



central iowa regional association of local governments

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FY83
TRANSPORTATION
SYSTEM MANAGEMENT
DES MOINES URBANIZED AREA

FY1983
TRANSPORTATION SYSTEM MANAGEMENT PLAN
FOR THE
DES MOINES URBANIZED AREA

The preparation of this report has been financed in part through grants from the U.S. Department of Transportation, Urban Mass Transportation Administration, under the Urban Mass Transportation Act of 1964, as amended, and the Federal Highway Administration

Subject: 1983 TSM Amendment

RESOLUTION

WHEREAS, the Central Iowa Regional Association of Local Governments has been designated the Metropolitan Planning Organization (MPO) for the Des Moines Metropolitan Area; and

WHEREAS, the Central Iowa Regional Association of Local Governments, through an agreement for continuing transportation planning in the Des Moines urban area, has been designated as the agency to carry out the requirements of Section 134 of the Federal Aid Highway Act of 1962 as amended, and Section 121 of the Urban Mass Transportation Act of 1964 as amended through November 26, 1974; and

WHEREAS, the Des Moines Urban Area Transportation Policy Committee has been authorized to act for and behalf of the Association concerning policy matters pertaining to transportation planning in the Des Moines Urbanized Area including A-95 Review; and

WHEREAS, the Des Moines Urban Area Transportation Technical Committee has reviewed and recommended approval of the FY1983 Transportation System Management Amendment.

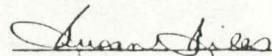
NOW, THEREFORE, BE IT RESOLVED BY THE DES MOINES AREA TRANSPORTATION POLICY COMMITTEE

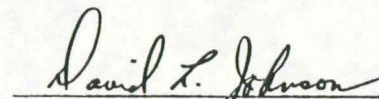
That the Transportation Policy Committee approves the FY1983 Transportation System Management Amendment and gives A-95 Review approval.

Passed and approved this 24th day of June, 1983.

ATTEST:

Central Iowa Regional Association
of Local Governments acting by
and through the Des Moines Urban
Area Transportation Policy
Committee


Susan Giles, Administrative Director


Chairman, David L. Johnson

Subject: 1983 TSM

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WHEREAS, the Des Moines Urban Area Transportation Technical Committee has reviewed and recommended approval of the FY1983 Transportation System Management Plan.

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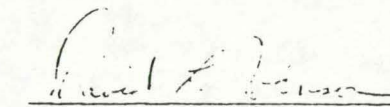
That the Transportation Policy Committee approves the FY1983 Transportation System Management Plan and gives A-95 Review Approval.

Passed and approved this 21st day of January, 1983.

ATTEST:

Central Iowa Regional Association
of Local Governments acting by
and through the Des Moines Urban
Area Transportation Policy
Committee


Susan Giles, Administrative Director


Chairman, David L. Johnson

DES MOINES URBAN AREA TRANSPORTATION COMMITTEES

THE DES MOINES URBAN AREA TRANSPORTATION POLICY COMMITTEE

Mrs. Nadean Hamilton Chairperson Des Moines	Councilwoman Droga Vignovich Johnston	*Richard Anderson Des Moines Public Schools
Councilman George Arvidson Vice Chairman West Des Moines	Mayor Kent Forbes Pleasant Hill	*H.A. Willard Federal Highway Administration
Mayor C.D. Millsap Vice Chairman Windsor Heights	Supervisor Richard Brannon Polk County	*Richard Humphrey Iowa Department of Transportation
Gary Lago Clive - City Manager	Supervisor Murray Drake Polk County	*C.I. MacGillivray Iowa Department of Transportation
Councilman Clarke Priebe Des Moines	Councilman David Johnson Urbandale	*Richard L. Barr Iowa Railroad Association
Mayor Pete Crivaro Des Moines	<u>ADVISORY MEMBERS*</u>	*Forest Swift Metropolitan Transit Authority
	*Bob Josten CIRALG Legal Counsel	

THE DES MOINES URBAN AREA TRANSPORTATION TECHNICAL COMMITTEE

Bruce Thorson Chairman West Des Moines	Gunnar Rorbakken Iowa Department of Transportation	Jim Thompson Des Moines
Larry Day Vice Chairman Urbandale	Gene Mills Iowa Department of Transportation	James Brown Windsor Heights
Gary Lago Clive	Don Coates Johnston	<u>ADVISORY MEMBERS*</u>
Bill Flannery Des Moines	Mayor Kent Forbes Pleasant Hill	*Ed Finn Federal Highway Administration
Jim Grant Des Moines	Gary Pryor Polk County	*Chuck Donald Urban Mass Transportation Administration
Steve Spade Metropolitan Transit Authority	Dale Harrington Polk County	

CIRALG TRANSPORTATION STAFF

Harry Mendenhall	Transportation Supervisor
Kevin Gilchrist	Associate Transportation Planner
Sheri Kyras	Associate Transportation Planner: Coordination, Text, Graphics
Cheri Borgerson	Transportation Secretary

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Chapter 1

THE TSM PROCESS

THE TSM PROCESS

The process selected for the FY1983 Transportation Systems Management (TSM) Element for the Des Moines Urbanized Area consists of five (5) steps:

I. Identification and Ranking of Problems

A total of nine problems were ranked by the representatives for both the Transportation Policy and Transportation Technical Committees. A comparison of the severity of the problems as seen by the two (2) committees is shown on the right. This ranking considered the severity of the problems in each of the areas and from these rankings, an overall ranking was developed for the urbanized area. The overall rank was determined by assigning points to each problem based on the separate ranks. A problem ranked first by a jurisdiction would receive 9 points, second 8 points, third 7 points and so on.

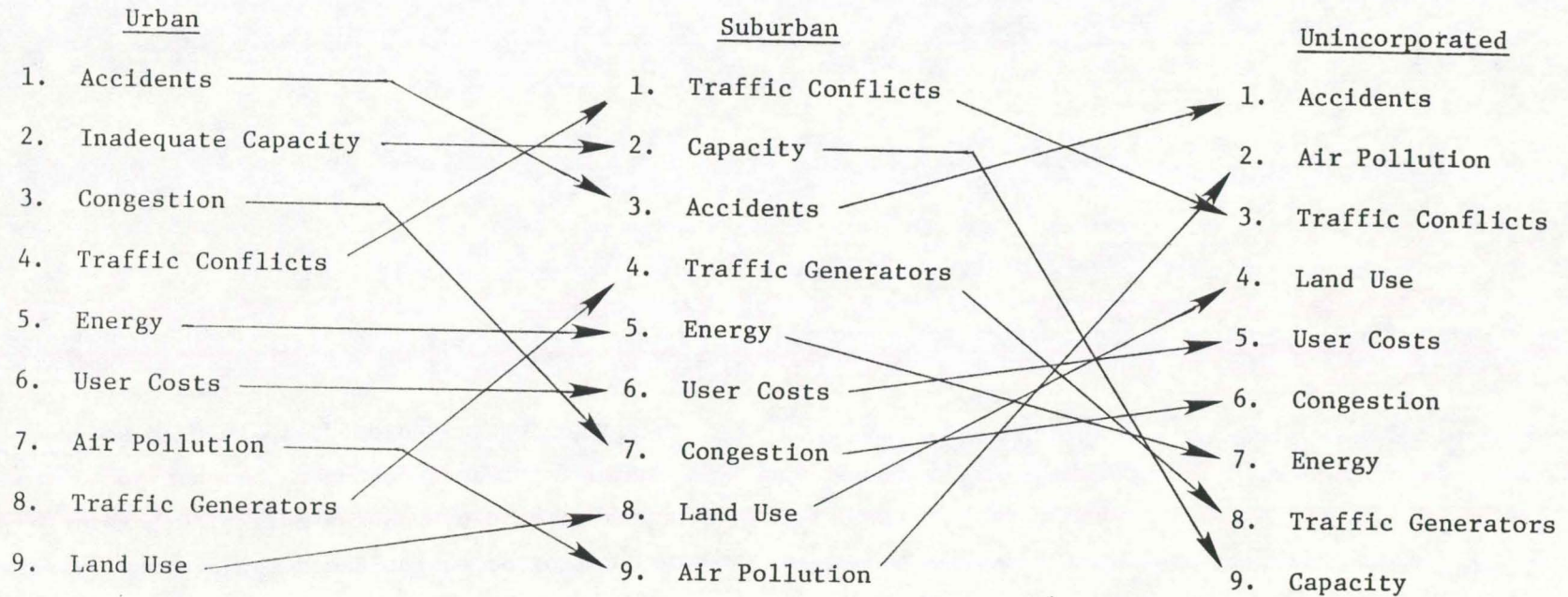
The overall ranks for the nine problems are also shown on the right. The total points assigned to each problem is also shown to indicate the range in points assigned.

	T.T.C. ¹		T.P.C. ²	
	Rank	Points	Rank	Points
1. Accidents	1	67	2	56
2. Traffic Conflicts	2	65	3	55
3. Congestion	2	65	1	62
4. Inadequate Capacity	3	57	5	47
5. Problems with serving high traffic generators	4	53	4	54
6. High user costs from increased time and fuel consumed as a result of delay	5	38	7	34
7. A need to conserve energy used for travel	6	37	8	28
8. Land use policies which make it difficult for the transportation system to adequately serve all areas	7	32	6	35
9. Transportation related air pollution	8	25	9	24

1 Transportation Technical Committee's Response
 2 Transportation Policy Committee's Response

Although the local governments face similar problems, the degree to which the problems are felt varies with the type of jurisdiction. This is shown by the separate rankings that were developed for jurisdictions serving urban, suburban and unincorporated areas for FY83 by the Transportation Technical Committee members. These rankings are shown on the following page with arrows indicating changes in problem ranks from one type of area to the next. For this comparison, the names of some of the problems have been shortened to conserve space.

Comparative Problem Ranks for Urban,
Suburban and Unincorporated Areas
1982



II. Project Problem Identification

The following chart is a listing of the transportation related projects that were undertaken in each jurisdiction during the past year. Following the project listings are the problems that each project addresses such as energy, congestion or traffic conflicts,

JURISDICTIONAL PROJECTS AND THE PROBLEMS ADDRESSED

PROJECT NUMBER	PROJECTS	JURISDICTION	AIR POLLUTION	ENERGY	TRAFFIC CONFLICTS	CONG.	LAND USE	TRAFFIC GEN.	ACC.	USER COSTS	CAPACITY
1	Fifth Avenue SW	Altoona	X	X	X	X			X		X
2	University Avenue/NW 73rd Street	Clive			X	X		X	X		X
3	Skywalk System	Des Moines	X	X	X	X	X	X	X	X	X
4	Fleur Drive Signal System	Des Moines	X	X		X			X	X	X
5	Street Signing Modification	Des Moines			X				X		
6	East University - Williams	Des Moines			X				X		
7	S.E. 17th Street	Des Moines					X				
8	Residential Paving Program	Des Moines	X								
9	S.W. 9th Street and Park Avenue	Des Moines			X	X	X		X	X	X
10	Merle Hay Road	Johnston				X					
11	Intersection Resigning and Restriping	Johnston							X		
12	Compressed Natural Gas Project	Johnston		X							
13	North Shadyview Boulevard	Pleasant Hill			X	X					X
14	Maple Drive	Pleasant Hill		X			X				
15	N.E. 62nd Street	Polk County	X	X							
16	N.E. Rising Sun Drive	Polk County	X	X							
17	N.E. 54th Avenue	Polk County	X	X							
18	N.E. 14th Street-N.E. 58th Avenue (widening)	Polk County		X	X	X		X	X	X	X
19	N.E. 14th Street-N.E. 58th Avenue (signalization)	Polk County		X	X	X		X	X	X	X
20	N.W. 2nd Avenue-N.W. 54th Avenue	Polk County		X	X	X		X	X	X	X
21	Sealcoat Program	Polk County		X							
22	Dust Control Program	Polk County		X							
23	Douglas Avenue	Urbandale		X	X						

III. Development of Alternative Solutions

Alternative solutions to the nine problems ranked in the previous section are shown on the following pages in chart form.

CHART 1

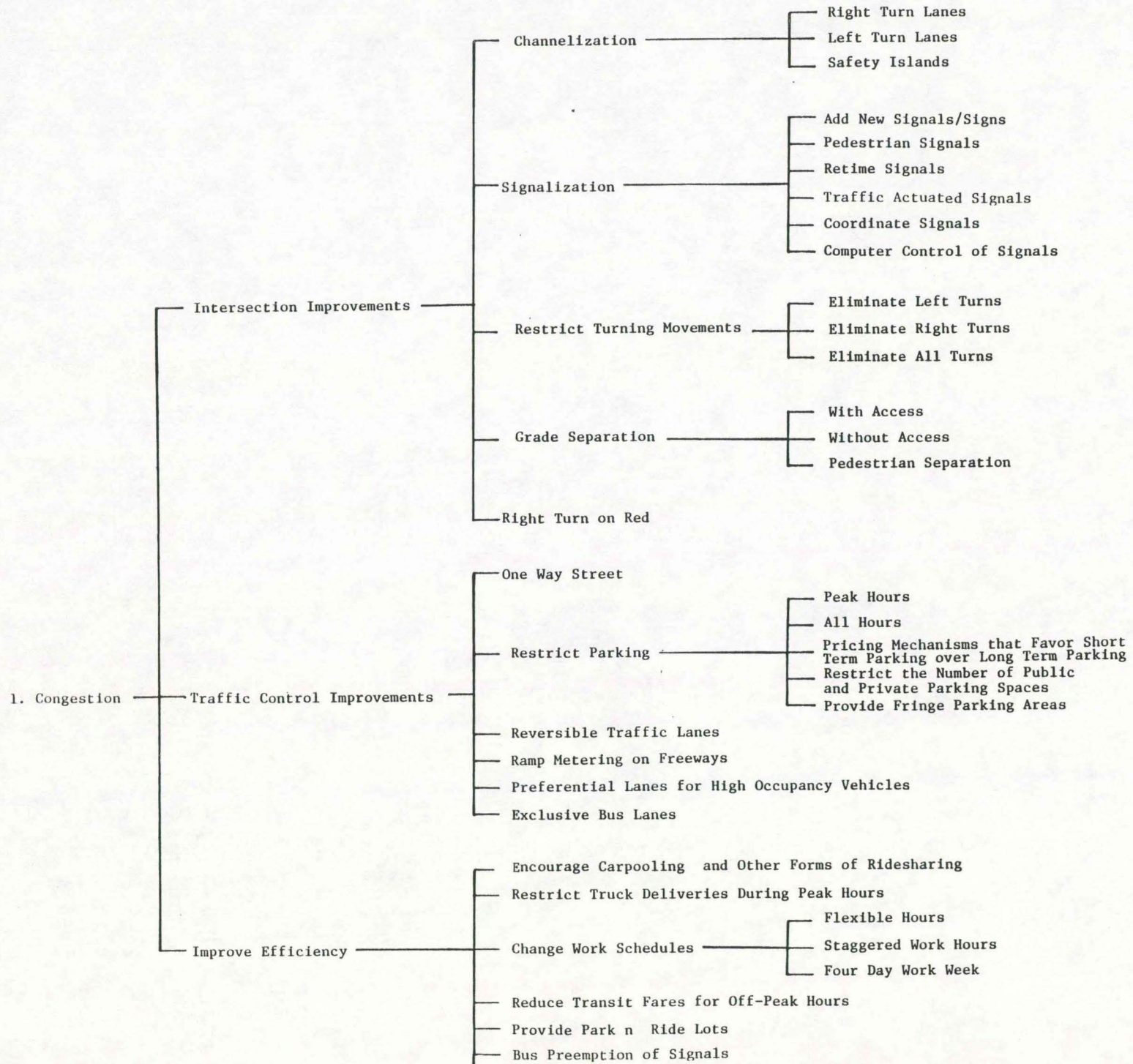
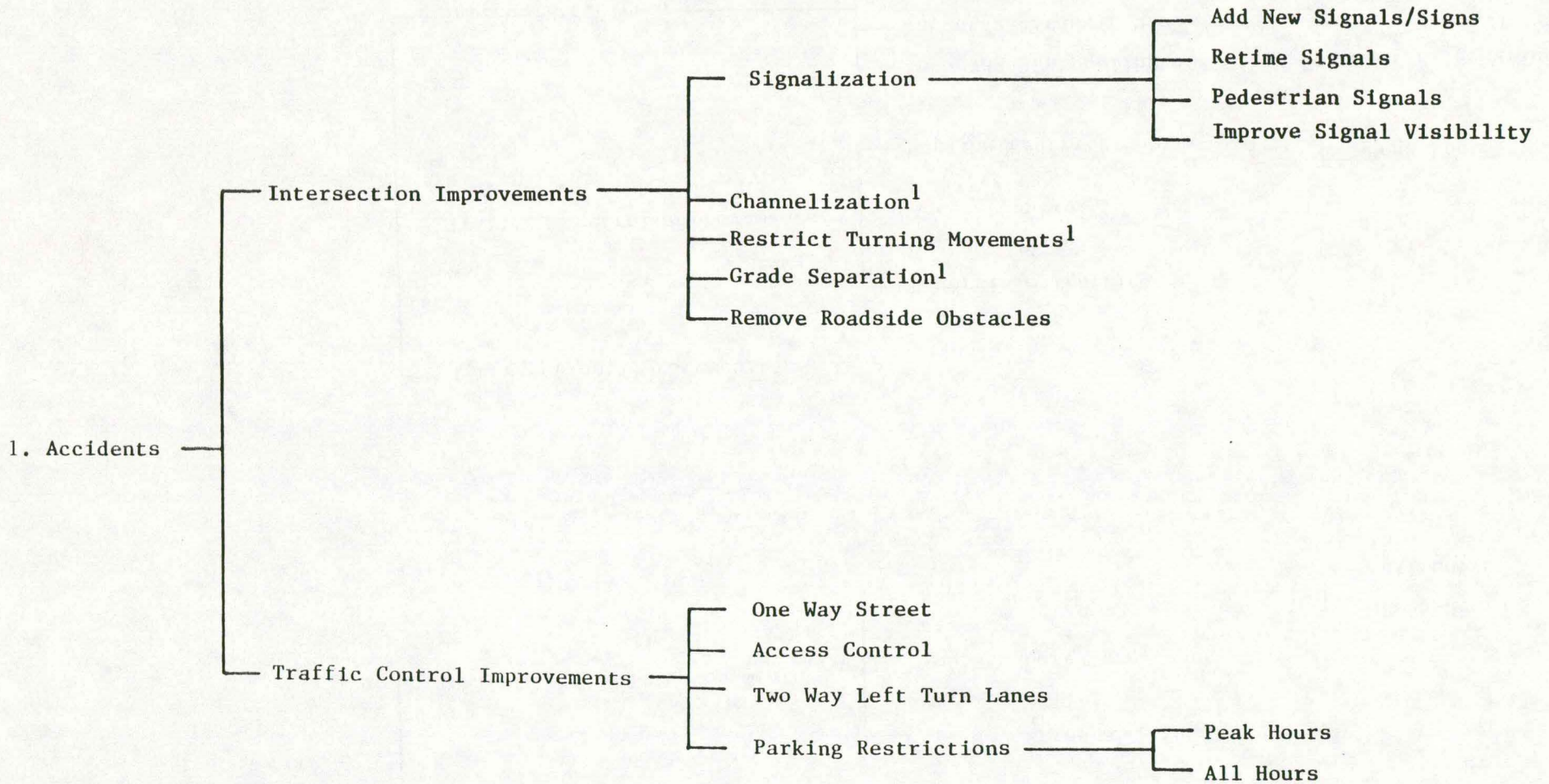


CHART 2



¹ See specific solutions from Chart 1

CHART 3

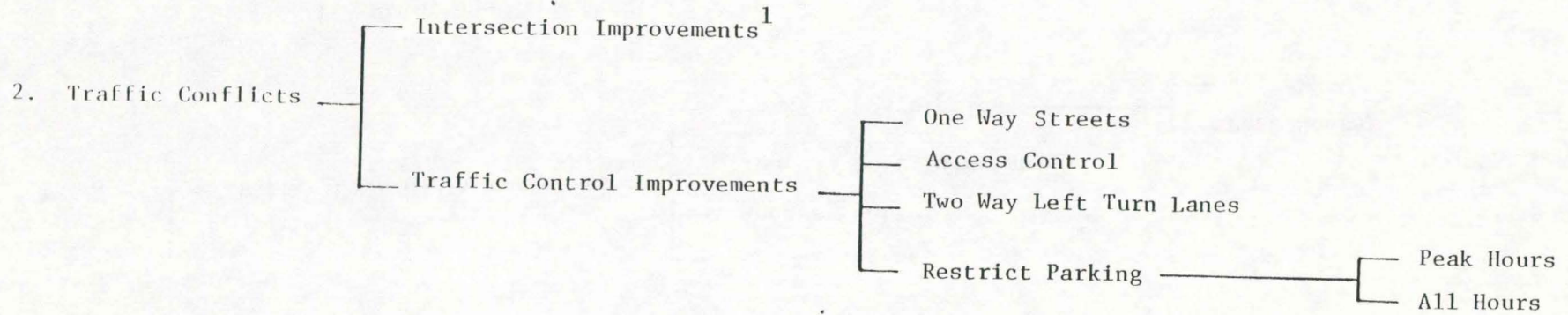
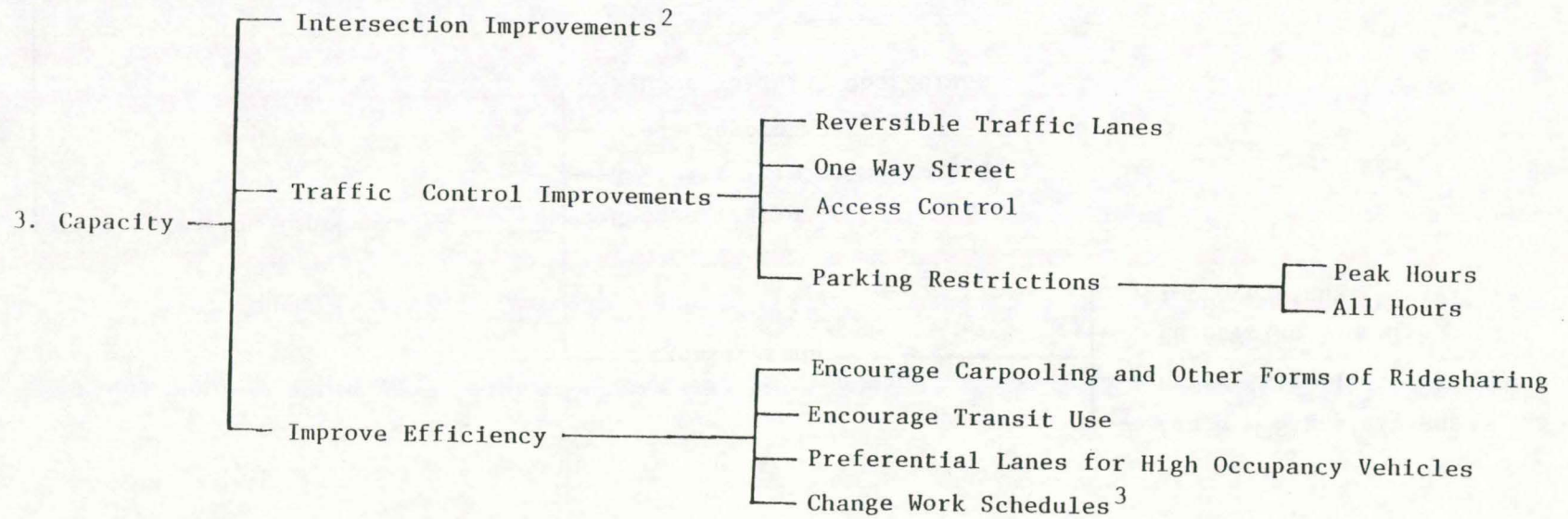


CHART 4



¹See solutions from Chart 1

²See specific solutions from Chart 1

³See specific solutions from Chart 1

CHART 5

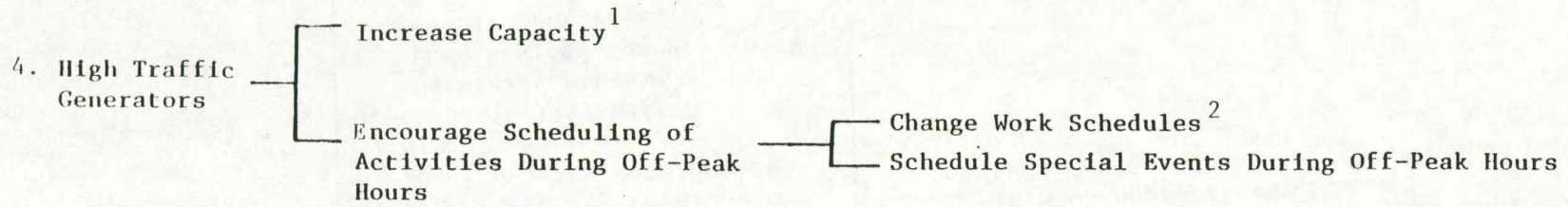
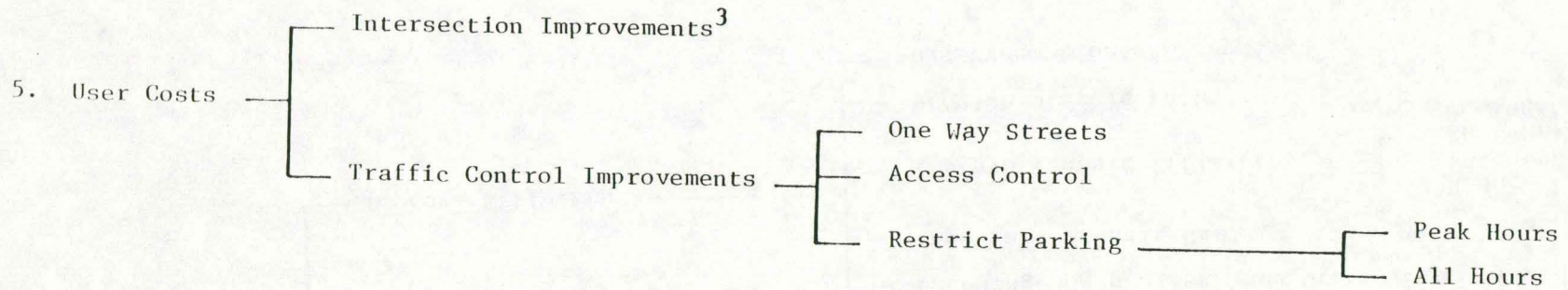


CHART 6



¹See solutions from Chart 3

²See solutions from Chart 1

³See solutions from Chart 1

CHART 7

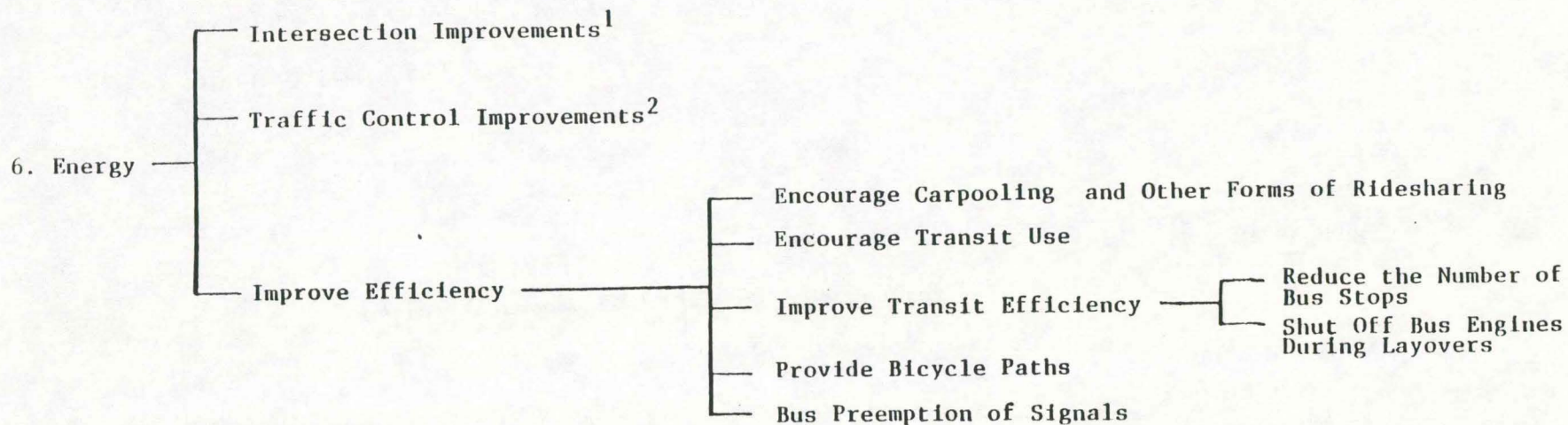
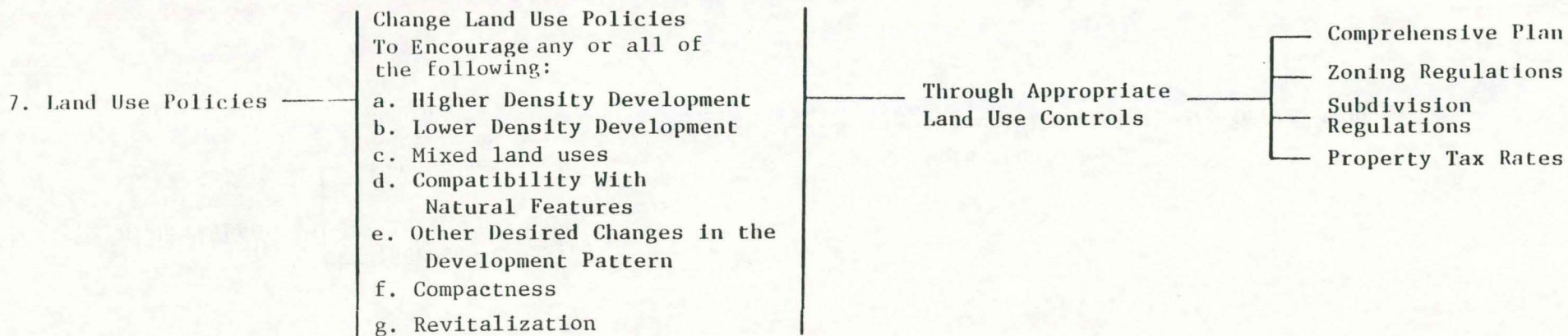


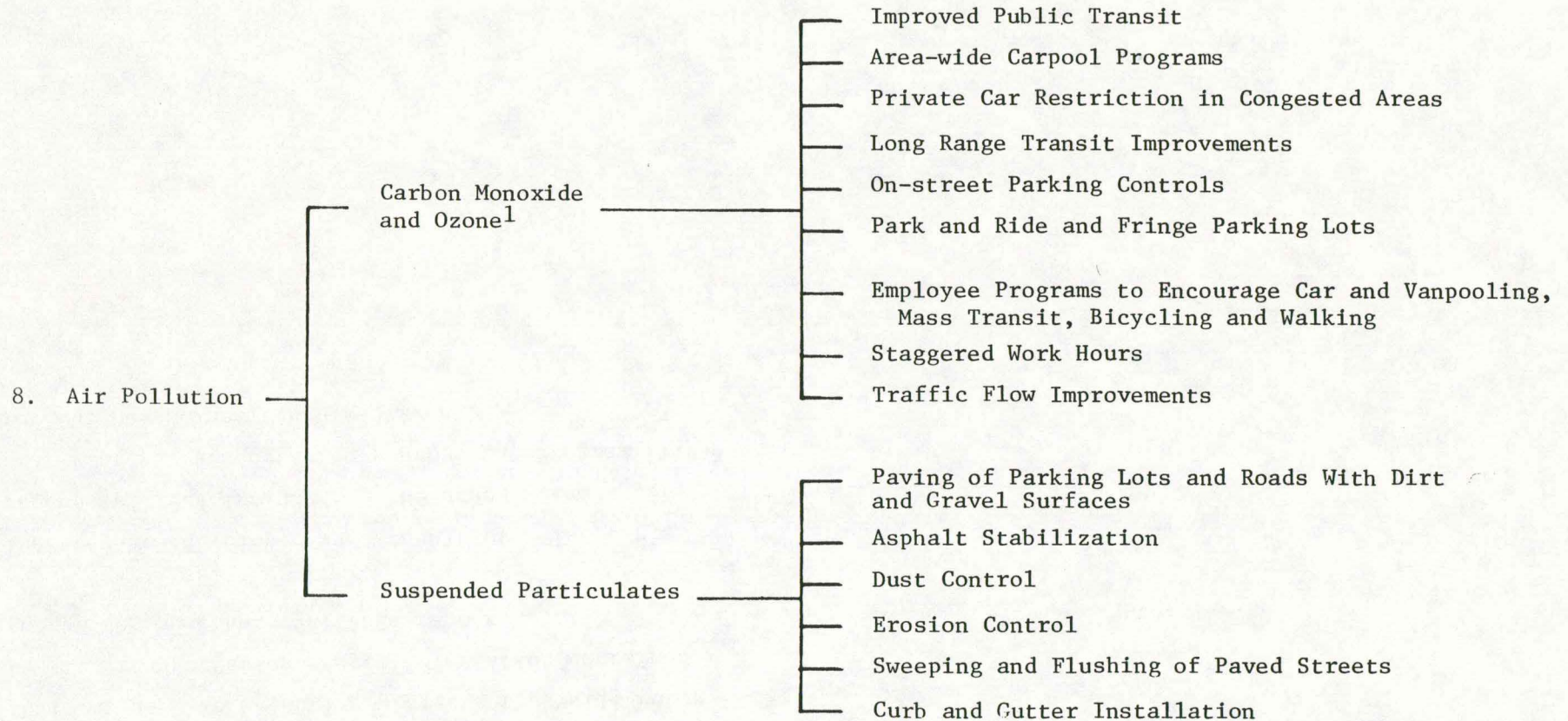
CHART 8



¹See solutions from Chart 1

²See solutions from Chart 5

CHART 9



¹Solutions drawn from pages 254-256 of the "Iowa State Implementation Plan Revisions to Control Air Pollution," Iowa Department of Environmental Quality, 1979. The Des Moines Area is currently in compliance with ozone standards set by the Environmental Protection Agency.

IV. Selection of Projects by the Local Jurisdictions Based on the Identified Alternatives

Using the alternatives as a base the individual governments will select projects to be implemented in their areas. In selecting projects they will refer to the transportation system information contained in the second chapter of this report.

The projects developed as a result of this year's TSM process will be included in the annual element of next year's Transportation Improvement Program (TIP) for the Des Moines Urbanized Area.

V. Roadway History

This section of the report studies three (3) roadways within the urbanized area. The first roadway is University Avenue from 12th Avenue in Pleasant Hill to Interstate 35-80 in Clive/West Des Moines. The second facility studied is Highway 65-69/E.-S.E. 14th Street from 70th Avenue in Polk County to Iowa 5 in Des Moines. The last roadway is Merle Hay Road from N.W. 62nd Avenue in Johnston to University Avenue in Des Moines. These roadways were examined as to the Average Daily Traffic and Accidents at the major intersections for 1978 and 1980.

The results of this study indicate a 2 % decline in the average daily traffic and a 15% decrease in the number of accidents at major intersections along the combined roadways. The tables on the following pages give the breakdown for each roadway and jurisdiction.

As the information indicates, University Avenue evidenced an increase in traffic volume for each jurisdiction (Pleasant Hill, Des Moines, Windsor Heights, Clive, and West Des Moines) from 1978 to 1980; however, the accidents along University Avenue in the Cities of Des Moines, Windsor Heights and Pleasant Hill decreased during the time period studied. The City of West Des Moines evidenced no change with the City of Clive

increasing the number of accidents by 50%.

The results of the study indicate that for U.S. 65-69/E.-S.E. 14th Street Polk County evidenced an increase of 46% in the traffic volume; however, the City of Des Moines witnessed a 9% decrease in traffic volume. In both the City of Des Moines and Polk County a decrease in the number of accidents at major intersections was documented.

The last roadway studied, Merle Hay Road, evidenced a decline within the Cities of Des Moines and Urbandale. Traffic Counts were not available for 1978 for the City of Johnston; therefore, no comparison could be made. The number of accidents decreased in the Cities of Des Moines and Urbandale; however, the City of Johnston witnessed a 200% increase in accidents between 1978 and 1980.

Table 1
TRAFFIC COUNTS

	<u>University Avenue</u>			
	<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
12th Avenue - Iowa 46	14,750	14,550	+ 200	1%
Iowa 46 - Highway 65/69	17,582	16,800	+ 782	5%
Highway 65/69 - Harding Road	13,536	15,200	-1,664	11%
Harding Road - Polk Boulevard	10,448	10,000	+ 448	4%
Polk Boulevard - 63rd Street	11,400	10,000	+1,400	14%
63rd Street - 73rd Street	Unknown	8,600	--	--
73rd Street - 86th/22nd Street	9,600	4,500	+5,100	113%
86th/22nd Street - 100th/35th Street	13,200	11,100	+2,100	19%
100th/35th Street - Interstate 35/80	5,960	4,162	+1,798	43%

	<u>Merle Hay Road</u>			
	<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
62nd Avenue - Interstate 35/80	8,430	Unknown	--	--
Interstate 35/80 - Douglas Avenue	20,240	21,440	-1,200	6%
Douglas Avenue - Hickman Road	19,750	21,050	-1,300	6%
Hickman Road - University Avenue	9,820	10,400	- 580	6%

	<u>U.S. 65-69/E.-S.E. 14th Street</u>			
	<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
70th Avenue - 66th Avenue	8,106	7,633	+ 473	6%
66th Avenue - 54th Avenue	8,710	8,169	+ 541	7%
54th Avenue - Interstate 35/80	16,100	11,000	+5,100	46%

Table 1 continued

	<u>U.S. 65-69/E.-S.E. 14th Street</u>			
	<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
Interstate 35/80 - Broadway Avenue	15,300	15,700	- 400	3%
Broadway Avenue - Aurora Avenue	16,300	17,000	- 700	4%
Aurora Avenue - Euclid Avenue	17,800	20,400	-2,600	13%
Euclid Avenue - University Avenue	18,900	21,100	-2,200	10%
University Avenue - Park Avenue	19,400	20,300	- 900	4%
Park Avenue - McKinley Avenue	21,150	24,100	-2,950	12%
McKinley Avenue - Iowa 5	17,100	19,500	-2,400	12%

<u>University Avenue Total</u>			
<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
96,476	94,912	+1,564	2%

<u>Merle Hay Road Total</u>			
<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
58,240	61,320	-3,080	5%

<u>U.S. 65-69/E.-S.E. 14th Street Total</u>			
<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
158,866	164,902	-6,036	4%

Table 2
ACCIDENTS

	<u>Des Moines</u>		<u>Difference</u>	<u>Percent of 1978</u>
	<u>1980</u>	<u>1978</u>		
Merle Hay Road	91	140	- 49	35%
University Avenue	665	835	-170	20%
S.E. 14th Street	794	829	- 35	4%
	<u>Urbandale</u>			
	<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
Merle Hay Road	22	34	- 12	35%
	<u>Johnston</u>			
	<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
Merle Hay Road	6	2	+ 4	200%
	<u>Clive</u>			
	<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
University Avenue/Boulevard	21	14	+ 7	50%
	<u>West Des Moines</u>			
	<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
University Avenue	6	6	+ 0	0%
	<u>Windsor Heights</u>			
	<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
University Avenue/Boulevard	9	16	- 7	44%

Table 2 continued

	<u>Pleasant Hill</u>		<u>Difference</u>	<u>Percent of 1978</u>
	<u>1980</u>	<u>1978</u>		
University Avenue	0	1	- 1	100%

	<u>Polk County</u>		<u>Difference</u>	<u>Percent of 1978</u>
	<u>1980</u>	<u>1978</u>		
U.S. 65-69	13	14	- 1	7%

<u>University Avenue Total</u>			
<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
701	872	-171	20%

<u>Merle Hay Road Total</u>			
<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
119	176	- 57	32%

<u>U.S. 65-69/E.-S.E. 14th Street Total</u>			
<u>1980</u>	<u>1978</u>	<u>Difference</u>	<u>Percent of 1978</u>
807	843	- 36	4%

VI. Status of Right-Turn-On-Red in Des Moines

The City of Des Moines has recently conducted a detailed review to determine if the law allowing vehicles to turn right at a red traffic signal has had any significant effect on the number of vehicle/pedestrian accidents. The study compared pedestrian accidents during 1972 and 1973 (before the Right-Turn-On-Red law was enacted) to accidents during 1981 and 1982 (after Right-Turn-On-Red was enacted). The results of the study indicated that there has not been a major increase in pedestrian accidents in Des Moines because of the enactment of the Right-Turn-On-Red (R-T-O-R) law. Specifically, during 1981 and 1982, only 8 accidents or 2.5% of the pedestrian accidents involved a R-T-O-R vehicle with none of the accidents involving major injuries.

Table 3 illustrates the total number of pedestrian accidents, the categories of accidents (Fatal, Major, Minor), the age breakdown, the number of school related accidents, the time of day, week and the location of R-T-O-R accidents in 1981 and 1982 are specifically shown.

VII. Intersection Improvement Projects

The City of Des Moines has conducted Before and After Studies on two (2) intersection improvements: S.W. 9th Street and Army Post Road and E. 14th Street and Euclid Avenue. The first study at S.W. 9th St. and Army Post Rd. indicates overall accidents improved significantly. (See Table 4) Specifically, the number of Injury, Left Turn and Right Angle Accidents were reduced from between 79% and 89%; however, the number of Rear End collisions doubled in occurrence. Under the "Operation Analysis" heading, the fuel savings, delay reduction and CO reduction are shown to have diminished significantly after the improvements were completed.

The second improvement at E. 14th St. and Euclid Ave. again shows a significant improvement in the total number of traffic accidents. (See Table 5) At this intersection, the number of Injury, Right Angle and Rear End collisions decreased from between 38% and 100% with the number of Left Turn accidents increasing 125% from four (4) accidents before the improvements were made to nine (9) collisions after completion. Under the "Operation Analysis" heading, the fuel savings, delay reduction and CO reduction are shown to have drastically improved for the Left Turn Lane and New Signal improvements.

Table 3

TRAFFIC AND TRANSPORTATION DEPARTMENT

CITY OF DES MOINES

PEDESTRIAN ACCIDENTS

JANUARY 1983

	1972		1973		1981		1982	
	#	%	#	%	#	%	#	%
Total Accidents	138	100 %	182	100 %	179	100 %	144	100 %
Injuries:								
Fatal	4	2.9%	4	2.2%	3	1.7%	2	1.4%
Major	111	81 %	142	78 %	41	22 %	29	20 %
Minor					144	76 %	111	77 %
Age (Years):								
0 - 4	12	9 %	21	12 %	9	5 %	13	9 %
5 - 12	46	33 %	62	34 %	45	24 %	35	24 %
13 - 18	22	16 %	25	14 %	29	15 %	27	19 %
19 - 30	17	12 %	29	16 %	47	25 %	24	17 %
31 - 60	22	16 %	27	15 %	39	21 %	32	22 %
60+	17	12 %	18	10 %	20	10 %	13	9 %
School Related	21	15 %	31	17 %	16	9 %	15	10 %
Light:								
Daylight	117	85 %	142	78 %	132	74 %	112	78 %
Dark	21	15 %	39	22 %	47	26 %	32	22 %
Day of Week:								
Sunday	5	4 %	7	4 %	14	8 %	15	10 %
Monday	23	17 %	27	15 %	25	14 %	24	17 %
Tuesday	25	18 %	24	13 %	28	16 %	23	16 %
Wednesday	29	21 %	43	24 %	26	15 %	21	15 %
Thursday	21	15 %	20	11 %	33	18 %	20	14 %
Friday	20	14 %	31	17 %	34	19 %	23	16 %
Saturday	15	11 %	30	16 %	19	11 %	18	12 %
Location:								
Midblock	51	37 %	88	48 %	58	32 %	50	35 %
Intersection	74	54 %	66	36 %	68	38 %	50	35 %
Turning Vehicle	33	24 %	21	12 %	29	16 %	18	13 %
Signalized	-	-	-	-	41	23 %	29	20 %
Turn. Veh.	-	-	-	-	26	15 %	17	12 %
RTOR	-	-	-	-	5	3 %	3	2 %
Private Property	9	6 %	20	11 %	26	15 %	14	10 %
Other	4	3 %	8	4 %	27	15 %	30	20 %

Table 4

Traffic and Transportation Department
 City of Des Moines
 January 1983

Intersection Improvement Project
 S.W. 9th Street & Army Post Road
 Before/After Evaluation

I. ACCIDENT ANALYSIS

Year	<u>Before</u>	<u>After</u>	<u>% Change</u>
	1980	1982	
Total Accidents	37	13	- 65 %
Injury Accidents	14	3	- 79 %
Left Turn Accidents	19	2	- 89 %
Right Angle Accidents	8	1	- 88 %
Rear End Accidents	3	6	+100 %

II. OPERATION ANALYSIS

	<u>Left Turn</u>	<u>New</u>	<u>Total</u>
	<u>Lane</u>	<u>Signals</u>	
Fuel Savings (Gal./yr.)	16,000	7,000	23,000
Delay Reduction (Hrs./yr.)	12,000	?	12,000 +
CO Reduction (Lbs./yr.)	22,000	?	22,000 +

Table 5
 Traffic and Transportation Department
 City of Des Moines
 January 1983

Intersection Improvement Project
 E. 14th Street (US 65/69) & Euclid Ave. (US 6/65)
 Before/After Evaluation

I. ACCIDENT ANALYSIS

Year	<u>Before</u>	<u>After</u>	<u>% Change</u>
	1980	1982	
Total Accidents	34	15	- 56 %
Injury Accidents	8	5	- 38 %
Left Turn Accidents	4	9	+125 %
Right Angle Accidents	8	0	-100 %
Rear End Accidents	11	4	- 64 %

II. OPERATION ANALYSIS

	<u>Left Turn</u>	<u>New</u>	<u>Total</u>
	<u>Lane (N-S)</u>	<u>Signals</u>	
Fuel Savings (Gal./yr.)	8,000	21,000	29,000
Delay Reduction (Hrs./yr.)	6,500	14,500	21,000
CO Reduction (Lbs./yr.)	6,500	43,500	50,000

Chapter 2

TRANSPORTATION SYSTEM INFORMATION

This section of the TSM is composed of two (2) divisions: Accident Analysis and Accident Problem Identification. The first section, Accident Analysis, analyzes the high accident locations within the Des Moines Urbanized Area with the second section identifying the major problems at the specified intersections and the planned modifications to remedy the problems.

ACCIDENT ANALYSIS

One of the TSM objectives for the Des Moines Urbanized Area is the reduction of injuries, deaths and property damage resulting from traffic accidents. The first step in accomplishing this task is to identify the top accident locations. From this list, local units of government can select intersections to implement appropriate TSM Action.

- 1) traffic control improvements
- 2) eliminating unnecessary traffic control devices
- 3) signal visibility upgrading
- 4) intersection improvements
- 5) mid-block improvements
- 6) intersection widening

A three year accident analysis was used to determine the top 50 accident locations in the Des Moines Metropolitan Area, the top twenty-five in Des Moines,

the top fifteen in Polk County, the top eleven in West Des Moines, the top five in Clive and Urbandale, the top four in Johnston, and the top three in Pleasant Hill and Windsor Heights. The criteria used in the analysis of these locations were:

- 1) Total Number of Accidents - this method consists of listing street locations by the number of traffic accidents that have occurred in the previous three years (1979-1981)
- 2) Traffic Accident Rate - this rate is the quotient of the number of traffic accidents that occur at a street location and the number of vehicles passing through the location during the same period. This is expressed in accidents per million entering vehicles. Thus, this rate reflects not only the accident experience at a location, but also the exposure to traffic. The formula for determining critical accident locations is as follows:

$$\text{Accident Rate} = \frac{N}{\text{MEV}}$$

where N = Three year total accidents
MEV = Three year 1,000,000 vehicles entering intersection

These categories are then placed in descending order, from highest to lowest, and each location is assigned a rank by Total Accidents. Accidents/MEV is calculated for the Des Moines Metro Area only.

Five maps follow the listing of accident locations. The first illustrates the top twenty-five Des Moines Metro Area locations by total number of accidents, the second shows the top twenty-five Des Moines Metro Area locations by Accidents/MEV, the third shows the top twenty-five Des Moines locations by overall rank, the fourth map illustrates the top three accident locations in each jurisdiction outside of Des Moines by overall rank, and finally the last map shows the top three accident locations for Polk County by overall rank.

Table 6
TOP 50 ACCIDENT LOCATIONS
IN THE METRO AREA
1979-1981

Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total
1	Army Post Rd. - S.W. 9th St.	115	2	3.78	4	6
2	University Ave. - 6th Ave.	106	5	3.45	8	13
3	Euclid Ave. - E. 14th St.	125	1	3.25	13	14
4	Grand Ave. - E. 15th St.	114	3	3.30	12	15
4	Watrous Ave. - S.E. 14th St.	93	8	3.52	7	15
5	University Ave. - E. 30th St.	102	6	3.40	10	16
6	Virginia Ave. - S.E. 14th St.	76	15	4.40	2	17
7	Army Post Rd. - S.E. 5th St.	90	9	3.31	11	20
8	Grand Ave. - E. 14th St.	96	7	3.11	14	21
9	University Ave. - 2nd Ave.	96	7	3.09	15	22
10	McKinley Ave. - S.E. 14th St.	78	14	3.30	12	26
10	Ingersoll Ave. - 31st St.	63	22	8.27	1	23
11	Euclid Ave. - 2nd Ave.	107	4	2.64	23	27
11	Indianola Ave. - Park Ave.	60	24	3.91	3	27
12	Beaver Ave. - Douglas Ave.	89	10	2.77	21	31
12	Watrous Ave. - S.W. 9th St.	78	14	2.86	17	31
13	McKinley Ave. - S.W. 9th St.	79	13	2.81	19	32
13	Army Post Rd. - S.W. 14th St.	62	23	3.43	9	32
13	Johnson Ct. - Maple St. - E. 15th St.	57	27	3.73	5	32
14	Hartford Ave. - S.E. 14th St.	59	25	3.43	9	34
15	Pennsylvania Ave. - University Ave.	68	18	2.82	18	36
15	Forest Ave. - Harding Rd.	62	23	3.12	13	36
15	University Ave. - 13th St.	54	30	3.56	6	36
16	University Ave. - 19th St.	71	17	2.74	22	39
17	Cottage Gr. - Harding Rd. - Olive St.	62	23	2.80	20	43
18	Hickman Rd. - Merklin Way - Merle Hay Rd.	73	16	2.29	28	44
19	Army Post Rd. - Fleur Dr.	66	20	2.43	25	45
19	Walnut Ave. - E. 15th St.	55	29	2.92	16	45
20	Delaware Ave. - Euclid Ave.	63	22	2.63	24	46
21	Washington St. - E. 14th St.	63	22	2.35	26	48
22	Harding Rd. - Hickman Rd.	68	18	1.99	33	51
23	I-235 - University Ave.	82	11	1.25	42	53
23	University Ave. - E. 29th St.	63	22	2.12	31	53
23	Hubbell Ave. - E. 38th St.	58	26	2.30	27	53
24	Fleur Dr. - Grand Ave. - Locust St.	65	21	1.99	33	54
25	I-235 - Keo Way	80	12	.98	43	55
25	Army Post Rd. - S.E. 14th St.	59	25	2.15	30	55
26	Park Ave. - S.W. 9th St.	60	24	2.10	32	56
27	Maury Ave. - S.E. 14th St.	67	19	1.72	38	57
28	University Ave. - 42nd St.	55	29	2.17	29	58
29	86th St. - Hickman Rd.	59	25	1.89	34	59
30	I-235 - E. 15th St.	68	18	.92	44	62
30	Park Ave. - S.E. 14th St.	58	26	1.86	36	62
31	I-235 - 42nd St.	68	18	.85	45	63
31	Euclid Ave. - 6th Ave.	58	26	1.80	37	63
31	Locust St. - 9th St.	56	28	1.87	35	63
32	Hubbell Ave. - University Ave.	59	25	1.49	40	65
32	University Ave. - E. 14th St.	58	26	1.64	39	65
33	Douglas Ave. - Merle Hay Rd.	57	27	1.32	41	68
34	I-235 - Pennsylvania Ave.	56	28	.76	46	74

Table 7
TOP 25 ACCIDENT LOCATIONS
IN DES MOINES
1979-1981

Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total
1	Army Post Rd. - S.W. 9th St.	115	2	3.78	2	4
2	Euclid Ave. - E. 14th St.	125	1	3.25	8	9
2	University Ave. - 6th Ave.	106	5	3.45	4	9
3	Grand Ave. - E. 15th St.	114	3	3.30	7	10
4	University Ave. - E. 30th St.	102	6	3.40	5	11
4	Watrous Ave. - S.E. 14th St.	93	8	3.52	3	11
5	Army Post Rd. - S.E. 5th St.	90	9	3.31	6	15
6	Grand Ave. - E. 14th St.	96	7	3.11	9	16
6	Virginia Ave. - S.E. 14th St.	76	15	4.40	1	16
7	University Ave. - 2nd Ave.	96	7	3.09	10	17
8	Euclid Ave. - 2nd Ave.	107	4	2.64	15	19
9	McKinley Ave. - S.E. 14th St.	78	14	3.30	7	21
10	Beaver Ave. - Douglas Ave.	89	10	2.77	13	23
11	McKinley Ave. - S.W. 9th St.	79	13	2.81	12	25
11	Watrous Ave. - S.W. 9th St.	78	14	2.86	11	25
12	University Ave. - 19th St.	71	17	2.74	14	31
13	I-235 - University Ave.	82	11	1.25	21	32
14	Hickman Rd. - Merklin Way - Merle Hay Rd.	73	16	2.29	17	33
15	I-235 - Keo Way	80	12	.98	22	34
16	Pennsylvania Ave. - University Ave.	68	18	2.28	18	36
16	Army Post Rd. - Fleur Dr.	66	20	2.43	16	36
17	Harding Rd. - Hickman Rd.	68	18	1.99	19	37
18	Maury Ave. - S.E. 14th St.	67	19	1.72	20	39
19	I-235 - E. 15th St.	68	18	.92	23	41
20	I-235 - 42nd St.	68	18	.85	24	42

Table 8
OTHER HIGH ACCIDENT LOCATIONS
IN THE URBANIZED AREA
1979-1981

Table 8 continued

Urbandale						Clive							
Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total	Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total
1	70th St. - Douglas Ave.	52	1	3.57	1	2	1	86th Ave. - University Blvd.	44	2	2.99	1	3
2	72nd St. - Douglas Ave.	33	2	3.05	2	4	2	86th Ave. - Hickman Rd.	59	1	1.89	3	4
3	Meredith Dr. - Merle Hay Rd.	32	3	1.08	4	7	3	86th Ave. - Harbach Rd.	35	3	2.72	2	5
4	Douglas Ave. - 86th St.	20	5	1.75	3	8	4	86th Ave. - University Ave.	22	4	1.09	5	9
5	Hickman Rd. - 73rd St.	23	4	.82	5	9	5	86th Ave. - Franklin Ave.	17	5	1.75	4	9
West Des Moines						Johnston							
Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total	Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total
1	I-235 - 35th Ramps	49	1	2.12	1	2	1	N.W. 62nd Ave. - N.W. Beaver Ave.	11	1	6.47	1	2
2	35th St. - Westown Pkwy.	33	2	1.35	2	4	2	N.W. 70th Ave. - N.W. 86th St.	8	3	2.90	2	5
3	Ashworth Rd. - Eighth St.	26	4	1.21	3	7	3	Merle Hay Rd. - I-80-35	10	2	1.08	4	6
4	22nd St. - Westown Pkwy	27	3	1.11	5	8	3	Merle Hay Rd. - N.W. 62nd Ave.	8	3	2.47	3	6
5	I-235 - 22nd St. Ramps.	25	5	.95	6	11							
5	35th St. - Ashworth Rd.	21	7	1.20	4	11							
6	Grand Ave. - First St.*	22	6	.65	10	16							
7	35th St. - Woodland Ave.	18	9	.93	8	17							
7	Grand Ave. - Fourth St.	17	10	.94	7	17							
8	22nd St. - University Ave.*	19	8	.52	11	19							
8	Eighth St. - Grand Ave.	17	10	.87	9	19							
Windsor Heights						Unincorporated Polk County							
Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total	Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total
1	73rd St. - I-235	50	1	2.07	1	2	1	N.E. 3rd St. - N.E. 46th Pl./Ave.	18	4	2.43	1	5
2	63rd St. - I-235	20	2	1.30	2	4	2	Hwy. 6 - N.E. 56th St.	20	3	1.80	3	6
3	73rd St. - University Ave.	20	2	1.01	3	5	2	N.E. 22nd St. - N.E. 46th Ave.	18	4	1.85	2	6
							2	U.S. 69 - N.E. 46th Ave.	37	1	1.52	5	6
							3	Hwy. 415 - N.W. 46th Ave.	29	2	1.32	6	8
							4	U.S. 69 - N.E. 44th Ave.	17	5	.85	9	14
							4	Hwy. 415 - N.W. 49th Ave.	17	5	.85	9	14
							4	U.S. 69 - N.E. 51st Ave.	16	6	1.02	8	14
							4	N.E. 46th Ave. - N.E. 38th St.	9	10	1.60	4	14
							5	N.E. 46th Ave. - N.E. 29th St.	9	10	1.09	7	17
							6	U.S. 69 - N.E. 43rd Ave.	15	7	.79	11	18
							7	U.S. 69 - N.E. 66th Ave.	9	10	.81	10	20
							8	Hwy. 415 - Aurora Ave.	14	8	.70	13	21
							8	Hwy. 415 - N.W. 54th Ave.	12	9	.76	12	21
							9	U.S. 69 - Aurora Ave.	14	8	.62	14	22
Pleasant Hill						Altoona							
Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total	Overall Rank	Location	Total Acc.	Rank	Acc/MEV	Rank	Total
1	Hwy. 163 - N. Hickory Blvd.	24	1	1.90	1	2	1	Hwy. 65 - N.E. 56th St.	14	1	1.31	1	2
2	Hwy. 46 - Carlisle Rd.	10	2	1.70	2	4	2	Hwy. 6 - 1st Ave. S.	11	2	.73	2	4
3	Pleasant Hill Blvd. - Maple Dr.	7	3	1.60	3	6	3	Hwy. 65 - N.E. 54th Ave.	10	3	.71	3	6

* West Des Moines accidents only

Figure 1

Top 25 accident locations
in the Des Moines Metro
Area by the Total Num-
ber of Accidents

1979-1981

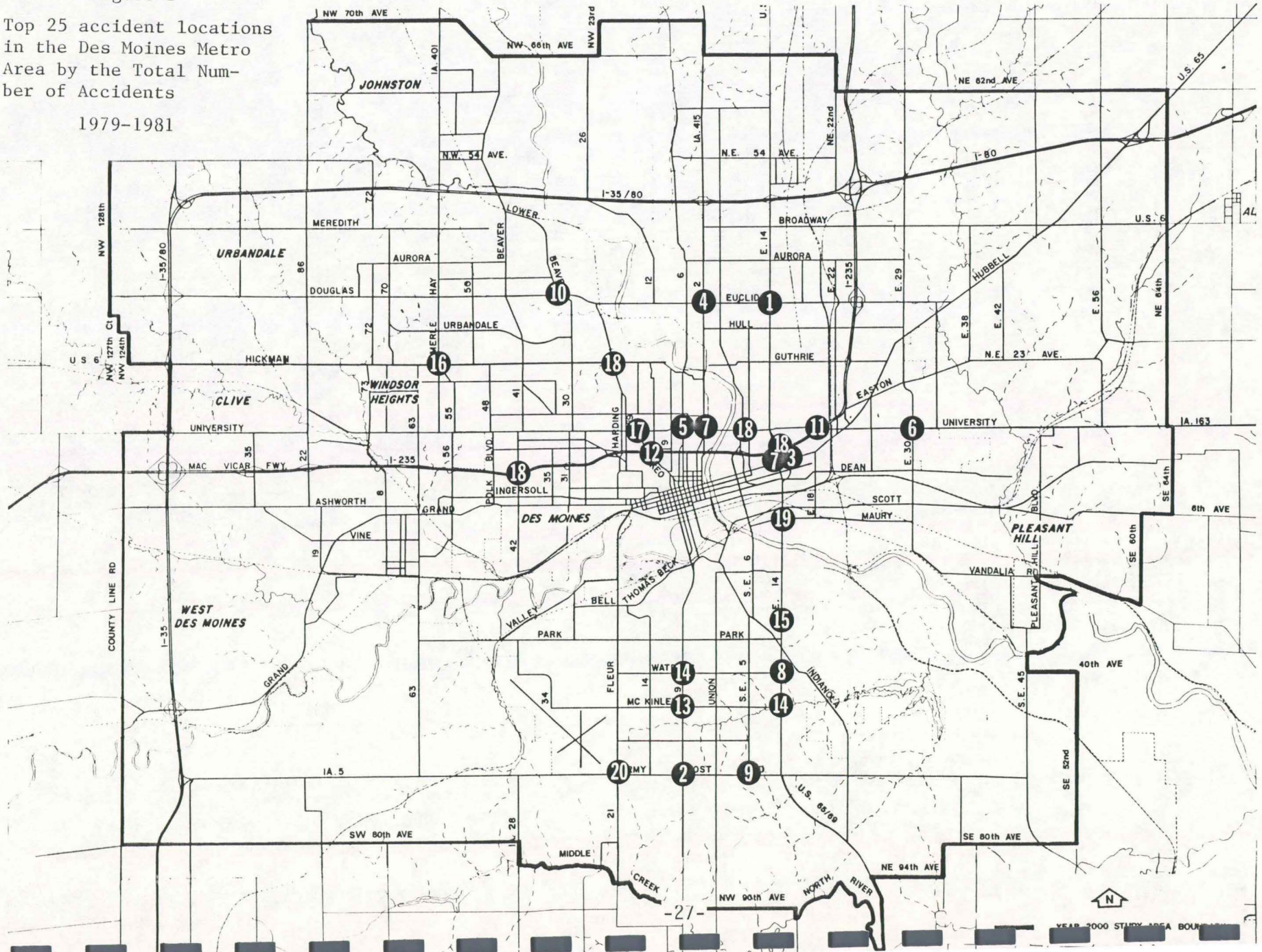


Figure 2

Top 25 accident locations
in the Des Moines Metro
Area by Accident/MEV
1979-1981

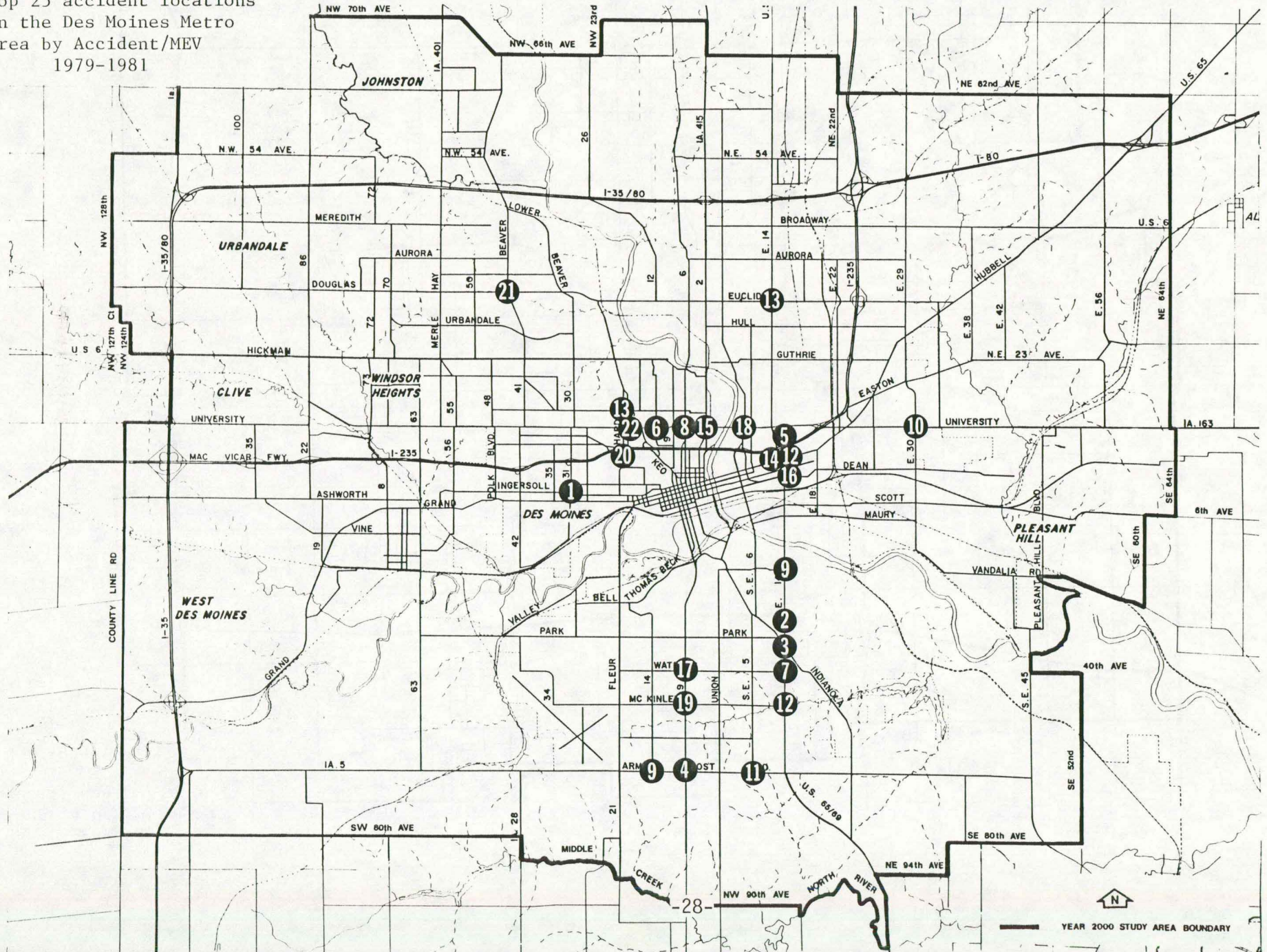


Figure 3

Top 25 accident locations in Des Moines by Overall Rank

1979-1981

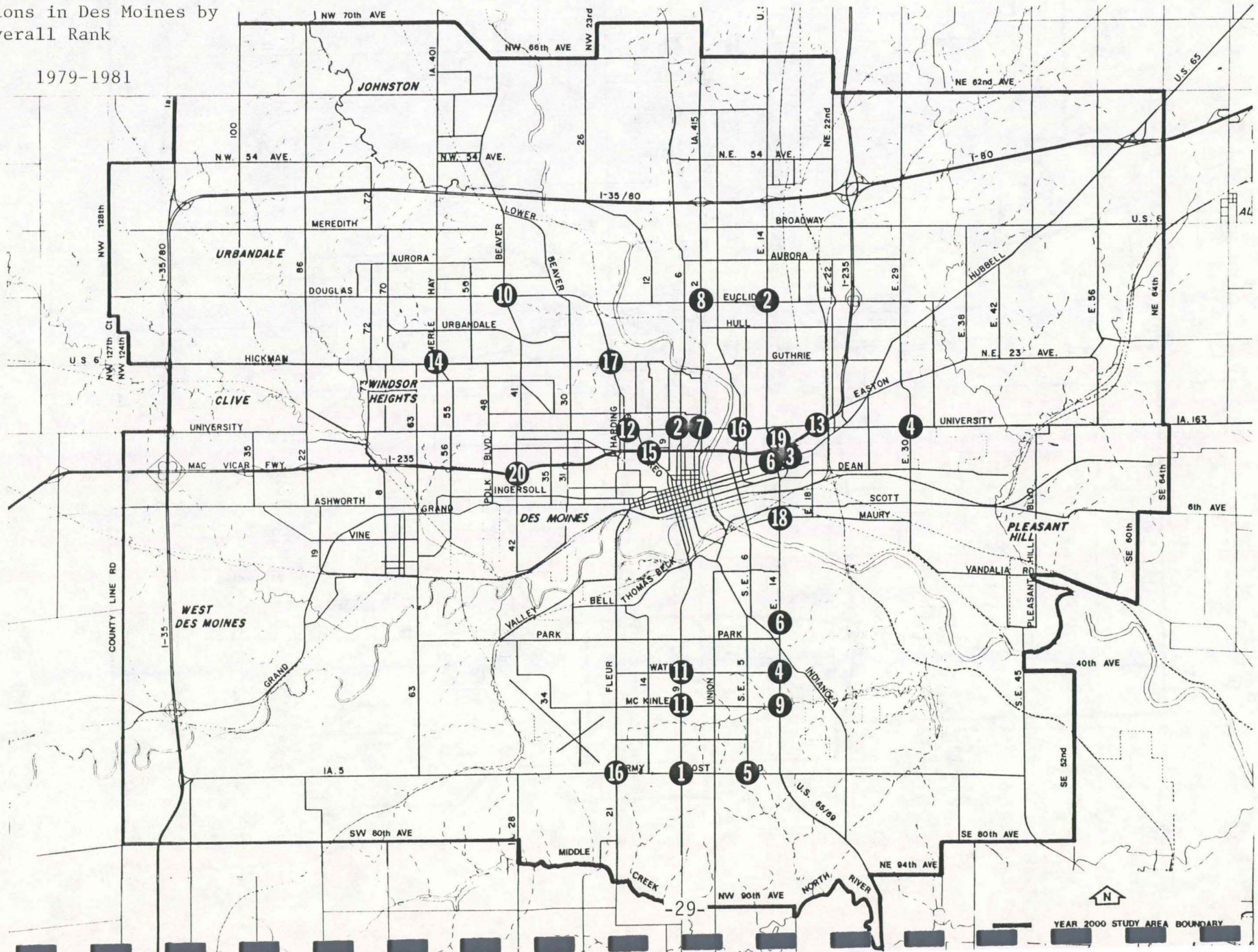


Figure 4

Other High Accident Locations in the Urbanized Area (Top Three locations in each jurisdiction outside of Des Moines by Overall Rank) 1979-1981

1979-1981

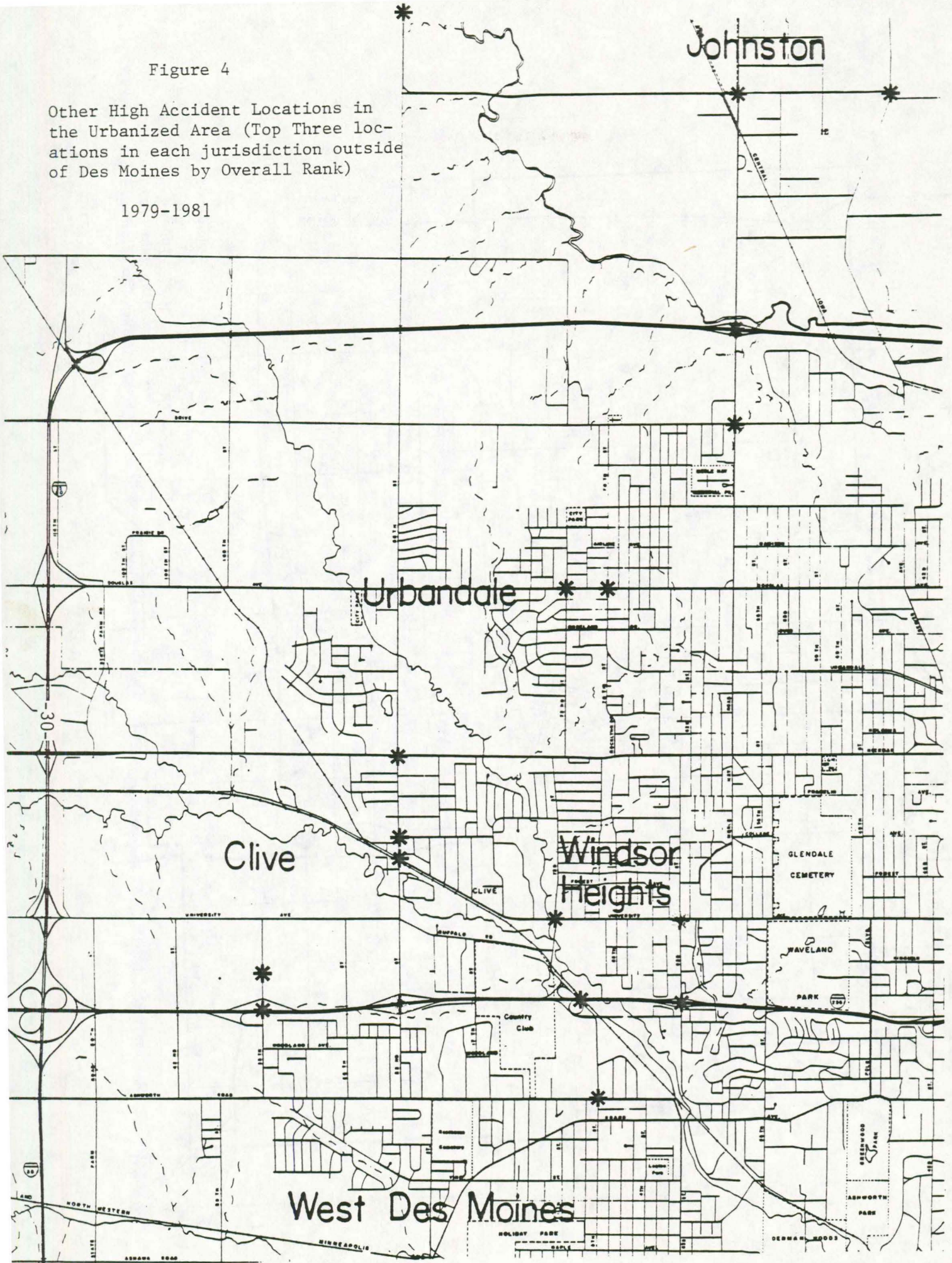


Figure 5

Top 3 Accident Locations
in Unincorporated Polk
County by Overall Rank

1979-1981

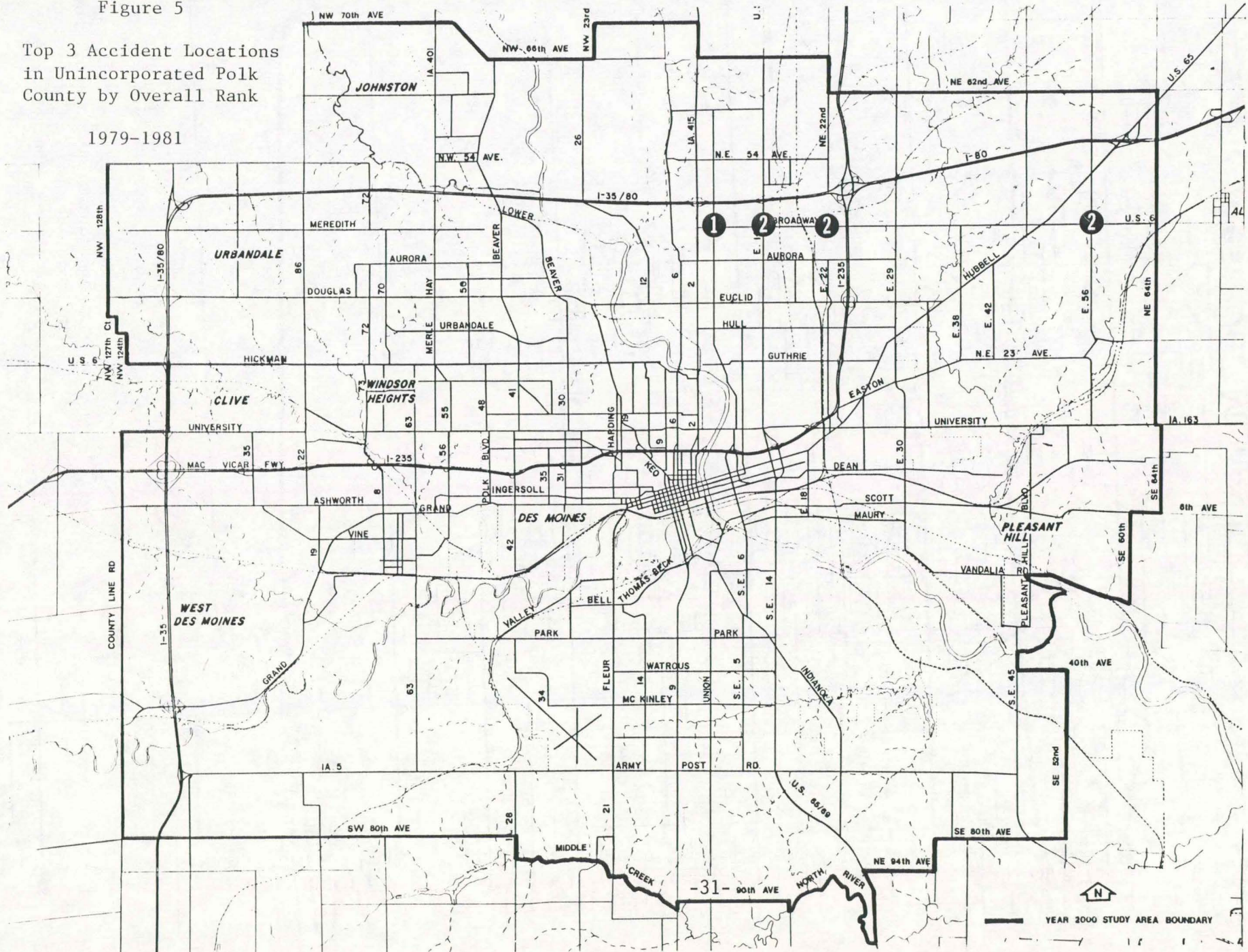
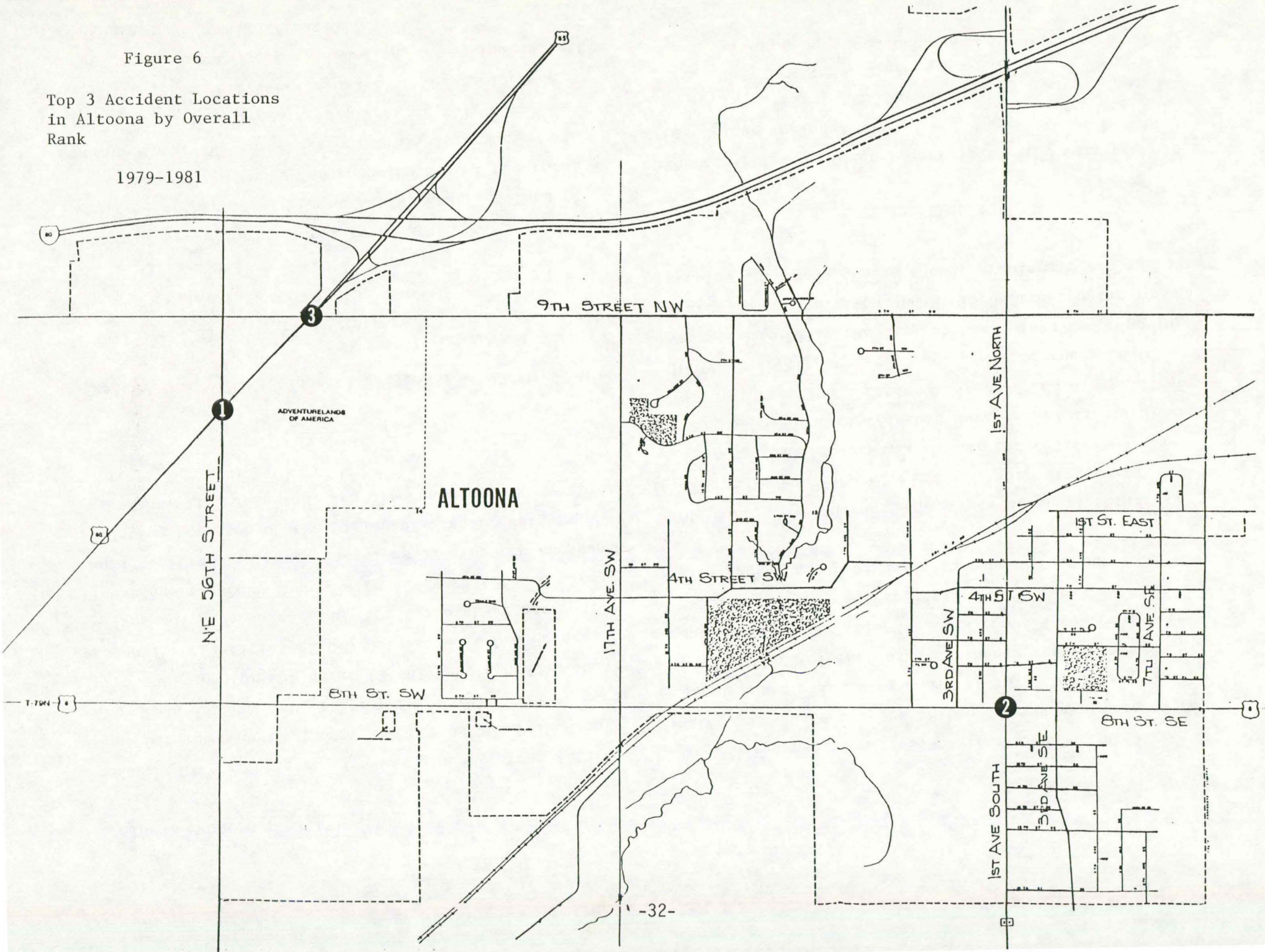


Figure 6

Top 3 Accident Locations
in Altoona by Overall
Rank

1979-1981



ACCIDENT PROBLEM IDENTIFICATION

Information for this section was acquired from Accident Diagrams submitted by the Cities and Polk County. From this information, the top three (3) accident types were analyzed for the three (3) highest accident locations for the Cities of Des Moines, West Des Moines, Clive, and Urbandale. The four (4) highest accident locations for Polk County were analyzed (there were no definitive top three locations). The top accident location for each of the Cities of Windsor Heights, Pleasant Hill, Johnston, and Altoona were also analyzed.

Des Moines

The top three (3) accident locations for the City of Des Moines include:

- 1) Euclid Ave. - E. 14th St.
- 2) Army Post Rd. - S.W. 9th St.
- 3) Grand Ave. - E. 14th and 15th Sts.

The most prevalent accident types at Euclid Avenue and E. 14th Street are Right Angle, Rear End, and Left Turn Collisions which comprise 84% of the total accidents at the intersection. This information was compiled during 1975 and 1976. After this data was compiled, the intersection was improved to include spot improvements, a raised median, a continuous left turn lane and resignalization.

At the intersection of S.W. 9th Street and Army Post Road the accident types that occurred most often were: Right Angle, Sideswipe and Left Turn Collisions which comprise 82% of the total accidents for the years 1975 and 1976. After this data was comprised, the intersection was improved to include left turn lanes on all approaches, resignalization and widening.

The most prevalent accident types at the intersection of Grand Avenue and E. 14th - E. 15th Street are Right Angle, Sideswipe, and Rear End Collisions which make up 89% of the accidents during 1977 and 1978. This intersection location has evidenced a significant increase in the number of accidents in the past few years; therefore, the City of Des Moines is proposing a study of the E. 14th and E. 15th Street split to determine the cause of the recent problems.

West Des Moines

The top three accident locations for the City of West Des Moines include:

- 1) I-235 - 35th Ramps
- 2) 35th St. - Westown Pkwy.
- 3) 22nd St. - Westown Pkwy.

There is no one prevalent accident type at Interstate 235 and the south 35th Street Ramp. Three (3) accidents occurred during 1981 one of each of the following: Rear End, Left Turn and Sideswipe. The City of West Des Moines is currently considering signals at the south ramps to alleviate this problem.

The second intersection, 35th Street and Westown Parkway, elicits a high percentage of Right Angle Collisions with this single category of accident making up 83% of the total accidents at this location during 1981. This location is slated for traffic signalization next year.

The most prevalent accident type at 22nd Street and Westown Parkway is the Right Angle Collision comprising 100% of the accidents at this location during 1981. No intersection improvements are being considered by the City of West Des Moines at this time.

Clive

The top three (3) accident locations for the City of Clive include:

- 1) 86th Ave. - Hickman Rd.
- 2) 86th Ave. - University Blvd.
- 3) 86th Ave. - Harbach Rd.

The most prevalent accident types at N.W. 86th Street and Hickman Road are Right Angle, Rear End, and Left Turn Collisions comprising 91% of the accidents during 1981. No intersection improvements are being considered by the City of Clive at this time.

The second intersection, N.W. 86th Avenue and University Blvd., elicits a high percentage of Rear End, and Left Turn Collisions comprising 82% of the total accidents during 1981. The City of Clive is considering upgrading the signalization and adding turn lanes in the future.

The most prevalent accident types at N.W. 86th Avenue and Harbach Road are Rear End, Right Angle, and Left Turn Collisions with four (4) accidents each comprising 86% of the total accidents during 1981. No intersection improvements are currently being planned at this location by the City of Clive as signalization has recently been added to this intersection.

Urbandale

The top three (3) accident locations for the City of Urbandale include:

- 1) 70th Street - Douglas Avenue
- 2) Douglas Avenue - 72nd Street
- 3) Meredith Drive - Merle Hay Road

The most prevalent accident type at the intersection of 70th Street and Douglas Avenue are:¹¹ Right Angle and Left Turn Collisions comprising 86% of the accidents at this location during 1981. The City of Urbandale is currently studying the problem at this intersection. Some of the possibilities studied include: widening Douglas Avenue and constructing left turn only lanes.

The second intersection, Douglas Avenue and 72nd Street, elicits a high percentage of Left Turn Collisions which comprises 57% of the accidents with the remaining accidents (1 each) occurring at Right Turn, Right Angle, and Rear End Collisions. Intersection improvements for this location are currently programmed in the Annual Element of the Transportation Improvement Program (TIP).

The last intersection, Meredith Drive and Merle Hay Road, elicits a high degree of Left Turn, Right Angle, and Rear End Collisions which comprise 82% of the total accidents at this location during 1981. The City of Urbandale is currently studying the situation at this intersection and is considering adding protected turn lanes and new signalization to correct the problem.

Unincorporated Polk County

The top four (4) accident locations within Polk County

include:

- 1) N.E. 3rd St. - N.E. 46th Pl./Ave.
- 2) Hwy. 6 - N.E. 56th St.
- 3) N.E. 22nd St. - N.E. 46th Ave.
- 4) U.S. 69 - N.E. 46th Ave.

The most prevalent accident type at N.E. 3rd Street and N.E. 46th Pl. Ave. is the Right Angle Collisions which comprises 100% of the total accidents at this location during 1979. No additional improvements are planned for this intersection as overhead flashing lights were installed at this intersection last year.

The most common accident type at Highway 6 and N.E. 56th Street is the Right Angle Collision which comprises 60% of the total accidents at this intersection during 1981. No intersection improvements are being planned at this time.

The third intersection, N.E. 22nd Street and N.E. 46th Avenue, elicits a high percentage of Rear End and Left Turn Collisions comprising 100% of the total number of accidents during 1979. A signalization project is currently being planned at this intersection.

The fourth intersection, U.S. 69 and N.E. 46th Avenue, elicits a high degree of Rear End Collisions comprising

Johnston

The top accident location within Johnston is:

N.W. Beaver Avenue - N.W. 62nd Street

The most prevalent accident type at this intersection is the Left Turn Collision which comprised 50% of the accidents during 1982. No intersection improvements are being considered by the City of Johnston at this time.

75% of the total number of accidents during 1979.

Polk County is currently waiting until the Iowa Department of Transportation has completed work on E. 14th Street to begin planning its changes for this intersection.

Windsor Heights

The top accident location within Windsor Heights is:

73rd Street - Interstate 235

The most prevalent accident types at the intersection of 73rd Street and Interstate 235 are Out-of-Control, Rear End, and Sideswipe Collisions which comprise 87% of the accidents during 1981. No intersection improvements are being considered by the City of Windsor Heights at this time.

Pleasant Hill

The top accident location within Pleasant Hill is:

Highway 163 - N. Hickory Blvd.

The most common accident types at the intersection of Highway 163 and North Hickory Boulevard are Left Turn, Right Angle, and Rear End Collisions comprising 86% of the accidents at this location during 1981. The City of Pleasant Hill currently has no plans for improving this intersection.

Altoona

The top accident location within Altoona is:

Highway 65 - N.E. 56th Street

There are no identifiable accident types at this intersection as there were four accidents; Right Angle, Rear End, Sideswipe, and Left Turn, with one accident each during 1979. No intersection improvements are being considered by the City of Altoona at this time.

ACCIDENT PROBLEM SUMMARY

<u>Intersection</u>	<u>Jurisdiction</u>	<u>Major Problem</u>	<u>Secondary Problem</u>	<u>Third Problem</u>
Euclid Avenue - E. 14th St.	Des Moines	Rear End	Left Turn	Right Angle
S.W. 9th St. - Army Post Rd.	Des Moines	Left Turn	Right Angle	Sideswipe
Grand Ave. - E. 14 & 15th Sts.	Des Moines	Sideswipe	Right Angle	Rear End
I-235 - 35th Ramps	West Des Moines	Rear End*	Left Turn*	Sideswipe*
35th St. - Westown Parkway	West Des Moines	Right Angle	Sideswipe	Left Turn
22nd St. - Westown Parkway	West Des Moines	Right Angle ¹	--	--
86th Ave. - Hickman Rd.	Clive	Right Angle	Rear End	Left Turn
86th Ave. - University Blvd.	Clive	Rear End	Left Turn	--
86th Ave. - Harbach Rd.	Clive	Rear End	Right Angle	Left Turn
N.E. 3rd St. - N.E. 46th Pl./Ave.	Polk County	Right Angle ¹	--	--
Hwy. 6 - N.E. 56th St.	Iowa DOT	Right Angle	Out-of-Control	Sideswipe
N.E. 22nd St. - N.E. 46th Ave.	Polk County	Rear End	Left Turn	--
U.S. 69 - N.E. 46th Ave.	Polk County	Rear End	--	--
70th St. - Douglas Ave.	Urbandale	Right Angle	Left Turn	--
Dougals Ave. - 72nd St.	Urbandale	Left Turn	--	--

* Each accident type comprised 1/3 of the total accidents

¹ No other accident types occurred at this intersection during the designated year

ACCIDENT PROBLEM SUMMARY continued

<u>Intersection</u>	<u>Jurisdiction</u>	<u>Major Problem</u>	<u>Secondary Problem</u>	<u>Third Problem</u>
Meredith Drive - Merle Hay Road	Urbandale	Left Turn	Right Angle	Rear End
73rd Street - Interstate 235	Windsor Heights	Out-of-Control	Rear End	Sideswipe
Highway 163 - N. Hickory Blvd.	Pleasant Hill	Left Turn	Right Angle	Rear End
N.W. 62nd St. - N.W. Beaver Ave.	Johnston	Left Turn	Right Angle	Out-of-Control
Highway 65 - N.E. 56th St.	Altoona	Right Angle ²	Rear End	Left Turn Sideswipe

² One accident occurred for each of the four types of accidents

TRANSIT REPORTS

The following three (3) reports which describe TSM transit planning activities were prepared during FY 1982 by the System Planning and Development Division of the Des Moines Metropolitan Transit Authority.

1. An Inventory of Transit Funding Alternatives (explained in detail on next page)

This report examines the various existing and proposed transit funding alternatives throughout the country. The report consists of an overview of transit systems receiving alternative financing, and an analysis of funding alternatives.

2. Fare System for Mobility Handicapped

This report examines the basis for decisions regarding a paratransit fare system and contains the basic types of fare structure, and the fare collection methods that could be utilized.

3. MTA Marketing Plan

This report details the strategies, tactics and phasing of the MTA's marketing efforts for FY81-82. The plan identifies the costs and budget allocations needed to meet these marketing objectives, and the specified activities that reflect the MTA's plan for short-term growth and long-term success.

MASS TRANSIT ALTERNATIVES

The Metropolitan Transit Authority (MTA) recently published a report entitled, " AN INVENTORY OF TRANSIT FUNDING ALTERNATIVES; PHASE I ", This report is the first section of a three-part document examining the various transit funding alternatives nationwide. Due to the changes occurring in the funding support to the mass transit systems, many cities are finding it necessary to create new, local funding sources. In a recent survey conducted by the United States Conference of Mayor's, approximately 46% of the responding cities stated that they had earmarked some form of taxes to aid in the cost of providing mass transit services. In addition, half of the cities that stated they had not earmarked taxes, had plans to propose such a tax within two (2) years.

The American Public Transit Association (APTA) released their primary funding of a study they conducted on alternative fund. In this report it states that the funding source used most often to create additional transit funds was the sales tax. The second most popular source was the use of lottery proceeds. Other alternatives used were motor vehicle taxes, earnings taxes, mortgage taxes and ad-

ditional miscellaneous sources.

The next section and the bulk of the report deals with the advantages and disadvantages of each of the twenty (20) funding mechanisms for mass transit. The five (5) major headings under which these mechanisms are located are:

1. Broad-Based Taxes and Revenue Sources;
2. Charges on Motor Vehicle Users;
3. Charges on Property Benefiting from Transit;
4. Borrowing Strategies;
5. Joint Ventures with the Private Sector.

The next phase of the three-part report is now under study.

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