

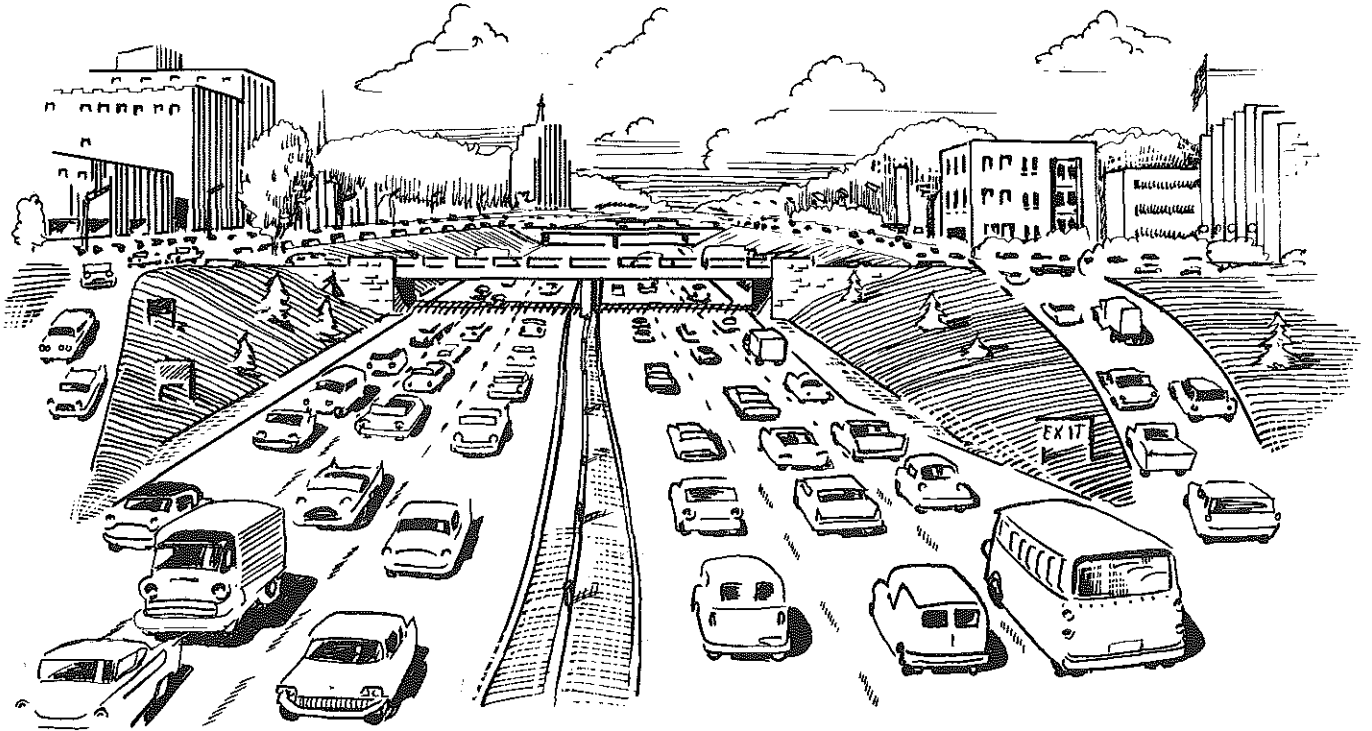
HE
356
.M5
M532a
1961

128

LIBRARY
michigan department of
state highways
LANSING

Annual Report

1961



TRAFFIC DIVISION

MICHIGAN STATE HIGHWAY DEPARTMENT

JOHN C. MACKIE, COMMISSIONER

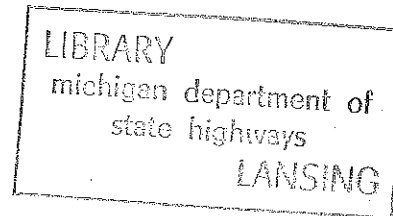
65-3128

M.S.H.D. REPORT NO. 141

Traffic Division

MICHIGAN STATE HIGHWAY DEPARTMENT

JOHN C. MACKIE, COMMISSIONER



Annual Report
of
Traffic Division
1961

Harold H. Cooper - Director.

FOREWORD

The Traffic Division is responsible for the safe and effective operation of traffic on the state trunkline system. This function obviously entails investigation of current traffic problems and application of appropriate corrective measures. However, it also requires determination of anticipated traffic needs to avoid future difficulties, derivation of improved geometric designs to solve existing and avoid future problems and involves performance of research activities to devise new methods and devices and to determine their merit.

In order to effectively describe the accomplishments of the Traffic Division during 1961, it is necessary to describe the activities of each organizational component separately. However, the interrelationship and coordination of these activities within the Division and with other Department agencies are readily apparent.

This Annual Report of the Traffic Division for 1961, the third annual report issued to date, will enable the reader to obtain a clearer understanding of Division objectives and, in reviewing specific accomplishments during the year, to witness the degree of success achieved toward attaining these goals.

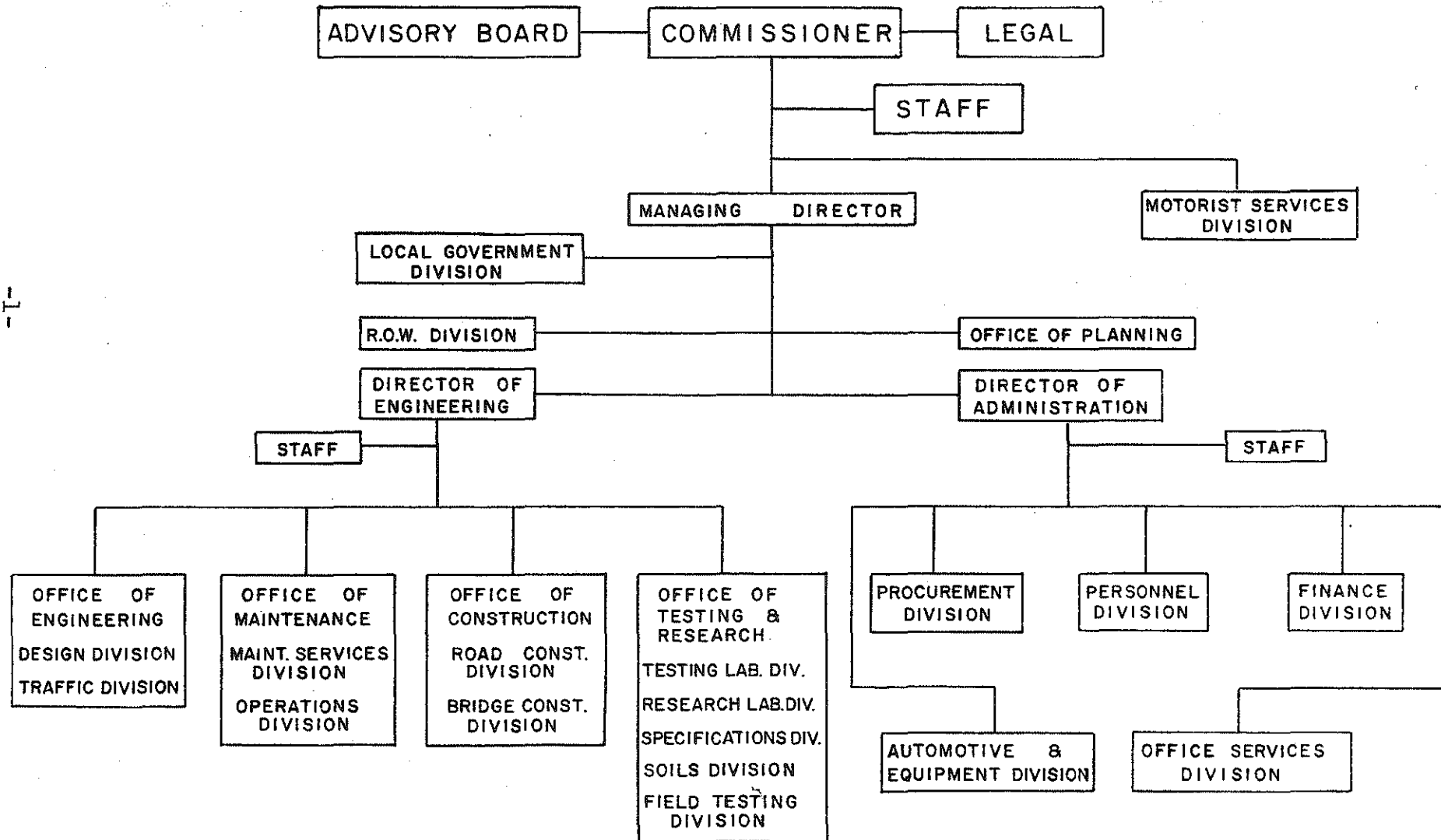
TABLE OF CONTENTS

Organization Charts

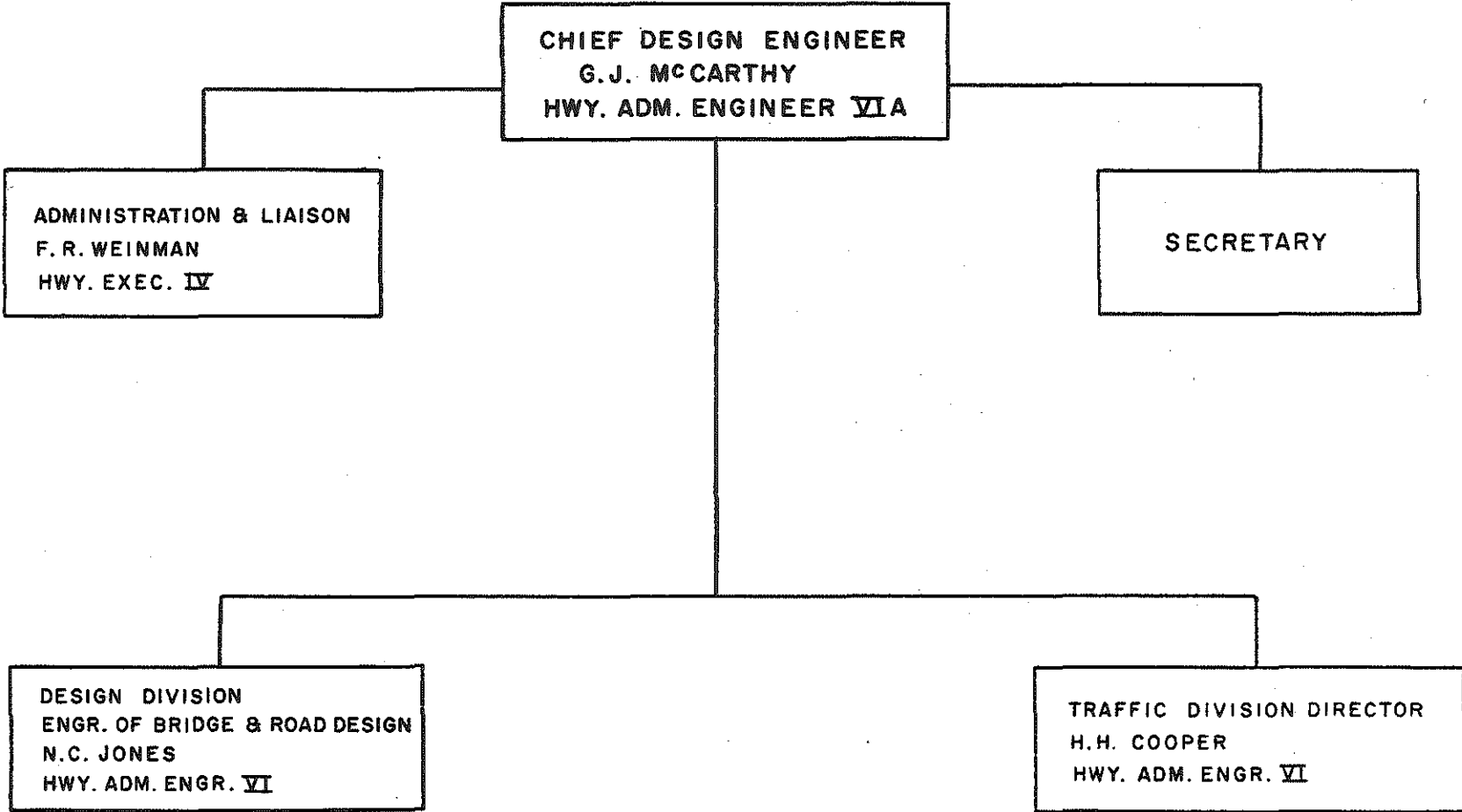
Michigan State Highway Department	1
Office of Design	2
Traffic Division	3
Administration	4
Surveys Section	7
Geometrics Section	18
Operations Section	26
Research Section	41
District Traffic Engineers	51
Awards	56
Conclusion	59

MICHIGAN STATE HIGHWAY DEPARTMENT ORGANIZATION

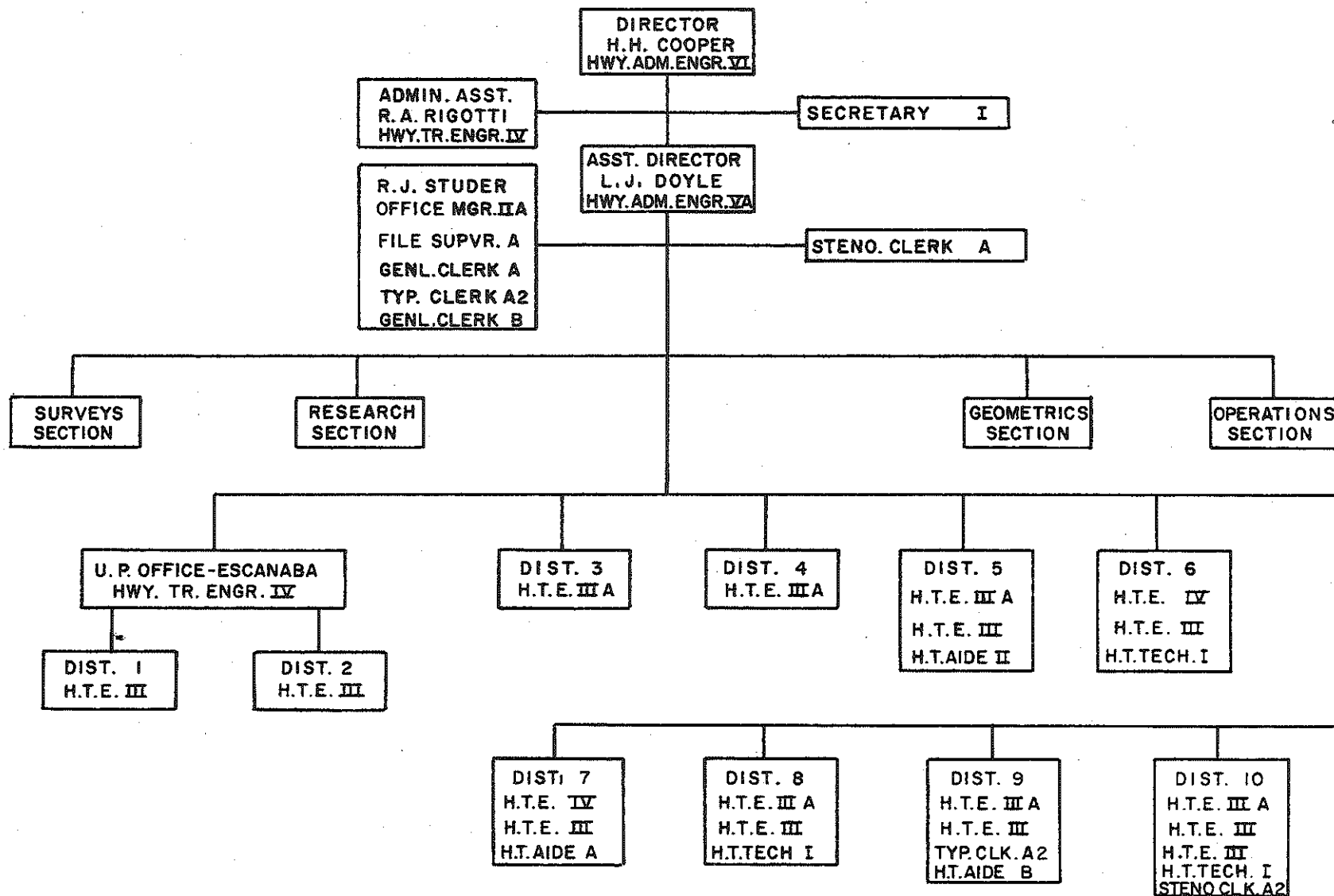
1961



OFFICE OF DESIGN ORGANIZATION 1961



TRAFFIC DIVISION ORGANIZATION 1961



ADMINISTRATION

Harold H. Cooper - Director

Lowell J. Doyle - Assistant Director

The major change in Division administration occurred in the middle of the calendar year when Commissioner Mackie named Mr. Harold G. Bauerle, then Director of the Traffic Division, as a member of the Department's new Engineering Development Committee. In turn, Commissioner Mackie selected Mr. Harold H. Cooper to head the Traffic Division. Mr. Cooper, an employee of the Department for over 25 years, assumed his new post on July 1, 1961. Other personnel re-assignments are reflected in the organization charts on pages 8, 19, 27, and 42, which name the incumbents of primary assignments at the close of the calendar year.

During 1961, the increasing amount of work warranted establishment of 13 new positions, bringing the total number of permanent positions to 180. Additionally, as many as 60 temporary employees were hired during the summer months, in addition to as many as 14 student highway technicians.

The inservice training program for Division employees continued with a class of approximately thirty employees attending a two-hour training session once each week for thirteen consecutive weeks. The program, which provided training for all Section and Unit Heads in 1960, included all remaining engineers, as well as employees with position ratings above the II level who had not participated in 1960. Improvements in

training methods were incorporated and the welcome response of participants warrants continuation of the inservice training program to familiarize employees with the functions and responsibilities of the Division's component groups.

Despite the increasing burden of responsibilities and growing complexities of operation, the Division continued to foster cooperative endeavor with other State agencies, local governmental agencies, other states and countries and with various organizations devoted to engineering and traffic safety activity. Further, recognizing the several advantages of adequate dissemination of information to the public, the Division worked closely with the Motorist Services and Reports Division in reporting significant information of aid and interest to Michigan motorists.

SURVEYS SECTION

J. F. Negri - Engineer of Traffic Surveys

TRAFFIC SURVEYS SECTION 1961

J. F. NEGRI
HWY. TR. ENGR. V
SECTION HEAD

W. M. LEPCZYK
HWY. TR. ENGR. III A
ASST. SECT. HEAD

SECRETARY & TYPING POOL

SURVEYS & ROAD INVENTORY

TABULATIONS & COMPUTATIONS

TRENDS & FORECAST

ELECTRONIC MAINT.

M. J. STEFFES
HWY. TR. AIDE III

M. P. FLACHS
HWY. TR. AIDE III

W. L. STEINFATT
HWY. TR. ENGR. IIIA

W. CARUSS
ELEC. TECH. IIA

OPR. SURVEYS
& SPEED

FIELD
SUPERVISOR

STATWIDE
O & D SURVEYS

ASST. UNIT HEAD

ASST. UNIT HEAD

FIELD INS. & REPAIR

LANSING SHOP

STATEWIDE

SPEEDS &
LOADOMETER

O.P. & PLAN
SURVEYS

P. T. R. S.

14

8

3

1

3

4

5

7

1

The TRAFFIC SURVEYS SECTION experienced further increases in activity in 1961 in accomplishing its prescribed function of gathering and analyzing information concerned with present and future trunkline traffic. A record 238 miles of new free-ways were added to the trunkline system during the year, making a total of over 800 miles of freeway routes in the State. Additional personnel were required to carry out the more complex studies of traffic on these routes, in addition to performance of routine studies on other trunklines.

To aid Michigan motorists during holiday weekends and other peak travel periods, estimates were made of traffic densities on major routes, and motorists were advised in advance concerning points of anticipated severe congestion so they could select alternate routes. Experience has indicated that this practice has proven very valuable.

The Permanent Traffic Recorder Unit continued weekly inspection and maintenance work on its equipment, strategically located throughout Michigan. Figure 1 illustrates one of the permanent traffic recorder installations. A total of 2,563 short manual classification counts were made during these visits. Additionally, eight new permanent directional traffic recorders were installed; four sonic-type overhead detectors on I-96 east of US-23, two magnetic detectors on I-94 east of Ypsilanti and

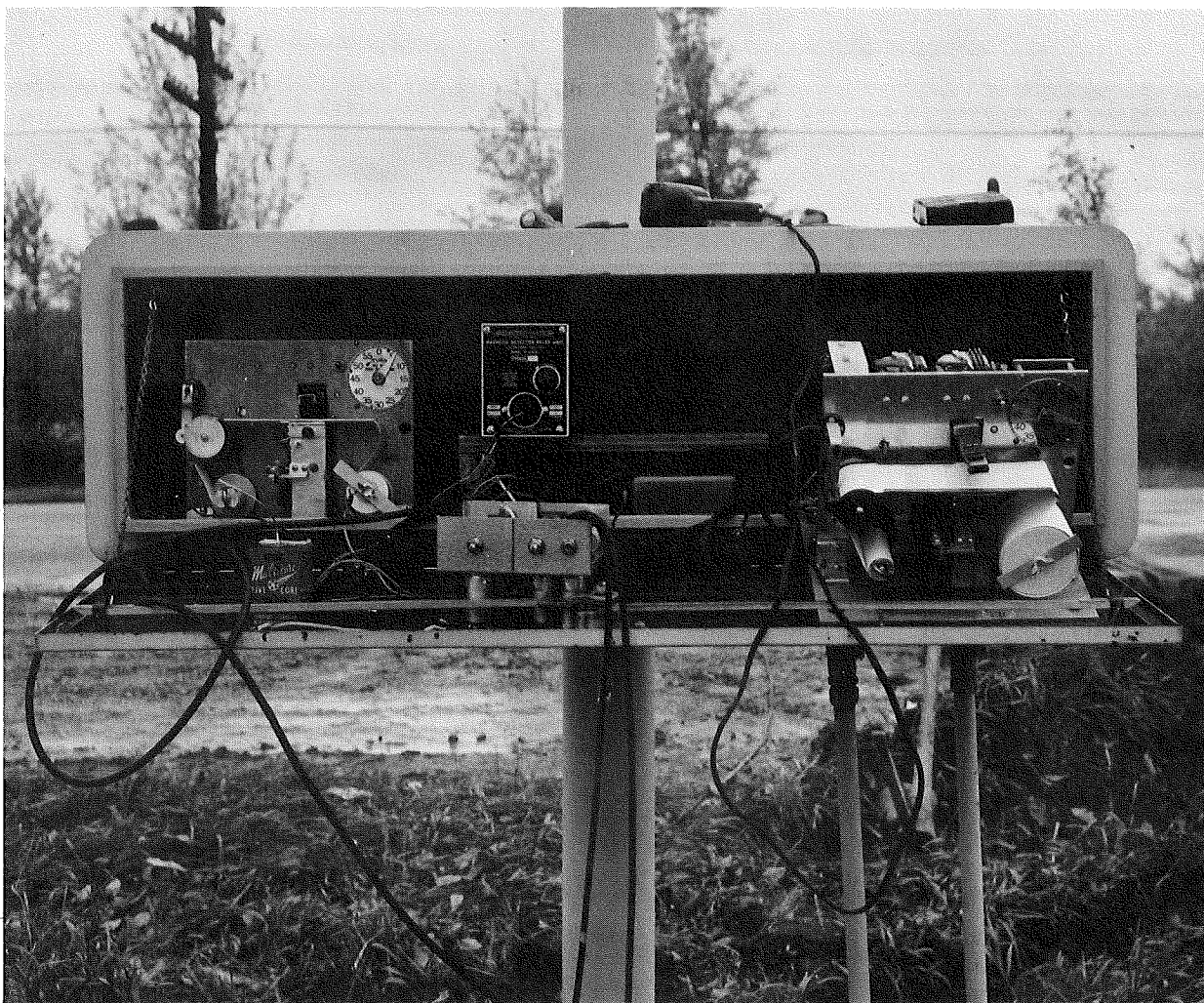


Figure 1. Permanent Traffic Recorder.

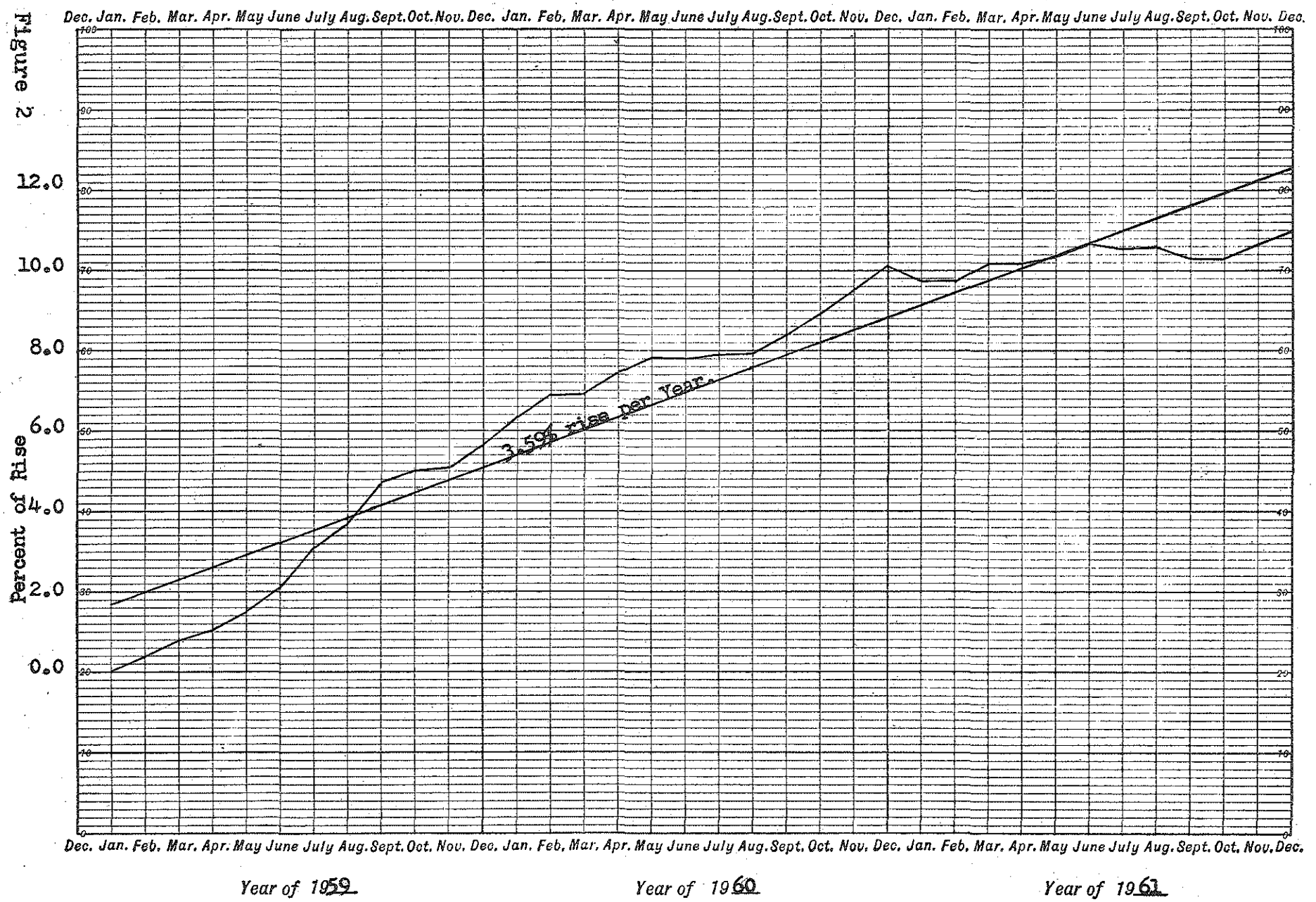
two other magnetic detectors on relocated US-27 south of Houghton Lake. At the conclusion of 1961, there were 40 permanent traffic recorder stations located on state trunkline routes and 8 on county roads, utilizing 67 machines. In addition, traffic volumes were recorded daily on the Mackinac and Blue Water Bridges and the Ironton Ferry.

Information obtained at these permanent sites is utilized in various ways, one of which is to establish traffic volume trends. Figure 2 on page 12 graphically illustrates the means by which recorded average vehicle volumes over a period of time serve to establish a normal "trend line", from which anticipated vehicle volumes may be estimated. Note, for example, the generally reduced rate of traffic volume increases during 1961. Traffic volumes recorded in 1962 will reveal the need for, and degree of, adjustment for the trend line for future analyses.

Survey data obtained from permanent traffic recorders is supplemented with that obtained from portable counters placed at a number of strategic sites throughout the year to evaluate statewide traffic patterns. These supplemental study sites are known as "A", "B" or "C" stations, and traffic counts vary from 96 hours (inclusive of a weekend) at "A" sites every other month to 48-hour counts at "C" stations every few years. This procedure is described in detail in the Traffic Division's Annual Report for 1959.

THREE YEAR TREND OF TRAFFIC

At 44 continuous Stations
January 1959 through December 1961



In 1961, there were 672 "A" station counts, 730 studies at "B" sites and 3,352 counts at "C" stations. In addition, there were 605 other special volume counts and 795 manual classification counts for two or more hours. Compilation and analysis of this data facilitates preparation of a statewide traffic flow map. The map showing average 24-hour traffic flow on the state trunkline system in 1960 was published in June of 1961.

A map illustrating commercial traffic volumes on the trunkline system in 1961 has also been published.

The Operational Surveys Unit conducted a number of studies to obtain data used in determining applicable corrective measures to improve traffic operations on the state trunkline system. During 1961, studies of vehicle turning movements were made at 356 locations. In addition, parking studies were conducted on M-46 (Apple Ave.) in Muskegon and on M-21 (Chicago) in Grandville.

A special study of three rest areas along Interstate Route 94 was made to determine the adequacy of existing facilities and to obtain information essential to the design and operation of future facilities. Data obtained from observing traffic and interviewing motorists at these sites has been summarized in a 128-page report entitled "I-94 Rest Area Study", prepared by Traffic Division personnel. Another special study was made of vehicle back-ups on the approaches to the I-75 bascule bridge crossing the Saginaw River north of Saginaw.

Other special studies included cooperative studies with General Motors Research Laboratory personnel for the Mound Road Pacer System, manual classification counts of traffic by 5-minute increments in conjunction with the TV Surveillance Project in Detroit, 25 freeway ramp capacity studies on the Lodge and Ford Freeways in Detroit and preparation of average daily traffic (ADT) estimates for 33 intersections and 32 rural sites to be used in establishing accident rates before and after certain improvements were effected.

The Origin and Destination Surveys Unit completed three urban studies in 1961, these being at Allegan, Battle Creek and Cadillac. A special 24-hour origin and destination study was also made at the Mackinac Bridge. College students and other temporary employees, supervised by permanent Division personnel, were utilized in obtaining and coding the field data.

The Annual Loadometer Study was conducted at 12 sites. This survey, required annually by the Bureau of Public Roads, obtains information concerned with truck weights, volumes, extent of loading and types of fuel used. This information is obtained in June and subsequently coded, compiled and analyzed in the form of a report to the Bureau.

In addition, a special commercial vehicle registration and truck weight study was made on I-96 at the Ionia truck scales station for an 8-hour period.

The Speed Surveys Unit made speed studies at 1,426 stations during the year. Of these, 1,266 stations were in previously established speed zones where rechecks of vehicle speeds were required. The remainder were initially-established sites where more comprehensive vehicle speed information was required. Vehicle speed data was also obtained four times during the year at each of 25 sites located throughout the state, and published in a report entitled "Quarterly Speed Report".

Vehicle "gap studies" were conducted at six locations and four "average running speed and time" studies were made during 1961. A special study of vehicle speeds on freeways commenced during the year, utilizing equipment located on structures spanning these routes to minimize motorists' observation of the personnel or equipment. (See Figure 3). The resultant data has also been analyzed to reveal the extent of change in passenger car speeds when the statutory speed limit on freeways was increased in September.

The Trends and Forecasts Unit determined projected traffic estimates for 291 projects during 1961. Of these, 258 were for design purposes and 33 for bituminous projects. Work has commenced on revision of the manual entitled "Estimating Traffic on Michigan Highways", which was published in 1959. The comparison analysis intended to determine the adequacy of permanent traffic recorder sites as to number and location has been completed. These sites are being modified and expanded as necessary to fit the altered traffic patterns.

Figure 4 illustrates the trend in travel in Michigan since 1920.



Figure 3. Hidden Detector Study of Vehicle Speeds on Freeway.

GRAPH OF ANNUAL VEHICLE MILES (IN BILLIONS) BASED ON MOTOR FUEL TAXES

13.49 IN 1950 TO 13.52 IN 1962 MILES PER GALLON USED TO ESTABLISH ESTIMATED VEHICLE MILES

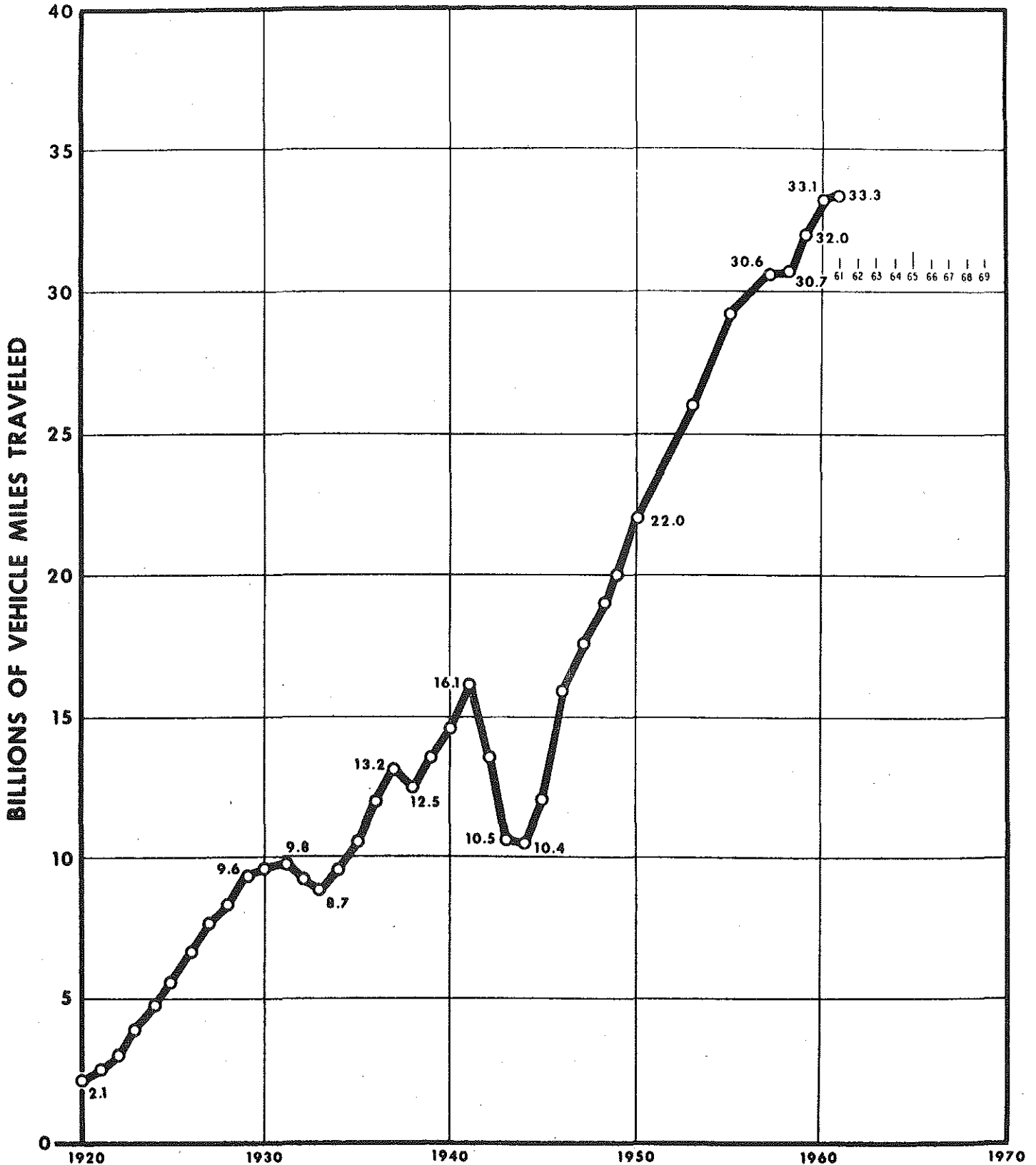
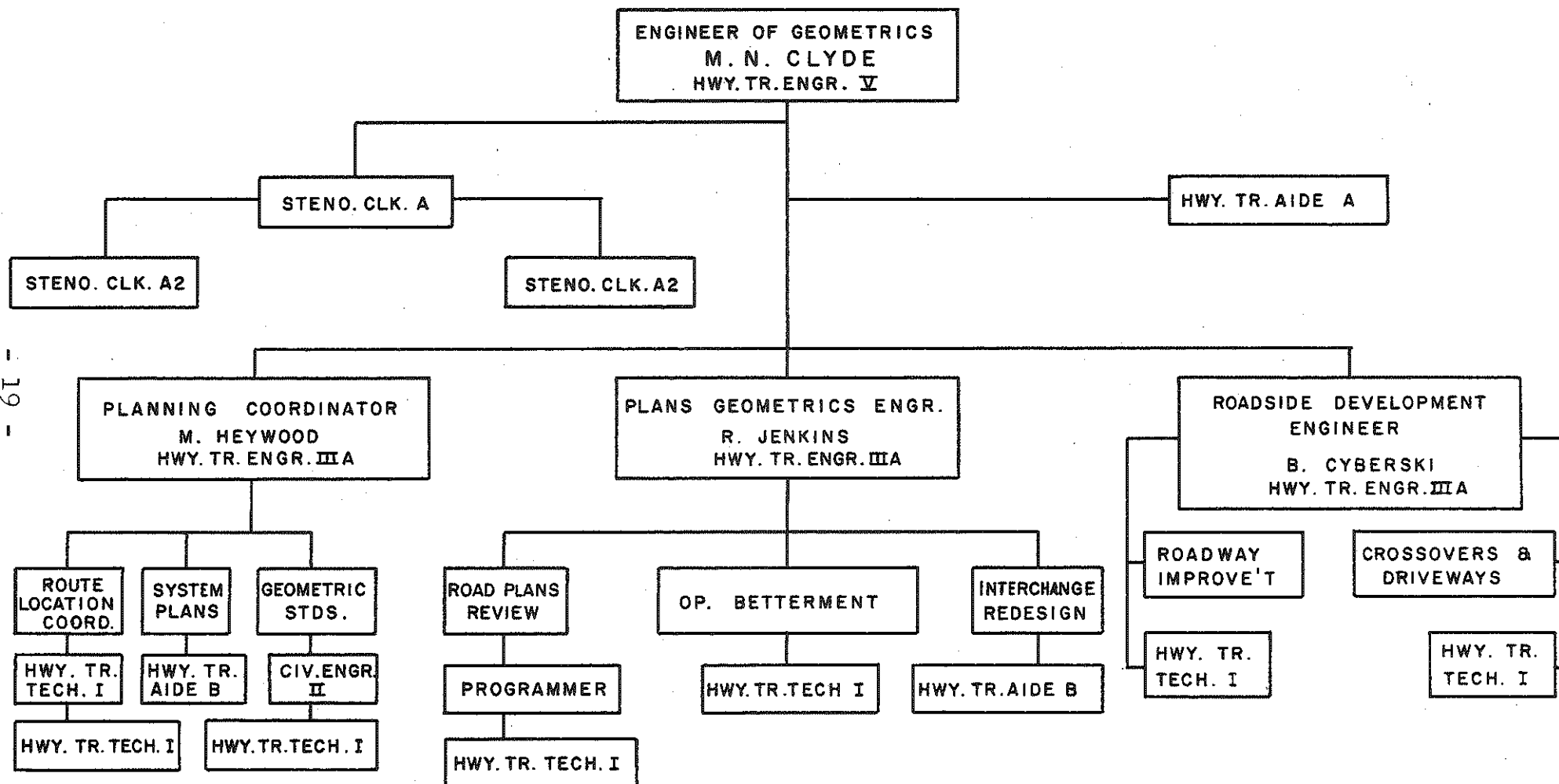


Figure 4.

GEOMETRICS SECTION

M. N. Clyde - Engineer of Traffic Geometrics

TRAFFIC GEOMETRICS SECTION 1961



The Traffic Geometrics Section has experienced a marked trend from rural to urban areas in its endeavors during 1961. This shift is in consonance with the State Highway Department's programmed development of trunklines which, having been primarily concentrated on rural routes in the past several years, has now been largely diverted to urban improvements. The geometrics of urban routes is invariably more involved due to more rigid limits and control points.

The Section's activities involve coordination of activity with several Department agencies and with officials of most city and county planning groups. Section personnel also participate in the Department's Review Board meetings to review all reports prepared by Route Location Division of the Office of Planning. Considerable effort is also expended in reviewing and, if possible, seeing the accomplishments of other states and countries in the area of traffic geometrics to gain every possible advantage for motorists on Michigan's highway system.

The Planning Coordination Unit, for example, has become particularly involved in urban route planning and development, and actively participated with local officials of the cities of Pontiac and Saginaw during 1961 in planning and designing local traffic facilities. The Unit has been active in the work of Detroit's Freeway Planning Committee, considering such subjects as the location of the Fisher Freeway and I-96.

Personnel of the Unit participated in the review and development of 29 engineering reports and 5 trunkline plans. A special study was made concerning details for widening M-153 in and near Dearborn. Thirty other geometric studies were completed, all of which led to recommendations, justifications or reports.

The Geometric Standards sub-unit produced a film entitled "Rural Freeway Geometrics", which portrays various geometric features of freeways and compares adequate and inadequate designs. Its personnel also obtains and maintains a file of 35-millimeter slides showing various geometric features. This file was used 14 times during the year as part of a presentation and was also used about once a week by other Divisions. The file now contains about 4,100 slides. Figure 5 shows an interchange in the northern part of the state. This photograph was not taken from a 35-millimeter slide, but it is similar to those contained in the slide file.

In addition, this sub-unit completed geometric standards for the diamond interchange, flares and intersection radii, crossover, entrance and exit ramps for a rural crossroad and entrance and exit ramps for an urban freeway. Twenty-three additional geometric standards are being developed. Ultimately, a book on geometric design will be compiled and published.



Figure 5. Interchange of US-27 & M-55, looking south.

The Plans Geometric Unit reviewed 77 preliminary and 139 final road plans for operational adequacy during the year. Eighty additional recommendations were prepared and submitted to the Office of Design.

The Unit is also responsible for administration of the Operational Betterment Program, which consists of programming and preparing plans for improving the functional operation of existing traffic facilities. The annual expenditures for the program total approximately one million dollars. Eighteen project sites were reconstructed, let for construction, or are in final design stages. A total of 172 other sites are being currently considered for future Operational Betterment Program activity.

In accomplishing these geometrically adequate facilities, there is marked cooperative effort between Unit employees and representatives of the Design Division. Increased emphasis is now being devoted by this group to accomplishing reconstruction of interchanges to resolve current operational difficulties. Five sites are included in the program for the 1961-62 fiscal year and a number of others are being studied.

The Roadside Development Unit reviewed, with owners or architects, the proper integration of their major community developments with existing trunkline routes in an effort to

minimize operational difficulties. This area of activity has become increasingly important as the number and relative size of such facilities (regional shopping centers) has developed at an increased pace.

More than 2,700 copies of the manual entitled "Standards and Procedures for Driveways" were distributed in 1961 to architectural firms, land developers, officials of local governmental units and other interested persons or agencies. Unit personnel also participated in the cooperative development of a number of other standards and procedures, including development of rest area and crossover designs. Parking design data was provided for five municipalities.

The Unit is also responsible for administering the Roadway Improvement and Control Program. This consists of reviewing needs and requests, conducting appropriate studies, preparing construction plans and cost estimates and reviewing the completed work. Many of the requests received by the Department annually to implement minor corrections, crossovers, turning lanes and the like, can be accomplished under this program in a relatively short period. 118 such problems were corrected during 1961.

Figure 6 shows an example of roadside control along a state trunkline in the western part of the state.

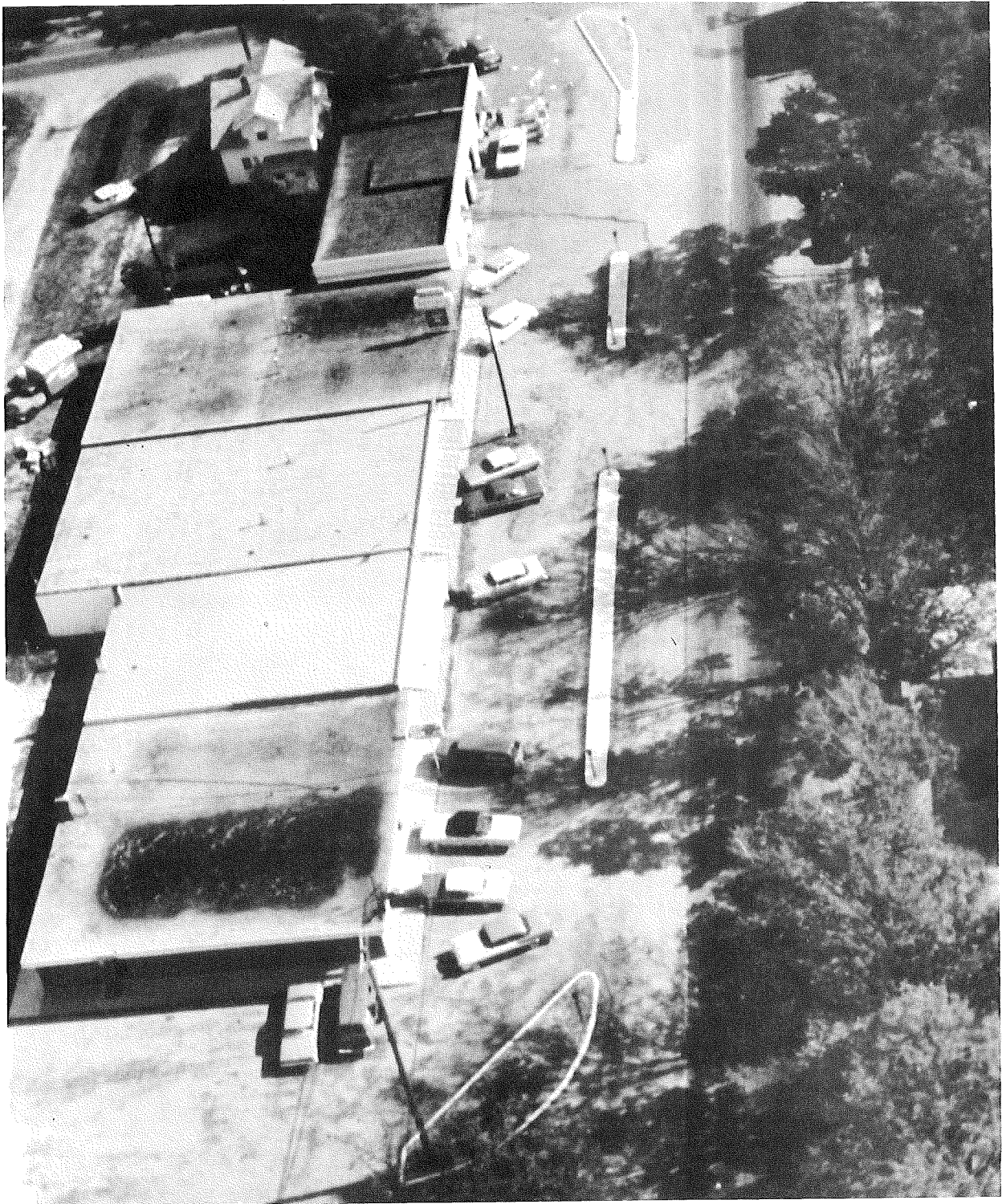
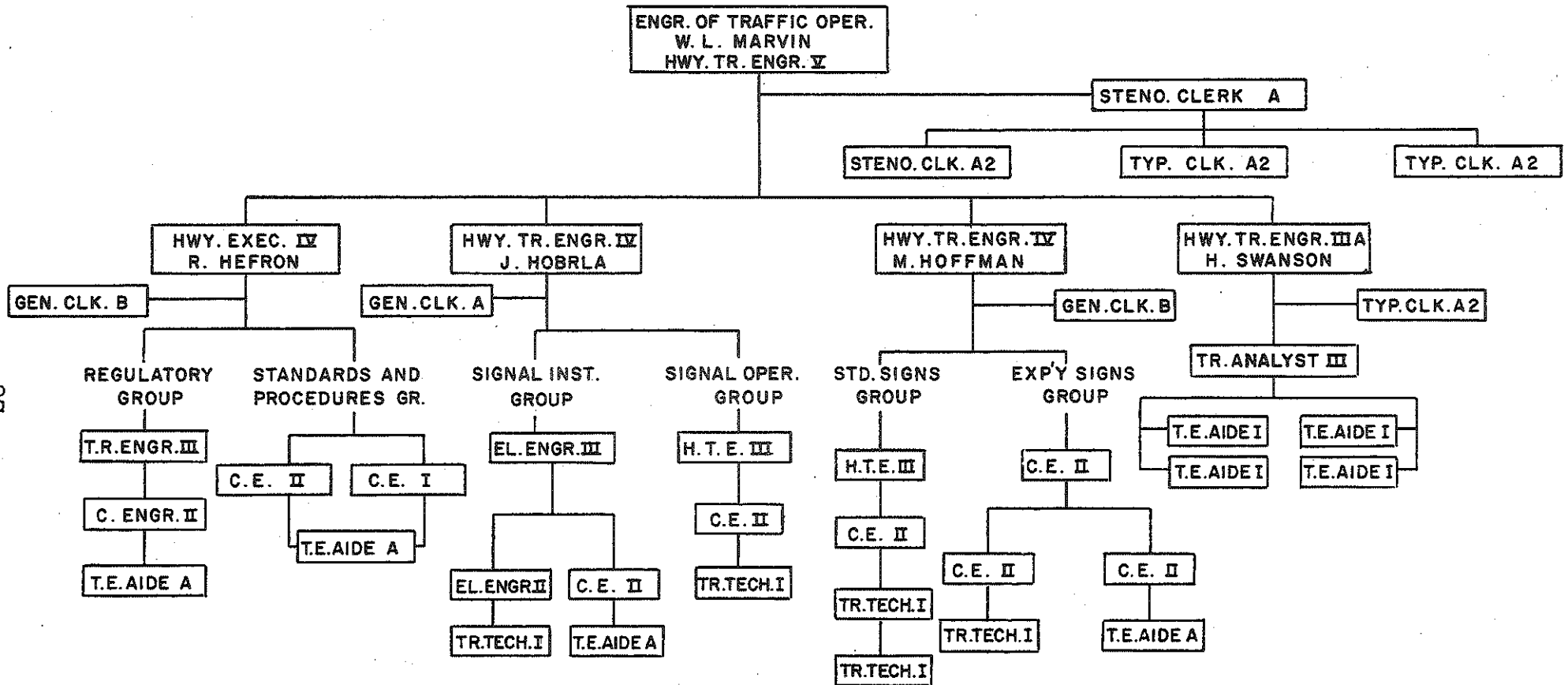


Figure 6. Roadside Control along M-50 west of Grand Rapids.

OPERATIONS SECTION

W. L. Marvin - Engineer of Traffic Operations

TRAFFIC OPERATIONS SECTION 1961



- 27 -

The Traffic Operations Section also experienced a marked increase in activities during 1961, particularly in the installation of traffic control devices to regulate, warn and guide motorists on the trunkline system. The increased mileage of freeway routes has created the need for larger signs with proportionately larger supporting structures, a need for special vehicle regulations to improve the safety and efficiency of traffic operation and careful analysis of current procedures and policies to effect further improvements. Michigan's role as a national leader in construction of Interstate Highway System routes has placed the State in an affiliate role as a pioneer in the development or improvement of devices and techniques to realize maximum advantage from these improved facilities.

The Department's right to regulate parking on a state trunkline within an incorporated area was upheld during 1961 when the Supreme Court decided in favor of the State in the Grand Rapids case on US-131 B.R.

The basis of the decision was two-fold, first that parking on a city street is a privilege and subject to regulation by the proper authorities and is not an absolute right; second, that unless specifically provided by statute, procedural due process does not require public hearing precedent to effective

enactment of parking regulation. Act 234, P. A. 1959 has since become effective and does provide that a home-rule city may apply for and be given an opportunity for a hearing on parking control orders within such city.

In addition to handling the above case, the Regulations Unit, operating in accordance with statutory provisions, has legally implemented parking restrictions on all freeways and prohibited pedestrians, bicycles and non-motorized vehicles the use of these routes. The Unit cooperated with Surveys Section personnel in establishing and continuing the analysis of freeway vehicle speeds in order to determine the adequacy of existing maximum limits and the need for establishing a minimum speed limit. Additionally, the adequacy of existing speed and parking regulations on other trunkline routes was studied and appropriate changes accomplished. To more closely adhere to existing statutory provisions, all document forms utilized by the Unit to implement vehicle regulations were reviewed with the Attorney General Division and State Police, and modified during 1961.

A total of 123 new documents governing speed control were issued during the year and an additional 112 documents implemented new parking restrictions. Forty-three documents served to revoke prevailing speed regulations, 9 others established special regulations governing the use of freeway routes and 10 documents established special, part-time speed limits at or near schools.

The Unit also edited a "Traffic Division Policies and Procedures Manual", which is a compilation of policies and procedures implemented by previous letters of instruction over a span of several years. Work has also commenced on revision of the "Michigan Manual of Uniform Traffic Control Devices" to conform with the "Manual on Uniform Traffic Control Devices for Streets and Highways", prepared by the National Joint Committee on Uniform Traffic Control Devices.

Seventeen recommendations for new or revised legislation designed to improve traffic operations were submitted to the Director of Administration for review and subsequent legislative action. All Senate and House Bills pertinent to Traffic Division activities were reviewed, with appropriate recommendations also forwarded to the Director of Administration for analysis and appropriate action.

Special parking availability and use studies were scheduled and subsequently analyzed by Unit personnel in conjunction with anticipated parking regulations in Ann Arbor and Muskegon.

The Electrical Devices Unit is responsible for the authorization and continued proper operation of the various electrical traffic control devices on the trunkline system, including stop-and-go signals, flasher signals, illuminated case signs and highway lighting. The three photographs in figure 7 illustrates the use of three such devices. The top one shows a stop-and-go signal



Figure 7. Illuminated Signs used with Traffic Signals.

with an illuminated case sign which has a "ONE WAY" legend. The lower left photograph shows an illuminated "STOP" sign used with a flasher installation. This installation stops the minor movement while allowing the heavier trunkline movement to turn freely from both directions. The lower right photograph shows an illuminated "YIELD" sign used with a flasher installation. This allows the minor street traffic to cross the second roadway of a divided highway without stopping when traffic is clear.

During the year, Unit personnel made 244 field studies and accomplished 417 layouts for installation of electrical devices. In determining the warrant for these installations and the manner of their operation, Unit personnel requested and analyzed 222 traffic studies.

Expenditures in 1961 for accomplishment of the Unit's mission increased 34% over total expenditures of the preceding year. Figure 8 tabulates these improvements according to type, cost and geographical locations.

ELECTRICAL DEVICES UNIT
WORK AUTHORIZATIONS DURING 1961

District	Stop and Go Signal	Flasher Signal	Moderni- zation	Keep Right	Removal	Intercon- nection	Fire Exit	Street Light	Emerg. Exit Flasher	School Speed Limit	Total Cost
1	0	2	5	4	0	0	0	0	0	0	\$ 15,097.00
2	0	3	1	0	0	0	1	0	0	0	3,353.00
3	0	17	2	0	2	0	0	4	0	0	15,530.00
4	0	11	5	2	1	0	0	2	0	0	22,322.00
5	16	9	23	5	6	0	1	0	0	0	85,127.00
6	7	27	34	3	1	3	1	2	0	3	81,485.00
7	6	13	26	7	6	0	0	0	1	4	91,963.00
8	9	16	32	0	11	1	0	0	0	1	68,712.00
9	7	13	36	0	2	3	0	2	0	0	65,081.00
10	4	21	22	2	3	1	0	0	0	0	94,684.00
TOTALS	49	132	186	23	32	8	3	10	1	8	\$543,354.00

- 33 -

Figure 8

The Reflective Devices Unit, responsible for the design and placement of signs and markings on all state trunkline routes was, again in 1961, largely occupied with preparation of sign plans, specifications and cost estimates for installation of signs on the Interstate and Arterial System. For example, 10 contracts were let during the year covering approximately 177 miles having an estimated cost of approximately \$750,000. Additional plans for signing other Interstate routes were also in final stages of preparation at the year's close.

Signing for additional Arterial System routes constituted a large part of the estimated expenditure of \$1,391,212 by work authorizations during the year, as set forth in the following tabulation:

Dist.	Dist. W. O.	Est. Cost	Lans. W. O.	Est. Cost	Total W. O.	Total Est. Cost
1	73	\$ 23,616	0	\$ 0	73	\$ 23,616
2	105	24,031	6	35,465	111	59,496
3	106	21,044	7	55,945	113	76,989
4	57	30,733	33	48,780	90	79,513
5	213	89,104	73	242,976	286	332,080
6	172	97,595	42	90,596	214	188,191
7	392	152,006	72	72,716	464	224,722
8	200	89,415	82	121,503	282	210,918
9	163	33,801	7	29,390	170	63,191
10	107	71,033	37	56,108	144	127,141
SW	0	0	9	5,355	9	5,355
TOTAL	1,588	\$632,378	368	\$758,834	1,956	\$1,391,212

The total mileage of Interstate and Arterial routes on which signs were authorized in accordance to the Interstate manual at the end of the year, was over 780 miles. 630 of this was to be

done by contract and the remainder by Highway forces. The signing is completed on more than 580 miles of this total and will be completed on the remainder during 1962. We believe this record of Interstate signing is unmatched by any other state in the country.

Figures 9 and 10 illustrate overhead directional sign installations typical of those erected on the Interstate and Arterial highways.

They also show the aluminum truss type of sign support, the design of which is the responsibility of the Unit.

Unit personnel also cooperated with other Division and Department personnel in thoroughly testing and evaluating new and improved materials for signs, delineators and pavement marking. For example, a prescribed testing program is carried on throughout the year to evaluate pavement marking materials during hours of daylight and darkness on various pavement types before authorizing purchase of needed quantities.

During 1961, a total of 600 man-hours were spent in the field on various signing projects. Unit personnel also cooperated with Regulations Unit personnel in planning and accomplishing revisions of the "Michigan Manual of Uniform Traffic Control Devices".



Figure 9. Aluminum Truss used for Directional Signing.
I-96 at Kensington Metropolitan Park.



Figure 10. Aluminum Truss used for Directional Signing.
I-94 at Merriman Road (Metropolitan Airport).

Work has continued in accomplishing the statewide sign inventory on all trunkline routes, although emphasis was shifted to making and sustaining the inventory for Interstate and Arterial System freeways.

The Accident Analysis Unit reviewed 29,396 accident reports during 1961. The analysis of these reports resulted in the referral of 2,230 to the Office of Maintenance for correction of road deficiencies, and the forwarding of 199 to the D. T. E. for traffic engineering attention. Forty-three "before-and-after" accident studies were made in response to requests from the District and Lansing personnel.

Collision diagrams were prepared for all rural intersections at which 10 or more accidents occurred during the previous year, and lists were prepared for all intersections which had two or more reported accidents in Districts 1 thru 4, and four or more in Districts 5 thru 10. As a matter of interest there were 185 rural intersections which had 10 or more accidents in 1960 and 30 intersections which had 25 or more. All but two of the latter intersections had "Stop-and-Go" traffic signals.

Included among the "before-and-after" studies were the following which are of special interest:

- Comparison of accidents on 128 miles of Interstate trunkline with 126 miles of bypassed trunkline.

- Five locations where left turns were prohibited on US-16 (Seaway Drive) in Muskegon County.
- Installation of "Deer Area" signs on M-21 west of Port Huron.
- Several locations along expressways (intersections at grade) where "yield" signs replaced "stop" signs in the median, and where road name signs were installed in advance of the crossroad.
- Construction of five-lane facilities on 28th Street (S.Belt) in Grand Rapids, and on M-97 near Mt. Clemens.

Special studies are represented by the following examples:

- Collision diagram on US-131 south of Kalamazoo for improvement of traffic operations.
- Listing of accidents on US-27 between Clare and Harrison for use in a right-of-way court case.
- Analysis of accidents at 58 locations for skid proofing projects.

During the latter part of 1961 plans were made for the conversion of all accident data to IBM cards beginning with January, 1962. A Coding Instruction Manual was prepared and coding sheets were printed. Tentative plans called for an accumulative compilation of all reports at each quarter. This system will be observed very closely during the year so that improvements can be made for future use.

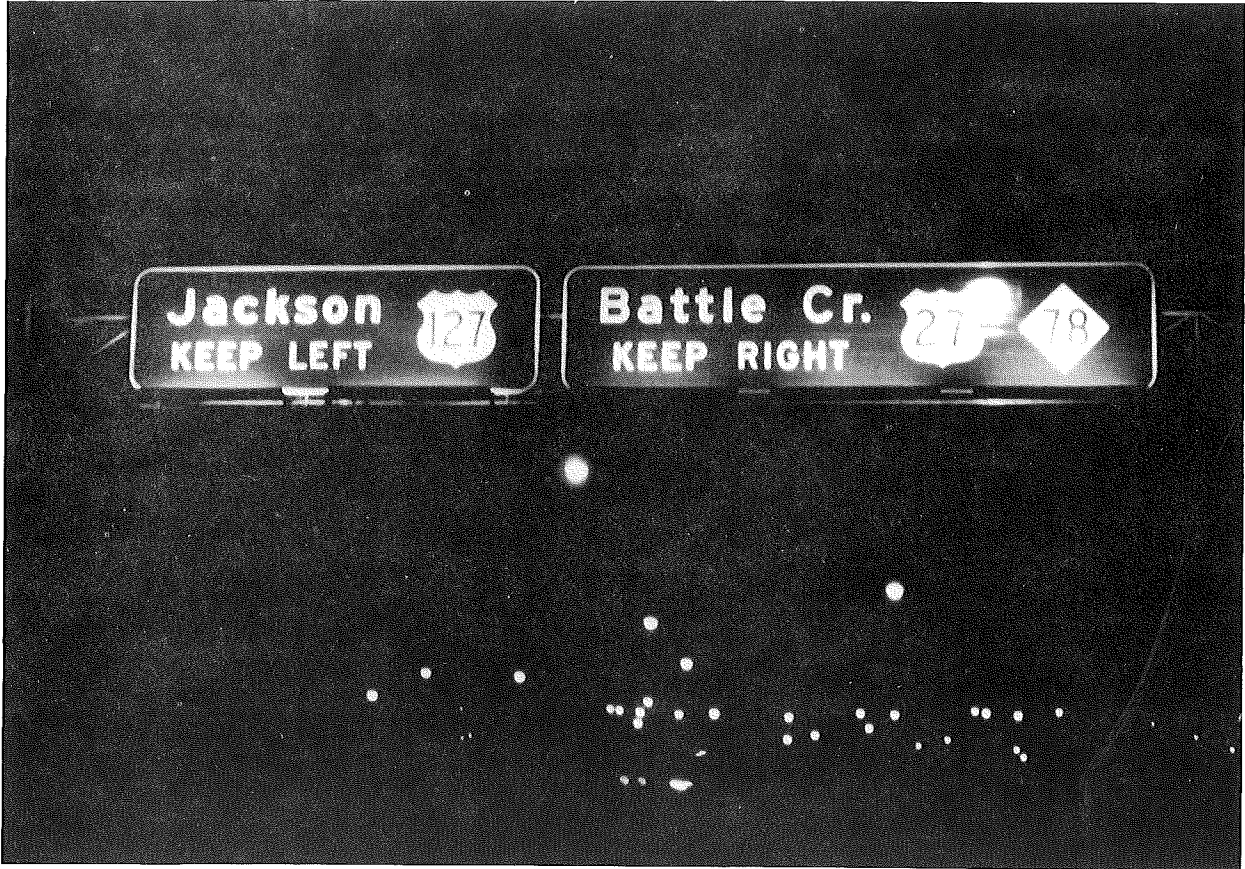
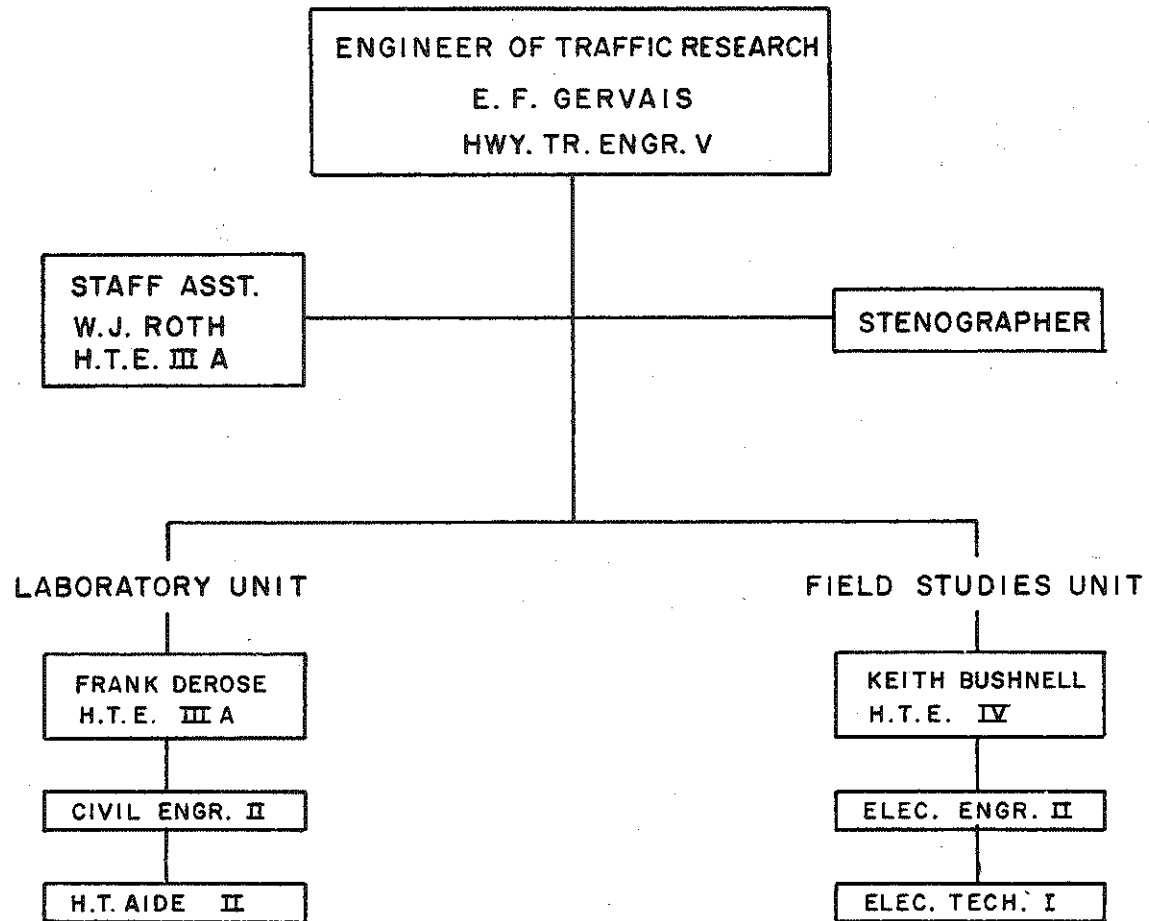


Figure 11. Overhead Directional Sign with Exterior Illumination.

RESEARCH SECTION

E. F. GERVAIS - Engineer of Traffic Research

TRAFFIC RESEARCH SECTION 1961



The Traffic Research Section determines the effectiveness of applied traffic engineering devices and procedures, and studies and develops new or improved devices or methods to meet the increasing needs of traffic. The work requires close cooperation with other Sections of the Division and other agencies of the Department, as well as considerable contact with manufacturers of materials and equipment. The needs of the several Sections for various research activities are regularly reviewed to establish appropriate order of priority in projects and the results of this cooperative endeavor have been significant in all phases of traffic operation.

Work continued on the TV Surveillance and Control Project during 1961, in cooperation with the City of Detroit, the Wayne County Road Commission and the Bureau of Public Roads. This extensive closed-circuit television system, covering 3.2 miles of the John Lodge Expressway in Detroit, was completed late in 1960 and was described in detail in the Traffic Division's Annual Report for 1960.

During 1961, specifications were written and contracts were let for supervisory control equipment, lane control signals and a variable speed sign for this project. The supervisory control equipment (see Figures 12 & 14) was installed and the lane control signals and speed sign (see Figure 15) were erected early in 1962. Work is continuing on development of a simplified overhead detector mount.



Figure 12. Television Monitoring and Confirmatory Equipment.

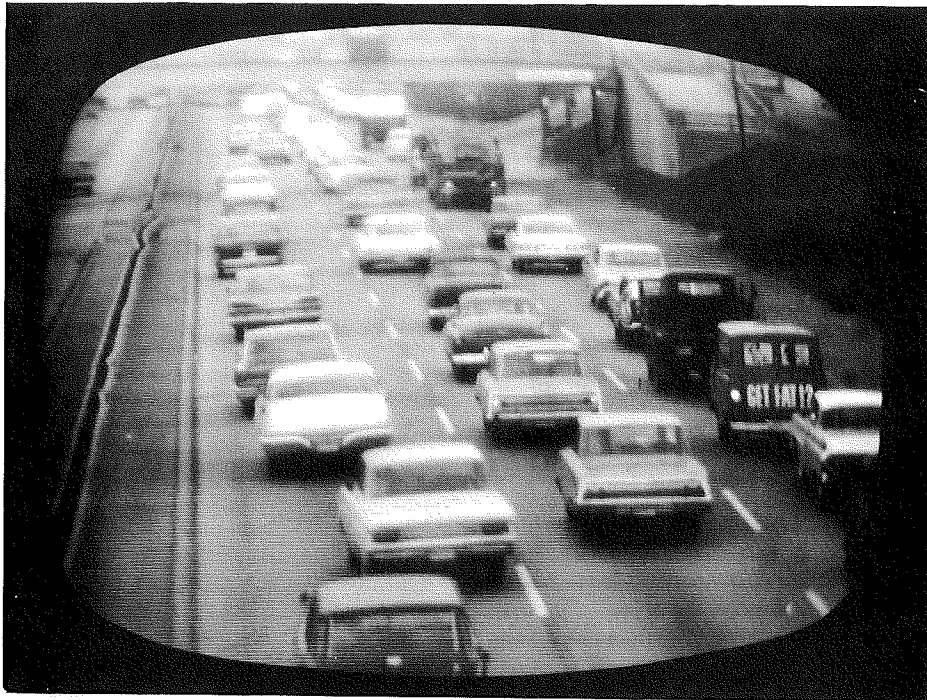


Figure 13. Close-up of Television Monitors.

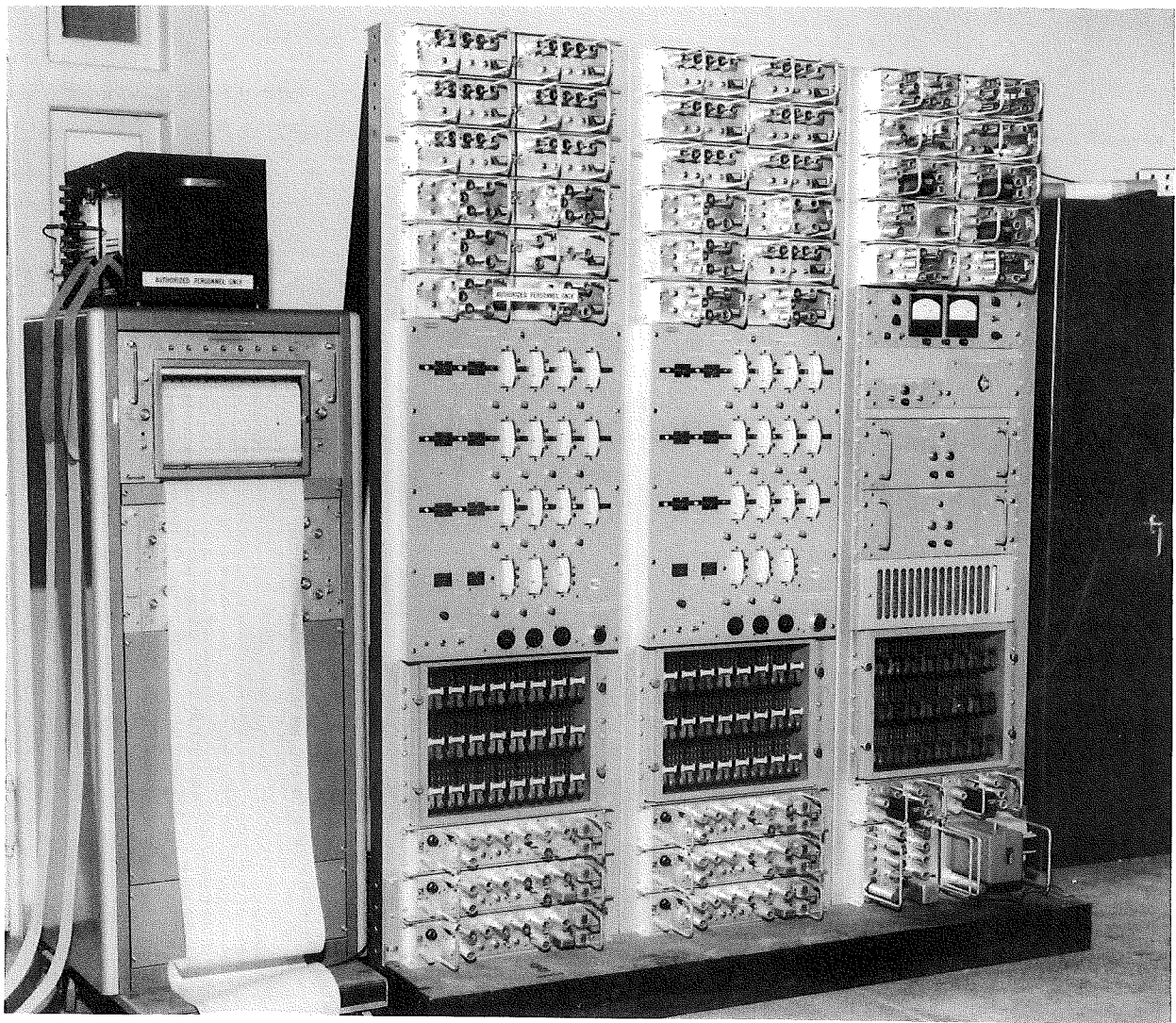


Figure 14. Analyzing and Computing Equipment for Sensing Devices on Freeway.



Figure 15. Speed Sign and Lane Control Signals
Mounted on Aluminum Truss.

Collection of data from this study continued throughout the year and Interim Reports have been prepared concerning free-way volume characteristics, travel time, characteristics of a stoppage wave and shoulder usage. Other reports in progress concern results of the constricted traffic flow study, lane changing, vehicle classification, prediction of stoppage, reliability and limitations of observers, scope and limitations of information from television screens, applications of the X-Y Plotter and evaluation of the cameras and other equipment.

During 1961, the Section completed its evaluation of the Ford-Lodge Interchange Ramp Study Report, which had been submitted by Ramo Wooldridge, and forwarded its summary of findings to the Bureau of Public Roads, which substantially agreed with the evaluation. The study of signal head colors on Woodward Avenue in Detroit, intended to determine the relative merits of dark green or black versus yellow signal heads, continued with additional observations of motorists' behavior. Comparisons of behavior on approaching light- and dark-colored signals are underway, and the program is being expanded to include studies on US-16 (Grand River Avenue). Accident records for the periods of study are also being compiled and analyzed. Together with Geometrics Section personnel, a study was made of placement and results of an anti-glare screen on I-96 (see Figure 16).

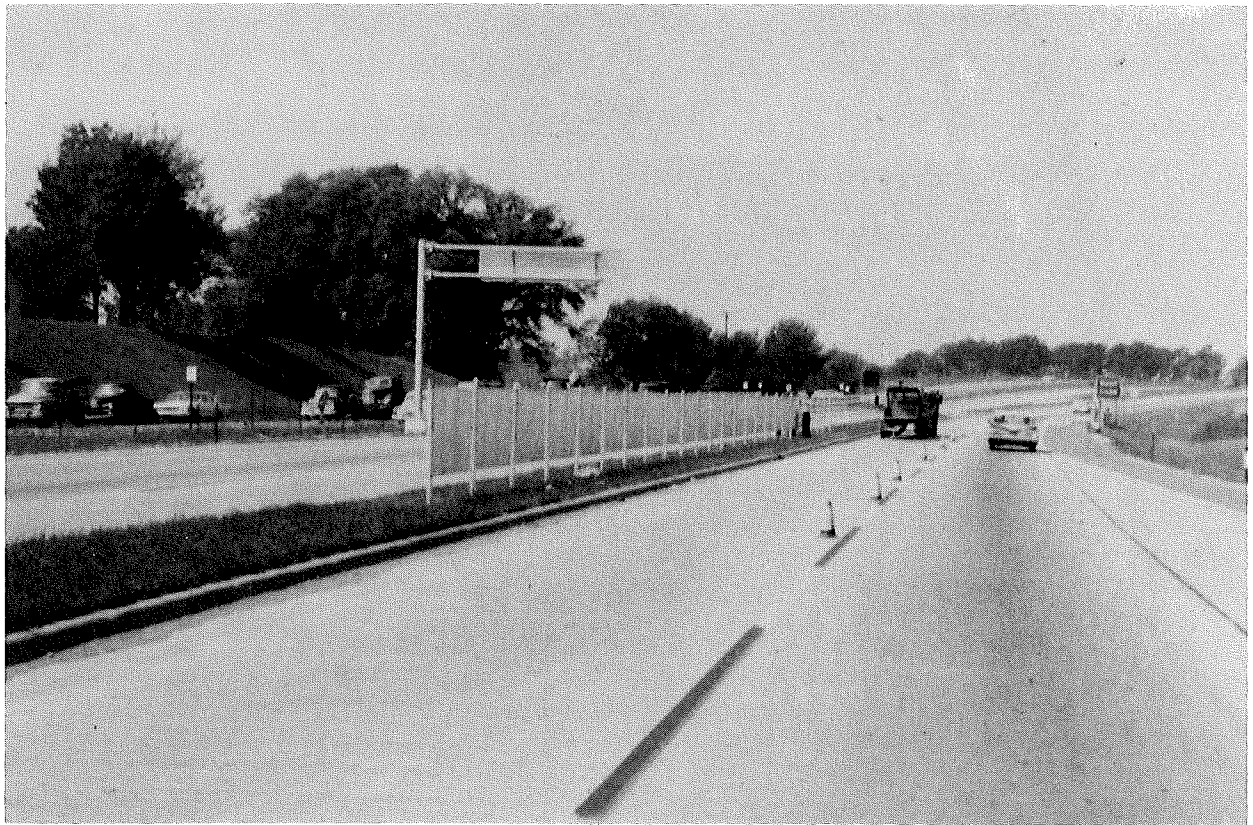


Figure 16. Anti-glare Screen.

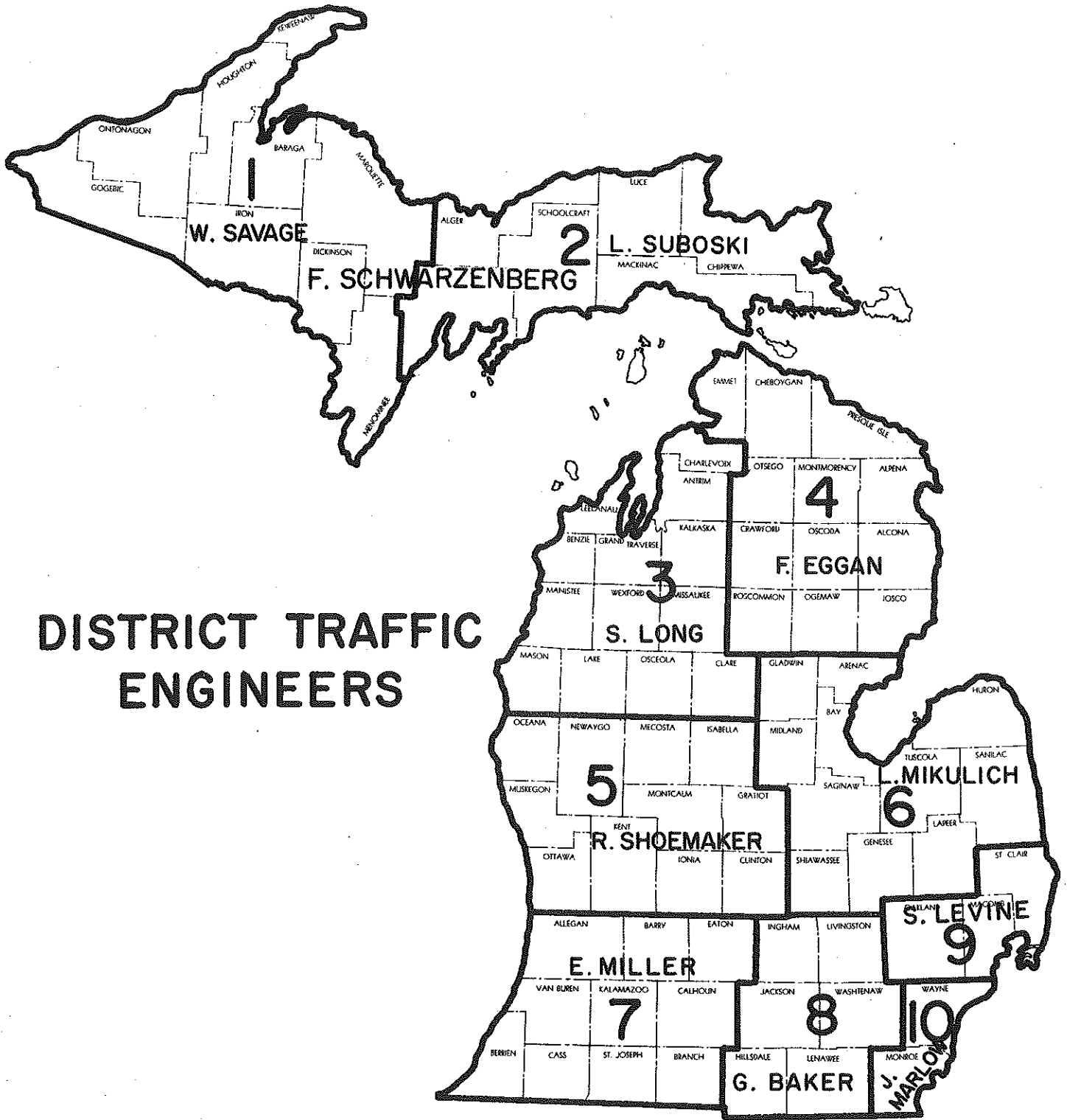
A number of studies were continued in 1961 but final analyses and reports have not yet been completed because of the severe demands on personnel required for the Television Surveillance Project. For example, the study of methods to determine no passing zones continued with collection of field data from a study of 180 zones. Comparisons were made between the various combinations of eye height and sight distance, considering the current location of the no passing zone. Data tabulation and analysis will continue at the earliest opportunity. Similarly, further studies, data tabulation, analysis and reports will be scheduled in 1962 for the South Cedar Lane and Ramp Usage Study in Lansing and for the use of left-side, pennant-shaped no passing zone signs.

Active interest in current and anticipated projects and in conclusions obtained has been exhibited by traffic agencies in various cities, counties, states and foreign countries. The Division has been pleased to note this degree of interest and to provide the results of our concluded studies in a spirit of mutual cooperation.

DISTRICT TRAFFIC ENGINEERS

L. J. DOYLE - Assistant Director

DISTRICT TRAFFIC ENGINEERS



The District Traffic Engineers, directly responsible to the Assistant Director of the Traffic Division, represent the Division in the particular areas prescribed on the map on the preceding page. They are the primary source of information on field problems and the voice of the Traffic Division in implementing policies, standards and procedures derived in part through their own previous efforts.

In his role as contact man with the general public in his area, the District Traffic Engineer must make his assistance readily available to local governmental officials, local and State enforcement agencies, safety organizations and the public at large concerning state trunkline traffic matters. He frequently attends, and on occasion serves as the guest speaker, at various Parent-Teacher Association, service club, and safety organization meetings. In gaining a given objective in an urban area, he often attends city council meetings and in rural areas, township board meetings. While primarily concerned with state trunkline traffic, he renders assistance concerning traffic problems on local roads or streets whenever his schedule permits.

He also coordinates his traffic engineering responsibilities with the work of other members of the District Office staff, attending preconstruction meetings with affected personnel, making grade inspections, aiding in the selection of temporary routes

around construction projects and in similar areas of group responsibility. He may also be selected as the District Office representative to accomplish specialized training (such as radiological monitoring), make a particular study or determination as part of a Departmental or District project or in other special assignments.

The District Traffic Engineer will be in closer contact with the Lansing office when the two-way radio communications system is activated. This system will be operative in the 7th and 8th Districts by the middle of 1962, with the remainder of the state ready on or about January 1st of 1963.

A number of meetings are held each year at which all District Traffic Engineers meet with administrative heads of the Lansing office to discuss current problems, to mutually determine methods of correction, and to discuss new or revised procedures or policies. Representatives of other Divisions and Offices attend these meetings whenever appropriate as a means to correlate Traffic Division activities with those of the other affected agencies. The District Traffic Engineers also attend other special meetings arranged by the Department to correlate its many activities.

The foregoing descriptions of Section activities during 1961 partially describe the role played by District personnel. Field studies, experimental installations and programming of

Division activities in the field are accomplished with the knowledge and usually the assistance of the appropriate District Traffic Engineer. More important, the field representative is, by virtue of his constant observations of traffic behavior, able to discern areas of current operational difficulty and recognize the need for corrective action. His on-the-job analysis of current and future traffic needs enables the Division to effect installations or designs adequate to meet these needs and avoid growth or repetition of these existing or potential deficiencies.

A thorough evaluation of the activities of all District Traffic Engineers in 1961 or any year challenges brief description. However, the foregoing provides the reader with a concept of his marked authority and responsibility and describes the primary role played by these field representatives in accomplishing the Division's objective of safe and efficient traffic operation on the trunkline system.

AWARDS

Certificate of Recognition

During 1961, the Operations Section's Regulations Unit was charged with the responsibility for gathering, analyzing and submitting to the National Safety Council specific data concerning traffic safety activities of the Michigan State Highway Department in 1960. This annual effort, in which all fifty states and many cities participate, enables a committee of representatives of the National Safety Council and Institute of Traffic Engineers to evaluate their relative accomplishments, using a national criteria for level of performance.

The Department's endeavor is confined to Section 4 of the report entitled "Traffic and Highway Engineering". The participating states are divided into groups according to population, trunkline mileage, vehicle registration and other factors. Michigan is one of eight states in the Class A Group (also called the "Big 8") which also includes California, Illinois, Indiana, New York, Ohio, Pennsylvania and Texas.

The evaluation of Section 4 is based on approximately 100 factors of diversified nature, dealing with all phases of highway traffic safety. There is actually no winning or losing on a percentage basis and the particular state having the highest percentage of accomplishment can be considered at the highest level of its group.

In the 1961 evaluation (for accomplishments during 1960), Michigan was, for the second successive year, rated the highest in this group. Its score was 98%, two points higher than the 96% rating for 1959 activities. However, all Class A states had a high performance level and were awarded Certificates of Achievement.

While the Division has the responsibility for preparation and submission of the annual report, it should be clearly understood that this award resulted also from the efforts of other Divisions and Offices of the Department and properly should reflect on the entire group. The time, effort and effective performance of many gained this significant achievement for the Michigan State Highway Department.

AAA Pedestrian Award

For the third successive year, Michigan was rated highest among all fifty states in the American Automobile Association's appraisal of pedestrian safety accomplishments (during 1960). A special award was received since this was the first time any state had topped all others for three years in succession.

The evaluation considered the following factors:

1. Pedestrian casualties
2. Records and uses
3. Legislation and enforcement

4. Engineering
5. Organization
6. School traffic safety
7. Public information

The Operation Section's Regulations Unit also compiled the statistics required for the Michigan entry in this report. Again, it should be borne in mind that while the compilation of data in the form of the annual entry report is accomplished by the Traffic Division, the end product and any resultant award properly should include credit to other participating agencies of the State Highway Department.

The State of Michigan and Michigan State Highway Department may be justly proud of their recognition in the form of these two awards for excellence in the areas of traffic and pedestrian safety.

CONCLUSION

Periodic review of recent accomplishments as set forth in this report's summary of Division activities during 1961, enables the reader to gain a better perspective of what has been and remains to be done. Together with a pride of accomplishment, it enables an employee to realize his own contribution toward these achievements, to appreciate and understand the correlation of activities within the Division and Department to gain these results and to comprehend more clearly future needs to maintain safe and efficient vehicle operation on Michigan's state trunk-line system.

The Division is vitally aware of the need to constantly look ahead to meet the ever-increasing needs of motorists. The Department's unique position of leadership in the construction of Interstate System routes compels us to take the lead in pioneering new designs and improved methods in traffic engineering to keep pace with route development. In achieving this mission, our work is, and will continue to be coordinated with that of state, national and foreign engineering organizations for maximum advantage to all.

