

CBD Loop Arterial
Des Moines, Polk County, Iowa

ADMINISTRATIVE ACTION
DRAFT
ENVIRONMENTAL IMPACT STATEMENT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
IOWA DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

AND

CITY OF DES MOINES, IOWA

SUBMITTED PURSUANT TO 42 U.S.C. 4332 (2) (C) 23 U.S.C. 128 (a)
49 U.S.C. 1653(f) and 16 U.S.C. 470(f)

ABSTRACT - THIS PROJECT INVOLVES THE CONSTRUCTION OF A FOUR- TO SIX-LANE, DIVIDED HIGHWAY FROM THE JUNCTION OF HARDING ROAD WITH INTERSTATE 235 TO U.S. HIGHWAYS 65 AND 69 AT SCOTT AVENUE. THE FOLLOWING PERSONS MAY BE CONTACTED FOR ADDITIONAL INFORMATION CONCERNING THIS DOCUMENT:

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Comments on this Draft EIS are due by July 5, 1983, and should be sent to Mr. James A. Thompson at the above address.

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FOR THE DIVISION ADMINISTRATOR
FEDERAL HIGHWAY ADMINISTRATION

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DRAFT ENVIRONMENTAL STATEMENT
CBD LOOP ARTERIAL IN
DES MOINES, POLK COUNTY, IOWA

SECTION 1

SUMMARY OF STATEMENT

DESCRIPTION OF ACTION

This project pertains to the construction of a four- to six-lane divided highway. The project has two major segments, a north-south segment and an east-west segment. The north-south segment would begin at the existing Harding Road and 19th Street overpasses of Interstate 235 and extend along the Harding Road corridor to Fleur Drive (approximately 1.5 miles). The east-west segment would intersect with the north-south segment near the Raccoon River and proceed to the east along the existing corridors of Market Street, Elm Street, Raccoon Street and Scott Avenue (approximately 2.9 miles) to the end of the project in the vicinity of S.E. 14th Street (U.S. Highways 65 and 69). The project also includes connections to Fleur Drive, 15th Street, Indianola Avenue and E. 15th Street.

ACTIONS REQUIRED BY OTHER FEDERAL AGENCIES

Section 404 Permits from the U.S. Army Corps of Engineers will be required for two crossings of the Raccoon River, one crossing of the Des Moines River and one crossing of a wetland.

ALTERNATES

Two major alternates in addition to the No Action alternate are under consideration. These alternates are very similar throughout the majority of the alignment. However, they differ considerably in a .6 mile segment. This segment is located in the western part of the

project near the junction of the north-south segment and the east-west segment. In this area, Alternate A proceeds along a northerly route and passes through a commercial district. Alternate B proceeds along a southerly route which passes through vacant land and the flood plain of the Raccoon River.

Each of these alternates has a subalternate variation at its intersection with Ingersoll Avenue. Subalternates 1A and 1B would have an interchange at this point, while Subalternates 2A and 2B would have an intersection.

PROBABLE ENVIRONMENTAL IMPACTS

Major environmental impacts which would result from this proposed project include:

- The displacement of from 463 to 545 people.
- The displacement of from 67 to 73 single-family residences and 120 to 159 multi-family housing units.
- The displacement of four churches.
- The displacement of from 56 to 71 businesses, employing from 894 to 1,038 individuals.
- The displacement of from four to six structures considered eligible for the National Register of Historic Places and several other structures that contribute to the significance of a National Register Historic District.
- The taking of small amounts of land from two to three publically owned parks and one privately owned, publically used park.
- Increased noise levels and highway related air pollution near the project.
- Intrusion upon the facilities and water storage areas of the Des Moines Water Works.
- Noise, air pollution, street closures and utility disruptions during construction.

Benefits to be derived from the project include:

- Reduced traffic congestion on many streets in the central city area.
- Reduced traffic accidents.
- Savings in travel time and fuel consumption.
- Improved accessibility within many parts of the central city area.
- Facilitates city land-use planning that is aimed at revitalizing the industrial and commercial areas of the central city.
- Supports ongoing revitalization of the CBD by providing a southern bypass around downtown area.

Areas of controversy and public concerns that were expressed during the development of the project have included: impacts to the Sherman Hill Historic District; displacement of residents; noise impacts to residential areas; impacts to established neighborhoods; displacement of churches; displacement of small business concerns; and impacts to park and recreation areas.

REVIEWING AGENCIES

A copy of this Draft Environmental Statement has been sent to the following agencies and individuals for review and comment.

Federal Agencies:

Advisory Council on Historic Preservation
Army Corps of Engineers
Coast Guard National Trust for Historic Preservation
Department of Energy
Department of Housing and Urban Development
Department of Agriculture
Department of Interior
Department of Health and Human Services
Environmental Protection Agency
Federal Highway Administration
Federal Aviation Administration
Federal Emergency Management Agency
Federal Railroad Administration
Urban Mass Transit Administration

State Agencies:

Office of Planning and Programming, which sends to:
Iowa Development Commission
Iowa Department of Soil Conservation
Iowa Conservation Commission
Iowa Natural Resources Council
Iowa Department of Environmental Quality
Iowa State Historical Society
State Historic Preservation Officer
Office of State Archaeologist
Iowa Department of Agriculture
Iowa Arts Council
Iowa Geological Survey
State Capitol Planning Commission

Local Agencies:

Mayor of Des Moines
Des Moines Public Works Director
Des Moines City Council
Des Moines Water Works
Des Moines School Board
Des Moines Metropolitan Transit Authority
Polk County Board of Supervisors
Polk County Conservation Commission
Polk County Engineer
Polk County Physical Planning Department
CIRALG Regional Planning Commission
Woodland-Willkie Neighborhood Priority Board
Southeast Neighborhood Priority Board
Pioneer-Columbus Neighborhood Priority Board

Private Organizations:

Community Action Research Group
Polk County Historical Society
Willkie House
Spanish Speaking People's Commission
Native American Project on Alcoholism
Gateway Opportunity Center
Proteus
Sherman Hill Neighborhood Association, Inc.
Chamber of Commerce of Greater Des Moines
Iowa Confederation of Environmental Organizations
ACORN
Citizens for Community Improvement
OEDP
National Association for the Advancement of Colored People

This Draft Statement was made available to the Environmental Protection Agency on May 6, 1983.

The following persons can be contacted for additional information concerning this proposed project and environmental impact statement.

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SECTION 2

PURPOSE OF AND NEED FOR ACTION

LOCATION AND DESCRIPTION OF THE PROPOSED ACTION

The city of Des Moines, the Capital of the state of Iowa, is located in south-central Iowa, as shown in Figure 2.1. The corridor of the proposed action and its relationship to the existing major transportation network is indicated in Figure 2.2

This project pertains to the construction of a four- to six-lane divided highway. The project has two major segments, a north-south segment and an east-west segment. The north-south segment would begin at the existing Harding Road and 19th Street overpasses of Interstate 235 and extend along the Harding Road corridor (approximately 1.5 miles). The east-west segment would intersect with the north-south segment near the Raccoon River and proceed to the east along the existing corridors of Market Street, Elm Street, Raccoon Street and Scott Avenue (approximately 2.9 miles) to the end of the project in the vicinity of S.E. 14th Street (U.S. Highways 65 and 69). The project also includes connections to Fleur Drive, 15th Street, Indianola Avenue and E. 15th Street.

METROPOLITAN TRANSPORTATION PLANNING

Segments of the proposed action have been part of the transportation plan for the city of Des Moines for a number of years. Planning reports which have included segments of this alignment are: "Major Street Report," for the City Plan and Zoning Commission, Des Moines, Iowa, by Harland Bartholomew and Associates, December, 1939; "Comprehensive Plan," Des Moines City Plan and Zoning Commission, November, 1961; and "1980 General Plan," Des Moines City Plan and Zoning Commission, 1963. The general corridor for the highway is also recognized in the 1990/2000

Land Use Plan (Proposed), Des Moines City Plan and Zoning Commission, July, 1978. Figures 2.3, 2.4 and 2.5 from the 1939, 1961 and 1963 reports, respectively, indicate earlier provisions for the proposed action. The successor to the above was the "Revised Initial 1990 Des Moines Urbanized Area Transportation Plan," Central Iowa Regional Association of Local Governments (CIRALG), May, 1974. This report was funded by federal grants from the Department of Housing and Urban Development under Section 701 of the Housing Act of 1954 as amended and from the Urban Mass Transit Administration under the provisions of Section IX of the Urban Mass Transportation Act of 1964.

The map in Figure 2.6, "Proposed Improvements of the Revised Initial 1990 Des Moines Urbanized Area Transportation Plan," Central Iowa Regional Association of Local Governments, May, 1974, as amended April 18, 1977, includes the proposed action and its major connections to existing streets and is part of the adopted urban transportation plan.

PURPOSE OF THE PROPOSED ACTION

One purpose of the proposed action is to carry east-west through traffic around, rather than through, the central business district (CBD) of the city, thus reducing traffic congestion and conflicts with pedestrians and vehicles needing access to this area. The project is also needed to provide improved accessibility to the Des Moines Airport from Interstate 235 and other areas of the city. It will also improve traffic flow between the downtown areas and the rapidly developing southeastern parts of the city. The project is also needed to relieve several major areas of traffic congestion: at the intersection of Fleur Drive and Locust Street; at the intersection of S.E. 14th Street and Maury Street; and along S.E. 14th Street.

Another purpose of the proposed action is to provide better traffic service and access to the central city industrial areas. These areas include: the area immediately south of the central business district on the east side of the Des Moines River, extending to Raccoon Street; the area south and southwest of the central business district on the west side of the Des Moines River and extending to the Raccoon River; and the area east of S.E. 14th Street.

The proposed action at its northern terminus would connect to two one-way roadways that currently overpass Interstate Route 235 (Harding Road and 19th Street) and intersects with Cottage Grove Avenue and School Street. The latter two roadways are connected to Interstate 235 by exit or entrance ramps (see Figure 2.2). It would then proceed southerly and then southeasterly to its easterly terminus at the joint routes of U.S. Highways 65 and 69 (S.E. 14th Street). The proposed action would connect to numerous major elements of the existing street system including School Street, Cottage Grove Avenue, Ingersoll Avenue, Fleur Drive, Grand Avenue, Locust Street, Mulberry Street, 15th Street, S.W. 16th Street, S.W. 14th Street, S.W. 11th Street, S.W. Ninth Street, S.W. Eighth Street, S.W. Fifth Street, S.W. Third Street, S.W. Second Street, S.W. First Street, Indianola Avenue, S.E. Fourth Street, S.E. Sixth Street, S.E. Ninth Street, S.E. 14th Street, E. 14th Street, E. 15th Street, S.E. 15th Street, E. Court Avenue, Scott Avenue and Maury Street.

NEED FOR THE PROPOSED ACTION

Traffic Congestion

Existing roadways are currently congested in several areas of the city in the vicinity of the proposed action. One such area is near the Des Moines Technical High School in the vicinity of Fleur Drive, Locust Street, Grand Avenue, 18th Street and 19th Street. Southbound traffic on Harding Road is primarily traveling to the Des Moines Airport or other locations on Fleur Drive, to the central business district or to points east or south of the CBD. This traffic currently travels south to Ingersoll Avenue then via Ingersoll Avenue, 19th Street and Grand Avenue to 18th Street, at which point southbound Fleur Drive traffic turns south and eastbound traffic proceeds east via Locust Street and other streets in the CBD. Figure 2.7 indicates these traffic movements from southbound Harding Road that are destined to Fleur Drive, the CBD and areas east of the CBD, including S.E. 14th Street. It likewise indicates the return routings for such traffic.

Other areas of traffic congestion in the project area that this project would improve include: the intersection of Indianola Avenue

with S.W. Seventh Street and S.E. First Street, the intersection of S.E. 14th Street and Maury Street, and streets within the CBD. These are discussed in more detail in the following paragraphs.

The Indianola Connection is predicted to reduce traffic volumes on S.W. Seventh Street, S.E. First Street and that part of S.W. First Street that lies north of the Raccoon River. This should greatly alleviate the traffic congestion in the vicinity of Indianola Avenue and improve traffic flow between the CBD and the rapidly developing southeast areas of the city.

The splitting of portions of E. 14th and S.E. 14th Streets into two, one-way roadways, via the extension of E. 15th Street, from the Des Moines River to E. Court Avenue will reduce traffic congestion at the intersection of S.E. 14th and Maury Streets, as well as along S.E. 14th Street itself. The intersection has been the scene of 67 accidents in the three-year period of 1979 through 1981, and more accidents can be expected, with increases in traffic volumes, if no improvements are made in this area.

There is considerable traffic congestion in the CBD due to both heavy vehicular and pedestrian traffic. Future plans for this area call for increased business and residential development in these areas, with an emphasis on pedestrian usage. The proposed CBD Loop will reduce the through traffic on many of the east-west streets in the CBD and thus improve pedestrian usage.

On-site investigations in the CBD area in September, 1982, indicated that existing traffic levels of service vary from Level D to Level F (see Figure 2.8). Figures 2.9a and 2.9b indicate and describe the degree of traffic congestion for Level of Service Indices A, B, C, D, E and F whereby Level A is the highest and Level F is the lowest level of service. Urban transportation facilities are normally designed to operate at Level C or better, while streets operating at Level D or lower are considered deficient. The various roadways indicated in Figure 2.8 are currently operating at Levels of Service D, E or F and

are considered inadequate for the existing traffic volumes under current conditions of street widths, parking and traffic control measures.

Current average daily traffic volumes are presented in Table A-1 of Appendix A for numerous locations in the city (Figures A-1 and A-2, Appendix A). Projected average daily traffic volumes for the year 2000 are also indicated in Table A-1 for each of the various alternates, including the No Action (or status quo) alternate. These alternatives are described in Section 3 of this report.

Community Planning

Traffic projections for the various alternates of the proposed action were based on various elements of community planning, including land-use trends, anticipated employment factors, economic development forecasts for commercial and industrial areas and public facilities needs. Input from the surrounding communities represented in the metropolitan planning organization, Central Iowa Regional Association of Local Governments (CIRALG), was also considered.

The CBD is currently undergoing extensive changes through redevelopment projects, supported by both public and private funds. The heaviest recent redevelopment has been within an area generally bounded by Keosauqua Way, Ninth Street, Mulberry Street, Court Avenue and Second Street to the west of the Des Moines River. Redevelopment projects have included demolition of buildings and construction of a new hotel, civic center, office buildings, a senior citizens' residence, a rental housing complex, parking ramps and a network of second-story skywalks interconnecting 19 city blocks (refer to Figure 4.5 in Section 4 for locations). Total full-time employment of employers located within this overall area was approximately 16,350 in 1980.

There has also been some recent redevelopment of the downtown area east of the Des Moines River. This area extends from the Des Moines River to the state capitol grounds between Court Avenue and Des Moines Street. The long-range planning for this area calls for considerable redevelopment. The future plans include development of a high-density residential area adjacent to the river, the construction of a new state historical building, increased commercial development and controlled industrial development.

Another area, generally west of the core area of the CBD, has been proposed for redevelopment. This area is bounded by Eighth Street on the east, High Street and Ingersoll Avenue on the north, 19th Street on the west, and a combination of Grand Avenue, 18th Street and the Des Moines Union Railway Company on the south. This area is partially commercial and industrial at present, although the future land use is proposed to be primarily general commercial, with some areas of office and retail and a three-block core area of intense office and retail use. Employment within this area was approximately 7,300 persons in 1980.

Future plans for these three areas include the expansion of commercial, retail and office use, which is expected to result in increased employment in the future. Maps showing existing land-use and proposed future land-use plans are included in Section 4 of this document.

The proposed action is needed to serve as a bypass of the CBD in order to reduce existing congestion and to be consistent with future plans for this area.

Traffic Accidents

Figure 2.10 indicates the locations of intersections in the project area where ten or more accidents occurred in 1979. The 1979 data indicates that numerous accidents occurred in the following areas:

1. Corridor of Harding Road-19th Street-18th Street-Fleur Drive from I-235 to Locust Street.
2. CBD, particularly west of the Des Moines River.
3. E. 14th Street-E. 15th Street and S.E. 14th Street corridor from I-235 to Hartford Avenue.

The data in Table 2.1 and Table 2.2 further indicate the accident trends for the years 1979, 1980 and 1981 for this area of the city. There was a general decrease in numbers of accidents from 1979 to 1981 (Table 2.2), which is in line with total yearly accident statistics for Des Moines. The total numbers of accidents for the years 1979, 1980 and 1981 were 9,078, 7,803 and 6,659, respectively. These figures do not include accidents in parking lots or on private properties. The number of fatalities and types of accidents in which they occurred during these three years are presented in Table 2.1.

TABLE 2.1
FATALITY ACCIDENTS IN DES MOINES DURING 1979, 1980 AND 1981

Type of Accident	Number of Fatalities		
	1979	1980	1981
Driver, Motorcycle or Moped.	6	4	5
Driver, Automobile.	5	14	11
Passenger, Motorcycle.	1	2	--
Passenger, Automobile.	7	6	4
Pedestrian.	8	6	3
Bicycle.	--	1	1
TOTAL FATALITIES	27	33	24

--None reported.

In 1979 one motorcycle passenger was killed in an accident on the S.E. 14th Street viaduct and an automobile passenger was killed in an accident at the intersection of S.E. 14th and Maury Streets, both within the vicinity of the proposed action. A motorcycle driver was killed at the intersection of E. Court Avenue and Johnson Court in 1980. In 1981, one automobile driver was killed at the intersection of Indianola Avenue and Hillside Avenue.

No details are available regarding individual accidents; and therefore, no specific conclusions can be made regarding accident causes. Data also excludes personal injury statistics. However, the accident data indicates that the E. 14th Street-E. 15th Street-S.E. 14th Street corridor has been the scene of numerous accidents. When this data is considered in combination with the existing and projected high traffic volumes in this area, the necessity for some type of roadway improvement is apparent.

TABLE 2.2
 INTERSECTION ACCIDENTS
 FOR YEARS 1979, 1980 AND 1981

Intersection		Number of Accidents		
Street	Street	1979	1980	1981
<u>Harding Road-19th Street-18th Street-Fleur Drive Corridor</u>				
I-235	Cottage Grove	17	--	11
I-235	Harding Road	15	--	--
Cottage Grove	Harding Road	24	26	12
Cottage Grove	Crocker/19th Street	11	13	--
Harding Road	Woodland Avenue	11	10	--
Ingersoll Avenue	Harding Road	22	11	--
Ingersoll Avenue	19th Street	10	--	--
Ingersoll Avenue	17th Street	11	--	--
Grand Avenue	19th Street	23	15	--
Fleur Drive	Grand/Locust Street	20	25	20
<u>Central Business District and Vicinity</u>				
Grand Avenue	17th Street	10	11	10
Grand Avenue	13th Street	13	--	--
Grand Avenue	12th Street	11	12	--
Grand Avenue	10th Street	--	16	12
Grand Avenue	Ninth Street	18	19	13
Grand Avenue	Eighth Street	17	15	13
Grand Avenue	Seventh Street	15	12	14
Grand Avenue	Sixth Street	17	17	10
Grand Avenue	Fifth Street	10	--	10
Grand Avenue	Fourth Street	10	--	--
Grand Avenue	Third Street	11	12	--
Grand Avenue	Second Avenue	26	17	--
Grand Avenue	E. Sixth Street	17	--	--
Grand Avenue	E. Ninth Street	--	--	12
Grand Avenue	E. 12th Street	10	--	--
Locust Street	13th Street	10	11	12
Locust Street	11th Street	--	12	--
Locust Street	10th Street	21	--	14
Locust Street	Ninth Street	18	18	20
Locust Street	Eighth Street	21	--	--
Locust Street	Seventh Street	--	--	10
Locust Street	Sixth Street	10	--	16
Locust Street	Fifth Street	11	12	--
Locust Street	Third Street	20	18	--

TABLE 2.2
 INTERSECTION ACCIDENTS
 FOR YEARS 1979, 1980 AND 1981
 (Continued)

Intersection		Number of Accidents		
Street	Street	1979	1980	1981
<u>Central Business District and Vicinity (Continued)</u>				
Locust Street	Second Avenue	10	10	11
Locust Street	E. Sixth Street	13	--	--
Walnut Street	Ninth Street	12	--	10
Walnut Street	Eighth Street	--	11	--
Walnut Street	Second Street	13	--	--
Mulberry Street	Ninth Street	--	13	--
Mulberry Street	Eighth Street	20	16	14
Mulberry Street	Seventh Street	--	12	--
Mulberry Street	Sixth Street	11	10	--
Court Avenue	Second Avenue	--	--	11
Court Avenue	Riverside/First Street	10	--	16
Tuttle Street	S.W. Ninth Street	14	--	--
S.W. Seventh Street	Clifton/Indianola Ave.	--	10(F)	--
Indianola Avenue	Hillside Avenue	--	--	-(F)
<u>E. 14th Street-E. 15th Street-S.E. 14th Street Corridor</u>				
Grand Avenue	E. 14th Street	29	38(4)	29(7)
Grand Avenue	E. 15th Street	48(3)	35(6)	31(5)
Walnut Street	E. 14th Street	14	17	--
Walnut Street	E. 15th Street	15	21	19
E. Court Avenue	E. 14th Street	11	--	19
E. Court Avenue	Johnson Ct./15th St.	17	-(F)	--
S.E. 14th Street	Viaduct	(F)	--	--
S.E. 14th Street	Maury Street	32(F)	19	16

F = Fatality
 () = Rank in Top 10 of Year
 -- = Indicates Less Than 10 Accidents; Number Not Reported or Known

The proposed action includes improvement of portions of E. 14th and E. 15th Streets and S.E. 14th Street and the extension of E. 15th Street. These improvements are expected to improve safety by separating northbound and southbound traffic onto separate roadways and will be particularly beneficial in reducing traffic congestion via separate intersections at Maury Street.

The proposed action will relieve traffic congestion in the Harding Road-19th Street-18th Street-Fleur Drive area and thus improve safety. Through traffic will also be allowed to bypass the CBD via the proposed action, thus reducing traffic volumes in the CBD and reducing potential conflicts between vehicular and pedestrian traffic.

Interface of Proposed Action With Air, Rail and Transit Facilities

Certain alternatives of the proposed action will provide improved access to industrial areas south of the CBD. Many existing industries in this area are highly dependent on highway transportation and are also served by railroad trackage. New automobiles are currently transported via railroads and are unloaded, stored and then delivered via highways to metropolitan automobile dealers. This facility is located approximately one-fourth mile south of Market Street and west of the Des Moines Union Railway Company's Slimmy Yard (approximately 0.3 mile west of S.W. Ninth Street). Other industries including lumber yards, beverage distributors and grocery warehouses also receive materials or goods via railroads and distribute via the highway system.

The Des Moines Metropolitan Transit Authority (MTA) operates from a 6.5-acre complex located at 1100 MTA Lane, which is approximately 0.4 mile south of Market Street and one-eighth mile west of S.W. Ninth Street. This city-owned and operated facility includes a garage storage area, administration and maintenance areas, and employee parking area. The MTA operates two Monday through Friday bus routes and nine Monday through Saturday routes, in addition to Saturday and Sunday Cultural Circuit route. The proximity of the MTA complex to the proposed action is expected to enhance its operations. Projected traffic volumes indicated in Appendix A, Table A-1, for the various alternates include transit system traffic.

The Des Moines Municipal Airport is located west of Fleur Drive between Army Post Road and McKinley Avenue (see Figure 2.2). Fleur Drive serves as the principal route from the airport to the center and northern half of the community. The proposed action will connect to Fleur Drive approximately 2.9 miles north of the airport entrance and will provide improved accessibility from that point to the northern, western and eastern areas of the community, including the CBD and adjacent industrial areas.

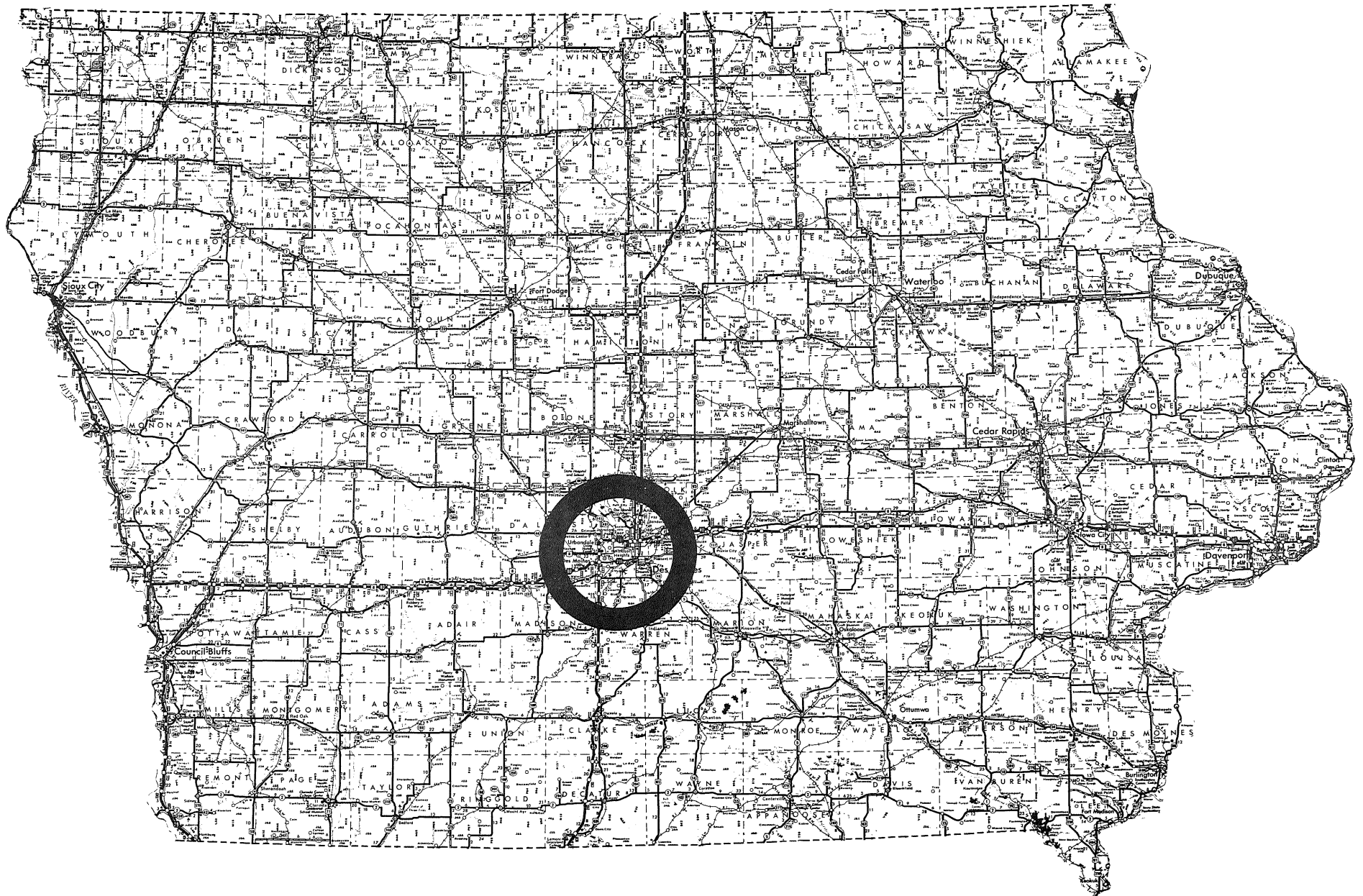
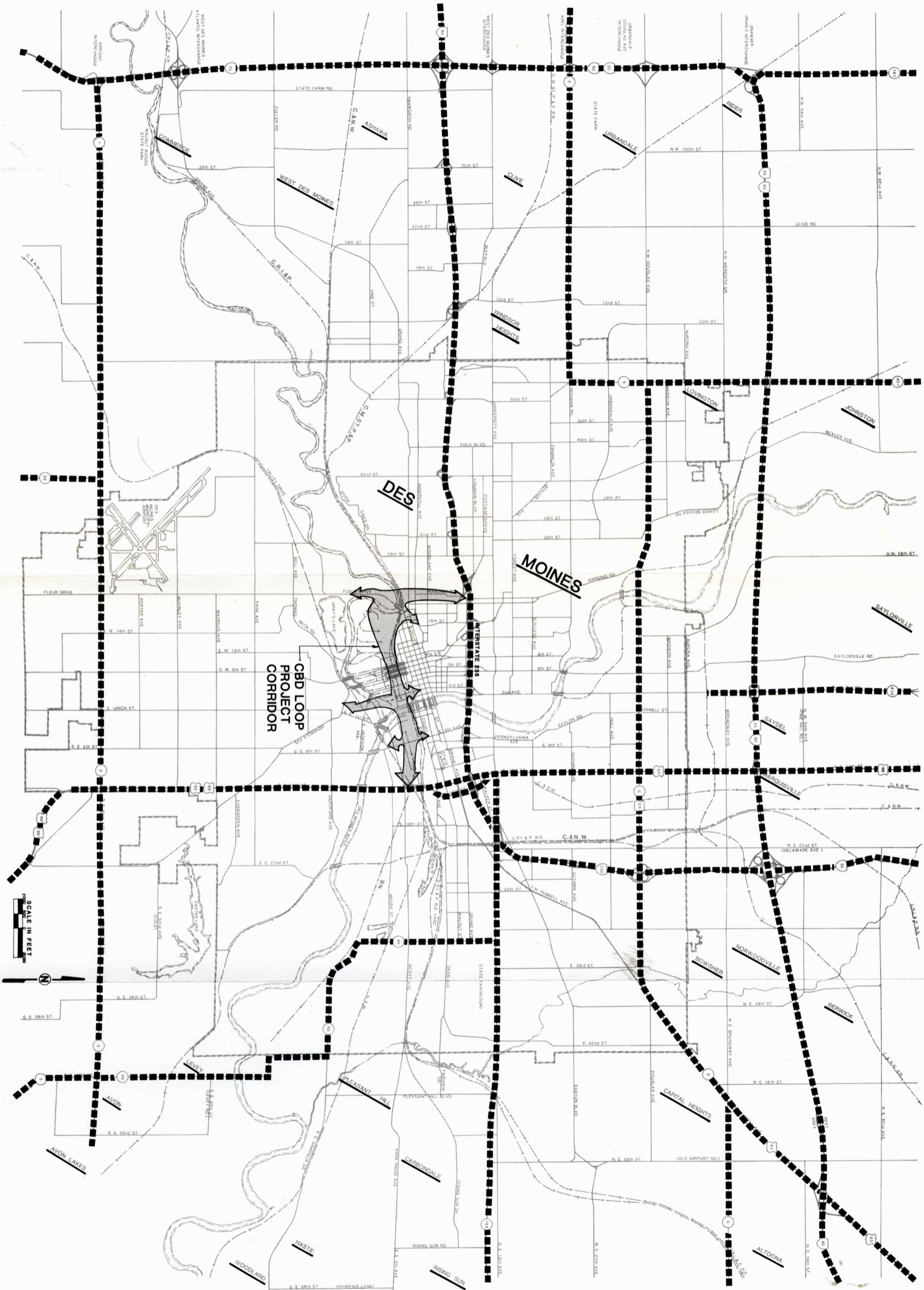


FIGURE 2.1 LOCATION OF DES MOINES WITHIN IOWA

FIGURE 2.2 MAJOR TRANSPORTION ARTERIES IN THE DES MOINES AREA & ADJACENT TO THE PROJECT CORRIDOR



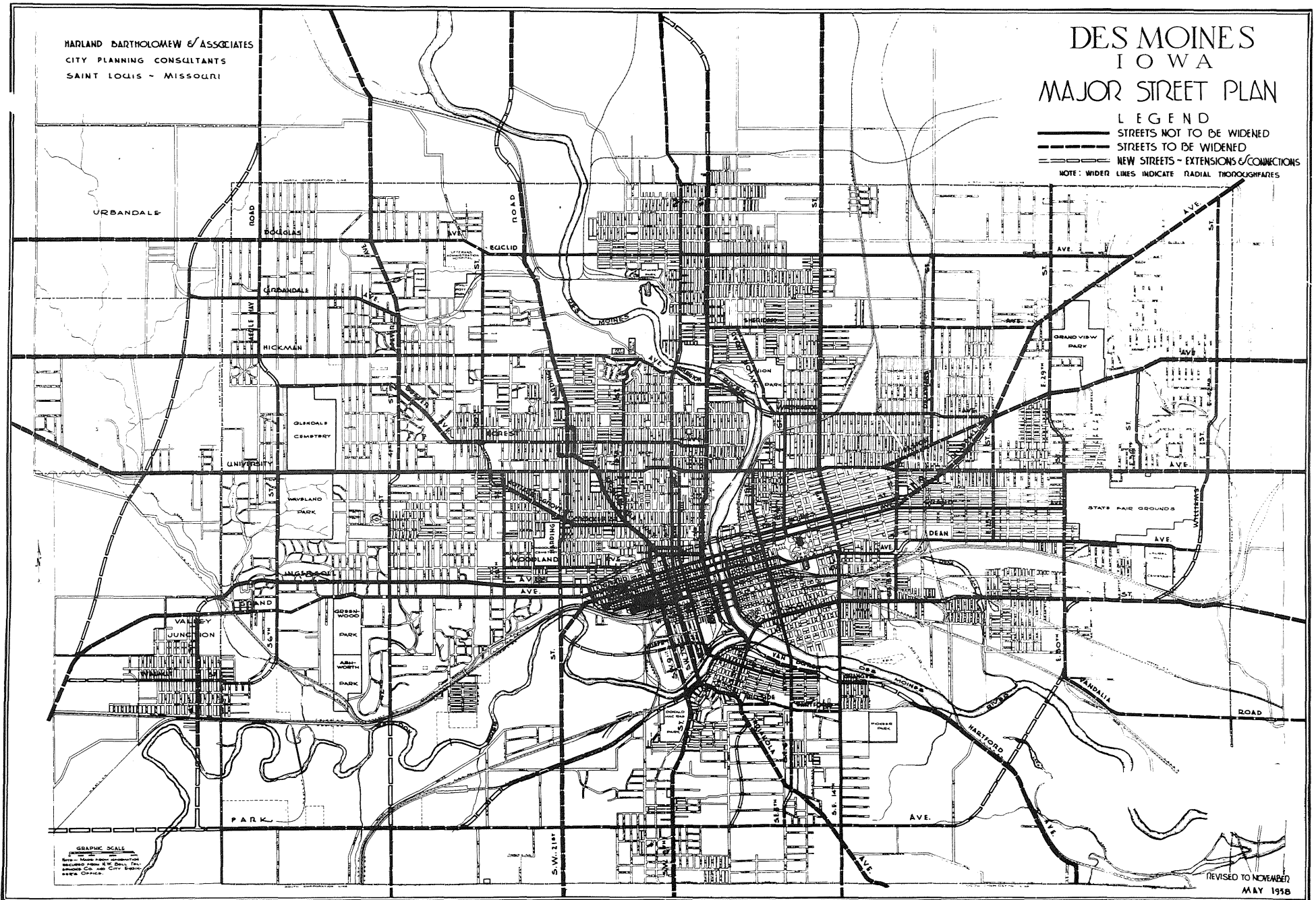


PLATE NUMBER 4

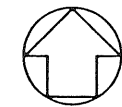
FIGURE 2.3 MAJOR STREET PLAN
(FROM 1939 TRANSPORTATION REPORT)



PRELIMINARY 1980 MAJOR STREETS PLAN

CENTRAL AREA

- | | |
|----------------------|-----------------------------|
| EXISTING | FREEWAY |
| EXPRESSWAY | PRIMARY THOROUGHFARE |
| THOROUGHFARE | PARKWAY |
| PROPOSED | FREEWAY |
| EXPRESSWAY | PRIMARY THOROUGHFARE |
| THOROUGHFARE | PARKWAY |
| CBD CORE AREA | |

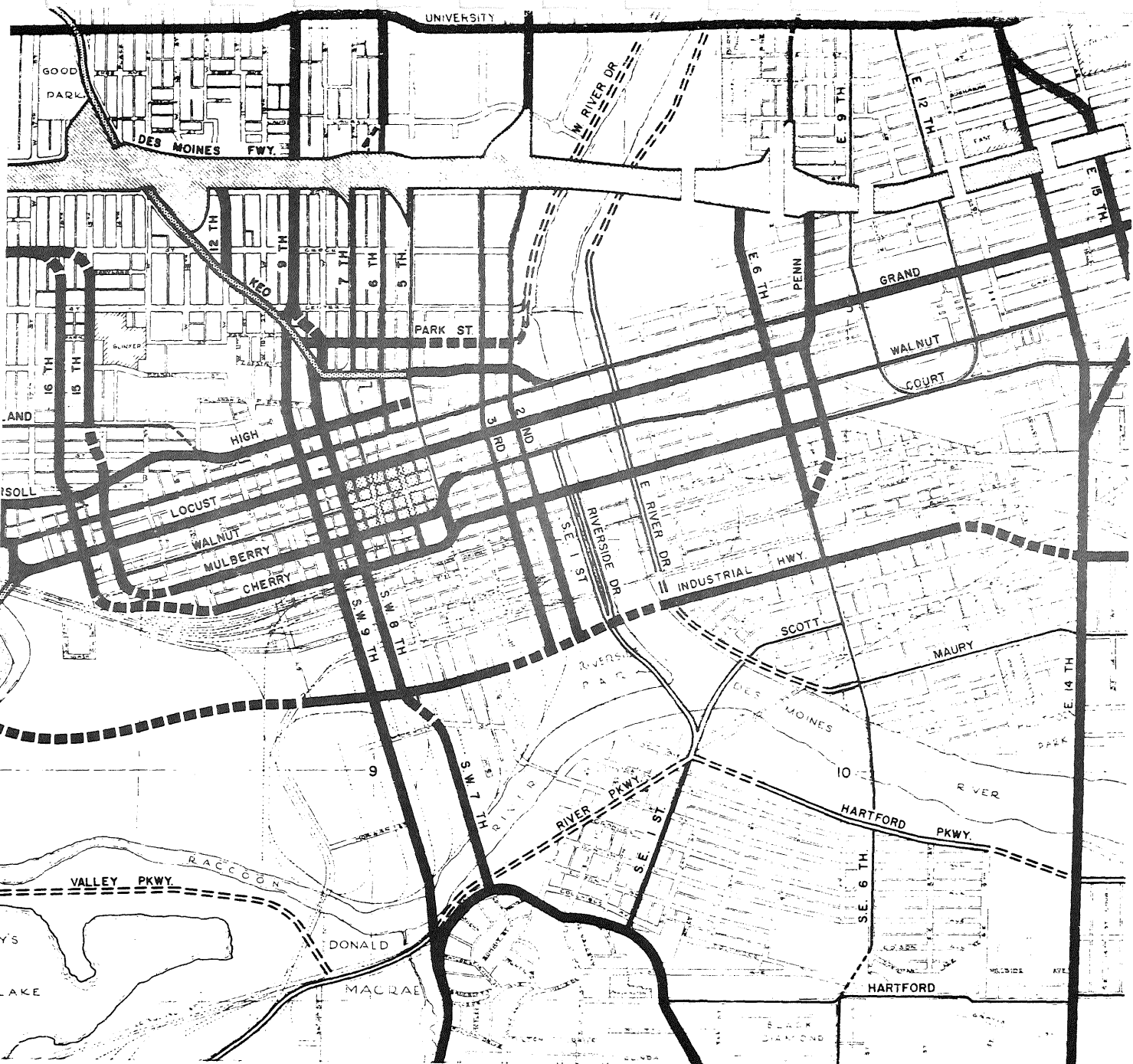


NOVEMBER, 1961

0 1/4 1/2 MILES

DES MOINES CITY PLAN
AND ZONING COMMISSION

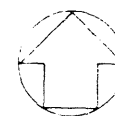
**FIGURE 2.4 PRELIMINARY 1980 MAJOR STREETS PLAN
(FROM 1961 COMPREHENSIVE PLAN)**



1980 MAJOR STREETS PLAN

CENTRAL AREA

- | | |
|-----------------|---------------------------------------|
| EXISTING | |
| | FREEWAY |
| | EXPRESSWAY |
| | PRIMARY THOROUGH-FARE |
| | THOROUGHFARE |
| | PARKWAY |
| | COLLECTOR |
| PROPOSED | |
| | FREEWAY |
| | EXPRESSWAY |
| | PRIMARY THOROUGH-FARE |
| | THOROUGHFARE |
| | PARKWAY |
| | COLLECTOR |
| | CENTRAL BUSINESS DISTRICT - CORE AREA |



JUNE , 1963

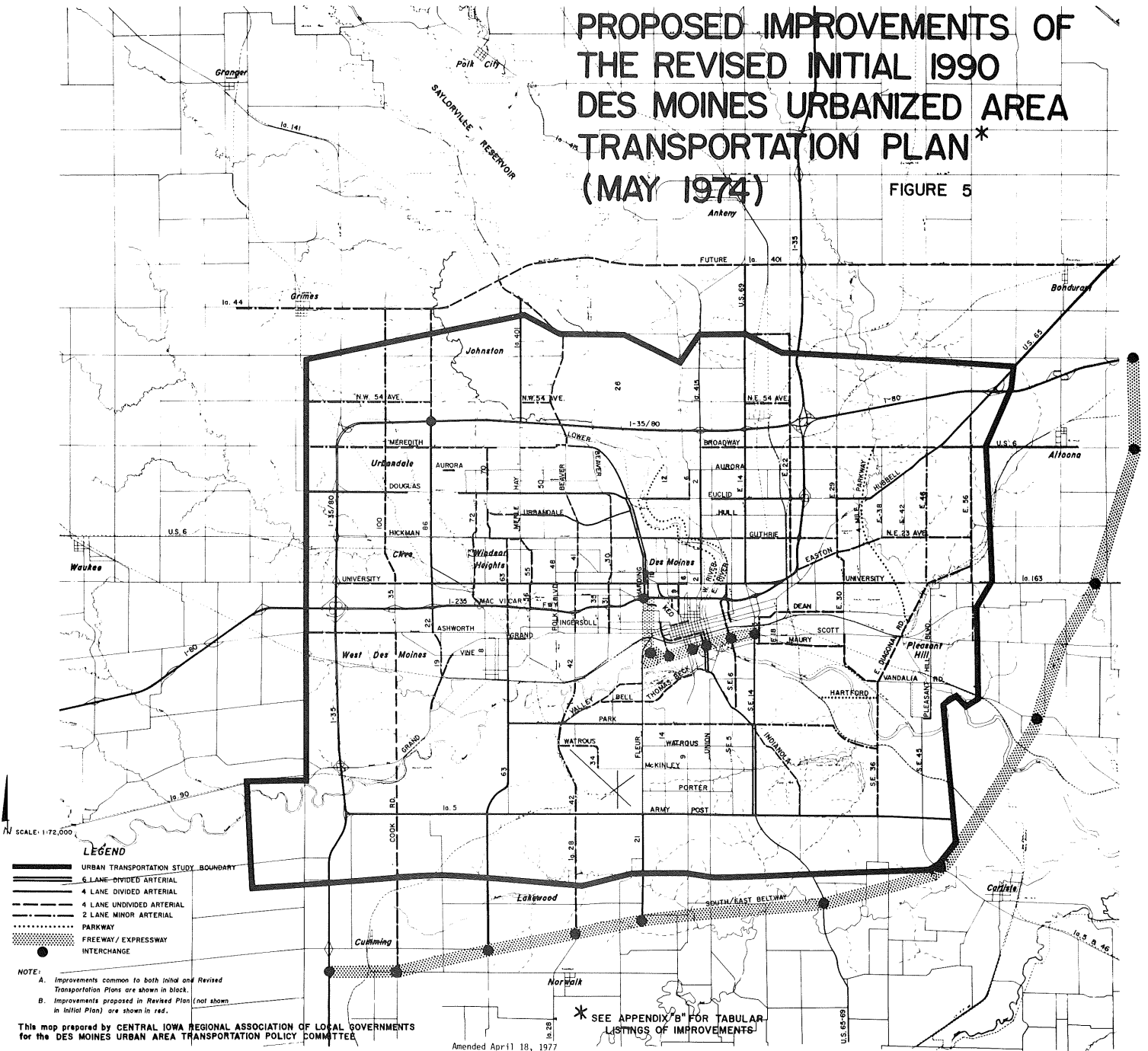
0 1/4 1/2 MILES

DES MOINES CITY PLAN AND ZONING COMMISSION

FIGURE 2.5 1980 MAJOR STREETS PLAN (FROM 1980 GENERAL PLAN 1963 UPDATED)

PROPOSED IMPROVEMENTS OF THE REVISED INITIAL 1990 DES MOINES URBANIZED AREA TRANSPORTATION PLAN* (MAY 1974)

FIGURE 5



**FIGURE 2.6 PROPOSED IMPROVEMENTS OF THE REVISED
INITIAL 1990 DES MOINES URBANIZED AREA
TRANSPORTATION PLAN, 1974
(AMENDED APR. 1977)**

FIGURE 2.7 EXISTING TRAFFIC FLOW MOVEMENTS

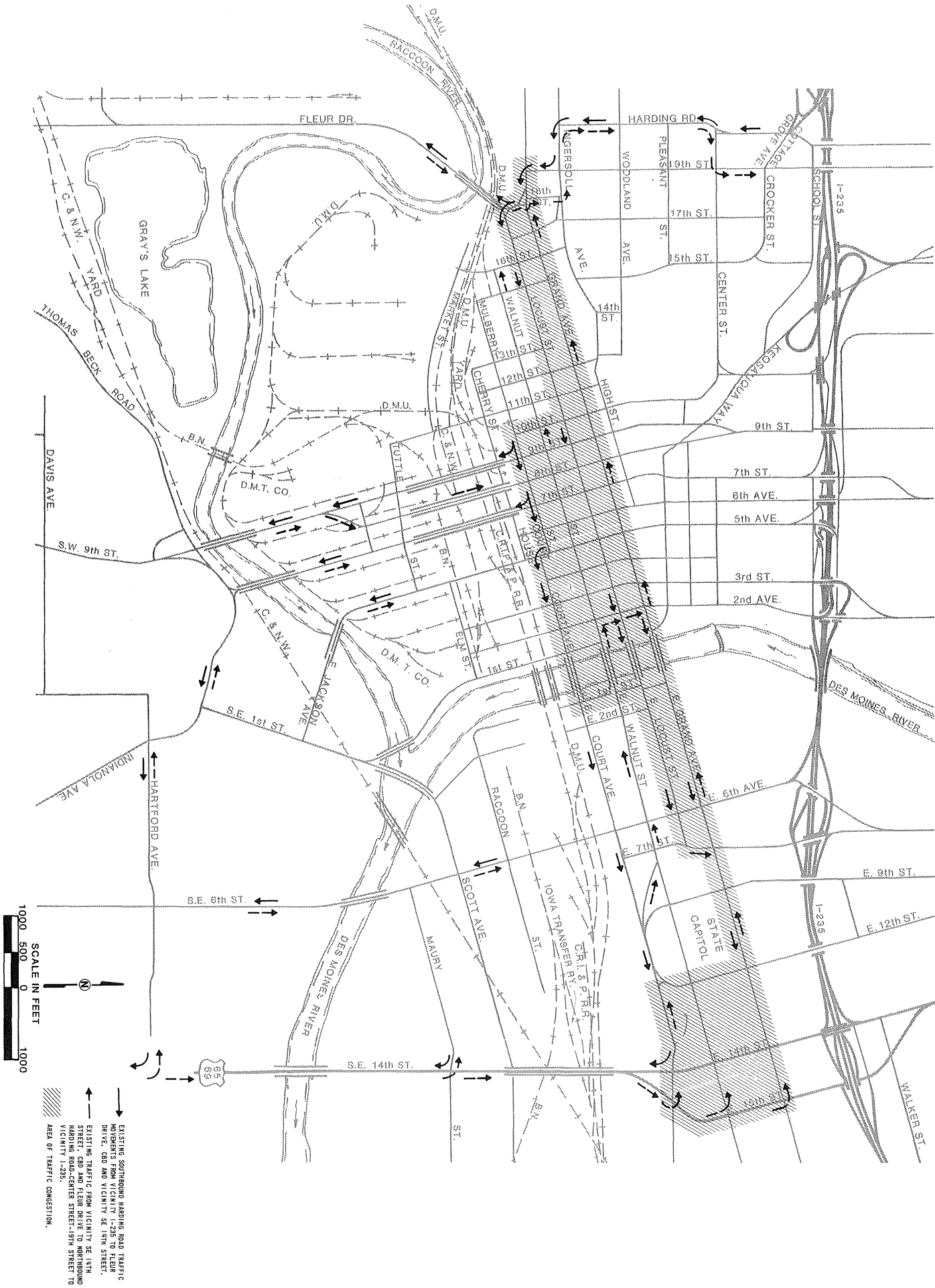
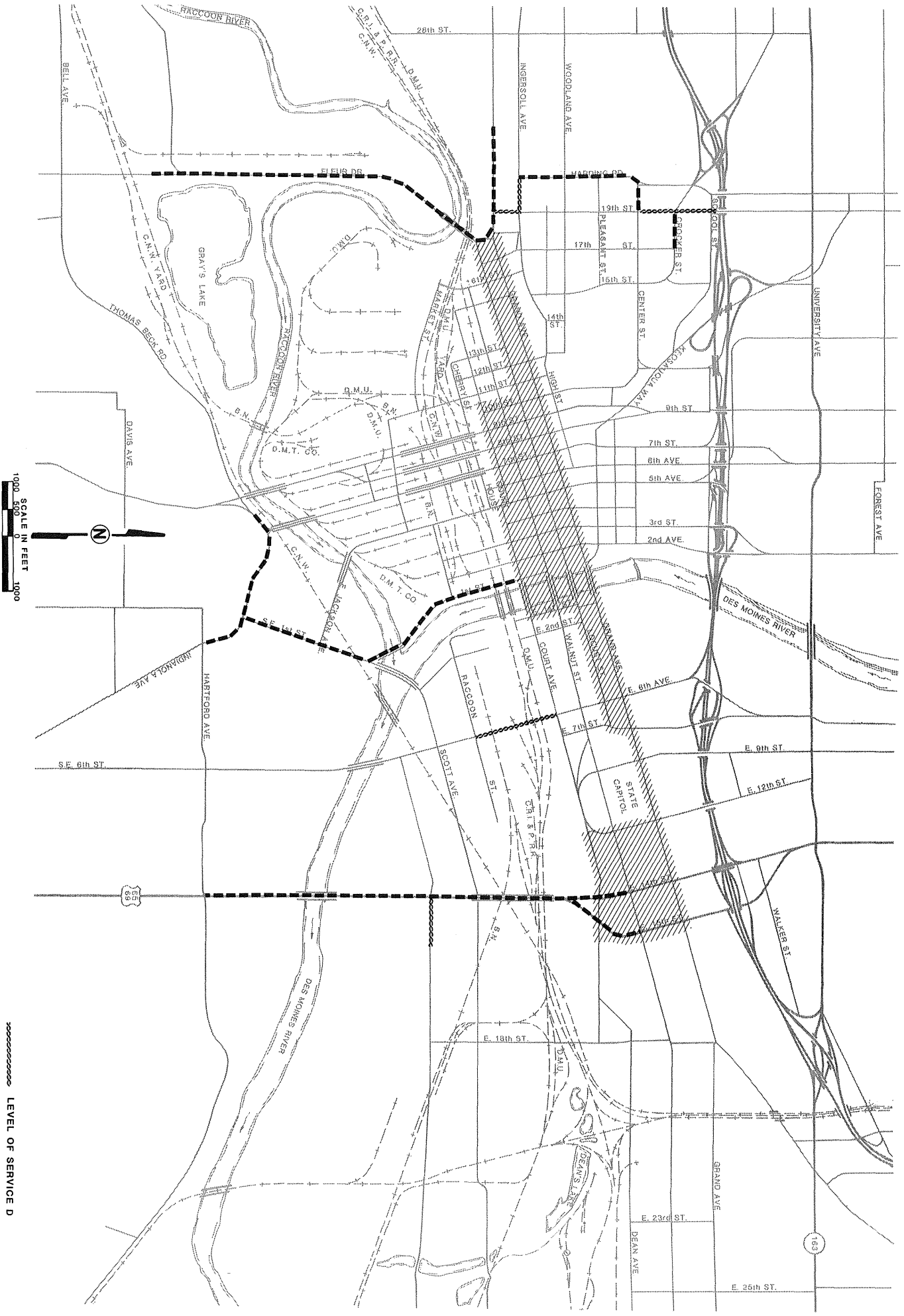


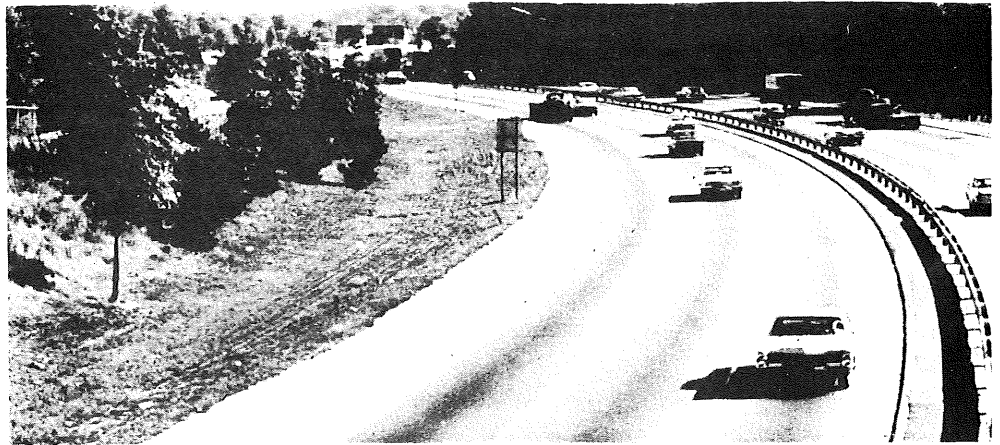
FIGURE 2.8 EXISTING LEVELS OF SERVICE



----- LEVEL OF SERVICE D
 _____ LEVELS OF SERVICE E & F
 // // // // // LEVEL OF SERVICE VARIES (D, E OR F)
 AT LEVELS OF SERVICE A, B OR C

LEVEL A

Free flow, low density, little restriction of maneuverability, little or no delays.



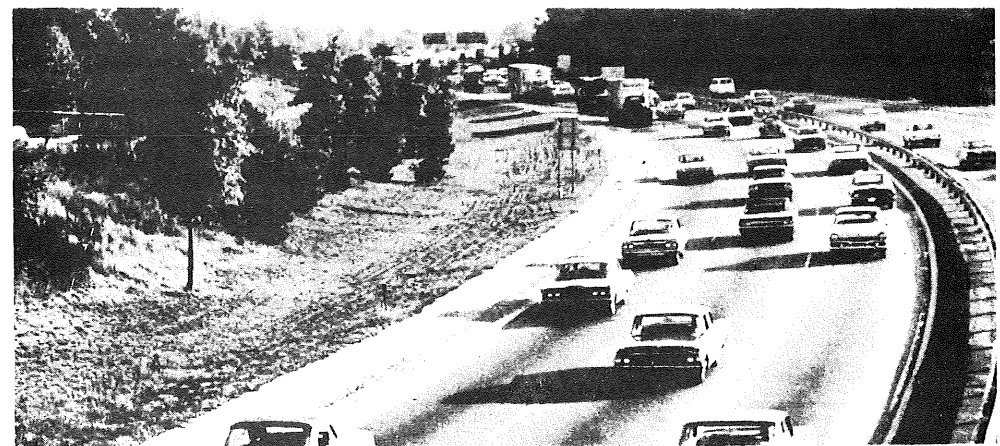
LEVEL B

Stable flow, minor restrictions in operation, driver has reasonable freedom in changing lanes.



LEVEL C

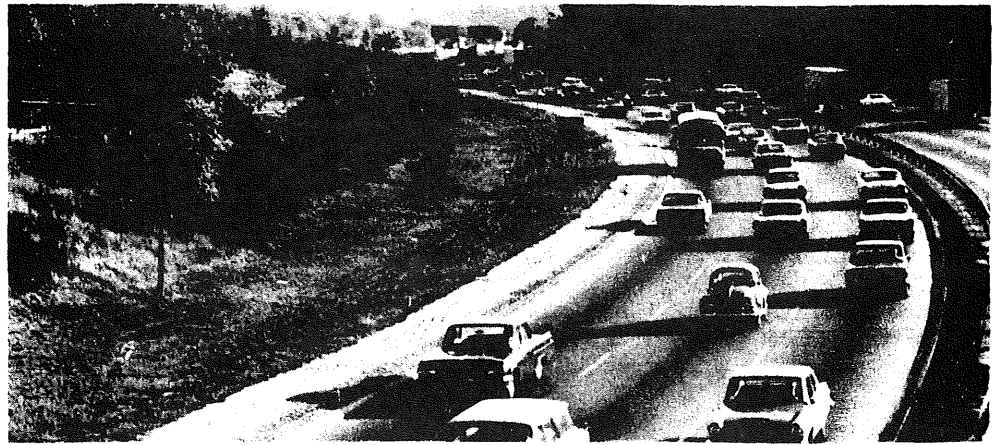
Lesser stable flow; most drivers are restricted in changing lanes or passing, relatively satisfactory operating speed.



**FIGURE 2.9a LEVELS OF SERVICE CHARACTERISTICS
LEVELS A, B, AND C, (HIGHWAY CAPACITY
MANUAL, HIGHWAY RESEARCH BOARD, SPECIAL
REPORT 87, 1965, pp. 75-87.)**

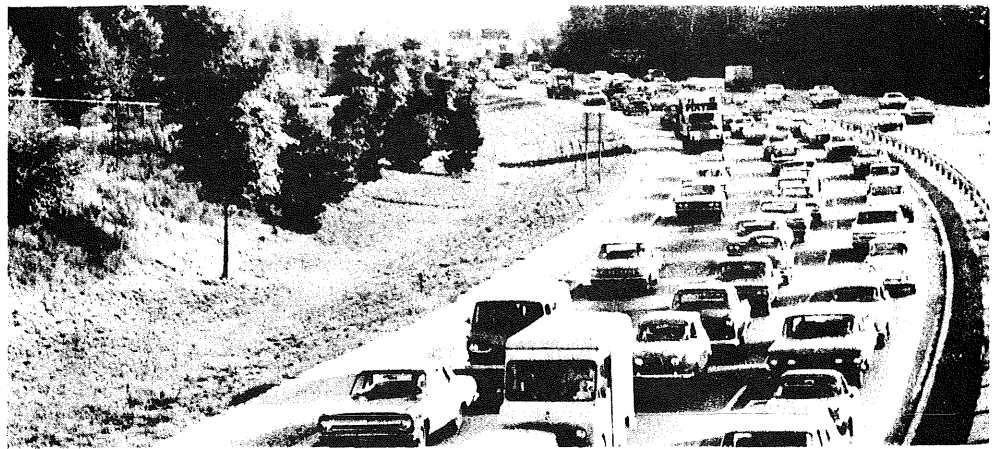
LEVEL D

Approaching unstable flow, low operating speed, little freedom to maneuver; condition tolerable for short periods only.



LEVEL E

Unstable flow, lower operating speeds, some momentary stoppages, volumes at or near capacity.



LEVEL F

Forced flow, operations at low speeds, highway acts as a storage area, many stoppages.

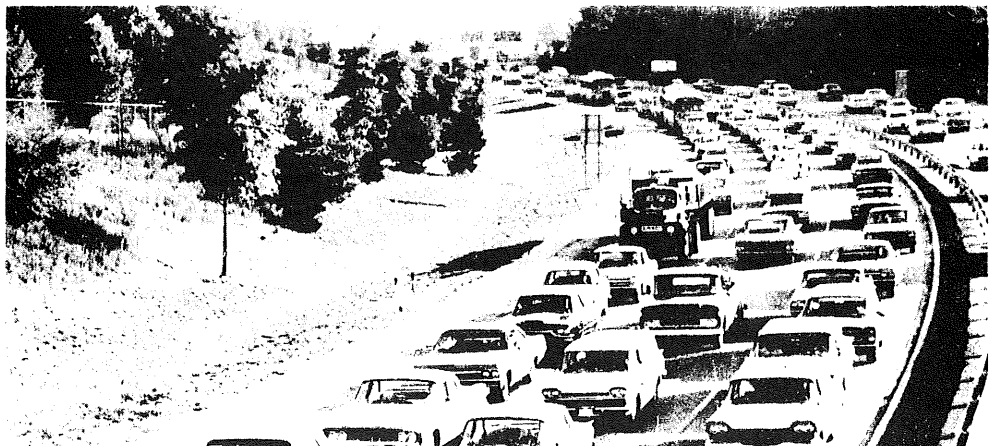


FIGURE 2.9b LEVELS OF SERVICE CHARACTERISTICS
LEVELS D, E, AND F. (HIGHWAY CAPACITY
MANUAL, HIGHWAY RESEARCH BOARD, SPECIAL
REPORT 87, 1965, pp. 75-87.)

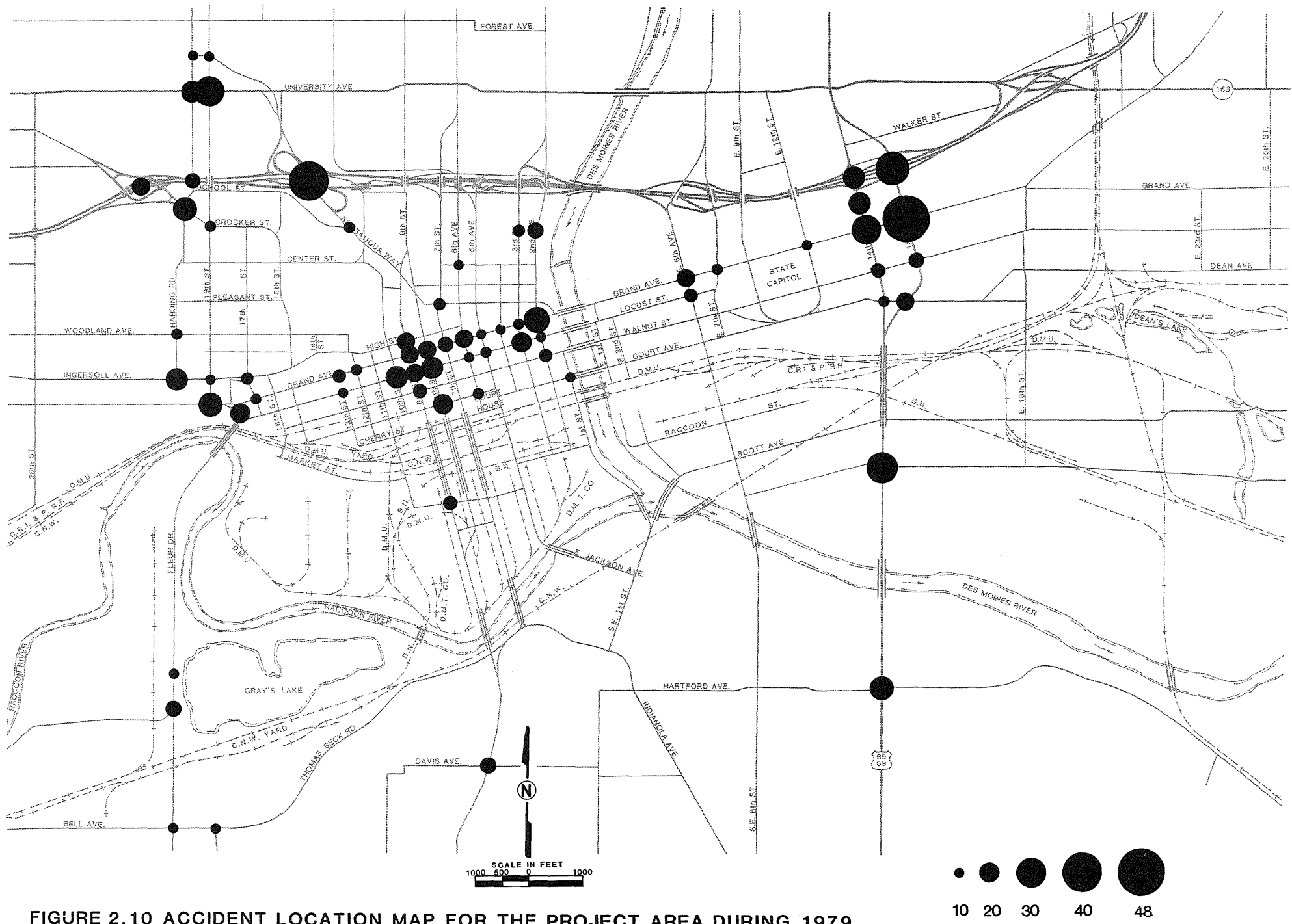


FIGURE 2.10 ACCIDENT LOCATION MAP FOR THE PROJECT AREA DURING 1979

NUMBER OF ACCIDENTS DURING 1979

SECTION 3

ALTERNATIVES

DEVELOPMENT OF ALTERNATIVES

The first step in developing alternatives was to collect data about the project study area, including the following: mapping, zoning, land use, architectural and historic resources, utilities, churches, schools, hospitals, community facilities, neighborhoods, major street networks, previous transportation planning, traffic volume data, railroads, drainage, parks and open spaces, and the natural environment. At the same time, a scoping process was conducted to receive public and agency input on significant issues and alternates to be considered (see Section 6, Comments and Coordination).

Succeeding work consisted of investigating numerous alignment alternatives that initially appeared to be physically feasible and that met the identified transportation needs. Each alternate was preliminarily assessed for its ability to fulfill the transportation needs and its impact on the various elements of the environment. These alternates were reviewed by the following organizations or agencies: Engineering, Plan and Zoning, and Traffic and Transportation Departments of the city of Des Moines; Iowa Department of Transportation; Federal Highway Administration; Central Iowa Regional Association of Local Governments; and the Consultant, Brice, Petrides & Associates, Inc. Based on discussions with these groups, several alternates were dropped from further investigation. The major reasons for elimination of alternates were: unfeasible to construct, adverse impacts on schools, neighborhoods, historical sites, architectural sites, land use or traffic safety, high construction costs and traffic congestion.

Additional traffic assignment data was requested for the remaining alternates. During the period in which data was being prepared, representatives of the city of Des Moines and the Consultant met with numerous

neighborhood, commercial and industrial organizations to provide information on the alternatives under study and to receive public input. These meetings are described in Section 6, Comments and Coordination.

A public informational meeting was conducted by the city of Des Moines on November 18, 1981, at 7:00 p.m., City Hall. Those in attendance were informed of the need for the project, the alternates to be evaluated in detail and procedures to be followed for the analyses of alternates and for the selection of an alternate. Attendees were asked for their opinions of the proposed alternates and for their concerns regarding the project.

Following the circulation of the Draft Environmental Impact Statement and a review period, a Location Public Hearing will be held to obtain input from individuals and agencies regarding the project. Input may be received at the public hearing, and written input received within 10 days following the hearing will become part of the official transcript.

Following review of the Draft Environmental Impact Statement and the transcript of the public hearing, the city of Des Moines will select the alternate it prefers. The Final Environmental Impact Statement will then be prepared for the preferred alternates.

DESCRIPTION OF ALTERNATIVES EVALUATED IN DETAIL

This section provides a brief description of the alternatives which have been selected for detailed evaluation. The construction alternates have been divided into several elements, and a description of each major element follows. In addition, each major roadway element will include associated intersection improvements, side street connections, cul-de-sacs for certain existing streets, and other miscellaneous improvements. Plates 1-18, Appendix C, illustrate the major features of each alignment. Design criteria that were used in the preliminary design of these alternates is included in Table A-2, Appendix A.

Alternate A - Northern Variation

This alternate of the CBD Loop Arterial will be described in two segments: a north-south segment and an east-west segment (see Figures 3.1 and 3.2). The north-south segment provides a connection from the existing

Harding Road-19th Street one-way couplet south of I-235 to Fleur Drive south of the Raccoon River. The east-west segment provides a connection from the north-south segment to U.S. Highways 65-69. Plates 1, 2, 3, 4, 7, 8, 9, 10, 13, 14, 15, 16, 17 and 18 (Appendix C) illustrate major features of this alternate.

The north-south segment of Alternate A consists of separate multilane, one-way roadways on new alignment, connecting to existing Harding Road and 19th Street south of I-235. Each independent one-way roadway proceeds southwesterly and the two roadways converge in the vicinity of Center Street, forming a multilane, divided roadway. The southerly extension of Harding Road is a one-way southbound roadway, while the 19th Street extension is one-way northbound. Proceeding south of Center Street, these two roadways are separated by a median, continue south along the existing corridor of Harding Road to Ingersoll Avenue and then continue south on new alignment, cross the Raccoon River and then connect to existing Fleur Drive, a four-lane, divided roadway. The proposed action includes at-grade intersections with School Street and Cottage Grove Avenue and underpasses at Woodland Avenue and Grand Avenue. Traffic flow is maintained on the latter two roadways, but no connections are provided to the proposed action for such streets. The proposed action overpasses the Raccoon River and railroad tracks north of the river.

Two subalternates are under consideration for the junction at Ingersoll Avenue: Subalternate 1A (see Figure 3.1) provides for a modified diamond interchange, with the CBD Loop Arterial overpassing Ingersoll Avenue, while Subalternate 2A (see Figure 3.2) provides for a major signalized at-grade intersection at Ingersoll Avenue. Due to the difference in traffic operations between the two subalternates, it was determined that Subalternate 1A would be a divided, four-lane facility north of Grand Avenue with a four-foot median, while Subalternate 2A would be a divided, six-lane facility north of Grand Avenue with a 16-foot median. South of Grand Avenue the median width for Subalternate 2A is reduced to four feet prior to the bridge over the railroad tracks and the Raccoon River. Both subalternates have four-foot medians on this bridge until transitioning to meet the existing 16-foot median (approximately) on Fleur Drive. Both subalternates of the north-south segment follow

the same general alignment throughout so that the construction could be staged to add the Ingersoll Avenue interchange at a later time if the intersection were constructed initially.

The east-west segment of Alternate A (see Figures 3.1 and 3.2) is a four-lane, divided highway which begins near the intersection of Ingersoll Avenue and 16th Street, curves southward to follow along 15th Street and crosses the Des Moines Union Railway Company's 11th Street yard, then curves eastward along the present alignment of Market Street, crosses under the S.W. Ninth Street, S.W. Eighth Street and S.W. Seventh Street viaducts near Elm Street, follows Elm Street easterly, crosses the Des Moines River, continues eastward along the south side of Raccoon Street, and then curves to the southeast to connect with Scott Avenue east of S.E. 14th Street. The median width varies, being approximately 16 feet wide at Ingersoll Avenue, narrows to four feet south of Walnut Street, widens to 16 feet near S.W. 13th Street, widens to approximately 50 feet in crossing under existing viaducts at S.W. Ninth, S.W. Eighth and S.W. Seventh Streets, narrows to 16 feet near S.W. Fifth Street, narrows to four feet near S.W. First Street, widens to 16 feet near S.E. Fourth Street, widens to maximum of 50 feet in the vicinity of undercrossings of S.E. 14th Street and E. 15th Street Extension and then ends near S.E. 15th Street.

This alternate includes the relocation of Market Street from S.W. 16th Street to S.W. 11th Street; partial interchanges at S.W. Ninth Street, S.W. Eighth Street, S.E. 14th Street and at an extension of E. 15th Street; and at-grade intersections at 16th Street, Grand Avenue, Locust Street, Walnut Street, S.W. 14th Street, S.W. 11th Street, S.W. Eighth Street, S.W. Fifth Street, S.W. Third Street, S.W. Second Street, S.W. First Street, S.E. Fourth Street, S.E. Sixth Street and S.E. Ninth Street. No median openings are provided at the intersections with S.E. Fourth and S.E. Ninth Streets. At-grade railroad crossings are provided at the north-south track of the Des Moines Union Railway Company (west of S.W. 11th Street) and at the crossing of the Chicago & North Western Transportation Company (in the vicinity of S.E. 11th Street, north of Scott Avenue).

The portion of the east-west segment from S.W. Sixth Street to S.W. First Street and the partial interchange at S.W. Ninth Street necessitate the removal of portions of the Burlington Northern, Inc., trackage. The ramp from the westbound lanes of the east-west segment of the CBD Loop Arterial and the location of the alternate from west of S.W. 14th Street to S.W. Ninth Street necessitate the removal of the trackage of the Chicago & North Western Transportation Company from west of S.W. 14th Street to S.W. Seventh Street. New railroad trackage is proposed between S.W. Sixth Street and S.W. Third Street to connect existing trackage of the Chicago & North Western Transportation Company and the Burlington Northern, Inc., to that of the Chicago, Rock Island and Pacific Railroad Company trackage and thereby maintain railroad service to remaining customers of the former two railroad companies (see Plate 13, Appendix C and Figure 3.5).

New right-of-way, in addition to existing street right-of-way, will be required for the proposed action. Right-of-way requirements for the north-south segment of Alternates A and B, including Subalternates 1A, 2A, 1B and 2B, between I-235 and Woodland Avenue, will include acquisition of commercial properties in the vicinity of Cottage Grove Avenue and dwellings and apartment housing units. Table 3.1 includes summaries of the numbers of buildings to be acquired of various uses for the respective subalternates. Right-of-way and relocation assistance cost estimates are included in Table 3.2. Alternates A and B will require the acquisition of primarily commercial properties between Woodland Avenue and the Raccoon River relative to the north-south segment, with Subalternates 1A and 1B involving more right-of-way for their interchanges at Ingersoll Avenue than is needed for Subalternates 2A and 2B. Right-of-way will also be required in crossing railroads north of the Raccoon River and in crossing Des Moines Water Works property south of the river.

Right-of-way for the east-west segment of Alternate A will be required between Ingersoll Avenue and Grand Avenue and along the east side of 15th Street from Grand Avenue to Walnut Street. This area includes predominantly commercial properties. Additional commercial and railroad properties will be affected in progressing to and along the corridor of Market Street. One warehouse building south of Market Street and west of S.W. 13th Street will have to be partially acquired,

and the remaining portion will need to be remodeled. Several warehouse and commercial properties between S.W. 11th and S.W. Ninth Streets will be required south of Market Street for interchange ramps with S.W. Ninth Street.

A ramp from the east-west segment to S.W. Eighth Street will require acquisition of industrial and warehouse buildings. Railroad right-of-way will have to be partially acquired in order to relocate Market Street from S.W. 16th Street to S.W. 11th Street.

In order to provide railroad service to customers currently served by the Burlington Northern Railroad (BN) between S.W. Ninth and S.W. First Streets, when its tracks are removed, right-of-way will have to be acquired for new railroad trackage to connect to trackage of the CNW and CRI&P railroads. This new track will be located from a junction with the CRI&P Railroad near S.W. Sixth Street southeasterly to a junction with the BN trackage west of S.W. Second Street (See Plate 13, Appendix C). No buildings will be acquired with the new railroad rights-of-way.

Alternate B - Southern Variation

This alternate of the CBD Loop Arterial also includes both a north-south segment and an east-west segment (see Figures 3.3 and 3.4). The north-south segment for this alternate is nearly identical to the north-south segment of Alternate A, except for the configuration of its interchange with the east-west segment in the vicinity of the Raccoon River. Alternate B also contains two similar subalternates, designated 1B and 2B, referring to the interchange or intersection at Ingersoll Avenue, respectively, as described under Alternate A (see Figures 3.3 and 3.4). Median widths for Subalternates 1B and 2B are identical to those of Subalternates 1A and 2A, respectively. Alternate B is illustrated in Plates 1, 2, 5, 6, 8, 11, 12, 13, 14, 15, 16, 17 and 18.

The east-west segment of Alternate B is a multilane, divided roadway which begins at an interchange with the north-south segment. It differs from the east-west segment of Alternate A for only a .6-mile segment which takes a more southerly route than does that of Alternate A. This segment begins north of the flood wall along the north side of the Raccoon River and west of the north-south segment, with two lanes being westbound and one lane being eastbound with a four-foot median. Its

alignment curves to the southeast, passes under the existing Fleur Drive bridge, becomes a four-lane, divided roadway with the median width increasing to 16 feet, and follows Market Street eastward to the vicinity of S.W. 11th Street where it joins the alignment of the east-west segment of Alternate A, previously described.

The features of Alternate B to the east of S.W. 11th Street are identical to those of Alternate A. This east-west segment of Alternate B includes partial interchanges at S.W. Ninth Street, S.W. Eighth Street, S.E. 14th Street and at the extension of E. 15th Street; and at-grade intersections at S.W. 16th Street, S.W. 14th Street, S.W. 11th Street, S.W. Eighth Street, S.W. Fifth Street, S.W. Third Street, S.W. Second Street, S.W. First Street, S.E. Fourth Street, S.E. Sixth Street and S.E. Ninth Street. As for Alternate A, no median openings are provided at the intersections with S.E. Fourth and S.E. Ninth Streets. At-grade railroad crossings are provided, as for Alternate A, at the north-south track of the Des Moines Union Railway Company (west of S.W. 11th Street) and at the crossing of the Chicago & North Western Transportation Company (in vicinity of S.E. 11th Street).

The location of this east-west segment of Alternate B in the vicinity of the north-south segment necessitates the relocation of two railroad tracks, one belonging to the Chicago, Rock Island and Pacific Railroad Company and the other belonging to the Chicago & North Western Transportation Company. Both tracks are proposed to be relocated, beginning approximately 2,300 feet southwest of the center line of the north-south segment, with one new track connecting to the two railroad company tracks and proceeding to the northeast to connect to existing trackage of the Des Moines Union Railway Company at a point approximately 800 feet southwest of the center line of the north-south segment (see Figure 3.5). Additional segments of railroad relocation in the vicinity of Fleur Drive and S.W. 16th Street are required to allow Chicago, Rock Island and Pacific Railroad Company and Chicago & North Western Transportation Company trains to use the Des Moines Union Railway Company trackage to bypass the roadway of this alternate. This alternate will necessitate removal of trackage of the Chicago & North Western Transportation Company trackage from west of S.W. 11th Street to S.W. Seventh Street. New railroad

trackage between S.W. Sixth Street and S.W. Third Street is identical to that described for the east-west segment of Alternate A.

Right-of-way requirements for Subalternates 1B and 2B of the north-south segment of the CBD Loop are nearly identical to Subalternates 1A and 2A of Alternate A, respectively. The main differences between the two alternates are in the areas south of Grand Avenue where ramps of Alternate B require more right-of-way than was needed for Alternate A; these areas are both north and south of the Raccoon River. The east-west segment of Alternate B is located along railroad right-of-way north and northeast of the Raccoon River to the vicinity of S.W. 17th Street. Continuing eastward, the roadway is located within the railroad and Market Street rights-of-way to the vicinity of S.W. 11th Street. East of S.W. 11th Street, right-of-way requirements of Alternate B are identical to those of Alternate A, beginning with the S.W. Ninth Street interchange ramp area.

Indianola Avenue Connection

The Indianola Avenue connection is an integral part of both Alternate A and Alternate B and provides a four-lane, divided highway linking the east-west segment of the CBD Loop Arterial with Indianola Avenue (Plates 13 and 14, Appendix C and Figures 3.1 through 3.4). This roadway consists of two one-way streets between the east-west segment of the CBD Loop Arterial and the Raccoon River. The southbound roadway is a southern extension of S.W. Third Street, whereas the northbound roadway is an extension of S.W. Second Street which curves to the southwest then runs adjacent to and east of the southbound roadway. These roadways converge north of the Raccoon River to proceed to the southeast as a four-lane, divided roadway with a four-foot median. The roadway crosses the Raccoon River, and curves to the southwest to intersect with Indianola Avenue west of its intersection with S.W. First Street.

At-grade intersections are provided along the proposed Indianola Avenue connection at a S.W. Second Street-Jackson Avenue connection, the Chicago & North Western Transportation Company track, Dunham Street and Indianola Avenue.

Indianola Avenue is proposed to be reconstructed as a four-lane, divided roadway in the vicinity of its intersection with the Indianola Avenue connection. It is proposed that transition sections be provided to tie back into existing paving both east and west of the widened section, connecting east of S.W. Seventh Street and west of South Union Street. A median varying from four feet to 28 feet in width is proposed.

Right-of-way requirements are summarized in Table 3.1 for this roadway. Included are buildings north of the Raccoon River used by the city of Des Moines Street Department, properties south of the river and along the west side of S.W. First Street and properties along Indianola Avenue in the vicinity of S.W. First and S.W. Second Streets.

15th Street-Tuttle Street Extension

This series of street extensions is associated only with Alternate B of the CBD Loop Arterial. It is illustrated in Plate 11, Appendix C. The extension of 15th Street begins at Walnut Street and proceeds southward, crossing the Des Moines Union Railway Company's 11th Street yard and the proposed CBD Loop Arterial on a viaduct, then descends in grade as it continues south to end at the Tuttle Street extension. The Tuttle Street extension begins at the west end of existing Tuttle Street near S.W. 14th Street and proceeds westward to the extension of S.W. 16th Street. The extension of S.W. 16th Street between the Tuttle Street extension and Wabash Street is also included in this group of new streets.

All of the above streets are proposed to be two-lane streets and will primarily provide improved access to the surrounding area south of the railroads, Market Street and the east-west segment of the CBD Loop Arterial.

The commercial building to be acquired for the extension of 15th Street south of Walnut Street is listed in Table 3.1. In addition, right-of-way will be required for the extension of this roadway across the trackage and yards of three railroad companies and industrial properties between Market Street and the extension of Tuttle Street. No other buildings need to be acquired for these street extensions.

E. 15th Street Extension

The E. 15th Street extension is an integral part of both Alternate A and Alternate B of the CBD Loop Arterial and is indicated on Plates 17

and 18 of Appendix C and in Figures 3.1 through 3.4. This new multilane, one-way street begins north of E. Court Avenue at existing E. 15th Street as a four-lane pavement. It then proceeds to the southwest, intersects with E. Court Avenue and E. Vine Street, crosses E. Vine Street about midway between S.E. 15th Street and Johnson Court, narrows to a three-lane roadway, then curves southward, overpasses approximately 14 railroad tracks belonging to numerous railroad companies, then overpasses the railroad track belonging to Burlington Northern, Inc., and the one-story portion of a building north of Scott Avenue. It then proceeds south to overpass the east-west segment of the CBD Loop Arterial that occupies the Scott Avenue corridor, descends in grade to an at-grade intersection with Maury Street, curves to the southwest and south to tie into the east half of the S.E. 14th Street Des Moines River bridge.

As part of this north-south link, S.E. 14th Street south of E. Vine Street is converted from a two-way, divided roadway (U.S. Highways 65 and 69) to a one-way southbound roadway. The existing diagonal roadway that begins at S.E. 14th Street and E. Vine Street and proceeds to the northeast to connect to E. 15th Street north of E. Court Avenue is proposed to be removed. The median of S.E. 14th Street is to be modified near E. Vine Street, and S.E. 14th Street is to be modified between Scott Avenue and the Des Moines River bridge. An at-grade intersection is provided at Maury Street.

The extension of E. 15th Street will require additional right-of-way from north of E. Court Avenue to the north end of the Des Moines River bridge on S.E. 14th Street. Right-of-way requirements are summarized in Table 3.1. In addition, rights-of-way for crossing of numerous railroad tracks and the aerial crossing of the industrial property and building north of Scott Avenue will be required. This street extension and its interchange ramps will require the acquisition of four churches, one parsonage, and commercial and residential properties. The residence located at the southeast corner of S.E. 14th and Harriet Streets is owned by the city of Des Moines, although the current occupant has a life estate status.

Associated Street Widening

Certain existing streets within the study area but beyond the limits of CBD Loop Alternates A and B, the Indianola Avenue Connection,

the W. 15th Street Extension and the E. 15th Street Extension are currently not capable of accommodating projected traffic volumes and are therefore recommended to be widened. Traffic projections for the year 2000 vary for numerous elements of the Metropolitan Area Transportation network, depending upon which alternate (A or B) of the CBD Loop Arterial is included (see Appendix A). The extent of street widenings within the study area needed to accommodate projected traffic volumes at Level of Service C, however, are identical for the two transportation networks including Alternates A and B of the CBD Loop Arterial, respectively.

Figure 3.6 indicates needed street widenings and intersection improvements within the study area that are associated with both Alternates A and B of the CBD Loop Arterial.

"No Action" Alternate

The "No Action" alternate accepts existing street and highway characteristics as they are at the present time. Therefore, no physical changes are included for pavement widths or grades, right-of-way widths, on-street parking arrangements, traffic circulation patterns or traffic control devices (traffic signals, signs and pavement markings).

As indicated in Figure 2.8, there are several areas with traffic congestion and poor levels of service within the existing street and highway network. Levels of service are illustrated in Figures 2.9a and 2.9b. In addition, as indicated in Figure 2.10 and Table 2.2, numerous accidents have occurred in these same areas. If no changes are made in the existing street and highway network, it is expected that traffic congestion and traffic-related accidents will continue to occur and will increase in proportion to future increases in traffic volumes.

It is recognized that removal of parking, minor improvements of pavement geometrics, altering of traffic circulation patterns or changes in traffic control may increase the level of service in certain areas. However, traffic congestion within the CBD and other areas and poor access to industrial areas near the CBD will continue. This alternate will therefore not meet the needs of the proposed action. In addition, other negative impacts are expected within the existing street network including traffic noise, exhaust emissions, fuel consumption, road-user costs, land use, emergency services and accessibility.

In order to preserve the integrity of the existing street and highway system, existing pavements and traffic control devices will continue to need maintenance. It is also expected that maintenance costs will increase as traffic volumes increase within the system in the future.

The removal of existing on-street parking in order to increase traffic capacities of streets will have adverse effects on businesses in the CBD as well as on residences and multiple housing areas along other streets. Adequate off-street parking is not currently available to compensate for losses of on-street parking spaces. Acquisition of off-street areas for parking would require the displacement of businesses and residences. Any increased demand for parking in the future will likewise add to parking problems.

An analysis of parking needs in the CBD appears in the report "Des Moines CBD Parking Study," city of Des Moines, Iowa, June, 1982. This study recommended the construction of seven parking ramps to the west of the Des Moines River to satisfy future needs for approximately 4,885 additional parking spaces. This analysis was based on ongoing and planned future redevelopment of the area. Initial construction was recommended for ramps in the fringe areas of the parking districts. Needs for parking in the area east of the Des Moines River were recommended to be met by the construction of surface parking areas.

Other Transportation Considerations

Fringe parking, ride-sharing, traffic signal timing and other relatively low-cost improvements are additional transportation considerations in the project corridor.

The Metropolitan Transit Authority (MTA) currently provides bus service to several passengers who park their automobiles in fringe areas, remote from the CBD, and then travel to their places of employment. MTA is currently attempting to secure permission to install signs in five or six fringe parking areas, such as at shopping centers, to encourage fringe parking and use of the bus system services. Only one site is currently identified by signs (in the vicinity of Merle Hay Road and Aurora Avenue).

No data is available concerning the number of persons who use either the signed parking area or other nondesignated parking areas within the community and then take a bus to their destinations. In a previous attempt to increase the use of fringe parking, employee parking was provided at the Veterans' Memorial Auditorium (10-acre parking lot bounded by I-235, Third Street, Crocker Street and Fifth Avenue), and MTA shuttle buses were then used to transport employees to the CBD during peak hours. This program was not successful and was dropped. As another means of encouraging the use of buses, including park-and-ride situations, MTA has developed a program whereby employers pay a portion of the cost of bus transportation for their employees. Bus useage in February, 1982, according to MTA estimates, provided transportation to 14 percent of the peak-hour person trips into and out of the CBD.

Other means of reducing individual automobile trips into the CBD are provided through ride-sharing (car-pooling and van-pooling), the use of bicycles, motorcycles and mopeds, and walking. Use of taxicabs may also qualify as ride-sharing in some instances. Walking does not provide much reduction in automobile travel due to the relatively small number of trips accomplished by walking. Choice of walking as a mode of travel is often dependent upon weather conditions and distances to be walked. Ride-sharing, however, can be effective in reducing the number of automobile trips into and out of the CBD. Car-pooling among employees has been encouraged in the past, and van-pooling has been supported by various employers. No data is available at the present time on the number of persons that travel to work via ride-sharing means or by bicycle, motorcycle or moped. The use of the latter three modes of travel, like walking, are highly dependent upon weather conditions.

The city of Des Moines has improved traffic flow and efficiency through recent traffic signalization improvement projects in the vicinity of the proposed action. Recent projects have included signal timing improvements along Grand Avenue and Ingersoll Avenue west of the CBD and within the Harding Road-19th Street corridor north of Ingersoll Avenue. A future feasibility study is being considered by the city of Des Moines to investigate traffic signalization improvements within the CBD. No other public improvement projects are under active consideration relative to revision of street geometrics or traffic operations within the project corridor.

ALTERNATIVES CONSIDERED, PARTIALLY EVALUATED AND DELETED FROM FURTHER CONSIDERATION

Several alternatives were preliminarily developed and evaluated and were then deleted from further detailed consideration due to their deficiencies. A brief description of each alternative thus deleted follows. Many of these alternatives are only segments of the total proposed facility. The numeral identifications included in the descriptions correspond with the numerals appearing on the map in Figure 3.7. In the following section, references to "Alternate A" and "Alternate B" are used to designate the previously described alternates which were selected for detailed evaluation.

CBD Loop Alternates

1. Harding Road - 19th Street - Pleasant Street Alternate

This alternative is a north-south segment of the proposed arterial facility from I-235 to the vicinity of Woodland Avenue. To the south of Pleasant Street it is a divided multilane facility located east of and adjacent to Woodland Cemetery. The remaining portion of this alternative consists of two one-way roadways. The southbound roadway connects to Harding Road in the vicinity of School Street south of I-235, curves southwesterly, intersects with Cottage Grove Avenue and then curves southerly to be located east of and adjacent to Woodland Cemetery and joins the southbound lanes of the divided roadway previously described. The northbound roadway branches off the divided roadway in the vicinity of Pleasant Street, proceeds northeasterly, crosses 20th Street, then curves northerly to join 19th Street north of Center Street and continues along 19th Street to the vicinity of School Street and I-235. The alignments of the northbound and southbound roadways were designed to provide improved horizontal roadway alignment as compared to the existing roadways:

This alternative was deleted from further consideration due to the following factors:

- a. The area between the one-way roadways north of Pleasant Street would be completely surrounded by major roadways

TABLE 3.1

RIGHT-OF-WAY REQUIREMENTS FOR THE ALTERNATES OF THE CBD LOOP ARTERIAL

Alternates & Segments***	Streets Bounding Area	Number of Buildings								
1A, 2A 1B, 2B N-S Segment	W. Side 19th	School	Olive	---	---	2	2			
	19th	Cottage Grove	19th Ct.	Olive	2					
	19th Ct.	20th	Olive	---	1					
	N. Side Olive	20th	19th	---	2					
	20th	Cottage Grove	Harding	---	2	1			1	
	19th Ct.	Cottage Grove	Harding	Crocker	4	1	1	3		
	W. Side Harding	Cottage Grove	Crocker	---					1	
	E. Side Harding	Crocker	Center	---		1	5			
	W. Side Harding	Crocker	Center	---			6			
	E. Side Harding	Center	Pleasant	---	1	2	1			
	E. Side Harding	Pleasant	Woodland	---		3			1	
	N. Side Woodland	Harding	19th	---		2	2			
	W. Side 20th	N. of Woodland	---	---		1	1			
	Harding	Woodland	19th	High	1					
	Harding	High	19th	Ingersoll	2					
	Harding Ext.	Ingersoll	19th	Grand	4				1	
	W. of Harding Ext.	Ingersoll	Grand	---	1					
E. of Harding Ext.	Grand	Raccoon River	---	1						
W. of Harding Ext.	Grand	Raccoon River	---	1						
Subtotal				22	13	19	3	2	1	
1A, 1B N-S Segment	Harding	Woodland	19th	High	1	1	5			
	Harding	High	19th	Ingersoll	4		1			
	Harding Ext.	Ingersoll	19th	Grand	1					
	W. of Harding Ext.	Ingersoll	Grand	---	2					
	W. of Harding Ext.	Grand	Raccoon River	---	1					
	Subtotal				9	1	6			
1A, 2A E-W Segment	15th	Ingersoll	16th	Grand	1				1	
	15th	Linden	14th	Grand	1					
	15th	Locust	14th	Walnut	3					
	15th	Walnut	14th	Falcon	1					
	S.W. 14th	Market	S.W. 13th±	Tuttle				1(P)		
Subtotal				6			1(P)	1		
1A, 2A 1B, 2B E-W Segment	15th	Falcon	Railroad	16th	1					
	S.W. 11th	Market	S.W. Ninth	Tuttle	2			5		
	S.W. Eighth	Vine	S.W. Seventh	Elm	1			1		
	S.E. Second	Allen	S.E. Third	Raccoon	1			3		
	S.E. Third	Allen	S.E. Fourth	Raccoon				1		
	S.E. Fourth	Allen	S.E. Fifth	Raccoon	1					
	S.E. Fifth	Allen	S.E. Sixth	Raccoon	2			1		
	S.E. Sixth	Allen	S.E. Seventh	Raccoon	1					
	S.E. Seventh	Allen	S.E. Eighth	Raccoon	3			3		
	S.E. Eighth	Allen	S.E. Ninth	Raccoon				3		
	S.E. Ninth	Allen	S.E. 10th	Raccoon				3		
	S.E. 10th	Allen	S.E. 11th	Raccoon				4		
	S.E. 10th	Allen	S.E. 12th	Scott				3		
	S.E. 12th	Allen	S.E. 14th	Scott				2		
	S.E. 12th	Scott	S.E. 13th	Shaw	1			3		
	S.E. 12th	Shaw	S.E. 14th	Maury	1			2		
	S.E. 14th	Scott	S.E. 14th Ct.	Maury				2		
Subtotal				14		30	6			
1A, 2A 1B, 2B Indianola Ave. Connection	S.W. Third Ext.	Elm	Raccoon River	S.W. Fourth Ext.					2	
	S.W. Second	Jackson	Raccoon River	---				2		
	S.W. Second	Granger	S.W. First	Dunham	1					
	S.W. Second	Dunham	S.W. First	Edison				1		
	S.W. Second	Edison	S.W. First	Columbus	2			2		
	S.W. Second	Columbus	S.W. First	Indianola	1	1				
	S. Side Indianola	S.W. Second	S. Union	---	1					
Subtotal				5	1	5		2	1	
1A, 2A 1B, 2B E. 15th St. Extension	E. Court	Johnson Ct.	E. Vine	E. 15th		1	5			
	E. Vine	E. 14th Ct.	Railroads	Johnson Ct.			1			
	S.E. 14th	Scott	S.E. 14th Ct.	Maury			1			
	S.E. 14th Ct.	Scott	S.E. 15th	Maury	1		4			
	S.E. 15th	Scott	S.E. 15th Ct.	Maury	2					
	S.E. 14th	Maury	S.E. 14th Ct.	Railroad Ave.	1		1			
	S.E. 14th	Railroad Avenue	S.E. 15th	Harriett	3					
	S.E. 14th	Harriett	S.E. 15th	D.M. River				1		
Subtotal				7	1	13				
TOTALS - Subalternate 1A				62	16	73	10+P	3	3	1
Subalternate 2A				53	16	67	10+P	3	3	1
Subalternate 1B				56	15	73	10	---	3	1
Subalternate 2B				47	15	67	10	---	3	1

P-Partial building - premanufactured building that can be partially removed.

*Buildings with apartments upstairs above two businesses.

**City buildings included maintenance and storage structures for city street department and park department.

***Alternate 1A is northern variation with interchange.

Alternate 2A is northern variation with intersection.

Alternate 1B is southern variation with interchange.

Alternate 2B is southern variation with intersection.

TABLE 3.2
COMPARISON OF ALTERNATES - COSTABLE FACTORS

	North-South Segment				East-West Segment		W. 15th Street Extension	Indianola Avenue Connection	E. 15th Street Extension	Totals			
	Subalternate				Alternate		Alternate	Alternates	Alternates	Subalternate**			
	1A	2A	1B	2B	A	B	B	A & B	A & B	1A	2A	1B	2B
Length (Miles).	1.5	1.5	1.5	1.5	2.6	2.9	0.3	0.7	1.0	5.8	5.8	6.4	6.4
Road-User Cost Savings*.										\$12,896,500.00	\$12,896,500.00	\$10,478,800.00	\$10,478,800.00
Construction Costs:													
Grading & Drainage.	\$ 1,389,200.00	\$ 1,136,700.00	\$ 1,428,600.00	\$ 1,154,500.00	\$ 1,957,800.00	\$ 1,920,300.00	\$ 286,200.00	\$ 468,000.00	\$ 597,400.00	4,412,400.00	4,159,900.00	4,700,500.00	4,426,400.00
Pavement.	1,419,800.00	1,660,300.00	1,502,900.00	1,724,500.00	2,702,300.00	2,577,200.00	269,300.00	736,700.00	869,200.00	5,728,000.00	5,968,500.00	5,955,300.00	6,176,900.00
Structures.	6,358,300.00	4,825,800.00	8,195,500.00	7,009,300.00	6,876,900.00	8,636,600.00	1,358,200.00	1,462,500.00	2,989,800.00	17,687,500.00	16,155,000.00	22,642,600.00	21,456,400.00
Railroad Relocation.	---	---	---	---	579,000.00	1,631,000.00	---	---	25,000.00	604,000.00	604,000.00	1,656,000.00	1,656,000.00
Utility Adjustments.	546,000.00	500,000.00	576,000.00	530,000.00	686,000.00	680,000.00	---	104,000.00	114,000.00	1,450,000.00	1,404,000.00	1,474,000.00	1,428,000.00
Miscellaneous.	955,400.00	929,000.00	979,900.00	945,400.00	1,496,000.00	1,427,500.00	117,100.00	348,900.00	\$ 389,300.00	\$ 3,189,600.00	\$ 3,163,200.00	\$ 3,262,700.00	\$ 3,228,200.00
TOTAL CONSTRUCTION COSTS.	\$10,668,700.00	\$ 9,051,800.00	\$12,682,900.00	\$11,363,700.00	\$14,298,000.00	\$16,872,600.00	\$2,030,800.00	\$3,120,100.00	\$4,984,700.00	\$33,071,500.00	\$31,454,600.00	\$39,691,100.00	\$38,371,900.00
Other Costs:													
Engineering, Legal, Administrative and Contingencies.	\$ 2,133,800.00	\$ 1,810,100.00	\$ 2,536,400.00	\$ 2,272,900.00	\$ 2,859,600.00	\$ 3,374,500.00	\$ 406,200.00	\$ 624,000.00	\$ 996,900.00	\$ 6,614,300.00	\$ 6,290,600.00	\$ 7,938,000.00	\$ 7,674,500.00
Right-of-Way.	9,497,200.00	7,781,300.00	9,497,200.00	7,781,300.00	7,405,600.00	5,539,400.00	449,200.00	1,645,400.00	1,808,900.00	20,357,100.00	18,641,200.00	18,940,100.00	17,224,200.00
Relocation Assistance.	2,618,000.00	2,014,000.00	2,618,000.00	2,014,000.00	1,990,000.00	2,560,000.00	50,000.00	398,000.00	970,000.00	5,976,000.00	5,372,000.00	5,596,000.00	4,992,000.00
TOTAL COSTS***.	\$24,917,700.00	\$20,657,200.00	\$27,334,500.00	\$23,431,900.00	\$26,553,200.00	\$27,346,500.00	\$2,936,200.00	\$5,787,500.00	\$8,760,500.00	\$66,018,900.00	\$61,758,400.00	\$72,165,200.00	\$68,262,600.00

*Road-User Cost Savings of Alternates as Compared With "No Action" Alternate.

**Alternate 1A is northern variation with interchange.

Alternate 2A is northern variation with intersection.

Alternate 1B is southern variation with interchange.

Alternate 2B is southern variation with intersection.

***Total costs do not include costs for some mitigation measures, such as archaeological mitigation, that are not known at this time.

NOTE: Estimated Costs Are Based on 1982 Cost Data.

TABLE 3.3

ESTIMATED PROJECT COSTS FOR VARIOUS SECTIONS OF THE PROJECT

Stage		Alt. A		Alt. B	
		Subalternate*			
From	To	1A	2A	1B	2B
<u>N-S Segment CBD</u>					
I-235	Ingersoll Ave.	\$11,540,300.00	\$ 9,793,200.00	\$11,540,300.00	\$ 9,793,200.00
Ingersoll Ave.	Fleur Drive	13,377,400.00	10,864,000.00	15,794,200.00	13,638,700.00
<u>E-W Segment CBD</u>					
N-S Segment CBD	S.W. First Street	18,602,100.00	18,602,100.00	19,395,400.00	19,395,400.00'
S.W. First Street	S.E. 14th St./ E. 15th St. Ext.	<u>7,951,100.00</u>	<u>7,951,100.00</u>	<u>7,951,100.00</u>	<u>7,951,100.00</u>
SUBTOTALS - CBD LOOP		\$51,470,900.00	\$47,210,400.00	\$54,681,000.00	\$50,778,400.00
<u>W. 15th St. Extension</u>					
Walnut Street	Tuttle St. Ext.	---	---	2,936,200.00	2,936,200.00
<u>Indianola Avenue Connection</u>					
E-W CBD	Indianola Ave.	5,787,500.00	5,787,500.00	5,787,500.00	5,787,500.00
<u>E. 15th Street Extension</u>					
North of E. Walnut Street	Des Moines River	<u>8,760,500.00</u>	<u>8,760,500.00</u>	<u>8,760,500.00</u>	<u>8,760,500.00</u>
SUBTOTALS		\$66,018,900.00	\$61,758,400.00	\$72,165,200.00	\$68,262,600.00
Street Widening		<u>3,203,200.00</u>	<u>3,203,200.00</u>	<u>3,151,000.00</u>	<u>3,151,000.00</u>
TOTALS		<u>\$69,222,100.00</u>	<u>\$64,961,600.00</u>	<u>\$75,316,200.00</u>	<u>\$71,413,600.00</u>

NOTE: Estimated Costs Are Based On 1982 Cost Data.

*Alternate 1A is northern variation with interchange.

Alternate 2A is northern variation with intersection.

Alternate 1B is southern variation with interchange.

Alternate 2B is southern variation with intersection.

and could be expected to deteriorate in condition. Much of the area is within the Sherman Hill Historic District.

- b. The diagonal northbound roadway would cross existing properties and sever streets between the cemetery and 19th Street and would adversely affect a portion of the Sherman Hill Historic District.

An alignment similar to this alternate, with modifications to minimize the above impacts, has been included in the final alternates (Alternates A and B) which were selected for detailed evaluation.

2. Harding Road - Fleur Drive - Raccoon River - Scott Avenue Alternate

This alternate consists of a divided, multilane roadway connecting to Alternate No. 1 at Woodland Avenue, proceeds south of Grand Avenue, curves southeasterly to cross the Raccoon River and Fleur Drive, curves easterly and then northeasterly to cross industrial and railroad properties north of the Raccoon River, being located between the Raccoon River and the Sec Taylor Baseball Stadium westerly of the Des Moines River, crosses the Des Moines River and follows Scott Avenue north-easterly to a junction with S.E. 14th Street.

This alternative was deleted from further consideration for the following reasons:

- a. Two crossings of the Raccoon River in the vicinity of Fleur Drive would increase the cost of this alternate in addition to doubling the construction impacts on the Raccoon River and Water Works Park.
- b. An interchange would be required to transfer traffic between the proposed roadway and Fleur Drive. Preliminary traffic volume projections indicated the major movements to be from north-south Fleur Drive to the north-south segment of the proposed roadway. The resulting interchange was envisioned to occupy the majority of the peninsular area of Water Works Park, with resulting environmental and flood plain impacts.

- c. The proposed roadway from the easterly crossing of the Raccoon River to the vicinity west of Sec Taylor Stadium crosses industrial and railroad properties. Its location in these areas would adversely divide and impact properties and would also result in high costs of property acquisition and relocation.
- d. Due to the proximity of the Sec Taylor Stadium and its access roads to the north bank of the Raccoon River, there does not appear to be sufficient space available to construct the proposed arterial roadway without encroachment into the floodway of the river. Existing parklands along the north side of the river would be severely impacted by such a facility.
- e. The location of the proposed arterial along Scott Avenue is located in an area that is primarily residential in nature. The impact of the proposed facility is expected to be adverse, although Scott Avenue is currently an arterial street that accommodates a considerable volume of traffic.

3. Harding Road - 19th Street - One-Way Couplet Alternate

This alternate is a portion of the proposed arterial between I-235 and Fleur Drive and consists of two one-way roadways. The southbound roadway begins at Harding Road in the vicinity of School Street and I-235, curves southwesterly, crosses Cottage Grove Avenue and then curves southerly to be located east of and adjacent to the Woodland Cemetery. This roadway is similar to such roadway in Alternate No. 1 previously described. The southbound roadway then continues south to Grand Avenue and southeasterly to Fleur Drive as in Alternate No. 2. The northbound roadway begins in the vicinity of Fleur Drive, as for Alternate No. 2, and curves northeasterly and then northerly to follow 19th Street from Ingersoll Avenue to the vicinity of School Street and I-235.

Due to the following adverse impacts, this alternate was deleted from further detailed consideration:

- a. The resulting area located between the two one-way roadways extends from the Raccoon River to School Street and is completely surrounded by major roadways. This area includes a portion of the Sherman Hill Historic District and residential and commercial areas. The northbound roadway would divide the residential and historic area and isolate it from the rest of the area, possibly leading to structure or area deterioration. High traffic volumes would also be introduced along 19th Street.
- b. The northbound roadway would require acquisition of the Des Moines Technical High School and the commercial buildings immediately to its west. Several of these structures are significant architectural or historic sites.
- c. The northbound roadway would be located adjacent to the west side of Chamberlain Park north of Ingersoll Avenue. Traffic noise and pedestrian access to the park would be among the adverse impacts of the proposed roadway relative to the park.

4. Harding Road - 19th Street - Center Street Alternate

This alternate is similar to Alternate No. 1 between Woodland Avenue and School Street. The southbound roadway is essentially located as in Alternate No. 1. The northbound roadway is located east of the southbound roadway from Woodland Avenue to just south of Center Street, with the two roadways being separated by a median. At a point south of Center Street, an improved radius is provided to curve the northbound roadway to the east along Center Street and another improved radius is provided to curve the roadway north onto 19th Street. This alternate then proceeds north along 19th Street to the vicinity of School Street and I-235. The traffic routing of the northbound roadway is similar to the existing traffic pattern, although sharp radius curves currently exist at Center Street. The proposed arterial facility will, however, have direct connections to

other major thoroughfares; and each of the one-way roadways are expected to carry more traffic than currently is present on such roadways.

This alternate was deleted from further analysis due to the following reasons:

- a. The area between the two one-way roadways north of Center Street to the vicinity of School Street and I-235 would be completely surrounded by major roadways. The north-south traffic volumes would increase from those currently using existing streets along similar routes, resulting in increased impacts on the area. Due to such anticipated traffic volume increases, the area will be separated from the balance of the residential area and historic district and may begin to deteriorate in the future.
- b. Radd improvements at Center Street, although improvements over existing conditions, do not adequately improve driving conditions as does Alternate No. 1.

5. Fleur Drive - Market Street Alternate

An alignment along the Market Street corridor easterly of S.W. 15th Street is one of the alternates selected for further design and evaluation (see Alternate B in previous section). Alternate No. 5 of the deleted alternates begins at said Alternate B in the vicinity of S.W. 15th Street and proceeds southwesterly, crossing the Raccoon River, and then westerly to connect to Fleur Drive.

This alternate was deleted for the following reason:

- a. Although this alternate would provide a connection from Fleur Drive to and from the east, no direct connection would be provided to the northern termini in the vicinity of School Street and I-235. Traffic would have to use the existing street network to reach such termini.

6. Harding Road - Market Street Alternate

Alternate No. 6 is a segment of the proposed arterial that joins to Alternate No. 1 at Woodland Avenue, curves southeasterly,

crosses Fleur Drive southwesterly of its intersection with Locust Street and joins to Alternate B easterly of S.W. 15th Street. This alternate provides a direct connection between north-south and east-west segments of the proposed arterial.

Due to the following reasons, this alternate was deleted from further consideration:

- a. The diagonal routing between Fleur Drive and Woodland Avenue necessitates the acquisition and relocation of numerous facilities, including commercial establishments and Des Moines Technical High School. Some sites with architectural or historic significance are included.
- b. The elevation of the proposed facility rises from near the existing ground level in the vicinity of Market Street and S.W. 15th Street to cross railroad tracks (providing a 22- or 23-foot vertical clearance) and then overpasses Fleur Drive with a vertical clearance of at least 14'-6". Fleur Drive currently overpasses said railroad trackage. The roadway would thereby be elevated approximately 50 feet above the existing railroad tracks, resulting in high construction costs for the structure.
- c. From Ingersoll Avenue to Fleur Drive, it is anticipated that the proposed arterial would be elevated above the existing terrain. This would result in increased costs for the facility, and the area would be visually impacted and divided.

7. Tuttle Street Alternate

The proposed arterial in this alternate begins at Alternate No. 2 southeasterly of the eastern crossing of the Raccoon River, curves northeasterly and then easterly to join Tuttle Street in the vicinity of S.W. 11th Street. Its alignment then follows Tuttle Street to S.W. 5th Street, proceeds northeasterly, crosses the Des Moines River north of Sec Taylor Stadium and then joins Alternates A and B south of Raccoon Street.

Alternate No. 7 was dropped from further design and evaluation because of the following:

- a. Between its junction with Alternate No. 2 and S.W. Second Street, this alternate requires the acquisition and relocation of several industrial and railroad properties. Right-of-way acquisition and relocation costs are expected to be prohibitively high.
- b. The alternate would cross various park properties between S.W. Second Street and the east side of the Des Moines River, with resulting impacts to such parklands.
- c. Numerous railroad tracks between the Raccoon River and S.W. Ninth Street would have to be crossed. Almost all of these would have to be either crossed at-grade or overpassed. Due to the relatively close spacing of railroads, a combination of at-grade crossings and overpasses is not feasible. Numerous at-grade crossings would deter traffic movements and reduce safety, whereby overpassing all tracks would be financially unfeasible.

8. Scott Avenue - Maury Street Alternate

The westerly terminus of this segment is located easterly of the Des Moines River at a point on Alternate No. 2. Its alignment then curves and proceeds easterly to join the route of existing Maury Street ending at the junction of S.E. 14th Street.

This alternate was deleted for the following reasons:

- a. Scott Avenue east of S.E. 14th Street is planned to be the major roadway in the future, with Maury Street being a lower-level roadway.
- b. Due to the diagonal nature of the alignment of this alternate as it relates to existing property layouts, the acquisition and relocation of numerous residential properties would be required. The impact on the remaining neighborhood is expected to be severe also.

9. Raccoon Street - Maury Street Alternate

This alternate begins in the vicinity of E. Sixth Street at Alternates A and B then curves southeasterly to follow Maury Street easterly to a junction with S.E. 14th Street.

This alternate was deleted for the same reasons as was Alternate No. 8.

10. 15th Street Alternate

The 15th Street alternate is a divided multilane arterial roadway connecting to the 15th Street leg of Alternate A and thence following 15th Street and Crocker Street to the north and west. This alternate then connects with the existing one-way streets of Harding Road and 19th Street just south of I-235.

This alternate was deleted from further review because of the following factors:

- a. The anticipated traffic volumes along Cottage Grove Avenue, Crocker Street and 15th Street north of Ingersoll Avenue would require the widening of such streets. Resulting impacts are expected to be severe for the commercial area along Cottage Grove Avenue, to residential areas, the historic district and St. Edmunds School areas along Crocker Street, and to residential areas and the historic district along 15th Street.
- b. The Harding Road and 19th Street connections intersect with Cottage Grove Avenue at approximately right angles. The provision of other than relatively large turning radii would reduce the efficiency of traffic movements. Larger radii would require more extensive property acquisitions. The church at the northeast corner of 19th Street and Cottage Grove Avenue (Crocker Street) would restrict the turning radius in this quadrant of the intersection.
- c. The proposed arterial in this alternate would separate St. Edmunds School and its adjoining open space from the neighborhood south of Cottage Grove Avenue and Crocker Street and west of 15th Street. School pedestrian traffic movements and safety would be severely affected by the increased traffic on these roadways.

- d. Noise level increases would be a significant impact on the school, church and residential areas along the proposed arterial.

11. High Street Alternate

This alternate begins at Alternate No. 1 north of Woodland Avenue, curves easterly in the vicinity of High Street and then curves southeasterly to follow along 15th Street to meet the 15th Street leg of Alternate A in the vicinity of Locust Street.

This alternate was deleted for the following reason:

- a. Access from Fleur Drive to the north-south segment of the proposed arterial north of Woodland Avenue would be very indirect. This would result in extra vehicle miles of travel and reduced efficiency and safety of traffic operations.
- b. Adverse impacts on residential areas, commercial areas and historic district.

12. Tuttle Street - Scott Avenue Alternate

Alternate No. 12 begins at Alternate No. 7 in the vicinity of S.W. Third Street, curves southeasterly and then northeasterly, meeting Alternate No. 2 in the vicinity of S.E. Eighth Street.

This alternate was deleted from further consideration for the following reasons:

- a. The diagonal alignment east of the Des Moines River would be adverse to existing properties due to the angular crossing of these blocks, thus resulting in increased acquisition of residences and relocation impacts.
- b. Alternate Nos. 2 and 7, to which this Alternate No. 12 connects, were deleted.

13. Tuttle Street - Elm Street Alternate

This alternate begins at Alternate No. 7 at a point in the vicinity of the southerly extension of S.W. 15th Street, proceeds northeasterly and then curves more northeasterly to join Alternates A and B in the vicinity of S.W. Ninth Street and Elm Street.

Due to the following factors, this alternate was deleted from further consideration:

- a. Its alignment would cross several railroads and commercial and industrial properties, resulting in high costs of right-of-way acquisition and relocation.
- b. Comment c. of Alternate No. 7 is applicable to this alternate.

Indianola Avenue Connection Alternates

I-1. S.E. First Street Alternate

This alternate provides for a segment of divided highway combined with two one-way streets to connect the CBD Loop Arterial with Indianola Avenue. Northbound traffic proceeds northeasterly from Indianola Avenue along the route of S.E. First Street to the Raccoon River, crosses said river and proceeds northwesterly along the route of S.W. First Street, then curves more northwesterly to pass north of the Sec Taylor Stadium and then curves more northerly to become aligned with S.W. Second Street in the vicinity of Elm Street.

The southbound roadway proceeds southerly of Elm Street along the route of S.W. Third Street, then curves southeasterly, crosses the Raccoon River and then curves to meet the proposed divided highway near Jackson Avenue. This alternate then follows the existing alignment of S.E. First Street to Indianola Avenue.

Alternate No. I-1 was deleted from further consideration for the following reasons:

- a. The northbound lanes were located to prevent intrusion into Columbus Park northerly of Indianola Avenue. This would result in the intrusion of the southbound lanes into properties along the westerly side of S.E. First Street. The alignment of the southbound lanes from the Raccoon River to Indianola Avenue therefore would require the acquisition and relocation of numerous residential and commercial properties.

- b. Properties south of the Raccoon River, north of the convergence of the southbound and northbound roadways and between the two said roadways would be separated from the current neighborhood. It is expected that this area would deteriorate.
- c. An additional east-west roadway, generally paralleling the Raccoon River to the south, would be required to accommodate traffic. This roadway would connect from the southbound roadway at a point south of the river and would proceed easterly, with a junction at the northbound roadway and an eastern terminus southerly of the Scott Avenue bridge. This roadway would require additional right-of-way and relocations.
- d. To accommodate the projected turning movements, this alternate would require a major intersection improvement at Indianola Avenue. However, due to the presence of Columbus Park in the northeasterly quadrant of this intersection, the necessary intersection improvements cannot be provided without encroachment into the park unless the north leg of the intersection is shifted considerably more to the west. Thus, either the park or additional private properties would be impacted.

I-2. S.W. First Street - S.E. First Street Alternate

This alternate provides for two one-way streets to connect the proposed CBD Loop Arterial with Indianola Avenue. The northbound roadway proceeds northerly from Indianola Avenue via the route of S.E. First Street and then curves northwesterly to join the alignment of S.W. Second Street as extended south of Elm Street.

The southbound roadway follows the route of S.W. Third Street as extended southerly of Elm Street and then curves southwesterly to follow the route of S.W. First Street to Indianola Avenue.

This alternate was deleted from further consideration and analyses due to the following:

- a. A relatively large area would be included between the two one-way roadways. The area south of the Raccoon River includes numerous residences, a church, a parochial school, a convent, several businesses and neighborhood facilities. The existing area would therefore be divided, with that portion between the one-way roadways being isolated from the balance of the neighborhood. The isolated area would be expected to deteriorate.
- b. A major intersection improvement at the junction of the northbound roadway at Indianola Avenue, as discussed for Alternate No. I-1, would have similar impacts for this alternate. In addition, an additional major intersection at the junction of the southbound roadway and Indianola Avenue would have a significant impact on the church at the northeasterly corner of such an intersection.
- c. Pedestrian access to the church and the parochial school that are located between the two one-way roadways would be adversely affected by the roadways.

S.E. 14th Street - S.E. 15th Street Alternates

14A. S.E. 14th Street Alternate

This alternate provides for a southbound roadway from the vicinity of E. Walnut Street to the railroad viaduct, thence becoming known as S.E. 14th Street to the bridge over the Des Moines River. The northbound roadway proceeds north from the said river bridge to the vicinity of the north end of the railroad viaduct, becomes E. 15th Street, curves northeasterly and then northwesterly along the route of E. 15th Street to E. Walnut Street. Existing S.E. 14th Street is a divided four-lane roadway from the convergence of E. 14th and E. 15th Streets north of the railroad viaduct to south of the bridge over the Des Moines River. The proposed alternate would include widening of the existing roadway to the extent necessary to accommodate projected future traffic volumes.

This alternate was deleted from further consideration due to the following reason:

- a. Based on preliminary traffic volume projections at the junctions of S.E. 14th Street with Scott Avenue and Maury Street, widenings of S.E. 14th Street, including the provision of additional turning lanes, would result in very large intersections or interchanges. Traffic could be accommodated more efficiently and safely by separating the northbound and southbound roadways and provide separate junctions at Scott Avenue and Maury Street. Such an alternate as the latter was selected for further preliminary design and evaluation.

15th Street Connection Alternate

15A. Fleur Drive - 15th Street Alternate

This alternate consists of the northeasterly extension of Fleur Drive to the vicinity of Ingersoll Avenue, thence curves northerly to follow along the route of 15th Street. In conjunction with Alternate Nos. 1, 2 and 4, this alternate was preliminarily considered to distribute Fleur Drive traffic to Locust Street, Grand Avenue, Ingersoll Avenue and 15th Street and to relieve traffic congestion in the vicinity of Locust Street, Grand Avenue, 18th Street, 17th Street and Ingersoll Avenue.

This alternate was deleted due to the following factors:

- a. Right-of-way needed for this alternate included expensive commercial businesses.
- b. The alignment of this alternate would cross existing blocks in a diagonal manner and intersect existing streets at objectionable angles, resulting in sharp, inefficient turning movements.

Street Widening Alternates

As an alternative to providing a new transportation facility in the project corridor, the possibility of widening existing streets to accommodate the projected traffic volumes was investigated. As shown in Figure 2.8, the projected traffic deficiencies are located in four general corridors: a north-south corridor along Harding Road and Fleur Drive, a north-south corridor along First Street, a north-south corridor along S.E. 14th Street,

and an east-west corridor through the central business district. The "Street Widening" alternates propose improvements to existing streets along or parallel to the above corridors as a method of satisfying the future traffic demand.

Street Widening Alternate No. SW-1

This alternate consists of widening and/or removing parking from those individual streets within the study area that are not capable of accommodating projected traffic volumes. The following street modifications are included in Alternate No. SW-1 and are indicated in Figure 3.8:

1. 19th Street, Center Street to I-235.
2. Crocker Street, 19th Street to 16th Street.
3. Center Street, 19th Street to Harding Road.
4. Harding Road, Center Street to Ingersoll Avenue.
5. Ingersoll Avenue, Harding Road to 19th Street.
6. 19th Street, Ingersoll Avenue to Grand Avenue.
7. Grand Avenue, 18th Street to West of Harding Road.
8. 18th Street, Grand Avenue to Fleur Drive.
9. Fleur Drive, Valley Drive to 18th Street.
10. Indianola Avenue, East of S.W. Ninth Street to Hartford Avenue.
11. First Street, Indianola Avenue to Court Avenue.
12. S.E. Sixth Street, Raccoon Street to E. Court Avenue.
13. S.E. 14th Street, Hartford Avenue to E. Walnut Street.
14. E. 15th Street, E. Court Avenue to E. Walnut Street.
15. S.E. 14th Street - E. 15th Street Connection, south of E. Court Avenue.
16. Maury Street, S.E. 14th Street east to study limit.
18. Widening of streets within shaded area shown in Figures 2.8 and 3.8.

During the preliminary evaluation stage of the above alternate, the following major impacts were identified:

- a. The traffic analysis indicated a need for an increase of approximately 25 percent in the traffic handling capacities of streets in the central business district area. To provide such increases in capacities would

require the widening of many streets and elimination of on-street parking within the CBD, as well as the removal of on-street parking in other areas. Due to the existing built-up character of this area, such major street improvements cannot be accommodated without narrowing or eliminating sidewalks and/or removing many existing multistory buildings. Based on right-of-way considerations alone, the widening of existing streets in the CBD area is considered to be an impractical solution. In addition, a recent 1982 study has stated that approximately 4,800 additional parking spaces will be needed in the downtown area, thus making the loss of existing parking a significant impact.

- b. The widening of existing streets in the CBD area would encourage the use of such streets for through-traffic movements, particularly if alternate parallel routes are not available. Accordingly, this alternate will further detract from the business usage character of the downtown area.
- c. Pedestrian movements in the CBD area would be severely impacted by the removal or reduction of sidewalk facilities or by the increase in traffic volumes. Approximately 20,614 full-time persons are employed at companies with offices located within the 55-block area bounded by Grand Avenue, Des Moines River, Court Avenue, Fifth Avenue, Cherry Street, 13th Street, Mulberry Street, 16th Street, Des Moines Union Railway and 18th Street, being west of the Des Moines River. In addition, approximately 1,363 persons are employed on the east side of the river in a 16-block area bounded by the Des Moines River, E. Court Avenue, E. Seventh Street and E. Grand Avenue.
- d. The proposed Walnut Avenue Transit Mall between Eighth Street and Fifth Street would be extremely difficult to implement due to the added traffic volumes in the CBD area. Traffic volumes would increase further on parallel

streets if this portion of Walnut Street was closed to through traffic as proposed for the transit mall.

- e. The historic district along Court Avenue west of the Des Moines River to Fifth Street, would be adversely impacted through right-of-way acquisition and increased traffic volumes.
- f. Major intersection or interchange improvements would be required at many locations including interchanges at Fleur Drive, S.W. Eighth and Ninth Streets and S.E. 14th Street, as well as other possible locations.
- g. The alternate would require the widening of four bridges: the Fleur Drive bridge over the Raccoon River, the First Street bridge over the Raccoon River, the S.E. 14th Street railroad viaduct north of Scott Avenue and the S.E. 14th Street bridge over the Des Moines River.
- h. A number of parks, open spaces and cemeteries would be affected by proposed street widenings including Chamberlain Park, Woodland Cemetery, St. Ambrose Cemetery, Columbus Park, Sec Taylor Stadium, Hawthorn Park, Water Works Park, and several areas of public open space near the Des Moines and Raccoon Rivers and in the CBD area. Impacts to certain park areas would include increases in traffic volumes, noise and exhaust emissions, in addition to visual and physical intrusion.
- i. The need to widen S.E. First Street from Indianola Avenue to the Raccoon River would necessitate acquisition of property fronting on both sides of the street or along only one side if all of the widening was made on one side. As Columbus Park is located on the east side of S.E. First Street, the widening would likely be along the west side of the present roadway, causing full or partial acquisition of existing residential and commercial properties along that side of the street.

S.W. First Street would need to be widened from its intersection with S.E. First Street, across the Raccoon

River (including bridge widening) and then to the junction of S.W. First Street and Riverside Drive, such being between and adjacent to parklands. To avoid widening S.W. First Street from its aforementioned junction with Riverside Drive to Court Avenue, existing S.W. First Street and Riverside Drive could be converted from two-way streets to a one-way couplet.

- j. The horizontal alignment of the present roadway relative to northbound traffic, via Harding Road-Center Street-19th Street restricts travel to speeds of 15 miles per hour at two curves. In order to provide for higher speeds and improve the level of service and other operational characteristics, a larger radius horizontal curve is proposed for the curve from northbound Harding Road to eastbound Center Street and for the curve from the latter to northbound 19th Street. Additional right-of-way will need to be acquired, which may include potential historic or architectural sites.

The area bounded by Harding Road, Center Street, 19th Street and Interstate 235, will continue to be isolated from the balance of the Sherman Hill Neighborhood area. School children destined for Edmunds School will have to continue to cross the 19th Street artery.

- k. The alternate will not provide an improved transportation facility to serve the industrial areas along Market Street and thus will not serve one of the primary needs defined for this project.

Street Widening Alternate No. SW-2

Due to the extent of impacts identified in the previous system, particularly in the CBD area, a second street widening alternate was investigated. This alternate, as shown in Figure 3.9, would replace the multiple east-west street widenings in the CBD area with a single east-west corridor consisting of Cherry and Mulberry Streets as one-way pairs west of Fifth Street and Court Avenue being a two-way street east of Fifth Street.

Connection of this system to the west at the existing Grand Avenue-Locust Street one-way couplet could be accomplished by a north-south one-way couplet consisting of 12th and 13th Streets from Cherry Street to Grand Avenue. By concentrating the east-west widening along this corridor, some of the impacts to the CBD area will be diminished; however, the following additional impacts were identified for this alternate:

- a. Right-of-way acquisition for 12th, 13th, Cherry and Mulberry Streets and Court Avenue would be more extensive than in Alternate No. SW-1.
- b. The historic district along Court Avenue from Fifth Street to the Des Moines River would experience additional impacts due to the increased traffic volumes and right-of-way needs associated with this alternate.
- c. The existing pedestrian structure over E. Court Avenue, being south of the State Capitol Building, would be severely impacted by the widening of E. Court Avenue. This structure is an earth-filled arch and is approximately 160 feet wide (as measured along E. Court Avenue). A new State Historic Museum is proposed to be located to the south of this structure with pedestrian access to the State Capitol Complex.
- d. This alternate would require the reversal of the existing one-way eastbound traffic movement on Mulberry Street to a westbound movement, with resultant impacts on businesses and parking entrances designed for the present eastbound movement. This change would also result in two parallel one-way westbound streets (Mulberry and Walnut Streets), creating an undesirable traffic flow situation (unless Walnut Street were to be changed to a two-way street).
- e. The Court Avenue bridge over the Des Moines River would possibly have to be widened as part of this alternate.
- f. Item Nos. b, e, f, g, h, i, j and k listed in Alternate No. SW-1 would be similar in this alternate.

Street Widening Alternate No. SW-3

In order to reduce the impacts to the CBD and State Capitol area, an additional street widening alternate was investigated. This alternate would create a major east-west route along existing streets south of the CBD area, including portions of 16th Street, Market Street, S.W. 11th Street, Tuttle Street, S.W. Fifth Street, Jackson Avenue, S.E. First Street and Scott Avenue, in lieu of multiple or selected street widenings in the CBD area (Figure 3.10). Other street widenings outside of the CBD area for this alternate are similar to Nos. 1 through 17 as listed for Street Widening Alternate No. SW-1. During the preliminary evaluation of Alternate No. SW-3, the following major impacts were found:

- a. Due to the volumes of intersecting traffic, the interchange improvements near S.W. Eighth and Ninth Streets and S.E. 14th Street would be more extensive than the previous alternates.
- b. This alternate would result in increased out-of-way travel of approximately 3,000,000 vehicle-miles per year for east-west traffic, with resultant costs and delays to the road users.
- c. Right-of-way and relocation costs associated with this alternate would be significant along 16th Street, S.W. 11th Street, Tuttle Street, S.E. First Street and Scott Avenue and particularly so in the vicinity of S.W. Eighth and S.W. Ninth Streets.
- d. Sixteenth Street would collect and distribute traffic to existing east-west streets in the western part of the CBD. Its grade south of Mulberry Street would approximate the existing grade, and it would cross the western end of the Des Moines Union Railway yards as does the existing street.
- e. The proposed widening of Scott Avenue from the Des Moines River to S.E. 14th Street in this alternate will adversely affect the residential area it traverses through increased

roadway and right-of-way widths and increased traffic volume, noise and exhaust emission levels. The Scott Avenue bridge over the Des Moines River will likely need to be widened as part of this alternate.

- f. S.E. First Street will have to be widened more than for Alternate Nos. SW-1 and SW-2 from Jackson Avenue to Scott Avenue. This will affect somewhat more right-of-way required to construct this segment of the roadway.
- g. In addition to those parks listed under Alternate No. SW-1, this alternate would also impact Allen Park and Cohen Park, adjacent to Scott Avenue. The horse watering trough located in Cohen Park, which is listed in the National Register of Historic Places, would be within the construction area of this alternate.
- h. Item Nos. f, g, h, i and j listed in Alternate No. SW-1 would be similar in this alternate.

Summary of Street Widening Alternates

Based on the extensive impacts to adjacent properties and parks, the increases in traffic volumes for local streets and in the CBD area, incompatibility with present and proposed developments in the CBD area, effects on historically and architecturally significant properties, major interchange or intersection problems at several locations, and other factors listed in the foregoing discussion, the Street Widening Alternates were deleted from further consideration.

Grand Avenue - 18th Street - Locust Street - Fleur Drive Area Street Modification Alternatives

Several alternate methods of relieving the existing traffic congestion on Grand Avenue, 18th Street, Fleur Drive and Locust Street in the vicinity of the Des Moines Technical High School, were analyzed. Nine alternates were preliminarily designed, partially evaluated and deleted from further consideration for the following reasons:

1. All alternatives involved diagonal crossings of commercial blocks, resulting in anticipated high costs for right-of-way and relocation, and adverse impacts on land use.

2. All alternatives, with the possible exception of GG and HH, reduced accessibility to properties.
3. All alternatives, although relieving congestion for the traffic movement eastbound Grand Avenue to eastbound Locust Street traffic (by reducing conflicts with northbound Fleur Drive traffic destined for westbound Grand Avenue or Ingersoll Avenue), result in indirect and longer-distance travel for said northbound Fleur Drive.
4. All alternatives resulted in indirect traffic movements for westbound Grand Avenue traffic west of 14th Street to 19th Street, with traffic being diverted to Ingersoll Avenue as part of some alternatives. The traffic movement from westbound Grand Avenue to southbound Fleur Drive would be indirect for all alternates.
5. Provision of the north-south segment of the CBD Loop Arterial, connecting Harding Road and Fleur Drive, resulted in reduced traffic volumes and congestion in this area and in the elimination of the need for such modifications relative to Alternates A and B.

SUMMARY AND COMPARISON OF ALTERNATES

The positive and negative impacts of the No Action alternate and each of the four "build" alternates under consideration are discussed in detail in Section 5, "Environmental Consequences." The following paragraphs will summarize these impacts. Major differences between the alternates are summarized in Table 3.4.

Impacts Common to the Construction Alternates- 1A, 2A, 1B and 2B

The alignments for all of these alternates are almost identical for about 70 percent of the project route. Minor differences in predicted impacts between alternates in this common alignment are primarily due to slight differences in traffic volumes that each would carry. The following list presents the impacts that are common to all of these alternates in the shared alignment areas.

Possible benefits:

1. Provides a southern bypass around the CBD for through traffic.
2. Provides better access and improved roadway facilities for industrial areas in the central city area.
3. Relieves traffic congestion in the CBD area on most east-west and some north-south streets.
4. Facilitates city land-use policies that are aimed at revitalizing the industrial and commercial areas of the central city.
5. Supports the redevelopment projects recently completed or underway in the CBD; enhances pedestrian usage of the CBD.
6. Improves accessibility to the CBD from the southeastern and southwestern areas of the city.
7. Relieves traffic congestion in the vicinity of the Fleur Drive and Locust Street intersection.
8. Provides a traffic level of service of C or better through most of the project area; most streets in the area currently operate at Level D or lower.
9. Reduces traffic accidents, particularly from I-235 to Locust Street, in the CBD along E. 14th Street-E. 15th Street and along S.E. 14th Street.
10. Improves accessibility to the Des Moines airport from northern and northeastern areas of the city.
11. Provides improved accessibility for police and ambulance services to the central city area.
12. Provides improved fire protection to some central city areas.

13. Reduces traffic volumes and associated noise and carbon monoxide levels on many local streets within central city neighborhoods, especially the Roadside and Pioneer-Columbus Areas.
14. Reduction of motor vehicle emissions and traffic-related noise levels in the CBD.
15. Increased safety for pedestrian and bicycle travel on many residential streets, particularly in the Roadside Area and the Pioneer-Columbus Area.
16. Increased school pedestrian safety for several schools, including Des Moines Technical High School, Edmunds Elementary School and St. Anthony's Catholic School.
17. Provides opportunities for joint use of land, particularly along the Harding Road corridor.
18. Serves as a barrier or strengthens the existing barrier between incompatible adjacent land uses (residential and industrial) in the Raccoon Street and S.W. First Street corridors.
19. Improves accessibility and/or visibility for several churches, including Kingsway Cathedral and Vine Street Gospel Chapel.

Possible adverse effects:

1. Displaces at least 463 residents from central city neighborhoods. These neighborhoods contain residents with lower incomes and have higher percentages of minorities than does the city as a whole.
2. Displaces at least 56 businesses from the central city area. An estimated minimum of 913 employees would be affected.
3. Displaces four churches: King of Kings (Church of the First Born), Grade Apostolic Temple, All Nations Church of God in Christ and Southeast Assembly of God Church.
4. Displaces from four to six structures that are considered eligible for nomination to the National Register of Historic Places.
5. Crosses several areas with high potential for containing significant archaeological materials.
6. Requires some right-of-way from at least three parks (Cohen Park, Riverside Park and Water Works Park), as well as several open space areas along the Des Moines and Raccoon riverfronts.
7. Possible relocation of a short segment of a bike path in the riverfront open spaces area.
8. Requires shifting of the main entrance to Woodland Cemetery approximately 25 feet to the west. Reduces accessibility somewhat from the north and south.
9. Introduces higher CO concentrations than currently exist into immediately adjacent residential areas along Raccoon Street, Harding Road, E. 15th Street and in the vicinity of S.W. First Street.

10. Increases noise levels and carbon monoxide levels in several park and open space areas adjacent to the alignment.
11. Increases noise levels at five churches adjacent to the alignment.
12. Increases noise levels in several residential areas.
13. Increases carbon monoxide levels at high-volume intersections of the arterial: Grand Avenue, Locust Street, Third Street, Second Avenue, Indianola Avenue and Maury Street.
14. Reduces the property tax base and tax revenue. Minimum tax revenue loss is estimated to be \$341,880.00.
15. Intrudes upon the facilities and future expansion area of the Des Moines Water Works.
16. Increases noise levels and suspended particulates during construction in the immediate vicinity of the project.
17. Temporary deterioration of surface water quality during construction.
18. Disruption of local traffic patterns during construction.
19. Placement of piers and fill in a wetland area.
20. Impairs pedestrian travel in three residential areas.

Impacts of the No Action Alternate

Possible benefits:

1. Would displace no residences or businesses.
2. No reduction in the city's tax base.
3. Would not destroy any historic buildings or intrude upon any historic districts or archaeological sites.
4. Would not displace any churches.
5. Would not require any parkland.
6. Would not involve any new crossings of the Des Moines or Raccoon Rivers or wetlands.
7. No cost to the city and state to construct the facility.
8. Many other highway construction projects and maintenance of existing facilities throughout the state could be undertaken.
9. No expenditure of highway improvement funds.

Possible adverse effects:

1. Increase in traffic congestion and inefficient fuel consumption for traffic in the central city areas of Des Moines.
2. Increase in traffic noise, vehicle emissions and traffic accidents in the central city area.
3. Increased street maintenance costs for many existing streets.
4. Could require the removal of parking in some areas to accommodate increased traffic.

5. Continued deterioration of the industrial areas in the central city because of inadequate accessibility and poor street conditions.
6. Inconsistent with the Proposed 1990/2000 Land Use Plan for the CBD and adjacent areas.
7. Increased response time for emergency services to some central city areas because of traffic congestion.
8. Continued increases in traffic through several residential areas.

Comparison of Alternates

The positive and negative effects of Alternate A (1A and 2A) (northern variation) compared to Alternate B (1B and 2B) (southern variation) are:

1. Has fewer impacts to the Raccoon River flood plain between Grand Avenue and its intersection with Fleur Drive than does Alternate B.
2. Has less impact on the existing and planned facilities and water storage areas of the Des Moines Water Works than does Alternate B.
3. Has less potential for impact on the subsurface archaeological resources in the Water Works Park area than does Alternate B.
4. Has lower total construction, right-of-way and relocation costs than does Alternate B.
5. Provides poorer service to the industrial area south of Market Street than does Alternate B.
6. Divides the commercial office area in the downtown west area in the vicinity of 15th Street.
7. Isolates the area west of 15th from the CBD.
8. Is not as consistent with the proposed land-use plans for this area as is Alternate B.
9. Displaces one more significant historic/architectural structure than does Alternate B (Cultural Site 2A.18).
10. Displaces 14 more businesses in the downtown west area than does Alternate B.

The positive and negative effects of Alternates 1A and 1B (interchange solutions) compared to Alternates 2A and 2B (intersection solutions) are:

1. Provides for safer, faster and more efficient traffic flow in the north-south segment of the project in the vicinity of Ingersoll Avenue.
2. More efficient traffic movement would result in slightly reduced vehicle emissions in the nearby residential areas.
3. Displaces 54 more residents and 21 more housing units in the vicinity of the Sherman Hill area.

4. Displaces 8 more businesses near the Sherman Hill area in the vicinity of Ingersoll Avenue.
5. Displaces one more significant historic/architectural structure (Cultural Site 2A.2).
6. Requires a small amount of right-of-way from Chamberlain Park (refer to Plates 3, 4, 5, 6, Appendix C).
7. Intrudes more into the Sherman Hill residential area and upon the Tech High athletic field (refer to Plates 3, 4, 5, 6, Appendix C).

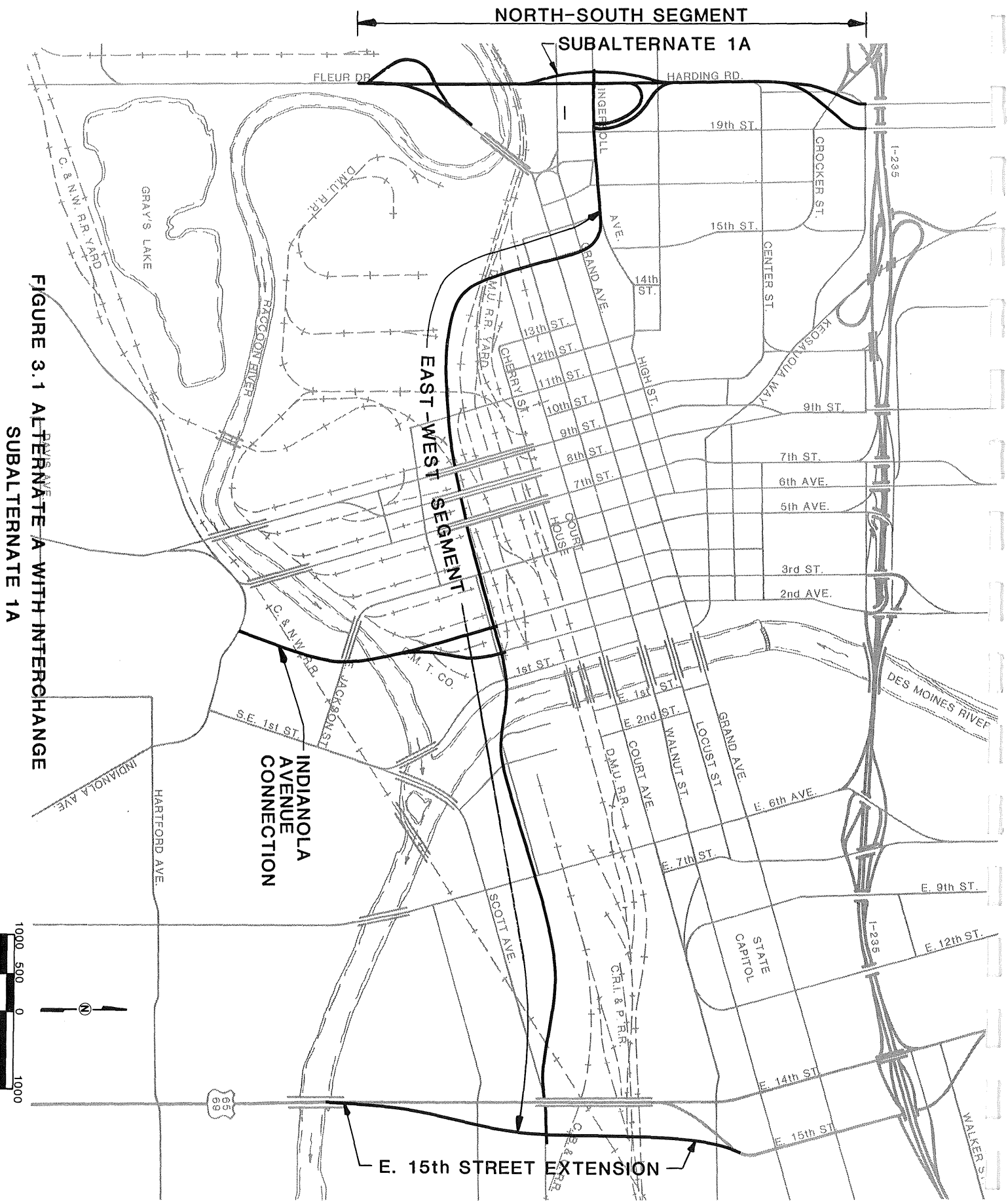
Possible Mitigation Measures

1. Relocation assistance to displaced owners and tenants of residential, commercial and nonprofit organizations.
2. Acquisition payments to all owners whose property is acquired.
3. Landscaped buffer areas where the roadway borders residential areas and parks.
4. Noise abatement measures in four residential areas, adjacent to two parks and for five churches.
5. Noise barrier rails on bridges in the Water Works Park area.
6. Pedestrian walkways in four residential areas.
7. Measures to divert highway runoff from collecting in the water storage facilities in Water Works Park.
8. Measures to minimize harm to the wetland crossed by the project.
9. Archaeological testing and salvaging of materials where the alignment crosses flood plain areas.
10. Archaeological testing and salvaging of materials at the site of old Fort Des Moines No. 2.
11. Relocation of significant historic and architectural properties where feasible.
12. Complete documentation of significant historic and architectural properties that are demolished.
13. Measures to control noise and air pollution and erosion during construction.

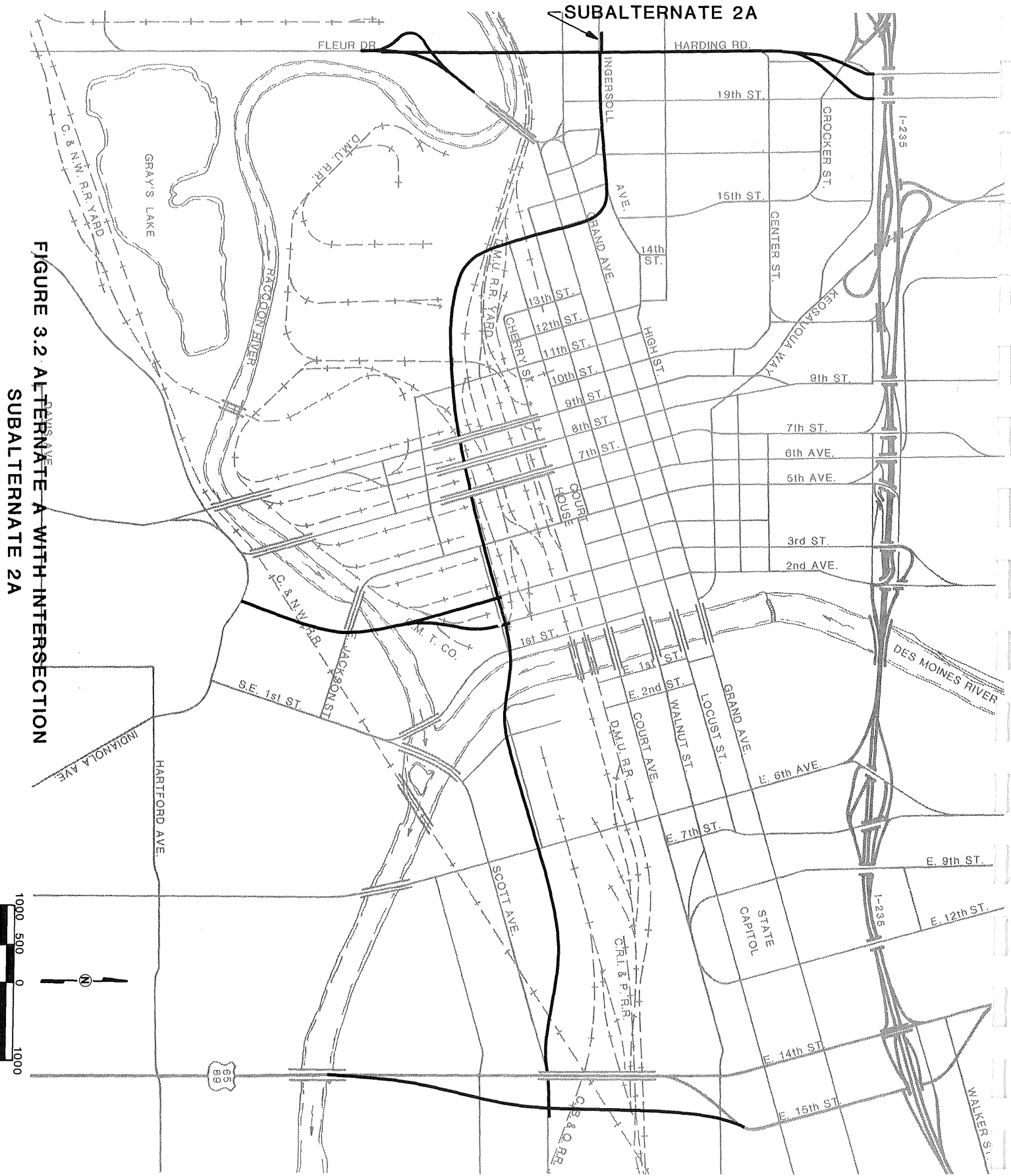
TABLE 3.4
SUMMARY OF MAJOR ADVERSE IMPACTS OF
CBD LOOP ALTERNATES

Parameter	Alternates*			
	1A	2A	1B	2B
Estimated Number of People Displaced	545	491	517	463
Housing Units Displaced	232	211	208	187
Single-Family Dwellings Displaced	73	67	73	67
Businesses Displaced	71	63	64	56
Churches Displaced	4	4	4	4
Historic Structures Displaced	6	5	5	4
Parks Where Right-of-Way for Project is Required	4	3	4	3
Total Construction Cost	\$33,071,500	\$31,454,600	\$39,691,100	\$38,371,900
Total Construction, Right-of-Way, Relocation Costs and Design Costs	\$66,018,900	\$61,758,400	\$72,165,200	\$68,262,600

*Alternate 1A is northern variation with interchange.
 Alternate 2A is northern variation with intersection.
 Alternate 1B is southern variation with interchange.
 Alternate 2B is southern variation with intersection.

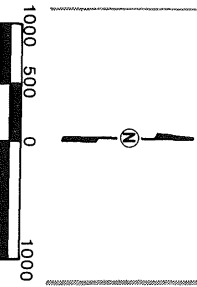


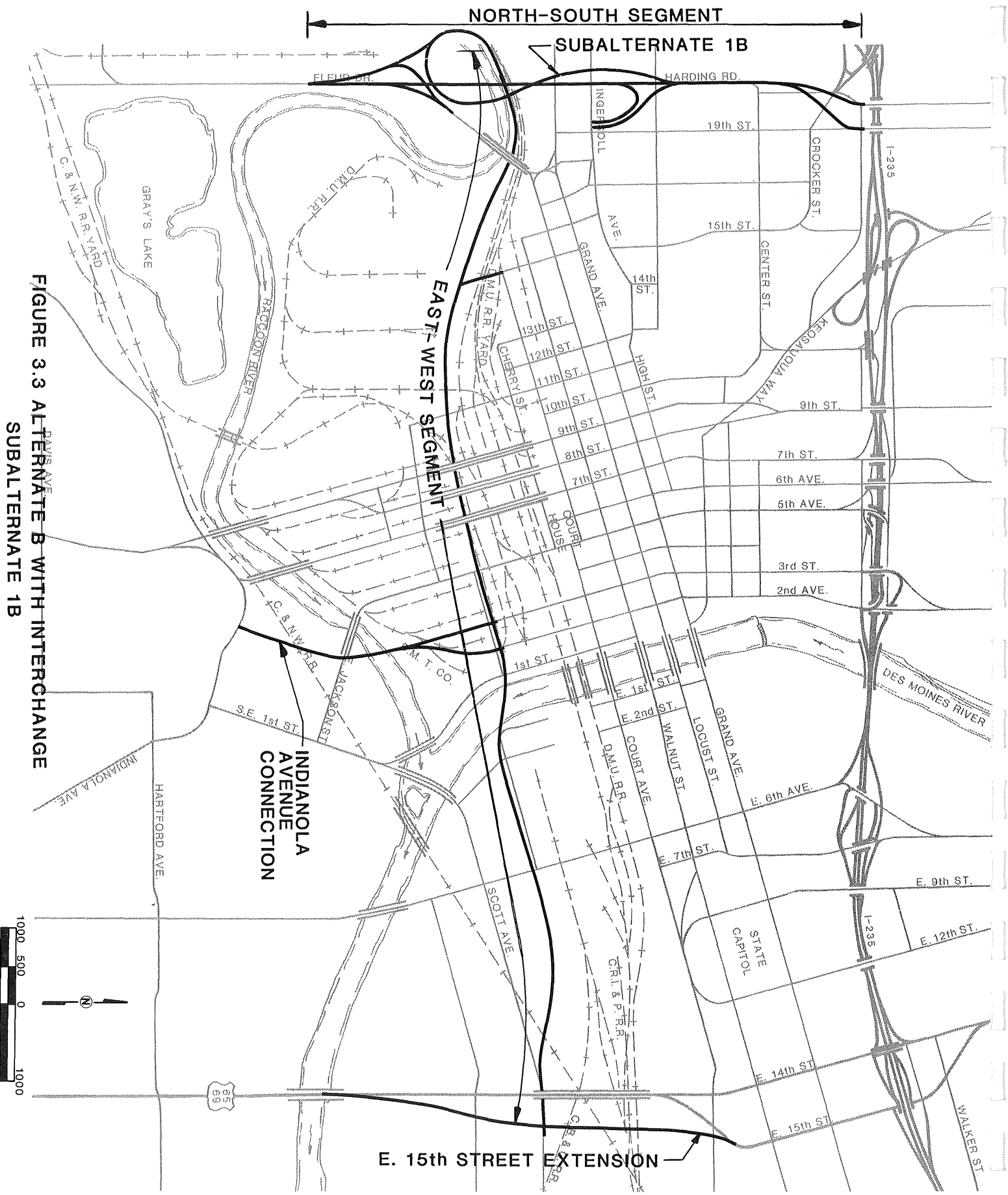
**FIGURE 3.1 ALTERNATE A WITH INTERCHANGE
SUBALTERNATE 1A**



SUBALTERNATE 2A

FIGURE 3.2 ALTERNATE A WITH INTERSECTION
SUBALTERNATE 2A

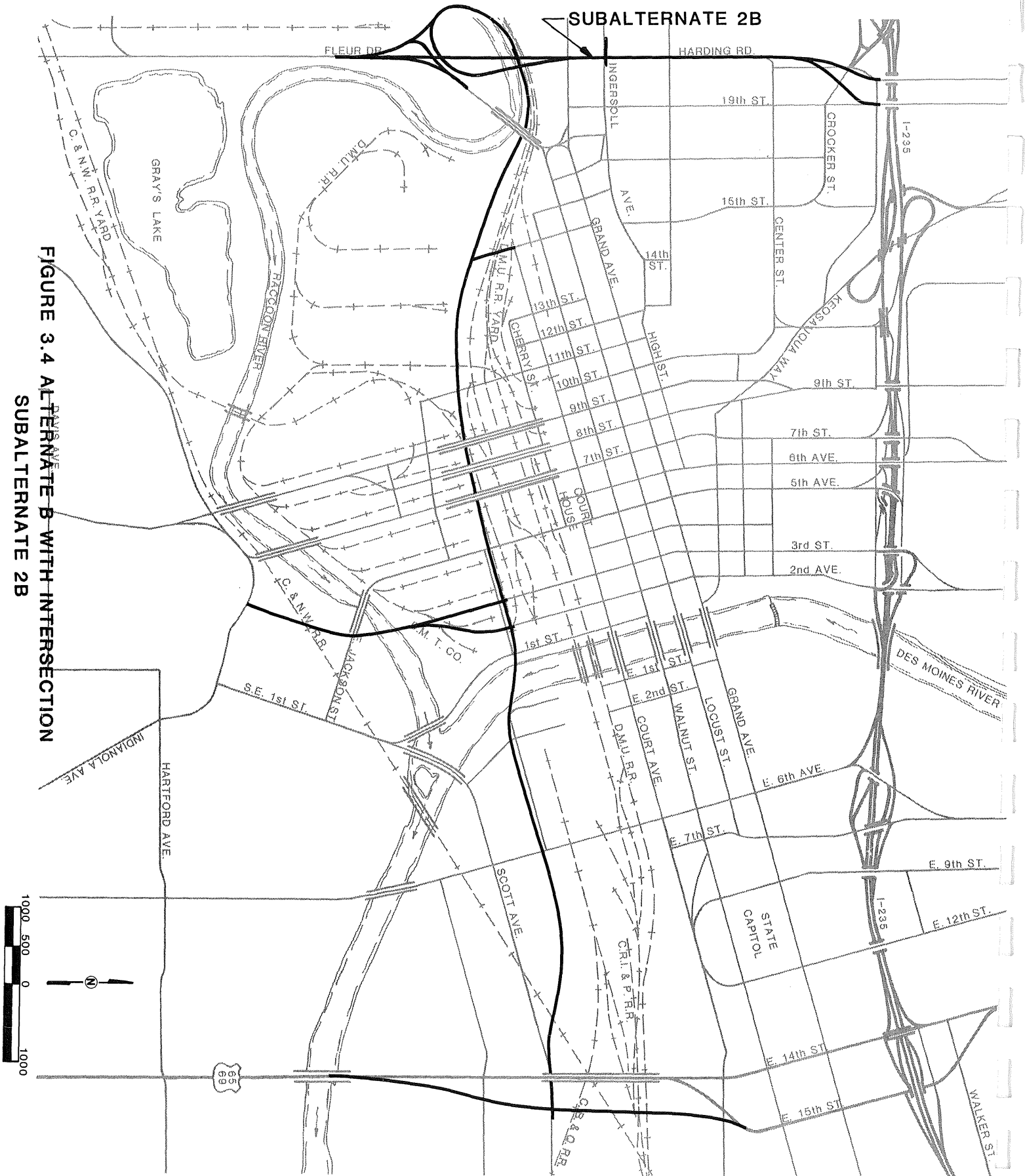


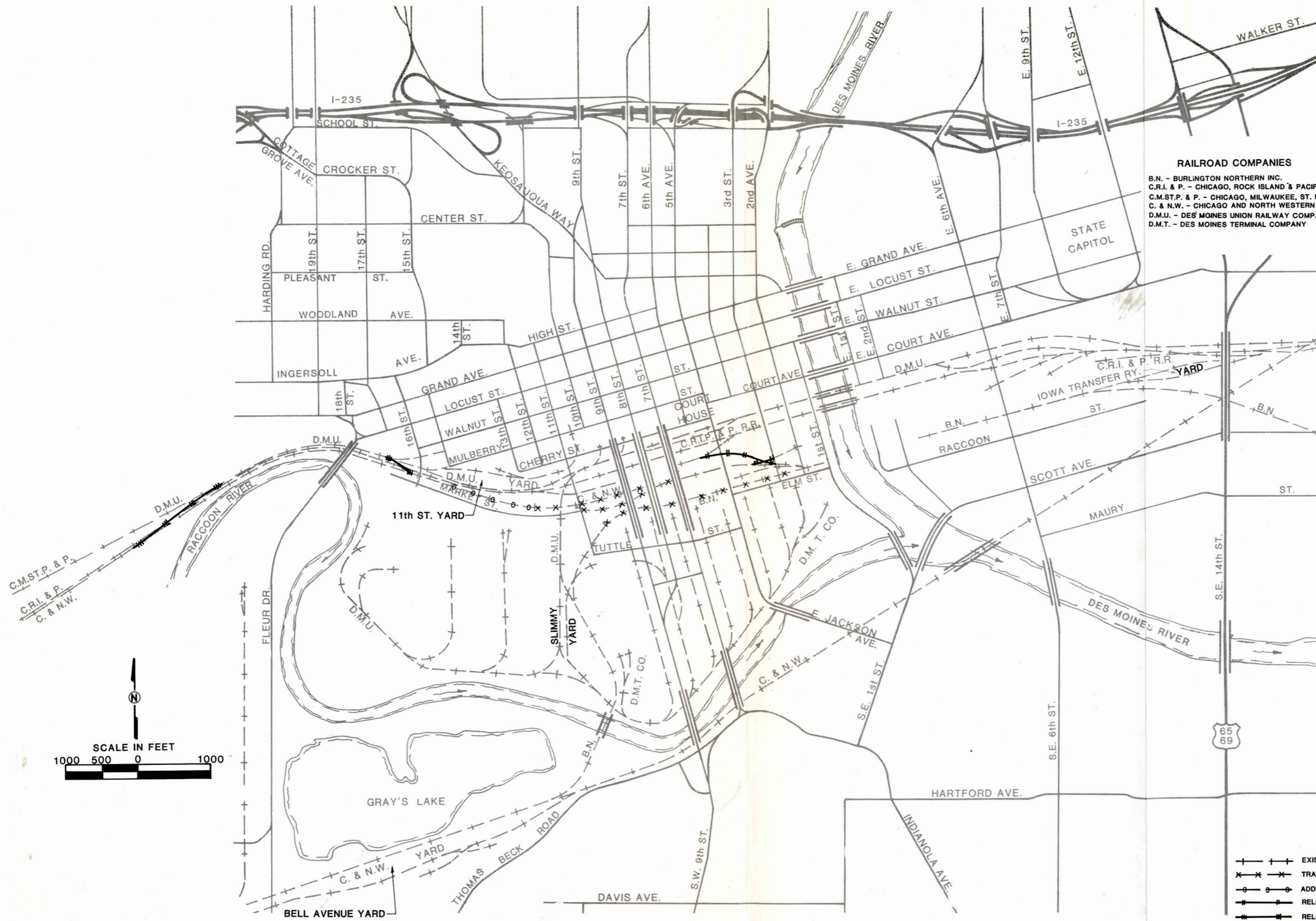


**FIGURE 3.3 ALTERNATE B WITH INTERCHANGE
SUBALTERNATE 1B**

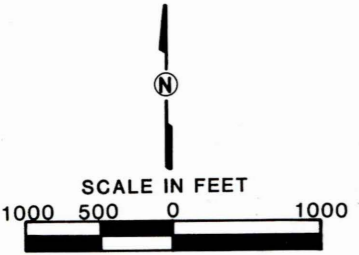
SUBALTERNATE 2B

FIGURE 3.4 ALTERNATE B WITH INTERSECTION
SUBALTERNATE 2B





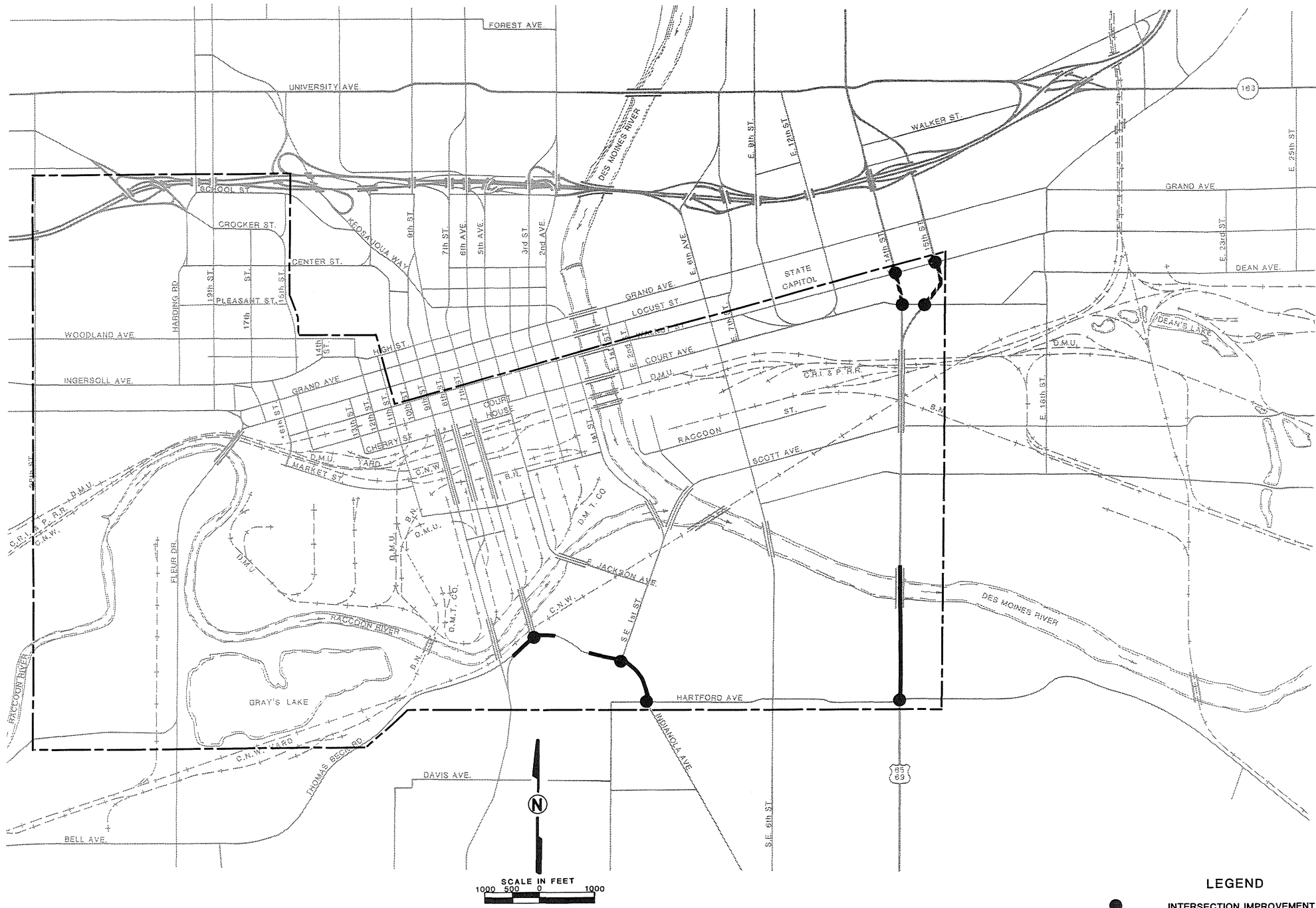
RAILROAD COMPANIES
 B.N. - BURLINGTON NORTHERN INC.
 C.R.I. & P. - CHICAGO, ROCK ISLAND & PACIFIC RAILROAD COMPANY
 C.M.S.T.P. & P. - CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC RAILROAD COMPANY
 C. & N.W. - CHICAGO AND NORTH WESTERN TRANSPORTATION COMPANY
 D.M.U. - DES MOINES UNION RAILWAY COMPANY
 D.M.T. - DES MOINES TERMINAL COMPANY



LEGEND

- +—+—+ EXISTING TRACKAGE
- x-x-x- TRACKAGE REMOVAL ALTERNATES A & B
- o-o-o- ADDITIONAL TRACKAGE REMOVAL ALTERNATE A
- +--+ RELOCATION OF TRACKAGE ALTERNATES A & B
- x-x-x- RELOCATION OF TRACKAGE ALTERNATE B

FIGURE 3.5 RAILROAD RELOCATIONS THAT WOULD BE REQUIRED BY THE CBD LOOP PROJECT



**FIGURE 3.6 STREET WIDENING ASSOCIATED WITH ALTERNATES A AND B
CBD LOOP ARTERIAL**

- LEGEND**
- INTERSECTION IMPROVEMENT
 - - - ANALYSIS AREA LIMIT
 - == WIDEN LESS THAN 2 LANES
 - ▬ WIDEN 2 LANES

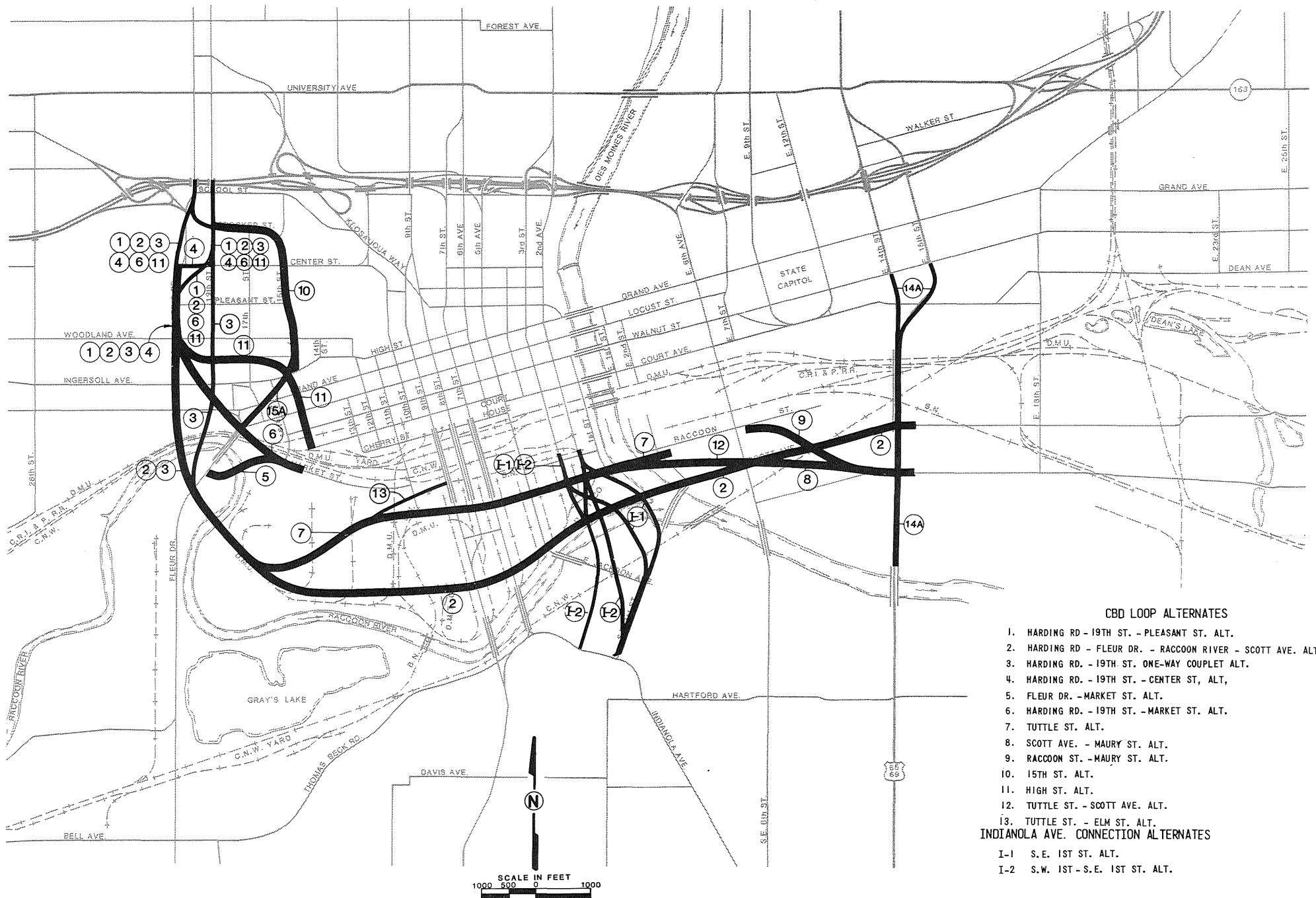


FIGURE 3.7 ALTERNATES CONSIDERED PARTIALLY EVALUATED & DELETED FROM FURTHER CONSIDERATION

- CBD LOOP ALTERNATES**
1. HARDING RD - 19TH ST. - PLEASANT ST. ALT.
 2. HARDING RD - FLEUR DR. - RACCOON RIVER - SCOTT AVE. ALT.
 3. HARDING RD. - 19TH ST. ONE-WAY COUPLER ALT.
 4. HARDING RD. - 19TH ST. - CENTER ST. ALT,
 5. FLEUR DR. - MARKET ST. ALT.
 6. HARDING RD. - 19TH ST. - MARKET ST. ALT.
 7. TUTTLE ST. ALT.
 8. SCOTT AVE. - MAURY ST. ALT.
 9. RACCOON ST. - MAURY ST. ALT.
 10. 15TH ST. ALT.
 11. HIGH ST. ALT.
 12. TUTTLE ST. - SCOTT AVE. ALT.
 13. TUTTLE ST. - ELM ST. ALT.
- INDIANOLA AVE. CONNECTION ALTERNATES**
- I-1 S.E. 1ST ST. ALT.
 I-2 S.W. 1ST - S.E. 1ST ST. ALT.
- S.E. 14TH - S.E. 15TH ST. ALTERNATES**
- 14A. S.E. 14TH ST. ALT.
- 15TH ST. CONNECTION ALTERNATES**
- 15A FLEUR DR. - 15TH ST. ALT.

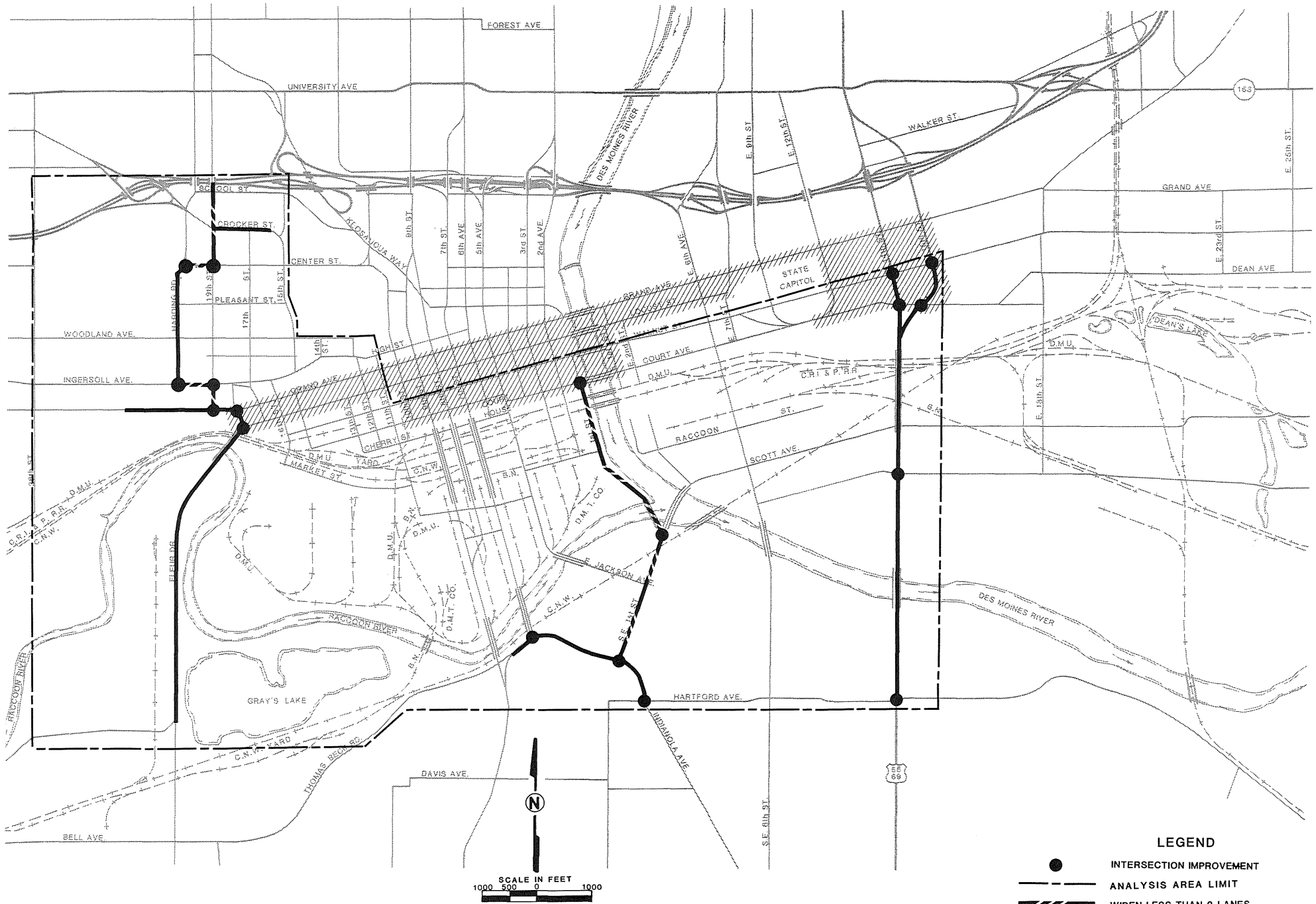


FIGURE 3.8 STREET WIDENING ALTERNATE SW-1

- LEGEND**
- INTERSECTION IMPROVEMENT
 - - - ANALYSIS AREA LIMIT
 - ▬▬▬ WIDEN LESS THAN 2 LANES
 - ▬▬▬ WIDEN 2 LANES
 - ▨▨▨▨▨ AREA OF TRAFFIC CONGESTION

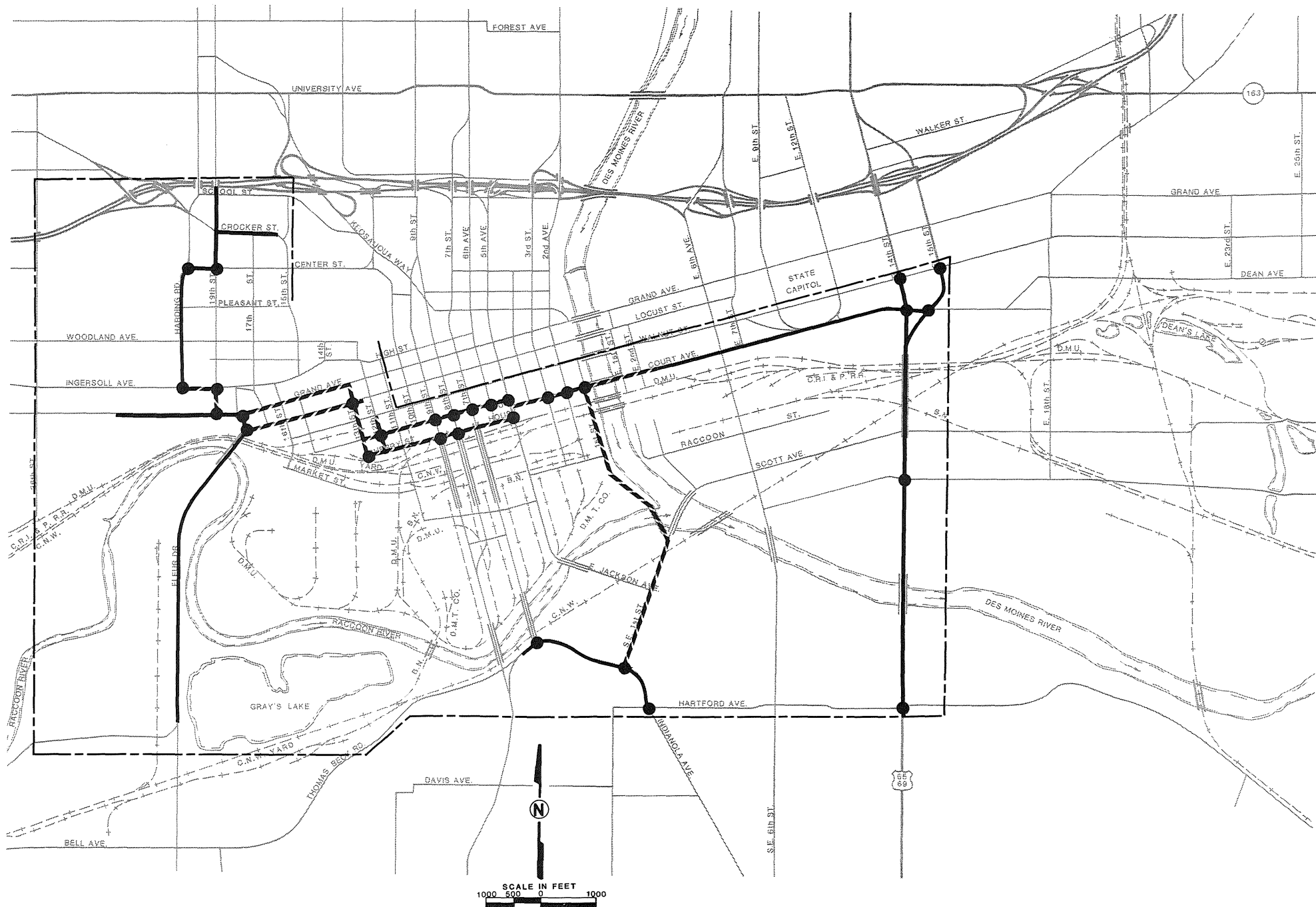


FIGURE 3.9 STREET WIDENING ALTERNATE SW-2

- LEGEND**
- INTERSECTION IMPROVEMENTS
 - WIDEN LESS THAN 2 LANES
 - WIDEN 2 LANES
 - - - ANALYSIS AREA LIMIT

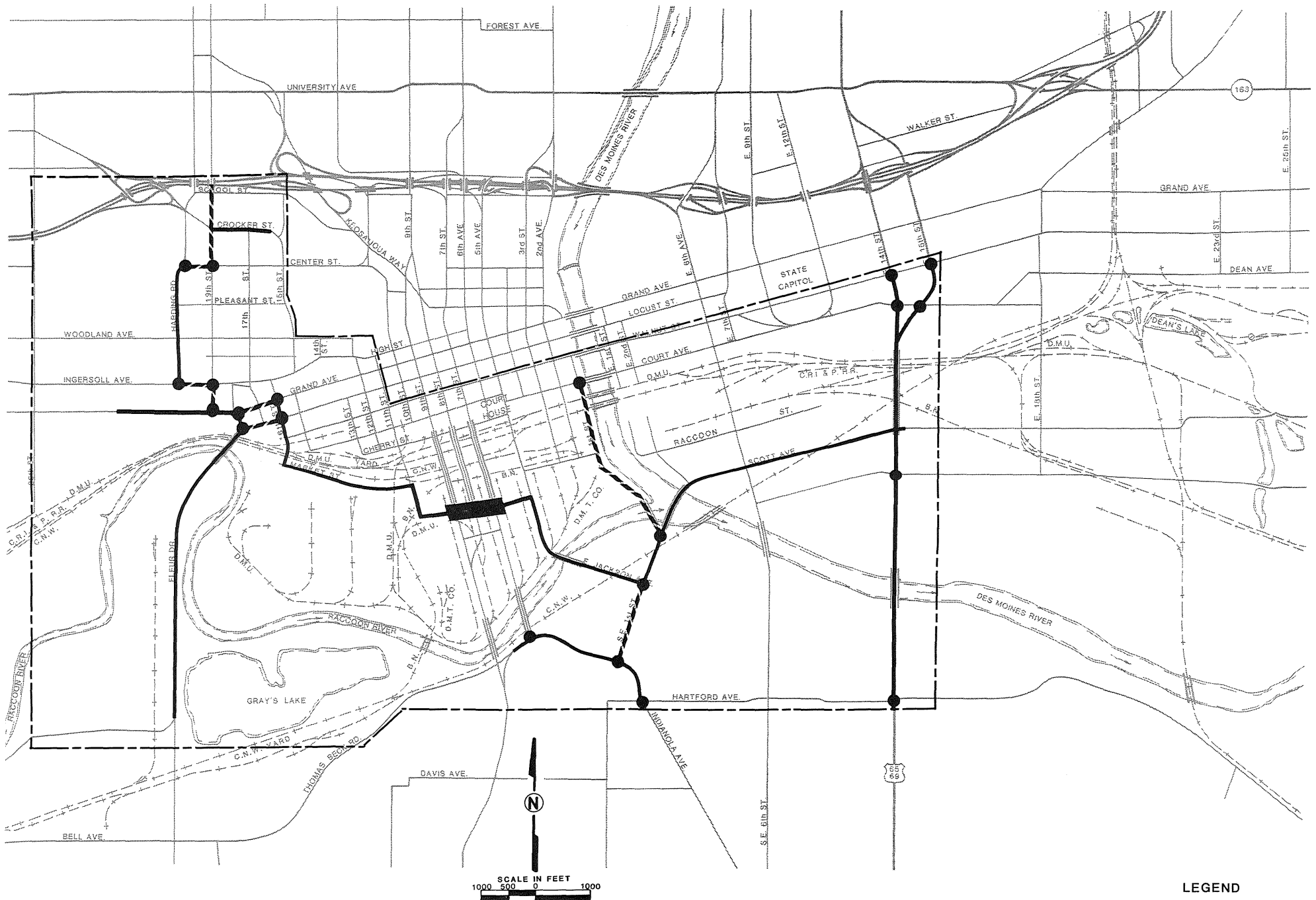







FIGURE 3.10 STREET WIDENING ALTERNATE SW-3

- LEGEND**
-  INTERCHANGE IMPROVEMENTS
 -  INTERSECTION IMPROVEMENTS
 -  WIDEN LESS THAN 2 LANES
 -  WIDEN 2 LANES
 -  ANALYSIS AREA LIMIT

SECTION 4

AFFECTED ENVIRONMENT

NATURAL ENVIRONMENT

The study area is a three-mile long corridor located within the city limits of Des Moines, Iowa. It encompasses approximately 1,750 acres of land, most of which is highly urbanized.

The corridor is situated on the flood plains and terraces of the Des Moines River and Raccoon River, and the confluence of these two rivers occurs in the project area. Both of these river valleys are characterized by steeply sloping bluffs and a broken and dissected topography, especially near the bluff edges. Elevations in the project area range from approximately 790 feet (above sea level) in the flood plain areas to about 900 feet on the terraces (Figure 4.1).

The project area is immediately south of the terminus of the Des Moines Lobe, the last Wisconsin drift sheet to cover north-central Iowa. All of the county is underlain by bedrock belonging to the Des Moines Series of Pennsylvanian Age. These flat-lying strata consist of shale containing thin coal seams and interbedded sandstone and limestone. Most of this bedrock is buried under several feet of glacial till, loess and alluvium and has little effect on the surficial topography. Rather, glacial deposits and erosion are responsible for the majority of the landforms.

The Des Moines and Raccoon River flood plains are areas of recent alluvial deposits with numerous meander scars. During the melting of the Wisconsin glacier, outwash was carried from the glacier by the major channels in this area. More than 90 feet of glacial debris and alluvium now lie in the deep bedrock channel cut in shale beneath the Des Moines River.

A field study of the geomorphology of the project area was conducted as part of this EIS project in 1982. Terrace sequences in the river

valleys were identified, and sediments from these deposits were aged. The amount of surface disturbance of these deposits and the depth of buried deposits were evaluated. Soil profiles were developed for six sites within the project area. This information was utilized in assessing the potential for archaeological sites within the project corridor. This study is presented in its entirety in Chapter 3 of Appendix Volume III, "Cultural Resources of the CBD Loop Arterial Project Area, Phase I Investigations."

In the late 1800s and early 1900s there were many active coal mines throughout the city. Most of the productive coal seams were depleted, and the last mine closed around 1946. Recently, the collapse of portions of several of these mines have caused holes to open up in an area to the east of the State Capitol. The Iowa Geological Survey has conducted a recent survey of these coal mines.

Other mineral resources in Des Moines of economic importance include sand, gravel, clay and sandstone.

The Des Moines River passes through the city near the center of the project area, flowing in a southeasterly direction. Upstream from Des Moines it drains a large area in both south-central Minnesota and north-central Iowa (upper Des Moines subbasin). Total drainage area of this subbasin just north of the mouth of the Raccoon River is 6,245 square miles. The Raccoon River subbasin drains a large area in northwest and west-central Iowa and has a drainage area of 3,441 square miles at a point just upstream from the project area. After leaving Des Moines, the river flows in a generally southeasterly direction for 535 miles and joins the Mississippi near Keokuk, Iowa. Its total drainage area is 14,540 square miles.

According to the Iowa Department of Environmental Quality Classification, the water quality of both the Des Moines and Raccoon Rivers in the project corridor falls in the Warm Water B category for Surface Water Classification. These waters are suitable for nonbody contact recreation such as boating or fishing. The Raccoon River is also classified as Warm Water C, which designates a potable water supply, in the vicinity of the Des Moines Water Works. This river is the major source of water for the city of Des Moines.

The most significant types of pollution in the Des Moines River are turbidity related to upstream soil erosion and bacteria related to municipal sewage outfalls. However, the recently constructed Saylorville Reservoir upstream from Des Moines has greatly reduced the silt loads in the reach of the river that passes through the city. Low dissolved oxygen levels are a problem in the Des Moines River during low flow conditions. Ammonia violations have occurred at times.

Low dissolved oxygen and high ammonia levels are also periodic problems in the Raccoon River. Water samples for pesticides and metals have been taken extensively at the water supply intake for the Des Moines Water Works directly upstream from the project corridor. These samples have shown that occasionally some pesticides and metals have been in excess of Iowa standards or National Academy of Science recommended maximum levels.

The Des Moines River is heavily used for recreation. Two major Corps of Engineers' flood control reservoirs have recently been constructed on the Des Moines River near Des Moines and are major recreation sites for the area. Saylorville Dam (5,500 acres) is located approximately 15 river miles upstream from the project site, and Red Rock Reservoir (5,400 acres) is downstream in an adjacent county.

Within the project area, these rivers have been highly modified by urban development. Flood control walls and earthen dikes have been installed in the flood plain and along the shores of both rivers (see Figure 5.8). The course of the Raccoon River at its mouth was modified in the early 1900s by the city of Des Moines. The old channel entered the Des Moines River approximately 700 feet to the northwest of the existing channel. The old channel was filled with debris and rubble and now underlies Riverside Park and Sec Taylor Stadium (refer to Figure 4.5 for locations of these facilities).

There are eight highway bridges and two railroad bridges crossing the Des Moines River and five highway bridges and one railroad bridge crossing the Raccoon River in the project area. Two low-water dams have been constructed on the Des Moines River in the project area (at Scott Street and Center Street) and one low-water dam occurs on the Raccoon River (east of the Fleur Drive bridge).

The city of Des Moines obtains its municipal water supply from sand and gravel deposits along the Raccoon River in the vicinity of Water Works Park. These reservoirs have large storage characteristics and are recharged normally at rather frequent intervals. Recharge occurs from local precipitation and seepage from the adjacent river channel; and thus, they are dependent on surface water quality and quantity. Water is collected and stored for the city in a unique infiltration gallery system laid in these sand and gravel deposits in the vicinity of Water Works Park.

Both of these rivers provide good habitat for fish and other aquatic life. According to the Iowa Conservation Commission, these rivers provide excellent fishing for channel catfish. White bass and carp are also abundant year-round. Seasonal fishing for walleye, crappie and white bass hybrids is also very good. Since the impoundment of Saylorville and Red Rock, there has been an increase in the diversity of fish species in this reach of the Des Moines River; and game fish, such as walleye and northern pike, have become more abundant (personal communication, Don Bonneau, Fisheries Biologist, ICC, Des Moines). Fishing from the shore is common in the project corridor.

The only undeveloped areas are located in the southwest portion of the corridor adjacent to the Raccoon River and in the western edge of the corridor. These areas include stands of flood plain forest, wetlands and old fields. Plant species occurring here are typical of flood plains in Iowa. No threatened or endangered plant species are known to occur in the area. Much of this area is existing or proposed open space for the city of Des Moines.

These areas provide habitat for a wide variety of common wildlife species. Small mammals and birds are abundant in the more remote portions of the corridor. Deer, red fox and other wildlife are occasionally seen on the Water Works property (personal communication, Dean Johnson, Director, Des Moines Water Works). The Des Moines River valley is a major migratory pathway for birds, and the Des Moines Audubon Society lists 56 species as common or abundant migrants. No threatened or endangered animal species are known to occur in the corridor (federal and state lists were consulted). However, the peregrine falcon (Falco

peregrinus) and the bald eagle (Haliaeetus leucocephalus) have been seen in the vicinity of Des Moines.

There are many scenic viewpoints in the city, primarily associated with the river bluffs and river flood plain areas. From the high bluffs north of the Raccoon River, broad vistas of the river and greenbelt along the river are very scenic. The State Capitol and Terrace Hill (Governor's mansion) are situated on these river bluffs. From the flood plain areas in most of the project corridor, one has excellent views of these two structures.

The climate of the area exhibits a wide variation in both temperature and precipitation during the year. The average yearly temperature is 49.8° F. The highest average month is July with 75.5° F., and the lowest is January with 20.5° F. The annual rainfall averages 32 inches, and snowfall averages 32 inches. The prevailing wind direction is southwesterly.

Air pollutants are measured at eight locations in Des Moines, several within the project corridor. During 1981, suspended particulates and carbon monoxide concentrations exceeded the national standards. The CBD Loop project corridor is within the areas designated as primary nonattainment areas for suspended particulates and for carbon monoxide.

SOCIAL ENVIRONMENT

Des Moines is the Capitol and largest city within the state of Iowa. Table 4.1 provides population and housing trends for the city of Des Moines, Polk County and the state of Iowa. As these data indicate, there has been a gradual decrease in total population for the city of Des Moines since 1960. The corporate limits of Des Moines include about 65 square miles, while the Des Moines SMSA encompasses 1,136 square miles.

In 1980, 90.5 percent of the total Des Moines population was white, 6.8 percent was black, while 2.7 percent were other racial groups (primarily Spanish and Asian). In terms of age, 25.8 percent of the population was under 18, while 12.5 percent was 65 or older.

Within the Des Moines SMSA, the 1980 population was 338,048, 94 percent of which was white, 4 percent was black and 2 percent was other races. In terms of age, 28 percent were under 18, and 10.3 percent were over 65. Population characteristics for specific census tracts affected by the project are discussed in the next section of this report.

TABLE 4.1
POPULATION AND HOUSING DATA

Year	Des Moines		Polk County		Iowa	
	Pop.	Year-Round Housing Units	Pop.	Year-Round Housing Units	Pop.	Year-Round Housing Units
1960	208,982	71,758*	266,315	89,084*	2,757,537	905,295*
1970	200,587	72,337	286,101	98,268	2,824,376	954,801
1980	191,003	79,891	303,170	122,075	2,913,808	1,121,199

*All housing units.

Sources: Population Abstract of the United States, Andriot Associates; Census of Housing, 1960, Vol. 1, States and Small Areas; 1970 Census of Housing, Vol. 1, Housing Characteristics for States, Cities and Counties; Census Summary Tape File 1, Iowa, 1980.

Des Moines population originally developed as a low density, primarily single-family one with development spread over a considerable area. In comparison with other U.S. cities of similar size, Des Moines was found to have more land per capita and lower residential densities than most of the other 10 cities surveyed (Des Moines Plan and Zoning Commission, 1978, Proposed 1990/2000 Land Use Plan).

Prior to 1960, most of the low density residential development was in the outlying areas, and the high density residential development was restricted to the central areas. However, since that time, there has been a dramatic shift from single-family homes to multi-family dwellings. Most of the apartment construction has occurred in the outlying areas, primarily along major roadways.

The majority of subdivision activity has been in the southern areas of the city. The northwest and northeast corners of the city have also experienced considerable development.

At the same time, there has been little new development in the central city, but rather considerable demolition resulting in a number of vacant lots.

There are 12 neighborhoods in Des Moines (Figure 4.3). These neighborhoods are the units used by the city for planning purposes. The project corridor includes portions of six of these neighborhoods: Willard, Hiatt, Downtown, Callanan, Brody and Weeks (Figure 4.3). Besides residential areas in these neighborhoods, the corridor also includes part of the Des Moines Central Business District, industrial areas and commercial areas.

The residential areas in the affected neighborhoods are all old, and most of the homes were constructed in the late 1800s and early 1900s. In the Callanan neighborhood, many of the homes predate the 1900s, and two areas have been declared as National Register Historic Districts (Sherman Hill Historic District and Owl's Head Historic District). A commercial area in the CBD, which is the oldest part of the city, is being proposed as a National Register Historic District (Figure 4.5).

Many of these older, centrally located neighborhoods house a more transient population than do the outlying areas. Many of the dwellings that were originally single-family, owner-occupied have been converted to multiple-family dwellings that are renter-occupied.

Many of the residential areas in the central city area have been identified as areas with considerable economic, physical and social problems which make them eligible for Community Development Block Grant programs and other forms of federal assistance. A reevaluation of these areas was conducted by the City Plan and Zoning Department in 1982 using low-income and housing deficiencies as criteria for identifying target areas for these programs. The income criterion for inclusion was that over one-half of the families had an estimated household income at or lower than 80 percent of the city-wide median income. The condition of the residential structures was also a consideration (Des Moines Plan and Zoning Department, 1982, "Recommended Changes to Prime Service Area Boundaries").

All of the residential areas that would be directly affected by the project were included in these proposed target areas. Programs that are

recommended for these target areas include rehabilitation, redevelopment, home improvement loans, limited relocation and demolition. Target areas within the project corridor appear in Figure 4.3.

Further descriptions of the six affected neighborhoods, including census statistics for the census tracts and blocks affected by the project, appear in Section 5.

Des Moines has a large amount of land devoted to parks and open spaces (about 3,000 acres). Much of this is located adjacent to the Des Moines and Raccoon Rivers and provides long continuous stretches of open space along these rivers (Figures 4.4 and 4.5). The city has recently acquired some of this land as part of an overall Riverfront Development project for recreation and open spaces.

One aspect of this Riverfront Development project is the construction of about 22 miles of riverfront bike trails. To date, almost 10 miles of the system has been completed (Figure 4.5). This includes a 4.3-mile segment between Ashworth Park and Gray's Lake and a 5.5-mile segment between McHenry Park and Hawthorn Park. Future plans include the construction of several rest stops and information centers and a bike bridge over the Raccoon River near Gray's Lake.

There are many schools and churches in the Des Moines SMSA. Those that are in or near the project corridor are shown in Figure 4.2.

Many of the city's cultural and recreational attractions are located in or adjacent to the project area. These include the State Capitol, Terrace Hill (Governor's mansion), the Civic Center Theater, Botanical Center, Sec Taylor Stadium, the Iowa Historical Museum, the Des Moines Public Library and the Veterans Memorial Auditorium (Figure 4.5).

The project area also includes the site of the founding of the original fort in 1843 and the area that was the site of early settlement of the city of Des Moines (Figure 4.5).

Future city plans for the area within the CBD Loop Corridor include: the expansion and remodeling of Sec Taylor Stadium to include various athletic facilities; development of a "Little Fort Des Moines" area south of Court Avenue along S.W. First Street as a pedestrian plaza (specialty shops, restaurants, museums); redevelopment of the existing

residential area south of the Raccoon and Des Moines Rivers near downtown (Weeks Neighborhood) to take advantage of the riverfront open space areas; and expansion of the public and semi-public uses along the river in the downtown area.

ECONOMIC SETTING

The Des Moines economy has historically been based on insurance, publishing and wholesaling. These continue to be the leading employers today, along with government and manufacturing.

The average unemployment rate for 1982 was 5.8 percent for the Des Moines SMSA. The unemployment rate for the city of Des Moines for November, 1982, was 8.6 percent. The average family income for Des Moines was \$20,755.00, and the average household income was \$16,793.00 (1980 Census).

During 1982, approximately 84 percent of the resident labor force for the Des Moines SMSA was employed in nonmanufacturing occupations (Iowa Department of Job Service, Labor Force Summary, January-November, 1982). The number of employees for the various work categories for the Des Moines SMSA in 1982 were:

Agriculture.....	3,000
Manufacturing.....	20,500
Nonmanufacturing.....	149,800
Construction.....	5,200
Transportation, Communication, Public Utilities.....	11,000
Wholesale and Retail Trade.....	44,500
Finance, Insurance, Real Estate.....	22,800
Services and Mining.....	39,500
Government.....	26,900

The major employers in Des Moines in 1982 (those employing over 1,000 persons) are listed in Table 4.2.

There are 52 employers that hire from 250-1,000 employees. Chief among these are manufacturing concerns (11) and insurance companies (10). Others include wholesale outlets, retail outlets, hospitals, educational institutions and banking.

TABLE 4.2

MAJOR EMPLOYERS IN THE GREATER DES MOINES AREA

Company	Product or Service
Armstrong Rubber Company	Tires
The Bankers Life	Insurance
Blue Cross & Blue Shield of Iowa	Insurance
Dahl's	Retail-Groceries
City of Des Moines	Government
Des Moines Independent School District	Schools
Des Moines Register & Tribune Company	Newspaper
Firestone Tire & Rubber Company	Tires
Hy-Vee Food Stores, Inc.	Retail-Groceries
Iowa Lutheran Hospital	Hospital
Iowa Methodist Medical Center	Hospital
Iowa Power & Light Company	Utility
John Deere Des Moines Works	Agricultural Implements
Mercy Hospital Medical Center	Hospital
Meredith Corporation	Publishing
Northwestern Bell Telephone Company	Communications
Pioneer Hi-Bred International, Inc.	Seed Production
Ruan Companies	Transportation Leasing & Tire Sales
State of Iowa	Government
U.S. Government	Government
U.S. Postal Service	Postal Services
Younkers Brothers	Retail-Department Stores

Source: "1981 Greater Des Moines Area Major Employers Listing" compiled by Research Department, Greater Des Moines Chamber of Commerce.

Many of these major employers are located in or adjacent to the Des Moines CBD and within the project corridor for the CBD Loop Arterial project. The proposed alignment for all "build" alternates under consideration will pass through some commercial and industrial land.

The downtown area has traditionally been the center of commercial activity in Des Moines. However, since the 1950s large, outlying shopping centers and strip commercial developments along major streets have considerably diminished the amount of commercial activity in the downtown area.

Similarly, there has been a trend for industrial development to shift to the fringe areas of the city. There has also been a recent decline in the amount of industrial employment.

LAND USE TRENDS

Existing Land Use

Existing land usage and recent trends in land usage for the city are presented in Table 4.3.

TABLE 4.3
LAND USE IN DES MOINES IN 1962, 1973 AND 1981

Land-Use Category	1962	1973	1981 Estimates	% Change 1962-1973	% Change 1973-1981
Commercial	1,060	1,800	2,000	+70%	+11%
Residential	13,980	14,500	15,200	+4%	+5%
Industrial	1,530	2,050	2,700	+34%	+32%
Public/Semi-Public	3,140	3,390	3,500	+8%	+3%
Parks & Open Space	2,360	2,910	3,860	+23%	+33%
Transportation	6,270	7,650	7,800	+22%	+2%
TOTAL DEVELOPED	28,250	32,300	35,060	+14%	+9%
Vacant Land & Rivers	12,470	9,800	7,230	-21%	-26%
TOTAL ACRES	40,720	42,100	42,290	+3%	+5%

Source: Des Moines Plan and Zoning Commission.

These increases in land use have occurred over a period of population loss for the city (from 208,982 in 1960 to 201,404 in 1970 to 191,003 in 1980). This reflects an increasing per capita need for all types of urban land. It also reflects an under-utilization of previously developed land, particularly in the central city area. Like many other U.S. cities, there has been a movement of residential, commercial and industrial areas to outlying areas along with the abandonment and demolition of structures in the central city. Many of the current land-use policies for the city are aimed at reviving the central city area. These will be discussed later in this section.

In comparison with ten other cities of similar size, Des Moines was found to have slightly more land per capita than most of the other cities, rather low residential densities, and the largest amount of land devoted to parks, open spaces, and public and semi-public uses (1978 survey by Des Moines Plan and Zoning Commission).

Figure 4.6 presents the current land-use map for the city. This map was prepared in 1978 by the City Plan and Zoning Commission. Some changes in the amount of land in the various land-use categories have occurred since then, but this figure still represents the basic areas of land use in Des Moines. Figure 4.7 presents a more detailed mapping of land uses in the project corridor and was based on 1981 data.

The study area includes a wide range of land uses, from single-family residential to light manufacturing and industrial. It also includes a considerable amount of vacant land.

The residential areas are located at the eastern, northwestern and south-central edges of the corridor. The eastern and south-central residential areas are almost entirely single-family, while the northern area is primarily multi-family. Also, there is considerable residential usage in the commercial areas, where it is fairly common to find residential uses on the upper floors of many commercial buildings.

All of these residential areas are older, central city areas that have undergone deterioration and abandonment to some degree and are targets for revitalization. Features of these residential areas are discussed in this section under "Social Environment" and in Section 5 under "Social Impacts."

The commercial areas in the corridor include the large office and retail concentration in the CBD as well as scattered neighborhood nodes and strip developments along major thoroughfares. Commercial uses vary from large office building and department stores to small neighborhood grocery stores and restaurants. Some of the largest commercial employers in the city occur in the corridor.

One area located in the west-central portion of the corridor roughly between Ninth and 16th Streets along Locust and Grand Avenues has a number of automotive-oriented business. This usage dates back to the

1910s and 1920s when automobiles were first becoming available to the public.

The industrial land usage in the corridor is primarily concentrated in an area south of downtown. This is the oldest industrial area in the city and developed here because of access to rail lines. Wholesalers, construction companies and various manufacturing concerns have been located here over the years. It was the major center for wholesaling in the state for a number of years. Currently, the area contains warehouses, wholesale suppliers, a steel plant, several small manufacturing concerns, trucking firms, and some vacant buildings.

The project corridor abuts upon another older industrial area that would be affected by the project. This area is located along the eastern border of the corridor and includes several major manufacturing concerns.

Currently, most of the major industrial activity is located in the fringe areas of the city in well-planned industrial parks, primarily in the northern and western areas of the city. The facilities and layout of the older, central city industrial areas need upgrading, particularly improvement of streets, utilities and accessibility.

A number of parks and open space areas occur in the corridor. Most of the recent open space acquisition by the city has taken place in this area, especially along the riverfronts. There is also a considerable amount of public and semi-public usage, primarily associated with the State Capitol Complex and other government buildings in the CBD.

Future Land Use

The 1990/2000 Land Use Plan for the City of Des Moines has been developed by the City Plan and Zoning Commission as part of the city's 1990/2000 Comprehensive Plan. The Land Use Plan consists of two elements: a series of land-use policy statements and a land-use map that depicts the recommended uses for the various land within the city. The following discussion will summarize this plan, with emphasis on those aspects that more directly relate to the CBD Loop project. Proposed land usage for the area in and adjacent to the project is presented in Figure 4.8.

The Land Use Plan is based on an analysis of past trends and projection of future trends and needs. Past trends have been described under

"Social Environment", "Economic Setting", and "Existing Land Use" in this section. Major trends have included:

Low-density development in general with a recent trend toward higher density development in the fringes and along major thoroughfares.

Some abandonment of the residential, commercial and industrial areas of the central city.

Greatest amount of subdivision activity occurring on the south side.

Increases in office space both in the downtown area and in outlying areas.

Slight decline in industrial activity.

Movement of many industries to industrial parks on the fringe areas of the city.

Future trends and needs that are identified in the plan include:

Continued demolition of residences in the central city and need for rebuilding these neighborhoods.

Continued major residential and commercial growth in the south side; modest growth in the northeast and northwest.

Need for development of more residential and commercial land, some of the need to be met through redevelopment.

Increase in commercial competitiveness of the downtown area because of the recently constructed skywalk system and other downtown improvements.

Increase in commercial space, particularly office space in the downtown area.

Very modest industrial expansion is projected.

Over one-half of industrial expansion is projected to be in wholesaling.

Need to improve streets, utilities and layouts of existing central city industrial areas to be competitive with suburban areas.

Continued expansion of governmental offices around the State Capitol Complex.

Increased usage of the Des Moines Municipal Airport.

Street improvements for many of Des Moines thoroughfares.

Consolidation and abandonment of some existing rail lines, especially in the downtown area.

The future residential trends that are pertinent to the CBD Loop project are described in more detail in the following paragraphs.

Residential demolitions are expected to continue at a high rate, and two-thirds of these are expected to occur in the older, centrally located neighborhoods (Hiatt, Callanan, Willard, Downtown, Irving). Significant amounts of rebuilding are projected for the four central city neighborhoods (Irving, Hiatt, Callanan and Downtown) if current public and private redevelopment efforts are successful. A considerable amount of restoration of homes has already taken place in the Sherman Hill area (Callanan Neighborhood). Also, several new multi-family residential complexes have recently been completed in or near the CBD.

The Downtown East Land-Use Plan proposes several blocks in the downtown area to be developed as high density residential (city of Des Moines Plan and Zoning Department, October, 1982).

At least one-half of the new residential growth is projected to occur in the southern limits of the city, especially in the area east of E. 14th Street and south of the Des Moines River.

The land-use policies that are a part of the 1990/2000 Land Use Plan are presented in Appendix B.1. The major features of the plan are summarized below.

The overall density of residential development in the city should be increased, particularly within the central city area. Also, within this central area, more flexibility in development should be allowed. A "General Residential" classification, allowing a mix of housing types and in-home occupations, will apply to these areas.

The plan encourages high-density housing close to major employment and shopping centers in corridors along major thoroughfares and in the downtown area.

The plan calls for the protection of historically/architecturally significant districts and of existing, stable neighborhoods from incompatible land uses.

Commercial development in residential areas and in strips along major thoroughfares is to be discouraged. Rather, commercial activities should be consolidated and grouped in nodes.

An "office/retail core" of high intensity commercial activity is proposed for the downtown area, with increased pedestrian movements and reduced vehicular traffic. The development of attractive, people-oriented open spaces in the downtown is encouraged. The long-term plan is to eliminate all surface parking within the "core" area and reduce surface parking in other downtown areas.

Future industrial development should be confined to existing industrial areas. This would entail the elimination of residential development that is currently within industrial areas and the improvement in the public facilities in the older industrial areas. The separation of industrial activities from other land uses by a definite boundary is encouraged.

The plan establishes a special category, "Planned Industrial," for industrial areas that require more restrictive site development standards than the "General Industrial" category. These areas have inadequate public facilities and/or may encroach upon sensitive adjacent land uses. Most of the industrial areas in the CBD Loop Corridor fall within this category.

Major proposed land uses for the corridor are planned industrial, general commercial, parks and open spaces, public and semi-public, office-retail and residential (primarily multi-family) (Figure 4.8).

Existing and future land uses are further described for each neighborhood in Section 5, "Environmental Consequences."

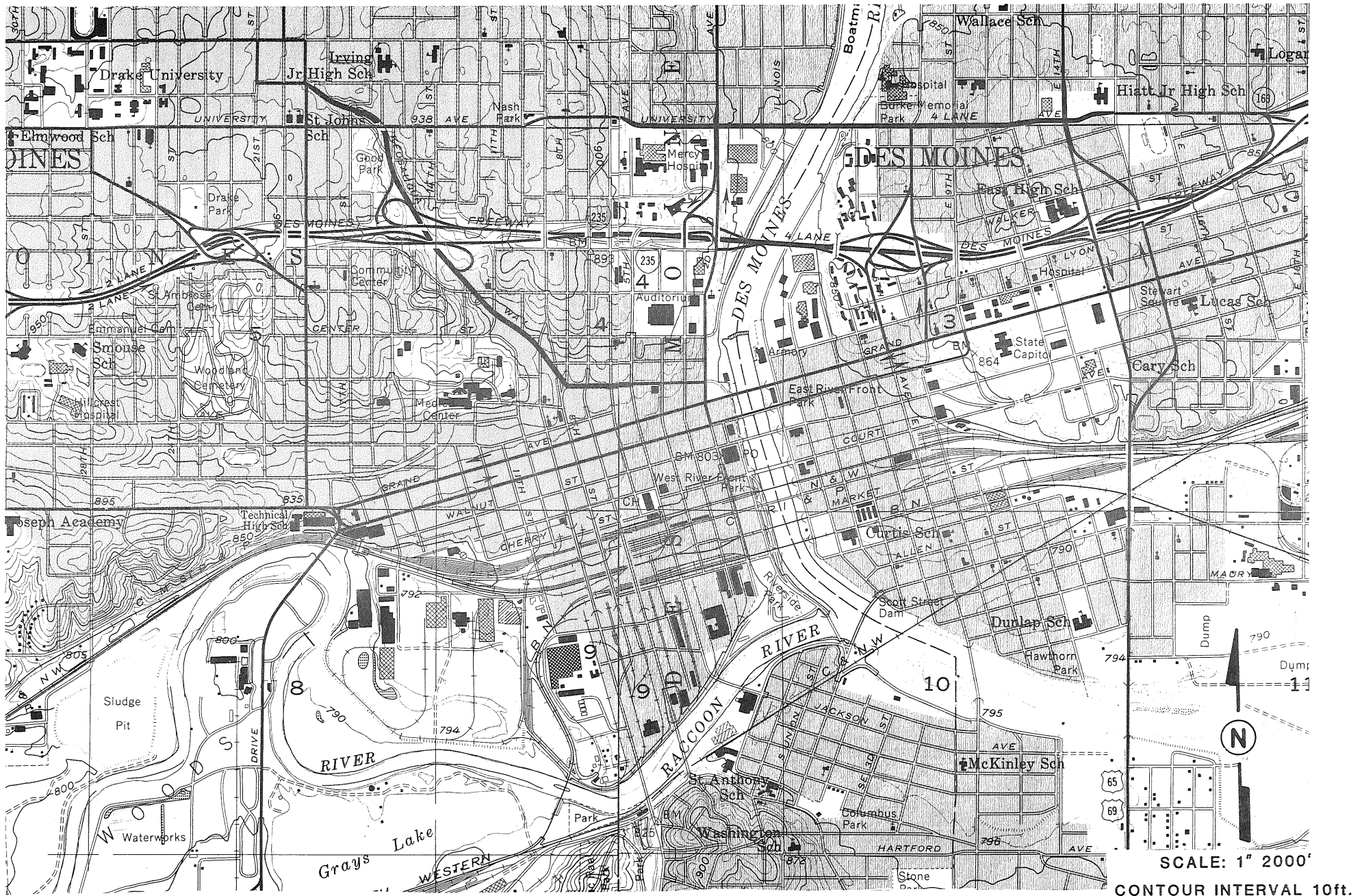
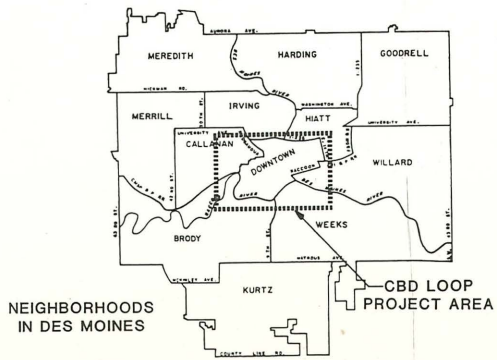
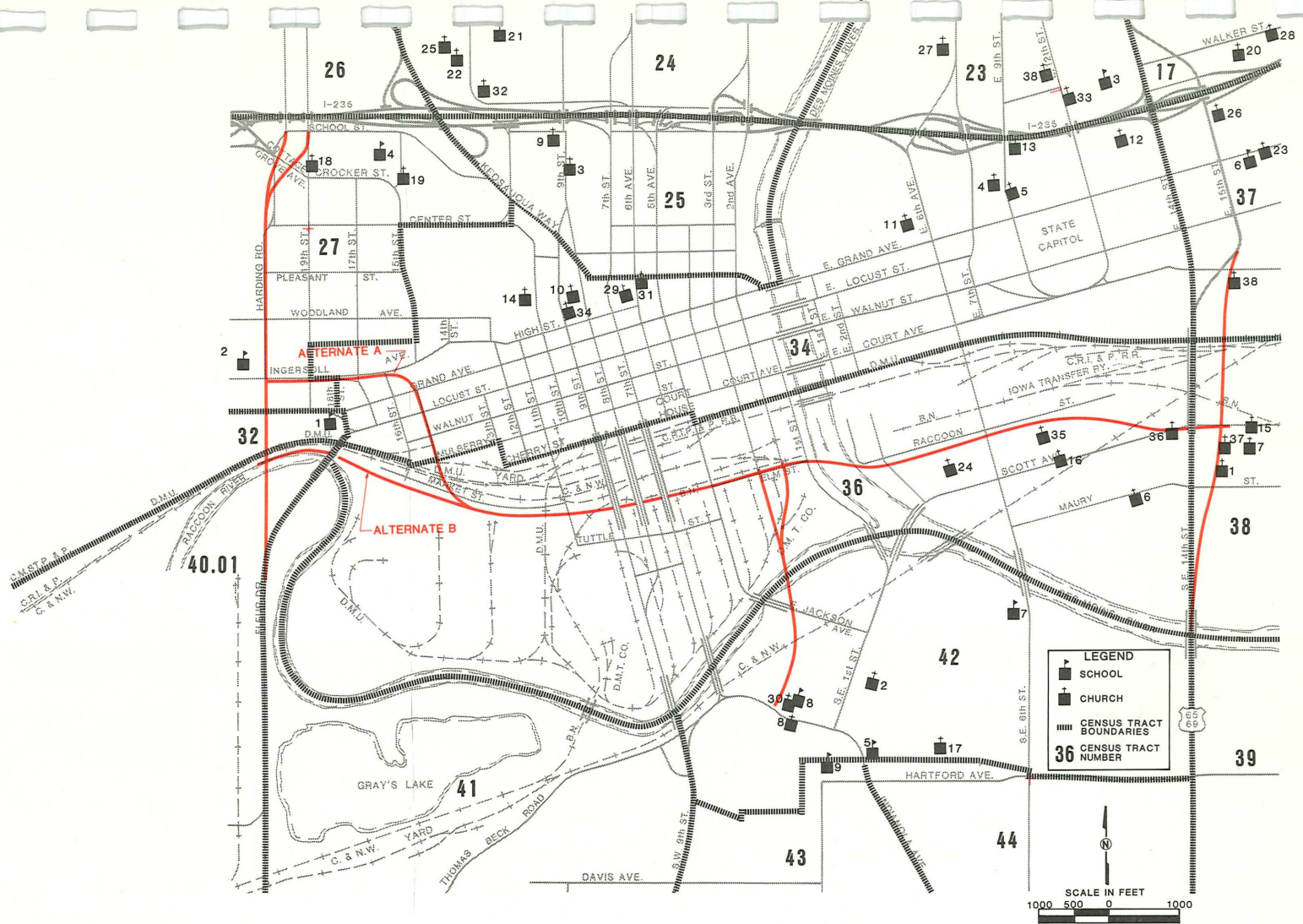


FIGURE 4.1 TOPOGRAPHIC MAP OF THE PROJECT AREA
 (FROM U.S.G.S. DES MOINES SE. QUADRANGLE, S.W. QUADRANGLE 7.5 MINUTE SERIES)

FIGURE 4.2 CHURCHES, SCHOOLS & CENSUS TRACTS IN THE PROJECT AREA

- CHURCHES**
1. ALL NATIONS CHURCH OF GOD IN CHRIST
711 S.E. 14TH COURT
 2. BETHANY OPEN BIBLE CHURCH
128 DUNHAM AVENUE
 3. BURNS UNITED METHODIST CHURCH
811 CROCKER STREET
 4. CALVARY BAPTIST CHURCH ABCUSA
605 EAST 9TH STREET
 5. CENTRAL LUTHERAN CHURCH
EAST 9TH & DES MOINES STREETS
 6. CHURCH OF COMPASSION
1000 S.E. 11TH STREET
 7. CHURCH OF THE FIRST BORN
619 S.E. 15TH STREET
 8. CLIFTON HEIGHTS UNITED PRESBYTERIAN CHURCH
1931 S.W. 1ST STREET
 9. CORINTHIAN BAPTIST CHURCH
814 SCHOOL STREET
 10. FIRST BAPTIST CHURCH
620 - 8TH STREET
 11. FIRST EVANGELICAL LUTHERAN CHURCH
EAST 5TH & DES MOINES STREETS
 12. FIRST FRIENDS CHURCH
615 EAST 13TH STREET
 13. FIRST GRACE BRETHREN CHURCH
EAST 10TH & LYON STREETS
 14. FIRST UNITED METHODIST CHURCH
10TH & PLEASANT STREETS
 15. GRACE APOSTOLIC TEMPLE
615 S.E. 15TH STREET
 16. GUADALUPE ROMAN CATHOLIC CHURCH
601 S.E. 8TH STREET
 17. JORDAN UNITED METHODIST CHURCH
1950 S.E. 4TH STREET
 18. KINGSWAY CATHEDRAL
901 - 19TH STREET
 19. KYLES AME ZION CHURCH
907 - 15TH STREET
 20. MAPLE STREET BAPTIST CHURCH
1552 MAPLE STREET
 21. MISSION TEMPLE
1161 ENOS AVENUE
 22. MORNING STAR BAPTIST CHURCH
1150 - 13TH STREET
 23. MT. HEBRON BAPTIST CHURCH
1600 EAST CAPITOL AVENUE
 24. MOUNT OLIVE BAPTIST CHURCH
501 S.E. 4TH STREET
 25. NEW JERUSALEM CHURCH OF GOD IN CHRIST
1198 14TH STREET
 26. OUR SAVIOURS BAPTIST CHURCH
1555 DES MOINES STREET
 27. PENN AVENUE CHURCH OF GOD
1000 PENNSYLVANIA AVENUE
 28. PILGRIM BAPTIST CHURCH
1732 WALKER STREET
 29. ST. AMBROSE CATHEDRAL
607 HIGH STREET
 30. ST. ANTHONY'S CATHOLIC CHURCH
INDIANOLA AVENUE & S.W. 1ST ST.
 31. ST. JOHN'S LUTHERAN CHURCH
6TH STREET & KEO WAY
 32. ST. PAUL AME CHURCH
1201 DAY STREET
 33. ST. PAUL LUTHERAN CHURCH
EAST 12TH & WALKER STREETS
 34. ST. PAUL'S EPISCOPAL CHURCH
815 HIGH STREET
 35. SHELTERING ROCK CHURCH
718 S.E. ALLEN STREET
 36. SHILOH BAPTIST CHURCH
1213 SCOTT AVENUE
 37. SOUTHEAST ASSEMBLY OF GOD CHURCH
715 S.E. 14TH COURT
 38. VINE STREET GOSPEL CHAPEL
1441 EAST VINE STREET
 39. WESLEY UNITED METHODIST CHURCH
800 EAST 12TH STREET

- SCHOOLS**
1. DES MOINES TECHNICAL HIGH SCHOOL
1800 GRAND AVENUE
 2. DES MOINES TECHNICAL HIGH SCHOOL
ATHLETIC FIELD
HARDING ROAD BETWEEN HIGH STREET & INGERSOLL
 3. EAST HIGH SCHOOL
EAST 13TH & WALKER STREETS
 4. EDMUNDS SCHOOL
1601 CROCKER STREET
 5. GREATER DES MOINES EDUCATION CENTER
1961 INDIANOLA AVENUE
 6. LUCAS SCHOOL
1535 CAPITOL AVENUE
 7. MCKINLEY SCHOOL
1610 S.E. 6TH STREET
 8. ST. ANTHONY'S SCHOOL
16 COLUMBUS AVENUE
 9. WASHINGTON SCHOOL
HARTFORD AVENUE & SOUTH UNION STREET



- MDS** MEDIUM DENSITY SINGLE FAMILY
6-10 units per net acre
- GR** GENERAL RESIDENTIAL
single and multi-family
6-15 units per net acre
- MDM** MEDIUM DENSITY RESIDENTIAL
multi-family
22 units per net acre
- HD** HIGH DENSITY RESIDENTIAL
multi-family
51 units per net acre
- LC** LOCAL COMMERCIAL
low and moderate intensity activities
neighborhood oriented
- GC** GENERAL COMMERCIAL
moderate and high intensity activities
auto oriented
- OR** OFFICE RETAIL (Downtown)
medium to high intensity
pedestrian and auto oriented
- ORC** OFFICE RETAIL CORE (Downtown)
high intensity
pedestrian oriented
- PI** PLANNED INDUSTRIAL
selected industry with limited nuisance features
- GI** GENERAL INDUSTRIAL
light and heavy industry
- P** PARKS
developed for leisure and active recreation
- POS** PUBLIC OPEN SPACE
light intensity
reserved for passive recreation and land conservation
- PSP** PUBLIC AND SEMI-PUBLIC
buildings and grounds including churches, hospitals,
cemeteries, schools and government offices
- CBD LOOP ALIGNMENT

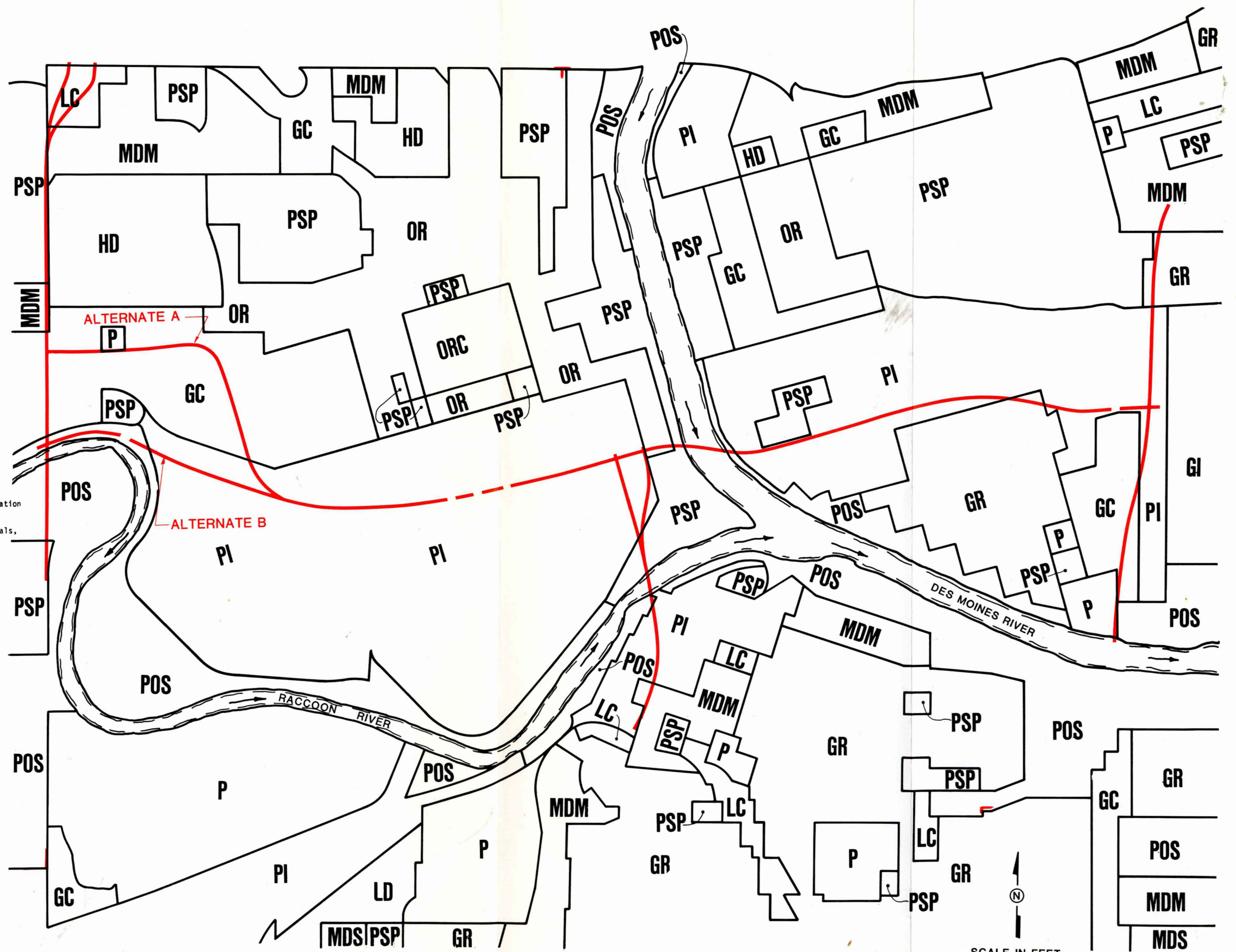
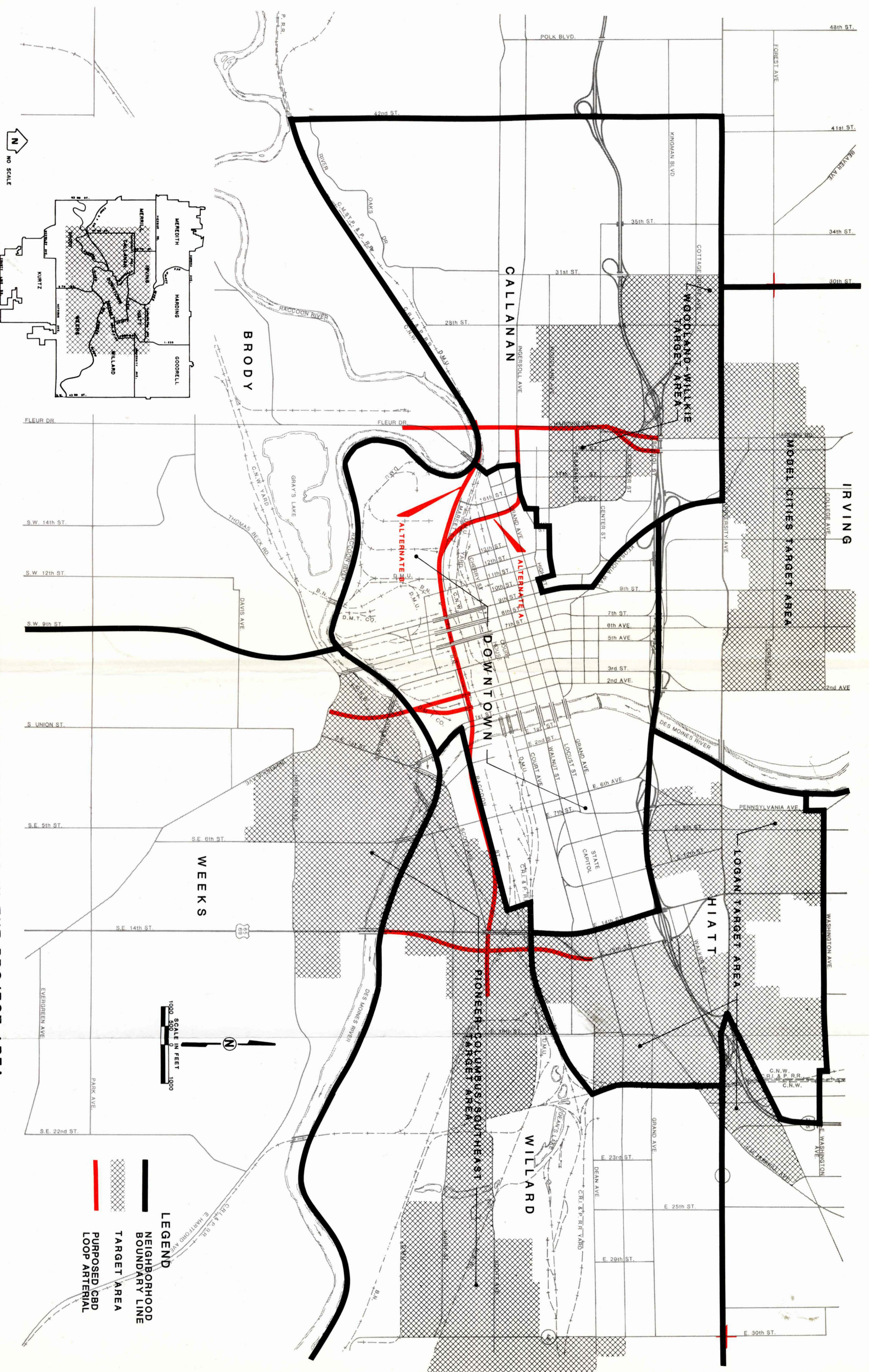


FIGURE 4.8 PROPOSED 1990/2000 LAND USE PLAN FOR THE PROJECT AREA

FIGURE 4.3 NEIGHBORHOODS AND TARGET AREAS IN THE PROJECT AREA
 (TARGET AREAS ARE FOR URBAN RENEWAL PROGRAMS)



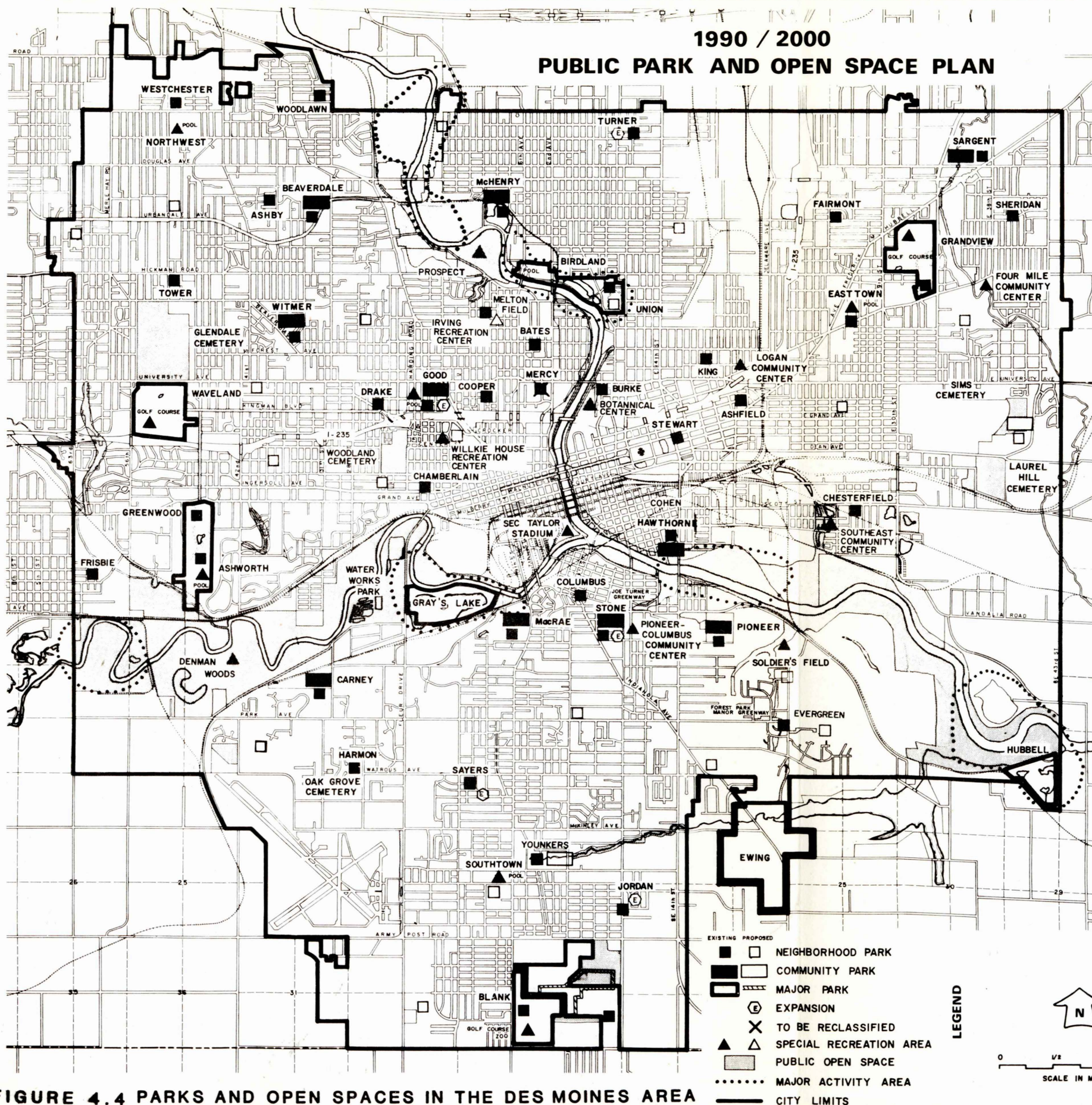
LEGEND

- NEIGHBORHOOD BOUNDARY LINE
- ▨ TARGET AREA
- PURPOSED CBD LOOP ARTERIAL

SCALE IN FEET
 1000 500 0 500 1000

N
 NO SCALE

INVENTORY OF EXISTING PARKS



NEIGHBORHOOD		
Name	Location	Acres
Ashby	38th & Davison	10.5
Ashfield	E. 18th & Lyon	7.0
Bates	3rd & Clark	3.0
Burke	E. 7th & University	5.0
Chamberlain	19th & Ingersoll	2.0
Chesterfield	E. 27th & Scott	5.0
Columbus	S. E. 2nd & Indianola	5.0
Cooper	11th & Day	3.0
Drake	24th & Cottage Grove	5.0
Easttown	E. 26th & Easton	14.0
Evergreen	S. E. 22nd & Evergreen	7.0
Fairmont	Hull Avenue & E. 26th St.	6.0
Frisbie	61st & Muskogee	4.0
Harmon	S. W. 26th & Watrous	4.5
Jordan	Wall Street - Jordan Drive @ S. E. 7th Court	1.5
Melton Field	11th & Jefferson	3.0
Mercy	3rd & Laurel	1.0
King	1310 E. 17th	6.0
Sayers	S. W. 13th & Watrous	4.0
Sheridan	Hull & E. 39th Court	3.5
Stewart	E. 14th & Grand	2.0
Southtown	S. W. 11th & Porter	9.0
Tower	50th & Hickman	8.0
Turner	E. 8th & Madison	2.5
Westchester	49th & Valdez	6.0
Woodlawn	South of Twana & Lawnwood	6.0

COMMUNITY		
Name	Location	Acres
Beaverdale	34th & Adams	20
Carney	S. W. 30th & Bell	45
Good	17th & University	12
Hawthorn	S. E. 14th & Railroad	15
MacRae	S. W. 9th & Davis	63
McHenry	Oak Park - 8th to 11th	17
Pioneer	S. E. 16th & Pioneer Rd.	46
Sargent	Collfax & Douglas	27
Stone	S. E. Fulton - 3rd to 4th Street	9
Witmer	34th & Washington	22

MAJOR		
Name	Location	Acres
Ashworth	South of Greenwood, 45th to 49th	65
Birdland	Saylor Road & 6th Avenue	70
A. H. Blank	S. W. 9th & County Line Rd.	190
Ewing	Indianola Rd & City Limits	357
Grandview	E. 32nd & Easton	176
Grays Lake	900 Fleur Drive	165
Greenwood	Grand Avenue - 45th to 49th	81
Hubbell	Brooks Drive & S. E. 42nd	82
Union	E. 9th & Saylor Road	54
Waveland	University - 49th to 56th	195

SPECIAL PARK LANDS & RECREATION FACILITIES

Name	Location	Acres
Four Mile Community Center	3711 Easton Boulevard	14
Southeast Community Center	S. E. 25th & Maury	3
Logan Community Center	Garfield & E. 17th Court	9
Willkie House Recreation Center	17th & Crocker	1.0
Sec Taylor Stadium/Riverside Park	W. 1st & Elm	16
Botanical Center	909 E. River Drive	14
Prospect Park	Des Moines River, Hickman to 14th Street	77
Northwest Pool	50th & Madison	4
Soldier's Field	S. E. 22nd & Hartford	80
Cohen Historic Site	S. E. 10th & Scott	1.0
Forest Park Manor Greenway	S. E. 19th & Park vicinity	9.5
Joe B. Turner Greenway	S. E. 6th & Hartford	5.0
Pioneer-Columbus Community Center	2100 S. E. 5th	1.0

PROPOSED PARK DEVELOPMENTS

- FIRST PHASE PRIORITIES**
- Development of Riverfront lands
 - Yeader Creek Community Park
 - Northeast Riverfront Neighborhood Park
 - Expand Blank Golf Course
- SECOND PHASE PRIORITIES**
- Union & Park Avenue Site
 - 41st & Cottage Grove Site
 - East 27th & Walnut Site
 - Expand Southtown Park for Neighborhood Facility
 - Fairgrounds - Williams Street Site
 - Union Park - South Neighborhood Area Development
 - Freebeach Park
- THIRD PHASE PRIORITIES**
- 39th & Pleasant Site
 - 49th & Urbandale Site
 - Expand Good Park
 - 26th & College Site
 - Urbandale & 64th Street Site
 - Expansion of Sayers Park
 - Grandview College Site
 - Expand Turner Park
 - East 36th & Dubuque Site
 - 28th & Woodland Site
 - Expansion of Jordan Park
 - Watrous & Indianola Avenue Site
 - 17th & Center Site
 - East 26th & Evergreen Site
 - Soldiers' Field Neighborhood Facility

FIGURE 4.4 PARKS AND OPEN SPACES IN THE DES MOINES AREA

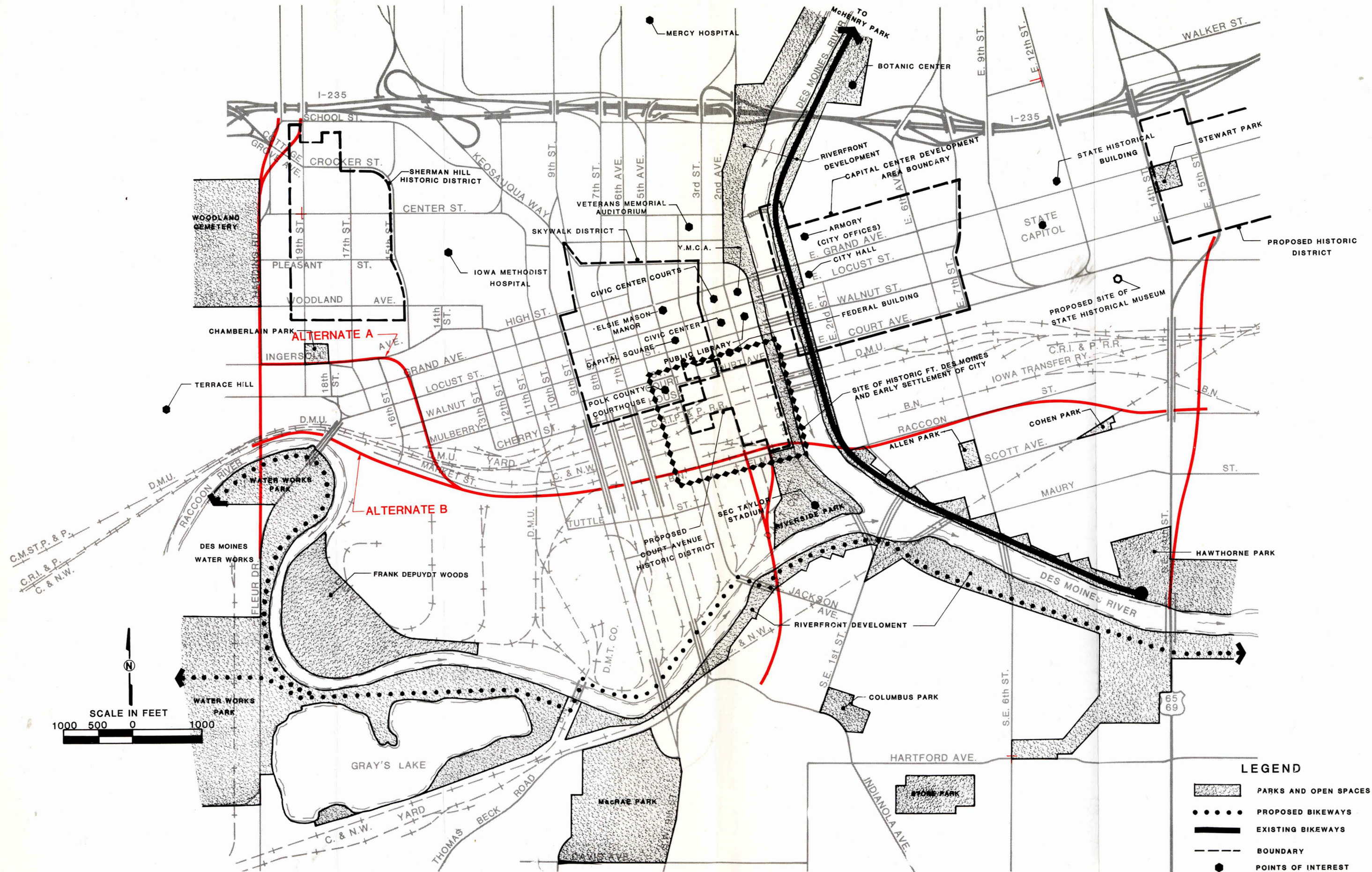


FIGURE 4.5 MAJOR COMMUNITY FACILITIES AND HISTORICAL DISTRICTS WITHIN THE PROJECT AREA

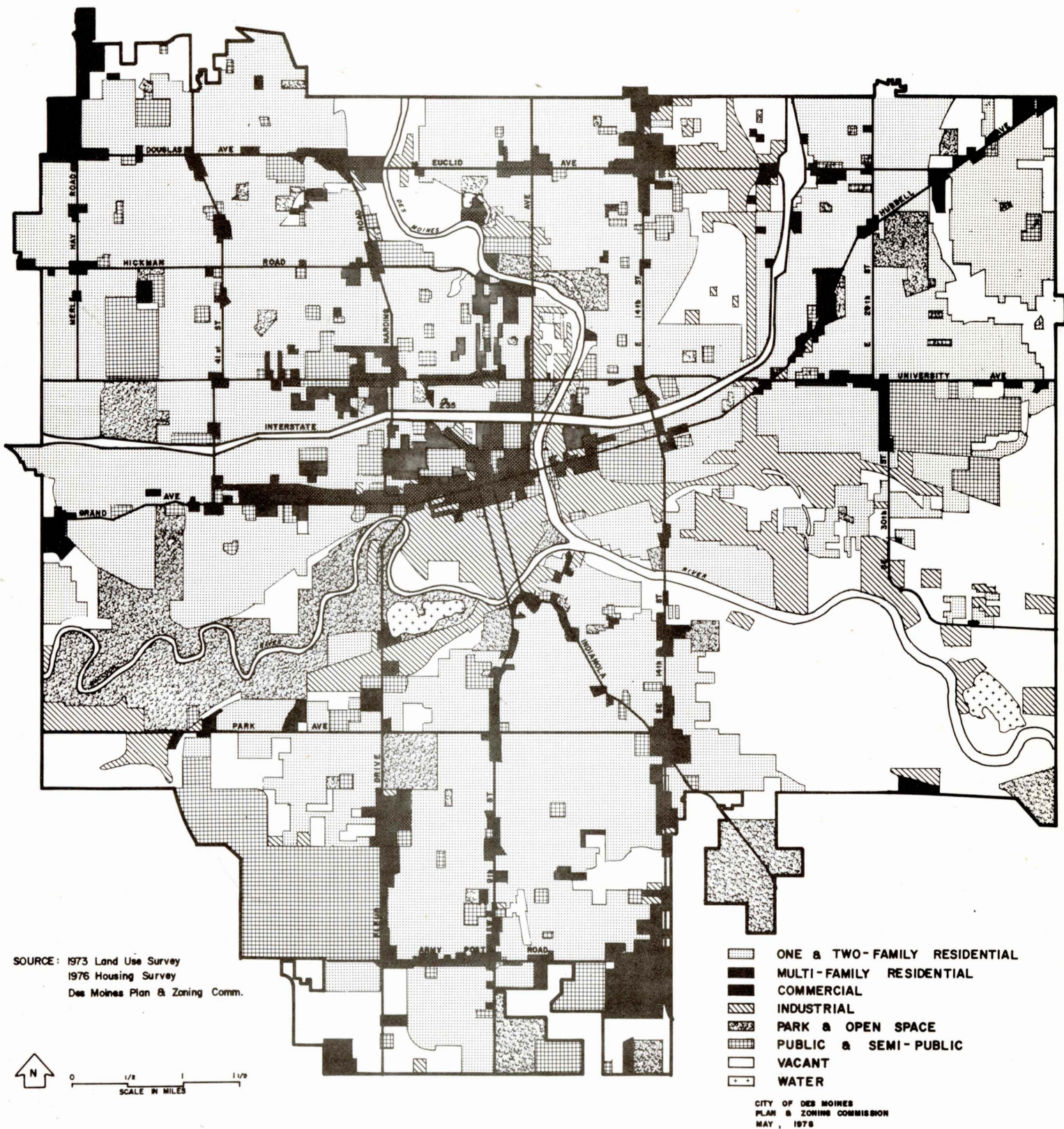


FIGURE 4.6 EXISTING LAND USE IN DES MOINES (1978)

- S** SINGLE FAMILY RESIDENTIAL
- M** MULTIPLE FAMILY AND TWO FAMILY RESIDENTIAL
- C** COMMERCIAL
- I** INDUSTRIAL
- P** PARKS AND OPEN SPACE
- PS** PUBLIC AND SEMI-PUBLIC
- U** UTILITIES
- V** VACANT
- CBD LOOP ALIGNMENT

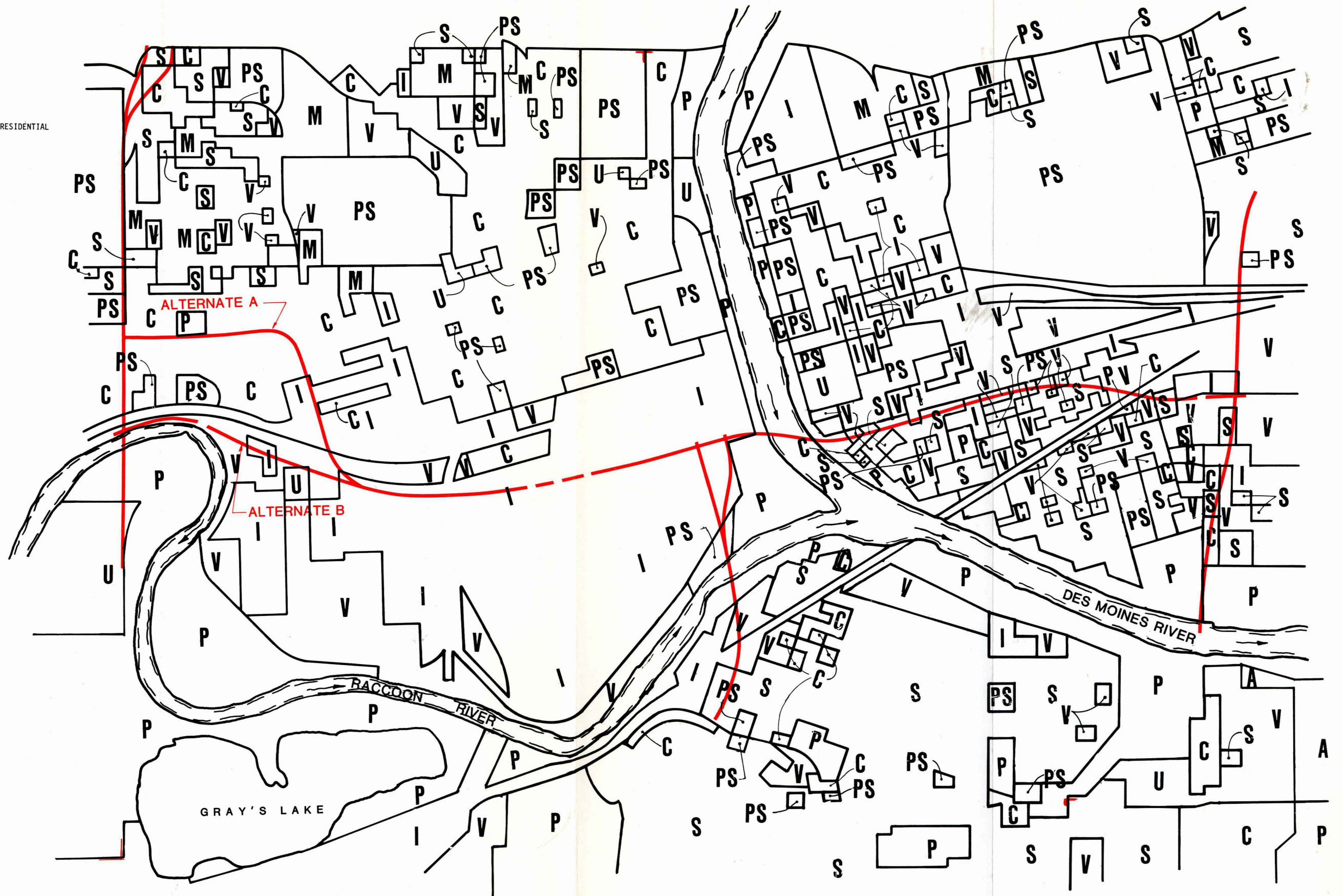


FIGURE 4.7 EXISTING LAND USE IN THE PROJECT AREA

SECTION 5

ENVIRONMENTAL CONSEQUENCES

A summary of the major environmental consequences described in this section appears at the end of Section 3.

SOCIOECONOMIC AND LAND-USE IMPACTS

Residential Relocation Impacts

Displacement of residents from the established neighborhoods in the project corridor will be a major social impact of the project. All of the "build" alternates will displace an estimated minimum of 463 persons (Table 5.1). Subalternate 1A (northern variation with interchange) will displace the most residents (545), while Subalternate 2B (southern variation with intersection) will displace the least (463). The number of residential buildings that will be taken varies from 82 (Subalternate 2B) to 89 (Subalternate 1A). These structures house from 187 to 232 housing units.

A breakdown of the characteristics of the displaced residents appears in Table 5.1. To place these figures in perspective, they may be compared with census data for the census blocks and tracts within which they occur and for the city as a whole. Data for census tracts is presented in Tables 5.2, 5.3 and 5.4. Census block data is presented in Tables 5.5 and 5.6. A comparison of characteristics of these subpopulations with those for the city of Des Moines appears in Table 5.7.

The neighborhood within which each census tract occurs is also indicated on these tables. In most cases, each census tract occurs within one neighborhood and is only one of several tracts within the neighborhood. However, census tracts 34 and 36 each overlap two neighborhoods, but the affected blocks within them belong to only one of the neighborhoods. Neighborhood boundaries are illustrated in Figures 4.3,

5.1 and 5.2. Census tract boundaries appear in Figure 4.2. A breakdown of the census block data and project displacement data for each neighborhood is presented in Table 5.8.

A comparison of the census tract data with that for all of Des Moines reveals that the population in the vicinity of the project contains higher percentages of non-whites than does the Des Moines population. There are lower percentages of owner-occupied housing units and single-family dwellings than for the city as a whole.

The block data shows these same trends with an even greater percentage of non-whites and renter-occupied housing units in the affected blocks than in the census tracts. The housing data for the affected properties is similar to that for the census blocks and tracts. Multi-family and renter-occupied housing units predominate. The population characteristics for the residents to be displaced were not surveyed but were developed from the block data. Thus, they show the trends for higher percentages of non-whites and young people than is present in the city as a whole.

Acquisition payments would be made to each owner whose property is to be acquired. Such payments are based on fair market values and would be determined by appraisal of the properties at the time of acquisition. This appraised value would be in accordance with current real estate selling prices at the time of acquisition.

In addition to acquisition payments, all eligible relocatees would receive relocation assistance in compliance with the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act of 1970 and Chapter 316, Code of Iowa, 1975.

The Relocation Assistance Program assists owners and tenants displaced by a highway project in finding decent, safe and sanitary housing. Both tenants and owners qualify for relocation assistance by meeting minimum residence requirements. All occupants will receive payments for moving expenses. In addition, any individual or family who has owned and occupied or rented a dwelling for at least 90 days before the start of negotiations is eligible to receive payments for closing costs incurred in purchasing another dwelling and, possibly, a replacement housing payment. Any individual or family that has owned and occupied their own

home for at least 180 days before the start of negotiations is also eligible for additional compensation to offset increased interest payments on a replacement dwelling.

There is adequate replacement housing currently available in comparable areas in the city. In December, 1982, there were 758 homes for sale in Des Moines with an average sale value of \$41,800.00. There were 2,500 single-family dwellings for rent at that time (Des Moines Plan and Zoning Commission data). Approximately 437 apartment rental units were available in Des Moines at that same time, with an average rent of \$265.00 for one-bedroom, \$313.00 for two-bedroom and \$407.00 for three-bedroom. Within the project area and nearby there were 245 available rental units. Average rent for these units was from \$240.00 to \$265.00 for one-bedroom, \$270.00 to \$286.00 for two-bedroom and \$275.00 to \$348.00 for three-bedroom (1982 Apartment Occupancy Survey, Wingar-Johnson & Associates, Des Moines).

In addition, the 1990/2000 Land Use Plan encourages new residential development (primarily multi-family) in the central area neighborhoods including the CBD area. A senior citizen's residence, Elsie Mason Manor, and a rental housing project, Civic Center Courts, were recently completed within the CBD core area. There are no immediate plans for subsidized housing units in the central city area (Des Moines Public Housing Authority).

In light of the above, "last resort" housing is not expected to be required for this project. However, if adequate replacement housing within financial means is not available at the time right-of-way negotiations begin, then "last resort" housing will be applied. Programmed replacement housing as a "last resort" is provided for under Section 206 of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. This Act stipulates that if the local agency determines it is in the public interest to proceed with the construction of the Federal-Aid project and it cannot do so because of an inadequate supply of comparable replacement housing, then it may, as a last resort, provide the necessary housing by use of funds authorized for the highway project.

Relocation of Non-Profit Organizations

The project will displace several structures that house non-profit organizations. These include four churches, an office of the American Red Cross and an automobile club office. Each of the "build" alternates under consideration would displace all of these structures.

The churches that would be displaced by the project are listed in Table 5.9 and indicated on the aerial map (Plate 18, Appendix C).

Discussions with representatives from the four churches have indicated that their congregations are all small, but come from all areas of the city rather than solely from the immediate neighborhood. These structures are located in an area where land use is currently a mixture of commercial, industrial and single-family residential. Future land use for this area is planned industrial (Figure 4.8).

The displacement of these churches from this area is not predicted to have a negative impact because of the surrounding land usage and because they do not particularly serve the local neighborhood. Their relocation in a more suitable land-use setting would most likely be beneficial to the congregation. However, there may be negative impacts to some individual members of the congregation who live nearby or who have long-term attachments to the structure or its surroundings.

The American Red Cross office that would be affected houses both the Central Iowa Chapter for a three-county area and the Iowa Division Office which covers all but the extreme western part of Iowa. The relocation of this office is not anticipated to have significant impacts on its services or on those who utilize these services.

The automobile club affected is the American Automobile Association (AAA) Office at 2050 Grant. This office provides membership services for the local area. The relocation of this office to another site is not anticipated to have significant impacts on its functions or membership.

These non-profit organizations would be eligible to receive payments for actual reasonable moving expenses, direct losses of tangible personal property, and reasonable expenses not to exceed \$500.00 incurred while searching for a replacement site. During the design period, it will be attempted to provide notification to these groups to allow them sufficient lead time to relocate.

If the non-profit organization cannot be reestablished at another location, it may be eligible for a fixed payment, not to exceed \$2,500.00 in lieu of actual moving expenses, if the state is convinced that:

1. The organization cannot relocate without a substantial loss of its existing patronage; and
2. The organization is not part of a commercial enterprise with one or more similar organizations not being acquired.

Commercial Relocation Impacts

The displacement of businesses and industries from the area will be an economic impact of the project. This displacement can also have social impacts on the neighborhood in which it occurs, particularly if the business provides local services.

The "build" alternates will displace from 56 to 71 businesses and industries, depending on the alternate selected. These businesses employ from 894 to 1,038 employees (1982 data). Table 5.10 presents a breakdown of the types of business affected and these impacts relative to each alternate.

All of the "build" alternates will displace 56 businesses. These businesses are primarily very small. Only 12 of these businesses employ 10 persons or more. The largest business employs 80 persons. These businesses include the following types: construction, construction materials, textile manufacturing, printing, iron works, scrap metal, welding, plating, auto dealer, auto repair, auto parts, business equipment, restaurant equipment, restaurant, tavern, motel, day care center, insurance and medical supplies.

An additional eight businesses would be displaced by Alternates 1A and 1B at the interchange with Ingersoll Avenue in the north-south segment. These include a greenhouse, two restaurants, a dry cleaners, beauty shop, public relations firm, pest control, and engineering offices. These businesses employ 87 persons (1982 data).

Both subalternates of Alternate A would displace seven additional businesses along the east-west segment. These include two taverns, four auto repair shops and a bingo establishment. A total of 57 employees would be affected (1982 data).

Most of these businesses serve clients throughout the city, rather than providing neighborhood services. The beauty shop, taverns, dry cleaners and day care center are the only businesses that would provide localized service. Therefore, these business displacements are not expected to have major impacts on the adjacent neighborhoods. A more detailed discussion of these businesses is provided in the subsequent discussion of neighborhood impacts.

The major adverse impacts of these displacements will be on the owners and employees, particularly if the business does not relocate elsewhere. Some inconvenience will be experienced by the customers of these businesses as they will have to locate the products or services elsewhere.

The displacement of the auto-related businesses in the vicinity of Locust and Grand between 14th and 19th Streets will have a negative impact on this area. This area has been a major center for auto-related businesses since the 1920s. Alternate A (northern variation) would pass through this area and remove four of these businesses.

The owner of a business will have the option of ceasing operation or relocating. Many of these businesses are expected to relocate and remain in operation within the metropolitan area. However, some of the smaller businesses may be forced to discontinue because of lack of comparable rental space or other reasons. In early 1983 a considerable amount of commercial space was available for sale or rent in the project area. Rent varied from \$6.00 to \$8.00 per square foot. Some owner-operators may not wish to acquire high interest debts to relocate and may discontinue operating.

The owner-operator or tenant-operator of a business displaced for highway purposes who is in occupancy when negotiations start, is eligible for payment of actual, reasonable expenses, which include: 1) actual, reasonable expenses as a result of moving a business or other personal property; 2) actual or direct losses of tangible personal property as a result of moving a business; and 3) actual, reasonable expenses not to exceed \$500.00 incurred while searching for a replacement location.

In lieu of moving expenses, a business may be eligible for a fixed payment to cover moving the business. This payment equals the average net earnings of the business based on the income tax returns during the two taxable years preceding the taxable year in which the business must relocate. This payment shall not be less than \$2,500.00 nor more than \$10,000.00. Before making the payment, the State of Iowa determines that the business 1) cannot be relocated without a substantial loss of business; 2) is not part of a commercial enterprise with one or more similar businesses not being acquired by the state or the United States; and 3) contributes materially to a person's income if it is a part-time business. If the part-time individual or family occupation in the home does not contribute materially to their income, they are not eligible for this payment.

TABLE 5.1
POPULATION AND HOUSING DISPLACEMENT DATA
FOR CENSUS BLOCKS AFFECTED BY PROPOSED ALTERNATES

Alternates & Segments***	Tract No. & Neighborhood	Block No.	Total Population Displaced	Number of Housing Units Displaced	Type of Housing Unit Displaced			Race of Householder			
					Single Family Dwelling	Duplex or Apartments+	Multiple Family Dwelling++	White	Black	Other	
1A, 2A, 1B, 2B N-S Segment	27 Callanan	220	35	15	2	13	---	12	2	1	
		208	4	2	---	2	---	ND	ND	ND	
		213	16	12	1	11	---	10	---	2	
		212	8	5	3	2	---	3	1	1	
		516	15	7	7	---	---	4	3	---	
		211	5	2	2	---	---	2	---	---	
		313	81	29	1	---	28	22	6	1	
		120	144	60	3	9	48	36	24	---	
		119	4	2	---	2	---	1	1	---	
		Subtotal		312	134	19	39	76	90	37	5
1A, 1B N-S Segment	27 Callanan	121	52	20	5	---	15	15	---	5	
		125	2	1	1	---	---	1	---	---	
Subtotal		54	21	6	---	15	16	---	5		
1A, 2A E-W Segment	34 Downtown	815	28	24	---	---	24	24	---	---	
		Subtotal		28	24	---	---	24	24	---	---
1A, 2A, 1B, 2B Indianola Ave. Segment	42 Weeks	323	4	2	2	---	---	1	1	---	
		307	2	1	1	---	---	1	---	---	
		306	10	2	2	---	---	2	---	---	
		301	5	2	---	2	---	1	*	*	
		Subtotal		21	7	5	2	---	5	1	*
1A, 2A, 1B, 2B E-W Segment	36 Willard	324	11	3	3	---	---	2	1	---	
		323	3	1	1	---	---	---	1	---	
		321	3	1	1	---	---	---	1	---	
		242	9	3	3	---	---	2	1	---	
		241	10	3	3	---	---	3	---	---	
		240	9	3	3	---	---	2	---	1	
		239	12	4	4	---	---	2	1	1	
		236	3	1	1	---	---	1	---	---	
		237	6	2	2	---	---	---	2	---	
		119	6	2	2	---	---	1	1	---	
		225	9	3	3	---	---	1	---	2	
		224	6	2	2	---	---	1	---	1	
		Subtotal		87	28	28	---	---	15	8	5
		1A, 2A, 1B, 2B E. 15th Street Ext. Segment	38 Willard	417	9	3	3	---	---	2	---	1
416	10			4	4	---	---	4	---	---	
418	3			1	1	---	---	1	---	---	
326	3			1	1	---	---	1	---	---	
Subtotal				24	9	9	---	---	8	---	1
1A, 2A 1B, 2B E. 15th Street Ext. Segment	37 Hiatt	326	3	1	1	---	---	1	---	---	
		329	15	8	5	3	---	8	---	---	
		Subtotal		18	9	6	3	---	9	---	---
TOTALS:	Subalternate 1A		545	232	73	44	115	167	46	16**	
	Subalternate 2A		491	211	67	44	100	151	46	11	
	Subalternate 1B		517	208	73	44	91	143	46	16	
	Subalternate 2B		463	187	67	44	76	127	46	11	

---None.

*One vacant unit.

**Total excludes one vacant unit and no data for Block 208 in Census Tract 27.

Source: Summary Tape File 1, Iowa, 1980.

+Apartments with less than ten units.

++Ten or more housing units per building.

***Alternate 1A is northern variation with interchange.
Alternate 2A is northern variation with intersection.
Alternate 1B is southern variation with interchange.
Alternate 2B is southern variation with intersection.

TABLE 5.2
POPULATION DATA FOR CENSUS TRACTS AFFECTED BY THE PROJECT

Neighborhood	Tract No.	Total Population	Percent						
			17 and Under	65 and Older	White	Non-White	Single	Married	Separated, Divorced, Widowed
Callanan	27	4,510	26	11	61	39	39	29	32
Downtown & Callanan	34	2,994	12	26	87	13	40	21	39
Weeks	42	1,969	27	14	98	2	25	52	23
Willard & Downtown	36	673	31	16	85	15	23	55	22
Willard	38	930	30	19	84	16	20	51	29
Hiatt	37	<u>2,842</u>	<u>29</u>	<u>14</u>	<u>93</u>	<u>7</u>	<u>28</u>	<u>45</u>	<u>27</u>
TOTAL/MEAN		13,918	25	16	81	19	34	36	30

Source: Census Summary Tape File 1, Iowa, 1980.

TABLE 5.3
HOUSING DATA FOR CENSUS TRACTS AFFECTED BY THE PROJECT

Neighborhood	Tract No.	Year-Round Housing Units	Occupancy Status			Race of Householder			Household Type			Persons Per Housing Unit
			Owner	Renter	Vacant	White	Black	Other	Families	Single Person	Non-Related Individual	
Callanan	27	2,411	407	1,705	299	1,385	639	88	942	1,009	161	2.1
Downtown & Callanan	34	1,744	78	1,518	146	1,405	133	58	365	1,163	68	1.5
Weeks	42	823	544	220	59	707	16	41	532	202	30	2.6
Willard & Downtown	36	238	177	49	12	155	39	32	179	43	4	3.0
Willard	38	375	242	113	20	293	56	6	243	95	17	2.6
Hiatt	37	<u>1,253</u>	<u>586</u>	<u>578</u>	<u>89</u>	<u>1,055</u>	<u>67</u>	<u>42</u>	<u>702</u>	<u>403</u>	<u>59</u>	<u>2.4</u>
TOTALS		6,844	2,034	4,183	627	5,000	950	267	2,963	2,915	339	2.0 (mean)

Source: Census Summary Tape File 1, Iowa, 1980.

TABLE 5.4

INCOME DATA AND POVERTY STATUS FOR
CENSUS TRACTS AFFECTED BY THE PROJECT

Neighborhood	Tract No.	Median Income in 1979 for		Poverty Status (Income in 1979 Below Poverty Level) Percent of All	
		Families*	Unrelated** Individuals	Families	Unrelated Individuals
Callanan	27	\$ 8,581.00	\$ 6,365.00	34.1%	22.3%
Downtown & Callanan	34	25,903.00	9,247.00	19.4	35.7
Weeks	42	28,432.00	15,067.00	14.8	14.1
Willard & Downtown	36	10,865.00	3,896.00	20.0	54.2
Willard	38	8,542.00	4,200.00	33.3	43.1
Hiatt	37	12,440.00	7,067.00	16.6	21.9

Source: Census Summary Tape File 3A, Iowa, 1980.

*Median income in 1979 for all families in Des Moines was \$20,755.00.

**Median income in 1979 for unrelated individuals in Des Moines was \$7,561.00.

TABLE 5.5
POPULATION DATA FOR CENSUS BLOCKS
AFFECTED BY THE PROJECT

Neighborhood	Tract No.	Block No.	Total Population	Age Groups			Race		Marital Status*			Separated, Divorced or Widowed
				17 and Younger	65 and Older	Median Age	White	Non-White	Single	Married		
Callanan	27	220	113	32%	6%	24	77%	23%	31%	30%	39%	
		208	4	...	...	...	...	...	...	...	...
		213	8	...	...	...	75	25	...	...	...
		212	21	17	19	40	67	33	33	33	33	
		516	40	25	18	40	50	50	42	47	11	
		211	50	34	6	25	92	8	36	22	42	
		313	146	32	3	24	75	25	35	33	32	
		120	147	36	3	22	51	49	28	43	29	
		121	51	39	2	23	62	38	35	32	33	
		125	2	...	...	...	100	---	...	...	...
		119	80	15	10	27	41	59	61	26	13	
Subtotal			662									
Downtown	34	815	117	---	46	64	98	2	39	13	48	
Subtotal			117									
Weeks	42	323	16	19	38	52	62	38	44	0	56	
		307	12	...	...	...	100	---	...	...	...
		306	15	47	7	24	100	---	27	40	7	
		301	2	...	...	...	100	---	...	...	...
Subtotal			45									
Willard	36	324	28	29	11	30	54	46	33	42	25	
		323	6	...	...	...	50	50	...	...	...
		321	2	...	...	...	---	100	...	...	...
		242	5	...	...	...	80	20	...	...	...
		241	20	30	20	40	100	---	7	53	40	
		240	10	...	...	...	100	---	...	...	...
		239	14	...	...	...	86	14	...	...	...
		236	2	...	...	...	100	---	...	...	...
		237	6	...	...	...	---	100	...	...	...
		226	22	27	18	25	86	14	6	75	19	
		119	6	...	...	...	17	83	...	...	...
		225	9	...	...	...	...	100**	...	...	...
		224	10	...	...	...	2	98**	...	...	...
Subtotal			140									
Willard	38	417	18	6	28	51	100	---	35	47	18	
		416	13	...	...	...	100	---	...	...	...
		418	5	...	...	...	60	40	...	...	...
		326	2	...	...	...	100	---	...	...	...
Subtotal			38									
Hiatt	37	326	87	25	20	38	100	---	20	60	20	
		329	27	30	11	28	93	7	24	48	28	
Subtotal			114									
TOTAL			1,116									

*For persons 15 years old or older.
...Data suppressed for purposes of confidentiality.
---None.
**Spanish speaking.
Source: Census summary Tape File 1, Iowa, 1980.

TABLE 5.6
HOUSING DATA FOR CENSUS BLOCKS
AFFECTED BY THE PROJECT

Neighborhood	Tract No.	Block No.	No. Year-Round Housing Units	Occupancy Status			Race of Householder			Household Type and Persons Per Household			
				Owner	Renter	Vacant	White	Black	Other	Families	Single Persons	Non-Family	Persons Per Household
Callanan	27	220	56	2	48	6	40	9	1	26	18	6	2.3
		208	2	---	2	---	ND	ND	ND	...	...	...	2.0
		213	8	1	5	2	5	---	1	2	4	---	1.3
		212	16	7	4	5	6	4	1	4	6	1	1.9
		516	22	16	3	3	10	8	1	11	8	---	2.1
		211	22	4	16	2	18	2	---	12	7	1	2.5
		313	90	2	51	37	40	11	2	25	17	11	2.8
		120	64	5	57	2	37	25	---	36	23	3	2.4
		121	25	2	18	5	15	---	5	13	7	---	2.6
		125	2	2	---	---	2	---	---	...	...	...	2.0
		119	62	3	42	17	35	8	2	10	28	7	1.8
Subtotal		369	44	246	79	208	67	13					
Downtown	34	815	101	---	100	1	99	1	---	9	83	8	1.2
		Subtotal	101				99	1	0				
Weeks	42	323	12	6	2	4	2	4	2	4	4	0	2.0
		307	6	5	1	0	5	---	1	5	1	0	2.0
		306	5	...	...	2	3	---	---	...	...	...	5.00
		301	2	...	...	1	1	---	---	...	...	...	2.6
Subtotal		25			7	11	4	3					
Willard	36	324	9	7	1	1	4	4	---	7	1	---	3.5
		323	3	...	...	---	1	1	1	...	...	...	3.0
		321	1	...	...	---	---	1	---	...	...	...	3.0
		242	3	...	...	---	2	1	---	...	...	...	3.0
		241	6	4	2	---	6	---	---	5	1	---	3.3
		240	6	5	---	1	4	---	1	2	3	---	3.0
		239	4	...	...	---	2	1	1	...	...	...	3.0
		236	1	...	...	---	1	---	---	...	...	...	3.0
		237	3	...	...	---	---	3	---	...	...	...	3.0
		226	8	6	2	---	7	1	---	7	1	0	2.8
		119	2	...	...	---	1	1	---	...	...	...	3.0
		225	3	...	...	---	1	---	2	...	...	...	3.0
		224	3	...	...	---	1	---	2	...	...	...	3.0
		Subtotal		52			2	30	13	7			
Willard	38	417	8	3	3	2	5	---	1	4	1	---	3.0
		416	5	3	2	---	5	---	---	4	---	1	2.6
		418	4	...	...	1	2	1	---	...	...	...	2.6
		326	2	...	...	---	2	---	---	...	...	...	2.6
Subtotal		19			3	14	1	1					
Hiatt	37	326	31	21	8	2	27	---	2	25	4	---	3.0
		329	12	8	3	1	11	---	---	7	4	---	2.5
Subtotal		43		29	11	3	38	0	2	33	8		
TOTALS			609				400	86	26				

...Data suppressed for purposes of confidentiality.

---None.

ND: No data.

Source: Census summary Tape File 1, Iowa, 1980.

TABLE 5.7

COMPARISON OF POPULATION AND HOUSING DATA FOR THE
CBD LOOP IMPACTED AREA AND THE CITY OF DES MOINES

	CBD Loop Displacements*	Affected Census Blocks	Affected Census Tracts	Des Moines
Total Population	545	1,116	13,918	191,003
White Householder	167 (73%)**	400 (78%)	5,000 (80%)	69,282 (92%)
Non-White Householder	62 (27%)**	112 (22%)	1,217 (20%)	5,967 (8%)
65 or Older	54 (10%)+	156 (14%)+	2,226 (16%)	23,879 (12%)
17 or Younger	169 (31%)+	290 (26%)+	3,479 (25%)	49,410 (26%)
No. Housing Units	232	609	6,844	79,891
Single-Family	73 (31%)	200 (33%)+	3,041 (44%)	57,897 (72%)
Multi-Family++	115 (50%)	217 (36%)+	2,223 (32%)	10,323 (13%)
Owner-Occupied	44 (19%)	112 (18%)	2,034 (30%)	48,432 (61%)
Renter-Occupied	---	370 (61%)	4,183 (61%)	26,817 (34%)
Vacant	---	96 (16%)	627 (9%)	4,642 (6%)

*Data is for Alternate 1A of CBD Loop project, other alternates have slightly lower values (refer to Table 5.1).

**Estimates based on block data.

+Complete age data only available at the census tract level. Block and displacement figures are estimates based on partial data and census tract data.

++Ten or more housing units per building.

+++Data on 31 housing units in these blocks were suppressed in the census tables.

---Data not available.

TABLE 5.8

POPULATION AND HOUSING CHARACTERISTICS BY
NEIGHBORHOOD FOR THE AREAS AFFECTED BY THE PROJECT

	Neighborhoods					Totals
	Callanan+	Downtown+	Weeks	Willard	Hiatt	
Affected Blocks						
Total Population	662	140	45	178	114	1,116
No. Housing Units	369	101	25	71	43	609
White Householder	207 (72%)	99 (99%)	11 (61%)	44 (67%)	38 (95%)	400
Non-White Householder	80 (28%)	1 (1%)	7 (39%)	22 (33%)	2 (5%)	112
No. Owner-Occupied Housing Units	44 (12%)	---	11 (44%)*	28 (40%)**	29 (67%)	112 (18%)
No. Vacant Housing Units	80 (22%)	1 (1%)	7 (28%)	5 (7%)	3 (7%)	96 (16%)
CBD Loop Displacements						
Total Population	366	28	21	112	18	545
No. Housing Units	155	24	7	37	9	232
White Householder	90 (68%)	24 (100%)	5 (83%)	23 (64%)	9 (100%)	151 (73%)
Non-White Householder	42 (32%)	---	1 (17%)	13 (36%)	---	56 (27%)
No. Owner-Occupied Housing Units	9 (6%)	---	4 (57%)	26 (70%)	5 (82%)	44 (19%)
No. Single-Family Dwellings	25 (16%)	---	5 (71%)	37 (100%)	6 (67%)	73 (31%)

---None.

*Data suppressed for seven housing units and not included in these totals.

**Data suppressed for 23 housing units and not included in these totals.

+Data is for Alternate 1A of the CBD Loop project, other alternates have slightly lower values (refer to Table 5.1). Data for the other four neighborhoods is the same for all alternates.

TABLE 5.9

CHURCHES IMPACTED BY ALTERNATES A AND B
OF THE CBD LOOP PROJECT

Church	Map Ref. No.*	Type of Impact	Segment of Alignment	Size of Congregation	Area Served
All Nations Church of God in Christ 711 S.E. 14th Court	1	Acquisition of Entire Property for R-O-W.	E. 15th Street Ext.	15	Immediate area and west side of city.
Clifton Heights United Presbyterian Church 1931 S.W. First Street	8	Possible Acquisition of Edge of Property for ROW.	Indianola Avenue Connection	196**	East and west side of city.
Grace Apostolic Temple 615 S.E. 15th Street	15	Acquisition of Entire Property for R-O-W.	E. 15th Street Ext.	40	All areas of the city.
Church of the First Born (King of Kings) 619 S.E. 15th Street	7	Acquisition of Entire Property for R-O-W.	E. 15th Street Ext.	---	---
Southeast Assembly of God Church 715 S.E. 14th Court	37	Acquisition of Entire Property for R-O-W.	E. 15th Street Ext.	35	All areas of city.
Shiloh Baptist Church 1213 Scott Avenue	36	Increased Noise Levels & Negative Impact on Accessibility.	East-West Segment	---	---
St. Anthony's Catholic Church Indianola Avenue & S.W. First St.	30	Slight Negative Impact on Accessibility from Western & Southern Areas. Increased Noise Levels.	Indianola Avenue Connection	2,800	Primarily the south side of the city.
Kingsway Cathedral 901 - 19th Street	18	Improves Accessibility slightly.	North-South Segment	400	All areas of the city.
Vine Street Gospel Chapel 1441 E. Vine Street	38	Increased Noise Levels. Improved Accessibility and Visibility.	E. 15th Street Ext.	40	All areas of the city.
Sheltering Rock Church 718 S.E. Allen Street	35	Increased Noise Levels. Improved Accessibility and Visibility	East-West Segment	30	---

*See Figure 4.2 and Plates 1-18 for map locations.

**Number of families.

---Information not available.

TABLE 5.10

COMMERCIAL DISPLACEMENTS OF THE CBD LOOP PROJECT

CBD Loop Alternates*** & Segments	Census Tract & Neighborhood	Major Industry Group*									Total Number	Number of Employees	
		1	2	3	4	5	6	7	8	9			
1A, 2A, 1B, 2B, N-S Segment	27 Callanan		2		4	6	3		8	3	26	338	
1A, 1B N-S Segment	27 Callanan			1	2				5		8	87	
1A, 2A E-W Segment	34 Downtown				2				5		7	57	
1A, 2A, 1B, 2B, E-W Segment	34 Downtown		4				1	2	7		14	371	
1A, 2A, 1B, 2B, Indianola Ave. Segment	42 Weeks	1	1		1			1			4	38	
1A, 2A, 1B, 2B, E-W Segment	36 Willard	1	3					1			5	60	
1A, 2A, 1B, 2B, E. 15th St. Extension	36 Willard	<u>3</u>	<u>—</u>	<u>1</u>	<u>2</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>—</u>	<u>7</u>	<u>87</u>	
TOTALS		7	8	6	13	3	1	23	11				
											Alternate Totals - 1A	71	1,038
											2A	63	951
											1B	64	981
											2B	56	894

*Industry groups used by the Bureau of Census, except for the warehouse category.

**Services is a diverse category that includes business, recreation, repair, health, legal, education and other personal services.

***Alternate 1A is northern variation with interchange.

Alternate 2A is northern variation with intersection.

Alternate 1B is southern variation with interchange.

Alternate 2B is southern variation with intersection.

NEIGHBORHOOD IMPACTS

Both Alternates A and B will pass through portions of six neighborhoods in the central area of Des Moines. These neighborhoods are those used by the city for planning purposes and do not necessarily represent neighborhoods in the usual sense. Population and housing characteristics for the affected census tracts and blocks within each of these neighborhoods were discussed in the preceding section on residential relocation impacts. Census data for tracts and blocks appears in Tables 5.2-5.7. These tables also indicate the corresponding neighborhood that would be affected. A breakdown of some of these population and housing characteristics for affected blocks within each neighborhood appears in Table 5.8.

These data indicate that the largest number of displacements associated with the CBD Loop project will occur in the Callanan Neighborhood (366), followed by the Willard Neighborhood (112). The displacements in the Callanan Neighborhood will be primarily those living in multi-family dwellings. The greatest number of single-family dwellings (37) and owner-occupied dwellings (27) will be displaced in the Willard Neighborhood. Affected blocks within the Callanan, Willard and Weeks Neighborhoods contain higher percentages of non-whites than do those in other affected neighborhoods.

The following paragraphs discuss impacts to each of these neighborhoods. Maps of the neighborhoods appear in Figures 5.1, 5.2 and 4.3. In addition, the reader is referred to the aerial maps (Plates 1-18, Appendix C). All of these maps indicate the location of the CBD Loop alignment. As the impacts of each of the CBD Loop alternatives are identical in all of the neighborhoods except for minor differences in the Callanan and Downtown Neighborhoods, the following discussion compares alternates only for these neighborhoods.

Callanan Neighborhood

Description

Callanan Neighborhood would be more affected by the project than would the other neighborhoods. It is an old, central city neighborhood located to the west and northwest of the downtown area (Figures 4.3

and 5.1). The western part of the neighborhood contains stable areas with some new development, while the eastern area houses a more transitional population and has undergone deterioration. It is this eastern area that would be directly affected by the CBD Loop project.

One of the first developments in the eastern area was Woodland Cemetery, which was originally established as a rural, romantic cemetery in the 1850s. Residential development soon followed, and some of the most prominent Des Moines residents lived in the area east and south of Woodland Cemetery in the late 1800s and early 1900s.

Today parts of this area are deteriorating, and many of the larger homes have been turned into apartments. One 20-block area to the east of Woodland Cemetery has been listed on the National Register of Historic Places, the Sherman Hill Historic District (Figure 4.5 and Plate 1, Appendix C). Recently, considerable interest in the preservation of this area has developed, and residents from other areas of the city are purchasing and restoring homes here. Residents and property owners have formed an association and developed a revitalization plan for the area ("Sherman Hill, Doors to the Past, Windows to the Future," Sherman Hill Association, Inc., October, 1981). The State Historic Preservation Officer has recently recommended that the western boundary of the historic district be extended to Woodland Cemetery.

Another residential district, Owl's Head Historic District, also occurs within the CBD project area to the southeast of Woodland Cemetery. There are also several structures along Grand Avenue in this area that are listed on the National Register of Historic Places including Terrace Hill, the governor's mansion.

Because of substandard housing and low-income, most of the area around Woodland Cemetery is included in the Woodland-Willkie Target Area (refer to pages 4.6, 4.7 and Figure 4.3). The 1980 Census reported that 34 percent of the families in Census Tract 27 (the tract that includes the Sherman Hill area) had income that was below the poverty level. The median income in 1979 for families in this tract was \$8,581.00.

The non-residential land use in the area affected by the project includes a small commercial area in the Crocker Street-Cottage Grove

Avenue area and a strip commercial development along Grand Avenue and Ingersoll Avenue. Parks and public/semipublic uses include a church, a technical high school, school athletic field, Woodland Cemetery and a small neighborhood park, Chamberlain Park.

Future land use proposed for this area includes local commercial, general commercial, medium-density and high-density residential, and public and semipublic (Figure 4.8).

The alignment of the CBD Loop would pass along the eastern edge of Woodland Cemetery and would cross the edge of the single-family and multi-family residential areas. It would also pass through the two commercial areas described above and immediately adjacent to the park and athletic field.

Residential Displacements

The eleven census blocks that would be affected by displacements of residents have a population of 662 (1980 Census). These blocks contain higher percentages of non-white householders and persons under 18 years of age than does the city as a whole (Table 5.5). There is a lower percentage of owner-occupied housing units than for the city as a whole (Tables 5.6 and 5.7).

The majority of residential displacements by the CBD Loop project will occur in this neighborhood. Approximately 67 percent (366) of the displaced population and 67 percent (155) of the displaced housing units will occur here (Table 5.8). Only six percent of these housing units are owner-occupied, and 16 percent are single-family dwellings. It is estimated that the displaced population will consist of 28 percent non-white householders. The above figures apply to Alternates 1A and 1B. Alternates 2A and 2B would displace somewhat fewer people (312) and housing units (134), but the percentages cited above would be about the same.

The housing structures displaced include 25 single-family dwellings, one duplex, seven apartment buildings and five large single-family dwellings that have been converted to apartments. All but one of the single-family dwellings and the duplex were constructed between 1870 and 1910. Two of the apartment buildings were constructed in the 1920s; the rest are modern structures dating from the 1960s to 1970s. On-site

observations of the exterior of these structures was conducted in 1982. Most appeared to be in only fair physical condition, with a few being rated in good condition (Appendix Volume II, "Cultural Resources of the CBD Loop Arterial Project Area, History and Architecture").

Four of these structures are considered eligible for the National Register of Historic Places. All "build" alternates would displace these structures. Thirty of these structures were identified as contributing to the significance of the Sherman Hill District. Alternates 1A and 1B would displace all of these, while 2A and 2B would displace 24 of these (refer to section on "Impacts to Historic, Archaeological and Architectural Resources"). The memorandum of agreement developed for this project proposes that these properties will be made available to the public for purchase and relocation within an historic district. Prior to relocation or demolition, they will be documented following federal guidelines (refer to p. 6.7, Section 6).

Other Neighborhood and Land-Use Impacts

Impacts of the project in this area include both positive and negative effects on the neighborhood and on land usage. The alignment will widen the barrier between the Sherman Hill residential area and the open space area provided by Woodland Cemetery. Existing Harding Road has high traffic volumes and currently has a barrier effect in the same alignment as the proposed CBD Loop. The CBD Loop would have greater traffic volumes than now exist or than are predicted for the No Action alternate.

The CBD Loop project is predicted to increase noise levels in this area. Approximately 18 residences along the eastern edge of the alignment would be exposed to noise levels greater than 70 dBA (L_{10} levels). This impact is discussed later in this section under "Noise Impacts."

The project is expected to have some positive impacts on this area, however. The roadway will be depressed from Pleasant Street to the Des Moines River (except for the Ingersoll crossing for interchange Alternates 1A and 1B). This will considerably improve the visual features in the vicinity of Woodland Cemetery as existing Harding Road is not now depressed (see Plates 1-5, Appendix C). Also, a pedestrian bridge across the facility at Woodland Avenue will be constructed which will

provide a pedestrian link between the Sherman Hill area and Woodland Cemetery. A landscaped berm will be designed to serve as a traffic buffer along the east side of the facility between School Street and Woodland Avenue. With these features, the CBD Loop corridor is predicted to provide more continuity between the Sherman Hill area and Woodland Cemetery than currently exists along Harding Road.

The project is expected to reduce through-traffic and the associated traffic noise on streets within the area. Several streets will be closed at their intersection with Harding Road including Crocker, Leyner, Center, Pleasant and High. These closures will have a positive benefit on the neighborhood environment.

The project will only be affecting existing residential land usage by changing the strip of land along Harding Road that is now single-family and multi-family residential to a non-residential usage. This impact is not considered significant as it passes on the edge of a residential area and does not split the area. Also, the strip of land taken for highway purposes has commercial uses interspersed within the residential.

The project is anticipated to have a beneficial effect on the future land use of the area and to be consistent with the land-use policies of the city. The 1990/2000 Land Use Plan calls for medium-density residential and high-density residential for this area. The plan also encourages the location of high-density housing along major thoroughfares. It discourages commercial development within residential areas and along major thoroughfares. The design of the CBD Loop project in this area will facilitate these land-use goals.

Impacts to Churches and Schools

The project is not expected to have negative impacts on churches in the neighborhood. It is expected to reduce the amount of traffic adjacent to Kingsway Cathedral (19th and Crocker Streets) and improve access to this church somewhat. Nineteenth Street is currently a one-way, northbound roadway which will become two-way after the CBD Loop is constructed (see Plates 1 and 2, Appendix C). Predicted exterior noise levels will be greater than 70 dBA with the project but would also be this high with the No Action alternate. Noise mitigation measures will be evaluated for this church during the design of the project.

The project will have some negative effects on Des Moines Technical High School (Grand Avenue and 18th Street). Approximately 300 people use this facility. This includes students at the high school, as well as the administrative staff for the Des Moines School System. Consultation with staff of the Des Moines Board of Education have indicated that their long-range plans call for the continued use of this facility, with possibly some reduction in staff. The only parking lot for this facility will be required for the project right-of-way. Also, the toe of the roadway will encroach upon the eastern edge of the athletic field for this school located along Harding Road (refer to Plates 3-6, Appendix C). The Board of Education staff has indicated that there is a strong possibility that this field will continue to be used for physical education courses by the school in the future. However, the long-range plans for this field are not determined at this time. On the other hand, the project will greatly relieve traffic congestion on Grand Avenue and 18th Street. Existing traffic volumes are predicted to be reduced by about two-thirds after the CBD Loop project is in operation. Year 2000 noise levels are predicted to be about 5 dBA lower with the CBD Loop than with the No Action alternate. Pedestrian safety will be improved around the high school with the reduction in traffic congestion.

Impacts to Commercial Areas

The Callanan Neighborhood will experience the greatest number of commercial displacements of all the neighborhoods.

Two commercial areas in this neighborhood would be affected by the project: the Crocker Street-Cottage Grove Avenue area and the Ingersoll Avenue-Grand Avenue area. Impacts to these areas are discussed in this section under "Economic Impacts." The following discussion is limited to those aspects that would affect the local neighborhood.

The Crocker Street-Cottage Grove commercial node is located in the Sherman Hill area. Many of the structures are deteriorated, and there is a high vacancy rate. Most of the businesses do not provide neighborhood-oriented services.

The 1990/2000 Land Use Plan calls for this area to be local commercial, with low and moderate intensity activities and neighborhood-oriented businesses. The master plan prepared for the Sherman Hill Association,

Inc., recommends that this area be revitalized and restored to be compatible with the historic character of the Sherman Hill area. Landscaping and other design features are recommended for this area to provide an attractive entrance into the Sherman Hill area. The master plan also recommends that the CBD Loop be restricted to the Harding Road alignment and not impact the commercial area.

The CBD Loop alignment would pass through this commercial area. It would remove approximately one-third of the businesses in this area. These include eight businesses and two vacant commercial structures. Only two of these businesses are neighborhood-oriented: a tavern and a dry cleaners. The removal of these businesses is not expected to have a significant effect on the Sherman Hill neighborhood.

The project is not in accordance with the Sherman Hill master plan, however. It will remove the western half of the proposed restoration and revitalization area. Six of these structures were constructed between 1910 and 1935 and are listed as contributing structures; i.e., they contribute to the architectural and historic significance of the historic district.

The memorandum of agreement regarding historic preservation states that two of these structures will be documented prior to demolition (refer to "Impacts to Historic, Archaeological and Architectural Resources" later in this section and pages 6.6-6.8). During the design of the project, the city staff will coordinate the removal and demolition plans for all of these structures with the Sherman Hill Association, Inc. This group will also be consulted regarding landscape design and development in this area.

The Ingersoll Avenue-Grand Avenue commercial area consists of strip developments along these two major thoroughfares with a diversity of retail and wholesale establishments and professional offices. Seventeen businesses would be displaced from this area. Of these, only three are neighborhood-oriented: two restaurants and a hair styling salon. The removal of these businesses is not expected to have a significant impact on the neighborhood.

There are four other businesses that are scattered in the residential area that would be displaced. None of these provide local services.

Public Input and Neighborhood Planning

During the planning stages of the project, meetings with the Woodland-Willkie Neighborhood Priority Board and the Sherman Hill Association, Inc., were held (see Section 6, Comments and Coordination). These groups expressed concern about being isolated from Woodland Cemetery and about the potential for pedestrian safety while crossing the CBD Loop to reach the cemetery, particularly since the cemetery is used as a play area by children. There were generally positive attitudes toward the closing of local streets at their intersection with the CBD Loop.

Other fears about the project that were expressed by the residents of the area included increased noise levels, destruction of historic structures and relocation of people. Members of this neighborhood area are particularly sensitive to highway impacts because I-235 (MacVicar Freeway) had recently been constructed through the area, and it was felt that noise impacts and relocation of people had not been adequately mitigated for that project.

According to residents and property owners in the area, another impact which has already resulted from the project has been the long period of uncertainty about the project. A corridor along Harding Road has been part of the city plans for a number of years, and property owners along Harding Road have been reluctant to improve their property because of the fear that their investment would not be recovered when the property was acquired for right-of-way. Most of these properties are rental properties, and some are vacant. Residents of the area expressed the belief that the deterioration of these properties has had a negative effect on the property values of the rest of the neighborhood.

The proposed arterial will incorporate, as much as possible, the recommendations made by the Sherman Hill Association, Inc., in their report "Sherman Hill, Doors to the Past, Windows to the Future," October, 1981. In this report the ideal option for Sherman Hill is described as one that locates the traffic corridor elsewhere. However, the report recognizes that it is likely that the corridor will pass in the vicinity of Sherman Hill. To minimize its impacts, the following recommendations were made:

1. Locate the facility at the extreme western edge of the neighborhood, following the general alignment of Harding Road.
2. Depress the facility as much as possible.
3. Incorporate landscape buffering and park facilities into the design. A strip park is recommended to run without interruption from Cottage Grove Avenue south to Woodland Avenue. A bicycle path and pedestrian path would run the park's length, and a pedestrian connection at Center Street is recommended.
4. Limit access from a number of the east-west streets in the district.

The proposed arterial, as conceptualized in the location study, incorporates these recommendations with these exceptions:

The eastern branch of the one-way north-south couplet of the arterial would pass through the Cottage Grove commercial area rather than to the west of it.

The pedestrian link to Woodland Cemetery would be located at Woodland Avenue rather than Center Street.

The strip park concept with pedestrian and bicycle paths has not yet been developed.

During the design phase of the project, the planners will work closely with the Woodland-Willkie Neighborhood Priority Board and the Sherman Hill Association, Inc., to arrive at a mutually agreeable design for the arterial in the vicinity of the Sherman Hill area.

Willard Neighborhood

Description

Willard Neighborhood is an older neighborhood located to the south and east of the downtown area (Figures 4.3 and 5.2). The residential areas are relatively stable and consist of primarily single-family housing. Many of these areas have deteriorated, however, and are in need of rehabilitation. Most of the area was platted from 1850 to 1890. Approximately 76 percent of the housing was built before 1940.

Because of substandard housing and low-income, a considerable area in the eastern and north-central part of this neighborhood is included in the Pioneer-Columbus/Southeast Target Area (refer to discussion on pages 4.6 and 4.7 and Figure 4.3).

There is more industrial land usage in this neighborhood than in any of the others in Des Moines (23 percent of the land in 1976). It is expected that this usage will continue. There is also considerable vacant land where industry is expected to expand. It is estimated that 31 percent of the land will be devoted to industrial purposes in the future (1990/2000 Land Use Plan, Des Moines Plan and Zoning Commission, 1978).

The part of the neighborhood that would be directly affected by the CBD Loop project is located in the extreme eastern area to the south of downtown and the state capitol complex (Figure 4.3). The majority of this area is a very old, stable residential area that has been referred to as the Roadside Area since the late 1800s. This includes the area south of Raccoon Street and west of S.E. 14th Street. The rest of the project area is a small strip located east of and adjacent to S.E. 14th Street. The homes in this area are not as old, dating from the 1920s. Both of these areas contain modest homes and have traditionally housed blue-collar workers.

This area is also referred to as the Southeast Bottoms for it lies on lowland within the former flood plain of the Des Moines River. An earthen flood control dike now borders the river throughout this area. A high river bluff on which the State Capitol Complex is situated lies to the north of this area.

A number of railroad tracks lie just to the north of Raccoon Street in an industrial area. One heavily used track of the Chicago & North Western Railroad passes through the residential area from southwest to northeast.

Major through traffic in the area moves north and south along S.E. 14th Street and S.E. Sixth Street. S.E. 14th is a four-lane roadway and is a major thoroughfare for the east side of the city. It also serves as U.S. Highways 65 and 69. East-west through traffic moves primarily on Scott Avenue and Maury Street.

Other nonresidential land uses in the area affected by the project include a commercial strip along S.E. 14th Street and commercial and industrial development along Raccoon Street. Small parcels of industrial and commercial usage are scattered throughout the area. Park and public/semipublic uses include nine churches, three neighborhood parks and public open space along the Des Moines River. There is a considerable number of small vacant parcels scattered throughout the area (Figure 4.7).

Future land use proposed for the Roadside Area includes primarily general residential, with some planned industrial along Raccoon Street and general commercial along S.E. 14th Street. The area east of S.E. 14th is proposed for planned industrial and general industrial, with no residential usage (Figure 4.8).

The affected area includes parts of Census Tracts 36 and 38. The 1980 Census reported that 20 percent of the families in Census Tract 36 and 33 percent of the families in Census Tract 38 had incomes that were below the poverty level. The median income in 1979 for families in these tracts was \$10,865.00 (Tract 36) and \$8,542.00 (Tract 38) (Table 5.4).

The land that would be required for the CBD Loop project right-of-way includes portions of 17 census blocks containing 71 housing units. These blocks contain a higher percentage of non-white householders than does the city as a whole (Tables 5.7 and 5.8). Age groups and housing data for these blocks are not available because much of the data for these blocks was suppressed due to small numbers per block. However, the census tract data indicates that somewhat higher percentages of those under 18 and over 65 reside in this larger area (Table 5.2). A slightly higher percentage of owner-occupied housing units occurs in these census tracts than in the city as a whole (Table 5.3).

Residential Displacements

The Willard Neighborhood will have the second largest number of residential displacements by the CBD Loop project. It is estimated that 112 persons and 37 housing units will be displaced from this area by all "build" alternates of the project (Tables 5.1 and 5.8). Approximately 70 percent of these housing units are owner-occupied and all are single-family dwellings. It is estimated that the displaced population contains a relatively high percentage of non-white householders (36 percent).

There are 37 single-family dwellings that would be displaced by the project. Over two-thirds of these structures were constructed between 1870 and 1900. Most of these are 1- or 1½-story wood frame houses. The 1982 architectural/historical survey of this area reported that few of these structures were in good condition and most were altered in some way. None of these were determined to have architectural or historical significance (Appendix Volume II, "Cultural Resources of the CBD Loop Arterial Project Area, History and Architecture", 1982).

Other Neighborhood and Land-Use Impacts

The alignment of the CBD Loop passes along Raccoon Street between the residential area to the south and the commercial/industrial area to the north. In the vicinity of S.E. 14th Street it curves to the south to Scott Street, passing on the edge of the residential area. To the east of S.E. 14th Street it passes through a mixed residential and commercial area.

Impacts of the project in this area include both positive and negative effects on the neighborhood and on land usage. The alignment will strengthen the boundary between conflicting adjacent land usages along Raccoon Street. It will serve as a buffer to the residential area, separating it further from the commercial/industrial area. During the design phase of the project, landscape design for the project right-of-way in this area will be developed that will enhance this buffer effect.

The project will improve access to the southwest and northwest areas of the city for the residents in this neighborhood. Accessibility to the various public facilities and services located in the downtown west area will also be improved.

On the other hand, the project will result in greatly increased traffic volumes on the Raccoon Street alignment than currently exist. Average daily traffic volumes are predicted to range from about 14,000 to 21,000, depending on the alternate. These volumes will result in significant increases in noise levels in the area (refer to discussion of "Noise Impacts" later in this section and to Plates 15-18, Appendix C). During the design phase, a noise wall or berm to protect the residential area from this impact will be considered. The aesthetic effect of the

structure, as well as the viewpoints of the residents toward such a structure, will be considered.

Similarly, high traffic volumes will be introduced along S.E. 15th Street, a street that currently has very little traffic. Average daily traffic volumes are predicted to range from about 24,500-25,700. As there are very few homes in this area and future land use is proposed to be industrial, the effect of increased traffic volumes in this area is not considered to be significant.

On the positive side, the diversion of through traffic from local streets to the CBD alignment is predicted to result in less traffic and lower noise levels within the residential area. For example, average daily traffic volumes on Maury Street are predicted to be 530 for both Alternates A and B, compared with 6,850 for the No Action alternative (Table A.1, Appendix A). The removal of heavy truck traffic is also expected to benefit the neighborhood. It is anticipated that the reduction in traffic within the neighborhood will enhance neighborhood cohesiveness.

Many of these local streets will also be closed where they encounter the CBD Loop alignment. These closures will also serve to reduce traffic on these streets. Seven north-south streets in this area will be closed, including: S.E. Second, S.E. Third, S.E. Fifth, S.E. Seventh, S.E. Eighth, S.E. Tenth and S.E. 14th Street Court. These closings will result in some changes and inconveniences to the north-south travel patterns of the residents. Three east-west streets will be closed at their junction with S.E. 14th. These are Railroad Avenue, Scott Avenue and Harriet Street. This effect is anticipated to be minor.

Impacts to Churches and Schools

The project will have negative impacts on several of the churches in the area (Table 5.9). Four of these churches will be displaced by the project. These churches are: All Nations Church of God in Christ, Grace Apostolic Temple, King of Kings, and Southeast Assembly of God. All of these are located in the area east of S.E. 14th Street (refer to Figure 4.2 and Plate 18, Appendix C for locations). All of these are small churches that have members from both the local area and other parts of the city.

The displacement of these churches is expected to have some negative impacts on the local neighborhood. Relocation assistance and reimbursement for property losses will be provided to each church (refer to earlier discussion in this section on "Relocation of Non-Profit Organizations"). There is considerable vacant land elsewhere in this area where these churches could relocate. As the area where they are now located is proposed for future industrial usage and residential usage is to be phased out, it should benefit these churches to relocate to an adjacent residential area.

Although not displaced by the project, two other churches in the area will be negatively impacted by the project. Shiloh Baptist Church, 1213 Scott Avenue, will be bounded by the main CBD alignment as well as the on and off ramps for the facility (refer to Plate 18, Appendix C). Accessibility by auto from the local area will be severely affected because entrance and departure will only be possible from the one-way eastbound lane of the CBD Loop roadway. Also, pedestrian accessibility from the local area will be difficult. The church will also be exposed to considerably higher traffic volumes (as high as 21,700 average daily volumes) and noise levels (exterior L_{10} of 81 dBA) than now exist (refer to "Noise Impacts" later in this section). These volumes and noise levels apply to peak traffic periods which are not expected to coincide with the major times of church activity. Because of these adverse impacts, the acquisition of this property will be considered during the design phase of this project in consultation with representatives of the congregation.

The other church affected by the project is Sheltering Rock Church, 718 S.E. Allen Street (refer to Plate 16, Appendix C, for location). Pedestrian and auto accessibility from the local area will not be affected. It will be improved somewhat for those driving from other areas of the city. The church will be exposed to higher noise levels than now exist. The predicted existing exterior noise level is 56 dBA (L_{10}), and the predicted exterior level for the No Action alternate is 45 dBA (L_{10}), with the CBD Loop project, exterior levels of 70-71 dBA (L_{10}). The peak traffic periods are not expected to coincide with the major times of church activity. Noise mitigation measures for this structure will be evaluated during the design of the project.

No schools will be impacted by the project in this area.

Impacts to Commercial Areas

The commercial and industrial concerns in the project area are primarily small manufacturing or construction-related firms. The structures that house these are generally small and unobtrusive and were built fairly recently (after 1940), compared to the residential structures.

The CBD Loop project will displace 12 of these businesses. Five of these are located along Raccoon Street, and six are located along the alignment proposed for the E. 15th Street Extension.

The remaining commercial and industrial establishments are expected to benefit from the project. Increased accessibility will be provided to these areas north of Raccoon Street and east of S.E. 14th Street. The 1990/2000 Land Use Plan proposes increased industrial and commercial development for these areas, and the CBD Loop project will help promote this development.

Some of the businesses along S.E. 14th Street between Scott Avenue and Harriet Street may have decreased accessibility as a result of the project. These businesses currently are accessible from the two-way S.E. 14th Street. The CBD Loop project will result in S.E. 14th Street as a one-way, southbound roadway (refer to Plate 18, Appendix C). During the design phase of the project, accessibility to this area from both directions will be provided where feasible.

Public Input

Input to the project from residents and property owners in this area was received during a public meeting that was held on August 18, 1981, in a church in the area. Representatives of the city presented the various alignments that were under consideration and asked for feedback on these and on sensitive sites in the area.

There was general concern expressed regarding the taking of homes as apparently many of the residents have lived here for a number of years. There was considerable concern regarding the fate of the many small churches that are located in the area. There were positive reactions to an alignment along Raccoon Street as opposed to one along Maury Street or Scott Avenue. The diversion of traffic from these two streets

to the Raccoon Street alignment was seen as a benefit to the neighborhood. However, several owners of the small businesses along Raccoon Street were present and objected to this route as it might displace their buildings.

Hiatt Neighborhood

Description

Hiatt Neighborhood will only be slightly impacted by the project. It is an older, central city neighborhood located immediately north and east of the State Capitol (Figures 4.3, 5.1 and Plate 17, Appendix C). Approximately 88 percent of its houses were built before 1940, and many date from the late 19th Century. An architectural/historic area has been identified immediately north of Court Avenue (Figures 4.5 and 5.1).

Like other central city areas, much of the housing has deteriorated and is considered substandard, and many of the residents are in low-income brackets. Most of the neighborhood has been included in the Logan Target Area (refer to discussion on pages 4.6 and 4.7 and Figure 4.3).

Approximately 42 percent of the land usage is residential (1976 data). The majority of residences are one- or two-story wood frame, single-family dwellings.

Future land-use plans call for increased multi-family residential usage in the area.

The area affected by the CBD Loop project is located in the southwest corner of the neighborhood. Existing land usage is almost entirely single-family residential (Figure 4.7). One church occurs in the area. The through routes in the area are along Court Avenue and S.E. 14th (U.S. Highways 65 and 69). The affected blocks lie on a bluff overlooking S.E. 14th and are not directly connected to this major roadway.

Future land use proposed for this area includes General Residential and Medium-Density Multi-Family Residential (Figure 4.8).

The affected area is within Census Tract 37. During 1979, 16.6 percent of the families in this tract had incomes below the poverty level. The median income for families was \$12,440.00 (Table 5.4).

The land that would be required for the CBD Loop project includes portions of two census blocks containing 43 housing units. These blocks

contain a high percentage of non-white householders and a lower percentage of owner-occupied housing units than does the city as a whole (Tables 5.7 and 5.8).

Residential Displacements

It is estimated that 18 persons residing in nine housing units will be displaced by the project. Six of these are single-family homes, five of which are owner-occupied. All of these structures are modest, wood frame homes built before or around the turn of the century. None of these were determined to have architectural or historical significance (Appendix Volume II, "Cultural Resources of the CBD Loop Arterial Project Area, History and Architecture," 1982).

Other Neighborhood and Land-Use Impacts

The alignment of the CBD Loop will pass through a single-family residential area that currently has very little traffic. The only through street in the area is Court Avenue. Existing traffic volumes on this section of Court Avenue are 5,750. Future predictions with the No Action alternate are for 4,560 vehicles per day. The proposed project will carry from 28,800 to 29,500 vehicles per day through this area.

It also will be isolating about 12 single-family residences from the rest of the neighborhood by a one-way northbound roadway (Plate 17, Appendix C). Negative effects on neighborhood cohesion and on pedestrian and bicycle safety are predicted to result from this alignment.

Noise levels greater than 70 dBA will be introduced into this area (Table 5.21). Approximately 22 homes would be exposed to noise levels greater than 70 dBA. Noise walls would not be effective in this area because of the presence of intersections.

During the design phase of the project, consideration will be given to measures to mitigate noise impacts, such as sound insulation for homes. A pedestrian walkway across the E. 15th Street Extension will also be considered. Also, consideration will be given to the relocation of these persons living west of the arterial and a joint development use of this land. Landscaping will be designed for the highway right-of-way through this area to provide a visual buffer for the residential area.

Impacts to Churches and Schools

The project is expected to have both negative and positive effects on the church in this area (Vine Street Gospel Chapel). The church will be exposed to noise impacts greater than 70 dBA. Noise reduction measures will be considered during the design of the project. The project will greatly increase the accessibility of the church from the southern areas of the city. It will also greatly increase the visibility of the church, an effect generally considered to be a positive one for churches.

No schools will be affected by the project in this area.

Impacts to Commercial Areas

No commercial areas will be affected by the project in this area.

Weeks Neighborhood

Description

Weeks Neighborhood is a mixture of older, stable, central city areas located in the western and northwestern parts and newer, rapidly growing areas located in the east and southeastern parts (Figures 4.3 and 5.2). This neighborhood has more land available for development than any other neighborhood in the city, and residential development is expected to double in size by the year 2000. Very little commercial or industrial growth is proposed for the area, however.

Current land use is primarily single-family residential. The 1990/2000 Land Use Plan calls for an increase in residential usage, with an increase in the amount of multi-family residential usage. An increase in the amount of parks and public open space lands is also proposed.

Because of substandard housing and low-income levels of residents, most of the northwestern area of this neighborhood is included in the Pioneer-Columbus/Southeast Target Area (refer to discussion on pages 4.6 and 4.7 and Figure 4.3).

The part of the neighborhood that would be directly affected by the CBD Loop project is located in the extreme northwestern corner, immediately south of the Raccoon River. This area is the oldest in the neighborhood and contains single-family residences, most of which were built from 1880 to 1920. The houses are of modest size and style.

Other land usages include light industrial west of S.W. First Street, a commercial strip along the major thoroughfare in the area, Indianola Avenue, and small, scattered parcels of vacant land. Park and public and semipublic uses include two churches, a neighborhood park and public open space along the Raccoon River (Figures 4.2, 4.5 and 4.7).

Future proposed land usage calls for planned industrial, medium-density, multi-family residential and local commercial (Figure 4.8).

Major through traffic in the area is north-south along S.E. First and east and west along Indianola Avenue. A heavily used track of the Chicago & North Western Railroad passes through the area from southwest to northeast.

The area was the site of the second major area of Italian settlement in the city beginning in the 1920s. St. Anthony's Roman Catholic Church, located at the corner of S.W. First and Indianola Avenue is still considered the most important symbol of Italian-American culture in Des Moines (Appendix Volume II, "Cultural Resources of the CBD Loop Arterial Project Area, History and Architecture", 1982).

The affected area occurs within Census Tract 42. The 1980 Census reported that 14.8 percent of the families in this tract had incomes that were below the poverty level. The median income for families in this tract was \$28,432.00 (Table 5.4).

The land that would be required for the CBD Loop project right-of-way includes portions of four census blocks containing 25 housing units. These blocks contain a higher percentage of non-white householders than does the city as a whole (Tables 5.7 and 5.8).

Residential Displacements

It is estimated that 21 persons will be displaced from seven housing units in this area. Four of these housing units are owner-occupied and five are single-family dwellings (Tables 5.1 and 5.8).

The five single-family dwellings were built around the turn of the century. The 1982 architectural/historical survey reported that these structures were not historically or architecturally significant.

Other Neighborhood and Land-Use Impacts

The alignment of the CBD Loop would pass between S.W. First and S.W. Second Streets between Jackson Avenue and Indianola Avenue (Plate 14, Appendix C). It will separate a primarily industrial area to the west from the residential area to the east. Only a few residents occur west of the alignment.

This alignment is expected to have positive effects on neighborhood conditions and existing land usage in the area. It will have a buffer effect between the residential and industrial areas. It will also promote proposed future land usage as it will be passing through an area proposed for Planned Industrial.

Another positive effect of the project will be the diversion of traffic from S.E. First Street to the CBD Loop. This street passes through the heart of the residential area and carries daily traffic volumes of 12,200. It is predicted that traffic volumes on this street after the CBD Loop is constructed will drop to 3,830 per day. Under the No Action alternate, future traffic volumes are predicted to be 13,860 (Table A.1, Appendix A).

Other local streets are also expected to experience reduced traffic volumes. These include S.E. Sixth and Hartford Avenue. A reduction in traffic noise and motor vehicle emissions along these local streets is also predicted. The project is also expected to facilitate new residential development in the southeastern areas of the neighborhood (E. of S.E. 14th) by providing improved access to the major employment centers in the CBD.

Impacts to Churches and Schools

The project will result in somewhat greater traffic volumes and noise levels than would the No Action alternate along Indianola Avenue in the vicinity of two churches and a school: St. Anthony's Catholic Church and school and Clifton Heights United Presbyterian Church (Figure 4.2 and Plate 14, Appendix C). Noise reduction measures for these churches will be considered in the design stage of the project. Small amounts of property from these two churches may be required, but the buildings will not be affected. Access by vehicle to these churches will be slightly poorer than under current conditions because of the closure of S.W. First and the presence of a median along Indianola Avenue.

Pedestrian accessibility is expected to be slightly improved because of the reduction of traffic volumes along S.E. First and other local streets. However, pedestrian accessibility will be impaired for those approaching from the south of Indianola Avenue. A pedestrian crossing of Indianola Avenue in the vicinity of these churches and school will be considered during the design of this project.

Reduction of traffic volumes along Hartford Avenue should result in increased school pedestrian safety in the vicinity of Washington Elementary School (Hartford and S. Union Road).

Impacts to Commercial Areas

The CBD Loop will displace four business concerns in this area: a small manufacturing concern, a construction-related firm, a restaurant and a day care center. The restaurant and day care center provide local services to the neighborhood, and their removal would have negative effects on some residents of the area.

Downtown Neighborhood

The Downtown Neighborhood includes the downtown areas on both the east and west sides of the Des Moines River, the State Capitol area, industrial areas south of downtown and scattered housing, primarily multi-family (Figures 4.3 and 5.1).

The Downtown Neighborhood includes the oldest part of the city; much of the land was platted in the 1850s to 1860s. One area in the vicinity of Court Street has been proposed as an architectural/historic district (refer to Figure 4.5). The site of the old Fort Des Moines in the vicinity of Elm Street and Court Avenue is currently being proposed as eligible for the National Register of Historic Places.

Although maintaining a high population of office workers, the downtown experienced a decline in residential population and retail activities in the 1960s and 1970s. However, it has recently undergone revitalization; and considerable new construction or renovation of office buildings, housing and community facilities has taken place. It has remained the major employment center for the SMSA over the years.

The area affected by the project is a strip running east-west just south of the downtown area and a north-south segment crossing the Raccoon

River near its confluence with the Des Moines River. In addition, Alternate A only would have a segment that curves through a commercial area west of the CBD core area referred to as downtown west.

Existing land use in the affected area is almost entirely commercial and industrial (Figure 4.7). Proposed land use is Planned Industrial, General Commercial and Office Retail (Figure 4.8). An area in the vicinity of Locust and 15th Streets has been dominated by automobile-related commercial concerns since the 1920s.

The residential usage is scattered throughout the commercial area and consists of apartment buildings, upstairs apartments in commercial buildings and public housing projects. Only seven percent of the housing units were single-family dwellings in 1976 (1990/2000 Land Use Plan, Des Moines Plan and Zoning Commission, 1978).

The residential population of only one census block containing 101 multi-family housing units will be affected by the project (Alternate A only). The population on this block contains a high percentage of elderly (46 percent) and no persons under the age of 18. Ninety-eight percent of the population is white. All persons live in rental housing, and most (83 percent) live alone (1980 Census Data).

Residential Displacements

It is estimated that 28 persons will be displaced from 24 multi-family rental housing units in this area. All of these residents are expected to be white householders. Only Alternate A will result in these displacements.

Other Neighborhood and Land-Use Impacts

Other than these displacements, the project is not expected to have negative effects on those persons living in the downtown area. Because it is predicted to reduce traffic congestion on many of the CBD streets, it will have positive effects on pedestrian safety and the general environment of the downtown area.

Revitalization plans call for an increase in multi-family housing in the downtown area. Two housing projects have recently been completed in the CBD core area (Elsie Mason Manor and Civic Center Courts, Figure 4.5). The CBD Loop project is predicted to result in lower traffic volumes on

streets adjacent to these two facilities. The CBD Loop is expected to help promote the development of a pedestrian-oriented downtown environment and the future development of multi-family housing here.

Churches, Schools and Public Facilities

The project will not affect any schools or churches in the Downtown Neighborhood. It will provide improved access to the community facilities and government offices in the CBD area for residents from the southeastern, western and southwestern areas of the city.

Impacts to Commercial Areas

The project will provide improved accessibility to the retail concerns in the CBD from the southeast and southwest areas of the city. The reduction of through traffic in the CBD will enhance the area for pedestrian usage and is expected to make the area more of an attractant for shopping than it now is.

The project will also improve accessibility for those who work in the CBD area.

The project is expected to improve accessibility for the industrial areas of the downtown located to the south on both sides of the Des Moines River. It is anticipated that redevelopment will occur in these industrial areas. Alternate B will have a greater positive effect on these industrial areas than will Alternate A.

The project alternates will have varying effects on the commercial-office area bounded by Ingersoll Avenue, High Avenue, Vine Street, Eighth Street and 19th Street. Alternates 1A and 2A will displace nine businesses from this area, while Alternate B will displace only one business from this area. These businesses include four automobile repair service concerns, two bars, one bingo parlor and two vacant buildings.

In addition, the Alternate A alignment will divide this area along 15th Street and will somewhat isolate the area between 15th and 19th Streets from the rest of the CBD. Several major employers occur in this isolated area, including Meredith Corporation (refer to Plate 9, Appendix C).

This area has recently been considered for possible expansion of the Capital Center Urban Renewal Area or for the location of a new tax increment district.

Another area where businesses will be displaced is the industrial area south of the CBD core between 14th Street and the Des Moines River. Ten businesses will be displaced in this area by either Alternate A or B. These businesses include: warehouses, a print shop, lumber yard, mill works and textile processing.

Brody Neighborhood

Description

This neighborhood is a relatively younger one compared to the other affected neighborhoods. Most of the area has been platted since 1950, and there is a considerable amount of vacant, developable land. Most of the housing is single-family, and the future land-use plan calls for a continuation of this trend. There is a large amount of existing industrial development and future industrial growth is expected. The Des Moines airport is located off Fleur Drive.

Impacts

The project will not displace any residents, businesses or other structures. It passes through only a small northeastern part of the neighborhood located within the property of the Des Moines Water Works.

It is expected to improve accessibility to the downtown area for residents and businesses in the area. It is also expected to improve accessibility to the Des Moines airport and to other destination points in the neighborhood from the northern areas of the city.

The project will have negative impacts on the Des Moines Water Works. These are discussed later in this section under "Impacts to Community Facilities" and "Impacts to Natural Features."

Impacts to Churches, Schools and School Pedestrian Safety

Both Alternates A and B would have the same impacts to these factors. These impacts have been described separately by neighborhood in the preceding section and are summarized in Table 5.9 and in the following discussion.

Four church properties would be required for the project right-of-way. These are discussed in the earlier section on "Dislocation Impacts to Non-Profit Organizations."

An additional six churches would be negatively affected by visual and noise intrusion on their properties and by slightly reduced accessibility. Mitigation measures to reduce these noise levels and improve the visual environment will be considered during the design of the project.

These impacts have the potential for being especially serious for the Shiloh Baptist Church, 1213 Scott Avenue (refer to Willard Neighborhood and Plate 18, Appendix C). During the design phase of the project, relocation of this church will be considered in consultation with the church's representatives.

Three of these churches are expected to benefit from the project through improved accessibility and visibility.

A negative effect of both alternates of the project is predicted to result from the acquisition of the parking lot for Des Moines Technical High School (see Callanan Neighborhood discussion). During the design of the project, the city staff will consider plans for the development of other comparable parking facilities in the vicinity of the high school.

Another negative effect will be in the Water Works Park. Several athletic practice fields here are used by Des Moines Technical High School (Plates 7 and 8, Appendix C). Both Alternates A and B would require this area for right-of-way. The Water Works Board maintains a renewable contract with the Des Moines School Board for the use of this land, but it appears likely that the land will not be used by the school after the next several years. However, the long-range plans of the Water Works call for the development of their facilities into this area, and the practice fields would no longer be available.

The project is expected to have positive impacts on vehicle and pedestrian accessibility and pedestrian safety for several schools including: Des Moines Technical High School, Washington Elementary School and St. Anthony's Catholic School. A pedestrian crossing on Indianola Avenue in the vicinity of S.W. First Street will be provided as part of the project.

Impacts to Community Facilities

Emergency Services

The proposed project will result in reduced response times for fire protection, police protection and ambulance services to many central city areas, as compared to existing conditions or the No Action alternate. Specific areas where improvement is anticipated include:

- Fire protection to the industrial area south of Market Street and west of S.W. Ninth Street (Plates 11 and 12, Appendix C). Access to this area from Fire Station No. 1 (Ninth and Mulberry) would be possible via the exist ramp from S.W. Ninth Street to the CBD Loop.
- Fire protection to the area south of the CNW Railroad tracks, north of Indianola Avenue and west of the CBD Loop via Dunham Street (Plate 14, Appendix C).
- Fire protection to the area north of the CNW tracks and south of the Raccoon River via the CBD Loop, E. Jackson Avenue and S.W. Second Street.
- Fire protection and police accessibility for the area immediately south of the CBD Loop from S.W. Ninth Street to S.E. 15th Street (Plates 12, 13, 15, 16, 17, Appendix C).

Adverse effects on accessibility are predicted for:

- Police and ambulance access to the area between E. 14th and E. Astor Streets and south of E. Court (Plate 17, Appendix C). Fire protection to this area would not be adversely affected.
- Response time from Fire Station No. 1 (Ninth and Mulberry) to areas along High Street immediately west of Harding Road (Plates 3, 5, Appendix C). This applies to Alternates 1A and 1B only (inter-change alternates). Accessibility to Iowa Methodist Medical Center from this same area would also be adversely affected by Alternates 1A and 1B.

Utilities

The project will require the relocation of utilities such as water, gas, electric, telephone and sewer. Table 5.13 in the following section on "General Economic Impacts" presents cost estimates for these relocations.

Residents and businesses in the area will be inconvenienced while this utility work is taking place.

A large area in the Des Moines Water Works Park would be affected by the project (refer to Plates 7 and 8, Appendix C). This area is projected to be the major expansion area for the plant as additional water demands are placed upon the system. Meetings with the Water Works staff regarding this matter were held in late 1982 and early 1983.

After study of the preliminary design plans for the arterial in this area, representatives of the Water Works staff provided comments on the project. These comments indicated that Alternate B would greatly interfere with their expansion plans for this area. There are no other areas in the Water Works property to which expansion can be shifted. It would also require the disconnection of the northern end of the existing gallery system. Without this water resource it is projected that the availability of water to consumers in the Des Moines metropolitan area would be reduced as much as 10 million gallons per day. Alternate A, which would result in only one bridge through the area, would allow this future expansion. However, it would still conflict with an existing suction well. A slight movement of the alignment of Alternate A to the east would be necessary to make this alternate compatible with the operations of the Des Moines Water Works (summarized from letter of February 4, 1983, by L. D. McMullan, Director of Engineering Services, Des Moines Water Works).

General Economic Impacts

Effects on Development

The construction alternates of the CBD Loop Arterial, including the connections to the existing street network, will affect existing and future developments. Numerous residential, commercial and industrial properties will be partially or entirely acquired for the project (refer to discussion of relocations earlier in this section). Those families, businesses and industries that are displaced by the project may choose to relocate to current vacant land areas in the vicinity of the proposed project or elsewhere in the community.

The alternates of the CBD Loop Arterial will provide improved access to industrial areas south of the Central Business District and south of Raccoon Street and along the Indianola Avenue Connection and the E. 15th Street Extension and, therefore, will have a positive effect of development of these areas.

The reduction of traffic within the Central Business District as a result of the diversion of through traffic to the proposed project, will encourage continued expansion and redevelopment of the downtown area.

Effects on Employment and Business

Relocation of businesses or industries because of the project may affect employment; some employers may decide to reduce operations and employment, while others may elect to expand their businesses and hire additional employees. The development of new businesses or industries in existing vacant areas, possibly as the result of improved access provided by the proposed roadways, will result in new employment opportunities. Continued development of the downtown area of Des Moines, as aided by reductions in traffic congestion, will likewise likely result in additional employment in offices and retail areas.

The construction of the proposed roadways will result in employment opportunities for the construction industry in the areas of highway construction, bridge construction, building demolition, building remodeling, sewer construction, utility relocations, traffic signals and street lighting, landscaping and erosion control, as well as other work. In addition, employment opportunities will be available in the areas of engineering, legal and administrative services and a wide variety of other support services that will be needed to accomplish said projects.

Accessibility to places of employment in the vicinity of the proposed project will generally be improved by the construction of the proposed project. The project will also improve access to the CBD area for purposes of shopping, dining, hotel accommodations, attendance of cultural and civic events, conventions and governmental business.

The proposed project, although reducing through traffic in the CBD and requiring the acquisition and/or relocation of some retail businesses, is not expected to adversely affect retail sales in the downtown area. The through traffic that will be able to bypass the central business

area is essentially made up of local motorists, as opposed to out-of-town motorists; the impact on retail sales is therefore expected to be minimal as retail sales are not dependent upon "drive-by" or "impulse" types of business.

Similarly, the proposed project is not expected to have any adverse impacts on the economic viability of the central business area of the community; all impacts are expected to be positive through the improvement of traffic conditions in the area. The downtown is expected to continue as a strong political, financial, administrative and business center. This area has experienced considerable growth in office space in recent years and is continuing to grow at present. Included within the area are governmental offices of Polk County and the city of Des Moines, numerous offices of the state of Iowa and offices of the federal government, in addition to major offices of numerous insurance companies and financial institutions.

Effects on Tax Base and Reserve

The construction of the CBD Loop Arterial is predicted to influence the urban tax base in the following ways: 1) acquisition of rights-of-way, 2) induce changes in property values, and 3) affect property development.

When highway right-of-way is acquired, property reverts to public ownership, resulting in an initial loss of property tax base and property tax revenue. These losses are the total taxes that would otherwise be collected by Polk County and distributed to the various jurisdictions. The city of Des Moines, the Des Moines Independent School District and Polk County would experience the greatest tax losses based on their respective percentages of property taxes, according to Table 5.11.

Table 5.12 indicates the estimated property tax base and property tax revenue losses attributable to the construction of the various alternates and includes the revenue losses per jurisdiction.

The total valuation of the city of Des Moines is \$2,985,524,368.00, which includes \$2,487,130.00 in agricultural land valuation. The losses of tax base, as percentages of the total valuation, vary from 0.32 to 0.38 percent for Subalternates 1A, 2A, 1B and 2B.

TABLE 5.11
DISTRIBUTION OF PROPERTY TAXES
ACCORDING TO JURISDICTION

Jurisdiction	1981-1982 Tax Rate (Per \$1,000.00 Valuation)	Percentage of Total
City of Des Moines	\$13.92396	38.628%
City Assessor	0.25197	0.699%
Des Moines Independent School District	13.36691	37.083%
Polk County	8.06160	22.365%
Area XI College	<u>0.44165</u>	<u>1.225%</u>
TOTALS	\$36.04609	100.000%

It is anticipated that many of the displaced residents, businesses and industries will move to new locations within the community, thereby tending to reduce the overall tax base loss for the community.

The construction of the project may initially result in a decrease of property values for some properties remaining adjacent to the new facility. Other properties are expected to improve in value due to the diversion of traffic from streets in their areas to the new facility. Further, industrial and commercial activities are expected to develop along the new roadways where zoning permits and where access is improved by the project, thus enhancing the community's tax base.

Conversely, property values are expected to decrease for the No Action alternate in areas of increased traffic congestion. Existing industrial areas with poor accessibility are expected to undergo deterioration and restriction of future development, particularly immediately south of the CBD.

TABLE 5.12
SUMMARY OF PROPERTY TAX REVENUE LOSSES

Alternate*** Network	Total Taxable Valuations for Properties Totally Acquired	Total Annual Reduction of Property Tax Revenue*	Jurisdictional Share of Reduction in Tax Revenue**			
			City of Des Moines	Des Moines Independent School District	Polk County	Others
1A	\$11,453,730.00	\$412,860.00	\$159,480.00	\$153,100.00	\$92,340.00	\$7,940.00
2A	10,096,500.00	363,940.00	140,580.00	134,960.00	81,400.00	7,000.00
1B	10,841,890.00	390,810.00	150,960.00	144,920.00	87,400.00	7,530.00
2B	9,484,660.00	341,880.00	132,060.00	126,780.00	76,460.00	6,580.00

*Based on Tax Rate of \$36.04609 Per \$1,000.00 of Valuation.

**Based on Respective Tax Rates Per Jurisdiction.

***Alternate 1A is northern variation with interchange.

Alternate 2A is northern variation with intersection.

Alternate 1B is southern variation with interchange.

Alternate 2B is southern variation with intersection.

Effects on Public Expenditures

Anticipated public expenditures for the project will include construction costs, public utility relocation or adjustment costs, right-of-way acquisition and relocation assistance costs, engineering, legal and administrative costs, and maintenance, road-user and accident costs.

The data in Table 3.2 presents a financial comparison of the alternates, including preliminary cost estimates for the construction of the CBD Loop Arterial and its connections to the existing street network. This data identifies various major areas of costs, i.e., grading and drainage, pavement, structures, utility adjustments and others, but excludes estimated costs of widening existing streets beyond the immediate project area. Table 3.3 provides estimated total costs for constructing various sections of the CBD Loop Arterial and its connections and, in addition, includes the estimated costs of widening existing streets within the analysis area. Costs associated with adjustments to public utilities (sanitary sewers and water mains) are included in Table 5.13, along with other utility adjustment costs including gas, electric and telephone utilities.

Other public expenditures relative to the various alternates, but not restricted to the construction alternates, include the costs associated with maintenance of roadways, both old and new. Maintenance costs include such items as crack sealing, street sweeping, minor repairs, snow removal and pavement markings. The costs incurred in maintaining a highway system are dependent on the types of roadways within the network, lengths and widths of roadways, average traffic volumes and other related factors. Maintenance costs were estimated for each alternate network based on average costs per mile in the state of Iowa. Only those streets included within the analysis area of the project corridor were considered for maintenance costs. These networks generally include only the major streets within the analysis area and exclude local residential and service streets.

TABLE 5.13
ESTIMATED PUBLIC UTILITY ADJUSTMENT COSTS

Alternate Network	Public Utility Adjustments			Total Cost of Utility Adjustments
	Sanitary Sewer Relocation	Water Main* Adjustments	Other Utility Adjustments	
1A	\$125,000.00	\$131,000.00	\$1,194,000.00	\$1,450,000.00
2A	108,500.00	126,500.00	1,169,000.00	1,404,000.00
1B	217,500.00	100,000.00	1,156,500.00	1,474,000.00
2B	201,000.00	95,500.00	1,131,500.00	1,428,000.00

*Cost estimates provided by staff of Des Moines Water Works.

Current maintenance costs for each type of roadway (provided by the Iowa Department of Transportation) were used in determining the projected maintenance cost of each alternate network. It is expected that any increase in unit maintenance costs would affect each alternate network proportionately, and no allowance has been made for future cost increases.

Table 5.14 shows the estimated maintenance costs for the various networks. Due to the addition of mileage of new roadways, maintenance costs were found to be higher on those networks which include the proposed CBD Loop Arterial and its connections to the existing street system.

It is expected that streets which carry high traffic volumes will experience maintenance costs in excess of those calculated, including such items as increased repair costs and earlier resurfacing needs. Due to the lack of statistical data on such factors, the costs shown in this section do not reflect the added cost of maintaining a heavily traveled system; it is expected that actual maintenance costs for the "No Action" alternate, in particular, will exceed the average roadway maintenance costs indicated.

TABLE 5.14

ESTIMATED MAINTENANCE COSTS
FOR THE CBD LOOP ALTERNATES

Alternate Network	Miles of Roadway in Network				Total Maintenance Cost Per Year
	Urban Freeway	Urban Primary	City Streets	New Roadways	
A	0.90	2.52	24.95	5.8	\$167,900.00
B	0.90	2.52	25.21	6.4	168,900.00
No Action	0.90	2.52	25.47	0	145,000.00

The public, as road users, pays the costs of owning and operating vehicles upon roadways. These costs depend upon the type of vehicle, the number of vehicle-miles traveled, operating speed of vehicles, number of stops necessary while traveling along a section of street and the duration of such stops. The latter three items depend upon the type of roadway and its ability to accommodate traffic demands without undue amounts of traffic congestion. Generally, a transportation network that provides higher operating speeds with fewer stops and fewer delays will accommodate more traffic and will reduce road-user costs.

An analysis of road-user costs for the major streets and roadways contained within the analysis area, including the proposed CBD Loop Arterial and its various connections and street widenings, was conducted for all the alternates. Minor local residential and service streets were not included in this analysis. The analysis included consideration of the types and lengths of roadways, projected traffic volumes for the year 2000, running and delay costs (based on 1980 costs), and traffic operational characteristics. The results of this analysis for the various alternates is indicated in Table 5.15.

TABLE 5.15
ANNUAL ROAD-USER COSTS

Alternate Network	Total Vehicle-Miles Per Day	Annual Road-User Costs			Average Cost Per Vehicle-Mile
		Running Cost	Delay Cost	Total Cost	
A	367,859	\$60,001,000.00	\$7,184,400.00	\$67,185,400.00	50.0¢
B	381,755	61,765,300.00	7,733,500.00	69,498,800.00	49.9¢
No Action	373,729	63,228,600.00	16,620,300.00	79,848,900.00	58.5¢

The amount of severity of accidents that occur upon roadways is also reflected in costs to the public for injuries, fatalities and property damages. The numbers of the various types of accidents (fatality, injury and property damage) are dependent upon the type of roadway facility, traffic control measures, traffic volumes, the degree of traffic congestion and other factors. The alternates were analyzed relative to current state-wide accident rates for the state of Iowa and on traffic volume projections for the year 2000. No statistical accident experience data is available, however, that relates to the degree of traffic congestion. The data in Table 5.16 indicates the estimated numbers of the three types of accidents for each alternate, based on vehicle-miles of travel on various roadways within the analysis area. This analysis is also based on state-wide accident rates per 100 million vehicle-miles of travel on the various types of roadways. Cost data provided is based on National Safety Council data for fatality, injury and property damage accidents.

TABLE 5.16
ANNUAL ACCIDENTS AND COSTS

Alternate Network	Fatality Accidents		Injury Accidents		Property Damage Accidents		Total Annual Cost
	Number	Annual Cost	Number	Annual Cost	Number	Annual Cost	
A	2.7	\$394,200.00	220	\$1,625,000.00	746	\$499,800.00	\$2,522,000.00
B	2.8	408,800.00	229	1,694,600.00	779	521,900.00	2,625,300.00
No Action	2.8	408,800.00	244	1,805,600.00	841	563,500.00	2,777,900.00

Table 5.17 summarizes all projected annual road-user, accident and maintenance costs and presents the annual cost savings of Alternates A and B as compared to the No Action alternate.

TABLE 5.17
SUMMARY OF ANNUAL ROAD-USER, ACCIDENT
AND MAINTENANCE COSTS

Alternate Network	Road-User Costs	Accident Costs	Maintenance Costs	Total Annual Costs	Annual Savings Compared to No Action
A	\$67,185,400.00	\$2,522,000.00	\$167,900.00	\$69,875,300.00	\$12,896,500.00
B	69,498,800.00	2,625,300.00	168,900.00	72,293,000.00	10,478,800.00
No Action	79,848,900.00	2,777,900.00	145,000.00	82,771,800.00	---

IMPACTS TO PARKS AND RECREATION AREAS

Each of the alternatives under consideration, except for No Action, will affect parks and open space lands. A map of parks and open spaces in Des Moines appears in Figure 4.3. Figure 4.4 provides more detail concerning these areas that are in the project corridor.

Small amounts of land would be required from several of these parks for the project right-of-way. The following discussion of 4(f) involvement discusses impacts to these parks.

Description of Section 4(f) Involvement

Land acquisition will be required from Sam Cohen Park, Hawthorn Park, Riverside Park and Water Works Park. Land will also be required from several open spaces which are part of the city-owned Riverfront Development Project. A small amount of land might also be required from Chamberlain Park.

Impacts to each of these parks are discussed in the following paragraphs. Also, the reader is referred to the later section on "Noise Impacts" for a detailed discussion of this impact to these parks.

Sam Cohen Park

Sam Cohen Park is a 0.8-acre park located on Scott Street between S.E. 10th and S.E. 11th Streets in a residential area. The park is owned by the city of Des Moines and controlled by the Des Moines Park Board.

The land was acquired by the city in 1978, and the development of a park at this site was approved by the Des Moines City Council in 1979. It was conceived as a minipark to improve the recreation facilities for senior citizens. Through the efforts of the Southeast Neighborhood Priority Board, the park was named after Sam Cohen, a local grocer who was raised in the neighborhood. The park was officially dedicated on June 12, 1981. The Des Moines Park Board is currently pursuing the acquisition of an additional small parcel from the railroad to complete the park.

The focal point of the park is a structure in the west end which has been placed on the National Register of Historic Places. This is

the Old Southeast Water Trough which is described in the following section on "Impacts to Historic, Archaeological and Architectural Resources." The only facilities at the park are benches around the water trough. No off-street parking is provided.

Both Alternates A and B of the proposed project will require the acquisition of approximately 0.3 acre of land from the northeast corner of the park (Plate 16, Appendix C). This area is on the opposite end from the main use area of the park.

The project will also result in increased noise levels within the park. The park is already subjected to high noise levels from the adjacent railroad. The existing L_{10} noise level was measured to be 67 dBA and 101 dBA (with train passing by). With either Alternate A or B, this level would be raised to an L_{10} of 71 dBA (Table 5.21). Over half of the parkland would be subjected to noise levels of 70 dBA or greater (Plate 16, Appendix C).

Pedestrian and vehicular access to the park from the east and north will be adversely affected by the project, although the roadway will connect with S.E. Sixth and Ninth Streets in this area. Access from the areas to the south and west of the project will not be affected.

At this time it appears that noise reduction measures would not be feasible and would detract from the aesthetics of the park. A landscaped buffer area will be developed along the roadway as it passes near and through the park to improve the visual environment. A pedestrian walkway or an intersection in the immediate vicinity of the park to alleviate access problems will be provided in the design of the project.

Alignment Variations to Avoid Sam Cohen Park

During the preliminary location study for the project, several alignments were considered and eliminated for reasons presented in the following discussion.

The horizontal alignment of the east-west segment of the CBD Loop, as shown on Plates 16 and 17 (Appendix C), was preliminarily designed to provide horizontal curves with radii of 716 feet or more, based on a design speed of 45 miles per hour and to avoid acquisition of expensive industrial property north of Scott Avenue and west of S.E. 14th Street.

In order to avoid taking any land from Cohen Park, two alignment alternatives were considered. The first alternative investigated was designed to avoid both Cohen Park and the industrial property. This resulted in a horizontal alignment with a curve radius of approximately 358 feet or less in the vicinity of Cohen Park, and concave northeasterly. This sharp curve would have to be located immediately west of the designed 819-foot radius curve, which curve is concave southerly and is located west of S.E. 14th Street. The resulting sharp reversal of the alignment (S-curve) is objectionable from traffic safety and traffic efficiency standpoints. The design speed of the proposed roadway would have to be lowered to 25 miles per hour or less due to these factors. Therefore, this alternative is not reasonable from an engineering or safety viewpoint. This alternative would also require the crossing of an additional railroad track, which serves the adjacent industry.

The second alignment alternative analyzed to avoid Cohen Park was designed to comply with horizontal curvature criteria for the design speed of 45 miles per hour. In order to avoid Cohen Park, this alignment would begin to curve northwesterly immediately west of S.E. 14th Street. As a result, curve radii ranging from 716 feet and 1,273 feet could be provided; but the resulting roadway would intrude into the buildings and property of the industrial property, necessitating its acquisition and relocation to another site. The value of the land and buildings alone is estimated to be in excess of \$500,000.00.

Hawthorn Park

Hawthorn Park is a 15.5-acre neighborhood park in the southeast corner of the project corridor bounded by Railroad Avenue, S.E. 10th Street and S.E. 14th Street (Plate 18, Appendix C). It was purchased by the city of Des Moines in 1938 from a private owner and was called Thomas Tract until 1940 when the name was changed to Hawthorn Park.

Facilities are located in the northern one-third of the park and include a wading pool, children's play equipment, basketball court, softball diamond and rest rooms. Off-street parking is provided for approximately 80 vehicles. The flood control levee constructed by the Army Corps of Engineers crosses through the southern area and divides the area into a northern area of 11.9 acres and a southern area of

3.6 acres. A federally funded bike path was recently constructed on this levee (East River Bikeway) (Federal Grant No.: (HCRS) N.P.S. #19-00581.4 (Iowa)). This bike trail runs from McHenry Park to Hawthorn Park.

Both Alternates A and B will require 0.10 acre from the eastern side of the park. No park facilities are located in this area.

Noise levels in the park would be higher than currently exist. Traffic noise from U.S. 65-69 (S.E. 14th Street) currently affects the park with an existing peak noise level (L_{10}) estimated to be 70 dBA. With either Alternates A or B, the noise level (L_{10}) is predicted to be 81 dBA (Table 5.21). The generalized 70 dBA contour lines affecting this park are shown in Plate 18, Appendix C. Approximately 30 percent of the park would be exposed to noise levels of 70 dBA or greater. A noise wall from six to eight feet in height along U.S. 65-69 would reduce the noise levels to 70 dBA or less within the park and would not be a detriment to park use. Incorporation of a noise wall or berm into the arterial design in this area will be considered during the design phase, recognizing that additional land may be required from the park to construct such a wall.

Vehicular and pedestrian access to the park from the east side will be affected by the project. Railroad Avenue and Harriett Street, which now provide access from the east, would be closed at the arterial. However, eastern access will be available one or two blocks to the north at Maury Street. Also, most of the residential area that the park serves is to the north and west, and access from these areas will not be affected by the project.

Alternates to Avoid Hawthorn Park

An alternate design that would handle the traffic in this vicinity was examined. It is described as Alternate 14A in Section 3 (p. 3.28-3.29). This alternate would have widened the existing S.E. 14th Street to accommodate projected future traffic volumes. The widening would have required more right-of-way from Hawthorn Park than would the CBD Loop alignment.

Riverside Park

Riverside Park is a 16.29-acre park located south of Elm Street between S.W. First and Second Streets. It is owned by the city of Des Moines and controlled by the Des Moines Park Board (see Plate 13, Appendix C).

The land in the northern half of the park was the site of the earliest settlement in the city, being occupied in the early 1840s by Fort Des Moines No. 2 and subsequently by the original town of Fort Des Moines (refer to discussion in following section on "Impacts to Historic, Archaeological and Architectural Resources"). This land was set apart and devoted to park purposes by the City Council in 1901. Prior to that time, it was referred to as public ground and was owned by the city of Des Moines.

The southern part of the park was originally the channel of the Raccoon River and was created when the city, in 1913, undertook to change the course of the Raccoon River to a point further south where it still flows today. On completion of the new course, the old river channel was abandoned and gradually filled with ashes and dirt and made available for park development. The river channel was owned by the state of Iowa; and in 1924 the State Board of Conservation created a state park on the site, and the city of Des Moines accepted the custodianship of the park. Ownership was subsequently turned over to the city. An additional 10 acres of city-owned land lies along the western boundary of the park. It is used for storage of street maintenance materials by the city of Des Moines.

The park has been the site of several efforts to commemorate the old fort and the early settlement of Des Moines. In 1908 the Daughters of the American Revolution (DAR) erected a granite monument to Fort Des Moines just south of Elm Street and about 100 feet west of the Des Moines River bank. This monument is no longer present.

In 1965 a log cabin was moved from its original site in Richmond, Iowa, and rebuilt on the site in memory of the birthplace of Des Moines. The Birthplace of Des Moines Association, affiliated with the Polk County Historical Society and partially funded by the DAR, was responsible for this memorial. The cabin dates from the mid 1800s and was thought

to be quite similar to the storehouse that was built at Fort Des Moines No. 2 in 1843. It was erected at what was believed to be the site of the original storehouse. At that time it was viewed as the first step in the restoration of the old Fort Des Moines area. However, no subsequent efforts to restore the fort have been made. The cabin still stands in the northeast corner of Riverside Park and is maintained by the Des Moines Park Board.

The only recreation facility in Riverside Park is the Sec Taylor Stadium, located in the southeastern portion of the park. The remainder of the park consists of an open, grassy area to the north and parking lots for the stadium to the north and west of the stadium.

Sec Taylor Stadium was constructed in 1946 by a private organization and turned over to the city for operation. It was originally named Pioneer Memorial Stadium. It has served as the home for a major league farm team during most of its existence and is currently the home of a farm team (Des Moines Cubs).

The stadium is used by many other groups, including government, civic organizations and charities. Examples of functions recently held there include charity softball games, rock concerts, dog shows and church services.

Both Alternates A and B will require the acquisition of approximately 0.8 acres of land from the northeast area of the park. No park facilities currently exist in this area. The street maintenance facilities adjacent to the park will be removed by the project. The city had already planned to move these facilities in the near future.

The project will also result in increased noise levels within the park. Existing noise levels in the northeast corner of the park were measured at 64 dBA (L_{10}), with peak existing noise levels estimated to be 77 dBA. The predicted peak noise level (year 2000) is 81 dBA (L_{10}) for Alternates A and B in this area. Approximately one-fourth of the park would be subjected to noise levels greater than 70 dBA (Plate 13, Appendix C). Noise walls at this site would block the motorists' and park users' view of the Des Moines River and would detract from the scenic quality of the area. They would also isolate the area from the

downtown district. Therefore, no noise mitigation measures are recommended for this area.

A landscaped buffer along the roadway will be considered in the design of the project to be compatible with the park environment.

Access to the park will not be impaired by the project. Existing accesses are on S.W. First and Second Streets and Elm Street. The project will maintain the S.W. First Street access and provide an access from the west along S.W. Second Street. Thus, the project will greatly improve accessibility to stadium events from the eastern, western and southern areas of the city.

Alternates to Avoid Riverside Park

All alternate alignments that were examined that would meet the traffic needs would have required passing through some portion of Riverside Park (refer to Section 3 and Figure 3.7). Any alternates that would avoid the park would have to be located to the north within the downtown area or to the south of the Raccoon and Des Moines Rivers.

An alignment through the downtown area would have been incompatible with the future land-use planning goals and the goals of this project. These goals are to reduce traffic in the downtown area and provide a pedestrian-oriented area.

An alignment to the south of the Raccoon River and Des Moines River would have been too far removed from the CBD project area to be effective in reducing through traffic in the CBD.

Chamberlain Park

Chamberlain Park is a neighborhood park located at the northeast corner of 19th Street and Ingersoll Avenue. It consists of 2 acres and is located between the Sherman Hill residential area and a commercial area. It was donated to the city in 1904 by Lowell Chamberlain, a prominent businessman, for a children's playground.

Facilities at the park include a softball diamond, tennis court, basketball court, horseshoe area, shuffleboard area, children's play equipment, wading pond, a picnic table and rest rooms. A parking area for approximately 20 cars is located within the right-of-way of 19th Street along its western border, and a chain-link fence surrounds the park area.

Alternates 1A and 1B (which have an interchange at Ingersoll Avenue) would abut upon the western edge of the park and require about 50 square feet of land from the parking lot. It is possible that during the design stage, a few square feet from the park might be required. Alternates 2A and 2B (which have an intersection at Ingersoll Avenue) would not require any land acquisition nor do they take any land from the parking lot.

All of the alternates would result in increased noise levels within the park. The park currently experiences high noise levels from the traffic along Ingersoll Avenue. The existing L_{10} noise level was measured at 69 dBA and estimated to be 86 during peak traffic levels. Noise levels predicted for the alternates are: 1A - 80 dBA, 2A - 78 dBA, 1B - 82 dBA, 2B - 80 dBA. With Alternates 1A and 1B, approximately 50 percent of the park would be exposed to noise levels of 70 dBA or greater (Plates 3 and 5, Appendix C). With Alternates 2A and 2B, only the southernmost border would be exposed to noise levels greater than 70 dBA (Plates 4 and 6, Appendix C).

Considering that the No Action alternate would result in an L_{10} noise level of 86 dBA, the project will be improving the future noise environment somewhat. To reduce the noise level to 70 dBA for either Alternates 1A or 1B would require a noise wall along the western, southern and part of the northern park boundaries. For Alternates 2A and 2B, a noise wall would be required only along the southern boundary. These walls would detract from the aesthetics of the park, but would serve to isolate it from the commercial area. During the design phase of the project, noise mitigation measures for this site will be evaluated further.

Vehicular access from the west of the park will be somewhat impaired by the entrance ramp for Alternates 1A and 1B. This ramp will also infringe upon the western parking area for the park along 19th Street. Design to allow vehicular access and parking along 19th Street will be considered during the design phase of the project.

Alternates to Avoid Chamberlain Park

An alignment along 15th Street that would have avoided any impacts to Chamberlain Park was examined and dropped in the preliminary stages of the project. This alignment is described in Section 3 (p. 3.24) and

depicted as Alternate 10 on Figure 3.7. It was dropped from further consideration because of several detrimental impacts that it would have including: impacts to the Sherman Hill area, impacts to St. Edmunds School, impacts to historic features and impacts to commercial areas. It would also have been more inefficient for traffic movement.

Riverfront Development Areas

The proposed project will require the acquisition of several small tracts of land that are part of the Riverfront Development Areas owned by the city and maintained as open spaces by the Park Department.

The city of Des Moines has owned much of the riverfront land in the city along the Des Moines and Raccoon Rivers since the early 1900s. In 1975 the city proposed to acquire the additional land needed to complete the riverfront corridor and to develop the corridor as an open space and recreation area. Facilities were to include a 22-mile bike trail system, a 4.5-mile river drive and a 6.6-mile pedestrian trail. When completed, the park would encompass all of the river's length within the city limits.

The proposal for this development was presented in three segments: a north corridor, a central corridor and a south corridor. As the proposed CBD Loop Arterial project would pass through only the central corridor, the following discussion pertains only to this corridor.

The central corridor extends from University Avenue south to S.E. 14th Street, a distance of approximately 2.75 miles. Acquisition of about 10 acres of land was needed to complement the 200 acres of city-owned land in this corridor. Development of this corridor was to include 6.6 miles of bike path along both sides of the Des Moines River, the development of a gathering point at Hawthorn Park and a river drive along the west side.

In 1975 the city requested federal funding for this project from the Land and Water Conservation Fund. A final environmental impact statement for the project was distributed by the Department of Interior in 1977. In this statement the boundaries of the project reflected the land needed for the CBD Loop transportation route (referred to at that time as "South Loop Expressway"). It was stated that access for the bike path and hiking trail would be provided across the expressway

either below the bridge or with an overpass (p. 4, Riverfront Acquisition Study, Department of Interior, 1977). To date, land acquisition for the project has been completed; and the bike path has been constructed on the east side of the river. Federal funds (U.S. Department of Interior Federal Grant No.: (HCRS) N.P.S. #19-00581.4 (Iowa)) were used for bike path construction. However, no federal funding was used to acquire the properties in the CBD Loop Arterial project corridor.

The CBD Loop Arterial will require the acquisition of 200 square feet from the Riverfront Development area along the west bank of the Des Moines River in the vicinity of Elm Street (Plate 13, Appendix C), 0.73 acre on the east bank of the Des Moines River in the vicinity of Raccoon Street (Plate 15), and 0.3 acre on the south bank of the Raccoon River in the vicinity of Jackson Avenue (Plate 14) and 0.2 acre on the north bank of the Des Moines River (Plate 18).

The project will cross the bike path along the east side of the Des Moines River. It will require that the bike path be relocated from its existing location on top of the flood control levee to a lower elevation in order to pass under the new Des Moines River bridge. Similarly, all hiking trails along the riverfront area that the project crosses will need to be rerouted in the vicinity of the project.

Alternates to Avoid Riverfront Development Areas

Any alternatives examined would cross the Riverfront Development project, as this borders the Raccoon and Des Moines Rivers throughout the downtown area.

Water Works Park

Water Works Park is owned by the board of the Des Moines Water Works and is the primary area for water collection, water storage and water treatment facilities for the municipal water supply. Most of the park is open to the public and it has served as a park and recreation area for city residents for a number of years.

A major public feature of the facility is a large crabapple arboretum which attracts thousands of people during the spring blooming season. Other facilities include pedestrian and bike trails, picnic areas and a fountain and formal garden area. Fishing also occurs from the banks of the Raccoon River.

The area of the park that would be affected by the project is pictured in Plate 7 in Appendix C. This area is not used as much by the public as is the area south and west of this photo. It does contain athletic practice fields which are used by Tech High School (see preceding discussion under "Impacts to Churches, Schools and School Pedestrian Safety"). It also contains an unpaved road that is used as a bike trail.

The long-range plans call for this northern area of the park to be the major expansion area for the water treatment areas and other facilities. The bike trail would be the only recreational usage that would remain in this area.

Construction of Alternate A of the CBD Loop project would impact approximately seven acres in this area, while Alternate B would impact approximately 17 acres. The amount of right-of-way required for the project cannot be determined at this time, but it is anticipated to be much lower than these impact areas. It is not anticipated that the project would interfere with the bike trail usage as the trail could easily pass under the bridges planned for this area.

The project will introduce noise levels into this area that are predicted to be higher than the existing levels or those for the No Action alternate. Levels of 69 dBA are predicted for No Action and from 74 to 75 dBA for Alternates A and B. Alternate B would have a more far-reaching impact on noise levels in the park than would Alternate A (see Plates 7 and 8, Appendix C). A solid, three-foot high barrier rail on all bridges in this area is recommended to reduce noise levels (refer to subsequent discussion on "Noise Impacts").

Alternates to Avoid Water Works Park

No alternate alignments were examined that would avoid Water Works Park. There were no feasible routes that could avoid this large area.

Other Impacts to Park and Recreation Areas

Allen Park, located south of Raccoon Street, would be adjacent to the CBD Loop alignment (Plates 15 and 16, Appendix C). It contains a variety of playground equipment. The project is not expected to have visual or noise intrusions on this park. The project will improve

accessibility to the park by vehicle from areas outside the neighborhood. The city staff is considering a reclassification of this land to non-park usage.

The project is expected to improve pedestrian access to Columbus Park (Plate 14, Appendix C). There are currently high levels of traffic on S.E. First Street that borders the western edge of the park. Much of this traffic will be diverted to the CBD Loop.

Woodland Cemetery is maintained by the Park Department as a public open space. The CBD Loop would result in noise levels greater than 70 dBA in the eastern edge of the cemetery. However, the No Action alternate would have similar noise levels. Any noise mitigation measures recommended for this area will be coordinated with the Sherman Hill Neighborhood Association. Landscaping along the highway right-of-way that will enhance the open space environment will be developed during the design.

The home of the caretaker for Woodland Cemetery and Glendale Cemetery is owned by the city and is located along Harding Road across from the cemetery. It will be required for the project right-of-way.

IMPACTS TO PEDESTRIANS AND BICYCLISTS

The proposed project does not conflict with any plans for future development of the city's pedestrian or bicycle facilities and does not eliminate or sever any existing bike paths. A portion of the existing Riverfront Bikeway on the east side of the Des Moines River will be relocated slightly to pass under the proposed highway bridge. Other proposed bikeways along the west side of the Des Moines River and across Water Works Park can be easily incorporated into the final design of this project. Figure 4.5 shows bike trails in the project area.

By reducing traffic volumes and congestion on many existing city streets, the construction of this project will provide increased safety for pedestrian and bicycle travel throughout the project area. However, the closure of some existing streets as part of the project may result in increased travel distances for some pedestrian and bicycle trips.

Sidewalks on bridges crossing the CBD Loop Arterial at Woodland and Grand Avenues will be designed as part of this project. Pedestrian and bicycle access to Water Works Park and the Gray's Lake area south of the Raccoon River are planned for the existing Fleur Drive bridge over the Raccoon River, with pathways being provided from the southerly end of the bridge, joining to the existing pathway that passes under the bridges.

IMPACTS TO LAND-USE PLANNING

Existing and proposed land use is discussed in Section 4, "Affected Environment," and illustrated in Figures 4.6, 4.7 and 4.8. Impacts of the project to existing and proposed land use along the various segments of the alignment are described in the preceding discussion of each affected neighborhood under "Socioeconomic and Land-Use Impacts" in this section.

Land-use policies for the city of Des Moines are presented in Appendix B.1. The proposed CBD Loop Arterial is consistent with the land-use goals and objectives of the city, and the corridor for the project has been incorporated into future land-use planning for a number of years. Potential impacts of the project, such as land-use changes or accelerated development in areas where accessibility is improved are among the objectives of the land-use plan. These effects on land use are anticipated to be positive ones on existing and proposed land use, especially in the CBD area.

In anticipation of the CBD Loop, the city has attempted to maintain compatible land use within the project corridor during recent years. Because of the long history of planning for the project and its incorporation into future land-use planning of the area, secondary impacts relative to land use are expected to be minor.

Certain sections along the alignment offer the opportunity for joint development activities. Public acquisition of some of these areas will be considered. These areas are described in the subsequent section on aesthetic impacts (also see Figure 5.10).

IMPACTS TO HISTORIC, ARCHAEOLOGICAL AND ARCHITECTURAL RESOURCES

As part of the EIS analysis, field investigations of the cultural resources within the CBD Loop Corridor were conducted during 1982. These included historic, architectural and prehistoric resources. These studies are presented in their entirety in Appendix Volume II, "Cultural Resources of the CBD Loop Arterial Project Area, History and Architecture," and Appendix Volume III, "Cultural Resources of the CBD Loop Arterial Project Area, Phase I Investigations." The following paragraphs summarize the results of these studies.

Archaeological Resources

Although the majority of the project corridor is urbanized, an archaeological study of this area was warranted because of the historic and prehistoric occupations that were known to occur in this area. The historic site that had occurred in the corridor was Fort Des Moines No. 2 which was occupied as a frontier military fort from 1843 to 1846. Also, this same area was the site of the early settlement and first platting of the city of Des Moines (1846).

A knowledge of the geomorphology of the area was central to assessing the potential for archaeological sites, particularly for prehistoric ones. Therefore, considerable effort was directed toward understanding the landscape and the soil profiles in the project area. Of particular interest were buried land surfaces which could have been occupied by humans, as many of the prehistoric sites in this region of Iowa occur in buried paleosols (ancient soils). Thus, the geomorphic study attempted to determine if such paleosols occur in the project area and if they dated from a time period when prehistoric Indians occupied this region of Iowa.

It was found that although urban development had destroyed most of the existing land surfaces with high potential for prehistoric occupation, there were buried land surfaces present that could contain prehistoric archaeological sites. These occur beneath the flood plains and terraces of the Raccoon and Des Moines Rivers. Specific locations that were identified for further study were Water Works Park, Raccoon Street from the Des Moines River to S.E. 14th Street, terrace in the vicinity of

S.E. 15th Street, and terrace along the north bank of the Raccoon River opposite Water Works Park (refer to Figure 5.7 for locations).

To determine the types of prehistoric sites that might occur in the project area, data from other sites in Polk County was reviewed and correlated with the results of the geomorphic field study. It was concluded that few Paleo Indian (13-10,000 B.P.) or Archaic (10-3500 B.P.) sites would occur in the project area. Sites of Woodland (3500 B.P. - A.D. 800+), Great Oasis (A.D. 750-1250) and Oneota (A.D. 1000-historic) cultures would very likely be found in the project area, however. Also, evidence of historic tribes should be present.

Phase II and Phase III investigations of the prehistoric resources will be conducted during the design phase of the project. At that time, the impacted areas with potential for prehistoric sites will be tested for the presence of such sites (Phase II). If such sites are located, their significance and eligibility for inclusion on the National Register of Historic Places will be assessed (Phase II). Phase III (data recovery) will be conducted for all impacted sites determined to be of National Register status and will serve as mitigation for the impacts of construction.

The study of historic sites concentrated on an area that was known to be the site of old Fort Des Moines (Fort Des Moines No. 2) and the site of the early settlement of the city of Des Moines. The objectives were to determine the potential for remains of the Fort and early Des Moines being preserved in the vicinity of the proposed highway alignment.

There was conflicting information regarding specific building locations within the Fort. However, synthesizing various lines of evidence, a layout for the Fort was developed during the course of this study. Assuming this plan of the Fort is the accurate one, the remains of a row of barracks and several other structures would have occurred in the project alignment in the vicinity of Elm Street between Sixth Street and First Street.

Subsurface investigations were conducted in this area to determine if the original land surface on which the Fort had stood still remained beneath the fill that had been deposited there over the years. These explorations were concentrated in the vicinity of the intersection of Second and Elm Streets and in Riverside Park.

The upper layer (A horizon) of the original soil surface was found to be present, occurring at varying depths from 50cm (1.6 ft.) to 2 meters (6.6 ft.) below the existing ground surface. On the basis of this finding, it was concluded that there is a good possibility that building foundations, floors and other remains of the Fort may still be preserved beneath the fill.

No structural remains or other artifacts identifiable as belonging to the Fort were encountered during the excavations. However, evidence of old structures and an 1840-1860 cultural deposit was found. Also, the upper level of an old dump was encountered in Riverside Park at a depth of approximately 3 meters (9.8 ft.). This dump could date back to the time of the Fort and the days of early settlement of the city of Des Moines and thus have cultural significance.

Phase II testing will be conducted in this area during the design of the project. Phase III (data recovery) will be conducted for all areas where the project would impact remains of Fort Des Moines No. 2 or of the early settlement of Des Moines.

Architectural/Historic Resources

During the early planning stages of this project, information was obtained on all properties in the project corridor that were listed in the National Register of Historic Places. It was found that six such properties occurred in the corridor and included:

- Herndon Hall (2000 Grand Avenue)
- Hoyt Sherman Place (1501 Woodland Avenue)
- The Lexington (1721 Pleasant Street)
- Maish House (1623 Center Street)
- Old Southeast Water Trough (S.E. 11th Street and Scott Avenue)
- Sherman Hill Historic District (Between Woodland Avenue and Cottage Grove, 15th and 19th Streets)

The location study for the CBD Loop was designed to avoid the taking of any of these properties, although as currently proposed it would come near Herndon Hall, the Old Southeast Water Trough and the Sherman Hill Historic District.

In addition, architecturally significant structures that had been identified in a preliminary study by the city and the Iowa Division of Historic Preservation were considered. These structures were avoided in the establishment of alternates.

In accordance with the federal requirements regarding the identification and protection of potentially significant architectural and historic resources, a comprehensive property-by-property survey was undertaken after the right-of-way requirements for the project were established. The results of this survey are presented in Appendix Volume III and summarized below.

The purpose of this survey was to identify any properties located within the potential impact zone of the project which may be eligible for the National Register of Historic Places. The area surveyed was a corridor which followed the proposed arterial alignments. The corridor was divided into eight survey tracts and each property was assigned a number which identified it by both survey tract and map number.

The survey consisted of the site specific evaluation of 178 buildings and other man-made landscape features. One hundred sixty-one of these would be within the right-of-way of the CBD Loop project, while 17 were adjacent sites. Each surveyed item was evaluated with respect to its historical and architectural significance.

The survey results identified six properties within the right-of-way that were judged to be eligible for the National Register of Historic Places by the State Historic Preservation Officer (Figure 5.5). Also, ten properties that would be adjacent to the new facility were judged to be of National Register status (Figure 5.6).

Thirty contributing structures located in the Sherman Hill area would also be within the project right-of-way. These are ones that individually may not qualify for the National Register of Historic Places but contribute to the significance of the Sherman Hill Historic District.

The locations of these properties are shown in Figure 5.4 and on the aerial plates in Appendix C. The decimal form number used to identify each property corresponds to the numbering system used in the survey. This number identifies the property, first by survey tract number and then by property number within that tract.

Description of Section 4(f) Involvement
of National Register Eligible Historic Properties

Sixteen properties within the project area have been determined to be eligible for the National Register of Historic Places (Figures 5.5 and 5.6).

From four to six of these properties would be displaced by the project, depending upon the alternate selected. These properties are described and illustrated on the following pages. They are also located on the aerial photographs (Plates 1-18, Appendix C).

The remaining eight to ten properties would not be displaced by the project. However, they would be situated close enough to the new facility to undergo some degree of visual intrusion. In addition, two properties that were already on the National Register prior to the inception of this project would be similarly affected. These properties are also discussed in the following pages and located on the aerial photographs.

The SHPO has also determined that there are a number of structures adjacent to the Sherman Hill Historic District that individually are not eligible for inclusion in the National Register but are significant as structures that contribute to the value and integrity of the district. From 26 to 30 of these structures would be displaced by the project, depending upon the alternate selected.

The SHPO was involved in determining the scope of the architectural and historic survey and was consulted throughout the study. Several field reviews of the project were conducted by the SHPO and the staff of the Division of Historic Preservation. A Memorandum of Agreement (MOA) regarding mitigation for these properties has been developed by FHWA in consultation with the SHPO (refer to Section 6, "Comments and Coordination.") The 16 properties are described in the following paragraphs. The Sherman Hill Historic District is also described.

National Register Eligible Properties
Within the Proposed Right-of-Way

1.2 Single Family Dwelling (940 - 19th Street) (Plates 1, 2)

This house was constructed around 1900 and is a typical late 19th Century Victorian house. It is a vernacular interpretation of the Queen Anne style or shingle style. Although a common style during its time, it is a rare survivor today.

1.35 Single Family Dwelling (2015 Pleasant Street) (Plates 1, 2)

This house was built around 1888. It is considered to have architectural significance as an unaltered Victorian cottage typical of the period. A variety of details, textures and shapes are present and well-preserved. It was originally owned by H. Schman.

2A.2 Hillside Apartments (1902 Woodland Avenue) (Plates 3, 4, 5, 6)

This brick apartment building was constructed around 1910. It is a good example of early apartment architecture and is well preserved. It represents a combination of Georgian and late Italian neoclassical style.

2A.18 Mitchell Transmission (1440 Locust) (Plates 9, 11)

This building is considered to be architecturally significant as an example of a commercial structure of the period that was built specifically to house the new automobile trade. The address is first listed in 1919; and in 1920, the Apperson Iowa Motor Car Company and the Iowa Truck and Tractor Company were installed in the building. A. C. Miller was president of the firm which distributed Sterling, Rainier, Apex and Packard trucks, Yankee tractors, and Elgin and Studebaker motor cars. The structure is one of the many in this area that comprised the first area devoted to motor car sales in Des Moines.

3.9 Green International Office Building (2015 Grand Avenue)
(Plates 3, 4, 5, 6)

Built around 1928, this structure was the second home office for Great Western Insurance Company, an accident insurance company. Henry Brown Hawley founded the company in 1901. It was one of the first successful health and accident insurance companies in the state. Hawley was known as the "Dean of Iowa accident insurance men." Also a philanthropist, he established the Hawley Welfare Foundation for constructive welfare work and research.

The structure is also architecturally significant with its classical detail, moorish-type window arches and other features. It is a good example of architecture from the 1920s that combines the requirements of a modern office with subtle references to classical design.

5.13 Ladin Industries, Inc. (113 S.W. Eighth Street) (Plates 10, 12)

This complex originally housed the Capital City Woolen Mills. There are five distinct sections to the complex, ranging in age from

1877 to 1970. Part one of the complex was a livery or Wells-Fargo station, according to the present occupants. Part two housed the Capital City Woolen Mills which went into operation in 1882. Parts three and four were additions to the mill in 1914. Part five was constructed in 1970.

This mill is historically significant for its role in both Jewish immigration to Des Moines and as a major industry in the city. The mill was owned by Abraham and Leopold Sheuerman who were both leaders in the Jewish community. They often aided newly arrived immigrants by giving them jobs at the woolen mill during the period of rapid Jewish settlement of the city (1882-1895).

By 1888 the Capital City Woolen Mill was the sole woolen mill in the city and remained the only one throughout its existence. They employed between 300 and 680 people, depending on the source consulted, and was described as "one of the city's largest manufacturing concerns."

The oldest parts of the building are considered to have some architectural significance as well, although the later additions (in 1914 and 1970) detract from the building's integrity.

National Register Eligible Properties
Adjacent to the CBD Loop Alignment

1.25 Woodland Cemetery (West of Harding Road Between Olive Street and Woodland Avenue) (Plates 1, 2, 3, 4, 5, 6)

Woodland Cemetery was designed in 1864 by Civil Engineer J. B. Bausman to be a rural, romantic cemetery. Its design reflects principles of romantic cemetery design: lush greenery; uneven, rolling topography; a variety of elaborate monuments; and narrow, curving lanes. The cemetery is large enough and with sufficient tree cover to create the impression of isolation from the surrounding urban area.

Some of the city's most influential and historically significant residents are interred at Woodland.

2A.22 BMS Building (304 - 15th Street) (Plates 9, 11)

This building was headquarters for the F. M. Fitch Company, manufacturers of toilet goods, perfume and shampoo in the 1920s. F. M. Fitch served as president and manager of the business and was known as the "Shampoo King" for his development of Fitch Ideal Dandruff Remover.

Fitch shampoo and related products were distributed nationwide. A former barber, Fitch was responsible for the formation of the first trade association for barbers in 1924.

The building is considered to be architecturally significant and representative of commercial structures of that period. It has been virtually unaltered from its original appearance.

3.10 Green International Accounting Office (1915 Grand Avenue)
(Plates 3, 4, 5, 6)

This structure was originally the house of Edward C. Finkbine and was constructed between 1890 and 1892. It is an interesting, relatively unaltered example of the late 19th Century amalgam of picturesque and classical styles. Its most striking feature is the variety of textures displayed.

Edward C. Finkbine was in the lumber supply business and was a representative example of a successful 19th Century businessman. His father, Robert S. Finkbine, is significant for his role as superintendent of construction for the State Capitol building.

3.11 Wallace-Homestead Company (1912 Grand Avenue) (Plates 3, 4, 5, 6)

Constructed in 1916, this building originally housed Homestead Publishing Company. It contains offices, printing plant and storage facilities for the company. It is a good example of an early 20th Century printing plant. Use of classical detail and white terra cotta reflected the owner's interest in having a thoroughly modern facility.

Publishing and related printing houses have been among the top industries in Des Moines since around 1860. Wallace Publishing and Homestead Publishing, which were among the most important of agriculturally related publishing houses, merged in 1929. Their famous publication Wallaces' Farmer is still published today.

3.12 Better Homes and Gardens Real Estate (2000 Grand Avenue)
(Plates 3, 4, 5, 6)

This structure is currently listed in the National Register of Historic Places. It was built in 1881 and is an extremely fine example of Queen Anne architecture. It was originally named "Herndon Hall," and the first owner was Jefferson Scott Polk. Polk figured prominently in the late 19th Century development of Des Moines as an urban center, primarily through his pioneering work in urban transportation systems.

5.10 Drake Roofing Company (330 S.W. Third Street) (Plate 13)

This structure housed the Des Moines Brewing Company which operated here from 1908 to about 1920. Its construction is typical of pre-prohibition breweries. It appears that during this period, its Old Tavern Beer was the only beer brewed in Des Moines. With its fortress-like bearing and size, the former brewery and later furnace works contributes to the historic significance of the warehouse district in which it occurs. Beginning in 1920, the structure was headquarters for Green Foundry and Furnace Works.

5.11 Blue Line Storage (226 Elm Street) (Plate 13)

In 1910 the Blue Line Transfer and Storage Company moved into its new building here. It was modeled after the Metropolitan Warehouse in New York City. The building is an example of the turn-of-the-century warehouse, both in design and method of construction. The company started in 1872 and was one of the first transfer and storage companies in the city. These companies were an important part of Des Moines economy, especially between 1890 and 1910 when a number of new warehouses were constructed in this district. Des Moines was a statewide center for this type of storage. It probably ceased to be a storage facility in 1921 when it was acquired by the nearby Green Foundry and Furnace Works.

5.12 Younkers Brothers Warehouse (216 S.W. First Street) (Plate 13)

This structure was built in 1924 to house the Brown-Camp Hardware Company. Hardware wholesaling was among the major kinds of wholesaling in the city, and Brown-Camp appears to have been the leading company. It is a good example of early 20th Century warehouse construction and appears to be unaltered from the original design.

7.14 Clifton Heights United Presbyterian Church (1218 Indianola Road) (Plate 14)

This church, built in 1923, is a highly distinctive example of church architecture of the 1920s. It is the third church the congregation built. It is the primary reminder of settlement in the area that dates to at least 1879, the year the congregation first organized as the Presbyterian Church of South Des Moines. Settlement in this area was greatly accelerated in 1887 when the Clifton Heights Land Company bought and began developing large tracts in the area. The presence of a Presbyterian

Church indicates that the area has not always been an exclusively Italian enclave.

8.27 Old Southeast Water Trough (S.E. 10th Street and Scott Avenue)
(Plate 16)

This is a six-foot granite structure composed of a rectangular shaft, a bowl about six feet across and four small cups at the base. It was erected in 1906 by the Des Moines Humane Society. It is an artifact from an earlier period of public utilities technology, before indoor plumbing and the exclusive use of motorized transportation. A small pipe filled the circular trough and served as a drinking fountain for people; the large bowl was for horses and the small cups for cats and dogs. Originally, there were 15 such troughs in various parts of the city, and this is the only one that remains.

Sherman Hill Historic District (Between Woodland Avenue and Cottage Grove,
15th and 19th Streets) (Plates 1, 2, 3, 4, 5, 6)

This district is one of Des Moines' oldest residential suburbs and today contains the city's highest concentration of late 19th and early 20th Century residential architecture. The development of Sherman Hill can be traced to 1850 when Hoyt Sherman, Postmaster of Des Moines and brother of General Sherman, purchased a five-acre tract for his home, which is now the major architectural landmark in the area. It is used for a number of public functions.

The district and three of its residences are listed on the National Register of Historic Places, and a number of others have been identified as contributing structures. The dwellings range from modest cottages to elegant mansions to apartment houses.

COMPARISON OF ALTERNATES

The north-south segment of both Alternates A and B contains four of the six structures that are considered to have potential eligibility for nomination to the National Register of Historic Places (Sites 1.2, 1.35, 2A.2 and 3.9).

This segment also contains a number of the structures that were considered to contribute to the significance of the Sherman Hill Historic District. Alternates 1A and 1B would displace 30 of these, while alternates 2A and 2B would displace 26 of these structures.

The east-west segment will require the taking of two structures considered to have potential for nomination to the National Register of Historic Places. Alternate A includes both of these structures (Sites 2A.18 and 5.13), while Alternate B includes one of these (Site 5.13). There are no eligible structures that would be directly impacted by the E. 15th Street Extension or by the Indianola Avenue Connection.

The greatest visual intrusion on significant adjacent properties will be in the north-south segment where the roadway will abut upon the Sherman Hill Historic District and Woodland Cemetery. The roadway will be depressed through part of this segment and will be an improvement over the existing conditions (Harding Road at-grade) (refer to Plates 3-6). Also, a considerable amount of right-of-way will be available for the development of a landscaped buffer area along the roadway.

The north-south segment will also lie adjacent to a grouping of three key structures (sites 3.10, 3.11, 3.12) and separate these structures from related properties to the west including Terrace Hill, the Governor's mansion. As the roadway will be depressed in this area, the visual intrusion on these properties will be minimal.

The east-west segment will lie adjacent to four key structures (Sites 2A.22, 5.10, 5.11 and 5.12). However, the visual intrusion upon these properties should be minimal as the alignment follows existing at-grade streets. The new roadway will be wider than the existing one, but it will remain at-grade adjacent to these structures and, in some cases, be over 20 feet further from the structures than the existing

street. This segment will also pass near the Old Southwest Watering Trough (Site 8.17) which is on the National Register. The roadway would be located far enough from this structure (about 250 feet) that little visual intrusion would occur.

The Indianola Avenue Connection will lie adjacent to one key structure (Site 7.14). Some visual intrusion on the property will result from the project.

The only difference among the alternates in terms of their impact to these significant adjacent properties occurs in the vicinity of Ingersoll Avenue and Grand Avenue. Both Alternates 1A and 1B (the interchange alternates) would intrude more into the Sherman Hill area between Woodland Avenue and Ingersoll Avenue than would the intersection alternates (2A and 2B) (compare Plates 3 and 5 with Plates 4 and 6, Appendix C).

The No Action alternate would not result in any displacement of properties of historical or architectural significance. However, the secondary impacts would be increased congestion, air pollution and noise levels along existing streets.

TABLE 5.18

DIRECT IMPACTS TO KEY HISTORIC/ARCHITECTURAL
STRUCTURES BY THE VARIOUS ALTERNATES AND
SEGMENTS OF THE CBD LOOP ARTERIAL

Structure	Alternate*				Segment of Arterial	
	1A	2A	1B	2B	N-S	E-W
1. 940 - 19th Street (1.2) Single-Family Dwelling	X	X	X	X	X	
2. 2015 Pleasant (1.35) Single-Family Dwelling	X	X	X	X	X	
3. 1902 Woodland Avenue (2A.2) Hillside Apartments	X		X		X	
4. 1440 Locust (2A.18) Mitchell Transmission (Formerly Apperson Iowa Motor Company)	X	X				X
5. 2015 Grand Avenue (3.9) Green International Office Building (Formerly Great Western Insurance Company)	X	X	X	X	X	
6. 113 S.W. Eighth (5.13) Ladin Industries (Formerly Capital City Woolen Mills)	X	X	X	X		X

X-Indicates that the structure would be within the right-of-way of the alternate or segment.

- *Alternate 1A is northern variation with interchange.
- Alternate 2A is northern variation with intersection.
- Alternate 1B is southern variation with interchange.
- Alternate 2B is southern variation with intersection.

TABLE 5.19

ADJACENT KEY STRUCTURES IMPACTED BY THE
VARIOUS ALTERNATES AND SEGMENTS OF THE
CBD LOOP ARTERIAL

Address	Alternate**		Segment of Arterial		
	A	B	N-S	E-W	Indianola Avenue
1. Harding Road and Woodland Avenue (1.25) Woodland Cemetery	X	X	X		
2. 1915 Grand Avenue (3.10) Green Construction Company Accounting Offices (Formerly Finkbine House)	X	X	X		
3. 1912 Grand Avenue (3.11) Wallace-Homestead Publishing Company	X	X	X		
*4. 2000 Grand Avenue (3.12) Better Homes and Gardens Real Estate (Formerly Herndon Hall)	X	X	X		
5. 304 - 15th Street (2A.22) BMS Building (Formerly F. M. Fitch Company)	X	X		X	
6. 330 S.W. Third (5.10) Drake Roofing Company (Formerly Des Moines Brewing Company)	X	X		X	
7. 226 Elm Street (5.11) Blue Line Transfer and Storage	X	X		X	
8. 216 S.W. First Street (5.12) Younkers Warehouse (Formerly Brown-Camp Hardware)	X	X		X	
9. 1218 Indianola Road (7.14) Clifton Heights United Presbyterian Church (Formerly Presbyterian Church of Des Moines)	X	X			X
10. Scott Avenue and S.E. 10th (8.27) Old Southeast Watering Trough	X	X			X

*Listed in National Register of Historic Places.

X-Indicates visual intrusion on the property by that alternate or segment of the project.

**Alternate 1A is northern variation with interchange.
Alternate 2A is northern variation with intersection.
Alternate 1B is southern variation with interchange.
Alternate 2B is southern variation with intersection.

NOISE IMPACTS

The guidelines presented in the Federal Highway Administration's Federal Aid Highway Program Manual, Volume 7, Chapter 7, Section 3 - Procedures for Abatement of Highway Traffic Noise and Construction Noise, were used during the preparation of this traffic noise analysis as required for location approval of federal aid highways. Reference to these guidelines and the publication Fundamentals and Abatement of Highway Traffic Noise (Bolt, Beranek and Newman, 1973) is recommended if further detail is desired.

Highway Noise Fundamentals

In order for the average reader to have a better understanding of this noise study, a brief overview of several aspects of noise would be helpful.

Decibels: "Decibels" are used to measure the intensity of sound just as "degrees" and "meters" are used to measure temperature and length. Decibels, abbreviated dB, are a logarithmic reference to sound pressure with the reference base (0 dB) being the weakest sound that can be heard by the average young ear.

Frequency and Weighting Networks: The range of normal hearing is from a low frequency of 20 Hertz (cycles per second) to a high frequency of approximately 15,000 Hertz. The human ear is particularly insensitive to very low frequencies, and the "A-scale" weighting network incorporated into the sound level meter closely approximates the frequency response of a young human ear. All noise measurements were conducted using the A-scale weighting network.

Traffic Noise and Its Effect: The engine, exhaust, tire-roadway interaction, brakes, vehicle vibration and air disturbance are all sources of vehicle noise. The contribution of each source to the total amount of noise is dependent on many variables such as speed, vehicle volume, auto-truck mix, and roadway geometrics. The effects of the vehicle noise source depends on the strength of this source, the amount of background noise present and the nature of the land use where the noise is heard. Figure 5.3 shows the decibel levels of several common interior and exterior noise sources, while Table 5.20 lists the design noise levels and their related activities.

Prediction: Vehicle noise levels are dependent on many variables. Research conducted by the Highway Research Board has resulted in a method by which the noise level produced by a future highway can be predicted. Comparison of this predicted noise level and existing measured noise levels may indicate the amount of noise impact to be experienced by nearby sensitive receivers.

Noise Abatement: There are two primary methods to control highway related noise. The first is to control the noise source by using improved muffler systems and tires that produce less roadway interaction noise. The second method is the incorporation of noise control measures into the roadway project. Typical noise control measures include raised or depressed roadway grade, changing the horizontal alignment, or constructing a barrier between the roadway and the sensitive receivers.

Sensitive Site Analysis

Both construction alternates border along or pass through existing land uses which can be classified as sensitive to highway related noise. The north-south segment borders along the Sherman Hill Historic District and Woodland Cemetery. This segment also contains another roadway penetrating Water Works Park.

Subalternates 1A and 1B include roadways adjacent to Chamberlain Park. Alternate A crosses a commercial district, while Alternate B involves additional roadways in the Des Moines Water Works property.

The east-west segment common to both alternates crosses an industrial area between S.W. 15th Street and S.W. Second Street, several parks and a residential area. These parks and residential areas are sensitive receiver areas, while the industrial area with its large amount of railroad activity is not considered particularly noise sensitive.

The Indianola Avenue connection borders on another residential area, passes through or beside several parks, all of which are considered noise sensitive. Two residential areas are penetrated by the E. 15th Street Extension while a portion of the roadway overpasses the railroad areas.

Thirty-two individual noise surveys were conducted to determine the existing noise levels for all sensitive sites in the project area. These included residential areas, churches, parks and schools. Table 5.21

contains the measured L_{50} and L_{10} levels at all sites. Site 24B is included to show the noise level expected when a train passes nearby, a common occurrence in some portions of the corridor. Figure 5.4 shows the location of each noise sample site.

During the noise sampling period, traffic counts were taken to be used in conjunction with the time of day of the survey to predict the maximum noise level for each site. These predicted existing peak noise levels are listed in Table 5.21 also.

Design noise levels were predicted for year 2000 traffic for all alternates, including the No Action alternate, and are also included in Table 5.21.

Noise Impacts

Noise Sample Sites 1-12: These sites and the Sherman Hill Historic District are affected mainly by the north-south segment. All site locations have a predicted No Action L_{10} noise level of 69 dBA or higher. Sites 1, 4, 5 and 6 represent the historic district, Woodland Cemetery and a small residential area. Building the north-south segment would improve the noise environment along the west side of this roadway and, at the same time, adversely affect the historic district on the east side of the road. The arterial would be depressed (along Harding Road) from Pleasant Street to the Des Moines River for Alternates A and B, except for the crossing of Ingersoll Avenue. A noise wall built along both edges of construction of the north-south segment with a constructed height varying from eight feet to one foot would produce a noise abatement adequate to bring the predicted noise levels below design criteria. However, wall construction could be detrimental to the visual features of this area. Therefore, this wall, if desired and constructed, should be designed to blend in with the historic district.

A master plan study was recently completed by the Sherman Hill Association which recommends a landscape berm traffic buffer along the east side of Harding Road. During the design of the CBD Loop, consultation with the Sherman Hill Association, Inc., will occur to arrive at a design that is compatible with the aesthetics of the area (refer to discussion under "Callanan Neighborhood" earlier in this section for more details).

Kingsway Cathedral, Site No. 2, is located at an intersection of two major streets. There is no practical method to reduce the noise impact other than adding sound insulation to the existing structure. This noise impact would be produced mainly by the new northbound lanes of the project. Since the predicted noise level for the No Action alternate is comparable to that created by any build alternate, any sound attenuation measures taken would improve the noise environment.

Edmunds School (Site 3) is also predicted to experience noise levels in excess of the design standards. No mitigation measures are recommended because these peak noise levels will not occur during normal usage time.

Chamberlain Park (Site 8) is located along Ingersoll Avenue and experiences high noise levels now. Either construction alternate with the interchange solution for Ingersoll Avenue (Subalternates 1A and 1B) would have a larger negative impact on this park than an at-grade intersection (Subalternates 2A and 2B). It should also be noted that all construction alternates have a predicted noise level lower than the No Action alternate. Noise mitigation measures will be considered for this area during the design of the project.

At Des Moines Technical High School (Site 10), the construction alternates would have the lowest predicted noise levels, which would be comparable to the existing levels. Since the High School will not be in normal use during peak traffic times, there are no mitigation measures recommended at this site.

The Water Works Park would be the most severely impacted area in the project corridor. While the existing noise levels along Fleur Drive will exceed 70 dBA at some locations, the noise source is limited to a single roadway. All construction alternates introduce new roadways into the area, with Alternate B introducing the greatest amount. While the total number of vehicles passing through the park would be approximately the same for all alternates, including the No Action alternate, the introduction of new roadways would create a relatively noisier environment over a larger area than now exists.

The area of Water Works Park west of Fleur Drive with its trees and the Raccoon River serves as a buffer to the surrounding urban areas. Both Alternates A and B of the CBD Loop project would cross this area. Noise mitigation measures in this park would be limited to barriers placed on the bridges. A solid, three-foot-high barrier rail on all bridges would reduce the predicted noise levels by approximately 5 dBA for both construction alternates at Site No. 11. Site No. 12 would have a less noticeable reduction in the predicted noise levels because of its greater distance from the proposed roadways. At the time of final design and construction, a solid concrete barrier rail will be considered on all bridges in this area.

Noise Sample Sites 13-16 and 19: These sites are park and open space areas along the Raccoon and Des Moines Rivers. Site No. 13 has the lowest recorded noise levels found during the study. This area is very secluded, with the only major noise sources being an occasional airplane or a train.

The public open spaces along the banks of the Raccoon and Des Moines Rivers (Sites 15, 16, 19) and Riverside Park (Site 14) have existing maximum noise levels ranging from 52 dBA to over 70 dBA. The major noise source near Site 14 is S.W. First Street. Noise walls at any of these sites would be detrimental to the scenic quality of the area. The noise wall would also have to be carried across the bridges to reduce the predicted noise levels sufficiently. The at-grade intersections on the east-west segment also would lessen the beneficial aspects of a noise wall system in this area. Therefore, no mitigation measures are recommended for these areas.

Noise Sample Sites 17 and 18: These two sites represent the area between Indianola Avenue and the Raccoon River. Site No. 17 (St. Anthony's Church) experienced a measured noise level in excess of 70 dBA. The noise level is predicted to increase to over 85 dBA by the year 2000, with the construction alternates showing the highest predicted levels. Because these churches are extremely close to Indianola Avenue, a noise wall would intrude on their aesthetic qualities. Interior sound control is the only possible mitigation measure for implementation for these sites.

Noise Sample Sites 20-25 and 31: These sites encompass the area south of the proposed east-west segment and east of the Des Moines River. An industrial area lies to the north of the proposed roadway and is not considered very sensitive to noise. However, the residential area to the south would be impacted by this project. The present major noise sources are U.S. Highway 65-69 (S.E. 14th Street), Scott Avenue, Maury Street, S.E. Sixth Street, and the railroad. Construction of the east-west segment would add a major new noise source to this area. The entire length of the proposed roadway in this area is at-grade, with intersections at S.E. Fourth, S.E. Sixth, S.E. Ninth and S.E. 14th Streets. By constructing a noise wall along the south side of the roadway with an approximate height of six to eight feet, the entire area could be protected, except for the intersection areas and railroad crossings where the wall would have to be interrupted. During the design phase, a noise wall will be considered.

The three parks in this area are located next to existing roads which are the major noise sources. These roadways, the proposed roadway and the railroad when close to the park, would need to be screened to produce a noise environment below 70 dBA at peak traffic times. Cohen Park, the smallest of the three, is located next to a railroad track line; and Allen Park, which is bordered by two major roadways, would need to be almost totally enclosed by noise walls to reduce the noise levels below the criteria. No mitigation measures are recommended for these two parks because of their aesthetic impact. Also, Allen Park is proposed to be reclassified by the city to nonpark uses.

Hawthorn Park, the largest of these three parks, could accommodate a noise wall of six to eight feet along U.S. Highway 65-69 without being a detriment to park use. However, a portion of the park would be needed for the construction of the noise wall or berm. The majority of park use is located at a considerable distance from this roadway. Noise mitigation measures will be considered for this site during the design phase of the project.

Noise Sample Sites 28-30: These sites would be located in the vicinity of the proposed E. 15th Street Extension. Two of the sites would be eliminated by any of the construction alternates. The construction of

the connection for U.S. Highway 65-69 would bring the traffic considerably closer to the sensitive sites. The proposed roadway would be elevated somewhat through this area, and a noise wall of moderate height could be incorporated to reduce the areas impacted by the project.

Noise Sample Sites 26 and 27: This residential area is located at the north end of the proposed E. 15th Street Extension. The proposed roadway in this area will relocate the traffic load through the residential area instead of beside it. Both noise sample sites are predicted to have noise levels in excess of 70 dBA with either construction alternate. The Vine Street Gospel Chapel (Site 26) would not be adversely affected by the No Action alternate. Site 27 in the residential neighborhood is predicted to have a much higher noise level if no construction alternate is implemented.

The at-grade intersection design for this roadway eliminates the benefits of a noise wall; therefore, mitigation measures undertaken in this area will have to be limited to interior building sound insulation.

Summary: In review, several areas would require noise mitigation measures with either Alternate A or B. During final design, roadside barriers or earthen berms, improvements in roadway geometry and sound insulation for existing buildings should be reevaluated for effectiveness and cost. Some residents may desire a special design to blend with the existing features while others may not desire any mitigation measures.

Noise Contours

The year 2000 L_{10} 70 dBA noise contour distances were predicted for all new roadways. Table 5.22 lists these distances for each proposed segment of both construction alternates. The generalized 70 dBA contour lines are shown, in Plates 1 to 18 (Appendix C).

It should be pointed out that the distances are generalized and do not include the shielding effects of elevated or depressed roadway conditions or the shielding effect of intervening buildings. This shielding, along with any noise wall construction, would result in a contour line nearer the road.

TABLE 5.20
DESIGN NOISE LEVEL/ACTIVITY RELATIONSHIPS

Activity Category	Design Noise Levels - dBA*		Description of Activity Category
	$L_{eq}(h)$	$L_{10}(h)$	
A**	57 (Exterior)	60 (Exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, open spaces, or historic districts which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B**	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, and parks which are not included in Category A, and residences, motels, hotels, public meeting rooms, schools, churches, libraries and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties or activities not included in Categories A or B above.
D	--	--	For requirements on undeveloped lands, see Paragraphs 11a and c.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

*Either L_{10} or L_{eq} (but not both) design noise levels may be used on a project.

**Parks in Categories A and B include all such lands (public or private) which are actually used as parks.

TABLE 5.21
SUMMARY OF SENSITIVE SITE ANALYSIS

Site No.	Site Location	EXISTING		Predicted Existing Peak Noise Level L ₅₀ /L ₁₀	PREDICTED NOISE LEVELS YEAR 2000				
		Measured Noise Level L ₅₀ /L ₁₀	Time of Measurement		No Action L ₅₀ /L ₁₀	Alt. 1A L ₅₀ /L ₁₀	Alt. 2A L ₅₀ /L ₁₀	Alt. 1B L ₅₀ /L ₁₀	Alt. 2B* L ₅₀ /L ₁₀
1	St. Ambrose Catholic Cemetery.	61/66	15:35	67/79	68/80	70/81	70/81	69/81	69/81
2	Kingsway Cathedral - 19th Street and Crocker Street.	64/72	16:10	65/80	67/82	68/83	68/83	67/82	67/82
3	Edmunds School.	64/65	16:45	60/74	63/77	62/77	62/77	62/76	62/76
4	Woodland Cemetery.	60/62	17:15	61/71	71/79	70/76	70/77	70/76	70/76
5	Center Street Between 18th Street and 19th Street.	57/64	10:25	67/78	63/74	60/72	60/72	55/70	55/70
6	Woodland Cemetery.	69/76	15:00	72/84	77/92	67/74	68/74	67/74	67/73
7	Tech High School Track.	57/61	8:30	72/84	73/85	66/75	65/74	68/76	66/75
8	Chamberlain Park.	64/69	12:10	76/86	74/86	66/80	62/78	69/82	65/80
9	South of Grand Avenue by Railroad Tracks.	65/71	9:50	72/82	73/83	72/82	71/81	72/81	72/80
10	Des Moines Tech High School.	66/73	8:50	72/83	77/88	70/83	70/83	69/83	69/83
11	Water Works Park.	60/61	11:45	65/69	65/69	68/74	68/74	68/75	68/75
12	Water Works Park.	59/65	10:00	67/72	66/71	64/69	64/69	65/71	65/71
13	Vicinity Flood Levee on Extension S.W. 16th Street.	45/51	12:25	46/53	46/53	46/53	46/53	46/53	46/53
14	Log Cabin in Riverside Park.	56/64	10:45	66/77	67/77	69/81	69/81	71/81	71/81
15	North Bank of the Des Moines River on Extension S.W. Third St.	53/66	11:15	57/70	57/70	69/78	69/78	69/78	69/78
16	South Bank of Des Moines River on Extension S.W. Third St.	50/52	11:40	54/60	54/60	69/76	69/76	68/76	68/76
17	St. Anthony's Church - Clifton Heights United Presbyterian Church - Indianola Avenue and S.W. First Street.	62/73	13:20	71/85	72/86	75/89	75/89	76/89	76/89
18	Intersection of Dunham Street and S.W. First Street.	48/54	14:00	54/60	54/60	69/77	69/77	69/76	69/76
19	Top of Flood Levee on Extension of Raccoon Street.	53/56	14:35	58/63	58/63	69/77	69/77	70/78	70/78
20	Mount Olive Baptist Church - Allen Street and S.E. Fourth Street.	52/63	15:00	53/64	49/59	57/64	57/64	57/65	57/65
21	Allen Park (To Be Reclassified in Future).	58/68	17:50	60/76	65/79	64/77	64/77	63/77	63/77
22	Sheltering Rock Church - S.E. Eighth Street and Allen Street.	50/56	16:15	50/56	33/45	63/70	63/70	64/71	64/71
23	Guadalupe Roman Catholic Church - S.E. Eighth Street and Scott Ave.	51/62	15:50	53/66	37/50	52/57	52/57	52/58	52/58
24a	Sam Cohen Park.	55/67	16:50	55/67	55/67	66/71	66/71	67/71	67/71
24b	Sam Cohen Park.	69/101	Train						
25	Shiloh Baptist Church - Scott Avenue and S.E. 13th St.	58/71	15:15	65/72	67/72	68/81	68/81	68/81	68/81
26	Vine Street Gospel Chapel.	55/58	13:45	52/60	53/61	62/72	62/72	61/72	61/72
27	Alley Between Vine Street and Court Avenue Near 15th Street.	63/71	14:15	76/89	77/90	72/80	72/80	72/80	72/80
28	House of Prayer and Church of the First Born - S.E. 15th St.	52/58	13:15	49/58	56/64	(1)	(1)	(1)	(1)
29	All Nations Church of God in Christ and S.E. Assembly of God - S.E. 14th Court.	55/60	14:45	55/65	60/69	(1)	(1)	(1)	(1)
30	Alley Between Maury Street and Railroad Avenue.	53/58	12:50	62/71	66/73	74/81	74/81	73/81	73/81
31	Hawthorn Park.	65/68	17:15	64/71	68/75	74/81	74/81	74/81	74/81

1) Existing Site is Eliminated by this Alternate.

*Alternate 1A is northern variation with interchange.
Alternate 2A is northern variation with intersection.
Alternate 1B is southern variation with interchange.
Alternate 2B is southern variation with intersection.

TABLE 5.22
PREDICTED YEAR 2000 NOISE CONTOUR DISTANCES*

Section	Alternate A	Alternate B
<u>North-South Segment</u>		
Northbound Lanes - I-235 to Center Street.	170'	160'
Southbound Lanes - I-235 to Center Street.	160'	170'
Center Street to Ingersoll Avenue.	210'	200'
Ingersoll Avenue to Fleur Drive.	215'	250'
<u>Alternate A</u>		
North-South Segment to Grand Avenue.	100'	
Grand Avenue to Mulberry Street.	135'	
Mulberry Street to S.W. Ninth Street.	120'	
<u>Alternate B</u>		
Fleur Drive to S.W. 15th Street.		170'
S.W. 15th Street to S.W. Ninth Street.		200'
<u>East-West Segment</u>		
S.W. Ninth Street to Indianola Avenue Connection.	150'	185'
Indianola Avenue Connection to S.E. Sixth St.	160'	170'
S.E. Sixth Street to S.E. 14th Street.	175'	185'
<u>Indianola Avenue Connection</u>		
Northbound Lanes - East-West Segment to Raccoon River.	130'	120'
Southbound Lanes - East-West Segment to Raccoon River.	120'	110'
Raccoon River to Indianola Avenue.	175'	170'
<u>E. 15th Street Extension</u>		
Court Avenue to Scott Avenue.	215'	210'
Scott Avenue to Maury Street.	230'	225'
Maury Street to S.E. 14th Street.	230'	225'

*Distances are from the roadway center line to the 70 dBA L₁₀ contour. Refer to Plates 1-18, Appendix C, for location of contours at interchanges.

Construction Noise

Those areas which were identified as sensitive to traffic noise may also be subjected to high noise levels during roadway construction. Construction with the large machinery is a strong noise source. Every effort will be required of the Contractor to supply and maintain equipment with muffler systems recommended by the equipment manufacturer.

AIR QUALITY IMPACTS

The Iowa Air Quality Report published annually by the Iowa Department of Environmental Quality describes the existing air quality in Iowa. During 1981, air quality was monitored at eight locations throughout Des Moines. The pollutants monitored included suspended particulates (smoke and dust), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2) and airborne lead.

Of these pollutants, suspended particulates and carbon monoxide concentrations exceeded the national standards causing portions of the Des Moines area to be designated as nonattainment areas. While the monitored concentrations of these pollutants are above the national standards, the recent trend in Des Moines has been toward lower concentration levels and fewer occurrences exceeding the standards.

Almost the entire corridor of the CBD Loop project is presently designated a primary standard nonattainment area for suspended particulates. This area includes the railroad yard and the monitoring site at National By-Products at S.E. 18th Street and Scott Avenue. The monitoring site at National By-Products records the highest level of suspended particulates in the state.

Carbon monoxide is generally accepted as the overall indicator of highway-related air pollution since its major source is the internal combustion engine and it does not react photochemically with other pollutants. Both monitoring sites in Des Moines (Tech High School at 19th Street and Grand Avenue and YWCA at S.W. Eighth Street and Grand Avenue) monitored concentrations of CO exceeding the secondary standard of nine parts per million (ppm). The entire CBD Loop project corridor is contained within the established boundaries of the CO nonattainment area for Des Moines.

The impact of the proposed CBD Loop facility upon the local air quality was assessed using mathematical modeling techniques, including CALINE 3 and HIWAY. An array of variables were used to define the pollutant source and the dispersion and dilution of the pollutant; the model predicted the CO concentrations at specific distances from the roadway. All modeling was done for comparison to the eight-hour standard (9 ppm) for CO. Very low wind speed (2 mph), wind at an angle of 22.5 degrees to the roadway, and very stable atmospheric conditions were assumed. These conditions would result in the highest pollutant levels. Vehicle emission rates were derived from EPA's MOBILE 1 emission factor computer program, as tabulated by FHWA. An ambient temperature of 0°F. and 20 percent cold-start operation for the traffic stream were used. It was felt that these would approximate "worst case" conditions. The vehicle mix used was 85 percent light duty vehicles, five percent light duty trucks, seven percent heavy duty gas trucks and three percent heavy duty diesel trucks.

Tables 5.23 to 5.26 present the worst concentrations at four sites. These receptor sites were selected based on the size of the traffic volumes and/or the sensitivity of the location; i.e., the likelihood of extended periods of human exposure. It should be pointed out the CO levels shown in the tables do not contain any background concentrations.

Along the north-south segment next to the residential area, the predicted concentrations are higher with any new construction alternate than with the No Action alternate. This is due to the larger traffic volumes that the arterial is predicted to carry. The expected concentration in 1985 at the first row of houses along this section is 4 ppm, in addition to background concentrations. If the No Action alternate is chosen, the predicted concentrations would be only 3 ppm plus background.

In the east-west segment along the Raccoon Street Corridor, the roadway would create a new pollution source for the area (this segment is common to both of the new construction alternates). This residential area presently has a low volume of traffic, and a new major source of carbon monoxide would lower the overall air quality of the area. The houses along Scott Avenue and Maury Street would experience a decrease in the CO levels because of less traffic on these roadways, while houses along Allen Street would be exposed to the additional concentrations

created by the construction alternates. Several houses are located as close as 50 to 100 feet from the shoulder line of the proposed facility.

Along S.E. 14th Street and the proposed E. 15th Street Extension, CO concentrations would be lowered somewhat with the proposed facility. The existing roadway is predicted to carry from 40,080 to 49,020 vehicles per day in year 2000. This source is confined to one roadway. With the construction alternates, this traffic load is predicted to range from 50,730 to 57,720 vehicles per day with Alternate A and from 48,530 to 56,250 vehicles per day under Alternate B. These heavier traffic volumes would be distributed nearly equally to two roadways approximately 400 feet apart north of the Des Moines River. This separation will tend to lower predicted CO concentrations along these two roadways when compared to the No Action alternate.

The Water Works Park area was the fourth site evaluated. Under the No Action alternate, the source would be limited to the existing roadway. Under any build alternate, additional source elements would be created and the overall CO levels throughout the park area would increase. While the tabulated values show little difference between any alternate, the No Action alternate would be more desirable because the source is confined to a single roadway.

The predicted CO concentrations discussed above were for specific locations along high volume portions of the construction alternates. To summarize the effects of either Alternates A or B, the residential areas along Harding Road, E. 15th Street Extension and Allen Street would be exposed to the greatest increases in CO levels, while the commercial and residential areas along S.E. 14th Street, Scott Avenue and 19th Street would experience the largest reduction in CO levels.

Table 5.27 summarizes the predicted total pollutant burden for all alternates for CO as well as hydrocarbons and nitrogen oxides. These amounts were determined using the FHWA emission factor tables (1978), assuming 100 percent light duty vehicles, 20 percent cold-start and 20°F. (-6°C.) ambient temperature. It should be noted that the higher pollutant burdens associated with Alternates A and B are related to greater vehicle miles for these alternates. Thus, the beneficial effects of higher running speeds on air quality are offset somewhat.

In summary, specific concentrations and highway-related air pollution concentrations in general resulting from CBD Loop traffic are not expected to exceed the national ambient air quality standards. Arterial traffic flow would be interrupted at at-grade intersections resulting in higher CO concentrations. This would be particularly the case at the high volume intersections of the Arterial with Grand Avenue, Locust Street, Third Street, Second Avenue, Indianola Avenue and Maury Street. Long-term exposure to such vehicular emissions would not be expected due to the primarily commercial land use near these intersections. The general diversion of traffic from the existing street network to the new facility would be expected to increase the efficiency of overall traffic movements in the area and reduce motor vehicle emissions somewhat in the existing downtown Des Moines street network.

The project is primarily in a nonattainment area which has transportation control measures in the State Implementation Plan. Pursuant to 23 CFR770, the project has been found by FHWA to conform to the State Implementation Plan.

Short-term air quality impacts would be expected to occur during construction operations. Contractors will be required to properly equip and maintain heavy machinery and haul trucks to minimize exhaust emissions. Additionally, adherence to Iowa's Rules and Regulations Relating to Air Pollution Control (DEQ, 1973), which include limitations placed on the generation of fugitive dust, will be required.

TABLE 5.23

ESTIMATED PEAK EIGHT-HOUR CO LEVELS FOR THE
NORTH-SOUTH SEGMENT (HARDING ROAD BETWEEN
COTTAGE GROVE AVENUE AND WOODLAND AVENUE). ESTIMATED
EXISTING EIGHT-HOUR PEAK CONCENTRATION IS 7 PPM.

Distance	No Action	Street Widening	CO Levels (PPM)*			
			A1	A2	B1	B2**
Year 1985						
Within Mixing Cell	5	5	6	6	5	5
50' From Shoulder	3	3	4	4	4	4
100' From Shoulder	3	3	4	3	3	3
250' From Shoulder	2	2	3	3	3	3
500' From Shoulder	2	2	3	2	2	2
Year 2000						
Within Mixing Cell	3	3	3	3	3	3
50' From Shoulder	2	2	2	2	2	2
100' From Shoulder	2	2	2	2	2	2
250' From Shoulder	1	1	2	2	2	1
500' From Shoulder	1	1	1	1	1	1

*Estimated values do not include background concentrations.

**Alternate 1A is northern variation with interchange.

Alternate 2A is northern variation with intersection.

Alternate 1B is southern variation with interchange.

Alternate 2B is southern variation with intersection.

TABLE 5.24

ESTIMATED PEAK EIGHT-HOUR CO LEVELS FOR THE
EAST-WEST SEGMENT BETWEEN THE DES MOINES RIVER
AND S.E. 14TH STREET. ESTIMATED EXISTING
EIGHT-HOUR PEAK CONCENTRATION IS 7 PPM.

Distance	No Action	Street Widening	CO Levels (PPM)*	
			Alt. A	Alt. B***
Year 1985				
Within Mixing Cell	**	**	5	5
50' From Shoulder	**	**	3	3
100' From Shoulder	**	**	3	3
250' From Shoulder	**	**	2	2
500' From Shoulder	**	**	2	2
Year 2000				
Within Mixing Cell	**	**	3	3
50' From Shoulder	**	**	2	2
100' From Shoulder	**	**	2	2
250' From Shoulder	**	**	1	1
500' From Shoulder	**	**	1	1

*Estimated values do not include background concentrations.

**Predicted values are approximately equal to 0 ppm.

***Alternate 1A is northern variation with interchange.

Alternate 2A is northern variation with intersection.

Alternate 1B is southern variation with interchange.

Alternate 2B is southern variation with intersection.

TABLE 5.25

ESTIMATED PEAK EIGHT-HOUR CO LEVELS FOR THE
S.E. 14TH STREET ALIGNMENT NEAR HAWTHORN PARK.
ESTIMATED EXISTING PEAK EIGHT-HOUR CONCENTRATION
IS 10 PPM.

Distance	No Action	Street Widening	CO Levels (PPM)*	
			Alt. A	Alt. B**
Year 1985				
Within Mixing Cell	9	9	6	5
50' From Shoulder	5	5	4	3
100' From Shoulder	5	5	3	3
250' From Shoulder	4	4	3	2
500' From Shoulder	3	3	2	2
Year 2000				
Within Mixing Cell	5	5	3	3
50' From Shoulder	3	3	2	2
100' From Shoulder	3	3	2	2
250' From Shoulder	2	2	1	1
500' From Shoulder	2	2	1	1

*Estimated values do not include background concentrations.

**Alternate 1A is northern variation with interchange.

Alternate 2A is northern variation with intersection.

Alternate 1B is southern variation with interchange.

Alternate 2B is southern variation with intersection.

TABLE 5.26

ESTIMATED PEAK EIGHT-HOUR CO LEVELS FOR
WATER WORKS PARK ALIGNMENT. ESTIMATED
EXISTING PEAK EIGHT-HOUR CONCENTRATION
IS 10 PPM.

Distance	No Action	Street Widening	CO Levels (PPM)*	
			Alt. A	Alt. B**
Year 1985				
Within Mixing Cell	6	6	6	7
50' From Shoulder	4	4	4	5
100' From Shoulder	3	3	3	4
250' From Shoulder	3	3	3	3
500' From Shoulder	2	2	3	3
Year 2000				
Within Mixing Cell	4	4	4	4
50' From Shoulder	2	2	2	3
100' From Shoulder	2	2	2	2
250' From Shoulder	2	2	2	2
500' From Shoulder	1	1	1	2

*Estimated values do not include background concentrations.

**Alternate 1A is northern variation with interchange.
Alternate 2A is northern variation with intersection.
Alternate 1B is southern variation with interchange.
Alternate 2B is southern variation with intersection.

TABLE 5.27

TOTAL PREDICTED POLLUTANT BURDEN ANALYSIS
FOR ALTERNATES OF THE CBD LOOP PROJECT

Network	Operating Speed	Vehicle-Miles	Year 2000 Daily Emissions (Tons)		
			CO	HC	NO _x
No Action	28.7	355,943	5.28	0.61	0.69
Street Widening	28.8	355,943	5.27	0.61	0.69
Alt. A	29.2	367,859	5.38	0.62	0.72
Alt. B	29.5	381,755	5.52	0.64	0.75

FLOOD PLAIN IMPACTS

The CBD Loop project will provide a transportation system over the two major riverine systems within the city of Des Moines. Inclusive to each alternate layout for the corridor are two riverine crossings over the Raccoon River and one crossing over the Des Moines River.

In this discussion, reference will be made to river locations by river mile and/or linear feet above the respective river's mouth. In addition, specific reference points may be discussed in terms of "left bank" or "right bank" of the river's channel. In this sense, the left bank will designate the bank of a river's channel located on the left side of an individual looking toward the downstream direction of the river. Conversely, the right bank of a river or stream designates the bank of the system on the right side of an individual as that individual looks toward the downstream direction of the river. The locations of the riverine crossings are shown on Figures 5.8 and 5.9.

In expanding on the location points for each crossing, the two Raccoon River crossings occur at points approximately 1,300 feet and 14,300 feet above the confluence of the Raccoon River with the Des Moines River. These locations are the same for each alternate (A and B) of the CBD Loop. The Des Moines River crossing for the project occurs approximately at Des Moines River mile 201.8.

Primary usage of flood plain areas for the Des Moines River reach affected by the project are strictly recreational. The existence of the flood control works creates a full flow hydraulic channel with no storage available for flood flows. The flood control works provide for a limited flood plain area within the levees' boundaries. Consequently, usage of areas riverward of the levees is during non-flood events and is limited to recreational activities such as fishing or boating.

The Raccoon River crossing (located downstream of the Jackson Street bridge) also will span flood control works on the Raccoon River. Again, these facilities will convey flood flows and will not provide storage in areas beyond the low-flow channel. Primary usage is limited to recreational functions. The second Raccoon River crossing (upstream of Fleur Drive) maintains flood protection on the left bank. Consequently,

no floodwater storage is possible in this area. The right bank area provides a significant overflow area and is not considered a principle storage area since during floods of magnitude the lower lying areas will be areas of floodwater conveyance. The right bank area is used for the most part by the city of Des Moines Water Works.

Both of these rivers provide good habitat for fish and other aquatic life. The flood plain of the Raccoon River also provides significant habitat for plant and animal species. Section 4 provides a description of these habitats (p. 4.1-4.5).

The Raccoon River and the Des Moines River have been subject to several engineering studies and analyses concerning the magnitude and frequency of respective floods for each river system. Of significant focus in planning the CBD Loop river crossings was the U.S. Army Corps of Engineers efforts in the hydraulic study and resulting flood control works for the Raccoon River and the Des Moines River. In addition, the Flood Insurance Study, City of Des Moines, Iowa, by the Federal Emergency Management Agency, was utilized in coordinating regulatory discharge flows and flood frequencies with the proposed riverine crossings.

The Raccoon River and Des Moines River flood control works were constructed by the U.S. Army Corps of Engineers in the mid to latter part of the 1960's decade. The flood control improvements consisted of earthen levees and concrete flood walls designed to control flood flows. While the design flood profile elevations for the flood control projects may differ from or exceed the regulatory 100-year flood profile elevations, the three river crossings for the Des Moines CBD network are designed to accommodate the predominating or greater design flood profile elevation.

The Des Moines River reach pertaining to this project is downstream of the Saylorville Reservoir. This reservoir acts as a flood control facility and recreational lake. The reservoir has been in place since 1977, and the greatest discharge of record at this time occurred on April 19, 1979, and was 18,000 cfs. This discharge corresponds to less than a 10-year flood on the Des Moines River in the city of Des Moines. The flood control levees on the Des Moines River have experienced no significant flood events during their existence. In combination, the Saylorville Reservoir and the flood control levees on the Des Moines

River provide for a low flood damage potential. The project crossing over the Des Moines River will not increase flood stages.

The Raccoon River crossing near the Jackson Street bridge will span the flood control works and consequently no increase in flood stages will occur. Flood damage potential for this area is also considered low. The second Raccoon River crossing will be designed to mitigate increases in flood events and adhere to all applicable state and city criteria. Land use for the flood plain areas in this reach are park areas and are expected to remain as such. Consequently, flood damage potential for this area is considered low to moderate.

In analyzing specific impacts to flood plain encroachments for the three riverine crossings, each crossing is reviewed individually in the following discussion.

The river crossing for the Des Moines River is similar for Alternate A and Alternate B. The Des Moines River flood plain at this location is confined within the Corps of Engineers' flood control project. The construction of this crossing is intended to have very little impact on the flood plain since the bridge will span the channel with a low steel elevation above the Corps of Engineers' design flood profile elevation.

The remaining two crossings located over the Raccoon River will also be correlated with existing flood control facilities. The first crossing is located downstream of the existing Jackson Street bridge and will span across earthen flood control levees. The left bank levee was constructed as a part of the Corps of Engineers' project, while the right bank levee was constructed by the city of Des Moines. This bridge will also have low steel above the design profile elevation for this segment of the flood control facilities.

The second crossing of the CBD Loop over the Raccoon River is located upstream of the existing Fleur Drive bridge. In this reach of the Raccoon River, flood control works (earthen and concrete wall levees) have been constructed on the left bank of the Raccoon River. This reach of the Raccoon River is also the beginning of a wide bend in the channel. As available flood plain mapping outlines, the 100-year flood plain is widespread on the right bank due not only to topographical conditions

but to the natural influence the river bend creates during high-water events. The area of the right bank is occupied by the city of Des Moines Water Works for water supply and treatment. At present, facilities are built on elevated sites for flood protection. The proposed crossing of the Raccoon River at this site varies for Alternate A and Alternate B. The basic difference is that Alternate B involves three respective crossings in the form of mainline and ramp crossings. Alternate A involves one mainline river crossing over the Raccoon River. Plates 7 and 8, Appendix C, outline the layouts for each alternate.

With the new crossings constructed, no significant impact is anticipated from increased development in flood plain areas adjacent to the crossings. The crossing of the Des Moines River and the crossing of the Raccoon River, below Jackson Street, will span the flood plain which is confined by the respective flood control works. Federal and State of Iowa criteria prohibit development or encroachment in areas riverward of the levee locations. The third crossing near Fleur Drive is not anticipated to change existing flood plain characteristics nor minimize recreational usage of the river in this reach. As outlined, the major portion of flood plain areas in this river reach are controlled by the Des Moines Water Works and is in usage as a city park.

In summary, the three crossing locations do not impact flood plain areas or their recreational benefits. Additionally, additional development is not anticipated in these flood plain areas due to existing federal, state and city of Des Moines criteria and present land usage.

In planning the two alternate crossings, detail was directed toward the mitigation of significant flood profile elevation. The encroachment and backwater effects of the placement of the piers and any fill in the floodway will be analyzed during preliminary structure design to ensure that all requirements of existing state and local flood plain ordinances are met.

While detailed design for each river crossing has not been completed at this planning stage, it is acknowledged that each crossing will be subject to careful review by the appropriate state and federal agencies and review boards. As such, the layout for each crossing has been accomplished with recognition of the various state and federal criterion

for hydraulic considerations as well as environmental aspects. Early coordination for the river crossings was conducted with the Iowa Natural Resources Council in office meetings and with the U.S. Army Corps of Engineers through correspondence.

IMPACTS TO NATURAL FEATURES

The natural features of the project area are described in Section 4, "Affected Environment." The proposed project is not expected to have any major impacts on these resources. The following concentrates on areas where some impacts are expected.

Vegetation Impacts

Several areas of native vegetation will be removed by the project. These areas may be seen in Plates 7, 8, 17 and 18, Appendix C. A ground survey of these areas was conducted during 1981. The vegetation was found to consist of flood plain species of trees, shrubs, grasses and forbs. One area had some upland vegetation (Raccoon River bluff, Plate 7).

This type of vegetation is very common in river flood plains throughout the state and occurs at many other locations within the city limits of Des Moines. Its removal from the project area will have negative impacts on wildlife in the area that uses it as habitat. It will also have aesthetic impacts (see next section). Revegetation within the project right-of-way will partially mitigate for the loss of this vegetation.

Wetlands

A wetland area will be crossed by the project (refer to Figure 5.7). The area is approximately 10 acres in size and supports wetland vegetation along its edges. It is crossed by three railroad embankments. It appears to be the remnants of a much larger wetland, extending to the east, which has been filled for some time.

The primary beneficial use of the wetland is habitat for wetland plant and animal species.

The proposed project will involve placement of fill in approximately four acres of the wetland. Piers for a bridge crossing will pass through the remainder of the area (refer to Plate 17, Appendix C).

Coordination with the Corps of Engineers, Rock Island District, has occurred; and it is anticipated that a Section 404 Permit for discharge of fill into a wetland will be required.

Contacts with the U.S. Fish and Wildlife Service, Rock Island, Illinois, and the Iowa Conservation Commission, Des Moines, Iowa, have been made. These agencies will be further consulted during the preparation of the FEIS. A wetland finding statement will be prepared and included in the FEIS to comply with Executive Order 11990.

Water Quality

The project alignment will have two crossings of the Raccoon River and one crossing of the Des Moines River. The Raccoon River in this area is a water supply source for the city of Des Moines (see Section 4, "Affected Environment," for discussion). Water is collected and stored in an underground gallery system, part of which underlies an area crossed by the project (refer to Plates 7 and 8, Appendix C).

The Iowa Department of Environmental Quality was contacted regarding the project in early 1983. Areas where the project crossed the Des Moines and Raccoon Rivers and Water Works Park were discussed with the staff. They indicated that their major area of concern was the impact on the water supply for the Des Moines Water Works.

Consultation with staff of the Des Moines Water Works in early 1983 indicated concern regarding the effect of pollutants carried in the highway runoff on the water storage areas. The design of the project will provide for the diversion of highway runoff from these sensitive areas. They are also concerned about the effect of the project on their future expansion plans. Coordination with the Des Moines Water Works staff will be maintained during the design and construction of the facility (refer to discussion of impact on utilities earlier in this section for further information).

Long-range effects of the proposed project on water quality in the Des Moines and Raccoon Rivers are predicted to be minimal. Street deicing agents and other surface deposits will be present in runoff into these rivers where no roadway now exists. With the large volumes and flow rates of these rivers, the effect of this runoff is predicted to be minimal.

There would be a possible increase in the use of weed control products along the new roadway and an increase in chemical and lubricant spills. Short-term effects on water quality will occur during construction (refer to "Construction Impacts" later in this section).

Mineral Resources

The project will be crossing one area that contains abandoned underground coal mines. This area is in the upper northeast corner of the alignment between E. Court Avenue and the railroad tracks to the south (see Plate 17, Appendix C, and letter of November 20, 1981, from Iowa Geological Survey in Section 6). Coordination with the Iowa Geological Survey regarding this area will be maintained during the design of the project.

Other Resources

The project will not impact any lands of high agricultural productivity, wild and scenic rivers, or habitats of threatened or endangered species.

IMPACTS TO AESTHETIC QUALITIES

Aesthetic considerations for a new roadway include: how well the highway blends with the terrain and surrounding landscape features; to what extent it complements the natural scenic amenities and planned open space uses of the corridor; the views of the surrounding environment provided the motorist; the view of the road from adjacent areas; and its compatibility with the local open space planning.

The roadway will have both positive and negative effects on these factors. Major aesthetic impacts are depicted in Figure 5.10 and discussed in the following paragraphs.

Trees and other vegetation will be removed from several areas in the corridor. This removal will have negative visual impacts on the area, particularly where wooded bluffs are crossed. The project will involve cuts into two of these bluffs, both of which are very scenic. Landscaping and grading plans in these areas will be developed to blend in with the surrounding bluff landscape as much as possible.

The project will visually intrude into several parks (see Impacts to Parks and Recreation Areas in this section). Several of these are adjacent to existing roadways, and the project will not provide anymore intrusions than already exist (Hawthorn Park, Chamberlain Park, Riverside Park). Alternates 1A and 2A would provide somewhat more intrusion upon Chamberlain Park than now exists.

The parks where visual intrusions into more remote parts where no roadway now exists or where there is now little traffic are Water Works Park and Sam Cohen Park (Plates 7 and 16, Appendix C).

The roadway in Water Works Park will obstruct or detract from existing scenic views of the park and the Raccoon River from the bluff areas to the north and from the Fleur Drive bridge.

The roadway adjacent to Sam Cohen Park will not obstruct scenic views, but its large scale and high noise impacts will detract greatly from the existing park experience that it provides. During design, landscaping will be considered in this area that will reduce the effects of the highway.

The roadway will improve the existing scenic qualities adjacent to Woodland Cemetery (Plates 1, 2, 3, 4, Appendix C). The existing Harding Road is at-grade adjacent to this cemetery, while the CBD Loop will be depressed from Pleasant to Ingersoll. Also, strips of land along either side of the CBD Loop would have the potential for landscaping and joint development as open spaces. This area is discussed in more detail in the section on the Callanan Neighborhood. Highway and right-of-way design in this area will be coordinated with the Sherman Hill Association and the Woodland-Willkie Neighborhood Board.

Another positive effect of the roadway on the visual qualities along the alignment will be the removal of some deteriorated structures and other features from the right-of-way area. This impact will be beneficial along Harding Road in the vicinity of the Sherman Hill area, in the industrial area south of the CBD core area, along the Raccoon Street corridor and along the S.E. 15th Street corridor.

Views from the road will be generally good. Most of the alignment is in a lowland area, below the downtown area and the State Capitol Complex, both of which occur on the much higher river bluffs. Excellent views of the downtown skyline and the State Capitol occur along most of the eastern half of the route. In some of the western areas, scenic views of the wooded bluffs are present. Terrace Hill, the Governor's mansion, may be seen on one of these bluffs.

Views of the road will be generally positive, except for the Water Works area which was previously described.

Several areas offer the potential for joint open space development adjacent to the roadway. These will be considered by the city during the design of the project.

CONSTRUCTION IMPACTS

Construction of any of the project will result in certain short-range adverse environmental impacts.

Noise from heavy construction equipment and haul trucks is a relatively short-range but nonetheless disturbing impact upon sensitive land use near the construction site. In an effort to minimize the adverse effects of the construction period, contractors will be required to equip and maintain trucks and machinery so as to limit noise emissions. Contract specifications will also restrict especially noisy construction activity to the daytime hours in order to minimize conflict with noise-sensitive nighttime activities.

Air quality will also be subjected to short-range deterioration in the construction areas. Grading operations and the transportation and handling of materials, such as earth and aggregates, will result in the release of airborne dust. The burning of clearing and grubbing wastes will also contribute to the particulate and pollutant loads in the atmosphere, although such conditions would be infrequent and of relatively short duration. Emissions from construction machinery will add to the motor vehicle classes of air pollution.

Contractors involved with the construction will be required to comply with the Iowa "Rules and Regulations Relating to Air Pollution Control" (Chapter 400, Iowa Administrative Code). Specifically, adherence to Sections 4.2 Open Burning, 4.3(2)c Fugitive Dust, 4.3(2)d Visible Emissions and 3.1(1) Permits will be required in the construction contracts in an effort to minimize the short-range effects upon air quality within the project corridor. The above regulations include the following stipulations, among others:

Open Burning - The burning of landscape wastes shall be limited to areas located at least one-fourth mile from any inhabited building.

Fugitive Dust - Reasonable precautions will be taken to prevent the discharge of fugitive dust including the use of such materials as water, chemicals, asphalt or oil on surfaces which cause fugitive dust. Installation and use of containment or control equipment to enclose or otherwise limit the emissions resulting from the handling and transfer of dusty materials will be required. Covering, while in motion, of open-bodied vehicles transporting materials likely to give rise to airborne dust will also be required.

Visible Emissions - Exhausts from construction equipment, asphalt plants and Portland Cement Concrete batching plants are required to comply with Iowa Air Quality Commission's emission standards.

Temporary deterioration of surface water quality will result from grading, bridge construction and other construction activities. Increased turbidity and siltation, caused by erosion of exposed land and disturbance of the stream beds, will be the greatest construction impact on water quality. Runoff from disturbed areas may also increase the levels of BOD, metals, pesticides and nutrients in the streams, depending on the land use and rainfall at the time of construction. Groundwater quality is not expected to be appreciably affected by construction operations.

To reduce impacts on water quality, contractors will be required to minimize the amount of area cleared during any time period and will employ erosion control measures at all stages of construction. "Standard Specifications for Highway and Bridge Construction," Iowa Department of Transportation, will be required as a contract document. Construction will also be in compliance with the city of Des Moines Ordinance No. 9384 regarding erosion and sedimentation control. Control measures will include silt fences, silt basins, temporary berms and dikes, drains, gravel, mulches and grasses as appropriate. These measures will apply

to haul roads and borrow sites as well as the permanent right-of-way. Sanitary facilities will be required at the construction sites. Suitable storage areas and careful handling of potentially harmful materials will be required by the contractor.

Traffic patterns and existing access points near the proposed facilities will be affected by construction activities. Construction schedules will be coordinated in advance to minimize the effects of such disruption. Suitable detours will be required to maintain traffic circulation, and areas to be torn up during any time period will be controlled to limit the extent of disruption. Contractors will be required to maintain access within a specified distance of any inhabited areas to assure continued fire protection and emergency services.

ENERGY IMPACTS

The principal energy consuming requirements of highway transportation are highway construction, highway maintenance and vehicle operation. Construction energy needs may be substantial but are of short duration. On the other hand, the energy required to maintain the roadway appears to be slight but, when considered over the useful life of the highway, can also be substantial. For most highways, however, it is the fuel needed to power the vehicles that represents the major energy requirement.

Estimation of construction energy is difficult due to the many types of construction activities which may occur and the great amount of variability between projects in the energy needed to perform a given task. One method of estimating energy consumption in construction is to relate energy requirements to the cost of the construction work. It has been determined that such a relationship exists and estimates of the quantity of energy expended per dollar spent on different types of construction projects are available in the final report of National Cooperative Highway Research Program Project No. 20-7, Task 8, titled "Energy and Transportation Systems." An estimate of energy requirements for construction of the CBD Loop alternates, expressed as equivalent barrels of oil (an equivalent barrel of oil equals 5,800,000 British Thermal Units), are shown in Table 5.28.

The major determinants of maintenance energy expenditures are the length and width of roadway to be maintained and the volume and type of traffic utilizing the roadways. The construction of any new roads will add additional lane-miles to be maintained; however, the removal of traffic volumes from existing streets by the construction of new facilities will reduce the deterioration and resultant maintenance for existing streets. Thus, the energy consumed in maintaining the new roadways will at least partially be offset by reduced maintenance needs on the remaining streets.

Fuel consumption of a transportation system is related to several factors including traffic volumes, running speeds, frequency and duration of delays, the type of vehicles, the condition of the pavement, and curvature of the roadway. The major factor that is likely to have a marked effect on vehicle fuel consumption is alteration of traffic flow characteristics. Two major impediments to smooth traffic flow are traffic congestion and the movement of traffic through intersections, resulting in speed reductions, stops and delays for a major portion of the traffic.

All alternates other than No Action would improve traffic flow characteristics and reduce vehicle fuel consumption. With the No Action alternate, traffic flow conditions would not improve and would, in fact, become more interrupted as traffic volumes increase in later years.

Estimated fuel consumption for the various alternates are summarized in Table 5.29. These estimates are based on the projected traffic volumes, running speeds and estimated traffic delays. Total fuel savings throughout a 20-year design period would be in the range of 28 to 37 million gallons based on the above estimate.

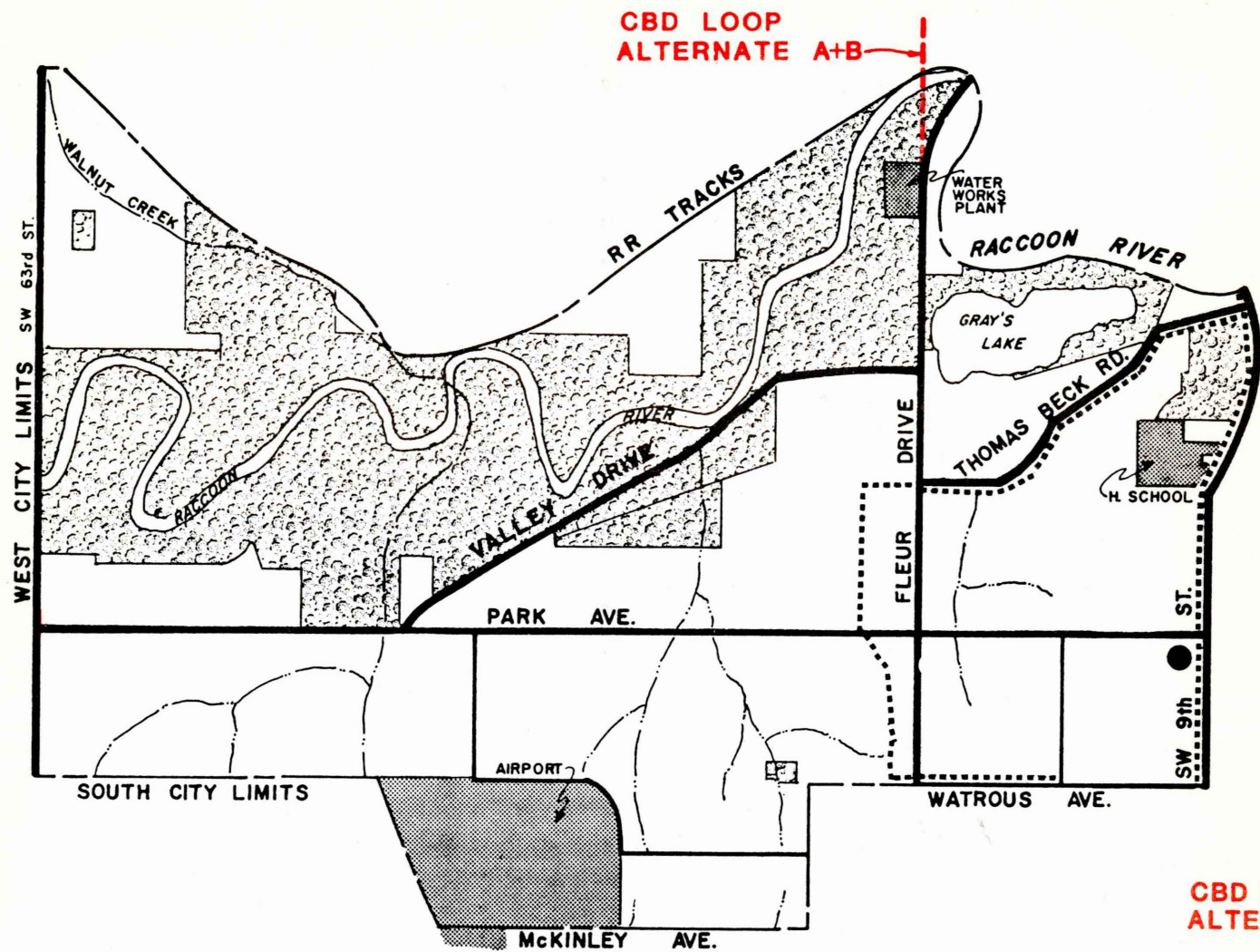
It should be emphasized that the above estimates of fuel consumption and energy usage during construction are for comparison purposes only and should not be considered as exact indicators of actual energy usage and fuel consumption. Due to the large number of variables involved, actual energy consumption may be significantly different than estimated at this stage.

TABLE 5.28
ENERGY REQUIREMENTS FOR CONSTRUCTION OF ALTERNATES OF THE
CBD LOOP

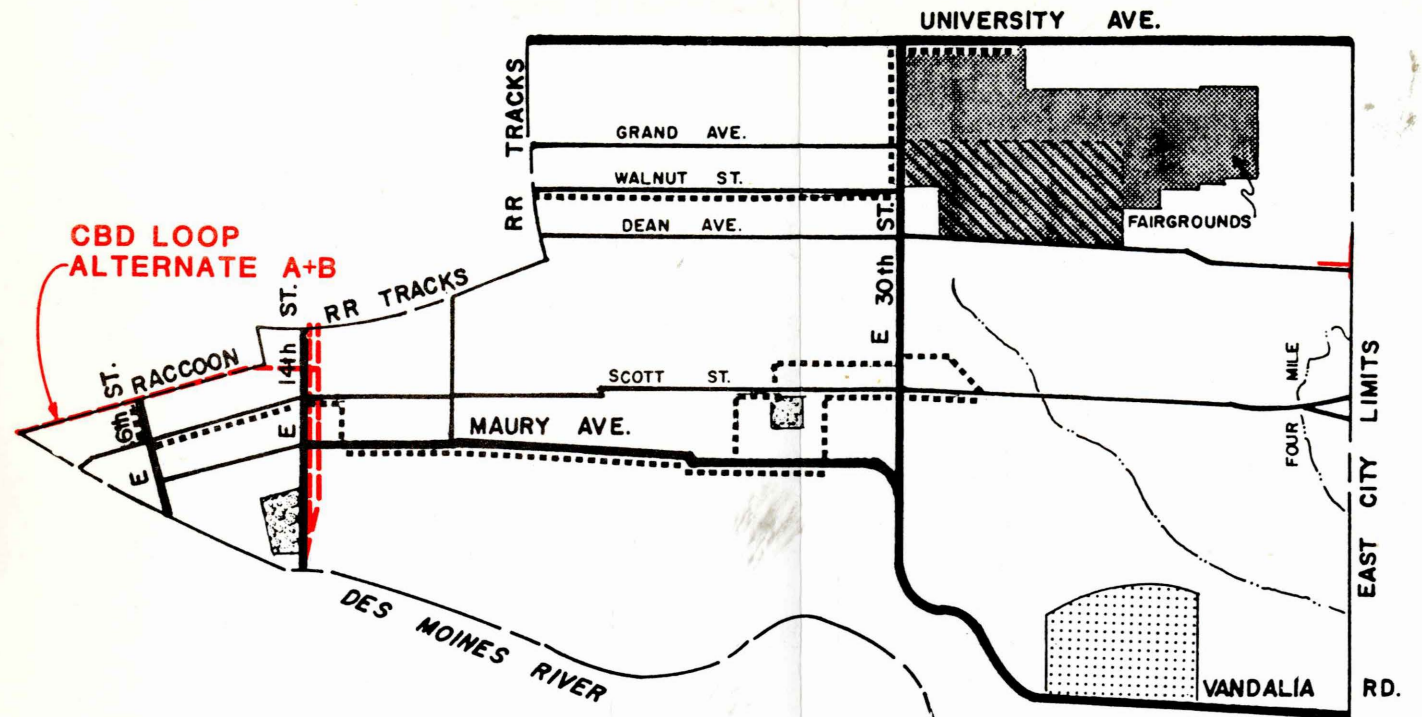
Equivalent Barrels of Oil			
Alternate	New Roadways	Associated Street Widening	Total
Alternate 1A	127,000	5,100	132,100
Alternate 2A	121,100	5,100	126,200
Alternate 1B	148,200	5,000	153,200
Alternate 2B	143,600	5,000	148,600

TABLE 5.29
PROJECTED FUEL CONSUMPTION

Alternate System	Vehicle-Miles Per Day	Total Annual Fuel Consumption (Million Gallons)
No Action	373,729	12.64
Alternate A	367,859	10.73
Alternate B	381,755	11.21

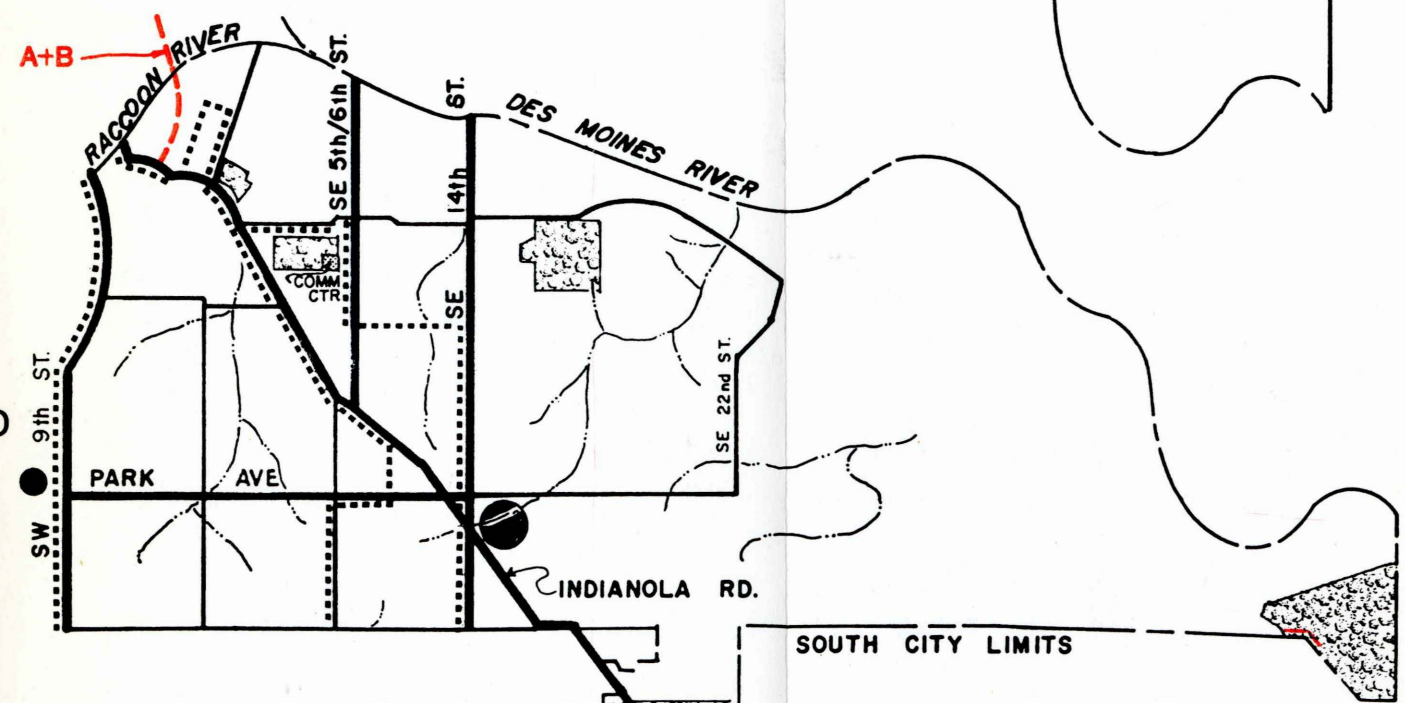


BRODY NEIGHBORHOOD

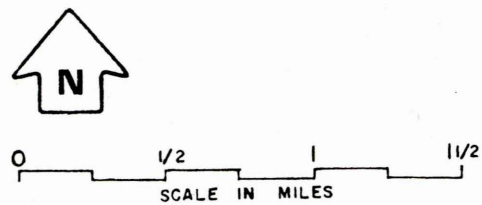


WILLARD NEIGHBORHOOD

CBD LOOP ALTERNATE A+B



WEEKS NEIGHBORHOOD



- NEIGHBORHOOD BOUNDARY
- == MAJOR STREETS
- == COLLECTOR STREETS
- BUS ROUTES
- - - DRAINAGEWAYS
- MAJOR COMMERCIAL NODE
- NEIGHBORHOOD COMMERCIAL NODE
- ▨ PARKS AND OPEN SPACE
- ▨ OTHER ACTIVITY CENTERS
- ▨ ARCHITECTURAL / HISTORIC AREA
- ▨ REHAB / REDEVELOPMENT AREA

FIGURE 5.2 BRODY, WEEKS AND WILLARD NEIGHBORHOODS
(ADAPTED FROM 1990/2000 LAND USE PLAN,
DES MOINES CITY PLAN AND ZONING COMMISSION, JULY 1978)

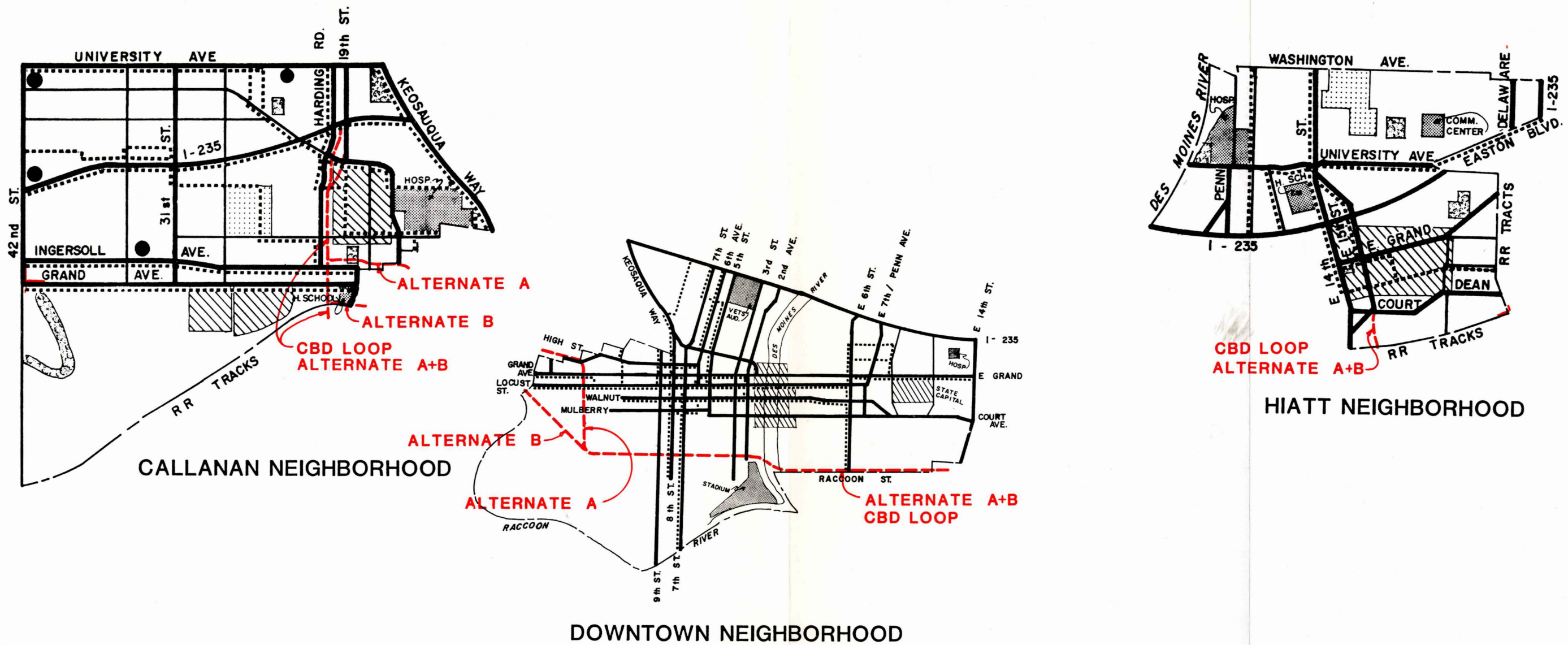


FIGURE 5.1 CALLANAN, DOWNTOWN AND HIATT NEIGHBORHOODS

(ADAPTED FROM 1990/2000 LAND USE PLAN,
DES MOINES CITY PLAN AND ZONING COMMISSION, JULY 1978)

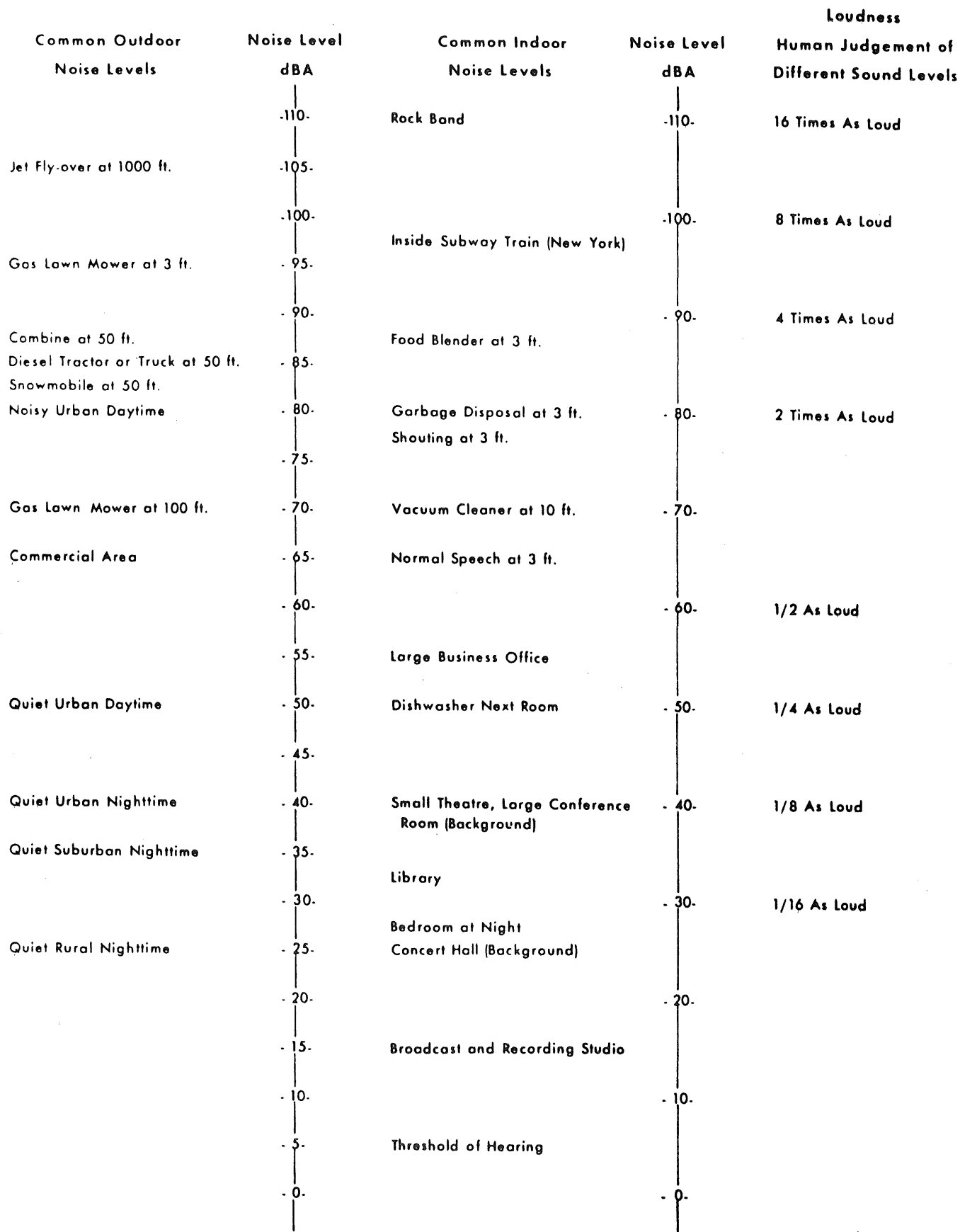


FIGURE 5.3 COMMON INDOOR AND OUTDOOR NOISE LEVELS
 (Adapted from: Bolt Beranek and Newman Inc.,
 "Fundamentals and Abatement of Highway Traffic Noise, 1973")



FIGURE 5.4 AERIAL MAP OF THE PROJECT CORRIDOR WITH CULTURAL RESOURCE SITES AND NOISE MEASUREMENT SITES (1978 AERIAL PHOTO)

FIGURE 5.5. PROPERTIES WITHIN THE CBD LOOP RIGHT-OF-WAY
THAT ARE ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES



Site 1.35. 2015 Pleasant Street



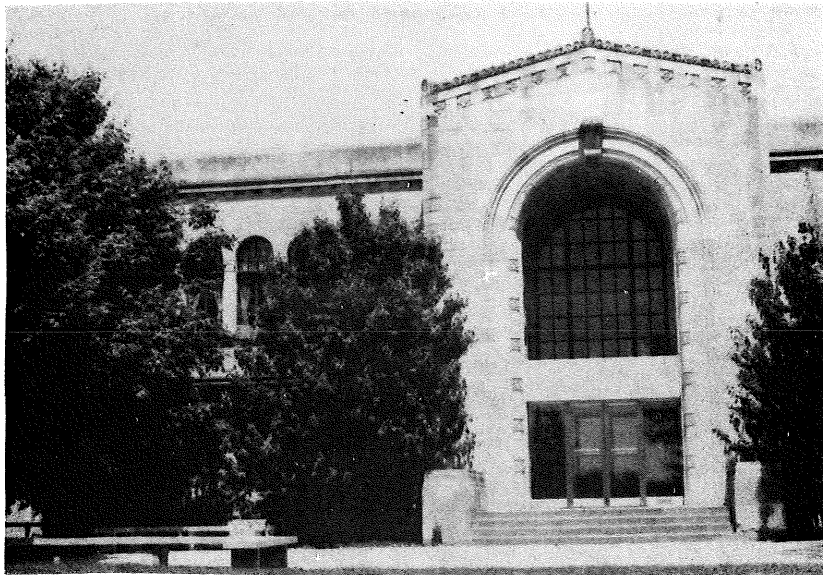
Site 1.2. 940 - 19th Street



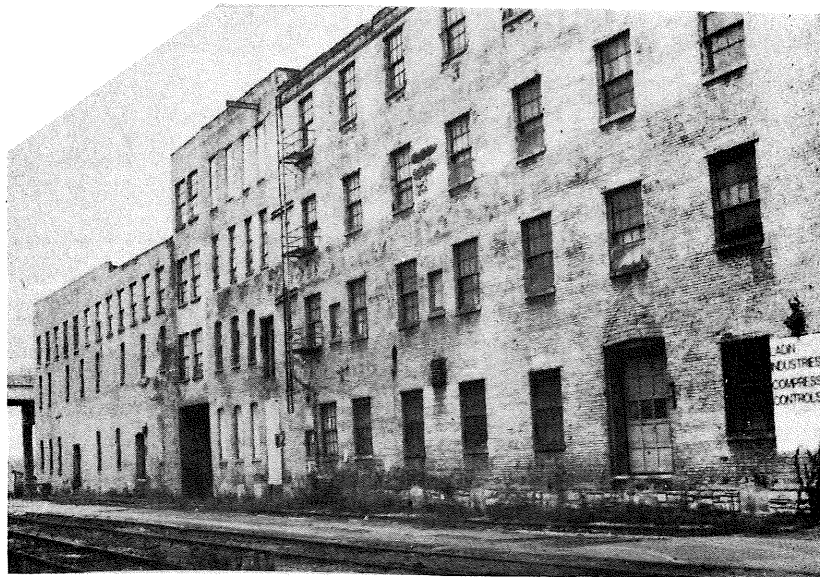
Site 2A.2. 1902 Woodland Avenue



Site 2A.18. 1440 Locust Street



Site 3.9. 2015 Grand Avenue

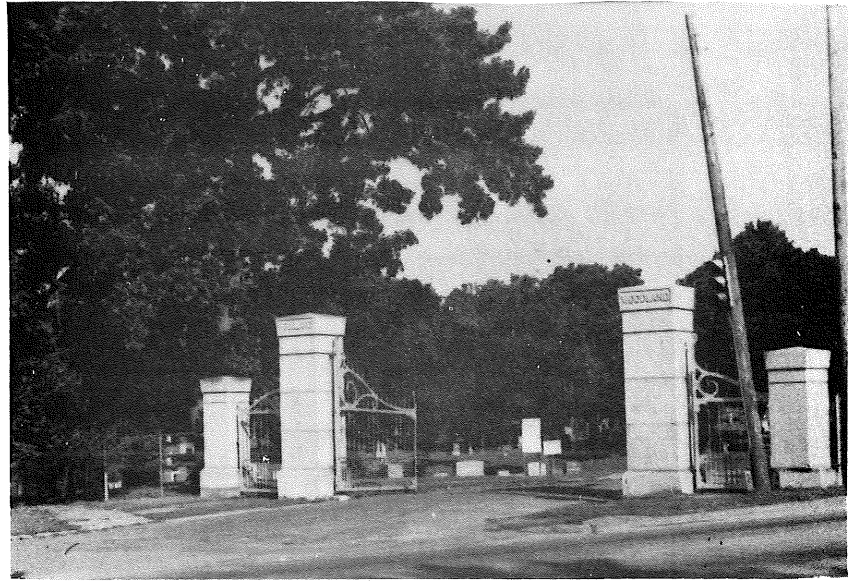


Site 5.13. 115 S.W. Eighth Street



Site 7.14. 1218 Indianola Road

FIGURE 5.6. PROPERTIES ADJACENT TO THE CBD LOOP RIGHT-OF-WAY
THAT ARE ON OR ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES



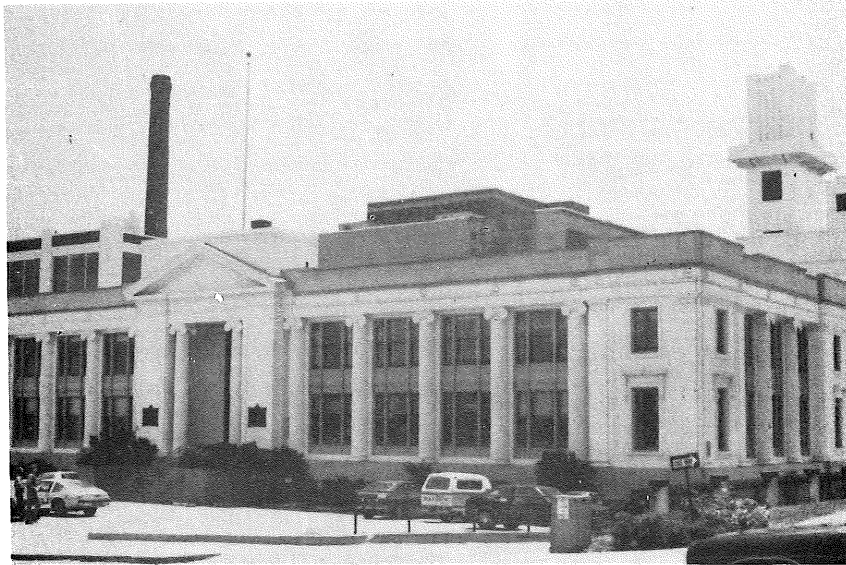
Site 1.25. Woodland Cemetery - Woodland Avenue and Harding Road



Site 2A.22. 304 - 15th Street



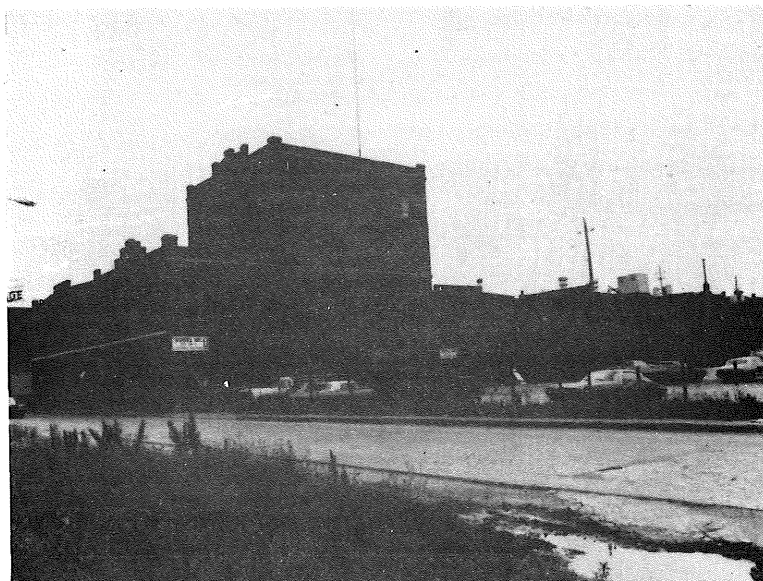
Site 3.10. 1915 Grand Avenue



Site 3.11. 1912 Grand Avenue



Site 3.12. 2000 Grand Avenue



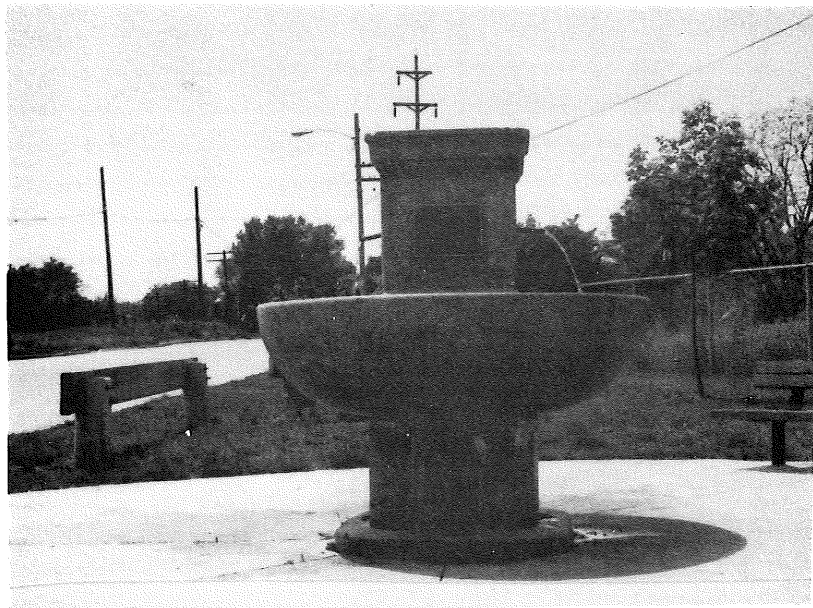
Site 5.10. 330 S.W. Third Street



Site 5.11. 226 Elm Street



Site 5.12. 216 S.W. First Street



Site 8.27. Old Southwest Water Trough - S.E. 11th Street and Scott Avenue

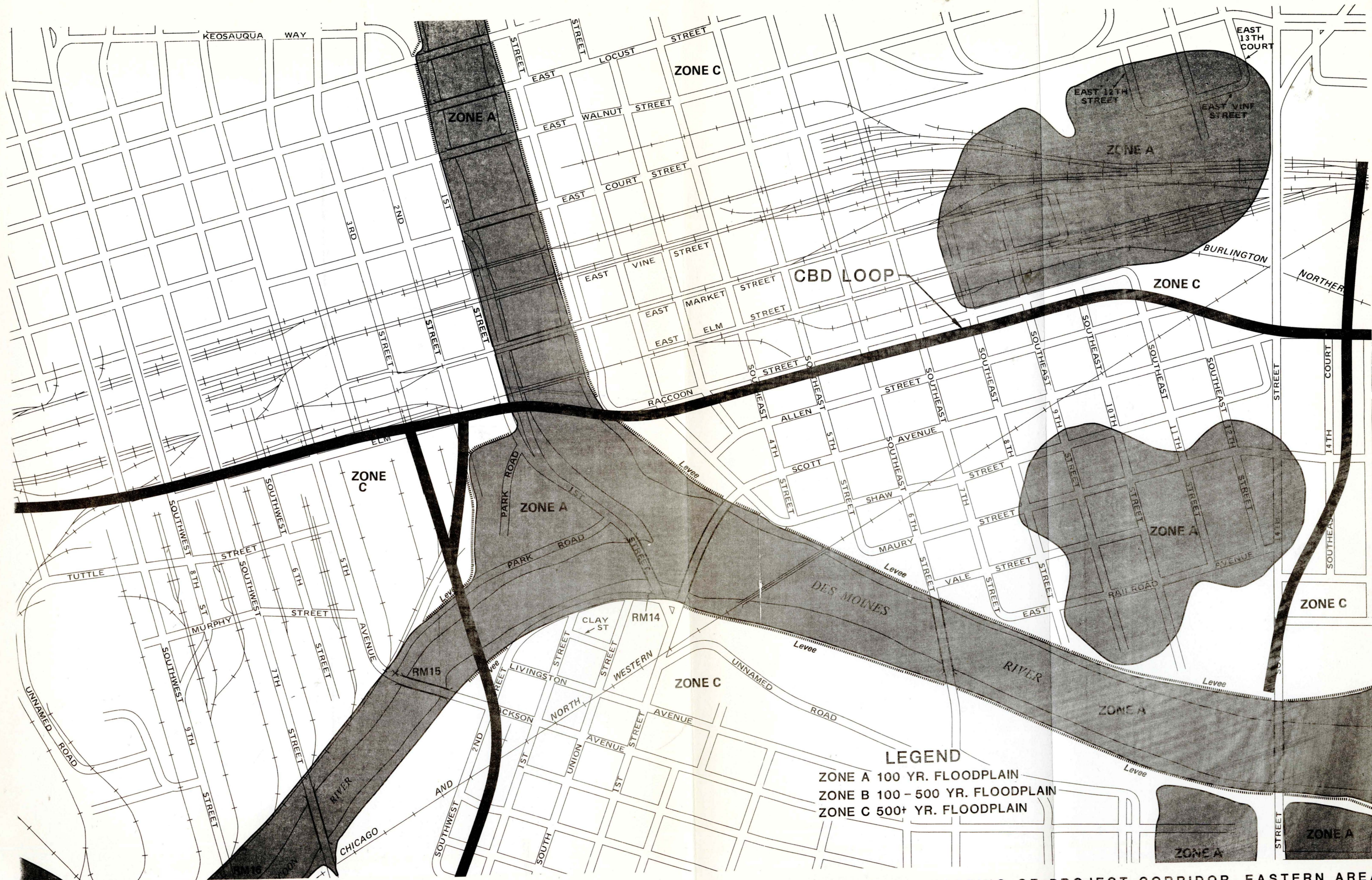


FIGURE 5.9 FLOOD PLAIN MAPPING OF PROJECT CORRIDOR, EASTERN AREA



FIGURE 5.7 AERIAL MAP OF THE PROJECT CORRIDOR IDENTIFYING ARCHAEOLOGICAL STUDY AREAS AND AFFECTED WETLANDS (1978 AERIAL PHOTO)

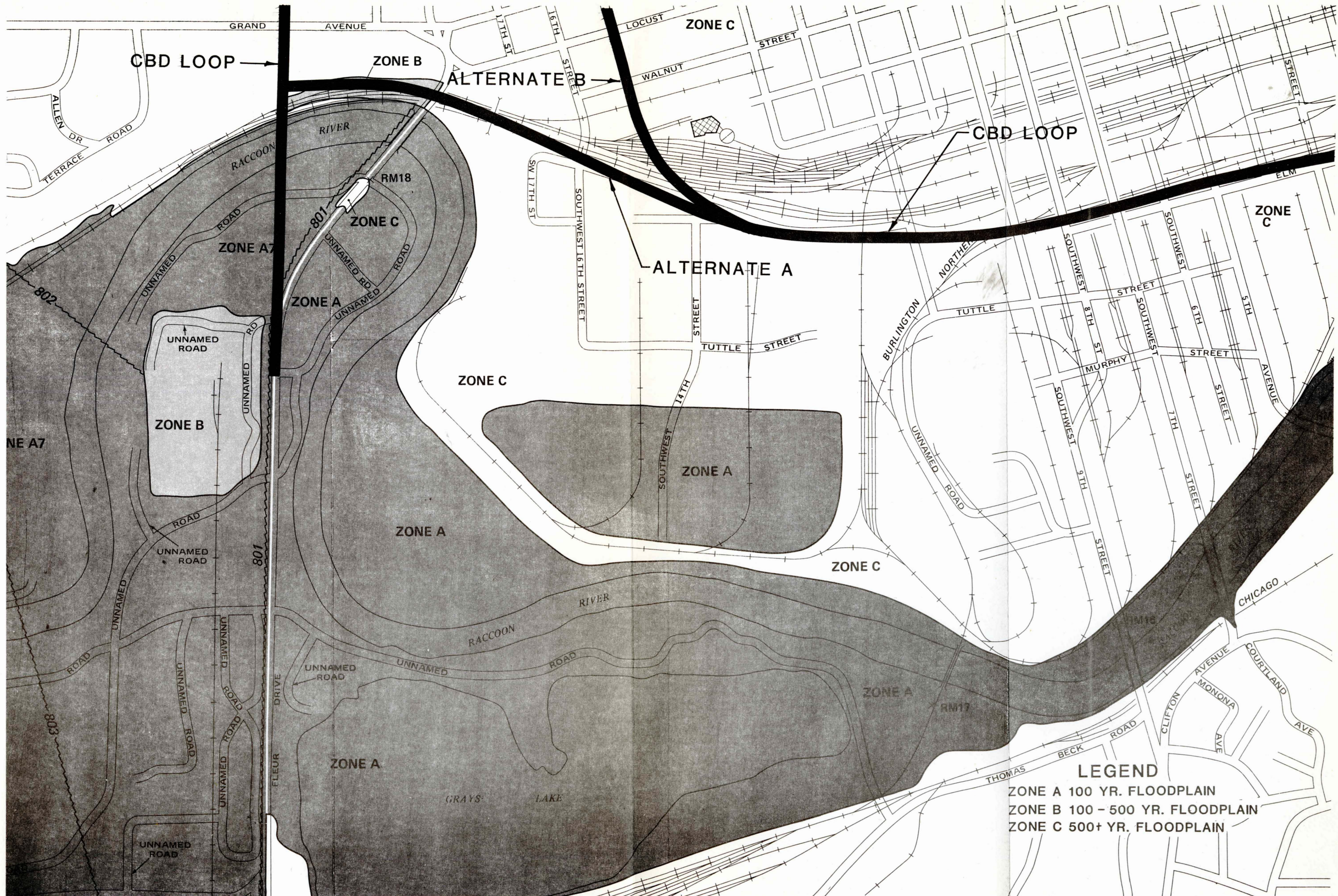


FIGURE 5.8 FLOOD PLAIN MAPPING OF THE PROJECT CORRIDOR, WESTERN AREA

KEY TO AESTHETIC SITES
FIGURE 5.10

1. Impact to area proposed for restoration as local commercial area for Sherman Hill Historic District. Potential for joint development to tie in with the plans for the Historic District. Also, potential for open space development of property to west of Harding Road to tie in with adjacent open spaces (refer to Plates 1 and 2, Appendix C).
2. Highway will be depressed in this area, a positive effect compared to the existing Harding Road which is at-grade. Potential for acquisition and open space development along each side of roadway to tie in with Woodland Cemetery and Sherman Hill Historic District (refer to Plates 1, 2, 3, 4, 5, 6, Appendix C).
3. Visual and noise intrusion into residential area in the Sherman Hill Historic District and Chamberlain Park. Consideration will be given to landscaping and noise berms that will reduce these effects. Impact only for Alternates 1A and 1B.
4. Highway will be depressed in this area and will reduce visual impact. Project will be dividing one of the older, former residential areas along Grand Avenue (usage is now primarily office) and separating several groupings of historic buildings (Plates 3, 4, 5, 6, Appendix C).
5. Project will remove upland tree vegetation and cut into a scenic bluff (Plates 3, 4, 5, 6, 7, 8, Appendix C).
6. New construction in a remote bottomland area at the base of a scenic bluff will introduce noise and visual intrusion into area visible from Water Works Park. Presence of railroad tracks already disturbs area somewhat. This segment is part of Alternate B only (Plate 8, Appendix C).
7. Visual and noise intrusion into Water Works Park in fairly remote area of park. Future plans call for non-park usage, however. Alternate B (Plate 8) will have more impact than will Alternate A (Plate 7).
8. Alternate A only divides an old, established commercial area. Control of strip development and compatibility of development with land-use planning for this area is needed (Plate 9, Appendix C).
9. Potential for development of open space land to tie in with Riverfront Development project and Riverside Park. Land already owned by city (Plate 13, Appendix C).
10. Potential for joint development of land to tie into Riverfront Development project (Plate 14, Appendix C).

11. Roadway will provide a buffer between industrial and residential area. Consideration will be given to acquisition and development of open space between the project and S.W. First Street to enhance this buffer effect (Plate 14).
12. Need for control of development at this intersection (Plate 14, Appendix C).
13. Roadway will provide a buffer between industrial and residential area. Consideration will be given to acquisition and development of open space area along this project to enhance this buffer effect (Plates 15 and 16, Appendix C).
14. Visual and noise intrusion, as well as limited access, will affect the residents of this area. Consideration will be given to acquisition of this land for joint development purposes (Plate 17, Appendix C).
15. Removal of vegetation and cut into scenic bluff (Plate 17, Appendix C).
16. New intersection will tend to encourage strip development and visual blight. Need for control of development (Plate 18, Appendix C).
17. Isolation of church and residences between ramps, CBD Loop and S.E. 14th Street. Consideration will be given to relocation of these (Plate 18, Appendix C).
18. Removal of lowland tree vegetation. Landscaping to blend in with open spaces areas to the south will be considered (Plate 18, Appendix C).
19. Isolation of businesses in this area. Consideration will be given to relocation and possible joint development of land (Plate 18, Appendix C).

SECTION 6

COMMENTS AND COORDINATION

A location study was initiated by the city of Des Moines in 1979 to analyze the location and type of facility for the CBD Loop Corridor. In conjunction with this study, an environmental impact study of the proposed project was initiated.

In late 1979, as part of the EIS study, a headquarters for receiving public input to the project was established through a private consultant retained by the city. A mailing address and toll-free telephone number for those wishing to express an opinion or receive information on the project was announced to the public and has been in operation throughout the duration of the location study and EIS process.

A Citizens' Advisory Committee for this project was established by the city in March, 1980, to assist in the scoping process. Members of this committee represent neighborhoods within the corridor, as well as civic and business leaders. Other existing committees have served as liaison between the city and the community at large.

To obtain additional public input, a door-to-door community survey of households within and adjacent to the corridor was conducted during 1980. This survey collected data on citizens' attitudes and values and served as input into the evaluation of the sociological impact of each of the proposed alternates. A survey of community leaders was also conducted to provide insights into the major goals of the community. Both these surveys and their results appear in Appendix Volume III, "Des Moines Community Survey: Central Business District Loop Arterial Project."

In February, 1980, a scoping process was conducted to receive public and agency input on the scope of issues to be addressed in accordance with CEQ Regulation 40 CFR, Part 1501.7. An eight-page document containing descriptions of the project area (including an aerial photo), details of the proposed project, the significant issues that had been identified to

date and the proposed EIS scope was distributed to agencies, citizens' groups and individuals. Comments on the scope of the study and issues and alternatives to be addressed by the EIS were solicited.

Agency response during the scoping process included responses from the following agencies: U.S. Environmental Protection Agency, U.S. Department of Interior, U.S. Army Corps of Engineers, Iowa Geological Survey, the State Historic Preservation Officer, Des Moines Independent School District and Des Moines Advisory Committee on Environmental Quality.

This input identified the following topics to be addressed in the Draft EIS:

- Noise impacts to residential areas.
- Impacts of construction in flood plains and wetlands.
- Impacts of operation and maintenance of the project on water quality.
- Impacts to Section 4(f) and 6(f) parklands.
- Impacts to historic and architecturally significant resources.
- Impacts to archaeological resources.
- Impacts to abandoned coal mines.
- Subsidence problems related to abandoned mines.
- Impacts of railroad relocations.
- Impacts to Tech High School and Edmunds Elementary School.
- Need to preserve and revitalize the neighborhood and business areas near downtown.

A meeting with representatives of the Des Moines Water Works was held on January 20, 1983. Input regarding the impact of the alternatives and the cost of utility relocation was obtained (see Section 5, Impacts to Community Facilities, for discussion).

Information about the project was presented at open public meetings held in the project corridor during 1980-1981. Meetings were held with the following groups:

Woodland-Willkie Neighborhood Priority Board
March 5, 1980; July 23, 1981; and October 15, 1981

Sherman Hill Neighborhood Association
July 20, 1981

Southeast Neighborhood Priority Board
August 18, 1981

Public input received through the neighborhood meetings, phone calls, the letters and the community survey indicated that the significant issues, as perceived by those citizens who participated in the process, centered around the following:

Consider the effects on those whose homes will be acquired for right-of-way. Give special attention to those persons who have already been relocated once when I-235 was constructed and to the long-term residents of the Roadside Neighborhood.

Consider the effects of traffic noise on residents along the new facility.

Study the feasibility of providing a pedestrian walkway from the Sherman Hill area to Woodland Cemetery if an alternate along Harding Road is selected.

Consider the impacts to the Woodland-Willkie Neighborhood for any alternates that would separate this neighborhood from the downtown area.

Minimize the impacts to historic structures in the corridor, especially in the Sherman Hill Historic District.

Analyze impacts to neighborhoods such as deterioration of property that has already occurred because of the long period of uncertainty about this project.

Study the impacts to the neighborhood in the vicinity of Edmunds School for an alternative along 15th Street. This alternative would divide the neighborhood area and come between many residences and Edmunds School.

Study the effect that the Arterial will have on the traffic volumes of local streets adjacent to the Arterial.

Study the feasibility of providing a bike trail along the Arterial that would connect the Sherman Hill area with the Gray's Lake area.

Consider the impacts to the small businesses and industries for any alternates along Raccoon Street.

Consider the impacts to the churches in the Roadside Neighborhood area.

A more detailed discussion of input received during these public meetings is included in Section 5 in the discussion of neighborhood impacts.

A meeting with the Transportation Committee of the Greater Des Moines Chamber of Commerce was held on October 15, 1981, to receive input from the business community.

These inputs were considered by the planning team in refining the scope of the EIS and the alternates to be further examined.

A general public informational meeting was held at the City Council Chambers in Des Moines on November 18, 1981, to present the results of the alternate development and scoping process and to receive further public input. Public input received at this meeting repeated many of the opinions that had been expressed at earlier meetings.

There has been excellent coordination among the IDOT, FHWA and the city of Des Moines during the planning for this project. Representatives of these agencies attended many information meetings to review the public input during the scoping process and to review alternates as they were being developed and analyzed.

In addition, several field reviews of the corridor were conducted during this period. This included three field reviews of the corridor in 1982 with the State Historic Preservation Officer (SHPO) or his representatives regarding cultural resources of the project. Comments from the SHPO about the project and the preliminary memorandum of agreement regarding significant properties appear at the end of this section.

This draft EIS will be circulated to governmental and private agencies for review and comments. Copies will also be made available to the general public. The distribution list appears in Section 7. After sufficient time has been allowed for review, a corridor public hearing will be held. Interested persons and agencies will be given an opportunity at that time to express their views on the project.

IOWA STATE HISTORICAL DEPARTMENT
DIVISION OF HISTORIC PRESERVATION

ADRIAN D. ANDERSON, DIRECTOR
STATE HISTORIC PRESERVATION OFFICER

September 17, 1982

Mr. David Cook
Project Planning
Department of Transportation
800 Lincoln Way
Ames, Iowa 50010

RE: Phase I Archaeological Investigation of the CDB Loop Arterial Project
Area *Polk County; City of Des Moines*

Dear David:

Our staff has received and reviewed the above referred report. It presents a fine example of the kinds of information possible through Phase I investigations based on establishing a predictive model for a local area. We concur with the findings of the report, and with the recommendations that further archaeological investigations are necessary. These should be conducted during the design stage of the project, and should consider all segments of the project in order to ensure their investigation no matter what the final funding.

Thank you for your assistance in completing the review process. If you have any questions, do not hesitate to call our office.

Sincerely,

Mary Ann McBride / Sr

Adrian D. Anderson, Director
State Historic Preservation Officer

ADA/clk

cc:

Lowell Richardson
Jim Thompson

MEMORANDUM OF AGREEMENT

Whereas, the Federal Highway Administration (FHWA) has determined that the Des Moines CBD Loop Arterial project will have an effect upon properties eligible for inclusion in the National Register of Historic Places and upon contributing properties within the Sherman Hills Historic District, and has requested the comments of the Advisory Council of Historic Preservation pursuant to Section 106 (and Section 110f) of the National Historic Preservation Act (16 U.S.C. 470) and its implementing regulations, "Protection on Historic and Cultural Properties (36 CFR Part 800).

Now, therefore, FHWA, the Historic Preservation Officer, and the Advisory Council on Historic Preservation agree that the Des Moines CBD Loop Arterial project shall be implemented in accordance with the attached stipulations in order to take into account the affect of the undertaking on historic properties.

Execution of the Memorandum of Agreement evidences that FHWA has afforded the Council a reasonable opportunity to comment on the undertaking and its effects on historic properties and that FHWA has taken into account the effects of its undertaking on historic properties.

Division Administrator
Federal Highway Administration

Date

State Historic Preservation Officer

Date

Executive Director
Advisory Council on Historic Preservation

Date

Chairman
Advisory Council on Historic Preservation

Date

Project M-2787
Des Moines, Iowa
CBD Loop Arterial

AGENCY PROPOSAL FOR STIPULATIONS

The Federal Highway Administration (FHWA) will ensure that the following measures are carried out.

- A. The following listed properties are eligible for the National Register and will be made available to the public for purchase and relocation within the Sherman Hills Historic District or other historic district or site approved by the State Historic Preservation Officer in accordance with the stipulation contained in Section I.D. of the Council's current Manual of Mitigation Measures. Any relocations will be in accordance with the stipulation contained in Section I.E. of the Council's current Manual of Mitigation Measures. Prior to relocation, the properties will be recorded with minimal HABS photos to show present setting.

The properties not relocated will be recorded with HABS drawings and photos prior to demolition.

1. House at 2015 Pleasant Street - Tract 1-35
 2. House at 940 19th Street - Tract 1-2
 - *3. Hillside Apartments, 1902 Woodland - Tract 2A-2 (not including garage)
 - *4. Apperson Iowa Motor Car Company, 1550 Locust
 - *5. Great Western Accident Association Building (present Green International Offices), 2015 Grand Avenue
 - *6. Clifton Heights United Presbyterian Church, 1218 Indianola Road
 - *7. Capital City Woolen Mills, 113 SW Eighth Street
- B. The following contributing properties will be recorded with minimal HABS photos to show present setting if demolished.
1. House at 944 19th Street, Tract 1-1
 2. House at 1919 Crocker Street, Tract 1-16
 3. House at 860 Harding Road, Tract 1-18
 4. House at 856 Harding Road, Tract 1-19
 5. House at 836 Harding Road, Tract 1-20
 6. House at 832 Harding Road, Tract 1-21
 7. House at 828 Harding Road, Tract 1-22
 8. House at 814 Harding Road, Tract 1-23
 9. House at 810 Harding Road, Tract 1-24

*cannot be relocated

10. House at 1936 Crocker Street, Tract 1-26
11. House at 855 Harding Road, Tract 1-27
12. House at 835 Harding Road, Tract 1-28
13. House at 2005 Leyner Street, Tract 1-29
14. House at 2008 Leyner Street, Tract 1-30
15. House at 2004 Leyner Street, Tract 1-31
16. House at 2019 Woodland, Tract 1-39
17. House at 2015 Woodland, Tract 1-40
18. House at 658 20th Street, Tract 1-43
19. House at 662 20th Street, Tract 1-44
20. House at 1919 High Street, Tract 2A-4
21. House at 1915 High Street, Tract 2A-5
22. House at 1907 High Street, Tract 2A-6
23. House at 1903 High Street, Tract 2A-7
24. House on 20th Street, Tract 2-23
- *25. Building at 1905-07 Cottage Grove, Tract 1-46
- *26. Duplex at 1913-15 Woodland, Tract 1-47
- *27. Apartments at 934-36 19th Street, Tract 1-3
- *28. Apartments at 924-26 19th Street, Tract 1-4
- *29. Apartments at 1920 Cottage Grove, Tract 1-13
- *30. Building at 1909 Cottage Grove, Tract 1-15
- *31. Apartments on Woodland, Tract 2-24

- C. Architectural salvage of properties individually eligible for the Register will be in accordance with the stipulations contained in Section I.H. of the Council's Manual of Mitigation Measures.
- D. The FHWA will notify the Keeper of the National Register within 90 days of the demolition of properties which are individually eligible for the Register.

*cannot be relocated

SECTION 7

LIST OF AGENCIES, ORGANIZATIONS AND
PERSONS TO WHOM COPIES OF THE DRAFT EIS WILL BE SENT

FEDERAL AGENCIES

Environmental Officer
U.S. Department of Housing
and Urban Development
UNIVAC Building
7100 West Center Road
Omaha, Nebraska 68106

Coordinator
Environmental Quality Activities
Office of the Secretary
U.S. Department of Agriculture
Washington, D.C. 20250

Director
Environmental Project Review
U.S. Department of the Interior
"C" Street Between 18th & 19th Streets, N.W.
Washington, D.C. 20240

Regional Environmental Officer
Office of the Regional Director
U.S. Department of Health and
Human Services
Federal Building
601 East 12th Street
Kansas City, Missouri 64106

Regional Administrator
U.S. Environmental Protection Agency,
Region 7
324 East 11th Street
Kansas City, Missouri 64106

Director
Office of Federal Activities
U.S. Environmental Protection Agency
Waterside Mall S.W.
Washington, D.C. 20460

District Commander
Second Coast Guard District
1520 Market Street
St. Louis, Missouri 63103

District Engineer
U.S. Army Corps of Engineers
Clock Tower Building
Rock Island, Illinois 61201

FEDERAL AGENCIES (Continued)

Director
Division of NEPA Affairs
U.S. Department of Energy
Mail Station E-201, GTN
Washington, D.C. 20545

Chief
Planning Branch
Federal Aviation Administration
Regional Office
601 East 12th Street
Kansas City, Missouri 64106

Division Administrator
Federal Highway Administration, Iowa Division
P.O. Box 627
Ames, Iowa 50010

Federal Railroad Administration
Bureau of Railroad Safety
1807 Federal Office Building
911 Walnut
Kansas City, Missouri 64106

Regional Chief
Urban Mass Transit Administration
6301 Rockhill Road
Colonial Square Building
Kansas City, Missouri 64141

Chief, Eastern Division of Project Review
Advisory Council on Historic Preservation
1522 K Street, N.W.
Washington, D.C. 20005

Regional Director
National Trust for Historic Preservation
Midwest Regional Office
407 South Dearborn Street, Suite 710
Chicago, Illinois 60605

STATE AGENCIES

Federal Funds Coordinator
Office for Planning and
Programming
523 East 12th Street
Des Moines, Iowa 50319

OPP Sends To:

Iowa Development Commission
Iowa Conservation Commission
Iowa Department of Environmental
Quality
State Historic Preservation Officer
Iowa Natural Resources Council
Iowa State Historical Society
Iowa Department of Agriculture
Iowa Arts Council
Office of State Archaeologist

Director
Iowa Geological Survey
123 North Capitol Street
Iowa City, Iowa 52240

State Capitol Planning Commission
Department of General Services
Hoover Building, Level A
Des Moines, Iowa 50309

REGIONAL AGENCIES

CIRALG Regional Planning Commission
1055 Sixth Avenue
Des Moines, Iowa 50309

COUNTY AGENCIES

Polk County Board of Supervisors
Polk County Administrative Office Building
Second and Court
Des Moines, Iowa 50309

Polk County Conservation Board
Jester Park
Granger, Iowa 50109

Polk County Engineer
5885 N.E. 14th
Des Moines, Iowa 50313

Polk County Physical Planning Department
5895 N.E. 14th
Des Moines, Iowa 50313

CITY OFFICIALS AND AGENCIES

Honorable Mayor Peter Crivaro
City Hall
East First and Locust
Des Moines, Iowa 50307

Des Moines City Council
City Hall
East First and Locust
Des Moines, Iowa 50307

Director of Public Works
City of Des Moines
City Hall
East First and Locust
Des Moines, Iowa 50307

Des Moines Water Works
10th and Locust
Des Moines, Iowa 50307

Des Moines School Board
18th and Grand
Des Moines, Iowa 50307

Des Moines Metropolitan Transit
Authority
1100 MTA Lane
Des Moines, Iowa 50309

Woodland-Willkie Neighborhood Priority
Board
939 Harding Road
Des Moines, Iowa 50314

Southeast Neighborhood Priority Board
S.E. 25th and Maury
Des Moines, Iowa 50317

Pioneer-Columbus Neighborhood
Priority Board
2100 S.E. Fifth Street
Des Moines, Iowa 50315

PRIVATE GROUPS AND INDIVIDUALS

Community Action Research Group
P.O. Box 1232
University Station
Ames, Iowa 50010

Polk County Historical Society
317 S.W. 42nd Street
Des Moines, Iowa 50312

Willkie House
900 - 17th Street
Des Moines, Iowa 50314

Spanish Speaking People's Commission
507 - 10th Street
Des Moines, Iowa 50309

Native American Project on
Alcoholism
517 - 14th Street
Des Moines, Iowa 50309

Gateway Opportunity Center
801 Forest Avenue
Des Moines, Iowa 50314

Proteus
4485 Delaware Street
Des Moines, Iowa 50313

Sherman Hills Neighborhood Association, Inc.
1706 Woodland
Des Moines, Iowa 50309

Chamber of Commerce of Greater
Des Moines
Eighth and High
Des Moines, Iowa 50307

Iowa Confederation of Environmental
Organizations
Box 1147
Ames, Iowa 50010

ACORN
617 East Grand
Des Moines, Iowa 50309

Citizens for Community Improvement
1521 Sixth
Des Moines, Iowa 50314

OEDP
City Manager's Office
East First and Locust
Des Moines, Iowa 50307

National Association for the
Advancement of Colored People
900 - 17th Street
Des Moines, Iowa 50314

REPOSITORIES FOR THE DRAFT EIS

Copies of the Draft EIS will be available for public review at the following locations:

City Clerk's Office
City Hall
East First and Locust
Des Moines, Iowa 50307

Des Moines Public Library
Main Library
First and Locust
Des Moines, Iowa 50307

East Side Branch Library
2559 Hubbell
Des Moines, Iowa 50317

Midcity Branch Library
1305 University Avenue
Des Moines, Iowa 50314

SECTION 8

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Ames, Iowa

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Mr. Bruce V. Johnson, Assistant Bridge Engineer
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Iowa Division of Historic Preservation
Des Moines, Iowa

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Mr. Ralph Christian, Architectural History

APPENDIX A

TABLE A.1
AVERAGE DAILY TRAFFIC VOLUMES

Location		Average Daily Traffic Volume** (Year 2000)			Existing Daily Traffic Volume
		No Action	A	B	
Site No.*	Street				
<u>North-South Streets</u>					
1	42nd Street	1,580	5,120	5,250	4,030
2	42nd Street	5,330	11,540	12,460	12,580
3	42nd Street	5,580	5,510	5,470	14,330
4	41st Street	4,320	4,270	4,240	NA
5	31st Street	4,300	3,650	3,590	NA
6	31st Street	15,370	15,280	16,810	NA
7	31st Street	8,020	7,830	7,960	NA
8	28th Street	3,730	4,360	4,370	2,090
9	28th Street	260	850	1,050	NA
10	28th Street	550	690	690	NA
11	28th Street	450	1,750	1,550	3,930
12	Fleur Drive	18,350	24,000	24,710	24,230
13	Fleur Drive	29,910	20,070	22,670	22,610
14	Fleur Drive	29,490	27,010	30,980	28,890
15	N-S Segment CBD	---	21,880	23,000	---
16	N-S Segment CBD	---	21,880	31,010	---
17	N-S Segment CBD	19,120	24,540	22,780	---
18	N-S Segment CBD	11,090	12,390	12,320	14,140
19	Harding Road	7,450	7,860	9,320	12,450
20	Center Street	11,020	---	---	NA
21	N-S Segment CBD	---	12,150	10,460	---
22	N-S Segment CBD	14,590	16,900	17,130	9,280
23	19th Street	11,340	11,770	12,580	10,740
24	19th Street	7,150	700	1,180	4,900
25	19th Street	3,010	4,640	2,920	NA
26	19th Street	14,590	3,600	4,300	NA
27	Fleur Drive	29,490	5,100	7,900	28,890
28	18th Street	30,140	8,670	9,080	25,500
29	18th Street	10,280	670	2,960	6,400
30	17th Street	7,200	7,420	7,140	7,200
31	17th Street	1,540	1,260	1,680	NA
32	17th Street	600	170	320	NA

TABLE A.1
 AVERAGE DAILY TRAFFIC VOLUMES
 (CONTINUED)

Location		Average Daily Traffic Volume** (Year 2000)			Existing Daily Traffic Volume
		No Action	A	B	
Site No.*	Street				
<u>North-South Streets (Continued)</u>					
33	16th Street	5,610	5,000	6,720	5,610
34	15th Street	2,590	10,330	10,310	NA
35	15th Street	3,100	12,500	3,700	3,100
36	15th Street	5,390	100	5,330	NA
37	15th Street	4,730	1,540	3,660	5,400
38	15th Street	7,910	7,240	6,610	NA
39	Keosauqua Way	11,300	11,380	10,300	13,380
40	S.W. 14th Street	480	480	480	1,270
41	S.W. Ninth Street	15,390	17,620	16,910	21,990
42	S.W. Ninth Street	16,180	21,840	21,210	NA
43	12th Street	7,400	7,100	6,500	7,400
44	Ninth Street	19,430	21,880	21,210	NA
45	Ninth Street	22,890	22,420	24,230	19,250
46	Ninth Street	10,640	11,100	10,770	12,600
47	Ninth Street	11,900	13,000	12,600	11,900
48	Ninth Street	9,180	8,830	8,390	700
49	Ninth Street	4,450	4,420	4,580	5,220
50	Ninth Street	140	160	160	5,230
51	13th Street	100	100	100	1,160
52	Eighth Street	11,580	13,160	9,580	7,900
53	Eighth Street	11,500	13,000	10,500	11,500
54	Seventh Street	9,270	4,730	3,720	12,100
55	Seventh Street	8,330	3,550	2,280	9,200
56	Seventh Street	9,300	4,920	3,460	7,500
57	Seventh Street	7,870	5,820	6,950	11,370
58	Sixth Avenue	22,770	21,137	20,960	14,100
59	Sixth Avenue	12,070	11,400	11,310	16,100
60	Sixth Avenue	12,590	12,140	11,980	NA
61	Fifth Avenue	6,730	4,320	4,190	NA
62	Fifth Avenue	7,870	5,820	5,670	6,260
63	S. Union Street	100	100	100	NA
64	Indianola Connection	---	14,830	13,890	---

TABLE A.1
AVERAGE DAILY TRAFFIC VOLUMES
(CONTINUED)

Location		Average Daily Traffic Volume** (Year 2000)			Existing Daily Traffic Volume
		No Action	A	B	
Site No.*	Street				
North-South Streets (Continued)					
65	Indianola Connection	---	7,520	7,370	---
66	Indianola Connection	---	7,310	6,520	---
67	Third Street	9,340	9,550	9,560	270
68	Third Street	9,340	10,860	10,540	5,200
69	Third Street	9,500	9,390	8,940	11,060
70	Second Avenue	13,250	14,420	14,340	17,550
71	Second Avenue	8,540	10,620	10,000	1,610
72	Second Avenue	13,400	14,200	13,200	13,400
73	Second Avenue	17,150	15,770	14,220	14,610
74	S.E. First Street	13,860	3,830	3,570	NA
75	S.E. First Street	17,280	6,600	6,280	12,200
76	First Street	12,510	2,180	2,100	10,140
77	First Street	6,650	1,430	1,360	3,300
78	Scott Avenue	5,860	4,430	4,190	7,860
79	E. First Street	2,800	3,000	3,000	2,800
80	Indianola Avenue	2,580	13,280	16,140	5,870
81	Indianola Avenue	13,760	13,280	14,700	5,360
82	S.E. Sixth Street	3,020	1,150	1,150	5,200
83	S.E. Sixth Street	5,280	1,690	1,670	7,280
84	S.E. Sixth Street	4,670	1,150	1,150	5,090
85	E. Sixth Street	5,950	990	990	5,200
86	E. Sixth Street	4,900	4,680	4,570	NA
87	E. Sixth Street	8,690	7,290	7,010	NA
88	E. Sixth Street	7,860	7,280	7,000	16,000
89	Pennsylvania Avenue	5,710	5,270	5,210	13,030
90	E. Seventh Street	1,600	1,480	1,400	NA
91	E. Seventh Street	6,070	5,920	5,730	6,270
92	E. Ninth Street	2,780	2,400	2,390	NA
93	E. Ninth Street	2,590	2,390	2,390	4,980
94	E. 12th Street	4,000	4,100	4,100	NA
95	E. 12th Street	1,510	1,610	1,610	NA
96	E. 12th Street	2,050	2,050	2,050	600
97	S.E. 14th Street	41,130	44,860	43,600	31,000

TABLE A.1
AVERAGE DAILY TRAFFIC VOLUMES
(CONTINUED)

Location		Average Daily Traffic Volume** (Year 2000)			Existing Daily Traffic Volume
		No Action	A	B	
Site No.*	Street				
<u>North-South Streets (Continued)</u>					
98	S.E. 14th Street	40,080	50,730	48,530	31,000
99	S.E. 14th Street	49,020	27,260	26,290	35,000
100	S.E. 14th Street	23,890	28,200	27,450	17,300
101	E. 14th Street	20,140	22,040	20,840	15,700
102	E. 14th Street	10,280	10,980	11,000	10,400
103	E. 14th Street	21,210	22,210	22,220	29,700
104	E. 15th Street Ext.	---	25,710	24,570	---
105	E. 15th Street Ext.	---	29,520	28,800	---
106	E. 15th Street	25,130	---	---	16,600
107	E. 15th Street	26,320	28,030	27,170	17,100
108	E. 18th Street	930	760	760	7,190
109	E. 18th Street	2,130	2,130	2,130	2,940
110	Delaware Avenue	3,180	3,180	3,180	NA
208	E. 15th Street Ext.	---	28,780	27,750	---
<u>East-West Streets</u>					
111	University Avenue	7,270	7,340	7,380	3,430
112	University Avenue	6,630	6,190	6,720	14,310
113	University Avenue	12,020	12,130	12,690	11,350
114	University Avenue	17,880	17,690	17,630	17,820
115	University Avenue	14,560	14,430	14,380	NA
116	University Avenue	33,600	33,140	33,010	NA
117	Cottage Grove Ave.	1,200	1,280	1,260	3,140
118	Cottage Grove Ave.	2,810	3,840	3,890	7,050
119	Kingman Boulevard	1,710	1,620	1,650	NA
120	Kingman Boulevard	1,040	1,060	1,060	3,390
121	Day Street	2,760	2,550	2,560	NA
122	Walker Street	5,680	5,670	5,670	NA
123	I-235	68,700	69,910	69,930	63,500
124	I-235	61,550	60,600	56,800	64,600
125	I-235	63,190	62,940	59,130	64,600
126	I-235	56,620	55,250	51,020	55,700

TABLE A.1
AVERAGE DAILY TRAFFIC VOLUMES
(CONTINUED)

Location		Average Daily Traffic Volume** (Year 2000)			Existing Daily Traffic Volume
		No Action	A	B	
Site No.*	Street				
<u>East-West Streets (Continued)</u>					
127	I-235	71,430	66,450	62,680	63,600
128	I-235	63,430	59,060	55,460	59,300
129	I-235	64,090	61,980	61,650	53,300
130	Crocker Street	7,690	11,290	8,600	NA
131	Crocker Street	10,860	9,110	7,830	NA
132	Center Street	2,720	2,800	2,800	NA
133	Center Street	230	100	100	270
134	Center Street	5,720	4,450	4,770	NA
135	Keosauqua Way	21,950	19,960	18,780	20,760
136	Park Street	3,660	3,480	3,160	1,590
137	Park Street	1,390	1,480	1,330	NA
138	Keosauqua Way	5,260	5,120	4,300	NA
139	Keosauqua Way	4,650	5,210	5,210	4,000
140	Woodland Avenue	1,660	1,520	1,520	NA
141	Woodland Avenue	1,830	2,390	2,590	1,050
142	Woodland Avenue	1,770	1,260	840	4,240
143	Woodland Avenue	5,580	4,060	2,650	NA
144	Ingersoll Avenue	8,300	9,700	12,340	NA
145	Ingersoll Avenue	10,500	11,630	20,560	NA
146	Ingersoll Avenue	13,000	7,120	9,350	15,650
147	Ingersoll Avenue	7,410	5,330	7,900	6,600
148	High Street	6,900	4,800	7,600	6,900
149	High Street	6,900	4,800	7,600	6,900
150	High Street	9,990	8,260	9,220	2,000
151	Grand Avenue	9,180	9,420	8,860	8,850
152	Grand Avenue	11,480	11,210	6,990	NA
153	Grand Avenue	21,000	14,330	10,170	21,000
154	Grand Avenue	27,800	13,630	9,000	27,810
155	Grand Avenue	19,100	13,500	14,200	19,100
156	Grand Avenue	18,500	13,100	13,700	18,500
157	Grand Avenue	9,600	6,800	7,100	9,600
158	Grand Avenue	11,000	7,790	8,170	11,360
159	Grand Avenue	9,500	9,500	9,500	9,500
160	Grand Avenue	11,000	12,580	12,800	4,000

TABLE A.1
AVERAGE DAILY TRAFFIC VOLUMES
(CONTINUED)

Location		Average Daily Traffic Volume** (Year 2000)			Existing Daily Traffic Volume
		No Action	A	B	
Site No.*	Street				
<u>East-West Streets (Continued)</u>					
161	Grand Avenue	12,790	14,930	15,130	12,700
162	Hubbell Avenue	11,650	14,090	14,330	12,970
163	Grand Avenue	1,560	1,260	1,260	NA
164	Locust Street	9,200	6,500	6,830	9,200
165	Locust Street	11,200	7,930	8,300	11,320
166	Locust Street	7,000	4,960	5,200	7,000
167	Locust Street	5,800	4,100	4,300	5,800
168	Walnut Street	4,400	3,120	3,300	4,400
169	Walnut Street	7,200	5,100	5,300	7,200
170	Walnut Street	8,000	5,660	5,940	8,050
171	Walnut Street	7,300	5,170	5,400	7,300
172	Walnut Street	5,740	4,070	3,970	5,020
173	Walnut Street	4,500	3,970	3,970	4,660
174	Walnut Street	600	600	600	4,590
175	Walnut Street	40	40	40	NA
176	Mulberry Street	1,230	870	900	NA
177	Mulberry Street	7,700	5,450	5,720	7,700
178	Court Avenue	6,000	4,250	4,460	6,000
179	Court Avenue	8,300	5,880	6,170	8,300
180	Court Avenue	6,400	4,800	4,800	6,400
181	Court Avenue	6,900	5,020	5,060	6,900
182	Court Avenue	4,560	5,290	5,370	5,750
183	Dean Avenue	4,420	4,960	5,000	NA
184	E-W Segment CBD	---	---	13,090	---
185	E-W Segment CBD	---	10,330	22,710	---
186	E-W Segment CBD	---	12,820	17,850	---
187	E-W Segment CBD	---	14,320	16,980	---
188	E-W Segment CBD	---	18,690	20,920	---
189	Scott Avenue	500	19,470	800	---
190	Scott Avenue	100	90	90	500
191	Maury Street	6,850	530	530	---
192	Maury Street	5,920	5,370	5,400	10,200
193	Valley Drive	3,530	11,650	10,900	NA
194	Valley Drive	2,700	3,320	3,380	1,800

FIGURE 5.10 AERIAL MAP OF THE PROJECT CORRIDOR DEPICTING AESTHETIC CONSIDERATIONS



LEGEND

↑ POINTS WITH GOOD VIEWS FROM THE ROAD

○ AREAS OF AESTHETIC IMPACT - SEE KEY

TABLE A.1
AVERAGE DAILY TRAFFIC VOLUMES
(CONTINUED)

Location		Average Daily Traffic Volume** (Year 2000)			Existing Daily Traffic Volume
		No Action	A	B	
Site No.*	Street				
<u>East-West Streets (Continued)</u>					
195	Valley Drive	6,610	6,020	7,310	2,150
196	Thomas Beck Road	5,020	5,020	3,350	7,930
197	Thomas Beck Road	6,600	7,450	4,940	7,580
198	Indianola Avenue	20,680	23,480	25,700	11,820
199	Indianola Avenue	18,570	18,580	20,890	14,950
200	Indianola Avenue	16,180	15,570	17,160	8,870
201	Hartford Avenue	5,130	1,740	1,700	3,410
202	Hartford Avenue	9,360	7,200	6,190	9,070
203	Hartford Avenue	1,880	2,490	2,510	NA
204	Park Avenue	9,530	7,930	7,180	8,590
205	Park Avenue	18,840	16,440	15,900	8,410
206	Park Avenue	20,540	19,380	19,240	4,770
207	Park Avenue	15,770	15,570	15,560	3,860

*See Figure A-1 for location of traffic volume.

**Traffic volumes as projected by IDOT.

NA-Traffic counts not available.

--- Roadway does not currently exist or would not be functional under the particular alternate under consideration.

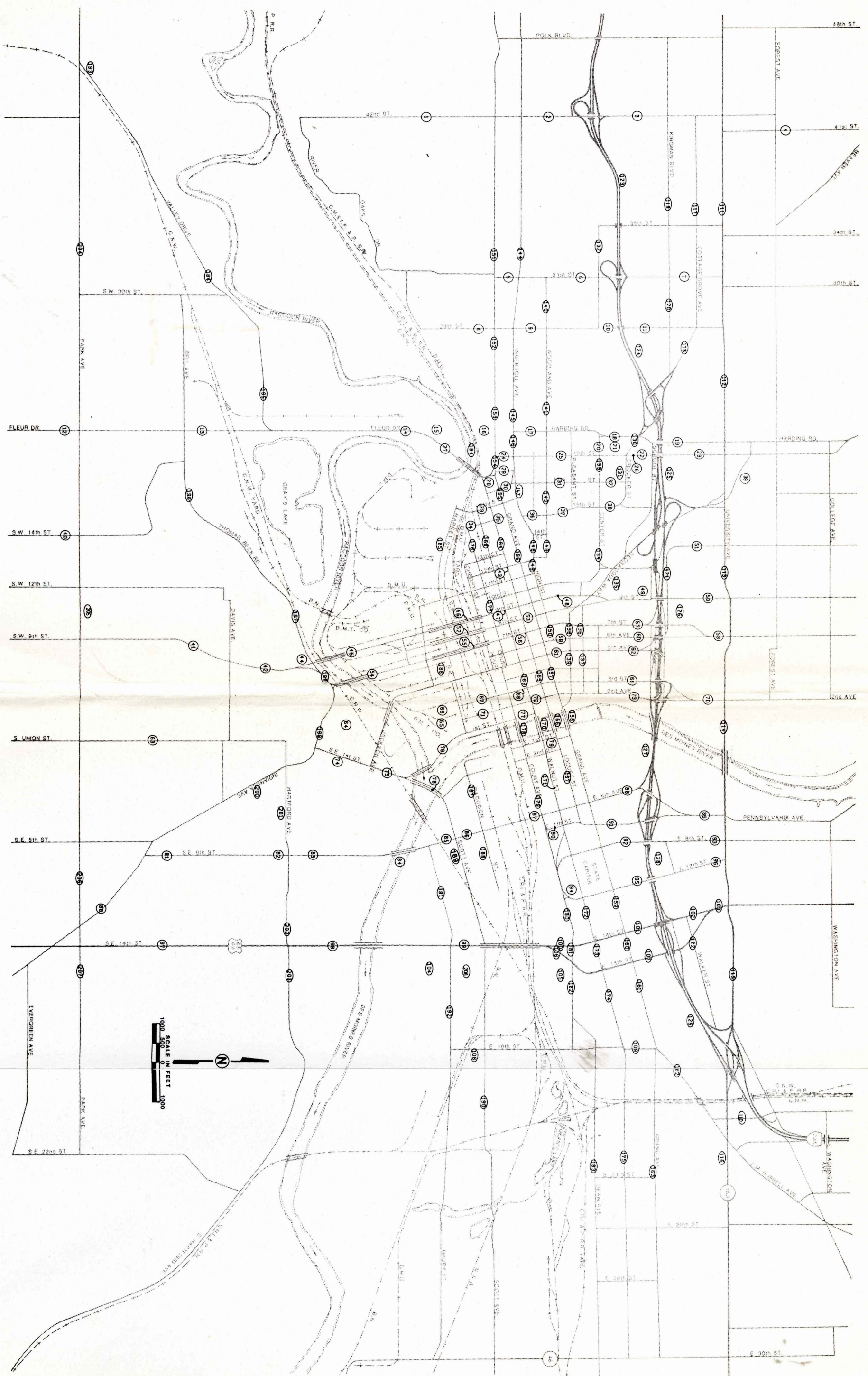
TABLE A.2 GEOMETRIC DESIGN CRITERIA FOR PROPOSED ROADWAYS

ELEMENTS OF DESIGN	C.B.D. LOOP	RAMPS	15TH ST. EXTENSION * INDIANOLA AVE. CONNECTION	E. 15TH ST. EXTENSION
A. DESIGN SPEED, MILES PER HOUR	45	25 DESIRED MIN. (20 MIN.)	30	45
B. STOPPING SIGHT DISTANCE, MINIMUM (BASED UPON 3.75 FT. EYE HEIGHT AND 6 IN. OBJECT HEIGHT)	325	160' (120' MIN.)	200'	325'
C. HORIZONTAL ALIGNMENT				
1) CURVATURE, MAXIMUM	8°30'	150' RADIUS (DESIRED MIN.)	21°00'	8°30'
2) SUPERELEVATION		(90' RADIUS - MIN.)		
A. MINIMUM RATE		ACCORDING TO AASHTO POLICY -		
B. MAXIMUM RATE	0.06 FT. PER FT.	0.06 FT. PER FT.	0.06 FT. PER FT.	0.06 FT. PER FT.
C. MINIMUM TRANSITION RATIO	1 TO 200	1 TO 100	1 TO 100	1 TO 200
D. MAXIMUM CROSSOVER SLOPE RATIO	0.07 FT. PER FT.	0.07 FT. PER FT.	0.07 FT. PER FT.	0.07 FT. PER FT.
E. TRANSITIONS	USE SPIRALS FOR ALL CURVES SHARPER THAN 1°45'	30% EQUIV. SPIRAL LENGTH ON CURVE	USE SPIRALS FOR ALL CURVES SHARPER THAN 4°00'	USE SPIRALS FOR ALL CURVES SHARPER THAN 1°45'
D. VERTICAL ALIGNMENT				
1) DESIRABLE MAXIMUM GRADES	4%	4%	4%	4%
2) ABSOLUTE MAXIMUM GRADES	6%	6.5%	7%	6%
3) ABSOLUTE MINIMUM GRADES	0.5%	0.5%	0.5%	0.5%
4) VERTICAL CURVES				
A. DESIRABLE MINIMUM LENGTH		ACCORDING TO AASHTO POLICY -		
B. ABSOLUTE MINIMUM LENGTH	150'	100'	100'	150'
E. CLEARANCES				
1) MINIMUM HORIZONTAL (WITHOUT GUARDRAIL OR BARRIER)				
A. TO STRUCTURE ON RIGHT	30'-0"	12'-0"	10'-0"	30'-0"
B. TO STRUCTURE ON LEFT	18'-0"	10'-0"	10'-0"	30'-0"
2) MINIMUM VERTICAL				
A. OVER C.B.D. LOOP PAVEMENT	14'-6"	14'-6"	—	14'-6"
B. OVER RAILROADS, MAIN LINES	23'-0"	23'-0"	23'-0"	23'-0"
C. OVER CROSSROAD PAVEMENT	14'-6"	14'-6"	14'-6"	—
F. CROSS SECTIONS				
1) PAVEMENT LANE WIDTH, MINIMUM	12'-0"	16'-0"	12'-0"	12'-0"
2) MEDIAN WIDTH	16'-0" F-F VICINITY AT-GRADE INTERSECTIONS 4'-0" F-F MINIMUM	—	4'-0" F-F	—
3) SHOULDER WIDTH				
A. RIGHT SHOULDER	10'-0"	6'-0"	10'-0"	10'-0"
B. LEFT SHOULDER	10'-0" (WHERE APPLICABLE)	4'-0"	10'-0"	10'-0" (WHERE APPLICABLE)
G. LEVEL OF SERVICE, MINIMUM	C	C	C	C

*INCLUDES PORTION EAST-WEST CBD LOOP FROM INGERSOLL AVE. TO MARKET ST. IN ALTERNATE A AND 15TH ST. EXTENSION FROM WALNUT ST. TO TUTTLE ST. EXTENSION IN ALTERNATE B.

A.8

FIGURE A.2 INDEX MAP FOR TRAFFIC VOLUMES TABULATED IN TABLE A.1



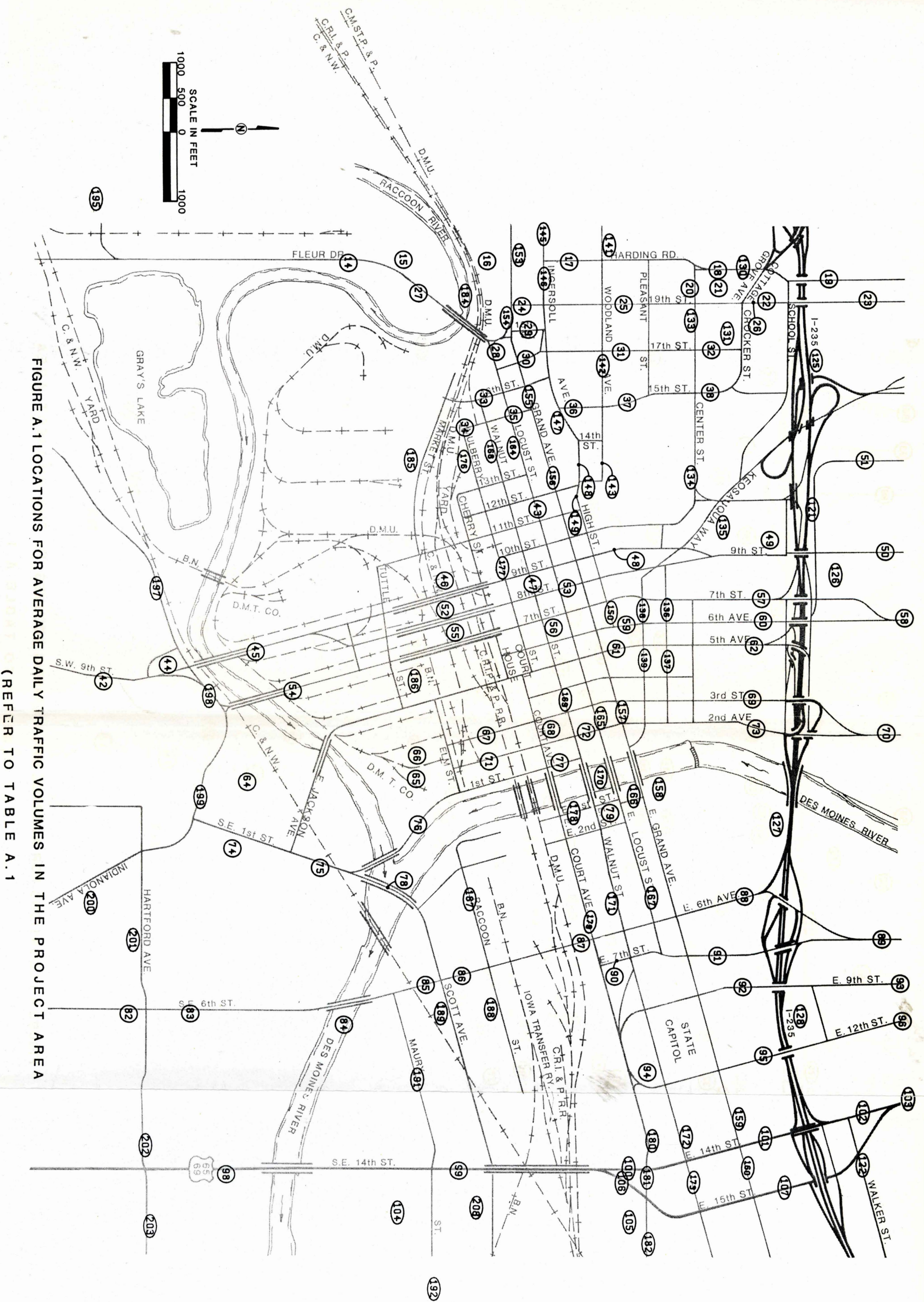


FIGURE A.1 LOCATIONS FOR AVERAGE DAILY TRAFFIC VOLUMES IN THE PROJECT AREA

(REFER TO TABLE A.1)

APPENDIX B

APPENDIX B.1
CITY OF DES MOINES LAND-USE POLICIES

(Adapted from Proposed 1990/2000 Land Use
Plan, Plan and Zoning Commission, July, 1978)

GENERAL GROWTH AND DEVELOPMENT

Growth Policy

Actively promote good quality residential development within the city and, at the same time, discourage "leap-frog" growth outside of the existing limits of the cities in the metro area by restricting sewer and water extensions and transportation improvements that are not consistent with adopted areawide utility, land use, and transportation plans.

Energy Policy

Increase the potential use of mass transit by locating higher intensity developments (e.g., shopping areas, apartments, employment centers) along major thoroughfares. High- and medium-density residential development should be encouraged close to major employment centers such as the downtown in order to decrease average driving distance.

Utilities Policy

Encourage development that, to the extent feasible, fully utilizes existing sewer and water lines. New water and sewer lines should be consistent with development envisioned by the 1990/2000 Land Use Plan map and the areawide Section 208 Intensity Development Pattern.

Density Policy

Increase the overall density of development particularly in the central part of the city where utilities, transportation facilities and employment opportunities can accommodate relatively high densities.

Air Pollution Policy

Activities that can cause significant levels of air pollution should be carefully located so that areas with existing air quality problems are not further aggravated and new problem areas are not created.

Mixed Uses Policy

Provide for "Mixed Land-Use Development" within designated commercial and residential districts where the proposed activities are compatible with the surrounding area.

Redevelopment Policy

Utilize innovative approaches to land redevelopment which could include tax incentives, special zoning provisions or bonuses, land banking, and urban renewal.

Historic Areas Policy

Seek to preserve identified historic districts either with zoning controls or special historic district ordinances. The Land Use Plan shows uses that are compatible with the architectural or historic character within each district.

Annexation Policy

Promote the annexation of unincorporated lands which are tributary to existing or proposed utility services provided by the city. Vacant land annexed into the city should be zoned initially for agriculture or low-intensity recreational activities.

Institutional Uses Policy

Adopt new development standards for large institutional uses. Expansion of such institutions should be consistent with the 1990/2000 Land Use Plan and should be carried out in conformance with an overall development plan that addresses the long-range physical development needs of the institutions.

RESIDENTIAL DEVELOPMENT POLICIES

Central Areas Residential Policy

Promote a greater variety in housing types for residential areas located within the central part of the city, from single-family housing to small apartment or condominium buildings (e.g., townhouses, garden apartments, etc.). In addition, greater flexibility should be provided for in-home occupations as long as such occupations do not adversely affect the surrounding neighborhood.

Corridor Use Policy

Encourage the use of planned, higher density corridor development along the city's major thoroughfares. Corridor development is defined as the construction of primarily medium- and high-density multi-family housing in a linear fashion along a street.

Housing Diversification Policy

Encourage and provide for a variety of housing types, particularly various forms of multiples (townhouses, row houses, walk-up apartments, condominiums, etc.).

P.U.D. Policy

Encourage the use of Planned Unit Development techniques, particularly for "hard-to-develop" sites not suited for conventional subdivision practices.

"In-Fill" Use Policy

Encourage "in-fill" development by the use of flexible standards that allow the development of vacant sites in largely built-up areas in accordance with the 1990/2000 Land Use Plan.

Residential Areas Policy

Maintain the integrity of existing stable residential areas by disallowing the intrusion of uses incompatible with the neighborhood in accordance with the 1990/2000 Land Use Plan.

COMMERCIAL DEVELOPMENT POLICIES

Neighborhood Commercial Policy

Encourage the location of future commercial development (i.e., retail, personal and professional services) in existing or proposed commercial nodes (see Figure 7). Where feasible, community facilities and services should be encouraged to locate in or near such commercial centers.

Major Commercial Policy

Major commercial nodes (those in excess of 150,000 square feet of floor space) should be subject to special development standards that take into consideration vehicular and pedestrian circulation, parking, landscaping, and relationship to the surrounding area. Development within these areas should be based on an accepted, overall development plan. These provisions should apply to both new developments as well as additions to existing major nodes.

Strip Commercial Policy

Strip commercial development should generally be discouraged. In situations where it is permitted, direct, individual access to major thoroughfares should be avoided in favor of controlled access points.

Older Commercial Consolidation Policy

Promote the consolidation of existing commercial activities in or near designated commercial nodes where there is an excessive amount of land devoted to commercial development including reducing the total commercial zoned land in the neighborhood where necessary.

INDUSTRIAL DEVELOPMENT POLICIES

Industrial Utilities' Use Policy

Locate large, industrial utility users where required utilities, particularly water and sewer, can be provided economically and without impairing service of the total system or individual areas. Conversely, low-water using industries (e.g., wholesaling) could be located in areas where sewer and water service is limited.

Industrial/Residential Boundary Policy

Require, to the extent feasible, that existing or proposed industrial development located in close proximity to a residential area minimize any adverse effects through such steps as screening, rerouting truck traffic, providing dust-free storage and parking surfaces, etc.

Industrial/Residential Relocation Policy

As a long-term policy to assist and encourage residential owners within designated industrial areas to relocate from the area; also to not provide financial assistance to major home improvements or new construction which would prolong the problem.

Industrial Park Policy

Actively promote and assist industrial park development that would provide improved, marketable sites for industrial use.

DOWNTOWN DEVELOPMENT POLICIES

Downtown Growth Policy

In close cooperation with the private sector, actively promote and assist the development of both the east and west parts of the downtown for high-density office and retail uses, high-density residential, governmental offices, cultural and recreation facilities, uses adaptable to the recycling of older buildings, areas for "Theme-Type" or major speciality use (i.e., new auto sales plaza) and other one-of-kind facilities (e.g., convention facilities, sport arenas).

Downtown "Core" Policy

Promote a downtown "core area" for high-intensity office, retail and hotel activities with increased pedestrian movements and reduced vehicular traffic.

Downtown Retail Policy

In close cooperation with the private sector, actively promote and assist the building of the downtown through medium- and high-density multi-family housing. Capitalize as much as possible on the role of the downtown as a major employment and cultural center.

Downtown Residential Policy

In close cooperation with the private sector, to actively promote and assist the building of the downtown with medium- to high-density, multi-family housing.

Downtown Open Spaces and Landscaping Policy

In close cooperation with the private sector, actively promote and assist the development of attractive streetscapes and people-oriented open spaces in downtown.










Downtown Parking Facilities Policies

As a long-term policy, seek to eliminate all surface parking within the "core" area and encourage reduction of other surface parking in favor of structured parking and increased use of mass transit.

APPENDIX C

AERIAL PHOTOGRAPHS OF PROJECT AREA

LEGEND

	ROADWAY ON BRIDGE STRUCTURE
	ROADWAY NEAR GROUND LEVEL
	ROADWAY BELOW GROUND LEVEL
	PARK BOUNDARIES
	GENERALIZED 70dBA NOISE CONTOUR LINES
3.11	SITE NUMBERS FOR HISTORIC/ARCHITECTURAL RESOURCES*
	RAILROAD RELOCATION
	STREET CONNECTION OR RELOCATION
	STREET TURN AROUND
	DIRECTION OF TRAFFIC FLOW
SCALE: 1" = APPROX. 300'	

NOTE: THE ABOVE SYMBOLS REPRESENT APPROXIMATE LOCATIONS ON THE FOLLOWING AERIAL PHOTOGRAPHS AND ARE NOT TO SCALE

*DESCRIPTIONS OF THESE SITES ARE IN SECTION 5 UNDER "IMPACTS TO HISTORIC, ARCHAEOLOGICAL AND ARCHITECTURAL RESOURCES."

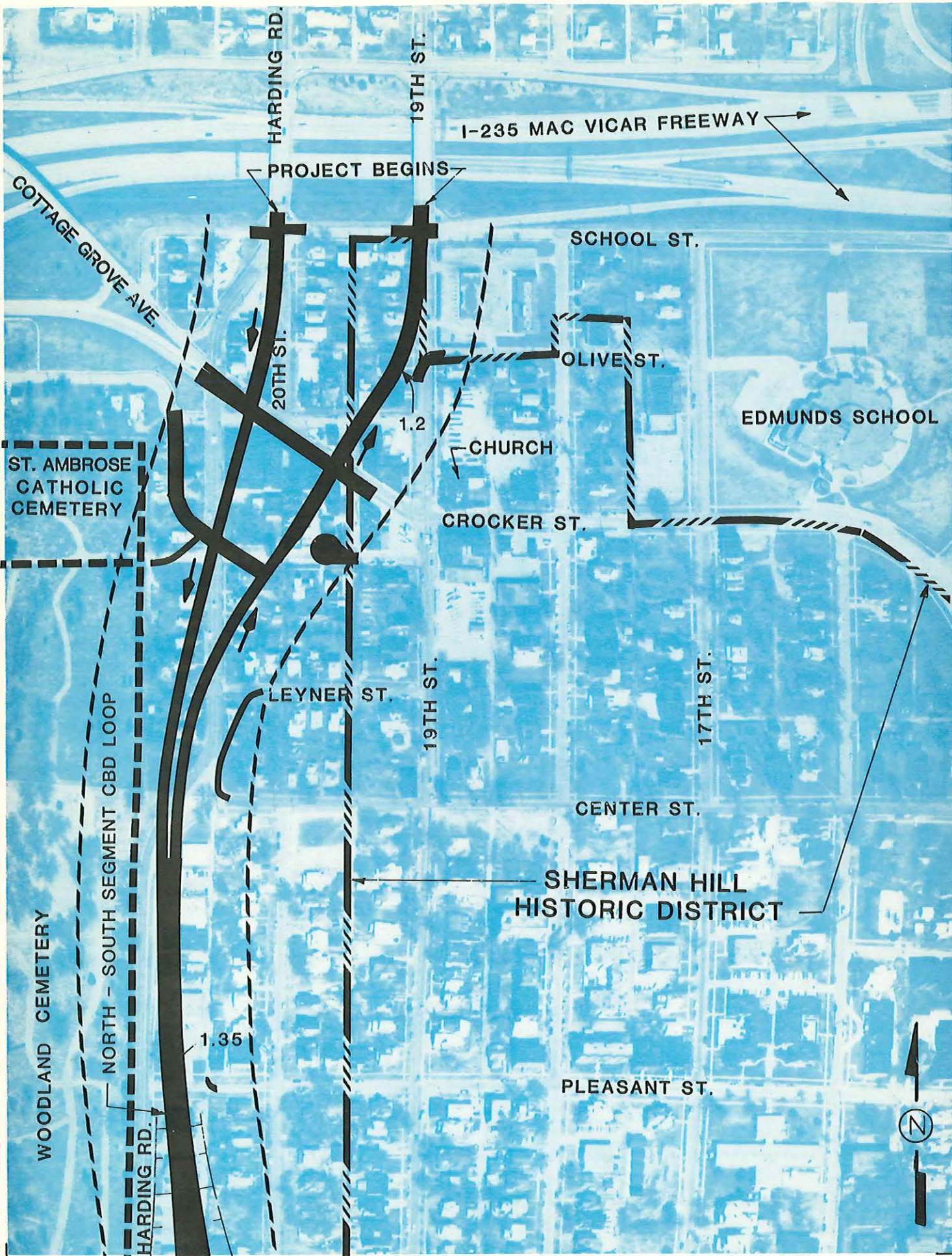


PLATE 1 SUBALTERNATES 1A & 1B

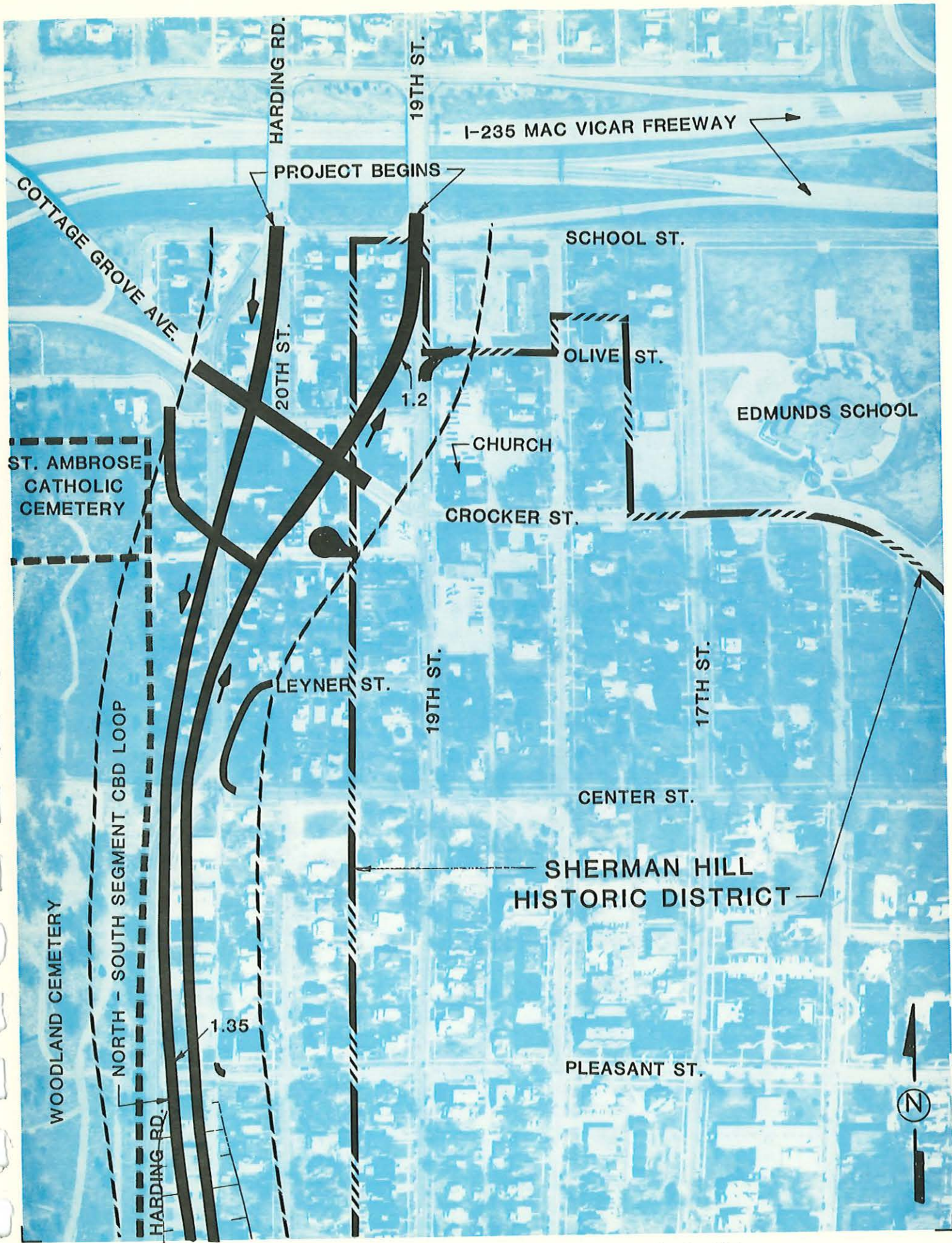


PLATE 2 SUBALTERNATES 2A & 2B

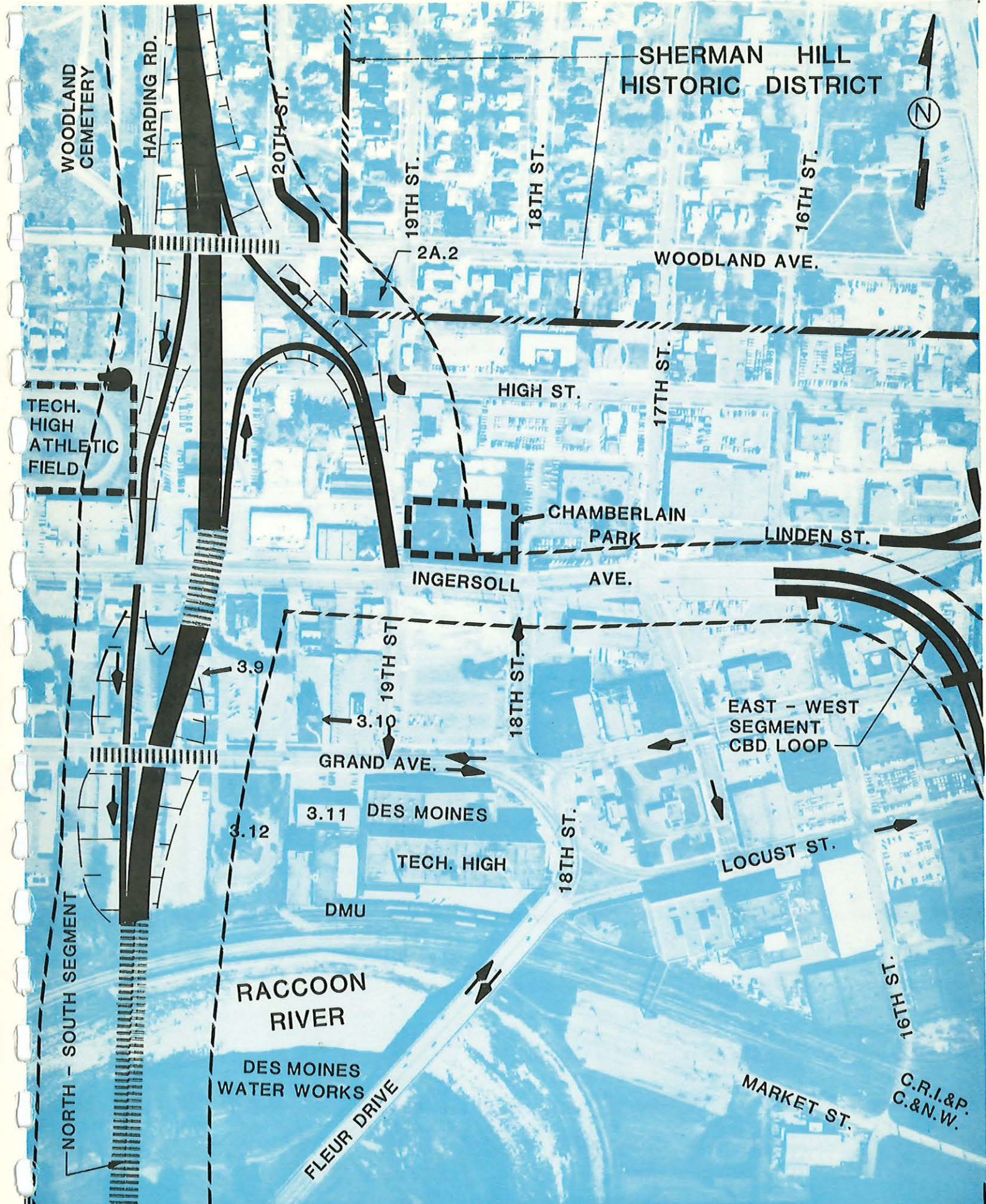


PLATE 3 SUBALTERNATE 1A

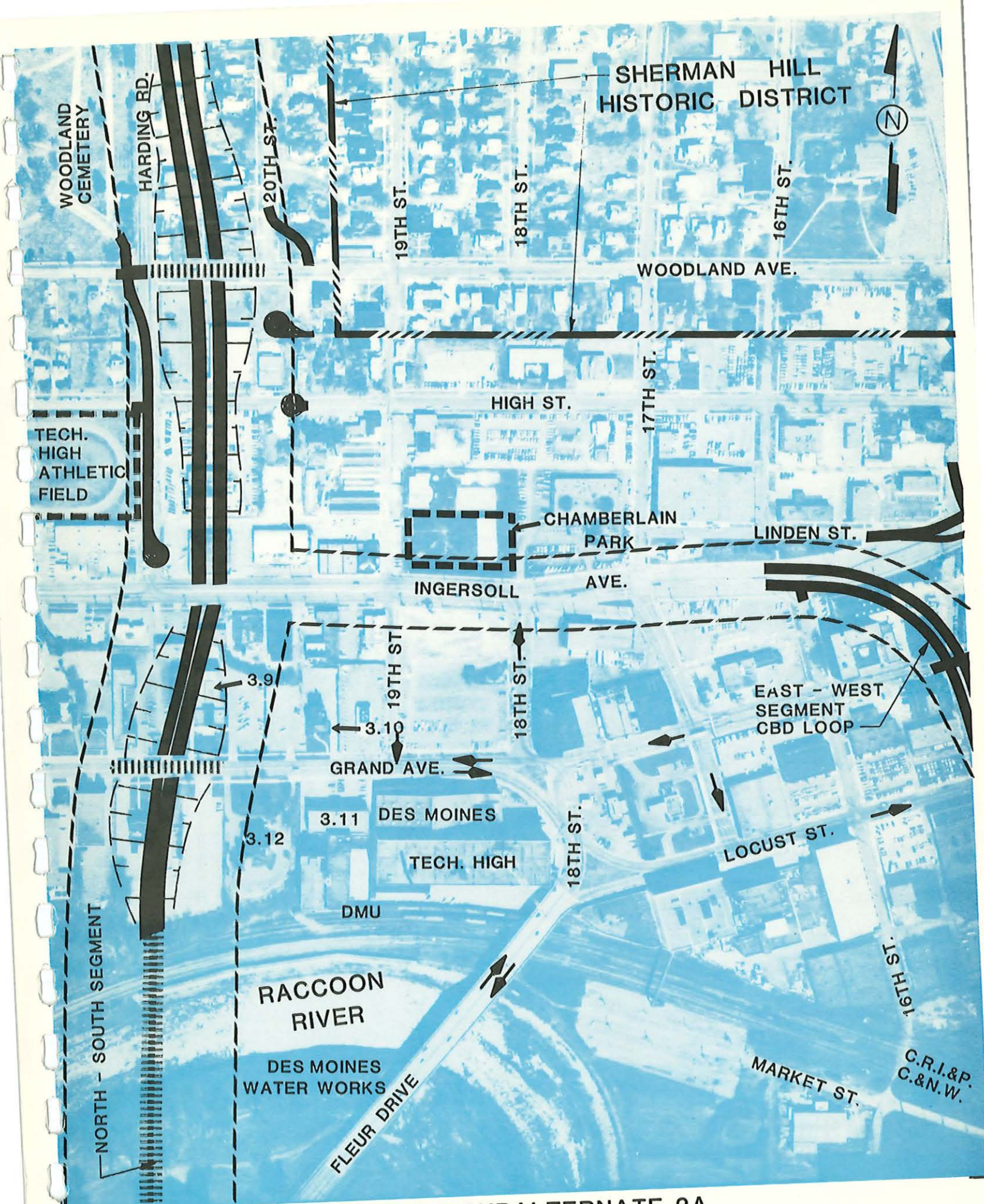


PLATE 4 SUBALTERNATE 2A

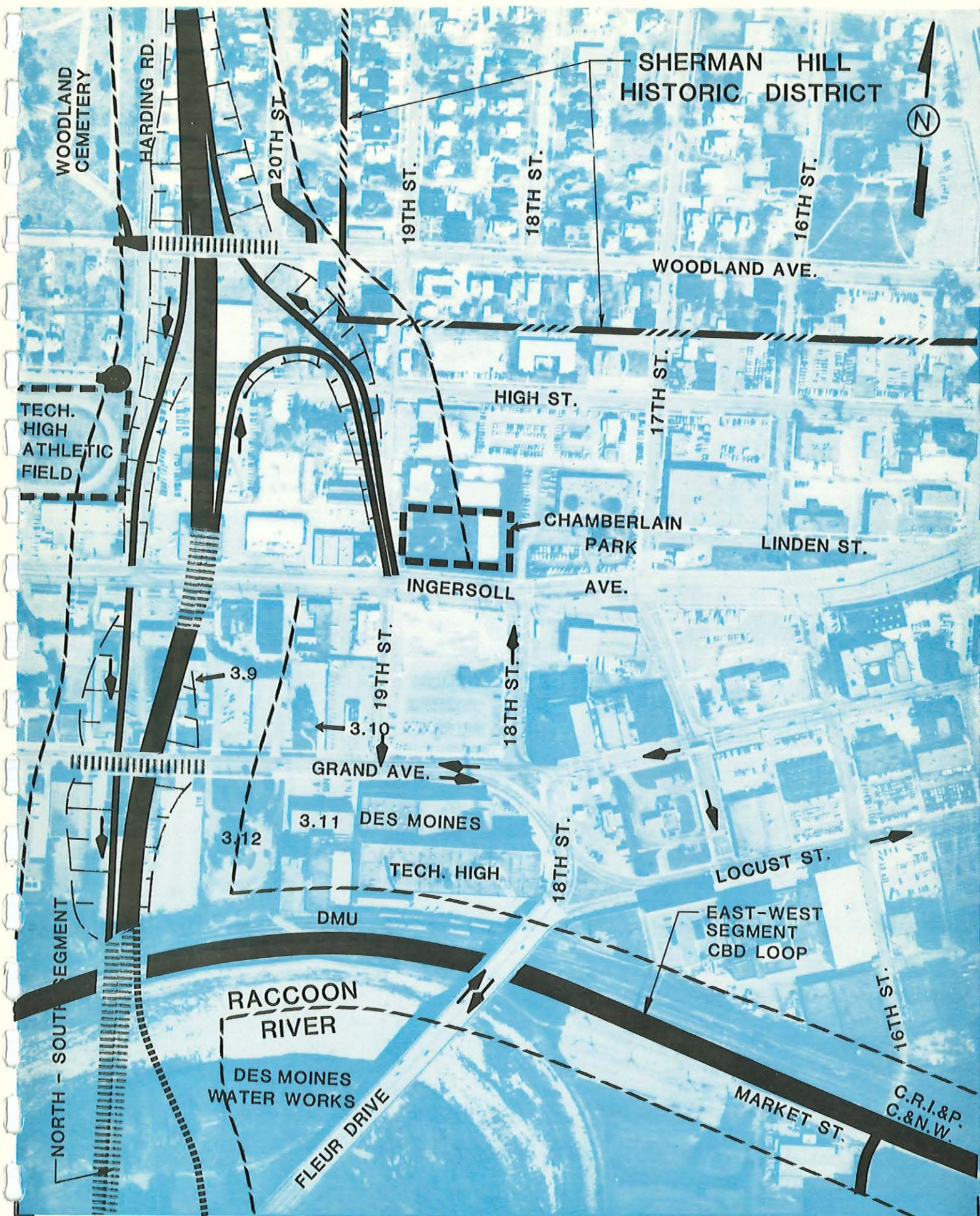
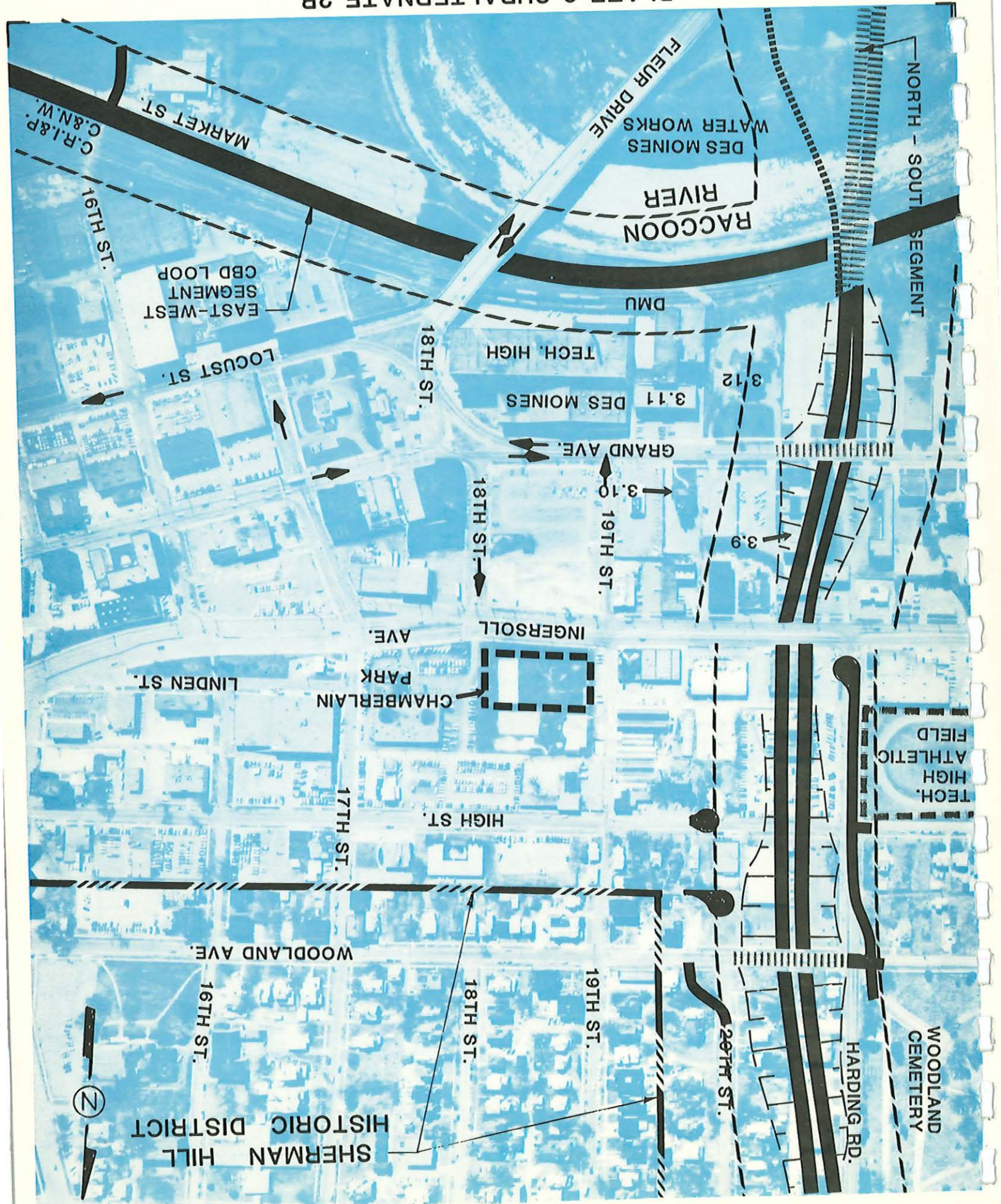


PLATE 5 SUBALTERNATE 1B

PLATE 6 SUBALTERNATE 2B



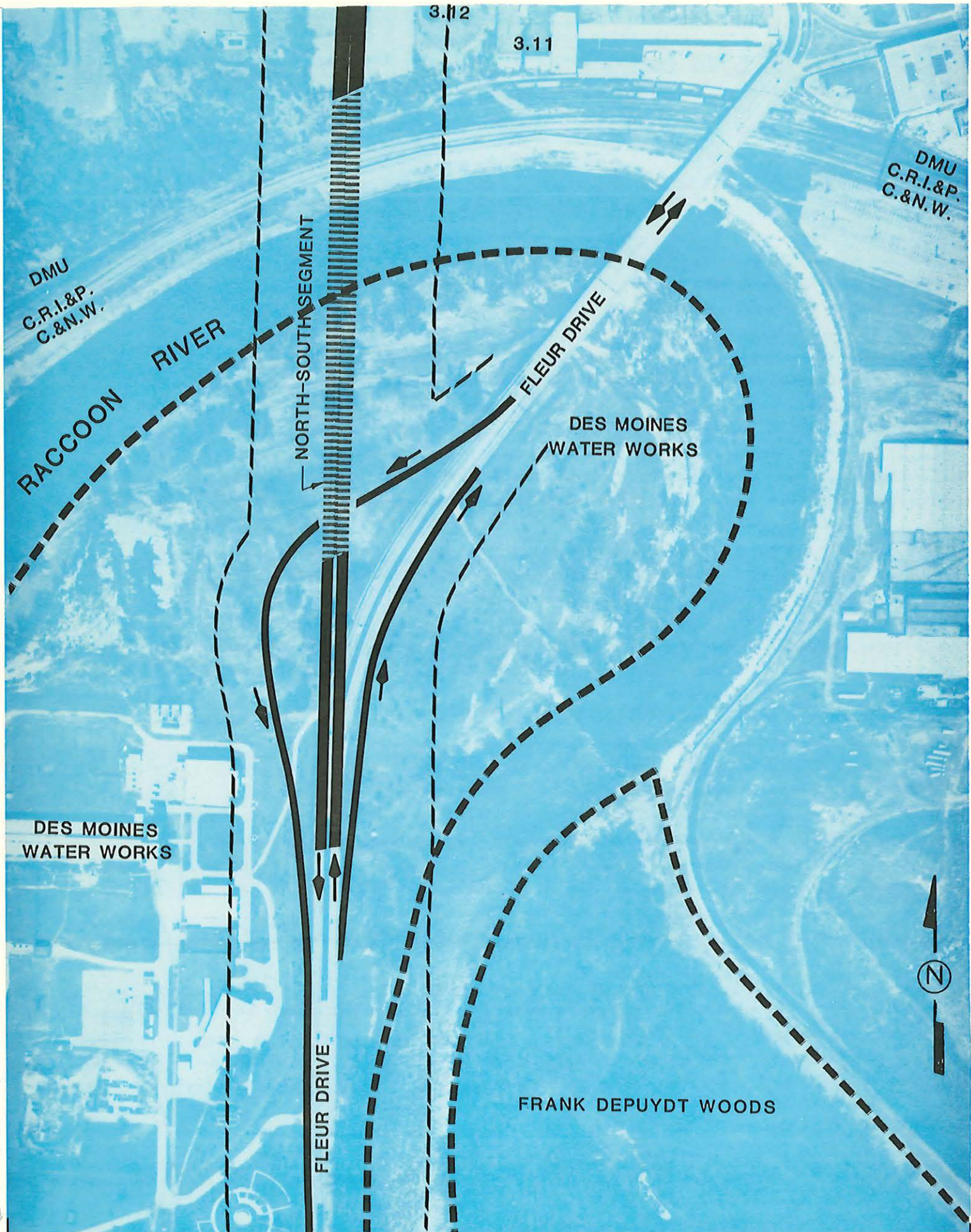


PLATE 7 SUBALTERNATES 1A & 2A

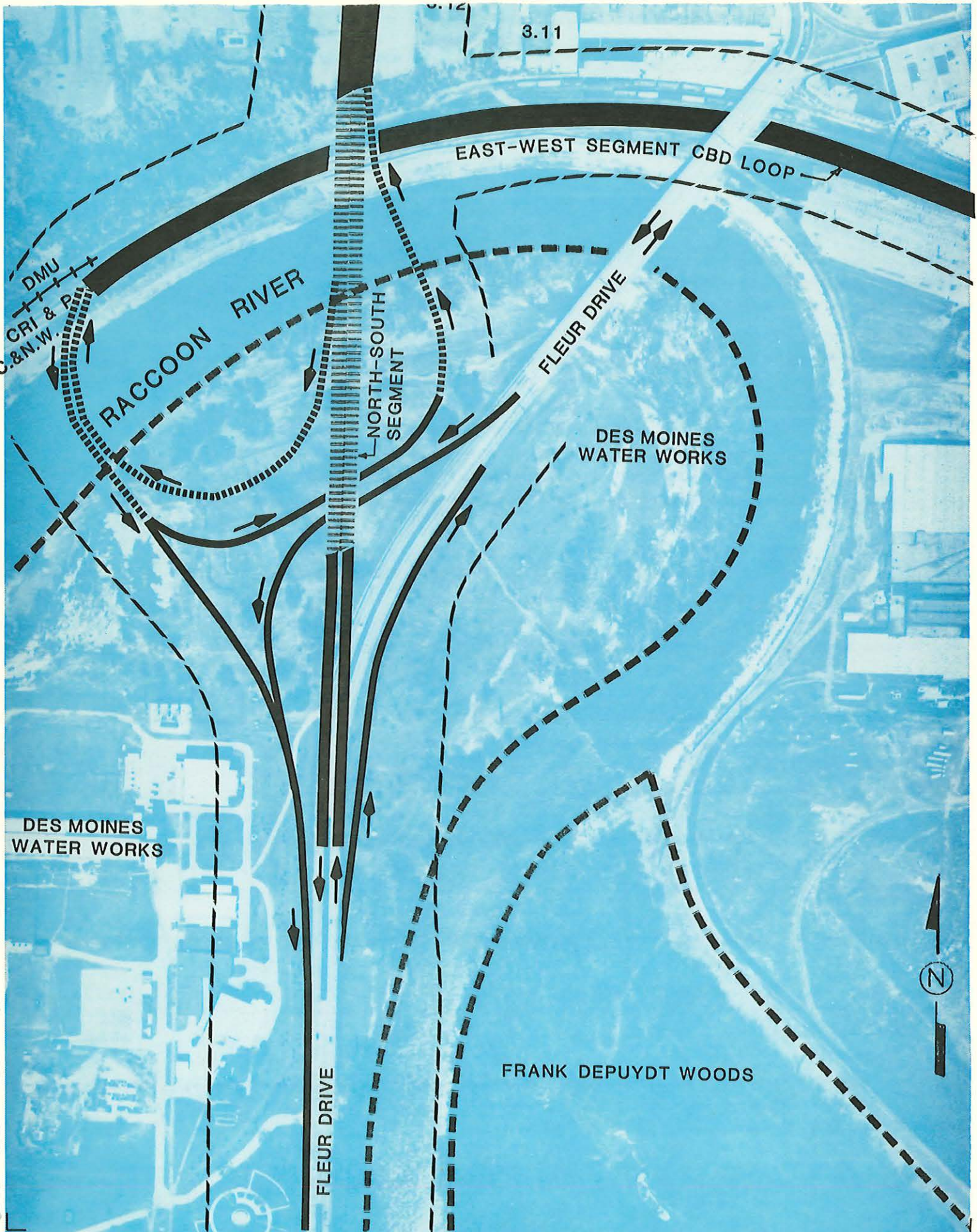


PLATE 8 SUBALTERNATES 1B & 2B

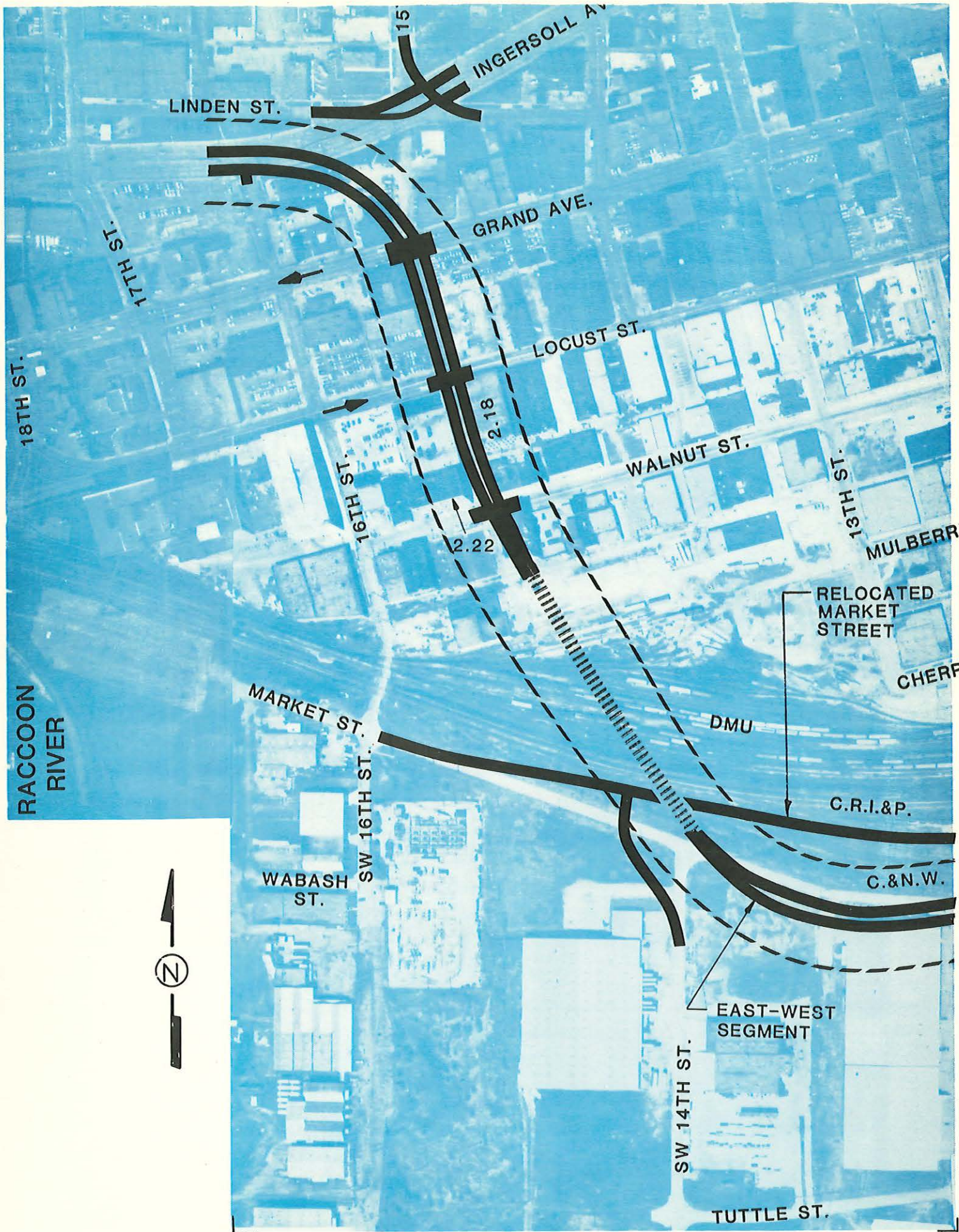


PLATE 9 ALTERNATE A



PLATE 10 ALTERNATE A

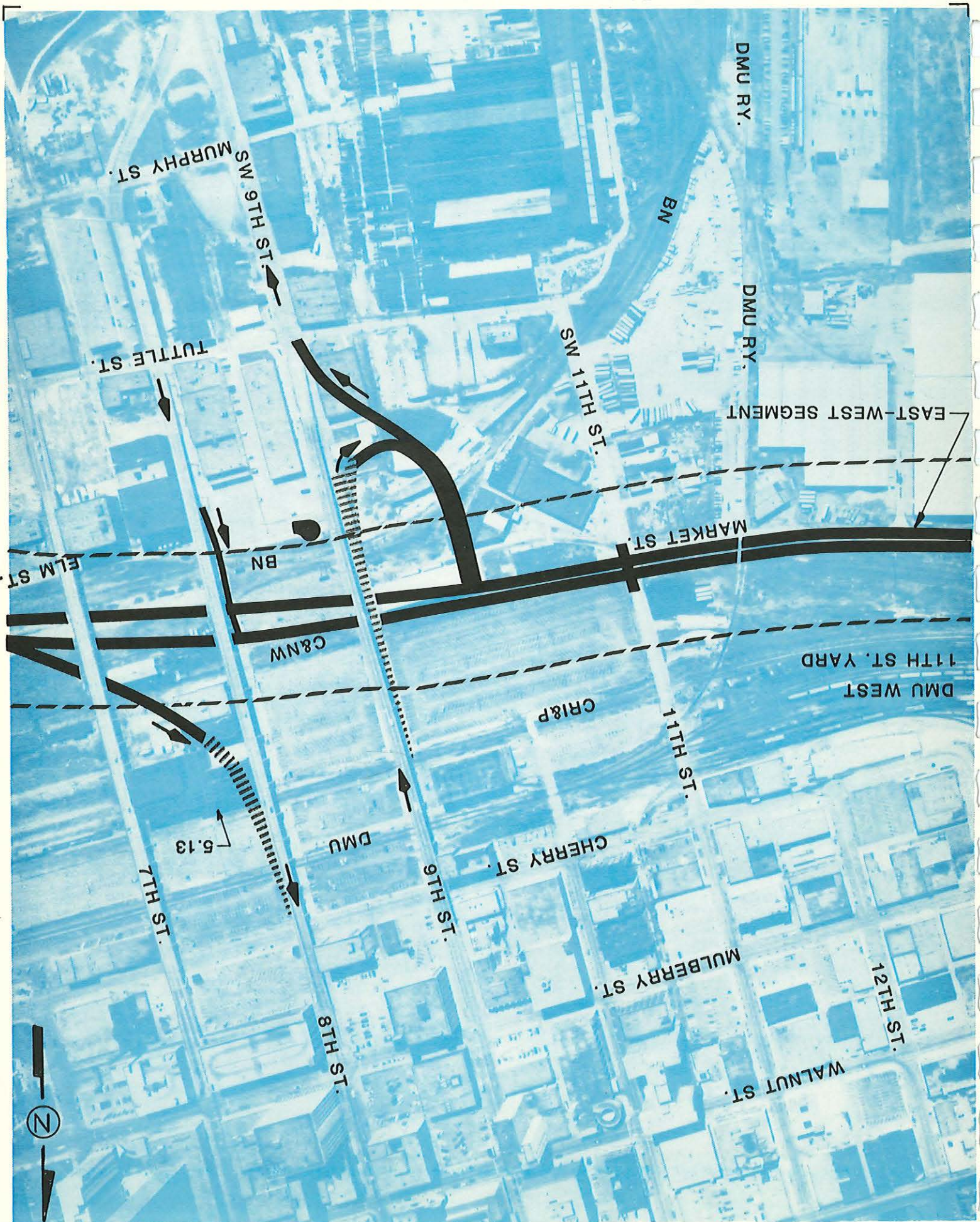
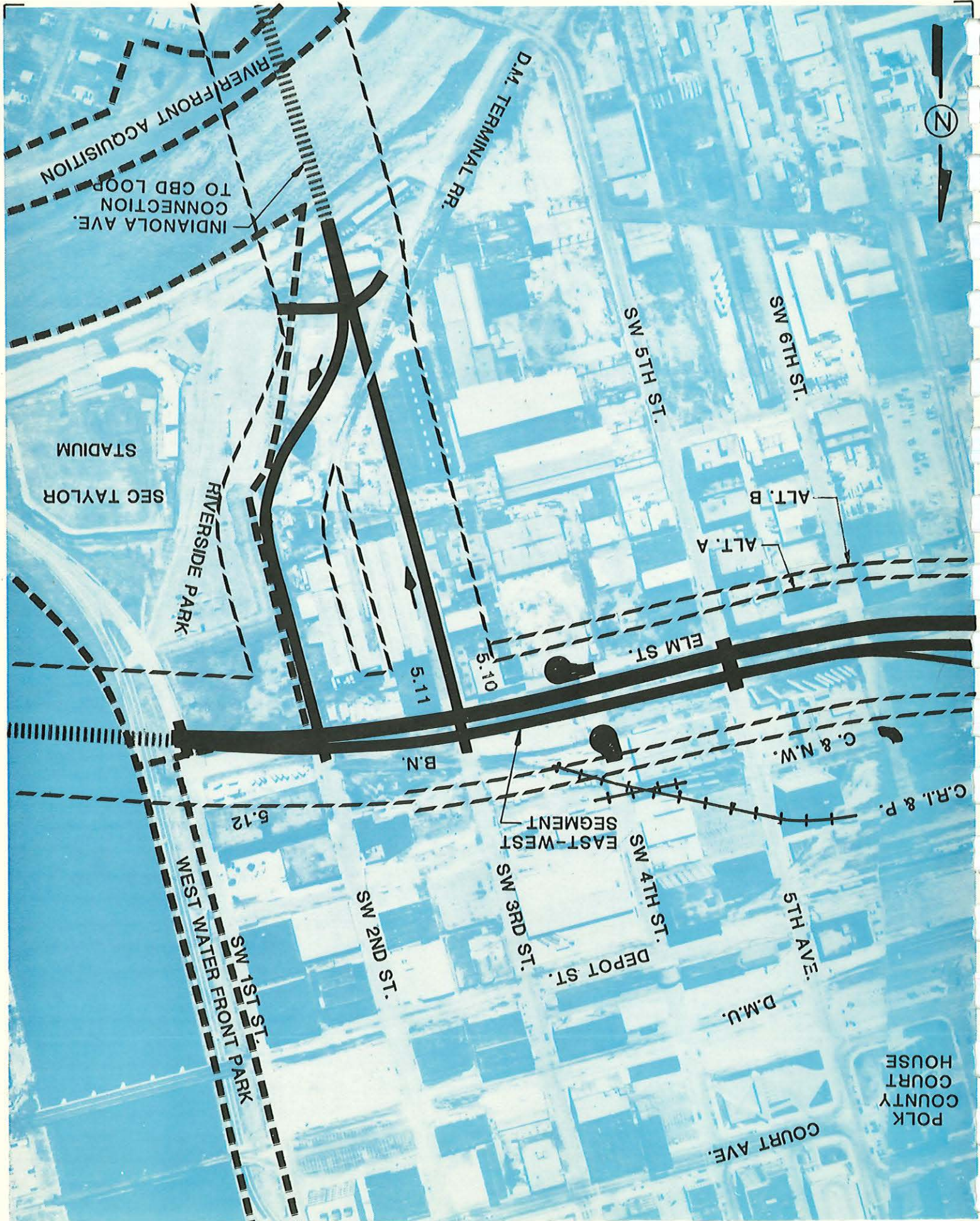


PLATE 13 ALTERNATES A & B



POLK COUNTY COURT HOUSE

COURT AVE.

5TH AVE.

D.M.U.

DEPOT ST.

SW 4TH ST.

SW 3RD ST.

SW 2ND ST.

SW 1ST ST.

WEST FRONT PARK

C.R.I. & P.

C. & N.W.

ELM ST.

ALT. B

ALT. A

SW 6TH ST.

SW 5TH ST.

D.M. TERMINAL RR.

RIVERSIDE PARK

SEC TAYLOR STADIUM

INDIANOLA AVE. CONNECTION TO CBD LOOP

RIVERFRONT ACQUISITION

5.11

5.10

6.12

B.N.

EAST-WEST SEGMENT



PLATE 14 ALTERNATES A & B

PLATE 15 ALTERNATES A & B



PLATE 16 ALTERNATES A & B



DES MOINES RIVER

RAILROAD AVE.

N

CHURCH

VALE ST.

SE 6TH ST.

SE 9TH ST.

SE 8TH ST.

SE 7TH ST.

SHAW ST.

SE 10TH ST.

B.N.

C. & N.W.

SCOTT AVE.

ALLEN PARK

SE 11TH ST.

8.27

SAM COHEN PARK

CHURCH

CHURCH

ALLEN ST.

EAST-WEST SEGMENT

RACCOON ST.

E. ELM ST.

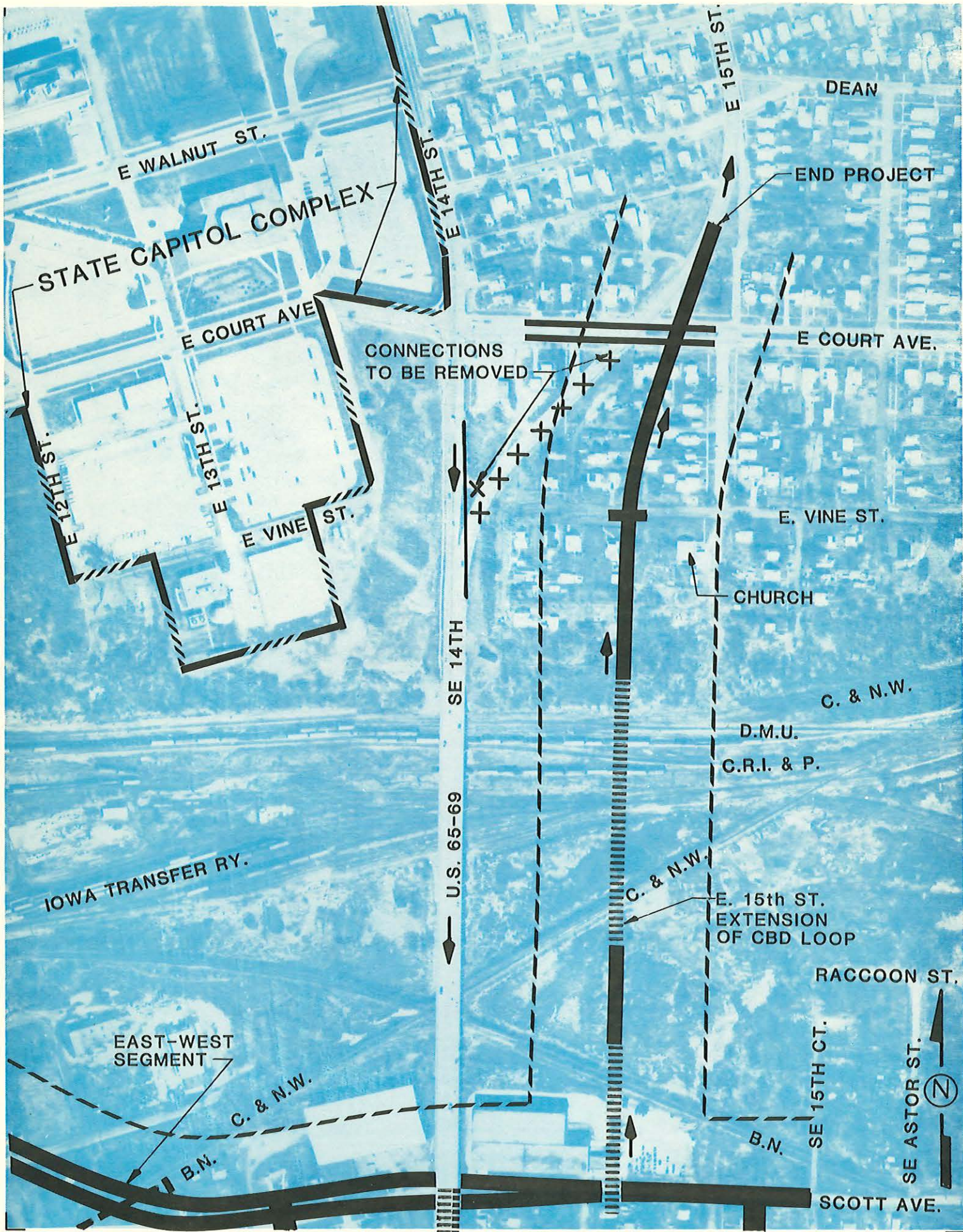


PLATE 17 ALTERNATES A & B

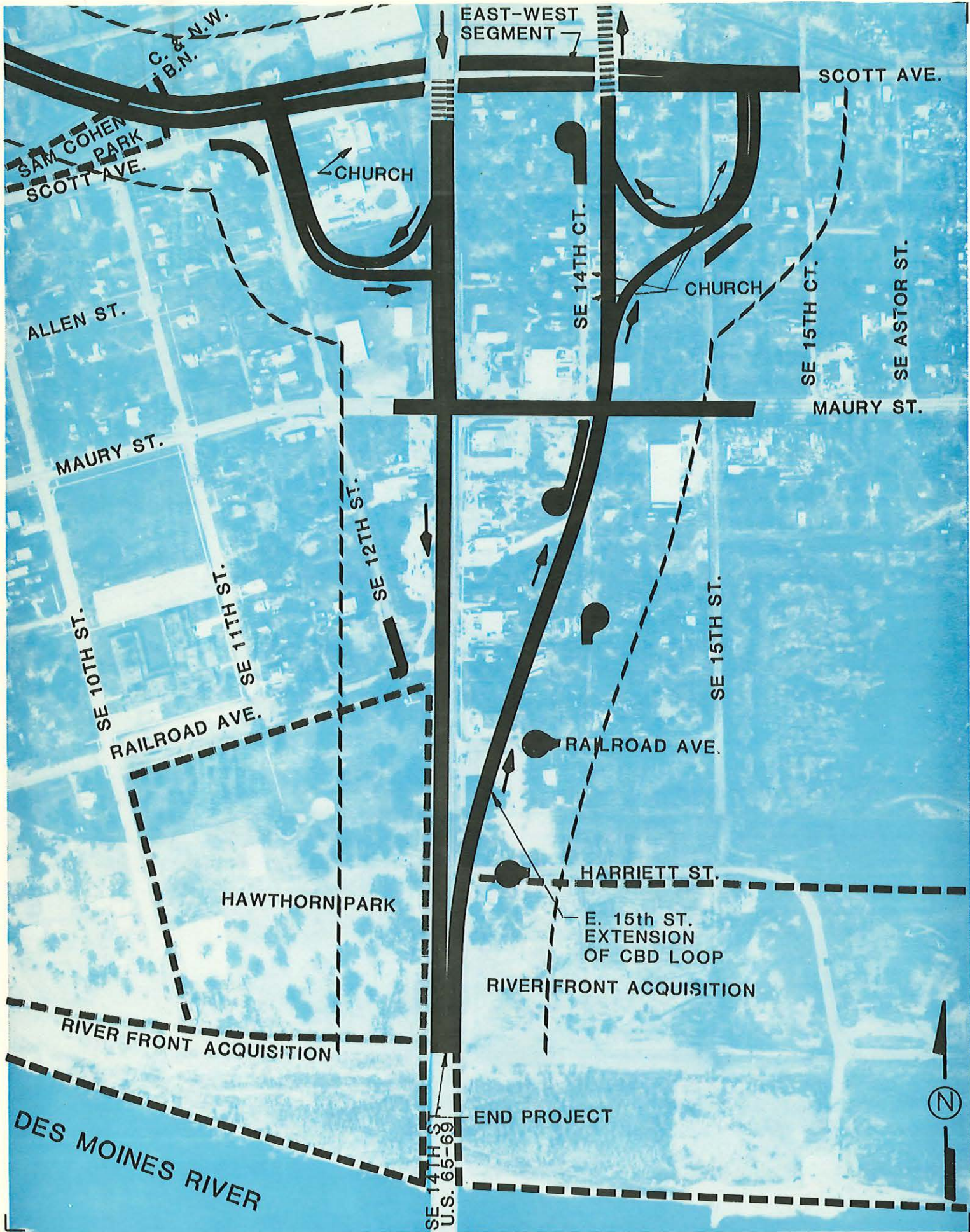


PLATE 18 ALTERNATES A & B

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