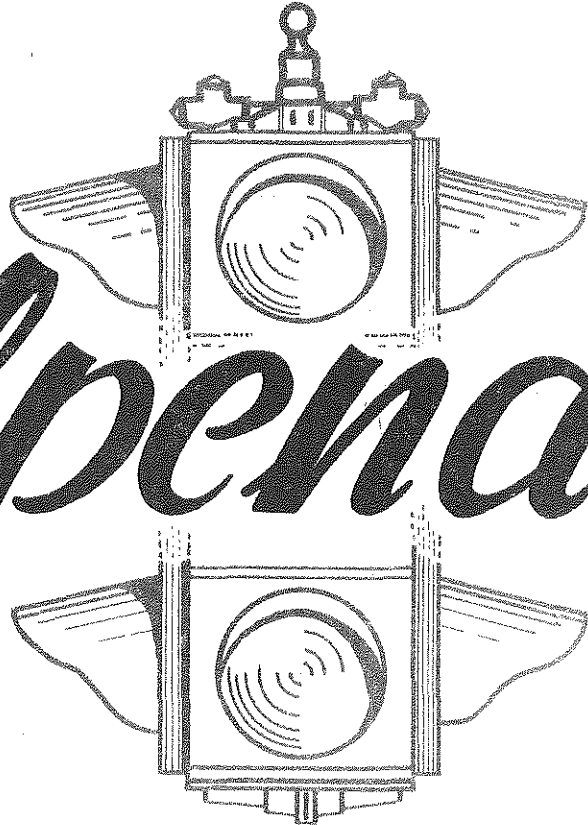


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**City of**

# Alpena



## **TRAFFIC STUDY**

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DEPARTMENT — LANSING**

**CENTRAL TRAFFIC SERVICES  
1958**

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**CITY OF ALPENA  
TRAFFIC STUDY**

**BY**

**CENTRAL TRAFFIC SERVICES**

**1958**

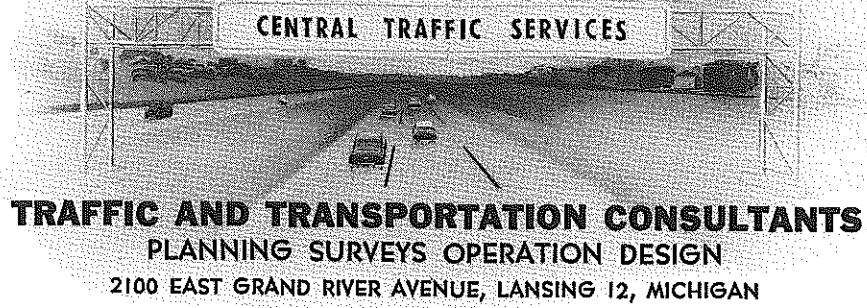
**REPORT CERTIFIED BY: EDWARD F. GERVAIS, P. E.**

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To: Honorable Mayor Harlo Herron

Councilmen: Lemuel Homant

Irvin Crow

Leo Linke

Walter Weinkauff

The City of Alpena has reflected the dynamic character of its officials and citizens by undertaking a traffic study for the purpose of acquiring factual evidence to be used in the preparation of a sound traffic plan. Good thinking has prompted the realization that an efficient and save movement of traffic on the streets of the city can only be obtained by a thorough and impartial study which has the common good as its goal.

Central Traffic Services has been very pleased to assist the people of Alpena in their desire to insure healthy and sound future growth by making this traffic study. By the utilization of proven traf-  
fic techniques, we are attempting to give the city the most efficient plan possible with a minimum outlay of public funds. With everybody's cooperation, this plan can be put in practical operation. We trust the people of Alpena will find the cost of this traffic study one of their soundest investments.

Respectfully submitted,

*Frederick I. Egan*  
Frederick I. Egan  
*Edward F. Gervais*  
Edward F. Gervais

## ACKNOWLEDGEMENT

On many occasions during the conduct of this traffic study, Central Traffic Services was required to obtain the assistance of many city officials, citizens and civic groups. Without this assistance, our task would have been immeasurably more difficult. Our staff wishes to take this occasion to thank all the people and organizations who gave us wholehearted cooperation whenever help was required.

A special message of thanks is given to the following people who gave direct assistance in the preparation of this report:

The Honorable Harlo Herron	Mayor, City of Alpena
Lemuel Homant	Councilman
Irvin Crow	Councilman
Leo Linke	Councilman
Walter Weinkauff	Councilman
Lorenzo Walker	Chief of Police
L. T. Matteson	Captain, Police Department
F. N. Jackson	City Manager
The staff of the City Manager	

## INTRODUCTION

The City of Alpena is dynamic and progressive and has become the hub of trade and industry in northeastern Michigan. It is ideally located on the shores of Thunder Bay and possesses excellent harbor facilities which are enhanced by a navigable river. The city is located on US Highway 23 which is one of the most important connecting links between the Detroit Metropolitan Area and the recently completed Mackinac Bridge. It services a trade area consisting of eight counties with a total population in excess of 60,000 people.

The diversified nature of Alpena's industry contributes greatly to its sound economy and volume of trade. The natural wealth of limestone which is found locally in several large deposits has given rise to a growing cement industry. In addition, paper, machinery, automotive supplies, fencing, furniture, hardboard and other products are produced in substantial quantities.

Besides being a large industrial center, Alpena is also located in the center of some of the finest vacationland in Michigan. The thousands of tourists who come during all the four seasons is a testimony to this important phase of activity.

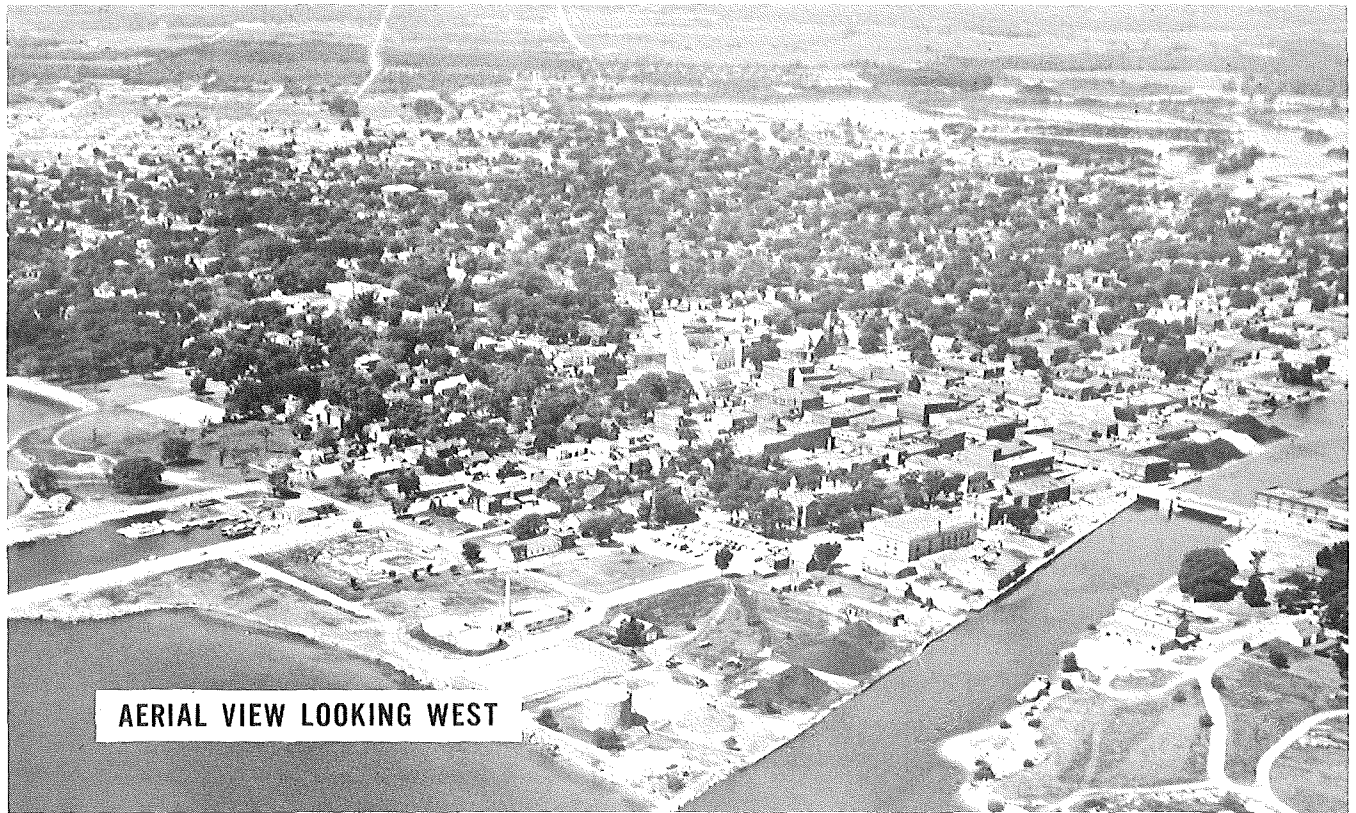
The city's growth has accelerated in recent years as witnessed by the construction of a new hardboard mill of the Abitibi Power and Paper Company. This plant alone will provide a \$2 million dollar payroll for more than 400 employees. The Huron Portland Cement Company mill, the largest of its kind in the world is expanding its facilities and is furnishing employment to 1,100 men. Wyandotte Chemical Corporation, Fletcher Paper Company and Alpena Power Company are expanding their facilities which will mean greater activity for the area. Several other industries are operating at a high employment level. Among these are the Besser Company, Thunder Bay Manufacturing Company, The Presque Isle Corporation, huge limestone quarrying operations controlled by Republic Steel Corporation, Bethlehem Steel Corporation, Youngstown Sheet and Tube, Great Lakes Steel Corporation, and Jones and Laughlin Corporation; the Habitant Fence Corporation, Alpena Cement Products, the Brilinski Concrete Block Company, and the Wiltse Brothers Corporation.

Added to this imposing array of industries are the various business enterprises which combine to produce a city which is in urgent need of an overhaul of its existing traffic structure if the transportation structure is to keep pace with the industrial and business growth.

Converting an outmoded street system into a modern, efficient one which is designed to provide maximum facility of travel with commensurate safety, cannot be accomplished without the wholehearted support of city officials and its citizenry. Old travel habits will need to be broken and prejudices against change will have to be broken if genuine improvement is to be obtained. This city has taken the first forward step in attempting to solve its traffic problem

by granting funds to acquire a traffic plan based on factual evidence. The time for the second and most difficult step of putting the plan into practical operation is now at hand. Some individuals and groups will probably suffer disruptions in their present operations, but the overall good of the community requires such action. Even those who must make the greatest change can share in the eventual benefits which a good transportation system will surely reflect on the city's economy.





**AERIAL VIEW LOOKING WEST**



**AERIAL VIEW LOOKING NORTH**

## TRAFFIC ACCIDENTS

In making a study of the traffic problem in a community, one of the most important aspects to consider is the traffic accident experience of the street system. The accident experience is an accurate barometer showing the efficiency under which the street system is performing the function for which it was designed. It is also an excellent criteria indicating the effectiveness of the Police Department's operation and the attitude of the people towards traffic laws and enforcement. A good street system must provide both efficiency of operation and safety. Accidents not only determine the safety index of a roadway, but also give a clue as to the operating efficiency.

With this in mind, an exhaustive study of the accident records of the City of Alpena was made. As a result of this study, several revealing facts were brought to light which were used to base many of the recommendations in this report.

### Method of Reporting

The Alpena Police Department utilizes the Uniform Accident Report Form which has been carefully prepared for the purpose of gathering sufficient information from accidents which will not only suffice for legal purposes, but also yield enough information for planning programs of accident prevention. The accidents are filed by location which permits the police to direct their enforcement activities into these areas having the greatest need. By using a uniform reporting form, Alpena is able to compare its accident records with other communities of the state and thus gain valuable information on the effectiveness of its system.

### Accident Statistics

The accident picture in Alpena has improved since 1954 when a record number of 500 accidents were reported. Since that time there has been a declining number with 455 shown in 1955, 427 in 1956 and 383 in 1957. This decrease was made in the face of a 20% increase in vehicle registrations since 1954 which means that the decreases in the total accident rate was even more spectacular. A summary of this data is shown in Table I and Plate 2. During this same period, the total number of accidents in the state went from 185,534 in 1954 to 191,915 in 1957. Although this indicates that the city has done a little better than the state as a whole, there is the grim reminder that the city has been averaging two traffic deaths a year on its streets since 1954. The 1957 Alpena accident rate per 1000 vehicles was 57.0 which is almost identical with the average for the State of Michigan which was 58.9. When we figure that accidents cost approximately 210 million dollars in the entire State for 1957, we can appreciate the extent of economic drainage on the taxpayer and why every effort must be made to reduce the staggering total. The human misery created by injuries and death cannot be measured in dollars and cents, but the seriousness can be appreciated by those who have either suffered or shared in the grief of their dear ones.

TABLE I  
 City of Alpena  
TRAFFIC ACCIDENTS AND VEHICLE REGISTRATIONS

1948-1957

<u>Year</u>	<u>Property Damage Accidents</u>	<u>Fatal Accidents</u>	<u>Injury Accidents</u>	<u>Persons Killed</u>	<u>Persons Injured</u>	<u>Total Accidents</u>	<u>Vehicle Registration</u>
1948	290	3	45	3	52	338	8,491
1949	384	2	37	2	43	423	9,047
1950	434	2	47	2	57	483	9,759
1951	428	1	49	1	65	478	9,855
1952	426	1	48	1	63	475	10,404
1953	419	0	48	0	62	467	10,881
1954	452	3	45	3	56	500	11,404
1955	419	1	35	1	48	455	12,350
1956	389	2	36	2	40	427	12,829
1957	335	2	46	2	64	383	13,427

# ACCIDENTS IN ALPENA 1946 THRU 1957

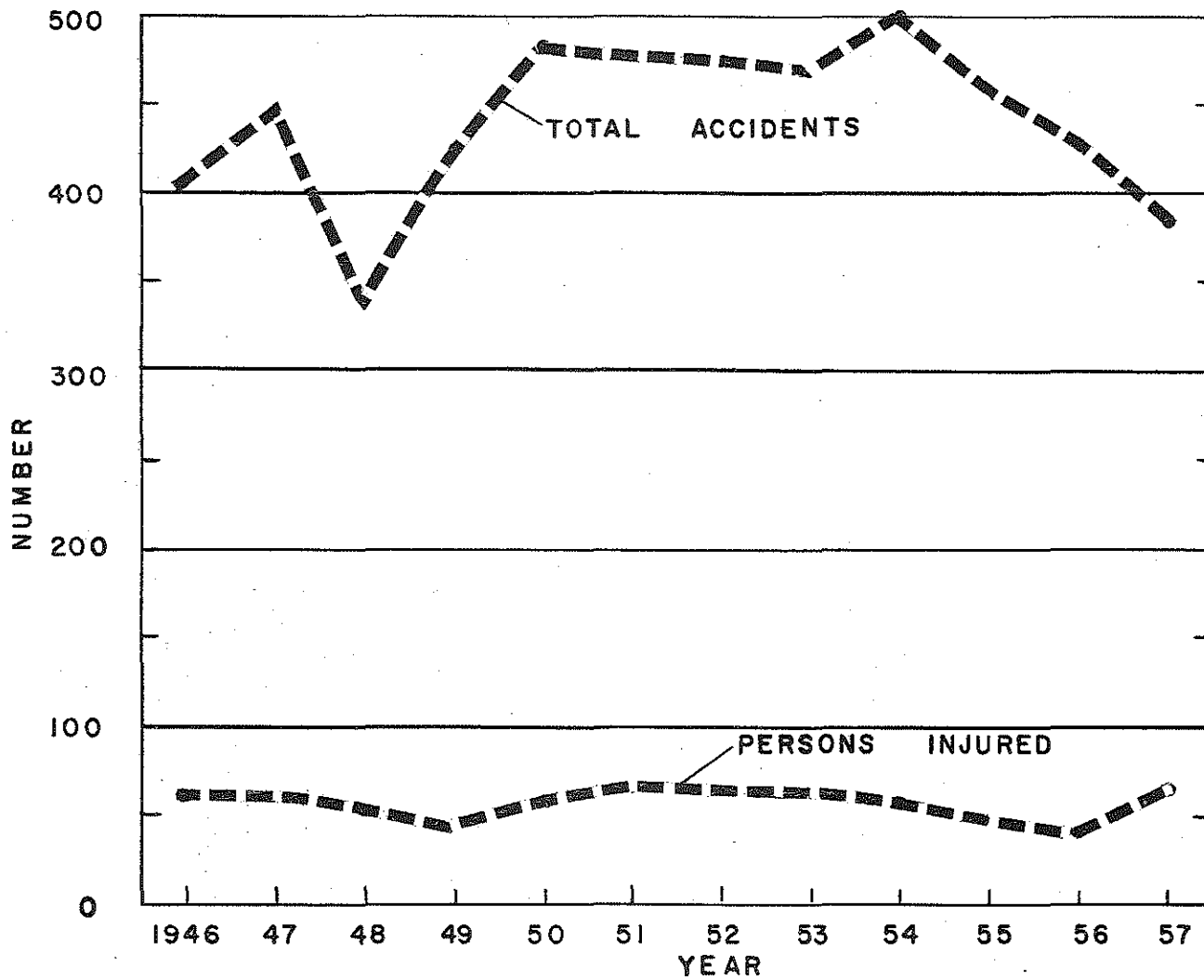


PLATE 2

CENTRAL TRAFFIC SERVICES

For purposes of evaluation, the city accident records for 1956 and 1957 were used in the detailed study. The total number of accidents reported in these two years showed 427 accidents in 1956 and 383 in 1957, which indicated a decrease of approximately 10%. Contrary to the total accident figure, injury accidents showed an increase of 3% in 1957 over 1956 figures. The total number of people injured in accidents likewise showed an increase. This increase is probably created by a change in the reporting policy of the Police Department rather than an actual increase in the casualty rate. The Police Department adopted a policy of including every type of injury regardless of severity. This included such minor injuries as nose-bleed, bruises and cuts.

Although total accidents showed a decrease of 10% in the one year span, drivers were guilty of more motor vehicle violations in 1957 over 1956. In 1956 a violation was responsible for the accident in 83% of the cases, while in 1957, 86% of the accidents were associated with violation of some driving rule. The types of violations and their frequency of occurrence is shown in Table II. This indicates the direction in which greater effort will have to be made before appreciable results can be gained in lowering Alpena's accident record.

Violations were found to be greatest in the "Failure to Yield Right of Way" category in both 1956 and 1957. This violation contributes 27% of the total and while most of it can be attributed to carelessness on the part of the motorists, the City must assume some of the blame since the intersection signing is poor and even absent at some locations. These will be treated in a later section of the report.

Speeding in excess of safe and posted limits was found to be a factor in 20% of the accidents in 1956 and 36% in 1957. Table III shows a breakdown of the speed of vehicles involved in accidents. This does not necessarily mean that the speeds were high, but rather under the circumstances the driver was using poor judgment and traveling too fast. This fact is borne out by the records which show that at the time of the accident, the vehicles involved in 88% of the cases were going under 30 miles an hour and under 20 miles per hour in 71% of the accidents.

"Following Too Closely" was found to be the secondmost violation contributing to an accident. This violation is a clear indication that the driver is either inattentive or that he has a weak conception of reaction time and braking distances. His attitude will have to be changed either by driver education or a safety program designed to remind him of this important factor in safe driving.

"Disregard of Traffic Control Device" added to approximately 7% of the total. This violation can be the fault of either the driver or the ineffectiveness of the traffic control device. Driver education and motor vehicle licensing procedures are supposed to equip the driver with the proper response to a traffic control device, but he must be aware of the presence and the clarity of its message if positive reaction is to be accomplished. Standardization of these devices as to size, color, shape and legend is of paramount importance in their effectiveness. Adherence to the rules and regulations outlined in the Michigan Manual of Uniform Traffic Control Devices is

TABLE II

City of Alpena

DRIVER VIOLATIONS INDICATED IN ACCIDENTS

<u>Violation</u>	<u>1956</u>	<u>1957</u>
Failure to Yield Right of Way	27%	26%
Exceeding Safe or Stated Speed	20%	36%
Following Too Closely	5%	4%
Disregard Traffic Control	4%	7%
Under Influence of Alcohol	3%	3%
All other violations	41%	24%

TABLE III

City of Alpena

SPEEDS OF VEHICLES IN ACCIDENTS

<u>Speed</u>	<u>1956</u>	<u>1957</u>
Standing Still	7%	8%
0 to 10 MPH	29%	27%
11 to 20 MPH	36%	30%
21 to 30 MPH	22%	23%
31 to 40 MPH	4%	4%
41 to 50 MPH	1%	2%
Over 50 or not stated	1%	6%

It should be noted that 88% were below 30 MPH and 71% of these were under 20 MPH at the time of the accident.

mandatory under Michigan law effective January 1, 1958, therefore it will behoove the City of Alpena to take cognizance of this and take action to conform in an expeditious manner. The results to be gained will be well worth this effort. Reflectorization of many categories of signs and standardization of sizes, shapes and legends will be needed if uniformity is to be obtained. Improper signs or improper location can very often prove to be the direct cause of a traffic accident.

A study of the graphs on Plates 3 and 4 shows the effect of traffic enforcement activity on the total accident picture. In nearly all cases, the months which show the greatest number of violations brought to court result in corresponding lowering of accidents reported. This indicates a positive effect on the driver resulting from his awareness that violations will lead him to the courtroom. Good traffic law enforcement contrary to some opinion is designed to eliminate driver rule infractions. Only when the driver appreciates that violation leads to almost certain apprehension, will this basic cause of accidents be drastically reduced. Enforcement directed at vague or non-apparent traffic regulations with revenue as the underlying motive will result in loss of public confidence and support to all traffic rules.

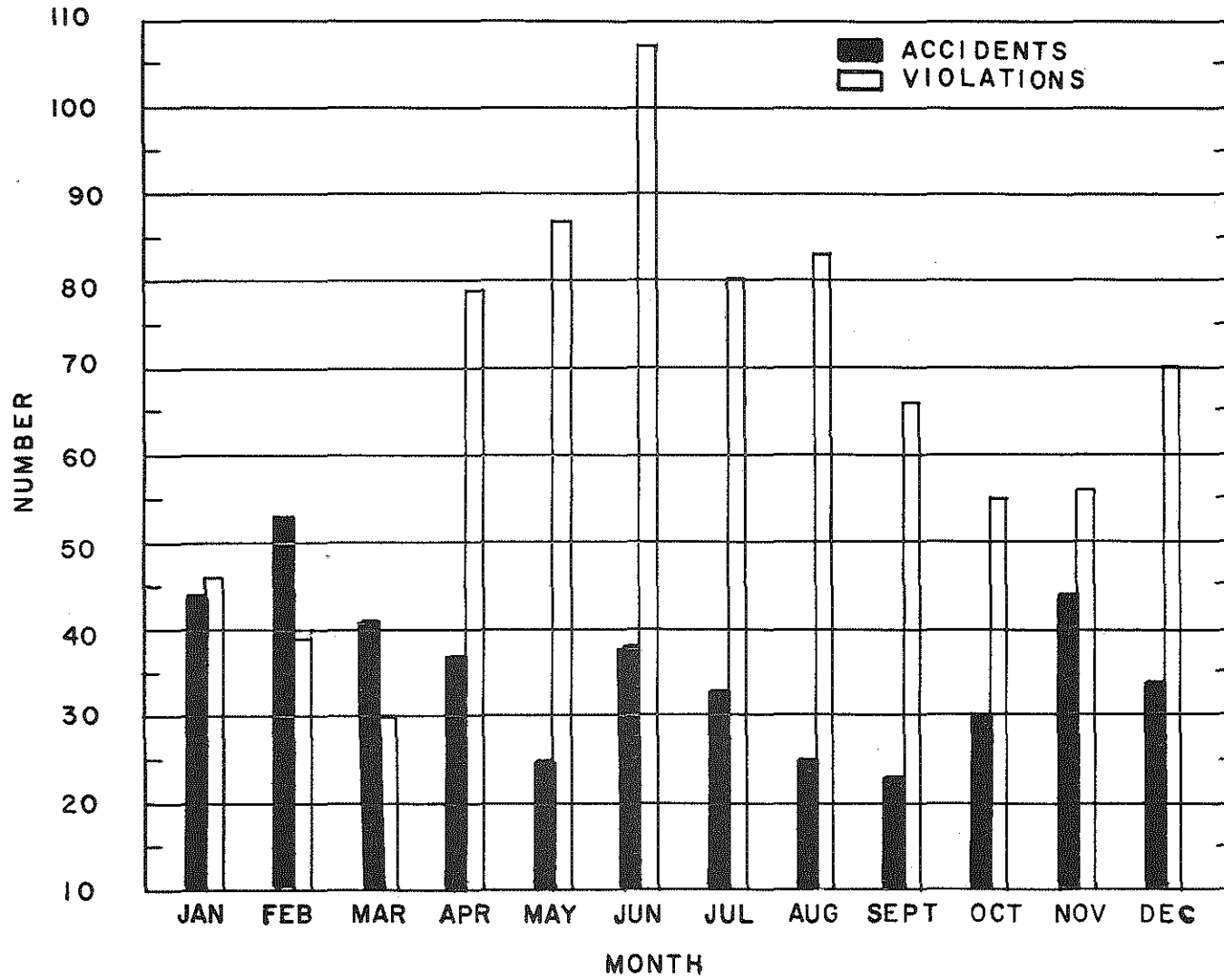
As shown in Table IV, the hours between noon and 6:00 p.m. are the ones in which the greatest number of accidents are generated. During 1956, 49% and in 1957, 44% of all the accidents occurred during these hours. This shows a natural relationship between accidents and traffic volumes since these are the hours of greatest motor vehicle travel over the city streets. Traffic law enforcement should be at its maximum during this period in order to offset the higher susceptibility to accidents. Very often manual control of traffic is needed during this period, therefore, the police can serve in a dual capacity.

Table V shows accident frequency by days of the week. The largest percentage averaging 53% over the two year period occurred between Thursday and Sunday. This is characteristic of the national accident experience and likewise can be attributed to increased traffic activity during this period. Additional patrols can prove beneficial particularly during summer weekends when a large percentage of tourists are intermingled with local drivers.

The ages of the drivers were studied for the purpose of determining how Alpena compared with national averages. Again the city proved quite normal with 31% of the drivers involved in accidents being under 25 years of age. The fact that this percentage is lowering with the passage of time is a tribute to the effectiveness of the sound driver education program in the Alpena School System. Support and improvement of this activity can result in even greater benefits. A further aid to this program would be a strong safety program instituted by the Police Department and directed at the younger students of the school system for the purpose of indoctrinating them in the principles of traffic safety before they reach the age of operating a motor vehicle. While the benefits of this program would not be witnessed immediately, the results will become apparent in the future when the young students grow up to be more alert drivers and



### CITY OF ALPENA 1956 ACCIDENTS AND VIOLATIONS IN COURT



CITY OF ALPENA  
1957 ACCIDENTS AND VIOLATIONS IN COURT

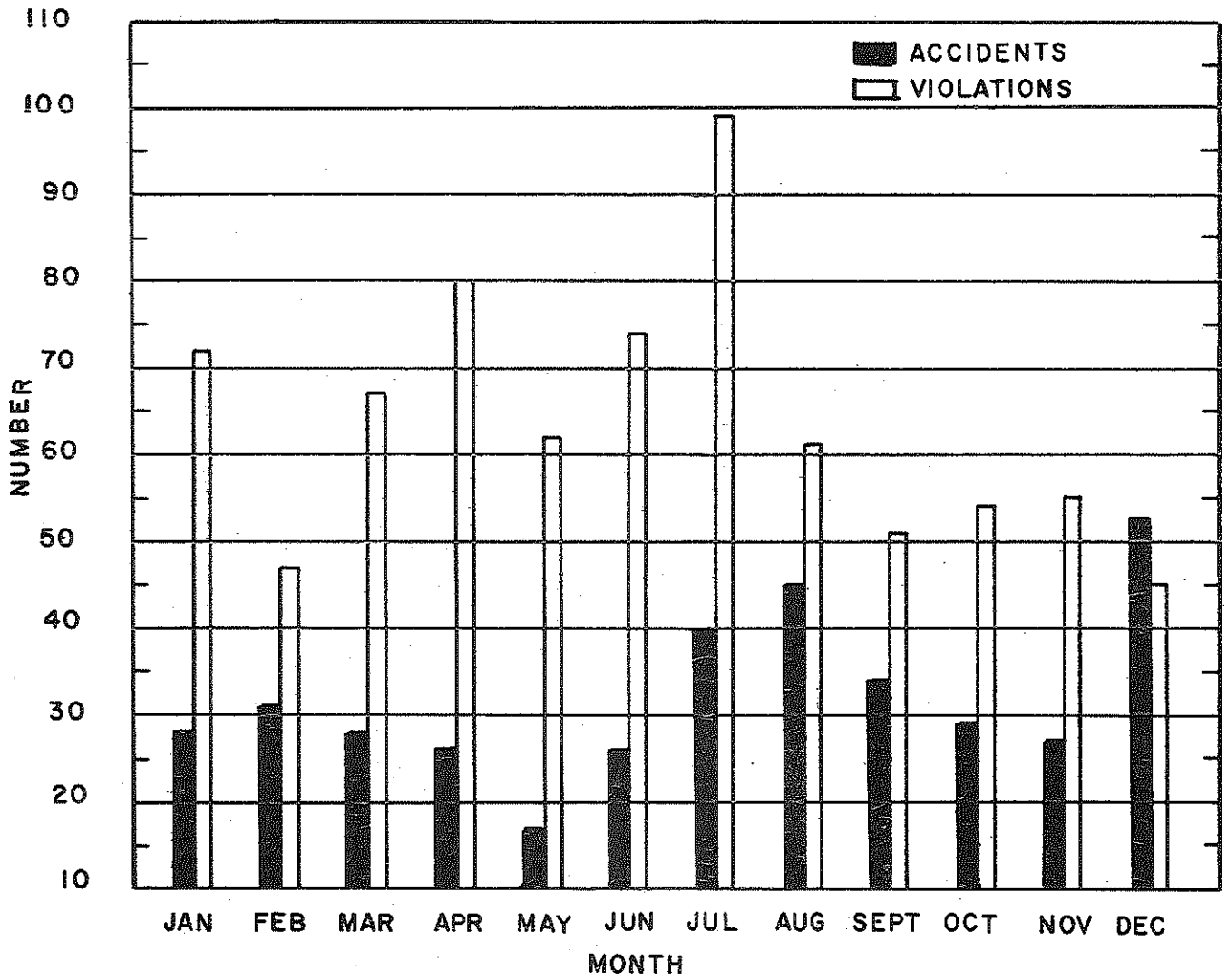


PLATE 4

CENTRAL TRAFFIC SERVICES

TABLE IV  
City of Alpena

ACCIDENT OCCURENCE BY HOUR OF DAY

<u>HOUR</u>	<u>1956</u>	<u>1957</u>
Midnight - 1:00 AM	9	8
1 - 2:00 AM	5	8
2 - 3:00 AM	12	15
3 - 4	6	-
4 - 5	1	-
5 - 6	2	3
6 - 7	2	5
7 - 8	14	8
8 - 9	11	13
9 - 10	10	8
10 - 11	18	22
11 - 12 Noon	20	23
12 - 1 PM	31	31
1 - 2	30	15
2 - 3	33	26
3 - 4	42	28
4 - 5	42	44
5 - 6	31	25
6 - 7	20	14
7 - 8	23	11
8 - 9	19	31
9 - 10	23	13
10 - 11	14	15
11 - 12	8	13
Not Stated	<u>1</u>	<u>4</u>
TOTALS	427	383

TABLE V  
City of AlpenaACCIDENT OCCURRENCE BY DAY OF WEEK

<u>DAY OF WEEK</u>	<u>1956</u>	<u>1957</u>
Monday	55	46
Tuesday	59	43
Wednesday	51	45
Thursday	46	58
Friday	71	89
Saturday	79	66
Sunday	<u>68</u>	<u>36</u>
TOTALS	427	383

pedestrians. The cost of such a program would be very negligible when compared to the gains. Cooperation obtained from other sources can prove to be a strong help to the Police Department on such a program.

The accident records revealed that 73% of the drivers involved in accidents on the streets of Alpena were residents of what is termed the metropolitan area. Of this total, 81% were residents of the city proper. This is a clear indication that a safety program directed through local sources such as the schools, clubs, newspapers, and radio, will reach the majority of people involved in accidents on the Alpena street system. Since two drivers are involved in most of the accidents, it can be quickly deducted that most of the accidents would have been eliminated if local drivers were abiding by all the rules of good driving.

The central business district contributed 44% of the total accidents in the years of 1956 and 1957. This is a definite indication of the predominate role played by congestion in the cause of accidents. Congestion created by automobiles cruising around the business district in search of parking and in the performance of the parking maneuver itself, contributed to 59% of the non-intersection accidents on the streets of Alpena. It was found that in 357 accidents, 208 involved a vehicle entering or leaving a parking stall. When public officials have to deal with the problem of improving safety on the city streets, they cannot ignore the significance of these figures. Off-street parking not only reduces congestion on the street due to the provision of more street capacity for travel, but it also eliminates a great deal of cruising for the purpose of seeking parking. Since off-street parking concentrates parking in well defined areas, the motorists will head directly for the location where he knows the parking exists. Even when a lot is filled to capacity, it can be quickly determined and the motorist can then move on to another lot. In contrast to this, curb parking compels him to examine each parking stall block by block in the search for a vacancy. Off-street parking also has the additional advantage of reducing accidents by separating the slow moving vehicles desiring to park from faster moving vehicles.

Congestion must be removed from the streets if a better safety record is anticipated. Some people feel that congestion actually contributes to safety since speeds are low. While it is true that speed contributes to the severity of an accident, cold, hard statistics in Alpena show the fallacy of such reasoning. Well regulated streets permit a shorter total travel time with greater safety. Absence of either of these items is an indication that there is trouble which needs correcting.

Of the total accidents on the streets of Alpena, it was found that approximately 51% occurred at intersections. This type of accident has several underlying causes, but in general it can be said that failure to yield right of way and obstruction of vision are the two most prevalent factors in the cause of the accidents. Certain streets by their arterial nature should be given preference over another route. This makes it mandatory that either "Yield Right of Way" or "Stop" signs be used to properly inform the motorist of such designation. There are certain psychological elements about the driver which must be considered in the placement of these signs. Many times these

signs are installed by neighborhood pressure with a consequent confusion to a driver. As an example, a certain street will have either of the above mentioned signs erected on two or more consecutive approaches to this roadway. The motorist travelling on this street is thus lulled into the sense that he has right of way over all intersecting roads which appear to have the same characteristics as the ones where signing has been provided. This gives good emphasis to the reasons why assignment of right of way at intersections should be done on a planned formula and not on a complaint basis.

The problem of vision at an intersection cannot be overlooked in planning a program of accident elimination. A picture on plate 27 shown in a later section of the report is ample evidence of the effects of parking in blocking vision of a motorist to an intersection. Vision obstructions created by buildings must be regulated by zoning. It is unfortunate that there are intersections existing in the city where the vision to the intersection is restricted by such structures, but it would be impractical to tear them down. This does not mean that mistakes of the past should be duplicated in the future. Intersections which have vision barriers which are not removable can be aided by the installation of the proper traffic control devices. This should not be considered as a perfect substitute for good vision since it is only a partial remedial measure.

Landscaping while good from an aesthetic standpoint can very often create a bad impediment to vision of a motorist at an intersection. High hedges and low-branched trees are the chief offenders in this category. Billboards and advertising material can very often be the direct contributing cause of a serious accident. Good vision at intersections should be acquired and maintained by well enforced ordinances. There are many people contributing to a bad accident hazard who if properly informed and guided, would be quite willing to eliminate the source of trouble in the interests of public safety.

Parking has come to be such a prime accident creator at intersections due to the blocking of vision, that laws have been passed which regulate the distances in which there can be no parking encroachment at an intersection. It is unfortunate that many businesses are operating in areas of parking shortages which have led to violations of the parking laws. City officials should take steps to eliminate parking in the areas adjacent to an intersection which is in violation of state statutes. Provisions should be made for acquiring this parking elsewhere.

Angle parking is a type of parking which contributes more than its share of the accidents due to parking. By its very nature, a motorist must back out of a parking stall with very little vision to oncoming traffic. In several cases, there is no vision whatsoever. This detrimental factor if amplified at an intersection where a vehicle turning into a street would have no warning of a vehicle backing out of an angle stall close to the intersection. Angle parking at a curb is not only hazardous, but an inefficient user of the street. This style of parking uses more street area not only for storage, but also the maneuvering area. Angle parking should be prohibited at all locations in view of the above facts.

Areas in Alpena where angle parking should be eliminated because of its detrimental effect on traffic and safety is at the intersections of State with Campbell, Heuber with Ford, Tuttle with Washington, Second with Mirre and other locations throughout the city.

Parking on Ninth Avenue is prohibited at all locations except the first 100 feet west of Saginaw Street. This is a very dangerous condition since it places these parked vehicles in line with moving traffic. This parking should be prohibited and closely enforced so this side of Ninth Avenue can be kept clear for through traffic.

Several of the high accident intersections of Alpena are shown on Plates 5 to 11. Collision diagrams have been prepared which show the number, type and direction of movement of vehicles involved in accidents. These can be analyzed to determine the type of accidents found most frequently and the corrective measures needed to eliminate them. Several of the recommendations made in later sections throughout the report have been the result of information gathered from these collision diagrams. It would be an excellent idea for city officials to prepare a collision diagram of the ten highest accident intersections in the city and take some positive accident preventative measures at each location. The object would be to remove these intersections from the high accident list in the subsequent year.

## Recommendations

An accident spot map is a very valuable aid to the police in directing enforcement activities into areas of greatest need. A well designed accident spot map system should consider some of the following:

### 1. Cumulative annual accident spot map

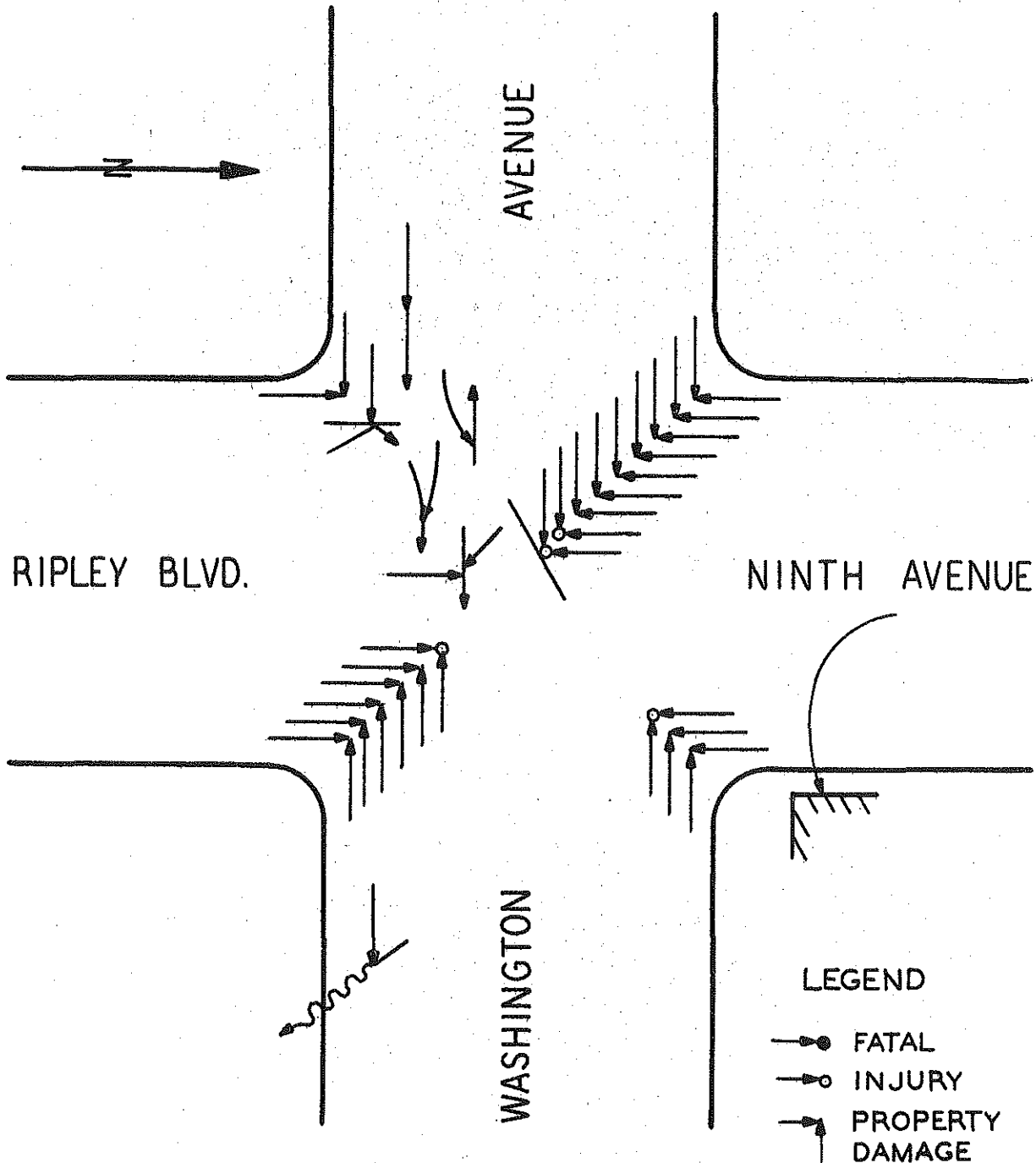
Pedestrian fatal, personal injury or property damage accidents should be shown by use of pins, color, symbols or other devices. The map itself need only show such essential features as streets, streams, railroads, etc. Scale preferred is 1" to 400' up to 1" for 1200'.

### 2. Work maps

Smaller size than the annual map, mounted on wall leaves. One map for each change of personnel strength OR one map for each four hour period of the day. They should contain a 3 months accident experience. Desirable scale of 1" to 600'. Legend can be shape of pin or spot which indicates the type of accident. Color can represent the type of violation. An additional map of the same size, time limitations and legend of violation should be used to record enforcement effort and thus provide a comparison with the accident experience.

# ALPENA TRAFFIC STUDY COLLISION DIAGRAM

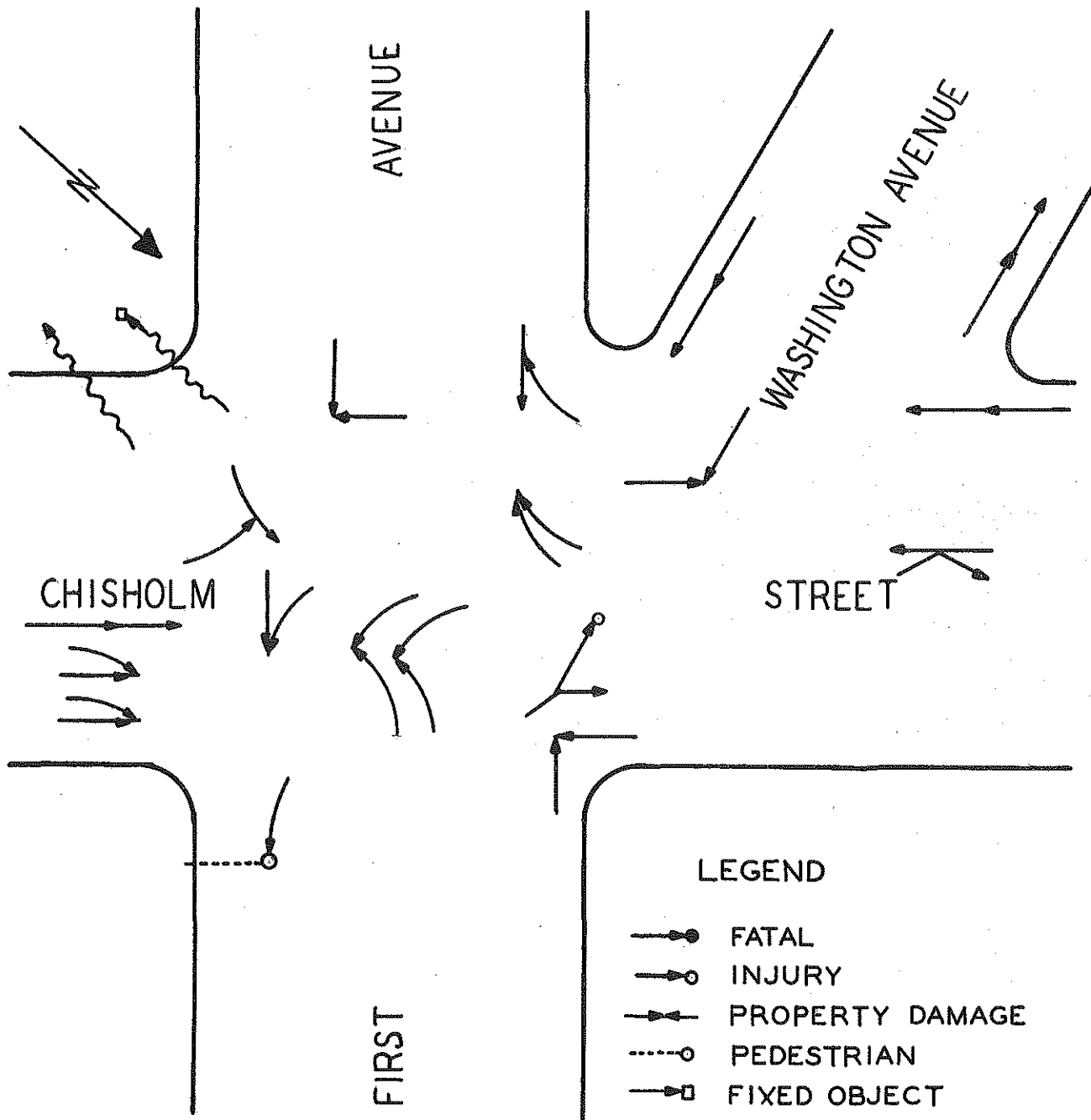
INTERSECTION OF RIPLEY, NINTH AND WASHINGTON  
CENTRAL TRAFFIC SERVICES





# ALPENA TRAFFIC STUDY COLLISION DIAGRAM

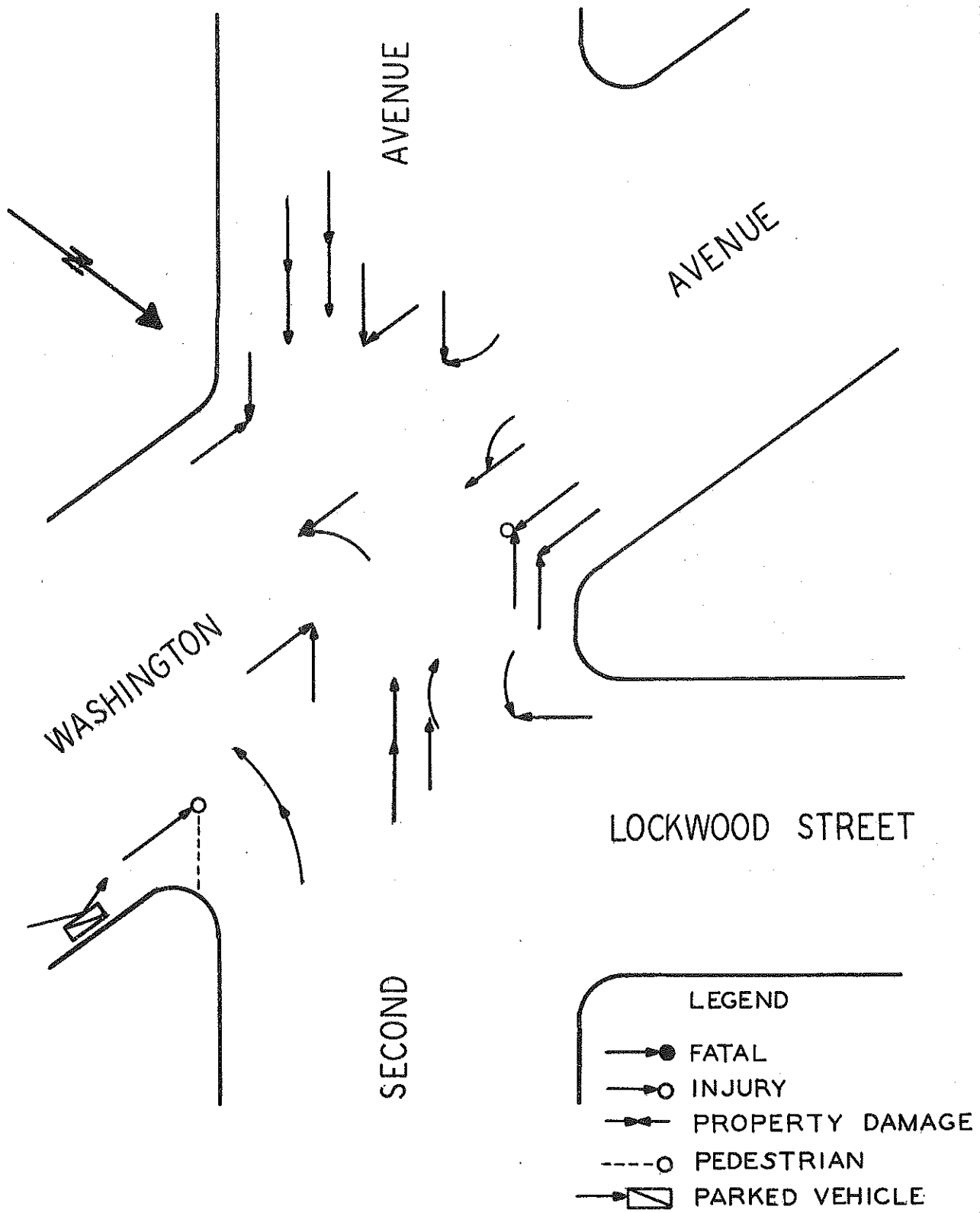
INTERSECTION OF CHISHOLM, FIRST AND WASHINGTON  
CENTRAL TRAFFIC SERVICES



# ALPENA TRAFFIC STUDY

## COLLISION DIAGRAM

INTERSECTION OF WASHINGTON, SECOND AND LOCKWOOD  
CENTRAL TRAFFIC SERVICES

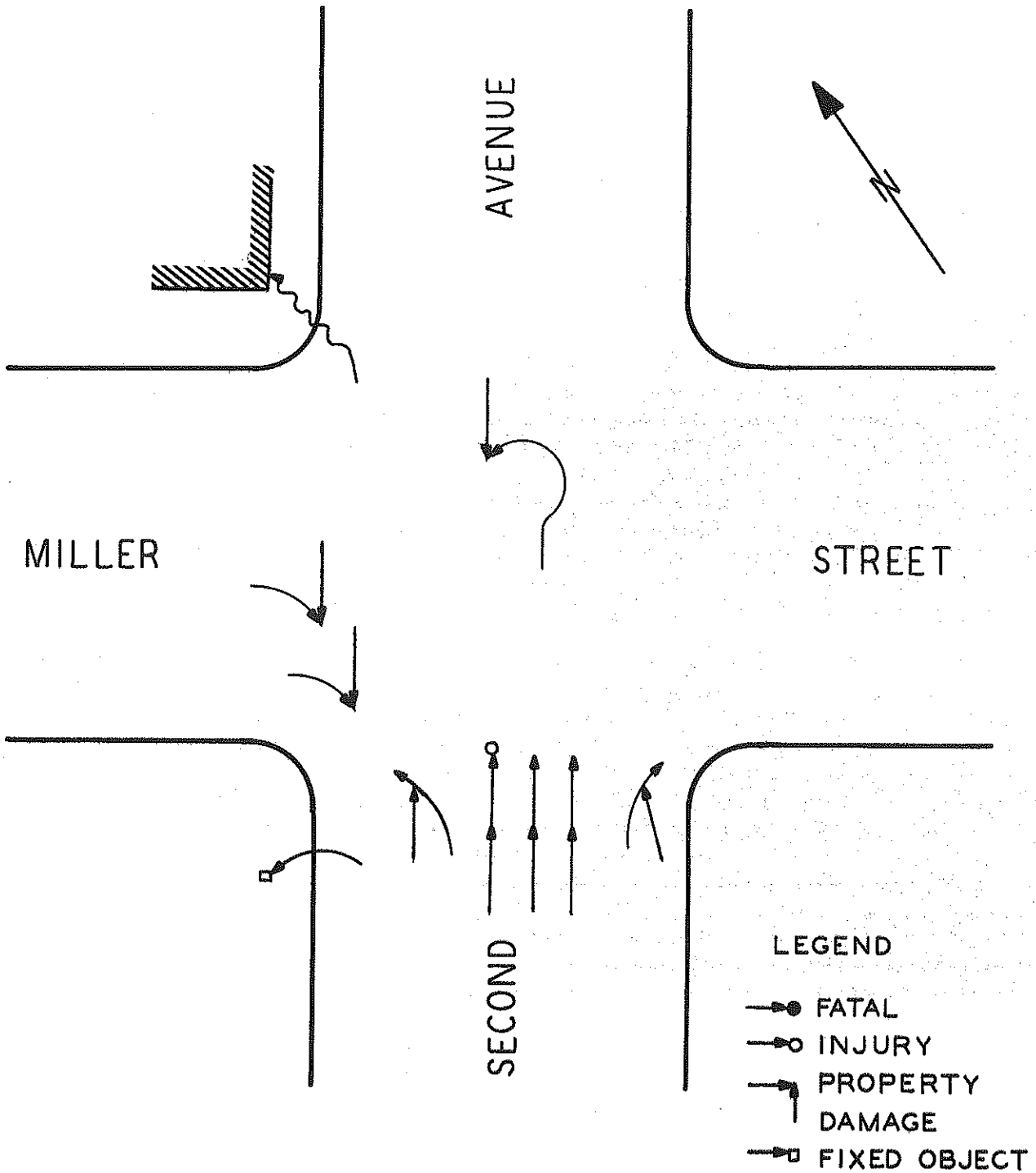


# ALPENA TRAFFIC STUDY

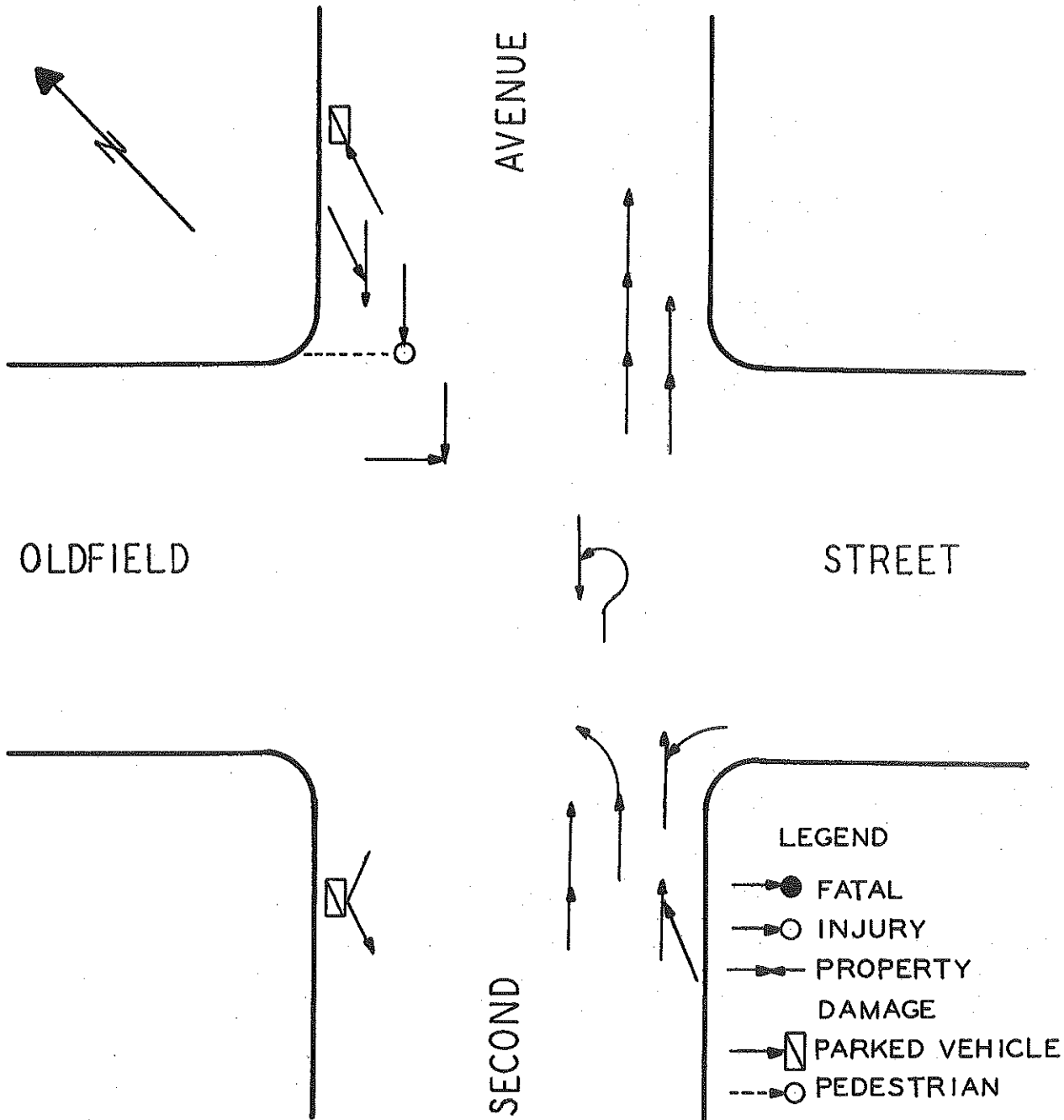
## COLLISION DIAGRAM

INTERSECTION OF SECOND AND MILLER

CENTRAL TRAFFIC SERVICES



**ALPENA TRAFFIC STUDY**  
**COLLISION DIAGRAM**  
**INTERSECTION OF SECOND AND OLDFIELD**  
**CENTRAL TRAFFIC SERVICES**

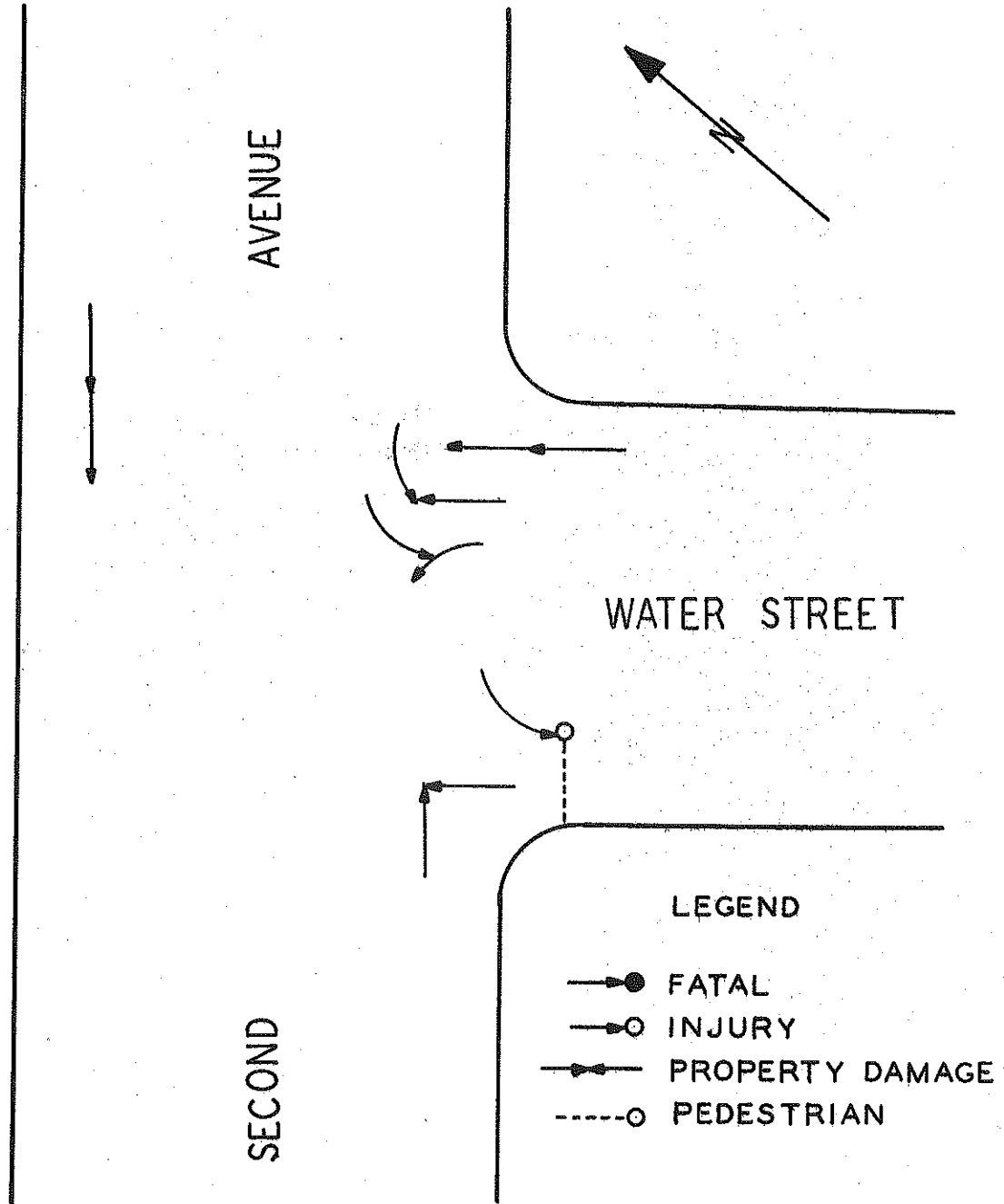


# ALPENA TRAFFIC STUDY

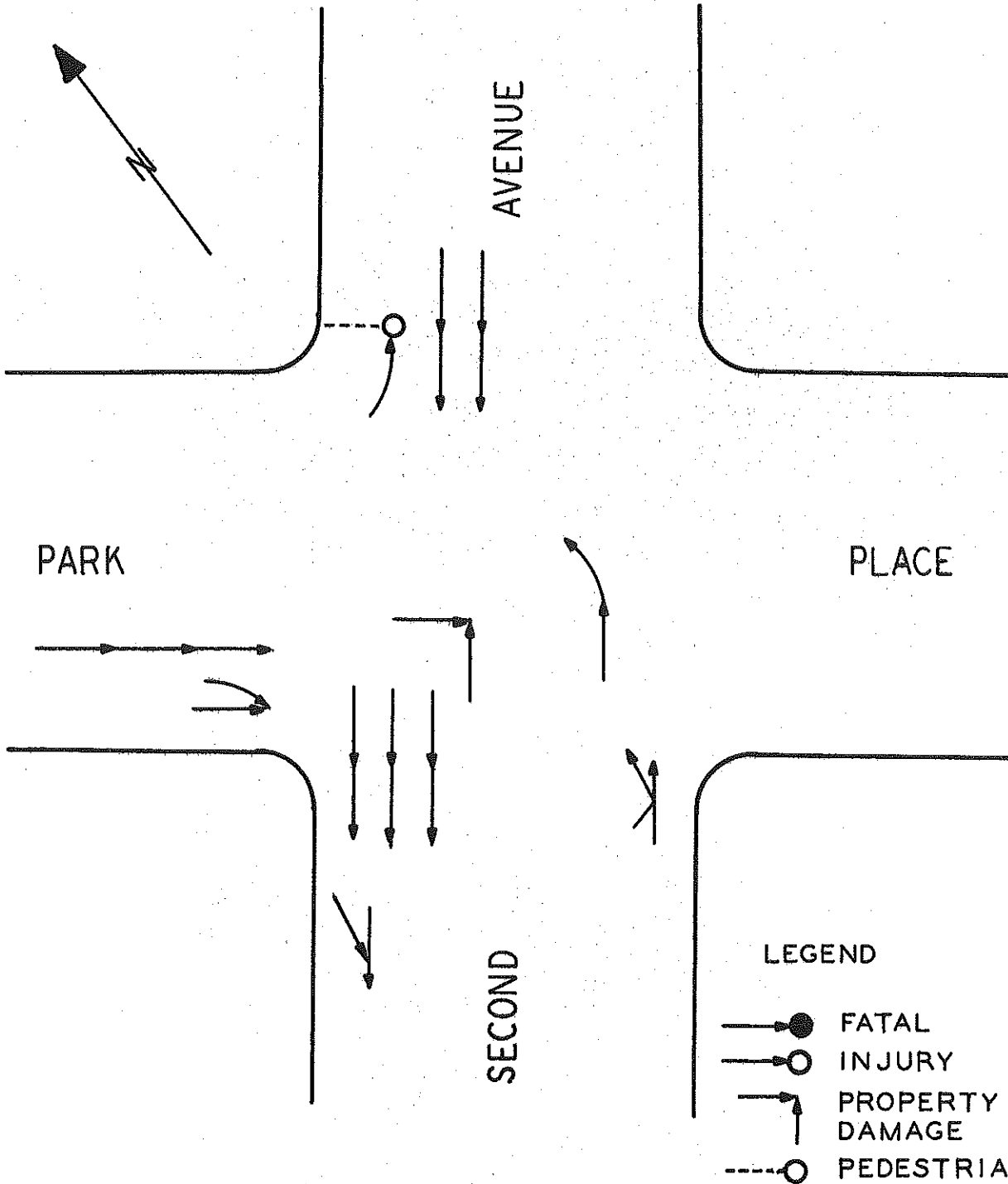
## COLLISION DIAGRAM

INTERSECTION OF SECOND AND WATER

CENTRAL TRAFFIC SERVICES



**ALPENA TRAFFIC STUDY**  
**COLLISION DIAGRAM**  
 INTERSECTION OF SECOND AND PARK PLACE  
 CENTRAL TRAFFIC SERVICES



### 3. Special spot maps

There are many that might be maintained, but of value only if experience warrants and if followed through special analysis and activities, some of these are: a) weekday experience, b) weekend experience, c) pedestrian accidents, d) residence of driver, e) residence of pedestrian.

There should be a close cooperation by the police with the safety education program which will: 1) make the public more traffic safety conscious, 2) teach proper driver and pedestrian habits, 3) build support for traffic control problems. They can best serve this program by providing accident facts needed for selective education and aiding in the actual conduct of activities.

Selective procedures in safety education as well as the use of general propaganda training in traffic should be provided for all traffic assigned personnel with periodic refreshers. Attendance of traffic supervision personnel of the Police Department at suitable regional or national traffic police training courses which meet standards of International Association of Chiefs of Police.

School safety should be met by school officials who should be charged with the responsibility of safety education work in all public and parochial schools. There should be a program of continuing safety education and project work as part of a regular curriculum in all elementary schools as approved by the National Education Association, or existing state legislation relating to such instruction. Operation of schoolboy patrols at street intersections and on school buses in accordance with standard rules as recommended by the Automobile Association in their specific publications. A junior safety council should exist in every school to carry on extra curricular activities in the schools. Liaison to be maintained with police traffic division on school instruction based on current local problems of traffic safety as determined by analysis.

Maintain and expand the current driver training program. Qualified instructors should be provided for not only the school children who have come of driver age, but also those adults who desire or have need of such training.

A program of public safety education should be conducted through information channels such as the mail, newspaper, radio and posters. Several excellent films have been prepared for this purpose and can be shown at different functions.

A Uniform Model Traffic Ordinance for Michigan has just been prepared and released by the Michigan State Police. Existing traffic ordinances in Alpena should be inventoried and revisions prepared so that standardization and uniformity can be obtained. This is a very important matter since the driver who is a stranger to a city and its ordinances cannot be expected to be aware of local rules contrary to general practices. Uniformity will result in better driving behaviour and by having a model ordinance already prepared, the City can save itself a lot of tedious work already performed by others.

## PARKING

### The Parking Problem

In the field of motor transportation, there are three elements which are found necessary for effective and efficient operation. These are the vehicle, the road or street, and a place to park at the beginning and end of a trip. We are constantly expending large sums of money to improve the roads for good service between points of vehicle origin and destination because we know that speed, economy and convenience are highly desirable factors of modern highway service. The passenger car is valuable because of its convenience, but the worth is diminished if the driver can find no place to park it in the downtown district when he gets there to do business. In most cities it is impossible to provide additional curb-side parking spaces, and in most, the demands for the use of the street area required by these spaces for moving traffic makes it mandatory that many of these spaces, especially those on the more congested streets, be eliminated to aid in better traffic operation in the business district.

In the City of Alpena, as in many other cities of comparable size, the central business district is limited in size with its boundaries fixed by land use developed in a previous era. The heavier traffic generators, such as stores and shops as well as service agencies and offices, are found concentrated in this small area, anchoring street widths yet causing an increase in the number of customers to be served. Increases in vehicle registrations have occurred yearly in Alpena County, rising from 6,037 in 1946 to 13,427 in 1957. This, of course, means that more people drive to the center of the city and compete for parking spaces.

The problem of inadequate parking facilities is a problem of the motorist who drives the car, the businessman who depends on the population for his livelihood, and the city officials responsible for city government.

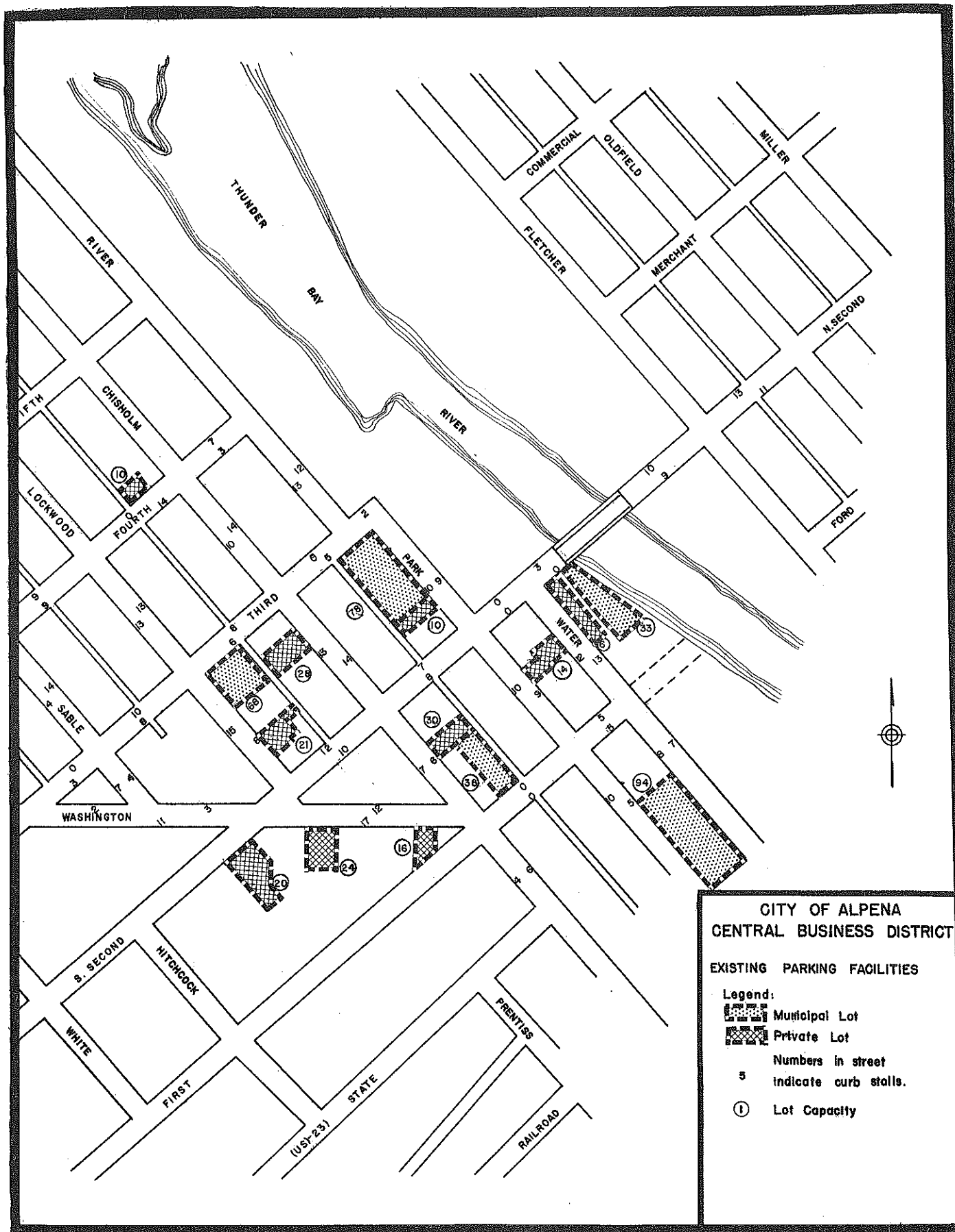
While the parking facilities existing in Alpena today cannot be looked upon as totally inadequate, it has been found through this survey and study that more offstreet parking should be acquired in order to more capably handle today's load as well as the demands of the future. It is becoming more apparent that with the increasing congestion on the streets in the downtown area, removal of much of the curb parking space will eventually be necessary.

With this in mind, the following study of the parking problem with the resultant recommendations has been made. Plate 12 shows existing curb and offstreet parking facilities in the downtown area.

### Employee Parking

In studying the parking conditions of a city it is necessary to determine the actual demand for parking spaces by finding out where the needs are the greatest and the type of parker creating these demands. As a means of finding out the parking habits of a





very important group of parkers, namely the employees and operators of downtown business places, a questionnaire was distributed to each place of business with the request that it be filled out as accurately as possible to aid in the analysis of the parking problem in the central business area. A total of 247 questionnaires were distributed and 176 usable replies were received. Some of the returns were too sketchy and incomplete to be of any value and were discarded. The returns yielded some very interesting facts and indicate one means which may be used to give some relief to the condition in the downtown business district.

Table VI shows a tabulation of these returns and from it we can readily see the effect of these parkers on the whole parking situation. A total of 853 people are covered by these questionnaires and were found employed as follows: 482, or 57% in stores; 141, or 16% in offices; and the remaining 27% in miscellaneous lines such as taverns, restaurants, etc.

In exploring the means of transportation used by these people in getting to work, a very significant fact appeared when it was found that 581 of these people drove their own cars. This is 68% of the total number of people employed in or near the downtown business district. Without regulation, people will park their cars in the most convenient spaces nearest their place of employment which could be used to a greater advantage by shopper parkers. The bulk of these employees and business operators, a total of 57%, use parking space on the streets or in public lots, and the remaining 43% park in private rented lots or in lots owned by the business itself. The location of the space used by these people is a significant factor to be considered. It was found that 336 (58%) of this group found parking space within one block of their place of employment. 137 (23%) within two blocks, 94 (16%) within three blocks, and a scant 3% four or more blocks away.

From this, the terrific impact this group has on the overall parking situation in Alpena can be plainly seen. These people who actually contribute little or nothing to the economic welfare or purchasing power of the area from which they draw their livelihood, are found to be utilizing a large percentage of the most desirable parking space which could be utilized by business customers. A total of 222 curb spaces are being occupied by these people during the time when they could be used at a greater turn-over rate for parkers doing business in stores of the area. If the number of spaces were made available to shoppers on the basis of average curb space turnover, which was found to be 5.4 in Alpena, an additional 1200 shoppers could have been parked on a daily basis. This is 43% of the number of the spaces the businessmen themselves have estimated they would need to fully accommodate their customers during peak periods as shown in Table VI.

Since employees report to work before the shoppers arrive in the area, it logically follows that they have first priority on available spaces. This fact was born out in the turnover rate study which showed that 48% of the unmetered spaces were occupied before 9:30 A.M. This clearly shows that some revision in the parking habits and practices of the employees are necessary if any improvement is to be made in the parking situation prevalent in the central business area.

TABLE VI

## EMPLOYEE PARKING QUESTIONNAIRE SUMMARY

Type of Business:	Number	Percent
Store	482	57
Office	141	16
Other	<u>230</u>	<u>27</u>
Total	<u>853</u>	<u>100</u>

Method of Traveling to Work:	Number	Percent
Walk	152	18
Drive Own Car	581	68
Ride with Others	<u>120</u>	<u>14</u>
Total	<u>853</u>	<u>100</u>

Parking Location:	Number	Percent
On-Street		
Metered Zone	24	4
Un-Metered Zone	198	34
Company owned lot	140	24
Private lot	112	24
Municipal Lot		
Metered	7	2
Un-metered	<u>100</u>	<u>17</u>
Total	<u>581</u>	<u>100</u>

Distance from Parking to Work (In Blocks):	Number	Percent
1 block	336	58
2 blocks	137	23
3 blocks	<u>94</u>	<u>16</u>
4 blocks	10	2
Over 4 blocks	<u>4</u>	<u>1</u>
Total	<u>581</u>	<u>100</u>

Estimate given by business people as to number of stalls required  
by their customers during peak periods: 2866

Square feet of floor area devoted to retail sales 283,789

Total questionnaires returned: 176

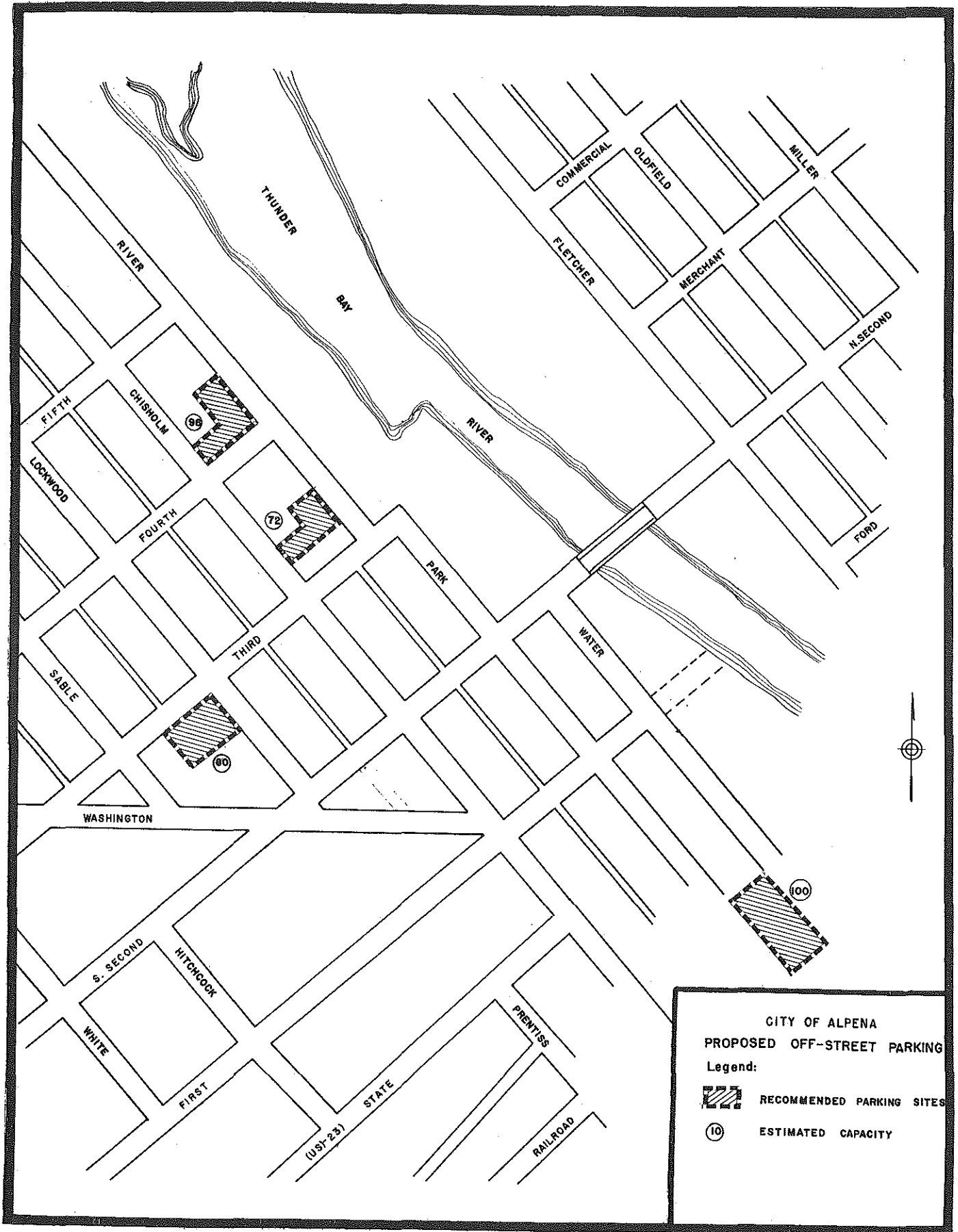
The condition which finds most of the available space occupied by employees of business is not peculiar to the downtown region. The area on Chisholm Street adjacent to the Fraser Products Company was also found to possess a very undesirable feature. The employees of this concern park their vehicles on Chisholm Street during the working day and fill the usable curb spaces so that other businesses in the area have no space in which their customers may find parking. The questionnaires returned by business places in this area asked for relief from this condition and registered complaints regarding this unfair practice. The overflow from Chisholm Street has spilled over into the Sixth and Lockwood residential section and is a source of complaint by residents of this area. It is recommended that a serious attempt be made to get the cooperation of the Fraser Products Company officials in locating a parking lot for their employees on vacant property directly behind their plant on River Street. Since this land is vacant and available, it would be a simple matter to arrange for an entrance from River Street and provide a good all-weather lot closer to the plant entrance for all employees. It will become necessary in future years to eliminate parking from one or both sides of Chisholm Street and a move by Fraser Products to provide its own parking facilities at the present would take care of future contingencies while the solution is readily available.



#### Recommendations On Parking Needs

The congestion on the traffic arteries in Alpena indicates that it is not going to be long before it will be necessary to eliminate parking on certain of the streets in the downtown area and on some of the principle streets in the intermediate areas. In order to be able to do this it will first be necessary to provide adequate off-street parking space to replace the spaces taken away from the curb. Taking this feature into account and combined with the analysis of the data obtained from the complete parking study, the recommendations for additional off-street parking lots shown graphically on Plate 13 have been made.

Criteria for determining the number of parking spaces necessary to meet specific conditions vary. Theoretical values which are based on floor area used for retail sales would indicate that there should be some 1100 stalls available. Using a population index, we arrive at a figure of approximately 1500 stalls.

In the entire central business district area, the percentage of occupancy averaged a little over 75%, and in the core of the most congested area bounded by Chisholm, Third, Water and First, it was found to be 80%. The accepted standard reflecting saturation of the existing parking facilities is in the neighborhood of 85%. Since we are slightly under this figure it would appear that we actually have an over abundance of spaces. This is incorrect due to the fact that vacancies can always be found in certain stalls due to the normal parking turn-over time. The time of day is also an important consideration since an effort must be made to provide an excess number of spaces to meet peak hour demands or customers will be obligated to go elsewhere. By providing these necessary facilities, brisk business can be assured for the area and the result will be the



CITY OF ALPENA  
 PROPOSED OFF-STREET PARKING  
 Legend:  
 RECOMMENDED PARKING SITES  
 ESTIMATED CAPACITY

improvement in land values and the city treasury will benefit from the higher tax returns. A deficiency of parking facilities can well cause an area to become less attractive to shoppers with the result that business will suffer, causing decreasing land values and resultant lowering of tax returns from that area.

The recommended sites shown will provide the additional parking spaces needed for the central business district of Alpena in locations near enough to be used to good advantage. Acquisition of these sites should be taken without undue delay so that spaces lost through the elimination of curb parking needed to put streets back to the use for which they were originally intended will not transpire first and leave a period of deficient parking.

The physical layout of the central business district is such that the important direction of expansion will be to the northwest along Chisholm Street. For this reason as well as the facts borne out by the survey that the demand for parking was greatest in the area immediately adjacent to the River Street parking lot, and the fact that the areas recommended are well within walking distance which can be reasonably expected to be acceptable to shopper parkers, it is recommended that the city take quick action to acquire the property recommended on Plate 13.

The area back of the City Hall not already being devoted to parking should be made available by the removal of the building and tower thereon. Blacktop surfacing should be applied and the surface marked by paint lines to designate stalls. By efficient delineation of the parking stalls and the additional room, it is estimated that this area will accommodate an additional 90 to 100 vehicles.

The property now in the possession of the Baptist Church on Third and Lockwood Streets is shown as a recommended site which would be desirable for a future off-street lot should this property become available as we have been given reason to believe. This area could accommodate an estimated 80 vehicles.

The site recommended northwest of the Central Fire Station and the Wehofer Bakery property which includes two lots fronting on River Street and one on Chisholm Street, is now occupied by two vacant warehouse type buildings and a residence. This site is well located to give a good facility in the area of greatest demand for parking space. It could be expected to provide parking for approximately 66 cars. The need for additional space in this vicinity is critical and it would be well to acquire the property as soon as possible.

The final area to be recommended is the four lot parcel lying northwest of Fourth Street between Chisholm and River Streets. This parcel has three lots fronting on River Street and one on Chisholm Street. One or more of the lots in this parcel is vacant and the others are occupied by buildings in a bad state of repair and in their present condition, are not enhancing the beauty of the area. This particular site is one which would be very valuable for use of longer period parkers who wish to shop in the downtown area for a longer time. The parking meters could be set to accommodate long time parking by employees of the businesses in the central business

district and thereby free curb spaces nearest the shopping centers for customer parking. This site would also be valuable for the parking which will be required by the future expansion of business in this direction which is already transpiring. This parcel could be prepared to accommodate approximately 88 vehicles and would give parking relief to a large area in the vicinity.

Any of the sites recommended above are large enough to accommodate a structure for a ramp type parking garage if the need should arise in the future. This is a point well worth considering when we take into account that land in the desirable areas will continue to become more scarce and increase in value. If future needs dictate that additional parking space will be necessary, this could prove to be the most economical way to provide this type of facility. The land is already in possession of the city, therefore it would be an important factor in the economic consideration to determine whether the greater building cost of a ramp garage will be offset by the advantages of location and elimination of the need to acquire additional land. This would be true whether the parking was sponsored by the city or private enterprise.

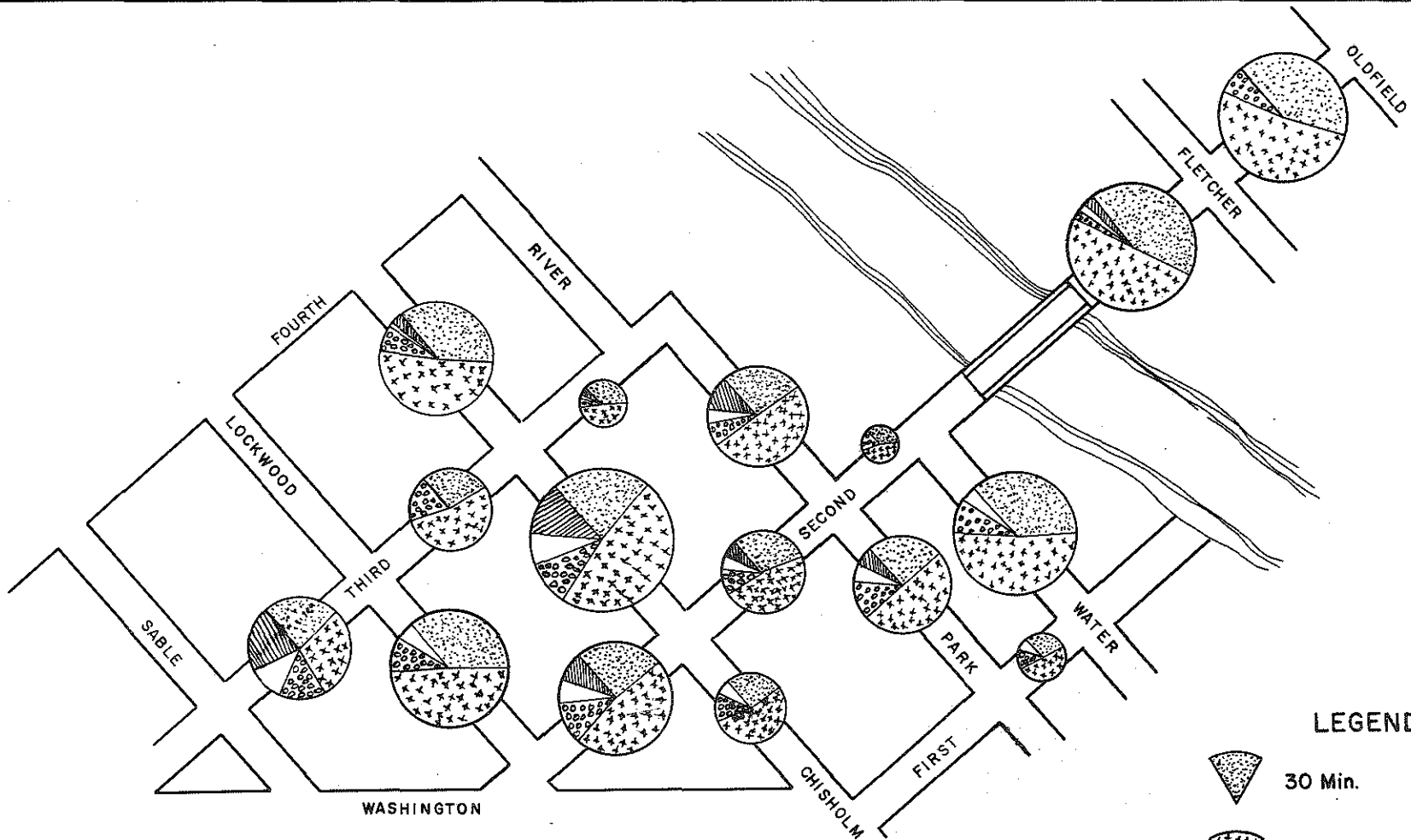
The recommended sites, excluding the Baptist Church property, would accommodate an estimated 252 vehicles and would be a progressive step in solving the parking problem for some time in the future.

On-street parking in Alpena seems to be working out quite well insofar as time limit violations are concerned. Violations are not particularly serious since the rate found during the survey was approximately 6%. For a city the size of Alpena this is quite reasonable, and is a tribute to good enforcement and cooperation by the people. Some parkers are willing to buy parking space by periodic "meter feeding" which, of course, defeats the purpose of the meter itself. Meters are used primarily to insure a turnover of vehicles in the spaces. Where there is evidence of meter feeding in an area, time limit enforcement making use of tire chalking must be initiated to combat this type of activity.

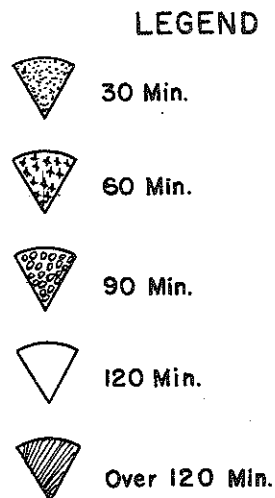
Plate 14 shows graphically the data obtained by a survey of the parking habits in the central business district on an average day. A short time study of the situation during the Deer Season influx was repeated and showed no appreciable differences in the areas of demand.

Parking lots should be made efficient by having a good clean surface at all times. The surface should be either concrete or asphalt in order to make possible the marking of stalls for the most economical use of the space available. Lighting, for night-time use is a very important factor in encouraging public use of these lots, especially by women. Dark, unlighted lots provide a refuge for vandals as well as being dangerous in other ways. Signs should be erected at strategic places along the streets to guide the motorists along the most desirable routes to the lots and thereby lessen congestion on the streets caused by uncertainty of people looking for them.

The northwest shopping area on both sides of Chisholm Street between Ninth and Tenth Streets appears to have very little trouble



GITY OF ALPENA  
 BUSINESS DISTRICT PARKING STUDY  
 Per Cent. Distribution of Parking Stall Capacity  
 On-Street Parking Only



SCALE: 20 STALLS PER 1" OF RADIUS



from the deficiency of parking spaces. The city government has approved the use of some land in Market Square for development into a parking lot if such a lot becomes necessary. While it does not appear that this will be needed immediately, this property should be reserved for this contingency. A large area back of the Kotwicki Department store is now being used to good advantage by patrons of the area but if this should be withdrawn from use as parking and a building built on the land, the building itself would probably become a traffic generator and further accentuate the deficiency in parking. The area from the alley to the rear of the buildings on the northeast side of Chisholm Street could easily be developed by property owners into parking if rear entrances to their places were built. It would make it very easy for customers to have a good place to park near to the place they wish to do business.

### Zoning Ordinances For Parking

Zoning for parking is a legal method of requiring needed off-street parking facilities in conjunction with newly erected or substantially altered buildings. The purpose of a zoning ordinance for off-street parking is to provide off-street parking space to meet present requirements and more realistically provide for the future demands of parking space created by parking generators. The extent of need should be determined by the type of usage. By means of these zoning ordinances, off-street parking facilities are made an integral part of the development of the business on a permanent basis and gives insurance against the lack of this essential component in a functionally complete business. Future growth can be accomplished with less burden placed on municipal and private facilities.

While these ordinances are not in themselves a complete solution to the problem, a properly drafted and administered ordinance, with the proper enforcement, can be a valuable aid to a municipal parking program and help materially to allay further expansion of the difficulties now present as regard the parking problem.

Ordinances outlining requirements for off-street parking facilities to be provided by generators of parking demand in Alpena are woefully inadequate. It was found in a study of the Ordinance Code of the City of Alpena that the provision of off-street parking is required only at places of public assembly, multiple dwellings, hospitals and hotels. While this is definitely a step in the right direction, it nevertheless falls short of treating the problem of equal or greater magnitude--that of the retail store or office building.

This should be remedied immediately by the addition to the Code definite requirements for off-street parking facilities in any new or substantially altered building which is not of the type covered in the ordinances already in effect.

## Loading Zones

The provision of off-street loading facilities as required by a Zoning Ordinance is another means of insuring future freedom from the difficulties now being experienced in the downtown area of Alpena. The increasing need of reserving more and more street space for the use of moving traffic dictates immediate action in making use of this means of providing freedom of movement on the streets.

While the requirements imposed by a Zoning Ordinance as mentioned above provide for the future, strong sustained effort must be put forth to do something to handle the problem for immediate relief. To this end the following recommendations are made.

In sections where alleys are in existence, it should be made mandatory that the merchants provide rear entrances for loading and unloading of freight and merchandise by commercial vehicles. In many cases, the requirement of using alleyways for loading zones is deemed inconvenient by users who continue to unload at their leisure in places of their choice which usually means double parking on the streets. Making it mandatory to carry on these activities in the alleys will, of course, necessitate strict enforcement of the ban on parking in alleys.

Permits for curb loading zones should be issued by the city only after a study of conditions by competent personnel assigned this function. The newly published Michigan Uniform Traffic Code for Cities, Townships and Villages very ably presents an ordinance for curb loading zones under Section 2.30 entitled "Permits for Curb Loading Zones", which reads as follows:

"The traffic engineer shall not hereafter designate or sign any curb loading zone upon special request of any person unless such person makes application for a permit for such zone and for two signs to indicate the ends of such zone. The traffic engineer upon granting a permit and issuing such signs shall collect from the applicant and deposit with the treasurer a service fee, in the amount specified by resolution of the ordinance making body, for year or fraction thereof. The governmental unit may by regulations impose conditions upon the use of such signs and for reimbursement for the value thereof in the event of misuse or upon expiration of permit. Every such permit shall expire at the end of 1 year."

Curb loading zones may be established for businesses in an area by designating a section of two to three stalls in length for loading during the off peak traffic hours and marked as such by signs placed at the ends of the zone. In Alpena, as determined by the parking study, it seems practical to have these zones signed so as to prohibit parking for all but commercial vehicles loading or unloading between the hours of 7:30 and 10:00 in the morning, and between 4:00 and 5:30 in the afternoon. The signs should bear the legend: LOADING ZONE-- No Parking 7:30 AM-10:00 AM -- 4:00 PM-5:30 PM.

It should be borne in mind that none of the remedies tried will be of any value if they are subject to modification for either personal or political reasons and unless they are administered in a fair and impartial basis. The strict enforcement of these curb loading zones by the Police Department is a most essential part in making this effort effective. Once the enforcement is relaxed for any reason which may seem convenient at the moment it will become increasingly easy for misuse of the zones to become so widespread as to render them totally ineffective. After provisions have been made to accommodate loading operations without interference with traffic, all violations should be penalized on an equitable basis without regard for special privileges. The penalty for double parking for the purpose of loading or unloading should be especially severe. Parking violations should be graduated so the penalty for overtime parking is not as great as parking in a moving lane of traffic.

## PEDESTRIAN AND VEHICLE VOLUMES

A good plan of traffic operation cannot be properly prepared without acquiring an accurate knowledge about the movement and volumes of vehicles and pedestrians. This information is basic and is the foundation on which a good arterial street system is developed. Without it, no proper appraisal of lane capacity and intersection cross-movements could be made.

Mechanical and manual methods were employed for gathering vehicle and pedestrian volumes. Machines can perform a reliable job of counting vehicles and grouping them by their time of passage through a selected point, but classification of turning movements would prove a difficult task unless complicated equipment was employed. Manual turning movements were taken on the Alpena Survey.

The proper selection of stations for counting vehicles plays a very important function in the success of the survey. It is costly and unnecessary to count traffic in every block of each street. Accurate sampling will produce just as satisfactory results. This requires a background knowledge of the manner in which the street system is being used. Identifying streets which carry large volumes of traffic is a relatively simple task. Attempting to isolate those intersections which act as interchanges for traffic moving from one street to another, is more difficult.

By the proper selection of counting stations, it is possible to account for all the important traffic flow movements through the city and determine whether a future street system will be able to accommodate the traffic growth which the future could produce.

Alpena has several streets carrying large volumes of traffic. This is a tribute to the dynamic character of the city and also the high level of economic activity. Chisholm Street and Second Avenue are the major traffic carriers, but other routes are fast approaching these streets in arterial importance. State Avenue, First Avenue, Ripley Boulevard, Ninth Avenue and Washington Avenue have grown to traffic proportions whereby the control of traffic requires considerable thought and planning. Johnson Street, while carrying smaller volumes when compared to the above mentioned routes, will grow in traffic importance due to the development in the area it serves.

Table VII shows 24-hour traffic volumes gathered at several stations on the Alpena street system. The largest traffic volume was found on Second Avenue between Chisholm Street and Park Place. This block is in the heart of Alpena's shopping area which accounts for the traffic activity. Second Avenue is also a bridge crossing route to the north section of the city which induces a considerable amount of traffic. Chisholm Street likewise has traffic volumes in excess of 10,000 vehicles in the downtown business area. The combination of business activity and through traffic movements swell the volume of traffic. Chisholm Street is also State Trunk-line Highway US-23 and is one of the major north to south routes in the State of Michigan.

Table VII

CITY OF ALPENA  
24-Hour Vehicle Volumes  
June, 1957

Street	Location	Count
Oldfield Street	Between Second and Ford	1637
Oldfield Street	Between Cedar and Pine	1306
Miller Street	Between Second and Ford	1084
Miller Street	Between Long Lake Road and Pine	2105
Second Avenue	Between Campbell and Lincoln	2390
Second Avenue	Between Hitchcock and Washington	3972
Second Avenue	Between Washington and Chisholm	9120
Second Avenue	Between Chisholm and Park Place	11271
Second Avenue	Between Lake and Clark	5789
First Avenue	Between Campbell and Lincoln	1706
First Avenue	Between Hitchcock and Chisholm	1478
First Avenue	Between Chisholm and Park Place	6235
Eighth Avenue	Between Lockwood and Sable	432
Eighth Avenue	Between Chisholm and River	367
Ninth Avenue	Between Lockwood and Sable	6259
Ninth Avenue	Between Chisholm and River	4667
Ripley Boulevard	Between State and Grant	4392
Ripley Boulevard	Between Campbell and Washington	5532
Ripley Boulevard	Between Washington and Catherine	5484
State Avenue	Between Ripley and Mason	8672
Chisholm Street	Between State and First	10488
Chisholm Street	Between First and Second	9201
Chisholm Street	Between Second and Third	10543
Chisholm Street	North of Johnson	7488
Washington Avenue	West City Limits	4780
Washington Avenue	Between Charlotte and Ripley	5803
Washington Avenue	Between Ripley and Bedford	5665
Washington Avenue	Between Chisholm and Second	4424
Johnson Street	Between Walnut and Woodward	1317
Adams Street	Between Long Lake Road and Lake	2743
Campbell Street	Between Third and Fourth	1984
Third Avenue	Between Dunbar and White	3704
Fourth Avenue	Between Washington and Tawas	726
Water Street	Between First and Second	3803
Park Place	Between First and Second	2621

A very well defined vehicle travel path was found from an examination of the traffic counts. The Ripley Boulevard-Ninth Avenue traffic axis is subject to a great deal of traffic usage due to its serving as a bypass to the Alpena central business area. A close observation of the city map will show that this is an ideal circumferential route. The route starts at the intersection of Ripley Boulevard with State Avenue and extends along Ripley until it runs into Ninth Avenue. Ninth Avenue carries on to the northeast where it crosses the Thunder Bay River into Alpena's north side. This is the only bridge crossing northwest of the Second Avenue bridge so traffic is required to use the route.

Plates 15 and 16 show hourly traffic volumes at count stations located on major traffic arteries. The purpose of these counts is to determine the maximum periods of traffic movement. This information is very vital for determining lane capacities on arterial streets. It would be very possible for two streets to carry identical traffic volumes during a 24-hour period, but with one street having a much more pronounced traffic peak than the other. Failure to account for this situation could result in traffic congestion which would occur on a daily basis. The period between 4 PM and 5 PM was the peak hour for most of the routes although the 2 PM to 3 PM hour was the heaviest on Second Avenue in the downtown area. As a general rule, the hour of highest traffic is 10% of the 24-hour total. Alpena traffic followed quite closely to this figure. This is proof that Alpena's traffic is diversified and is not confined to one type of activity.

The intersection of Chisholm Street with Second Avenue is one of the busiest intersections in the City in view of the combined vehicle and pedestrian volumes. A graphic summary sheet of vehicle volumes was prepared for the eight hours between the periods of 7AM-10AM; 11AM-1PM and 3PM-6PM. These hours encompassed the peak hours of the day. Left turns are prohibited at this location therefore the counts shown on Plate 17 are traffic violations. There are heavy right-turning movements in the north, west and east quadrants which are in conflict with pedestrian movements.

Plate 18 shows a vehicle flow diagram for the intersection of Second Avenue with Miller Street. The city recently installed a traffic signal at this location, therefore a turning movement count was taken in the two hours between 3:30 PM-5:30PM when industrial traffic was at a maximum. The counts show that the left turn from the southwest on Second Avenue to the northwest on Miller Street is the heaviest conflicting movement. This movement is actually being hindered by traffic signal operation.

Pedestrian volumes are shown for an eight hour period at three intersections in the downtown area. Plate 19 shows the volume and direction of pedestrian movements for the three periods between the hours of 7AM-10AM; 11AM-1PM and 3PM-6PM. The intersections of Second Avenue with Chisholm and Park Place have very large volumes of pedestrian travel while the intersection of Chisholm and Third is lighter. The number of pedestrians found at all three locations will prevent a severe conflict with vehicle movements and must be solved by proper signal timing and the enforcement of pedestrian ordinances.

ALPENA TRAFFIC SURVEY  
1957

CENTRAL TRAFFIC SERVICES

HOURLY TRAFFIC VOLUMES

STATION NO.	1.	2.	3.	4.	5.	6.	7.
DAY	Thurs.	Thurs.	Wed.	Wed.	Wed.	Wed.	Thurs.
DATE	6/27	6/27	6/26	6/26	6/26	6/26	6/27
TIME							
12-1A.M.	102	82	72	207	169	245	84
1-2	73	62	38	141	94	127	88
2-3	83	48	28	73	67	126	56
3-4	38	39	8	45	21	47	15
4-5	12	10	8	25	15	9	15
5-6	23	19	19	75	35	23	34
6-7	154	101	44	111	97	68	111
7-8	223	174	90	345	230	217	251
8-9	190	169	172	416	367	270	208
9-10	246	221	168	404	370	422	224
10-11	271	301	252	663	558	578	280
11-12	287	285	256	627	559	696	274
12-1P.M.	355	356	337	659	583	760	350
1-2	366	395	298	708	608	705	359
2-3	380	398	283	691	580	804	326
3-4	401	395	314	718	592	702	354
4-5	473	460	336	807	673	748	482
5-6	434	400	310	719	573	741	395
6-7	331	338	234	630	511	508	360
7-8	427	399	259	657	634	663	365
8-9	285	336	286	581	647	680	353
9-10	258	267	240	492	503	572	226
10-11	173	202	204	375	419	495	178
11-12	218	208	168	320	296	337	144
TOTAL	5803	5665	4424	10489	9201	10543	5532

PLATE 15

Station No.	Location	Station No.	Location
1.	Washington (M-32) West of Ripley	5.	Chisholm (US-23) Between First & Second
2.	Washington (M-32) East of Ripley	6.	Chisholm (US-23) Between Second & Third
3.	Washington (M-32) Between Chisholm and Second	7.	Ripley Between Campbell and Washington
4.	Chisholm (US-23) Between State and First		

ALPENA TRAFFIC SURVEY  
1957  
CENTRAL TRAFFIC SERVICES

HOURLY TRAFFIC VOLUMES

STATION NO.	8.	9.	10.	11.	12.	13.
DAY	Wed.	Wed.	Wed.	Wed.	Wed.	Fri.
DATE	6/26	6/26	6/26	6/26	6/26	6/28
TIME						
12-1A.M.	78	14	65	172	238	160
1-2	91	8	42	71	104	77
2-3	45	6	25	80	78	62
3-4	22	4	19	15	26	22
4-5	16	2	8	8	5	14
5-6	38	7	60	47	50	82
6-7	159	27	148	172	155	285
7-8	253	41	228	238	265	573
8-9	194	94	309	239	286	450
9-10	224	80	308	349	400	494
10-11	276	71	375	429	575	582
11-12	274	85	376	494	664	604
12-1P.M.	349	109	440	650	785	841
1-2	332	109	494	632	772	742
2-3	356	84	414	706	898	718
3-4	350	90	442	608	755	813
4-5	465	110	511	689	806	952
5-6	389	107	440	634	743	967
6-7	354	88	273	396	454	568
7-8	351	96	313	642	773	786
8-9	303	88	296	612	827	866
9-10	217	61	319	529	715	842
10-11	175	56	185	400	501	625
11-12	173	41	145	308	398	355
TOTAL	5484	1478	6235	9120	11273	12480

PLATE 16

Station No.	Location	Station No.	Location
8.	Ripley Between Washington and Catherine	11.	Second Between Washington and Chisholm
9.	First Street Southwest of Chisholm	12.	Second Between Chisholm and Park Place
10.	First Street Between Chisholm and Park Place	13.	Second North of Bridge



# ALPENA TRAFFIC SURVEY

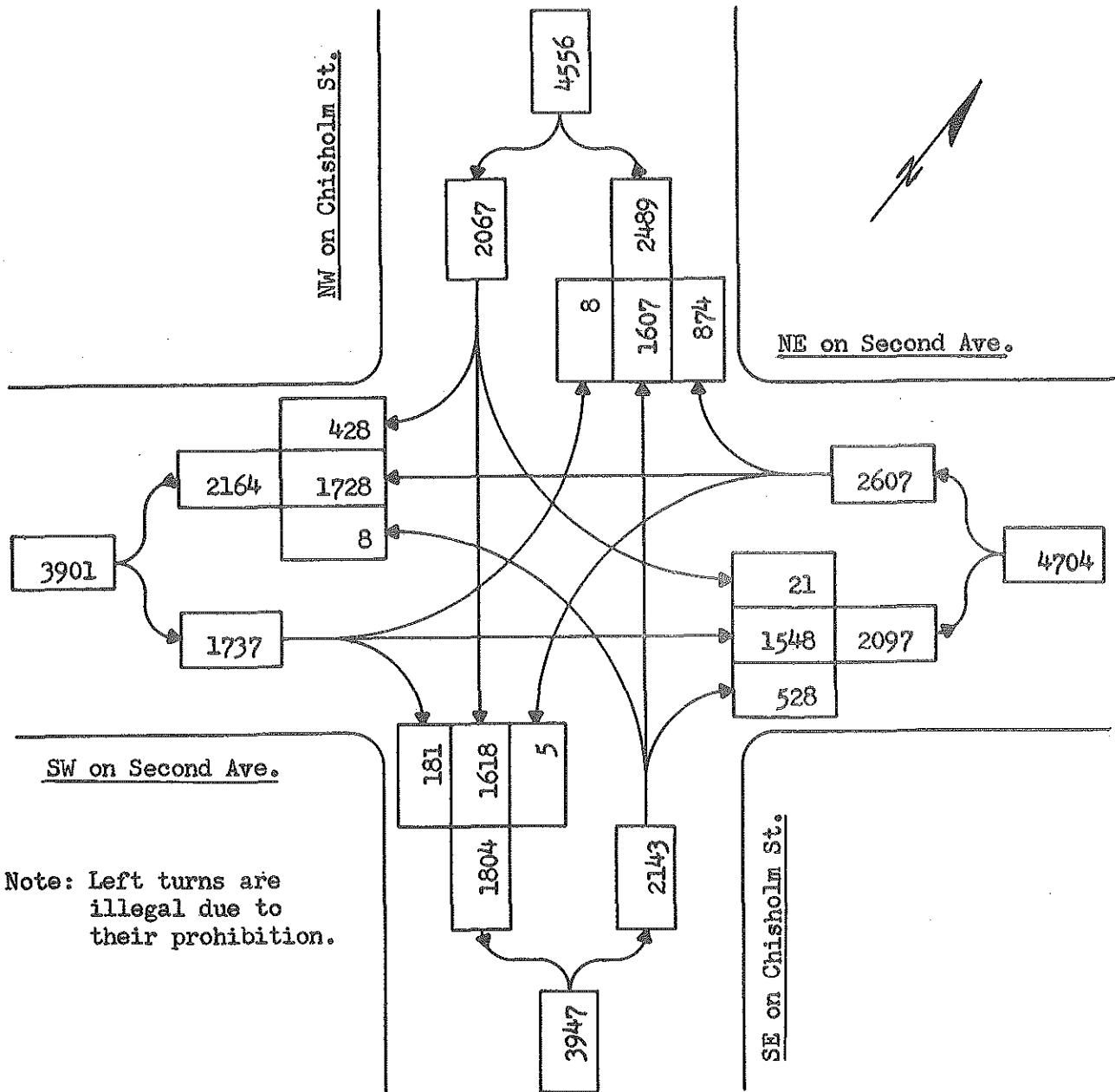
1957

VEHICLE VOLUME COUNT  
GRAPHIC SUMMARY SHEET

7AM 10AM  
11AM 1PM

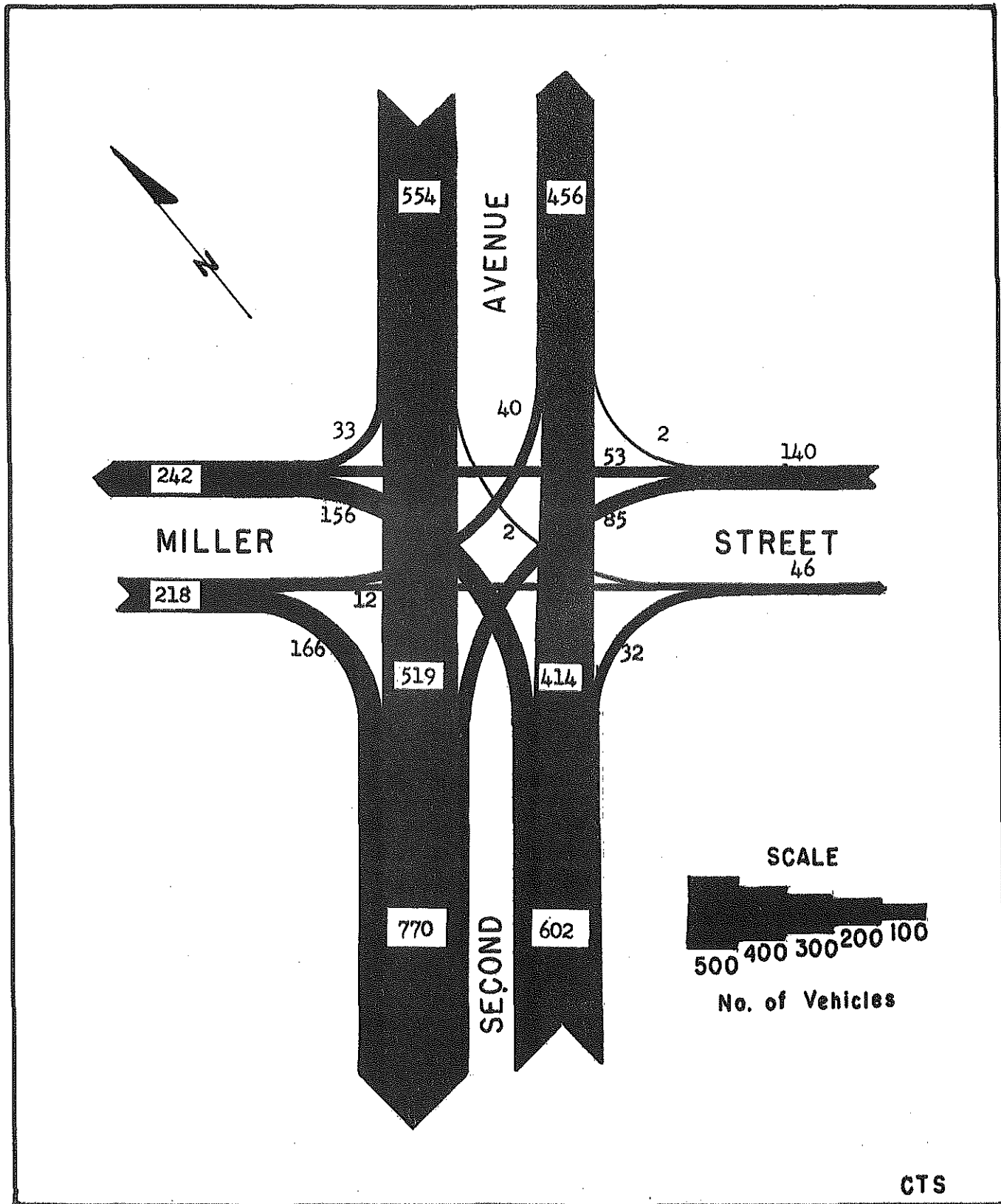
Date: 6/26/57 Day: Wednesday Weather: Clear Time: 3PM to 6PM

Intersection of: Chisholm Street and Second Avenue



Intersection Leg	Inbound	Outbound	Total
SW Leg of Second Avenue	1737	2164	3901
NE Leg of Second Avenue	2607	2097	4704
SE Leg of Chisholm Street	2143	1804	3947
NW Leg of Chisholm Street	2067	2489	4556
<b>TOTAL</b>	<b>8554</b>	<b>8554</b>	

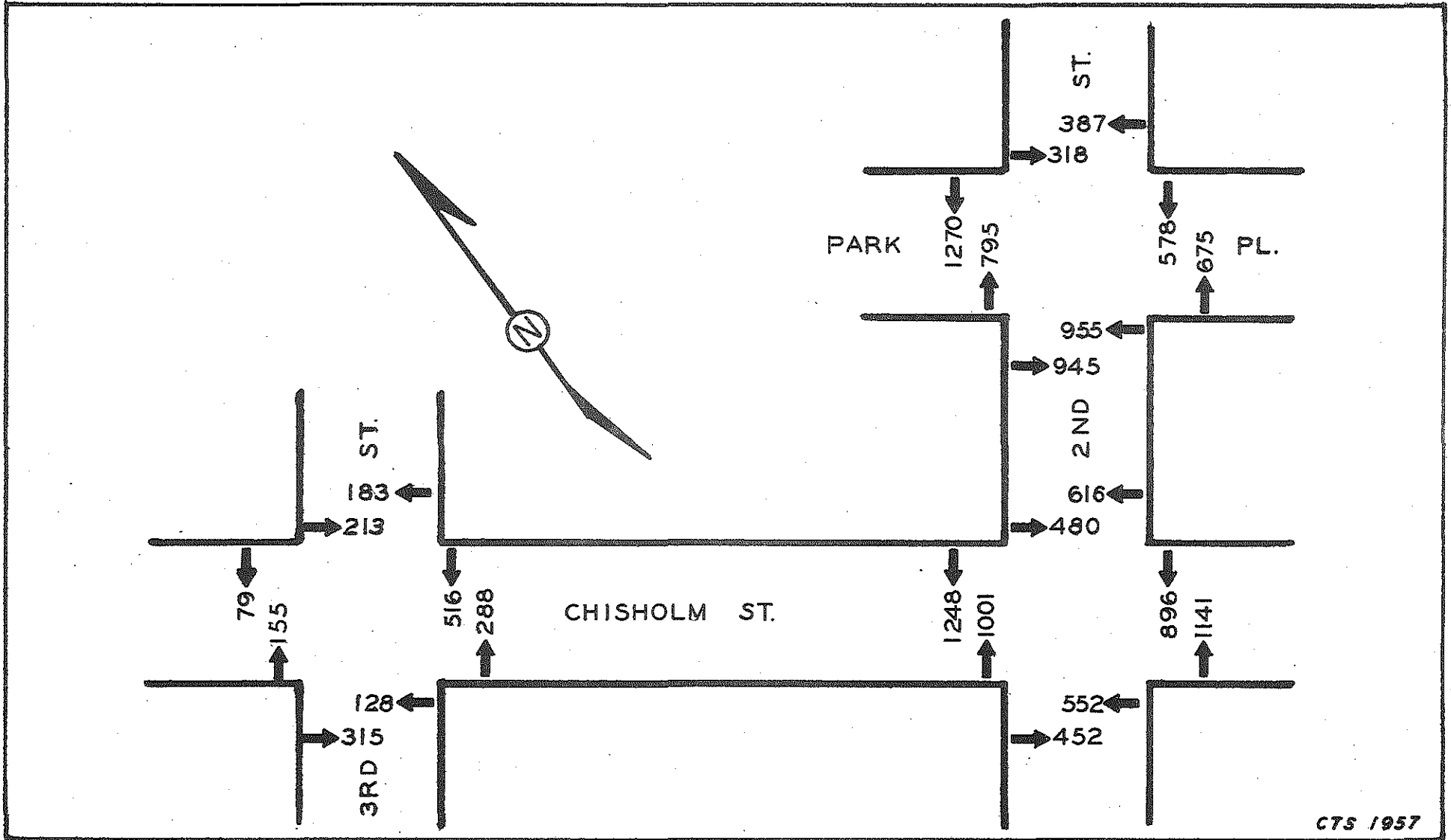
ALPENA TRAFFIC STUDY  
 VEHICLE FLOW DIAGRAM  
 SECOND AND MILLER  
 3:30pm - 5:30pm  
 1957



CTS

# CITY OF ALPENA

PEDESTRIAN 8-HOUR VOLUMES  
AVERAGE WEEKDAY  
7AM-10AM; 11AM-1PM; 3PM-6PM;



CTS 1957

## SPEED AND DELAY

The speed of traffic over the streets of Alpena indicates that there is a need to maintain or increase enforcement in certain areas while at the same time, raise the speed limits to realistic maximums where such speeds are permissible. A review of the accident records reveal that violation of the posted speed limits was very seldom the cause of accidents. Although speed is a factor in some of the accidents, this is generally because of a violation of the prima facie speed law which compels a driver to maintain a speed which is reasonable and proper for conditions even if the posted speed is greater.

## Vehicle Speed Studies

The streets selected for the speed checks were those on which the police have found the greatest number of violations and where the existing speed limits are subject to question. These are State Avenue, Chisholm Street, Washington Avenue, Ripley Boulevard between State Avenue and Washington Avenue, and Johnson Street between Chisholm Street and Walnut Street. Tables VIII, IX, and X show the results of these speed checks.

Stations #1 to #5 are on US-23 while stations #6 to #10 are on M-32. These two highways have speed limits which are established by the joint authority of the State Highway Commissioner and the Commissioner of State Police and cannot be altered by local governmental action. The checks reveal that the zones are set quite accurately and are definitely not too high. There is a tendency for disobedience of the posted speeds on Chisholm Street, near Long Rapids Road and on Washington Avenue at the west city limits. Obedience is good on the remaining sections.

The speed study made on Ripley Boulevard indicates the need of a speed limit higher than the basic speed of 25 miles per hour.

The 85th percentile is calculated for each speed station since this is nationally recognized as the proper place to establish the maximum speed. This means that the average drivers are performing within the legal limit while 15 percent are driving beyond this limit. Establishing a limit much lower than this value would create a speed zone impossible to enforce judiciously. It is a proven fact that the posting of a low speed on a sign will not alter the driver's behavior to any appreciable degree.

30 miles per hour should be posted on Ripley Boulevard between Washington Avenue and Third Avenue while 35 miles per hour should be posted between Third Avenue and State Avenue. The problem of raising the basic speed past the school will no doubt cause criticism, but a new development in electrical signing provides a ready answer for this problem. A signal-sign combination consisting of alternate flashers and an illuminated speed legend is placed in advance of a school zone on each approach leg of the highway. When children are coming and departing from school, the flashers are activated and the speed legend is illuminated. This speed legend should be "25"

Table VIII

## ALPENA TRAFFIC SURVEY

## Central Traffic Services

## VEHICLE SPEED SUMMARY

Light Conditions

Weather

Pavement Condition

Dark \_\_\_\_\_ Light XClear \_\_\_\_\_ X Cloudy \_\_\_\_\_ Rain \_\_\_\_\_ Snow \_\_\_\_\_Dry X Wet \_\_\_\_\_ Icy \_\_\_\_\_

SPEEDS IN M.P.H.	Station #1		Station #2		Station #3		Station #4		Station #5	
	No.	%	No.	%	No.	%	No.	%	No.	%
Over 50									2	2.0
45 - 50									5	5.0
40 - 45	2	2.0	2	2.0					16	16.0
35 - 40	5	5.0	3	3.0	2	2.0	4	4.0	15	15.0
30 - 35	25	25.0	29	29.0	4	4.0	15	15.0	34	34.0
25 - 30	36	36.0	42	42.0	44	44.0	30	30.0	17	17.0
Under 25	32	32.0	24	24.0	50	50.0	51	51.0	11	11.0
TOTAL	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0
AVERAGE SPEED	27.7		28.5		25.5		26.2		38.8	
85th PERCENTILE	32.2		33.4		30.1		31.6		45.1	
ESTABLISHED SPEED	30		25		30		30		40	

Station	Day and Date	Time and Length of Count
#1 State Avenue between Mason and Barry	6-24-57	9:30 AM to 10:00 AM 30 Min.
#2 State Avenue between Dunbar and Hitchcock	6-24-57	10:20 AM to 10:45 AM 25 Min.
#3 Chisholm Street between Sixth and Seventh	6-24-57	11:10 AM to 11:37 AM 27 Min.
#4 Chisholm Street between Eleventh and Twelfth	6-24-57	2:20 PM to 2:50 PM 30 Min.
#5 Chisholm Street 500 feet SE of Long Rapids Rd.	6-24-57	3:05 PM to 3:28 PM 23 Min.



TABLE X  
ALPENA TRAFFIC SURVEY  
Central Traffic Services  
VEHICLE SPEED SUMMARY

Light Conditions \_\_\_\_\_ Weather \_\_\_\_\_ Pavement Condition \_\_\_\_\_  
 Dark \_\_\_\_\_ Light X \_\_\_\_\_ Clear X Cloudy \_\_\_\_\_ Rain \_\_\_\_\_ Snow \_\_\_\_\_ Dry X Wet \_\_\_\_\_ Icy \_\_\_\_\_

SPEEDS IN M.P.H.	Station #11		Station #12		Station #13		Station #14		Station #15	
	No.	%	No.	%	No.	%	No.	%	No.	%
Over 50										
45 - 50			1	1.0	3	3.0	1	1.0	2	2.0
40 - 45			1	1.0	3	3.0	1	1.0	3	3.0
35 - 40	13	13.0	9	9.0	20	20.0	17	17.0	31	31.0
30 - 35	12	12.0	7	7.0	19	19.0	23	23.0	25	25.0
25 - 30	49	49.0	59	59.0	48	48.0	53	53.0	32	32.0
Under 25	26	26.0	23	23.0	7	7.0	5	5.0	7	7.0
TOTAL	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0
AVERAGE SPEED	28.8		27.6		32.0		31.2		33.1	
85th PERCENTILE	33.0		30.8		36.4		35.4		37.4	
ESTABLISHED SPEED	25		25		25		25		25	

51

Station	Day and Date	Time and Length of Count
#11 Ripley Blvd. 200 ft. So. of Baldwin	6-25-57	8:30 AM to 9:40 AM 1 hr. 10 Min.
#12 Ripley Blvd. between Third and Fourth	6-25-57	11:00 AM to 12:00 N 1 hr.
#13 Ripley Blvd. between First and Second	6-25-57	1:15 PM to 1:45 PM 45 Min.
#14 Ripley Blvd. 200 ft. No. of LaForest	6-25-57	2:00 PM to 2:45 PM 45 Min.
#15 Johnson St. 2900 ft. SE of Chisholm	6-25-57	3:15 PM to 4:30 PM 1 hr. 15 Min.

and will supercede the regular 30 mile speed limit. This permits the motorist to drive under a realistic speed limit for normal conditions, but when the children are present, a very effective illuminated signal and sign is put in operation which lowers the speed and adds to the safety of the school zone. The speed legend on this sign cannot be read when the electric power is off.

The speed check shows that Johnson Street should be posted for a 35 mile speed limit between Chisholm Street and Walnut Street.

### Speed and Delay Studies

Traffic congestion on Chisholm Street and Second Avenue indicated the desirability of making a speed and delay study to show the places where congestion was most prevalent and to isolate the causes.

The study on Chisholm Street which is shown on Plate 20 started at State Avenue and ended on Thirteenth Avenue. The runs were made on a week day afternoon when traffic conditions would be considered normal. The runs from State Avenue to Thirteenth Avenue were made at an average speed of 14.4 miles per hour while the runs from Thirteenth Avenue to State Avenue were made at 16.9 miles per hour. Most of the delays were encountered between State Avenue and Third Avenue due to poor signal timing and left turn interference. The curb parking on Chisholm Street creates an interference which causes poor progressive movement from one signal to another. Better signal timing and reduction of left turns across opposing traffic will give a big improvement in the existing condition. The timing of the signals shown in the signal section will permit a motorist to travel at an average speed of 22.7 miles per hour through this area on a sixty second signal cycle.

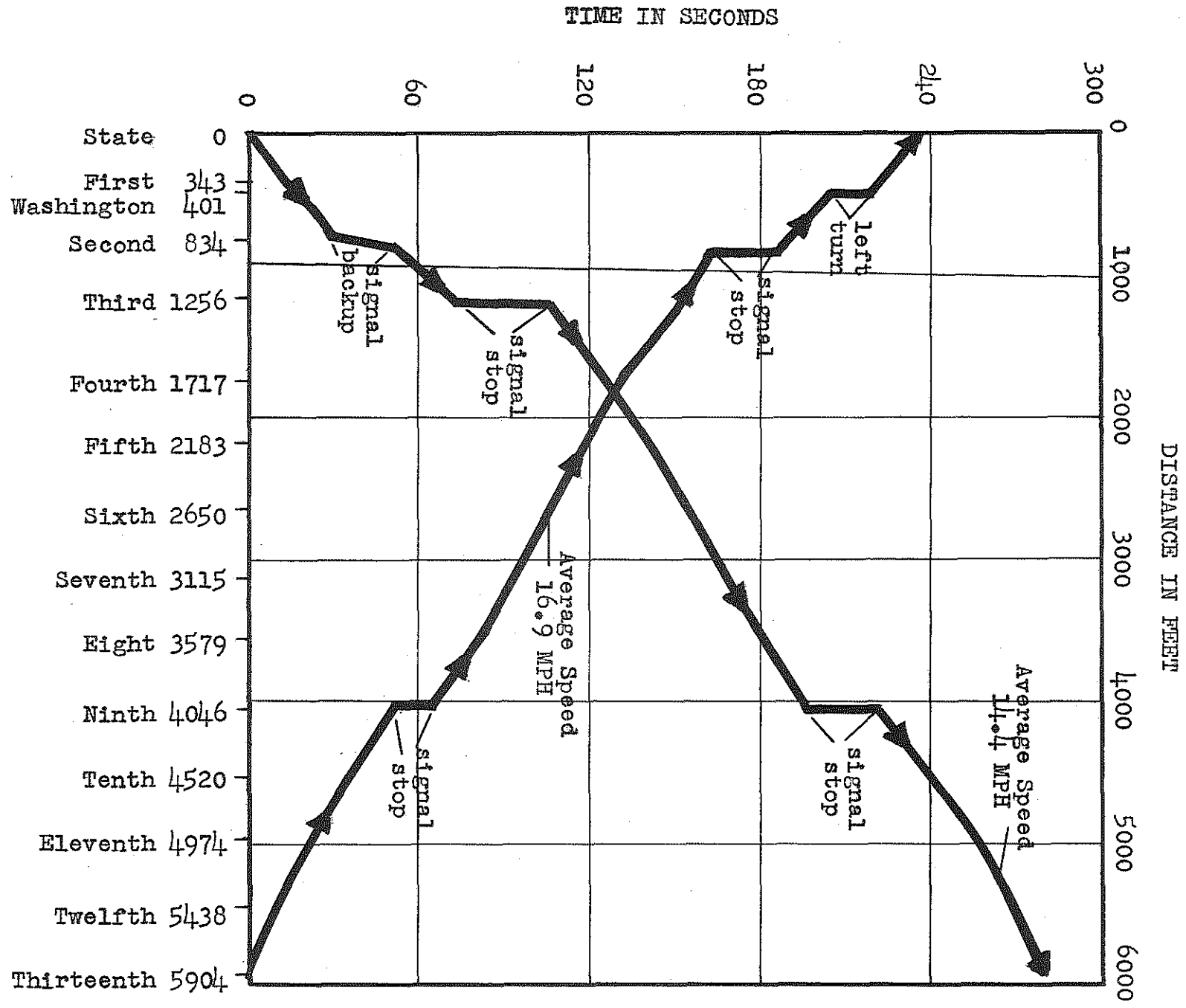
Second Avenue was studied from Washington Avenue to Clark Street. The test vehicle was able to average 14.1 miles per hour going from Washington Avenue to Clarke Street while only 12.6 miles per hour could be maintained going from Clarke Street to Washington Avenue. The results are shown on Plate 21. The area of greatest congestion was between Washington Avenue and the Second Avenue Bridge over the Thunder Bay River. The signal timing was again causing difficulty. It was apparent that pedestrians crossing Second Avenue with the traffic signals at Chisholm Street and Park Place were being permitted to walk almost to the time when the vehicle clearance interval started. This was instrumental in blocking vehicles on Second Avenue desiring to start on the green signal since pedestrians were still in the intersection.

Left turns at Water Street, Park Place and the alleyways were blocking traffic on Second Avenue. This was very pronounced at Water Street in the period from 4:00 p.m. to 6:00 p.m. when vehicles from the industrial area north of the Bridge were attempting to turn left off of Second Avenue.

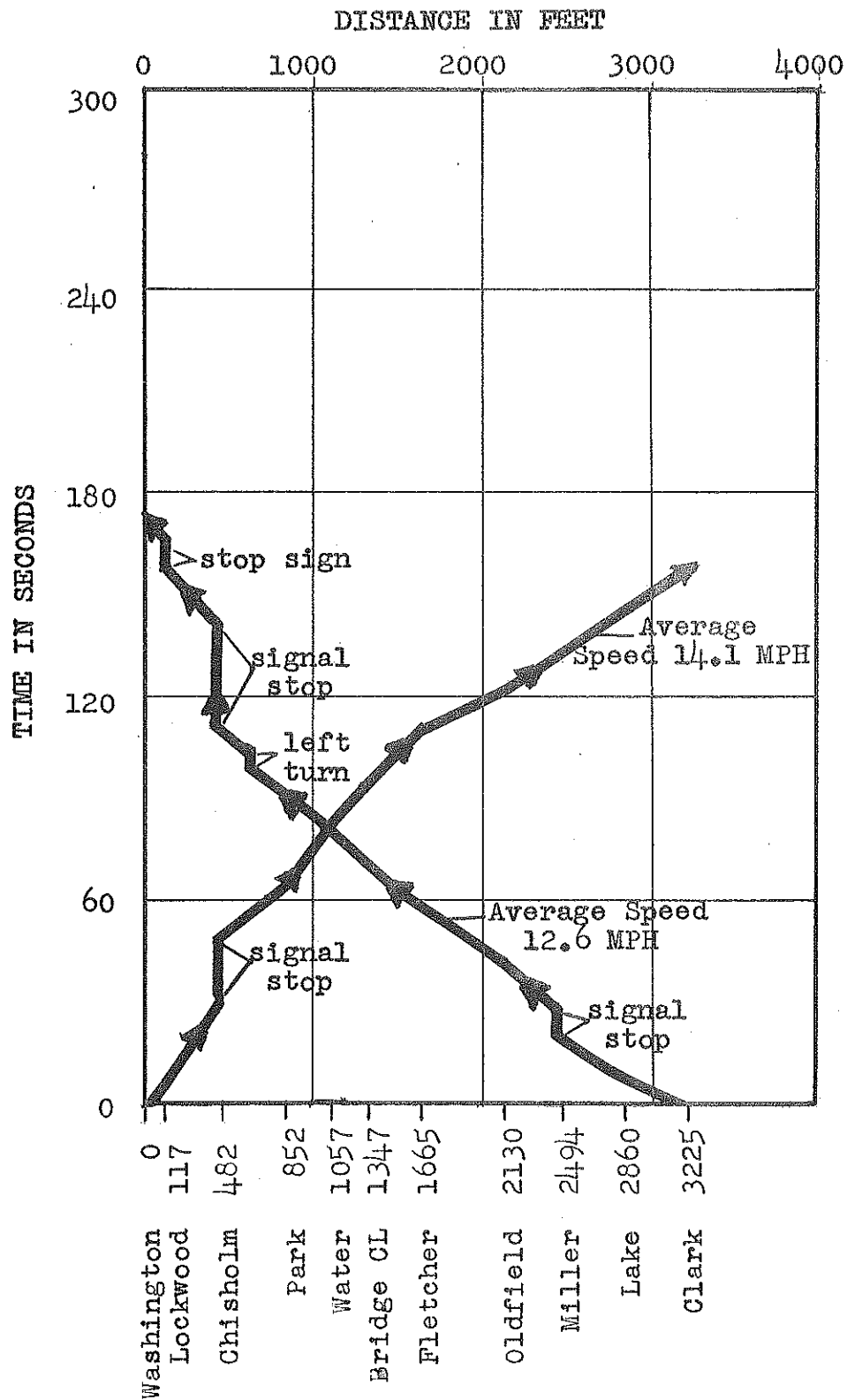
Placing in effect a good signal timing schedule would permit



SPEED AND DELAY STUDY  
CHISHOLM ST. - STATE TO THIRTEENTH  
ALPENA MICHIGAN



**SPEED AND DELAY STUDY**  
**SECOND AVE. — WASHINGTON TO CLARK**  
**ALPENA MICHIGAN**



traffic to move along Second Avenue at an average speed of 20.7 miles per hour on a 60 second signal cycle.

Specific remedies for removing the congestion found on Chisholm Street and Second Avenue will be discussed in other sections of this report.

## TRAFFIC SIGNALS

## Existing System

There are five intersections which have traffic signal control in the City of Alpena. Three of these are on Chisholm Street (US-23) which means they are controlled by the Michigan State Highway Department. The two signals which are the sole responsibility of the city are located at the intersections of Second Avenue with Park Place and Second Avenue with Miller Street. The traffic signal control equipment is modern and in an excellent state of repair. The equipment is capable of a flexibility in control which is not being utilized at the present time.

With the exception of the controller for the traffic signal at the Second Avenue and Miller Street intersection which has only a single dial, all of the others have two dials. The controllers are of a single manufacturer and are capable of being expanded to three dials. The three signals in the downtown area which are within a block of each other are interconnected. This means that the signals can operate with a prescribed time relationship between them which is not dependent on the synchronous action of the electric motors which drive the timing mechanism.

An inventory of the timing schedules established for the various signals revealed that the second dial was serving little, if any, useful purpose. For instance, the controller at Chisholm Street and Third Avenue had the same timing schedule and cycle gear for both dials #1 and #2. It was apparent from this and the lack of dial transfer mechanism of the master controller that only one time schedule could be in effect when the controllers were under automatic operation. It would be possible for the cycle length to be changed from a fifty-five to a sixty second length by manual operation at the Chisholm Street and Ninth Avenue signal.

All the vehicle traffic signals are of the single head, span-suspended type. There are pedestrian signals at the three locations in the downtown business area. They are of the neon type and are mounted on pedestal posts. Isolation of the pedestrian signals from the vehicle signals is in keeping with sound practice. The visibility of the overhead vehicle signals can be improved since they are deficient in this respect.

The present timing of the pedestrian signals permits the pedestrian to walk across an intersection within four seconds of the time when the vehicle clearance interval commences. This is unnecessary and in most instances should be changed. There is a common belief that pedestrian signals are set in accordance with the time it takes to walk the length of the particular crosswalk. This cannot be true when we consider that a pedestrian may leave the curb only a few seconds before the expiration of the "walk" interval and legally be granted right of way over vehicles until he reaches the far curb. The pedestrian signal is designed not only to give the pedestrian positive assignment of right of way, but also to prohibit his crossing of the intersection a sufficient time in advance of the vehicle clearance interval so that vehicles may be given an opportunity to make right and left turns without obstruction.

## Recommended Signal Timing Changes

The three traffic signals on Chisholm Street and the three on Second Avenue (the signal at Chisholm and Second is common to both streets) are spaced sufficiently close together whereby definite advantages can be obtained by operating the signals with a time relationship between them. The most positive method of acquiring this time relationship is by interconnecting the traffic signals throughout the system. Although the synchronous action of the motors will permit one time dial to remain in step with another provided the same cycle length is employed throughout the system, this has a double disadvantage. First, flexibility of the present signal equipment in Alpena is lost because only one time dial can be used. Second, any interruption of electrical service will require the manual resetting of the signals.

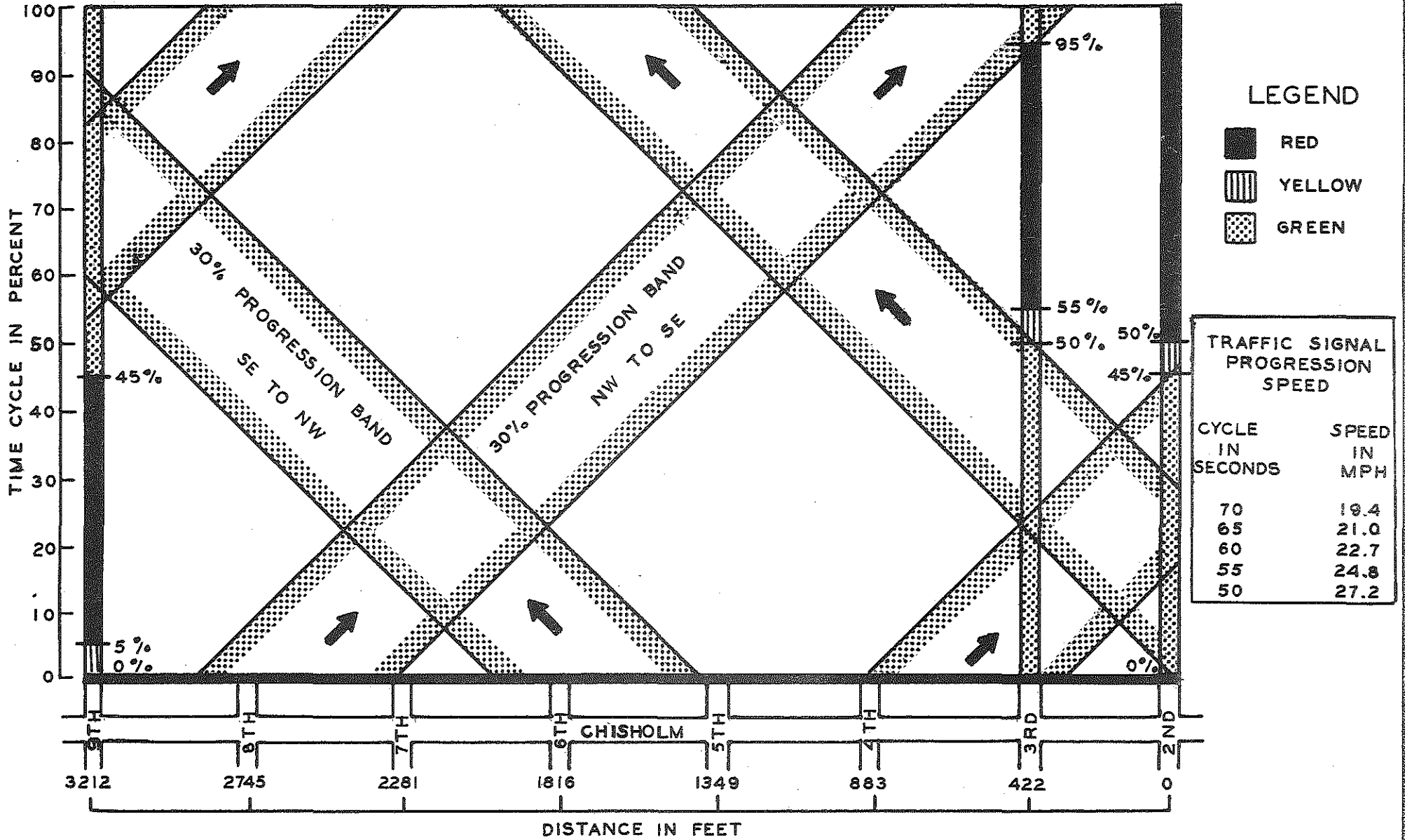
It is desirable that the traffic signals at Chisholm with Ninth Avenue and Second with Miller Street be added to the present interconnected system in the downtown business area. The whole signal system should be placed in an operating condition whereby the master controller can select either of two time dials at each of the secondary controllers. This would require the addition of a second time dial at the intersection of Second with Miller Street.

Plate 22 shows a time-space diagram designed for the traffic signals located on Chisholm Street. The signal at Chisholm with Second Avenue shows the same amount of "green" period for both Chisholm and Second. The close balance between traffic volumes on these two roadways require this time split. The signal at the intersection of Chisholm with Third Avenue is only 422 feet away from this signal which means that the best vehicle progression is obtained by operating the signals simultaneously. By this we mean that the green light will be displayed for Chisholm Street during the same period at both the Second and Third Avenue intersections. The amount of time that it takes a vehicle to travel from Second to Third Avenue or vice versa, will be the amount of "progressive" green which is lost from the total green interval at both of these signals. Permitting a longer green interval at the Third Avenue signal for Chisholm Street will permit the widening of the progressive green band with a consequent improvement in vehicular flow. Vehicle volumes at this intersection lend itself to this consideration since the Chisholm Street volumes exceed those on Third Avenue.

At the progressive speeds shown, it would take a vehicle one and one half times the length of the signal time cycle to travel from Second Avenue to Ninth Avenue. Using a 60 second cycle length, this would require 90 seconds. This means that the signal at Chisholm and Ninth Avenue would be displaying a red signal to Chisholm when a green signal is displayed at Second and Third Avenues. The speeds at which vehicles can move through the proposed progressive signal system are dependent upon the cycle length under which the system is operating. The longer the time cycle, the slower the speed since more time is allocated for vehicles in travelling from one signal to the next.

The cycle length at the Chisholm and Second Avenue signals are set at 55 seconds while the Third and Second Avenue signals are set at 60 seconds. This is contrary to State Highway signal timing

# TIME - SPACE DIAGRAM FOR CHISHOLM AVENUE



## LEGEND

- RED
- YELLOW
- GREEN

## TRAFFIC SIGNAL PROGRESSION SPEED

CYCLE IN SECONDS	SPEED IN MPH
70	19.4
65	21.0
60	22.7
55	24.8
50	27.2

methods and means that the Ninth Street signal changes its relationship with the other two signals throughout every cycle. With such a variation, no positive speed control can be obtained from the signal system. By adopting the timing which is shown on Plate 22, the desired speed shown for each of the cycle lengths can be selected.

The time splits for each of the signals in the system are shown in percent since this is the way the timing dial on the controllers is calibrated. The time in seconds for each of the points shown can be obtained by multiplying the cycle length by the percent. Five percent of a sixty second cycle would represent three seconds.

Plate 23 shows the Time-Space diagram for Second Avenue. Since the signal at Chisholm and Second Avenue has the Chisholm green interval commencing at the 0 percent mark, the Second Avenue green would begin at the 50 percent mark because we are employing an equal time split. The signal at Second and Park Place is only 370 feet from this signal, therefore, we must operate it simultaneously. For reasons already stated, we can increase the Second Avenue "green" period at the Park Place signal and thus improve vehicle progression.

The traffic signal at Second and Miller Street is spaced one cycle length of time away from the Park Place signal which means it likewise will be operated simultaneously with the other two signals. The diagram shows how this is accomplished. Second Avenue is entitled to more time than Miller Street due to its greater traffic volumes, therefore, a 55 - 45 percent time split is shown.

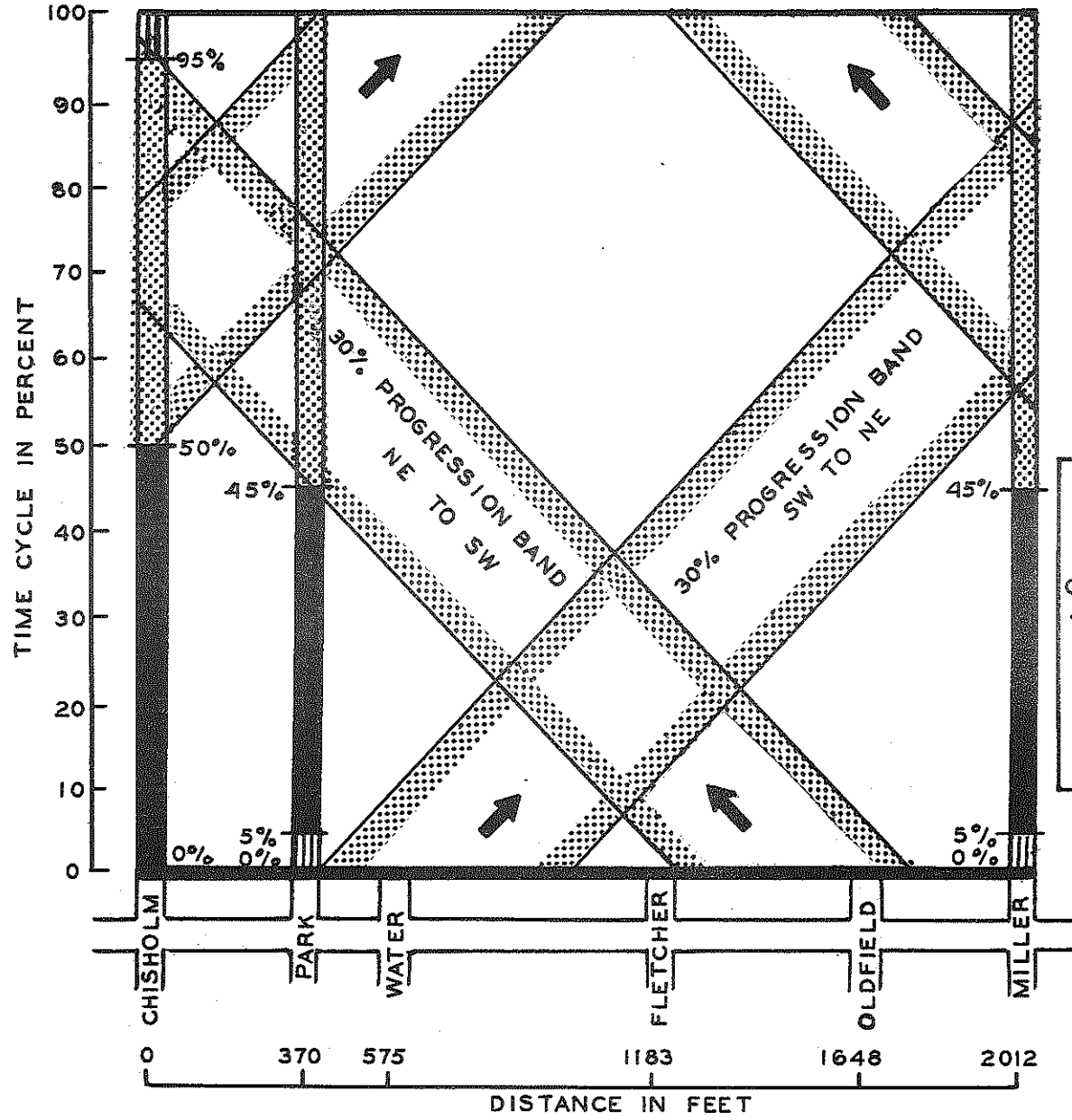
Speeds for the various cycle lengths indicate lower values on Second than on Chisholm. This is because the signals are spaced as they are. This will not create any difficulty since higher speeds can be driven on Chisholm Street throughout the signalized area.

Since all the signals will be a part of one interconnected system, it means that the same cycle length will be employed throughout this system at any one time. The cycle length can be changed, but only if done simultaneously at all controllers.

Dial #2 can be utilized for changing the cycle length and/or the time split at each of the signalized intersections. During peak traffic periods, the longer cycle length may be desired in order to reduce the progressive speed. It is very doubtful if a cycle length longer than 60 seconds will be needed in Alpena since the short length of blocks in the downtown area would not permit much storage of vehicles waiting for a green signal. During light traffic periods, a 55 or 50 second cycle length may be very desirable since it will permit greater speeds and reduce waiting time for a green signal. Dial #2 can likewise be utilized at certain intersections for adjusting the traffic signal timing for variations in vehicle demands for the intersecting streets. It is quite likely that under peak shopping conditions, the signal timing at Chisholm and Third Avenue will have to be altered so that Third will obtain a more proportionate share of green. With the possibility of two time splits, this can be accomplished without penalizing the normal traffic demands.

Plate 24 can be used for timing dial #1 throughout the system. The time splits for vehicle signals are likewise shown on the two

# TIME - SPACE DIAGRAM FOR SECOND AVENUE



## LEGEND

- RED
- YELLOW
- GREEN

TRAFFIC SIGNAL PROGRESSION SPEED	
CYCLE IN SECONDS	SPEED IN MPH
70	17.8
65	19.1
60	20.7
55	22.6
50	24.8

PLATE 23

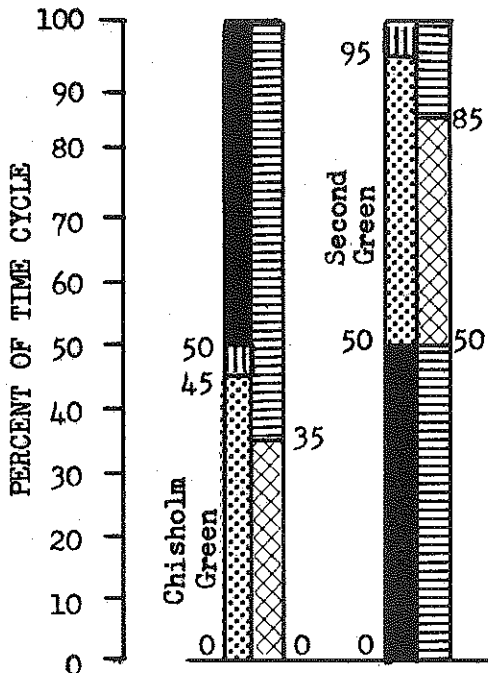
CTS



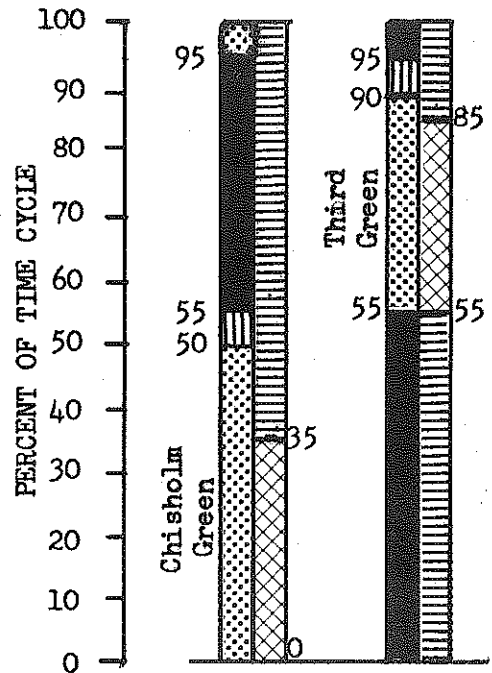
# ALPENA TRAFFIC SURVEY

1958

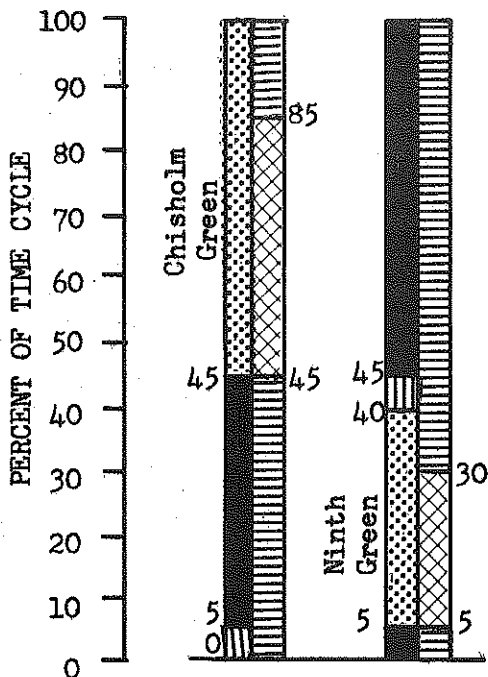
## TRAFFIC SIGNAL TIMING CHART



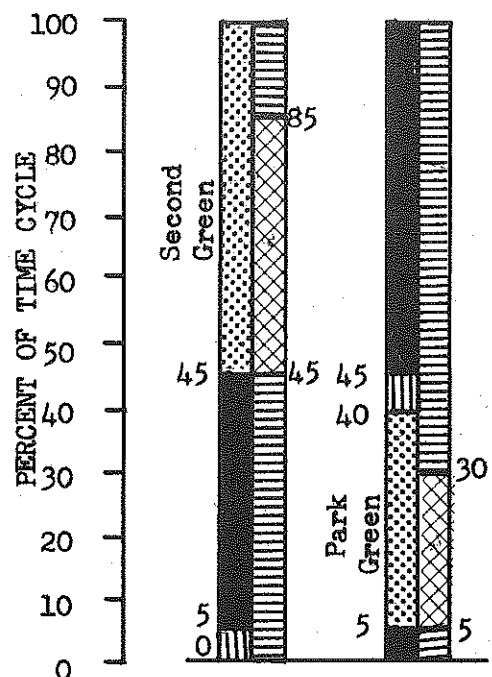
CHISHOLM & SECOND



CHISHOLM & THIRD



CHISHOLM & NINTH



SECOND & PARK

### LEGEND



RED



YELLOW



GREEN



WALK



DONT WALK

time-space diagrams, but Plate 24 offers the advantage of showing this timing in relationship to the timing of the pedestrian signals. Although the present traffic signal at the intersection of Chisholm and Ninth does not possess pedestrian heads, a timing is shown in case they are added.

An examination of the timing of pedestrian signals for each intersection shows that the "don't walk" is displayed sufficiently in advance of the vehicle clearance interval so that right and left turning vehicles can complete their maneuver. Pedestrians are permitted sufficient time to leave the curb and walk to the other side of the street.

In the chapter on arterial streets, there will be recommendations for the establishment of one-way streets. One-way streets have very definite advantages when timing signals progressively. This doesn't mean that perfect progression can be obtained on one-way streets if their relationship to each other in a grid system is not carefully planned. The selection of one-way streets for Alpena was done with this in mind. Changing the proposed plan without regard to grid signal timing could produce a very poor traffic operation. This could easily happen even though to all outward appearances there were just as many one-way streets having identical capacity with the original plan. The timing schedules will be satisfactory for both the present street system and the proposed one-way system.

#### Signal Head Improvements

The present traffic signal heads at all locations in Alpena have only one three-color head facing each signalized direction. While not too objectionable when traffic is light, this lack of good signal head visibility can be hazardous when vehicles crowd the street. Good signal observance can only be obtained when the motorist is able to clearly see his signal indication. One traffic signal head can very often be hidden from a motorist's vision by a large truck or vehicle. Having two signal heads spaced an ample distance apart precludes the possibility of this occurring. Good signal operation requires that there be two or more lanes approaching each traffic signal in order that turning movements will not interfere with through movements. One signal head is very inadequate under such circumstances. Both National and State standards require dual traffic heads facing each signalized direction.

The present neon pedestrian signals employed in Alpena are considered satisfactory by modern standards. The Michigan State Highway Department has found by pedestrian behavior studies that giving the pedestrian signal individuality apart from the vehicle traffic signals will increase observance. For this reason, the pedestrian signals are painted a dark green color and mounted on pedestal posts in line with the cross-walks. In order to accentuate this difference further, they are now utilizing an orange color for the "Don't-Walk" and a blue color for the "Walk". The present neon signals in Alpena utilize the red and green colors which are also used for vehicles. New developments in neon signals now make use of an internally illuminated signal which shows the entire message in one color. The present signal shows the "Don't-Walk" in both the green and red since the "Walk" part of the message remains a constant green. Both the new neon and incandescent pedestrian signal show only one color at a time and are more satisfactory. Any new signals ordered should be of these two styles.

## Recommendation of Improvements for Traffic Signal Operation

A smoothly functioning traffic signal system requires certain conditions to be present. It is sought to eliminate the present objectionable characteristics and supplant them with conditions and techniques which will guarantee success. With this as our goal, the following recommendations are made:

1. Although a street leading into a traffic signal may have only one lane in each direction, this should be expanded to provide at least two moving lanes into a traffic signal. This can be accomplished by the elimination of parking a sufficient distance back of the "Stop-bar" so that the number of vehicles which can store in each lane during one signal cycle can be accommodated. These lanes should be well marked and police should be very careful to keep them exclusively for the use of moving traffic by prohibiting any standing, stopping or parking at the curb lane for any purpose other than required for traffic control.

2. Pedestrians should be required to cross only at legally designated crosswalks. At signalized intersections, they should be compelled by law to obey the proper signals or be subject to a violation ticket which carries a fine. This is done both for the safety of the pedestrian and to minimize interference to vehicles having the assigned right of way. If pedestrians are exempt from conforming to control, it is impossible to obtain good vehicle progression from signal to signal and congestion will result. The pedestrian is the biggest loser since he will be exposed to injury or death if he does not confine his path to the designated places or walk at the proper time.

3. Place in effect the signal timing shown by the charts in this report. The Michigan State Highway Department's timing for their signals and the City's will then be coordinated in a smoothly operating grid system. The traffic signals can be operated synchronously on dial #1 until the balance of the interconnection work in the city can be completed.

4. Improve the visibility of both pedestrian and vehicle traffic signal heads as discussed in this chapter. All traffic signal installations should conform to the Michigan Manual of Uniform Traffic Control Devices.

5. Establish a plan of one-way streets which considers the grid timing of traffic signals. Early adoption of such a plan will prevent many future traffic problems which will be created by the installation of new traffic signals.

## New Traffic Signals

The intersection which has already been shown to require the installation of a traffic signal because of recent increases in traffic volumes, and right angle collisions is the intersection of Washington Avenue with Ripley Boulevard. Since Washington Avenue is M-32, approval for this traffic signal will be dependent on the Michigan State Highway Department. There are between five and six thousand vehicles a day on each of the approach legs to this intersection.

Under these circumstances, there will be an urgent need of having two moving lanes into the intersection before a traffic signal should be installed. This can be acquired by the elimination of the parking along the curb in advance of the traffic signal. It is not uncommon to find congestion resulting at an intersection after a traffic signal is installed. This is particularly true when there is only one approach lane into the intersection. Turning movements block the lane for through traffic because they can only move when the light is green and oncoming traffic is clear of the intersection. Since traffic can only move a fraction of the time at a traffic signal, capacity should be increased at the intersection to offset the decreased time for vehicle movement. Installation of this signal by the State is dependent on removal of designated parking on Washington Avenue.

The intersection of Second with Water Street has sufficient vehicles to require a traffic signal, but traffic volumes alone cannot dictate the use of a signal. There is a heavy left-turn movement from Second to Water which would be almost impossible to make if a two phase traffic signal were installed. Permitting this movement on a special signal phase would result in a reduction of intersection capacity. Three phase signals while giving good assignment of right of way, allow traffic to move approximately one third of the time from any one direction. Since the Second Avenue bridge is the only bridge crossing the Thunder Bay River in the business area, this would be equivalent to placing a severe capacity block right on the bridge approach. The effect of this would be detrimental to the downtown business area. If Second and Water become one-way streets, there will be no need of a traffic signal. Water Street will then be the source of all northeast bound traffic crossing the Second Avenue bridge. Since Second Avenue is one-way for southwest bound traffic beyond this intersection, there will be no conflict with Water Street traffic.

The five-legged intersection of Chisholm, First and Washington Avenue has some of the largest traffic volumes in Alpena. Even a three phase signal at this type of intersection would give little opportunity to complete turning movements. Due to restrictions in Alpena's street system in this area, turning movements are induced at this location and cannot be eliminated. The solution of this intersection's traffic problem cannot be accomplished without a major alteration in the operation of Alpena's street system. Installation of a traffic signal under these present conditions would magnify the traffic problems.

There are other intersections in Alpena which will be requiring signalization in the near future. Some of these intersections such as the intersection of Chisholm with Fourth Avenue are located too close to existing traffic signals. Installing signals at these points would destroy vehicle progression on two-way streets. When traffic volumes become too heavy, public opinion will demand the installation of traffic signals. Therefore, the early institution of a planned one-way street system will place public officials in a position where new traffic signals can be installed without resulting in vehicle congestion. New traffic signals will have to be installed with the institution of a one-way street system. Both streets of a one-way pair will require traffic signals when crossing major intersections.

All new traffic signals should meet the minimum warrants prescribed in the Michigan Manual of Uniform Traffic Control Devices. A traffic signal while an aid to traffic when used properly, can be a liability under improper circumstances.

## MAJOR STREET SYSTEM

## System Planning

Most cities find severe financial limitations to their efforts for acquiring a smoothly operating street system. Given unlimited budgets, many problems could be solved by the simple process of over-designing for each situation. Even under such circumstances it is possible to create a traffic problem which would require corrective treatment. There can be no substitute for intelligent planning since it permits a city to solve its traffic and street problems by making the most economical use of its available funds. The application of good traffic engineering principles will provide the means of obtaining a street which will serve public needs. By tailoring this system to planning needs, the future traffic growth will be intelligent and serve the best interests of the community.

The first step in this direction is to determine the most important generators of traffic and isolate traffic desire lines. The vehicle and pedestrian volumes play an important part in this determination. Once this information has been gathered and analyzed, it is possible to begin the development of an arterial street system.

Streets which possess the greatest congestion should be the focal point for initial study. This congestion is caused by too many vehicles for the capacity of the roadway through a particular section. The problem can be solved either by reducing the traffic volumes or by increasing the traffic capacity. Since traffic is difficult to abolish, the first method generally involves the development or building of an alternate route. The second method involves the application of traffic engineering techniques such as control of parking, signal timing, lane marking, etc., or construction work. Construction is expensive and should be reserved for those areas where it is the only real solution to the problem. Each street should be inventoried very carefully in order to determine if it can be streamlined in a traffic manner for the purpose of acquiring the greatest efficiency of travel and safety.

Alpena already has a plan which when implemented by this traffic study will produce an efficient, economical means of giving it practical reality. Most of the recommendations in this report are specific as to their application on the Alpena streets. Certain general recommendations are given which would be applicable under all circumstances. Since a major street system can be likened to the frame of a house, great care should be taken before any element is altered less we destroy the value of the entire structure. Any traffic plan which necessity dictates the elimination or conversion to new travel habits is almost certain to find resentment or opposition from certain sources. Only by using a broadminded approach to the problem and by weighing benefits against disruptions will the people of the city and its officials be able to obtain a genuine solution to their traffic problem.

## Recommended Standards for Streets

In establishing a procedure for the establishment of new streets

and the reconstruction of the existing, it is necessary to have knowledge on the type of traffic expected to use the street so that the proper widths, curb radii and other construction features can be incorporated in its building. There are well defined standards for these features which have been acquired from study and practical experience. These standards are based on the speed and classification of vehicles by types which use a designated street. Curb parking plays a very strong influence in the design of a roadway. Streets which have low design standards and costs can afford curb parking, while arterial streets which require expensive surfaces cannot economically support this style of parking. Under these circumstances, offstreet parking will prove to be the most sound investment in parking procurement. Only by strict adherence to sound design principles can a city hope to obtain a sound return on its investment in a street system. When a city makes an outlay of its funds to improve a certain street, it must know beforehand that the width of right of way is sufficient, the structure is capable of handling the type of vehicles that will use its surface and that a definite betterment in traffic movement and capacity will result. Without this assurance, the investment is speculative and possibly unsound.

There are definite values which should be used as a guide in determining the width of a street. Lanes designed to handle moving traffic on an arterial street should be 11 and possibly 12 feet wide. 10 foot lanes may be utilized when modification of an existing street does not permit greater width due to right of way limitations or excessive costs. Continuous barrier curbs which are either adjacent or planned in the future to be adjacent to moving traffic lanes should be set back a minimum distance of 1 foot from the edge of said lane. The basic design speed of an arterial street should be 30 miles per hour and this should be upgraded in accordance with speed desirability along a designated street.

Residential streets are dedicated to providing the dual facility of vehicle travel and parking. These streets generally require parking on both sides of the street. The minimum width for this type of street should be 36 feet. This may seem to be a generous standard when compared to those of the past, but even at this width, vehicles can move both directions at a time only under reduced speeds. Since low speeds in residential areas are desirable, these widths are acceptable.

In permitting an arterial street to be built where parking will be permitted, it is important to remember the following facts: The width of a curb parking lane should be 12 to 13 feet wide. Although a parked vehicle can confine its physical dimension to a lane 8 feet in width, its zone of influence to moving traffic spreads beyond this dimension. Comprehensive studies made on a nationwide basis show conclusive evidence that motorists will not drive any closer to a vehicle than their judgment permits. The painting of lane lines will not force the average motorist to drive any closer to a parked vehicle. Even if this were true, it would be poor practice from the safety standpoint. Providing insufficient width for parking will even force motorists to drive left of a painted centerline. This is open invitation for head-on and side-swipe accidents. If an arterial street requires a high type of pavement surface and also a 12 to 13 foot wide lane for parking, it is well to consider the merits of pro-

viding offstreet parking as against curb parking which cannot offer the advantage of cheaper cost, safety and less interference to moving traffic.

Arterial streets should be constructed with a width of 44 to 48 feet. If present vehicle volumes do not require more than two moving lanes of traffic, it is possible to permit curb parking until the time when capacity requirements demand its removal and an off-street parking program has provided the needed parking requirements. It is important to remember at this point that any traffic signal or similar reducer of volumes will require an increase of lane capacity in the zone of restriction.

### Improvements in Street Capacity

It is an easily recognized fact that as Alpena continues to grow, a greater burden will be placed on the existing street facilities. Some of these are already saturated with traffic and can only be placed back in a good operating condition by making a beneficial change in the existing street usage. Two of the most important streets in Alpena today are Chisholm and Second Avenue. These two streets are vital to the economic well being of Alpena's downtown business area and must also serve as arterial routes for through traffic. Parking practices have restricted these two streets to a single lane moving in each direction. Present traffic volumes show a definite need of greater traffic capacity. Whenever vehicle volumes on a street exceed 350 vehicles per lane per hour, it is well for the city to take steps for providing additional travel lanes. Both of the streets mentioned have right of way widths and development which will not permit the economic widening of the street surface. This leaves the removal of curb parking as the only means of obtaining additional lane capacity.

We cannot recommend such a procedure without first recognizing the value of this parking to the economic well being of the downtown business area. Since a good transportation system requires both the facilities for moving and parking a vehicle, we cannot sacrifice one at the expense of the other. We must therefore compensate for the removal of any curb parking by the provision of an equivalent amount of offstreet parking located in such a manner as to be serviceable. Since the downtown area of Alpena already has a deficiency of parking places, curb parking removal is going to require the coordination with an offstreet parking program which is presented in the parking section of this report. The urgency of obtaining immediate increases in vehicle traffic capacity requires the city to proceed at once with the expansion of its offstreet parking plan.

In the traffic signal section, we find several recommendations on signal timing and pedestrian control which will enable the procurement of greater traffic capacity at restricted points. A route of travel has a good analogy in plumbing. There is no good reason in placing a 1 inch pipe in a system which is fed from a 1/2 inch pipe. Likewise, there is no point in building a route which has a large traffic capacity only to permit its restriction in certain areas by unsound traffic development or political pressure. An efficient street will have capacity proportionate to demands along its entire



length. Insufficient lane widths, unnecessary stops, poor sight distances, impractical low speeds, bad signal timing and poor intersection design are some of the greatest enemies of traffic capacity and should be eliminated as quickly as possible.

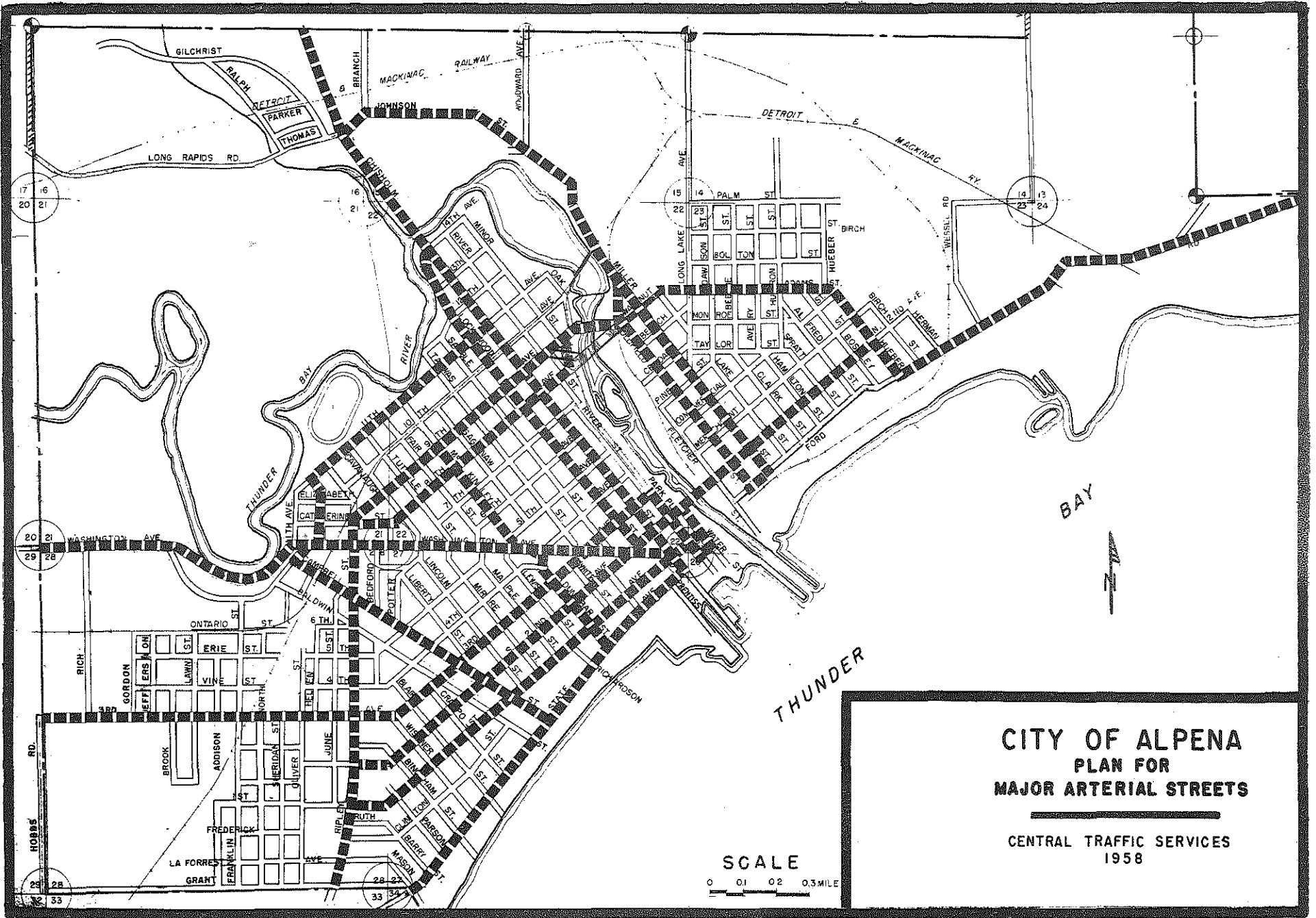
### Recommended Plan for Arterial Streets

The traffic census taken on the street system of Alpena was the basis for the development of the arterial street system shown on Plate 25. Since the city's present and future traffic needs have been considered in its development, adoption is recommended. This plan of arterial streets has been designed to provide facilities for strong desire lines of traffic movement between areas. Efficient utilization of the existing street structure was a prime consideration in this plan.

State Avenue, Chisholm Street and Washington Avenue in Alpena are state trunkline highways and as such must conform to the planning and traffic engineering of the Michigan State Highway Department. It is well to outline some traffic features found along these routes which do not lend themselves to the principles of good traffic operation. State Avenue and Washington Avenue are only 30 feet wide with parking permitted on one side. This is inadequate by modern design standards since there are times when these roadways are reduced to one-lane capacity by double parking and parking maneuvers. These street widths dictate the early removal of parking if any improvement is going to be obtained over the present condition.

Second Avenue and Chisholm Street in the downtown business area were noted to possess the greatest number of double parkers and jay-walkers. The desire to double park is increased with the presence of curb parking and since both of these streets should eventually have this type of parking eliminated, this nuisance will disappear. Jay-walking must be met with a strict law enforcement program if there is any hope to eliminate this unsafe, restrictive influence to vehicle travel. Pedestrians, especially those who make a practice of jay-walking between the Ward and Sherwin-Williams Paint stores, must realize they are jeopardizing their own safety while in the process of interfering with vehicle traffic.

The present physical layout of Alpena's street system is presenting a series of traffic problems in the downtown business area. State Avenue which feeds this area from the southwest, is a congested narrow roadway. Where it intersects Chisholm Street, all traffic is compelled to turn left since State Avenue dead-ends at this point and the lakefront is to the right on Chisholm Street. The first intersection to the northwest of this intersection is the five-legged corner where First Avenue, Washington Avenue and Chisholm Street all come together. Washington Avenue carries large traffic volumes since it is the major arterial street to the west and all traffic coming from Tawas, Sable and Lockwood Streets deadend at Washington Avenue and must travel down to this busy intersection if it wishes to travel out on State Avenue or go to the area served by First Avenue. Add to this confusion the desire of vehicles to turn right off of Chisholm Street and travel northeast on First Avenue in order to reach the City



**CITY OF ALPENA  
PLAN FOR  
MAJOR ARTERIAL STREETS**

CENTRAL TRAFFIC SERVICES  
1958



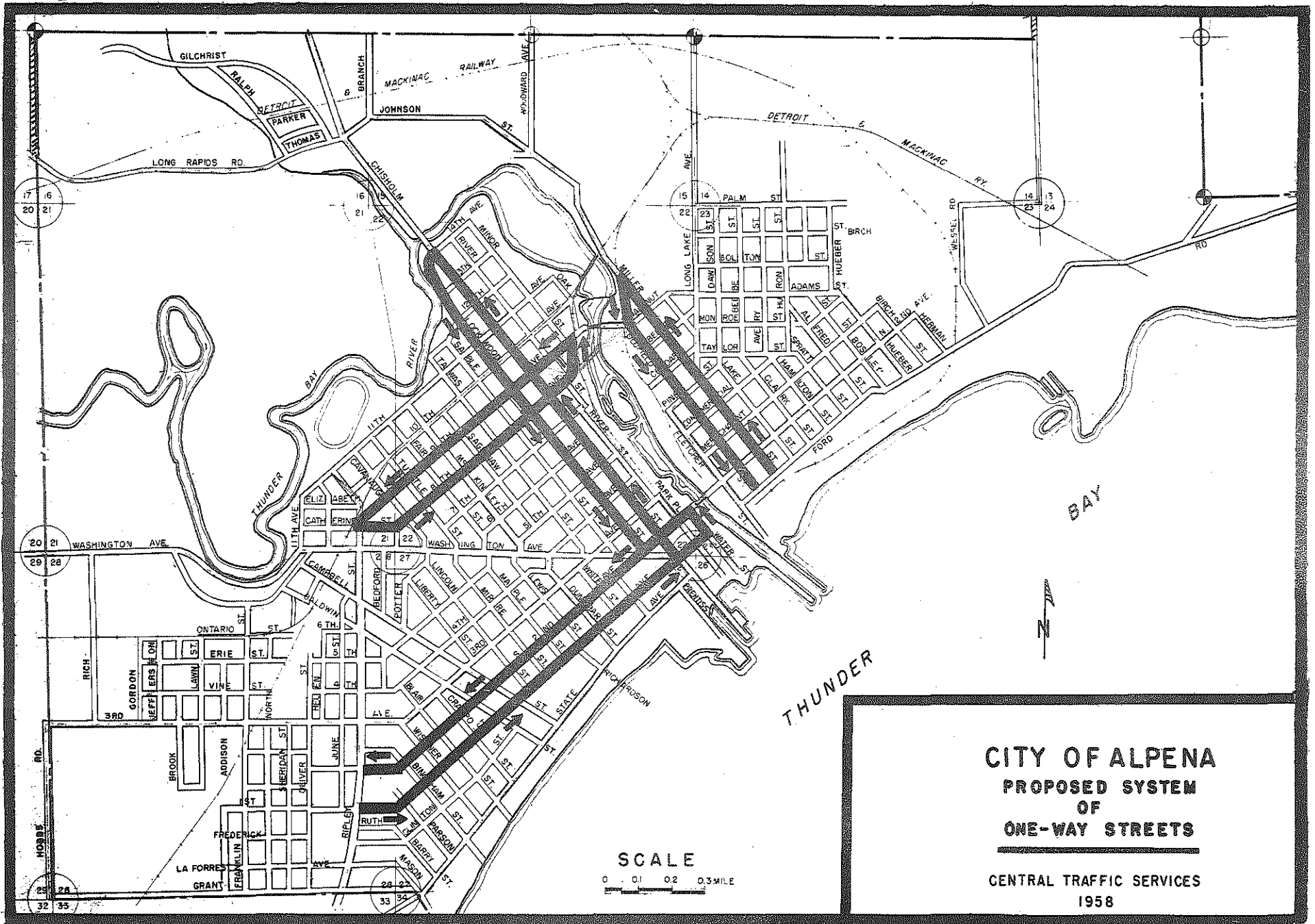
Hall area or the Second Avenue bridge and you have a major traffic problem. It is apparent from these findings that if State Avenue were extended to the northeast in order to connect with Water Street and Park Place, that great traffic improvements would result. Unfortunately, land development has already placed a severe barrier in the path of such a street extension. The Chamber of Commerce building has recently been constructed in the direct path of State Avenue while a big Kroger Store has been constructed to the southeast. Earlier traffic planning would have preserved a corridor for this street extension.

A new street between Washington Avenue and State Avenue would also be a very important factor in solving Alpena's downtown traffic problem. The best location of this street would be the extension of Lockwood Street to the southeast. This street should be no further west of Chisholm Street than Tawas. The acquisition of right of way will present a major financial problem therefore, an alternate solution is offered which has other benefits to offer.

An examination of Alpena's map will reveal that First and Second Avenues offer a parallel route to State Avenue. By using both of these streets for a traffic relief plan, it is possible to solve many problems by the establishment of a one-way pair. Traffic desiring to travel to Alpena's downtown area can leave State Avenue and travel north on Ripley Boulevard to First Avenue. At this point it will travel northeast on a one-way street to the intersection of Water Street. Water Street should be made one-way from First Avenue to Second Avenue from whence it can travel northwest over the bridge and into Alpena's north side. The return flow will be provided a route over Second Avenue which will be one-way southwest of Water Street and continue on such a basis to Ripley Boulevard. By establishing the directional flow of traffic on First and Second Avenues, many other traffic problems will be solved. Interference created by left turns will be eliminated. The traffic movements at the intersection of Second Avenue and Water Street will be simplified to the point where a traffic signal will be unnecessary and a restriction to the capacity of the Second Avenue bridge will be removed. The latter will result in considerable savings to the taxpayers of Alpena since inefficient traffic operation over a bridge requires additional bridges at a much earlier date than would be otherwise necessary. Greater safety to both pedestrians and vehicles will likewise result from this plan. Signal timing will be increased in its flexibility.

By making First Avenue a one-way street, the intersection of Chisholm, Washington and First Avenue will be considerably improved since the left turn from the northeast on First Avenue to the southeast on Chisholm Street will no longer be existant. Any elimination of vehicle conflicts at this busy intersection is bound to be reflected in traffic betterment. The one-way street plan for Alpena is shown on Plate 26.

It is an unsound practice to develop a one-way street system along one axis which does not have its counterpart perpendicular to it. The reason for this is that the intersection of two one-way street systems is essentially a traffic circle. All turning movements in such a system are performed without conflict from the opposite direction. Signal timing also plays a big part. Whenever two one-way streets cross a two-way street carrying large traffic volumes, traffic signals are



required at both locations. These locations are spaced too close for good vehicle progression on the two-way street. The benefits of one-way operation should be given to all directions of travel.

Making a one-way pair of Chisholm and Lockwood Streets would be the most ideal from the standpoint of Alpena's overall street plan, but since Chisholm Street is a State Trunkline Highway, such a proposal would have to be studied and approved by the State. An alternate to such a plan would be the establishment of a Lockwood-Sable one-way pair. This is not as desirable as the other plan since many traffic problems are created by left turns on Chisholm Street which could be solved by a one-way operation.

Lockwood Street's incorporation into a one-way plan would require its extension through the park area directly behind the County Court House. This would in no way decrease the park's value as a parking area or destroy the beauty of the grounds. Better parking facilities for courthouse patrons could be built simultaneously with the extension of Lockwood Street. Fourteenth Avenue would be the northern terminal of either of the one-way systems while it could extend southward to Washington Avenue. At this point it is easy to see the benefits which could be gained if Lockwood Street would go southward beyond this point since it would eliminate the need of using Washington Avenue as an arterial street between Second Avenue and First Avenue. It could be used as a parking area and thus eliminate the five legged intersection which now exists. We recognize the improbability of this plan with present land development, but failure to mention the desirability of this action might mean its failure to be considered in the future in the event that land for its development is obtainable.

It is possible that future highway construction will by-pass the central city. In this event, the establishment of the two one-way pairs will provide a ready access to the central business district. This is insurance that the economic well being of the area will be preserved and even amplified since potential shoppers will find it easy to travel into the district. Short sightedness in providing good access routes designed on present day standards will result in an eventual throttling of the central business area and business will shift to zones of lesser traffic restrictions. Although both of the one-way systems are shown between their present limits, this does not mean that they could not be extended to a future by-pass route. This should be included in any future planning since the benefits of one-way streets are just as great in one area as the other as long as there are two streets well designed to carry this type of traffic.

Although future by-pass routes would probably be built for the segregation of through traffic from local traffic, there is a great need of having a route which does not require traffic to go through the central business area when there is no need to be there. Such trips only interfere with customers of the area and produce a deteriorating effect. There is a strong desire for traffic coming to Alpena from the south to detour the central business district and proceed to northern sections of the city. Ripley Boulevard provides an excellent route for this travel. The travel path north of Washington Avenue for this traffic carries over Ninth Avenue to Chisholm

Street. Ninth Avenue is required to handle higher traffic volumes than Ripley Boulevard even though its design standards are lower. It is apparent that it must be given commensurate capacity if future growth is to be accommodated.

Eighth and Ninth Avenues parallel each other one block apart and have a common junction with Ripley Boulevard. This is ideal for their adaptation to one-way operation. This one-way operation should be continued as far as the Ninth Avenue Bridge. This plan will increase the efficiency of the bridge's traffic carrying capacity similar to the Second Avenue Bridge. Eighth Avenue can be returned to Ninth Avenue at the northern end by the construction of a diagonal return. This would be superior to the use of River Street since one-way traffic moving over to Ninth Avenue from Eighth Avenue would not interfere with present two-way traffic on River Street. The traffic which crosses the Ninth Avenue Bridge to the northern part of the city must be given a good path of travel. Added to this traffic demand is that generated by the new plant of the Abitibi Corporation, the increased building activity on Johnson Street such as the new Community College and Elementary School. Besser Manufacturing Company, Habitant Fence Company and the Cement Mill. The logical path of this traffic is along the Miller Street axis. The city recently installed a traffic signal at the intersection of Miller Street with Second Avenue for the purpose of assigning right of way for this traffic. This signal has failed to fulfill its assigned purpose since there is a large volume of left turns at the location which is hindered by the signal's operation. Corrective measures should be taken if future growth is to be properly accommodated.

By adhering to the principle of commensurate capacity, a one-way street system on one side of the Ninth Avenue Bridge would merit the same treatment on the opposite side. Alpena's street system has provided the ideal couple in Miller Street and Oldfield Street. Miller Street would be utilized by traffic moving to the northwest, while Oldfield would be used for traffic moving to the southeast. The one-way operation would begin at Ford Avenue and end approximately one block beyond Walnut Street. This will involve the construction of a diagonal extension of Oldfield adjacent to the railroad for the purpose of connecting with Miller Street. The point of this return will be an excellent beginning for the one-way system. Some surface work will be required on Miller Street so that a hard surface will be provided the length of the one-way system. The turning movements at Second Avenue will be given much greater facility of movement with the institution of directional traffic flow.

By referring to Plate 26 it is readily apparent that the Ripley Boulevard, Eighth-Ninth and Miller-Oldfield one-way streets form a connecting route to each of the major highways entering Alpena. It is over these routes that trucks entering and leaving Alpena with their cargos will travel. The proposed street system will form an excellent city truck route which will keep the commercial vehicles which carry material to and from the various industries out of the central business area. The fact that the greatest portion of this proposed truck route is on a one-way operation is very important to its success. Commercial vehicles lose much of their disagreeableness when they are permitted to move without the need of accelerating or decelerating. Next to an expressway design, the one-way street

system is the best insurance that truck noise levels will be held to a minimum in an urban area.

The manner in which a one-way street system is introduced to a city is very important to its eventual success. Each one of the one-way pairs discussed in this section can be established as soon as preparations are complete. The exception is the Chisholm-Lockwood pair which can only be accomplished when the State Highway Department finds such action necessary by their studies. The city, however, can establish the Lockwood-Sable system under their own auspices.

Although new one-way streets are readily accepted in cities where their use has already been established, it is important for city officials to appreciate that their initial introduction is generally accompanied by opposition from people having property interests along their length. The solution of a traffic problem, while important, should not be done at the expense of any particular group of citizens. Fortunately, one-way streets are no longer experimental but have their background in good solid evidence which supports their use both from the standpoint of traffic and economics. National studies have been conducted for the purpose of determining the economic effect of one-way streets on business and land use. The results show that, with few exceptions, businesses are enhanced under one-way operation. Since businesses must depend upon an efficient transportation system for their support, it is illogical to assume that a method which supplies this efficiency would prove detrimental. The United States Chamber of Commerce has conducted a nationwide survey on this subject and the evidence is strongly in favor of one-way operation.

A program of public education should be undertaken prior to the establishment of one-way streets. Support should be received from both the business and property owner groups by studying factual evidence and weeding out the factors based on fear and prejudice. The local radio and newspaper can perform a splendid job in properly preparing the people for the changes in their travel habits which they will have to undergo if they are to receive beneficial results.

On some occasions when one-way streets are proposed for a community, there is a demand to either compromise or reduce the extent of the one-way plan. Some strong pressure groups will consider a one-way street plan only after the area where they have their interests is removed from the plan. One-way streets become less effective as their length is reduced since the lengthening of travel paths is the same for traveling a short as a long route. Also, the benefits of this type of operation are inherent and not peculiar to any particular location if fundamental rules have been followed in their planning. The question may be raised concerning the desirability of reversing the directions of traffic flow on a particular one-way pair. This cannot be done without changing the entire plan, since the grid traffic signal timing system requires the streets to be spaced in a prescribed manner and the directions of flow to be in a specific direction.

Basically, the direction of traffic flow on a pair of one-way streets would be counter-clockwise in order to facilitate the return to two-way operation at the extremities. A one-way operation is

essentially a divided highway with a wide median which can properly handle turning movements. Therefore, the same flow directions should be utilized. If the reverse directions of traffic flow were employed and traffic had to begin or end at a two-way street, this would mean that one direction of traffic would have to cross the other. There are some rare exceptions to this rule, but they are not present in this city.

Some of the one-way streets proposed in the plan will travel through residential neighborhoods. City officials very often feel that this is placing the street in a commercial category. Unfortunately, for this line of reasoning we do not eliminate traffic by neglecting to provide for it. If one street becomes inadequate for handling traffic, either the area will deteriorate for lack of traffic capacity or traffic will seek an alternate route. The one-way operation merely selects this route in an orderly manner. In addition to this, a one-way operation is safer for both vehicles and pedestrians and this is a highly important factor in a residential neighborhood.

Some of the beneficial results received from one-way operation are as follows:

1. An efficient use of the street is accomplished with a minimum expenditure of funds. One-way streets can be established by few or no changes involving construction. The small costs involved are primarily for signs and signal changeovers.
2. Capacity of a one-way system is 33 percent greater in a downtown area and 40 percent greater in intermediate areas than two-way streets of the same width. This is accomplished by the reduction of friction created by oncoming traffic and the conflicts at intersections.
3. Speed control and faster overall travel time are acquired by the progressive timing of the traffic signals and the ability to pass slow moving vehicles in the additional lanes.
4. Streets having an odd number of lanes can be fully utilized. On a two-way street of three or five lanes, the center lane unless used for specific purpose such as left turns only, gives little additional traffic capacity.
5. Accidents are reduced by eliminating head-on collisions and minimizing intersection conflicts. Night driving is safer because of the elimination of headlight glare.
6. Curb parking is simplified since the vehicle maneuvering for parking can be passed in an adjacent lane. Under similar circumstances on a two-way operation, the passing vehicle might have to stop and wait if traffic was coming from the opposite direction.
7. Pedestrian safety is enhanced since traffic signals will produce gaps in vehicle traffic which will permit safe crossings of the one-way roadway downstream from the traffic signal.



Although the plan of one-way operation presented in this report does not represent all the possibilities in this direction, it does represent a practical, well designed foundation on which to expand this plan of traffic operation consistent with future growth. Alpena's existing street pattern was carefully studied before recommendations were made and future one-way streets can be added without the necessity of going back and changing the present plan.

The arterial street plan shown on Plate 25 has taken in account those streets which must be added to the arterial system because of their inclusion in the one-way street system. Basically, the present arterial street system plan adopted by the city is sound, but some alterations will be needed to accommodate the proposed street system. Those streets which will lose their importance on the new street plan can be deleted from this mileage in order to offset the addition of the mileage needed for the new streets.

The recommendations made in this section of the report play a most important part in the betterment of the city's traffic system. Traffic relief can be accomplished only by the willingness of all parties to cooperate and permit the plan to be placed in actual operation. Severe alterations and compromises can only result in a plan which satisfies some people in part and nobody in general. Every effort must be made to take the positive action needed to give Alpena's present businesses and industries a chance to grow and prosper by providing good traffic operating streets and ample parking.

The introduction of one-way streets will result in some confusion in the initial stages. Since the system is fundamentally more simple than other traffic control plans, this will disappear and motorists will begin to appreciate their greater driving ease. The accident rate in the period of indoctrination can be expected to remain unchanged, however, this will begin to lower so that eventually, the accident rates on the one-way operation will result in an improved safety record. The time at which a one-way street system is introduced can play a big part in the ease of conversion. Alpena should avoid establishing a one-way system during the Pre-Easter shopping season, the summer tourist season, the deer hunting season, and the Christmas shopping season. By avoiding rush periods, it is easier for people to get adjusted and permits corrections of faults in signing which may develop and create difficulty.

Merchants should be tolerant in the initial stages when customers are becoming adjusted to their new routes of travel. Permanent benefits will far offset the difficulties in the beginning. It is a proven fact that once a one-way operation has been firmly established, people who opposed the installation will very often become the staunchest supporters. Merchants should be very careful to evaluate general economic conditions when determining the influence of this type of operation. As stated before, the results are generally beneficial since more customers are served with greater driver and pedestrian comfort.

## INTERSECTION CONTROL, SIGNS AND MARKINGS

## Stop Signs

A comprehensive survey of stop signs at locations where control of this type is found desirable revealed there is urgent need for standardization of the existing signs along with the addition of several others. The preceding section on Major Streets showed those roadways which have been designated for arterial usage. These streets must have their approaches protected by standard stop signs at all intersecting streets unless there is traffic signal control present for the assignment of right of way. Failure to place stop signs where their use is indicated will create a condition conducive to accidents since some motorists may assume through experience that arterial streets are protected by stop signs and expect the right of way through an intersecting street. The fact that a stop sign cannot be readily seen by a motorist travelling on the street at right angles to it, contributes to this unsafe situation.

The present stop signs in the City of Alpena fit every size, shape and description. They have no standard location as to placement or mounting height. They may be found hanging from utility poles or concealed in the branches of trees and shrubbery. The importance of the stop sign cannot be over-emphasized, therefore, every effort must be made to locate them in full accordance with published standards where they will be easily seen and deciphered by all approaching traffic. Uniformity of location and good visibility will give the motorist the advantage of finding the sign in the same spot and thereby increase his obedience to its message. This fact was clearly demonstrated in a study of the higher accident locations in the city which showed that stop sign visibility and uniformity of appearances was sadly lacking at several of these spots. One of the pictures on Plate 27 shows an example of the use of non-standardized stop sign in a poorly located position.

The red stop sign has been established as both a state and national standard and has been incorporated in the Michigan Manual of Uniform Traffic Control Devices since October 15, 1956. The law states that the erection of all new stop signs or the refinishing of the old should conform to the new standard. Since over two years have elapsed since this new sign has been established as the standard, the old style yellow stop sign is becoming increasingly scarce. The law had to be practical in the changeover to the new sign because a considerable financial investment was involved. Unfortunately for traffic safety, the yellow stop sign is becoming increasingly weak as its use diminishes. It would be good planning for Alpena to consider the institution of a stop sign renovation program for the purpose of replacing all stop signs not conforming to the new standards.

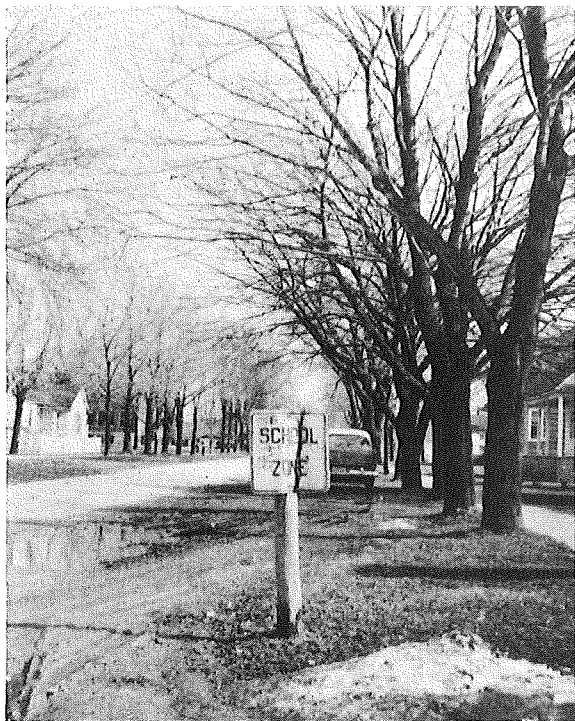
The law does not make it mandatory to use reflectorized background color on the stop sign, but this city should not consider the use of any other type except those which are self illuminated. The background color of red has been adopted as a standard since red means "stop". If the sign cannot convey this color message both day and night, then it loses much of its value. The additional cost is trivial compared with the safety benefits.



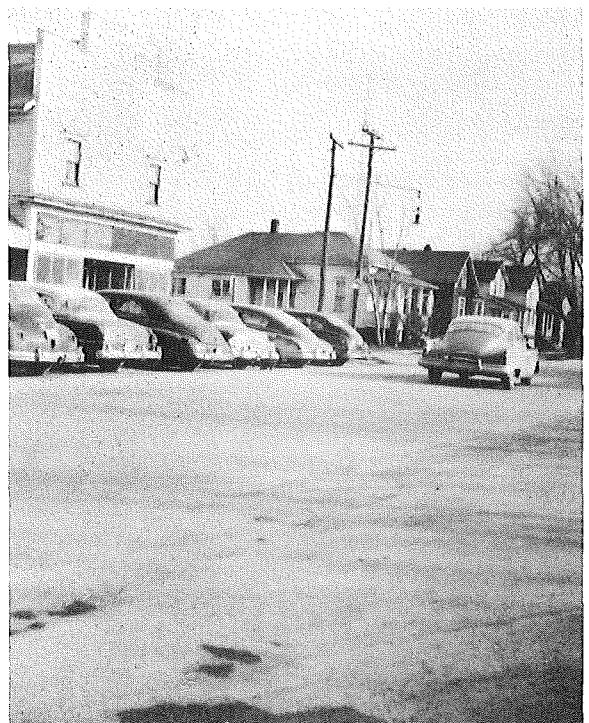
**LOADING OR PARKING?**



**STOP SIGNS MUST BE UNIFORM**



**SCHOOLS NEED GOOD SIGNS!**



**VISION IS SAFETY**

The minimum size of the octagonal shaped stop sign is 24 inches. There are 30 and 36 inch sizes available for urban use which involve multi-lane intersections and higher speed traffic.

Stop signs erected in urban areas should be one foot to the right and seven feet from the top of the curb. In areas where they will not be obscured by parked vehicles, the signs should be placed so as to have a bottom height of five feet above the pavement or roadway. For the purpose of giving the motorist a clear vision of the sign under all conditions, they should be checked periodically to see that they have not become obscured by trees, shrubbery, or other objects. While it is physically and economically unfeasible to replace all of the deficient signs in a short period of time, it is recommended that a planned program be instituted immediately to rectify this condition. The stop signs on the major arterial streets should be taken care of first while the others should follow in their order of importance.

Stop signs must be placed with intelligent study or they can be the source of as many problems as they can prevent. As already mentioned in this report, stop signs should be used very sparingly at isolated intersections lest the motorist be confused on right of way assignments at adjacent intersections not protected by traffic control. By stopping one street for another, this has the effect of increasing the safe sight distance. For this reason, poor sight distance is one of the factors which warrant "stop" control. Right angle accidents and traffic volumes are some others.

#### Yield Right of Way Signs

This type of regulatory sign has only been legalized in Michigan for a short period of time. Its use is now quite prevalent and the sign is proving very effective in the assignment of right of way to motorists. This sign was designed to assign right of way at intersections where traffic volumes are not heavy enough to require a full stop on the part of the motorist approaching from the lighter volume street. The yield right of way sign also serves the purpose of preserving the use of stop signs for the approaches to through streets where the larger traffic volumes and normally higher speeds require a full stop. The presence of this sign should eliminate any need for using the stop sign improperly in residential neighborhoods. When a yield right of way sign is used, the motorist realizes that although he is approaching a street which does not carry a large volume of traffic, he must yield right of way to such traffic. Since he is not compelled to make a stop which traffic doesn't necessitate, he is more willing to comply.

#### Intersection Sight Distances

In order to preserve sight distances at intersections where there are outside influences causing congestion and accidents, it is necessary to establish certain parking restrictions at the curb. These restrictions should only be made after a thorough inventory of conditions at an intersection. The motorist should be guaranteed a clear view of approaching traffic at least 100 feet from the cross street. A greater distance would be even more beneficial, but cer-

tain standards must be followed for the purpose of acquiring sight distances which are considered minimum for conditions. The speed of traffic and type of traffic control employed at an intersection have the most influence on the amount of sight distance needed. As the speed of approach traffic increases, the driver will require more distance in which to see traffic and bring his vehicle to a stop. At locations under traffic signal control, lesser distances are required than would be needed at intersections under "stop" control or no control whatsoever. Sight distance must be of sufficient length so that a motorist approaching an intersection will not be required to stop or slow down at an uncomfortable rate of deceleration. Curb parking restrictions for the purpose of retaining sight distance should be vigorously enforced with no exceptions permitted.

The limits of the restricted parking area can be shown by painting the curb yellow and the erection of a sign at the beginning of the area with the legend "No Parking Here to Corner". Plate 28 shows a typical intersection control. This plate illustrates very clearly the State Law which requires parking to be restricted a distance of 20 feet away from a pedestrian crosswalk. In areas where there are no crosswalks, this distance should be 15 feet back from the property line. There are several violations to this law in Alpena, therefore, it is recommended that the proper parking restrictions be placed in effect without delay for the best interests of traffic safety.

### Traffic Signs and Markings

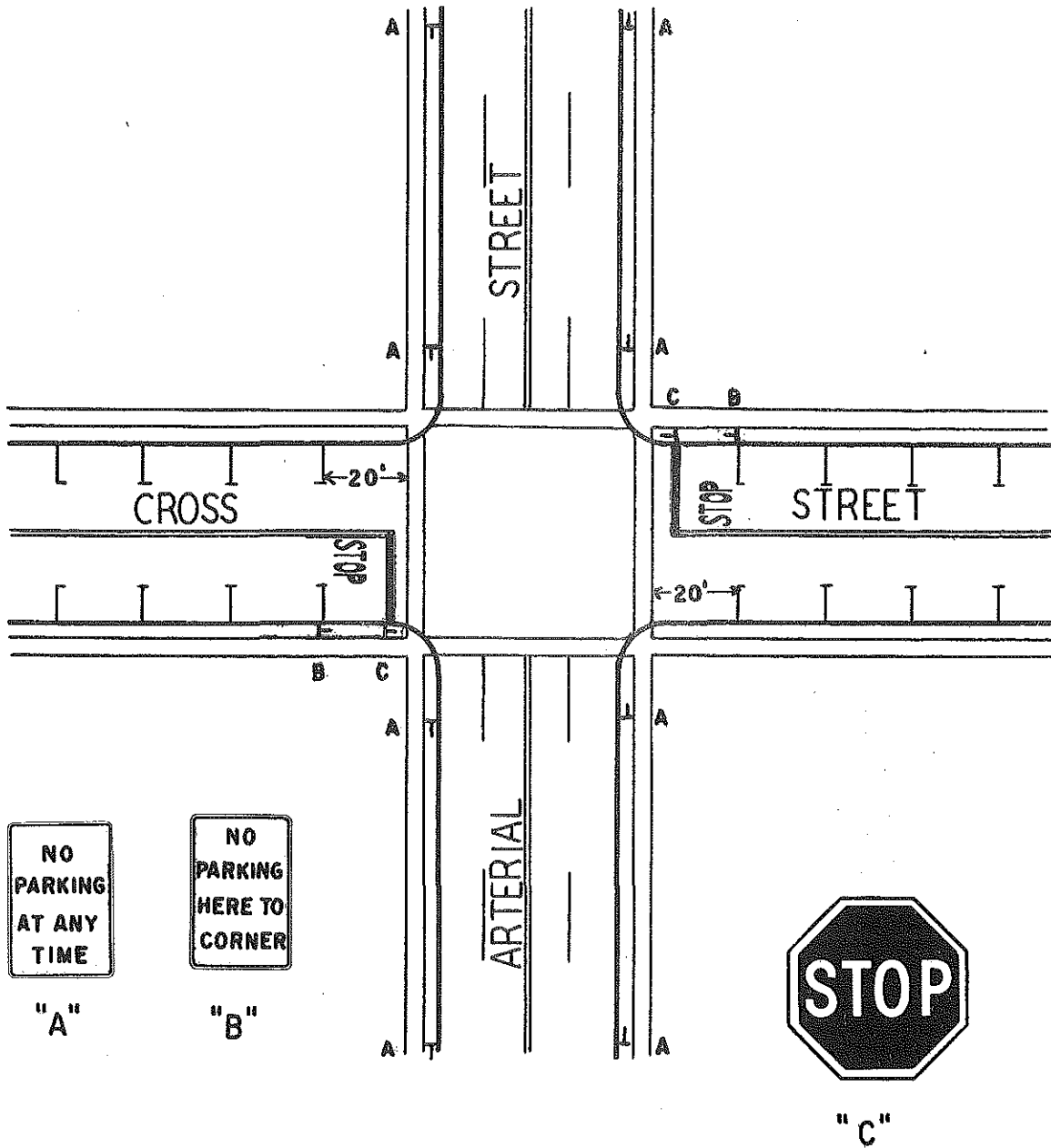
The Michigan Manual of Uniform Traffic Control Devices which makes it mandatory after January 1, 1958 that it be followed in the design and erection of traffic control devices used on all roadways in the state, lists several items which are not followed in Alpena. Stop sign exceptions have already been mentioned. The manual shows the size, color, shape, mounting height and location of all types of traffic signs and pavement markings.

School crossings are deserving of the best signing and markings if motorists are to be alerted to the presence of children. Non-standard or poorly maintained signs can create a hazard which must be avoided. All school signs should be made to conform to state standards before the start of another school year. Plate 27 shows a picture of a school sign taken in Alpena during the survey. This type of signing is very inadequate for giving the proper protection to school children.

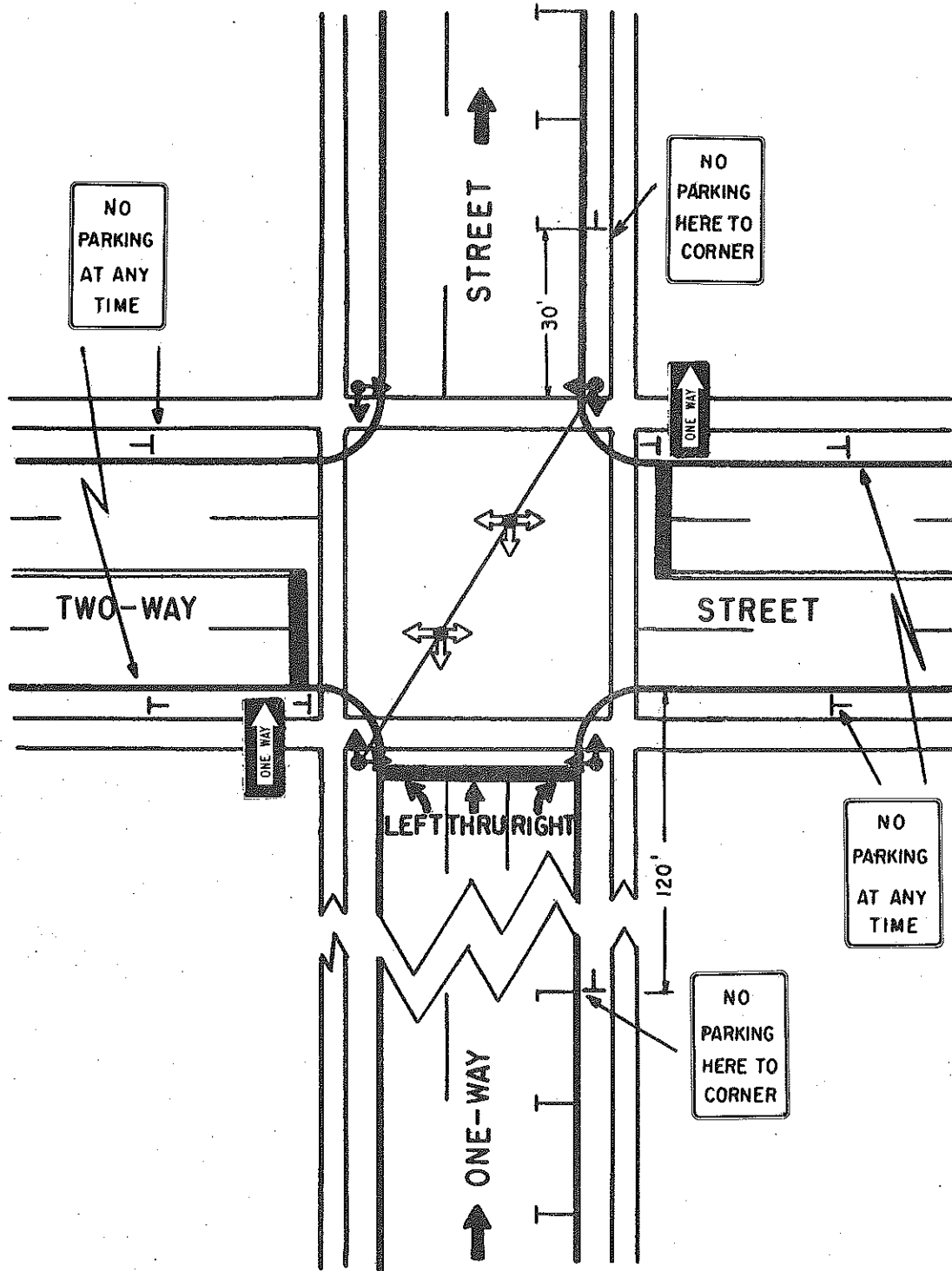
One-way streets will require good signing in order that motorists will be well indoctrinated and guided through new travel patterns. Plate 29 shows the intersection of a typical one-way and two-way street. The one-way signs to indicate the direction of movement are mounted on the near right hand and far left hand corners of streets that have been designated as one-way traffic thoroughfares. In urban areas they are 1 foot to the right and 7 feet above the top of a standard curb. There may be some locations where a third sign may be found desirable on the far right corner. This should always be in addition and not in lieu of the two signs required in the standards.

# TYPICAL INTERSECTION CONTROL

CENTRAL TRAFFIC SERVICES



PAVEMENT MARKING & SIGNING  
INTERSECTION OF ONE-WAY  
AND TWO-WAY STREET  
UNDER TRAFFIC SIGNAL CONTROL



CENTRAL TRAFFIC SERVICES

Center lines should be painted on streets in the downtown area except at locations where special treatment requires other action. Center lines are very important both from the standpoint of safety and the efficient movement of traffic. The center line helps to prevent the encroachment of the wrong side of the street by an on-coming vehicle. Center lines are recommended on city streets under the following circumstances:

1. Traffic volume is sufficient.
2. The roadway between curbs is greater than 20 feet and less than 40 feet and there is no parking present.
3. The roadway between parallel parked cars is greater than 24 and less than 40 feet wide.
4. The roadway between angle-parked cars is greater than 24 and less than 60 feet wide.
5. The roadway between parallel-parked vehicles on one side and curb on opposite side with parking prohibited is greater than 24 and less than 40 feet wide.

Four lane, two-way roadways shall have a center line which shall be composed on two parallel yellow lines  $5\frac{1}{2}$  inches apart. The lines shall be placed equal distances from the center of that part of the roadway available for free moving traffic. They are recommended when:

1. The roadway between curbs is greater than 40 feet wide with parking prohibited.
2. The roadway between parallel-parked cars is greater than 40 feet wide.
3. The roadway between angle parked cars is greater than 60 feet.
4. The roadway between parallel-parked cars on one side and the curb on the opposite with parking prohibited is greater than 40 feet wide.

The use of lane lines permits an efficient use of the pavement with a consequent increase in capacity. The lane lines are particularly valuable at signalized intersections where an additional lane is acquired at the intersection by the removal of parking. Plates 28 and 29 are good examples of how this is accomplished.

Solid yellow lines are used to mark "No-Passing" zones. A speed of 25 miles per hour requires a sight distance of 500 feet while a speed of 35 miles per hour requires 700 feet. The level terrain of the Alpena area does not require any "No-Passing" zones at the present time on the city streets.

Colors used in pavement painting should follow the Michigan Manual. In this respect, white is used for the following purposes:

1. Center line on city streets.



2. Lane lines.
3. Turn markings.
4. Stop lines.
5. Crosswalk lines.
6. Parking space limits.
7. School markings.
8. Word markings.

The color of yellow is used in pavement marking for the following purposes:

1. Double center line on four or more lane undivided pavement.
2. "No-Passing" barrier lines.
3. Curb marking to indicate parking prohibition.
4. Curb marking to indicate obstruction in roadway.

Pavement painting is very useful for marking parking stalls either along the curb or in off-street parking lots. Curb stalls for parallel parking should be 22 feet long and 8 feet wide. Vehicles are becoming longer and unless there is sufficient distance in each parking stall, the parking maneuver becomes very difficult and causes excessive blocking of travel lanes while the motorist is attempting to squeeze his vehicle in a short space. Unless off-street parking lots are marked, careless motorists will make inefficient use of the available parking space.

#### Intersection Recommendations

##### Ripley Boulevard at Campbell Street:-

This intersection is presently controlled by a four-way "Stop" which contributes little to the safety of the intersection, but detracts considerably from the efficiency of traffic movement. The four-way "Stop" is based on the theory that if one motorist violates he will be spared an accident due to the necessity of the second motorist likewise being required to stop. In a practical application, it fails to live up to expectations. Since motorists are required to stop from both directions, there is no right of way rule which prevails after the first maneuver is performed. This results in considerable "jockeying" which may have the effect of causing accidents rather than preventing them. Whenever there is very much traffic on either street, congestion will be created. Ripley Boulevard is increasing in importance for arterial travel and if the recommendations of this report are followed, it will become a very important key in Alpena's transportation system. With increasing traffic volumes, it is recommended that this street be made more efficient by giving its traffic priority over Campbell Street by the removal of

the stop signs facing Ripley Boulevard traffic. Stop sign control will be necessary for the service road which parallels Ripley at the point where it enters Campbell Street. Measures should be taken to control parking at the business establishments near this intersection which can block intersection sight distance.

Adams Street at Long Lake Avenue:-

This is another intersection which has utilized a four-way "Stop" to control traffic. The traffic volumes which use this intersection during peak hours is unduly hindered by the inefficiency of this type of control. Long Lake Avenue traffic should be required to stop for Adams Street traffic. Parking should be eliminated on the approach of Adams Street from the east for a sufficient distance to eliminate vision obstructions and keep traffic freely moving.

Lincoln Street at Fourth Avenue:-

This intersection should have the parking restricted in the intersection area in order to obtain clear vision which at present is obstructed by parking. "Yield Right of Way" and "Children Crossing" signs should be considered due to the number of children using the intersection.

Lincoln Street at Fifth Avenue:-

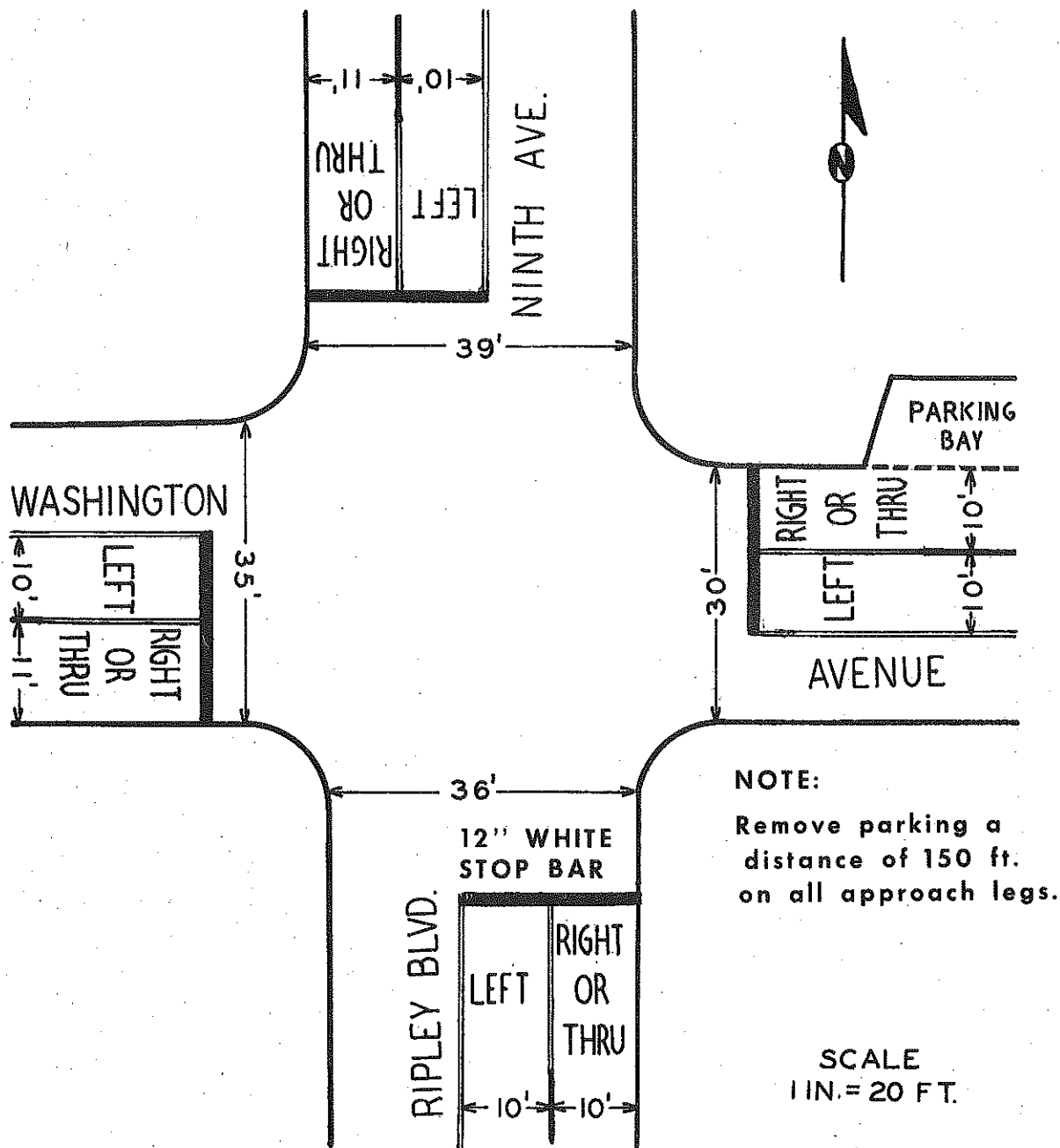
Same recommendations as for Lincoln Street at Fourth Avenue.

Ripley Boulevard, Ninth Avenue at Washington Avenue:-

This intersection is one of the high accident intersections of the city as shown in the section on accidents. Plate 30 shows the proposed intersection control for this location. Since a traffic signal will be needed to control traffic, it will be necessary to provide two lanes into the intersection if proper vehicle capacity is to be gained. The recommended pavement painting will be needed to channelize the vehicles so that a greater number can pass through the intersection on the green phase of the traffic signal. The present control at the intersection is creating congestion which causes the motorists to lose patience and drive in an unsafe manner.

With the proposed traffic control system, curb parking in the intersection area must be eliminated in order to offset the disadvantage of the narrow street. This will require the removal of parking for a distance of 150 feet back from the intersection on all approach legs. The installation of a traffic signal cannot be considered without restricting the parking in the prescribed manner since turning movements at the intersections make it imperative that additional lanes be obtained if severe congestion is to be prevented. The present accident record will not permit the city to leave this intersection in its present condition, therefore, positive steps on the parking removal should be undertaken at once. The grocery store on the north side of Washington Avenue offers the biggest block to the institution of the parking ban. While the value of parking to a business is fully appreciated, the general welfare of the people takes first priority. The curb parking should be eliminated and off-street parking substitution so that a safer, more efficient traffic operation can be placed in effect.

**ALPENA TRAFFIC STUDY**  
**PROPOSED INTERSECTION CONTROL**  
**INTERSECTION OF RIPLEY, NINTH AND WASHINGTON**  
 CENTRAL TRAFFIC SERVICES



The public telephone booth and other installations in the northwest quadrant are creating a sight restriction which should be alleviated. Signs at the service station should be better controlled for the purpose of maintaining good vision for motorists at the intersection.

#### Second Avenue at Park Place:-

Second Avenue has been recommended for a one-way operation to the southwest. This in itself will create many intersection betterments at Park Place. Plate 31 shows the proposed intersection traffic control. By the removal of three parking stalls on the north side of Second Avenue near the bridge, it will be possible to have four lanes available for moving traffic from the bridge to Park Place. This is very logical even if we permit only two lanes southwest of this intersection. This will permit the establishment of a right and left turn lane for traffic along with two through lanes. There will be a large volume of vehicles which will desire to leave Second Avenue at this intersection and travel in both directions on Park Place for the purpose of reaching the parking areas and other destinations. Parking should be eliminated on the northwest leg of Park Place along the south side between the intersection and the entrance to the city parking lot. The parking on the opposite leg will probably be permissible until additional traffic volumes will require its restriction. The off-street parking program should prepare for curb parking restrictions in the area.

#### Second Avenue at Chisholm Street:-

Parking should be prohibited on the north side of Second Avenue between the alley and Chisholm Street. This will permit the establishment of the right turn lane needed for handling this large turning movement. Since pedestrians cause considerable interference to this movement, it should have a special lane so they will be lined up and prepared to move when the pedestrian signal gives the right turning vehicles an opportunity to proceed. This will also segregate the right turns from the through moving vehicles and thus permit their free movement. Lane lines and pavement markings should be painted to give the proper guidance.

#### Second Avenue at Miller Street:-

This is a signalized intersection and therefore should be provided with two lanes into the intersection for moving traffic. Parking should be eliminated for a distance of at least 150 feet on the right hand side of the approach legs of Second Avenue to the intersection. Lane lines and word markings should be painted on the pavement to guide traffic in the proper channels. Since Miller Street is recommended for one-way use it will only be necessary to treat the approach from the southeast with a center line on the pavement.

#### Second Avenue at Oldfield Street:-

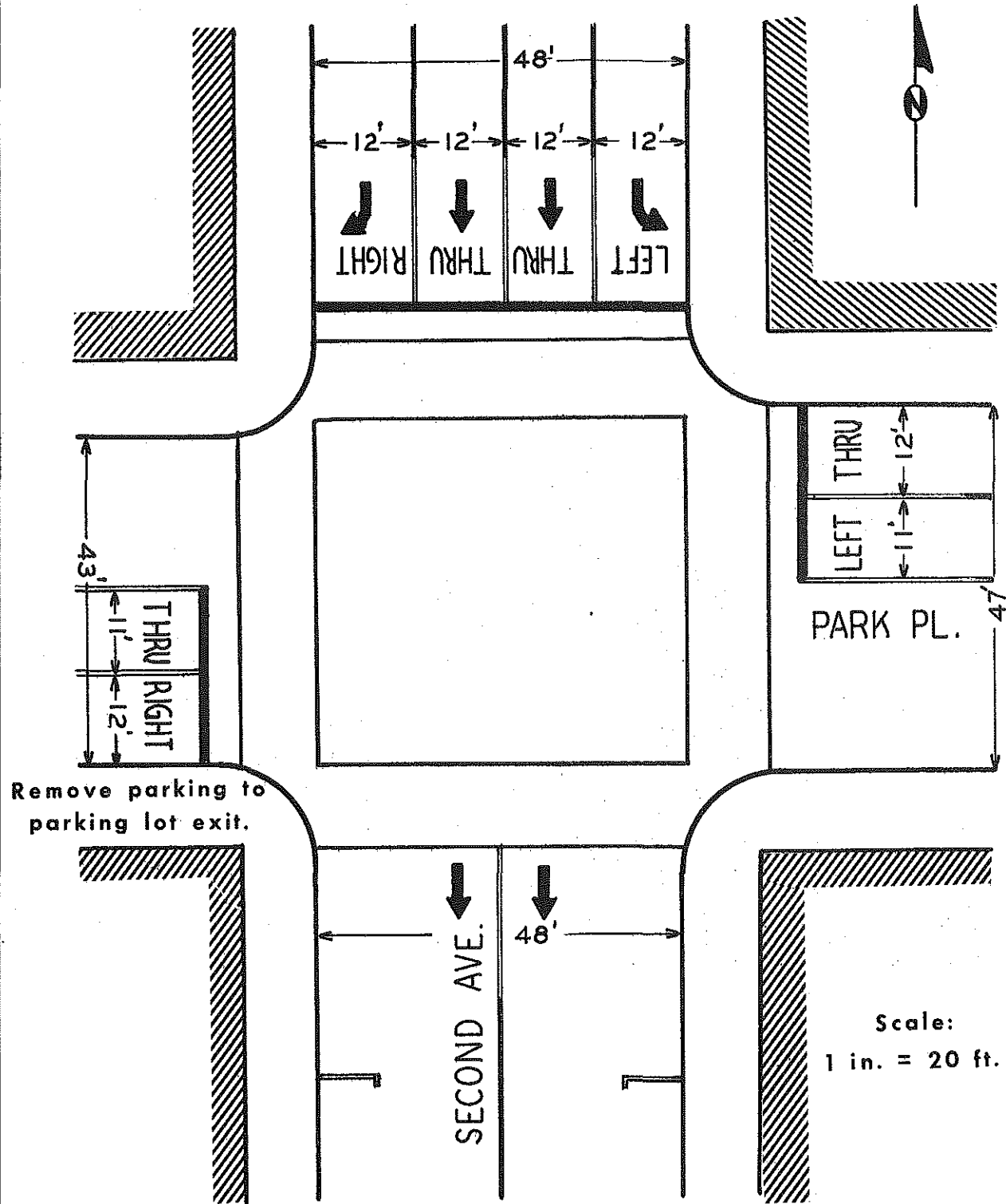
Oldfield Street has been proposed for a one-way operation to the southeast. This will require the painting of a lane line on the northwest approach to Second Avenue in order to acquire two lane operation. Parking should be restricted on the right hand side of the approach

# ALPENA TRAFFIC STUDY

## PROPOSED INTERSECTION CONTROL

### INTERSECTION OF SECOND AND PARK PLACE

CENTRAL TRAFFIC SERVICES



legs of Second Avenue to this intersection. This should extend for a distance of 150 feet. Pavement marking should be employed to simplify traffic control.

Second Avenue, Lockwood Street at Washington Avenue:-

Under one-way operation, Second Avenue should be provided with a right turn lane on its approach to Washington Avenue. This lane and a through lane should be shown by pavement marking.

Ford Avenue at Hueber Street:-

It has been observed that there is a deficiency of clear vision at this intersection created by the parking at the tavern in the vicinity. The photograph on Plate 27 clearly illustrates the extreme difficulty a motorist would have in seeing an approaching vehicle on the intersecting street due to the parked vehicles. Parking should be restricted so that clear vision is restored to the intersection.

Ninth Avenue at Chisholm Street:-

The approaches of Ninth Avenue to Chisholm Street from the northeast under one-way operation will make it necessary to employ pavement marking and lane lines in order to acquire three lane capacity. The present street is too narrow and should be flared to a width of 36 feet from Chisholm Street back to the alley. This will permit the painting of three 12 foot wide lines. The heavy traffic anticipated on this route makes this action very necessary.

Johnson Street at Chisholm Street:-

After completion of work on Johnson Street it is recommended that Johnson Street be made a minimum width of 44 feet for a distance of 200 feet from the intersection. A double yellow center line and lane lines should be painted on the pavement in order to insure two lanes in each direction for the length of the widened area.

State Avenue at Chisholm Street:-

This is a "tee" intersection involving two state trunkline legs. The State Highway Department has authorized the establishment of two lanes for southeast bound traffic. The through traffic movement will be required to stop and for this purpose a newly developed illuminated red stop sign will be suspended over the through lane. The right turn lane for traffic turning into State Avenue will not be required to stop. Traffic turning from State Avenue into Chisholm Street will also be permitted to flow. By this type of traffic control, the heavy traffic movement is permitted to travel without coming to a stop. This will improve capacity of the intersection.

## GENERAL RECOMMENDATIONS

Throughout this report, there have been recommendations made dealing with the subject matter of that particular section. In this final section of the report, recommendations are made which are of a general nature. The purpose of the entire traffic study was to use factual information and engineering methods to derive improvements which will reflect themselves in a safer and more efficient street and traffic system in the City of Alpena. The true value of this report will never be known if the procedures and recommendations outlined herein are never placed into practical reality. Serious alterations and modifications of vital portions can also effect the final results. We have not attempted to soften the procedures on how positive traffic relief can be obtained. We can appreciate that some of the recommendations will mean severe changes in the habits of certain groups. It is very possible that city officials will be opposed in their efforts to place into effect portions of the plan. If we would have permitted the anticipation of opposition from certain groups to enter in the planning of this report, the real solution of the traffic problem without the need of huge financial outlays could have been lost.

Now that the point has been reached where the City of Alpena has a traffic plan, the decision on what to do about it will have to be made. Machinery should be placed in motion to determine how the plan will be accomplished and the priority and scheduling of the work. Naturally, it will be impossible to accomplish the whole task overnight since a great deal of work is needed along with the cooperation of a lot of people. Some of the recommendations in this section are designed to facilitate the accomplishment of the recommendations of this report.

1. The City Manager should designate someone with engineering training and duties who will be responsible for the carrying out of the traffic engineering functions for the City of Alpena. This employee can be prepared for his specialized duties by attending the regional and on-campus traffic engineering courses offered by the Traffic Safety Center of the Michigan State University for this specific purpose.
2. Traffic engineering consultation services can be employed by the city to solve traffic problems requiring services of highly trained people. The City's size and budget does not permit the hiring of a full time trained traffic engineer.
3. A program of traffic work should be approved for each fiscal year and a budget earmarked for this specific purpose.
4. The appointment of a citizen's traffic safety committee whose duties will be to discuss and make recommendations on community traffic safety problems. This committee should meet once a month for this purpose. While this committee should not attempt to solve the traffic problems, it should give support to the agencies entrusted with this responsibility. Members of this committee should be composed of citizens of diversified occupations and businesses so that a good cross-section of the people is represented.

5. A traffic commission consisting of five or more members should be appointed by the Mayor for the purpose of passing on all matters pertaining to traffic operation and regulations. The Commission should be established by ordinance. The person entrusted with the duties of traffic engineering should serve as Secretary to the commission and bring matters pertaining to traffic and transportation before it. He should supply the factual data on traffic matters to the commission and make recommendations for the best interests of safety and efficiency of travel. The Chief of Police should serve on this commission in order that the proper enforcement can be rendered to traffic ordinances. The City Attorney should be represented to keep all proposals within the limits of existing legislation. The other representatives should have some interests which will give them an above average acquaintance with the traffic problem. In this respect, the City Planner or a representative from the Planning Commission would be an excellent choice since traffic facilities are affected by, and have an effect upon city planning and land use. By coordination with planning, traffic generators can be controlled and confined to areas where traffic facilities are ample for the demand.
6. The Michigan Manual of Uniform Traffic Control Devices should be conformed with in all city traffic signing and operations.
7. The Michigan Uniform Traffic Code for Cities, Townships and Villages should be adopted for the City of Alpena.
8. A program of education and information on traffic matters should be instituted with the local press and radio for the purpose of gaining popular support on traffic changes or improvements.
9. Conduct meetings where traffic matters are discussed with interested citizenry. Show films and dispense information on traffic subjects.
10. Install programs in the schools designed to create interest and enthusiasm on the part of future citizens in affairs of traffic and safety.
11. Establish the machinery needed to acquire a smoothly operating traffic structure capable of supporting Alpena's future traffic growth.

In presenting this report to the City of Alpena, it is our firm hope that each and everyone will remember that a good traffic plan like anything else, can only be accomplished by placing selfish interests behind us and working towards the overall good of the community. No traffic plan which creates accidents and congestion can be good for the City's economy and welfare. Likewise, a good traffic plan must result in a healthy atmosphere for conducting business. We wish the city every success in its future growth.