a 12" clearance to the curb (or ramp structure), a 6'-9" bike lane would be required to meet recommended standards. At level of service D (36" travel lane), a 5'-6" bike lane would be required.

12. The fence enclosing the existing surface parking area is set back 16' from the curb; half of this area is now paved and half is occupied by large (portable) concrete planters. The entire 16' wide area could be paved to provide a temporary off-street bicycle/pedestrian pathway. Although this width is substantially less than recommended for the development of a route shared by bicycles and pedestrians in this area, it will at least provide a necessary link without requiring any changes to the existing fencing. The 26' width suggested in the text would, of course, be preferable, if obtainable.

13. Coastal Zone Laboratory, University of Michigan, Riverfront Capabilities Expansion Analysis, July, 1979, pp. 317-382. Prepared for the City of Detroit with funding assistance from the Coastal Zone Management Program, administered by the Division of Land Resource Programs, Michigan Department of Natural Resources.

14. In the context of the Riverfront Capabilities Expansion Analysis report, the term "pedway" refers to a pathway accommodating both bicycle and pedestrian movement.

15. This report provided no estimated costs for the development of an off-shore pedway. The materials cost for the cantilevered balcony extension was estimated to be $31,505 per 100 lineal feet. These costs do not include labor, sales tax, or materials delivery charges. (Riverfront Capabilities Expansion Analysis, pp. 354-355.)

16. Continued use of on-street bike lanes on Jefferson Avenue to the west of the Civic Center area is not likely to be possible because of the limited roadway width available and the number of turning conflicts to be encountered at the entrance to the Joe Louis Arena garage. As a result, a transition from on-street bike lanes to an off-street pathway (to be located on the south side of Jefferson Avenue in the easement to be provided by Riverfront West) must be made at the intersection of Third and Jefferson. This transition is likely to be especially difficult for the westbound cyclists and cyclist perceptions of route legibility and continuity are likely to be negatively affected.

17. The Detroit Department of Transportation reports that the parking lane on Third Street is typically used by City-operated shuttle buses which transport Civic Center patrons to and from downtown parking facilities. This shuttle bus concept may be a potential solution to providing convenient access to the Civic Center for patrons who arrive by charter bus, as well as by car, thus reducing the bus parking requirement in this area.

18. A walk-your-bike policy in Hart Plaza, allowing access to the riverfront from the north and through access on the plaza's riverfront promenade, is recommended no matter which design alternative is selected for long-term implementation.

19. It should be noted, however, that limitations on bicycle access (e.g., a walk-your-bike policy), as well as the limited length of the bicycle system available in the early phases of implementation, are likely to have a negative impact on use levels. The somewhat depressed levels of use which result may lead already skeptical decision makers to conclude that the demand for bicycle facilities is lower than it might be, given more positive encouragement to potential users.

20. Many of these issues involve decisions and commitments which must be negotiated between City departments, as well as continuing negotiations between the City and area landowners and lessees. These issues could not be resolved within this study's time schedule.

21. The length of the Free Press riverfront easement is approximately 2,200' or .4 mile.

22. This "buffer" will also accommodate light poles and signal boxes.

23. This width allows for two 43" travel lanes, an 18" lateral clearance between travel lanes, and an 18" clearance between the bike lane and the pedestrian use zone. No lateral clearance will be required on the roadway edge of the bike path and no separation between bicycle and pedestrian use areas is likely to be required because of the low pedestrian volumes; bollards or a change in pavement surface treatment can be used to delineate bicycle and pedestrian zones, if desired.

24. The distance between the piers supporting the off-ramp and the curb of (reconstructed) Jefferson Avenue is 18' at these two points.

25. This width will allow space for an 8' buffer to the roadway, a 10' bike path, the 6' wide pier, and a 6' walkway with an 18" clearance to the pier.

26. After the widening of Jefferson Avenue from Eighth to Twelfth Streets is complete, approximately 12 parking spaces will be available in this off-street parking area; the development of a bicycle and pedestrian entry to the easement may reduce the amount of parking available to nine spaces.

27. Representatives of the N & W report that weekday on-street parking is occupied not by rail company employees, but by employees of the motor freight companies to whom the railroads lease space. The N & W's reaction to the reduction or removal of on-street parking appears to be neutral. (Conversation with Superintendent Robert Anglen, Norfolk and Western Railroad.)

The on-street (diagonal) parking capacity now available on the east side of Twelfth Street (south of Jefferson) will accommodate approximately 37 cars. If parallel parking were used to reduce the width of the right-of-way devoted to parking, approximately ten spaces could be provided (see figure 4-23). Twelve parking spaces will also be available on the western side of Twelfth Street.

28. At the time the Free Press easements were originally negotiated, public access to the river edge in this area was understood to have had continued fishing access, rather than the development of a continuous riverfront pathway system, as its primary purpose. The Free Press anticipates that through bicycle and pedestrian movement along the river edge easement may create several potential problems. These include: conflicts with fishermen, conflicts with truck and rail activity on Twelfth Street, and the need for increased maintenance efforts and supervision of use.

29. The area between the roadway and the fences enclosing the Chessie rail yard and Chrysler trucking facility is 12' to 20' wide. This width would allow the development of a bi-directional off-street bike path from Fifteenth to Twenty-first Streets in the short term if an immediate easement agreement could be negotiated. However, adequate width is not now available

to construct a bi-directional off-street path between Twelfth and Fifteenth Streets or between Twenty-third Street and the City's Animal Control Center, located to the west of Twenty-fourth Street. As a result, the construction of a limited (.3 mile) off-street bike path segment in the short term would require that westbound cyclists negotiate three shifts in route treatment (on-street lane, off-street path, sidewalk path).

30. These questions include: whether the use of a grade rather than a grade-separated crossing will be possible, the type and cost of signalization required for a grade crossing, and the extent to which the use of a grade crossing will limit (or be limited by) necessary rail switching operations.

31. Weekend traffic volumes on West Jefferson Avenue to the west of Twelfth Street range from 850 to 975 vehicles per day with a peak direction/peak hour traffic volume of 35 to 45 vehicles. Detroit Department of Transportation, machine counts, July 19-20, 1980.

32. Average daily weekend traffic volumes on West Grand Boulevard north of Jefferson are in the range of 4,900 to 6,600 vehicles; peak hour/peak directional volumes are 275 to 300 vehicles. These peaks occur in the late evening (10:00 to 11:00 P.M.) hours. Detroit Department of Transportation, machine counts, July 18-19, 1980.

33. Barton-Aschman Associates, Inc., "Harrisburg Area Pilot Bikeway Program," 1976, in Pedestrian and Bicycle Considerations in Urban Areas, p. 17A-13.

Implementation

Introduction

Because the feasibility of implementing preferred route alternatives for the West Riverfront bicycle/pedestrian pathway will depend on the results of continuing planning efforts, the route implementation strategy must be flexible enough to meet both "best case" and "worst case" outcomes. Flexibility is also required to allow the coordination of pathway development with the implementation of other related projects which have been proposed in the study area (e.g., Riverfront West and the proposed DPM system) for which development timetables have not yet been established. The phasing of pathway development will also be influenced by local budgetary constraints and the nature, timing, and extent of funding assistance which is made available by state and federal grant programs.

Because of these uncertainties concerning planning outcomes, related development plans, and funding availability, it is impossible to define a precise timetable for implementing the West Riverfront bicycle/pedestrian pathway. As a result, the following discussion of route development phasing and costs outlines a sequence of implementation priorities which can be used as a guide in structuring the schedule for development of the pathway. This phasing strategy defines three sets of development tasks:

- First priority tasks: These tasks represent a minimum route development plan which can be implemented in the short term at relatively low cost.

- Second priority tasks: These tasks include a group of intermediate pathway improvements which can be implemented over the course of several years.

- Third priority tasks: These tasks include a number of final additions to the pathway which will complete the long-term optimal plan for route development.

The tasks included in each of these three priority categories are outlined below; cost estimates for each implementation phase are also provided.

Development Phasing and Costs

FIRST PRIORITY TASKS

Overview

The development of a skeletal pathway system which meets the primary objectives of providing a continous, safe, and legible route is proposed for implementation in the short term. The development priorities in this first implementation phase include:

- initial development of the area located behind Cobo Hall as a riverfront promenade, incorporating bicycle parking and directional and informational signing to promote the use of the pathway system

- the development of a temporary path on the Third Street edge of the Riverfront West hotel/retail site and bike path development along Jefferson Avenue from Third to Eighth to ensure continuous east-west access

- provision of informational and directional signing at each of the major pathway turning points

- the development of an off-street pathway on Twelfth Street linking Jefferson Avenue to the river edge Free Press walkway to ensure that this valuable route asset is effectively utilized

- the improvement of surface conditions (including rail crossings) on Jefferson Avenue between Twelfth and Eighteenth Streets to provide a safe on-street route to Riverside Park

- the development of an improved bicycle/pedestrian entrance to Riverside Park at West Grand Boulevard to maximize user safety and promote use of the route

This first phase of development also includes signing of the inland on-street loop; this loop system can improve riverfront access and provide an expanded variety of recreational cycling options at minimum additional cost.

Development Description

Eastern Zone:

Recommended Phase I development in the eastern zone of the study area focuses on the conversion of the parking area located on the river edge behind Cobo Hall to a riverfront promenade. The initial development of this area includes the removal of paving in the central portion of the parking lot to allow the development of a landscaped berm which is planted with shade and flowering trees. The existing asphalt paving will be retained on the river edge and along Civic Center Drive to provide both pedestrian and bicycle use zones. Bicycle parking and a kiosk displaying information on the bicycle/pedestrian pathway's alignment, attractions, and use are provided at the eastern end of the Cobo promenade, adjacent to the Lansdowne site. The use of "walk-your-bike" signs at the Lansdowne area and at various locations throughout the Hart Plaza is proposed to allow access for cyclists while minimizing the potential for conflicts with pedestrians. A second informational kiosk is located in Hart Plaza near Woodward Avenue where the supplementary, inland on-street bike loop terminates. Additional bicycle parking is also made available at this location.

The extension of the existing 6' wide concrete sidewalk which borders the Boblo site to the full 14' width of the easement which has been negotiated is also proposed in the short term. This walkway expansion will provide adequate width for pedestrians and off-street bicycle access under a walk-your-bike policy. Until the Riverfront West hotel/retail complex and DPM system are developed, the volume of pedestrian traffic in this area is likely to be relatively low, except during arrivals and departures from the Boblo boat dock and major Civic Center events. It may, therefore, be possible to allow through bicycle riding on the sidewalk except at these peak pedestrian traffic periods without creating serious bicycle/pedestrian conflicts.

The development of a riverfront promenade in the area behind Cobo Hall will make it possible to provide off-street bicycle and pedestrian access along the river edge. However, the feasibility of developing this promenade will depend on the timing of construction of the proposed Downtown People Mover system and the areal extent of construction disturbance.

It is likely that the development plan which has been proposed will be implemented in the short term only if DPM construction activity is limited to the area immediately surrounding the proposed piers. If the entire riverfront parking area must be used for construction staging, the development of the promenade is likely to be postponed. If this is the case, continuous pedestrian access through the eastern zone of the study area can only be provided on the existing sidewalks located to the north of Civic Center Drive.[1] Bicycle access must be provided on street by designating Civic Center Drive and Third Street as a Class III bike route; cyclists will be required to walk their bikes on the sidewalk during peak vehicular traffic periods and/or when on-street bus parking is heavy (see figure 5-1, Option B).

If the Cobo area riverfront promenade is developed in the short term, an off-street continuation of the bicycle/pedestrian pathway on Third Street should also be provided. The expansion of the existing 8' wide concrete walk which is located between the foot of Third Street and the old Jefferson Avenue alignment is proposed. A 16' wide paved path can be provided between the curb and the fence enclosing the surface parking area located on the southern half of the Riverfront West site. As in the Boblo area, bicycle and pedestrian movement will be combined in this 100' long pathway segment and limitations on through bicycle riding may be required. The bicycle and pedestrian paths can be separated to the north of this parking area, however, with a temporary 8' wide asphalt path aligned to the west of the DPM/skyway ramp, providing bicycle access;[2] pedestrians will use the existing walkway which runs north to the intersection of Jefferson and Third.

The initial development of the pathway node located at Third and Jefferson is also proposed as part of the short-term plan. In order to minimize costs, this node development will be limited to paving the area to the north of the DPM/skyway ramp and providing informational and directional signing (e.g., route map and information on route attractions and use).

It will be necessary to establish an easement agreement with the developers of Riverfront West in order to develop the pathway segment located adjacent to Third Street and the western continuation of the path along Jefferson Avenue. While a final resolution of the question of easement dimensions may not be possible in the short term, an interim easement agreement must be negotiated in order to allow the development of a continuous east-west pathway.[3]

Central Zone:

The development of a 10' wide bike path from Third to Eighth Streets on the northern edge of the Riverfront West hotel/retail and housing development parcels is proposed as a first priority task. As noted above, the feasibility of developing this portion of the pathway will depend on the availability of an easement from Riverfront West's developers in the short term.

While this 10' wide pathway segment is less than the recommended standard for joint bicycle and pedestrian use, it is likely to be adequate in the short term. Moreover, this reduced pathway width allows a significant percentage of the total cost of constructing this portion of the route (approximately 40 percent of the total paving cost, or $12,000) to be shifted to a later development phase. Future improvements along this 1,800' pathway segment will include landscaping, as well as pavement expansion.

Only limited development of the pathway nodes which have been proposed to define the entrances to the river edge at Eighth and Twelfth Streets can be provided in the short term if the cost of Phase I implementation strategy is to be kept to a minimum. The provision of informational and directional signing at these locations is included in the short-term plan, however, to increase the visibility of the pathway system (thereby promoting its use) and to ensure that the route is clearly legible. Additional improvements to the entrance to the Eighth Street easement are included in this implementation phase to provide clear definition of this turning point and to separate the pathway from the existing parking lot. The short-term improvements at the entrance to the Eighth Street easement include:

- reduction of parking capacity by three spaces to allow adequate area for signing
- installation of curbing on the eastern edge of the parking area
- the construction of a 10' wide asphalt path, located to the east of the parking lot[4]

To minimize development costs, no improvements to the remainder of the Eighth Street easement and no development of the "riverwatch" plaza proposed at the foot of the easement are included in the short-term plan. For the same reason, no major improvements to the Free Press riverfront walkway are included; however, it will be necessary to relocate the fence which impedes access to the western end of the Free Press walkway and to provide some improvements to the area at the foot of Twelfth Street. The development of a clear pathway linkage on Twelfth from the river edge to Jefferson Avenue is also recommended as a first priority task. The construction of a 14' wide, off-street pathway on the east side of Twelfth, the improvement of the rail crossing and the installation of concrete paving and curbing at the river edge are proposed. These improvements will establish the framework for future development of a "riverwatch" plaza at the foot of Twelfth Street.

Western Zone:

In the western zone of the study area the short-term implementation plan includes limited repaving of Jefferson Avenue from Twelfth to Eighteenth Streets to create east- and westbound bikelanes within the right-of-way and the improvement of surface conditions at the points at which the bike lanes must cross rail tracks.[5] Lane striping, bike route signs, and railroad crossing signs are also included in the Phase I development plan.

To the west of Twenty-first Street, the westbound bike lane will shift to the sidewalk to allow adequate roadway space for on-street parking at the new Riverside Park playfield. As a result, curb ramp construction and sidewalk improvements are also included in the short-term plan.

The development of a new bicycle/pedestrian entrance to Riverside Park at West Grand Boulevard is also recommended as a first priority task. This entry development will include an informational kiosk illustrating the pathway alignment and describing its characteristics, the construction of a 10' wide path from Jefferson Avenue to the park entry drive, and surface improvements to the rail crossing. Signs indicating the location of the bike route's starting point and bicycle parking will be provided in the park itself.

Inland Bike Loop:

The development of the inland on-street bike loop is included in the short-term development plan. The implementation of this part of the pathway system will include the designation of portions of West Grand Boulevard, Twenty-first Street, Lafayette, Woodward, Fort, and Shelby as Class III bike routes, signed for weekend and holiday use. Development will include posting of route signs and curb ramp construction along the I-75 Service Drive.

Estimated Development Cost

The estimated cost of each of the development tasks included in the short-term route implementation strategy is shown in figure 5-1. Costs have been included for the off-street pathway option recommended in the eastern zone of the study area (Option A) and for the "fallback" option which proposes an on-street bike route if development of the Cobo area riverfront promenade is not possible in the short term (Option B).

The total development cost for the short-term path, assuming Option A, is $218,753. The development cost under Option B is $148,713. Fifteen percent is added to the total development cost to cover contingencies. An additional 15% is included to meet general construction conditions.[6] A final 10% is added to cover professional fees. These cost additions increase the grand total for development of the proposed short-term path to $317,137 under Option A, and $216,339 under Option B.

Figure 5-1

SHORT-TERM PATHWAY DEVELOPMENT: FIRST PRIORITY TASKS

EASTERN ZONE: OPTION A/COBO DEVELOPMENT

	Item	Qty/Unit		Unit Cost	Subtotal	Total
Hart Plaza						
	Informational signing kiosk				$ 3,500.00	
	Walk bike signs	10 Ea.	@	$ 150.00	1,500.00	
	Bike parking	10 Ea.	@	150.00	1,500.00	
	Site preparation (20%)				1,300.00	$ 7,800.00
Lansdowne						
	Walk bike signs	2 Ea.	@	150.00	300.00	300.00
Cobo Area Promenade (Initial Development)						
	Bike parking	10 Ea.	@	150.00	1,500.00	
	Informational kiosk				3,500.00	
	Demolition/pavement removal				11,000.00	
	Fill				12,000.00	
	Planting (topsoil, sod, canopy, flowering trees)				24,000.00	
	Irrigation				5,000.00	
	Site preparation (20%)				11,400.00	68,400.00
Boblo						
	Extend existing concrete walk to 14' (350')	2,800 S.F.	@	2.50	7,000.00	
	Walk bike signs	2 Ea.	@	150.00	300.00	
	Site preparation (20%)				1,460.00	8,760.00
Third Street/Riverfront West						
	Widen existing 8' concrete walk adding 8' asphalt from foot of Third to old Jefferson (100')	89 S.Y.	@	10.00	890.00	
	Site preparation (20%)				178.00	1,068.00
Third Street/DPM Ramp						
	Pave under skyway bridge at Jefferson and Third	267 S.Y.	@	10.00	2,670.00	
	Signing				1,000.00	
	Site preparation (20%)				734.00	4,404.00
		TOTAL FOR ZONE (OPTION A)				$ 90,732.00

EASTERN ZONE: OPTION B/NO COBO DEVELOPMENT

Hart Plaza						
	Informational signing kiosks*	2 Ea.	@	3,500.00	7,000.00	
	Bicycle parking*	20 Ea.	@	150.00	3,000.00	
	Walk bike signing	10 Ea.	@	150.00	1,500.00	
	Site preparation (20%)				2,300.00	13,800.00
Lansdowne						
	Walk bike signs	2 Ea.	@	150.00	300.00	300.00
Civic Center Drive/Third Street						
	Crosswalk striping	150 L.F.	@	.16	24.00	
	Bike route signs	6 Ea.	@	150.00	900.00	
	Walk bike signs	6 Ea.	@	150.00	900.00	
	Site preparation (20%)				364.00	2,188.00
Third/DPM Ramp						
	Pave (asphalt) under skyway bridge	267 S.Y.	@	10.00	2,670.00	
	Signing				1,000.00	
	Site preparation (20%)				734.00	4,404.00
		TOTAL FOR ZONE (OPTION B)				$ 20,692.00

*One located at Woodward on Jefferson Avenue; the other located within Hart Plaza on the river edge promenade immediately to the east of the Lansdowne.

CENTRAL ZONE

Riverfront West/Jefferson Avenue (Third to Eighth)					
	10' asphalt path (1,800')	2,000 S.Y.	@	10.00	20,000.00	
	Signing	4 Ea.	@	150.00	600.00	
	Site preparation (20%)				4,120.00	24,720.00
Entry to Eighth Street Easement						
	Curb to edge parking area (east side)	175 L.F.	@	10.00	1,750.00	
	10' asphalt path to east of parking area (125')	139 S.Y.	@	10.00	1,390.00	
	Directional/informational signing				1,000.00	
	Site preparation (20%)				828.00	4,968.00
Eighth Street Easement						
	No improvements					
Eighth Street Riverwatch						
	No improvements					
Free Press Riverfront Walkway						
	Relocate fence to improve access to and from Twelfth				2,000.00	
	Trash containers	6 Ea.	@	100.00	600.00	
	Site preparation (20%)				520.00	3,120.00
Twelfth Street Riverwatch						
	Improve rail crossing for cyclists	10 L.F.	@	360.00	3,600.00	
	10' asphalt path extension (60')	67 S.Y.	@	10.00	670.00	
	Curb at street end (50')	50 L.F.	@	10.00	500.00	
	Concrete paving	1,500 S.F.	@	2.50	3,750.00	
	Site preparation (20%)				1,704.00	10,224.00
Twelfth Street Pathway						
	Curb installation	400 L.F.	@	10.00	4,000.00	
	14' asphalt path (500')	778 S.Y.	@	10.00	7,780.00	
	Site preparation (20%)				2,356.00	14,136.00
Twelfth Entry Node						
	Directional signing				1,000.00	
	Site preparation (20%)				200.00	1,200.00
		ZONE TOTAL				$ 58,368.00

WESTERN ZONE

Jefferson Avenue/Twelfth to Eighteenth						
	Crosswalk striping	210 L.F.	@	.16	33.00	
	Repave 4' strip, north side of Jefferson (2,200')	978 S.Y.	@	10.00	9,780.00	
	Clear and pave 4' asphalt path, south side of Jefferson					
	Clearing				1,000.00	
	Paving	978 S.Y.	@	10.00	9,780.00	
	Lane line, north side	2,200 L.F.	@	.14	308.00	
	Improve rail crossings (4 Ea., 4' wide)	16 L.F.	@	360.00	5,760.00	
	Railroad crossing and route signs	8 Ea.	@	150.00	1,200.00	
	Site preparation (20%)				5,572.00	33,439.00
Jefferson Avenue/Eighteenth to Twenty-First						
	Lane lines (north and south sides)	2,200 L.F.	@	.14	308.00	
	Route signs	2 Ea.	@	150.00	300.00	608.00
Jefferson Avenue/Twenty-first to West Grand Boulevard						
	Lane line (south side)	1,100 L.F.	@	.14	154.00	
	Sidewalk repairs (north side) (Twenty-first to Twenty-fourth)				1,000.00	
	Curb ramps	2 Ea.	@	60.00	120.00	
	Lane line (north side)	800 L.F.	@	.14	112.00	
	Route signs	7 Ea.	@	150.00	1,050.00	
	Site preparation (20%)				487.00	2,923.00
Riverside Park Entry (30' x 30')						
	Informational Kiosk				3,500.00	
	10' asphalt path (100')	111 S.Y.	@	10.00	1,110.00	
	Seeding	600 S.Y.	@	.50	300.00	
	Crosswalk striping	162 L.F.	@	.16	26.00	
	Railroad crossing (4 tracks, 10' wide)	40 S.F.	@	360.00	14,400.00	
	Rail crossing signs	2 Ea.	@	150.00	300.00	
	Site preparation (20%)				3,927.00	23,563.00
Riverside Park						
	Bicycle parking	30 Ea.	@	150.00	4,500.00	
	Walk bike and "to route" signs	6 Ea.	@	150.00	900.00	
	Site preparation (20%)				1,020.00	6,480.00
		ZONE TOTAL				$ 67,013.00

INLAND LOOP

	Signs	38 Ea.	@	50.00*	1,900.00	
	Curb cuts	5 Ea.	@	60.00	300.00	
	Site preparation (20%)				440.00	$ 2,640.00

SHORT-TERM PATHWAY COST TOTALS

		Alternate A	Alternate B
Development Costs			
	Eastern Zone	$ 90,732.00	$ 20,692.00
	Central Zone	58,368.00	58,368.00
	Western Zone	67,013.00	67,013.00
	Inland Loop	2,640.00	2,640.00
		218,753.00	148,713.00
Contingencies (15%)		32,813.00	22,306.00
General Conditions (15%)		37,735.00	25,653.00
Professional Fees (10%)		28,830.00	19,667.00
TOTAL		$317,131.00	$216,339.00

*Signs attached to existing poles.

IMPLEMENTATION

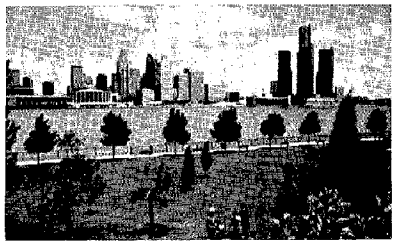
The total cost of developing the West Riverfront Bicycle/Pedestrian Pathway is estimated to be $2,006,000 (1980). The proposed phasing strategy identifies a sequence of implementation priorities. First priority tasks, costing $317,000, include:

- a riverfront promenade behind Cobo Hall
- a temporary off-street path on Third and a permanent pathway from Third to Eighth Streets bordering Jefferson Avenue
- an off-street path linking the Free Press riverwalk to Jefferson Avenue on Twelfth
- improvements to Jefferson Avenue between Twelfth and Eighteenth Streets
- informational and directional signing on the riverfront route and inland loop

The second implementation phase completes the recommended pathway improvements in the eastern and central zones of the study area, and will cost $1,064,000. Final additions to the route include an off-street pathway from Twelfth Street to Riverside Park and a new park entrance at Twenty-fourth Street, estimated at $625,000.

The successful implementation of the West Riverfront Bicycle/Pedestrian Pathway requires the assistance and cooperation of public agencies, private landowners and area cyclists. The City administration and departmental staff must establish the pathway concept as an integral part of continuing development planning; the interdepartmental Riverfront Task Force can ensure that riverfront development decisions are reviewed in the context of their impact on pathway implementation. State and Federal programs for community and economic development, recreation, and transportation can provide substantial funding assistance.

Private interests in the study area can facilitate implementation of the pathway system by cooperating in easement negotiations and removing barriers to pathway development. The City can encourage such cooperation by ensuring a high level of maintenance and supervision of the pathway system. Local cycling groups can contribute by lobbying for funding commitments for pathway development, participating in the design process, and evaluating and monitoring use of the route as it is developed.



WINDSOR BIKE PATH

CREDITS

This report was prepared by:

BJR,Inc.
Landscape Architects and Site Planners
William M. Jackson, Principal
Constance C. Dimond, Associate

This report was prepared for:

City of Detroit
Coleman A. Young, Mayor

Recreation Department
Daniel Krichbaum, Director
Theodore Jordan, Deputy Director
Harriet Saperstein, Principal Planner
Edward Viall, Chief Landscape Architect
Betsy Reich, Planning Intern

This report was funded in part through financial assistance provided by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, United States Department of Commerce, through funds provided under the Coastal Zone Management Act of 1972 (PL 92-583) and administered by the Michigan Department of Natural Resources Division of Land Resource Programs.
Chris Shafer, In Charge,
Coastal Zone Management Unit
David Warner, Project Representative

bjr

Michigan Square, 330 E. Liberty, Suite 30/Ann Arbor, Michigan 48104/(313) 665-9146

WEST RIVERFRONT BICYCLE AND PEDESTRIAN ROUTE

Expanding urban recreation opportunities need not be tied to the availability of land for additional parks and open space. Often, great potential can be realized through assessment of existing facilities and user needs. Extending recreational opportunities along the Detroit River, truly Detroit's finest natural asset, is an opportunity within our grasp.

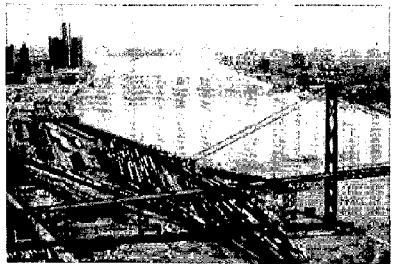
The West Riverfront Bicycle/Pedestrian Pathway Study clearly identifies a potential route along a complex portion of Detroit's riverfront which includes exciting urban activities, the reality of industry and railyards, and the uncertainties of newly planned uses. This recreational pathway can be woven into the pattern of riverfront development without extensive land acquisition, resulting in a high potential for implementation. The timing is appropriate for this planning and coordination; opportunities are immediately available for route implementation at a reasonable cost. Drawing on public/private cooperation, the City can demonstrate its commitment to improve recreational access to and along the riverfront with this exciting linear parkway.

INTRODUCTION

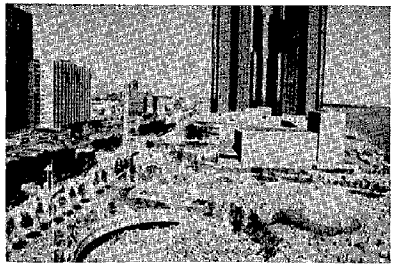
With most of its riverfront already developed in a variety of land uses, Detroit's strategy to recapture the recreational potential of the riverfront relies upon integrating public access and recreational activity nodes with new and existing riverfront development. The West Riverfront Bicycle/Pedestrian route is part of a plan to create a continuous pathway system linking recreation and urban activity centers along Detroit's ten-mile riverfront. The objectives of the pathway linkage system are to:

- improve public access to and along the river
- link recreational opportunities together, maximizing their use potential
- establish a unifying element in the mixed-use riverfront zone
- create new opportunities for cycling, walking, jogging, and urban interpretive trails

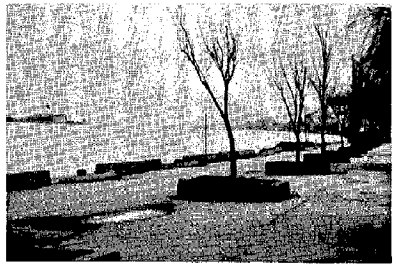
The West Riverfront Bicycle/Pedestrian Pathway Study is the third in a series of planning and design studies funded by the Coastal Zone Management Program to aid in the implementation of Detroit's riverfront recreation strategy. The study recommends a route alignment and design solutions for the West Riverfront bicycle/pedestrian route, linking Hart Plaza, a special events area near Detroit's Civic Center, with the 20-acre Riverside Park located two miles to the west. The creation of an international bike route via the Ambassador Bridge to Canada is also explored.



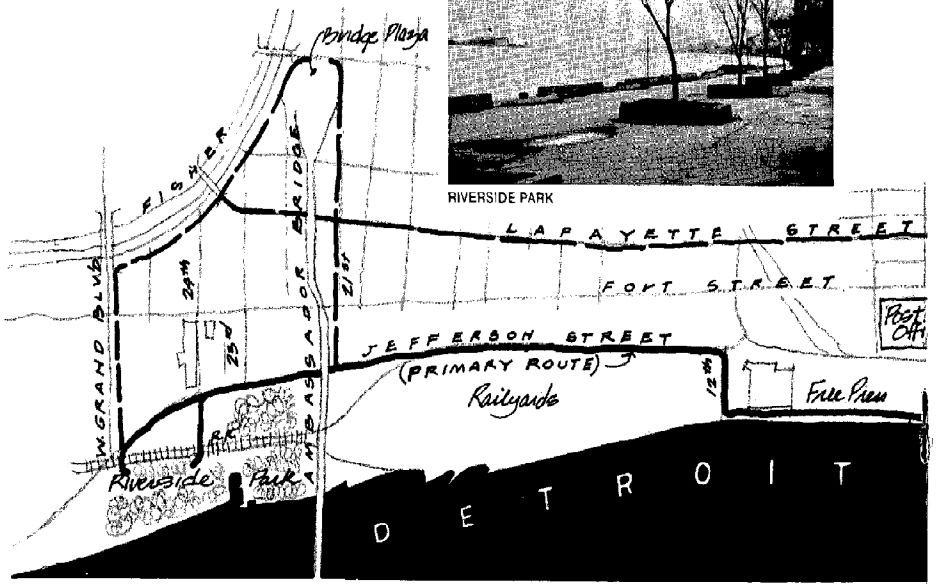
DETROIT RIVERFRONT



HART PLAZA



RIVERSIDE PARK



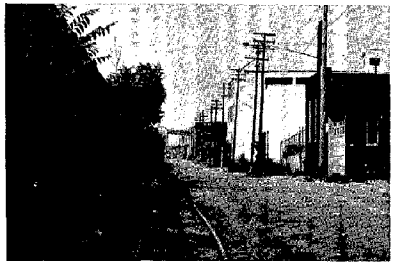
WESTERN ZONE

Existing Conditions: Riverfront access to the west of Twelfth Street is blocked by the N&W and Chessie rail yards. Jefferson Avenue traffic volumes are low in this area; however, pavement quality between Twelfth and Eighteenth Streets is poor, and rail tracks and spurs are located in the roadway. Rail tracks, heavy traffic volumes, and poor surface conditions at the entrance to Riverside Park complicate access for cyclists.

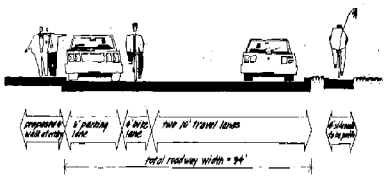
Potential conflicts with vehicles at the Ambassador Bridge plazas and the narrow bridge walkway pose safety problems for international cyclists; the bridge management is not inclined to undertake improvements to facilitate bicycle travel on the bridge. Moreover, construction planned for the next two years will reportedly prohibit bicycle access.

Route Development: The bicycle/pedestrian route must continue west in the Jefferson Avenue right-of-way, necessitating some repaving and rail crossing improvements. In the future, Chessie Systems may provide an easement for the development of an off-street pathway along Jefferson.

Improvements to the Riverside Park entrance, including directional and informational signing, a new pathway, and an improved rail crossing, are recommended to facilitate access for cyclists. Future park expansion may make it possible to develop a new entrance at Twenty-fourth Street.



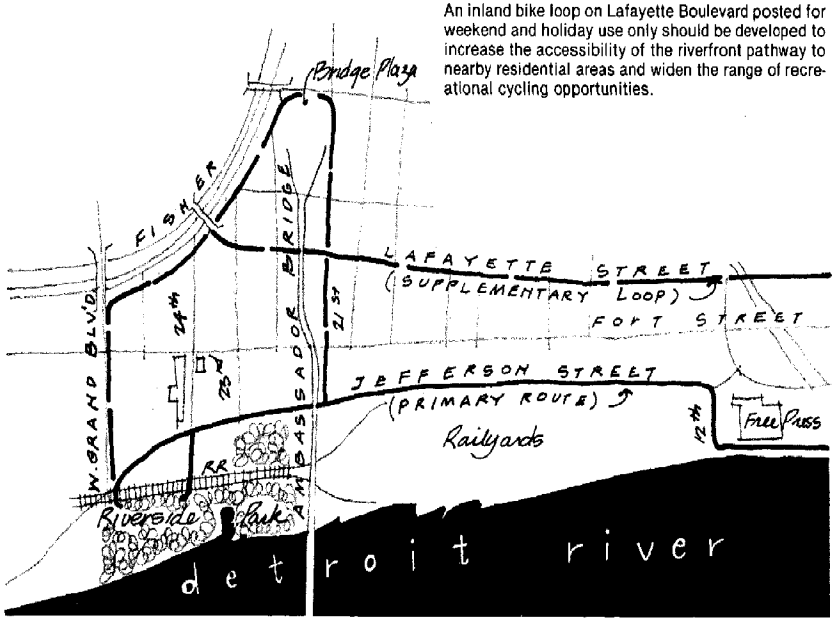
RAIL VIADUCT/JEFFERSON AVE



JEFFERSON AVE. 21ST TO 24TH STREETS

A bike link from the park to the Ambassador Bridge may be delayed; continued discussion with the bridge management and involvement of Canadian agencies may help to establish improved bicycle access in the future.

An inland bike loop on Lafayette Boulevard posted for weekend and holiday use only should be developed to increase the accessibility of the riverfront pathway to nearby residential areas and widen the range of recreational cycling opportunities.

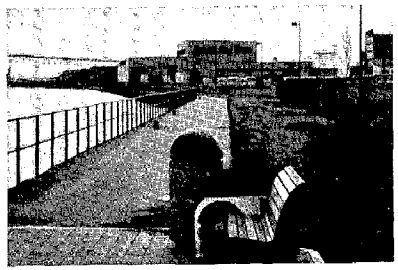


CENTRAL ZONE

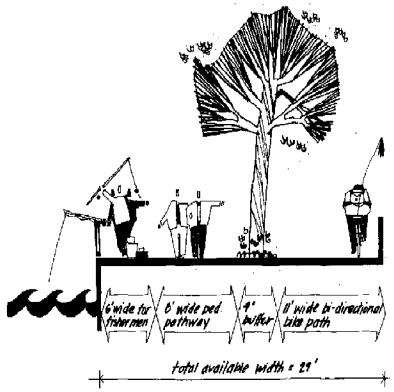
Existing Conditions: A public access easement is to be provided to the north of Riverfront West adjacent to Jefferson Avenue. Public access to the river and a riverfront walkway have been developed on the site of the Detroit Free Press printing plant between Eighth and Twelfth Streets. Pedestrian access to the riverfront walkway from Twelfth Street has been discouraged due to potential weekday conflicts with heavy truck traffic and rail deliveries to the plant.

Route Development: The easements provided by the Free Press are the only portions of the proposed route which are already developed and ready for use. To take maximum advantage of this opportunity for river edge access, these easements must be strongly integrated into the remainder of the pathway system:

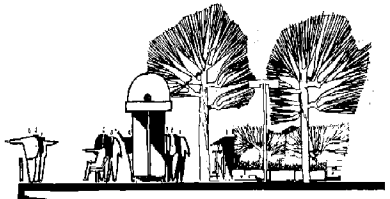
- Well-defined links from Jefferson Avenue to the river edge at Eighth and Twelfth Streets should be provided; "entrances" to the river can be developed at these pathway turning points.
- Small "riverwatch" plazas can be developed at the foot of the Eighth Street easement and within the Twelfth Street right-of-way to create intermediate activity nodes along the route between Hart Plaza and Riverside Park.



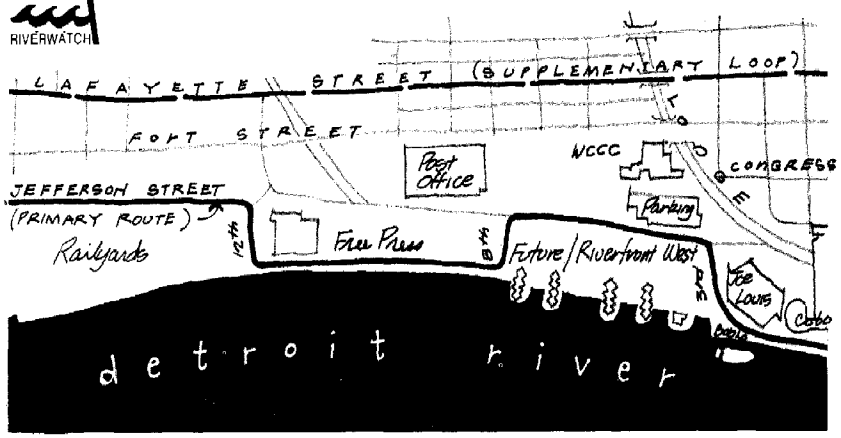
FREE PRESS RIVERFRONT WALKWAY



FREE PRESS RIVERFRONT WALKWAY



RIVERWATCH



Recognizing the physical and financial constraints in developing the bicycle/pedestrian route, the study proposes alternative design and management solutions which will allow a staged implementation of the pathway.

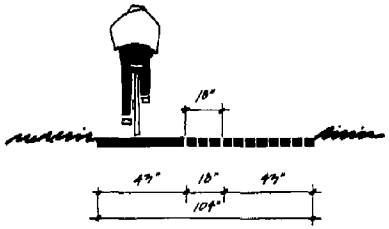
Planning objectives for the pathway linkage system clearly express its riverfront orientation and the importance of physical proximity and a strong visual relationship to the river's edge. The recreation emphasis of the linkage system suggests that an off-street path is the preferred route treatment and that route location and design characteristics such as attractiveness, legibility and safety can be given priority over functional service characteristics such as directness and minimum delay.

DESIGN CONSIDERATIONS

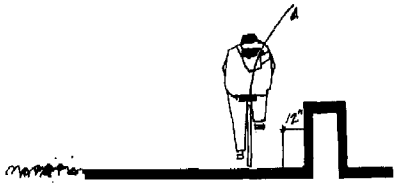
User characteristics have important implications in the design of the bike route. Differences between cyclists and pedestrians in speeds of movement, typical trip length, and maneuverability pose potential conflicts. Facilities which are to be shared by cyclists and pedestrians must be designed to meet more restrictive bikeway engineering standards.

Design standards recommend widths for bicycle facility development based upon research done for the Federal Highway Administration. Providing for travel lanes, lateral clearances, and pedestrian space, recommended widths range from 8'-8" to 11'-8" for a bi-directional bike path; additional width to accomodate pedestrians may range from 6' in a low use area to 15-20' where pedestrian activity is high.

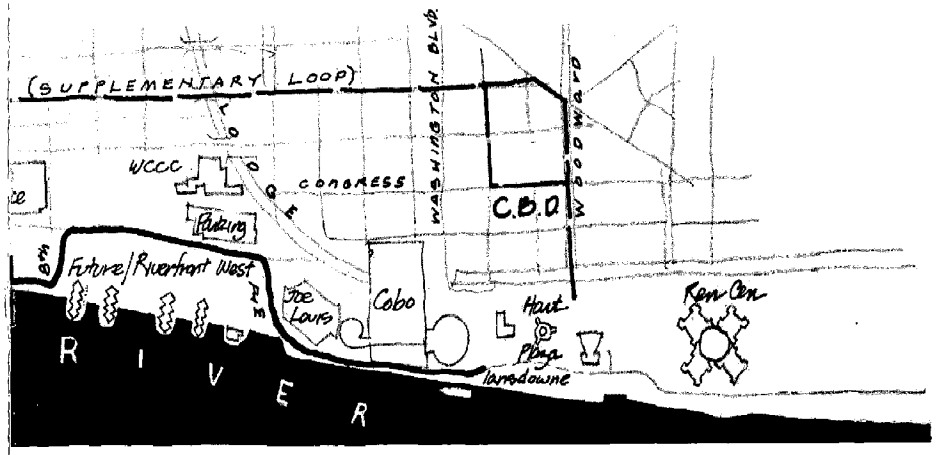
Design constraints will be posed by competing demands for the use of the riverfront. To create continuous access, flexibility in applying design standards may be required and management solutions may have to be relied upon for initial route development in some areas; improvements can be staged as conditions and funding availability permit.



LEVEL OF SERVICE C



SOLID CONTINUOUS OBSTRUCTION

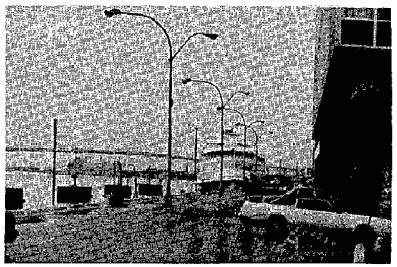


EASTERN ZONE

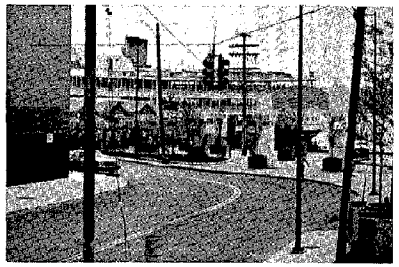
Existing Conditions: This high activity zone includes part of Detroit's central business district and the Civic Center area, with Hart Plaza, the Lansdowne (a ferry boat converted to a restaurant), a 1,000' long surface parking area and the Boblo boat dock lining the river's edge. Civic Center Drive parallels the river from Third Street east, continuing under Hart Plaza to the Renaissance Center; it is used primarily for access to and bus parking for major Civic Center events.

The proposed Riverfront West hotel/retail complex located to the west of Third Street will not provide river access; public access easements will be made available on the inland edges of the parcel. The Downtown People Mover (DPM) elevated guideway route will be on the southern edge of Civic Center Drive and on the west side of Third Street. A ramp to a pedestrian skyway which will link Joe Louis Arena, the Arena garage, and the Riverfront West complex is located at the intersection of Jefferson and Third. This structure will also incorporate a DPM station.

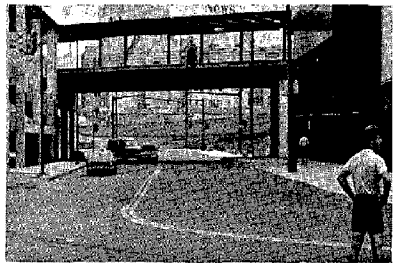
Route Development: The numerous city and regional attractions in this zone of the study area will generate intense use of this segment of the bicycle/pedestrian pathway, particularly by pedestrians. A continuous off-street bike path can be developed if the narrow walkways which are to be provided at the Lansdowne and Boblo sites can be expanded and if an adequate easement is made available on the edge of the Riverfront West site.



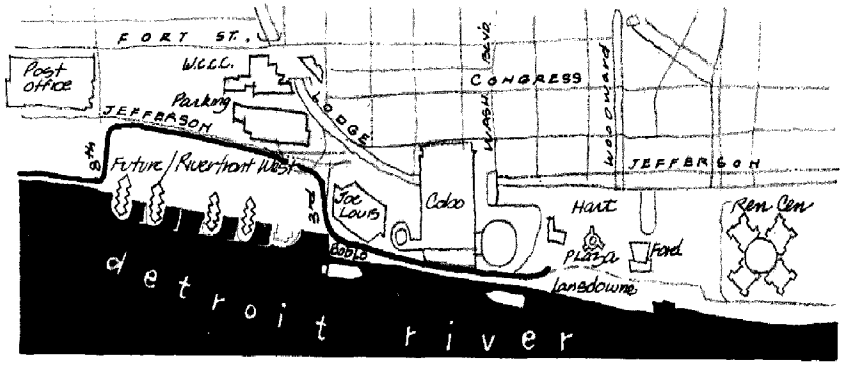
COBO HALL RIVERFRONT PARKING



BOBLO ENTRY

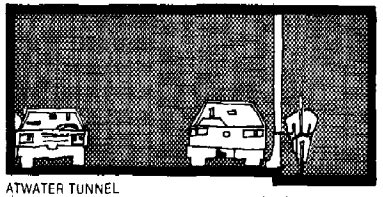


THIRD STREET (NORTH)



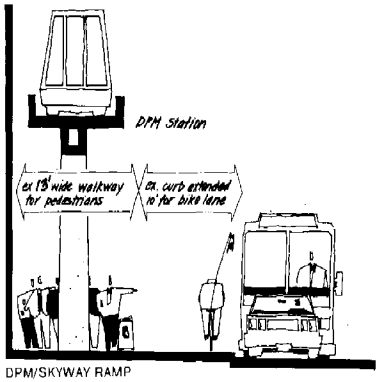
A range of route alternatives is proposed pending resolution of these planning questions:

- An off-street bicycle/pedestrian pathway, incorporating a new riverfront promenade in the area behind Cobo Hall, and preempting one roadway lane where adequate space is not already available. Future expansion of the river edge in these bottleneck areas may also provide the space needed for pathway development.
- On-street bike lanes in combination with a new pedestrian walkway located along the river edge and the west side of Third Street. This would necessitate reducing Civic Center Drive and Third Street to three lanes, eliminating substantial on-street bus parking capacity.
- A "walk-your-bike" policy on those segments of the pathway where adequate space is not available for bike path development. New walkways located on the riverfront and the west side of Third Street provide access for both cyclists and pedestrians.
- Designating Civic Center Drive and Third Street as on-street bike routes posted for use during non-peak traffic periods only. Cyclists are required to walk bikes on pedestrian pathways when traffic conditions prevent on-street use.

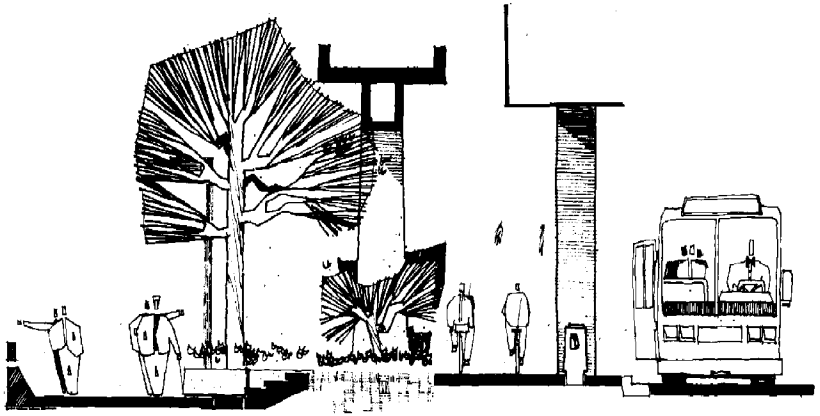


ATWATER TUNNEL

three 12' traffic lanes | 11' bike path bi-directional



DPM/SKYWAY RAMP



COBO RIVERFRONT PROMENADE

special paving 20' ± (varies) | steps 5ft | landscaped buffer 12' ± | 11' bikeway | concrete walk 5' | 10' bus lane

Bulkhead cap and railing repair ex. bulkhead and cap with pour-in-place concrete edge with integral railing

Raised planters with canopy trees and ground cover - extend into pedestrian walkway

Provide stepped areas for sitting and viewing of river and pedestrians

SECOND PRIORITY TASKS

Overview

The second phase of implementation includes intensified development of the Cobo area riverfront promenade and the development of the major pathway nodes and turning points. These are located at:

- the foot of Third Street
- the intersection of Third and Jefferson
- the entrance to the Eighth Street easement
- the Eighth Street riverwatch
- The Twelfth Street riverwatch
- the intersection of Twelfth and Jefferson
- the entrance to Riverside Park at West Grand Boulevard
- the foot of Twenty-fourth Street in Riverside Park

The development of the pathway segment located on Third Street at the entrance to the Riverfront West hotel/retail complex, the development of the off-street bike paths proposed at the Boblo and Lansdowne sites, and the eastern continuation of the pathway system through the Atwater Tunnel are also included in this phase. Finally, improvements to the Eighth Street easement and the Free Press riverfront walkway are recommended as second priority tasks.

The estimated cost of construction for all of the tasks included in this intermediate development phase is substantial (see figure 5-2). Because it is unlikely that all of these pathway improvements can be made simultaneously, it may be necessary to divide implementation of these second priority tasks into several phases which can be implemented over a period of years.

The ranking of development priorities in this intermediate phase of implementation will depend, in part, on the intensity of use that different segments of the pathway receive. It is likely that the Civic Center area will attract the greatest use and that the second priority tasks in the eastern zone of the study area will receive funding priority. The development of the pathway nodes and turning points located on Jefferson Avenue and at the river edge at Eighth and Twelfth Streets and in Riverside Part at the West Grand Boulevard entrance and the foot of Twenty-fourth Street, should also be given a high development priority, however. The development of these nodes will contribute substantially to the route's continuity, legibility, and attractiveness. The high total construction cost of these nodes may make it necessary to phase their development, providing basic paving, seating, and landscaping first, and intensifying their development with the addition of special paving, lighting, and informational kiosks at a later date. In this way, a uniform level of development can be provided at major nodes throughout the pathway system. This phased development strategy may be preferable to providing complete node development at one location at the expense of all others. This same phased development strategy can be applied to the Cobo area riverfront promenade.

Development Description

Eastern Zone:

The extension of the bicycle portion of the riverfront pathway linkage system to the east of Hart Plaza is proposed as a second priority task. The development of this eastern connection includes the development of a bi-directional off-street bike path from the Cobo area riverfront promenade past the entrance to the Lansdowne's valet parking area; the development of this 10' wide bike path will require the pre-emption of one lane of Civic Center Drive (approximately 150'). A signalized crossing is proposed to the east of the Lansdowne site.

The area on the north side of Civic Center Drive, from the crossing point to the Atwater Tunnel, is already paved. The relocation of the fence enclosing the Ethnic Festival committee parking lot, the removal of the concrete block barricades at the entrances to the separated right-of-way on the north side of the tunnel, and the paving of the tunnel right-of-way will be required to allow through bicycle access.

The major cost element of the intermediate implementation phase in the eastern zone of the study area is the final development of the Cobo area riverfront promenade. This development includes the installation of concrete paving along the pedestrian walkway at the river edge, with special paving provided in the more intensely developed nodes which are located at the eastern and western ends of the promenade and at the principal entrance to Cobo Hall. Planting on the landscaped berm which separates bicycle and pedestrian use zones will be intensified and concrete retaining walls and steps will be constructed at the major pedestrian crossing points. Lighting will also be provided in the central landscaped area along the length of the promenade. Extended phasing of these improvements is recommended to spread the cost of development over several years and to allow funds to be allocated to other high priority pathway development tasks.

The expansion of the Boblo easement to 24' with the addition of a 10' bike path adjacent to Civic Center Drive is proposed as part of the second phase of development in the eastern zone of the study area. The construction of this bike path segment will improve through bicycle access, but will pre-empt one lane of the roadway, reducing the available bus parking capacity by approximately seven spaces. Improvements to the foot of Third Street, adjacent to the Boblo entrance are also proposed. These improvements include the provision of bicycle parking and an informational and directional signing kiosk.

The final second priority development task in the eastern zone of the study area is the construction of the off-street bicycle/pedestrian pathway segment located on the west side of Third Street. This development includes an 11' wide asphalt bike path at the curb edge (running from the foot of Third Street to within 40' of the entrance to the DPM/skyway ramp), a 15' wide pedestrian walkway, and a 10' wide raised planting area to separate bicycle and pedestrian zones at the entrance to the Riverfront West hotel/retail site.

The bicycle path continues north on Third at the curb edge, past the DPM/skyway ramp, to the pathway node located at the intersection of Third and Jefferson. The installation of special paving in the area to the north of the DPM/skyway ramp will complete the development of this pathway turning point. The pedestrian path (an 8' wide concrete walkway) is aligned to the west of the DPM/skyway ramp.

Central Zone:

The expansion of the pathway segment which runs along the northern edge of the Riverfront West parcels between Third and Eighth Streets and street tree planting in the 1,800' long buffer area which separates the pathway from Jefferson Avenue are included in the second major development phase. Pavement expansion can be postponed if the volume of pedestrian use on this portion of the pathway is observed to be very low and no conflicts between cyclists and pedestrians are apparent. Eventual expansion of the pathway to the recommended width of 16' is likely to be necessary, however, as the use of the pathway system increases.

The development of the pathway turning points located on Jefferson Avenue at Eighth and Twelfth Streets should be given high priority in the intermediate development phase. The proposed plan for development of these small (30' x 40') pathway nodes includes the installation of special paving, landscaping, seating,

lighting, and informational kiosks. The development of the river edge plazas proposed at the foot of the Eighth Street easement and at the foot of Twelfth Street are also considered high priority tasks in the second phase of implementation. The development of these plazas is similar to that proposed for the pathway nodes on Jefferson Avenue, including special paving, landscaping, lighting, and informational signing. As suggested above, this development can be phased to provide basic paving, landscaping, and seating first with special paving and lighting added as additional funds permit. This phased development strategy can reduce the initial construction cost for these pathway nodes and turning points by 30 to 40 percent.

The expansion and improvement of the Eighth Street easement and the Free Press riverfront walkway will also be necessary as bicycle and pedestrian use volumes increase in the central zone of the study area. These pathway improvements include the expansion of the existing asphalt paths to create an 11' wide bi-directional bike path and an 8' wide pedestrian walkway; the addition of central planting strips to separate pedestrian and bicycle use zones is also proposed.[7]

The final development task in the central study area zone is the improvement of the off-street pathway linkage located on Twelfth. The final additions to the development of this segment of the pathway include the installation of lighting, curb construction on the west side of Twelfth Street, and shade tree planting.[8]

Western Zone:

The second priority tasks in the western zone of the study area include the development of small plazas at the bicycle/pedestrian entrance to Riverside Park (at West Grand Boulevard) and within the park at the foot of Twenty-fourth Street. This node development includes special paving, seating, landscaping, lighting, and informational signing. The development of a 10' wide bike path extending from the park entry drive to the restroom facility and the riverfront promenade are also proposed.

Inland Loop:

The extension of the inland on-street bike loop to the Ambassador Bridge entrance plaza, located at Porter Street, is proposed in the intermediate implementation phase. This portion of the inland route will include a sidewalk bike path along the I-75 Service Drive from Lafayette to Porter and an on-street (Class III) route, signed for weekend and holiday use, on Twenty-first Street from Porter to Lafayette.

Estimated Development Cost

The estimated development cost for each second priority task is shown in figure 5-2. The estimated total development cost for this intermediate phase of implementation is $731,485. Percentages for contingencies (15%), general conditions (15%), and professional fees (10%) are added to the development total; the grand total for the second phase of development is $1,064,128.

Figure 5-2

INTERMEDIATE PATHWAY IMPROVEMENTS: SECOND PRIORITY TASKS

EASTERN ZONE	Item	Qty/Unit		Unit Cost	Subtotal	Total
Hart Plaza						
	No improvements					
Lansdowne						
	Remove existing curb	150 L.F.	@	$ 5.00	$ 750.00	
	Construct new curb	150 L.F.	@	10.00	1,500.00	
	Construct 10' wide asphalt path (150')	167 S.Y.	@	10.00	1,670.00	
	Site preparation (20%)				784.00	$ 4,704.00
Atwater Tunnel						
	Crosswalk striping	150 L.F.	@	.16	24.00	
	Traffic signal with pedestrian actuator				15,000.00	
	Relocate existing fencing				1,500.00	
	Remove existing concrete block walls				2,000.00	
	Pave 11' tunnel r.o.w. (700')	856 S.Y.	@	10.00	8,560.00	
	Site preparation (20%)				5,417.00	32,501.00
Cobo Area Promenade (final development)						
	Demolition				15,000.00	
	Walls	600 L.F.	@	60.00	36,000.00	
	Concrete paving	15,000 S.F.	@	2.50	37,500.00	
	Special paving	9,000 S.F.	@	8.50	76,500.00	
	Steps	1,000 S.F.	@	8.00	8,000.00	
	Benches	100 L.F.	@	20.00	2,000.00	
	Planting				24,675.00	
	Lighting	8 Ea.	@	1,600.00	12,800.00	
		6 Ea.	@	2,200.00	13,200.00	
	Curb and gutter	120 L.F.	@	10.00	1,200.00	
	Site preparation (20%)				45,375.00	272,250.00
Boblo						
	Remove existing curb	350 L.F.	@	5.00	1,750.00	
	Construct new curb	350 L.F.	@	10.00	3,500.00	
	Construct 10' asphalt bike path	389 S.Y.	@	10.00	3,890.00	
	Site preparation (20%)				1,828.00	10,968.00
Foot of Third Street						
	Directional/informational signing kiosk				3,500.00	
	Bike parking	20 Ea.	@	150.00	3,000.00	
	Site preparation (20%)				1,300.00	7,800.00
Third Street/Riverfront West						
	Remove 8' concrete walk (100')	89 S.Y.	@	4.00	356.00	
	Construct 11' wide asphalt path (130')	159 S.Y.	@	10.00	1,590.00	
	Construct raised planters	200 L.F.	@	60.00	12,000.00	
	Planting				8,000.00	
	Irrigation				3,000.00	
	Lighting	8 Ea.	@	1,600.00	12,800.00	
	15' concrete walk (275')	4,110 S.F.	@	2.50	10,275.00	
	Construct 8' concrete walk west of DPM ramp (200')	1,600 S.F.	@	2.50	4,000.00	
	Remove asphalt under skyway bridge	267 S.Y.	@	2.00	534.00	
	Install special paving	2,400 S.F.	@	8.50	6,000.00	
	Site preparation (20%)				19,102.00	66,857.00
		ZONE TOTAL				$395,080.00

CENTRAL ZONE

Riverfront West/Jefferson Avenue					
Expand pathway width to 16'* (1,800')	1,200 S.Y.	@	10.00	12,000.00	
Street tree planting, 50' o.c.	36 Ea.	@	400.00	14,400.00	
Site preparation (20%)				5,280.00	31,680.00
Entry to Eighth Street Easement (30' x 40')					
Remove asphalt	139 S.Y.	@	2.00	278.00	
Install special paving	1,200 S.F.	@	8.50	10,200.00	
Planting				4,400.00	
Irrigation				3,000.00	
20' concrete walk (125')	2,500 S.F.	@	2.50	6,250.00	
Benches	32 L.F.	@	20.00	640.00	
Informational kiosk				3,500.00	
Lighting	2 Ea.	@	2,200.00	4,400.00	
Site preparation (20%)				6,534.00	39,202.00
Eighth Street Easement					
Remove 4' asphalt (400')	178 S.Y.	@	2.00	356.00	
Add 4' asphalt (400')	178 S.Y.	@	10.00	1,780.00	
Add 8' concrete walk (400')	3,200 S.F.	@	2.50	8,000.00	
Planting	10 Ea.	@	400.00	4,000.00	
Irrigation				3,000.00	
Site preparation (20%)				3,427.00	20,563.00
Eighth Street Riverwatch (30' x 40')					
Special paving	1,200 S.F.	@	8.50	10,200.00	
Kiosk and signing				3,500.00	
Benches	60 L.F.	@	20.00	640.00	
Bike parking	5 Ea.	@	150.00	750.00	
Trash containers	2 Ea.	@	300.00	600.00	
Planting				4,400.00	
Irrigation				3,000.00	
Lighting	2 Ea.	@	2,200.00	4,400.00	
Site preparation (20%)				5,498.00	32,988.00
Free Press Easement					
Add 2' to existing 10' walk (2,200')	489 S.Y.	@	10.00	4,890.00	
5' planting strip (sod with canopy trees 40' o.c.)				23,833.00	
Irrigation				3,000.00	
11' asphalt bike path (2,200')	2,690 S.Y.	@	10.00	26,900.00	
Trash containers	4 Ea.	@	300.00	1,200.00	
Site preparation (20%)				11,965.00	71,788.00
Twelfth Street Riverwatch					
Special paving	1,500 S.F.	@	6.00	9,000.00	
Planting				4,400.00	
Irrigation				3,000.00	
Benches	60 L.F.	@	20.00	1,200.00	
Lighting	2 Ea.	@	2,200.00	4,400.00	
Bicycle parking	5 Ea.	@	150.00	750.00	
Trash containers	2 Ea.	@	300.00	600.00	
Site preparation (20%)				4,670.00	28,020.00
Twelfth Street Pathway					
Curb (west side)	250 L.F.	@	10.00	2,500.00	
Lighting	6 Ea.	@	1,600.00	9,600.00	
Planting (shade trees on Free Press property)	13 Ea.	@	400.00	5,200.00	
Site preparation (20%)				3,460.00	20,760.00
Twelfth Street Entry Node (30' x 40')					
Special paving	1,200 S.F.	@	8.50	10,200.00	
Directional/informational kiosk				3,500.00	
Planting				4,400.00	
Irrigation				3,000.00	
Benches	32 L.F.	@	20.00	640.00	
Lighting	2 Ea.	@	2,200.00	4,400.00	
Site preparation (20%)				5,228.00	31,368.00
ZONE TOTAL					$276,369.00

*Cost of 6' concrete walk = $27,000.00.

WESTERN ZONE

Jefferson Avenue/Twelfth to West Grand Boulevard

No improvements

Riverside Park Entry (30' x 30')					
Special paving	900 S.F.	@	8.50	2,250.00	
Planting				4,400.00	
Irrigation				3,000.00	
Benches	60 L.F.	@	20.00	1,200.00	
Trash containers	2 Ea.	@	300.00	600.00	
Lighting	2 Ea.	@	2,200.00	4,400.00	
Site preparation (20%)				3,170.00	19,020.00
Park Improvements					
10' wide bike paths (420')	467 S.Y.	@	10.00	4,670.00	
Plaza development (30' x 40')					
special paving	1,200 S.F.	@	8.50	10,200.00	
kiosk and signing				3,500.00	
planting				4,400.00	
irrigation				3,000.00	
lighting	2 Ea.	@	2,200.00	4,400.00	
benches	60 L.F.	@	20.00	1,200.00	
bike parking	10 Ea.	@	150.00	1,500.00	
trash containers	2 Ea.	@	300.00	600.00	
site preparation (20%)				6,694.00	40,164.00
	ZONE TOTAL				$ 59,184.00

INLAND LOOP

Signs	7 Ea.	@	50.00	350.00	
Curb ramps	6 Ea.	@	60.00	360.00	
Site preparation (20%)				142.00	$ 852.00

PHASE II PATHWAY IMPROVEMENT TOTALS

Construction Costs	
Eastern Zone	$395,080.00
Central Zone	276,369.00
Western Zone	59,184.00
Inland Loop	852.00
	731,485.00
Contingencies (15%)	109,723.00
General Conditions (15%)	126,181.00
Professional Fees (10%)	96,739.00
TOTAL	$1,064,128.00

THIRD PRIORITY TASKS

Overview

The final implementation phase includes two major additions to the West Riverfront bicycle/pedestrian pathway system. These additions, which complete the long-term optimal plan, are:

- the development of an off-street pathway located adjacent to Jefferson Avenue between Twelfth Street and Riverside Park, and
- the development of a new entrance to Riverside Park at Twenty-fourth Street, including a rail crossing to link the northern portion of the park to the river edge

Development Description

Western Zone:

The feasibility of developing an off-street pathway segment from Twelfth Street to Riverside Park (Twenty-first Street) will depend on the outcome of easement negotiations with Chessie Systems and Chrysler Trucking, the owners of the property located between Jefferson Avenue and the river. The proposed plan for developing this off-street path requires a minimum easement width of 20'; an easement of 30' to 40' is recommended, however, to allow the incorporation of the abandoned rail viaduct (located between Twelfth and Fifteenth Streets) into the pathway system and to provide buffer areas on either side of the path.[9]

This segment of the bicycle/pedestrian route includes a 16' wide asphalt path with 10' wide buffers to separate the pathway from Jefferson Avenue and the adjacent rail yards. Street tree planting, seeding, and lighting are also included in the development plan. In addition, regrading of the eastern end of the rail viaduct will be necessary to allow access from Twelfth Street.

This new off-street bicycle/pedestrian pathway will continue on the south side of Jefferson Avenue along the edge of Riverside Park's playfield to the park entrance. The long-term development of a new park entrance is proposed in conjunction with the expansion of the park north to Jefferson Avenue (between Twenty-third Street and West Grand Boulevard). Park expansion to Jefferson Avenue is a long-term objective of the Detroit Recreation Department; however, the timing of expansion and the development of the new park entrance will depend on the relocation of the Environmental Protection and Maintenance and Health Department facilities located at Twenty-third and Twenty-fourth Streets.

The development of a new park entrance plaza at Twenty-fourth Street is proposed. This development will include special paving, planting, seating, lighting, and a directional and informational signing kiosk. A new rail crossing will also be needed at Twenty-fourth Street. It has not yet been determined whether a grade separated crossing will be required; a signalized grade crossing may be possible.

Estimated Development Cost

The estimated cost of the development tasks included in the final phase of implementation for the West Riverfront bicycle/pedestrian pathway are shown in figure 5-3. The estimated development cost for this final phase is $429,540. The overall total final phase cost (including contingencies, general conditions, and professional fees) is $624,874.

Figure 5-3

FINAL PATHWAY IMPROVEMENTS: THIRD PRIORITY TASKS

	Qty/Unit		Unit Cost	Subtotal	Total
EASTERN ZONE					
None					
CENTRAL ZONE					
None					
WESTERN ZONE					
Jefferson Avenue/Twelfth to Twenty-first*					
Regrade viaduct to allow access from Twelfth				$20,000.00	
10' planted buffer to roadway (3,300') sod and trees				37,700.00	
Irrigation				5,000.00	
16' asphalt path (3,300')**	5,687 S.Y.	@	$ 10.00	58,670.00	
Lighting	37 Ea.	@	1,600.00	59,200.00	
10' buffer to rail yard (3,300') seeded				5,000.00	
Rail crossing (rubberized mat)	10 L.F.	@	360.00	3,600.00	
Signs	8 Ea.	@	75.00***	600.00	
Site preparation (20%)				37,954.00	$227,724.00
Jefferson Avenue/Twenty-first to Twenty-fourth					
16' asphalt path (1,000')	1,778 S.Y.	@	10.00	17,780.00	
Site preparation (20%)				3,556.00	21,336.00
Riverside Park Entrance at Twenty-fourth Street (30' x 40')					
Special paving	1,200 S.F.	@	8.50	10,200.00	
Kiosk and signing				3,500.00	
Planting				4,400.00	
Irrigation				3,000.00	
Benches	60 L.F.	@	20.00	1,200.00	
Lighting	2 Ea.	@	2,200.00	4,400.00	
Bike parking	10 Ea.	@	150.00	1,500.00	
Trash containers	2 Ea.	@	300.00	600.00	
Signalized rail grade crossing****				100,000.00	
Surface improvements (rubberized mat) 15' wide, 4 tracks	60 L.F.	@	360.00	21,600.00	
Site preparation (20%)				30,080.00	180,480.00
	ZONE TOTAL				429,540.00
INLAND LOOP					
None					

FINAL PHASE COST TOTALS

Development Costs	
Eastern Zone	$ 0.00
Central Zone	0.00
Western Zone	429,540.00
Inland Loop	0.00
	429,540.00
Contingencies (15%)	64,431.00
General Conditions (15%)	74,096.00
Professional Fees (10%)	56,807.00
TOTAL	$624,874.00

*Acquisition costs not included.
**6' concrete walkway for pedestrians increases cost to $86,170.00.
***Existing signs relocated.
****Grade separated crossing costs range from $250,000 (subsurface) to $500,000 (overhead).

TOTAL PROJECT COSTS

The estimated development costs for the three implementation phases which have been outlined above are summarized in figure 5-4. This figure also illustrates total development costs by sub-area and by zone.

The total estimated project cost for the West Riverfront bicycle/pedestrian pathway is $2,006,133. This cost will allow not only the development of a continuous bicycle/pedestrian route, but will also make it possible to develop a series of riverfront promenades and plazas which, when complete, will create a linear park system in the West Riverfront area.

Figure 5-4

DEVELOPMENT COSTS SUMMARY

Zone and Sub-area	First Priority Tasks (Option A)	Second Priority Tasks	Third Priority Tasks	Costs by Sub-area
Eastern Zone				
Hart Plaza	$ 7,800.00	$	$	$ 7,800.00
Lansdowne	300.00	4,704.00		5,004.00
Atwater Tunnel		32,501.00		32,501.00
Cobo Promenade	68,400.00	272,250.00		340,650.00
Bobio	8,760.00	10,968.00		19,728.00
Foot of Third		7,800.00		7,800.00
Third Street	5,112.00	66,857.00		71,969.00
Subtotal	90,732.00	395,080.00		485,812.00
Central Zone				
Jefferson Avenue	24,720.00	31,680.00		56,400.00
Entry to Eighth Street Easement	4,968.00	39,202.00		44,170.00
Eighth Street Easement		20,563.00		20,563.00
Eighth Street Riverwatch Plaza		32,988.00		32,988.00
Free Press Walkway	3,120.00	71,788.00		74,908.00
Twelfth Street Riverwatch	10,224.00	28,020.00		38,244.00
Twelfth Street	14,136.00	20,760.00		34,896.00
Twelfth Street Entry Node	1,200.00	31,368.00		32,568.00
Subtotal	58,368.00	276,369.00		334,737.00
Western Zone				
Jefferson Avenue/Twelfth to Eighteenth	33,439.00		227,724.00	261,771.00
Jefferson Avenue/Eighteenth to Twenty-first	608.00			
Jefferson Avenue/Twenty-first to West Grand Blvd.	2,923.00		21,336.00	24,259.00
Riverside Park Entry, West Grand Blvd.	23,563.00	19,020.00		42,583.00
Riverside Park Improvements	6,480.00	40,164.00		46,644.00
Riverside Park Entry, Twenty-fourth			180,480.00	180,480.00
Subtotal	67,013.00	59,184.00	429,540.00	555,737.00
Inland Loop	2,640.00	852.00		3,492.00
Total Development Costs by Phase	$218,753.00	$731,485.00	$429,540.00	
Contingencies (15%)	32,813.00	109,723.00	64,431.00	
	251,566.00	841,208.00	493,971.00	
General Conditions (15%)	37,735.00	126,181.00	74,096.00	
	288,301.00	967,389.00	568,067.00	
Professional Fees (10%)	28,830.00	96,739.00	56,807.00	
	$317,131.00 +	$1,064,128.00 +	$624,874.00	
		Total Project Cost		$2,006,133.00

Funding Assistance

Figure 5-5 provides summary descriptions of a number of funding assistance programs which are available to aid in the continued planning, design, and development of the West Riverfront bicycle/pedestrian pathway. This funding assistance includes both general programs for community and economic development, programs to aid in land acquisition, and the design and development of recreational facilities, and programs for the development and improvement of transportation facilities.

Local funds must also be committed to the development of the bicycle/pedestrian pathway. A number of City departments will participate in continued planning for the pathway and will contribute to its development and maintenance. These include the Recreation Department, the Planning Department, the Department of Transportation, the Community and Economic Development Department, and the Police Department.

Private assistance may also be available in implementing plans for the development of the West Riverfront bicycle/pedestrian pathway. For example, the Free Press has indicated their willingness to consider proposals for making additional land available for interim public recreational use on the riverfront. In addition, Riverfront West, Boblo, the Ambassador Bridge, and the railroads and industries located in the western zone of the study area may contribute to the development of the bicycle/pedestrian pathway by cooperating in easement negotiations, removing obstacles to pathway development, and improving the visual character of the area along the proposed route. The cooperation of these private interests can be encouraged by demonstrating a City commitment to implement the bicycle/pedestrian pathway concept and to provide the maintenance and supervision necessary to ensure that the route is an asset to the study area.

Local bicycle groups can also be encouraged to participate in the development of the bicycle/pedestrian route; while these groups will not contribute any direct financial assistance, they can provide design input, help to evaluate the route, and help to promote and monitor its use.

Figure 5-5

FEDERAL AND STATE FUNDING ASSISTANCE

Federal Aid-Highway Program

Agency:	U.S. Department of Transportation, Federal Highway Administration
Funding:	Total funding of $6.9 billion (FY 1979) including all transportation related projects. Section 217 of Title 23 authorizes $45 million per year and $2.5 million per state for the construction and improvement of bicycle facilities and pedestrian walkways; 80% federal share for planning; 70% federal share for construction.
Description:	For the planning, development, and improvement of highway projects including bicycle facilities and pedestrian walkways. Eligible projects include the development of bike paths, bike lanes, and pedestrian walkways (including right-of-way acquisition, grading, paving, landscaping, and lighting), traffic control devices, bicycle parking and shelters, railroad crossing improvements. Bicycle and pedestrian projects compete with other highway projects for funding.
Potential Application:	Roadway resurfacing, lane and crosswalk striping, landscaping, and pathway construction; rail crossings

Bicycle Grant Program, Surface Transportation Assistance Act of 1978, Section 141(c)

Agency:	U.S. Department of Transportation, Federal Highway Administration
Funding:	Proposed funding of $20 million annually for 1979-1982; $4 million appropriated in 1980; maximum 75% federal cost share.
Description:	For bikeway construction and non-construction projects enhancing the safety and use of bicycles. A wide range of projects are eligible including bike path and bike lane development, bike parking, bike racks for transit vehicles, drainage grate replacement, railroad crossing improvements, traffic control devices, curb ramps, route mapping and promotion, safety and education and training programs for cyclists and motorists.
Potential Application:	Full range of construction tasks; mapping and promotion

Unified Work Program for Transportation Planning Technical Assistance;
Mass Transit Grants

Agency:	U.S. Department of Transportation, Urban Mass Transportation Administration
Funding:	$2.9 billion (FY 1979)
Description:	All mass transit projects; funds can be used for bicycle demand studies and route planning. Construction of feeder routes to mass transit and bicycle parking at transit stations are eligible. Bicycle facilities must be included in the continuing transportation planning process (Unified Planning Work Program).
Potential Application:	Improvements in the vicinity of the DPM/skyway ramp. Commuter bicycle parking at the Arena garage.

Transportation Improvement Program (TIP)

Agency:	U.S. Department of Transportation, Urban Mass Transportation Administration
Funding:	$2.9 billion (FY 1979)
Description:	For transportation projects to be implemented in next three to five years. Bike paths, exclusive lanes, bicycle parking/storage, and other bicycle facilitation measures which increase the efficient use of existing transportation facilities through low-cost improvements are eligible. Bicycle facilities must be part of the TIP and the Transportation System Management (TSM) plan.
Potential Application:	Bike path construction, bicycle parking, signing, lane striping throughout route, but especially on West Jefferson Avenue.

Highway Safety Program

Agency:	U.S. Department of Transportation, National Highway Traffic Safety Administration
Funding:	$137 million (FY 1978) to states
Description:	Safety education for bicyclists and pedestrians; special enforcement to reduce bicycle related accidents; engineering studies to determine facility related causes of accidents and to determine counter measures; not for construction.
Potential Application:	Post-construction re-evaluation, if needed; education programs to promote bicycle interest and use.

Community Development Block Grant

Agency:	Department of Housing and Urban Development
Funding:	$3.75 billion (FY 1979)
Description:	Bikeway and other recreation projects are eligible as part of community development plans in low and moderate income neighborhoods.
Potential Application:	Hubbard-Richard area bike route improvements.

Urban Development Action Grant

Agency:	Department of Housing and Urban Development
Funding:	Variable amounts; matching grant
Description:	To alleviate physical and economic deterioration by encouraging neighborhood and economic development; private support for project and leveraging of private investment is a key criteria for eligibility. A full range of acquisition and development activities are eligible.
Potential Application:	Bicycle path, pedestrian walkway and streetscape improvements in the eastern zone of the study area as part of the overall Riverfront West grant package.

Public Works Grants and Loans

Agency:	Department of Commerce, Economic Development Administration
Funding:	$169 million
Description:	To assist in the construction of public facilities needed to initiate and encourage long-term economic growth in areas where economic growth is lagging. Public information and tourism and park development programs resulting in economic expansion are among the eligible projects.
Potential Application:	Bicycle/pedestrian pathway improvements in the eastern zone of the study area as part of the Riverfront West grant package.

Public Works Impact Program

Agency:	Department of Commerce, Economic Development Administration
Description:	Jobs created by public works projects in high unemployment areas. Bicycle and pedestrian facilities are eligible. Projects must begin construction within 90 days and be complete within one year.
Potential Application:	General development of bicycle/pedestrian pathway.

Land and Water Conservation Fund

Agency:	Department of the Interior, Heritage Recreation and Conservation Service
Funding:	$900 million per year proposed for 1980-9; 50/50 match
Description:	Design, planning, and construction of all outdoor recreation facilities. Land acquisition included. Facilities must remain in recreational use permanently. Projects must be included in the State Comprehensive Outdoor Recreation Plan (SCORP) to be eligible.
Potential Application:	Cobo area promenade, Riverside Park improvements, Twelfth Street riverwatch.

Urban Park Recreation and Recovery Program

Agency:	Department of the Interior, Heritage Recreation and Conservation Service
Funding:	70% federal share
Description:	Rehabilitation of park landscapes, buildings, and support facilities; innovative grants for improved recreational opportunities. No new acquisition; existing facilities only.
Potential Application:	Riverside Park improvements including riverwatch, bike paths, park entrance, rennovation of restroom building.

National Foundation for Arts and Humanities, various programs

Agency:	National Endowment for the Arts
Funding:	$120 million (FY 1979); maximum grant, $50,000; 50/50 match
Description:	To promote excellence in the design of the built environment; environmental education and public awareness of environmental values; design and non-construction projects.
Potential Application:	Plaza/promenade design; route informational/educational signing; route maps and logo; promotion and publicity.

Coastal Zone Management

Agency:	Department of the Interior, National Oceanic and Atmospheric Administration
Description:	Design, engineering and feasibility analysis studies relating to the coastal zone including, but not limited to, recreational access; low cost construction projects are also funded.
Potential Application:	Detailed design and engineering; route signing is a possible low-cost project.

Urban Fisheries Program

Agency:	Michigan Department of Natural Resources, Division of Fisheries
Description:	To improve public acess to and the development of fishing sites.
Potential Application:	Improvements to Eighth Street easement, Free Press riverfront walkway, and development of Twelfth Street path and riverwatch.

Non-motorized Facilities (Section 10k of State Transportation Act of 1978)

Agency:	Michigan Department of Transportation
Funding:	1% of all motor vehicle funds
Description:	Not less than 1% of all highway development and improvement funds spent in each locality over a five-year period are to be devoted to the facilitation of non-motorized transportation. Bicycle and pedestrian improvements are eligible. Other non-motorized facility projects (pedestrian bridges crossing freeways) have taken priority over bicycle-related development.
Potential Application:	General development of route.

Kammer Recreational Land Trust Fund

Agency:	Department of Natural Resources, Office of Budget and Federal Aid
Funding:	$2.5 million per year (maximum)
Description:	Acquisition of lands or interests in lands (e.g., easements) which have urban recreational potential or which provide access to or use of the Great Lakes, inland lakes, rivers, or streams or which promote innovative or educational recreation opportunities are eligible.
Potential Application:	Railroad area easement acquisition may be eligible, especially if an overlook providing educational background on rail/ferry operation and Great Lakes shipping is included.

Project Status

The problems, issues and uncertainties which must be resolved in developing a continuous bicycle/pedestrian route in the West Riverfront area are numerous. The variety of land use and circulation conditions in the study area, the dynamic nature of redevelopment planning, and the number of City departments, other public agencies, and private land owners who must cooperate in continued planning all contribute to the complexity of the problems which must be resolved.

This study of alternatives for the West Riverfront bicycle/pedestrian route has established a framework for addressing this set of issues and problems and has proposed a recommended route alignment and preferred design treatment for each route segment. In addition, the study has suggested a number of design and management alternatives which will allow the implementation of the pathway system to begin in the short-term. These alternatives take into account the competing demands which exist for the use of the river edge and recognize that optimal design solutions cannot always be achieved immediately. As a result, these alternatives provide the flexibility needed to allow decision-makers to respond to the existing problems and changing conditions which will influence route development.

The timing and construction period requirements of related development projects, such as Riverfront West and the Downtown People Mover system, and competing demands for the use of the river edge will clearly affect the phasing of route implementation. Some limitations on continuous bicycle and pedestrian access may have to be accepted in the short-term. If a continuing commitment to implement the pathway linkage concept is made, however, it will be possible to reduce these limitations over time and to achieve preferred design solutions. By initiating route development where opportunities now exist, this committment can be demonstrated and the gradual process of working toward optimal route development can begin.

NOTES

1. A crosswalk must be provided on Civic Center Drive near the Lansdowne site to facilitate access to Hart Plaza.

2. It may also be possible to utilize old Jefferson Avenue (which is no longer in use) to provide a western pathway continuation from Third Street to the Eighth Street easement. It is anticipated, however, that if the use of this alternate path is allowed, it will only be permitted for a relatively short period of time, until construction begins at the Riverfront West hotel/retail site. The short-term pathway implementation strategy, therefore, includes the development of a temporary path along Third Street and the development of the pathway segment adjacent to Jefferson Avenue (from Third to Eighth Streets) which will be incorporated into the long-term route.

3. While it may be possible to continue the Class III bike route designation (proposed as a "fallback" option in the Civic Center area) on Jefferson Avenue between Third and Eighth, it is likely that on-street bike use would frequently be restricted because of traffic volumes in the vicinity of the Arena garage. During these periods cyclists would be required to walk their bikes along the sidewalk on the north side of Jefferson.

This on-street bike use strategy may severely limit the accessibility of the eastern zone of the study area. This limitation on bicycle access may have a significant adverse affect on the use levels on other portions of the West Riverfront pathway.

4. This will require a minimum 10' interim easement from the developers of Riverfront West.

5. The installation of rubberized mat crossings is recommended at the spurs which are still actively used. Less expense asphalt filling is suggested at the three remaining rail spurs; it would be preferable, however, to request the removal of these unused tracks.

6. General construction conditions refers to the general requirements which are included in all City of Detroit contract documents. These requirements include, for example, traffic control during the construction period, contractors insurance, temporary lighting, and clean-up.

7. Along the Free Press riverfront walkway, a 14' pedestrian use zone is recommended to provide adequate space for fishermen and through pedestrian movement.

8. It is proposed that these trees be planted on the Free Press property at the fence line.

9. Six feet are already available on the south side of Jefferson Avenue within the right-of-way.

NOAA COASTAL SERVICES CENTER LIBRARY
3 6668 00001 4375