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A PUBLIC HIGHWAY SYSTEM  
FOR  
VAN BUREN COUNTY  
MICHIGAN

THESIS FOR DEGREE OF C. E.  
Homer Merle Ward  
1932





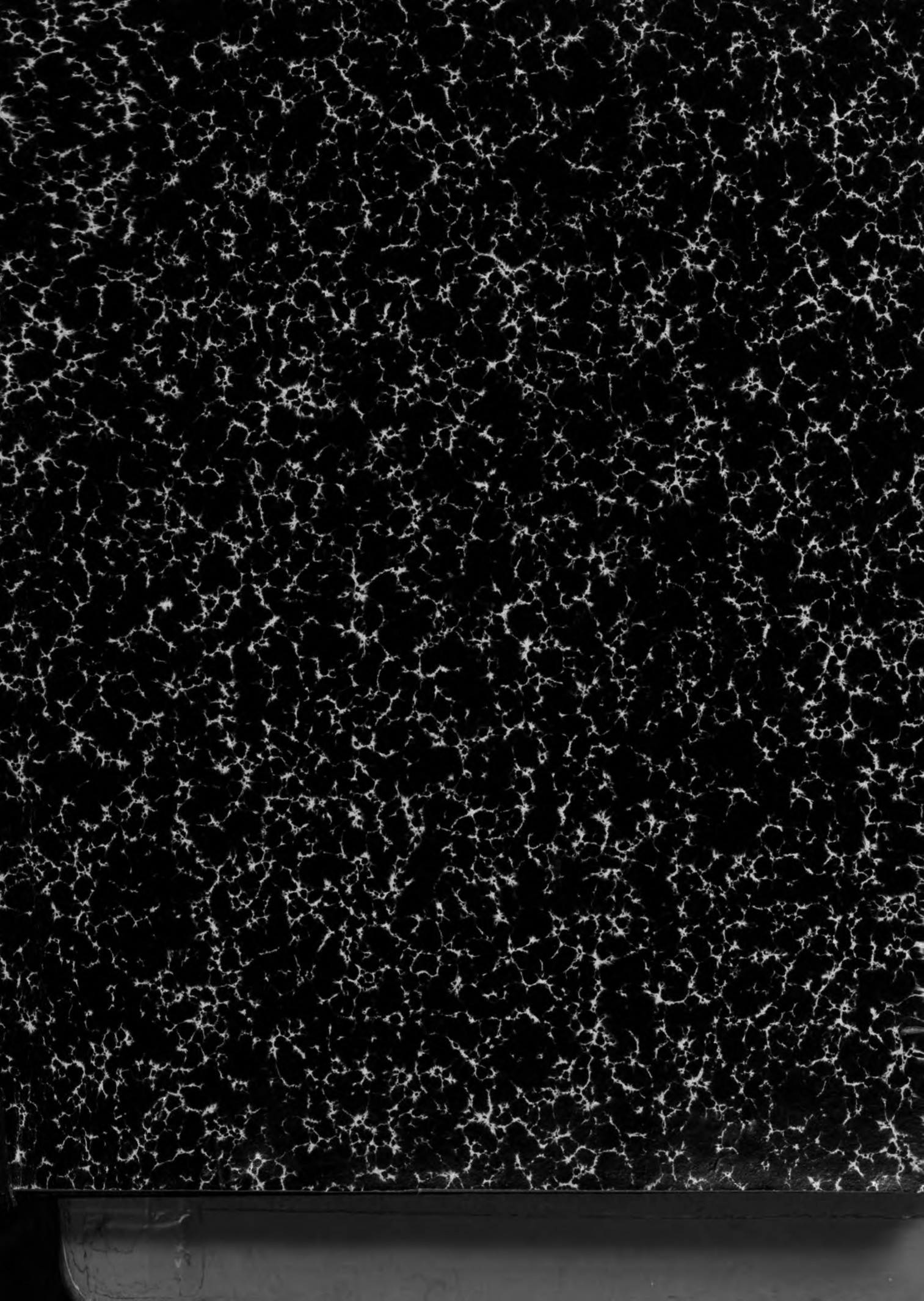


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A PUBLIC HIGHWAY SYSTEM  
FOR VAN BUREN COUNTY, MICHIGAN

A Thesis Submitted to the Faculty  
of  
Michigan State College  
of  
Agriculture and Applied Science

by  
Homer Merle Ward

Candidate for Degree  
of  
Civil Engineer

June, 1932

THESIS

## PREFACE

The enactment of the McNitt-Holbeck-Smith Bill (Act 130, P. A. 1931) by the Michigan State Legislature, created an urgent need for a detailed analysis of the entire highway system of Van Buren County with the object of providing an orderly plan of future development designed to include the entire mileage of public roads.

The writer's ultimate aim is to design a flexible system of future development which will extend the direct benefits of improved highways to a larger percentage of the land owners at a cost within reach of the individual tax payer. It is imperative that the public be apprised concerning the anticipated needs and the necessary financing arrangements which will make it possible to provide them.

Acknowledgment is made to Prof. C. L. Allen of the Department of Civil Engineering, Michigan State College, for his advice and splendid constructive criticism, and to my wife for her able assistance in proof reading and arranging the data contained herein.

H. M. W.

Faw Faw, Michigan, May 20, 1932



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History teaches us that public highways have a very definite and guiding influence upon the social and economic welfare of all nations. Traces of such effects are encountered in the annals of ancient, mediaeval and modern times. The most outstanding example of this factor occurring prior to this century, is that of the great Appian Way constructed by the Roman Empire during its period of affluence and power. A striking depiction of these influences in modern times was made during the early part of the World War, when the German Empire made use of its great highway system to expedite troop movements in a manner never before accomplished. Once within the borders of France they pressed on with almost uncanny speed over the hard surface roads leading to the capitol of the French Republic. At this critical point, the highways of France blazed an important trail on the pages of history. The nation wide network of improved roads enabled the French army commanders to effect rapid changes in troop concentrations at points threatened by superior forces of the enemy. This factor directly caused the repulse of the German Army and its withdrawal from the very gates of Paris. The capture of the French capitol in



the early stages of the conflict would undoubtedly have resulted in the subjection of the French nation, with a complete change in the political and economic structure of the European continent - yes, even the entire world.

In studying the growth of nations or municipal units thereof, it is impossible to establish a fine line of distinction as to whether the existence of public roads caused their development, proceeded with it, or was a resultant force of general improved conditions which created a demand for such public improvements. Be that as it may, the highways of any community are a vital part of its very existence. Their influence is so far reaching that a nation's highway system is an index of its progress in arts, sciences, and all the varied ramifications of what we call civilization. Doubtless this is due to the inevitable results of broadening the scope of individual and group thought through outside contacts which are so immeasurably facilitated by all means of transport.

Van Buren County, Michigan, was first designated as a municipal unit by legislative enactment in 1829. When the first white settlers came to this county

there were no roads except the Indian trails which for the most part could only be used by pedestrians or saddle animals. Practically the entire area was covered with dense timber growths of various kinds including hemlock, hickory, maple, pine, walnut, elm, oak, whitewood and beech. In the southern portion of the county where the soil conditions favored the growth of oak timber, we find the first settlements of white families, who came overland in wagons bearing all their earthly possessions. Here the natural spaces between the standing timber known as "oak openings" afforded the pioneers comparatively easy access to the region without the necessity of cutting a continuous trail through the forest. The virgin timber growth in this area, being of lower density, made it possible for the farmers to clear the land and prepare it for cultivation at the expense of considerably less effort than in localities covered by thick undergrowth. Thus it was that the first urgent need for a public road was felt in this part of the county.

The so-called Territorial Road which traversed the State from east to west, was laid out and surveyed during the years 1835-36. This highway enters the county near the northeast corner of Antwerp

Township and continues through Antwerp, Paw Paw, Lawrence, Hamilton and Keeler Townships in a general westerly and southwesterly direction leading toward the mouth of the St. Joseph River at Benton Harbor and St. Joseph. At about this time the first Michigan constitution was adopted, and during the intervening period to 1837 when the territory was admitted to the Union as a state, Michigan showed considerable activity in the establishment of arterial roads which later proved to be a nucleus of the present well balanced system.

Many of these early important highways passed through Van Buren County and converged at Paw Paw because at this point there existed a natural ford for crossing the Paw Paw River. There being no other favorable crossing point within a radius of many miles, we find the county strategically located by nature to participate in the early road development.

The first real activity leading toward construction of artificially surfaced highways was provided by the State Legislature. In 1848 it authorized the incorporation of plank road companies which were given the privilege of providing a special surfacing on the public roads, and collecting a

specified toll from traffic for the use thereof. The practical application of this law enabled organized capital to clear standing timber from the roadways, salvaging the material in the form of planks to be used for a wearing surface. Thus the timber obstructions were made to further the cause of uninterrupted transportation.

Early attempts to use and maintain the Paw Paw River as a navigable stream from Paw Paw to Lake Michigan were both frequent and persistent, but owing to the varied contour of the drainage area and the unfavorable alignment conditions of this waterway, the idea never reached successful application in practice. This failure also contributed to the demand for overland routes to serve as outlets for the ever increasing volume of farm products.

Fruit growing on a commercial scale in Van Buren County dates back to 1852, at which time this class of farming had its inception in the South Haven area. This point is of special interest because the fruit growing industry has afforded considerable impetus to the rapid development of our modern highway system.

Nature was again kind to this area because it was discovered that the climatic influence of



Lake Michigan was to serve as a natural thermostat to regulate the extremes of temperature which are prevalent elsewhere in these same northern latitudes. Moreover, the lake serves as a vast storage area for moisture which is subsequently disseminated during times of serious drought. This body of water also influences favorably the marketing of crops, because of the ease of distribution via cheap water transport to the great market centers of Chicago and other lake ports. It was at first believed that the climatic benefits of the Lake extended over a very narrow strip bordering the shore line, but the growing favor of the fruit industry gradually brought about the widening of the so-called fruit belt until this branch of farming may properly be classed as the leading industry of the whole county.

The rapid expansion of fruit growing created a persistent demand for the modern highway system because, having solved the problems of successful production, the fruit man next needed proper facilities for rapid transit of his perishable produce to the market centers. Motor vehicles and improved highways are the "Siamese Twins" which enable the growers to place their wares before the

consumers in a few hours time and with an absolute minimum of handling from orchard to table. Some idea of this modern trend in the direction of motor transport is contained in the following extracts from an article written by Mr. Fred L. Granger, a prominent shipper of fruits and vegetables operating in Benton Harbor. Mr. Granger says in part:

"Six years ago Berrien and Van Buren Counties which normally ship 10,000 to 12,000 cars of fruits and vegetables annually, moved ninety percent of their tonnage by rail and ten percent by truck. Today the situation is reversed and our highways are carrying ninety percent of the tonnage. Shipments by motor trucks are now being made to markets 500 to 700 miles from points of production. Some of the reasons are: reduction of 30 to 40 percent in transportation costs; reduction of 30 to 50 percent in transportation time; delivery of the product in better physical condition; almost complete elimination of claim factors; elimination of loading, unloading, and cartage charges; reduction of market losses and rejections due to decline of market during period in transit; closer adjustment of purchases to market demand."

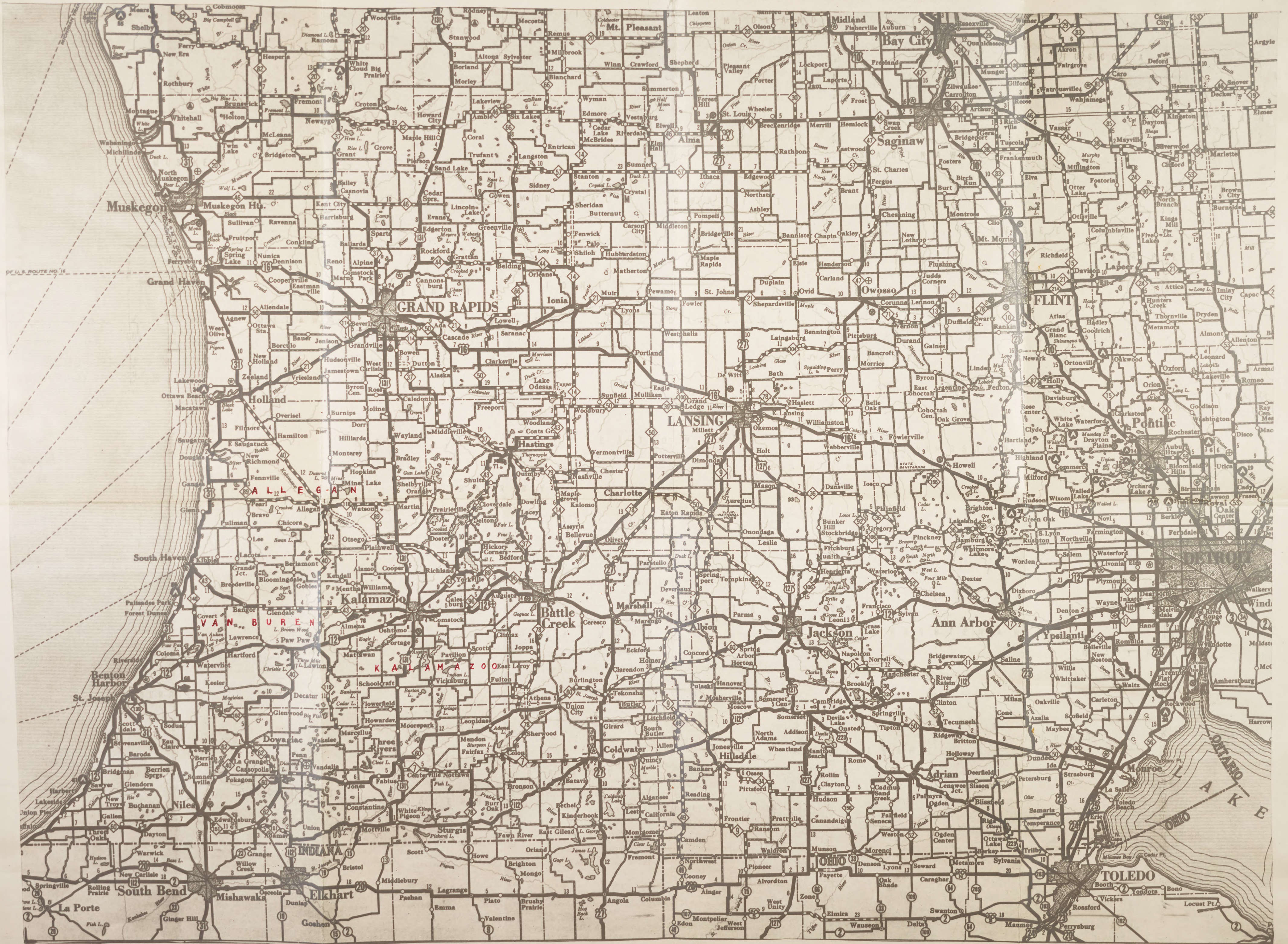
All of the above changes represent assets to

the producer, shipper and consumer. Is it any wonder then, that the highway authorities of this county are called upon to keep pace with these developments which depend absolutely upon the construction and care of adequate highways? It is evident that the increasing desire, yes, insatiable demand for improved roads, has far exceeded the capacity of municipal units to pay for the same through the normal means of tax levies upon real estate and personal property. Hence the trend in recent years toward taxes upon the motor vehicle itself as well as the fuel which it consumes.

On Page 9 is a map of the southern portion of Michigan showing the State Trunk Line Roads which traverse this county and their relation to those of adjacent counties. On Page 10 is a more detailed map showing Van Buren County only. We find U. S. 12 following the general location of the old Territorial Road from Kalamazoo to Paw Paw, there taking advantage of the natural ford site for crossing the Paw Paw River as did the old Indian trails, followed later by the original trans-state route established by the Michigan Legislature. At a point near the west line of Paw Paw Township the modern alignment of this artery leaves the original Territorial



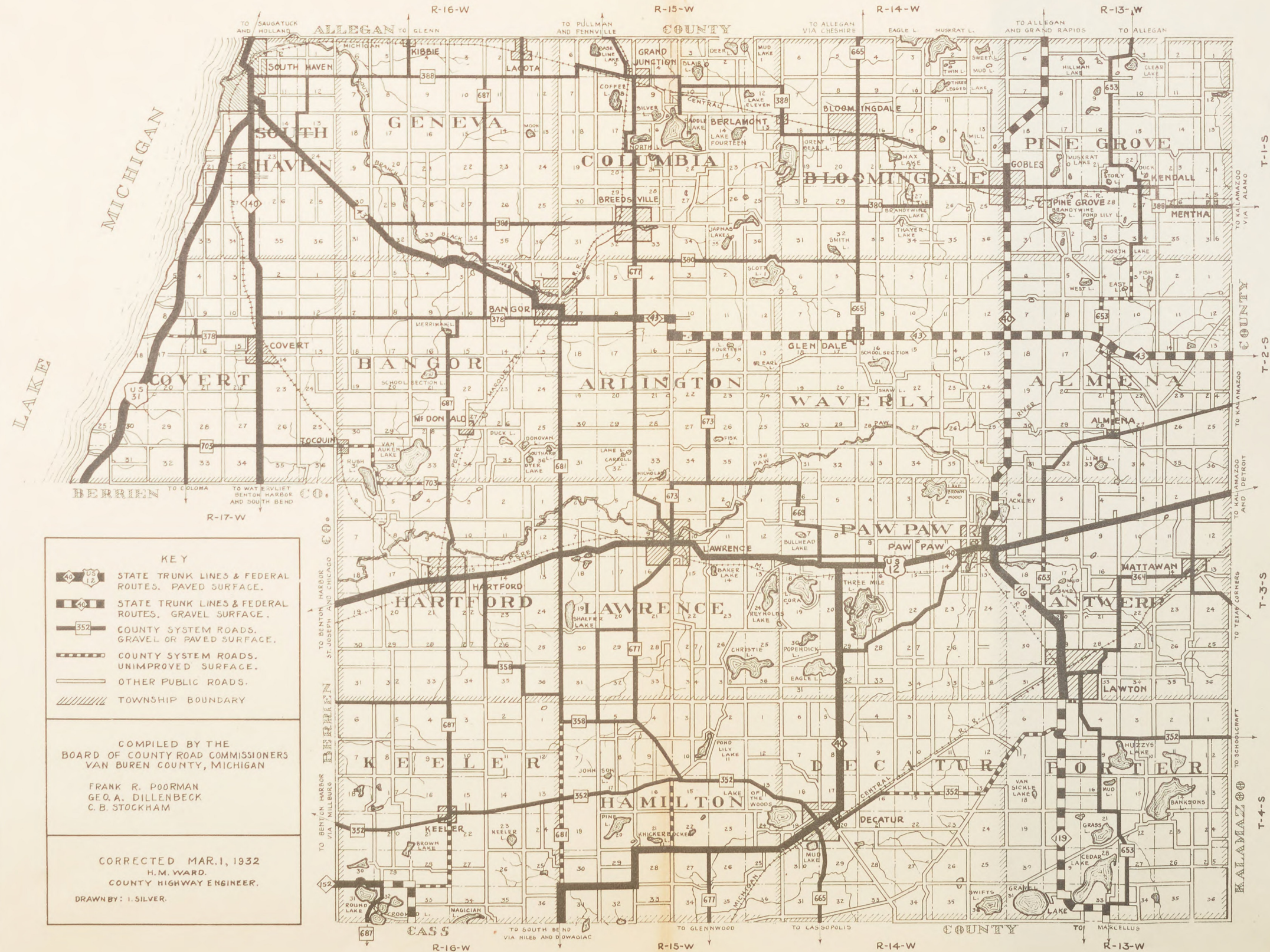
ROAD MAP SHOWING SOUTHERN PORTION OF MICHIGAN





# ROAD MAP OF VAN BUREN COUNTY MICHIGAN

- 10 -







Road location and thence proceeds in quite a direct line through Lawrence, Hartford, Watervliet and Coloma to the twin lake ports of Benton Harbor and St. Joseph. This later location of the west portion was unquestionably due to the rapid rise of fruit growing and its allied industries, within the new area served. We also have parts of the present U. S. 31 and M-140 which even in an early day opened land communication between the lake ports, and now pass through this county in the midst of long established and highly productive fruit farms. Just another indication of the ever present influence of that particular occupation. We must conclude that the original system of state routes designated by early legislative bodies was very comprehensive, and that later extensions to this main structure have conformed to and been in anticipation of vital traffic needs brought about by development of the natural resources therein.

Trunk Line M-40 extending through Niles, Dowagiac, Decatur, Paw Paw, Allegan and Holland, came as a later development to serve this section as a north and south relief road dividing and serving territory between U. S. 31 and U. S. 131 in such a manner as to decrease the natural traffic

density on those two routes.

Trunk Line M-43 is a later development controlled and influenced by the necessity for a more direct route between Kalamazoo, the so-called paper city, and the lake port of South Haven. The anticipated need for this connection has already been justified, because during the past two years ocean going freight boats carrying imported wood pulp and clay used in the paper industries at Kalamazoo have entered via the Great Lakes to dock at South Haven. Thence their cargoes are trucked overland to the mills at Kalamazoo. The writer takes issue with the location of this particular Trunk Line on the grounds that a location further north would best serve the interest of this county as well as a considerable area in the southern portion of Allegan County not now served by a state road. A study of the maps on Pages 10 and 13 shows County Road #388 crossing the northern tier of townships in Van Buren County. Kalamazoo County has an improved highway extending easterly across two townships on a general line averaging three miles from the north county line and eventually joining with U. S. 131 at the southeast corner of Section 17, Porter Township. Traffic and mainten-



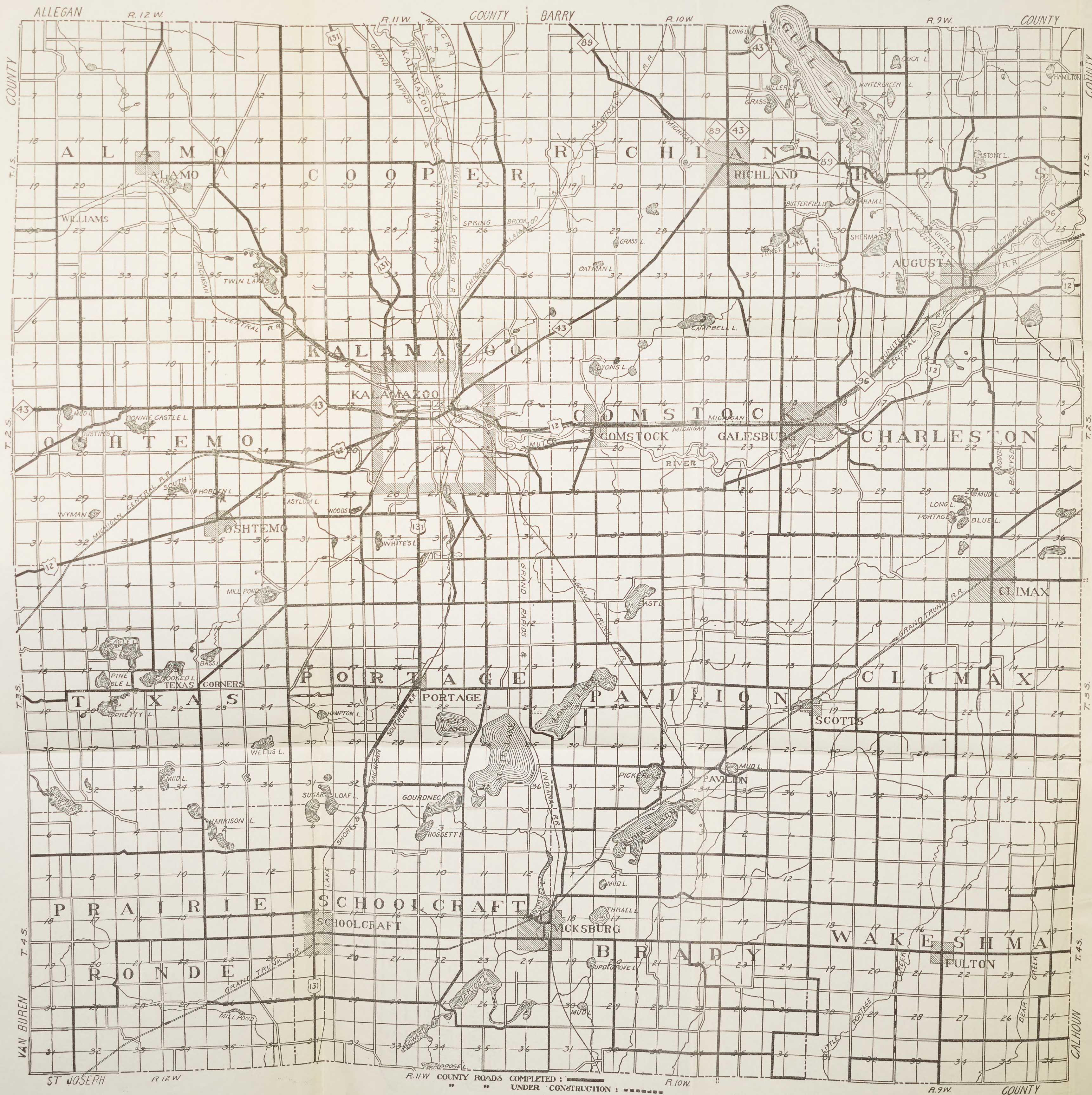
COUNTY ROAD COMMISSION

WILLIAM E. WHITE  
EDGAR RASEMAN  
LOUIS J. OSWALT

# ROAD MAP OF KALAMAZOO COUNTY

LEO. J. WYKKE, Engineer

SCALE  $\frac{3}{4}$  IN. = 1 MILE









ance records of the Van Buren County Road Commission prove conclusively that this highway is of major importance and cannot be successfully or economically maintained as a gravel surface road due to the large volume of traffic. The present location of County Route #388 would not be feasible for a Trunk Line owing to the excessive number of grade intersections with the railroad, and many objectionable alignment features. However, by leaving South Haven at the north corporation line, thence proceeding easterly along or near to the Allegan-Van Buren county line, we would encounter the same number of grade crossings as exist between South Haven and Kalamazoo on the present designated route of M-43. This proposed location could be projected easterly along or near the base line between Allegan and Kalamazoo Counties to join with U. S. 131, thence doubling with this road into Kalamazoo. This would complete the link between this manufacturing center and the lake port of our county. Undoubtedly such an alternate route can no longer be considered for trunk line development owing to the determination already made for Route M-43 as shown. This point is mentioned herein because it has considerable weight in our future planning. It is imperative that we provide for this

natural flow of traffic through the group of small villages in the northern section of this county, because only a small portion of this traffic is now diverted to M-43 on account of the travel distance of these communities from the present route.

Another important possible trunk line development is a cross over from M-43 at Bangor, thence south along County Road #681 to join M-40 at the northeast corner of Section 36, Keeler Township. This would logically provide a direct route for heavy trucking of fruit produce from Bangor, which is an important purchasing center for the western half of this county, to the market centers of Niles, South Bend and Elkhart.

In the years from 1916 to the present time we have seen in this county the gradual evolution in methods of trunk line financing from a state construction fund raised in the proportion of 75% from motor vehicle revenues and 25% from county property levies, to the present 100% motor revenue sources for both construction and maintenance. Even the \$50,000,000 bond issue for trunk line construction originally voted by the people of this state as an anticipated property levy, is now being retired from motor revenues under the heading of "gas tax".

In other words, the owners of real estate have had a \$50,000,000 tax load lifted from property taxes and transferred to the user of the highways. This should awaken some careful thought in those who constantly demand tax relief by placing all road taxes of whatever nature upon the motorist. Evidently they have already forgotten this sizeable item of tax relief formerly provided for.

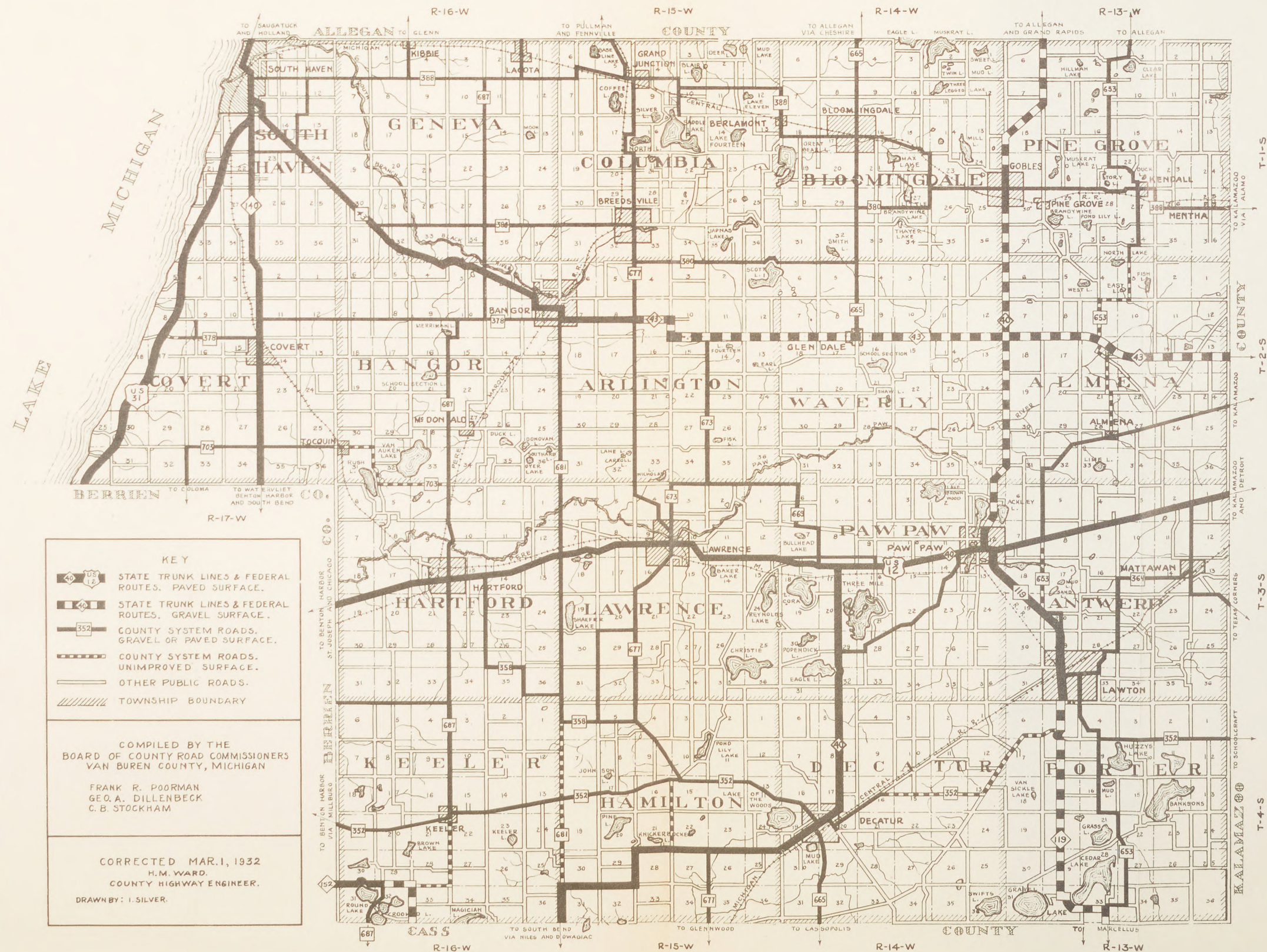
The writer advocates no change in the method of financing construction and maintenance of state trunk line roads, believing that a portion of whatever motor vehicle or gas taxes may be imposed should be allocated for these specific purposes displacing all property levies therefor. It would seem that our trunk line system has now attained a stage of perfection and efficiency which would logically warrant partial retrenchment on new construction. This would make possible the diversion of a larger portion of motor revenues to county units for development of their secondary and tertiary systems.

The complete plan of the Primary County System as of March 1, 1932, is indicated in the map shown on Page 17. The original county system of roads designated in 1916 by our first Board of County Road Commissioners has been entirely absorbed into our



# ROAD MAP OF VAN BUREN COUNTY MICHIGAN

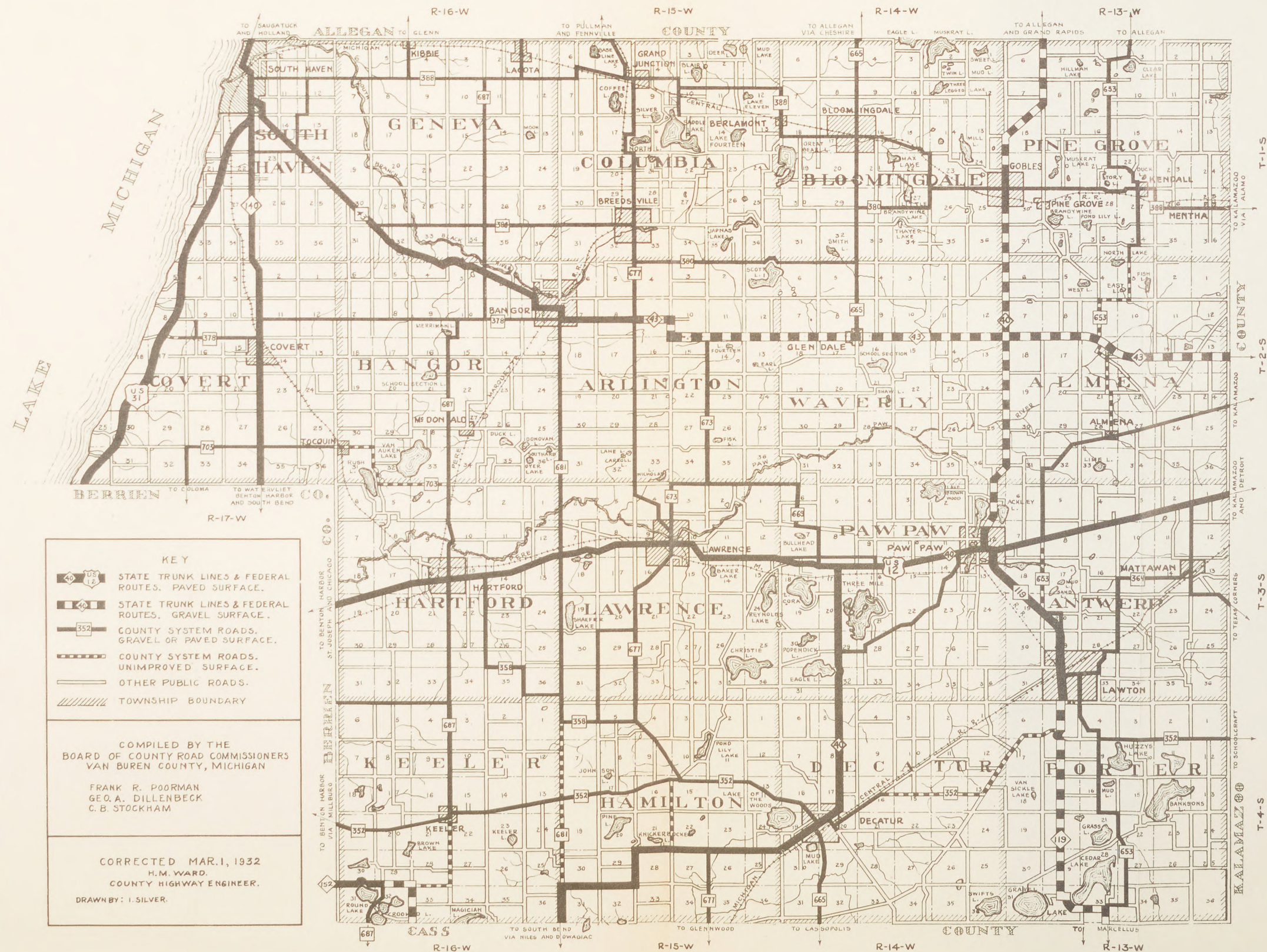
- 17 -





# ROAD MAP OF VAN BUREN COUNTY MICHIGAN

- 17 -







### Primary and Secondary Systems.

Later expansions of the Trunk Line System included many of these primary county highways which grew in importance along with the development of the two systems as a unit. This in itself is a justification of the first selection of county roads which had for its objective the designation of the highways of primary importance.

Since the adoption of the County Road System by this county in 1916, the financing of improvements and maintenance of the county roads has been based upon the following sources of revenue:

1. County share of Motor Vehicle Weight Taxes, comprising for the greater portion of the period an amount equivalent to one-half the weight tax collected from residents of the county.
2. County mill taxes levied upon property.
3. Special assessments upon property under the provisions of the so-called Covert Road Law (Act 59, P. A. 1915).

This county's portion of vehicle weight tax received annually since 1917 is as follows:

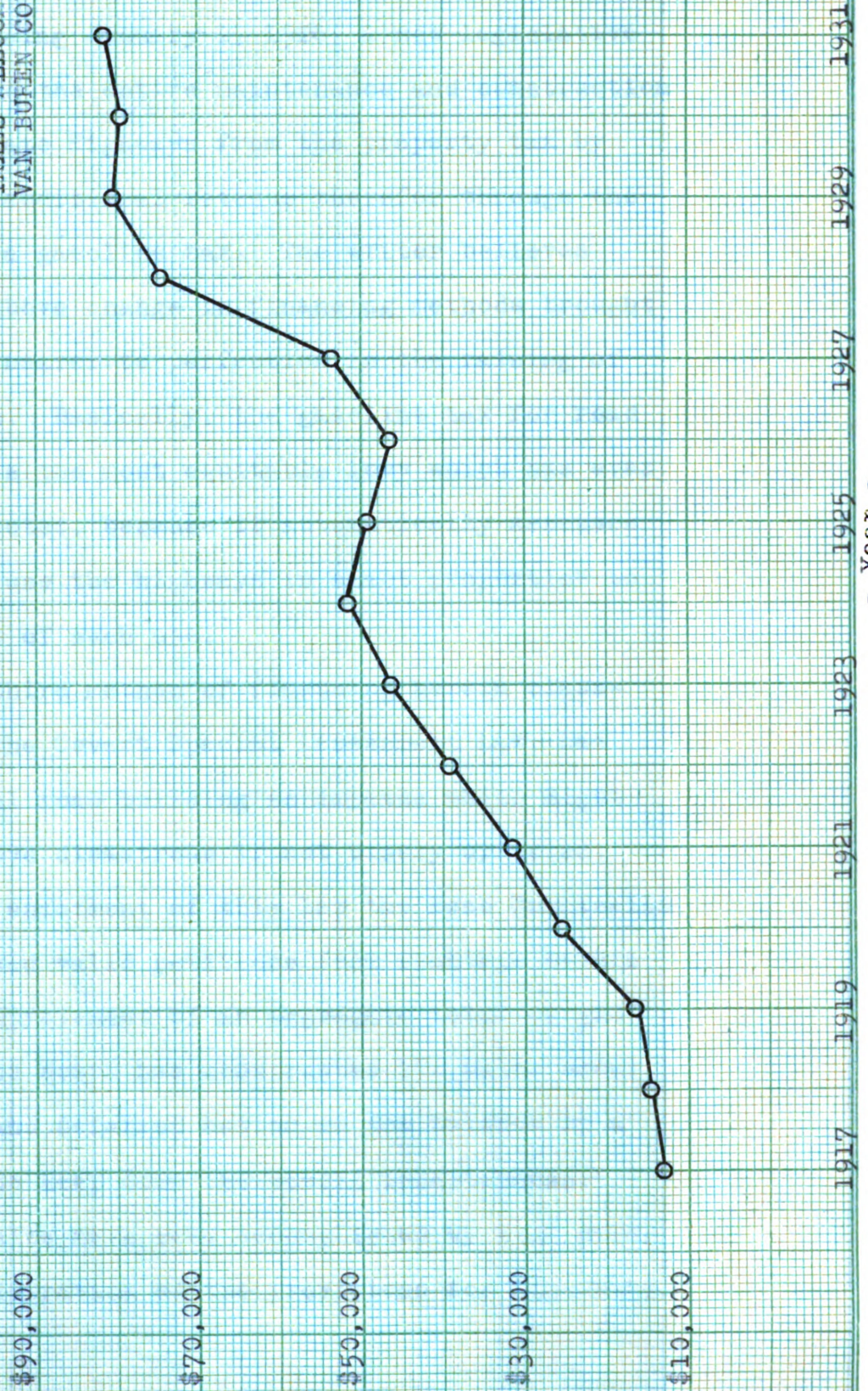


1917.....	\$13,103.20
1918.....	14,762.33
1919.....	16,821.51
1920.....	25,397.74
1921.....	31,484.05
1922.....	39,351.41
1923.....	46,321.62
1924.....	51,685.09
1925.....	49,141.58
1926.....	46,447.48
1927.....	53,869.39
1928.....	74,360.54
1929.....	80,194.73
1930.....	79,590.10
1931.....	81,499.24

This data is indicated in graphical form on Page 20, and examination of the same discloses rather irregular fluctuations especially in the years 1925 and 1926. The regular trend of this revenue has been on a steady increase, the variations mentioned above being due to a change in the ratio of distribution and not to a decrease in total revenues collected. During the last four years the amounts available have become stabilized so that we may predict the probable income from



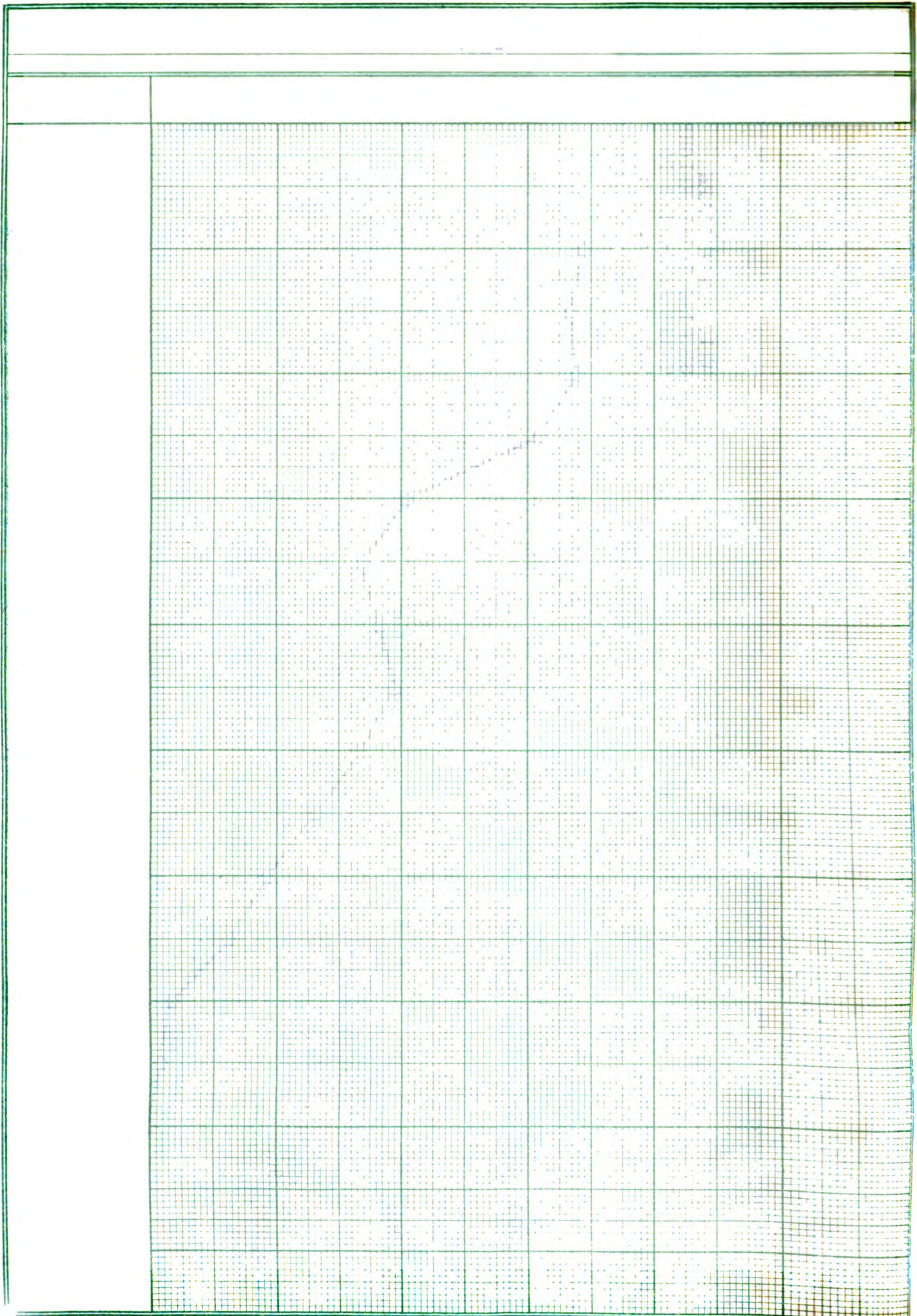
WEIGHT TAX GRAPH  
SHOWING TOTAL WEIGHT  
TAXES ALLOCATED TO  
VAN BUREN COUNTY



- Year -

TOTAL ANNUAL DISTRIBUTION OF WEIGHT TAX TO COUNTY





this source with reasonable accuracy.

Beginning January 1, 1926, a new legislative act removed the entire maintenance and construction cost of State Highways from the property tax by providing additional revenue therefor through the medium of a gasoline tax. The writer believes that the above change in financing methods brought our State nearer to perfection in the raising of road funds. Basically, the gasoline tax for road purposes is the most equitable levy which has ever been collected, because it automatically assesses those who use the highways in exact proportion to the amount of such use.

The third method of financing herein classified as the Covert Special Assessment Law, has given local road building an impetus which might easily prove disastrous if not wisely directed. Since the enactment of this law the Road Commission has received valid petitions from frontage owners seeking improvement of an aggregate total of 320 miles. The Board has constructed 150 miles under this law and deferred action on the balance in a struggle to keep down the bonded indebtedness. These results have been accomplished by such careful administration of the provisions for financing

under this law that no bonds of this county have ever been in default, and all obligations will be met promptly even during the present economic crisis.

As to the suggested changes in financing arrangements, the author sees no urgent need for radical changes, which in effect, might break up and destroy the present successful and orderly method of raising funds. It is evident, however, that a change in distribution of these motor revenues will probably come about as a result of the special legislative session which has been called by the Governor of this State. The trend of changes for many years has been toward using the motor revenues in some manner which will relieve property from all or a portion of its road taxes. Such an objective in principle is well founded, but should be attained by remembering the cardinal principle that EVERY PENNY OF MOTOR VEHICLE AND FUEL TAX REVENUES MUST BE APPLIED ON THE PUBLIC HIGHWAY SYSTEMS. In other words, no diversion of any kind or in any amount from the present distribution should be permitted unless the same is controlled to assure its use for highways and streets exclusively. The McNitt-

Holbeck-Smith bill passed by the 1931 legislature is an outstanding piece of progressive highway legislation which accomplishes an orderly, well planned change in the right direction. In brief, this act provides for the absorption of all township highways into the various county road systems of their respective counties, this to be accomplished over a period of five years beginning April 1, 1932, and at the rate of 20% of each township's mileage per year. Streets and alleys in recorded plats which were laid out as public roads prior to the recording of such plats are included in the mileages to be placed under county jurisdiction. To finance the counties in caring for this added mileage, the act provides for diversion of gas tax revenues as follows:

Year 1932.....	\$2,000,000
Year 1933.....	2,500,000
Year 1934.....	3,000,000
Year 1935.....	3,500,000
Year 1936.....	4,000,000
Each year thereafter..	4,000,000

The net result of the above distribution on a mileage basis as specified by law means that Van Buren County will have available the following amounts in each successive year:

Year	Total Mileage to be Maintained under Act 130	Total Amount Allocated to County under Act 130	Average Amount per Mile Maintained
1932	211.8	\$35,110.87	\$167
1933	423.6	43,888.59	104
1934	635.4	52,666.31	83
1935	847.2	61,444.03	71
1936	1058.9	70,221.75	66
Annually Thereafter	1058.9	70,221.75	66

Obviously such amounts cannot adequately care for the enormous mileage of roads in a manner to make them useful during all seasons of the year. The writer believes, therefore, that the proper change at this point of the highway financing plan should be by the allocation of more funds from motor revenues to enable the county units to maintain these feeder and branch roads in passable condition for daily motor vehicle service. To what extent and how this may be accomplished will be discussed in the latter part of this thesis.

The township road system comprises all public highways not designated as State Trunk Lines or County Roads. The source of finances for construction and care of this large mileage of highways has been entirely confined to levies upon all taxable



holdings in the same manner as for any other public expenditures of a township unit. The general highway laws provide for two funds to be designated as repair and improvement funds, the same to be established by the tax levies above indicated. The administration of these funds and control of the township highways is vested in a highway commissioner, overseer, and sometimes a group of pathmasters, according to the varying choices of the electors in the township units. These officials are elected annually by the people, and from the moment of their selection generally hope to survive the rigors of several successful campaigns for the same office, and hence naturally proceed to use their positions with that end in view. This is not a personal condemnation of all the individuals who served in those capacities, for many gave their most conscientious efforts to this public service only to fall by the wayside because they could not even hope to please a very considerable number of their voters. Under this elective system they were frequently replaced with other individuals elected to carry out the dictates of some other section or faction. The writer believes that it is a first principle of efficient public service to have the



active field or operative supervision of every municipal department absolutely divorced from politics with no award of alimony. Our system of democratic government seems to require the direction of general policies by various boards, the members of which are elected or appointed by the people or their representatives. If this general principle were applied to township road affairs, the township commissioner could render far more efficient service if he were employed by the township board in the capacity of a road superintendent.

The long and nearly continuous record of unsatisfactory results under the township unit system of road control was a major contributing factor in the radical change of supervision contemplated by the McNitt bill. It is not at all surprising to those conversant with highway financing and management, that the very road tax relief measures so sorely needed in the townships were greatly delayed by the legislators' reluctance to be responsible for dumping of additional funds into the township coffers, there to be expended by an organization system which in its very simplest principles had proven so inefficient and inadequate.

It was obviously the intention of the 1931 legislature in passing the McNitt bill to design a tax relief measure by making a portion of gas tax revenues displace a part of the ordinary property levies for road purposes. Not satisfied with the township unit system of highway administration, the legislators made it mandatory that all the highways at the end of five years should be under jurisdiction of the County Road Commissions. The law as it now stands provides a limited amount per mile with which only the most elementary types of maintenance can be attempted, but we believe that this legislation will accomplish the following results:

1. Place the control of all secondary roads on a firm basis of business management directed by experienced road workers.
2. Develop a continuous system of secondary roads which will serve as true feeders to the County System and State Trunk Line roads.
3. Increase the efficiency of road building or repair operations by making available money saving tools which could not be purchased by the separate townships because of high initial costs.

4. Serve as a property tax relief measure

because the law in itself actually further restricts the maximum amount of property tax which can be levied for road purposes. It is also probable that successful administration of this act may bring about larger allotments of revenue in the future to meet the demands for better side roads.

In laying out a comprehensive program for future planning, we must first consider the improved roads which we already have, regardless of details as to how they came into existence. The experience and results outlined in the parts preceding will be used as an index and guide to help form an outline for future planning. The map on Page 9 shows the State Trunk Line System of highways as of May 1, 1932. This comprises a total of 125 miles, all provided with wearing surfaces ranging from gravel to permanent pavements. Further comment on the Trunk Line System is not necessary, because its financing under present laws is handled entirely by the State Highway Department from motor revenues, thus having no influence on property levies. It should be noted, however, that the details of the proposed county program are made

to cover preparations for the ultimate absorption of County Road #681 from Bangor south to the junction of M-40 as a State Trunk Line. Thus our program for future construction of the unimproved portion provides for a minimum grade width of 30 feet, with appropriate drainage structures.

It does not seem likely that an east and west Trunk Line along or near the base line as discussed herein, is possible of realization in view of the determination of M-43 on its present route. Accordingly, this point requires that our future plans for County Road #388 will include a special surface treatment of some kind which can be satisfactorily maintained for the heavy traffic which must be accommodated.

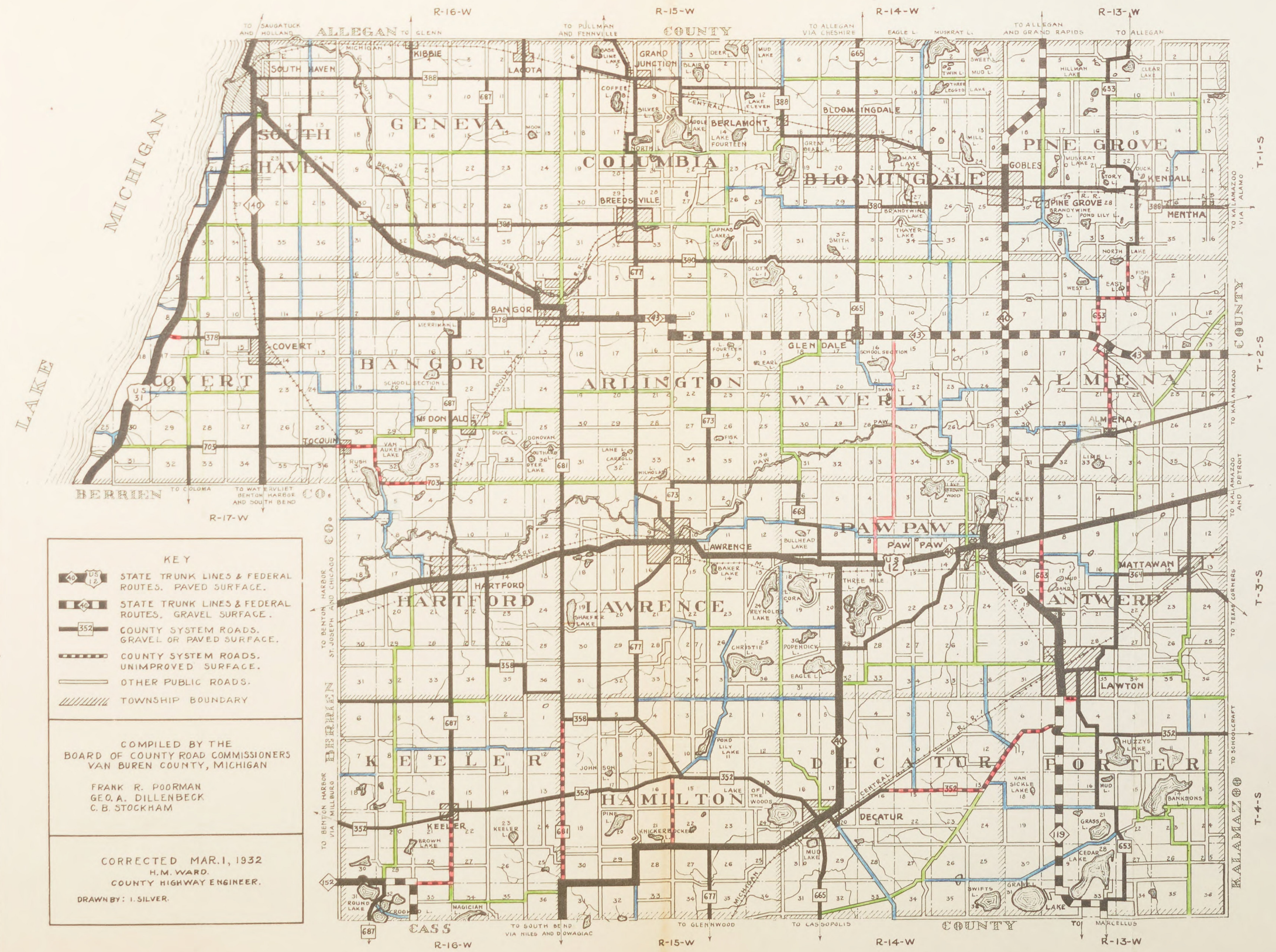
The writer recommends the County Road System shown in map on Page 30 as a so-called Primary System, to serve as main arteries leading to Trunk Lines. Not all of these roads would logically be designated as of primary importance at this time, but having been previously improved to the requirements of our Primary System, it is good economy to maintain them to this standard. The following road should be added: 6.5 miles in Waverly and Paw Paw Townships as an extension of #665. Proposed new









# ROAD MAP OF VAN BUREN COUNTY MICHIGAN

## KEY TO MAP

-  Urgent construction needs, Primary System
-  Secondary System of County Roads
-  Tertiary System of County Roads



**KEY**

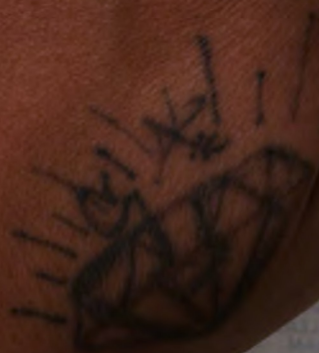
-  STATE TRUNK LINES & FEDERAL ROUTES. PAVED SURFACE.
-  STATE TRUNK LINES & FEDERAL ROUTES. GRAVEL SURFACE.
-  COUNTY SYSTEM ROADS. GRAVEL OR PAVED SURFACE.
-  COUNTY SYSTEM ROADS. UNIMPROVED SURFACE.
-  OTHER PUBLIC ROADS.
-  TOWNSHIP BOUNDARY

COMPILED BY THE  
BOARD OF COUNTY ROAD COMMISSIONERS  
VAN BUREN COUNTY, MICHIGAN

FRANK R. POORMAN  
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CORRECTED MAR. 1, 1932  
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construction work should include the above addition together with the portions on the present outline designated as "unimproved surface" for first preference on new construction work. Our present County System comprises 221 miles of improved surfaces. We must provide for the following new construction:

1.	On Route #687, Keeler Twp.	3.0 miles
2.	" " #681, Keeler & Hamilton	4.2 "
3.	" " #677, Hamilton Twp.	1.9 "
4.	" " #653, Antwerp Twp.	2.0 "
5.	" " #653, Alma Twp.	5.9 "
6.	" " #665, Paw Paw Twp.	2.5 "
7.	" " #665, Waverly Twp.	4.0 "
8.	" " #703, Bangor Twp.	3.2 "
9.	" " #703, Hartford Twp.	1.0 "
10.	" " #378, Covert Twp.	0.6 "
11.	" " #352, Decatur Twp.	3.5 "
12.	" " #352, Porter Twp.	<u>2.2</u> "

TOTAL URGENT CONSTRUCTION 34.0 miles

This proposed construction should be undertaken on specifications equally as good as used for our present completed mileage, which would involve complete re-grading to a minimum width of 24 feet, limiting gradients of 6% maximum and a two course

Michigan State Highway Specification Class "B" gravel roadway, sixteen feet in width with eight inch depth of compacted gravel. Based on our average costs of this type of construction over a period of fifteen years, this would cost \$8000 per mile complete, involving a total construction expenditure of \$272,000.

In laying out a Secondary System of county roads, it is our object to designate the most important township highways, keeping constantly in mind their ultimate value as connecting or feeder arteries to the heavier traveled State and Primary County Roads. Such a plan is carried out on the outline map, Page 30. The total of this proposed system is 165.2 miles distributed as shown on page 33. From their very nature as secondary roads, it is unnecessary that they be designed to carry large volumes of traffic, but in order to make them passable during the whole year, it is recommended that grading operations should produce a minimum grade width of 24 feet with all drainage structures designed to facilitate future widening. For surfacing, we recommend a one course Class "B" gravel track nine feet in width and five inch depth of compacted gravel with proper side and cross drainage



Township	Miles Improved	Miles Unimproved	Total Miles
Almena	5.3	---	5.3
Antwerp	6.1	3.7	9.8
Arlington	7.7	1.8	9.5
Bangor	3.0	6.7	9.7
Bloomington	8.1	---	8.1
Columbia	3.1	11.0	14.1
Covert	---	10.8	10.8
Decatur	5.1	4.6	9.7
Geneva	---	13.5	13.5
Hamilton	---	0.8	0.8
Hartford	5.3	1.5	6.8
Keeler	1.5	8.2	9.7
Lawrence	6.0	---	6.0
Paw Paw	12.4	---	12.4
Fine Grove	9.7	---	9.7
Porter	7.5	2.5	10.0
South Haven	2.7	5.7	8.4
Waverly	4.9	6.0	10.9
TOTALS	88.4	76.8	165.2

to assure that the gravel will not be washed away by surface waters. This type of construction is costing our department an average of \$2000 per mile.

Thus we must eventually provide for completion of our Secondary System approximately \$154,000.

The Tertiary System of county roads is designed to accommodate only local traffic by providing limited areas not otherwise readily accessible, with important cross overs or direct connecting links with the more important arteries. A study of the map on Page 30 will afford an adequate picture of the part these roads will have in the general planning system. These highways will not be expected to provide for anything but a very low volume of traffic, and hence it is our purpose to confine our grading operations to the quality of work which can be done by heavy ditch graders with tractor power or its equivalent. This type of repair work would provide a turnpiked grade of minimum 20 ft. width, the profile of which would follow the natural contour of the ground surface. All drainage structures should be of corrugated metal or other types which can be readily salvaged or moved. Upon this prepared turnpike with appropriate side and cross drainage, we would place a one course Class "B" gravel surface nine feet in width and with a three inch depth of compacted gravel. This type of construction, according to

our records, should cost an average of \$1000 per mile.

The total of the above proposed system is 106.7 miles distributed as follows:

Township	Miles Improved	Miles Unimproved	Total Miles
Almena	1.6	2.7	4.3
Antwerp	2.5	---	2.5
Arlington	---	---	---
Bangor	7.3	---	7.3
Bloomington	5.5	1.6	7.1
Columbia	0.5	2.9	3.4
Covert	---	6.2	6.2
Decatur	4.3	6.1	10.4
Geneva	---	1.0	1.0
Hamilton	---	5.9	5.9
Hartford	---	4.8	4.8
Keeler	---	7.2	7.2
Lawrence	5.7	5.2	10.9
Paw Paw	7.8	1.0	8.8
Pine Grove	5.7	---	5.7
Porter	1.0	6.1	7.1
South Haven	2.5	2.7	5.2
Waverly	6.8	2.1	8.9
TOTALS	51.2	55.5	106.7

To complete construction work on the Tertiary County System therefore, the county must provide for 55.5 miles at \$1000 per mile, or practically \$56,000.00.

To summarize the construction and financing problems involved, the following condensed tabulation is provided:

	Total Miles	Miles Completed	Miles Unimproved	Total Estimated Construction Cost to Complete
State Trunk Lines	125.0	125.0	None	
County Primary System	255.0	221.0	34.0	\$272,000
County Secondary System	165.2	88.4	76.8	154,000
County Tertiary System	106.7	51.2	55.5	56,000
County Local Roads	753.0	No improvements contemplated except that provided by maintenance income		
TOTALS	1404.9			\$482,000

Completion of the Primary, Secondary, and Tertiary County Road Systems leaves a total of 753 miles designated as "Local Roads". The design of the three systems designated above for various types of improvement brings approximately 90% of the landowners

in direct touch with an improved highway. With but very few exceptions, the balance of the owners are within a one mile direct haul to said improved highways. Due to the very limited local needs to be served by this mileage of local roads, the writer considers that they may be made to serve satisfactorily by using the allowance provided in schedule on Page 24 to maintain them as natural dirt roads. The maintenance allowance will enable the County Road Commission to turnpike the grades and provide the necessary drainage to eliminate surface water from the grade proper.

The writer will next consider the taxes which are to be raised each year for retirement of Road Bond obligations already incurred under provisions of the Covert Law (Act 59, P. A. 1915, Michigan). These amounts are as shown on Page 38. Van Buren County has no bonded indebtedness except that for which payment must be provided as detailed on Page 38. The present total bonded indebtedness of the county is \$354,000 which includes all county at large, township at large and district portions of these obligations. The statutory limitation under our present valuation for above purposes is

Year	Total Taxes to be Raised for Retirement of Present Obligations (This includes County at Large, Townships at large and District Portions with proper accrued interest charges)
1933	\$97,686.00
1934	90,933.00
1935	86,736.00
1936	82,405.00
1937	58,549.00
1938	37,516.00
1939	28,813.00
1940	None

\$840,000 for county portions alone; thus, our grand total is 42.1% of the allowable limit for county at large portions only. It is evident that the financing of our road system is on an ultra conservative basis, even in these times of tax difficulties and bond default. The writer believes we are in a position to "carry on" toward our goal of a unified and well balanced network of roads involving the three systems outlined as Primary, Secondary, and Tertiary.

It has been the observation of the author during his association with this county organization since 1919, that it is just, equitable and



sound business and highway economics that taxes should be levied upon property for the construction of new roads. An improved highway along any parcel of real estate is as much of an asset to its potential value for a residence or producing medium as modern buildings, attractive shrubbery, good fences, or any other improvement which adds to the comfort or income of the property holder. In this era of motor traffic the improved road seems of paramount importance, because the motor vehicle has become a vital part of our civilization, and its efficient and pleasurable use demands adequate highway facilities. The evolution of highway legislation in our state has, in a short span of years, removed all Trunk Line costs from property taxes.

The writer strongly favors the financing principle of the Covert Road Law of Michigan, which provides for constructing highways by property taxes based upon benefits derived. It is an outstanding piece of legislative genius, designed to provide permanent property improvements for those who can and are willing to pay for them. The spirit of the law has been abused in many cases, although it must be said that the enormous indebtedness incurred by various municipal units was

absolutely due to persistent pressure of property owners who were following the trend to pay "a dollar down" and enjoy the roads at once. However, these examples do not in any way detract from the principle of just and equitable distribution of construction costs to property owners rather than to the motorist when considering the construction of local roads. Present practice in this county should continue to assess property for all construction on County roads. The detailed tax analysis sheets on Pages 45 to 61, when considered with the summarized county construction and debt retirement programs on Pages 36 and 38, lead the writer to conclude that a construction program is entirely feasible and should be undertaken beginning with the year 1933.

The proposed property taxes for new construction are to create a County Construction Fund which is to be used in conjunction with amounts raised by the various townships for improvement work in the ratio of county 75% and townships 25% of total costs involved. It is designed as a substitute plan to replace normal Covert Construction in case the County Board of Supervisors should not wish to issue more bonds at this time. This is absolutely

a "pay as you enter" program, and if the County Board of Supervisors considers that Mr. Average Taxpayer cannot afford to participate, he does not "enter", because the program is held in abeyance.

Volumes have been thought, written and spoken on the subject of tax reduction, until we are thinking in terms of reduction only rather than true economy. At practically no other period since the operation of the County System, can the Van Buren County tax dollar purchase more highway service than at present. We consider it wise to improve our property when material and labor costs are at low ebb. Our highways belong to all of us and are an integral part of our property holdings. But Mr. Taxpayer says, "We are taxed to death". Yes, everyone pays more tax than he wishes to, but that is human nature and not economics. It seems to the writer that these years of depression should be tempered by wisely planned public improvement programs which will produce something useful to the municipal units. We would be calling upon the taxpayer who claims to be overburdened. But the man who has something to tax will thereby be investing

a small part of his holdings in labor dependent upon its daily wage, and in a manner which will produce property assets in the form of improvements. If the tax payer declines this opportunity, he will contribute his tax dollar regardless; but it will be expended for emergency relief of this same labor which might be producing useful work. Is not the tax dollar for road improvement a sound insurance protection for the property we now have?

On Page 44 is a tabulation showing amounts which would be made available by the adoption of a tentative five year construction program. The "Township Property Tax" items are the amounts which would be made available by spreading a one mill tax on the present equalized valuation, and represent the township portion or 25% of the total construction fund. The "County Property Tax" items are the amounts which would be raised by a levy of a three mill tax on the present equalized valuation. This would provide the county's proposed 75% share of the general construction fund. The "Weight Tax" represents the extra 50% of the estimated weight tax which was formerly distributed to the State Highway Department. It seems certain that the present special session of the State Legislature will

enact provisions to bring about the return of this fund to the various counties. Without doubt, there will be a mandatory provision requiring that this added county revenue be applied on outstanding bond obligations. Therefore, this amount is included as a part of "Total Available", from which is deducted "Debt Retirement" items to ascertain the "Net Amount Available for Construction." This tentative five year plan would enable the County Road Commission to complete the anticipated construction requirements for the Primary, Secondary, and Tertiary County Road Systems within the next five years. The table on Page 36 indicates the total construction requirements to be \$482,000, while the plan tabulated on Page 44 provides a total of \$533,791 on a strict "pay as you go" policy. This plan can be accelerated by heavier mill tax rates or additional Covert bond issues, and can be decelerated by lower rates at the option of the county tax raising body.



Year	Township Property Tax	County Property Tax	Weight Tax (50% which must apply on bonded debt)	Total Avail- able	Debt Re- tirement (includ- ing int. charges)	Net Amount Available for Construc- tion
1933	\$28000	\$84000	\$78000	\$190000	\$97686	\$92414
1934	28000	84000	78000	190000	90934	99067
1935	28000	84000	78000	190000	86736	103264
1936	28000	84000	78000	190000	82406	107595
1937	28000	84000	78000	190000	58549	131451

TOTAL \$533791

In the following pages, 45 to 80 inclusive, will be found detailed tax analyses for each township during each year since the adoption of the County Road System. Application of the above tentative program tax rates to the graphs showing the total road tax rate per \$1000 valuation indicate that the proposed five year program property tax rates for all road purposes are far below the average for the period 1916 to 1931 in every individual township as well as in the grand total for the county. Moreover, the proposed rates are even below the minimums reached during the whole period, except for Antwerp Township in 1917, and Keeler Township in 1918.

ROAD TAX ANALYSIS FOR YEAR 1916

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	825,000	2,000.00	1,687.32	3,687.32	4.47
Antwerp	1,980,000	4,675.00	4,049.60	8,724.60	4.40
Arlington	1,420,000	5,500.00	2,904.26	8,404.26	5.92
Bangor	2,000,000	8,350.00	4,090.50	12,440.50	6.22
Bloomington	1,705,000	5,641.16	3,487.15	9,128.31	5.35
Columbia	870,000	5,000.00	1,779.37	6,779.37	7.78
Covert	1,040,000	3,450.00	2,127.06	5,577.06	5.36
Decatur	1,960,000	7,866.96	4,008.69	11,875.65	6.06
Geneva	1,040,000	4,994.80	2,127.06	7,121.86	6.84
Hamilton	1,040,000	2,600.00	2,127.06	4,727.06	4.55
Hartford	2,350,000	6,288.55	4,086.34	10,374.89	4.41
Keeler	1,270,000	3,951.10	2,597.47	6,548.57	5.15
Lawrence	1,705,000	6,200.00	3,487.15	9,687.18	5.69
Paw Paw	2,590,000	7,917.00	5,297.20	13,214.30	5.10
Pine Grove	1,120,000	3,000.00	2,290.68	5,290.68	4.72
Porter	1,210,000	3,526.49	2,474.75	6,001.24	4.96
South Haven	1,130,000	4,863.45	2,311.13	7,174.58	6.35
Waverly	1,140,000	4,945.29	2,331.59	7,276.88	6.38
<b>TOTAL</b>	<b>\$30,000,000</b>	<b>\$90,769.80</b>	<b>\$53,264.38</b>	<b>\$144,034.18</b>	

The average total road tax rate for the entire county  
this year was \$4.80 per \$1000 valuation.



ROAD TAX ANALYSIS FOR YEAR 1917

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	727,800	2,400.00	1,690.78	4,090.78	5.62
Antwerp	1,773,200	2,360.00	4,097.92	6,457.92	3.64
Arlington	1,365,500	5,200.00	3,129.23	8,329.23	6.10
Bangor	1,929,800	6,660.20	5,606.86	12,267.06	6.36
Bloomington	1,606,500	5,988.70	3,624.22	9,612.92	5.98
Columbia	855,300	4,500.00	1,960.04	6,460.04	7.55
Covert	979,700	3,300.00	3,072.13	6,372.13	6.50
Decatur	1,827,700	10,590.00	4,211.34	14,801.34	8.05
Geneva	999,900	5,538.33	2,291.40	7,829.73	7.83
Hamilton	969,700	2,500.00	1,245.13	3,745.13	3.76
Hartford	2,172,900	6,282.55	4,979.49	11,262.04	5.13
Keeler	1,172,600	5,208.98	2,744.49	7,953.47	6.78
Lawrence	1,418,100	5,400.00	4,264.36	9,664.36	6.81
Paw Paw	2,339,500	8,077.10	5,384.24	13,461.34	5.75
Pine Grove	1,122,400	3,500.00	2,480.47	4,980.47	5.33
Porter	1,152,000	6,000.00	2,639.97	8,639.97	7.50
South Haven	1,049,000	7,766.00	2,403.92	10,169.92	9.70
Waverly	1,061,400	2,358.05	2,432.35	4,790.40	4.52
<b>TOTAL</b>	<b>\$ 28,000,000</b>	<b>\$ 93,629.91</b>	<b>\$ 58,258.34</b>	<b>\$151,888.25</b>	

The average total road tax rate for the entire county  
this year was \$4.52 per \$1000 valuation.

ROAD TAX ANALYSIS FOR YEAR 1918

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	737,800	3,100.00	2,372.81	5,472.81	7.42
Antwerp	1,788,200	2,500.00	5,759.62	8,259.62	4.61
Arlington	1,410,000	4,500.00	4,540.19	9,040.10	6.41
Bangor	2,075,800	7,650.00	10,537.94	18,187.94	8.76
Bloomington	1,545,600	5,737.50	4,977.41	10,714.91	6.92
Columbia	855,000	5,500.00	3,887.94	9,387.94	10.97
Covert	972,000	1,050.00	6,561.47	7,611.47	7.83
Decatur	1,875,000	5,848.33	6,039.48	11,887.81	6.34
Geneva	989,900	4,440.51	6,059.21	10,499.72	10.63
Hamilton	979,700	1,000.00	3,152.76	4,152.76	4.34
Hartford	2,205,000	5,291.25	6,167.94	11,459.19	5.20
Keeler	1,197,000		3,855.34	3,855.34	3.22
Lawrence	1,468,100	3,612.45	4,727.50	8,339.95	5.68
Paw Paw	2,349,500	6,853.67	7,569.40	14,423.07	6.14
Pine Grove	1,152,000	2,214.24	3,483.89	5,698.13	4.94
Porter	1,152,000	6,000.00	6,228.30	11,926.43	10.35
South Haven	1,025,000	4,000.00	3,298.81	7,298.81	7.12
Waverly	1,061,400	3,730.00	3,416.18	7,146.58	6.73
<b>TOTAL</b>	<b>\$ 28,000,000</b>	<b>\$ 73,028.35</b>	<b>\$92,636.19</b>	<b>\$165,362.67</b>	

The average total road tax rate for the entire county this year was \$5.90 per \$1000 valuation.



ROAD TAX ANALYSIS FOR YEAR 1919

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	738,000	2,500.00	3,818.46	6,318.46	8.56
Antwerp	1,799,000	3,700.00	5,677.87	9,377.87	5.21
Arlington	1,400,000	4,300.00	4,418.59	8,718.59	6.22
Bangor	2,075,000	8,055.00	11,525.56	19,580.56	9.38
Bloomington	1,545,000	5,703.64	4,876.22	10,579.86	6.84
Columbia	855,000	3,000.00	3,215.30	6,215.30	7.27
Covert	975,000	1,650.00	7,565.65	9,215.65	9.45
Decatur	1,870,000	9,308.00	5,901.95	15,209.95	8.13
Geneva	995,000	5,552.98	10,535.85	16,088.83	16.16
Hamilton	980,000	2,000.00	3,093.03	5,093.03	5.19
Hartford	2,200,000	7,288.63	6,943.46	14,232.09	6.47
Keeler	1,200,000	5,226.00	3,787.37	9,013.37	7.51
Lawrence	1,470,000	3,000.00	4,639.52	7,639.52	5.19
Paw Paw	2,350,000	8,941.53	7,416.88	16,358.41	6.96
Pine Grove	1,083,000	8,837.61	3,418.12	12,255.73	11.31
Porter	1,152,000	1,400.00	7,578.57	8,978.57	7.79
South Haven	1,020,000	5,000.00	3,219.28	8,219.28	8.05
Waverly	1,065,000	4,116.88	3,361.30	7,478.18	7.02
<b>TOTAL</b>	<b>\$28,000,000</b>	<b>\$89,580.27</b>	<b>\$100,992.98</b>	<b>\$190,573.25</b>	

The Average total road tax rate for the entire county  
this year was \$6.80 per \$1000 valuation.

ROAD TAX ANALYSIS FOR YEAR 1920

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	738,000	2,500.00	4,067.34	6,567.34	8.89
Antwerp	1,824,000	6,129.72	13,703.70	19,833.42	10.92
Arlington	1,400,000	4,500.00	16,788.29	21,288.29	15.20
Bangor	2,075,000	5,750.00	17,353.48	23,103.48	11.13
Bloomington	1,545,000	5,543.83	12,921.33	18,465.16	11.95
Columbia	855,000	3,000.00	9,144.30	12,144.30	14.20
Covert	975,000	2,000.00	25,088.46	27,088.46	27.78
Decatur	1,870,000	10,975.00	10,305.92	21,280.92	11.37
Geneva	1,000,000	4,492.00	13,626.73	18,118.73	18.11
Hamilton	970,000	2,500.00	7,227.87	9,727.87	10.03
Hartford	2,200,000	4,373.97	16,474.86	20,848.83	9.48
Keeler	1,200,000	5,334.71	10,652.30	15,987.01	13.32
Lawrence	1,470,000		14,152.14	14,152.14	9.63
Paw Paw	2,350,000	8,361.10	15,219.83	23,580.93	10.03
Pine Grove	1,083,000	8,500.74	5,938.73	14,438.73	13.33
Porter	1,160,000	11,850.00	10,146.18	21,996.18	18.96
South Haven	990,000	13,000.00	5,456.18	18,456.18	18.96
Waverly	1,065,000	3,160.30	9,005.53	12,165.83	11.42
<b>TOTAL</b>	<b>\$28,000,000</b>	<b>\$101,971.37</b>	<b>\$217,273.17</b>	<b>\$319,243.80</b>	

The average total road tax rate for the entire county  
this year was \$11.40 per \$1000 valuation.



ROAD TAX ANALYSIS FOR YEAR 1921

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Hd. Tax	Total Tax Per \$1000 Value
Almena	730,000	3,500.00	3,364.09	6,864.49	9.32
Antwerp	1,850,000	11,191.65	13,277.96	24,469.61	13.22
Arlington	1,395,000	4,900.00	15,089.59	19,989.59	14.33
Bangor	2,070,000	6,450.00	12,519.12	18,969.12	9.11
Bloomington	2,1540,000	5,751.15	11,873.99	17,625.14	11.44
Columbia	855,000	4,000.00	10,326.54	14,326.54	16.75
Covert	970,000	2,000.00	13,223.49	15,223.49	15.69
Decatur	1,860,000	11,106.62	10,430.54	21,537.16	11.58
Geneva	1,025,000	3,368.85	12,695.08	16,063.93	16.16
Hamilton	980,000	3,055.00	6,581.73	9,636.73	9.83
Hartford	2,190,000	7,354.77	16,998.92	24,353.69	11.12
Keeler	1,210,000	8,029.30	10,945.59	18,974.89	15.68
Lawrence	1,465,000	9,600.00	13,449.28	23,049.28	16.41
Paw Paw	2,450,000	8,389.24	16,508.84	24,898.08	10.17
Pine Grove	1,070,000	8,437.29	4,934.89	13,372.18	12.49
Porter	1,170,000	17,500.00	9,454.86	26,954.86	22.18
South Haven	975,000	10,500.00	4,495.99	14,995.99	15.38
Waverly	1,055,000	4,434.09	8,291.25	12,725.34	12.06
<b>TOTAL</b>	<b>\$28,000,000</b>	<b>\$129,567.96</b>	<b>\$194,461.75</b>	<b>\$324,029.71</b>	

The average total road tax rate for the entire county  
this year was \$11.57 per \$1000 valuation.

ROAD TAX ANALYSIS FOR YEAR 1922

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	725,000	2,500.00	3,946.64	6,446.64	8.89
Antwerp	1,850,000	4,080.00	18,983.08	23,063.08	12.95
Arlington	1,390,000	4,000.00	12,676.61	16,676.61	11.99
Bangor	2,070,000	8,200.00	12,719.09	20,919.09	10.10
Bloomington	1,550,000	9,075.90	13,819.81	22,895.71	14.77
Columbia	850,000	6,000.00	10,566.33	16,566.33	19.49
Covert	970,000	3,000.00	14,243.94	17,243.94	17.77
Decatur	1,850,000	7,618.59	12,154.06	19,772.65	10.65
Geneva	1,030,000	3,921.92	14,110.67	18,032.59	17.50
Hamilton	980,000	2,150.00	8,091.93	10,241.93	10.45
Hartford	2,190,000	10,319.07	20,749.32	31,068.39	14.14
Keeler	1,120,000	4,661.06	11,861.97	16,523.03	14.75
Lawrence	1,465,000	8,700.00	14,723.89	23,423.89	15.92
Paw Paw	2,470,000	9,139.17	17,298.78	26,437.95	10.70
Pine Grove	1,070,000	5,567.00	5,741.65	11,308.65	10.57
Porter	1,165,000	10,000.00	11,011.14	21,011.14	18.04
South Haven	975,000	11,000.00	5,880.92	16,880.92	17.31
Waverly	1,050,000	3,552.00	9,309.57	12,861.57	12.25
<b>TOTAL</b>	<b>\$28,000,000</b>	<b>\$113,484.71</b>	<b>\$1217889.40</b>	<b>\$331,374.11</b>	

The average total road tax rate for the entire county  
this year was \$11.82 per \$1000 valuation.



ROAD TAX ANALYSIS FOR YEAR 1923

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	800.825	2,500.00	5,596.77	8,096.77	10.10
Antwerp	2,402,275	12,660.78	15,613.52	28,274.30	11.31
Arlington	1,498,150	5,000.00	16,497.17	21,497.17	14.35
Bangor	2,285,750	8,200.00	18,942.92	27,142.92	11.87
Bloomington	1,672,050	8,625.61	14,392.31	23,017.92	13.77
Columbia	937,575	5,000.00	7,940.32	12,940.32	13.81
Covert	1,091,100	3,500.00	14,266.46	17,766.46	16.28
Decatur	2,040,650	7,654.62	13,589.95	21,544.57	10.56
Geneva	1,093,700	4,448.80	13,549.65	17,998.45	16.47
Hamilton	1,022,075	2,000.00	10,956.90	12,956.90	12.67
Hartford	2,481,400	6,900.00	17,093.09	23,993.09	9.67
Keeler	1,330.875	5,361.44	13,210.63	18,572.07	13.21
Lawrence	1,556,065	8,000.00	15,118.56	23,118.56	14.12
Paw Paw	2,680,050	13,494.00	17,590.91	30,984.91	11.56
Fine Grove	1,245,830	5,076.66	7,117.88	12,194.54	9.79
Porter	1,267,675	7,500.00	11,103.00	18,603.00	14.68
South Haven	1,032,800	16,400.00	6,904.22	23,304.22	22.58
Waverly	1,161,350	4,155.60	9,793.97	13,949.57	12.01
<b>TOTAL</b>	<b>\$32,000,000</b>	<b>\$126,477.51</b>	<b>\$299,278.23</b>	<b>\$355,955.74</b>	

The average total road tax rate for the entire county this year was \$11.12 per \$1000 valuation.

ROAD TAX ANALYSIS FOR YEAR 1924

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	808,717	4,000.00	3,895.51	7,895.51	9.77
Antwerp	2,331,771	6,923.51	17,427.64	24,351.15	10.44
Arlington	1,508,765	9,000.00	13,202.04	22,202.04	14.72
Bangor	2,272,994	8,350.00	14,064.10	22,414.10	9.86
Bloomington	1,681,371	10,047.32	11,900.48	21,947.80	13.06
Columbia	945,471	5,000.00	9,108.87	14,108.87	14.93
Covert	1,046,650	3,500.00	11,879.33	15,379.33	14.70
Decatur	2,068,988	5,943.46	7,710.68	13,654.14	6.60
Geneva	1,095,525	4,446.00	11,047.29	15,493.29	14.15
Hamilton	1,025,613	2,000.00	8,977.72	10,977.72	10.71
Hartford	2,460,131	10,280.00	11,965.69	22,245.69	9.04
Keeler	1,338,542	5,437.84	10,311.88	15,749.72	11.77
Lawrence	1,585,326	6,000.00	10,766.82	16,766.82	10.58
Paw Paw	2,664,854	10,471.17	12,013.46	22,484.63	8.44
Pine Grove	1,230,523	2,178.50	4,584.56	6,763.06	5.42
Porter	1,266,613	9,000.00	6,295.21	15,295.21	12.08
South Haven	1,024,050	10,600.00	4,874.22	15,474.22	15.11
Waverly	1,154,719	4,256.00	7,292.37	11,548.37	10.00
<b>TOTAL</b>	<b>\$32,000,000</b>	<b>\$117,433.80</b>	<b>\$177,317.87</b>	<b>\$294,751.67</b>	

The average total road tax rate for the entire county this year was \$9.21 per \$1000 valuation.

ROAD TAX ANALYSIS FOR YEAR 1925

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Ho. Tax	Total Tax Per \$1000 Value
Almena	801,875	3,000.00	5,364.06	8,364.06	10.44
Antwerp	2,262,765	7,937.11	17,560.08	25,497.19	11.27
Arlington	1,492,340	4,500.00	15,582.43	20,082.43	13.45
Bangor	2,262,155	8,250.00	13,052.10	21,302.10	8.97
Bloomington	1,650,950	9,164.21	7,909.58	17,073.79	10.34
Columbia	939,025	5,000.00	11,573.35	16,573.35	17.65
Covert	1,138,370	3,650.00	11,957.04	15,607.04	13.71
Decatur	2,056,185	9,634.30	10,145.26	19,779.56	9.62
Geneva	1,097,895	6,169.08	11,105.20	17,274.28	15.75
Hamilton	1,020,250	2,000.00	11,005.23	13,005.23	12.75
Hartford	2,462,005	7,622.33	15,702.37	23,324.70	9.47
Keeler	1,350,730	7,589.73	7,140.33	14,730.06	10.91
Lawrence	1,579,130	5,300.00	12,075.21	17,375.21	11.00
Paw Paw	2,651,551	10,514.46	14,380.90	24,895.36	9.39
Pine Grove	1,228,125	3,865.56	5,039.87	8,905.43	7.25
Porter	1,254,385	1,901.85	8,617.35	10,519.20	8.30
South Haven	1,030,115	12,000.00	5,243.64	17,243.64	16.74
Waverly	1,151,290	5,698.53	7,579.16	13,277.69	11.53
<b>TOTAL</b>	<b>\$32,000,000</b>	<b>\$113,797.16</b>	<b>\$191,033.16</b>	<b>\$304,830.32</b>	

The average total road tax rate for the entire county this year was \$9.52 per \$1000 valuation.



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ROAD TAX ANALYSIS FOR YEAR 1925

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total ho. Tax	Total Tax Per \$1000 Value
Almena	801,875	3,000.00	5,364.06	8,364.06	10.44
Antwerp	2,262,765	7,937.11	17,560.08	25,497.19	11.27
Arlington	1,492,340	4,500.00	15,582.43	20,082.43	13.45
Bangor	2,262,155	8,250.00	13,052.10	21,302.10	8.97
Bloomington	1,650,950	9,164.21	7,909.58	17,073.79	10.34
Columbia	939,025	5,000.00	11,573.35	16,573.35	17.65
Covert	1,138,370	3,650.00	11,957.04	15,607.04	13.71
Decatur	2,056,185	9,634.30	10,145.26	19,779.56	9.62
Geneva	1,097,895	6,169.08	11,105.20	17,274.28	15.75
Hamilton	1,020,250	2,000.00	11,005.23	13,005.23	12.75
Hartford	2,462,005	7,622.33	15,702.37	23,324.70	9.47
Keeler	1,350,730	7,589.73	7,140.33	14,730.06	10.91
Lawrence	1,579,130	5,300.00	12,075.21	17,375.21	11.00
Paw Paw	2,651,551	10,514.46	14,380.90	24,895.36	9.39
Pine Grove	1,228,125	3,865.56	5,039.87	8,905.43	7.25
Porter	1,254,385	1,901.85	8,617.35	10,519.20	8.30
South Haven	1,030,115	12,000.00	5,243.64	17,243.64	16.74
Waverly	1,151,290	5,698.53	7,579.16	13,277.69	11.53
<b>TOTAL</b>	<b>\$32,000,000</b>	<b>\$113,797.16</b>	<b>\$191,033.16</b>	<b>\$304,830.32</b>	

The average total road tax rate for the entire county this year was \$9.52 per \$1000 valuation.

ROAD TAX ANALYSIS FOR YEAR 1926

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	792,490	2,500.00	3,959.10	6,459.10	8.15
Antwerp	2,254,425	6,098.89	13,520.86	19,619.75	8.70
Arlington	1,446,710	3,000.00	9,787.11	12,787.11	8.72
Bangor	2,236,945	8,200.00	9,132.46	17,332.46	7.79
Bloomington	1,639,595	9,236.98	4,023.59	13,260.57	8.08
Columbia	927,620	6,500.00	7,383.07	13,883.07	14.97
Covert	1,222,555	4,700.00	9,965.05	14,665.06	12.00
Decatur	2,035,555	16,817.38	6,690.77	23,508.15	11.55
Geneva	1,084,040	3,380.70	8,962.23	12,342.93	11.38
Hamilton	985,850	2,000.00	7,074.15	9,074.15	9.22
Hartford	2,451,270	9,467.28	8,576.15	18,043.43	7.32
Keeler	1,346,875	8,765.77	8,170.50	16,936.27	12.58
Lawrence	1,578,205	6,000.00	9,258.29	15,258.29	9.65
Paw Paw	2,683,660	13,093.77	8,873.56	21,967.33	5.97
Pine Grove	1,210,795	6,728.79	2,971.31	9,700.10	8.01
Porter	1,240,465	7,429.12	6,379.36	13,808.48	11.14
South Haven	1,031,865	11,200.00	3,539.32	14,739.32	14.29
Waverly	1,103,145	3,453.23	5,465.22	8,918.45	8.08
<b>TOTAL</b>	<b>\$32,000,000</b>	<b>\$128,571.91</b>	<b>\$133,732.10</b>	<b>\$262,304.01</b>	

The average total road tax rate for the entire county this year was \$8.19 per \$1000 valuation.



ROAD TAX ANALYSIS FOR YEAR 1927

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	781,550	3,000.00	3,239.46	6,239.46	7.98
Antwerp	2,221,300	6,096.64	13,439.10	19,535.74	8.79
Arlington	1,436,760	5,600.00	11,098.11	16,698.11	11.63
Bangor	2,231,250	2,000.00	11,544.60	13,544.60	6.07
Bloomington	1,617,025	9,268.21	8,269.57	17,537.78	10.84
Columbia	948,950	1,300.00	9,716.04	11,016.04	11.62
Covert	1,200,750	6,875.64	6,638.43	13,514.07	11.26
Decatur	2,017,675	16,867.00	6,911.46	23,778.46	11.78
Geneva	1,066,700	3,948.00	12,780.51	16,728.51	15.69
Hamilton	970,425	4,000.00	9,510.85	13,501.85	13.91
Hartford	2,406,950	14,014.80	12,057.28	26,072.08	10.83
Keeler	1,378,700	8,738.10	8,217.61	16,955.71	12.30
Lawrence	1,547,250	7,000.00	9,236.66	16,236.66	10.49
Paw Paw	2,639,200	13,326.70	8,281.49	21,608.19	8.19
Pine Grove	1,195,400	7,960.00	3,136.87	11,096.87	9.29
Porter	1,219,650	7,500.00	8,946.00	16,446.00	13.49
South Haven	1,031,625	13,000.00	3,671.79	16,671.79	16.17
Waverly	1,088,275	5,950.000	5,479.96	11,429.96	10.50
<b>TOTAL</b>	<b>\$32,000,000</b>	<b>\$136,445.09</b>	<b>\$152,175.79</b>	<b>\$288,611.88</b>	

The average total road tax rate for the entire county this year was \$9.02 per \$1000 valuation.

ROAD TAX ANALYSIS FOR YEAR 1928

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	781,268	3,500.00	3,959.87	7,459.87	9.55
Antwerp	2,187,714	6,069.62	5,930.71	12,000.33	5.49
Arlington	1,435,368	7,650.00	14,851.18	22,501.18	15.68
Bangor	2,242,689	7,000.00	9,937.01	16,937.01	7.51
Bloomington	1,622,389	8,477.85	8,320.29	16,798.14	10.35
Columbia	981,353	4,000.00	8,207.43	12,207.43	12.44
Covert	1,202,467	5,300.00	8,839.63	14,139.63	11.76
Decatur	2,001,655	10,120.20	6,958.01	17,078.21	8.53
Geneva	1,064,264	4,513.40	8,225.81	12,739.21	11.97
Hamilton	970,578	2,000.00	10,064.25	12,064.25	12.43
Hartford	2,390,472	9,507.05	11,337.23	20,844.28	8.59
Keeler	1,423,398	3,757.70	9,503.85	13,261.55	9.32
Lawrence	1,556,034	7,000.00	12,355.19	19,355.19	12.44
Paw Paw	2,607,212	11,944.15	9,586.01	21,530.16	8.26
Pine Grove	1,190,284	6,835.92	3,225.50	10,061.42	8.45
Porter	1,211,411	10,000.00	6,659.83	16,659.83	13.75
South Haven	1,024,911	13,000.00	2,945.08	15,945.08	15.57
Waverly	1,051,875	5,071.87	5,353.38	10,425.25	9.92
<b>TOTAL</b>	<b>\$32,000,000</b>	<b>\$125,747.76</b>	<b>\$146,260.26</b>	<b>\$272,088.02</b>	

The Average total road tax rate for the entire county this year was \$8.50 per \$1000 valuation.

ROAD TAX ANALYSIS FOR YEAR 1929

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	746,091	4,500.00	4,462.18	8,962.18	12.14
Antwerp	2,117,493	6,092.23	14,553.64	20,645.87	9.75
Arlington	1,392,987	6,415.00	12,700.41	19,115.41	13.73
Bangor	2,161,628	7,500.00	11,519.83	19,219.83	8.89
Bloomington	1,567,394	8,450.84	9,994.89	18,445.73	11.13
Columbia	953,178	4,500.00	10,026.67	14,526.67	15.24
Covert	1,162,332	6,700.00	7,349.39	14,049.39	12.09
Decatur	1,953,751	10,202.25	8,530.29	18,732.54	9.59
Geneva	1,035,349	3,400.00	8,867.57	12,267.57	11.85
Hamilton	943,850	3,000.00	10,595.77	13,595.77	14.41
Hartford	2,309,488	9,002.60	13,617.42	22,620.02	9.79
Keeler	1,394,813	9,174.45	11,031.46	20,205.91	14.49
Lawrence	1,512,307	7,000.00	13,975.01	20,975.01	13.87
Paw Paw	2,469,375	11,715.63	12,318.62	24,034.25	9.72
Pine Grove	1,159,409	6,776.60	1,269.27	8,045.87	6.94
Porter	1,164,118	9,500.00	7,455.51	16,955.51	14.56
South Haven	986,246	13,000.00	4,453.93	17,453.93	17.70
Waverly	1,051,975	5,901.98	6,829.56	12,731.54	12.11
<b>TOTAL</b>	<b>\$31,000,000</b>	<b>\$132,831.58</b>	<b>\$169,551.42</b>	<b>\$302,583.00</b>	

The average total road tax rate for the entire county this year was \$9.76 per \$1000 valuation.



ROAD TAX ANALYSIS FOR YEAR 1930

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax per \$1000 Value
Almena	727,988	3,500.00	3,203.93	6,703.93	9.21
Antwerp	2,114,631	6,096.48	11,538.60	17,635.08	8.34
Arlington	1,383,329	5,000.00	13,446.02	18,446.02	13.33
Bangor	2,133,701	8,000.00	11,602.32	19,602.32	9.18
Bloomington	1,563,922	8,128.72	6,773.09	14,901.81	9.52
Columbia	945,961	4,000.00	10,492.38	14,492.38	15.32
Covert	1,197,721	6,600.00	4,159.73	10,759.73	8.98
Decatur	2,003,907	10,225.04	8,195.03	18,420.07	9.14
Geneva	1,046,571	3,433.80	12,214.34	15,648.14	14.96
Hamilton	943,995	2,000.00	8,790.00	10,790.00	11.44
Hartford	2,311,010	8,496.50	11,113.38	19,609.88	8.48
Keeler	1,391,256	4,573.95	9,655.77	14,229.72	10.23
Lawrence	1,496,517	7,000.00	9,026.17	16,026.17	10.71
Paw Paw	2,452,302	13,025.26	8,786.81	21,822.07	8.89
Pine Grove	1,145,242	1,856.70	4,212.03	6,068.73	5.21
Porter	1,158,749	8,500.00	7,128.79	15,628.79	13.50
South Haven	980,203	13,000.00	5,627.58	18,637.58	19.01
Waverly	1,026,628	4,550.00	4,541.39	9,091.39	8.76
<b>TOTAL</b>	<b>\$31,000,000</b>	<b>\$117,986.45</b>	<b>\$150,517.36</b>	<b>\$268,513.81</b>	

The average total road tax rate for the entire county this year was \$8.66 per \$1000 valuation.

ROAD TAX ANALYSIS FOR YEAR 1931

Township	Equalized Valuation	Total Township Road Tax	Total Co. Road Tax	Total Rd. Tax	Total Tax Per \$1000 Value
Almena	660,693	1,500.00	3,095.19	4,595.19	6.95
Antwerp	2,010,034	4,825.99	7,615.31	12,441.30	6.19
Arlington	1,240,868	2,500.00	11,229.78	13,729.78	11.06
Bangor	1,916,149	5,000.00	8,541.80	13,541.80	7.06
Bloomington	1,399,081	5,822.79	4,481.29	10,304.08	7.36
Columbia	862,027	2,342.10	7,263.27	9,605.37	11.14
Covert	1,089,736	3,700.00	2,484.61	6,184.61	5.67
Decatur	1,774,223	9,360.00	4,045.23	13,405.23	7.55
Geneva	951,762	2,600.00	11,151.36	13,751.36	14.44
Hamilton	839,363	1,600.00	7,166.73	8,766.73	10.44
Hartford	2,133,461	8,647.89	13,558.57	22,206.46	10.40
Keeler	1,262,221	4,195.72	6,939.18	11,134.90	8.82
Lawrence	1,350,632	4,000.00	8,074.74	12,074.74	8.94
Paw Paw	2,213,060	9,192.87	6,614.06	15,806.93	7.14
Fine Grove	1,037,257	2,079.51	2,364.65	4,444.16	4.28
Porter	1,050,303	6,000.00	4,977.18	10,977.18	10.45
South Haven	884,821	13,000.00	7,028.04	20,028.04	26.62
Waverly	914,874	1,250.00	3,102.59	4,352.59	4.75
TOTAL	\$28,000,000	\$87,616.87	\$119,733.58	\$207,530.45	

The average total road tax rate for the entire county this year was \$7.41 per \$1000 valuation.

Average Annual Road Tax Rate  
of Townships

For Each \$1000 Valuation

(These are computed for each township for the  
period 1916 to 1931 inclusive, as per data  
compiled in the tax analysis sheets, Pages  
45 to 60.)

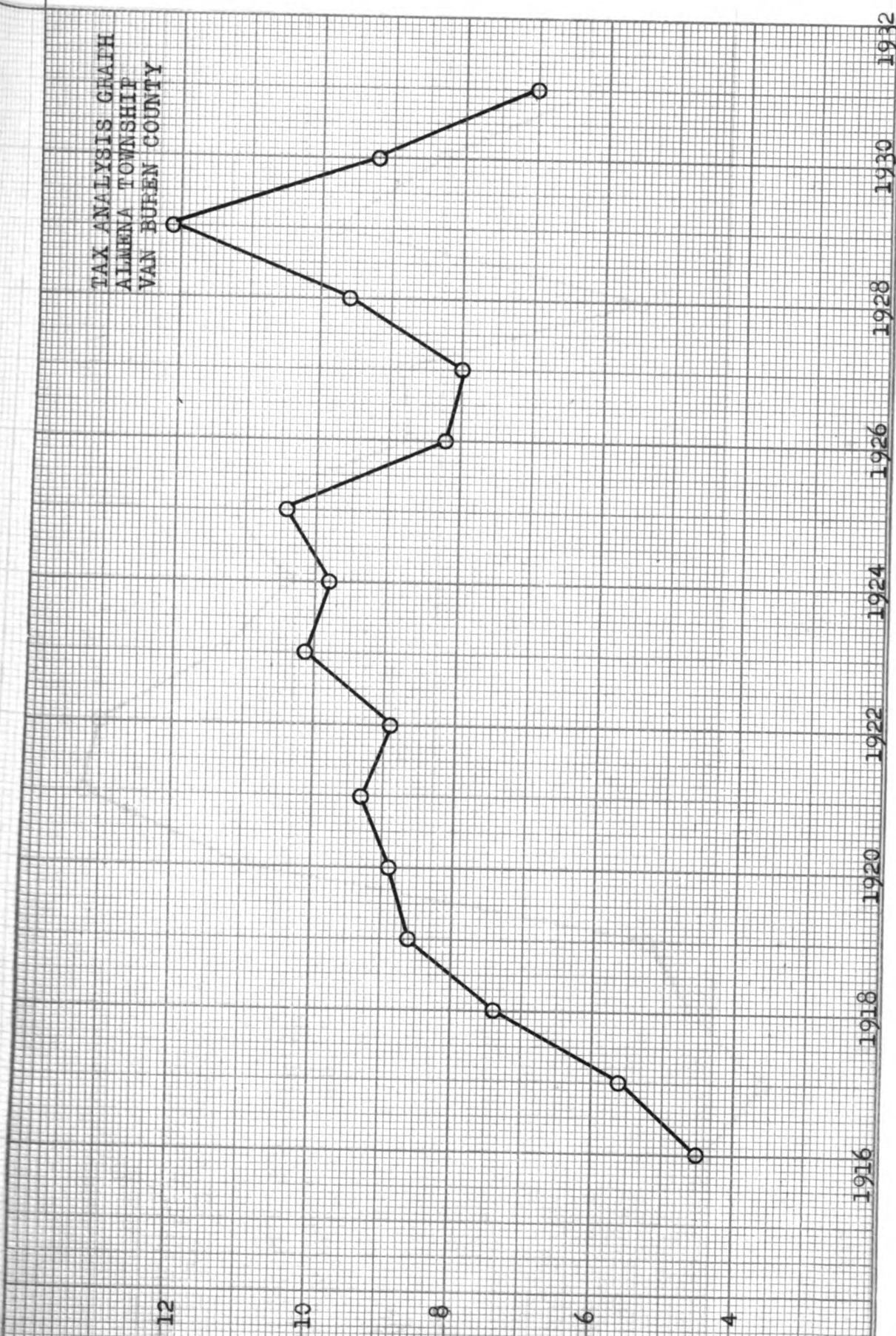
Township	Average Annual Tax Rate For \$1000 Valuation
Almena	\$ 8.59
Antwerp	8.45
Arlington	11.43
Bangor	8.64
Bloomington	9.86
Columbia	13.13
Covert	12.30
Decatur	9.13
Geneva	13.74
Hamilton	9.76
Hartford	8.72
Keeler	10.62
Lawrence	10.45
Paw Paw	8.67
Pine Grove	7.96
Porter	12.61
South Haven	15.42
Waverly	9.25





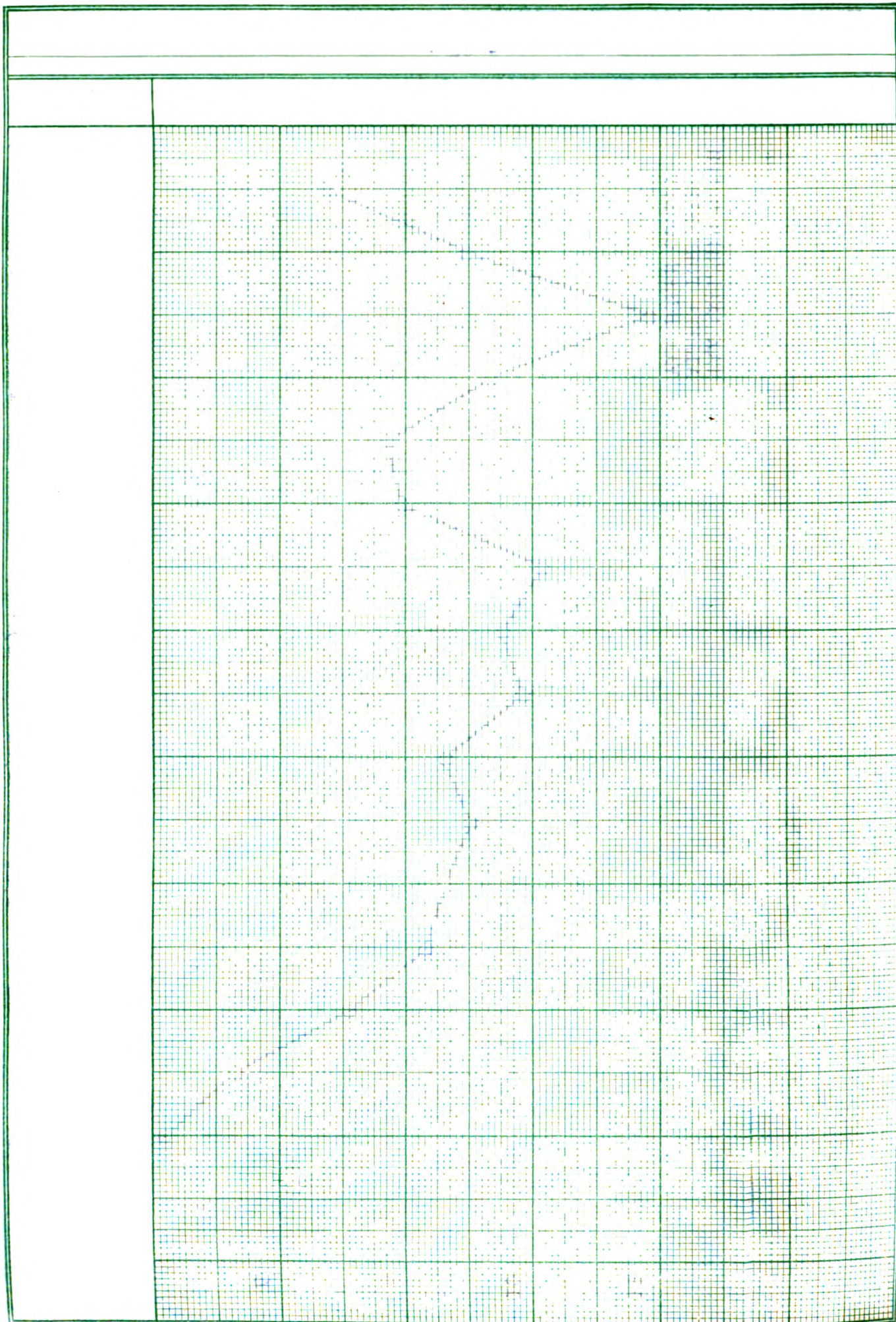
TAX ANALYSIS GRAFH  
ALMENA TOWNSHIP  
VAN BUREN COUNTY

TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION



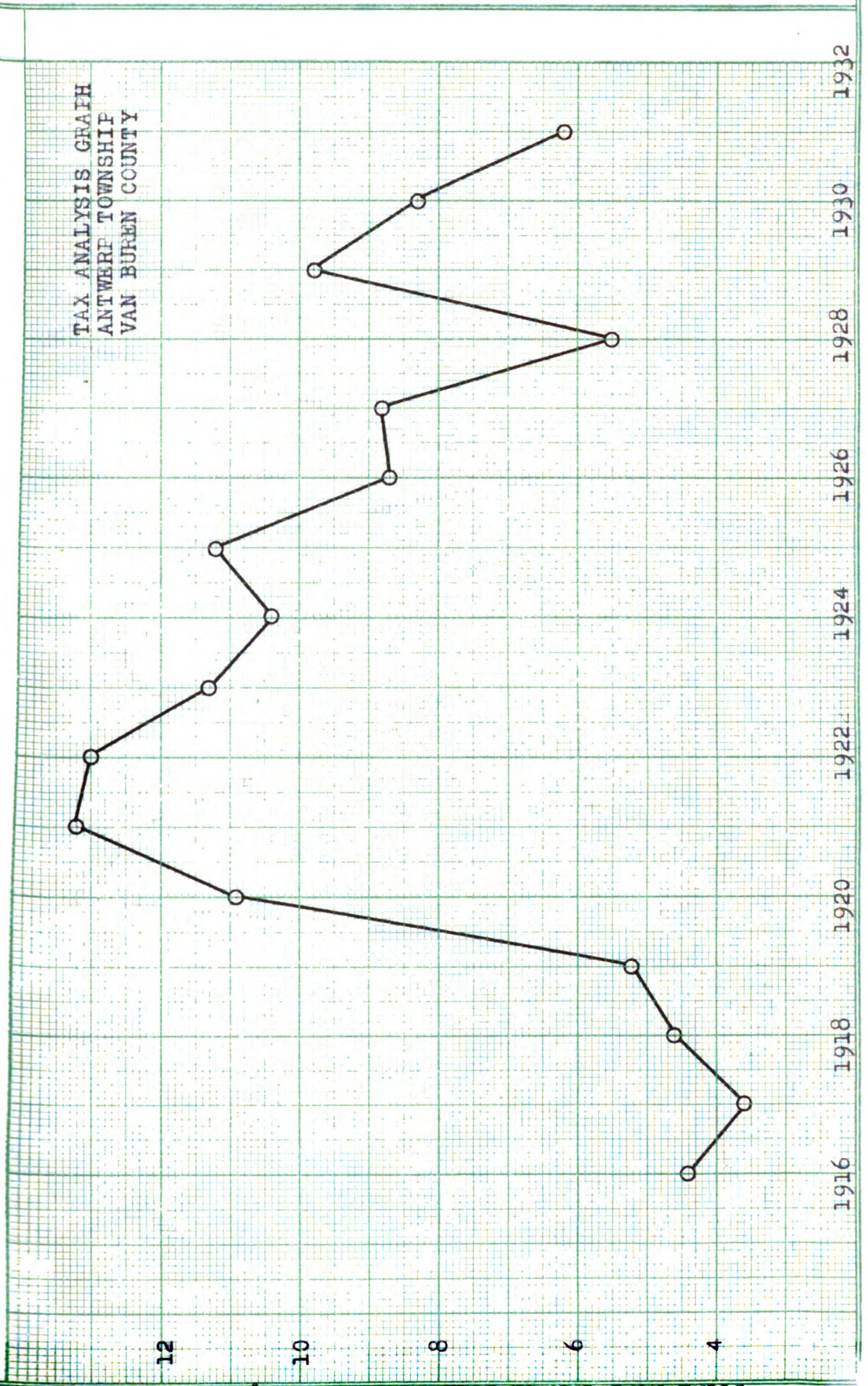
- Year -







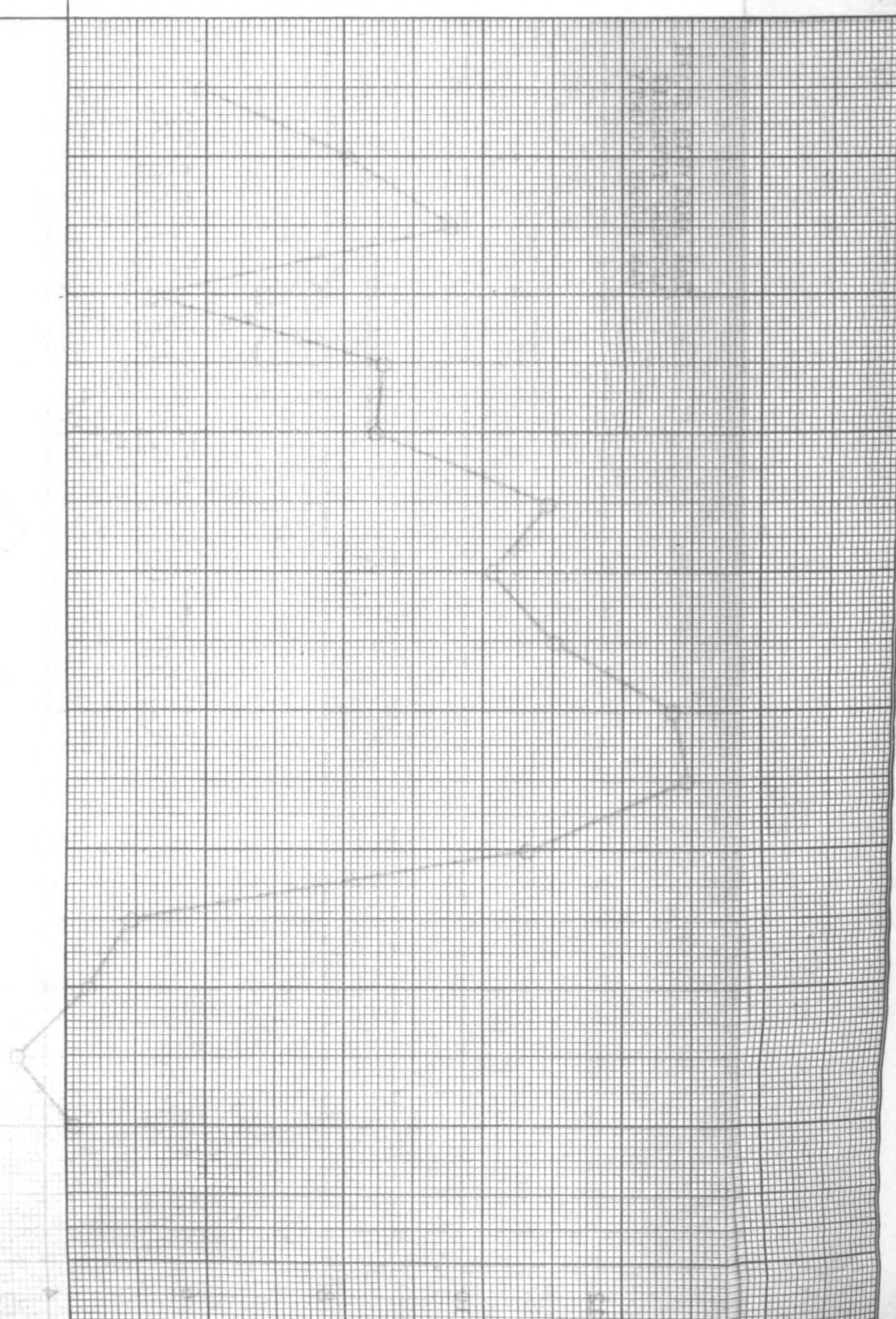
TAX ANALYSIS GRAFH  
ANTWERP TOWNSHIP  
VAN BUREN COUNTY



- Year -

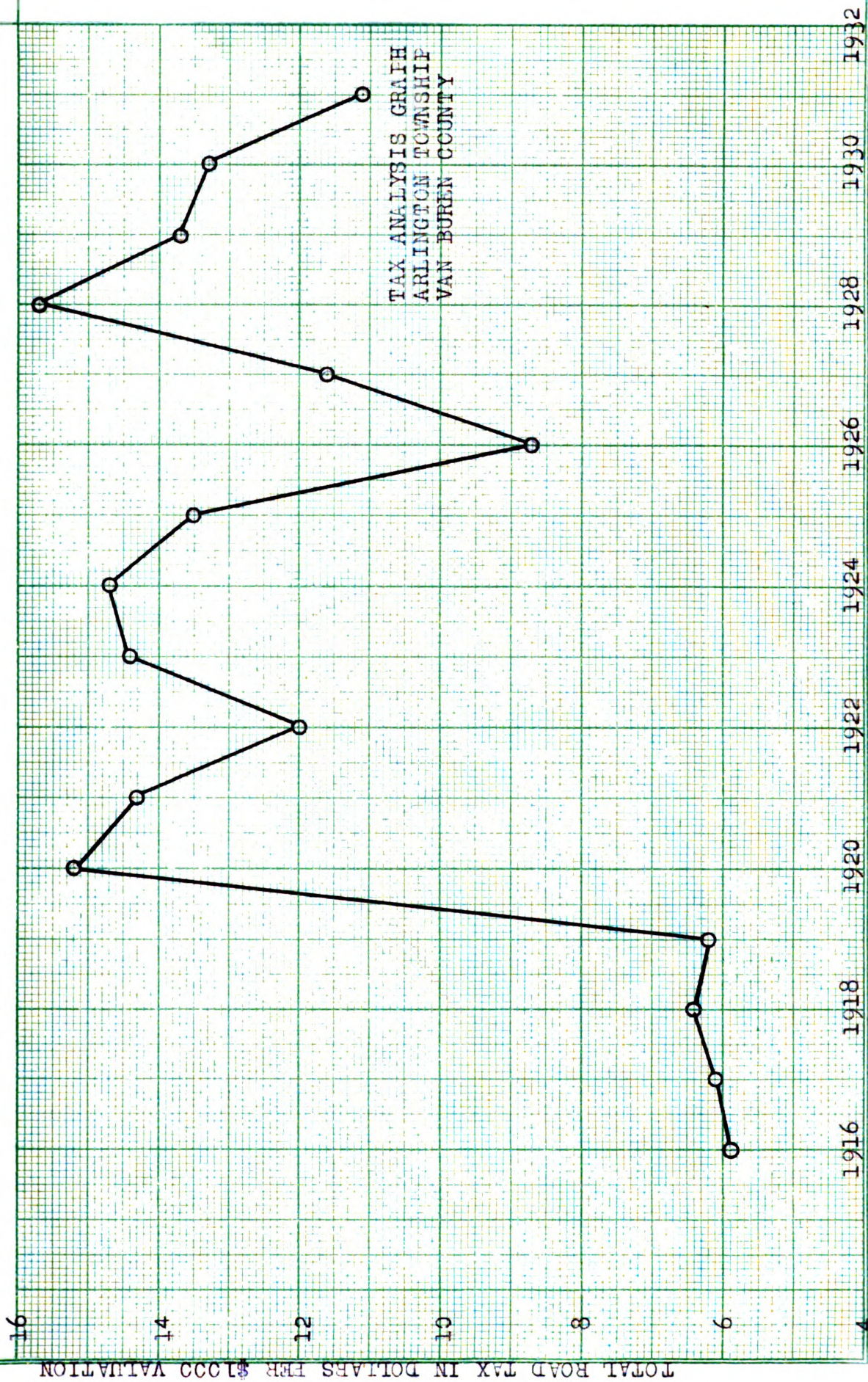


1000  
 0900  
 0800  
 0700  
 0600  
 0500  
 0400  
 0300  
 0200  
 0100  
 0000

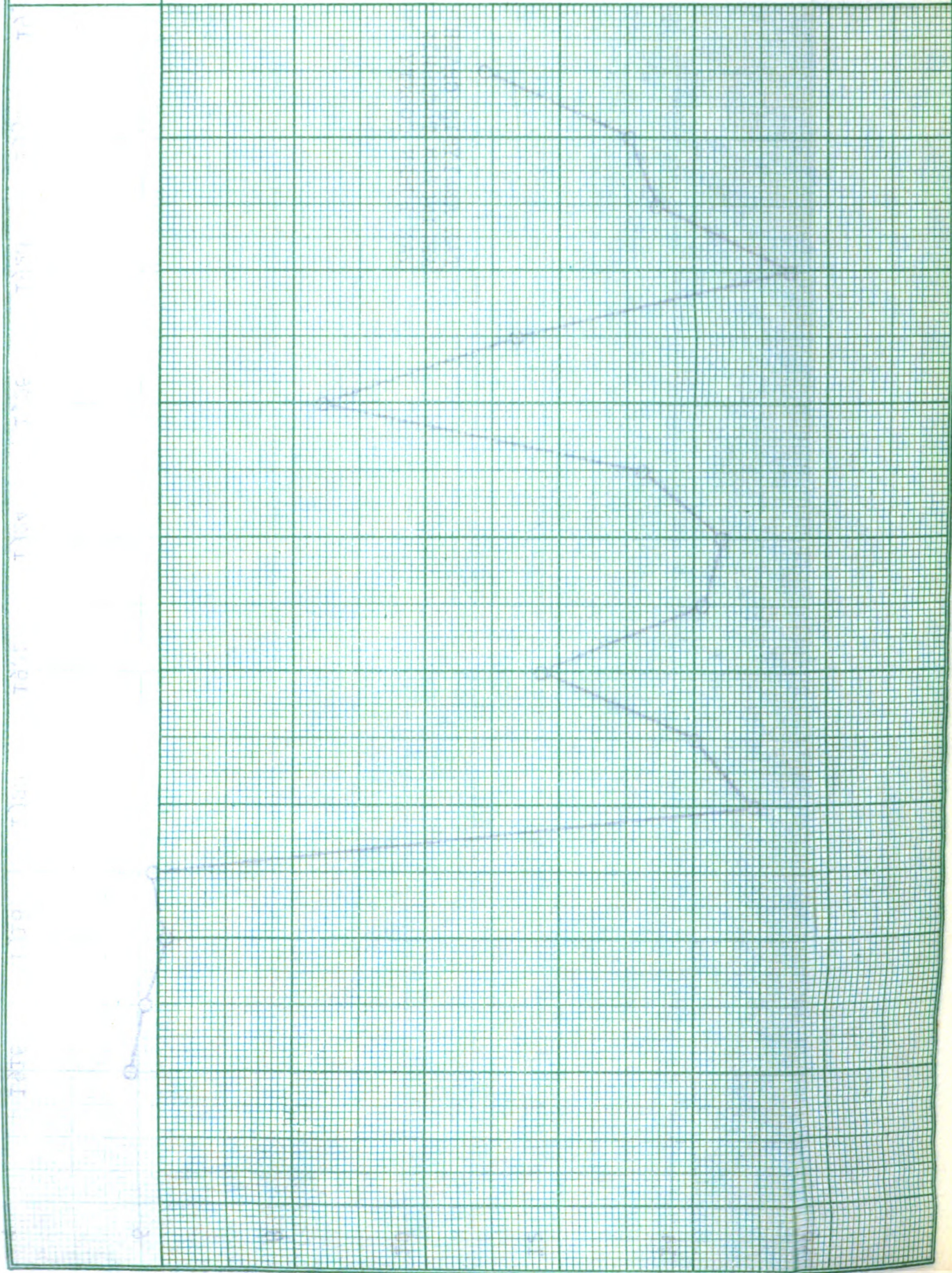


NOTES: 1. 1000 HOURS IN 1000 HOURS PER HOUR 1000 HOURS



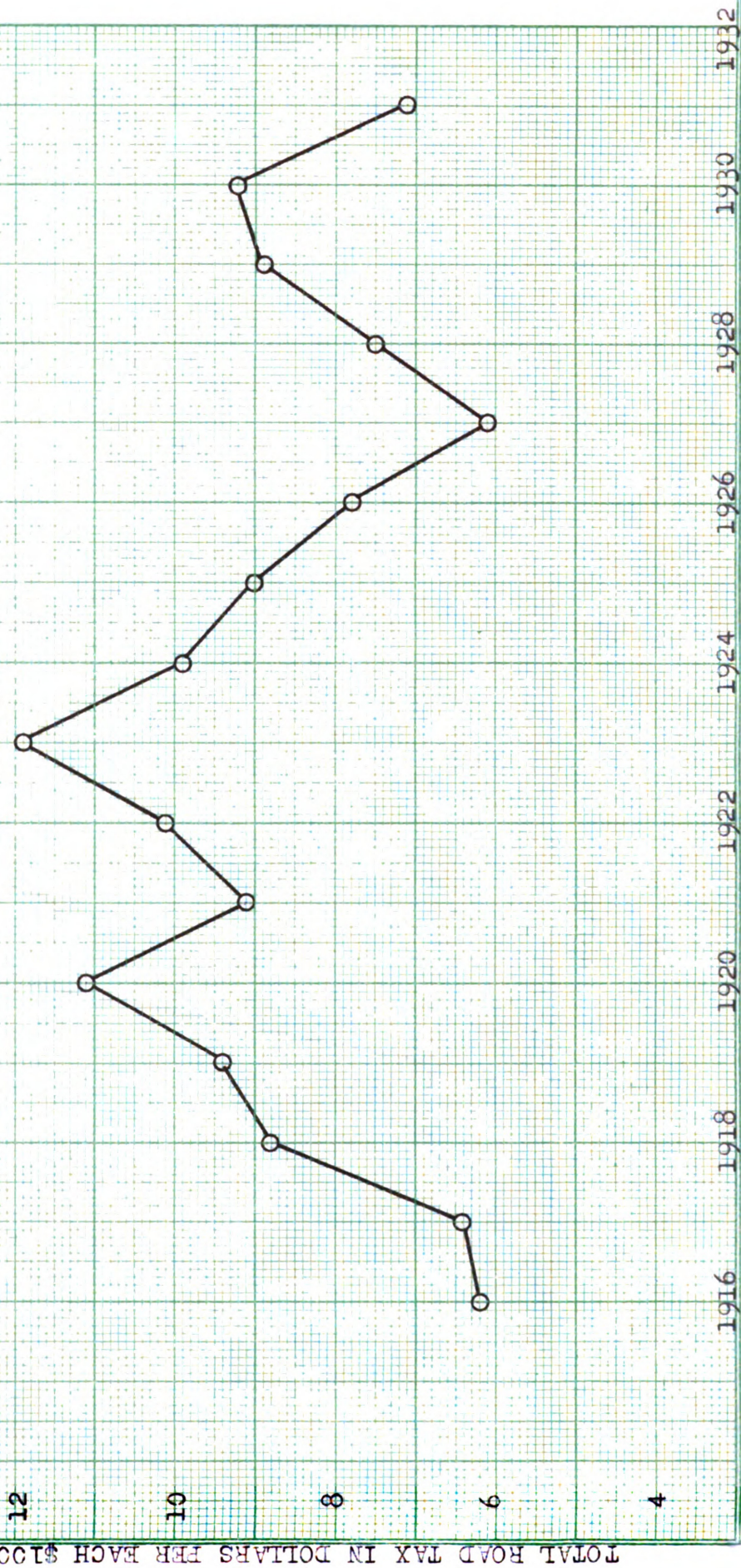








TAX ANALYSIS GRAPH  
BANGOR TOWNSHIP  
VAN BUREN COUNTY

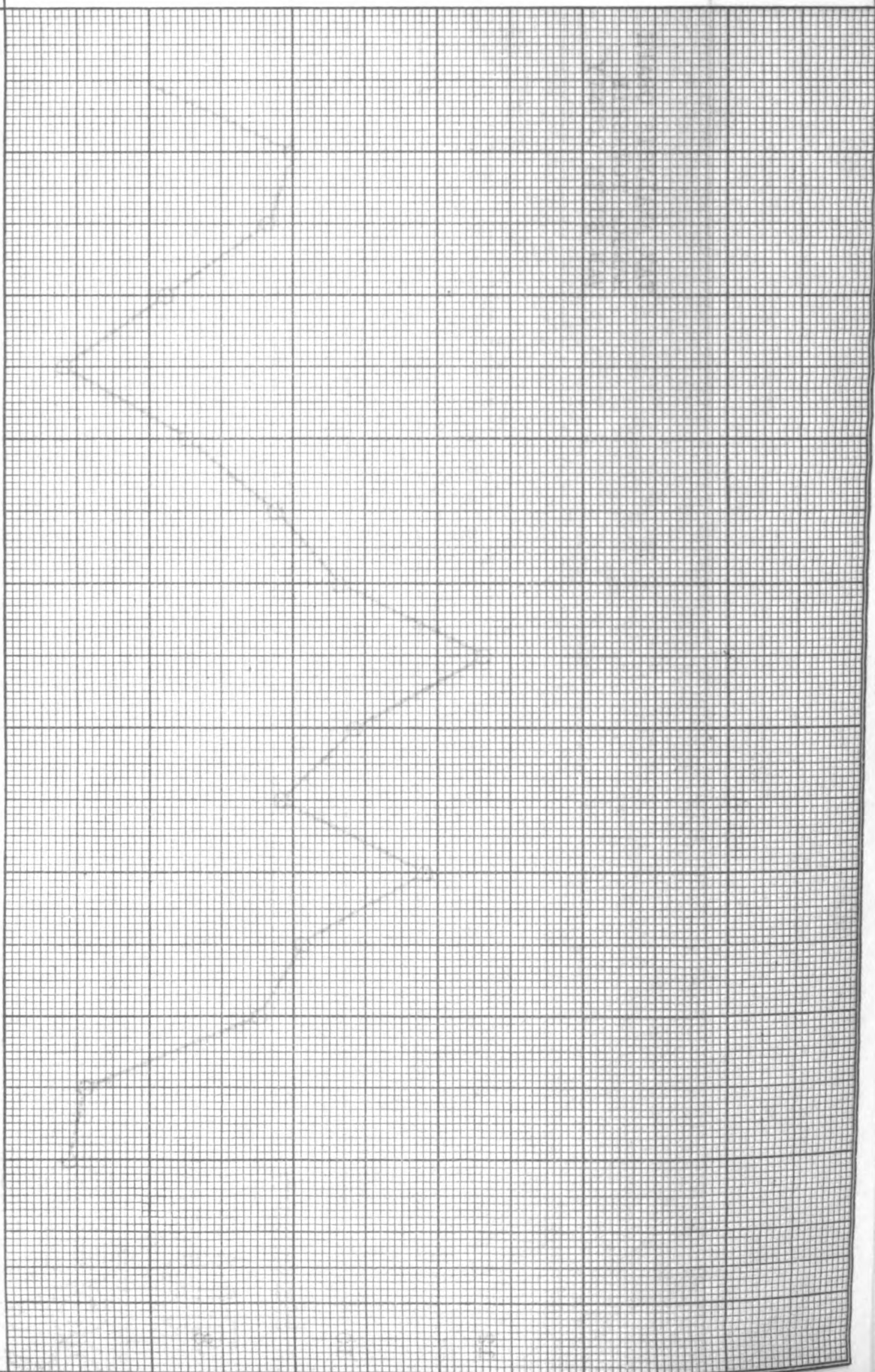


- Year -

TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION

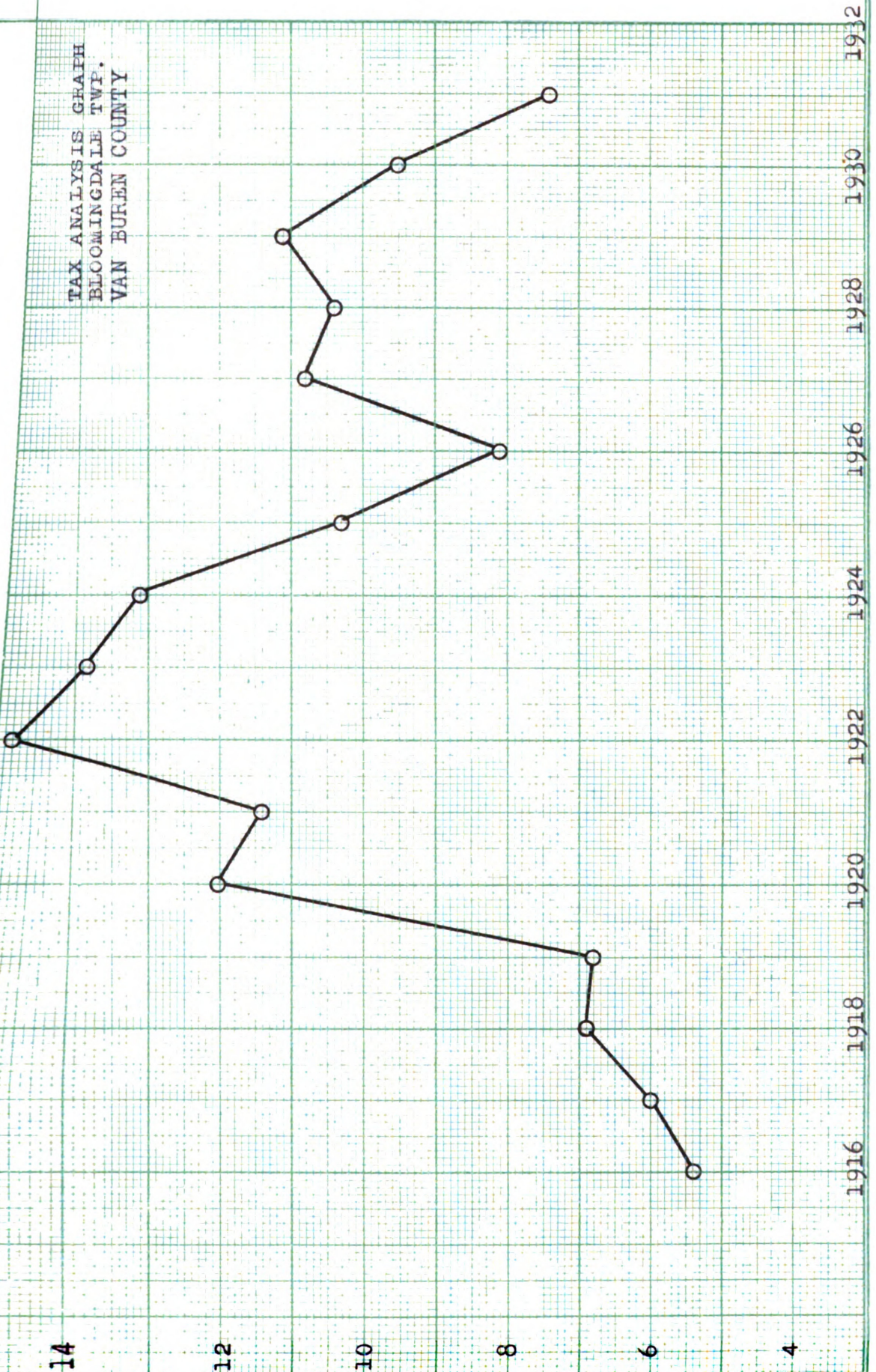


200 100 0 100 200 300 400 500 600 700 800 900 1000





TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION



- Year -





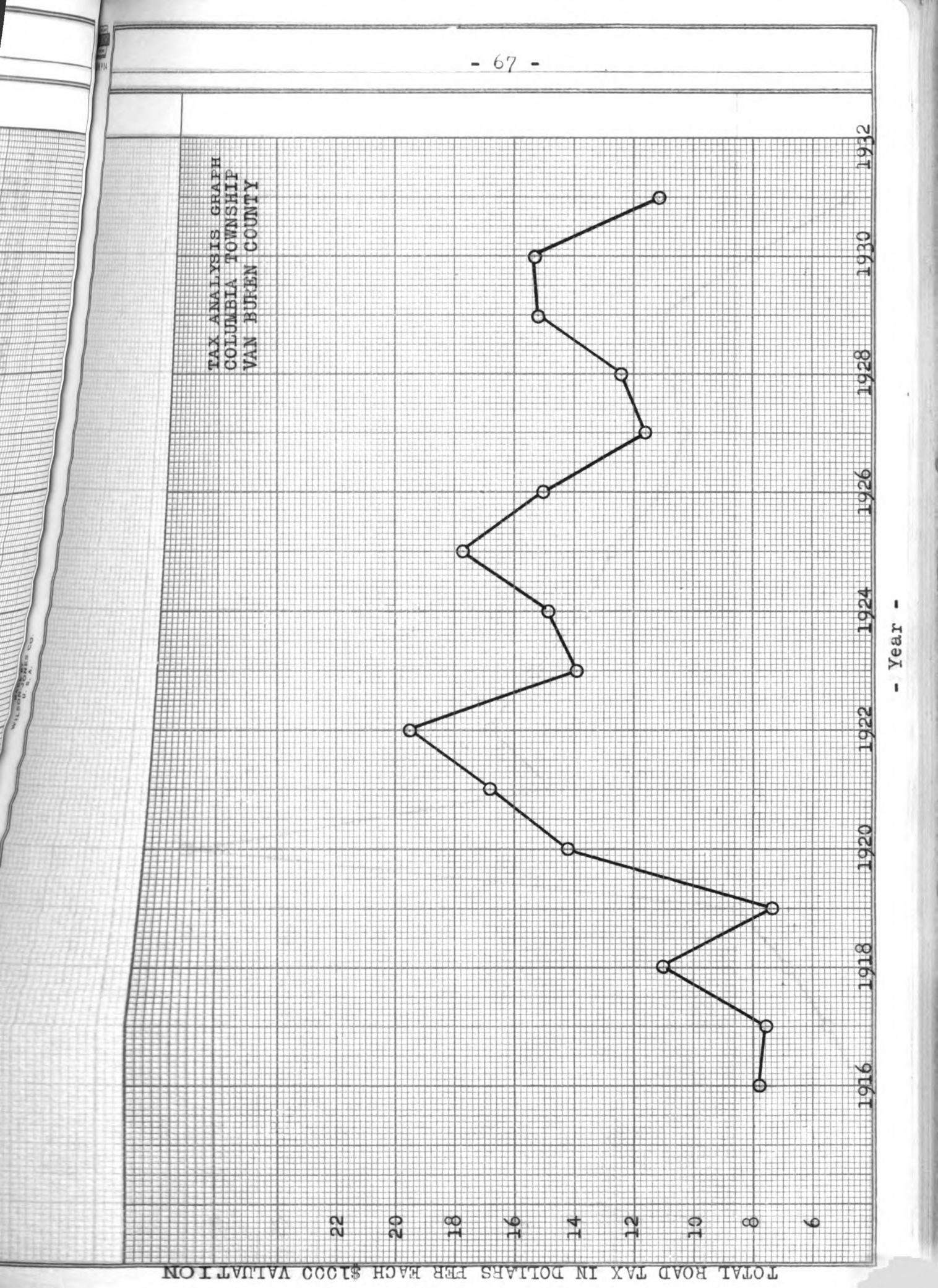
TAX ANALYSIS GRAPH  
COLUMBIA TOWNSHIP  
VAN BUREN COUNTY

TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION

22  
20  
18  
16  
14  
12  
10  
8  
6

1916 1918 1920 1922 1924 1926 1928 1930 1932

- Year -



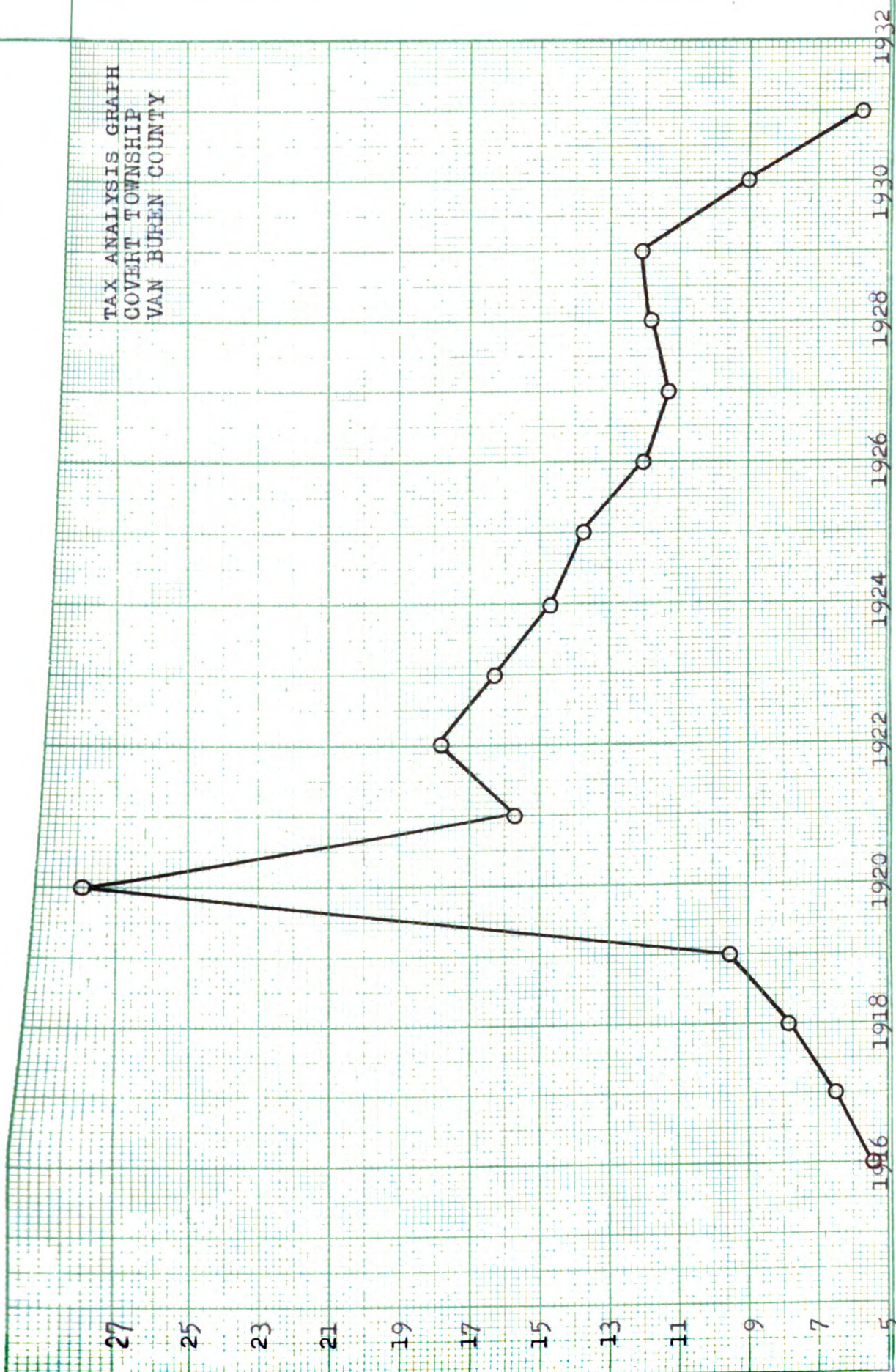




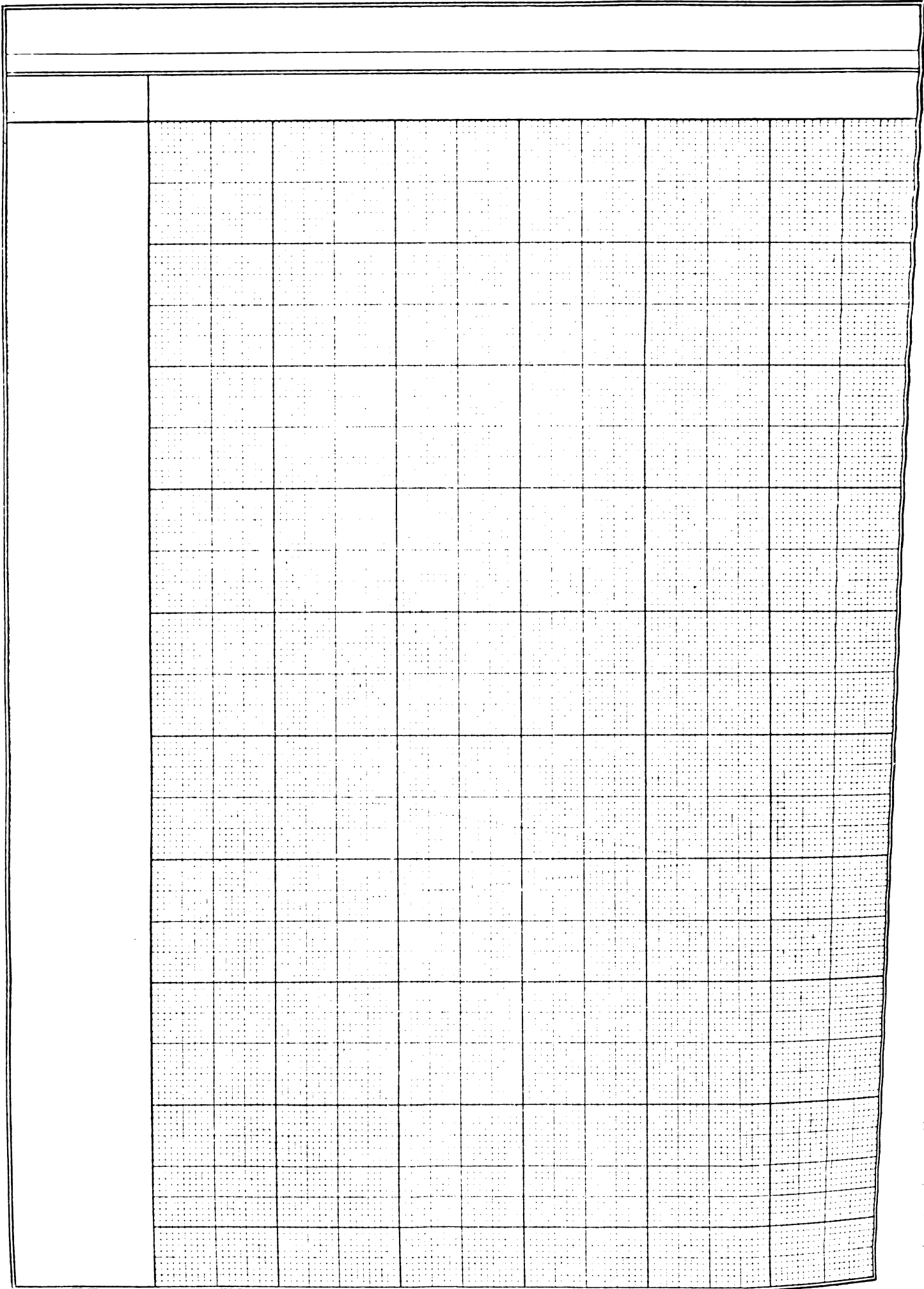


TAX ANALYSIS GRAPH  
COVERT TOWNSHIP  
VAN BUREN COUNTY

TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION



- year -





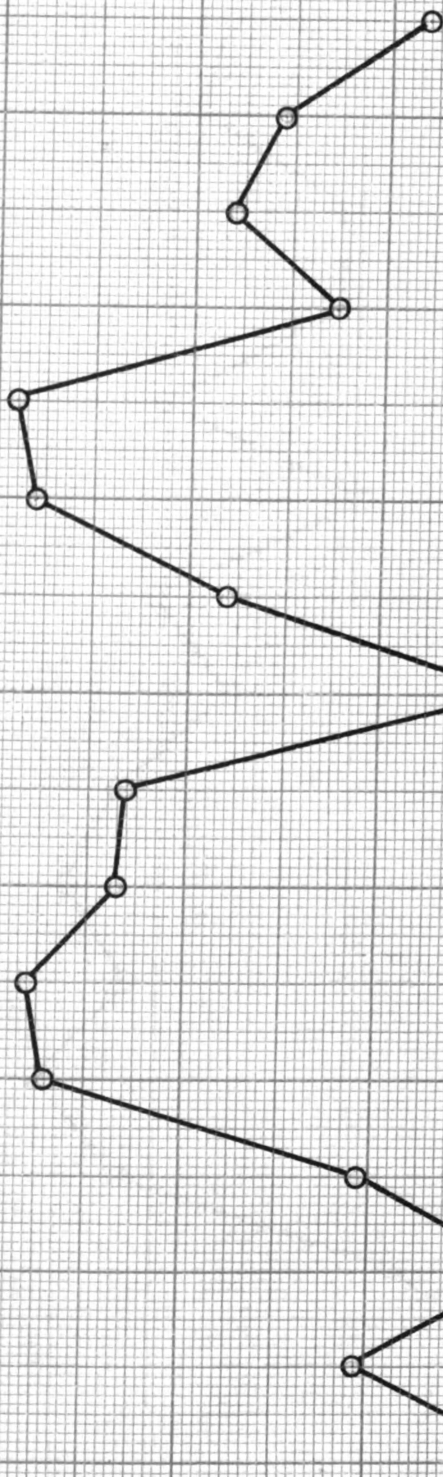
TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION

TAX ANALYSIS GRAPH  
DECATUR TOWNSHIP  
VAN BUREN COUNTY

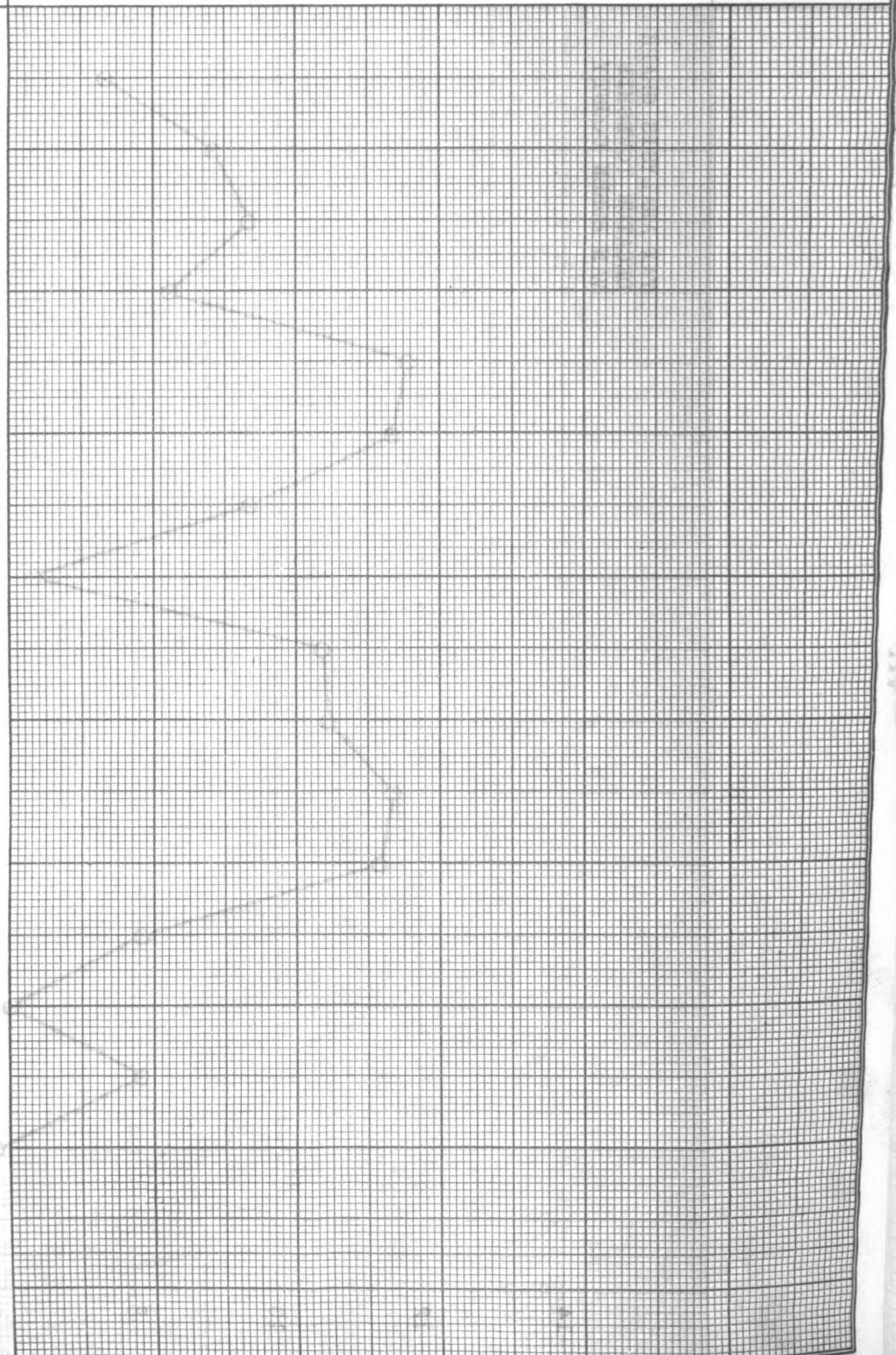
14  
12  
10  
8  
6

1916 1918 1920 1922 1924 1926 1928 1930 1932

- Year -



8000 7500 7000 6500 6000 5500 5000 4500 4000 3500 3000 2500 2000 1500 1000 500 0



NOTATION: THE DATA IS NOT TO BE USED FOR ANY OTHER PURPOSE



TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION

TAX ANALYSIS GRAPH  
GENEVA TOWNSHIP  
VAN BUREN COUNTY

25

21

17

13

9

5

1916

1918

1920

1922

1924

1926

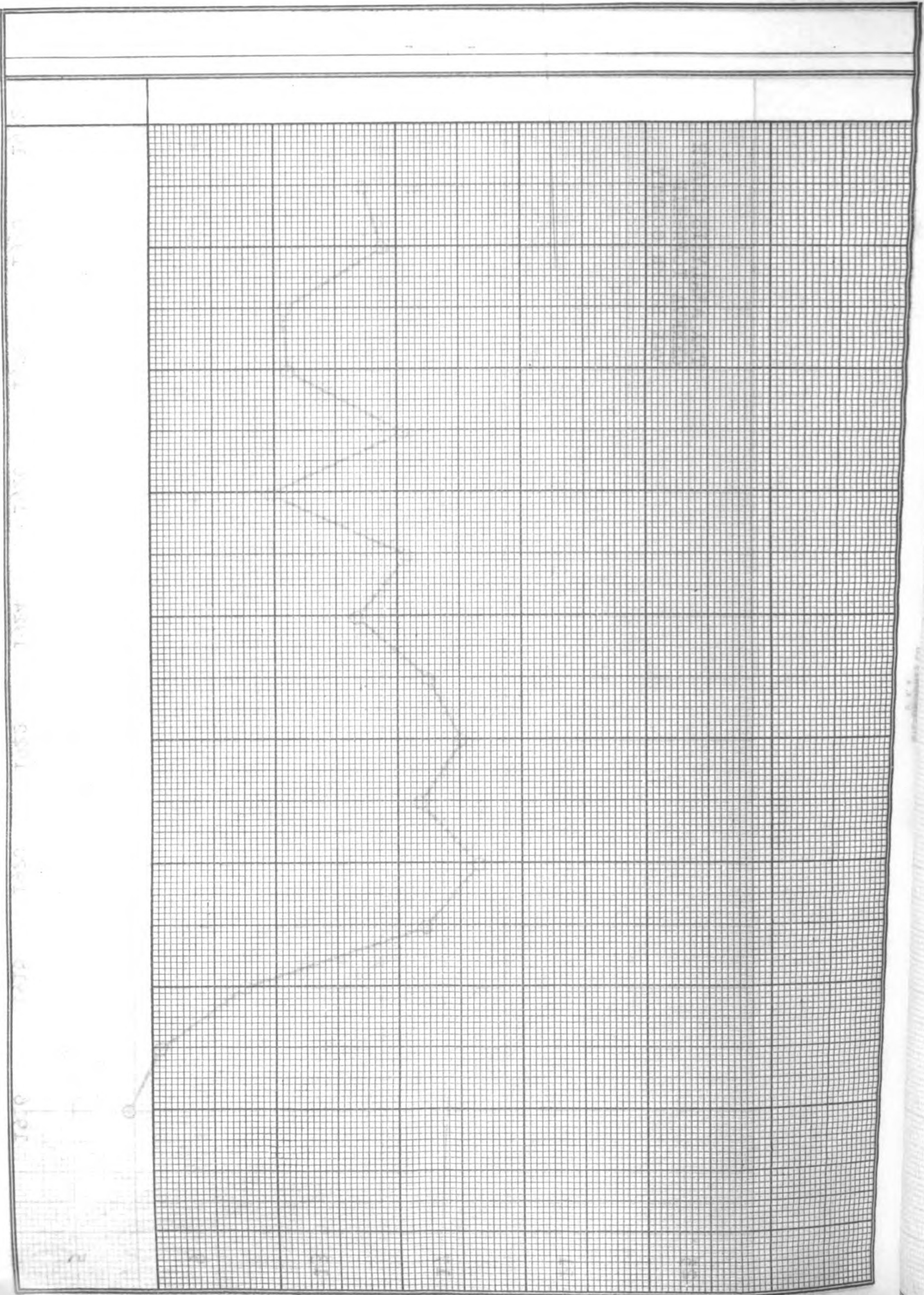
1928

1930

1932

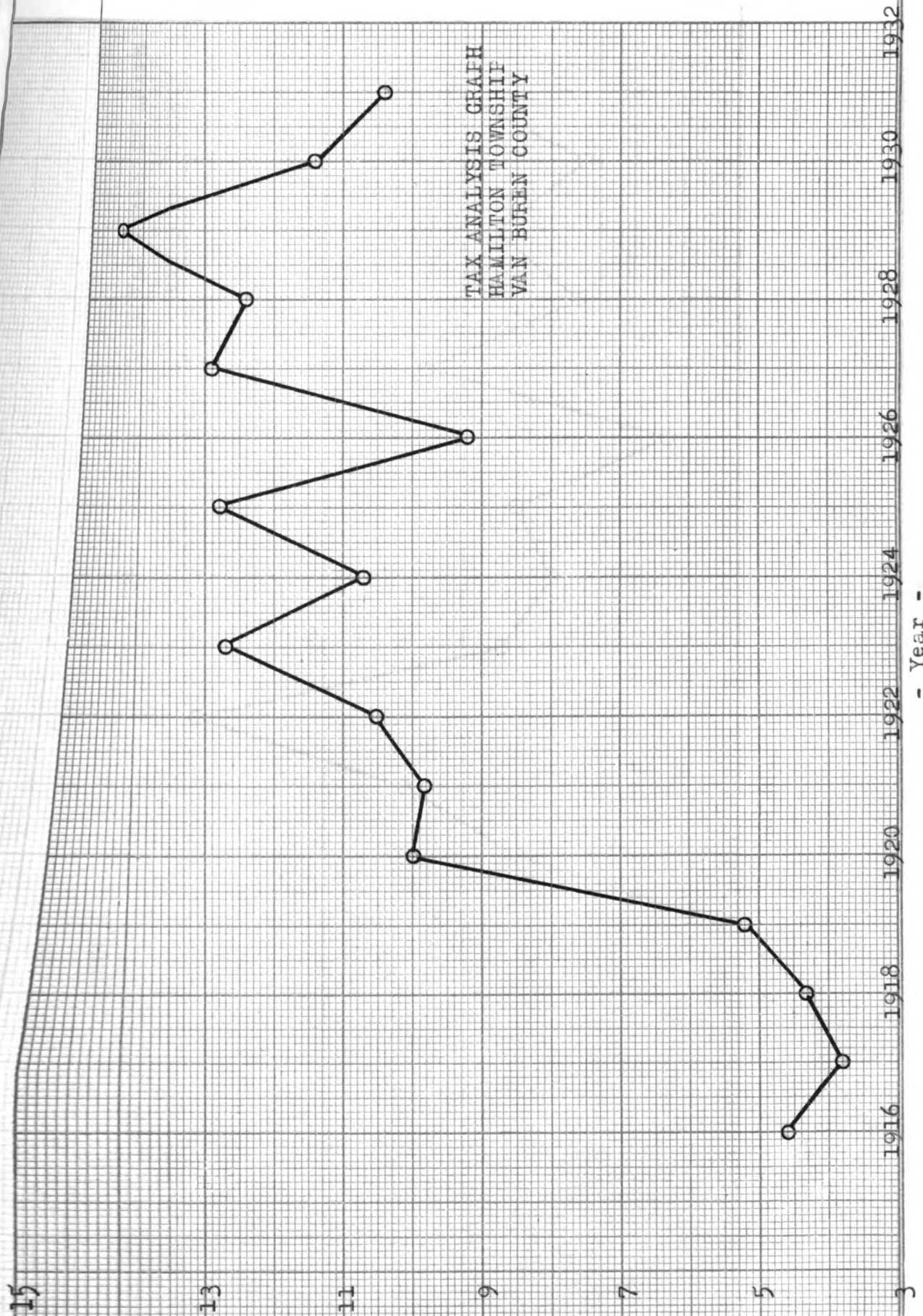
WILSON & SONS CO  
U.S.A.





NOTATION: 1000 RPM IN DISTANCE XAX DOW PLATOT

TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION



- Year -

WILSON & SONS CO.  
U.S. PAT. 1,100,000



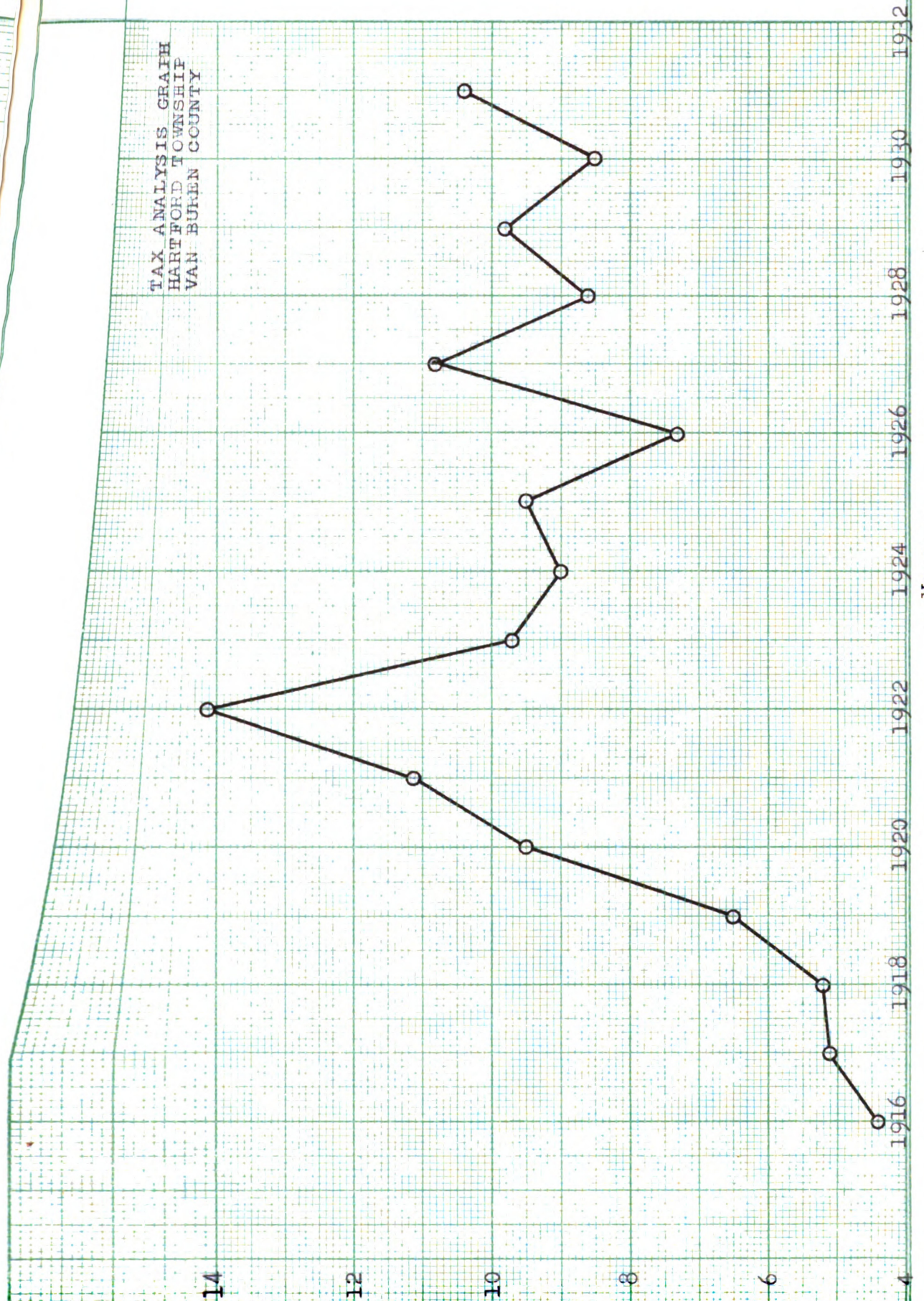




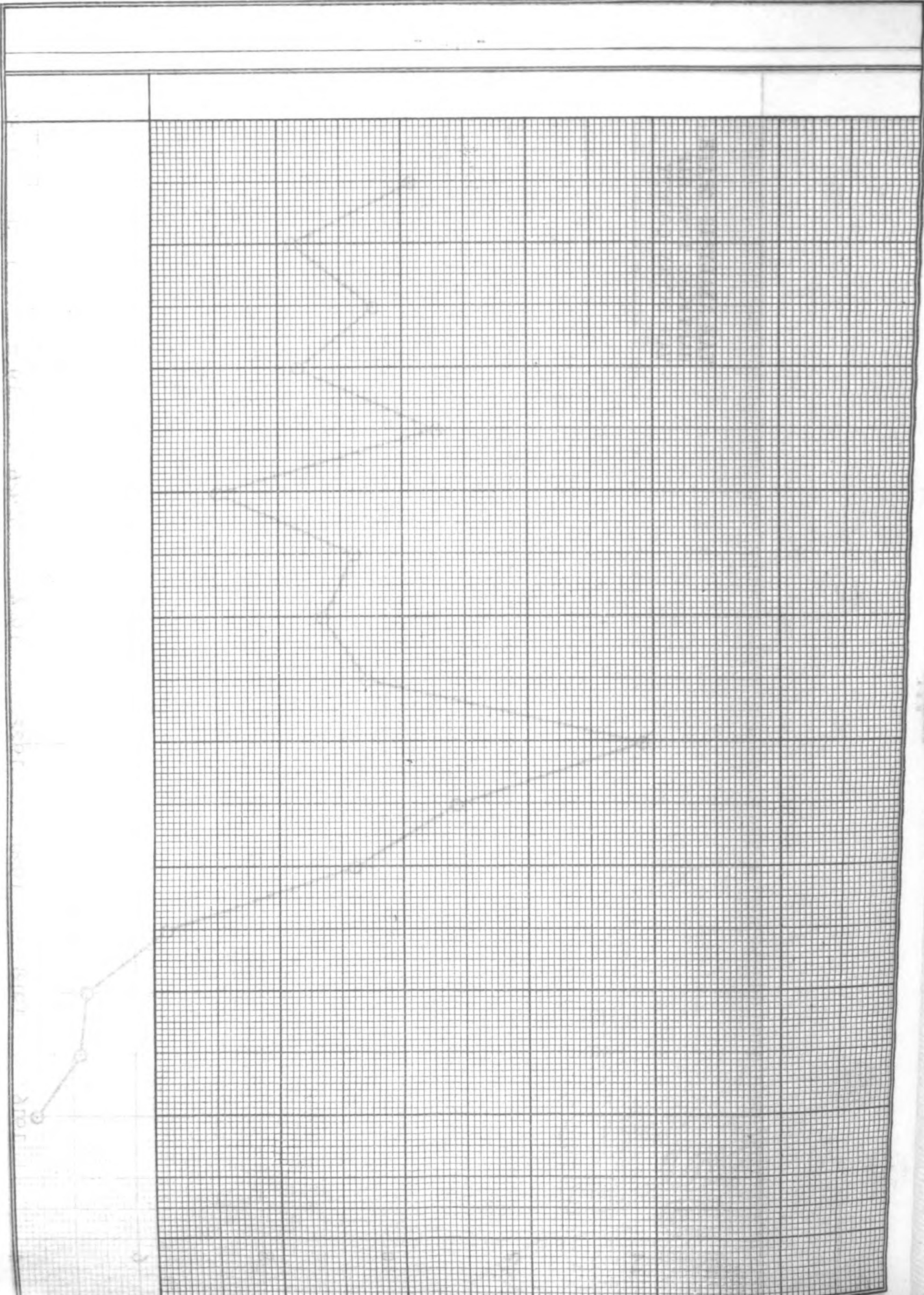
TAX ANALYSIS GRAPH  
HARTFORD TOWNSHIP  
VAN BUREN COUNTY

TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION

- Year -



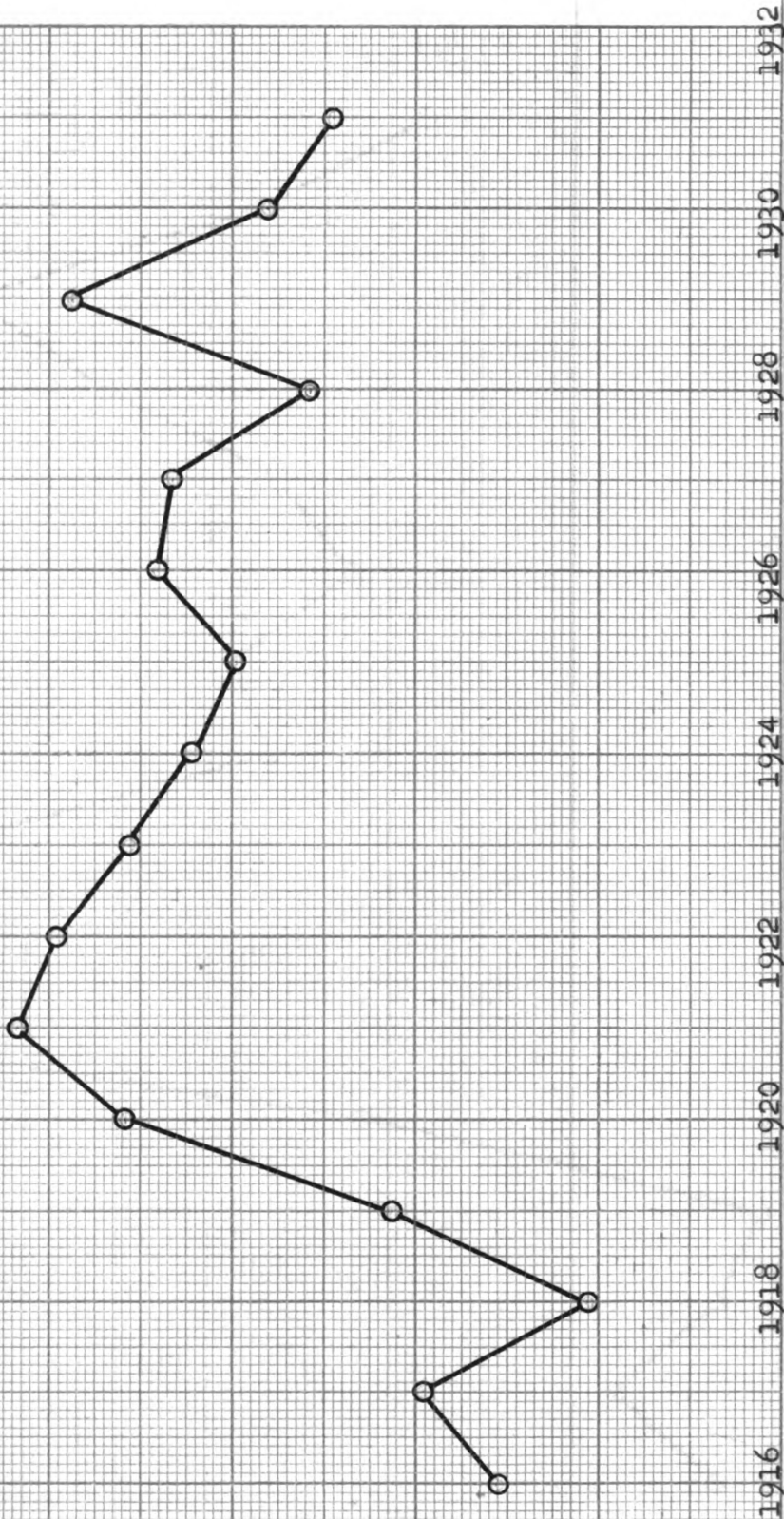




RELATIVE OCCUR. OF KAT. FAUN. J.M.T.

TAX ANALYSIS GRAPH  
KEELER TOWNSHIP  
VAN BUREN COUNTY

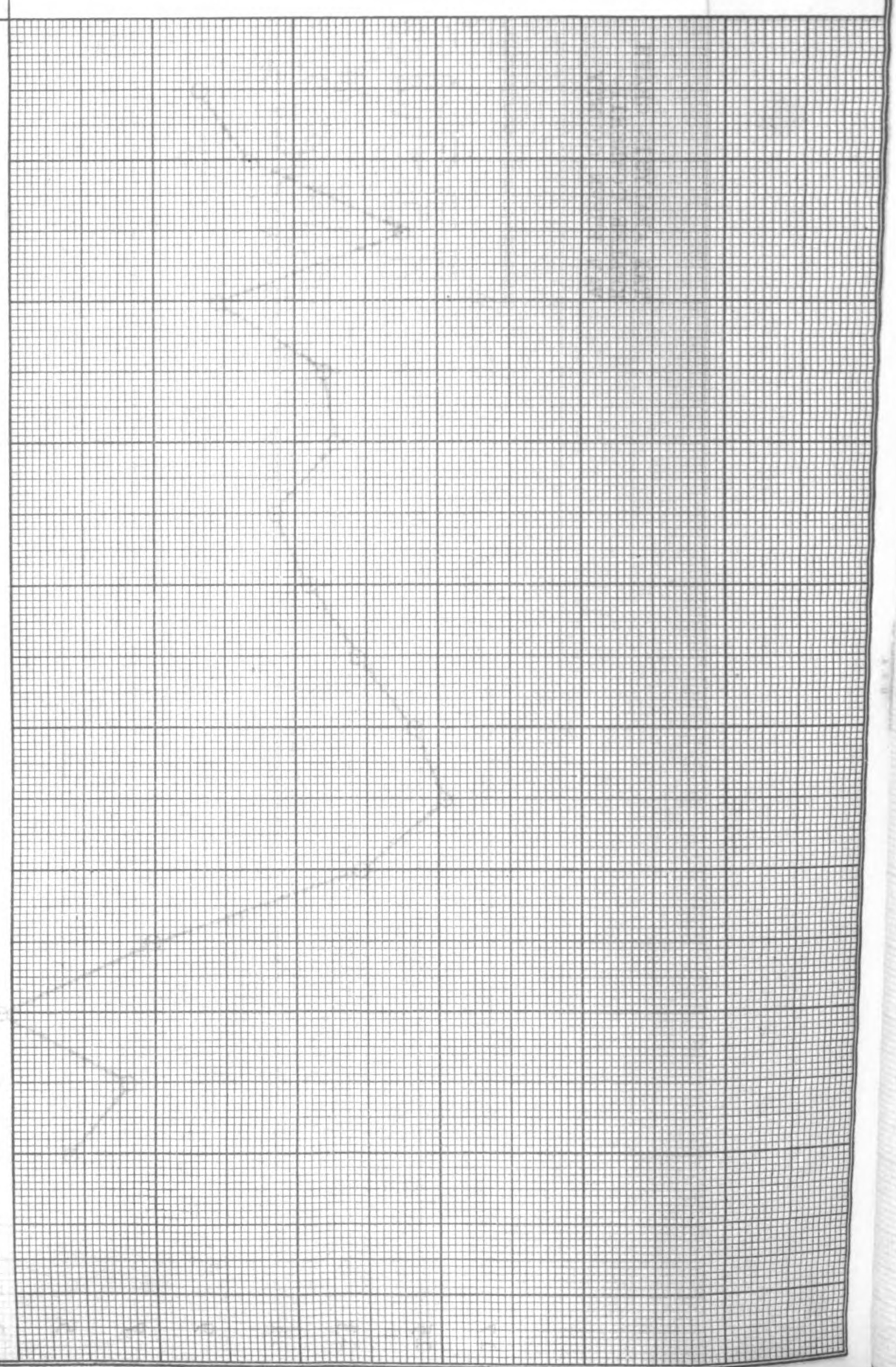
TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION



- Year -



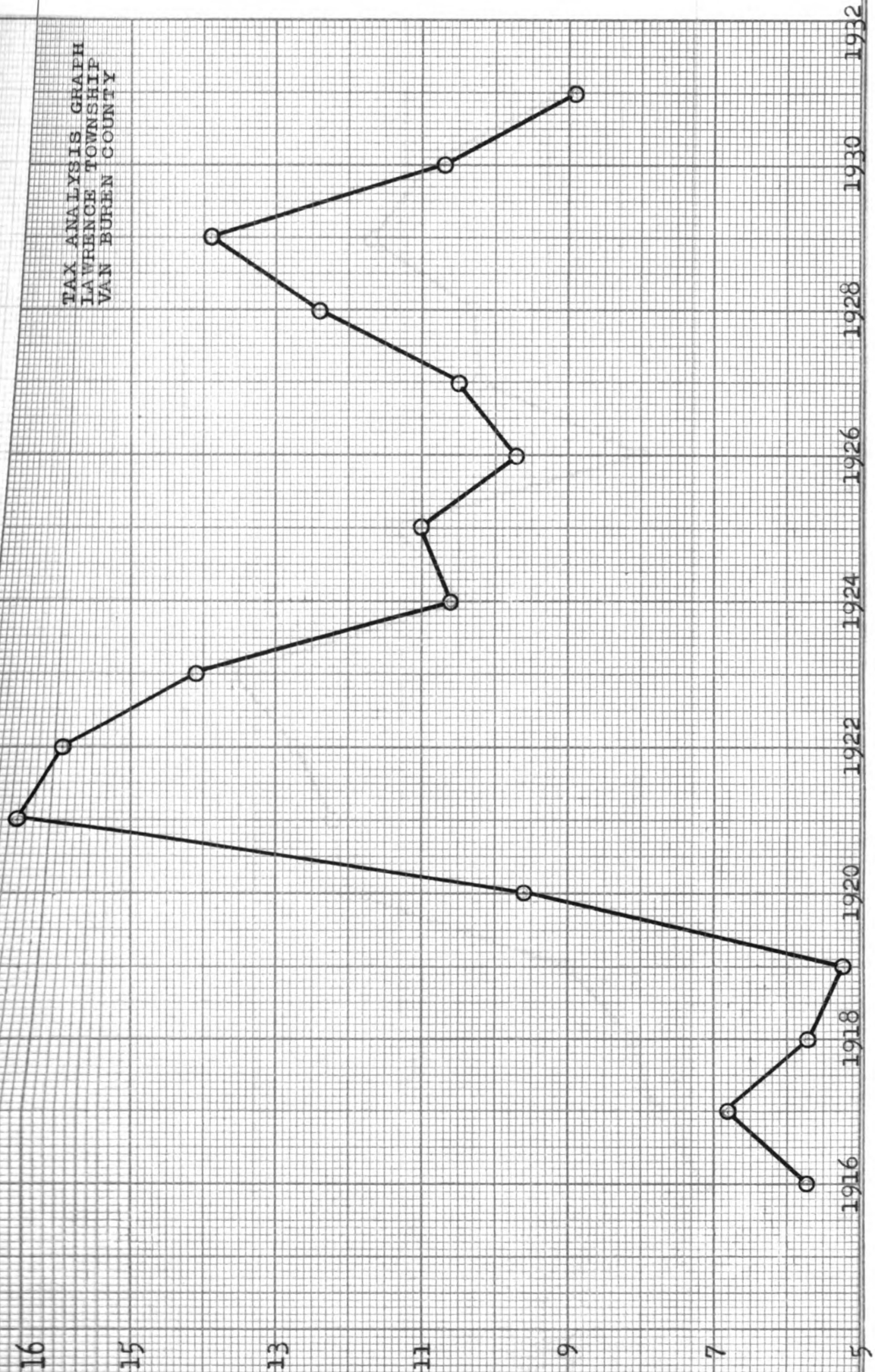
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REPRODUCED FROM THE ORIGINAL RECORDS OF THE NATIONAL BUREAU OF STANDARDS

TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION

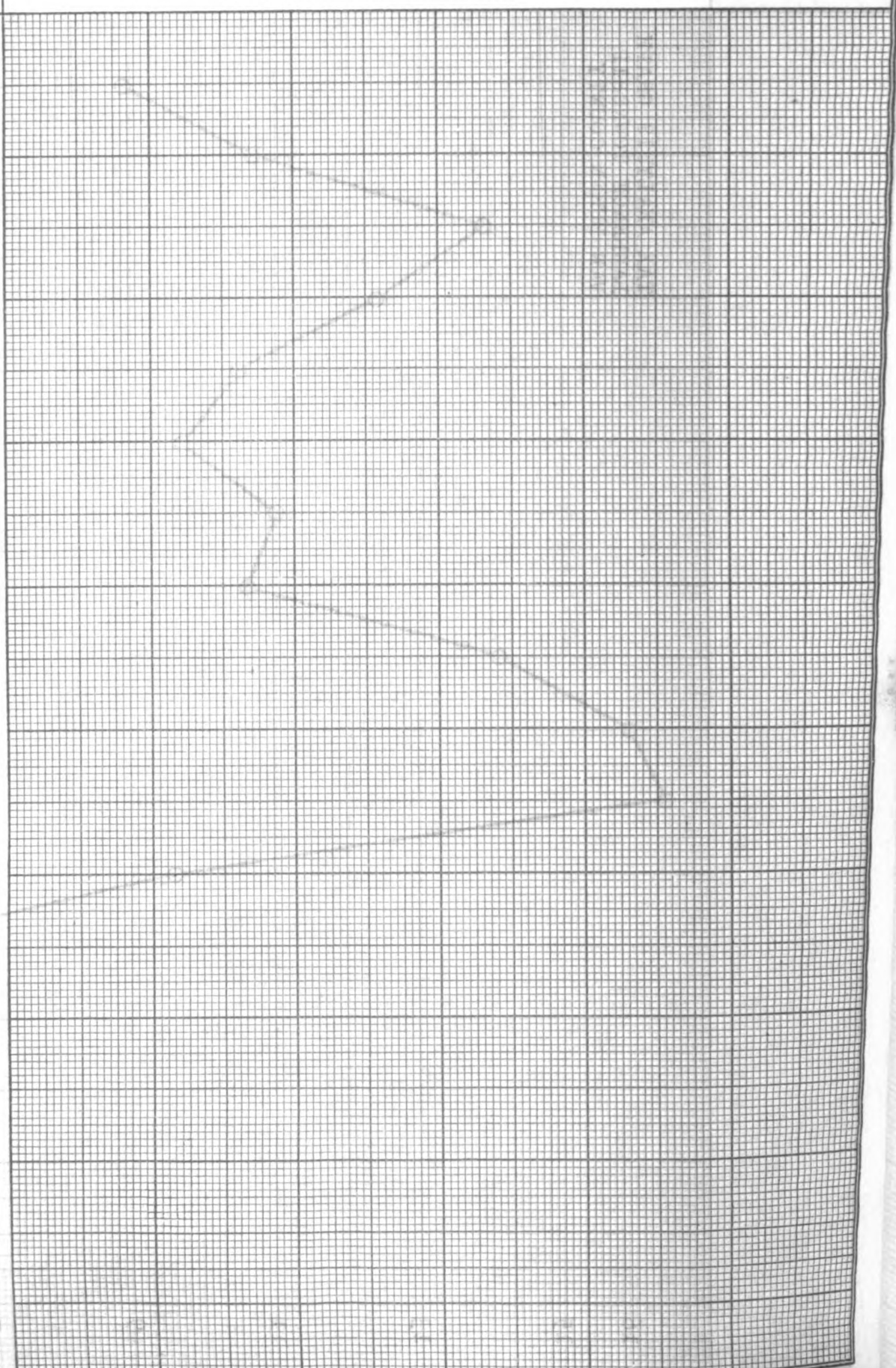
TAX ANALYSIS GRAPH  
LAWRENCE TOWNSHIP  
VAN BUREN COUNTY



- Year -

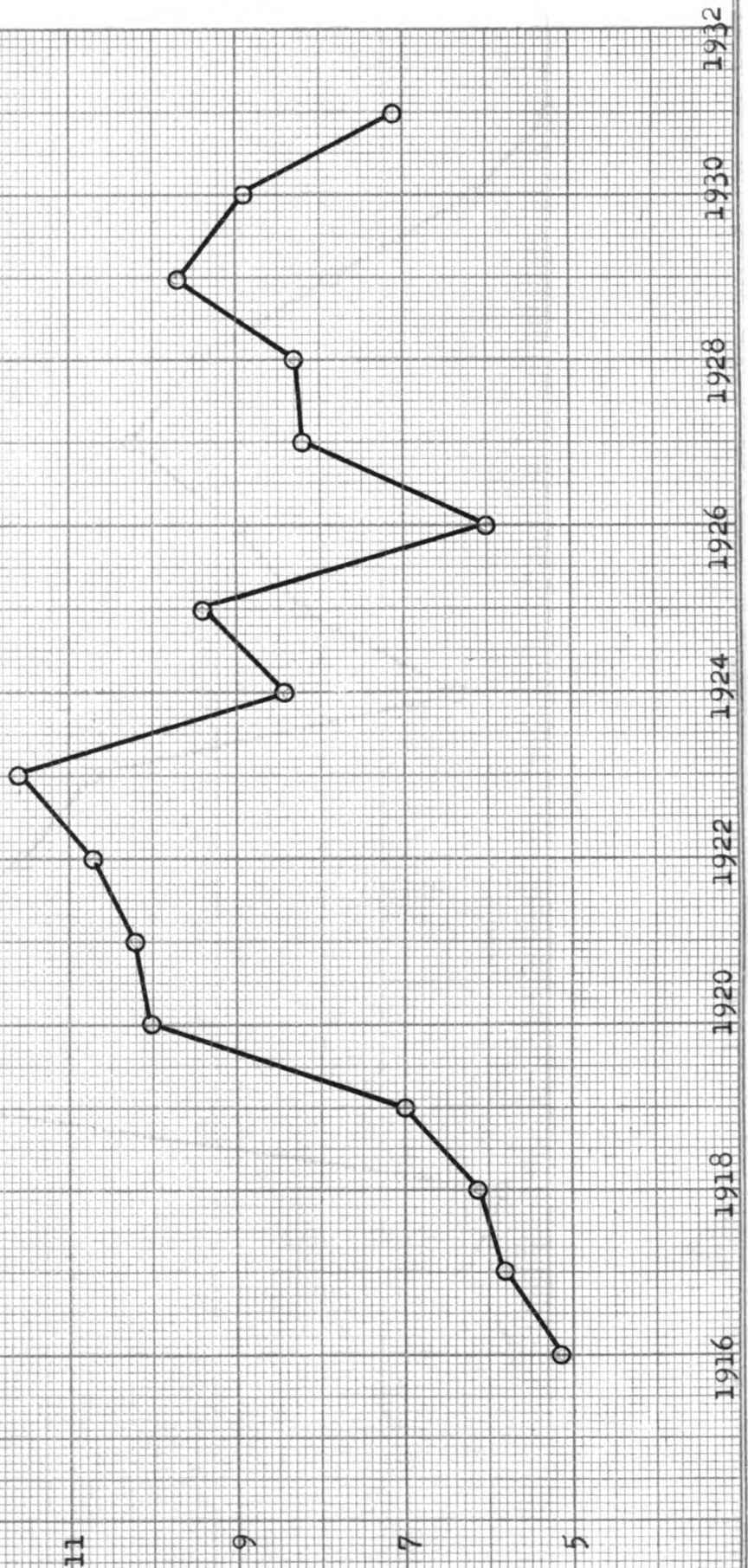


WIND SPEED  
WIND DIRECTION  
WIND VELOCITY  
WIND PRESSURE  
WIND TEMPERATURE  
WIND HUMIDITY  
WIND DENSITY  
WIND VISCOSITY  
WIND ELASTICITY  
WIND PLASTICITY  
WIND FRACTILITY  
WIND INFLAMMABILITY  
WIND CORROSIVENESS  
WIND TOXICITY  
WIND RADIOACTIVITY  
WIND BIOLOGICAL ACTIVITY  
WIND CHEMICAL ACTIVITY  
WIND PHYSICAL ACTIVITY  
WIND MECHANICAL ACTIVITY  
WIND ELECTRICAL ACTIVITY  
WIND MAGNETICAL ACTIVITY  
WIND OPTICAL ACTIVITY  
WIND ACOUSTICAL ACTIVITY  
WIND THERMAL ACTIVITY  
WIND RADIATION ACTIVITY  
WIND NUCLEAR ACTIVITY  
WIND COSMIC ACTIVITY  
WIND GRAVITATIONAL ACTIVITY  
WIND ELECTROMAGNETIC ACTIVITY  
WIND QUANTUM ACTIVITY  
WIND RELATIVISTIC ACTIVITY  
WIND SUPERNOVULAR ACTIVITY  
WIND GALACTIC ACTIVITY  
WIND COSMIC ACTIVITY  
WIND UNIVERSE ACTIVITY



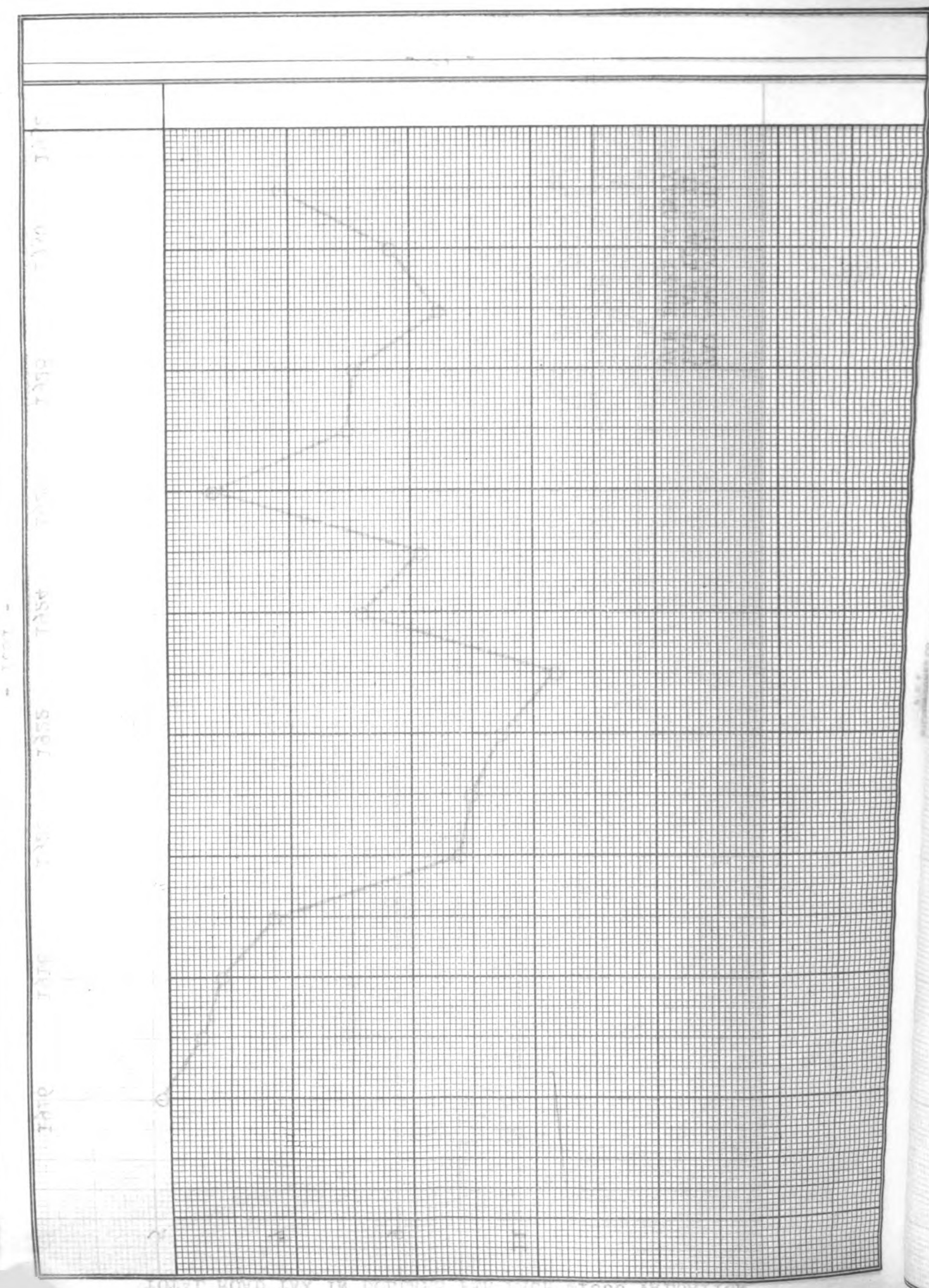
TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION

TAX ANALYSIS GRAPH  
PAW PAW TOWNSHIP  
VAN BUREN COUNTY

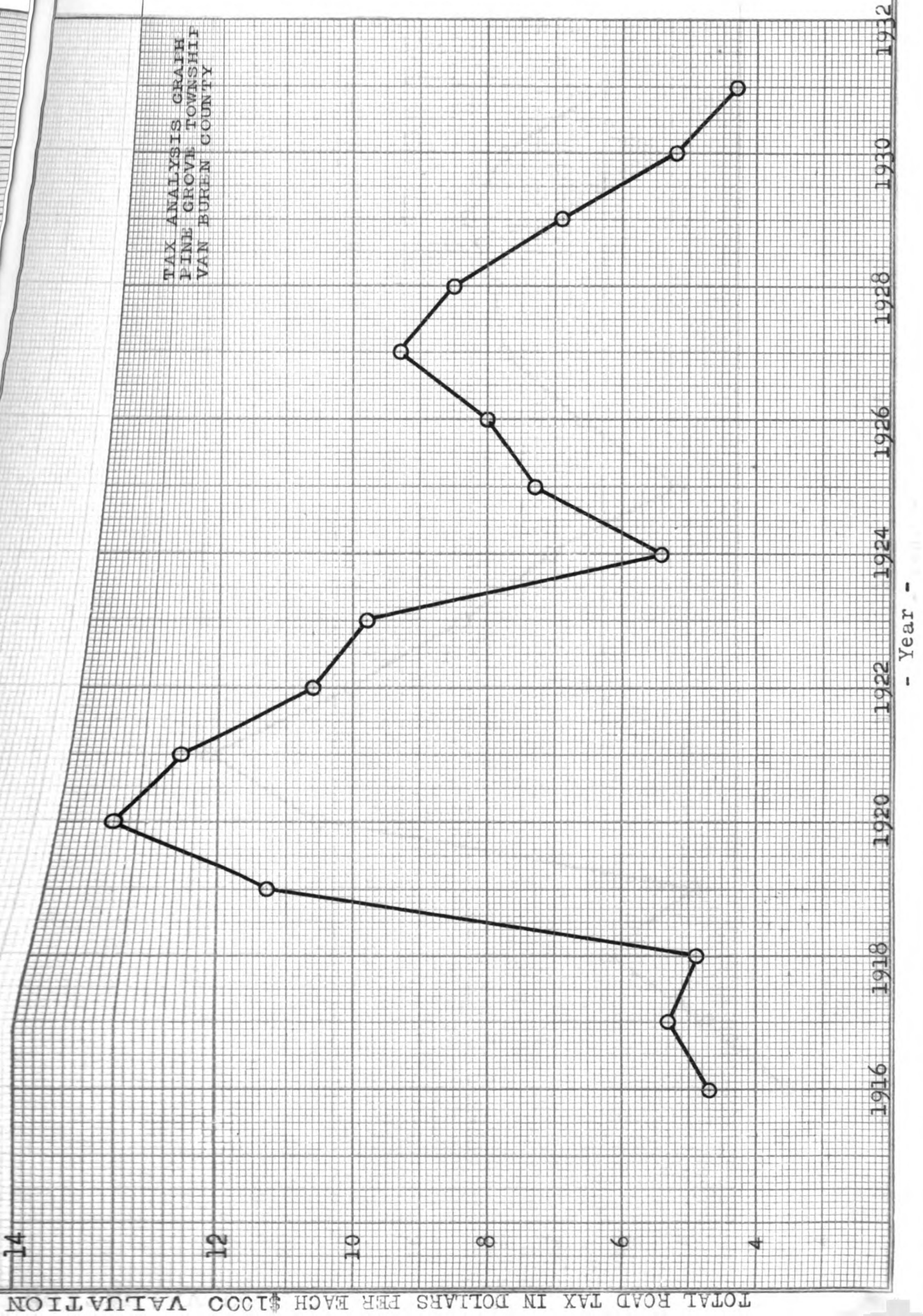


- Year -





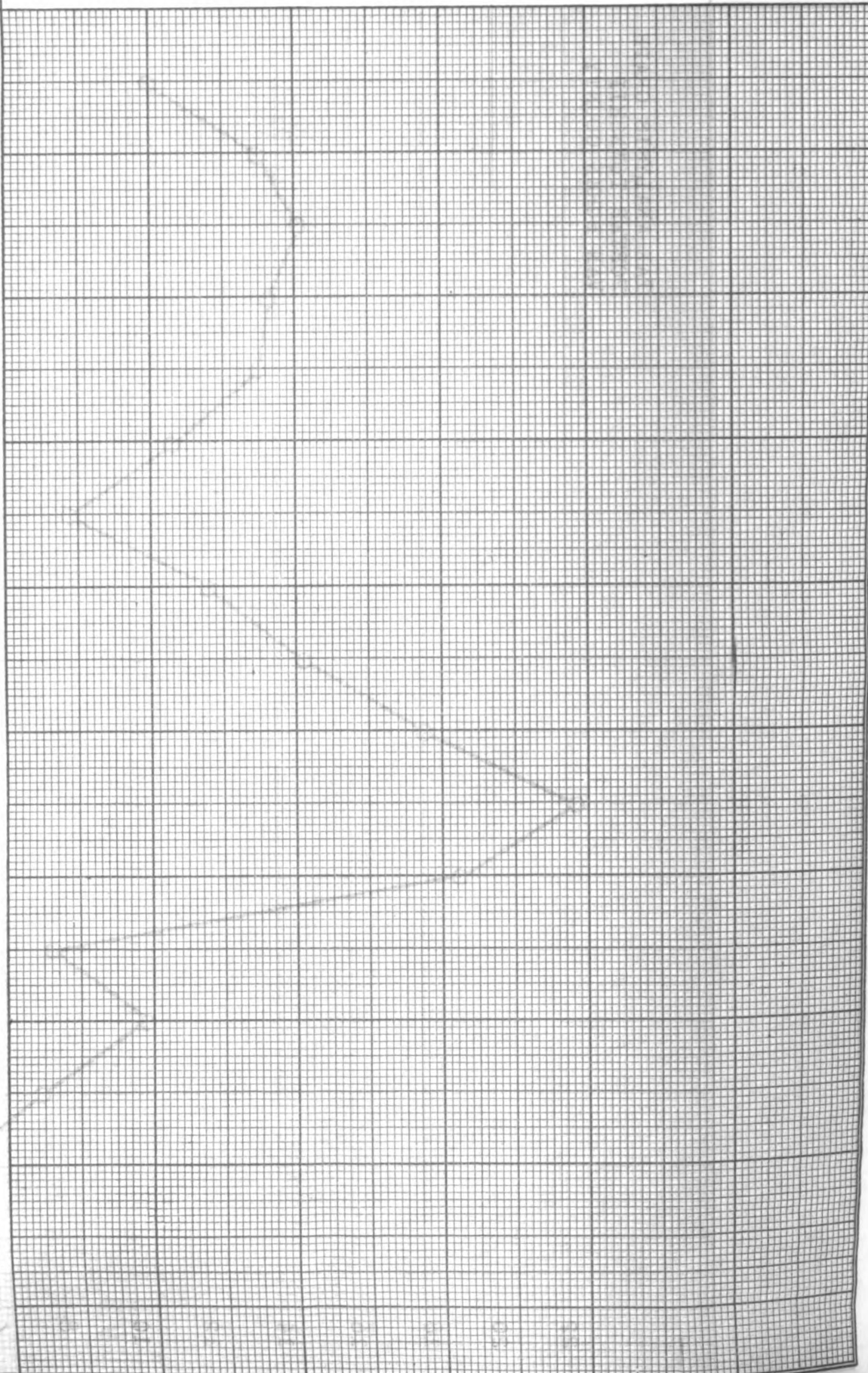
NOTATION: CIRCLE NUMBER INDICATES POSITION IN X-Y COORDINATE







1000  
 800  
 600  
 400  
 200  
 0



1000  
 800  
 600  
 400  
 200  
 0

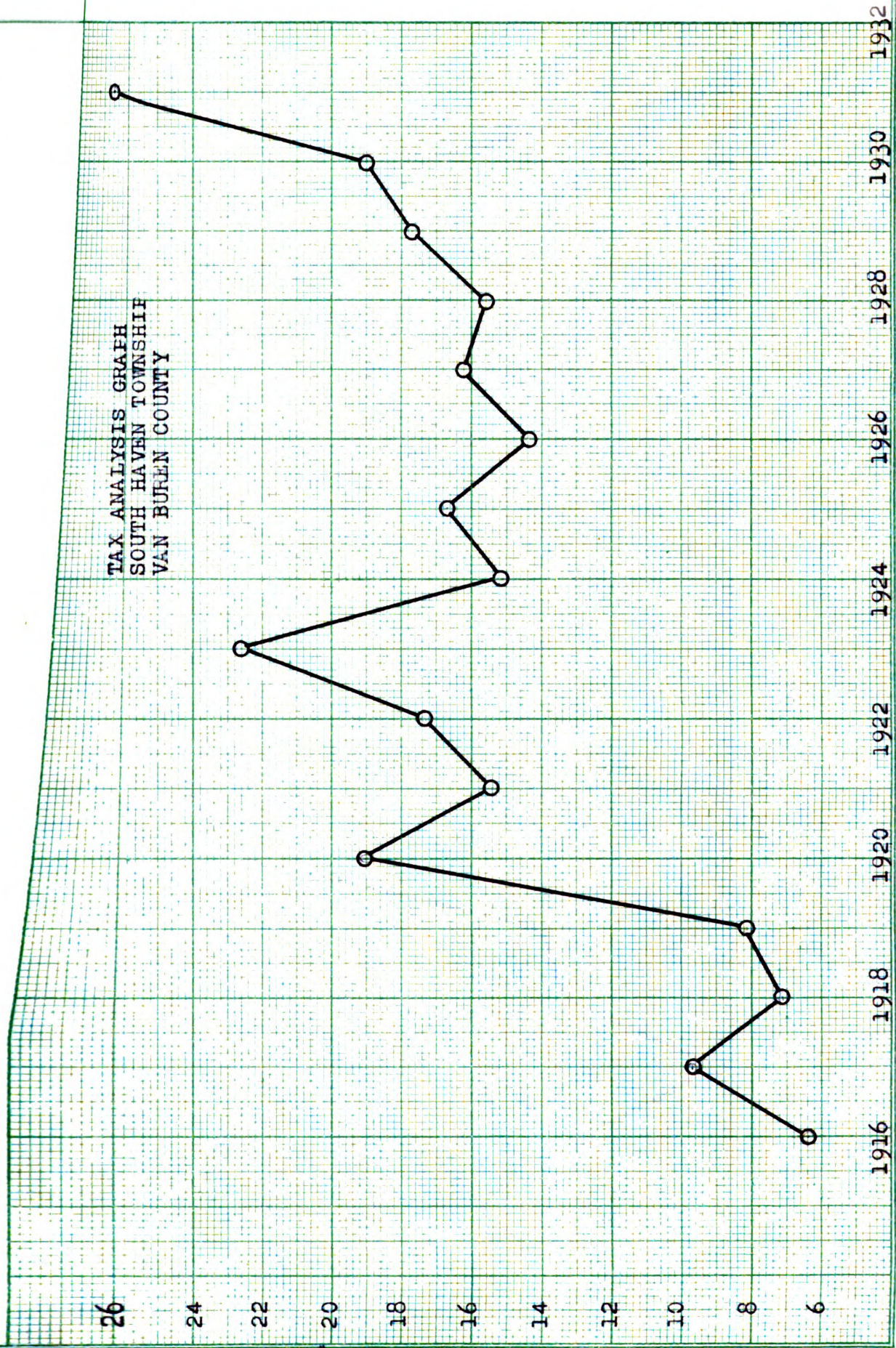


TAX ANALYSIS GRAPH  
SOUTH HAVEN TOWNSHIP  
VAN BUREN COUNTY

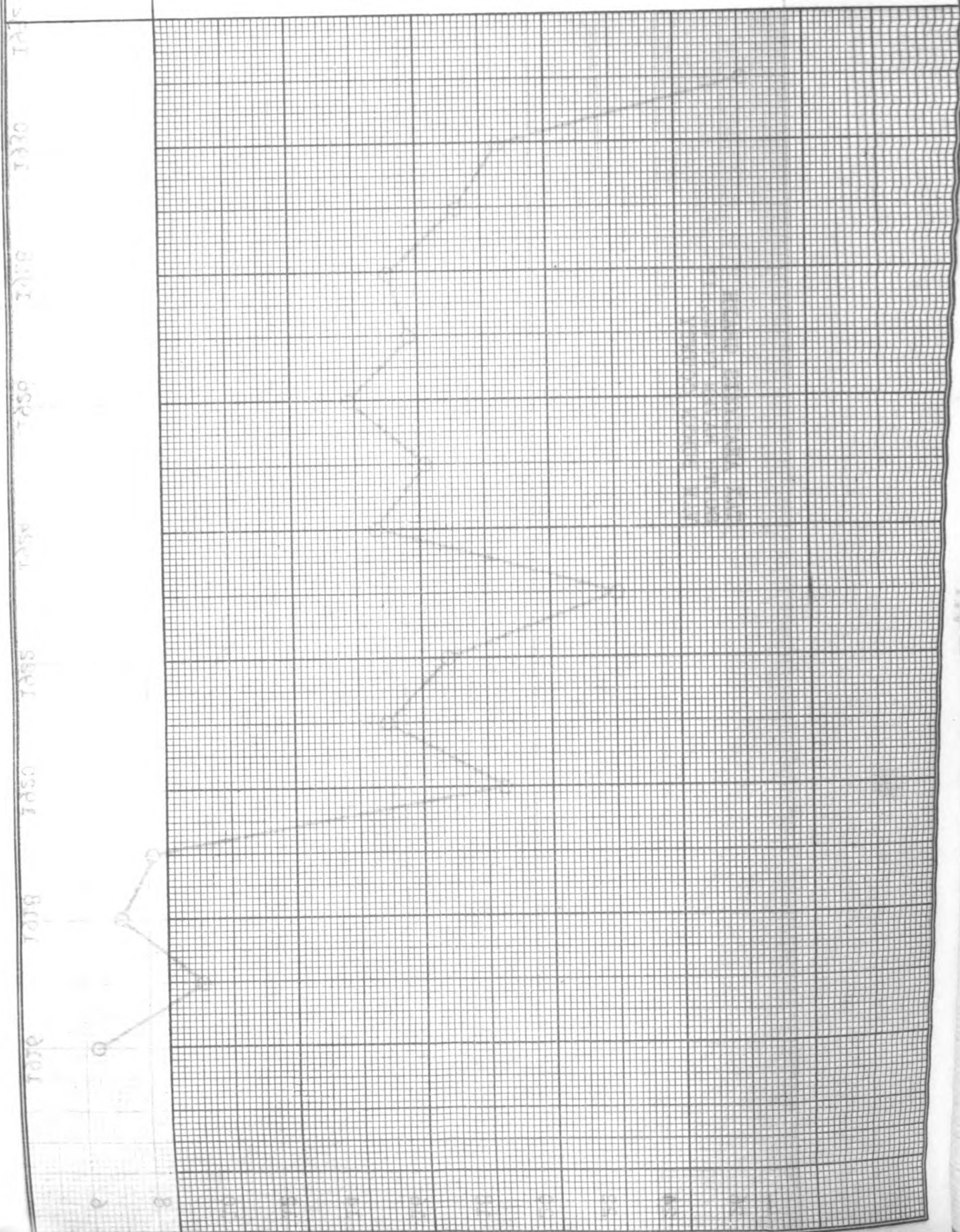
TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION

1916 1918 1920 1922 1924 1926 1928 1930 1932

- Year -



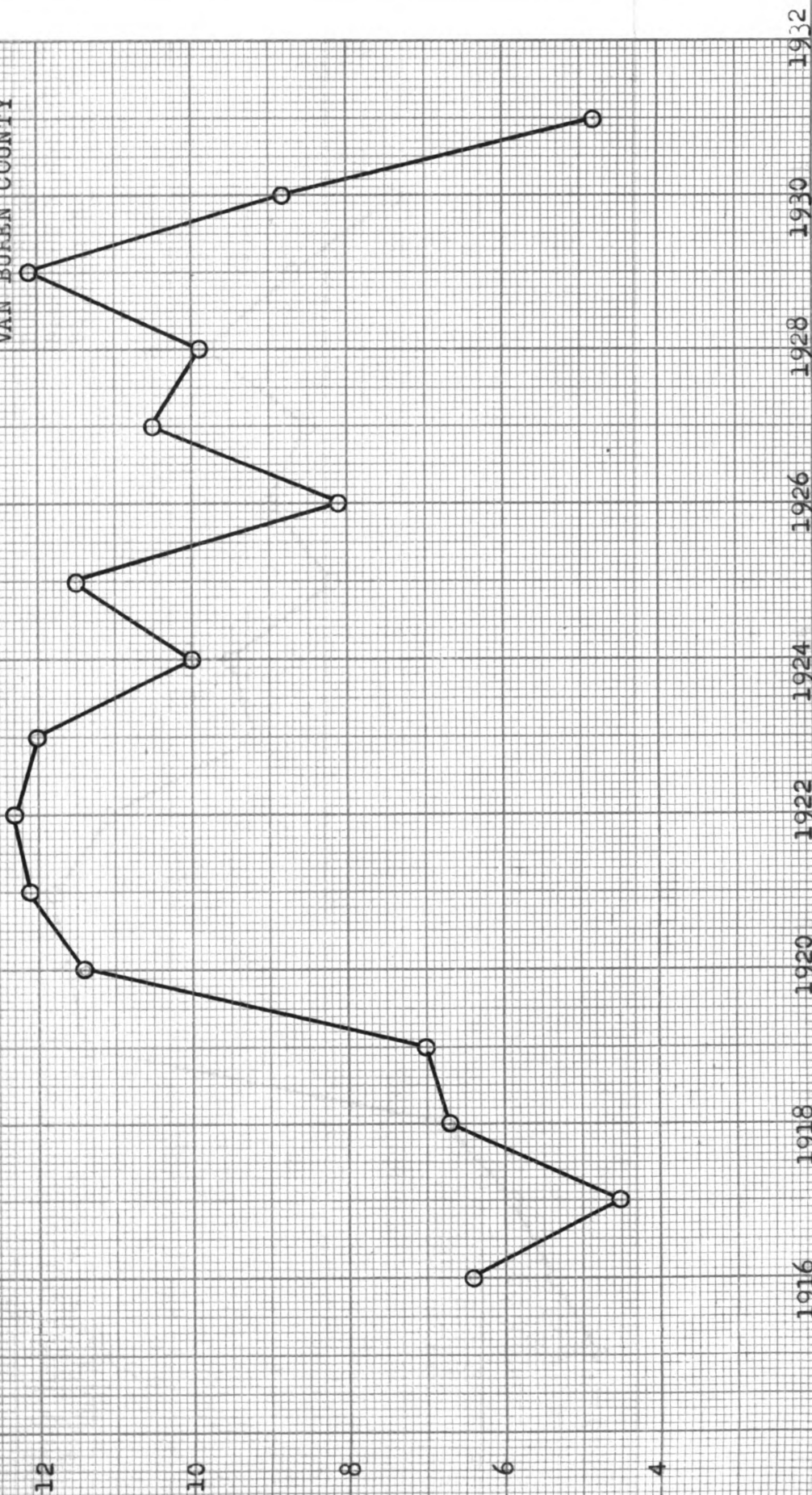




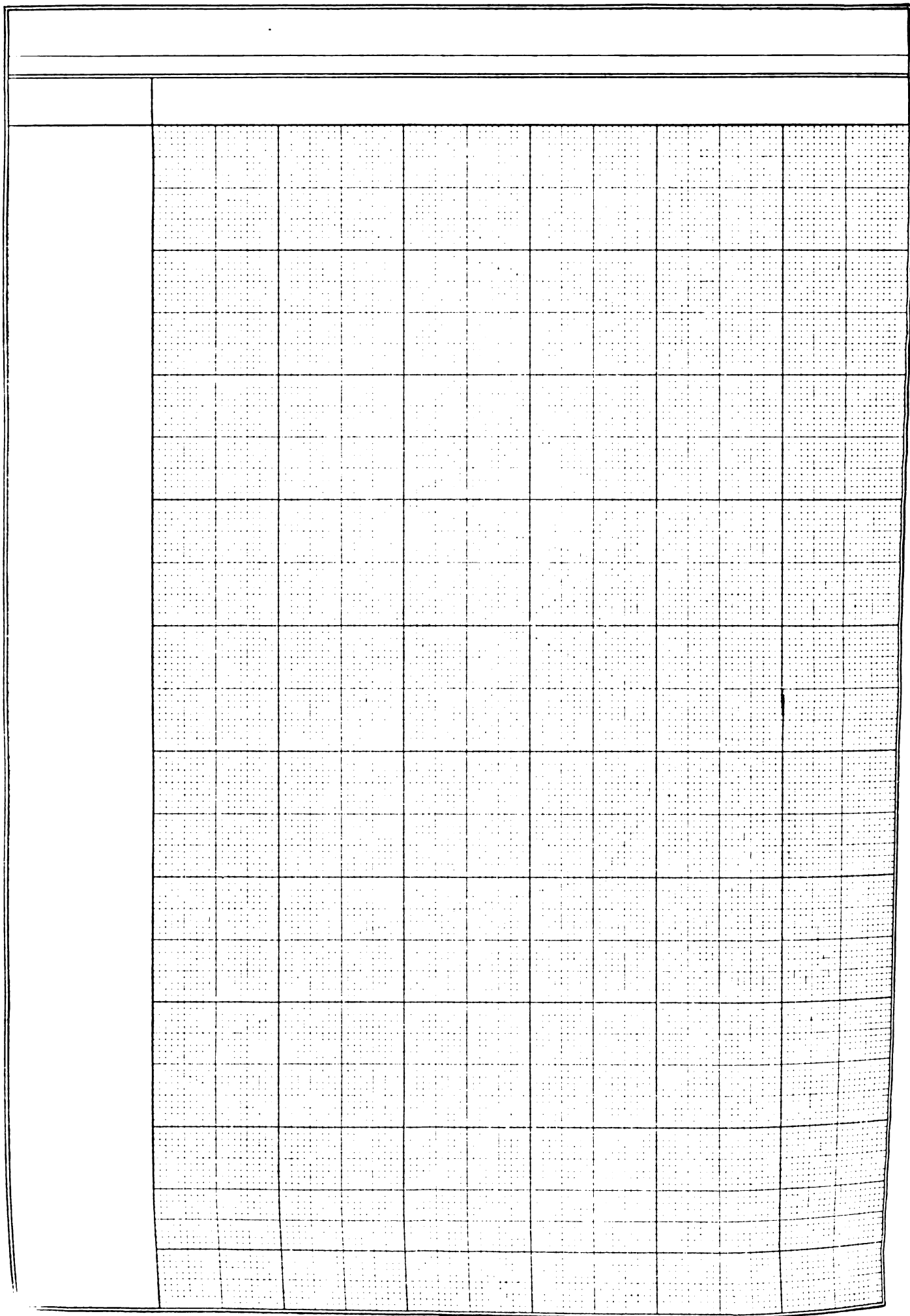


TOTAL ROAD TAX IN DOLLARS PER EACH \$1000 VALUATION

TAX ANALYSIS GRAPH  
WAVERLY TOWNSHIP  
VAN BUREN COUNTY

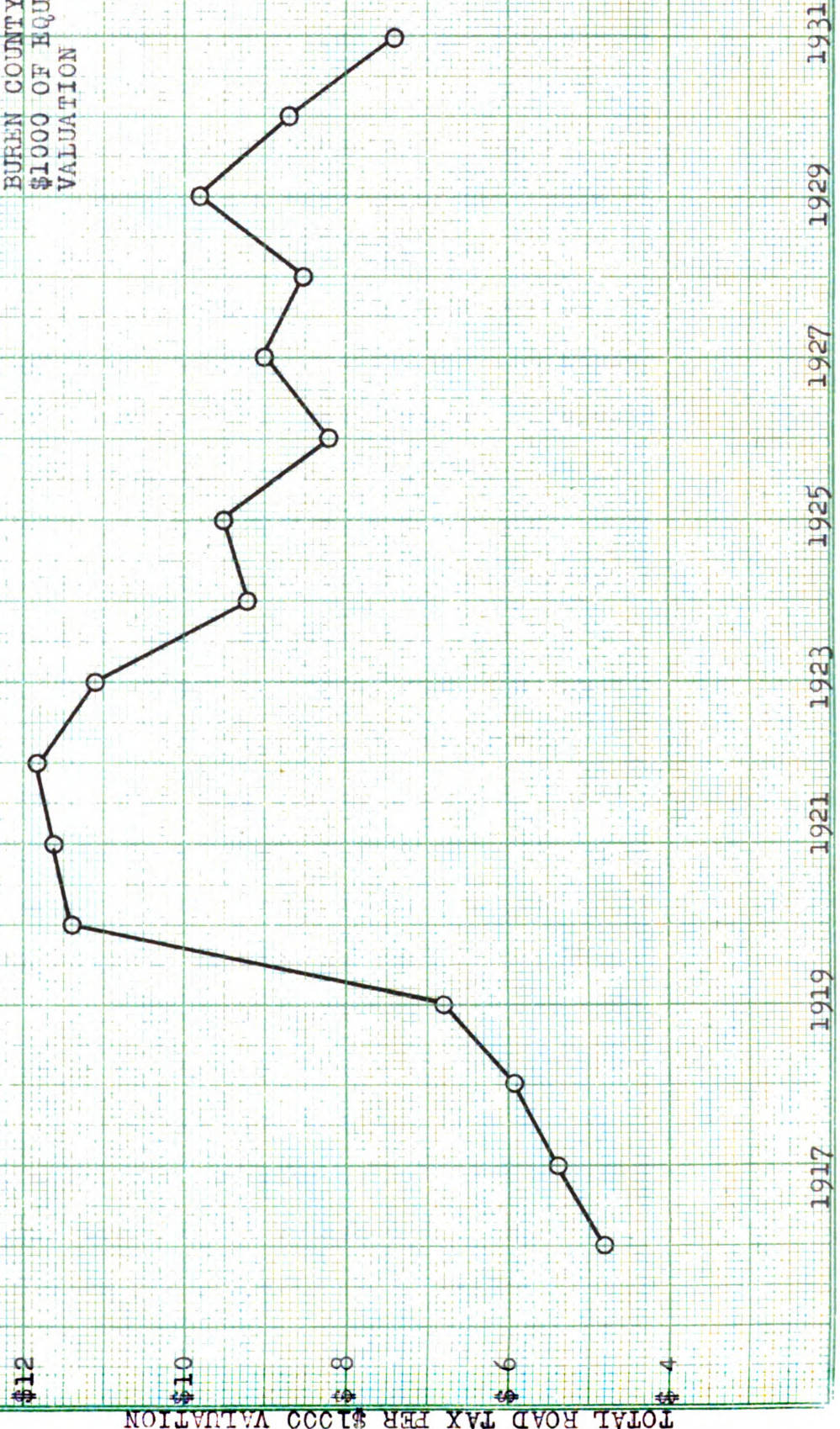


- Year -





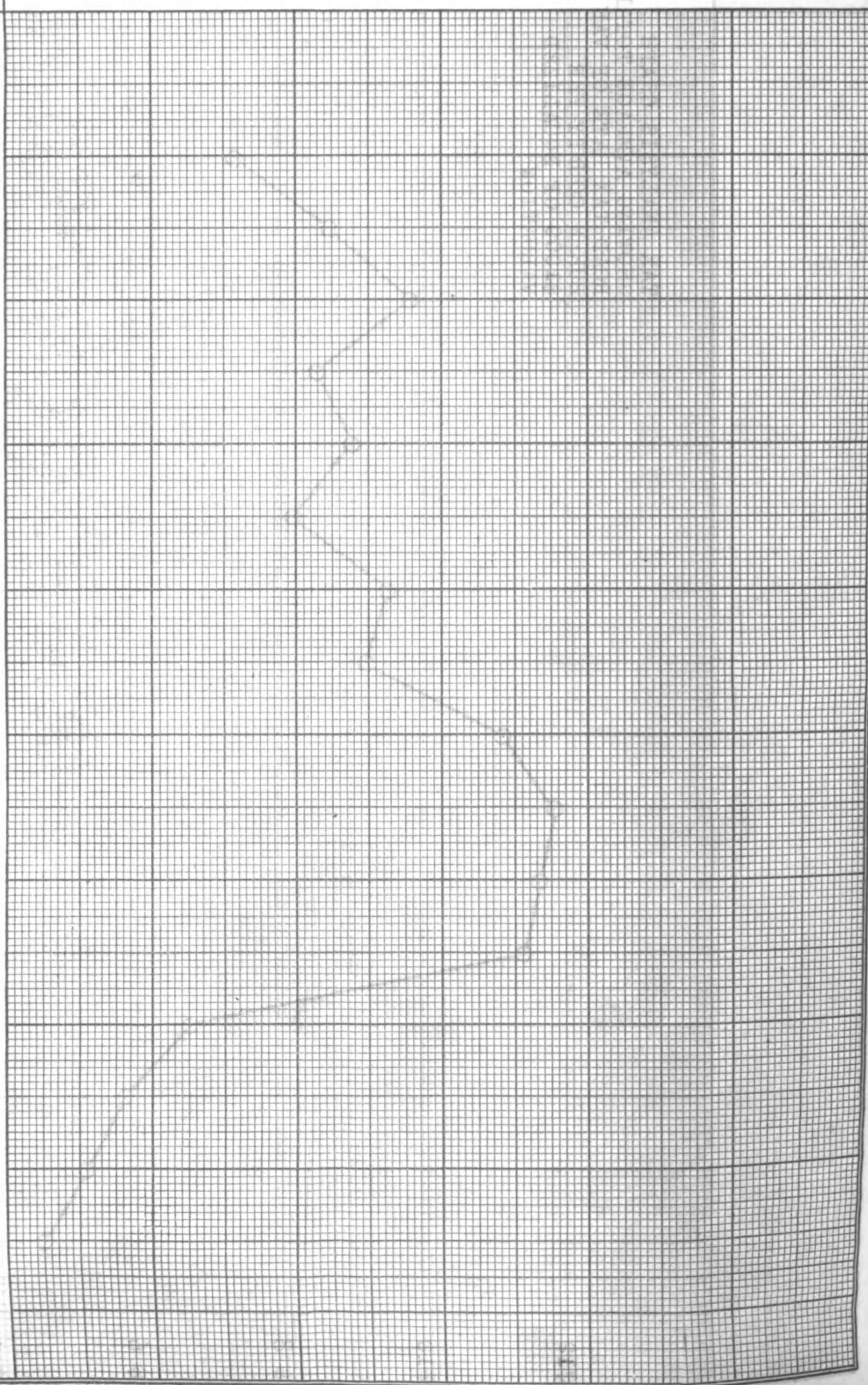
TAX ANALYSIS GRAPH  
SHOWING AVERAGE TOTAL  
ROAD TAX RATE OF VAN  
BUREN COUNTY PER  
\$1000 OF EQUALIZED  
VALUATION



- Year -

TOTAL ROAD TAX PER \$1000 VALUATION







Having established a workable financing plan to assure the ultimate completion of the Primary, Secondary and Tertiary County Road Systems, the writer will now devote his attention to their maintenance. Herein lies a very important angle of the road problem as a whole. The investment of large sums necessary to establish these comprehensive units of public property, warrant ample provision for their careful preservation. Property levies have in the past, and as advocated above, should in the future continue to furnish the financial source for building all highways except the important arterial roads designed as State Trunk Lines. Tax roll property as such, has no part in wearing out the highways built by tax levies thereon. Upon this point it is extremely difficult to establish an exact line of division which will determine by whom the cost of good roads should be paid, or even by whom it has been paid in the past. However, it seems self-evident that everyone is benefiting from good roads either directly or indirectly. It does not seem proper to classify motorists as property tax payers and non-tax payers because all automobile owners in the United States pay property taxes either

directly as owners or indirectly in the form of rent. The writer's theory in not assessing maintenance costs to real property takes cognizance of the fact that the proper maintenance of the public highway system is of direct advantage to adjacent property which in most cases has been taxed for the construction costs. Many pieces of property may be unoccupied and unused for years at a time, and therefore contribute in no way to the wearing out of the adjacent highways. But some may declare that it still is holding an advantageous position for which it should pay something. Quite right, but the author contends that all property adjacent to improved highways should be assessed on a higher scale of valuation to cover its increased potential value resulting from such location. Thus it would be paying for this advantage in proportion to other parcels of land not so favorably situated. The highway user is the unit upon which the obligation rests to keep the roads in proper repair after their construction. The author believes that motor vehicle taxes are the proper means for spreading of maintenance costs. In this classification the gasoline tax is unquestionably the most equitable of any tax which has ever been levied. It taxes the highway user



whenever he uses this public utility and automatically spreads this levy in exact proportion to the amount or extent of such use.

Under the present (March, 1932) laws governing the distribution of motor vehicle and fuel levies, this county may anticipate the following amounts for maintenance income during the next five years:

MAINTENANCE INCOME

Year	Present Distribution of Vehicle Weight Tax	Fixed Portion of Gas Tax under Act 130, P.A.1931	Available Surplus
1933	\$78,000 (estimated; see graph on Page 44)	\$35,298	\$110,000
1934	78,000	44,122	
1935	78,000	52,946	
1936	78,000	61,770	
1937	78,000	70,594	

Study of the graph on Page 20 indicates that we may conservatively anticipate the annual maintenance income shown in the second column. The third column tabulates the amounts available by the provisions of the McNitt-Holbeck-Smith bill enacted by the Legislature of 1931. The "Available Surplus" represents

the aggregate savings which have been accumulated by our County Road Commission, principally as unused maintenance savings from State construction rewards. No property tax for maintenance of County Roads has been levied in Van Buren County since 1920. The Board has held to this policy and keeps within available maintenance resources all the time. The Primary System comprises 255 miles, of which 34 miles are unimproved as indicated in table on Page 31. This entire mileage is included in the Board's current (1932) maintenance budget. Based on the estimated returns from the original 50% weight tax distribution, this item should make available an average of \$305 per mile. Maintenance records of this county show that the average costs of maintenance of our Primary System per mile per year since 1926 were as follows:

Year	Average Maintenance Cost Per Mile Per Year
1926	\$321.00
1927	428.00
1928	446.00
1929	491.00
1930	375.00
1931	356.00



Data prior to 1926 was not used because earlier maintenance expenditures involved the county share of Trunk Line maintenance which since January 1, 1926, has been borne entirely by the State Highway Department. Another reason is that 1926 represented a turning point in types of maintenance wherein, to satisfy the urgent demands of the users of our highways, it became necessary to incorporate snow removal and dust palliative treatments as a regular part of the maintenance expenditures. The former service has been given on the total mileage of improved roads in the County System since 1926. Dust palliative treatments were made partially available from 1926 to 1929 inclusive, and were then placed in operation over the whole system in 1930 and 1931. All dust layers were eliminated from the 1932 program as an economy measure. The records for dust layer treatments for 1930 and 1931 show that the cost of this work averaged \$100 per mile for a single treatment to carry through the months of June, July and August. Thus it is anticipated that the average 1932 maintenance cost may be reduced to approximately \$260 per mile, which is well within the estimated Primary System

maintenance income of \$305 per mile. The saving on this item will be used to build approximately ten miles of bituminous retread surfaces on parts of our heaviest traveled Primary System roads which we can no longer maintain economically with gravel surfaces. The most urgent need of this kind is on Route #308 where we still have five miles of gravel surface which are urgently in need of bituminous surface treatments to withstand the demands of the traffic, as previously noted on Page 29. This condition will be cared for in 1932, because part of the saving just enumerated will be used for this purpose.

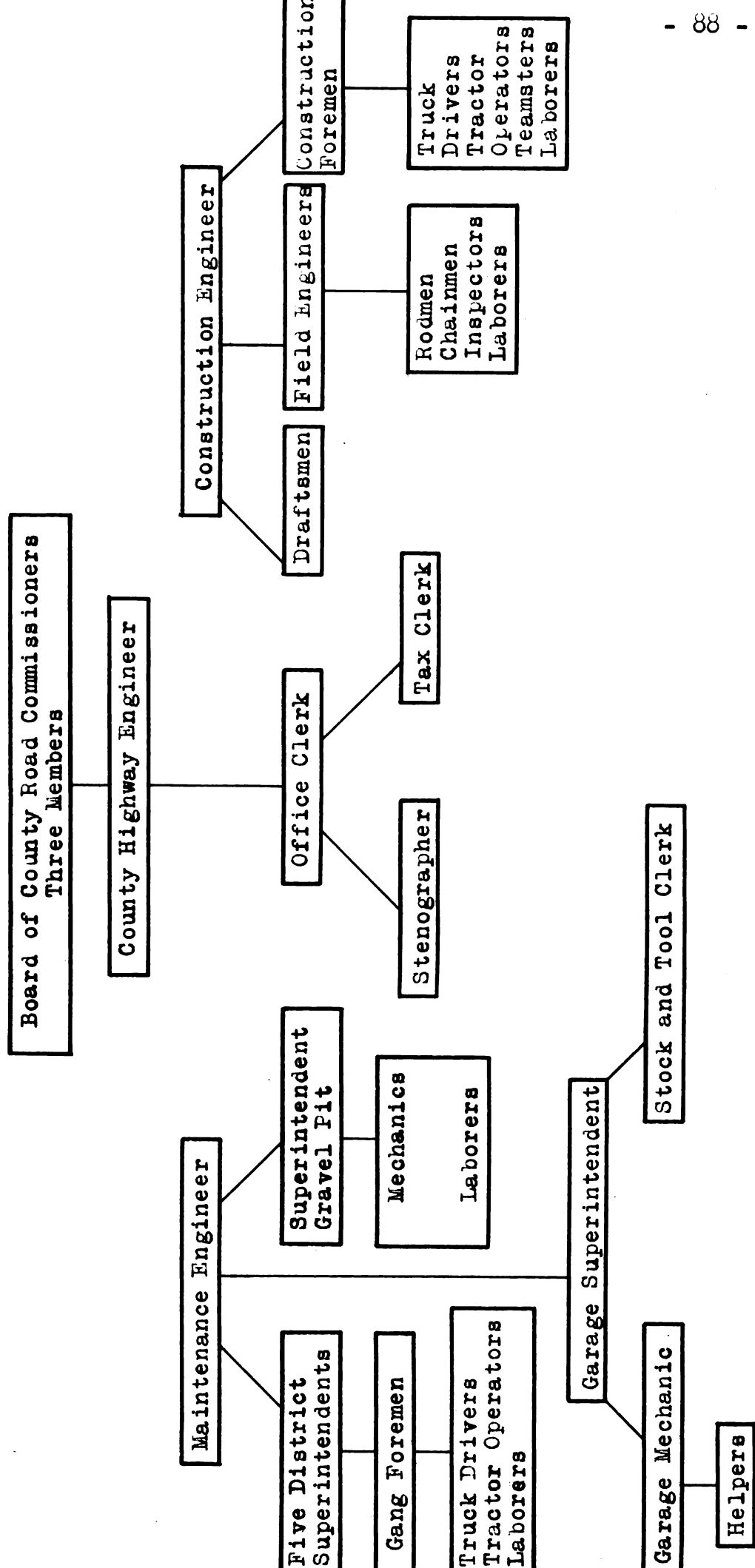
The revenues provided by the McNitt-Holbeck-Smith law will be made to maintain the roads thus taken over, because when those funds are exhausted for the purposes anticipated, the Board will balance the budget by use of the word "STOP". Should unforeseen emergencies arise, the Board will still have available the maintenance surplus indicated in tabulation of Page 83. The present plan is to use about 10% of this surplus to provide bituminous treatments on some portions where gravel surfaces are proving inadequate. This will operate to reduce the average maintenance cost per mile, or to



make possible a still better maintenance service.

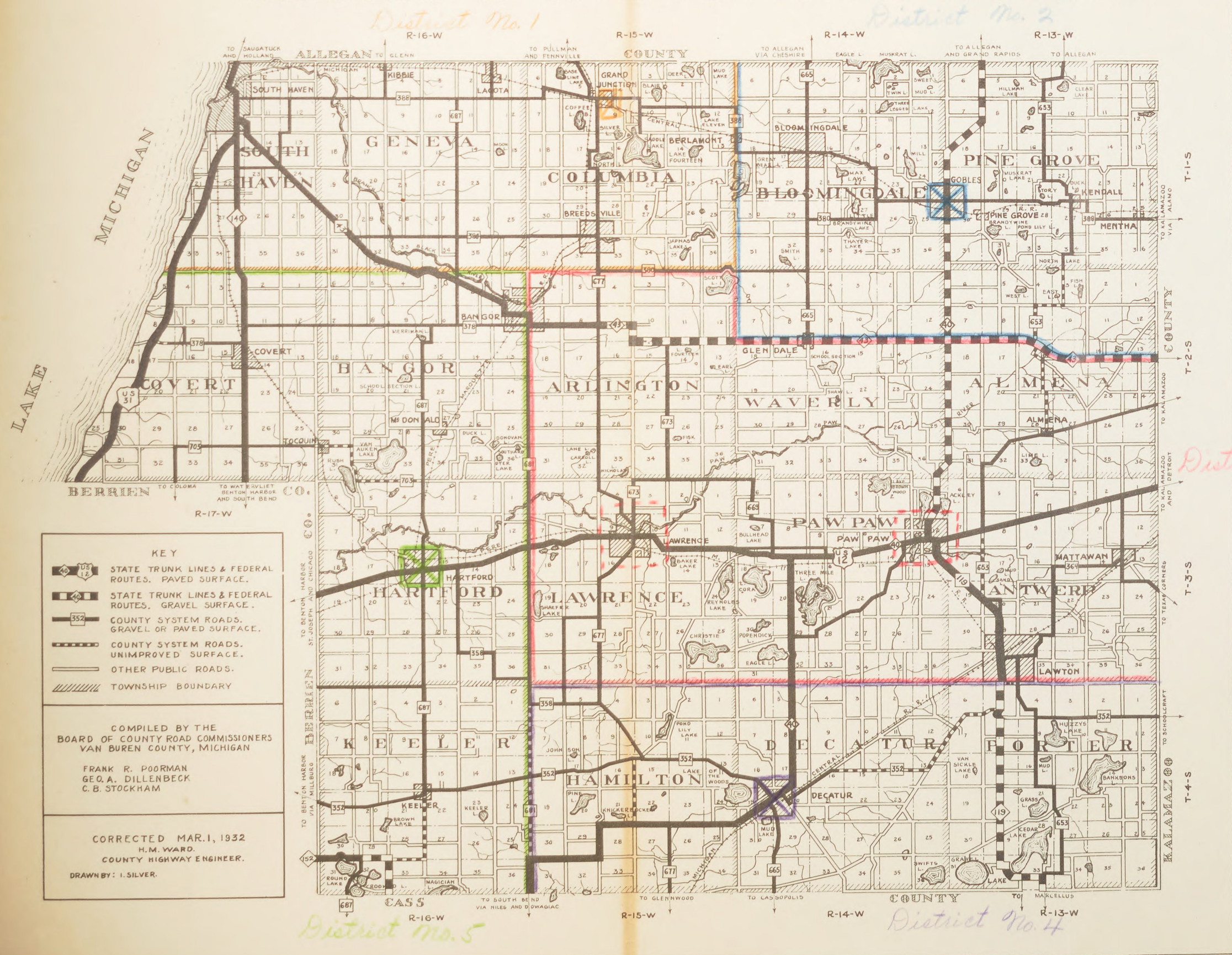
In administering the extensive operations involved in the proposed five year plan, the writer suggests the organization set up shown in the chart on Page 88. In connection with the above, it is recommended that the ultimate maintenance organization shall be based on five districts as shown on the map, Page 89. This would eventually call for the construction of a central garage and warehouse at Paw Paw or Lawrence with complete machine shop equipment, Road Commission Office, and storage facilities. The latter location is preferable from the standpoint of position in relation to the whole territory to be served, the only objection being the removal of the offices from the county seat. In addition to the central repair shops we would provide equipment and storage warehouses in each of the other districts. Locations at Hartford, Grand Junction, Gobles and Decatur are especially recommended. Hartford and Grand Junction are both located on an important Pere Marquette Railway line from Chicago to Grand Rapids. Grand Junction is also served by the Michigan Central from Kalamazoo, the same as Gobles. Decatur is located on the main

ORGANIZATION CHART - VAN BUREN COUNTY





# ROAD MAP OF VAN BUREN COUNTY MICHIGAN







line of the Michigan Central operating between Detroit and Chicago. This arrangement in the northwestern district sacrifices some advantages of centralized location in order to take advantage of better railroad facilities. The estimated cost of these buildings is as follows:

Central Shops at Paw Paw or Lawrence....	\$15,000
Warehouse, Grand Junction.....	2,500
Warehouse, Hartford.....	3,000
Warehouse, Gobles.....	2,000
Warehouse, Decatur.....	<u>3,500</u>
TOTAL	\$26,000

This item might be financed from a portion of the accrued maintenance surplus indicated on Page 83, according to the option of the County Road Commission.



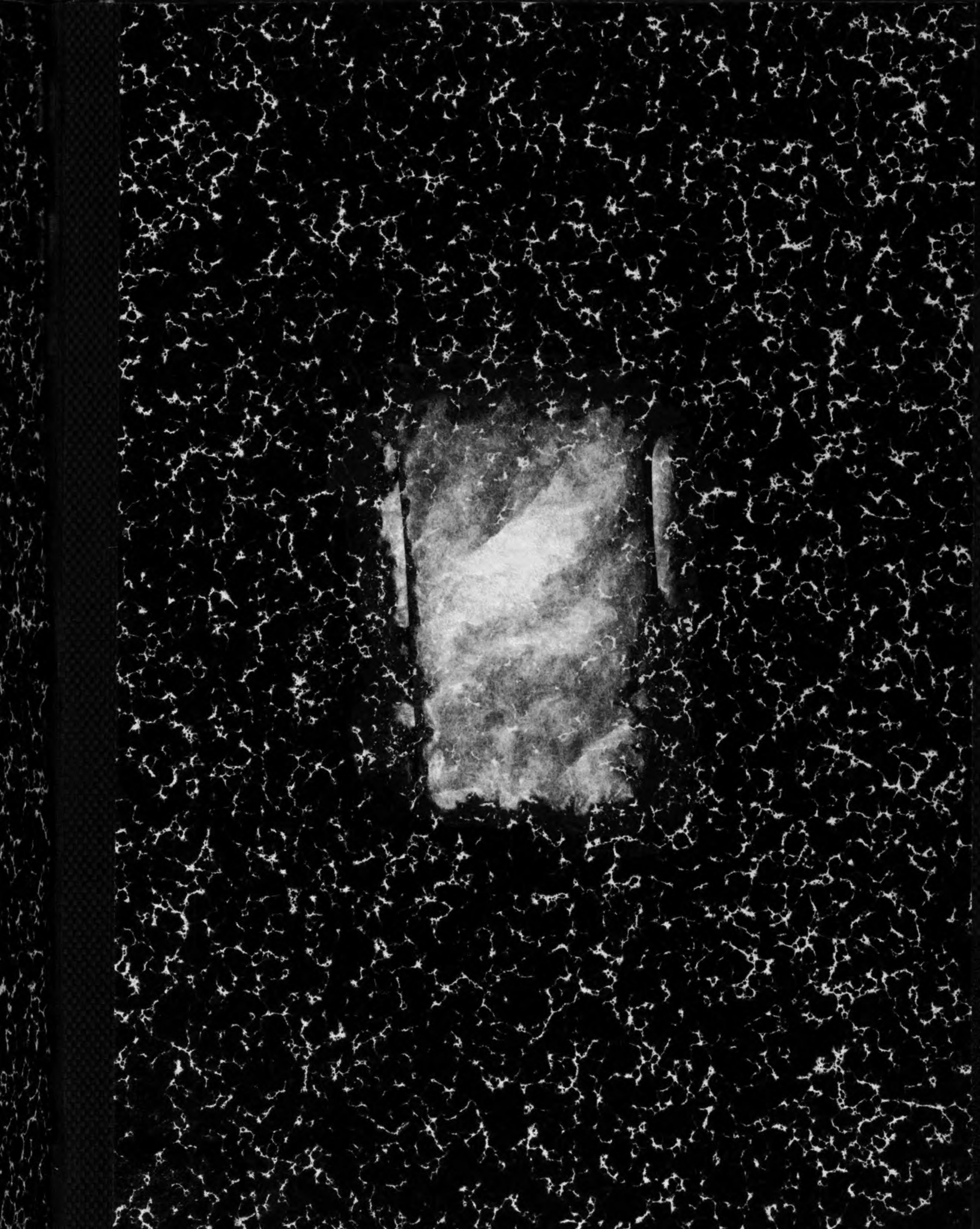
## CONCLUSION

The writer, from his association as an employee of the Van Buren County Road Commission since 1919, has made use of his observations and experience to create in this thesis an orderly flexible plan for future development of the whole system of public roads. The financing details could not safely be laid out for more than five years in advance on account of the usual trend of highway legislation affecting available funds. The compilations of tax and cost data were taken from the records of the Van Buren County Road Commission and the County Clerk, thus establishing their authenticity. It is hoped that the data herein contained may render a service to Van Buren County as a municipal unit, and to the individual who may be designated as Mr. Average Taxpayer.

Nov 6 '40







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