Creston, Iowa

TRAFFIC SAFETY STUDY

Henningson, Durham & Richardson

January 1977

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HENNINGSON, DURHAM & RICHARDSON
ARCHITECTURE · ENGINEERING · PLANNING · SYSTEMS · ECOSCIENCES
8404 Indian Hills Drive
Omaha, Nebraska 68114
January 1, 1977

Mr. Arthur Becker, City Engineer
City of Creston
402 W. Montgomery
Creston, Iowa 50801

Re: Creston Traffic Safety Study
HDR Project No. R550-01-02

Dear Mr. Becker:

In accordance with our contractural agreement for engineering services, Henningson, Durham & Richardson is pleased to submit our final report on the Creston Traffic Safety Study.

This report contains a written and graphical accounting of information collected in our study. The recommendations are based upon a careful study of accident history and traffic control devices currently utilized by the City. We believe that the implementation of this report will benefit traffic safety in Creston.

We wish to thank you, the City staff, involved local organizations, the Iowa Department of Transportation, and the Federal Highway Administration for their assistance and cooperation during the course of this study. We sincerely hope that this report will be a useful guide towards the betterment of traffic safety in the City of Creston.

Respectfully,

HENNINGSON, DURHAM & RICHARDSON

Robert A Rohling

Robert A. Rohling, P.E.
Vice President

James H Suttle

James H. Suttle, P.E.
Transportation Engineer

CRESTON, IOWA

TRAFFIC SAFETY STUDY

JANUARY 1977

Prepared by

HENNINGSON, DURHAM & RICHARDSON

OMAHA, NEBRASKA

This report was prepared through a grant provided by the United States Department of Transportation, Federal Highway Administration pursuant to the provision of Section 402 of Title 23 U.S. Code.

ACKNOWLEDGEMENTS

Mayor	William Weaver	
Council	Robert Bierkamp*	David Johns
	James Crawford	June Loudon
	Robert Fullenkamp**	Larry Taylor
	Melvin Fulton	Al P. Zarifis
City Engineer	Arthur Becker	
Police Chief	Robert Kessler	

AND THE MANY ORGANIZATIONS, AGENCIES, BUSINESSES AND OTHER GROUPS AND INDIVIDUALS WHO CONTRIBUTED THEIR TIME AND THOUGHTS IN SUPPLYING FACTORS, INFORMATION, IDEAS, SUGGESTIONS AND CRITICISMS TO THE CONSUMMATION OF THIS REPORT.

* Began serving in July 1976.
** Left Council in July 1976.

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CHAPTER 1

INTRODUCTION

The contents of this report document the study efforts undertaken by Henningson, Durham & Richardson for a traffic engineering safety study of the City of Creston, Iowa. The study places particular emphasis upon high accident locations, signs and signals, the downtown business district, school pedestrian areas, and railroad crossings and underpasses.

The content of the report is structured in such a manner as to provide the City with clear guidelines and directions on the improvements which should be made to improve traffic safety and traffic flow within the City. With this in mind, the reader will find that the first chapters in the report primarily address the city street system at large, wherein the discussion covers the functional classification of streets, city-wide traffic flow, city traffic generators, city-wide high accident locations, city-wide intersection controls and other items relating to the general street system. The later chapters in the report begin to address specific areas such as the downtown, school areas, railroad crossings, truck routes, and special spot location improvements.

The closing chapter addresses an implementation program for the City with emphasis placed upon funding and financing of improvements as well as their scheduling and priorities. At the end of the report is an appendix which contains appropriate supporting information relevant to the study.

STUDY OBJECTIVES

In recognition of the high incidence of traffic accidents and the growing traffic demands on its streets, the City of Creston applied for and received a grant for a Traffic Safety Study. This Study was funded by the Iowa Department of Transportation (IDOT), Division of Highways and the Federal Highway Administration under the Highway Safety Program Standard 13, issued in accordance with the Highway Safety Act of 1966, as revised.

The primary objective of this study was to develop measures for the improvement of traffic safety on the city streets. This was accomplished by the application of accepted traffic engineering practices, principles, and standards to the physical elements of the existing street system and the operational elements of the traffic control devices which regulate traffic on that street system.

STUDY AREA

The study area consisted of the streets and roadways within the corporate limits of the City of Creston, Iowa. However, the Consultant did include in the analysis those intersections in proximity to the corporate limits which in the Consultant's opinion had a relationship to traffic flow and safety to the City.

SCOPE OF STUDY

The basic study approach involved a 3-phase process consisting of the following steps:

1. Survey of existing traffic conditions, traffic control devices, and accident history.

2. Evaluation of existing system and controls to identify deficiencies and develop solutions.

3. Formulation of suggested improvements and guidelines for implementation.

Toward fulfilling these three phases, the scope of work for the study utilized the following task in the study's analysis and evaluation.

1. Analyze traffic flow patterns as related to access, circulation, safety and efficiency in the movement of vehicles and pedestrians in the downtown, at school locations and adjacent areas, and at the high accident locations.

2. In the downtown area of Division, Adams, Walnut, Howard Streets, analyze left turn provisions, crosswalk locations, one-way street and alley lows, street capabilities, curb turning radii, signal and sign placements, sight distances, driveway entries, loading-unloading zones, any urban renewal street closing impacts and other traffic flow characteristics. Develop recommended improvements where deficiencies are identified.

3. Analyze the vehicle-pedestrian conflicts in the downtown and around all schools and develop recommended improvements for increasing pedestrian safety.

4. Study the downtown street system to determine where traffic control changes can contribute to improved safety and operation, where parking restrictions may be needed to promote safety, and what impacts parking removals have on parking supply.

5. Analyze all high accident locations (principally intersections with seven or more accidents per year) and develop corrective measures.

6. Review existing traffic control devices in the downtown, around schools and at high accident locations for conformance with the Manual on Uniform Traffic Control Devices [1] as to proper usage, adequacy and placement of signs, signals and pavement markings.

7. Analyze any safety conflict with existing truck movements through the City and develop, where feasible, a truck route plan for the City.

8. Toward the implementing of recommended changes and improvements, prepare a general implementation plan, including cost estimates, time schedule, priorities and funding sources.

9. Analyze pedestrian safety needs and prepare appropriate recommendations for a safety program, particularly as related to the education of children for using safer routes to school.

10. Review traffic flow and safety at railroad crossings and around those special traffic generators with significant or potential impacts for accident.

COMMUNITY INVOLVEMENT

During the conduct of the study, the Consultant actively solicited opinions and thoughts of City officials, businessmen, school officials, City department representatives, and other interested parties. Their thoughts and opinions were evaluated and served as a useful input for completing this report.

The working relationships established with the local individuals served as a valuable source of information for the study. These contacts also served as a valuable instrument in establishing a two-way avenue of communication that enabled individuals on the local level to be better informed of the progress of the study while, as the same time, assisting the Consultant in better addressing the traffic problems of the community.

The Appendix contains a listing of those individuals and agencies contacted throughout the study.

CHAPTER 2

STREET SYSTEM

As the county seat of Union County, Creston is an important agricultural community in South Central Iowa. Its population is approximately 8,500 people which should increase to approximately 10,000 persons over the next 10-year period.

TRAFFIC GENERATORS

As may be seen in Figure 2-1, Creston like many midwestern cities grew and developed along the major railroad facilities. As such, the Burlington Northern divides the City basically in an east-west pattern.

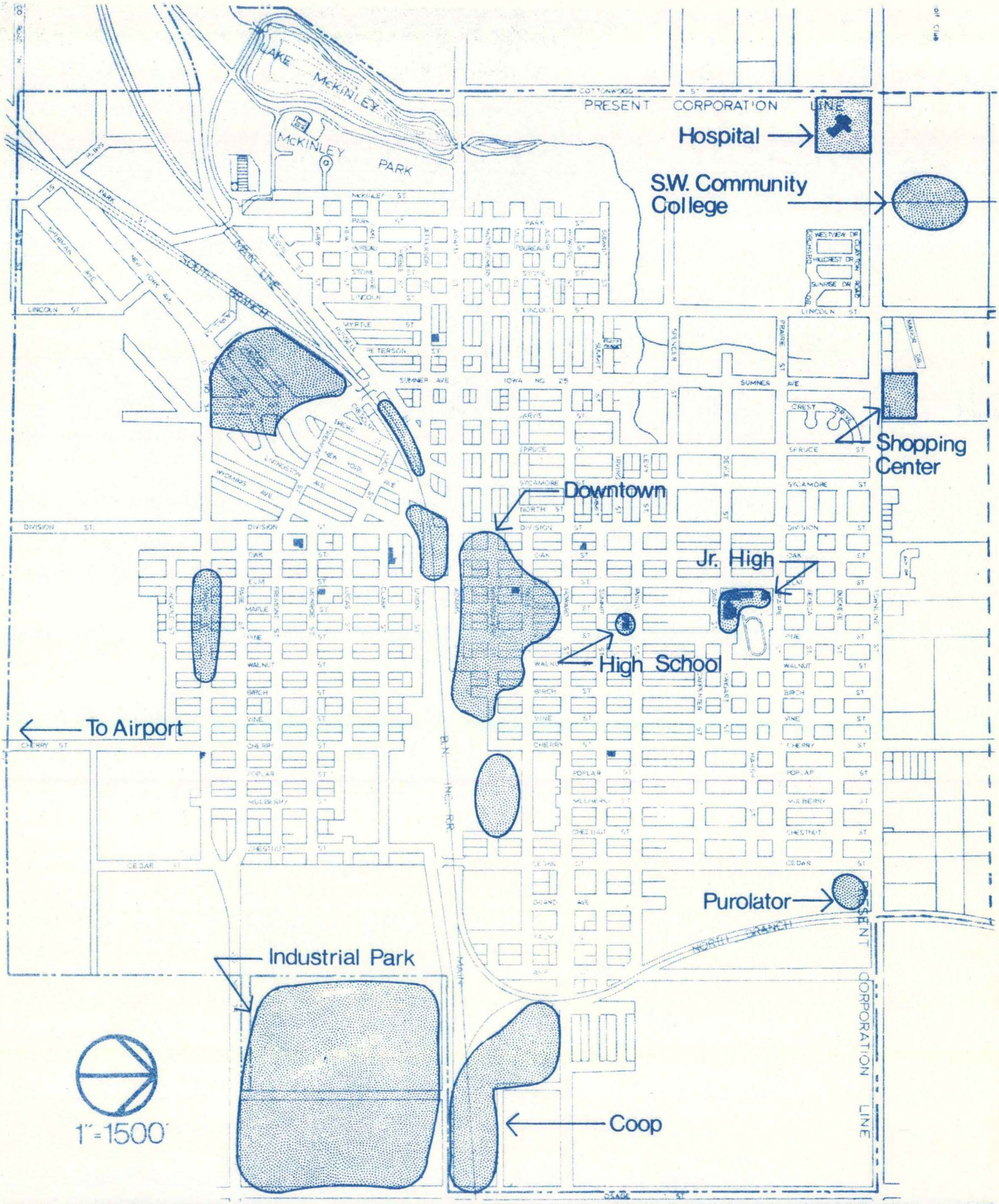
Major commercial traffic generators comprise the entire downtown area of Creston which is located in the center of the City and to the north of the Burlington rail line. Other commercial areas consist of the Easter's Shopping Center on Townline Street to the northwest, miscellaneous commercial businesses distributed along U.S. 34 to the south, and the concentration of a number of automobile dealers and major commercial retail establishments all located in the proximity of the junction of U.S. 34 and State Highway 25.

The City is promoting an industrial park to the east and southeast. Several industries have already developed in the area consisting of light manufacturing as well as agricultural operations. Other industrial type uses may be found along the Burlington Northern rail line in proximity to the downtown area.

Education facilities such as the Southwestern Community College, Creston High School, and Creston Junior High also serve as major traffic generators.

As may be seen in Figure 2-1, the traffic generators are distributed across the entire city area. This serves to distribute the generated traffic fairly evenly over a large number of arterial and collector streets. The grid pattern and placement of crossings over the Burlington Northern assist in the distribution and collection of the generated traffic volumes.

Primary among the traffic generators would be the downtown area and the developing activities in the industrial park area. Of primary concern to the industrial park will be the handling of employee traffic and truck traffic associated with the various operations, particularly the Farmers COOP installations.



Creston, Iowa

TRAFFIC GENERATORS

figure 2-1

CITY-WIDE STREET SYSTEM

Figure 2-2 illustrates the functional street classifications for the City of Creston. As may be seen, the major connecting links through the City consist of U. S. 34 traversing an east-west pattern across the southern part of the City and State Highway 25 passing basically in a north-south pattern through the near center of the City.

The other streets serving as arterials fairly well blanket the City accessing all major traffic generators. Principal streets of these arterials are the north-south arterials of Elm, Cherry, Cedar, and Sycamore. East-west arterials consist of Townline, Prairie, Howard, Adams, Russell and Union-Clark.

In the outlying areas of the City, important streets which are now classified basically as collectors are Osage to the east and Cottonwood to the west.

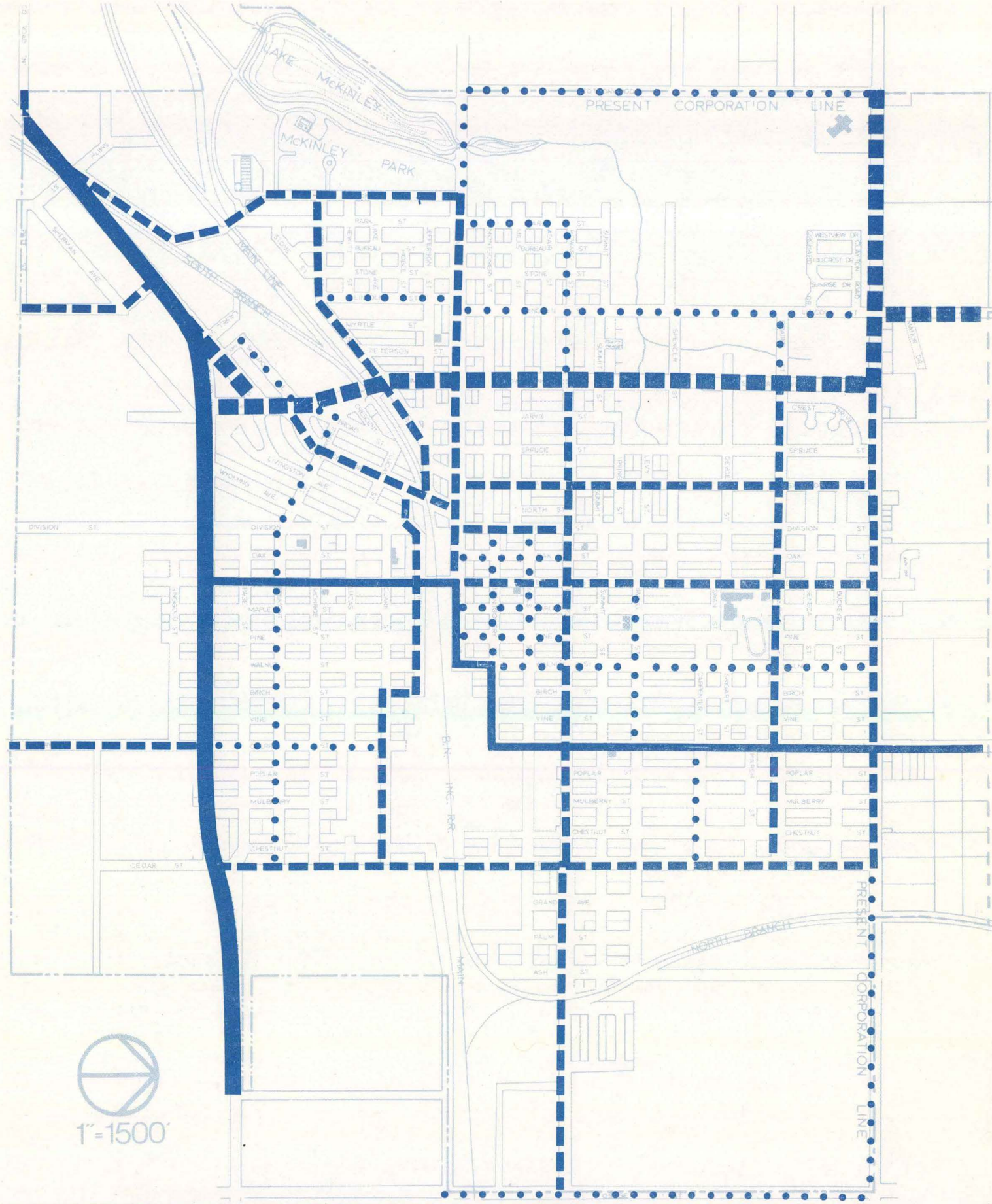
Overall, the functional classification of the streets appears reasonable based upon the field inspections of the Consultant and based upon a review of prior plans and studies of the City.

Figure 2-3 shows the Federal-Aid system as reasonably established for the City. All of the roadways included in the functional street classification system are repeated in the Federal-Aid system designation.

Here again, the primary Federal-Aid routes consist of U. S. 34 and State Highway 25. All other city arterials and collectors have been placed on the Federal-Aid urban classification.

With regard to street improvements, State Highway 25 is currently being reconstructed as a 4-lane undivided roadway from Russell Street north along Sumner Avenue to Townline and westward along Townline from Sumner to the corporate limits at Cottonwood. Additional 2-lane reconstruction of Highway 25 is also in progress as part of this project from the corporate limits on westward. The anticipated opening date is sometime in the fall of 1976.

Table 2-1 indicates the projected project improvements tentatively programmed for Creston during the next 3-year period. Several of the items in the program involve spot improvements to small bridges or culverts and short sections of city streets. Two of the improvements involving the extension of Locust Street and a section of an unnamed road, both of which are in the industrial park.



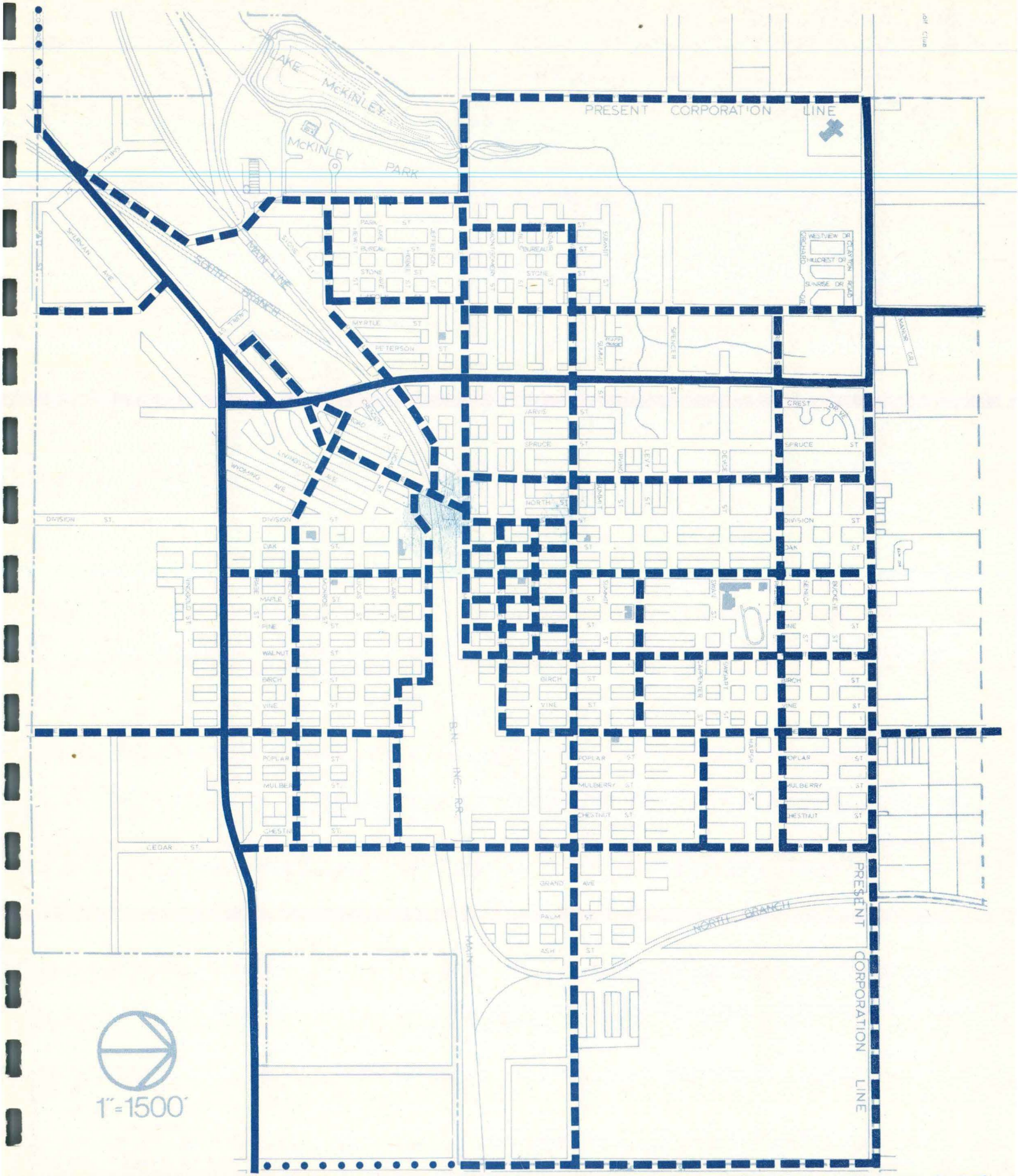
Creston, Iowa

connecting link rural principal arterial
connecting link rural minor arterial
other principal arterial

minor arterial
collector

figure 2-2

FUNCTIONAL STREET CLASSIFICATION



Creston, Iowa

primary ——— secondary • • • • • urban — — — —

figure 2-3

FEDERAL AID SYSTEM

TABLE 2-1

CRESTON STREET CONSTRUCTION PROGRAM

Year	Street Name or Number	Project Limits From	To	Type of Construction
1977	Sumner Ave. (Iowa 25)	Russell	Prairie	P.C.C. Pavement Grading & Drainage
1977	Ash	Howard	Mills	Grade, Drain & Rock Surface
1977	Mills	Palm	Ash	Grade, Drain & Rock Surface
1978	(Unnamed) Ind. Road	Adams	ext. of Lucas	P.C.C. Pavement Grading & Drainage (Co-op) Project
1978	extension of Lucas	Chestnut	(Unnamed) Ind. Rd.	P.C.C. Pavement Grading & Drainage (co-op) Project.
1978	Sumner Ave. (Iowa 25)	at Sheldon		Add right hand turn lanes
1978	Elm	Spencer	DeVoe	Replace double box culvert
1979	Oak	Spencer	DeVoe	Replace bridge with culvert
1979	Spencer	Oak	Division	Replace bridge with culvert
1979	Lincoln	US 34	Patt	P.C.C. Pavement Grading & Drainage

Since the development of the street construction program, the City has had discussions regarding several additional improvements. These improvements are listed below, although none of them have been formerly programmed at this point in time.

1. Install school crossing signal lights at the intersection of Adams and Peterson Streets.

2. Install traffic signal lights at the intersection of Adams and Division Streets.

3. Upgrade the existing traffic signal lights at the intersection of Adams and Elm Streets to conform with the Iowa Manual on Uniform Traffic Control Devices.

4. Pave McKinley Street from Adams Street south to existing paving, approximately one block south of Kirby Street, with six-inch plain portland cement concrete, thirty one feet wide with integral curb.

5. Pave Kirby Street from McKinley Street to Russell Street with six-inch plain portland cement concrete, between existing concrete curb and gutters.

TRAFFIC FLOW PATTERNS

Figures 2-4 and 2-5 provide an illustration of the traffic flow patterns within the City of Creston. The volumes shown generally reflect the 1975-1976 traffic flows as based upon a series of counts taken by the Iowa Department of Transportation and the City during the time period of 1973 through 1976.

The volumes in the downtown area were taken in 1975 by the County and Community Development Department. Major counts taken along U.S. 34 and State Highway 25 were made by IDOT in 1974. Several 1973 counts existed on the farm-to-market roadways entering the Creston area.

To supplement the above counts, a series of sample traffic counts were taken by the City Engineer's Office at the request of the Consultant. These sample count locations were mainly used to supply volume information on streets with no traffic volume history and for those locations presently containing school signals.

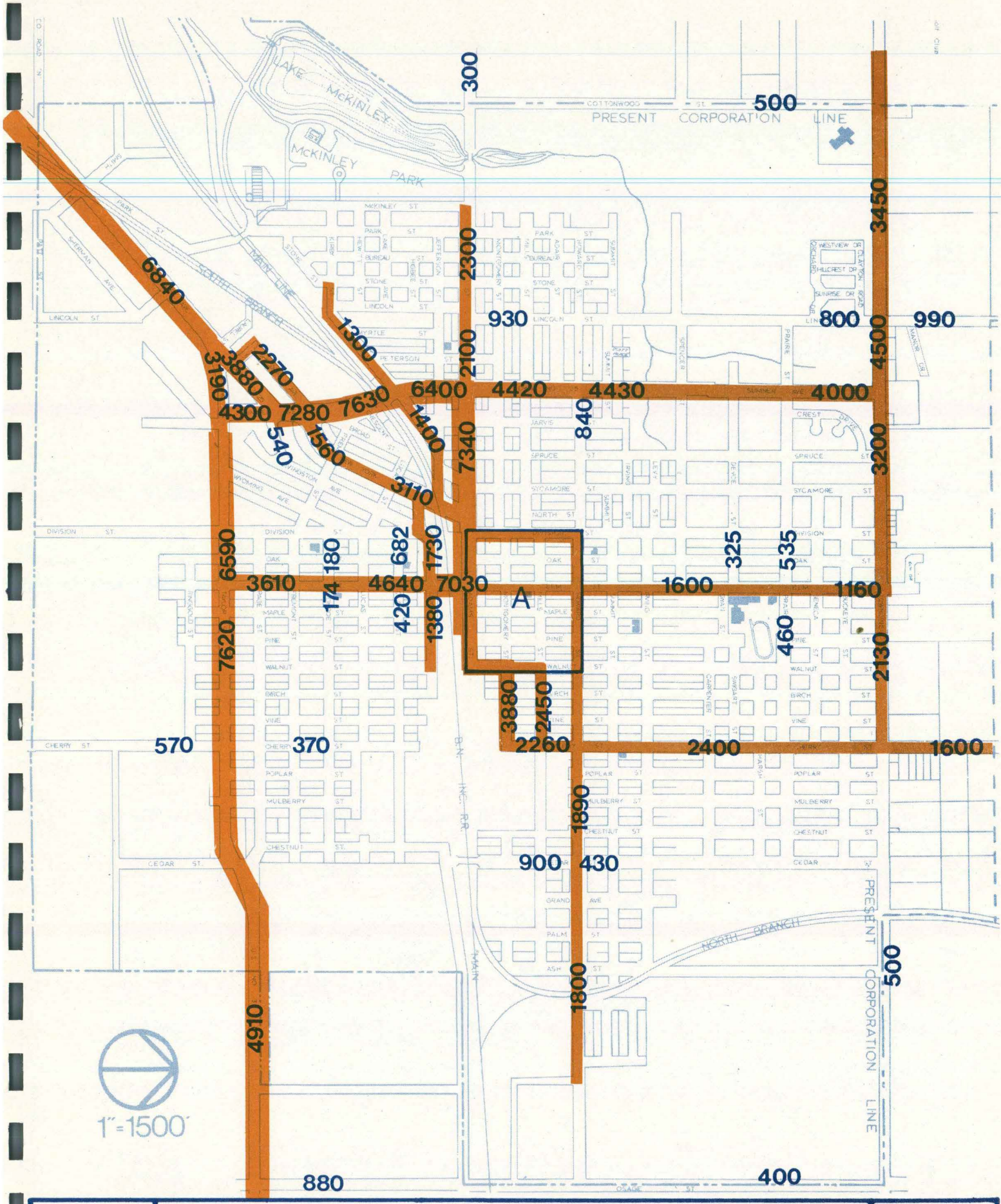
The highest volume intersection in the City is Adams Street at Elm Street. Both of these streets constitute major entry-exits to the downtown area and are fed by several other arterial and collector streets. This intersection presently is signalized. It also is the highest accident location in the City as will be described in Chapter 3.

Both U.S. 34 and Highway 25 constitute high traffic volume corridors through the City. Adams Street, likewise, continues to carry high volumes westward from the downtown area to its junction with Highway 25.

Other roadways through the City basically carry a moderate to low traffic volume as may be seen in the traffic flow figures. Primary among these streets are Elm Street which connects north and south from the downtown area to Townline and to U.S. 34. Townline also serves as an important traffic bypass to the northern areas of the City and to the industrial park and Farmers COOP located on the eastern extremities of the City.

As may be seen in Figure 2-5, access and circulation within the downtown area is primarily dependent upon Adams, Elm, and Maple. Of secondary importance to the flow patterns is the one-way pair of Montgomery and Mills.

In reviewing the traffic flow patterns, the Consultant has made the following general observations and conclusions:

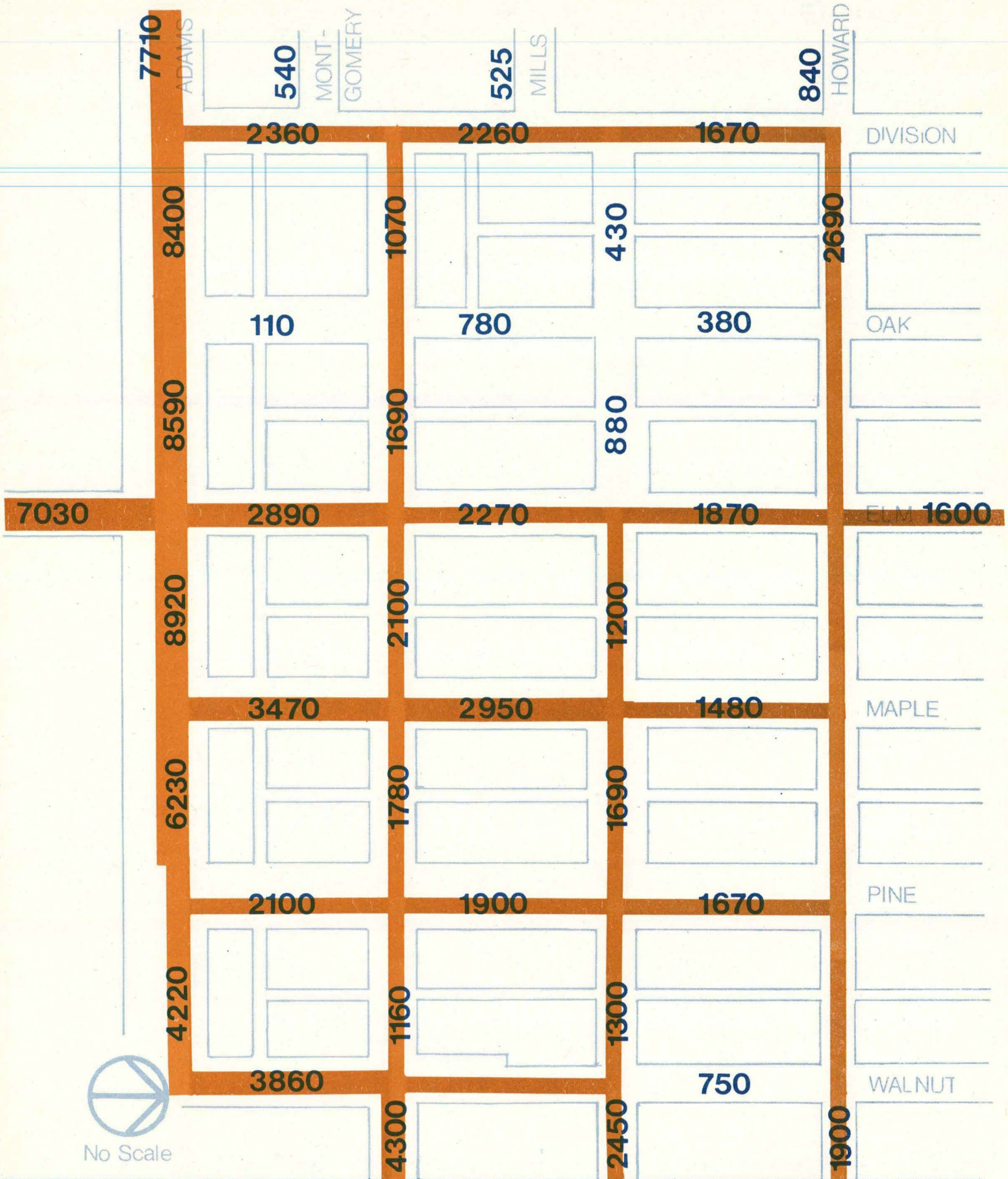


Creston, Iowa

based upon 1973–1976 counts; 0–1000 2500–5000
A–see figure 2-5 1000–2500 5000 & over

figure 2-4

AVERAGE DAILY TRAFFIC



Creston, Iowa

based upon 1975 & 1976 counts

0–1000
1000–2500
2500–5000
5000 & over

figure 2-5

DOWNTOWN DAILY TRAFFIC FLOW

1. Major street capacity restraints do not seem to exist for the traffic flow patterns in the City. There are, however, several locations, particularly in the downtown area, where traffic flow is impeded by on-street parking, poor signalization, and poor signing. Detailed recommendations to improve these situations will be given in later sections of this report.

2. The traffic volumes at the existing signalized intersections do meet the volume warrants of the Manual on Uniform Traffic Control Devices with the exception of the school crossing signals and the downtown signals on Montgomery.

3. With specific regard to the school crossing signals, the Consultant does question their need based upon a review of the street conditions and vehicular traffic volumes. Nevertheless, there are other factors to be considered in the retention of the school crossing signals. Therefore, a more detailed analysis of these intersections is required and is provided in Chapter 6.

4. With regard to the downtown signal installations on Montgomery, the Consultant concludes that these signals should be retained to provide safety for the pedestrians and to overcome the vehicular sight distance problems at these intersections. Additional discussion and analysis may be found on these intersections in Chapter 5.

5. There are four intersections whose traffic volumes are approaching theoretically the volume warrants (70% criteria) of the MUTCD. These locations are as follows:

Sumner (Hwy. 25)	at	Russell
Adams	at	New York
Adams	at	Division
Elm	at	Taylor

These locations should have annual traffic counts taken to monitor the growth increases in traffic and the ultimate need for any signalization. Of these four locations, Elm at Taylor is probably the most likely candidate for future signalization. The two intersections along Adams will probably function satisfactorily without signalization with the improvements discussed for these intersections in Chapter 5. With regard to Russell at Sumner, signalization may not be necessary due to the close proximity of this intersection to the signals at Sumner and Adams.

The Consultant does recommend that the City Engineer request IDOT to add Elm at Taylor and Sumner at Russell to their standard traffic count program. The IDOT count program presently takes traffic volume measurements every two years on the sections of U.S. 34 and State Highway 25 passing through Creston.

In addition, the City Engineer should make or should request IDOT to make traffic counts at other strategic locations involving high accidents or involving high traffic volumes within the City. All of the State's normal counts, as well as the special counts, should then be reviewed by the City Engineer in order to determine the future needs for signalization for further traffic engineering improvements.

With regard to trucks, their percentage in the traffic stream on the major streets in the City of Creston vary between 3% to 10% of the daily traffic volumes. Most of the higher percentages occur on U. S. 34 (6% to 9%) and on State Highway 25 (4% to 6%). Some of the other streets such as Cherry and New York Avenue show low daily traffic volumes but slightly higher percentages of trucks in the traffic stream. Additional discussion on trucks may be found in Chapter 8.

CHAPTER 3

ACCIDENTS

CITY-WIDE ACCIDENTS

Figure 3-1 presents a scatter diagram of the distribution of accidents within Creston for 1975 and 1976. The placement of the dots in the scatter diagram provide a general location of the accidents as some of them actually occur within the intersection while others occur at mid-block locations. Thus the scatter diagram provides a useful indication of where the accidents are mainly concentrated. This allows the analyst to direct his efforts toward more specific locations when researching the individual accident reports themselves.

A summary of the accident trends from 1970 thru 1976 is presented in Table 3-1. The percent of annual change in total accidents has fluctuated considerably in that time period with the peak increase of 12% occurring in 1973. Since then, the annual trend has been on a more level or slightly reduced path. The projected trend for 1976 is a minus 7% over 1975 total accidents. Personal injury accidents involve approximately 14 to 24 percent of the total annual accidents within the City. Fatal accidents have fortunately been very few within the City.

Table 3-2 provides several special summaries for the accidents occurring within 1975 and 1976. As indicated, accidents involving pedestrians, bicycles, and motorcycles are fairly low in number, although as to be expected, the personal injuries involved have been rather severe in most instances. One of the pedestrian accidents in July of 1975 resulted in the death of a small child.

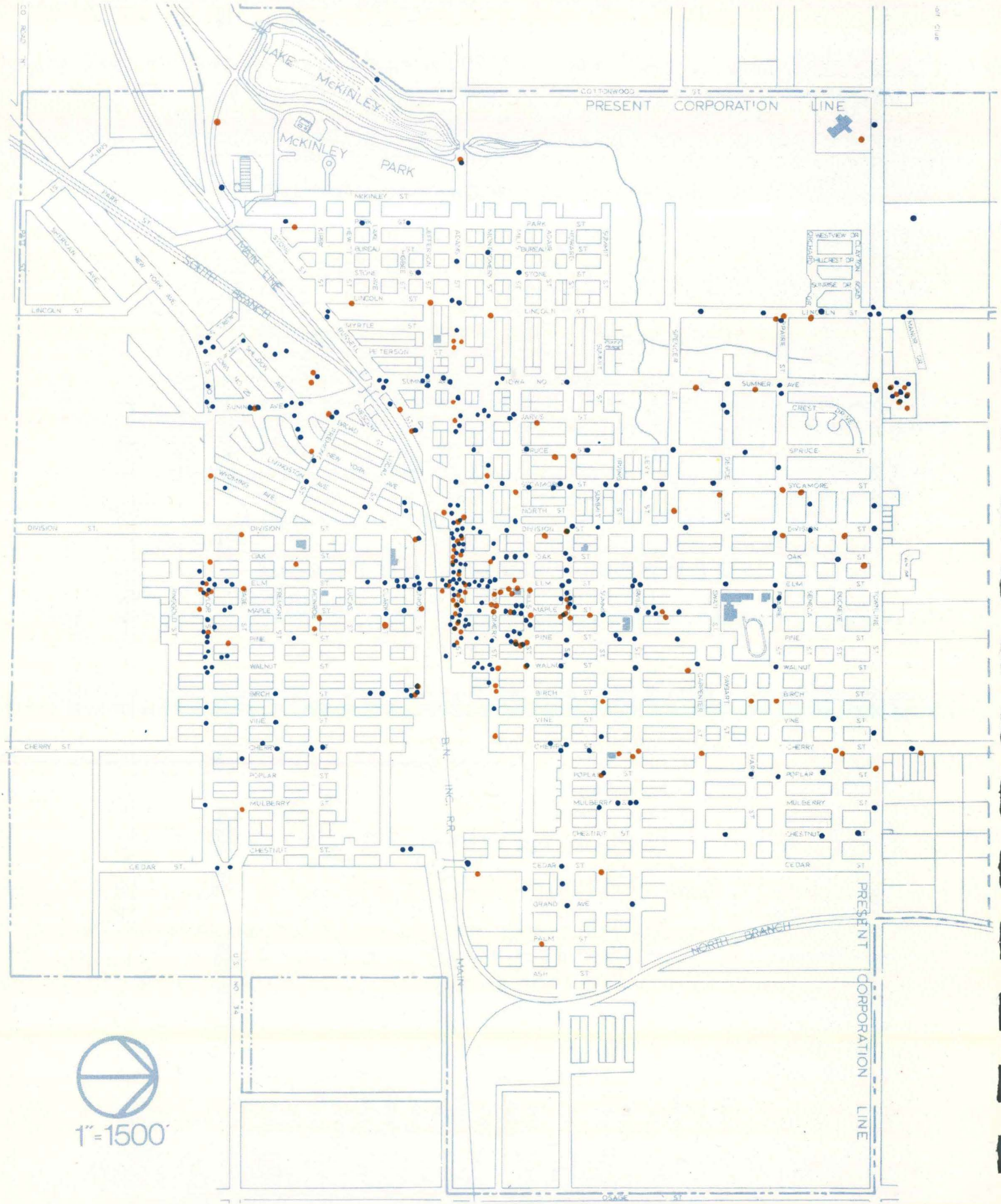
With regard to the time of day, the occurrence of accidents appear to be fairly evenly distributed between the daylight hours (8:00 A.M. to 4:00 P.M.) and the evening hours from 4:00 P.M. to midnight. Based upon a spot check of the accident records themselves, most of the accidents occurring in the late evening and after midnight time periods involved drinking drivers.

Table 3-2 also gives a general breakdown by age group of the drivers involved in the various accidents. As can be seen, most of the accidents involved the very young or the middle-aged and elderly.

In fact the following observations are made by the Consultant based upon the notations from the review and analyses of the individual accidents records themselves.

1. The vast majority of all accidents occurred during good weather.

2. The vast majority of the accidents involved people residing in Creston or in Union County.



Creston, Iowa

1975 accidents •
1976 accidents •

ACCIDENT DISTRIBUTION

figure 3-1

TABLE 3-1

ANNUAL ACCIDENT TRENDS (1970 - 1976)

	1976 thru June	1975	1974	1973	1972	1971	197
Property Damage	149	296	304	299	243	253	272
Personal Injury	21	69	64	58	75	47	44
Killed		1	1				
Total	170	366	369	357	318	300	316
% Annual Change	-7% (projected)	-1%	+3%	+12%	+6%	-5%	

TABLE 3-2

SPECIAL ACCIDENT SUMMARIES (1975 - 1976)

					Time			Age		
		Pedestrian	Bicycle	Motorcycle	8 AM-4 PM	4PM-Midnight	Midnight - 8AM	16-25	25-40	40 & up
1975	Jan				15	20	1	25	9	15
	Feb				12	8	3	18	4	13
	Mar				12	16	5	28	17	13
	Apr			4	16	9	3	19	6	18
	May				15	14	5	21	12	21
	June		1		19	11	2	21	11	19
	July	1	1	1	18	12	3	23	6	23
	Aug				9	11	2	21	4	7
	Sept				9	14	3	20	11	10
	Oct	1	2		14	12	8	24	3	19
	Nov				15	10	5	25	12	12
	Dec	1			21	8	3	23	10	14
1976	Jan				18	10	2	23	7	18
	Feb				13	14	3	20	8	18
	Mar				12	10	3	14	10	13
	Apr				13	7	5	13	8	17
	May				20	6	6	22	9	18
	June				13	12	2	25	9	8

3. Many accidents were caused by the negligence and inattention of the drivers.

4. Many of the accidents in the downtown area involved parked vehicles and turning vehicles.

5. Wet pavement and rain or snow conditions contributed to less than 20% of the citywide accidents.

HIGH ACCIDENT LOCATIONS

Based upon the concentrations of the accidents in Figure 3-1, the Consultant went through the individual accident records on file with the Creston Police Department. The purpose of this research was to develop accident collision diagrams for those locations exhibiting the higher accident frequencies. This research also enabled the Consultant to determine if in fact those areas shown in the scatter diagram of Figure 3-1 were actually high accident locations.

From these efforts, the following locations were identified as being primary and secondary in the frequency of accidents over the 1975 and 1976 time periods.

Primary Accident Locations

Adams at Elm
Adams - Oak to Elm
Adams - Elm to Maple
Adams - Maple to Pine
Adams - Oak to Division
Adams - Division to New York
Elm - Montgomery to Adams
Easter's Shopping Center Parking Lot

Secondary Accident Locations

Elm at Union
Union at Birch
Elm at Taylor (US 34)
Howard - Maple to Elm
Pine - Montgomery to Mills

Of the primary locations, it can be seen that the locations listed involve the Adams at Elm intersection and the sections of Adams Street extending from this intersection through the remainder of the downtown. The only non-downtown location consists of the parking lot at Easter's Shopping Center.

The secondary accident locations mainly involve a few additional blocks in the downtown area plus two intersections along Union Street and Elm Street.

The high accident locations are discussed individually in the text which follows below. Accident diagrams for those critical locations may be found in the Appendix.

Adams at Elm. As may be seen by the accident collision diagram in the Appendix, accidents at this intersection occur within the intersection and on all four approach legs to the intersection. Nearly all of the accidents occurred during fair weather and in daylight hours.

The types of accidents can be grouped into three major categories: 1) accidents involving vehicles legally parked on the street or vehicles attempting to enter or leave legal parking spaces; 2) vehicles making turns at or near the intersection; 3) accidents involving vehicles running the red traffic signal.

There are geometric improvements which can be made at this intersection to reduce the frequency of accidents. These improvements should comprise the removal of on-street parking within 30 feet of the intersection crosswalks, the proper alignment of traffic lanes entering and leaving the intersection, the utilization of mast arm traffic signals and the placement of additional signing to identify turn lanes and the one-way streets.

A sketch drawing of the recommended improvements may be found in Chapter 5.

Adams - Maple to Pine. As may be seen by the accident collision diagram in the Appendix, the accidents occurring on this section of Adams are fairly evenly distributed between the intersection at Maple Street and the mid-block area between Maple and Pine.

At the Maple intersection, most of the accidents involved vehicles stopped to make a left-hand turn from Adams onto Maple Street. Other accidents involved angle parked cars too close to the intersection. The removal of parked cars from within 30 feet of the intersection as well as improved signalization and lane markings will aid in reducing accident frequencies at this location.

The mid-block accidents between Adams and Pine are entirely attributed to angle parked vehicles. Several of the accidents involved left turning vehicles from Adams striking angle parked cars on the street as they were turning into a supermarket parking lot. This one problem could be alleviated by removing one or two on-street parking spaces located to the west side of the entry driveway to the supermarket parking lot. Field observations by the Consultant indicated that a vehicle parked in one of the on-street stalls directly blocks the driveway into the supermarket.

The other accidents attributed to the angle parked vehicles in the mid-block can only be eliminated by the removal of on-street angle parking.

A sketch drawings of the recommended improvements at the intersection of Adams and Maple Street may be found in Chapter 5.

Adams - Division to Oak. As may be seen in the collision diagram in the Appendix, the accidents within this block are related to angle parking. However, in July of 1976, the City converted the angle parking to parallel parking and since then no accidents have been reported.

One additional factor to be considered in the accidents along this block is that several of the accidents occurred during the late evening or early morning hours in front of a local tavern. Obviously, from a review of the accident records, several of these accidents involved drinking drivers. It is the conclusions of the Consultant that with the change from angle to parallel parking, the frequency of these types of accidents will likewise be reduced or eliminated at this location.

Adams at Division. From the Appendix accident collision diagram, most of the accidents at this intersection involves right angle collisions, collisions of turning vehicles, and collisions involving angle parked vehicles. Again, however, the City in July of 1976 converted the angle parking to parallel parking along Adams. This has significantly improved the sight distance from Division looking onto Adams, resulting in a significant reduction in accidents at this location.

A restriping of the traffic lanes along Adams and the removal of curb parking within 30 feet of the intersection will further reduce the accident potential at this intersection. Chapter 5 contains a sketch drawing of the suggested improvements.

Elm at Taylor (US 34). As shown in the Appendix accident collision diagram, this intersection is experiencing right angle collisions as well as rear end collisions at the STOP sign on Elm.

The occurrence of accidents was rather surprising due to the rather open environment present at this intersection. However, a field inspection revealed that a sight distance problem did exist in the northeast quadrant of the intersection. The line of sight of motorists stopped at Elm and looking eastward onto Taylor is restricted by a street name sign pole, a street light telephone pole, a BUSINESS DISTRICT sign, and a gas station pole for an overhead advertising sign.

The relocation of three of these obstacles and the placement of a STOP AHEAD sign on Elm Street will improve the situation. These improvements are further defined in a sketch drawing in Chapter 10.

Elm at Union. A review of the accidents in the accident collision diagram found in the Appendix shows the accidents to be distributed within the intersection and on all four approach legs to the intersection. Several of the accidents involved vehicles turning into or backing from a commercial store and gas station on the southwest corner. Other accidents primarily involved turning vehicles within the intersection itself.

Field observations of the intersection pointed out two critical problems. First, the commercial business on the southwest corner places a small portable advertising sign at the corner of the intersection. This sign definitely attracts the attention of the motorist regarding the "Special of the Day"; however, it also blocks the sight distance for vehicles stopped on Union Street (west leg of the intersection).

Second, parking is permitted along a specially paved shoulder area on the east side of Elm extending southward from Union. Vehicles parked in this shoulder area definitely restrict the sight distance for those motorists stopped on Union (east leg of the intersection). It is suggested that NO PARKING signs be installed for a distance extending from Union south to the alley on the east side of Elm.

Chapter 10 contains a supplemental discussion of these improvements.

Birch at Union. This intersection actually comprises a 90° turn in the roadway as Union is closed to the east and Birch is closed to the north. From the accident diagram in the Appendix, most of the accidents involve a single vehicle striking a fixed object. A review of the individual accident records indicated that speeding was a contributing cause.

It is apparent from a field inspection of this intersection that signing is needed to call attention to the fact that the roadway does make a 90° turn. In addition, parking should be restricted within 30 feet of the intersection along the south side of Union and the west side of Birch in order to maintain proper sight distance around the corner.

Two rectangular ARROW signs (W1-6, black on yellow, 48" x 24") should be placed in the general northeast corner of this intersection. One sign should face the line of vision of traffic approaching the intersection from Birch and the other in the line of vision of traffic approaching on Union.

These signs should be supplemented by the placement of a TURN sign (W1-1, black on yellow, 30" x 30") at locations approximately 150 feet in advance of the intersection. That is, a left TURN sign should be placed on Birch 150 feet in advance of the intersection and a right turning TURN sign should be placed on Union approximately 150 feet in advance of the intersection.

Chapter 10 contains additional discussion on this location.

Howard at Maple. The Appendix collision diagram shows a pattern number of right angle accidents at this intersection. A field inspection of the location shows that the sight distance for vehicles stopped on Maple (south leg of the intersection) is restricted by a line of trees extending along the south side of Howard and to the west of Maple. The trimming of the lower limbs of these trees should be completed to improve the sight distance and lower the accidents at this location. A sketch drawing of this improvement as well as additional signing improvements at this intersection may be found in Chapter 5.

Elm at Howard. The collision diagram in the Appendix also shows right angle accidents at this intersection. Signing improvements as well as the trimming of lower tree limbs will improve the situation as shown in the sketch diagram found in Chapter 5.

Pine - Mills to Montgomery. As may be seen in the accident diagram in the Appendix, all of the accidents in this block section involve angle parked cars. Each of the accidents also occurred on clear days and in daylight hours.

The optimum solution would be to remove the angle parking and replace it with parallel stalls. However, this would place a severe hardship on the supply of parking spaces in the downtown area. A more feasible alternative would be to reduce the angle of the parked vehicles to 30° to allow more space for the moving traffic and for maneuvering of vehicles into and out of the parking spaces. Field observations revealed that the existing angle of the parking stalls varies from 45° to 60° which is too great for the width of the street.

Chapter 5 contains sketch drawings of the intersections of Pine with Mills and with Montgomery which depict the signing and parking modifications required to improve safety along this section of the street.

Maple - Irving to Swan. This particular section of street showed a number of accidents related to icy conditions and parked cars. The Appendix contains a collision diagram illustrating the types of accidents involved.

A field inspection of this block failed to reveal any major contributing causes to these types of accidents. The street contains no significant grade nor width problems. The only suggestions are that the residents along this section of street become more cautious and that the City give special attention to the street during snow removal and icy conditions.

Easter's Shopping Center. A considerable number of accidents were recorded in the parking lot at Easter's Shopping Center. Nearly all involved parking or parked vehicles. Although these accidents are on private property, they do constitute a high enough number to be of concern to the City.

Field observations indicate that the accidents are of those types normally attributed to angle parking. In addition, the mixing of traffic flows (entering and exiting vehicles) with parkers could be increasing the potentials for accidents.

Presently, the entry drive to Easter's has been reconstructed in conjunction with the redesign of State Highway 25. This new drive will be signalized and has some channelization. From the Consultant's observations, however, the parking lot at Easter's should be totally redone to reduce accidents, improve traffic flow and conform with the reconstructed entry.

From a functional standpoint, a wide driveway aisle (40 feet minimum) free of parking should extend from the Highway 25 signal north to Easter's building and then east along the buildings. Angle parking (30°) can then be striped along minor aisles in a north-south configuration.

An example sketch concept for the Easter's lot is shown in Chapter 10.

OTHER ACCIDENT LOCATIONS

A review was made of accident records at other spot locations involving railroad crossing, school areas, and locations of severe accidents. No major or critical roadway conditions seemed to be contributing to these special areas. Nevertheless, the Consultant did address many of these locations regarding the need for possible signing and geometric improvements. These locations will be discussed in the remaining chapters relating to the downtown area, schools, railroad crossings and special locations.

A review was made of the conditions regarding the accident and subsequent death of a small child in 1975 near the intersection of Sycamore at Howard Street. Based upon the accident report, it is concluded that the driver, weather, and roadway geometrics were not contributing causes to this accident.

ACCIDENT RECORDS

The accident records available for this study are presently on file with the Creston Police Department. The following steps are taken to establish the current accident record keeping system used by the Police Department.

1. The officer fills out a motor vehicle accident report which consists of the standardized Iowa State Form currently being used for this purpose.

2. The completed form is reviewed by office personnel at the Creston Police Department. Those accidents involving no personal injury or involving damages less than $250.00 are placed in the Police Department's accident files. For those accidents over $250.00 in damage or involving personal injuries, an additional accident report form is typed and sent to the State. The original officer form is then filed with the City's accident records.

3. Office personnel prepare a series of accident file cards for each accident report form. The accident file card contains the names of all drivers and the assigned accident case number. Copies of the cards are then filed alphabetically by each driver involved in the accident. This system serves as the primary index for locating the accident report forms in the files.

4. The accident report form completed by the officer is then filed by the month in which the accident occurred.

5. Office personnel type, at the end of each month, a monthly summary of the accidents giving the date, location, accident type (property damage, personal injury, killed), and some related information on the driver ages and time period of the accident. This information is used to locate the accidents by intersection and to develop an accident pin map.

6. The monthly summary report is then used to place colored pins in an accident location pin map on the wall in the Police Department.

The accident records are mainly used by the insurance companies and by Police officials when making court appearances regarding traffic violations or professional testimony on the causes of the accident. To use the present system, the researcher must know the name of one of the drivers in the accident. With this knowledge he can then use the accident file card with the driver's name to locate the assigned accident report number to the accident and its date. With the date and the accident report number, the researcher can then proceed to the monthly files containing the individual officer reports on the individual accidents.

If a researcher desires to review all of the accidents occurring at one particular intersection, he must read through the monthly accident summary to locate the desired intersection and the date of the accidents. Once the researcher has the dates he then can find the monthly file folders which contain the individual officer accident reports.

At the present time, no photographs are taken at the end of each year of the accident pin map. Pin maps are retained for the last 2 or 3 year periods with the oldest pin map being destroyed with the start of a new reporting season in January.

Overall, the accident filing system is set up entirely for use by the insurance investigator who, in turn, is interested in one accident. The filing system is not set up for use by the City Engineer or by the Police Department to analyze a series of accidents occurring at one location. Thus, a policy decision needs to be made at the City level to determine which purpose (insurance investigators or Engineer/Police Officer) the accident record keeping system should be designed for.

With this in mind, the Consultant offers the following conclusions and suggestions on the accident records keeping system for Creston:

1. The Consultant concludes that the accident record keeping system should be revised in order to make it more easy for use by the City Engineer and the Police Department in analyzing high accident locations.

2. With this in mind, the Consultant suggests that the accident records be filed by street name intersections, rather than the present method of using the month and the last name of the drivers. Under this method, the name of the street closer to "A" in the alphabet would always be listed first in identifying the intersection near which the accident occurred. For example, if an accident occurred on Elm Street near Adams, the accident record would actually be filed under "Adams at Elm".

   The order of the files would be as follows:

   a. Alpha street name intersections; i.e., Adams at Elm; Elm at Montgomery; Elm at Taylor; etc.

   b. Long street sections on which there are no nearby intersections to reference the accident. (An example would be some sections of Cottonwood or Townline or Osage on the fringe areas of the City. Here a miscellaneous file should be set up for the individual street name with the individual accidents and referenced by their approximate distance from a known geographical feature such as a railroad crossing, intersection, or street address.)

   c. Alleys.

   d. Special locations; i.e., Easter's Parking Lot, etc.

3. The Consultant recommends that Police Officers be instructed to clearly indicate the location of the accident by the nearest intersection. Thus, the accidents should not be merely identified as occurring on "East Elm" with no address or intersection being given. In addition, special attention should be given to those "Key" intersections with similar names; e.g. New York Avenue has two different intersections with Sumner.

4. The Consultant suggests the following revised office procedure for processing and filing accidents:

   a. The Police Officer completes the accident report form clearly indicating the street on which the accident occurred and the location of the nearest intersection or roadway feature.

b. Office personnel type a duplicate of the Officer's completed accident form for the State if the accident is greater than $250.00 or involves a death or personal injury.

c. Office personnel indicate in the top righthand margin of the completed accident form in black ink, the alpha street name intersection as described above under Item 2.

d. Office personnel type a driver accident file card for each driver involved in the accident and add to the file card the alpha street name location as printed in black in the top righthand margin of the accident form.

e. Office personnel file the driver accident file card alphabetically by the last name of the driver.

f. Using the completed accident report form, office personnel place a pin for the type of the accident in the office Accident Pin Map.

g. Office personnel then file the accident report form by the alpha street name located in black ink in the top righthand margin of the form. File folders identifying the alpha street name intersection do not need to be made until there is an actual accident form to be placed in that file.

5. The Consultant recommends that each January the Engineering Department should review the Accident Pin Map and develop an accident collision diagram for each location with five or more accidents within the calendar year. These collision diagrams should then be jointly analyzed by the City Engineer and the Police Chief to identify any improvements which should be made in the "Engineering" or "Enforcement" at the high accident location. Their joint report and recommendations should then be filed with the City Council in February.

6. The Consultant recommends that each January a color photograph of suitable size be taken of the Accident Pin Map before the pins are removed from that map. This color photo can then be filed along with the individual accident reports for that calendar year.

CHAPTER 4

TRAFFIC CONTROLS

CITY-WIDE INTERSECTION CONTROL SIGNING

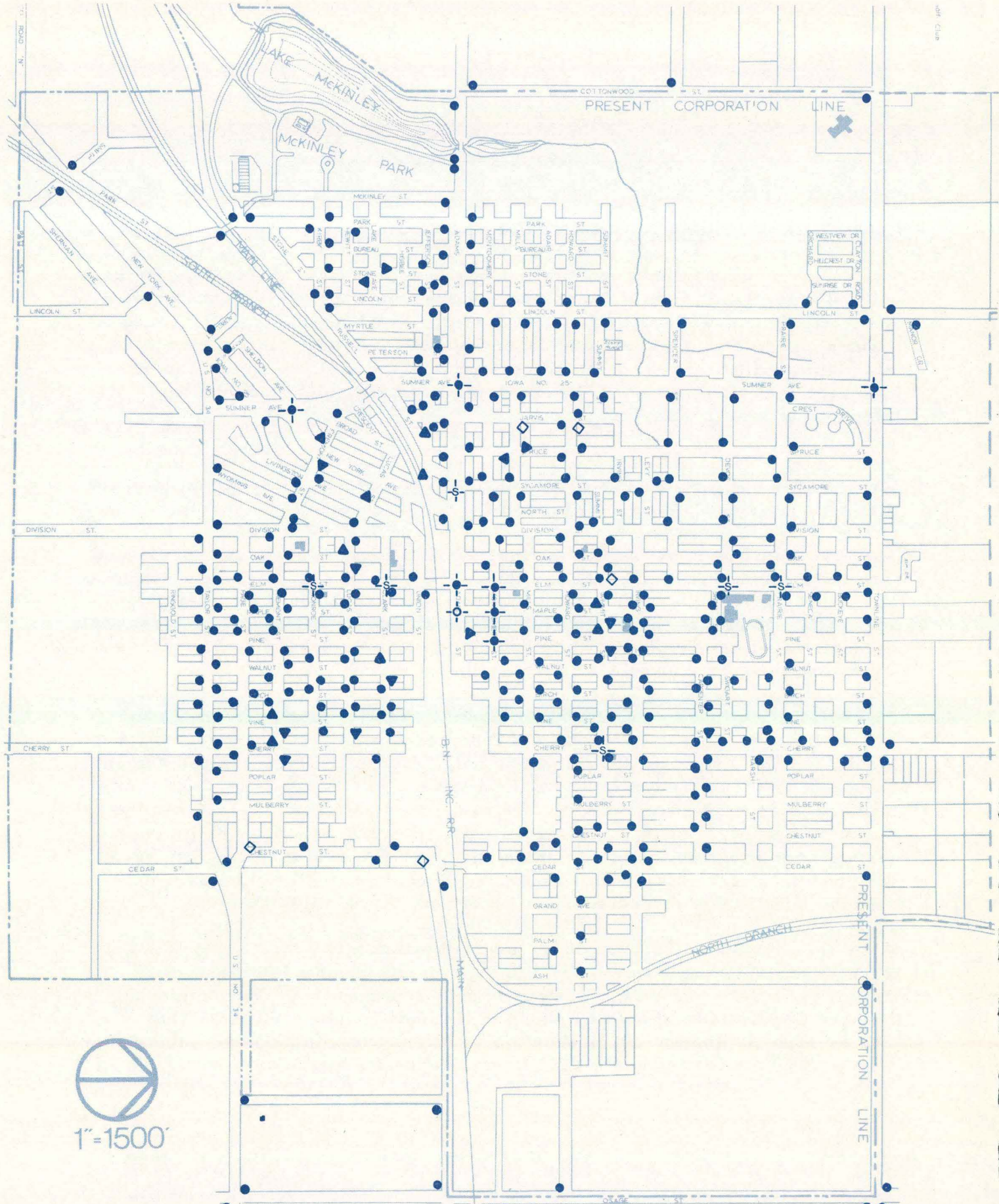
The most predominant form of intersection control in Creston involves the usage of STOP and YIELD signs. Other intersection controls involve signs for turn restrictions, one-way traffic flow, lane controls and related types of miscellaneous signing. The discussion below on the city-wide usage of intersection control signing will concentrate on the use of STOP and YIELD signs. The other intersection control signs will be discussed on an individual location basis in later chapters of this report.

Existing STOP and YIELD Signs. Figure 4-1 indicates the locations of the STOP and YIELD signs throughout the City of Creston. As may be seen, much of the City street system is covered with some form of intersection control.

The first impression by the Consultant is that the City is possibly over-signed with its usage of STOP and YIELD signs. Many of the sign placements on local streets appear to have been installed because of neighborhood complaints on speeding or to reduce the usage by vehicles. Other installations have been made at locations with sight distance problems and locations involving differences in the street surface conditions at intersections.

Overall, inspections by the Consultant show that the physical placement and mounting height of the STOP and YIELD signs are satisfactory. Several isolated locations did reveal that mounting heights were less than the recommended standards in the Manual on Uniform Traffic Control Devices (MUTCD). Most of these locations appeared in and around the downtown area. The Consultant recommends that the City Engineer take positive measures as part of his annual maintenance program to restore any signs at substandard mounting heights to the properly acceptable mounting heights. Guidelines on the sign placement may be found in the Appendix to this Report and in the MUTCD.

Field inspections by the Consultant revealed that at a few locations in the City STOP and YIELD signs were mixed in their usage at some intersections. This is not a good practice. Therefore, the Consultant highly recommends that the City avoid mixing STOP and YIELD signs at intersections. That is, the opposite approach legs should both contain the same control sign rather than a STOP on one leg and a YIELD on the opposite leg.



Creston, Iowa	• stop sign ▼ yield sign	◇ slow sign -$- school signal	-⊕- signal -⊙- flashing signal

figure 4-1

INTERSECTION CONTROLS

The City presently has several intersections where all of the legs are controlled with STOP signs. With the exception of one location, all of these multi-stop locations did not contain the supplemental 3-WAY or 4-WAY plates. The Consultant highly recommends that these supplemental plates be installed at all existing as well as future multi-stop intersections. The usage of these plates clearly advises the motorist that drivers on the other legs must stop at the intersection. In addition, the usage of these plates provides a differentiation between intersections with multi-stop control vs. stop controls on only some of the intersection legs.

The field inspections by the Consultant indicated that a SLOW warning sign (diamond shaped, black on yellow) was being used at some intersection locations possibly as an intersection control sign. This is definitely an improper use of a warning sign as they do not legally establish right-of-way for vehicles entering an intersection. As nearly all of these SLOW signs were fairly old, it appears to the Consultant that these signs became a conflict when STOP and YIELD signs were finally added to the intersection.

A common problem observed with intersection control signing throughout the City was the obstruction of the signs by tree limbs. In several locations, it appeared that this factor had a bearing on the accident frequency as discussed in Chapter 3. It would be highly advisable for the City Engineer to establish a program for inspecting and trimming lower tree limbs throughout the City on major arterial streets each spring.

The Consultant also observed many locations where curb parked vehicles blocked the visibility of STOP or YIELD signs at intersections. Generally speaking, the accepted standard is to prohibit parking for 30 feet in advance of an intersection control sign.

Locations where parked vehicles obstruct intersection control signs are mainly found in those areas of the City which have an excessive parking demand. These, of course, are the downtown area, the fringes of the downtown area, the high school, and several industrial and commercial operations within the City. It is therefore suggested that the City Engineer take corrective measures through the installation of NO PARKING signs in advance of intersections in and adjacent to the downtown and around the high school in order to prevent visual obstruction of intersection controls by parked vehicles. Chapter 5 contains sketch drawings showing specific locations for most of the downtown intersections where no parking provisions should be added. Chapter 9 provides general guideline information on parking restrictions at intersections.

Recommended STOP and YIELD Sign Changes. Based upon an evaluation of the intersection controls shown in Figure 4-1, the Consultant delineated those street segments having continuous right-of-way for vehicular traffic. The results of this evaluation are shown in Figure 4-2 which illustrates the existing traffic flow continuity on the present street system.

A comparison was then made between the traffic flow continuity in Figure 4-2 with the functional street classification shown previously in Figure 2-2. This comparison provides an indication of how the street system plan (Functional Street Classification in Figure 2-2) compares directly with what has been implemented on the streets themselves with the intersection traffic control devices (Existing Traffic Flow Continuity shown in Figure 4-2).

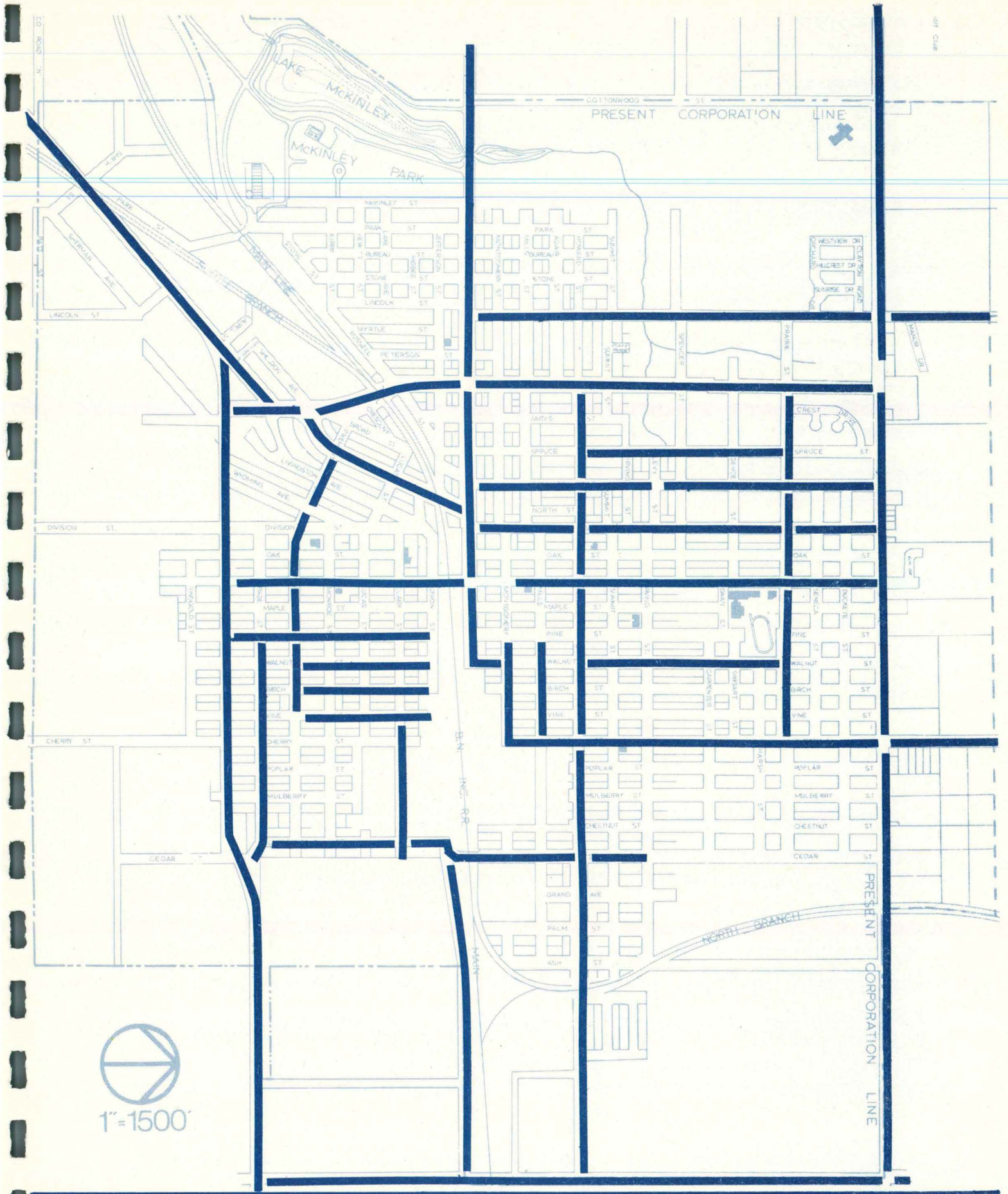
In comparing these two figures, the street classification and existing traffic flow continuity are consistent for the principal and major arterials in Creston. That is, flow continuity is maintained for U.S. 34, State Highway 25, Elm, and Cherry (north of the downtown).

However, flow continuity for many of the designated minor arterial and collector streets does not conform with the functional street classification shown in Figure 2-2. Most of the differences seem to occur in the south area of the City bounded between the Burlington Northern Railroad and U.S. 34.

In this area, most of the intersection controls establish right-of-way for the north-south streets when, in fact, the functional classification gives emphasis to the east-west streets. For example, Fremont has broken right-of-way continuity all the way from New York Avenue eastward. A field inspection indicates that the street pavement and intersection roadway cross slopes favor the north-south streets. Consequently, the motorist using Fremont experiences a "bump" at each cross street. If the intersection controls are to be retained as they presently are, then it is suggested that Fremont be changed from a collector to a local in the functional street classification.

Another example is the Union-Clark Street corridor shown in Figure 2-2. This roadway corridor also is not clearly signed at several intersections to conform with the functional street classification. If it is, in fact, to serve as a minor arterial, then some minor signing changes are in order.

One very obvious inconsistency between the signing and the designated street classification involves Carpenter Street between Cherry and Cedar. Figure 2-2 shows this section to be a collector street, whereas the existing stop sign placements in Figure 4-1 show the vehicular right-of-way being given to each of the north-south streets crossing Carpenter. Here again, either the STOP signs should be relocated to the north-south streets or Carpenter should be changed from a collector to a local street.



Creston, Iowa

street segments having continuous right-of-way

figure 4-2

EXISTING TRAFFIC FLOW CONTINUITY

Other differences between Figure 2-2 and Figure 4-2 are primarily confined to a single intersection discrepancy along other minor arterials and collectors.

Figure 4-3 indicates the suggested intersection control modifications for STOP, YIELD and related signs. Most of the recommended STOP and YIELD placements are intended to bring conformity to the existing installations, conformity with the functional street classification, replace vandalized signs, and strengthen intersection controls.

Figure 4-3 also shows the removal of all of the non-conforming SLOW warning signs and the installation of 3-WAY and 4-WAY to supplement STOP sign installations at multi-stop intersections.

Table 4-1 provides a listing of the intersection control modifications shown in Figure 4-3. The signs in Table 4-1 are summarized in Table 4-2. This summary table lists the net number of signs required as well as an estimate of the cost associated for completing the sign modifications to the entire City street system.

The intersection control modifications for signs do not include the downtown area which is discussed separately in Chapter 5.

When making any changes in the intersection control signing, the Consultant strongly urges that --

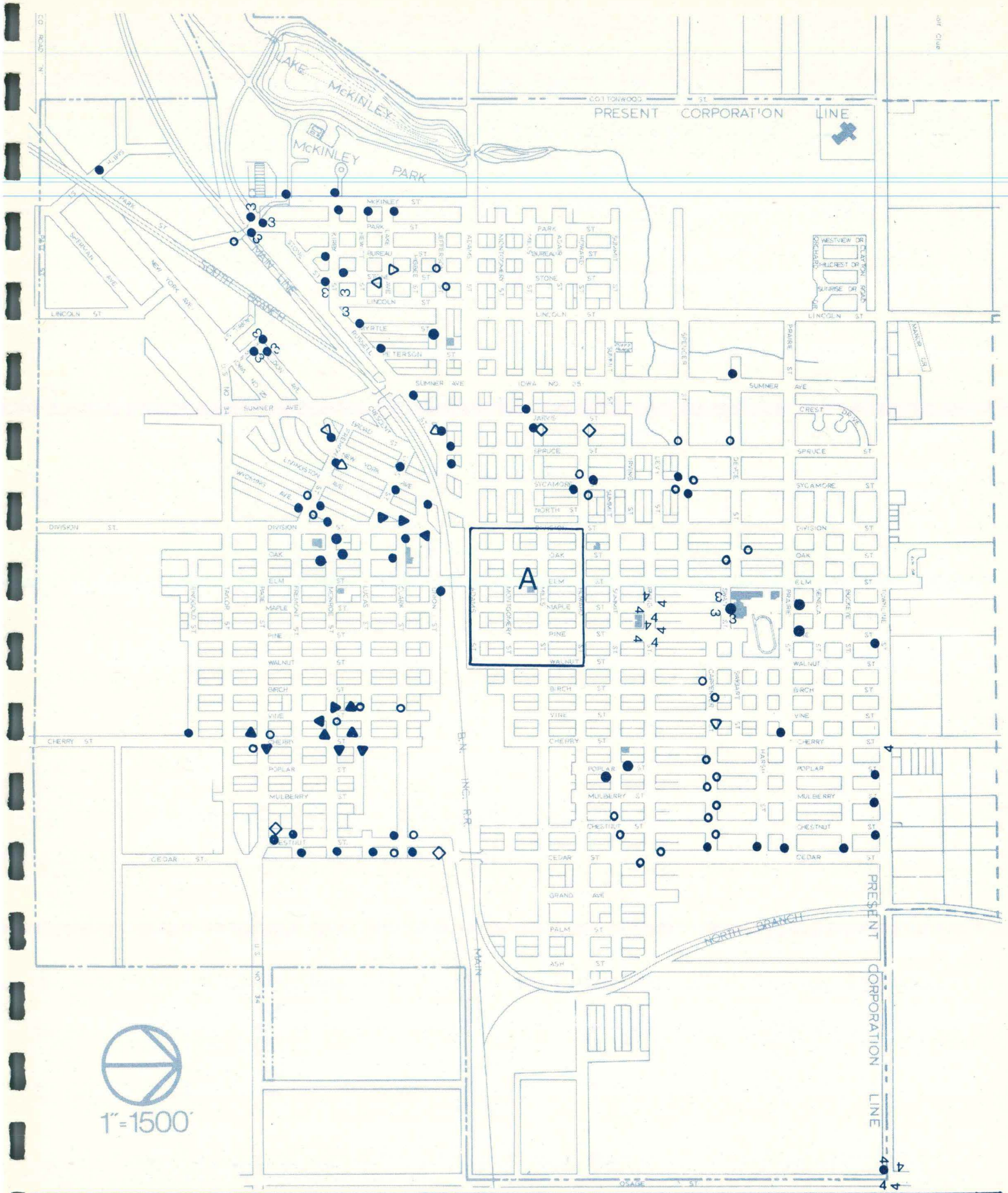
a. The changes be made on a systematic basis rather than a random or spot basis.

b. The improvements be done in small groups; i.e. along an entire street or by a neighborhood or specific section of the City.

c. The assistance of the local newspaper and radio station should be sought to provide public notice of the sign control changes.

d. Bright red flags (plastic or cloth) should be affixed to the top of all newly installed traffic control signs for a period of 30 days following their installation.

Additional information is contained in Chapter 9 on the standard procedures to follow in the installation of new traffic control devices.



Creston, Iowa

•	new stop sign	o	remove stop sign	A	see chapter 5
4	add 4-way plate	▽	remove yield sign	▼	new yield sign
3	add 3-way plate	◇	remove slow sign		

INTERSECTION CONTROL MODIFICATIONS

figure 4-3

TABLE 4-1
INTERSECTION CONTROL MODIFICATIONS
(Tabulation of Changes Shown in Figure 4-3)

INTERSECTION	APPROACH(ES)	SIGN CHANGE
McKinley at Park Drive	W	Add STOP
at Kirby	W&E	Add STOP
at Hewitt	E	Add STOP
at Lake	E	Add STOP
at Park	N&W	Replace STOP; add 3-WAY Relocate STOP; add 3-WAY
Park at Smith	NW on Smith	Add STOP
Kirby at Bureau	A	Add STOP
at Stone	N&S	Add STOP
at Lincoln	ALL	Add 3-WAY
Stone at Lake	N&S	Remove YIELD
at Jefferson		Remove STOP
Sheldon at Hickory & K-Mart Drive	ALL	Add STOP & 3-WAY
Russell at Myrtle	N	Add STOP
at Peterson	N	Add STOP
at Sumner	E	Add STOP
at Jefferson	E on Jefferson	Replace YIELD with STOP
Jefferson at Spruce	N	Add STOP
at Sycamore	N	Add STOP
Mills at Jarvis	E&W	Add STOP; remove SLOW on E leg.
Howard at Javis	E	Remove SLOW
at Sycamore	E&W	Remove STOP
	N&S	Add STOP
Summit at Chestnut	E&W	Remove STOP
at Popular	N&S	Add STOP
Irving at Maple	ALL	Add 4-WAY
at Pine	ALL	Add 4-WAY
at Cedar	N&S	Remove STOP

INTERSECTION	APPROACH(ES)	SIGN CHANGE
Spencer at Spruce	A	Remove STOP
at Sycamore	N&S	Remove STOP
	E&W	Add STOP
DeVoe at Sumner	W	Add STOP
at Spruce	W	Remove STOP
at Oak	N&S	Remove STOP
Swan at Maple	ALL	Add 3-WAY
	E	Replace STOP
Carpenter at Birch	N&S	Remove STOP
at Pine	E	Remove YIELD
at Popular	E&W	Remove STOP
at Mulberry	E&W	Remove STOP
at Chestnut	E&W	Remove STOP
at Cedar	W	Add STOP
Harsh at Cedar	W	Add STOP
Prairie at Cherry	W	Add STOP
at Cedar	W	Add STOP
at Maple	N	Add STOP
at Pine	N	Add STOP
Townline at Pine	S	Add STOP
at Cherry	E	Add 4-WAY
at Popular	S	Add STOP
at Mulberry	S	Add STOP
at Chestnut	S	Add STOP
at Osage	W	Add STOP
	All	Add 4-WAY
New York at Fremont	E&W	Replace YIELD with STOP
at Lucas	E&W	Add STOP
at Union	E	Add STOP
Wyoming at Fremont	N&S	Add STOP
	E&W	Remove STOP
at Division	S on Wyoming	Add STOP
Livingston at Lucas	E	Add YIELD
Unionn at Livingston	S	Add YIELD
at Division	S	Add YIELD
at Elm	E	Add STOP

INTERSECTION	APPROACH (ES)	SIGN CHANGE
Clark at Division	E	Add STOP
at Vine	W	Remove STOP
at Oak	S	Add STOP
Chestnut at Page	N	Add STOP; remove SLOW
at Fremont	E&W	Add STOP
at Monroe	E	Add STOP
at Lucas	E	Add STOP
at Clark	N&S	Remove STOP
	E&W	Add STOP
at Adams	S	Remove SLOW
Cherry at Ringgold	W	Add STOP
at Page	N&S	Remove STOP
	E&W	Add YIELD
at Monroe	E&W	Add YIELD
at Lucas	E&W	Add YIELD
Vine at Monroe	N&S	Add YIELD
	E	Remove STOP
at Lucas	W	Add YIELD; remove STOP
Monroe at Division	E	Add STOP
at Oak	N&S	Add STOP
Buckeye at Cedar	W	Add STOP
Jefferson at Myrtle	S	Add STOP

TABLE 4-2
SIGN QUANTITIES FOR INTERSECTION CONTROL MODIFICATIONS

Sign	Number	Estimated Cost
Relocated STOP	1	(1)
Removed STOP	32	
New STOP	65	
Net STOP Needed	33	$1,650(2)
Removed YIELD	6	
New YIELD	12	
Net YIELD Needed	6	$ 300(2)
Removed SLOW	4	$ 40
New 3-WAY Needed	12	$ 240
New 4-WAY Needed	13	$ 260
	Total	$2,490

(1) Cost computed in the improvements shown elsewhere for the specific location.

(2) Average cost including new signs, poles, installation and removal of old sign and post

Summary Guidelines on STOP and YIELD. In general, the Consultant wishes to call special attention to the following concluding guidelines regarding the placement of STOP and YIELD signs.

1. The City should avoid any over-usage of STOP and YIELD signs, as over-usage or improper usage will promote a disregard for these important control signs by the motoring public.

2. The City should follow the proper placement criteria contained in the MUTCD, as supplemented by the Sign Placement Chart contained in the Appendix of this report. Such placement of the signs should conform to the need for the traffic control sign based upon sound engineering judgment and principles rather than political opinions or pressures.

3. The City should not mix STOP and YIELD at the same intersection for opposing legs of traffic.

4. The City should install 3-WAY or 4-WAY plates with STOP signs at all multi-stop intersections.

5. The black on yellow diamond shaped SLOW warning sign should not be used at intersections to establish vehicular right-of-way.

6. The City should adopt, as part of their normal street maintenance procedures, a means of inspecting and keeping tree limbs trimmed on approaches to major intersections or intersections with problem sight distance.

7. No parking zones should be established and enforced for 30 feet in advance of STOP and YIELD signs at intersections in and around the downtown and around the high school.

8. The placement of STOP and YIELD signs at intersections should conform with the Functional Street Classification (Figure 2-2).

9. The Consultant advises the City to use YIELD signs cautiously at intersections as the usage of these signs in lieu of STOP signs can promote accident potential.

10. The City should install bright red warning flags to the top of any new sign placements for a period of 30 days following the installation.

11. The mounting height of STOP and YIELD signs should conform with the MUTCD as reflected in the Sign Placement Chart contained in the Appendix of this report.

CITY-WIDE INTERSECTION SIGNALS

Table 4-3 and Figure 4-1 provide information on the present signal locations within the City of Creston. Primarily, the signals fall into three categories - Highway 25, downtown, and school crossings.

The signals along Highway 25 are the newer installations and fully conform to the MUTCD as to the installations and to the signal warrants. The signals at Adams and at Townline are new installations being installed as part of the roadway widening project on Highway 25.

The signals in the downtown area all involve two phase fixed time signals with pedestal mountings. There are no WALK/DONT WALK signal heads.

The downtown signal equipment is very old (over 25 years). In some cases the wiring is exposed. Some of the signal heads flash YELLOW during the RED or GREEN phase.

The installations along Montgomery and at Adams and Maple are believed necessary because of the sight distance restrictions created by the downtown buildings and on street parking. In addition, the signals should be retained due to the pedestrian traffic flows through these downtown intersections. Although accident rates are not excessively high at these four intersections themselves, the absence of signal control would, in the opinion of the Consultant, produce sufficient accident occurrences to warrant signals.

With special regard to the Adams at Elm downtown intersection, considerable discussion was previously given in Chapter 3 on the accident frequency and the potential improvements in the signalization needed to improve visibility at the intersection and to improve the channelizing of the various traffic flows.

Presently, the intersection at Adams and Maple is on permanent FLASHING YELLOW in all directions. Being a T intersection with the odd leg being one-way from the intersection, the FLASHING YELLOW becomes functional. The major concern at this location, however, is the fact that pedestrians are crossing on the FLASHING YELLOW with the assistance of non-conforming signs stating STOP FOR PEDESTRIANS IN CROSSWALK.

A more detailed discussion on the specific improvements needed at the five downtown intersections may be found in Chapter 5. In summary, however, new signal installations are required at each of these intersections to improve pedestrian safety, better control vehicular flow and vehicular safety, and to replace the worn out signal equipment presently in use.

TABLE 4-3
TRAFFIC SIGNAL LOCATIONS

Location	Type of Signal Installation	MUTCD Warrants Met	Installation Conforms to MUTCD
Highway 25			
1. Sumner at Sheldon/New York	2-Phase, Fully Actuated Moduvac. Mast Arm	Warrants 1 & 2	Yes
2. Sumner at Adams	3-Phase, actuated Mast Arm. W/DW. (Under Const.)	Warrants 1, 2&4	Yes
3. Sumner at Townline	3-Phase, Actuated Mast Arm (Under Const.)	Warrants 1 & 2	Yes
Downtown			
4. Adams at Elm	2-Ph., Fixed Time, Pedestal	Warrants 1, 2 & 6	Yes
5. Montgomery at Elm	2-Ph., Fixed Time, Pedestal	Warrant 3 & 6	Yes
6. Montgomery at Maple	2-Ph., Fixed Time, Pedestal	Warrant 3 & 6	Yes
7. Montgomery at Pine	2-Ph., Fixed Time, Pedestal	Warrant 3 & 6	Yes
8. Adams at Maple	Flashed Yellow, Pedestal	Warrant 3 & 6	Questionable
School Signals			
9. Elm at Monroe	Push Button, RAG Main St.; Flash R/Solid R Side St. Pedestal. W/DW	None	Questionable
10. Elm at Clark	Same as 9	None	Questionable
11. Elm at Devoe	Same as 9	None	Questionable
12. Elm at Prairie	Same as 9	None	Questionable
13. Cherry at Summit	Same as 9	None	Questionable
14. Adams east of Sycamore	Push Button. Flash Y/Solid R. Pedestal. W/DW	Warrant 4	No

Currently, there are six school crossing signal locations. However, the one on Adams just east of Sycamore was turned off by the City Engineer due to its total non-conformance with the MUTCD.

The other five locations consist primarily of pedestal mounted signals at intersections with the main street receiving a RED-YELLOW-GREEN, while the cross street receives a flashing red/solid red in conjunction with a STOP sign installation. WALK/DONT WALK signal heads are then provided on one or two of the legs of the intersection.

Vehicular and pedestrian volume counts did not seem to satisfy any of the MUTCD's signal warrants. This and other factors, however, will be discussed in more detail in Chapter 6, along with proposals for improving the school crossing signal locations.

In summary, the Consultant definitely believes that the eight signal locations along Highway 25 and in the downtown area should be retained or improved as explained in other sections of this report. The school crossing signal locations present a different issued, however, and will be discussed in greater detail with conclusions in Chapter 6.

With regard to the need for new signal installations at other locations, the discussion contained in Chapter 2 indicated four locations which are approaching the warrants for signalization. As previously indicated, these locations should be counted annually and monitored closely to see if traffic volumes or accidents increase significantly to warrant signalization.

CITY-WIDE SPEED LIMITS

Based upon the notes taken during the field inspections of the City's street system, the Consultant concludes that SPEED LIMIT signs are being over-used by the City. The predominately used sign is SPEED 25 MPH LIMIT which is found installed on numerous local streets as well as arterial and collector streets.

There are several points to be made regarding the wastefulness by the City in the over-use of the SPEED LIMIT signs.

a. If a speeding problem exists on any street in the City, the installation of the black on white SPEED LIMIT sign by itself will have, in the opinion of the Consultant, no impact upon reducing or altering vehicular speeds.

b. By law, the residential speed limit is commonly set at 25 mph unless other regulatory signs are posted on the roadway reflecting a different speed limit.

c. The over-use of SPEED LIMIT signs therefore constitutes, in the opinion of the Consultant, a waste of public monies.

d. For those locations with speeding problems, enforcement or engineering modifications to the roadway are the only deterrence to excessive speeding.

Because of the large number of SPEED LIMIT signs posted on nearly every street section throughout the City, the Consultant did not endeavor to compile these signs onto some form of a location map. It was the feeling of the Consultant that a more effective approach would be to delineate a speed limit plan for the City. With the adoption of the speed limit plan by the City Council with the advice and counsel of the City Engineer and the Police Chief, the City Engineer can undertake a massive program to remove all of the unnecessary SPEED LIMIT signs on roadways not included in the speed limit plan.

In addition to the excessive placement of conforming SPEED LIMIT signs, the Consultant observed a large number of old, rusted, non-conforming SPEED LIMIT signs throughout the City. Examples of two of these signs are as follows:

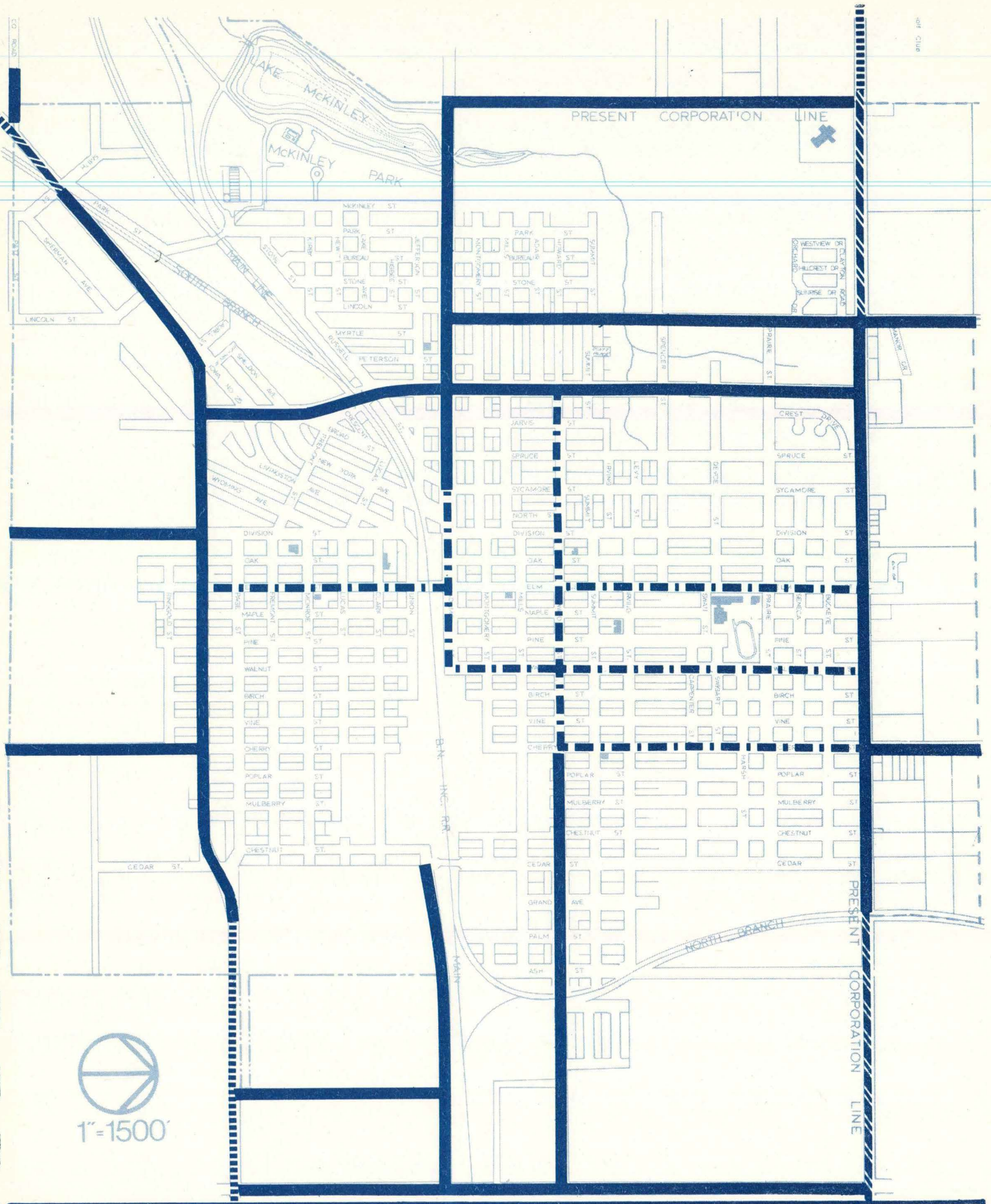
a. 35 MPH, a black on yellow small rectangular sign (supposed to be used as an advisory sign with diamond shaped warning signs).

b. RESIDENTIAL (or SCHOOL) SPEED LIMIT 25-MILES DISTRICT, large rectangular black on white or black on yellow signs.

All of these old signs, as well as ones similar to them, should be removed completely from the street system.

The major criteria for speed limits, according to most traffic engineering publications, is the utilization of the 85th percentile speed based upon a spot speed study as the means of establishing a definite speed limit. However, in urban areas, there are other factors to be considered such as the land use, pedestrian flows, roadway conditions, and related items rather than just the 85th percentile speed in setting speed limits.

With this in mind, the Consultant has prepared a general speed limit plan shown in Figure 4-4. This plan is intended to be only a very general guideline for use by the City in determining what speed limits should be clearly signed. The plan more specifically will provide the City with direction on which streets should receive the speed limit signing.



Creston, Iowa

SPEED LIMIT PLAN

figure 4-4

The general placement of signing on the streets should be fairly restricted in order to prevent over-signing and to prevent disregard by the motorist. Locations of the signs should conform to the MUTCD (Section 2B-13). That is, SPEED LIMIT signs should be located at points of change from one speed limit to another, on the departing legs at major intersection, at major intervals (approximately 5 blocks), and at school zones.

The recommended size of the SPEED LIMIT sign for Creston is 24" x 30", which is in accordance with the MUTCD.

Special guidelines regarding school speed limits will be discussed in Chapter 6.

In reviewing the speed limit plan in Figure 4-3, most of the roadways leading into the City are properly signed at the present time for speed limits. An exception is Osage Street which currently is posted with the non-conforming black on yellow ADVISORY SPEED signs. These should be replaced with the proper black on white signs.

Those streets not indicated in the speed limit plan should, in the opinion of the Consultant, have the existing SPEED LIMIT signs removed.

The estimated cost is $1,000 which is mainly in labor for making the sign inspections, removals, and relocations. The City will also end up with an oversupply of SPEED LIMIT signs as reserve supply.

MISCELLANEOUS CITY-WIDE SIGNS

On a systems basis, there are several other signs which should be addressed on a collective basis.

DEAD END Signs. Throughout the City, there were several dead-end streets which exhibited old, home-made signs advising the motorist of a dead-end street with no outlet. Many of the signs were illegible and contained colors and shapes which were in conflict with the adopted procedures of the MUTCD.

The following is a listing of the major locations found during the Consultant's field inspections as related to the locations of DEAD-END signs. Appropriate measures as indicated below should be taken to either install a conforming DEAD-END sign (W14-1) or make the modification indicated.

1.	Grand Avenue at Irving (North Leg)	-	Remove homemade sign; place new W14-1
2.	Lucas at New York (West Leg)	-	Existing sign okay; trim tree limbs over sign
3.	Summit at Stone (West Leg)	-	Remove homemade sign; place new W14-1
4.	Laurel at New York (North Leg)	-	Remove 2 homemade signs; place one new W14-1
5.	Bureau at Adair (North Leg)	-	Remove existing sign; street does not end.

The cost of these improvements is $150. The signing and labor should be handled fairly easily within the existing City budget for signs.

STOP FOR PEDESTRIANS IN CROSSWALK Signs. Two locations were found where the City had installed a small rectangular sign with the message STOP (white on red) FOR PEDESTRIANS IN CROSS-WALK (red on white). This sign is not a conforming sign in the MUTCD. In addition, it gives the pedestrian a false sense of security that vehicles will see the sign and will obey the sign by stopping when the pedestrian is crossing the street.

This sign was observed on Adams Street at Maple and on Townline Street at Birch in front of a church.

It is highly recommended by the Consultant that these signs be removed immediately in order to eliminate the hazards placed upon the pedestrians and to avoid having the City involved in any liability suits because of these improperly used signs. In addition, the signs should be removed at any other locations within the City which were not identified by the Consultant during the field inspections.

If such a sign is required to identify a pedestrian cross-walk at a non-school location, then the Consultant recommends that in conjunction with a painted cross-walk, the City install four PEDESTRIAN CROSSING signs (W11-2). That is, two signs would be placed back to back on both sides of the roadway at the painted crosswalk so that a motorist's line of vision sights two signs.

Presently, only two locations as mentioned above are utilized as pedestrian non-school crossings. The improvements suggested later in Chapter 5 cover specifically the improvements at Adams and Maple.

At the Church pedestrian crossing on Townline at Birch, the installation of four PEDESTRIAN CROSSING signs could be accomplished for approximately $100.00. If this is undertaken the PEDESTRIAN CROSSING signs should be mounted at a height of not less than 7 feet to the bottom of the sign. In addition, tree limbs should be pruned to ensure visibility of the sign and on-street parking should be prohibited within 100 feet of either side of the cross-walk.

Bridge Approaches. During the field inspections by the Consultant, a considerable number of small bridges and culverts were observed on the local residential and collector streets within the City. Most of the bridge crossings involved wooden bridge rails and offered the motorist no advanced warning.

These bridge crossings needed, in most cases, to have the weeds cut and the major parts of the bridge railings painted white.

In addition, it is highly advisable that the City invest in the purchase and installation of OBJECT MARKER signs (12" x 36") as shown in the listing of typical signs in the Appendix to this report. The OBJECT MARKER signs should then be placed at the bridge locations where the street pavement meets the bridge railing or other fixed object closest to the traveled way for the vehicles.

The general locations to be considered for the installation of OBJECT MARKERS at bridge crossings are:

a. South central part of the City in and around Page at Oak Streets.

b. Adams Bridge Crossing over Lake McKinley.

c. North Central part of the City from Lincoln eastward to the Junior High School near Swan Street.

d. North part of the City from the vicinity of the Junior High at Swan eastward toward Cherry.

e. Far north part of the City from the Junior High northward to Townline.

There are approximately 38 bridge crossings which with four OBJECT MARKER signs at each bridge, gives a total need of 152 signs. Adding in eight extra signs, the City would need to order 160 OBJECT MARKER signs (80 left and 80 right). The total cost would be approximately $8,000, inclusive of the new signs, post, installation, and weed cutting.

A painting project for the bridge railings could be undertaken through the Service Clubs within the City or at the Senior and Junior High Schools. Under such a program, the City could furnish the paint and materials while the Service Club furnishes the manpower. The estimated cost for painting the rails under this program would be approximately $800.00.

STREET NAME Sign Replacement. During the field reconnaissance efforts of the Consultant, it was observed that many of the STREET NAME signs were either missing, damaged, or badly deteriorated from age. Most of the problems seem to center around the deterioration with age reason.

With this in mind, the Consultant encourages the City to undertake within the next two to three years a STREET NAME sign replacement program. Such a program can be done on a phased basis to lower the cost or on a city-wide basis.

If the replacement program is to be done on a phase basis, the Consultant suggests that the phasing be done on the basis of the functional street classification as previously shown in Figure 2-2. Therefore, the primary arterials would be done first, minor arterials second, and collectors third. The STREET NAME sign replacement for the local streets could then likewise be phased by dividing the City into three or four sectors.

The need for the STREET NAME sign replacement is to provide proper identification to the public in using the street system. In addition, the STREET NAME signs are very important for the proper identification of vehicular accidents as previously discussed in Chapter 3.

The Consultant believes that most of the existing poles for STREET NAME signs would not require replacement.

The Consultant would suggest that the new STREET NAME signs be reflective and be white on green. The cost for the sign replacement program could range from as low as $10,000 to as high as $25,000, depending upon the number of signs to be replaced and the time period over which those signs would be replaced.

In lieu of the amount of money required for the STREET NAME sign replacement, it may be in the best interest of the City's budget to program the sign replacement as part of their annual improvements, thereby phasing the new signs in over a number of years.

NO PARKING Sign Replacement. During the field reconnaissance, the Consultant observed that the City has quite a variety of types of NO PARKING signs.

These signs varied in their messages; for example, NO PARKING THIS SIDE, NO PARKING ANY TIME, NO PARKING, NO PARKING with an ARROW.

The coloring of the signs also varied from the accepted red on white to many signs with black on white.

For the most part, the mounting heights of the NO PARKING signs were not in conformance with MUTCD. Some signs were observed as being only two or three feet above the curb in height.

Many of the existing NO PARKING signs were also badly deteriorated either from age or damage.

The NO PARKING signs were satisfactory along Howard Street in the downtown area, Taylor, Adams, and Sumner. For the most part, the other NO PARKING sign installations throughout the City will require sign replacements and/or new conforming sign mounting heights. This is particularly true along North Elm Street, in the downtown area, in the older sections of the City, and around schools.

The improvement sketch diagrams shown elsewhere in this report generally show the areas where parking controls and restrictions should be applied around schools and in the downtown area.

Overall, the Consultant believes that the City should undertake, through its normal budget, a program to replace, standardize and mount properly the NO PARKING signs throughout the City. Major emphasis should first be given to the areas around schools; secondly, in the downtown area; and thirdly, along all major and minor arterials.

The Consultant believes that the majority of the NO PARKING signs should be standardized rather than the present mixture of colors and messages. The Consultant would favor a NO PARKING sign with an arrow (left, doubleheaded, or right) of red on white coloring with sizes of 12" x 18". Some special locations or special signs may be required particularly in school areas of an 18" x 24".

The estimated cost of the NO PARKING sign replacement program could range again from $10,000 to $20,000, all of which, however, could be spread over several years within the street budget.

The need for new NO PARKING signs is to clearly identify no parking zones to the motoring public and to provide a more concrete basis for enforcement of no parking zones by the Police Department.

CHAPTER 5

DOWNTOWN

EXISTING CONDITIONS

The existing downtown area comprises 15 square blocks bounded by Adams, Walnut, Howard, and Division Streets. Most of the commercial retail core is centered around a four block area of Adams, Pine, Mills, and Elm. The block areas closer to Howard Street and Division Street contain some office usages mixed with residential uses.

Figure 5-1 shows the existing downtown intersection controls as well as the one-way street system. Figure 5-2 reflects the on-street and major off-street parking areas.

In regard to the one-way street system, Mills and Montgomery forman east-west couplet while Pine is matched with Maple and Elm is matched with Oak in the north-south direction. The limits of the one-way streets are totally within the 15 block downtown area.

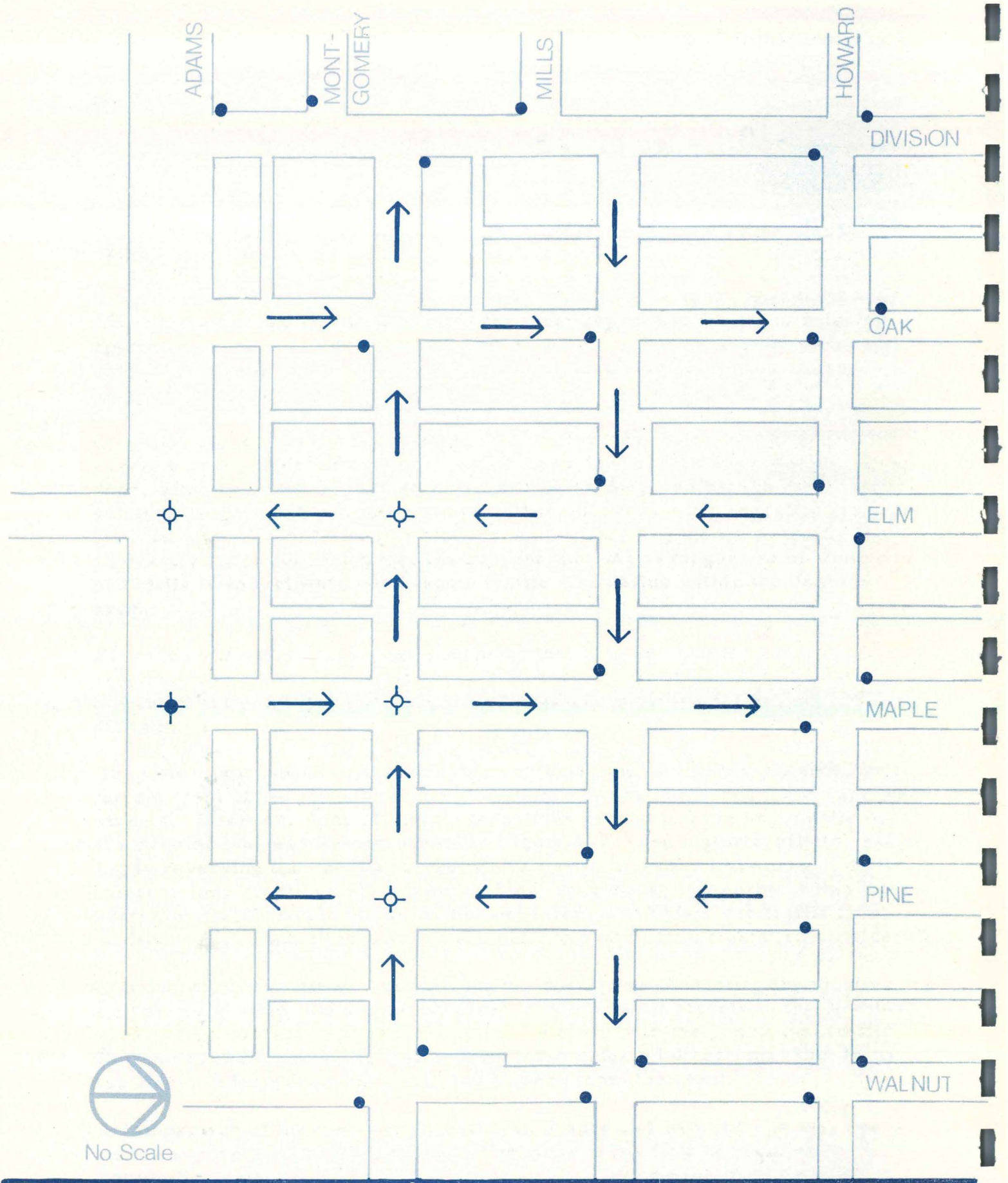
Intersection controls mainly involve the usage of STOP signs. Five intersections are signalized with fixed time controllers. One of these intersections, however, (Adams at Maple) operates on a permanent FLASHING YELLOW.

In reviewing the on-street parking, most of the designated spaces involve parallel parking. The major exceptions involving angle parking are along Adams Street and Pine Street. Several major off-street parking facilities are available with the primary ones being located along the south side of Adams Street.

Streets in the downtown area are fairly narrow, although basically adequate for two moving traffic lanes and one or two lanes of parallel parking. The primary exceptions are the extra wide widths along Adams and along Pine.

The accident statistics for the downtown area were previously discussed in Chapter 3. From that discussion and the supporting accident collision diagrams found in the Appendix, it can be summarized that the downtown accidents relate to angle parking, driver in attentiveness, and poor visibility of signals and signs.

The intersection of Adams at Elm as previously indicated is the highest accident location in the City, while also constituting one of the higher volume intersections in the City. Most of the other accidents are not concentrated at intersections but rather at mid-block locations involving parked vehicles.

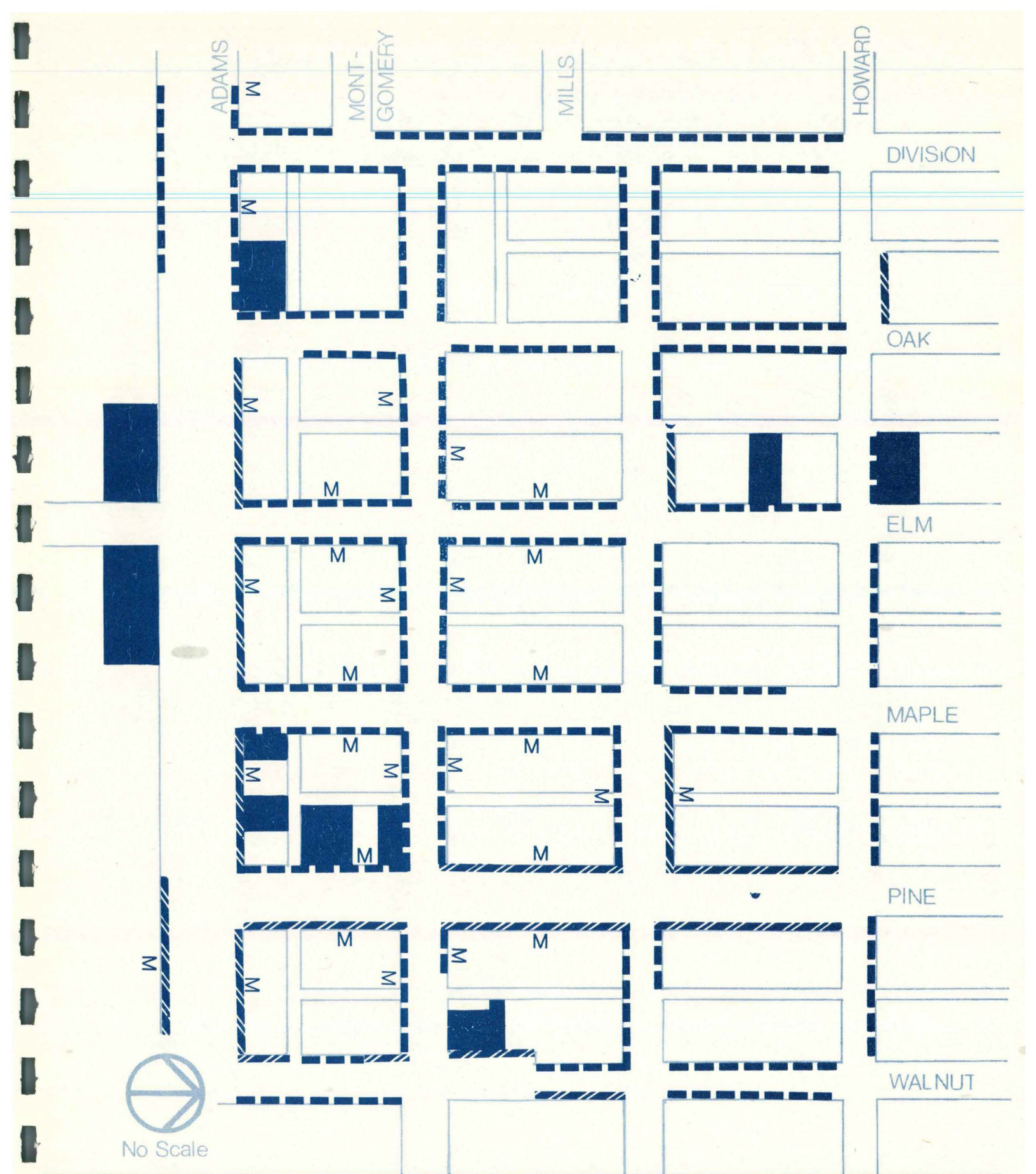


Creston, Iowa

● stop sign ✦ flashing signal
⊹ signal ← one way

DOWNTOWN INTERSECTION CONTROLS

figure 5-1



Creston, Iowa

parallel parking
angle parking
off street parking lots
M meters

figure 5-2

DOWNTOWN PARKING

ANALYSIS OF THE ONE-WAY STREET SYSTEM

The Consultant completed an analysis of the traffic flow patterns in the downtown area in order to determine the impacts of the existing street patterns upon vehicular traffic flow and safety. In addition, contacts within the local community resulted in the receiving of some concerns over the existing one-way street operations as opposed to a conversion back to two-way street operations.

Figure 5-3 reflects the existing one-way street system in the downtown area. Also shown are the traffic flow lines for incoming traffic for three selected approaches to the downtown (Elm from the south, Adams from the west, and Howard from the east). The flow lines are intended to be conceptual and show the general approaches into the retail core of the downtown.

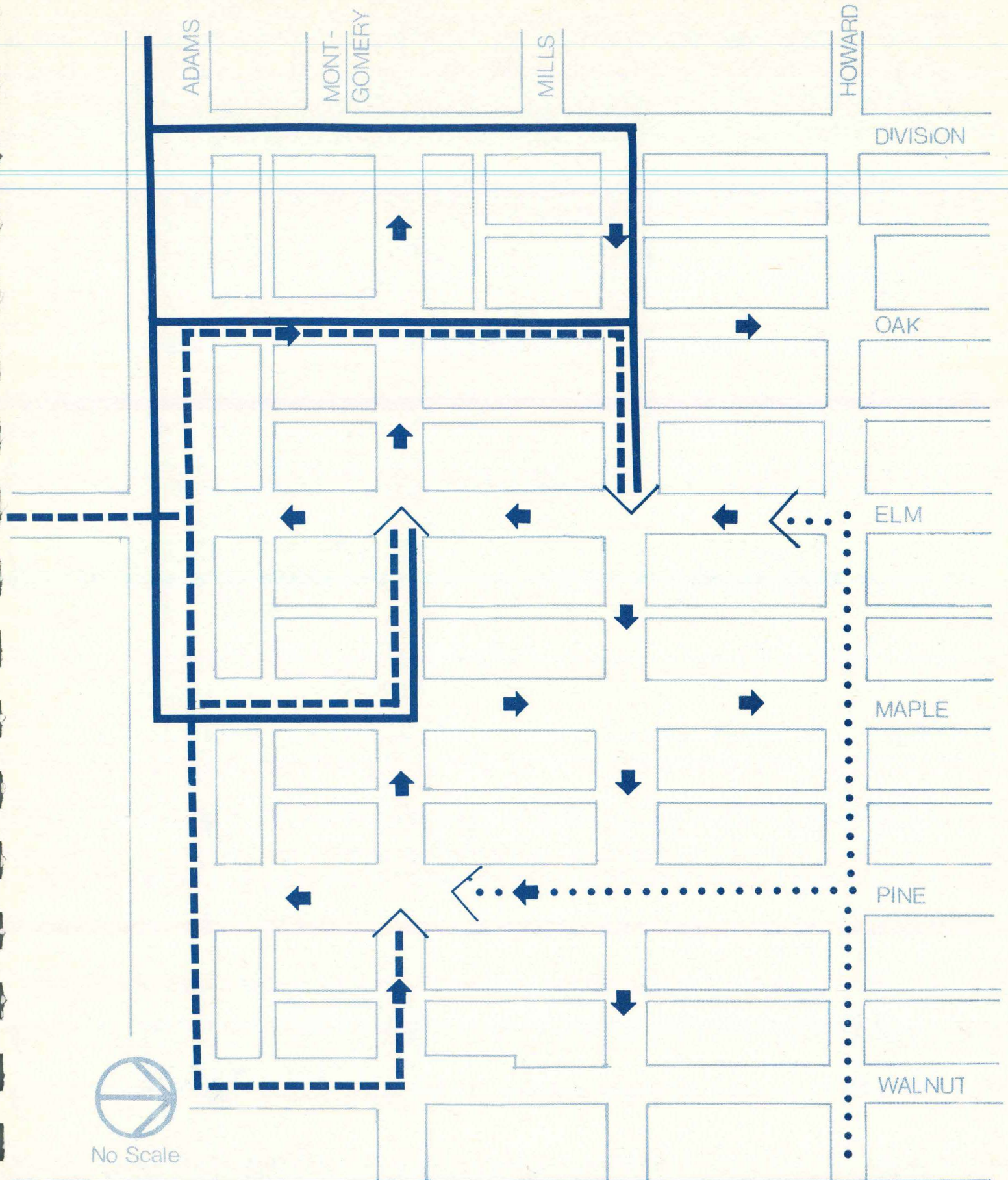
Of initial concern to the Consultant was the fact that Montgomery and Mills create a cross-over situation for traffic flows in the vicinity of Walnut. However, after studying this situation further in the field and for the daily traffic volumes (Figure 2-5), it was concluded that the cross-over in traffic streams for Montgomery and Mills at Walnut is not a major impedance to traffic flow. Primarily, it is concluded that the present one-way arrangement of Montgomery and Mills is to facilitate north-south traffic circulating within the downtown area.

From the analysis, it was also concluded that Elm and Maple have a direct relationship as a one-way pair in serving north-south traffic through the downtown area and therefore are major roadway facilities for access and circulation.

The Consultant looked briefly at other combinations of one-way streets involving the reversal of the directions now established on the north-south and east-west streets. However, none of these alternatives proved to have any merits over the existing one-way system shown in Figure 5-3. The major conflicts resulting in reversing the one-way street flows was to increase left-turns at critical intersections, particularly Adams at Elm. Increasing left-turns at this intersection certainly would not be in the best interest of safety nor traffic flow. Consequently, such alternatives were not given any further detailed consideration.

Consideration was given, however, to the concept of converting the existing one-way street system into a two-way street system on all streets in the downtown area. This concept is shown in Figure 5-4 along with the conceptual traffic flow patterns for incoming traffic from three selected directions (Elm from the south, Adams from the west, and Howard from the east).

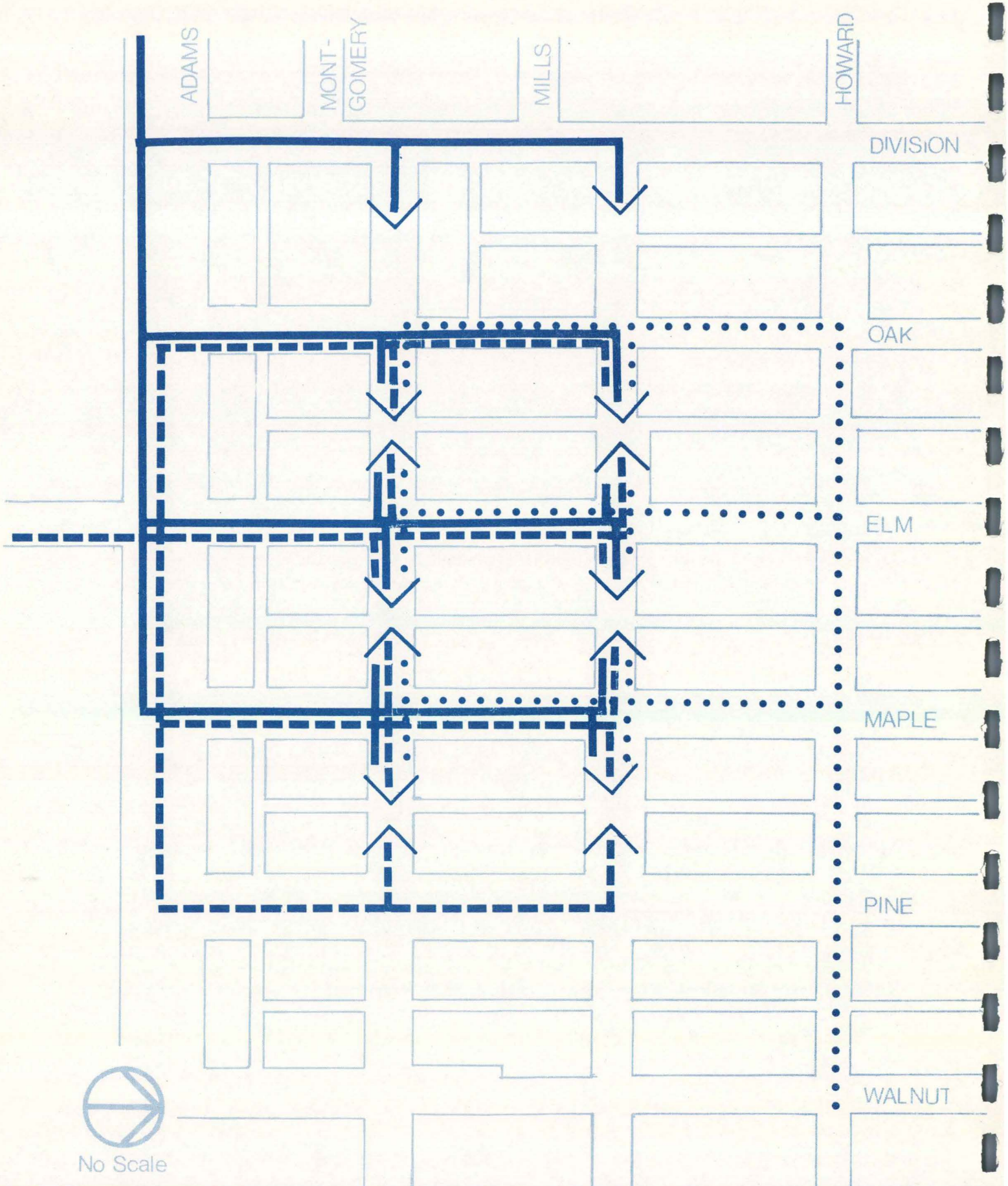
A comparison of the two-way operation in Figure 5-4 with the one-way operation in Figure 5-3 reveals major differences in the flow of vehicles in the downtown. Although the two-way system seems to provide more flexibility



Creston, Iowa

DOWNTOWN TRAFFIC FLOW
EXISTING ONE-WAY SYSTEM

figure
5-3



Creston, Iowa

DOWNTOWN TRAFFIC FLOW ALL TWO-WAY SYSTEM

figure 5-4

for the motorist in selecting his travel routes within the downtown, the system promotes from a negative standpoint heavy left-turn potentials at all of the critical downtown intersections within the retail area. It is the Consultant's conclusion that such a two-way operation would add considerably to the congestion of vehicles on all sections of streets within the area bounded by Adams, Pine, Mills, and Oak.

In addition, the two-way system would encourage a heavy concentration of vehicles on Elm Street. The width of Elm is not adequate to handle two opposing traffic flows along with the resultant left turns.

Overall, it can be seen in comparing the two figures that the one-way system segregates the traffic flows and eliminates many of the left-turn conflicts against opposing traffic. The one-way system will also allow simpler traffic controls to be used at all intersections since opposing left turns do not present a major conflict except at the Adams and Elm intersection. Characteristically, one-way streets enable a city to gain more traffic flow efficiency and safety from their existing street system when those streets are narrow and contain on-street parking. This is the case in Creston.

It may seem to some motorist that the one-way system causes additional circulation in the downtown area. This is true with a one-way system. However, the one-way system will reduce delays created by left turning vehicles and therefore on a travel time basis provide greater efficiency to the motorist.

Safety is also generally increased with a one-way system. This trait is attributed to having the traffic flows on a street moving in a common direction. Likewise, there are less vehicular conflicts at intersections involving one-way streets.

Overall, the Consultant sees no advantages to the conversion of the existing one-way system to a two-way system. Therefore, the Consultant believes it is in the best interest of the motoring public to retain the existing one-way system as shown in Figure 5-3.

With regard to the conversion of Division Street to a one-way southbound and the conversion of Walnut Street to a one-way northbound, the Consultant believes that such changes are not necessary at the present time. Such changes, however, may be necessary in future years as the City continues to grow and prosper. Therefore, it is suggested that Division and Walnut remain as two-way streets for the immediate short-term future.

IMPACTS OF THE DOWNTOWN REDEVELOPMENT PLAN

Conceptual plans have been prepared regarding a proposed downtown redevelopment centered along Adams Street from Elm to Pine, along Maple from Adams to Mills, and the parking lot areas around the old railroad depot on Adams Street. This plan would be in conjunction with the proposed plans to convert the old railroad depot into a City Hall Complex.

The Consultant reviewed the available concept plans for this redevelopment from the standpoint of traffic circulation and safety within the downtown area. The review also included the relationships between Adams and Maple Street to the other streets in the downtown street system.

The proposed redevelopment plans along Adams Street are concluded by the Consultant to be excellent for improving traffic safety and traffic flow. The same conclusion is made regarding the redevelopment of the parking lots and their entry-exits located around the old railroad depot.

Of particular importance to the safety and channelization of traffic is the extension of the curbs and sidewalks which will segregate the angle parking along the north side of Adams Street from the moving traffic lanes. The angle parking should be developed at 45° or less and four 12-foot traffic lanes should be made available on Adams Street.

The Consultant wholeheartedly concurs in the recommendation for a pedestrian crossing signal on Adams Street just to the east side of Maple. The curb extensions will shorten the length of the crosswalk and will also call special attention to the crosswalk for both pedestrians and motorists.

Along Maple Street, the proposed redevelopment plan calls for angle parking and one through traffic lane constructed on a curvilinear path for the two blocks between Adams and Mills. The Consultant does not believe that this proposal as shown is in the best interest of safety for the motorist and pedestrians. Nor is the proposal acceptable from the standpoint of maintaining good vehicular access and circulation in the downtown area since Maple Street is one of the more important traffic circulators in the downtown area.

If implemented, the angle parking and the curvilinear design of Maple will promote vehicular accidents. The reason is that the motorist in using Maple must direct his vehicle over a curved path, while at the same time be watching for a parking stall, pedestrians, or a vehicle entering or leaving a parking stall.

An additional point against this proposal is the fact that the curves introduced into Maple Street create turns at Montgomery and at Mills which are greater than 90°. That is, the curved alignment of Maple Street does not lend itself with the one-way streets on Montgomery or Mills for any vehicles desiring to turn from Maple onto Montgomery or Mills.

The present daily traffic volumes on Maple Street are in the range of 3,400. This daily volume cannot be handled on a single traffic lane and will require with on-street parking two traffic lanes.

If the desire is to have a street with landscaping which conforms with the redevelopment plans along Adams, then the Consultant makes the following suggestions:

1. In order to minimize vehicular accidents, it is suggested that two traffic lanes be maintained on Maple Street and that parallel parking be retained instead of angle parking.

2. It is suggested that at the intersections the curbs and sidewalks be extended in order to segregate the parallel parking stalls from the traffic lanes on Maple. These areas will also provide locations for landscaping.

3. If landscaping or mid-block pedestrian crossings are deemed necessary, then a parallel stall can be removed at any location within the block for such landscaping.

The positive features of the redevelopment plan as well as the Consultant's suggested modifications have been incorporated in the individual intersection improvements found later in this chapter.

SIGNALIZATION

As previously indicated, the existing downtown signalization is concentrated in the downtown core area at three intersections along Montgomery (Pine, Maple, and Elm) and two nearby intersections on Adams (Maple and Elm).

The existing signal installations all contain fixed-time controllers with single dials. The signals are pedestal mounted. The signal faces are all 8-inch heads with the exception of the RED signal heads which were converted to 12-inch lenses a few years ago.

Although all of the controller cabinets and signal heads have been newly painted with highway yellow, a visual inspection of the controllers and the signals indicates to the Consultant that all of the signal equipment should be replaced in the immediate future. Field inspections found that some of the signal wiring is exposed to the elements, particularly at the base of many of the signal poles. Much of the controller and signal installation appears to be over 25 years in age and much of the usable life has been expended.

The controllers are all operating on a 50 second cycle and are primarily set for a 50-50 percent split in the cycle length. There is, however, no interconnection or progression established between any of the intersections either physically through their controllers or through the actual timing established for each intersection.

The old fire station which is now vacated contained a switch for converting the signal at Montgomery and Maple to an ALL RED indication. However, no mechanical means exist for automatically resetting this signal to its normal cycle operation and timing with respect to the adjacent intersections. With the moving of the fire station to a temporary location on Walnut Street, it would appear to the Consultant that the ALL RED preemption for the signals at Montgomery and Maple would no longer need to be used.

During the field observations of the Consultant, it was observed that the YELLOW would come on for a few seconds during the first portion of the RED indication or the GREEN signal indication. These conflicts seem to occur along Montgomery at different intersections and appear to be created by some abnormality in the controllers.

As previously indicated, the Consultant believes that the five intersections now signalized in the downtown area should remain signalized in the future, primarily for pedestrian safety and traffic flow regulation in the downtown area. The Consultant, however, strongly recommends that the City adopt immediately a positive program for replacing all of the signal equipment at these five intersections.

In addition, the Consultant strongly recommends that some form of interconnection be established between the five intersections in order to insure that these signal installations will work together in controlling downtown traffic rather than operating as individual intersections. Figure 5-5 illustrates the interconnections which can be established for the downtown signals both now for the existing installations and in the future for the new installations.

The key intersection for establishing a signal system in the downtown area of Creston is the signal installation at the intersection of Elm and Adams. Once the timing is established at this intersection, then the timing for the remaining signals can be projected forward along Adams or retracted backwards along Montgomery.

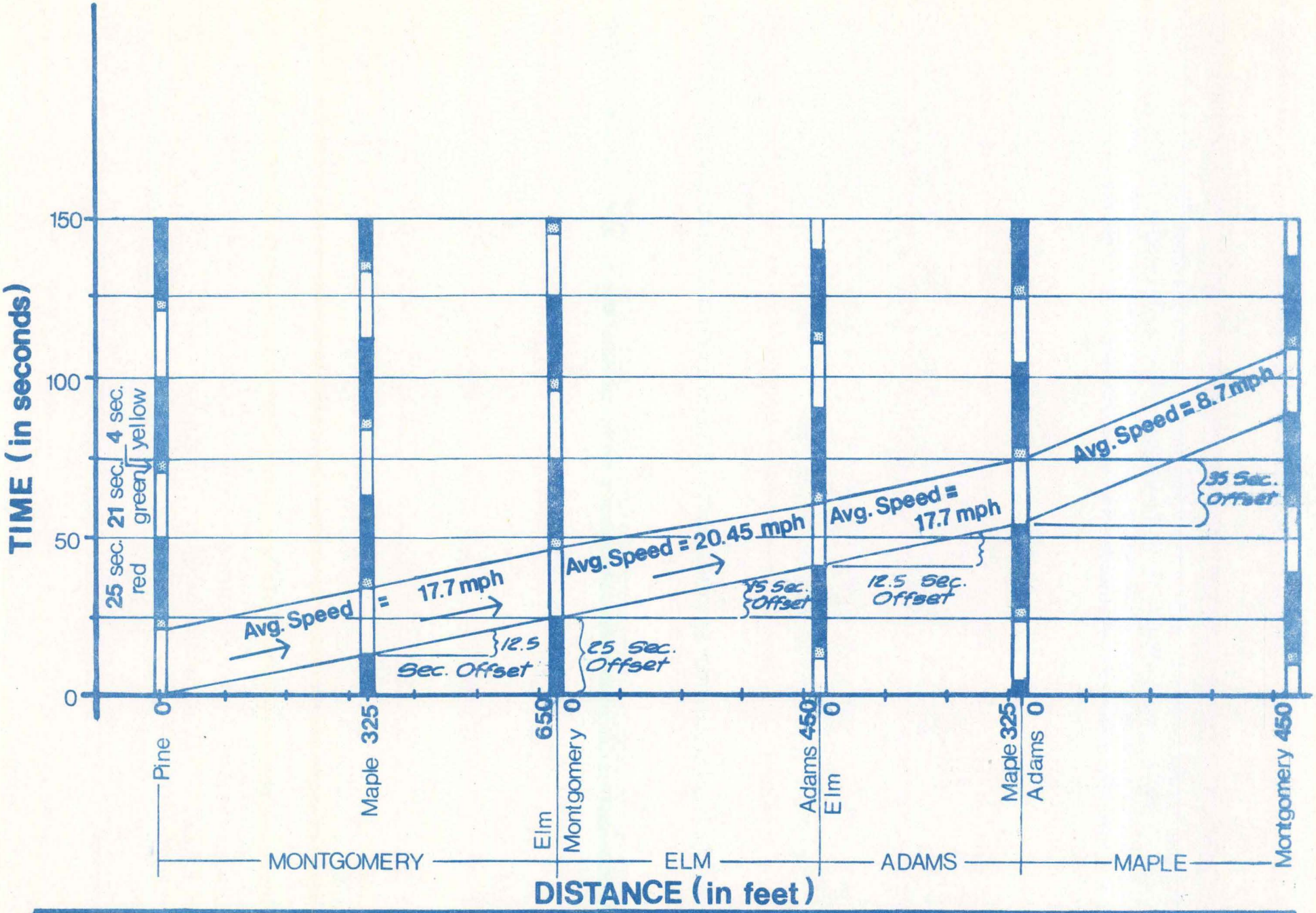
It should be noted in Figure 5-5 that all of the installations will retain a 50-second cycle with a 50-50 percent split.

For a city the size of Creston, it is not mandatory that monies be expended on a sophisticated signal system to interconnect the five intersections. In order to be cost effective and functional, it is recommended by the Consultant that the new signal equipment consist of single dial fixed-time controllers with the interconnection being established through the timing of the signals. Once the timing is established, the City should instruct its electrician to monitor and readjust the timing on a periodic basis to ensure its conformance with the offsets shown in Figure 5-5.

Further details as to the individual signal requirements at each intersection and the associated cost will be given later in this chapter.

In reviewing the information in Figure 5-5, it should be kept in mind that the average speeds shown for the signal progression are theoretical. Such speeds reflect the average which a vehicle should maintain in order to hit the GREEN signal indications at each successive intersection. In actual practice, the established progression will be interrupted by vehicles entering or leaving parking spaces and by vehicles traveling above or below the average speed indicated.

It should also be noted that the speed limits on the Downtown streets should not be changed to match those in Figure 5-5. The indicated average speeds are what is probably necessary to maintain a progression between the signals in the Downtown. The major influence on maintaining a progression for eastbound traffic on Adams will be the fact that the signal at Adams and Maple will be pedestrian activated, and therefore will possibly retain a GREEN indication on Adams for periods longer than the green time indicated in Figure 5-5.



Creston, Iowa

DOWNTOWN SIGNALS TIME / SPACE DIAGRAM

figure 5-5

No progression was established on Adams for westbound traffic from Maple to Elm as the Consultant concludes that the primary direction to be favored is the eastbound traffic.

FIRE ACCESS ROUTES

At the present time, the fire station equipment has been moved to a temporary location in a warehouse on Walnut Street between Adams and Montgomery. At this new location, the primary routes for leaving the downtown fire station would be west on Adams to various major streets (Elm, New York, Sumner, etc.), or north on Walnut to other major streets (Howard or Townline).

Along Adams, fire equipment will pass through the present FLASHING YELLOW signal at Adams and Maple and the normal traffic signal at Adams and Elm. The Consultant does not believe that the existing nor proposed pedestrian signal at Adams and Maple presents any major problems to fire equipment.

At Adams and Elm, the option does exist for installing some preemption equipment to allow this intersection to go an ALL RED phase. Further discussions and implementation of this concept can be addressed between the Creston City Council and the Fire Chief since the Consultant does not believe there is a strong need for such preemption equipment at this intersection. Should the Council and Fire Chief decide to install a signal preemption at Adams and Elm, then the Consultant strongly urges that the mechanical equipment utilized for the preemption allow the signal at Adams and Elm to return to its original progression time sequence as part of the overall downtown signal system.

Along Walnut Street, the Consultant is suggesting that the intersection controls at Walnut and Montgomery and Walnut and Mills be modified to allow the through movement to exist on Walnut Street. This would entail the removal of the STOP signs now on Walnut and their relocation onto Montgomery and Mills. Details of the intersection modifications along Walnut Street at Montgomery and Mills may be found later in this chapter.

ON-STREET PARKING

As previously indicated, a major contributor to accidents in the downtown area is the angle parking which exists on several of the downtown streets. Although angle parking does provide more parking spaces, it does present visibility problems for motorists attempting to back out of the spaces. In addition, the angle of the parking stalls on some streets is too large which forces motorist entering or leaving stalls to use both of the moving traffic lanes assigned on the street.

The Consultant does recognize that downtown parking is an important element to the business community. As a guideline, the Consultant suggests that if angle parking is to be retained that the angle of the painted stalls be no greater than 45°. On Pine Street, however, it will be necessary to use 30° as the maximum angle for the parking spaces.

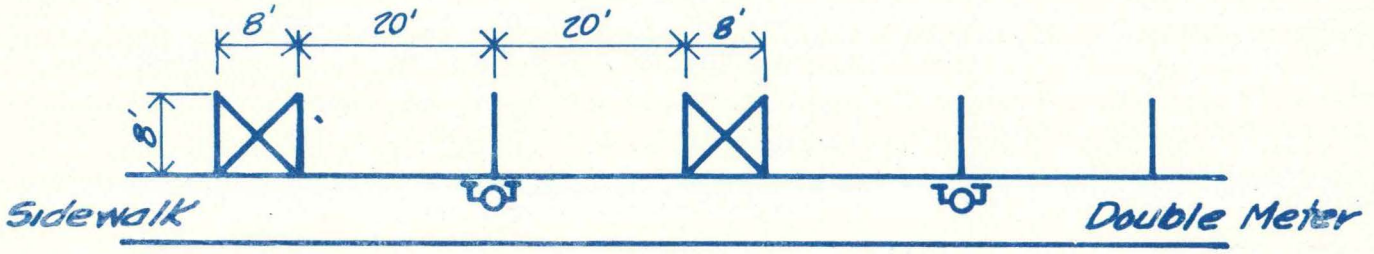
The Consultant has previously recommended that the City begin monitoring on an annual basis all high accident locations. Should it be found in the future that angle parking even with the suggested improvements contained in this report continues to cause high accidents in the downtown area, then the Consultant suggests that the angle parking in question be replaced with parallel parking.

Figure 5-6 illustrates the recommended form of parallel parking. The concept shown is the "double alternate" form of parallel parking. The major advantages of this form of parallel parking are the increased ease to the motorist in entering and exiting the parking stalls and the fact that a single post can support two parking meters.

Parking (whether parallel or angle) should be prohibited within 30 feet of the cross walk when approaching an intersection and within 20 feet of the cross walk when traveling away from an intersection. Presently, within the downtown area, parking stalls are permitted right up to the cross-walks at the intersections. In some cases, the parking space overlaps portions of driveway entries.

The major reasons for restricting parking immediately at the intersections are to improve visibility of both motorist and pedestrians and to prevent vehicles in some cases from backing into an intersection in order to leave or enter a parking space.

The elements contained in this section will be exhibited later in this chapter where specific improvements are discussed for individual intersections.



Creston, Iowa

SUGGESTED PARALLEL PARKING

figure 5-6

ALLEYS

At the present time, all alleys in the downtown area operate as two-way roadways with the exception of the east-west alley just north of Adams between Maple and Pine. This alley basically functions as a one-way eastbound roadway.

In reviewing the operations of the alley system in the downtown, the Consultant does not believe it is necessary to implement a one-way alley system or make major changes to the existing alley system itself at this time.

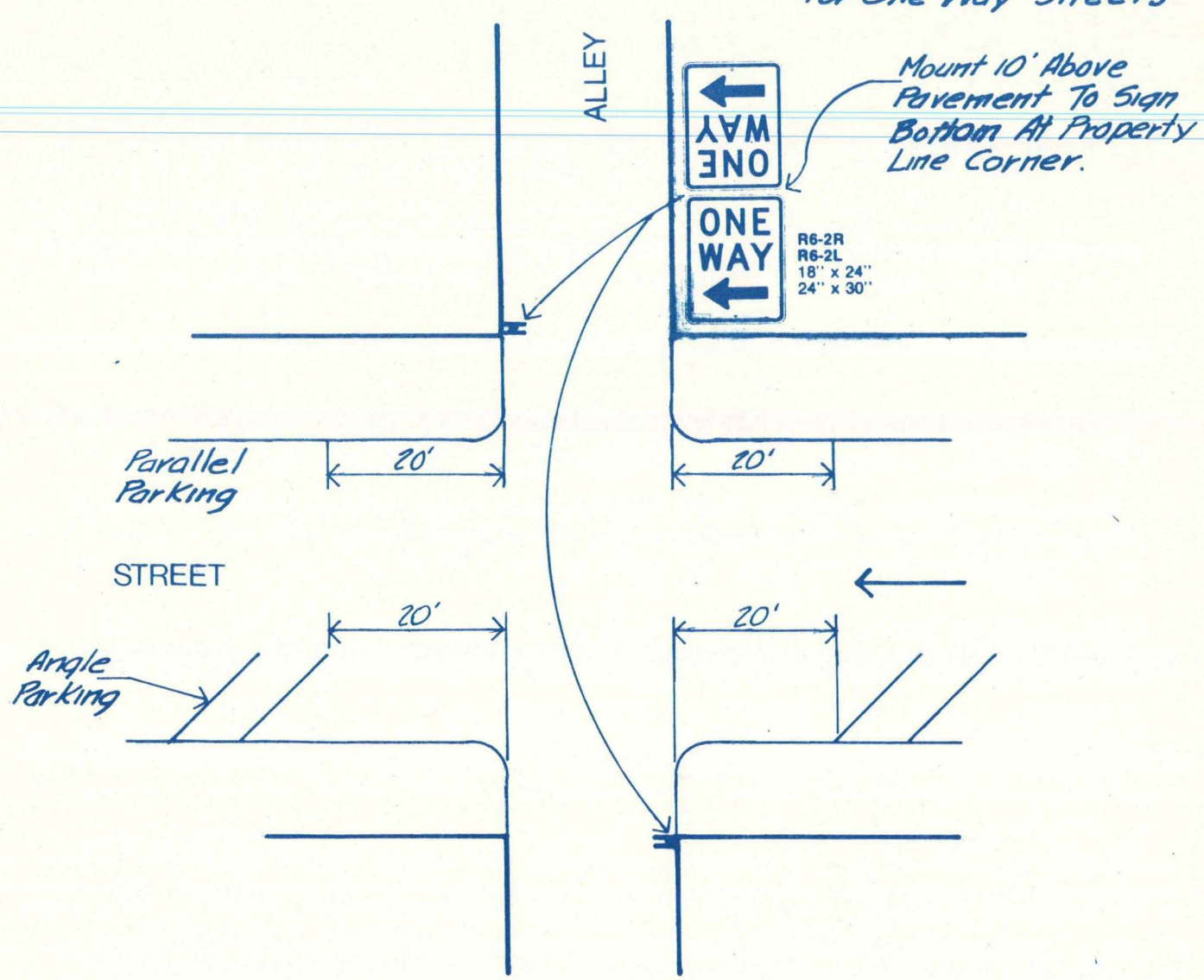
A major problem concerning the alleys involved the placement of ONE WAY signs at the intersections of the alleys with the one-way streets. Presently, the City is using the 36-inch x 12-inch ONE WAY sign (R6-1). In many cases, this sign, although mounted 10 to 12 feet above the roadway, is bent due to passing trucks. In other cases, this sign is not visible to motorists using the alley and approaching the one-way cross street.

To overcome the problem of the damaged signs and the improper placement of these signs, the Consultant is proposing the changes shown in Figure 5-7. This would entail the usage of the 18-inch x 24-inch ONE WAY sign (R6-2) which will lower the horizontal features of the sign and hopefully reduce the damages caused by vehicles bending the signs.

The Consultant is also suggesting in Figure 5-7 that the City discontinue mounting the one-way signs on the overhead steel power structures, since in many cases these structures are located too far from the intersection. As a correct alternative, the Consultant is suggesting that the new ONE WAY signs be mounted a minimum of 10 feet above the alley surface at the property lines between the alley and the one-way cross street. The mounted sign could be either on a pole or with the permission of the property owner on the building itself. This location of the ONE WAY signs will improve visibility and also bring the installation of these signs into conformance with the MUTCD.

In addition, the Consultant is also recommending as shown in Figure 5-7 that parking be restricted within 20 feet of the alley entrance in order to improve sight distance and vehicle entry and exit to the alley.

To properly replace the ONE WAY signs for the alley intersections with the one-way streets in the downtown area, a total of 54 ONE WAY signs (R6-2) are required. By including six (6) extra signs, the total becomes 60 with 33 left-arrow signs and 27 right-arrow signs. The total cost is estimated at $3,000.00, which includes the new sign, new post, removal of old signs, and labor.



Creston, Iowa	TYPICAL ALLEY SIGNING & CLEARANCES	figure 5-7

SIDEWALK RAMPS FOR THE HANDICAPPED

At the present time, many of the Federal Programs require that sidewalk ramps be installed with any new construction or reconstruction of sidewalks. Thus, the City is encouraged at any locations where sidewalks will be reconstructed due to the specific intersection improvements contained in this report or with those improvements being recommended in the downtown redevelopment program that special ramps for the handicapped be incorporated into the construction of any new sidewalk facilities.

The Appendix to this report contains sketch drawings showing the typical design for Residential Sidewalk Ramps and for Business District Sidewalk Ramps.

SIGN MOUNTINGS

Field observations within the downtown area found approximately 30% of the existing traffic signs to be improperly mounted as to their height. A sketch diagram showing Sign Placements may be found in the Appendix of this report, as well as in the MUTCD. The City is strongly encouraged to correct the mountings of any and all signs in the downtown area which do not conform to the minimum mounting heights shown in the diagram in the Appendix.

A critical error was made several years ago with the usage of non-galvanized sign bolts and clamps for mounting of signs in the downtown area. As a result, these existing bolts and clamps have rusted, thereby creating rust stains over the faces of many of the downtown signs. Consequently, the usable life of many of the existing downtown signs has expired, creating a need for a replacement of approximately 50% of the downtown signs. However, since the Consultant is modifying or revising much of the signing at the downtown intersections, many of these ruined signs due to the rust stains will automatically be replaced with the implementation of the Consultant's recommendations.

The Consultant highly recommends that the City avoid using non-galvanized sign bolts and clamps when installing signs anyplace within the City. There are on the market many acceptable clamps and devices for use in properly installing signs. The small amount of additional monies to buy the proper rust prohibitive clamps and bolts will be worth it in the long run in order to avoid the repetition of the existing conditions with so many of the downtown signs ruined due to unnecessary rust stains.

INDIVIDUAL INTERSECTION IMPROVEMENTS

The following includes a brief discussion and supporting sketch diagrams for the suggested modifications in the traffic engineering controls at the principle intersections in the downtown area.

Adams at Pine. Figure 5-8 illustrates the recommended improvements for this downtown intersection. All of the improvements involve signing and are for the following purposes and objectives.

a. STOP signs should be used on Pine Street rather than a single YIELD sign. This is an intersection with a major arterial and therefore should contain the full STOP sign control. The usage of two STOP signs will more clearly define the intersection controls to all moving traffic lanes on Pine Street.

b. The black on white TURN ARROW signs beneath the STOP signs on Pine will aid in identifying the allowable turning movements onto Adams.

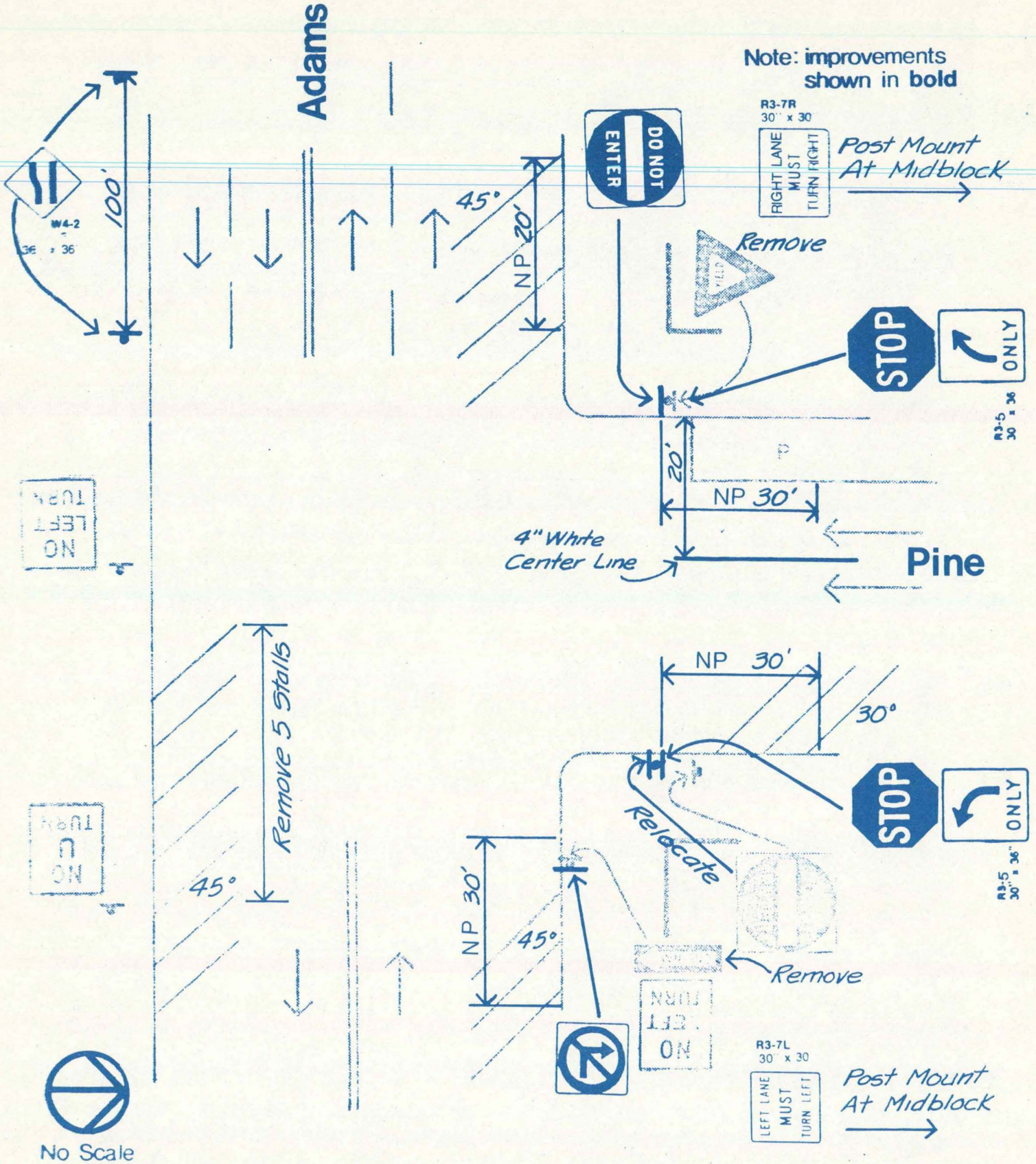
c. A 4-inch white centerline is recommended on the approach of Pine Street to Adams. This centerline should be slightly offset to allow a larger lane adjacent to the angle parking.

d. The angle parking on Pine Street should be re-striped for 30°.

e. Two LANE NARROWS signs (Symbolic) should be used on the west approach leg of Adams.

f. Parking should be restricted on the approaches to the intersection to improve sight distance and decrease accidents with parked or parking vehicles.

The cost of the improvements is estimated at approximately $500.00, inclusive of signs, poles, removal of old signs, and the installation of new signs and pavement markings.



Creston, Iowa	P parking NP no parking curb extensions & traffic islands	figure 5-8
	ADAMS at PINE	

Adams at Maple. Figure 5-9 shows the recommended improvements involving signs, signals, pavement markings, and curb extensions. The improvements generally conform to the concepts contained in the downtown redevelopment plan. These improvements will promote the following objectives.

a. The extensions of the curb lines as shown in the northwest and northeast corners of the intersection will assist in improving the visibility of signs and signals and pedestrians to the motorist, will segregate the on-street parking from the moving traffic lanes, and will provide major areas for landscaping.

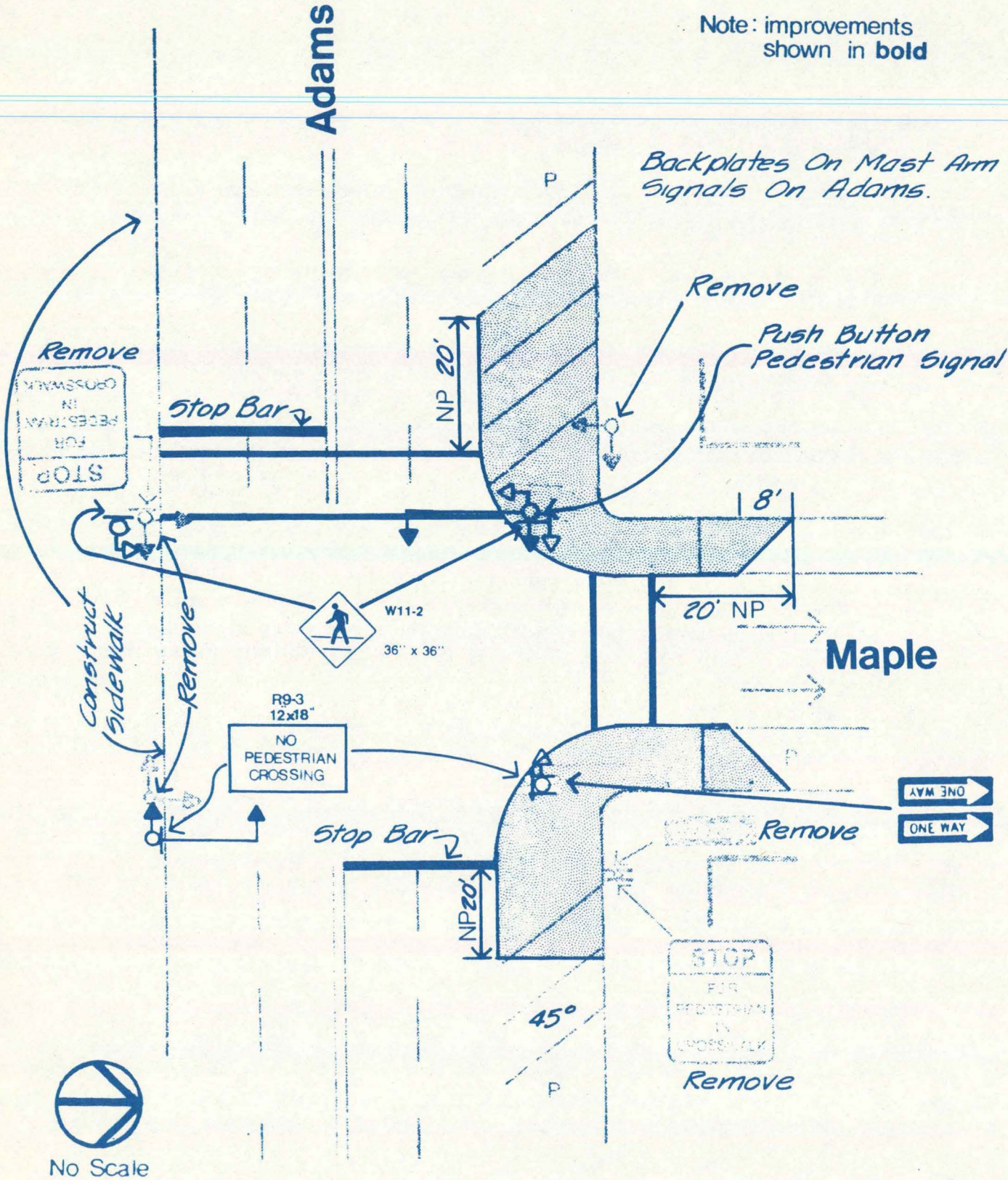
b. All existing signs and signals should be removed, particularly the STOP FOR PEDESTRIANS IN CROSSWALK sign, which is a nonconforming sign and which promotes a false sense of security for the pedestrian when crossing the street.

c. New mast arm signals should be installed with pushbutton pedestrian actuation features. The PEDESTRIAN CROSSING black on yellow signs (W1 1-2) should also be installed on the signal poles above the traffic signals. According to MUTCD interpretation, entire intersection must be signalized when crossing is close to intersection.

d. Painted crosswalks and stop bars should be installed.

The estimated cost is as follows, and includes the installation of signs, poles, removal of old signs, installation, curb extensions, and landscaping.

Signalization	$ 9,500
Signs	200
Markings	150
Curb Extensions	3,000
Landscaping	3,000
	$ 15,850



Creston, Iowa	mast arm pole 12 in. RYG signal walk / dont walk	P parking NP no parking	curb extensions & traffic islands	figure 5-9
	ADAMS at MAPLE			

Adams at Elm. Figure 5-10 reflects the improvements required at this intersection, which is the highest accident location in the City. As can be seen, there are numerous improvements proposed; however, all of these changes will improve safety at this location.

a. Mast Arm Signals will improve the motorist's visibility of the traffic lights at this intersection.

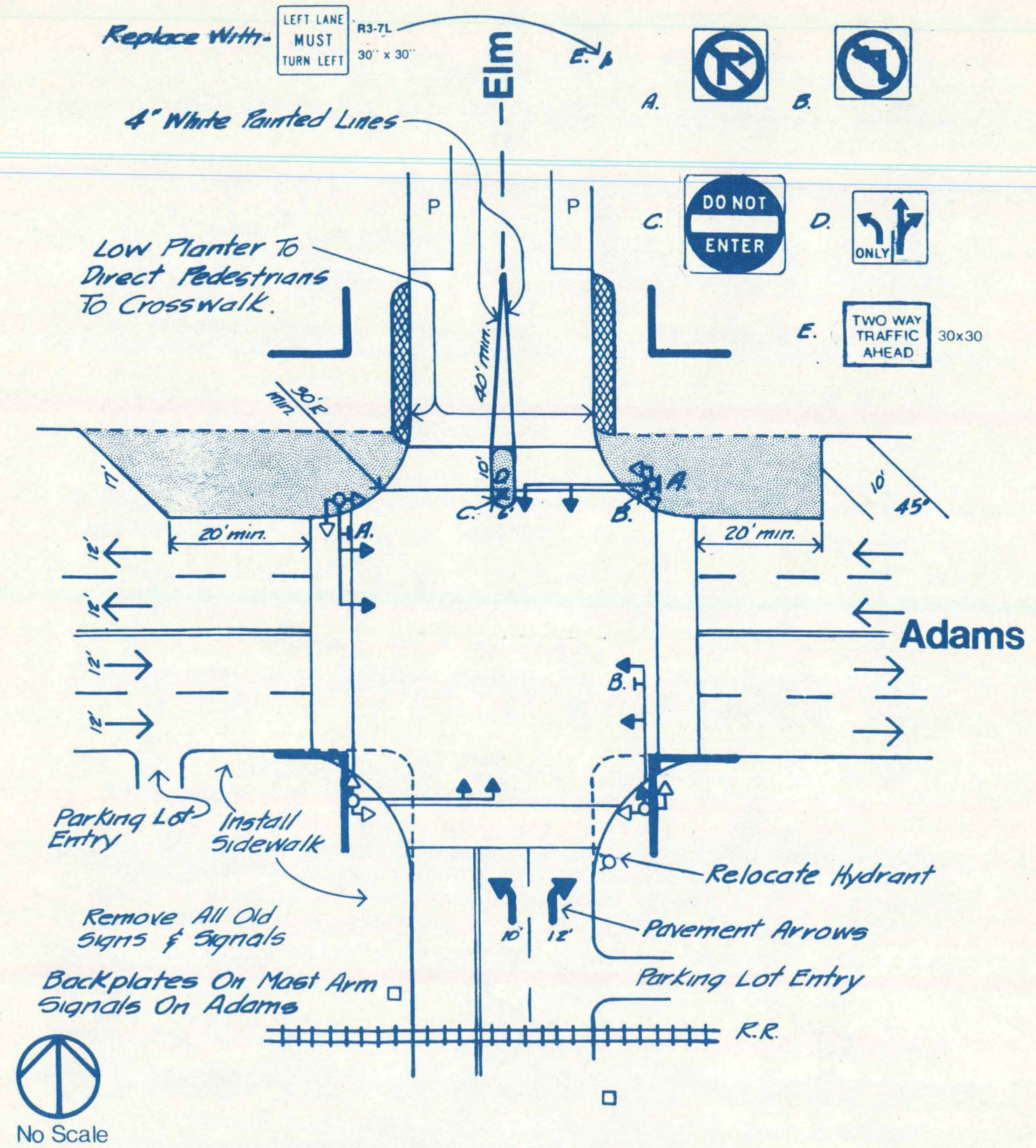
b. WALK/DONT WALK signals, together with painted cross-walks, will improve pedestrian safety.

c. On Elm (north leg), the removal of parking for a length of 40 feet and the installation of a small traffic island, will assist in properly aligning the southbound lane on Elm and will properly direct the traffic turning from Elm eastbound onto Adams. Presently, the southbound lane on Elm (north leg), projects directly into the left turn lane for northbound traffic on Elm (south leg).

d. The curb extensions on the north side of Adams are in conformance with the proposed downtown redevelopment plan. These curb extensions will segregate the angle parking from the through traffic lanes, will place the signals and signs in a more visible location, and will provide areas for landscaping.

The cost of these improvements is as follows:

Signalization	$ 26,750
Signs	300
Curb Extensions, Sidewalks, Curb Radii & Pavement, Islands, Planters	7,200
Markings	700
Hydrant Relocation	500
	$ 35,450



Creston, Iowa

mast arm pole
12 in. RYG signal
walk / dont walk
curb extensions & traffic islands
crossing gate

PROPOSED ADAMS at ELM IMPROVEMENTS

figure 5-10

Adams - Sycamore to Oak. The two sheets of Figure 5-11 reflect the recommended improvements along the three-block section of Adams Street from Sycamore to Oak. The main problem in this section of Adams is the lack of continuity between the traveled lanes along this very wide street.

Although accident statistics indicate a high frequency of accidents along this section, this situation has been corrected with the conversion in July of 1976 of the angle parking to parallel parking along the north side of Adams.

Traffic volumes as previously discussed are of a sufficient nature at the intersections of Adams at New York and Adams at Division to warrant monitoring on an annual basis to determine if traffic signals should be installed in the future. At the present time, however, the Consultant does not believe that traffic signals should be installed until the improvements shown in Figure 5-11 have been made and monitored as to their effectiveness in promoting traffic safety and efficiency along Adams Street.

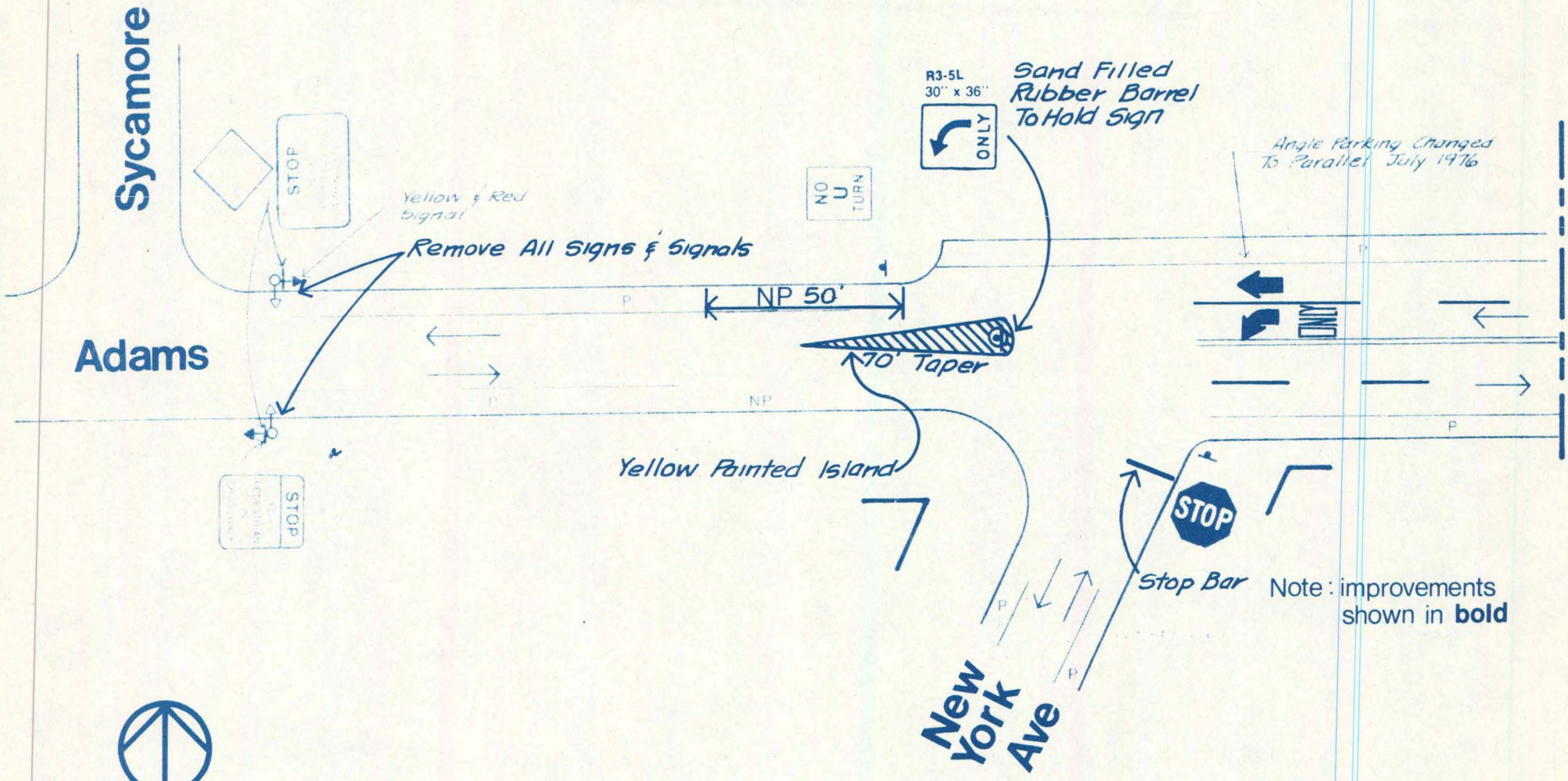
The suggested improvements in Figure 5-11 are as follows.

a. The changes in the pavement striping is intended to indicate to the motorist that there are four moving traffic lanes in the section from New York Avenue eastward beyond Oak. In addition, the pavement marking is slightly tapered in the vicinity of Oak Street in order to properly align the traffic lanes on Adams.

b. A painted traffic island is suggested on Adams to the east side of New York Avenue. A rubber, sand-filled barrel should be installed in this painted traffic island to allow the placement of a TURN ARROW sign for westbound traffic on Adams.

c. The pedestrian traffic signals on Adams just east of Sycamore should be removed along with the signs at the signals. These signals are totally non-conforming with the MUTCD and appear to be unnecessary due to the configurations established for the existing school attendance boundaries.

The estimated cost for all of the improvements shown in Figure 5-11 is $3,800.00.



No Scale

mast arm pole
12 in. RYG signal
walk / dont walk

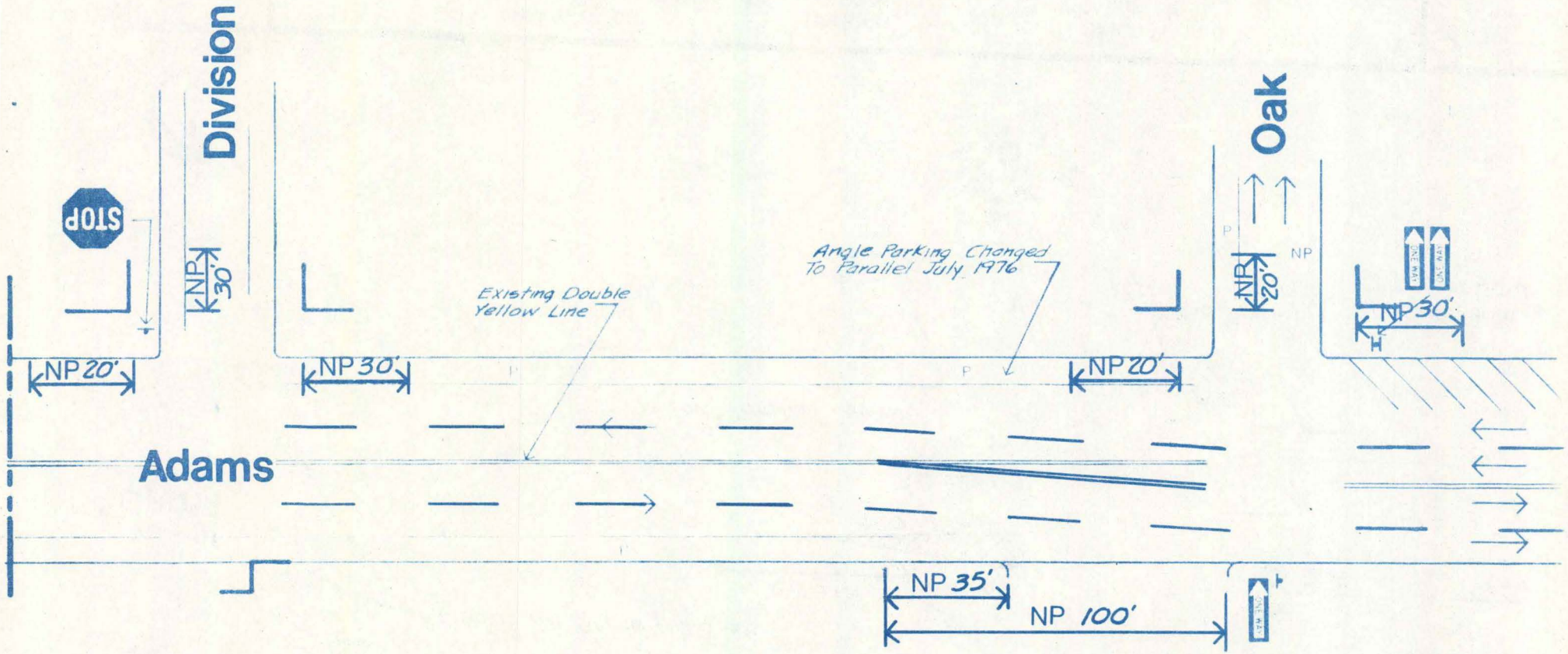
P parking
NP no parking

curb extensions & traffic islands

Creston, Iowa

ADAMS / SYCAMORE to OAK

figure 5-11



Note: improvements shown in **bold**

No Scale

mast arm pole
12 in. RYG signal
walk / dont walk

P parking
NP no parking

curb extensions & traffic islands

Creston, Iowa

ADAMS / SYCAMORE to OAK

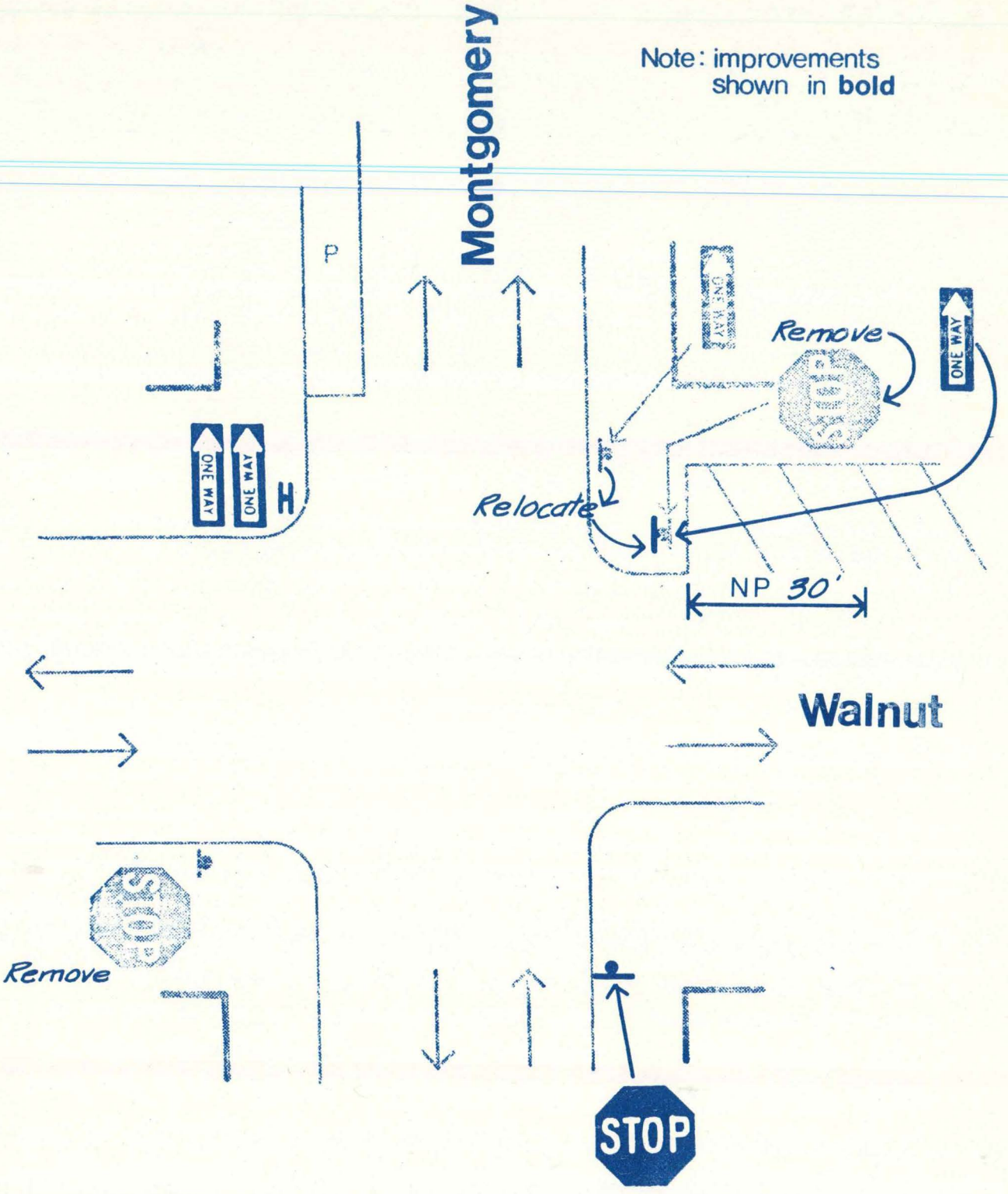
figure **5-11 (cont.)**

Montgomery at Walnut. Figure 5-12 illustrates the recommended improvements for this intersection. The suggested changes center around the previous discussions on the fire equipment routes leaving the downtown. Since the temporary fire station will be located on Walnut, the Consultant believes that it would be advantageous to assign the vehicle right-of-way to Walnut Street rather than Montgomery.

With this in mind, the suggested changes show a readjustment of the STOP signs at the intersection.

An additional change is to relocate the ONE WAY signs so that they are more visible to Walnut Street traffic.

Total cost of this modification is estimated at $200.00.



Creston, Iowa	P parking NP no parking curb extensions & traffic islands	figure 5-12
	MONTGOMERY at WALNUT	

Montgomery at Pine. Figure 5-13 reflects the signal and sign modifications at this intersection. These improvements are made for the following purposes.

a. The curb extensions will improve the visibility of the signs and signals for the motorist, will segregate the on-street parking from the moving traffic lanes, and will provide areas for landscaping.

b. All existing signals should be removed and replaced with new pedestal mounted signals, and a new controller.

c. WALK/DONT WALK signals should be installed along with crosswalks to improve pedestrian safety.

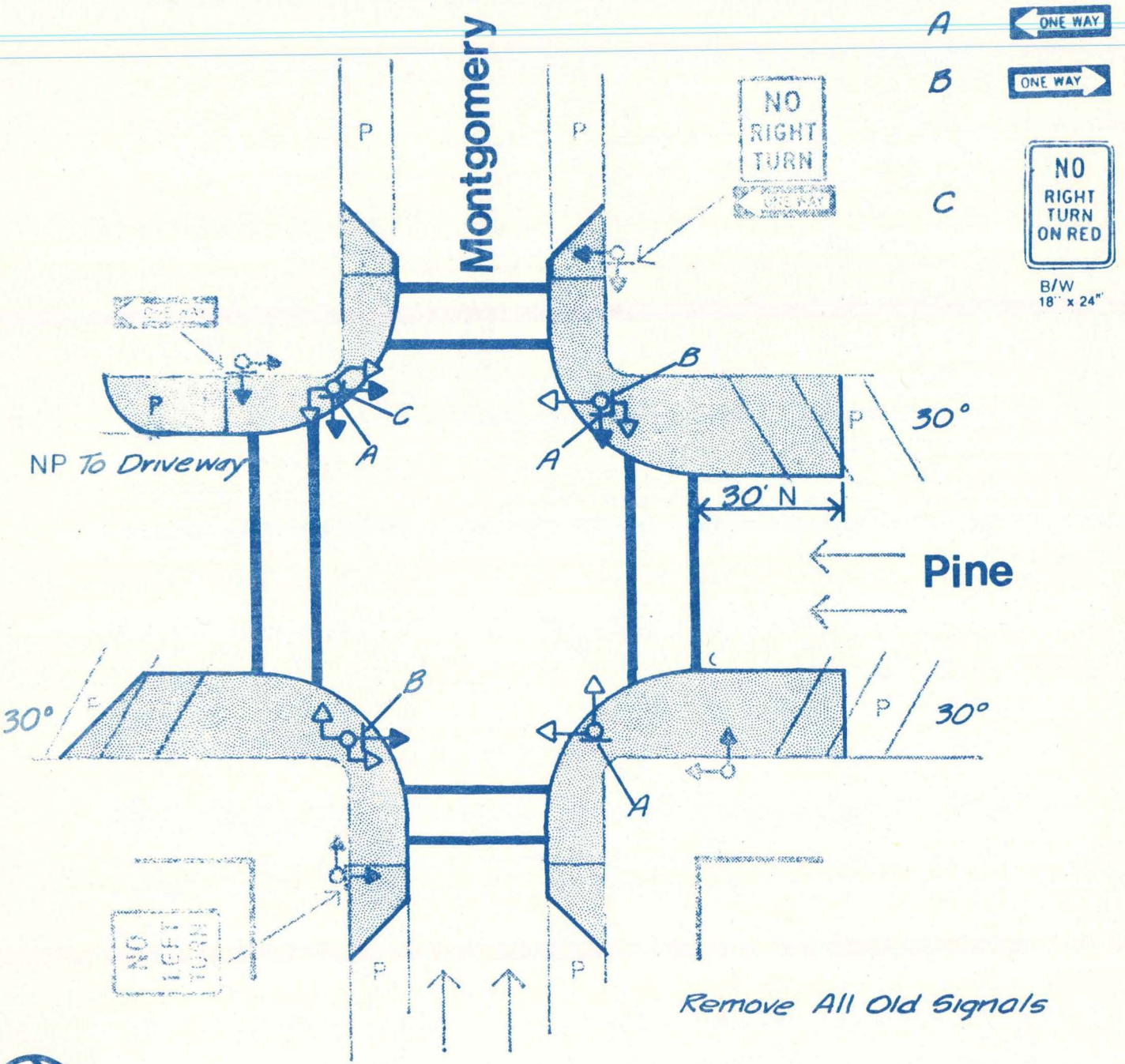
d. Because of the pedestrians in the area, turns on the RED signal should be prohibited.

e. The angle parking on Pine Street should be changed to a 30° angle.

The estimated cost of these improvements is as follows.

Signalization	$ 16,100
Signs	300
Curb Extensions	4,000
Markings	100
	$ 20,500

Note: improvements shown in **bold**



No Scale

Creston Iowa	mast arm pole 12 in. RYG signal walk / dont walk	P parking NP no parking	curb extensions & traffic islands

figure 5-13

MONTGOMERY at PINE

Maple at Montgomery. Figure 5-14 shows the improvements recommended at this intersection. These improvements conform with the general theme indicated in the downtown redevelopment plan concepts. The improvements are for the following purposes.

a. The curb extensions will provide improved visibility for the signs and signals, will segregate the on-street parking from the moving traffic lanes, and will provide areas for landscaping.

b. All existing signal equipment should be removed and replaced with new pedestal mounted signals, new signal heads, and a new controller.

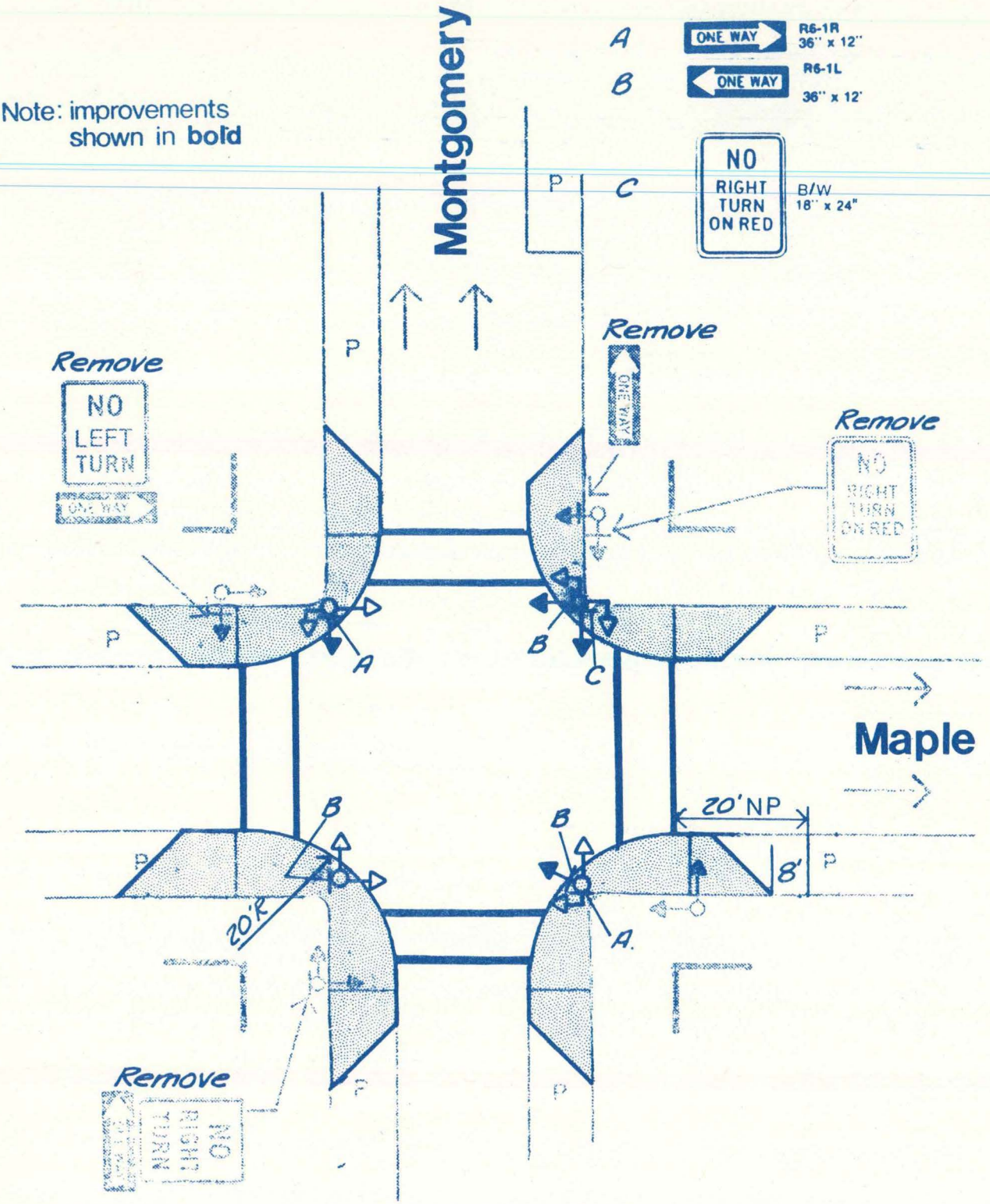
c. WALK/DONT WALK signals, together with painted crosswalks, should be installed to improve pedestrian safety.

d. Because of the pedestrians, turns on the RED signal should be prohibited at this intersection.

The cost of the improvements is estimated as follows:

Signalization	$ 16,100
Signs	300
Curb Extensions	4,000
Markings	100
	$ 20,500

Note: improvements shown in **bold**



Remove All Old Signals

No Scale

mast arm pole
12 in. RYG signal
walk / dont walk

P parking
NP no parking

curb extensions & traffic islands

Creston Iowa

figure 5-14

MAPLE at MONTGOMERY

Elm at Montgomery. Figure 5-15 shows the improvements suggested for this downtown intersection. The purposes of these improvements are as follows:

a. The curb extensions will provide improved visibility for the signs and signals, will segregate the on-street parking from the moving traffic lanes, and will provide areas for landscaping.

b. All existing signal equipment should be removed and replaced with new pedestal mounted signals, new signal heads, and a new controller.

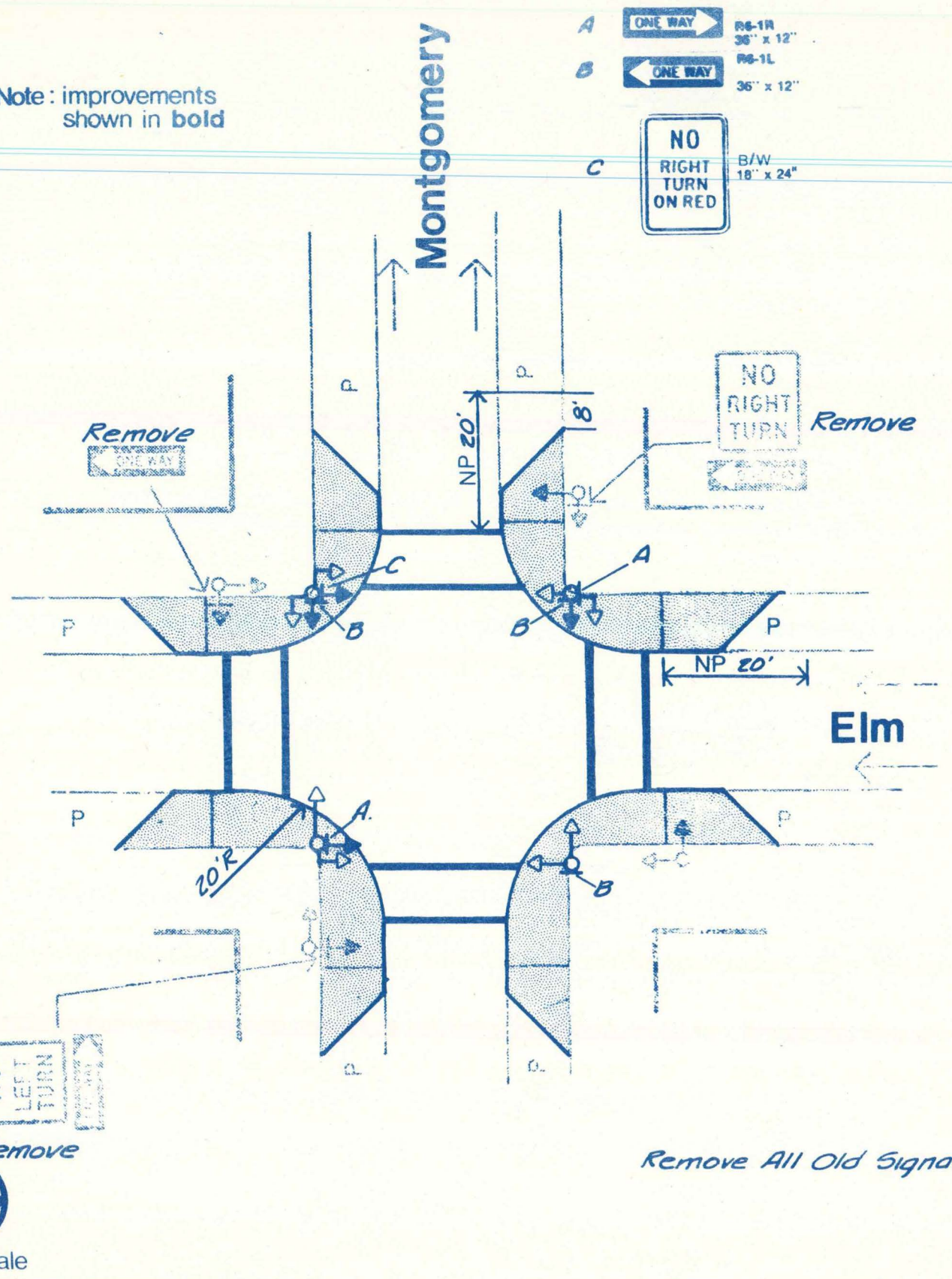
c. WALK/DONT WALK signals, together with painted crosswalks, should be installed to improve pedestrian safety.

d. Because of the pedestrians, turns on the RED signal should be prohibited at this intersection.

The cost of the improvements is estimated as follows:

Signalization	$ 16,100
Signs	300
Curb Extensions	4,000
Markings	100
	$ 20,500

Note: improvements shown in **bold**

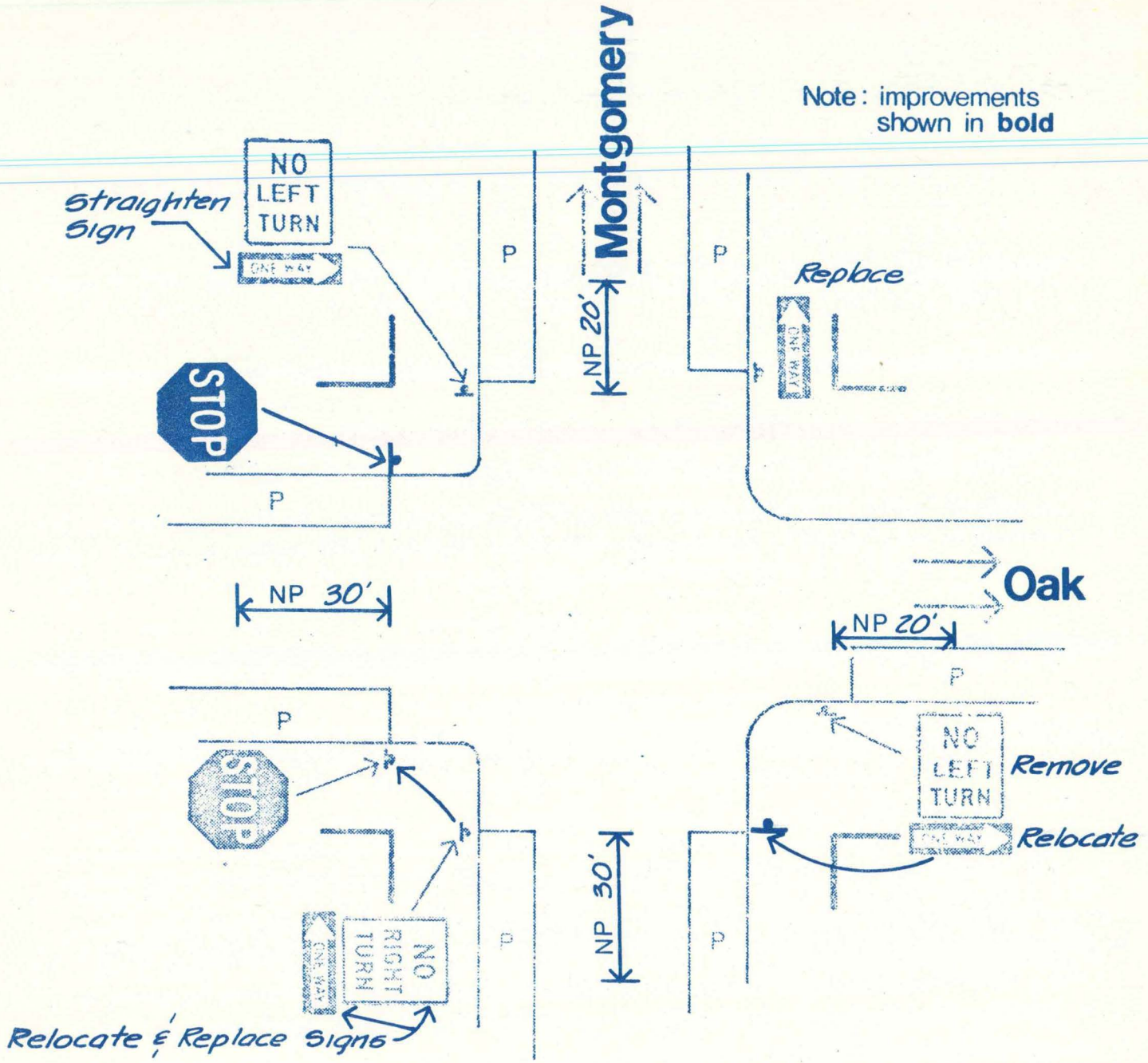


Creston, Iowa	mast arm pole 12 in. RYG signal walk / dont walk	P parking NP no parking	curb extensions & traffic islands	figure 5-15
	ELM at MONTGOMERY			

Montgomery at Oak. Figure 5-16 shows the recommended signing changes for this intersection. The major problem at this intersection involved the existing signs being located away from the effective line of sight of the motorist. In addition, some of the signs were damaged or contained rust stains affecting their legibility.

An additional STOP sign is recommended on Oak Street (south leg) in order to have a total of two STOP signs for both of the traffic lanes on the one-way Oak Street.

The estimated cost of the sign revisions is $200.00.



No Scale

Creston, Iowa	P parking NP no parking curb extensions & traffic islands	figure 5-16
	MONTGOMERY at OAK	

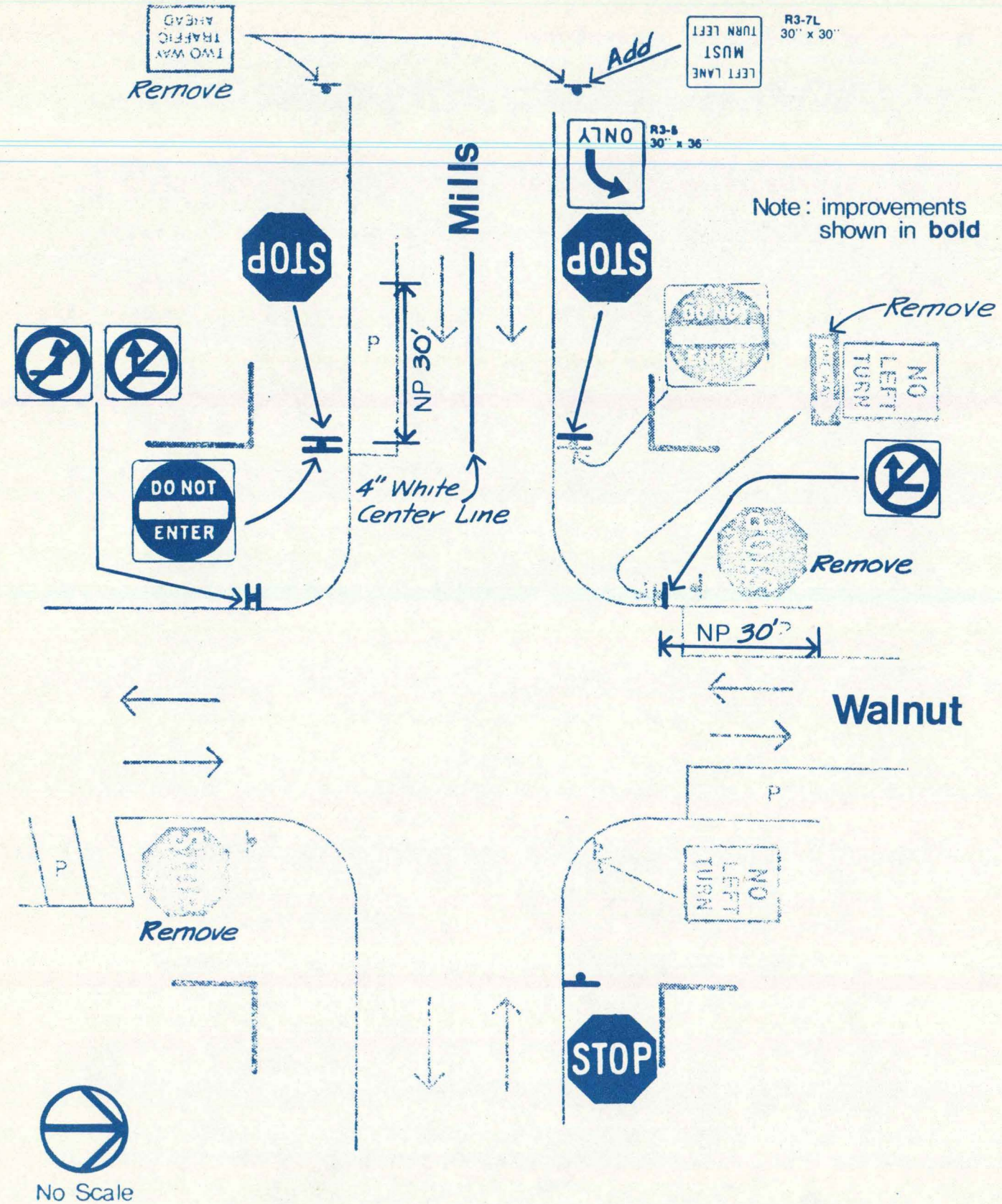
Mills at Walnut. Figure 5-17 shows the recommended changes at this intersection. These changes are made for the following purposes.

a. As previously stated, the Consultant recommends that the vehicular right-of-way be changed from Mills to Walnut. This will improve the flow of fire emergency equipment in leaving the downtown area via Walnut from the new temporary fire station. Therefore, several STOP sign changes are shown.

b. A LEFT TURN ARROW sign should be added on Mills (west leg). In addition, a 4-inch white center line should be placed to clearly define the traffic lanes at this location.

c. Several additional signs are also recommended for installation to more clearly define the one-way traffic flow on Mills (west leg).

The estimated cost of these improvements is $450.00.



Creston, Iowa	P parking NP no parking	curb extensions & traffic islands	figure 5-17
	MILLS at WALNUT		

Mills at Pine. Figure 5-18 shows the recommended improvements at this intersection which are for the following major purposes.

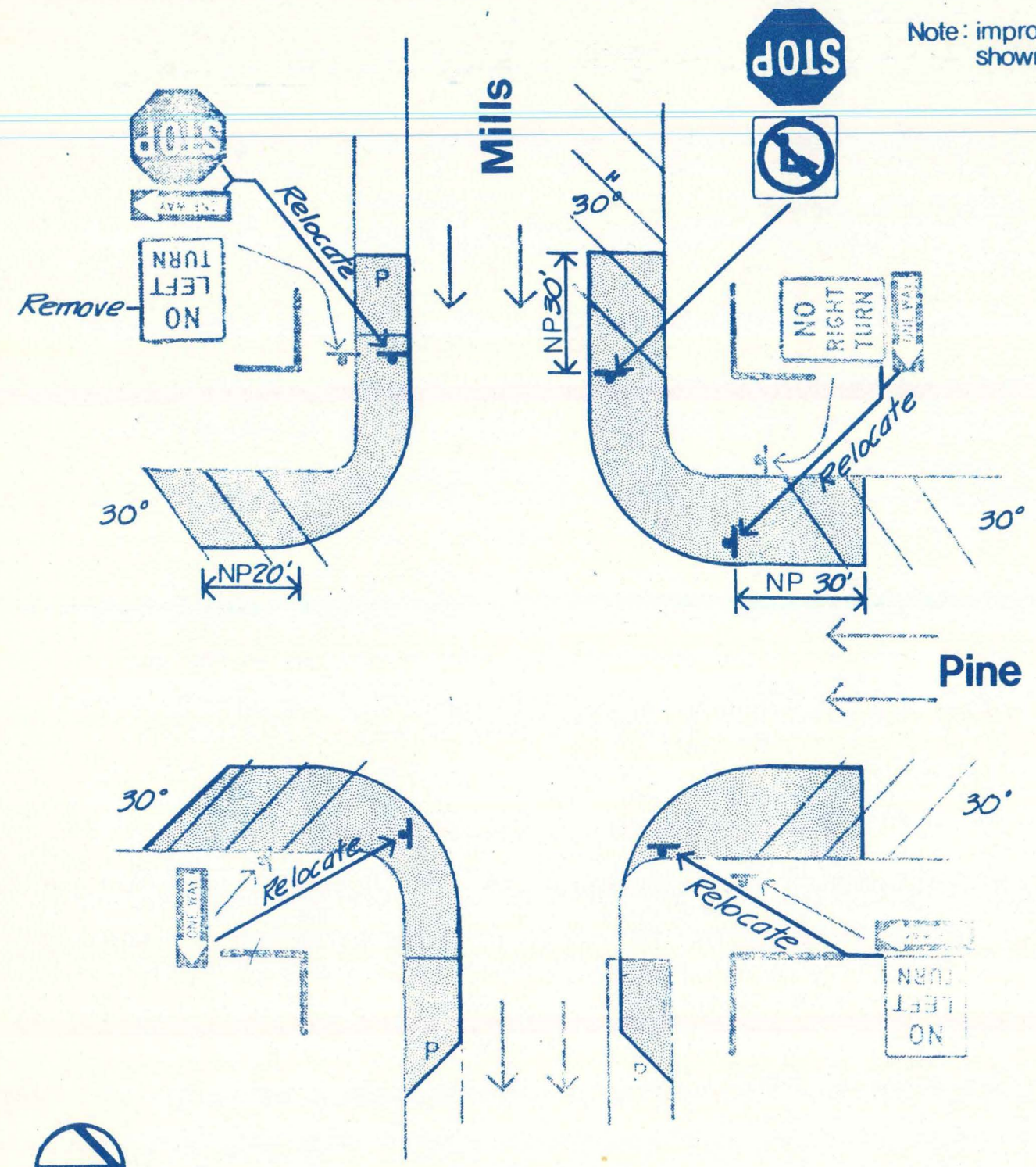
a. The curb extensions will allow improved visibility of the traffic signs, will segregate the on-street parking from the moving traffic lanes, and will provide areas for landscaping.

b. An additional STOP sign is recommended on Mills (west leg) in order to provide control for both of the lanes on Mills.

c. The angle parking on Pine Street should be changed to a 30° angle.

The estimated cost of these improvements is $4,100.00.

Note: improvements shown in **bold**



No Scale

P parking
NP no parking

curb extensions & traffic islands

Creston, Iowa

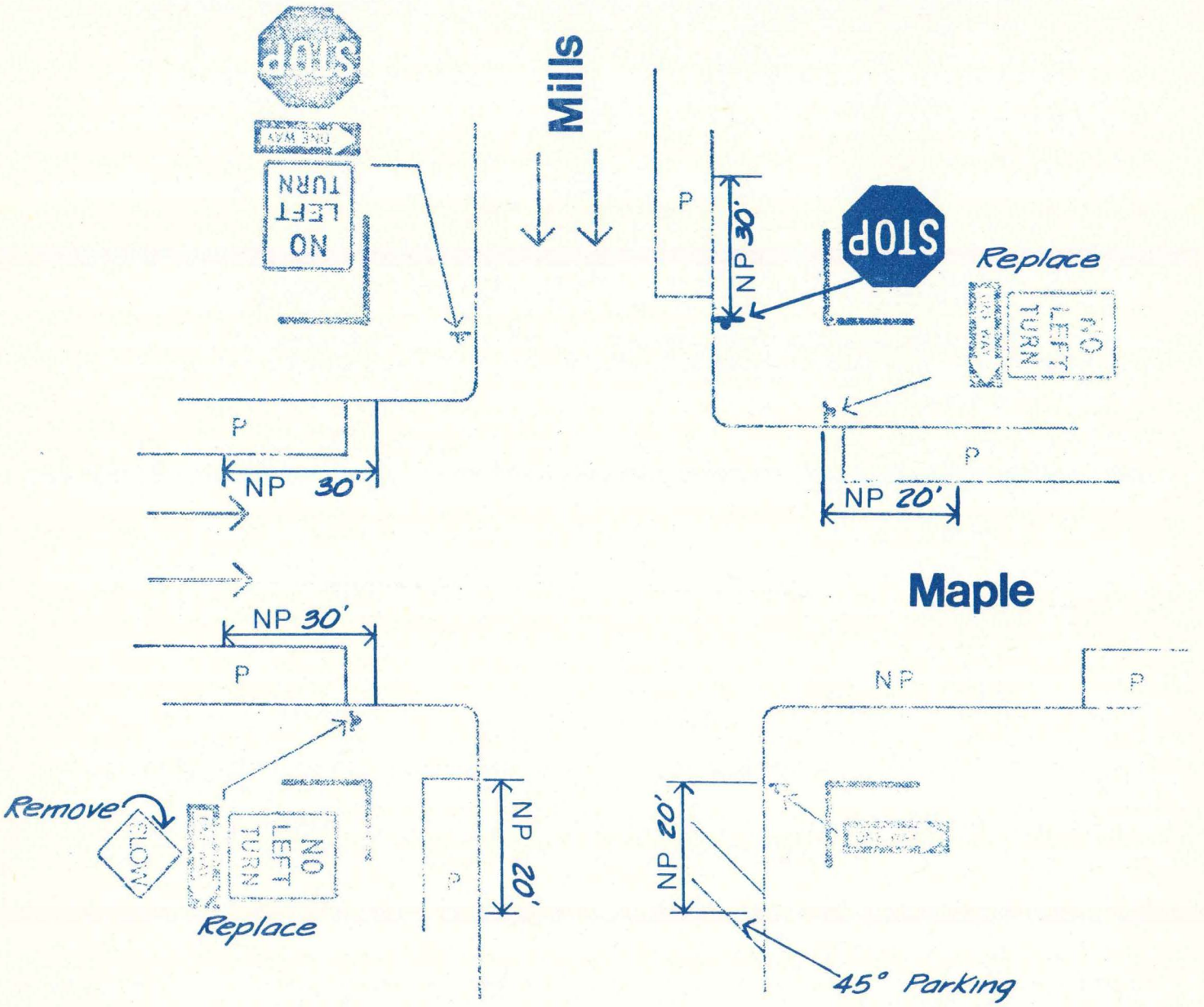
MILLS at PINE

figure 5-18

Maple at Mills. Figure 5-19 shows the recommended improvements for this downtown intersection. These improvements primarily relate to the replacement of several signs which are damaged or contain rust stains on the faces. An additional STOP sign is recommended for installation on Mills (west leg).

Total cost of the sign changes is estimated at $250.00.

Note: improvements shown in **bold**



No Scale

P parking
NP no parking

curb extensions & traffic islands

Creston, Iowa

MAPLE at MILLS

figure **5-19**

Elm at Mills. Figure 5-20 shows the recommended improvements at this intersection for the following purposes.

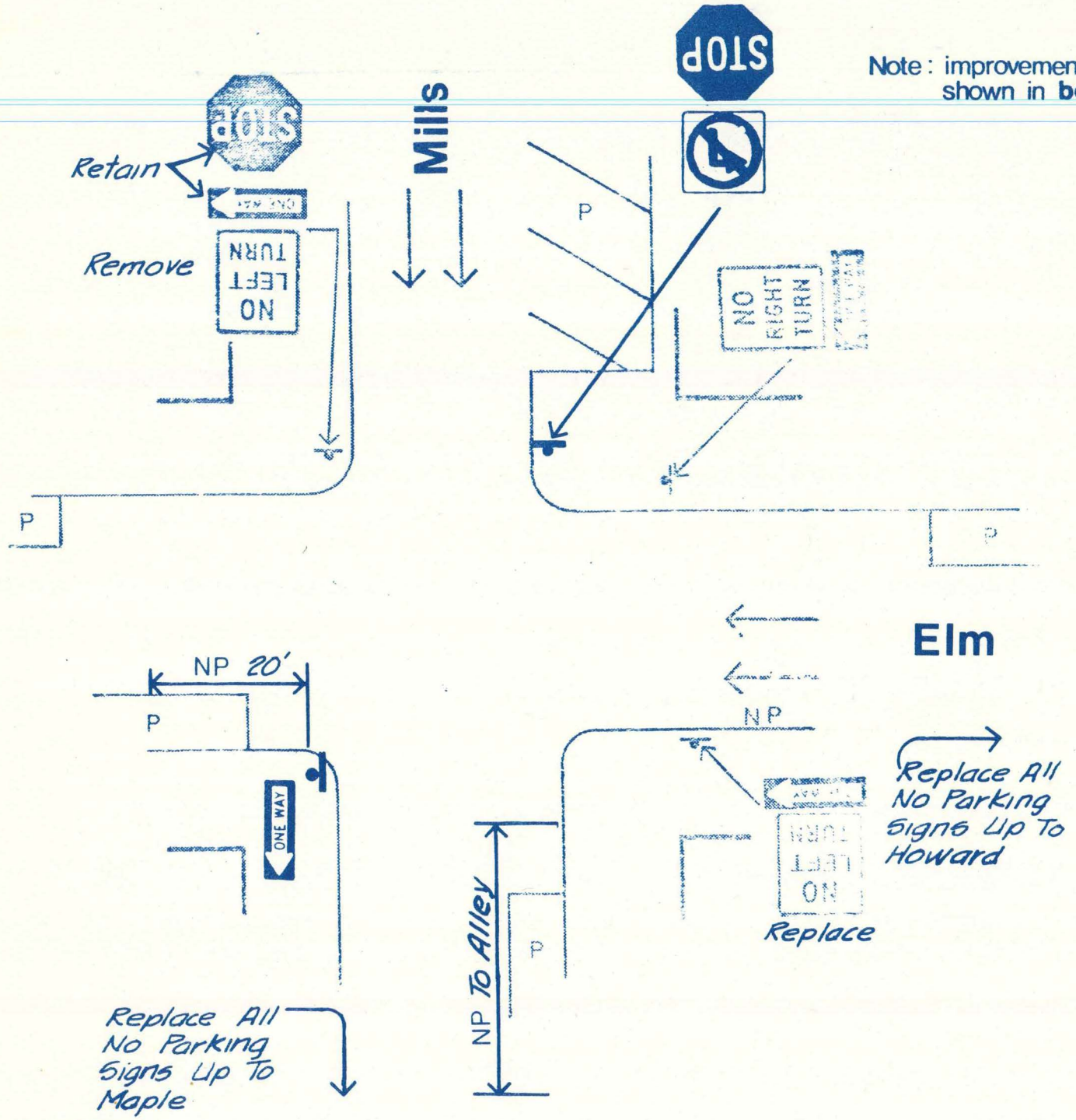
a. An additional STOP sign is recommended for placement on Mills (west leg) to provide better traffic control of the two one-way traffic lanes on Mills.

b. Several signs are indicated to be replaced due to damage or rust stains.

c. All of the NO PARKING signs should be replaced along the east side of Elm between Mills and Howard and along the south side of Mills from Elm to Maple. The existing signs are old and in many cases illegible. In addition, the existing NO PARKING signs are improperly mounted as to their height above the roadway surface.

The estimated cost of these sign changes is $430.00.

Note : improvements shown in **bold**

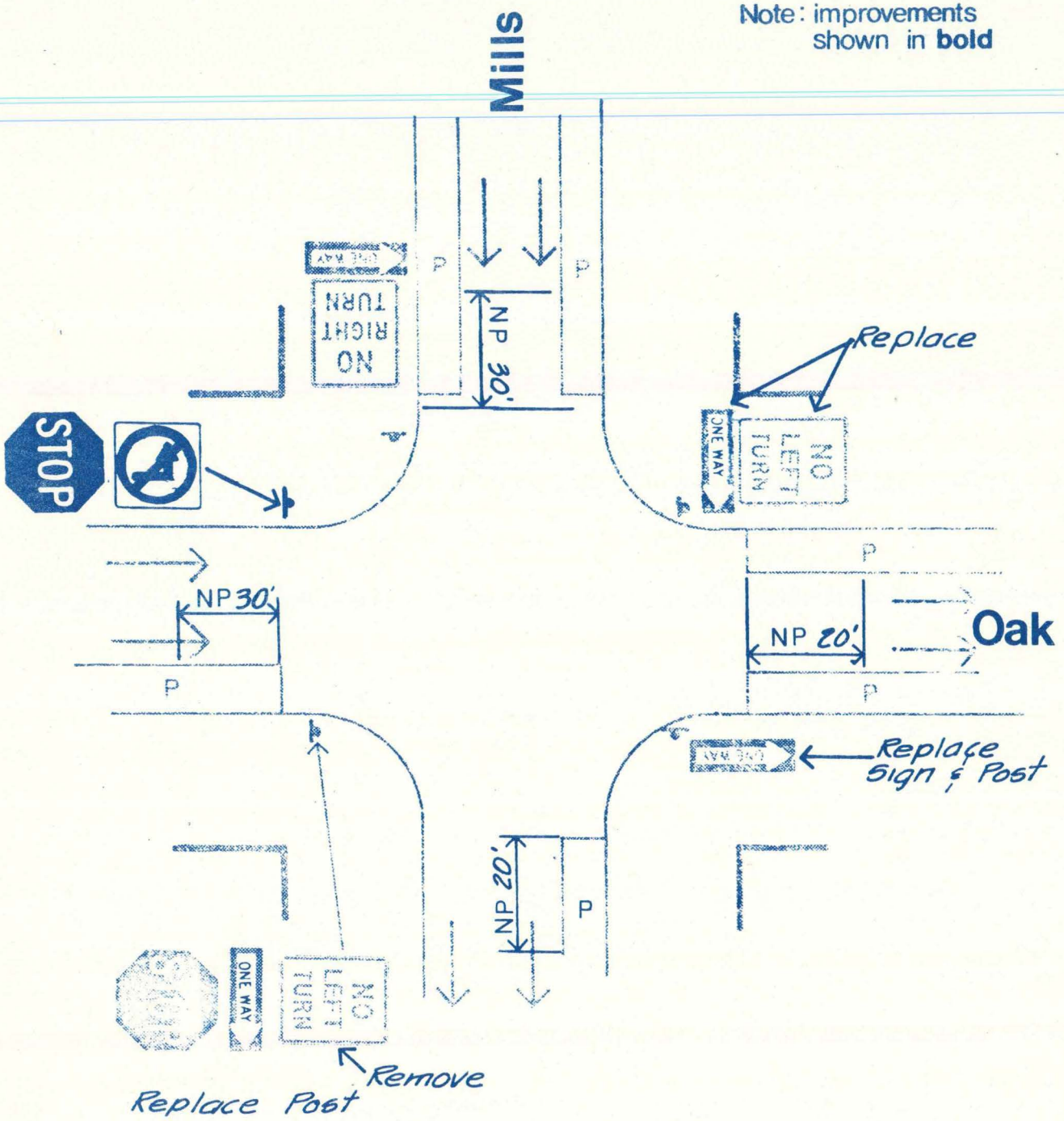


Creston, Iowa	P parking NP no parking	curb extensions & traffic islands	figure 5-20
	ELM at MILLS		

Mills at Oak. Figure 5-21 shows the recommended sign improvements for this intersection. Several of the signs require replacement due to age, damage, or rust stains. An additional STOP sign is recommended for placement on Oak (south leg).

The estimated cost of these improvements is $250.00.

Note: improvements shown in **bold**

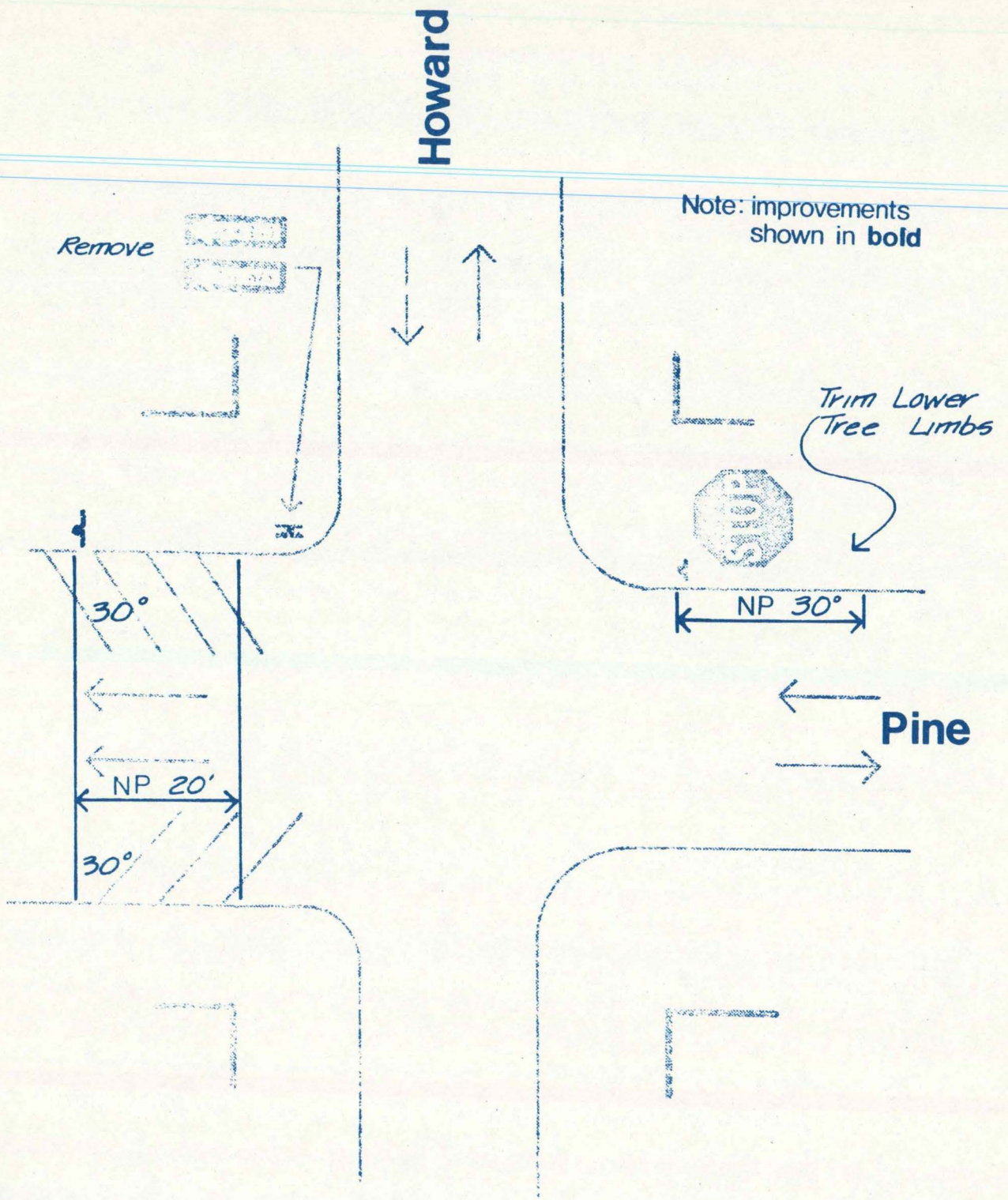


No Scale

Creston, Iowa	P parking NP no parking curb extensions & traffic islands	figure 5-21
	MILLS at OAK	

Howard at Pine. Figure 5-22 shows the suggested improvements at this intersection. The improvements shown call for the trimming of the lower tree limbs to improve the visibility of existing signing and the restriction of parking within close proximity to the intersection. In addition, the angle of the on-street parking stalls on Pine Street should be changed to 30°.

The estimated cost of these improvements is estimated at $200.00.



No Scale

Creston, Iowa	P parking NP no parking curb extensions & traffic islands	figure 5-22
	HOWARD at PINE	

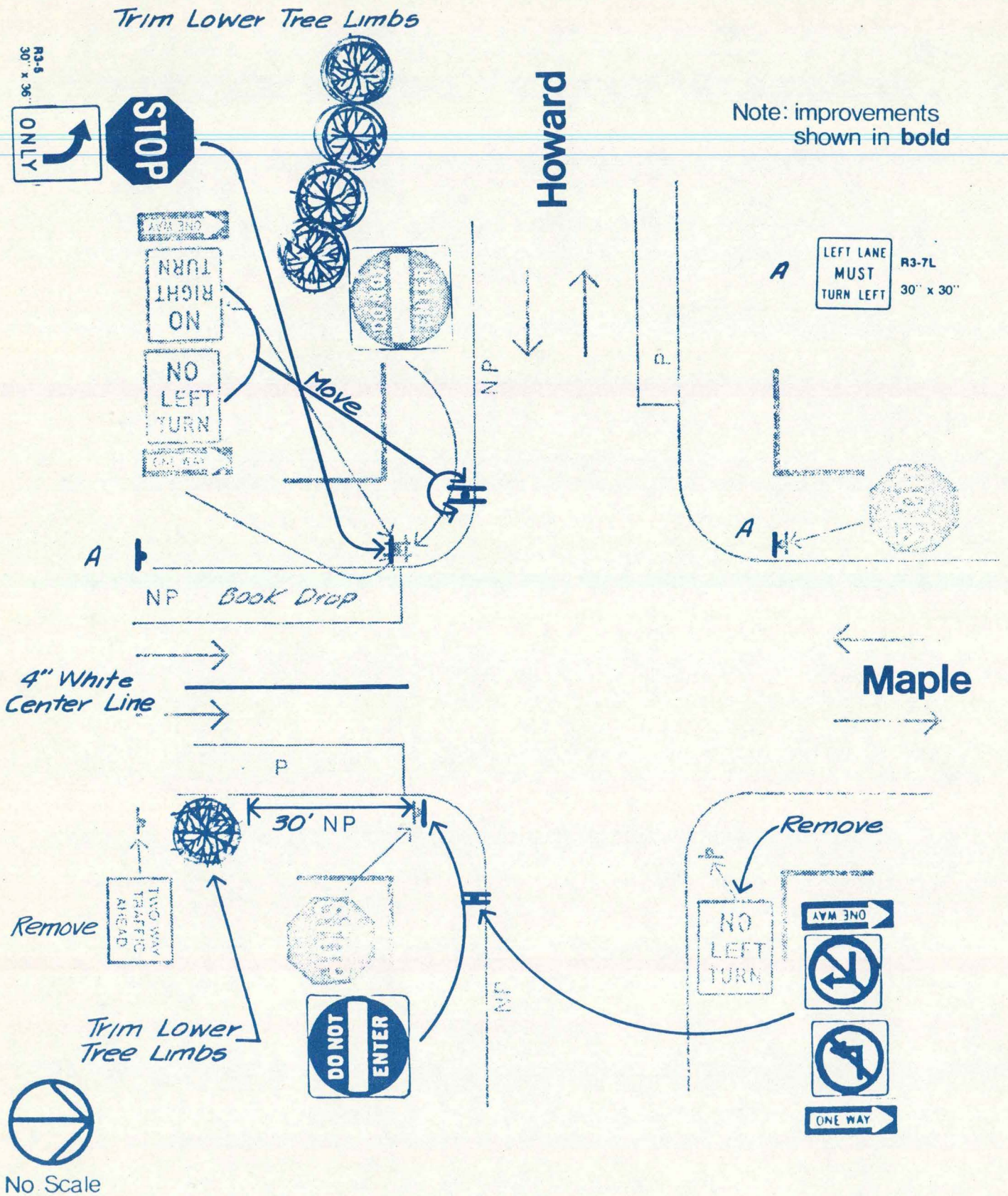
Howard at Maple. Figure 5-23 shows the recommended improvements for the following purposes.

a. As previously stated in the discussion on accidents in Chapter 3, poor visibility seemed to be contributing to the accident frequency at this intersection. Therefore, the Consultant recommends that the lower tree limbs be trimmed for the trees along the south side of Howard extending from Maple westward to the alley, and for the trees along the east side of Maple from Howard southward.

b. An additional STOP sign, together with a LEFT TURN ARROW sign are recommended on Maple Street (south leg) for northbound traffic. Also, a white centerline should be placed on this section of Maple Street to clearly define the two traffic lanes on Maple.

c. The ONE WAY and TURN PROHIBITION signs in the southwest corner of the intersection should be moved in order to increase their visibility for traffic on Howard Street.

The estimated cost of these improvements is $550.00.



Creston, Iowa	P parking NP no parking curb extensions & traffic islands	figure 5-23
	HOWARD at MAPLE	

Elm at Howard. Figure 5-24 shows the recommended sign improvements for this intersection. These improvements are for the following purposes:

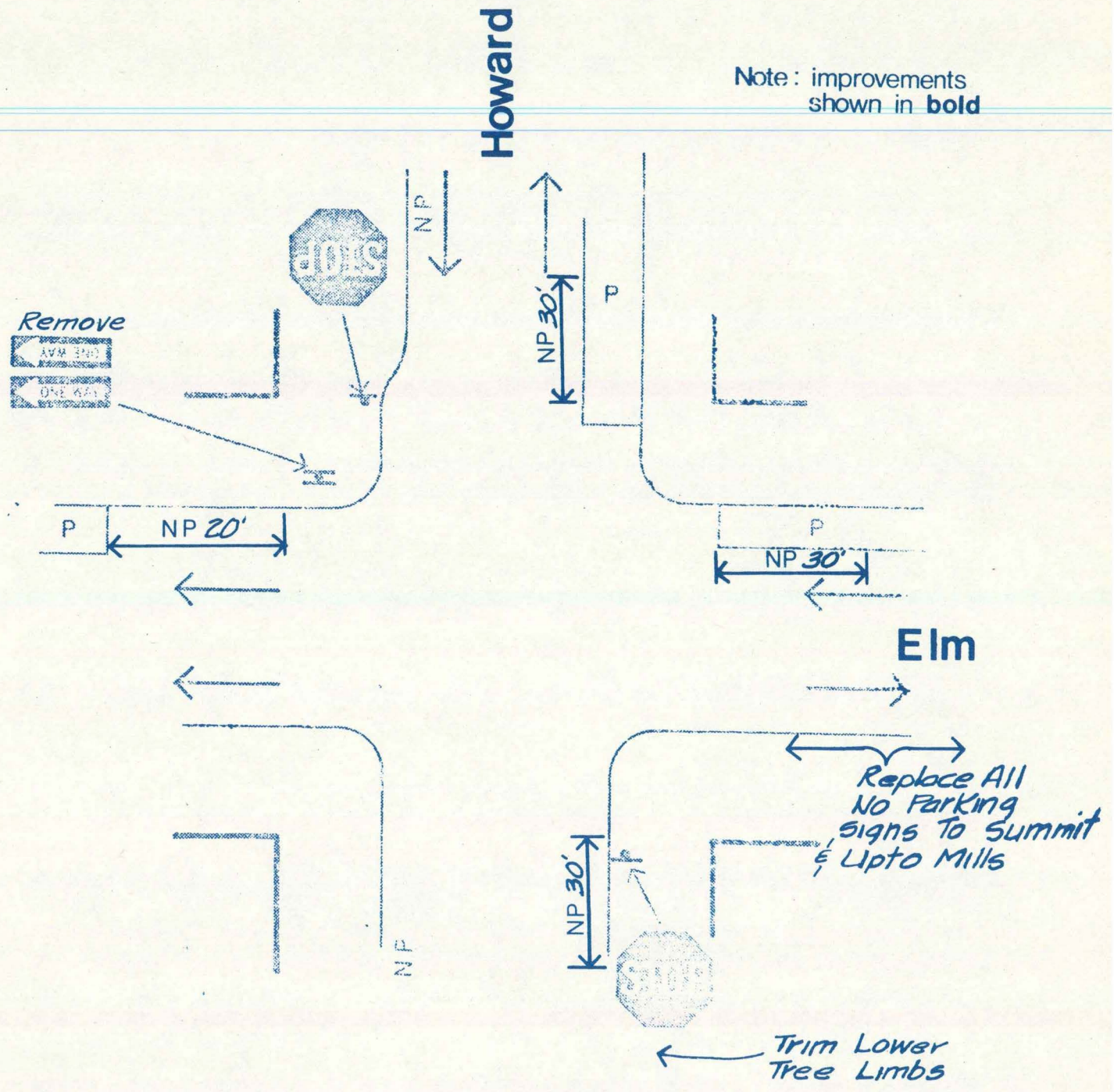
a. The tree limbs should be trimmed to improve the visibility of the existing STOP sign on Howard Street (east leg).

b. The existing NO PARKING signs along the east side of Elm between Howard and Summit should be replaced. In addition, the existing signs are not mounted at the proper height above the roadway.

c. Two new ONE WAY signs should be installed to improve visibility at this intersection for traffic on Howard Street.

The estimated cost of these improvements is $330.00.

Note: improvements shown in **bold**



No Scale

Creston, Iowa	P parking NP no parking	curb extensions & traffic islands	figure 5-24
	ELM at HOWARD		

Howard at Oak. Figure 5-25 contains the improvements recommended for this downtown fringe area intersection. These improvements are for the following purposes:

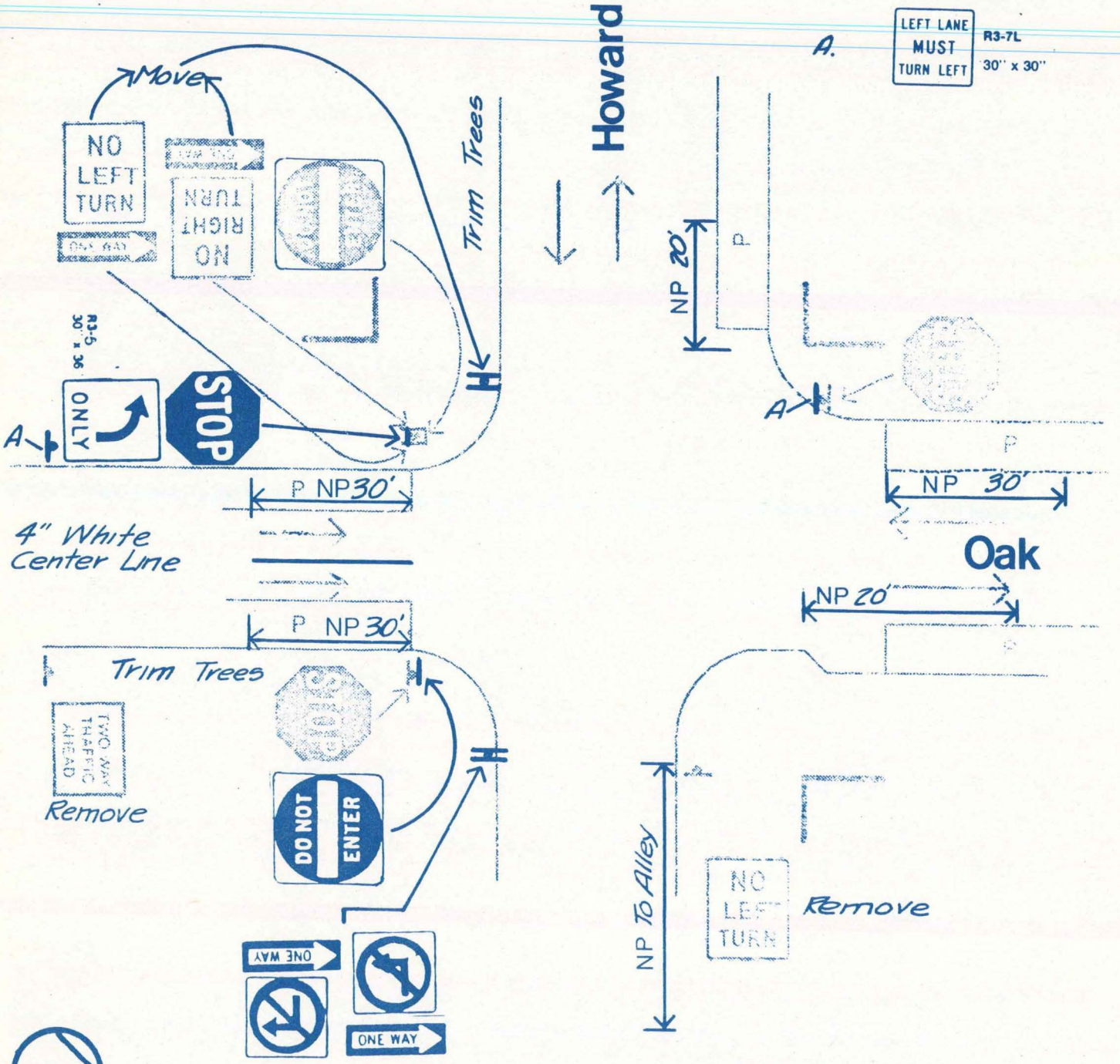
a. An additional STOP sign along with a LEFT TURN ARROW sign should be installed on Oak Street (south leg) to better regulate the traffic flows on this street approaching the intersection. A white centerline is also recommended to segregate the two northbound traffic lanes on this section of Oak Street.

b. The ONE WAY and TURN PROHIBITION signs should be moved as shown onto Howard Street so that they are more visible by the traffic utilizing Howard.

c. Various tree limbs should be pruned along the south side of Howard and the east side of Oak.

The estimated cost of these improvements is $500.00.

Note: improvements shown in **bold**



No Scale

Creston, Iowa	P parking NP no parking	curb extensions & traffic islands	figure 5-25
	HOWARD at OAK		

CHAPTER 6

SCHOOL SAFETY

SCHOOL LOCATIONS

Within the City of Creston, the school facilities fall into three (3) categories - community college, Catholic and public. These school locations are shown in Figure 6-1 along with the school attendance boundaries for the public elementary schools.

The Southwestern Community College was established in 1966 as a 2-year academic and vocational school. Southwestern is the successor to the Creston Community College.

St. Malachy Catholic School operates grades 1 through 8. This school facility serves the Catholic community for the Creston regional area.

Within the public school system, four (4) elementary schools plus a junior high and senior high are operated within the City. The four elementary schools actually house grades 1 through 5 with the 6th grade of each of these schools being bused into the county to Cromwell School.

The public schools presently own 40 acres just to the north of Townline Street at Sycamore. This location now contains the high school's main athletic field and is also the site for the future construction of a new high school complex.

The existing high school located at Maple and Irving is situated in the middle of a residential district. This location has no off-street parking and has no streets leading to the facility.

The present junior high complex is a newer facility located in the northcentral part of the City. With the construction of a new high school, tentative plans under consideration are to move the junior high classrooms to the old high school building.

ELEMENTS OF A SCHOOL SAFETY PROGRAM

The philosophy of a school safety program is fairly straightforward and simple: to provide a safe path to and from school for children. Necessary elements of such a program include:

- school route planning.
- appropriate signing, markings, signal controls, and crossing guards.
- adequate site layout (to reduce vehicle-pedestrian conflicts).
- education of children, parents and motorists.
- review of operational and safety experience.
- updating plan at regular intervals.

Long-range considerations which apply, especially in the implementation of more costly control devices, are the stability of school attendance boundaries, and the potential for school relocation, expansion, or closing.

Each of these elements is amplified in the following discussion.

School Route Plan. This simply involves the designation of suggested routes between a school and the residential areas within its attendance boundary. Guiding factors in the placement of each route are:

- Aggregate children on their way to school to consolidate principal crossings and to enhance the visibility by grouping the children.

- Minimize the number of crossings on major streets.

- Provide routes that are direct as possible given other more important constraints.

- Maximize use of existing traffic and crossing controls, if they are suitable.

- Maximize use of existing available sidewalks.

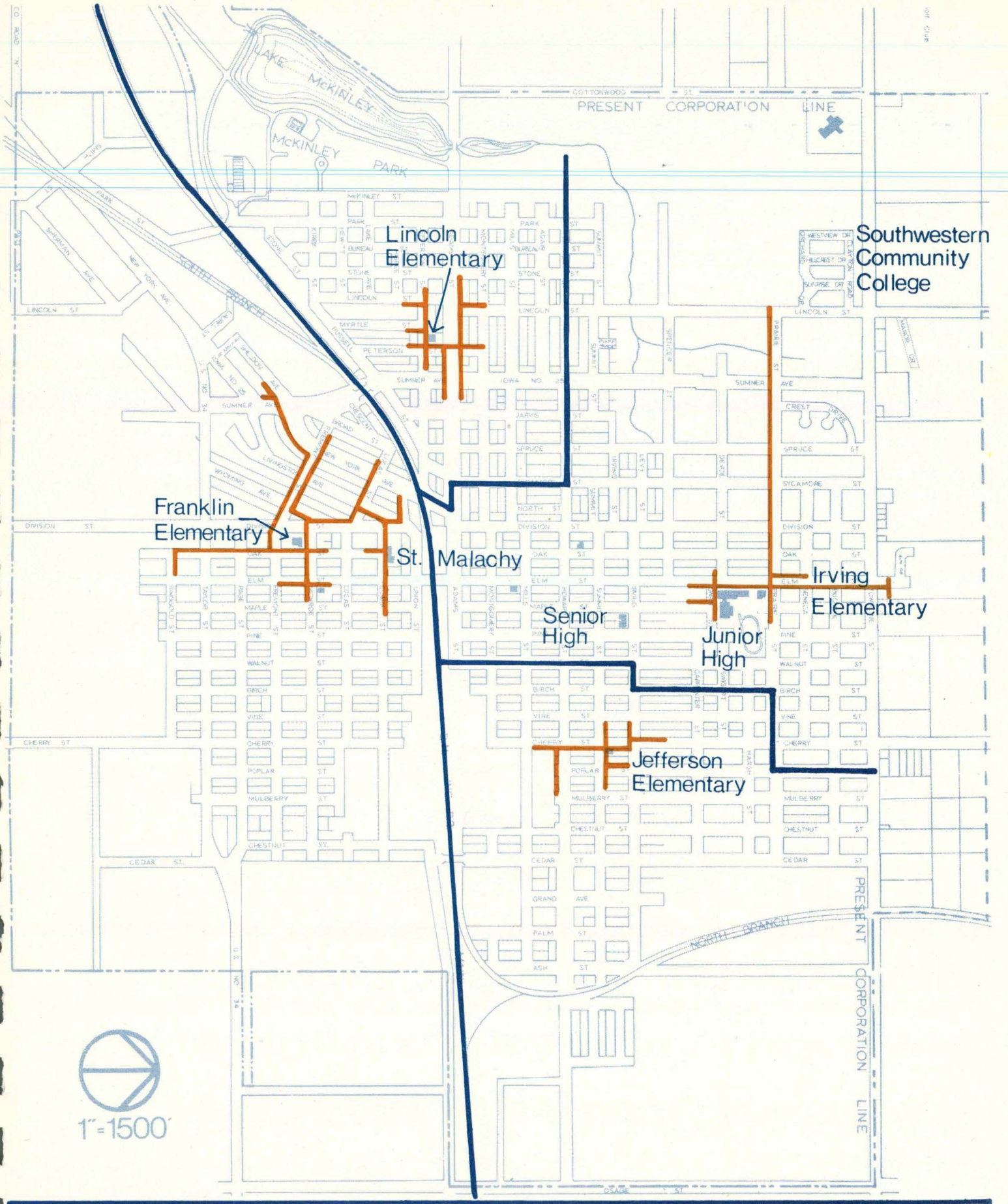
- Provide adequate sight distances.

- Avoid midblock crossings other than those adjacent to schools.

Traffic Controls. These include pavement markings, crosswalks, related signing, speed limits, intersection controls, beacons, traffic signals, and crossing guards. The proper use and general warrants for each are described below:

Pavement Markings used for school safety in Creston consist of painted crosswalks and stop lines. The MUTCD specifies that crosswalks shall be marked by two white lines at least 6 inches in width and at least 6 feet apart (alternate markings are available). The stop bars are not specifically required by the MUTCD, but are used in conjunction with most marked crosswalks in Creston. One stated warrant for marked crosswalks requires 25 or more children crossing a minimum volume of 60 vehicles an hour.

Signing serves to alert motorists to the proximity of a school or crossing and to regulations on speed limit and right-of-way.



Creston, Iowa

public elementary boundaries

suggested major school routes

SCHOOL LOCATIONS

figure 6-1

a. SCHOOL ADVANCE sign (S1-1) is intended for use in advance of school grounds and school crossings. A general guide for placement is a distance equal to six times the posted speed limit in advance for lower speeds in school zones.

b. SCHOOL CROSSING sign (S2-1) is intended for use at established crosswalks except at crossings controlled by a STOP sign. It shall be preceded by a SCHOOL ADVANCE sign. Placement is at, or as near as possible, to the crosswalk.

c. A SCHOOL SPEED LIMIT sign assembly (R2-1 with S4-3 and S4-2) is used to define a reduced speed zone near school grounds. This sign can be used with flashing beacons, or as a changeable message sign, with beacons, to emphasize the school speed zone on streets with higher traffic volumes or a higher base speed limit. At the end of the zone, the standard speed limit should be posted. This pertains more to major streets.

d. STOP signs should be installed primarily on the basis of traffic volumes and assignment of right-of-way. Accident experience, sight distance, and inadequate gaps in traffic for children are potential influencing factors.

e. NO PARKING signs (R7-series) are usually necessary to provide proper sight distance at crossings, and similar signs can be used to identify school area loading zones.

Beacons may be used in conjunction with various school area signing to draw special attention. Standard permissible uses are YELLOW beacons used with SCHOOL CROSSING signs or SCHOOL SPEED LIMIT signs, which flash to coincide with the hours of pedestrian activity. According to the MUTCD, FLASHING RED beacons are not to be used on an intermittent basis at intersections or mid block school crosswalks. This implies that their present use at crosswalks with various warning signs is not conforming. The intent is that at all locations where a motorist is required to fully stop at some times and not at other times, this control be provided only by signal-type controls.

In summary, YELLOW beacons can be used with warning or regulatory signs on an intermittent basis, if necessary. RED beacons must be used as permanent installations and should be supplemented by a STOP sign.

Pedestrian-Actuated Traffic Signals are warranted in the MUTCD when there is less than one adequate gap per minute in traffic for children to cross during the period of crossing activity. Considering walking speed and street width, TABLE 6-1 depicts the approximate threshold volumes for meeting the signal warrant.

TABLE 6-1

VOLUME WARRANTS FOR SIGNALIZED CROSSWALKS

Street Width	Crossing Time	Maximum Volume Allowing 1 Safe Gap per Minute[1)]
18	8	910
22	9	740
24	10	675
28	11	570
30	12	520
36	13	465
40	14	435
44	16	405
48	17	375
55	19	335
65	22	285

1) Use 70% of these values since Creston is under 10,000 in population.

Table 6-1 provides a general guide and should be supplemented by additional field data including pedestrian volumes, vehicle speeds, sight distances and other engineering factors.

Signalized intersection control can help complete the safe route concept by providing a specified gap in heavy traffic. Such crossings at signals should be marked with crosswalks, warning signing and pedestrian indications. Care should be taken in signal phasing to assure that adequate time is available during a phase for children to completely cross the street.

Adult Crossing Guards are usually assigned to assist children using a marked crosswalk where special hazards exist that can be best gauged by an adult. Such hazards could include long crossings and heavy vehicular or truck traffic. Considerable judgment in the use of crossing guards is necessary because of the expense incurred. One general set of warrants in use specifies the use of adult guards:

- at major crosswalks on State and Federal routes.
- at crosswalks where the volume of vehicles and children is 1600 or greater at the time children use the crossing.
- at crosswalks where a signal is warranted as an interim control, or as a permanent control if special conditions indicate that the guard could provide better protection.

In the control of traffic, adult guards should pick opportune times to create a safe gap. When traffic has stopped, then he permits children to cross. Guard training and supervision should be coordinated through the Police Department.

School Crossing Patrols are an alternative supplement to traffic control measures. Such patrols are now used in all the elementary schools in Creston.

Pedestrian Overpasses are the ultimate solution to eliminating vehicle-pedestrian conflicts at critical locations. However, it is felt the high cost of these structures (about $100,000 for a four-lane overpass) precludes their use at the present and in the near future.

Attendance Areas. Optimally, elementary schools should be located away from major streets. Attendance boundaries likewise should follow along principal streets, railroads, or natural features. Following these general guidelines on the location of schools and attendance areas certainly will promote school safety.

Junior and senior high schools on the other hand require accessibility and therefore are best located on or near major or minor arterials.

Overall, the delineation of attendance areas should keep in mind school safety as a criteria for identifying school attendance boundaries. Most assuredly, school boundaries should be located in such a manner as to prevent or discourage students from having to cross hazardous areas or obstacles on their routes to and from school.

School Site Layout. The physical layout of the school site itself can contribute a great deal to the traffic operations and controls as relating to pedestrian safety. Adequate sidewalks, specified areas for student loading and unloading from vehicles, bus loading zones, and entry exits to the school buildings, all have an important bearing on school safety.

SAFE ROUTE TO SCHOOL PLAN

Presently students are given informal instructions within their classrooms as to the proper means of crossing streets. Emphasis is also given by the teachers and the school administration for students to use the school crossing signals at the various locations in the City when attending school. Additional instruction is provided a student by incorporating safety and the learning about safety into the course work actually being taught in the classroom. It is the intention that the direct and indirect coverage of safety will be applied by the students as they attend school.

Overall, the theme of the existing safety instructions centers around the usage of the school patrol, entry and exit from the school building, and the proper usage of the signalized school crossings.

The Consultant did not find that efforts had been made by any of these schools particularly the elementary schools in identifying a safe route school plan.

In an effort to provide the local schools with guidelines on a safe route to school program, the Consultant has compiled the following discussions. This discussion centers around the elementary schools and the junior high school in Creston.

Figure 6-1 shows the suggested major school routes leading to each of the school sites from the various quandrants within the school attendance district. These major school routes will serve as a guide for the students walking to the school facilities.

It is suggested that the principal and the parent groups at each school further refine the suggested measure of routes to school shown in Figure 6-1. Such refinement would include the development of a map handout showing the major safe routes to school. Such a handout would then be used as part of the regular continuing education program to train the students to following the safest routes to school.

An additional use of the safe route to school plan would be for identifying areas which require new sidewalks or replacement of existing sidewalks. The school route plan will also serve to identify those areas where additional traffic control planning or devices are required to further promote school pedestrian safety. Additional discussions are contained elsewhere in this chapter regarding sidewalks and the traffic control devices required to enhance the major safe routes to schools identified in Figure 6-1.

A major point which the Consultant wishes to make is that the Consultant can only identify the major criteria or guidelines centering around a safe route to school plan. For such a plan to be successful, however, it is the Consultant's opinion that the school officials, parents, and students must take an active part in developing the best safe route to school plan for their school. Such participation will

promote the development of a sound school plan and provide better assurances that it will be followed by the students.

In closing, the special comment in the box on the next page is interesting in regards to school safety. It points out that engineering alone will not totally handle school safety. The best safety protection is a safe route to school and a thorough education of our children so they, as individuals, can make the proper decisions on their own safety.

SIDEWALK NEEDS

A review by the Consultant of the sidewalks within the City indicates that overall adequate sidewalk facilities do exist for students and for other pedestrians. However, there are many blocks without sidewalks which should have them and other blocks where the sidewalks have deteriorated sufficiently to require replacement.

Many of the existing sidewalks are comprised of brick. Through the years, however, weeds and grass have grown in the joints between the bricks with the end result being the near obliteration of the brick sidewalk. Although not a major problem, the grass could contribute depending upon its length and thickness to a safety problem for pedestrians. Such a problem would relate to the slippage of pedestrians due to the instability of the grass during wet or snowy weather.

Overall, the Consultant suggests that the public and parochial schools work with the City through the City Engineer to begin a program of sidewalk construction. The first phase of such a program should be to construct sidewalks along those blocks currently not having sidewalks which are identified as being on the suggested major school routes shown in Figure 6-1.

Phase 2 of this overall program would be the reconditioning of existing sidewalks along the suggested major school routes shown in Figure 6-1. Such reconditioning would include the reconstruction of those sidewalk sections which are broken or badly deteriorated. In addition, it may be desirable to use some form of a herbicide to kill the weeds and grasses currently growing and obliterating the existing brick sidewalks.

Phase 3 of the sidewalk program would concentrate on the providing of sidewalks or the reconditioning of sidewalks along all major streets (arterials and collectors as defined previously in Figure 2-2).

Sidewalk ramps at intersections for the handicapped should be provided on new sidewalk installations. Illustrations showing the typical sidewalk ramps may be found in the Appendix to this report.

SCHOOL CROSSINGS: A COMMENT

(The following article by Jan Bierman was submitted as a Letter to the Editor and appeared in the Des Moines Register and Tribune, October 1974)

There is no such thing as a "safe route", where the combination of motor vehicles and children occurs. Some day, by some fantastic stroke of luck, people are going to realize this and work toward educating children and drivers in this direction. A child must learn to cross the street independently -- with a healthy respect for vehicles -- without dependency upon Adult Crossing Guards or "Safety Bugs", which are available only at school times. A driver must learn to SEE what is around him and to watch especially for children whose traffic judgment is still developing.

Parents need to spend time teaching traffic values in the home, and demonstrating these values in a positive way on the streets as they come into contact with traffic. Licensing requirements and education of drivers need to be more thorough, with emphasis on children at ALL times, not just near schools or on school routes.

Individual priorities need to be reassigned, so if any mother feels her child is in danger at a crossing, she will be with that child showing him what he needs to watch for -- for the other times and other crossings he may need to make when she is not there. A Crossing Guard has no more control over traffic than a parent has and provides the type of assistance that fosters acceptance of protection in place of independent learning.

It is unrealistic to interpret "safe route" in a literal sense. It was not intended to be understood in that way, and was a poor choice of words by trusting-type officials who felt most people were of reasonable intelligence.

Separation of children and traffic is the only sure way to avoid tragedies. The next best way is to equip our kids on a round-the-clock basis through education of both children and drivers, along with acceptance of responsibility by those who really have the most to gain.

We can educate and accomplish some long term benefits. Or we can assign more Crossing Guards during school times and leave kids to their own resources after 3:45 each school day; and ALL DAY each day throughout week-ends and summer vacations -- which is what we're doing now to "protect our children".

It is not enough. And we need to decide if safety at school times is all we really care about.

It is the Consultant's feeling that much of the sidewalk construction should be assessed directly to the property owners involved.

EXISTING TRAFFIC CONTROLS

Presently the primary traffic controls in and around school areas consist of signalized school crossings and of SCHOOL CROSSING signs. The locations of the five school crossing signals were previously given and discussed in Chapter 4. Usage of the SCHOOL CROSSING sign (S2-1) is mainly confined to the proximity of the existing school crossing signals.

Pavement markings are also used presently at the school crossing signal locations and at several non-signalized locations near schools. The existing crosswalks generally seem to conform to the MUTCD as to the proper color (white), width of painted line, and spacing from other crosswalks.

Stop bars are also painted on many approaches to the school crossings along with a wavy white line proceeding away from the stop bar.

As previously indicated in Chapter 4, the school crossing signals consist of pedestal mounted signal heads on all corners of the intersection at the school crossing. The main street receives a RED-YELLOW-GREEN with the push of the pedestrian actuation button. The minor streets receive a RED-FLASHING RED in conjunction with a STOP sign. A single crosswalk over the major street has the WALK/DONT WALK signals.

The Creston City Engineer made traffic counts at each of the existing school traffic signal locations. The results of these traffic counts are shown in Table 6-2 along with the general warrants established for school crossing signals. Basically, to meet the warrants for installing the pedestrian signal, the traffic on the major street during the hours when the students are crossing that street must equal or exceed the volumes identified in Table 6-2 as the "70% maximum volume"(the values for Creston's population).

Based purely upon the signal warrant requirements, none of the signal installations presently in use at school crossings are needed. This is based purely upon a comparison of actual traffic volumes to those theoretical volumes which would prevent acceptable gaps in the traffic stream for students crossing the street.

TABLE 6-2

EXISTING SCHOOL CROSSING SIGNALS -
VOLUMES VERSUS WARRANTS

TIME	VEHICLES PER HOUR					
	Elm (at Clark)	Elm (at Monroe)	Elm (at Devoe)	Elm (at Prairie)	Cherry (at Summit)	Adams (at Lincoln)
7 - 8 A.M.	248	100	52	76	75	76
8 - 9	310	242	212	108	142	202
9 - 10	276	238	76	62	152	106
10 - 11	308	232	88	38	128	86
2 - 3 P.M.	398	230	78	118	190	152
3 - 4	316	328	144	138	160	180
4 - 5	416	308	124	120	214	194
5 - 6	296	326	124	62	222	198
Street Width (ft)	25	25	25	25	40	30
Max. Hourly Volume to Warrant Pedestrian Signal	675	675	675	675	435	520
70% Max. Vol.	472	472	472	472	304	364

Certainly the major intention of the City in installing the existing pedestrian school crossings was safety for students traveling to and from school and having to cross major arterial streets. Although the Consultant still concludes that the pedestrian signals are not totally necessary, the Consultant does commend the City for its sound intentions in promoting safer school crossings.

Nevertheless, the Consultant is reluctant to recommend that the existing school crossing signals be removed in their entirety. This statement is made primarily because the signal installation have been in use a sufficient time to become a fixed part of the traffic control features within the City near schools. In addition the signals do serve a function in protecting the safety of the students. With this in mind, the Consultant will in the next section provide some guidelines for making modifications to the existing school crossing signal locations and some guidelines for consideration of future major school crossing locations.

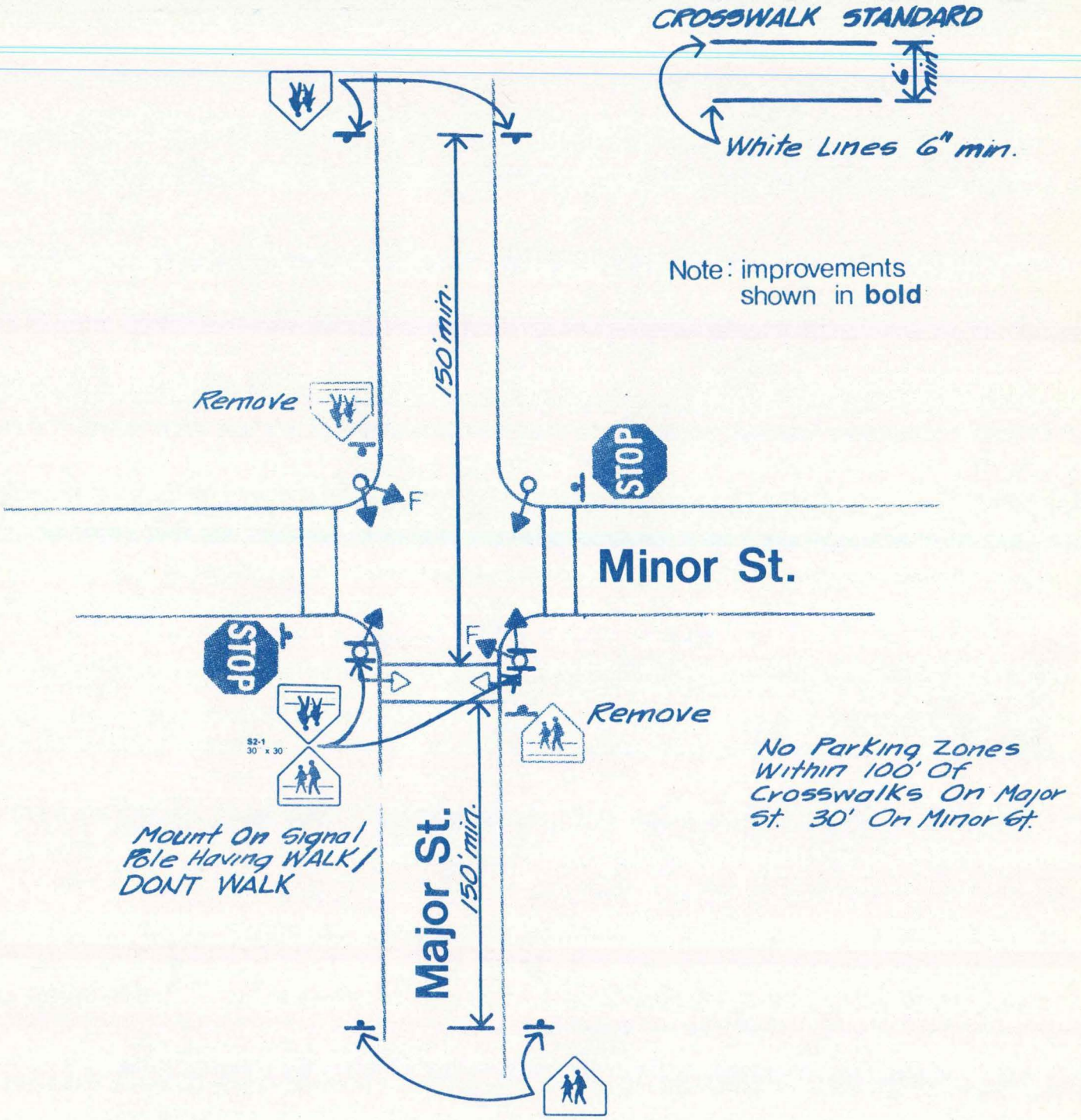
RECOMMENDED TRAFFIC CONTROLS

The discussion which follows provides the City with the Consultant's recommendations and guidelines for both specific locations and for the general application of traffic control devices.

General School Crossing Controls. As a continuation of the above discussion relating to the existing school signal locations, the Consultant wishes to recommend some immediate improvements which the City can undertake to make the existing school signal installations operate more efficiently. Figure 6-2 shows a typical installation for the existing school signals and also shows the signing modifications recommended by the Consultant for immediate action.

Concentrating on the signing for the school signal crossings, the Consultant finds that the proper use of the SCHOOL CROSSING sign (S2-1) and the ADVANCE SCHOOL CROSSING sign (S1-1) will better identify these locations as school crossings.

Overall, the improvements shown in Figure 6-2 are for the following purposes and objectives:



Creston, Iowa

mast arm pole
12 in. RYG signal
walk / dont walk

F – flashing red

TYPICAL EXISTING SCHOOL SIGNAL IMMEDIATE IMPROVEMENTS

figure 6-2

a. According to the MUTCD, the SCHOOL CROSSING sign should be placed as near to the crosswalk as possible. For this reason, the Consultant recommends that the SCHOOL CROSSING signs be placed directly on the traffic signal pole, preferably above the traffic signal. In order to call additional attention to the crossing, the Consultant recommends that the SCHOOL CROSSING sign be placed on both sides of the roadway for each of the two street approaches to the signalized crosswalks.

b. For a minimum distance of 150 feet in advance of the crosswalk, an ADVANCE SCHOOL CROSSING sign should be placed to provide advanced warning to the motorist of the upcoming signalized school crossing. Here again, the Consultant is recommending that the ADVANCE SCHOOL CROSSING sign be placed on both sides of the roadway approaching the signalized crosswalk.

c. Signs prohibiting parking within 100 feet of the signalized crosswalk on a major street should be implemented in order to improve sight distance for both motorists and pedestrians.

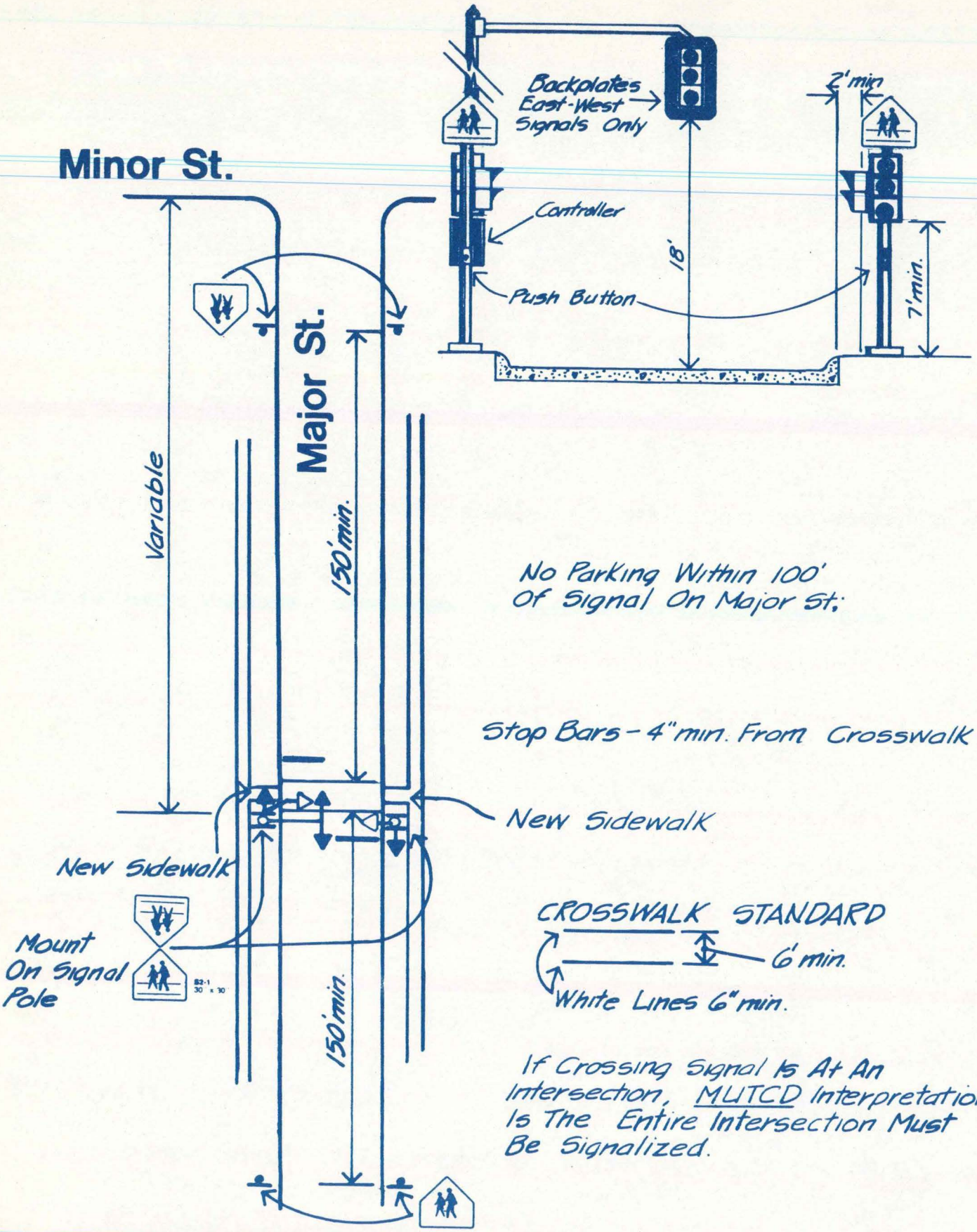
d. The City should continue to follow the MUTCD standards for painted crosswalks. Such crosswalks should be repainted in the fall just prior to the beginning of school and in the spring immediately after the winter storms have subsided.

The estimated cost of the signing improvements identified in Figure 6-2 is $580.00. The cost for completing this improvement at all five (5) of the existing school signal locations is therefore $2,900.00.

If, in the future, the City wishes to install new school crossing signals at any location, then the Consultant recommends that they generally follow the concepts shown in Figure 6-3. This figure shows the installation of mast arm signals at the crosswalk on the major street only. The distance of the signalized crosswalk from the intersection with the minor street is a variable although the Consultant suggests that the crosswalk be placed as close to the actual path of the students as possible.

The signing suggestions in Figure 6-3 for the ADVANCE SCHOOL CROSSING sign and the SCHOOL CROSSING sign are the same as previously described for Figure 6-2.

The City may wish to make modifications to the signal installations at the existing signalized school crossing locations in order to bring the signal installation into closer conformity with the MUTCD. The present conflict is the fact that a RED indication is given to the minor street without any provisions for a YELLOW and a GREEN signal on the minor street. That is, a FLASHING RED indication is permissive with a STOP sign. However, a solid RED signal without the corresponding YELLOW and GREEN signal installations is not permissible.



Creston, Iowa	mast arm pole 12 in. RYG signal walk / dont walk	figure
	SUGGESTED TYPICAL SCHOOL SIGNAL	**6-3**

Although the present installations in Creston with the RED-FLASHING RED on the minor streets is questioned by many traffic engineers, it can be concluded that the present installations are not 100% incorrect. However, the Consultant did observe some confusion on the part of motorists approaching the intersection from the minor street. Some of these motorists were not clear as to what right-of-way they may have with either the SOLID RED or FLASHING RED beacon.

Since the STOP sign is the controlling traffic device rather than the RED-FLASHING RED beacon, the Consultant believes it to be advisable to modify all of the existing signal locations to conform with the signal installation concept shown in Figure 6-3.

Although there is considerable disagreement within the traffic engineering profession as to how to best handle pedestrian signal installations at or near intersections, the Consultant believes that the installation guidelines shown in Figure 6-3 will meet the requirements of the MUTCD while at the same time providing a functional school crossing location.

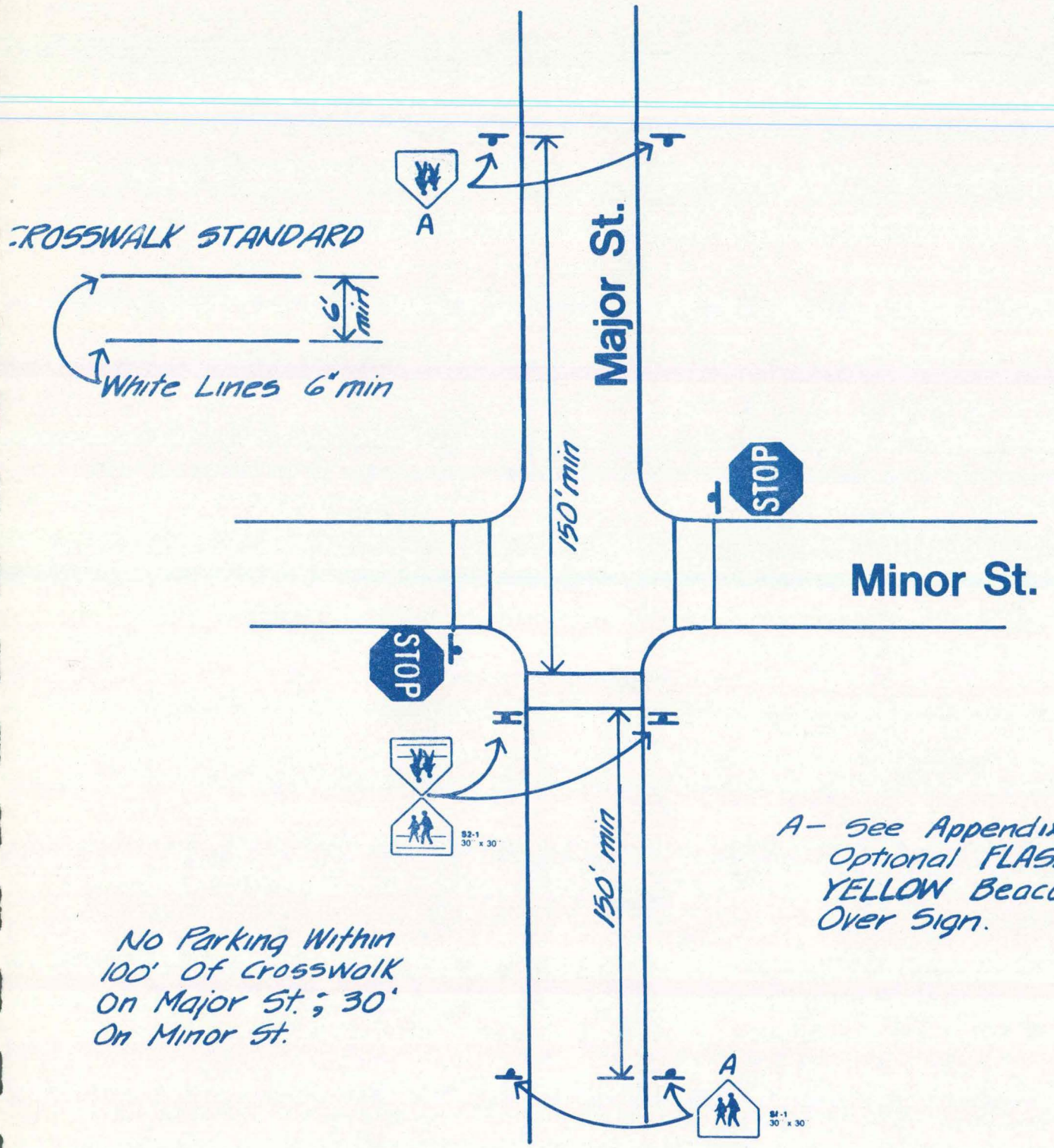
The estimated cost of the sign and signal improvements shown in Figure 6-3 is $12,880.00 per location. This estimate assumes all new equipment for both signs and signals. For the conversion of the five existing school crossing locations, the cost of implementing the guidelines in Figure 6-3 would be $64,400.00.

At those school crossing locations which do not have or do not require traffic signals, the need does exist for installing the proper signs to clearly identify the crossing locations to the motoring public and to pedestrians. As such, Figure 6-4 shows the suggested typical school crossing concept to be utilized by the City at those locations involving an unsignalized school crossing at a major street.

Primarily, the improvements shown in Figure 6-4 reflect the usage of the SCHOOL CROSSING sign and the ADVANCE SCHOOL CROSSING sign on both sides of the roadway for the crosswalk. In addition, no parking zones are to be established within 100 feet of the crosswalk on a major and within 30 feet of the crosswalks on the minor streets.

The estimates cost of the improvements shown in Figure 6-4 is $580.00 per crossing location.

There is an optional element which can be added to the suggested concepts shown in Figure 6-4. This option is the addition of a FLASHING YELLOW beacon to be placed over the ADVANCE SCHOOL CROSSING sign. The purpose of the flashing beacon would be to call the motorists attention to the warning signs associated with the school crossing.



Creston, Iowa	SUGGESTED TYPICAL SCHOOL CROSSING	figure 6 - 4

The estimated cost of installing a FLASHING YELLOW beacon at the four locations with the ADVANCE SCHOOL CROSSING (S1-1) sign shown in Figure 6-4 is $1,200.00. Therefore, with the signs and optional YELLOW beacons in Figure 6-4, the total installation cost would therefore become $1,780.00.

The Appendix shows a detail drawing of the installation of the YELLOW beacon with the ADVANCE SCHOOL CROSSING sign.

School Speed Limits. At the present time, special speed limits are not used in the school zones in and around the various school facilities. The posted speed limits at each of the schools now is 25 miles per hour.

The Consultant concurs with the utilization of the existing 25 mile an hour speed limits and the corresponding signing for the various major streets passing in or near the school facilities.

There is increasing support nationwide based upon several research studies that lower speed limits of 15 or 20 mile per hour do not contribute to the improved safety within school zones. For these reasons many cities are currently using 25 mile per hour or are maintaining the speed limit through the school zone that is established along the entire major street itself.

As previously indicated, SPEED LIMIT signs by themselves will not totally control the speeds of the vehicles. Only strict enforcement of speed limits will force the motoring public to maintain the posted speed limit.

Pavement Markings. The Consultant feels that the City should continue with its current policies and standards regarding the installation of crosswalks and stop bars. The usage of the wavy line in advance of the stop bar is permissible and may be continued also.

The Consultant does suggest, however, that the City maintain all painted crosswalks to a high degree of visibility. This will require the frequent inspection of the painted crosswalks. As a minimum, the crosswalks should be repainted in advance of the start of school at the end of the summer and in the spring at the close of the winter season.

Creston High School. Figure 6-5 shows a schematic diagram of the streets immediately around the high school.

Regarding the need for new or additional signing, the Consultant does not believe that any major revisions in the signing around the high school is required. Much of the existing signing is satisfactory with a few minor exceptions. As indicated in Figure 6-5, the Consultant is suggesting the replacement of several no parking signs which are badly deteriorated. In addition, as previously discussed in Chapter 4, the City should add 4-WAY plates to the multi-stop intersections at Irving and Maple and Irving and Pine.

From discussions with school officials, it was learned that school buses presently stop along the south side of Irving. Therefore, the Consultant suggests that NO PARKING BUS STOP signs be installed. These same signs should be installed at any other locations where buses are to stop in or near the high school.

From our discussions, the major problem around the high school seems to be noise and speeding. During the summer of 1976, representatives of the Community Resource Development Program conducted a survey of residents and teachers to solicit their opinions and ideas relating to possible solutions to the speeding problems around the high school. The consensus derived from this survey indicated that speed bumps and more police control were deemed to be the best solutions.

As previously stated, the Consultant firmly believes that speeding problems in most cases must be handled through heavy enforcement. However, the Consultant feels that it is logical to conclude that heavy enforcement in and around the high school will not totally solve the problem but may generate other problems, particularly in the area of strained relations between the Police Department and the students themselves.

For these reasons the Consultant believes that the Police Department, High School Administration and the Student Body should jointly work together to alleviate and minimize as much as possible the speed and noise problems around the High School. If the students can be involved to some degree in the regulation of the problem, then the creditability gap which exists between our youth and adults will be minimized. In addition, the speeding and noise problems will likewise be minimized.

Therefore, the Consultant suggests that the Chief of Police, the Principal and Guidance Counsellors of the High School, and the Presidents of the Student Council and each Grade Class at the High School should immediately begin joint meetings to plan a method of action for meeting the speeding problems.

The Consultant offers the following ideas to be considered.

a. Phone calls or letters received at the high school regarding speeding complaints from neighbors should be responded to through a personal visit to that neighbor by two representatives of the Student Council or Student Committee established for the speeding problem.

b. Possibly those students who are involved in the speeding problem itself can be appointed to serve on the Special Student Committee on speeding, thereby involving the offenders in seeking solutions to the speeding problem.

In regard to the concept of using speed bumps in the streets, the Consultant generally does not recommend this as a solution. There are problems associated with speed bumps such as conflicts with snow removal efforts, liability to the City should the bumps be the contributing cause to an accident, and ineffectiveness in controlling the speeding problem.

If, however, the policy decision is made by the City to try the speed bump concept, the Consultant offers the following guidelines:

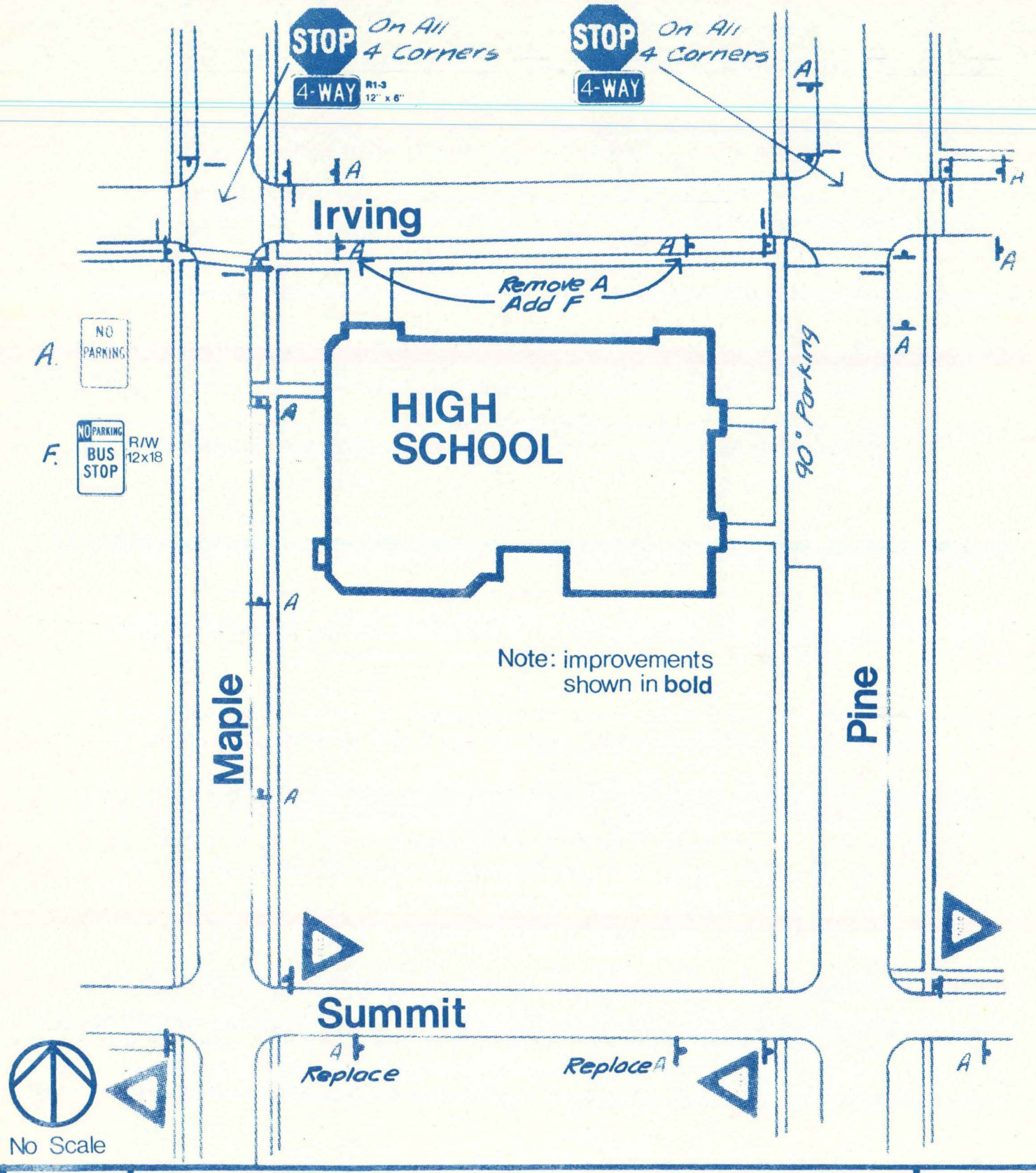
a. The speed bumps should be installed for one school year with the City Engineer and the Police Chief studying the impacts of the bumps, before and after their installation upon the speeding and the number of complaints from residents.

b. The speed bumps should be formed from asphalt and should be arc-shaped with a height of 3 inches or less and a width of 8 inches or less.

c. A rectangular black on yellow BUMP sign (W9-1) should be installed on both sides of the street in both directions at the speed bump itself. That is, the motorist should see the BUMP sign on both sides of the roadway at the speed bump.

d. All tree limbs should be pruned in order that the motorist can clearly see the BUMP signs.

The estimated cost of the sign modifications shown in Figure 6-5 is $130.00. Should the City decide to install the speed bumps, the estimated cost is $500.00 for each speed bump installation inclusive of labor, asphalt, and the four BUMP signs with posts.



Creston, Iowa

CRESTON HIGH SCHOOL

figure 6-5

Creston Junior High and Irving Elementary. Figure 6-6 shows the existing conditions as well as the recommended signing improvements for these two schools. The recommended improvements are for the following purposes:

a. The City should follow the immediate signing improvements for the school crossing signals as previously shown and discussed in Figure 6-2. The City is urged to consider in the near future the complete modification of the school crossing signals to conform to the concepts shown in Figures 6-3 or 6-4.

b. Several sections of sidewalk should be replaced or added around the school complex.

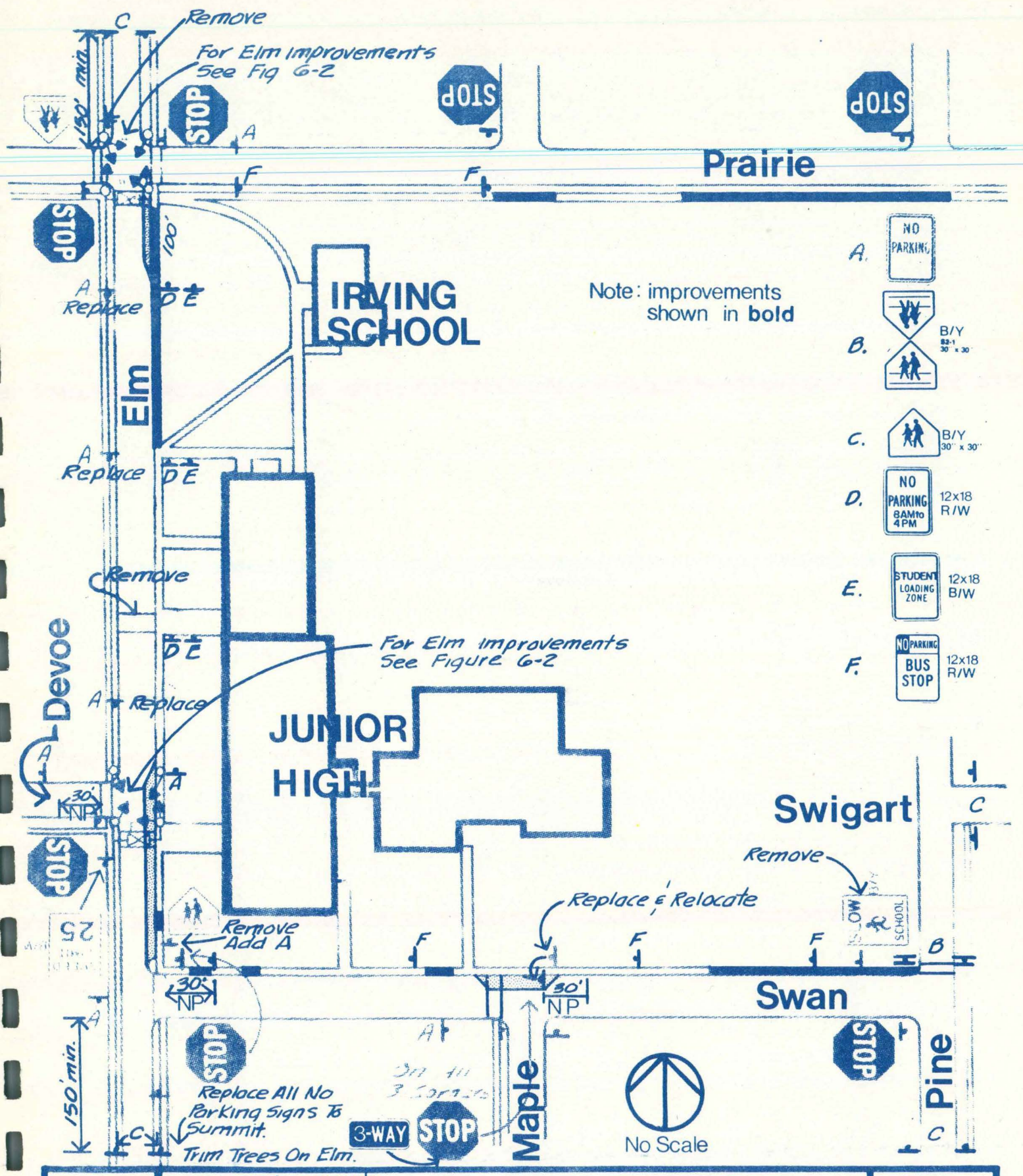
c. On Elm Street, a definitive student loading zone should be established in front of both schools along the east side of Elm between the two school crossing signals on Elm. To better define the student loading zone, two special signs should be installed (NO PARKING 8:00 A.M. TO 4:00 P.M. and STUDENT LOADING ZONE). In addition, the curb line should be reextended for a length of 100 feet south along Elm from the school crossing signal at Prairie. The curbs should also be extended along Elm between Swan and Devoe. These curb extensions will improve the sight distance of both the motorist and pedestrians and will prevent vehicles from pulling through the signalized crosswalks.

d. The crosswalk located on Elm between Devoe and Prairie should be removed or allowed to weather away.

e. A critical safety hazard exists with the present manner with which the school buses are parked along the north side of Swan. The buses park too close to the crosswalk at Swan and Elm and at Swan and Maple. No parking zones should be established for all vehicles including buses 30 feet in advance of the STOP signs on Swan at Elm and at Maple. Bus drivers should be clearly instructed to avoid parking within 30 feet of the STOP signs.

f. A curb extension is proposed along the north side of Swan in the intersection with Maple. This curb extension will serve the purposes of preventing school buses from parking across the cross walk and in the intersection with Maple. It will also allow the STOP sign (east leg) to be relocated into the line of sight of the motorist. Presently, this STOP sign is obstructed from the view of the motorist by the parked school buses.

g. The lower tree limbs should be trimmed along Elm Street to improve the visibility of signs and the school signals.


Remove
For Elm Improvements See Fig 6-2
150' min.
STOP
Prairie
IRVING SCHOOL
Elm
Replace
Note: improvements shown in bold
A. NO PARKING
B. B/Y
C. B/Y 30" x 30"
D. NO PARKING 8AM to 4PM 12x18 R/W
E. STUDENT LOADING ZONE 12x18 B/W
F. NO PARKING BUS STOP 12x18 R/W
Devoe
JUNIOR HIGH
For Elm Improvements See Figure 6-2
Swigart
Remove
Replace & Relocate
Remove Add A
30' NP
Swan
Pine
Maple
3-WAY STOP
Replace All No Parking Signs To Summit.
Trim Trees On Elm.
No Scale
mast arm pole
12 in. RYG signal
walk / dont walk
new or replaced sidewalk
F – flashing red
curb extension
Creston, Iowa
figure 6-6
IRVING / JUNIOR HIGH

h. A no parking zone should be established along the south side of Prairie adjacent to Irving School. This is to improve the visibility of students walking along and crossing Prairie east of the school.

i. The NO PARKING zone along the north side of Devoe should be enforced as vehicles are regularly parking there now.

j. School officials should make concerted efforts to properly instruct parents to use the STUDENT LOADING ZONE. The Police Department should periodically check Elm Street during the school closing times and give warning tickets to those parents picking up students on the unsafe west side of Elm Street.

The estimated cost of the improvements shown in Figure 6-6 is $7,735.00. This cost assumes that the sidewalk replacements would paid for by the adjacent property owners and that the improvements to the existing school signal locations conform to the immediate action recommendations in Figure 6-2.

Franklin Elementary. Figure 6-7 shows the existing setting for this school as well as the recommended improvements. The purposes of these improvements are as follows:

a. The City is encouraged to implement the immediate action recommendations shown in Figure 6-2 for the school crossing signal located one block east of the school at the intersection of Elm and Monroe. The City is further encouraged in the future to implement the improvement suggestions for this signalized school crossing as shown in Figure 6-3 or 6-4.

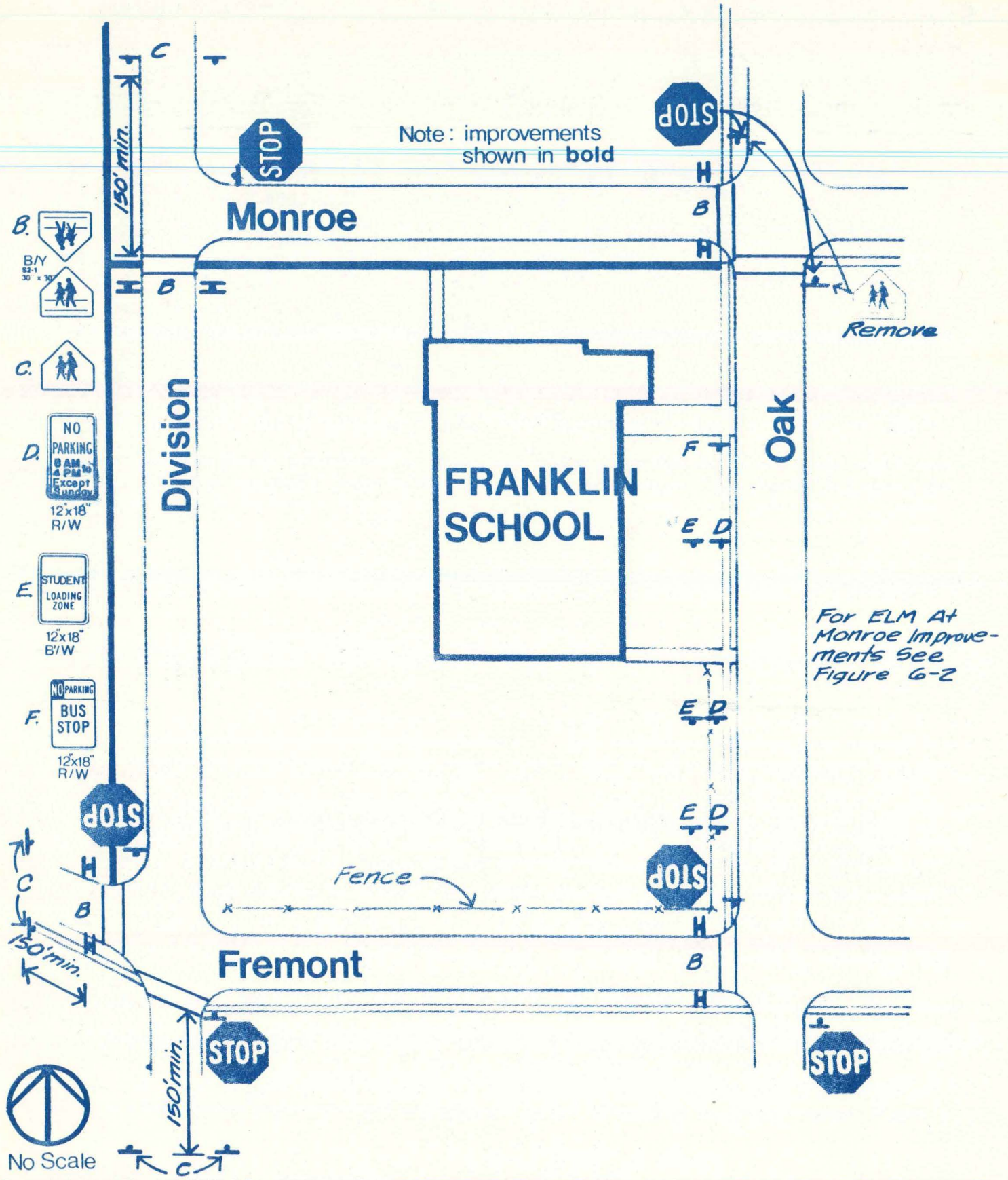
b. It was the Consultant's belief that it would be in the best interest of the students to install STOP sign controls at the two intersections of Monroe with Division and with Oak on the north side of the school. The STOP signs will establish vehicular right-of-way and eliminate some confusion in this area between pedestrians and moving vehicles.

c. Special signing should be installed along the west side of Oak between Monroe and Fremont in order to properly establish a student loading zone as well as a bus stop.

d. For those school crosswalks not controlled by STOP signs, the SCHOOL CROSSING sign (S2-1) should be installed as shown in Figure 6-7. In keeping with the theme of increasing the visibility of these signs, the Consultant is recommending as previously discussed the installation of the SCHOOL CROSSING signs on both sides of the roadway for each approach to the crosswalk.

e. Sidewalks are especially needed along Division Street and Monroe as indicated in Figure 6-7.

The estimated cost of the improvements for Franklin School as shown in Figure 6-7 is $2,330.00. This value assumes that the sidewalks would be paid through an assessment to the adjacent property owners and that the improvements at the school crossing signal on Elm Street will follow Figure 6-2.



Creston, Iowa

new or replaced sidewalk

FRANKLIN SCHOOL

figure 6-7

Lincoln Elementary. Figure 6-8 shows the recommended improvements for this school which will accomplish the following purposes and objectives:

a. The City should immediately install the signing improvements shown in Figure 6-4 for the school crosswalk located on Adams adjacent to Peterson Street.

b. The school should discontinue the use of the portable rollout STOP sign now being used in the crosswalk on Adams Street adjacent to Peterson. Portable rollout stop signs are not a conforming traffic control device as stated in the MUTCD.

c. Several sections of sidewalk should be replaced or added in and near the school as shown in Figure 6-8.

d. Special signing to clearly identify the student loading zones and the bus stop zones should be installed along the west side of Peterson between Adams and Jefferson and along the north side of Jefferson between Peterson and Myrtle.

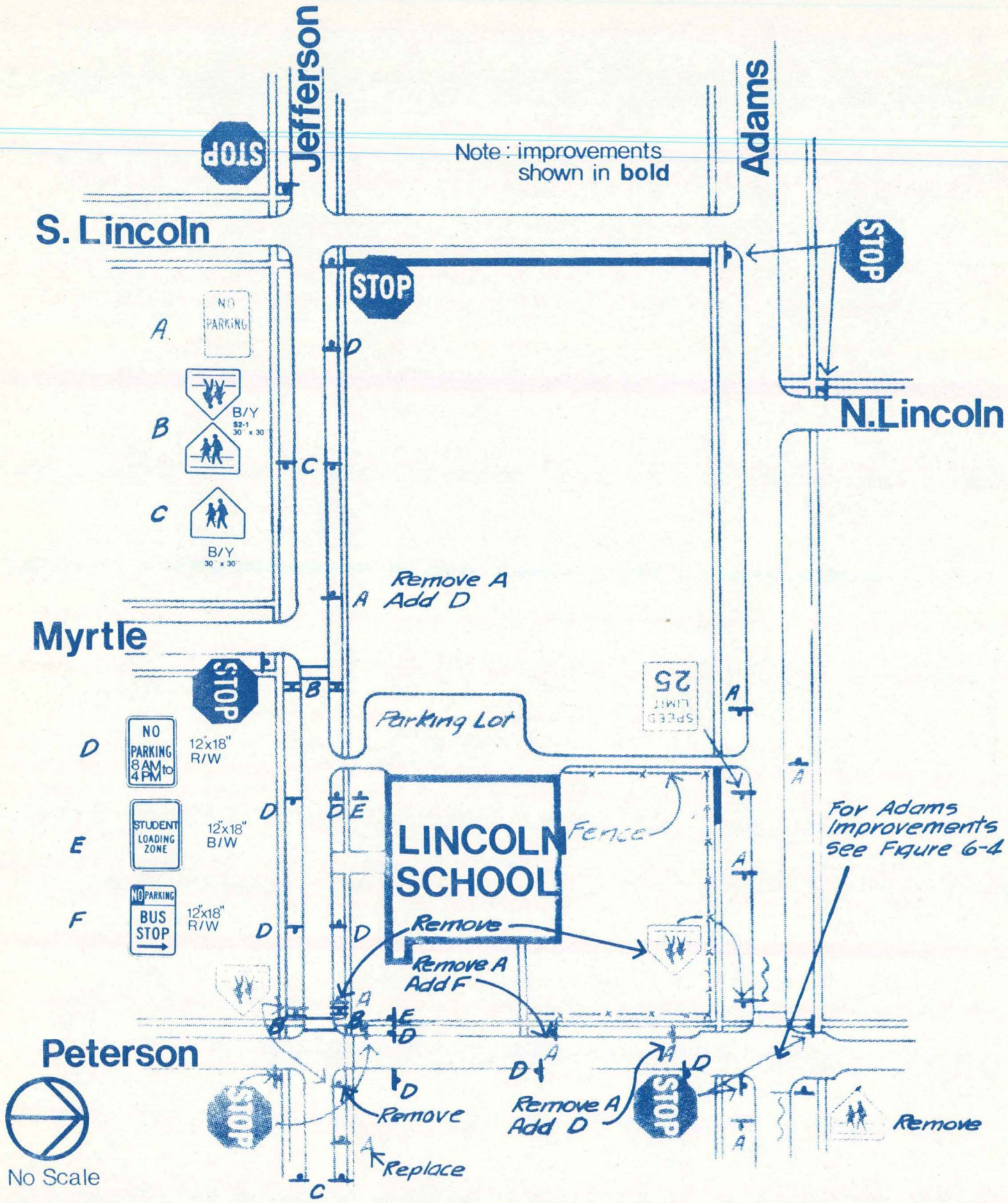
e. No parking zones should be established along the east side of Peterson between Adams and Jefferson and the south side of Jefferson between Peterson and Myrtle. Both of these streets are too narrow to allow parking on one side and maintain a bus or student loading zone on the other side of the street. Therefore, for reasons of traffic flow and safety, parking should be disallowed between school hours on the sides of the street opposite the bus stop zones and the student loading zones.

f. In order to better identify the existing crosswalk on Jefferson at Peterson and the new crosswalk at Myrtle, ADVANCE SCHOOL CROSSING (S1-1) and SCHOOL CROSSING (S2-1) signs are required along the 3 block length of Jefferson by the school. Locations for these signs are shown in Figure 6-8.

g. Nearly all of the existing NO PARKING signs in and around the school, except on Adams Street are old and illegible. Therefore they should be replaced.

h. The school administration should undertake efforts to encourage the parents to pick up and discharge their children in the designated student loading zones.

The estimated cost of the improvements shown in Figure 6-8 is $2,045.00. This assumes that the sidewalk improvements will be paid for through assessments to the adjacent property owners.



Creston, Iowa	new or replaced sidewalk	figure 6-8
	LINCOLN SCHOOL	

Jefferson Elementary. Figure 6-9 shows the existing setting around this school as well as the recommended improvements. These improvements will accomplish the following purposes.

a. It is recommended that the immediate action improvements shown previously in Figure 6-2 will be completed for the school crossing signal located at Cherry and Summit Streets. The City is further encouraged to implement in the near future the suggested improvements in Figure 6-3 or 6-4 for the school crossing at Cherry and Summit.

b. Some new sections of sidewalk are needed in the immediate vicinity of the school.

c. A student loading zone should be established along the east side of Cherry Street between Summit and Irving Streets. Special signing (NO PARKING and STUDENT LOADING ZONE) will be necessary to clearly identify the loading zone in front of the school.

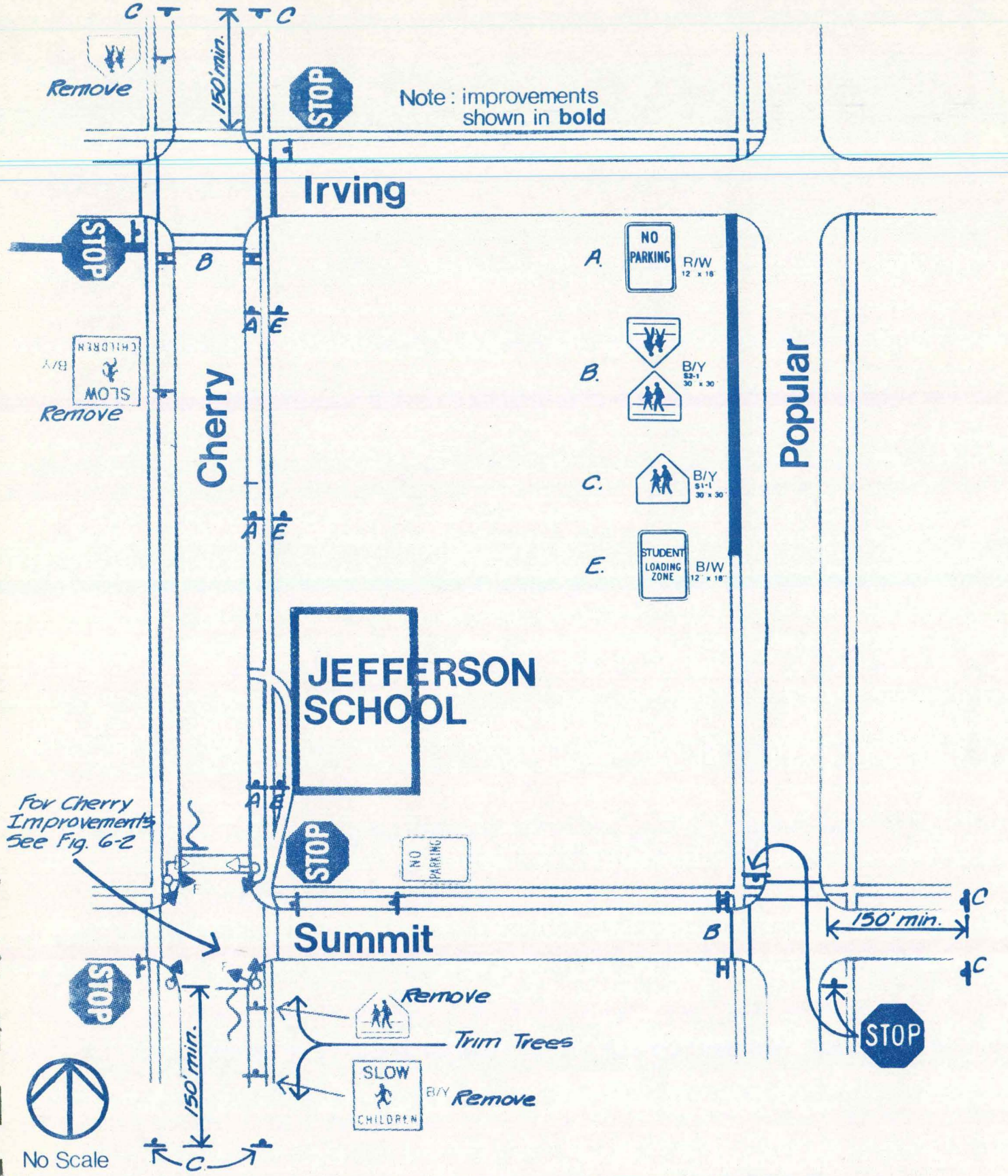
d. Because of the proximity of the intersection to the school itself, the Consultant felt it advisable to install STOP sign controls at the intersection of Summit and Poplar. This will establish the vehicular right-of-way and reduce the amount of conflict between moving vehicles and the school students.

e. In conjunction with the existing and the new crosswalks, the installation of ADVANCE SCHOOL CROSSING (S1-1) and SCHOOL CROSSING (S2-1) signs will be required in order to call special attention to the school zone and the school crosswalks.

f. The trees along the east side of Cherry south of Summit should be trimmed in order to improve the visibility of the school signs and school signals.

g. School officials should undertake a program to encourage parents to use student loading zone being established in front of the school.

The estimated cost of the improvements shown in Figure 6-9 is $1,495.00. This estimate excludes the cost of the sidewalks which should be assessed to the adjacent property owners.



Creston, Iowa

mast arm pole
12 in. RYG signal
walk / dont walk
new or replaced sidewalk

figure 6-9

JEFFERSON SCHOOL

St. Malachy Catholic School. Figure 6-10 shows the existing conditions and the recommended improvements for this school facility. From a safety standpoint the existing conditions along Clark Street in front of the school presents a very hazardous situation due to the angle parked cars, poor sight distance of crosswalks and sidewalks, and the random pickup and discharge of students from vehicles at various points within and along the street. The recommended improvements will therefore accomplish the following purposes:

a. For the school crossing signal located at Elm and Clark, the City is encourage to implement immediately the signing improvements shown in Figure 6-2. The City is encouraged in the near future to consider the implementation of the improvements shown previously in Figure 6-3 or 6-4.

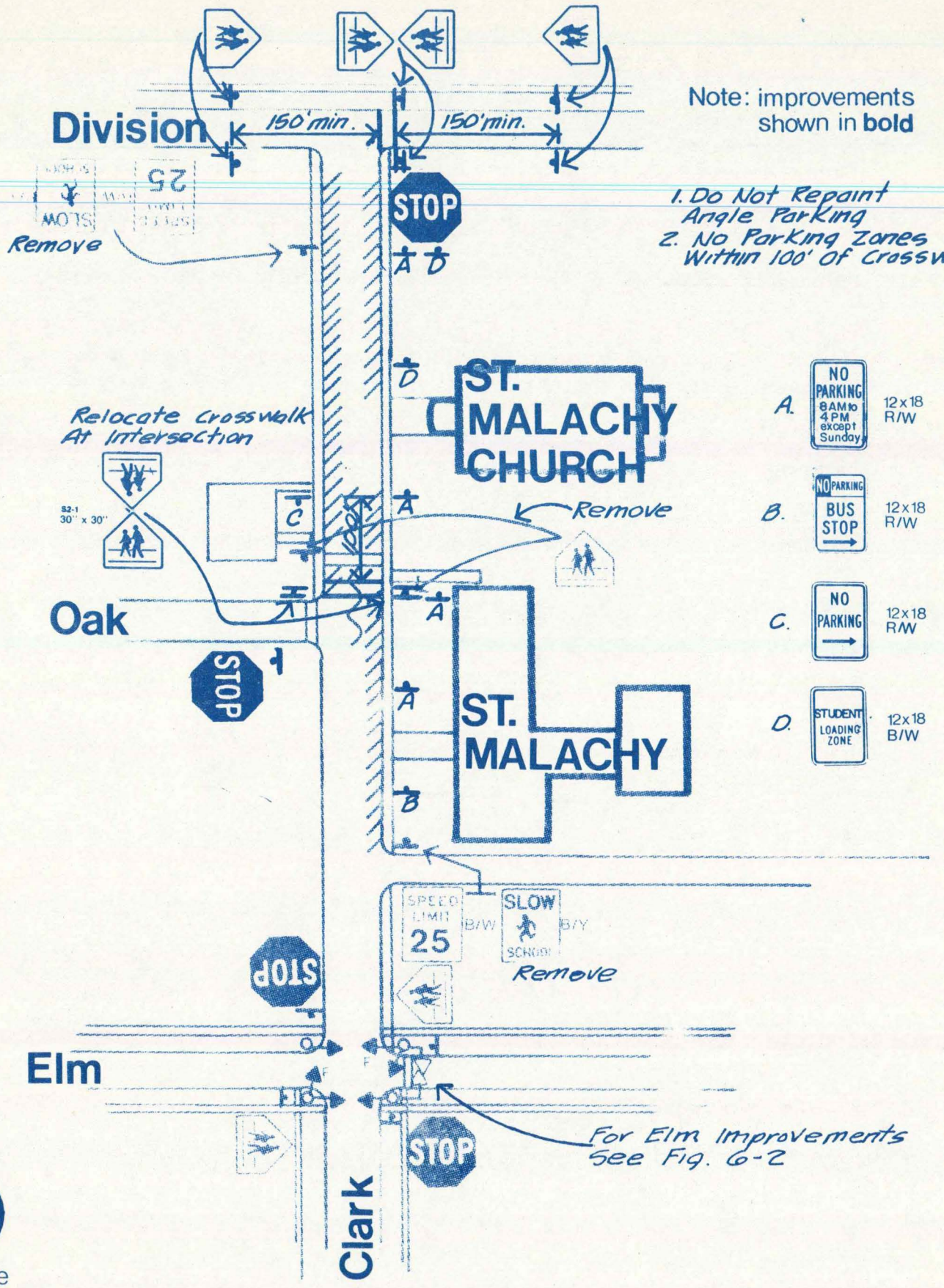
b. The angle parking along Clark Street apparently is for the parking demands of St. Malachy Church on Sundays. The street is entirely too narrow to have angle parking. In addition, the angle parking presents a serious hazard to the students as previously stated and also adds to the possibility of accidents between vehicles entering or leaving the stalls. Therefore the Consultant recommends that the angle parking stalls not be repainted in order to discourage angle parking on the street on school days. On Sundays, persons attending St. Malachy Church should be allowed to park in an angle fashion on Clark Street which they can and will continue to do through a force of habit. In actuality, if the church has such a critical parking problem, then it should be constructing adequate off-street parking lots.

c. The Consultant is recommending that a student loading zone and bus stop be established along the north side of Clark from the alley adjacent to the school westward to Division Street.

d. School officials should promote the usage of this curbside loading zone by parents when picking up and discharging their students. The Police Department should be available periodically during school starting and ending hours to issue warning tickets to those parents picking up or discharging students at points other than the designated loading zone.

e. Presently the school is using a portable STOP sign in conjunction with the crosswalk on Clark Street just west of Oak. The usage of this portable STOP sign should be discontinued immediately since the usage of such portable signs is not permitted according to the MUTCD.

f. The existing crosswalk on Clark Street just west of Oak is not clearly defined nor fully visible to motorists due to the angle-parked cars and to parents stopping in the middle of the street to load and unload children. Therefore, the Consultant recommends that the crosswalk be moved eastward to the intersection of Clark at Oak. SCHOOL CROSSING signs



Creston, Iowa

mast arm pole
12 in. RYG signal
walk / dont walk
F - flashing red

figure 6-10

ST. MALACHY SCHOOL

(S2-1) should be installed at this crosswalk. Parking should be prohibited as well as the loading and unloading of children for a minimum distance of 100 feet on both sides of the crosswalk.

g. If the school is desirous of using a STOP sign control for the crosswalk on Clark at Oak, then the Consultant would suggest that the entire intersection be made a 3-way stop intersection. This would entail the installation of additional STOP signs on Clark and the installation of 3-WAY plates. The SCHOOL CROSSING signs proposed for the Clark crosswalk in Figure 6-10 should not be installed if the 3-way stop situation is implemented. Overall, the Consultant does not believe the 3-way stop is needed at Clark and Oak.

The estimated cost of the improvements shown in Figure 6-10 is $1,565.00.

Southwestern Community College. The major drive leading to the college presently intersects with the newly reconstructed four-lane roadway of Townline (State Highway 25). This intersection presently has a STOP sign control for the college drive. At this time, the Consultant does not find the need for additional traffic controls at or near the college. However, the Consultant does suggest that the City Engineer monitor the area in and around the College to see what changes in safety the new four-lane Townline Street has on traffic flow patterns.

Special School Crossing Locations. There are several locations identified in Figure 6-1 where the suggested major routes to schools cross major arterial streets. Several of these locations require, in the opinion of the Consultant, special signing in order to identify crosswalks to motorists and to promote improved safety for students.

From Figure 6-1 the various locations of special school crossings have been listed in Table 6-3. Most of the locations will follow the recommended signing plan for the crosswalk as previously shown in Figure 6-4. Two of the locations (Taylor at Oak and Sumner at Prairie) will also require the optional FLASHING YELLOW beacon as indicated on Figure 6-4 and as further detailed in the Appendix. The FLASHING YELLOW beacon should operate only during those time periods when students will be crossing the street on their way to or from school.

The new signal installation presently being designed for the intersection of Sumner at Adams should have WALK/DONT WALK signals on all approach legs at the intersection. If the pedestrian signals have not been included in this project at the time it is being constructed, then the City should undertake measures for adding pedestrian signals to this intersection.

The existing traffic actuated signal at the intersection of Sumner with New York/Sheldon presently does not have pedestrian signals. The Consultant suggests that WALK/DONT WALK signals be added to this intersection.

Table 6-3 also gives the estimated cost for each of these special school crossing locations.

TABLE 6-3

SPECIAL SCHOOL CROSSINGS

Intersection Location	Crosswalk Location	Improvements	Estimated Cost
Taylor (US 34) at Oak	West Leg	Figure 6-4 plus FLASHING YELLOW Beacon	$ 1,780
New York at Fremont	North Leg (N. Y. Ave.)	Figure 6-4	$ 580
New York at Lucas	South Leg (N. Y. Ave.)	Figure 6-4	$ 580
Sumner at New York/ Sheldon	South Leg	Add WALK/DONT WALK preferably to All Legs	$ 4,400
Sumner at Adams	All Legs	New Signal Installation should have WALK/DONT WALK Signals on all legs	$ -
Sumner at Prairie	South Leg	Figure 6-4 plus FLASHING YELLOW Beacon	$ 1,780
Lincoln at Prairie	South Leg	Figure 6-4	$ 580
Townline at Elm	East Leg	Figure 6-4	$ 580
			$10,280

OTHER SCHOOL SAFETY GUIDELINES

Adult Crossing Guards. The Consultant encourages the City and the various schools to utilize crossing guards at those locations deemed to have a potential safety hazard for children going to and from school.

Jefferson and Lincoln Schools each presently use a crossing guard for the crosswalks near the school on Summit and Adams Streets, respectively.

Consideration may be given to the employing of crossing guards for the school crosswalk locations on Taylor at Oak and Sumner at Prairie.

However, before employing the crossing guards, the City Engineer and the Police Chief should first implement the improvement suggested in this report. After the implementation, the locations should be observed to see how well they operate before actually employing an adult crossing guard at the location.

It would be advisable to have some form of clothing (possibly a uniform) to clearly identify the crossing guard and his authorities. The crossing guard should also wear a bright orange vest as described in the MUTCD.

School Boundaries. Overall, the Consultant sees no major conflicts between the existing school attendance boundaries and school safety.

One minor location to which the Creston Community School Board may wish to address is the boundary line between Jefferson and Irving Elementary Schools. The area of concern deals with the shifting of the far northern portion of the school attendance boundary (Figure 6-1) from Poplar Street one block westward to Cherry Street. Although traffic volumes are fairly low on this section of Cherry Street, it is a major arterial. The shifting of the boundaries, therefore, would reduce the need for a small number of students to cross Cherry Street in this location.

School Safety Patrol. Presently, all of the elementary schools have a school safety patrol. The Consultant believes that the school safety patrol for varying reasons can be a valuable means of encouraging and promoting safety as well as leadership and responsibility among the students. For these reasons, the Consultant encourages the various schools to continue to use the school safety patrol as part of their school safety program.

School Safety Education. Presently, the individual schools and the City Police Department participate in programs to promote pedestrian and bicycle safety among the school students. Currently, the schools incorporate the teaching of school safety aspects into the normal classroom course work. Some handout material is utilized in this classroom education.

The Police Department assigns an officer as a liaison to each school. Some material is provided to the schools by the Police Department in the form of handouts usually from the National Child Safety Council. Local merchants are involved in paying for these handout materials.

The Consultant believes that the school safety education efforts should be continued and expanded as much as possible within the existing budget and staff capabilities of the schools and the Police Department. In addition, the Consultant believes that each elementary school should publish and disseminate to students and parents a map showing the safe route to school routes and showing the safe student loading zones designated at each school complex.

CHAPTER 7

RAILROAD CROSSINGS

GENERAL DISCUSSION

As previously indicated, the Burlington Northern Railroad presently has a main line traversing the City in an east-west direction. In addition to the main line, there are two branch lines beginning in the Creston city limits. A north branch is located on the easterly limits of the City while a south branch diverges from the main line in the southwest portion of the City.

Several spur lines are available throughout the City. However, nearly all of these are parallel to or in proximity to the existing main line and branch lines of the Burlington Northern. The only major exception is a new spur line extending southward into the industrial park located on the eastern edge of the City.

The Burlington also has a railroad yard area and round house located along the main line of the track near Cherry Street. Much of the yard work involves the movement of grain and agricultural products from various Creston operations.

Generally there are 25 trains per day operating on the main line of the Burlington Northern. Most other trained movements involve the switching of rail cars in the Burlington Northern Yards or on the various spur tracks in the area. Most of the yard movements are done at night.

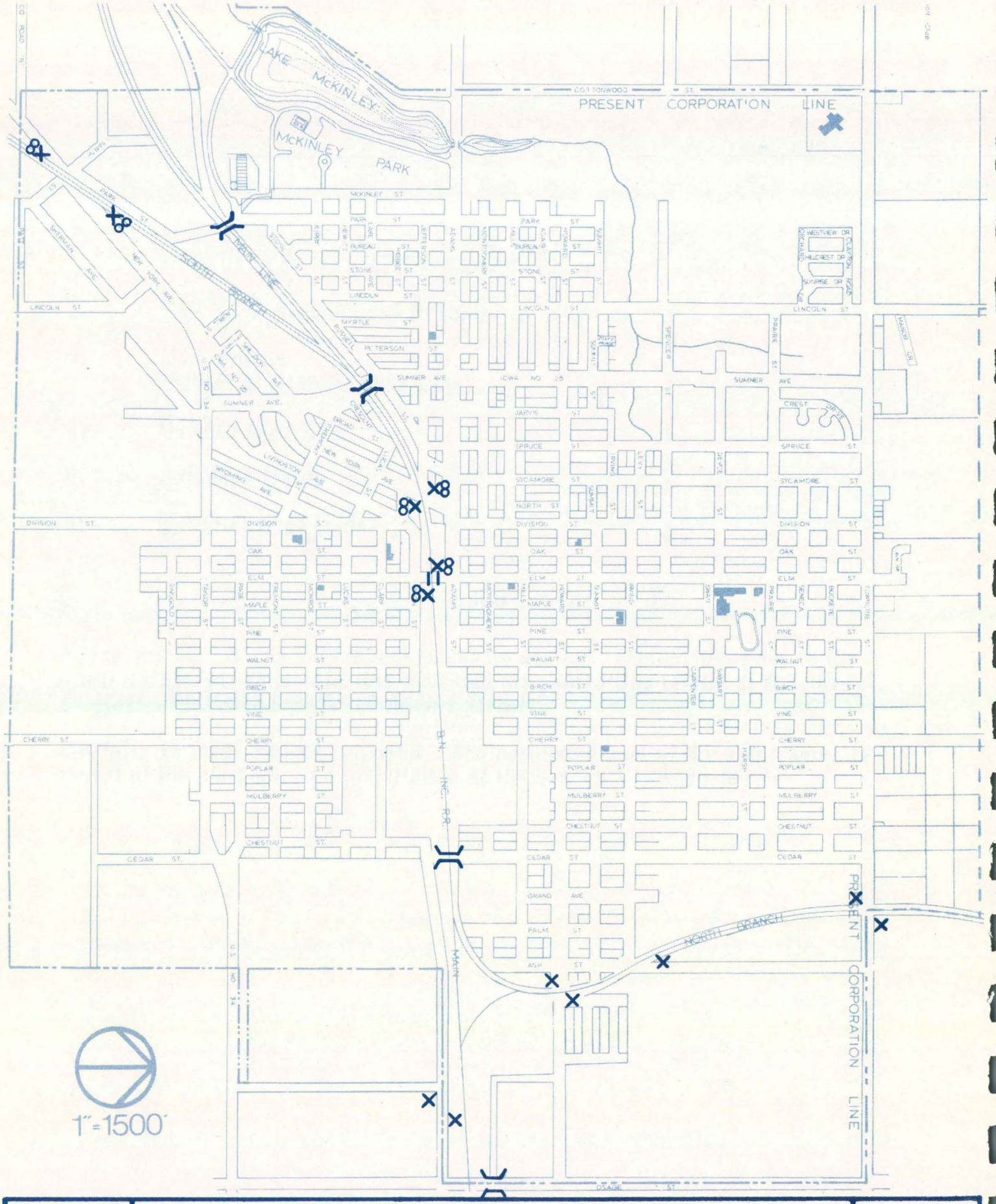
RAIL CROSSINGS

Figure 7-1 indicates the locations of the various railroad crossings in the City of Creston. Also indicated are the types of railroad crossing protection devices.

There are six crossings of the main line, four of which involve underpasses. Each of the underpasses is basically a one-lane facility with the exception of the two-lane capabilities of the underpass at Sumner Avenue.

The at-grade crossings at New York Avenue and Elm Street received major maintenance improvements by the Burlington Northern during the summer of 1976. Both crossings contain cross bucks and flashing lights. In addition, the Elm Street crossing does have gates. Gates are planned for New York.

All of the other railroad crossings involving the branch lines and spur lines are protected by cross bucks.



Creston, Iowa

× crossbuck — gates

flashing lights underpass

RAILROAD CROSSINGS

figure 7-1

A review of the accident records indicated that none of the railroad crossings constituted a high accident location nor presented major features contributing to accidents that actually occurred. This may appear as a surprising conclusion when reviewing the field conditions of the railroad crossing underpasses at Osage, Cedar and Park Streets. However, it appears that most of the local residents are very cautious in their approach and usage of these underpasses, thereby minimizing the frequency of accidents occurring.

Several accidents occurring at the Elm Street crossing involved rear-end collisions from motorists stopping for the flashing lights. In one instance the crossing gate actually came down on top of the hood of a motorist who drove too close to the tracks.

All of the crossings have excellent site distance both on the roadway approaching the crossing and at the crossing itself along the rail lines. The only possible exception is the crossing at Ash Street near Irving Street. The roadways at this location however, are unimproved dirt streets receiving little traffic usage. This crossing does not involve high speed trains. No improvements are recommended at this time due to the characteristics of the crossing and the usage of the street.

SUGGESTED CROSSING IMPROVEMENTS

Although the crossings do not exhibit a high frequency of accidents, The Consultant does believe that the improvements listed below are necessary to reduce any potentials for accidents in the future and to improve the overall safety of the rail crossings and underpasses in the City.

Railroad Advance Warning Sign. An advance warning sign appeared at nearly all railroad crossings within the City; however, all of the signs were old and had faded or illegible faces.

Therefore, the Consultant recommends that all existing ADVANCE RAILROAD signs be removed and replaced with new warning signs (W10-1, 36 diameter). Such signs should be placed on the street approaches to the following crossings.

	Crossing Location	Number of Signs
1.	U.S. 34/State 25 (New York Ave.) near Park and Smith	2
2.	New York Avenue near Russell	2
3.	East Adams (Industrial District Spur Line)	2
4.	Howard near Ash	2
5.	Ash near Irving	2
6.	Townline near Cedar	2
	Total	12

Advance signs at the Elm Street Crossing are not recommended due to the proliferation of signs near this crossing for controlling traffic at the intersections with Union Street and Adams Street.

Overall, 12 signs will be required. The estimated cost of the sign, pole, removal of the old sign, and installation of the new sign is $600.00.

Cedar Street Underpass. Figure 7-2 illustrates the recommended improvements for this narrow railroad underpass. All of the improvements involve signing. These improvements are for the following purposes and objectives:

a. Placement of large reflectorized underpass CLEARANCE HEIGHT signs over the entries to the underpass will properly notify motorist of the height restrictions.

b. OBJECT MARKERS placed at the entry edge of the underpass will call attention to the narrowness of the underpass and the location of the wing walls.

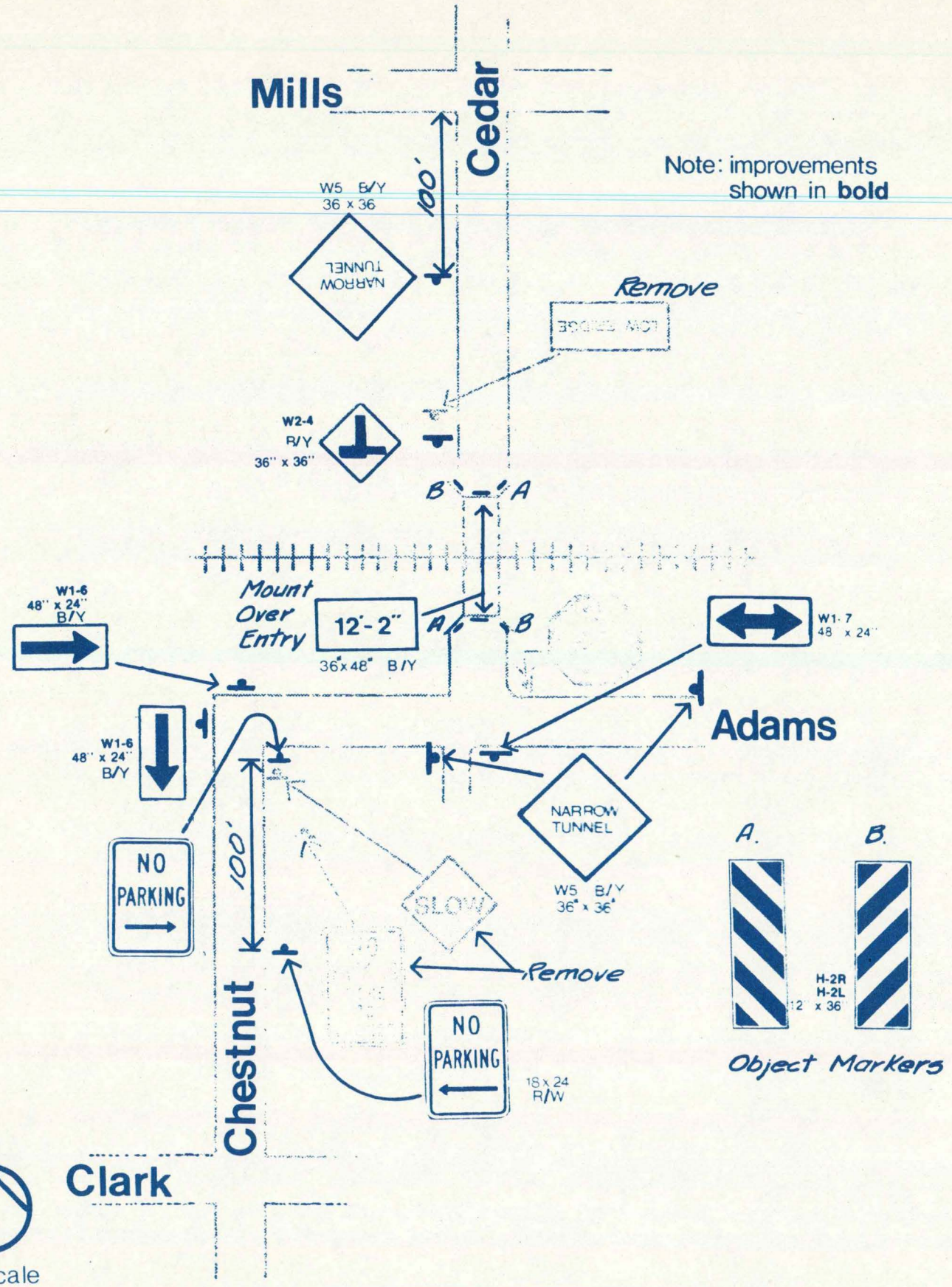
c. Parking should be restricted along the east side of Chestnut for 100 ft. in advance of the intersection with Adams. To improve the site visibility of the 90° turn at this intersection.

d. Large reflectorized black on yellow ARROW signs should be placed at the 90° turn of Chestnut onto Adams. These signs should be placed directly in the line of vision for motorist approaching this turn.

e. Other signs shown will call attention to the narrow tunnel as well as the intersection of Adams at Cedar.

f. Most all existing signs should be removed because of their illegibility, improper usage, or lack of need.

The cost of these improvements is estimated at approximately $1,075.00, inclusive of the signs, poles, removal of old signs, and installation of new signs.


Mills
Cedar
Note: improvements shown in **bold**
W5 B/Y 36 x 36
100'
NARROW TUNNEL
Remove
LOW CLEARANCE
W2-4 B/Y 36" x 36"
B
A
W1-6 48" x 24" B/Y
Mount Over Entry
12'-2"
36"x48" B/Y
A
B
W1-7 48 x 24"
Adams
W1-6 48" x 24" B/Y
NO PARKING
100'
NARROW TUNNEL
W5 B/Y 36" x 36"
SLOW
Remove
NO PARKING
18 x 24 R/W
Chestnut
Clark
A.
B.
H-2R H-2L 12" x 36"
Object Markers
No Scale
Creston, Iowa
CEDAR UNDERPASS
figure 7 - 2

Osage Street Underpass. Figure 7-3 illustrates the signing improvements recommended by the Consultant for the railroad underpass on Osage Street. These sign installations will accomplish the following purposes and objectives:

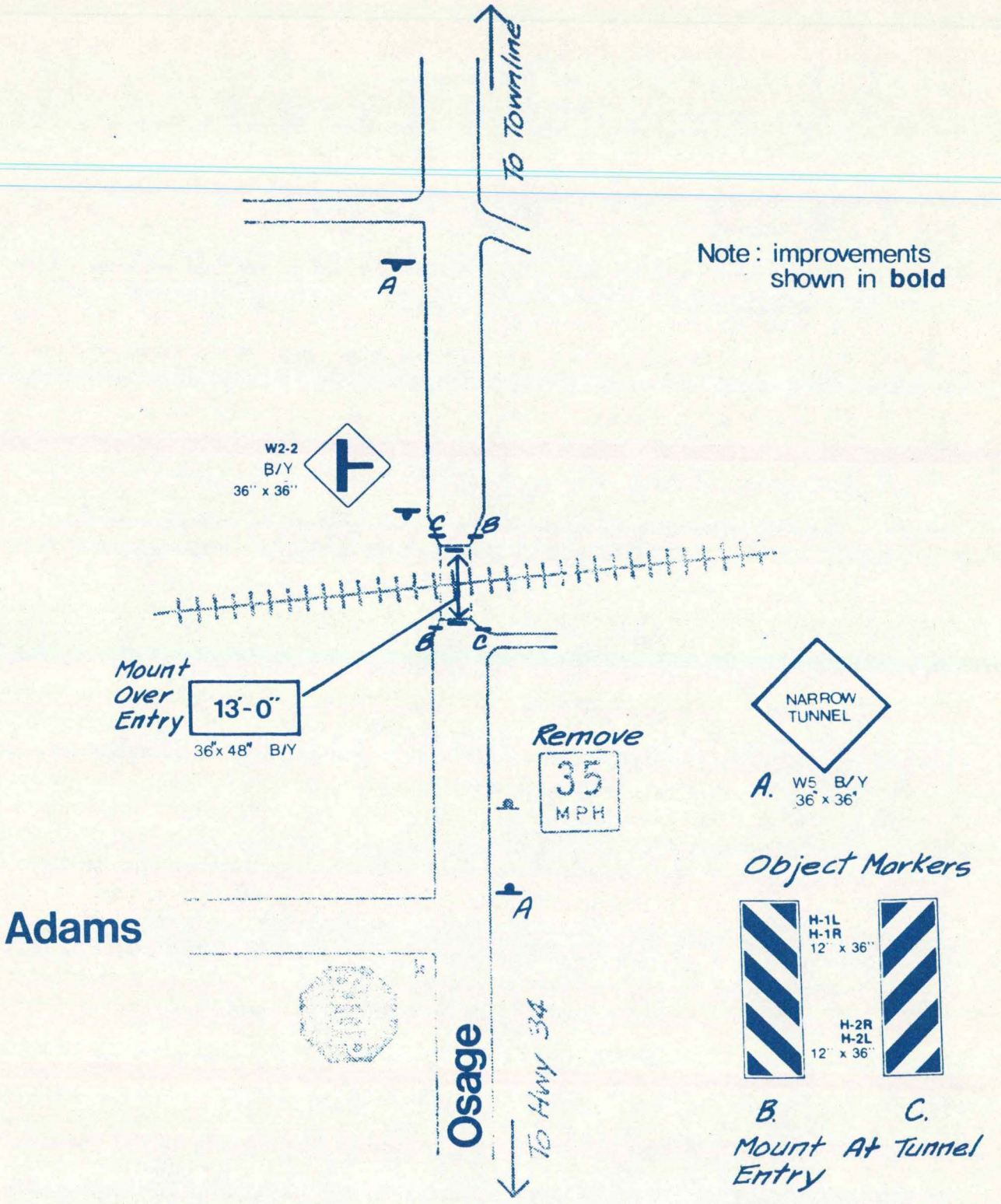
a. The large reflectorized overhead signs placed at the entry to the underpass will clearly identify the clearance height for trucking and other vehicles using the underpass.

b. Placement of the OBJECT MARKERS at the entries to the underpass will call attention to the width of the underpass as well as the locations of the wing walls.

c. The black on yellow speed sign cannot be used to indicate speed limits and therefore, must be removed.

d. The ADVANCE INTERSECTION sign located to the northside of the underpass will call attention to the driveway located immediately on the southside of the underpass.

The estimated cost for installing the recommended signing is $600.00 inclusive of the new signs, sign post, removal of old signs, and installation of new signs. A discussion of the merits for constructing a new overpass or underpass at this location is covered in Chapter 8.



No Scale

Creston, Iowa

OSAGE UNDERPASS

figure
7-3

Park Street Underpass. Figure 7-4 provides an illustration of the recommended improvements at the Park Street Underpass. The improvements recommend the resigning of the underpass, some pavement markings, and the extension of the existing curb of Park Street on the north side of the underpass.

The major objectives and purposes of these improvements are as follows:

a. The placement of a reflectorized overhead sign over each entry to the underpass will more clearly identify the clearance height restrictions.

b. A yellow centerline stripe should be painted through the tunnel and extending 20 feet on the tunnel approaches to clearly define the traveled lanes for two vehicles approaching the tunnel from opposite direction.

c. A three-way intersection should be clearly defined on the north side of the underpass. To do this, the curbing on Park Street should be extended in such a manner as to indicate that Park Street(to the North) curves into an intersection with McKinley-Park Street (to the south). This extension of the curb will more clearly define a three-way intersection and will provide a place of the installation of a STOP sign, which can be seen by vehicles passing through the tunnel north bound.

d. The intersection should have 3-way plates added to the STOP signs at the McKinley and Park intersection.

e. All weeds should be cut at the entries to the underpass.

f. NARROW TUNNEL sign should be added or replaced on the approaches to the underpass, as shown.

g. OBJECT MARKERS should be placed at the edge of the entries to the tunnel to more clearly identify the restricted width of the underpass to the motorist.

h. Two of the STOP signs at the McKinley and Park intersection have been vandalized and need replaced.

i. A new STOP sign should be placed on the dirt road approach on McKinley.

j. With the improvements being made as shown and the addition of the NARROW TUNNEL sign, the OLD DANGEROUS should be removed.

Creston, Iowa	**PARK STREET UNDERPASS**	figure **7-4**

The total cost of the improvements shown in Figure 7 - 4 is estimated at $1,350.00 inclusive of the cost of new signs, removal of old signs, new sign post, placement of the signs and pavement markings, and the extension of the curb at Park Street.

CHAPTER 8

TRUCKS

TRUCK OPERATIONS AND TERMINALS

Figure 8-1 provides a general indication of the locations of those activities associated in varying degrees with trucking in the Creston area. These activities include a wide range from truck servicing and sales, to trucking associated with goods movement at manufacturing locations, to maintenance and service operations associated with governmental activities and utilities, to agricultural activities associates with grain operations, and to commercial operations such as the downtown area and shopping centers.

As may be seen in Figure 8-1, much of the trucking activity is involved in the industrial park located to the east side of the City and to various locations along the Burlington Northern Railroad Line, U.S. Highway 34, and the downtown area.

As previously discussed in Chapter 2, the percentage of trucks in the traffic streams on the major streets in the City of Creston vary between 3% to 10% of the daily traffic volumes. Most of the higher percentages occur on U. S. 34 (6% to 9%) and on State Highway 25 (4% to 6%). Some of the other streets such as Cherry and New York Avenue show low daily traffic volumes but slightly higher percentages of trucks in the traffic stream.

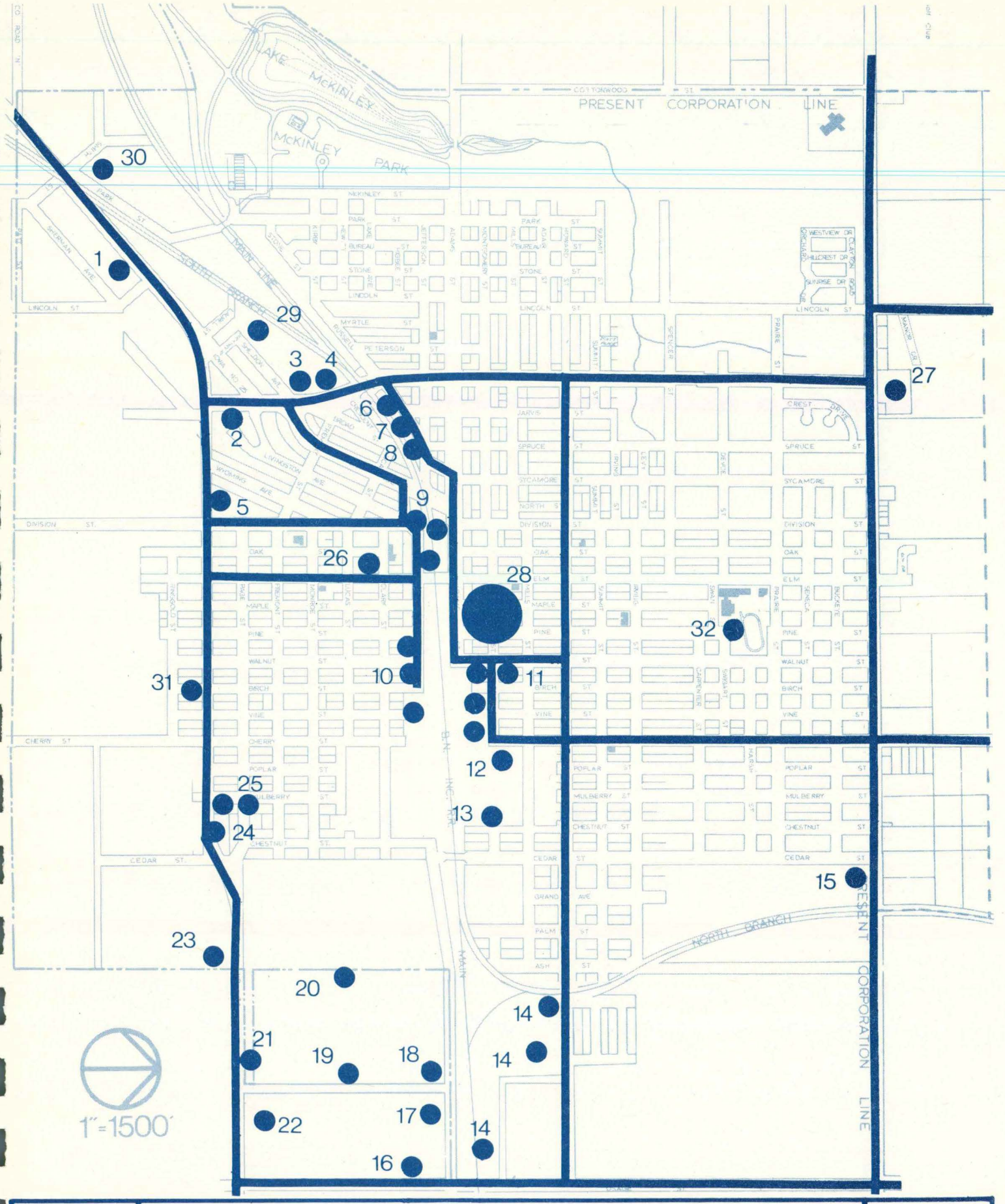
During the harvest season, truck traffic does increase in the Creston area as trucks loaded with beans, grain and other agricultural products travel to the COOP operations. In the past, this has created a heavy demand for truck flows on New York Avenue and Union Street as the various trucks and farm vehicles travel into Creston to the COOP scales on Union Street. With the moving of part of the COOP operations to East Howard Street, the truck demands on New York Avenue will be lessened. Nevertheless, seasonal variations in truck volumes have not created a critical traffic capacity problem for any of the major arterials in the Creston area. Infrequently trucks have been required to wait on Union Street in the past to be weighed on the COOP scales. This should be minimized in the future with the opening of the additional COOP facilities on East Howard Street.

TRUCK ROUTES

At the present time, trucks generally have free movement over most of the street system within the City of Creston. Generally, however, trucks do follow those streets which are identified as being arterials or collectors (Figure 2-2).

TABLE 8-1 TRUCK TERMINAL AREAS

Number in Figure 8-1	Name
1	Truck Stop
2	Mark-Cornick Motors
3	M & M Motors
4	Farm Home
5	Plywood Minn./TSC
6	Boortz
7	Get Plastics
8	Creston Grain & Feed
9	Farmers Coop/Creston Motors
10	United Parcel
11	Vanmark Corp
12	Creston Livestock Auction
13	Smith Concrete
14	Farmers Coop
15	Purolator Corp.
16	Producers Livestock
17	Springfield Plastics
18	County Maintenance
19	Crouse Cartage Co.
20	National Custom
21	Gits
22	Wellman Dynamics
23	Central State Livestock
24	US Army Reserve
25	State Highway Department
26	Post Office
27	Easter's Shopping Center
28	Downtown Creston
29	K-Mart/Hy-Vee Store
30	Creston Bottling
31	Telephone Maintenance Shop
32	School Bus Barn



routes
terminals

Creston, Iowa

TRUCK TERMINAL AREAS AND ROUTES

figure 8-1

Trucks traveling through the City generally stay on U.S. 34 or on Iowa State Highway 25. Consequently, those trucks deviating to other streets in the City area are most usually seeking one of the truck terminal areas identified in Figure 8-1.

The Consultant has identified in Figure 8-1 those roadways which should serve as the truck routes through Creston. The roadways shown are all presently being used for truck traffic.

After much deliberation and analysis, the Consultant concludes that it is not necessary for the City to adopt the roadways shown in Figure 8-1 as official truck routes at this point in time as the truck flow does not appear to be of any major problem. In addition, the Consultant does not feel it is economically justified for Creston to expend monies on signing of truck routes and the resultant enforcement that would be necessary for such a truck route system.

For Creston, the Consultant believes that it would be more logical and cost effective to prohibit trucks through signing on those streets which actually exhibit a truck traffic problem as identified by the City Engineer, Police Chief, or a particular neighborhood area. Any residential street experiencing such a truck problem can then be restricted through an action of the City Council to prohibit the usage of commercial trucks on that street. This approach will allow less local monies to be used on signing and enforcement with such signing and enforcement efforts being concentrated at the source of the problem.

An additional effort which can be made through the Police Department is to identify those truck operators who may be using a residential street. Contacts can then be made to the truck operator requesting that his drivers seek an alternative path. This type of contact should be made prior to the step above for formally signing the street for no trucks.

SPECIAL CONSIDERATIONS

The results of the Consultant's analyses of the railroad underpasses produced the recommended revisions found in Chapter 7. These revisions will facilitate truck movements at the railroad underpasses by properly identifying the clearance heights and properly giving advanced warning as to the location of the underpasses themselves.

In discussions with the management of the Farmers COOP and with City officials, interest was expressed in making improvements to the railroad underpass on Osage Street, as well as the eventual hard surfacing of this roadway. Although past accident records exhibit no accident problems along this roadway or at the underpass, the Consultant believes that the increased automobile and truck traffic generated by the industrial land uses to the north and south of the Burlington Northern

will place sufficient volume demands on Osage to require its eventual paving. Although the paving of Osage does not constitute a viable safety improvement in its entirety, the Consultant certainly encourages the City and the County to proceed with the programming of this roadway for surfacing.

A notation should be made, however, that the paving of Osage will add to the potential for accidents at the railroad underpass with the Burlington Northern. This potential is mainly based upon the increased travel speed along Osage in relation to the grades of the roadway as it approaches the underpass and the width of the underpass itself.

With this in mind, the City and County may wish to program improvements to the underpass in conjunction with the repaving of Osage. This could involve two alternative concepts - the construction of a new underpass or the construction of an at-grade railroad crossing. An at-grade crossing would require gates and lights to provide the maximum degree of safety with the railroad.

The Consultant suggests that the City and County study the improvement of Osage further, as well as the modifications to the railroad crossing itself. Since the paving of Osage and the reconstruction of the crossing are beyond the scope of this safety project, the Consultant has not attempted to develop a cost estimate for this improvement.

CHAPTER 9

SPECIAL GUIDELINES AND STANDARDS

The purposes of this chapter are to mainly provide a general discussion of those procedures, guidelines, and standards which the City should be cognizant of when dealing with traffic engineering controls and general public safety.

SIGN PLACEMENT STANDARDS

In previous sections of this report, discussion was given to the proper placement of traffic control signs with respect to their setbacks from the edge of the roadway and to their proper mounting height above the roadway surface. The MUTCD contains specific directions on the proper placement of signs to insure their visibility by the motoring public. The City Engineer should refer to the MUTCD for the proper instructions on the installation of signing. As a supplement to the MUTCD, this report contains a Sign Placement Chart in the Appendix which can also be followed by the City Engineer and his staff in placing signs.

As previously indicated, the City at the present time is generally installing signs at the proper mounting height and proper setback from the roadway. There were, however, major discrepancies in the proper sign placement for some signs in the downtown area and generally for the old NO PARKING signs found on the major arterial streets in the older sections of the City. Since the Consultant has recommended the city-wide replacement of the NO PARKING signs, the problem of improper mountings and sign placement for these particular signs will be corrected through this type of a program. A similar situation exists with the recommended improvements specified for the downtown area wherein the implementation of the suggested signing changes will also correct the irregularities in the sign placements.

INTERSECTION NO PARKING REGULATIONS

It is a good practice to follow the general standards for restricting curb parking within 30 feet of the crosswalk or stop sign on the approach to an intersection. Similarly, curb parking should be restricted for a length of 20 feet along the traffic lanes leaving the intersection.

Overall, these standards are not presently being followed in the City of Creston. This presents considerable safety problems in the downtown area and around schools.

Many of the recommendations presented by the Consultant for the downtown area and for schools will, if followed, introduce proper curb no parking restrictions at intersections and crosswalks. The City is advised to follow these recommendations to restrict curb parking at the intersections and thereby improve safety to the motoring public and to pedestrians.

The primary reason for implementing these types of intersection parking regulations is to improve the visibility by the motorist of intersection traffic controls and pedestrians at these intersections. In addition, the no parking regulations assist in preventing vehicles from backing into an intersection when attempting to enter or leave a parking stall.

INTERSECTION SIGHT DISTANCE STANDARDS

The Appendix contains a sketch drawing from the City of Omaha regarding their Intersection Visibility Ordinance for maintaining proper sight distances at intersections. The Consultant suggests that the City of Creston follow the general guidelines contained in this sketch drawing for insuring that proper safety provisions through adequate sight distance are available at city intersections.

The City Engineer can follow the standards shown in the Appendix sketch drawing at locations where sight distance restrictions are contributing to the accident frequency or accident potential.

TRIMMING OF TREES

As previously noted, the Consultant had found many locations particularly in the older parts of the City where lower tree limbs were obstructing traffic signs or the sight distance at intersections. In several locations, it was apparent from the accident statistics that the lower tree limbs were the contributing causes.

Overall, the Consultant suggests that the City Engineer adopt a program of annually inspecting the visibility at intersections along major arterial streets. Where required, the lower tree limbs should then be pruned at those locations where they are obstructing traffic control devices or the motorist line of sight.

PLACEMENT OF NEW SIGNS

The City should install bright red warning flags at the top of any new sign placements for a period of 30 days following the installation. This is in order to call special attention to the traffic engineering changes. In the majority of cases the red flags will gain the attention of the motorist and direct it toward the new or changed traffic control signing. The main intention is to avoid a surprise situation for the motorist which could possibly contribute to an accident because the motorist did not perceive the new or changed traffic sign.

ORDINANCES AND LEGISLATION

At the present time, the Consultant does not see any major problems with implementing traffic engineering safety improvements through the existing Creston City Ordinances. In discussions with the City Attorney, the City is able to handle sight distance problems caused by obstructions on private property through the City's Nuisance Ordinance.

The City may wish, however, through its City Attorney to further review its ordinances as it begins to initiate the improvements outlined in this report. The City Attorney is the proper authority to advise the City if any conflicts in fact do exist between what is permissible under the various ordinances as related to the improvements contained in this report.

CHAPTER 10

SPECIAL IMPROVEMENTS

The contents of this chapter provides some special discussion on the recommended improvements for those locations which were not covered in the previous chapters.

ELM AT UNION

In Chapter 3 a discussion was held regarding the accident frequency at this particular intersection. That discussion also contained some specific recommendations as to what minor improvements in signing and sight distance should be made at this intersection in order to decrease the number of angular accidents.

Rather than show the improvements on a sketch diagram, the needed improvements can be more easily discussed in paragraph form for this particular location.

On the southwest corner of the intersection at Elm and Union is a small commercial business which apparently from time to time places a small portable advertising sign at the corner of the intersection. This sign definitely attracts the attention of the motorist regarding the "Special of the Day"; however, it also blocks the sight distance for vehicles stopped on Union (west leg of the intersection). Therefore, the Consultant recommends that the City Engineer and/or the Police Chief contact the owner or manager of the commercial business and discuss the conflicts between his advertising sign and the sight distance problem at the intersection. Perhaps other provisions can be made for locating the portable advertising sign in such a manner that it is not placed upon the public street right-of-way and does not block the motorist's sight distance when looking southward on Elm Street.

At the present time, parking is permitted along a specially paved shoulder area on the east side of Elm extending southward from Union. Vehicles parked in this shoulder area definitely restrict the sight distance for those motorists stopped on Union (east leg of the intersection). It is suggested that NO PARKING signs be installed for a distance extending from Union Street south to the alley along the east side of Elm. This will improve the sight distance of motorists wishing to make turns from Elm Street, thereby hopefully reducing the number of right angle intersections occurring at the junction of Elm and Union.

UNION AT DIVISION/LIVINGSTON

As shown in the sketch in Figure 10-1, this unusual intersection is located adjacent to the Farmers COOP in the central area of Creston. Oddly this intersection has no accident history or pattern. Apparently this is due to the motorist exercising considerable caution in utilizing this intersection.

In addition, the intersection presently has no signing and no intersection controls. The intersection was widened in the 1950's to accommodate truck movements onto the COOP scales.

After analysing the intersection very closely, the Consultant suggests that only minor revisions be made to the controls at this intersection. These improvements are:

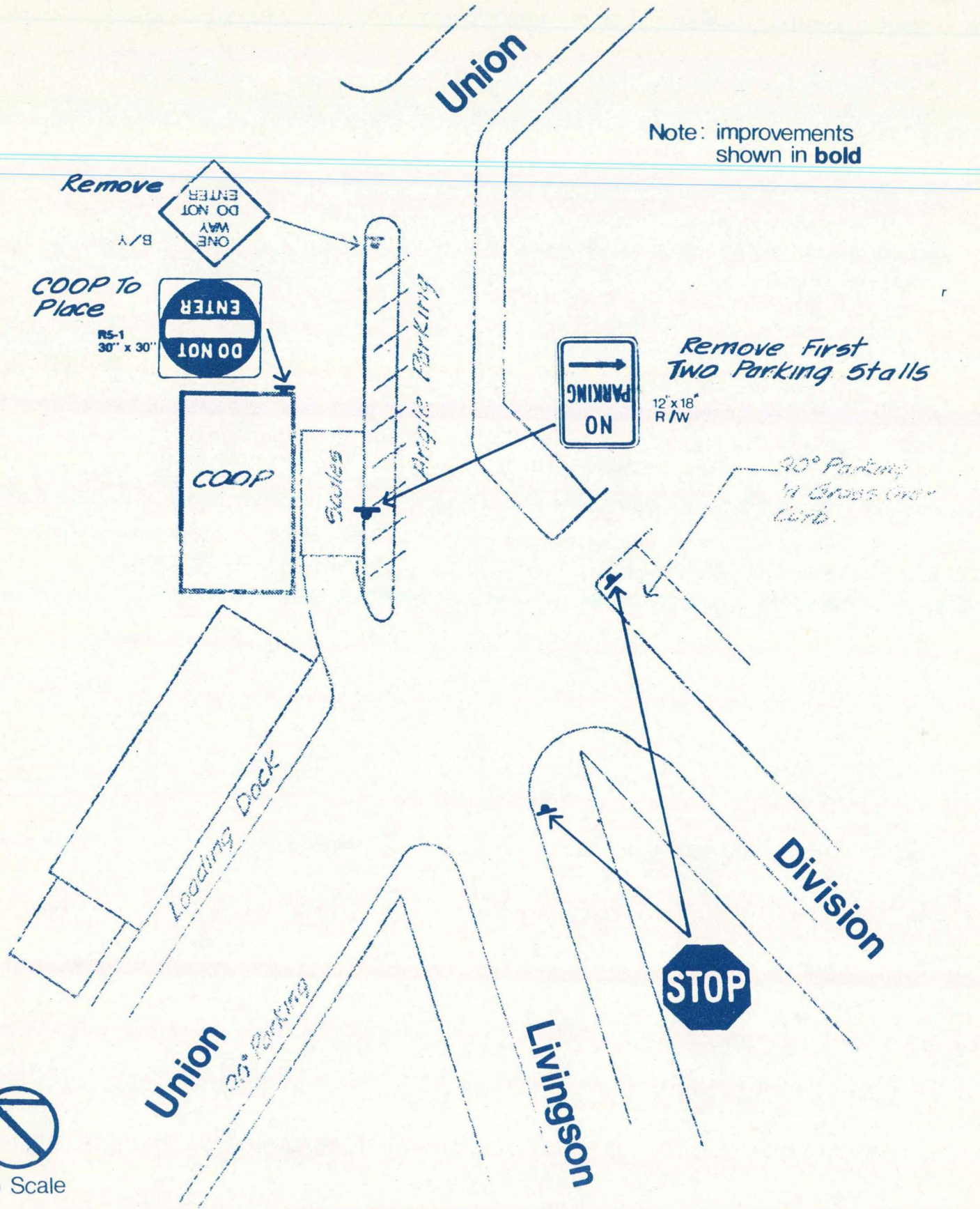
a. Remove the non-conforming black on yellow ONE-WAY DO NOT ENTER sign located in the public right-of-way on a utility pole to the northeast of the entry to the COOP scales. The COOP should place a new DO NOT ENTER (R5-1) somewhere on its property and closer to the exit drive from the scales. These signs should not be placed on or near the right-of-way of Union Street in order to prevent any misunderstanding from the motorist using Union.

b. The first two stalls of the angle parking in front of the COOP should be removed in order to improve the sight distance on Union Street.

c. For clarity on the right-of-way, it is suggested that STOP signs be placed on the approaches to the intersection on Livingston and Division Streets.

The usage of other signs and pavement markings were considered to call special attention to the curve in Union Street and the uncontrolled intersection. However, it was deemed that such controls were not necessary at this point in time due to the lack of accident occurrence.

The estimated cost of the sign placements is $75.00.



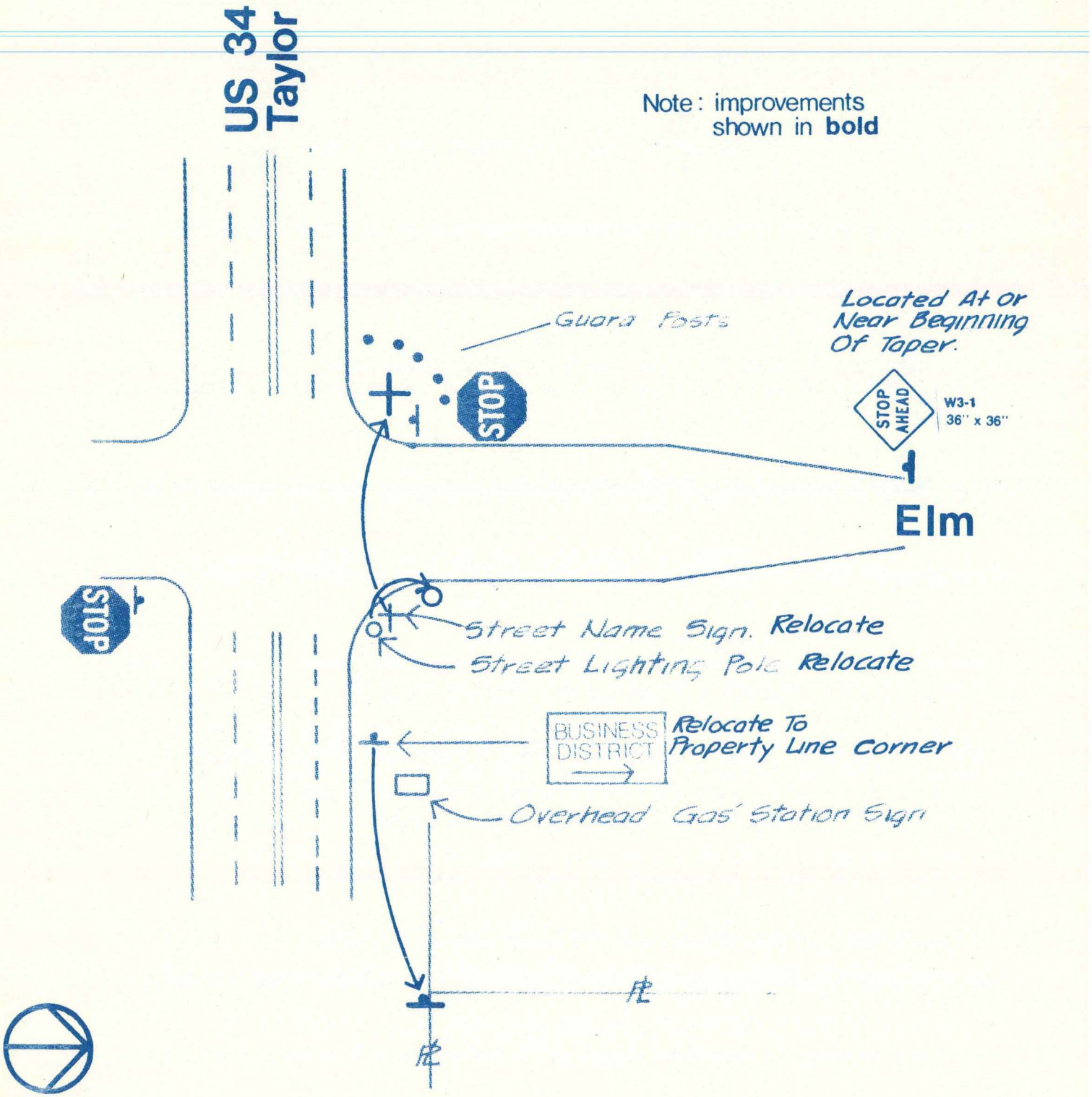
Creston, Iowa	UNION & DIVISION / LIVINGSON	figure 10-1

ELM AT TAYLOR (U.S. 34)

Previously discussed in Chapter 3 was the serious number of accidents occurring at this major street intersection. A study of the accident collision diagrams in the Appendix showed a considerable number of right angle collisions as well as rear end collisions at the STOP sign on Elm.

As indicated, the occurrence of the accidents apparently was caused by the line of sight of the motorist stopped on Elm and looking eastward onto Taylor being restricted by the street name sign pole, a street light telephone pole, a BUSINESS DISTRICT sign, and a gas station pole for an overhead advertising sign.

In order to alleviate the problem, the Consultant is recommending the relocation of three of the obstacles blocking the sight distance. These recommendations are shown in Figure 10-2. In addition, the Consultant is recommending the placement of a STOP AHEAD sign (W3-1) on Elm Street in advance of the STOP sign at the intersection with Taylor. The estimated cost of the improvements shown in Figure 10-2 is $650.00.



Creston, Iowa

ELM at TAYLOR

figure 10-2

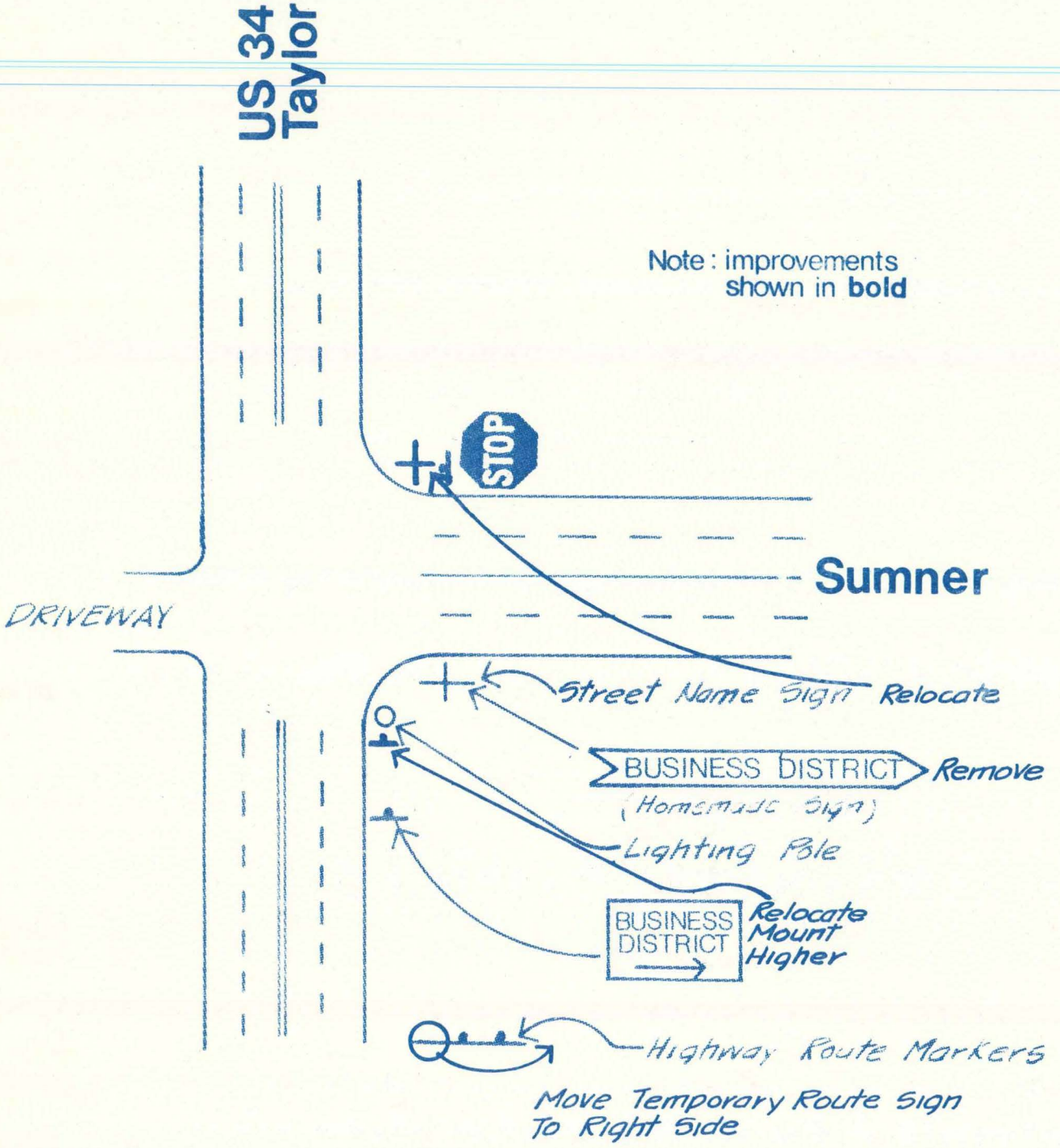
SUMNER AT TAYLOR

Although there is no apparent accident problem at this intersection, field observations indicated some minor similarities between the restrictions in the sight distance at this location with that previously discussed for the intersection of Elm at Taylor. That is, traffic waiting on Sumner and looking eastward onto Taylor has the line of sight of the motorist somewhat obstructed by a street name sign post which also contains a homemade BUSINESS DISTRICT sign, a street light pole, a BUSINESS DISTRICT sign, and a cluster of HIGHWAY ROUTE MARKER signs.

In order to prevent the same accident pattern at Elm and Taylor from occurring at Sumner and Taylor, the Consultant recommends the signing changes shown in Figure 10-3.

Part of the problem with the HIGHWAY ROUTE MARKER signs is the temporary detour ROUTE MARKER signs which have been added on the south side of the sign cluster. These naturally would be removed when the detour is no longer in use; however, in the meantime, it would be advisable to shift the temporary detour markers to the north side of the sign cluster.

The estimated cost of the sign modifications in Figure 10-3 is $125.00.



No Scale

Creston, Iowa	**SUMNER at TAYLOR**	figure **10-3**

EASTER'S PARKING LOT

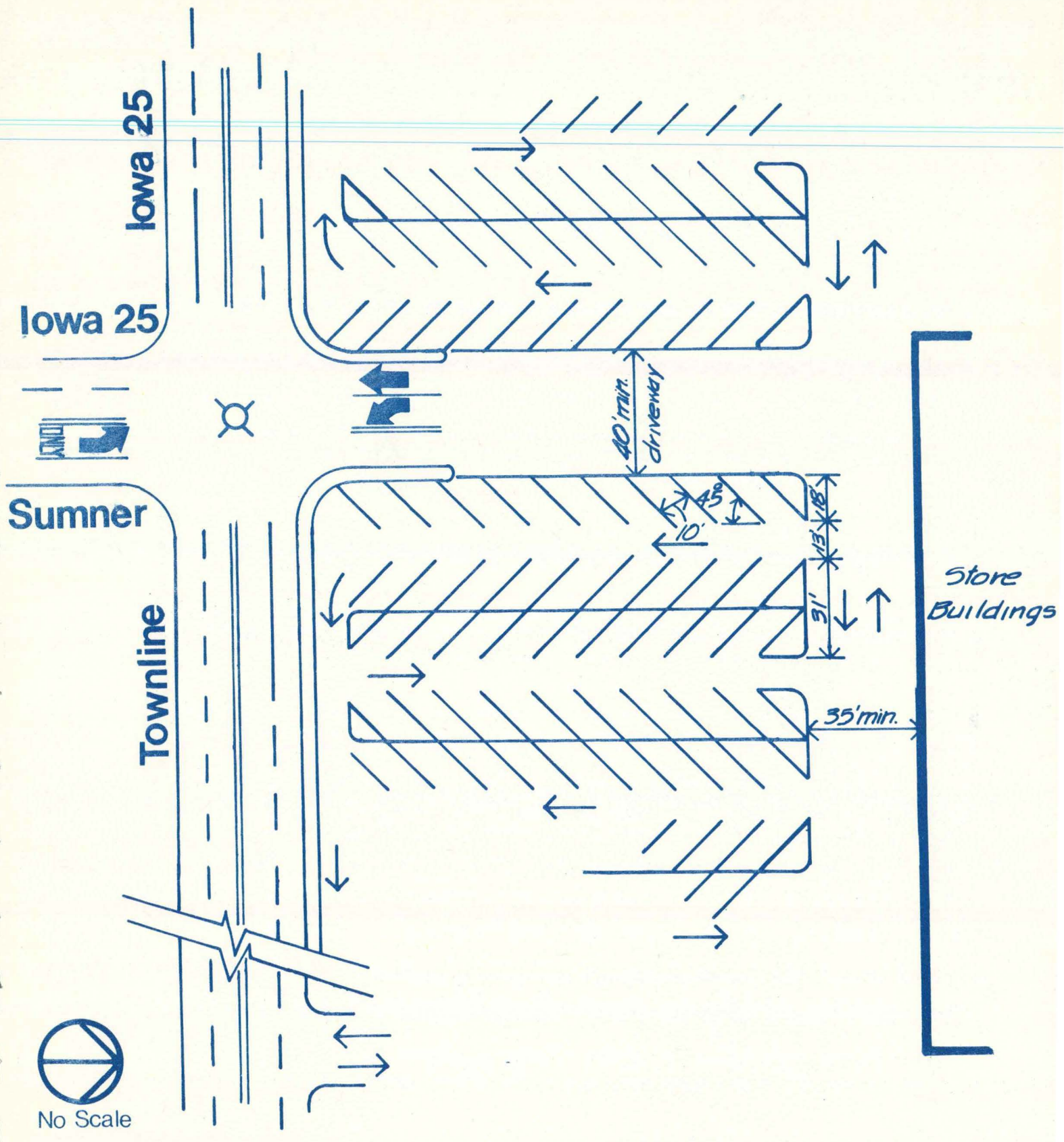
As previously discussed in Chapter 3, a large number of accidents were recorded in the Police Department files as occurring in the parking lot at the Easter's Shopping Center. Nearly all of these accidents involved parking or parked vehicles. Although these accidents are on private property, they do constitute a high enough number to be of concern to the City.

Field observations indicate that the accidents are those types normally attributed to angle parking. In addition, the mixing of traffic flows (entering and exiting vehicles) with parkers could be increasing the potentials for accidents.

Presently, the entry drive to Easter's has been reconstructed in conjunction with the redesign of State Highway 25. This new drive will be signalized and has some channelization. From the Consultant's observations, however, the parking lot at Easter's should be totally redone to reduce accidents, improve traffic flow and conform with the reconstructed entry. If the existing aisles and stalls now situated in the parking lot are retained, then the Consultant believes that vehicular congestion between parked vehicles and vehicles wishing to enter the parking lot will cause enough congestion to cause this congestion to carry out into the intersection of Sumner and Townline. Not only could accidents increase within the parking lot but also they may increase within the new intersection of Sumner and Townline.

Therefore, the Consultant has sketched a parking lot concept (Figure 10-4) which should promote uniform traffic flow on the shopping center site, provide adequate parking, and prevent accidents and congestion from carrying over from the shopping center into the intersection at Sumner and Townline.

The Consultant emphasizes that the sketch shown in Figure 10-4 is only a concept intended to establish a general location for the driveways and the aisle configurations for the angle parking. Final decisions on what to implement in the parking lot to maximize the number of parking stalls will, of course, rest with the management of Easter's Shopping Center.



Creston, Iowa

signal

EASTER'S PARKING LOT CONCEPT

figure 10-4

CHAPTER 11

IMPLEMENTATION PROGRAM

The preceding chapters of this report have dealt with the existing traffic operations and safety on city streets and with the formulation of recommended improvements and modifications for the betterment of public safety and a reduction in accidents. However, these recommendations require implementation in order to effectively improve safety, and in turn, implementation requires the scheduling and funding of the recommended improvements.

With this in mind, the contents of this chapter will summarize the potential funding sources for the City of Creston and will summarize the recommended improvements by their priority for implementation.

FUNDING SOURCES

Although there are various programs available for funding the improvements contained within this report, the Consultant believe that the greatest potential for such funding for Creston is in the following:

Funding Classification	Funding Ratio Federal-City
Federal-Aid Urban System (On System)	70% - 30%
Safer Roads Demonstration (Off System)	90% - 10%
Local	0% -100%

The Federal-Aid Urban System refers to the administrative street classification previously shown in Figure 2-3. Under the Federal-Aid Highway Act of 1976 the Iowa Department of Transportation has allocated $188,344 to the City of Creston for use over the time period from 1976 through 1978. These moneys constitute the 70% Federal share to which the City must match on a 30% share. That is if the City wishes to use all of the $188,344, then the City must match

the Federal share with $80,718.85. Therefore, the resultant total dollar amount (Federal and local moneys combined) available for projects on the Federal-Aid Urban System (FAUS) equals $269,062.85.

The Safer Roads Demonstration funds are available for use on those streets and roadways which are not on the FAUS. A specific allocation to Creston has not yet been made for those moneys available under the 1976 Act. For the moneys available under the 1973 Act, Creston's allocation was $4,547 which constituted the 90% Federal share.

Local moneys come from a variety of sources including the road use tax, property taxes, special assessments, and other related sources. A breakdown of the receipts and expenditures for both the street program and the parking program in Creston are shown respectively in Tables 11-1 and 11-2. These summary reports indicated that at the close of the fiscal year in June, 1976 the City had monetary balances of $284,382 in the street accounts and $16,281 in the parking account. It is recognized that these balances are somewhat committed in the street and parking budgets established for the next fiscal year. However, Creston appears to have considerable flexibility in rebudgeting its street and parking receipts in order to easily produce the local matching moneys for applying for the available Federal funds under the FAUS Program and the Safer Roads Demonstration Program.

Several additional points should be made regarding the funding sources and their application to the Creston street system.

Although Creston is allocated a certain amount of Federal moneys, there are potentially additional funds available in either of the FAUS or the Safer Roads Program. These extra moneys potentially become available when other cities fail to use their Federal aid allotments. Therefore, these unused funds are assembled by IDOT and can be made available to those cities such as Creston, who wish to apply.

The contents of this report will assist both the City and IDOT in identifying both the individual and the total highway safety type improvements for Creston. Thus, when making application for the Federal moneys, portions of this report (justifications, recommended improvements, cost estimates, etc.) can be attached as part of the application. Applications can also be made for individual projects or collectively for several projects.

TABLE 11-1
STREET FINANCE REPORT

Municipality Creston
County Union
Official Census Figure 8324

	Road Use Tax Fund	Street Account	From Other Accounts*	Totals
A. Actual Balance, July 1, 1975	$ 87,778	$-15,947	$139,995	$211,826
ACTUAL RECEIPTS				
B. 1. Road Use Tax	152,830			152,830
2. Property Taxes			130,556	130,556
3. Special Assessments			89,264	89,264
4. Miscellaneous		196,262		196,262
C. Total Receipts (Lines B1-B4)	152,830	196,262	219,820	568,912
D. TOTAL FUNDS AVAILABLE (Line A + Line C)	$240,608	$180,315	$359,815	$780,738
ACTUAL EXPENDITURES				
E. Maintenance				
1. Roadway Maintenance	32,200	93,102		125,302
2. Snow and Ice Removal	1,953	256		2,209
3. Storm Sewers	5,000	5,000		10,000
4. Traffic Services				
5. Street Cleaning	2,500	5,000		7,500
F. Construction or Reconstruction				
1. Engineering	8,000	7,000		15,000
2. Right of Way Purchased	32,408			32,408
3. Roadway Construction	15,199			15,199
4. Storm Sewers	7,384	2,750		10,134
5. Traffic Services		928		928
G. Administration				
H. Street Lighting		484	29,572	30,056
I. Trees		4,167		4,178
J. Equipment Purchased		10,828		10,828
K. Miscellaneous		50,789		50,789
L. Bonds and Interest Paid				
1. Paid on Bonds Retired			121,000	121,000
2. Interest Paid on Bonds			60,825	60,825
M. Non-Street Purposes				
N. Total Expenditures (Lines E thru M)	$104,644	$180,315	$211,397	$496,356
O. BALANCE, June 30, 1976	$135,964		$148,418	$284,382
P. TOTAL FUNDS ACCOUNT FORWARD (Line N + Line O)	$240,608	$180,315	$359,815	$780,738

*Debt Service, General, Sanitation, Public Safety, Utility, etc. Includes the balances for accounts which are used entirely for streets.

TABLE 11-2

PARKING FINANCE REPORT

Municipality Creston

A.	ACTUAL BALANCE July 1, 1975	$13,430
	ACTUAL RECEIPTS	
B.	Parking and Meter Receipts	
	1. Street Meter Revenue	14,264
	2. Lot or Garage Meter Revenue	6,449
	3. Other Lot or Garage Revenue (Rentals)	
	4. Property Taxes	
	5. Miscellaneous (Fines; Damaged Meters)	7,219
C.	Proceeds of Parking Bonds Sold	
D.	Total Receipts (lines B1-B5 and line C)	27,962
E.	TOTAL PARKING FUNDS AVAILABLE (lines A and D)	$41,392
	ACTUAL EXPENDITURES	
F.	For On and Off Street Parking	
	1. Acquisition and Installation of Meters	
	2. Maintenance and Repair of Meters	2,747
	3. Acquisition and Improvement of Parking	
	4. Maintenance and Operation for Parking	
	5. Policing and Enforcement	15,358
	Total (lines F1-F5)	
G.	Parking Bonds and Interest Paid	
	1. Paid on Bonds Retired	5,000
	2. Interest Paid	1,806
H.	Street Work Paid from Parking	
I.	Total Expenditures (lines F1-F5, G1-G2, and line H)	$25,111
J.	ACTUAL BALANCE June 30, 1976	$16,281
K.	TOTAL PARKING FUNDS ACCOUNTED FOR (lines I and J)	$41,392

IMPLEMENTATION OF IMPROVEMENTS

The Consultant has summarized all of the project improvements contained in this report into three classifications - immediate action projects, short-term projects, and long-term projects. These projects along with their assigned priority are shown respectively in Tables 11-3 through 11-5.

As shown in Table 11-3, the immediate action projects mainly involve routine signing modifications or administrative modifications. Because of the low amount of the costs to make these improvements, the Consultant believes that all of the immediate action projects can be handled locally as part of the regular street budget. The Consultant does not believe it is advantageous to the City to expend the time to apply for any Federal moneys to assist in these types of projects.

As indicated, two of the projects (priority items 3 and 4) are to be accomplished by other governmental units or private industry.

The Consultant has assigned a priority to each of the immediate action projects in Table 11-3. The City, at its own discretion, may wish to adjust the priorities or to group several improvements together into one project. This is certainly acceptable to the Consultant.

On a time basis, the Consultant believes that the immediate action projects should be completed as soon as possible within the next 3 to 6 months following the acceptance of this report.

The short-term projects shown in Table 11-4 relate to special improvements for schools, special spot locations, local bridges, and city-wide signing improvements. These improvements should be scheduled for implementation over the next 1 to 5 years.

The total estimated cost of the short-term projects is $56,315, excluding the special assessment cost for sidewalk replacements. Half of this amount could come through an application by the City for moneys from the FAUS or the Safer Roads Programs.

The City may, at its own discretion, follow the Consultant's advice on the priority listing or the City may combine several of the projects into larger projects. This may be advisable when applying for the FAUS funds to place all of those projects into one large project. The same is true for applications for the Safer Roads moneys.

The STREET NAME and NO PARKING sign replacement programs could easily be phased into the normal street budget for a number of years. The time frame can be the 5-year period indicated in Table 11-2 or another time duration acceptable to the City.

TABLE 11-3

IMMEDIATE ACTION PROJECTS

Priority	Recommendation	Page	Estimated Cost	Funding Type	Federal	City
1	STOP FOR PEDESTRIANS IN CROSSWALK Signs	4-19	$ 100	Local		$ 100
2	School Signal Signing	6-13	2,900	Local		2,900
3	Safe Route to School Plan	6-7	--	Schools		
4	Easter's Parking Lot	10-8	--	Easter's		
5	Retime Downtown Signals	5-12	100	Local		100
6	Accident Record System	3-11	--	Local		
7	STOP and YIELD Sign Changes	4-4	2,490	Local		2,490
8	City-Wide SPEED LIMIT Signs	4-15	1,000	Local		1,000
9	DEAD END Signs	4-19	150	Local		150
	TOTAL		$6,790		$ 0	$6,740

TABLE 11-4

SHORT-TERM PROJECTS

Priority	Recommendations	Page	Estimated Cost	Funding Type	Federal	City
1	All Schools (See Table 11-6)	6-19	$12,760	$7,180 FAUS	$ 5,026	$ 2,154
				$5,580 Safer Roads	5,022	558
1	Special School Crossings	6-35	10,280	FAUS	7,196	3,084
2	Special Spot Improvements	10-1	850	FAUS	595	255
2	Railroad Crossings	7-1	3,625	FAUS	2,537.50	1,087.50
3	Bridges-Painting and Installing of OBJECT MARKERS	4-20	8,800	Safer Roads	7,920	880
4	Sidewalk Replacement	6-8		Special Assessment		
5	STREET NAME Sign Replacement	4-21	2,000/ Year for 5 years	Local		2,000/year for 5 years
6	NO PARKING Sign Replacement	4-22	2,000/ Year for 5 years	Local		2,000/year for 5 years
	TOTAL		$56,315		$28,296.50	$28,018.50

1) Excludes immediate action sign additions shown in Figure 6-2.

TABLE 11-5

LONG-TERM PROJECTS

Priority	Recommendation	Page	Estimated Cost	Funding Type	Funding Federal	Funding City
1	Downtown Signing and Signals - Street and Alley Intersection Improvements	5-16	$127,560	FAUS	$ 89,292	$ 38,268
2	School Signal Installation Modifications	6-15	64,400	FAUS	45,080	19,320
	TOTAL		$191,960		$134,372	$ 57,588

With regard to the school improvements, the Consultant has broken the estimated cost into the amounts which are eligible only under the FAUS program and under the Safer Roads Program. The breakdown of the school improvement cost by these two Federal Aid programs are shown in Table 11-6.

Table 11-5 shows the long-term projects for the City. Basically, the Consultant has grouped all of the downtown signing and signalization improvements into one project for which the City can make the necessary applications.

The second major project in Table 11-5 deals with the school signal modifications suggested by the Consultant previously in Figure 6-3. The implementation of this particular project has been left in the hands of the City policy makers to determine if they wish to undertake measures to modify the existing school signal installation. Here again, the City could apply for FAUS funds.

Although these projects are identified as being long-term, the Consultant would suggest that the City take the necessary steps to implement the downtown improvements within the next two years. The only reason these projects were separated out into Table 11-5 is because of the largeness of the dollar amount to complete them. If the City wishes, they may group the FAUS downtown improvement project shown in Table 11-5 with the other FAUS projects shown in Table 11-4. Such aggregation of projects will depend upon the time frame within which the City wishes to complete the work and the amount of local matching funds which the City can set aside within its budget.

Overall, the guidelines contained in this section provide the City with sufficient flexibility to approach its traffic engineering improvements on an individual or collective basis. Successful completion of the improvements in this document will enable the City to reduce accidents now occurring, prevent future accidents from occurring, and improve the overall safety and traffic flow within the City of Creston.

TABLE 11-6

SCHOOL IMPROVEMENT COSTS BY FEDERAL FUNDING

School	Cost Estimate[1] On-System	Off-System
Creston High	$ 130	$ -
Junior High/Irving Elem.	5,775	800
Franklin	-	1,750
Lincoln	580	1,465
Jefferson	695	400
St. Malachy	-	1,165
TOTALS	$7,180	$5,580

1) Excludes immediate action sign addition shown in Figure 6-2.

APPENDIX

LIST OF CONTACTS

1. City Engineering - Art Becker, City Engineer
2. City Clerk - Frances Pashek, City Clerk; Mildred McKee
3. Police Department - Robert Kessler, Chief; Carol Barton
4. City Attorney - Paul Boysen, Jr.
5. State Patrol - Richard Aringdale
6. Chuck Eldridge, Former City-County Planner
7. Iowa Department of Transportation - Bruce Claggett, District Office; Robert Andresen, Safety Studies Coordinator; Robert Studer, Traffic Surveys; Lowell Richardson, Urban Systems Engineer
8. Southern Iowa Council of Governments - Al Murdock; Ted Hauser
9. Chamber of Commerce - Gene Smith
10. Pete Deyer
11. Creston Schools - Gene Smith, Board Member
12. MER Engineering - Merle Essing
13. Mid-State Engineering - Lynn Sickles
14. Community Resource Development Program - Vickie Fugate
15. Creston Catholic Community School - Sister Mary Jane Card
16. Creston Schools - Jody Keith; Gene Smith, Board Member
17. Creston High School - Ron Levin, Principal, and Jim Clark, Ass't. Principal
18. Creston Junior High School - Russell Hobbs, Principal
19. Lincoln School - Mrs. Opal Gordon, Principal
20. Franklin School - Mrs. Opal Gordon, Principal
21. Irving School - Jack Braby, Principal
22. Jefferson School - Jack Braby, Principal
23. Kenkinnon Electric - LeRoy Kenkinnon
24. Farmers COOP - Larry Crosser
25. Creston Fire Department - Melford Johnson, Acting Ass't. Chief
26. Burlington North - Joe Jones, Trainmaster

TYPICAL SIGNS

PAVEMENT WIDTH TRANSITION SIGN

CROSSROAD SIGN

SIGNAL AHEAD SIGN

SCHOOL ADVANCE SIGN

SCHOOL CROSSING SIGN

RIGHT LANE ENDS SIGN

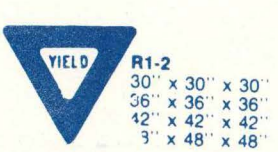
SCHOOL SPEED LIMIT SIGN ASSEMBLY

RAILROAD ADVANCE SIGN

OBJECT MARKER SIGN

DO NOT ENTER SIGN

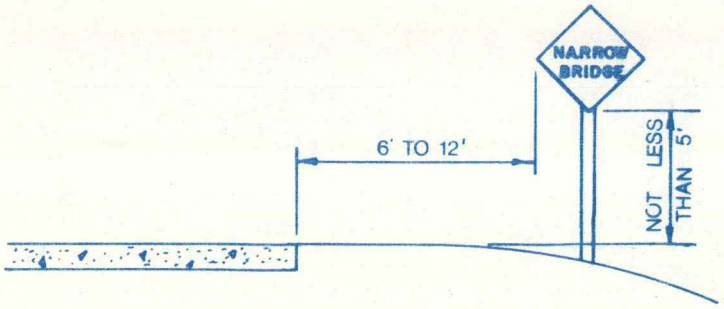
STOP SIGN



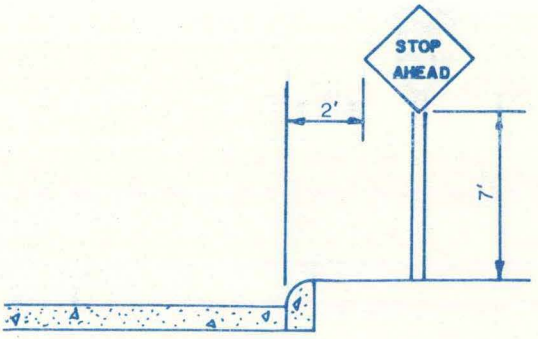
YIELD SIGN

NO RIGHT TURN SIGN

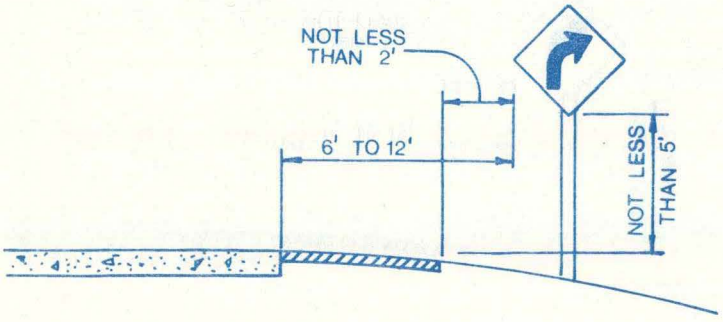
SIGN PLACEMENT



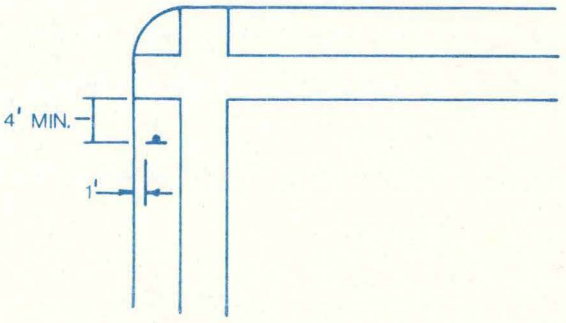
rural section



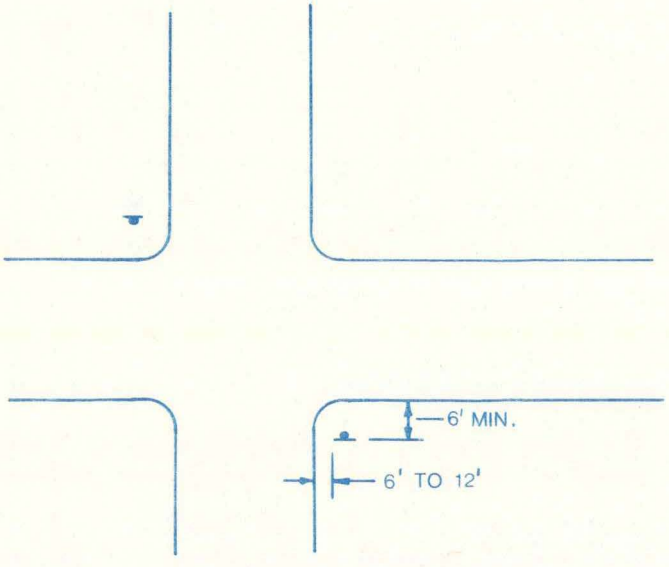
urban section



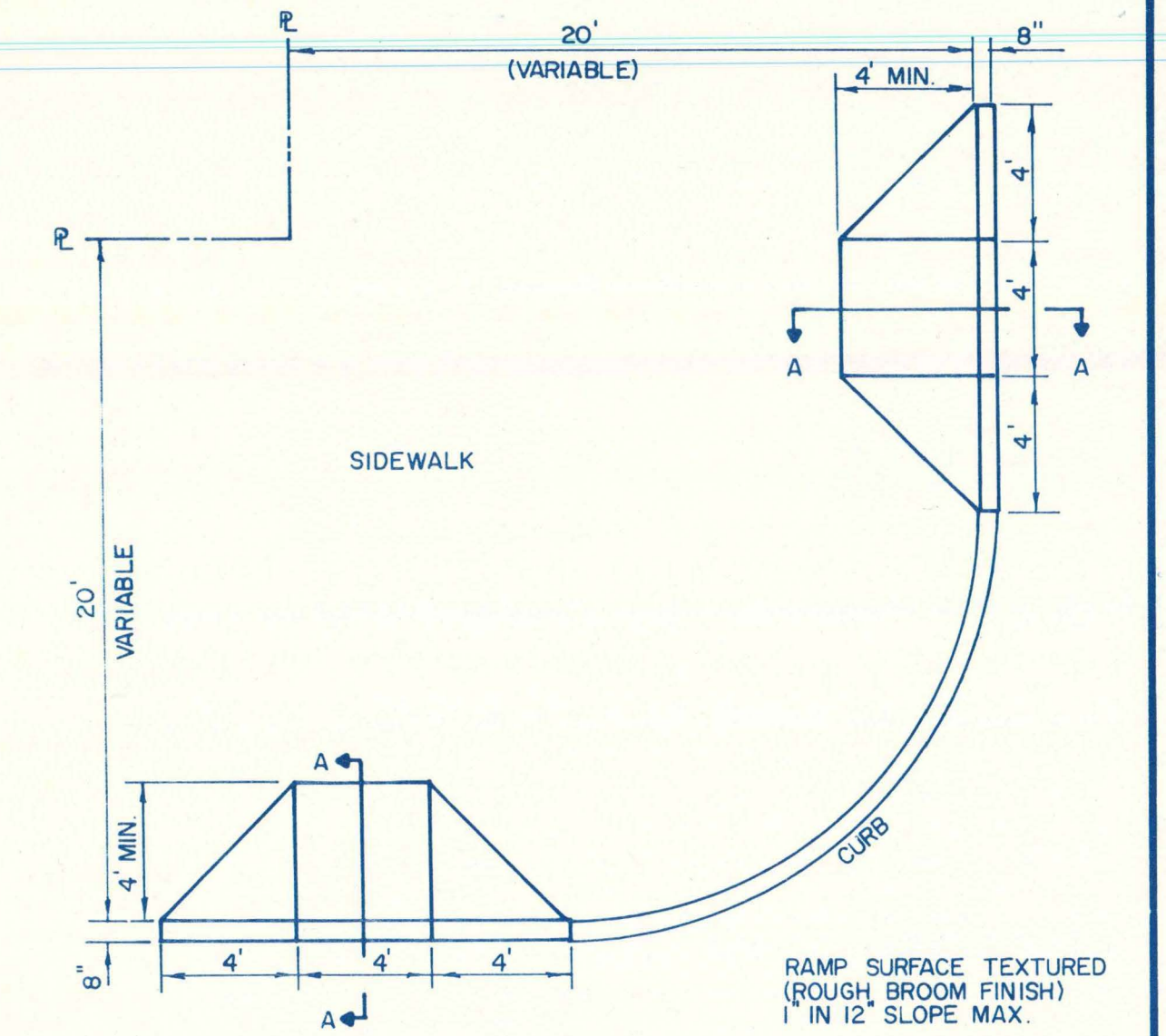
rural section



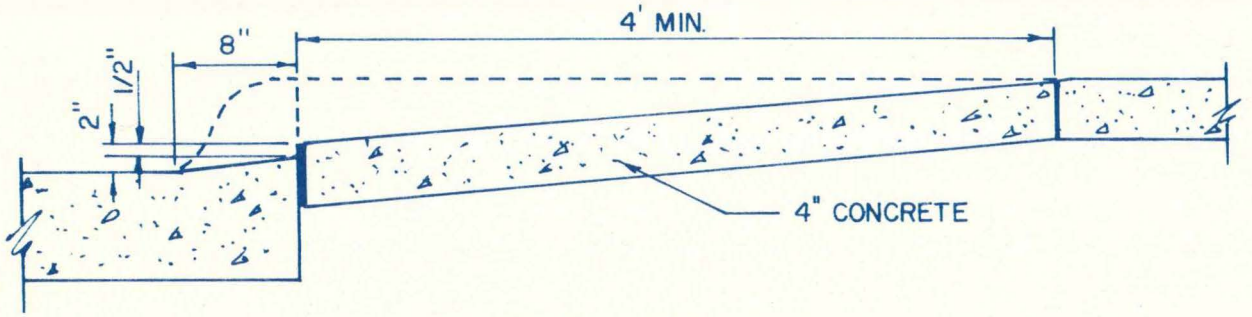
urban intersection



rural intersection



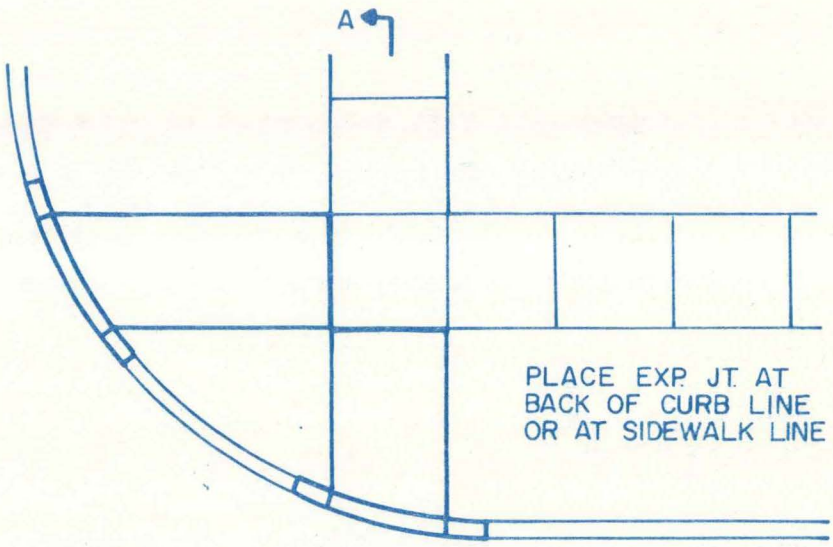
PLAN



SECTION A-A

BUSINESS DISTRICT
SIDEWALK RAMP

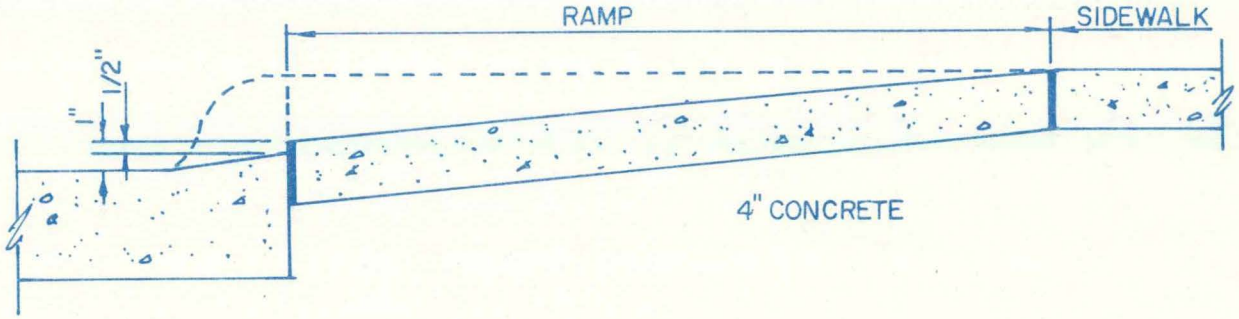
NOT TO SCALE



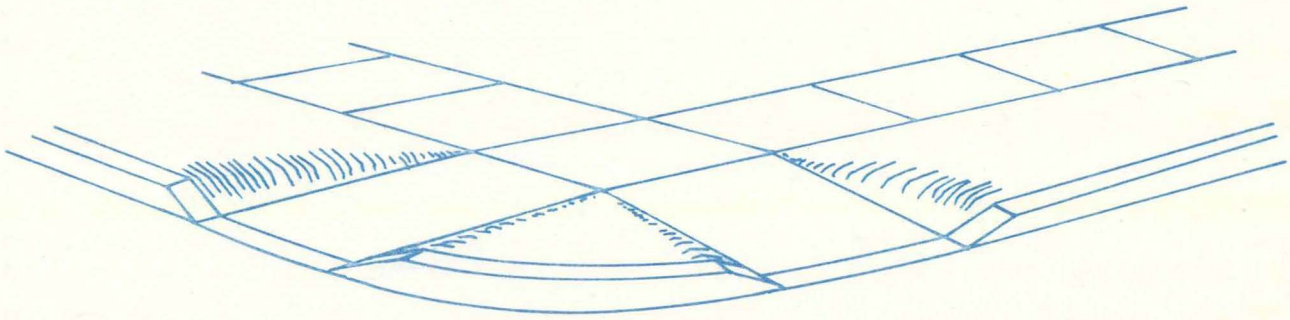
RAMP SURFACE TEXTURED
(ROUGH BROOM FINISH)
1 1/2" IN 12" SLOPE MAX.

A

PLAN

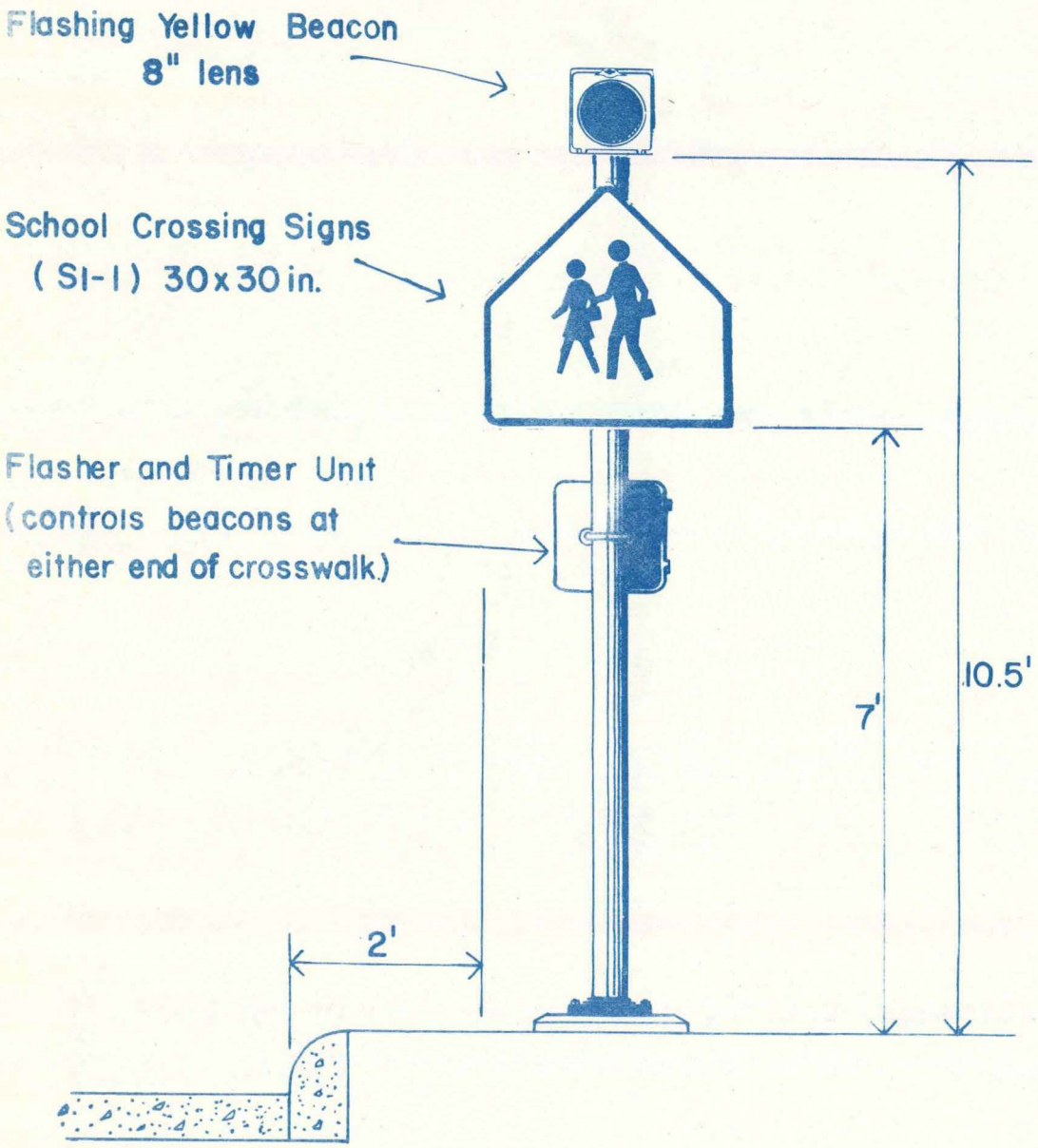


SECTION A-A



RESIDENTIAL SIDEWALK RAMP

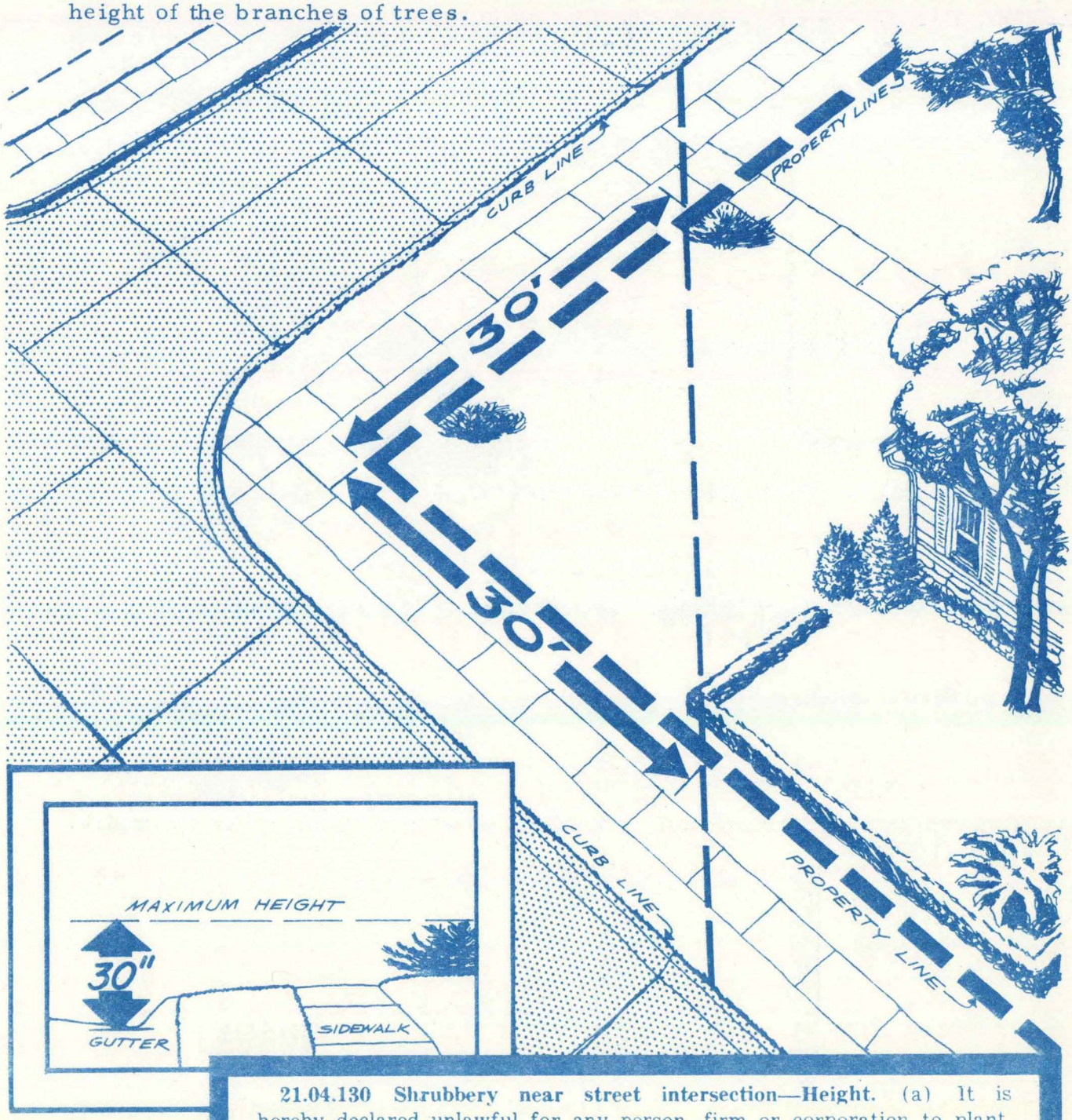
NOT TO SCALE



School Crossing Sign with Beacon

INTERSECTION VISIBILITY ORDINANCE

The City of Omaha ordinance relating to sight distances at intersections appears below. Such ordinances often include restrictions on the minimum height of the branches of trees.



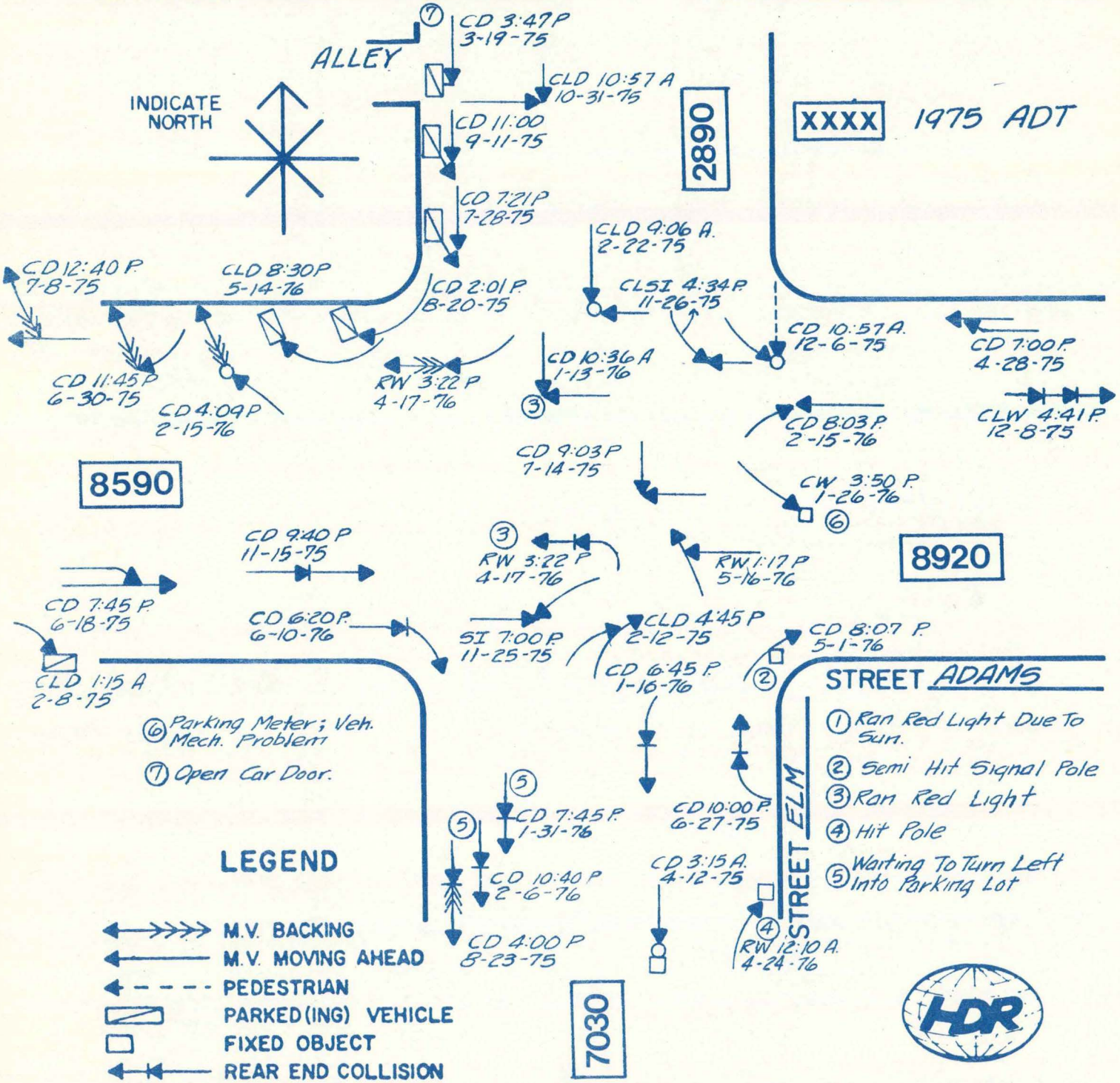
21.04.130 Shrubbery near street intersection—Height. (a) It is hereby declared unlawful for any person, firm or corporation to plant, grow, keep, or maintain, or cause to be planted, grown, kept or maintained any hedge, bush or shrubbery of any kind or nature more than two and one-half feet in height above the roadway within the triangle formed by the adjacent side lines of two intersecting streets and the line joining points distant thirty feet on each side line from their point of intersection.

(b) For the purpose of this section "side line" of street, shall mean the property line. (Ord. 14924 § 56-1.13, as amended by Ord. 21423; September 6, 1960).

ACCIDENT COLLISION DIAGRAM

LOCATION ADAMS @ ELM

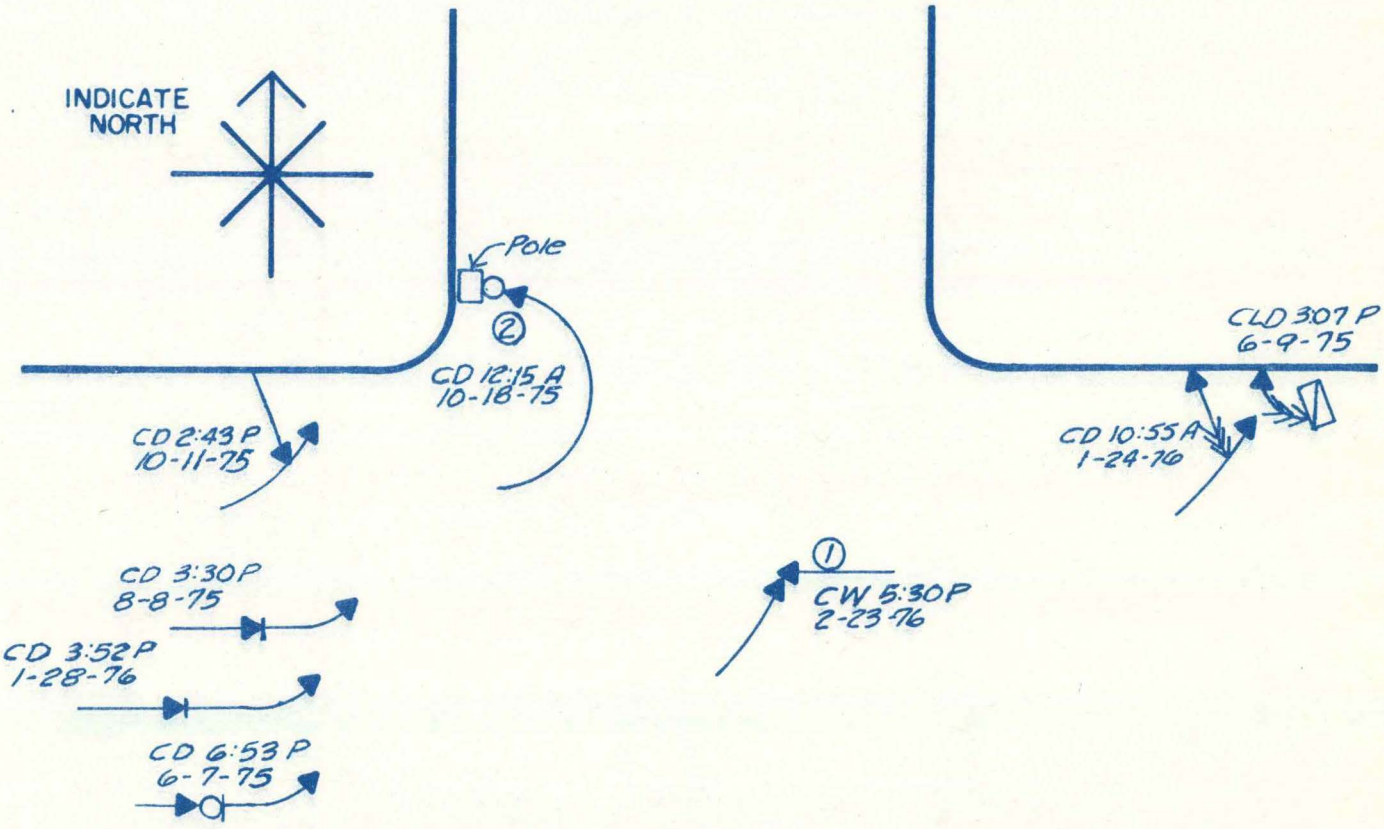
PERIOD 1975-76



ACCIDENT COLLISION DIAGRAM

LOCATION ADAMS @ MAPLE

PERIOD 1975-76



STREET ADAMS

STREET MAPLE

① Snow Piled In Middle Of St. Blocked S.D

② Drinking Driver.

LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

TIME: A=A.M. P=P.M.

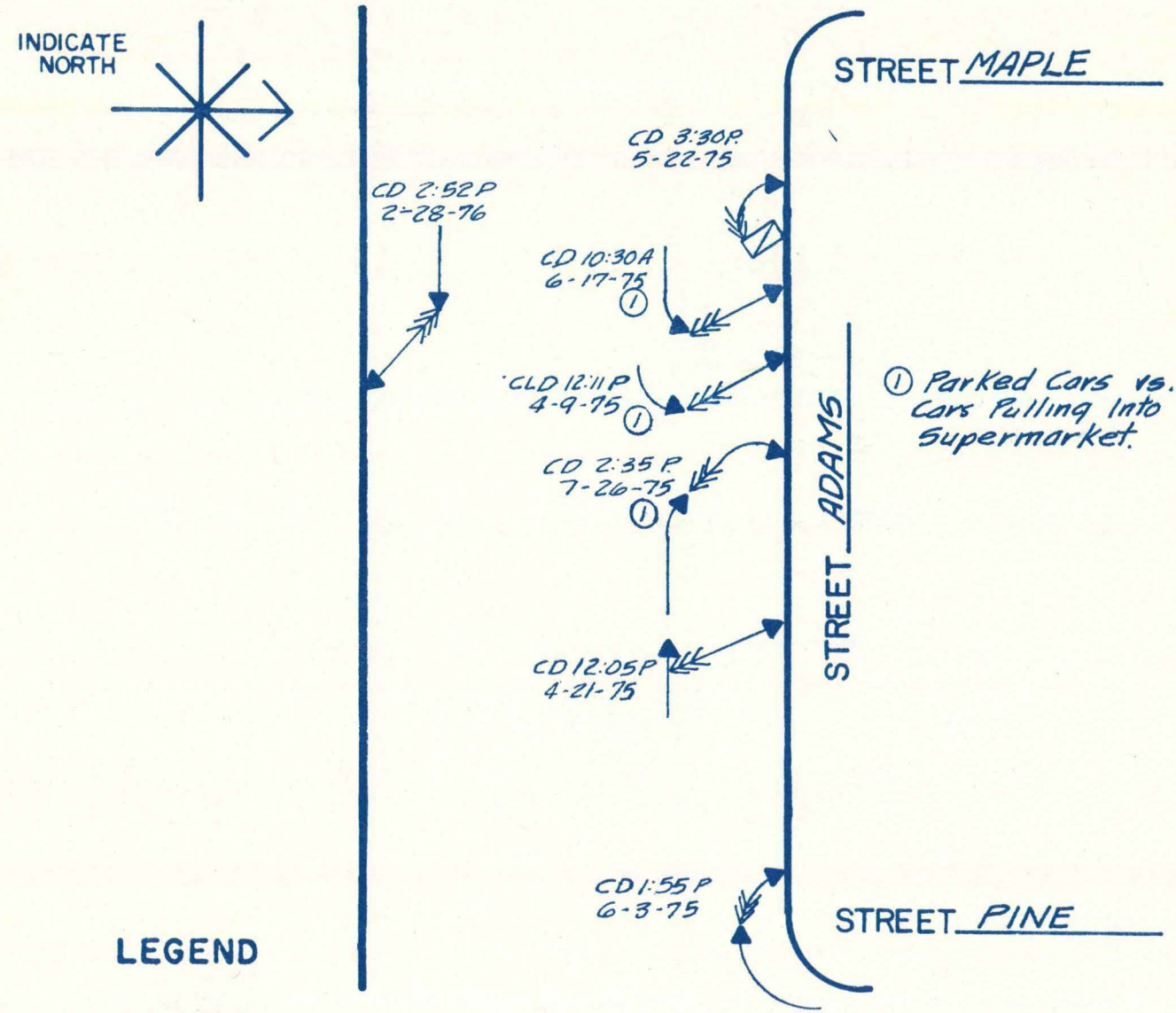
PAVEMENT: D=DRY I=ICY W=WET

WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT COLLISION DIAGRAM

LOCATION ADAMS – MAPLE to PINE

PERIOD 1975-76



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

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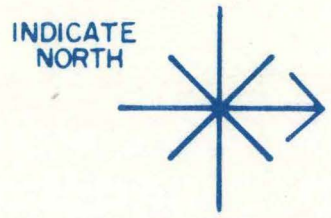
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT COLLISION DIAGRAM

LOCATION ADAMS -MAPLE to ELM

PERIOD 1975-76



STREET ELM

STREET ADAMS

CLF 8:32 A
3-2-76

CD 4:30 P
6-8-76

CD 1:55 P
6-4-76

STREET MAPLE

LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

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PAVEMENT: D=DRY I=ICY W=WET
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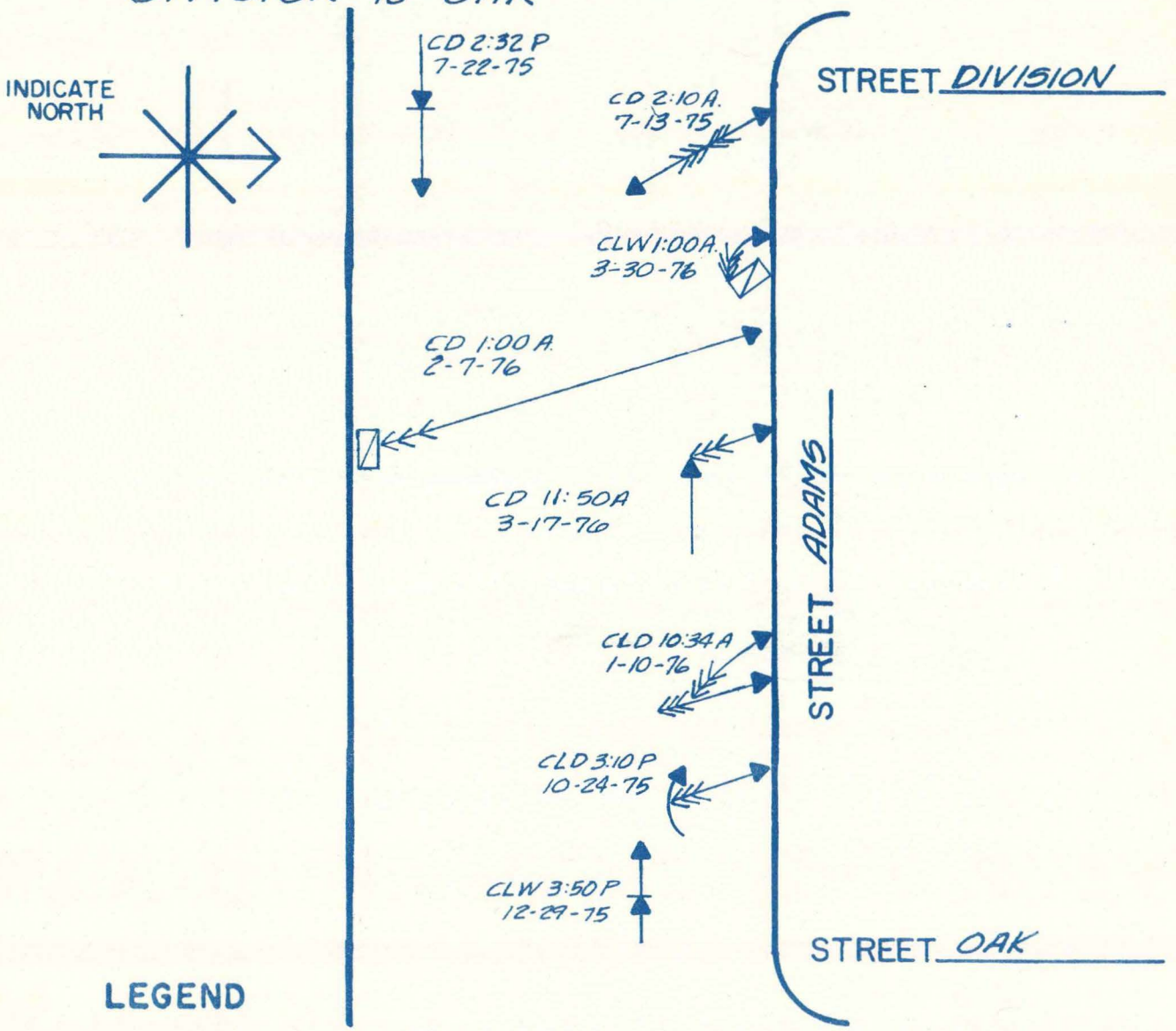
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT COLLISION DIAGRAM

LOCATION ADAMS
DIVISION to OAK

PERIOD 1975-76



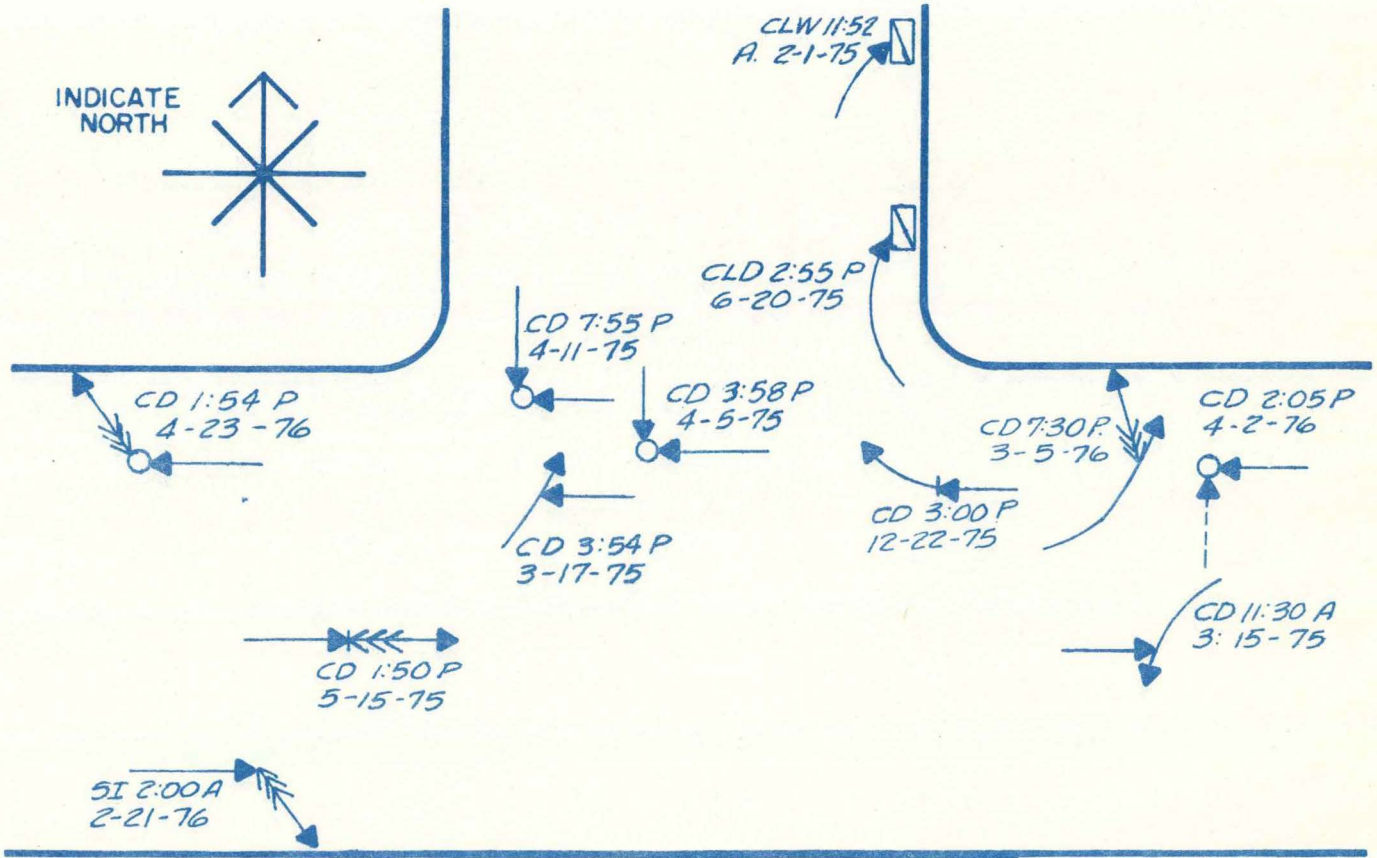
LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT
COLLISION DIAGRAM

LOCATION ADAMS @ DIVISION PERIOD 1975-76



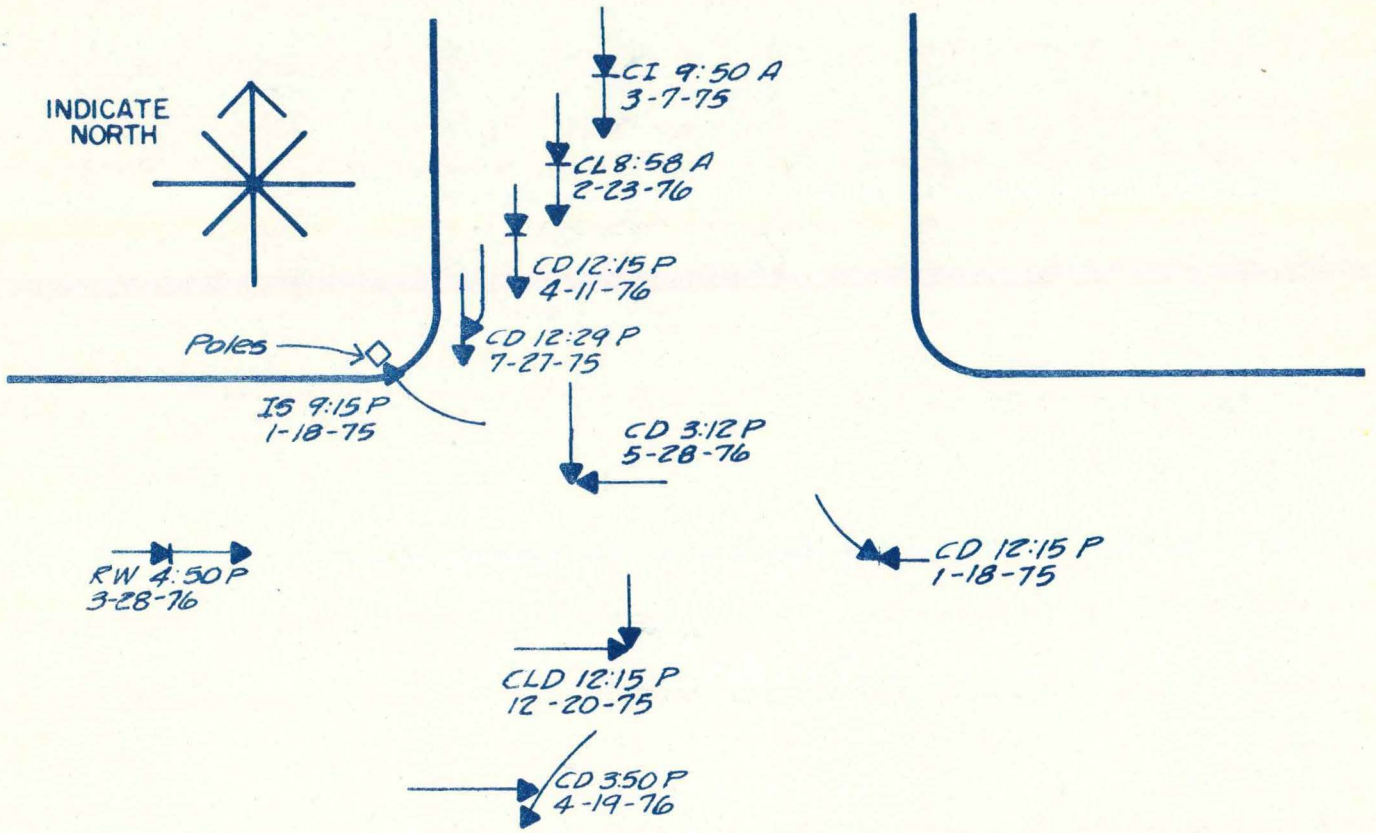
LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT
COLLISION DIAGRAM

LOCATION ELM @ TAYLOR (US 34) PERIOD 1975-76



STREET TAYLOR

STREET ELM

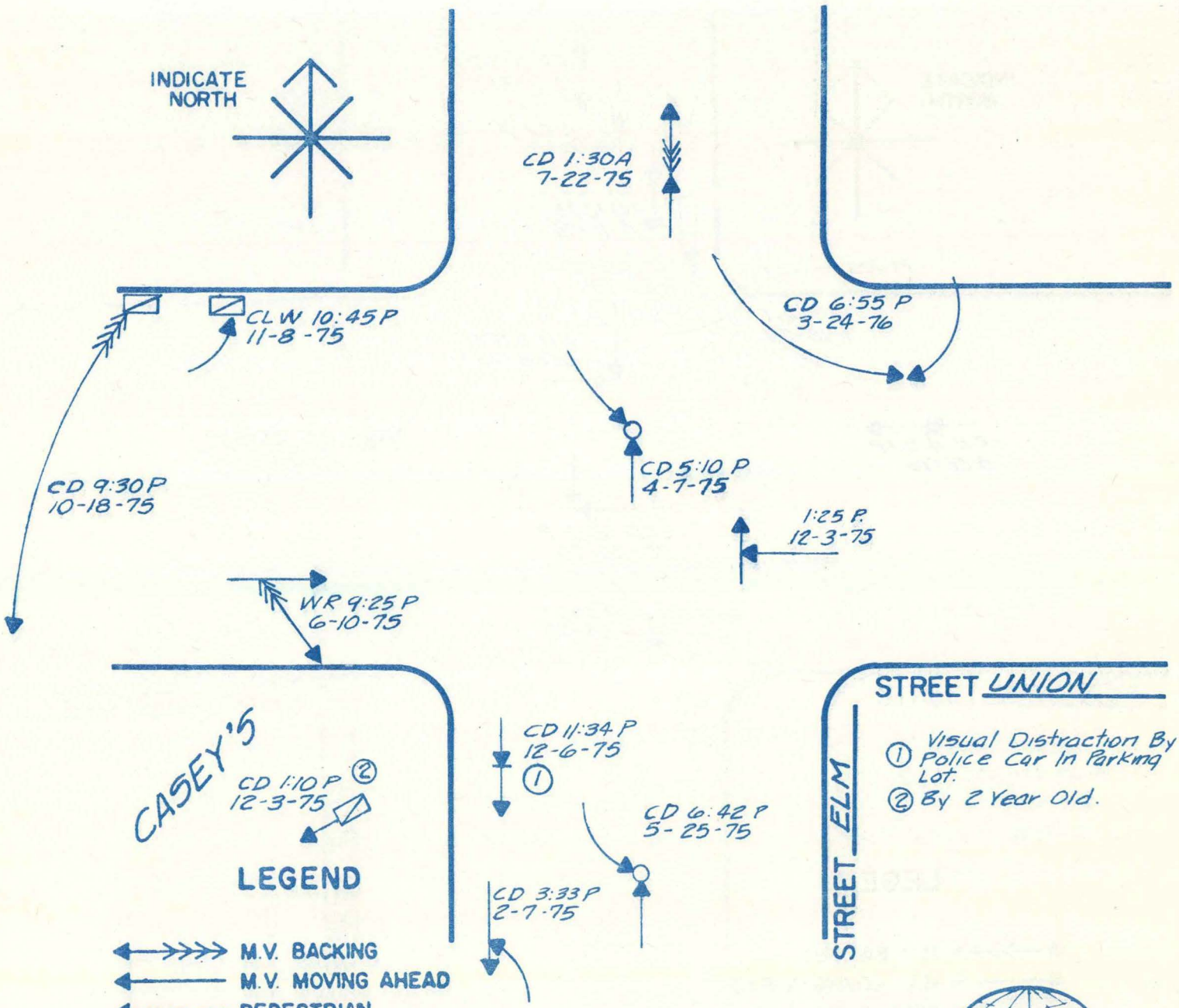
LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT COLLISION DIAGRAM

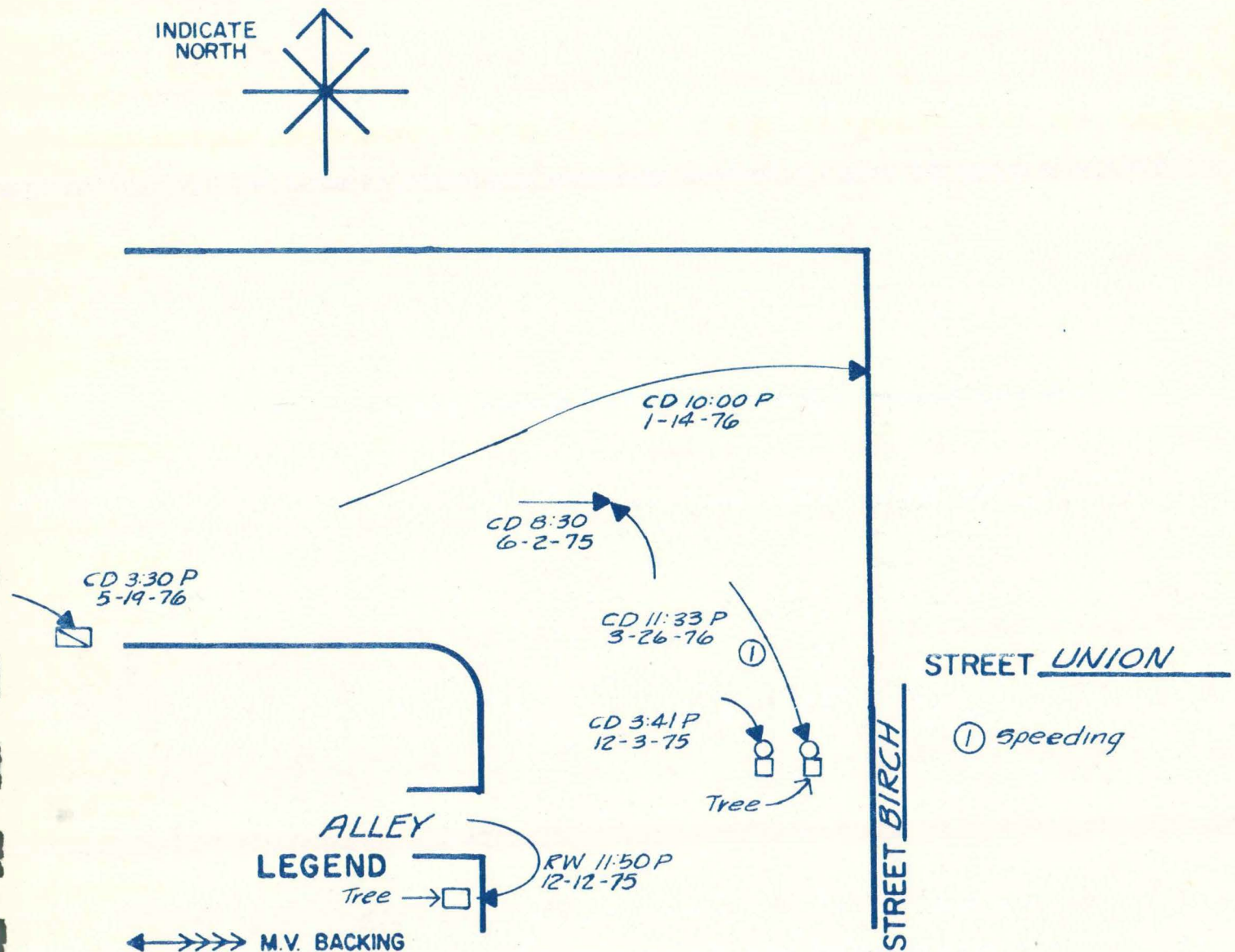
LOCATION ELM @ UNION PERIOD 1975-76



TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT
COLLISION DIAGRAM

LOCATION BIRCH @ UNION PERIOD 1975 - 76

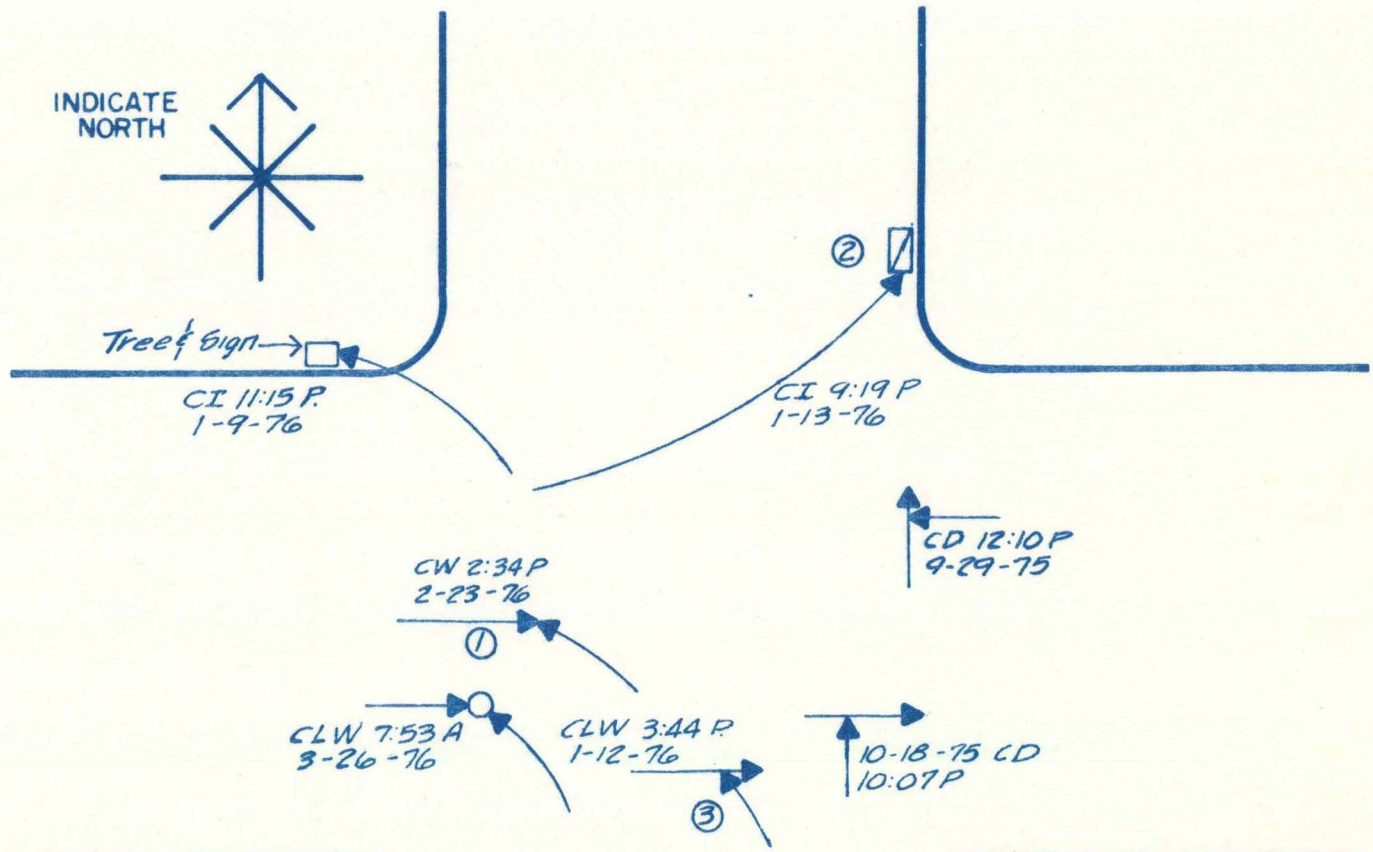


TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT
COLLISION DIAGRAM

LOCATION HOWARD @ MAPLE

PERIOD 1975-76



① Snowballing

② Ice From Drained City Water Line

③ Left From Right Lane

LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

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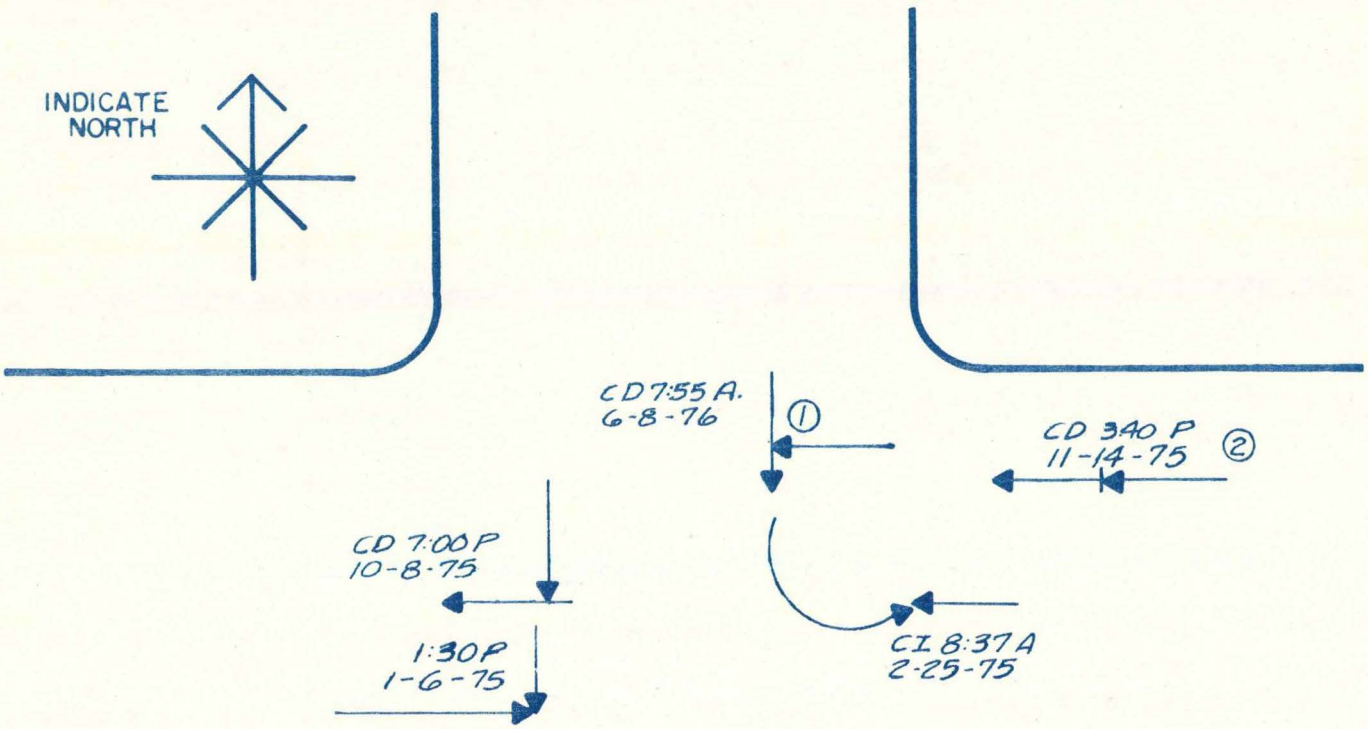
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT
COLLISION DIAGRAM

LOCATION ELM @ HOWARD PERIOD 1975 -76



① Ran Stop
② Brakes Failed

LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

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PAVEMENT: D=DRY I=ICY W=WET
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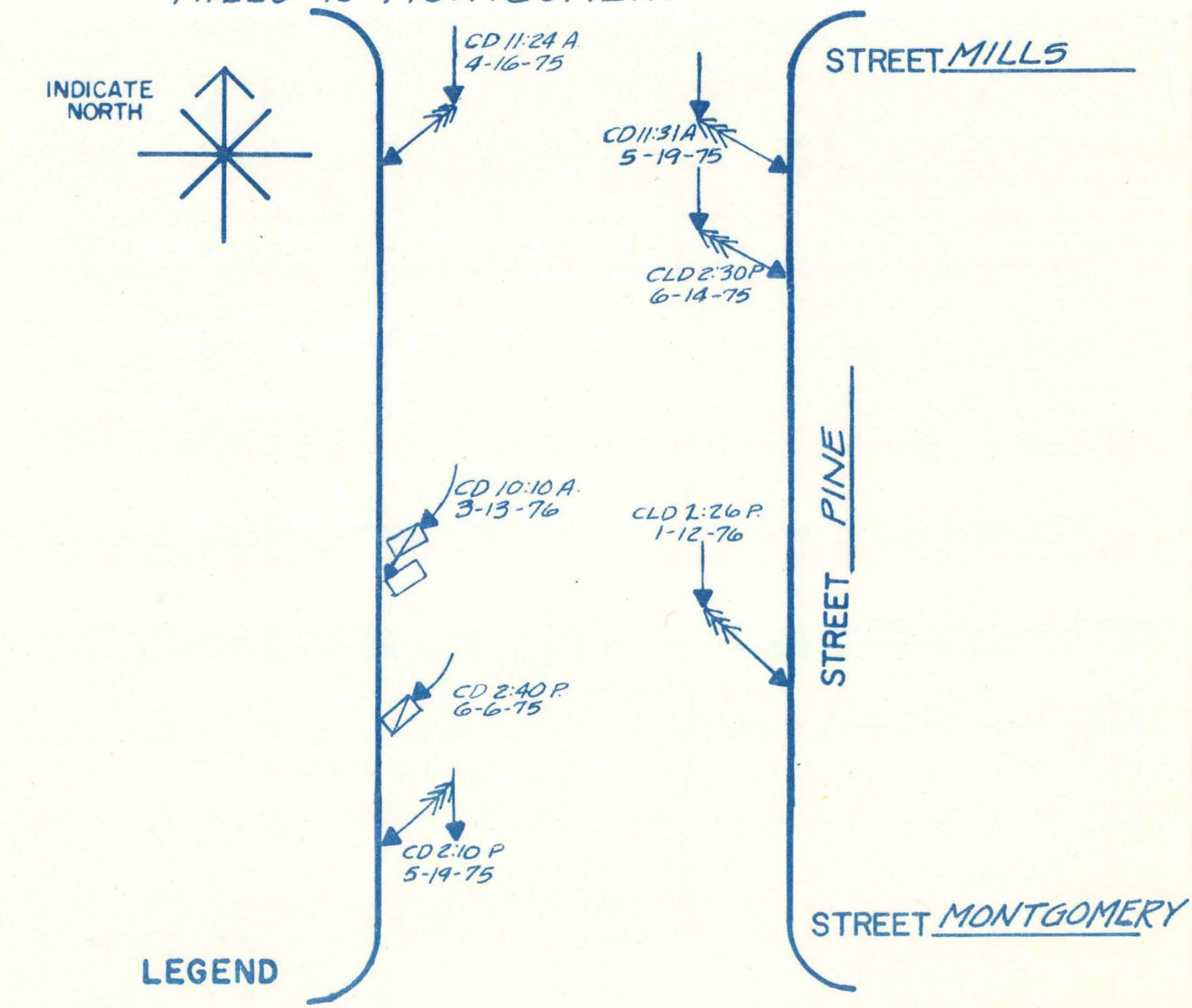
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT
COLLISION DIAGRAM

LOCATION PINE -MILLS to MONTGOMERY

PERIOD 1975-76



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
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- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

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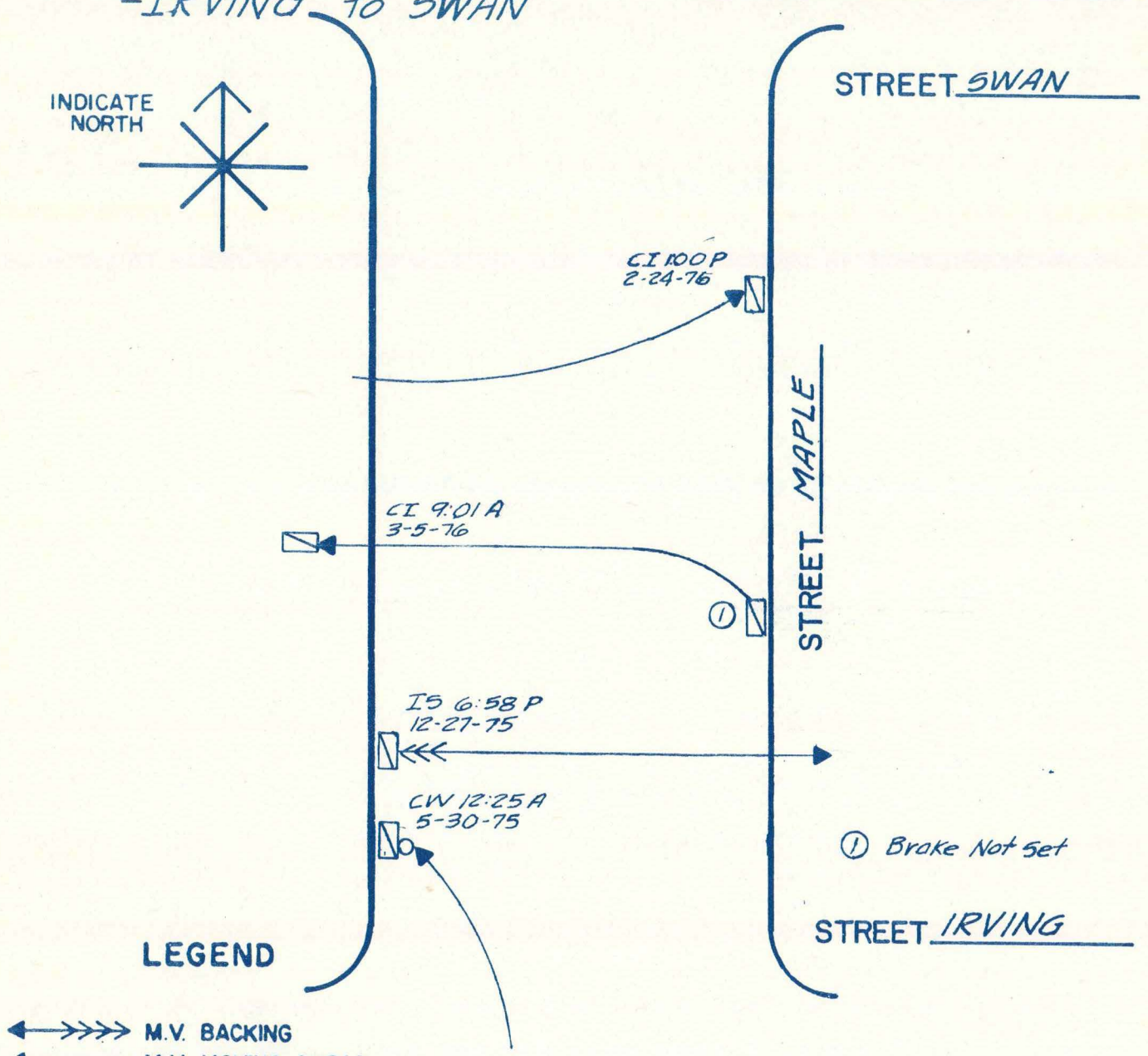
S=SNOW SL=SLEET
CL=CLOUDY

ACCIDENT COLLISION DIAGRAM

LOCATION MAPLE -IRVING to SWAN

PERIOD 1975-76



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
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