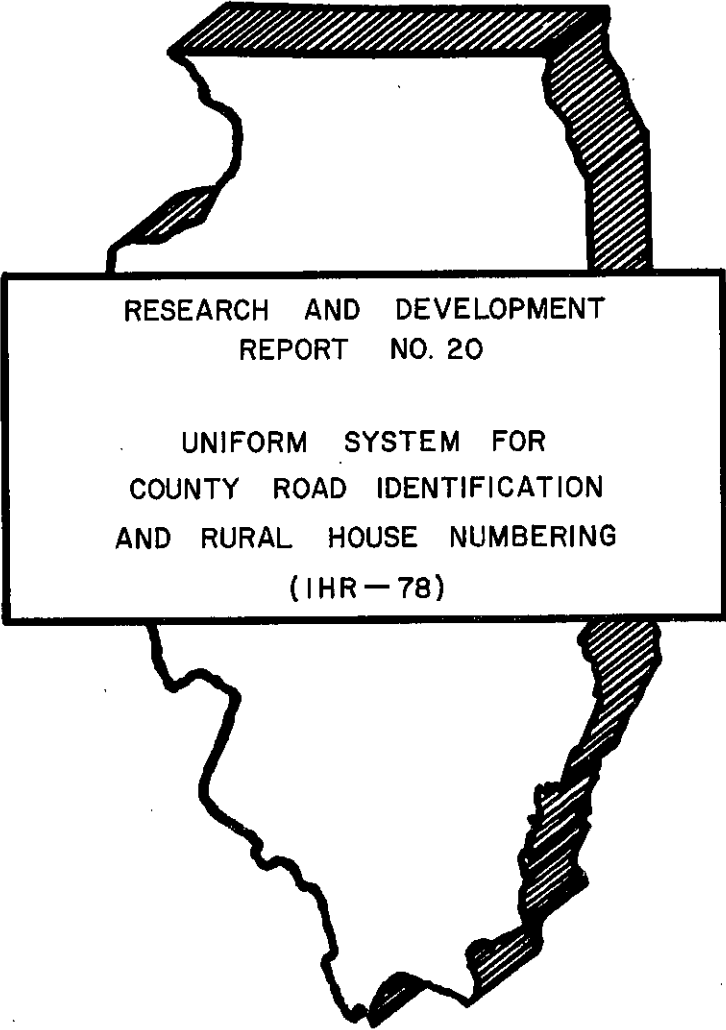


STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
DIVISION OF HIGHWAYS



RESEARCH AND DEVELOPMENT
REPORT NO. 20

UNIFORM SYSTEM FOR
COUNTY ROAD IDENTIFICATION
AND RURAL HOUSE NUMBERING
(IHR-78)



State of Illinois
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
Division of Highways
Bureau of Planning

A UNIFORM SYSTEM FOR COUNTY ROAD
IDENTIFICATION AND RURAL HOUSE NUMBERING

by

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Final Report
Illinois Highway Research Project No. 78

conducted by

Illinois Division of Highways
In Cooperation with the
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Bureau of Public Roads

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ABSTRACT

This report describes a study that was undertaken to develop an improved system for county road identification and rural house numbering, with special application under conditions that exist in Illinois. The system that was developed, based in major extent upon a review of all known systems in use or proposed for use elsewhere, is presented. Although developed specifically for use in Illinois, the proposed system is considered to have application in other areas.

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O. B. Dold	DuPage County
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A UNIFORM SYSTEM FOR COUNTY ROAD
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INTRODUCTION

A problem long recognized in Illinois, but one that has become more critical with the increased tourist travel in rural areas and the increased desire for such services as those provided by rural fire district organizations, is the identification of rural roads and rural homes.

Upon the recommendation of the Illinois Association of County Superintendents of Highways, the Illinois Division of Highways in 1962 initiated a study to develop a uniform system of county road identification and rural house numbering. This study, which is identified as Research Project IHR-78 has been jointly sponsored by the Illinois Division of Highways and the United States Department of Commerce, Bureau of Public Roads. The Bureau of Planning of the Illinois Division of Highways has been the organization responsible for conducting the study. An Advisory Committee representing the County Superintendents of Highways of the State furnished guidance during the development and prosecution of the project.

This is a final report on the project, explaining the developmental activities and presenting the details of the method for identifying rural roads and for numbering the houses served by each, which was developed on a "per county" basis to meet the requirements of the project objective.

GENERAL

It is recognized a problem exists in Illinois in the identification of certain roads and the majority of the rural homes. The State Primary System in Illinois consists of slightly more than 10% of the total rural mileage and is satisfactorily marked throughout the State. A motorist can readily travel these roads from city to city with assistance from one of the many maps available. Travel on the remaining 90% of the roads can be more difficult. With continued improvement and greater usage of these roads, the need for a satisfactory means of directing the traveler is necessary. A companion problem of the method for adequate road identification is the need for a means to assist the traveler in locating individual rural homes. This problem has been intensified with the increased mobility of the population.

OBJECTIVES

The objectives of this research project were to develop an orderly and systematic method of local road identification and house numbering, to minimize delays and confusion, and to provide for standardized economic service in rural areas. Within urban areas, streets and roads are generally identified with a name; but beyond the built-up areas, unmarked roads are generally known only to local residents by the name peculiar to the area. The Illinois Highway Code provides that the county highways shall be assigned a number and that these highways may be renumbered from time to time. The numbering system for these roads has no relation to the geographic location and is of little value to the traveling public. Each county should be a basic unit, but identification methods should be uniform for all counties in the State. This last objective eliminated some possible numbering systems to establish a system suitable for all counties in Illinois.

BENEFITS

Benefits from an efficient road and house numbering system would be numerous. Confusion and delays in travel on rural roads would be minimized. Tourist travel could be increased if local roads were easier to follow. The appropriate officials would be able to reach the scenes of fire, accidents, criminal acts and other emergencies more readily. Accident victims could be reached by the most direct route and receive aid within a shorter length of time with an orderly numbering system. The State police have found it difficult to locate accidents from vague descriptions they receive. If emergency squads were given a more definite location as described in this report, it would facilitate rescue operations and in turn save human lives.

A cross section of residents was asked if it felt a Statewide system of identification would be helpful and without exception, the idea was endorsed whole-heartedly. Some of the people contacted were local doctors, firemen, and municipal personnel. Organizations contacted were a historical society, the U. S. Forest Service, and civil defense directors.

EXISTING SYSTEMS

The study for the development of an effective uniform system of county road identification and rural house numbering system was proposed by the research committee of Illinois Association of County Superintendents of Highways in 1961. The committee met periodically with several representatives from the Illinois Division of Highways to discuss possible methods of approach and to review the progress of the several phases of this study.

A motion was made and passed by the committee to:

1. Provide a system to be used Statewide in the numbering of residences.
2. Make use of the same system for identifying roads.
3. Use an identification system similar to the marking of primary highways to identify principle continuous county highways across the State. Numbers or letters may be used identification.

The initial step was to search libraries for any work of this nature accomplished by some other agency. One published report of this type entitled, "Project Report on County Road Markings" by A. K. Branham and J. E. Bearwald was found in the April 19 - 22, 1954 Engineering Bulletin, Purdue Engineering Extension Department.

A letter was sent to the planning engineers of all states announcing we were conducting a study on the numbering of county roads for identification purposes. Each state was asked whether it had some method of numbering county roads or whether a study had been made on this subject. All except nine states replied but only ten reported a numbering system in use or being studied in their respective state. Several systems used by some states adapted to states with different physical characteristics than Illinois. A number of other states had not completed their studies. This reduced to five, the states with some system in use that would be applicable to Illinois.

A number of states are still identifying roads by means of the system established for the Statewide Planning Survey in the mid 1930's. This system is still used in Illinois. In Illinois, the east and west roads were given odd numbers starting along the north border of the county and proceeding in a southerly direction. North and south roads were given even numbers starting along the west border.

Most short roads in the congested areas are assigned larger numbers than the longer roads in strictly rural areas. This makes locating a road from its assigned number quite difficult. Frequently, these short roads have the greatest concentration of houses and other cultural features. This is a workable system for keeping road-inventory records, but is not readily accepted by other agencies or the general public.

Systems of identifying roads in use by other states either on a limited or a statewide basis can be classified into the following categories: (1) Names of roads; (2) ranges and township numbers; (3) areas, and (4) quadrants.

In Wisconsin, names of roads are used for identification; in Oregon, the range and township provide the key; in North Carolina, the counties are divided into areas; and in California and Utah, the quadrant system is used. Some of the shortcomings in the range and township system were reported by Oregon; and California reported some in the quadrant system.

In an article entitled, "Names or Numbers for County Roads" in the January 1963 issue of Better Roads, it was stated "for the purposes of inventorying, record keeping and statistical work many county engineers definitely prefer a numbering system" (to naming roads) "since it is easier to keep track of the various roads by numbers and there is no duplication. But local residents sometime refuse to accept the numbering system and cling to the time-honored names. More and more counties are erecting route markers on their roads usually at intersections and at termini of roads. In Manitowac County, Wisconsin, county truck highways are signed about the same as the State highways including directional signs at intersections. Some counties use both names and numbers. The numbers are for the use of the crews and office staff, the names for county residents."

The quadrant system used by California and Utah and the area system used by North Carolina were two tried systems that could be modified for Illinois. It was the majority opinion of the committee that the quadrant system could best be applied to Illinois counties. It was pointed out that a primary purpose was to adopt a uniform system of road numbers that would also be adaptable for house numbering.

PROPOSED SYSTEM

The county base and county meridian lines should be selected as near to the center of a county as practicable. Township lines through or near the center of large cities, or straight roads that are continuous for some distance are examples to be considered.

To illustrate road and house numbering, we selected Cumberland County with most of the roads either on section lines or on the $\frac{1}{2}$ -mile or $\frac{1}{4}$ -mile lines. However, some of the roads are irregular with numerous deflections.

Fig. 1 illustrates the selection of the county base and county meridian lines with the four quadrants identified NW, SE, NE, and SW. Fig. 2 shows the method of establishing the identification of straight roads in the NW quadrant. Three and four digits will be used in each road number, depending on the distance from the county base line or the county meridian line.

Thus, a road on the first section line from the county baseline or county meridian would contain the digits "100," a road two miles distant the digits "200," a road $11\frac{1}{2}$ miles "1150" and so on. The letters preceding the digits identify the direction from the county base for the east and west roads and from the county meridian for the north and south roads. The letter following the digits locates the road in reference to the other axis; thus each road is located in its respective quadrant.

In Fig. 2, road N-100-W is on the first section line north of the county base and lies west of the county meridian. Road W-100-N is on the first section line west of the county meridian and lies north of the county base line. County base-line roads are identified as N-000-W or N-000-E. County meridian-line roads are identified as W-000-N or W-000-S.

In Fig. 3 the road network is identified for three miles north and three miles west at the intersection of the county base and county meridian lines in the city of Toledo. The identification of the roads on section corners has been covered. Roads on the $\frac{1}{2}$ -section lines, which connect $\frac{1}{2}$ -section corners, are assigned "50" as the last two digits. Thus, a road W-250-N is $2\frac{1}{2}$ miles west of the county meridian and north of the county base line. Roads on the $\frac{1}{4}$ -section lines are assigned "25" or "75" for the last two digits. Identifying straight roads on section lines, $\frac{1}{2}$ -section or $\frac{1}{4}$ -section lines is relatively simple. But when the roads deviate from these lines, consideration must be given to the general location in respect to the regular roads.

Road N-275-W extends over two miles on a $\frac{1}{4}$ -section line $2\frac{3}{4}$ miles north of the county base line, but east of road W-125-N it becomes an irregular road. Theoretically this portion could be identified as N-275-W, thence W-090-N, thence N-250-W. However, the lengths that could be identified as W-090-W and N-250-N are relatively short in comparison to the entire length of N-275-W. Even if N-275-W extended for only the section shown in the example it would be more practical to ignore the irregular length and identify the entire road as N-275-W.

The identity of the roads with shorter straight sections and longer irregular sections may not be as easy to define since "a longer tail" may soon begin to "wag the dog". In such cases, the irregular portion of sufficient length may be identified by its general position, or if the irregular section is composed of several regular lengths, each may be identified separately. Road W-160-N extends approximately three miles in a general north and south direction. It has been identified as W-160-N since the average distance of this road west of the meridian is approximately 1.6 miles.

In order not to duplicate the identification of county-line roads, each county will identify the roads on the north and west county lines. Roads on the south and east county lines will be identified by the adjacent county, except those on the Illinois-Indiana border. These stateline roads will carry an Illinois number unless the individual county comes to an agreement with Indiana.

Diagonal roads are identified by either a "1" or "3" as the final digit. Predominantly northeast and southwest roads are assigned the digit "1" and northwest and southeast roads the digit "3". The road from Walla Walla to near Greenup in Fig. 4 can be classified as an irregular diagonal road running in a predominantly northeast and southwest direction. It is more of a north and south than an east and west road. Therefore, it is identified as E-341-S (average distance from the meridian is approximately 3.4 miles).

Dead-end or cul-de-sac roads not on a section line, $\frac{1}{2}$ -section line or $\frac{1}{4}$ -section line are identified by the coordinate location of the connection with a public-road network with "9" assigned as the final digit. The general location of a road with one entrance and exit would be of little value since access is only provided at one point. "E" and "W" roads will normally have "N" and "S" parent roads. A dead-end road extending from an incorporated area will bear the identity of the point where it becomes a rural road.

It is not practical to establish a hard and fast rule stating that a section-line road of two miles in length that deviates from the line for approximately 1,200 ft. at a creek crossing shall not be identified as a road on a section line for its entirety. If the deviation was only for 200 ft., there would be little doubt that it should be identified as a section-line road; if the road leaves the section line for 4,000 ft., there would be little doubt that it should not be identified with the section line. The breaking point where it will or will not be identified to the section line must be determined by the agency preparing the road-numbering system. Similar questions may arise concerning whether or not a road should be classified as diagonal.

One of the shortcomings of this system is that more than one road will have the same identification number. Thus road N-100-W may extend from the meridian line west for only two miles and terminate. It may be four miles west of the meridian before there will be another road on the section line. This road will also be identified as N-100-W. This method of identification can be defended to some extent because it is frequently the policy in municipalities to give streets the same name even though the street may not be continuous.

A house number is the combination of a road number plus the distance of the entrance from the reference axis indicated by the final letter in the road number. Odd numbers were assigned to features on the north and east side of roads, and even numbers to those on the south and west side.

In Fig. 5, the number method is illustrated along road N-100-W. The entrance of the first house west of the county meridian is about 0.40 miles from the meridian, thus 041 is attached to the road identification number making the house number N-100-W-041. It is then established that the house in question is on a road one mile north of the county base line and 0.41 miles west of the county meridian. East of the county meridian on the north side of road N-100-E, the first house is numbered N-100-E-051 as the entrance is on the $\frac{1}{2}$ -mile point although the house actually is perpendicular from a point on the road about $\frac{3}{4}$ mile from the county meridian.

Fig. 6 illustrates the house-numbering system along a diagonal road, which is also applicable to other irregular roads. Some difficulty is encountered in numbering houses along irregular roads, such as Road E-341-S. This road is identified as a northeast and southwest diagonal, but since it is more of a north and south than an east and west road the average distance is measured from the county meridian. Occasionally a road referenced to the meridian may run east and west for a short distance as does E-341-S near Greenup.

Because the number assigned the features is obtained from the distance of the entrance from the reference axis, it is evident that if several features were adjacent to E-341-S-300 and had their entrances on the portion of E-341-S that runs east and west, they would all have the same number. This would defeat the purpose of individual feature numbers. In order to avoid a duplication of numbers, "300" would be assigned to the center feature along this section. Adjacent features in the direction toward the county base line would be given a smaller even number as 298, 296 and so on. Those in the other direction would be given 302, 304 and so on.

For a short section of road, as the one just discussed, the odd and even numbers may appear to be reversed; that is an odd number for the feature on the south side of a road and an even numbered-feature on the north side. The same reference axis is used for numbering of the entire road. The features in turn are referred to the other axis. For irregular roads this is not an uncommon condition.

It was the general opinion of the county superintendents of highways on the special committee that it would be feasible to mark in some manner the more important continuous county highways as a service to the public. The signing of any route must conform to the specifications stated in the Manual of Uniform Traffic Control Devices.

If the signing of these roads to form a Statewide system of county highways becomes a reality, it will be a county-sponsored project in agreement with the Illinois Division of Highways. The signing of county routes overlapping State and U. S. numbered highways, road junctions of county and state routes, statemaintained county highways, warning signs, and the maintenance of these signs must be agreed upon by the counties involved, the Illinois Division of Highways and any municipality through which marked routes are to be posted.

The system agreed upon for identification of continuous county highways is feasible for Illinois. It will occasionally enable a driver to follow the better county highways to reach his destination in a more direct and well-defined route. If marking is extended into municipalities to marked State and U. S. numbered highways it will provide a continuous system of marked roads. In order not to conflict with the existing numbered highways, it was proposed to designate letters for the county system. Single letters were allotted to roads in the general east and west direction, and double letters to the north and south roads. Every other letter has been allotted to the proposed system, which will allow for a one-to-one expansion of routes.

Letters in the first part of the alphabet were assigned to the selected roads in the northern part of the counties adjacent to Wisconsin. As roads selected in the system were encountered to the south, additional letters were obtained further down the alphabet. An attempt was made to establish an east and west and a north and south zone in the state to assign specific letters to each zone. This proved to be impractical with limited letters. The present system is to proceed through the alphabet from north to south and east to west, then repeat as often as necessary until all desired roads are lettered. In no case shall any county have more than one road with the same identification.

The roads in the system are county highways. It was sometimes necessary in order to add to the continuity of roads to overlap other systems; however, the overlapping has been held to a minimum. The plan for continuous marking has been referred to the research committee of the association for action. If it is approved it should be carefully reviewed by the counties so that all concerned will be in accord.

The road and house numbering system and the lettering of continuous county highways is a system that the county superintendents of highways and representatives from the Illinois Division of Highways believe feasible for Illinois. In no way are counties obligated to accept any or all of the proposed program. It is believed that this system will be beneficial from the standpoint of the number of rural dwellings saved from the fire; increased tourist travel in rural Illinois, ability to pinpoint and fight forest fires efficiently, and the number of rural accident victims saved.

It is believed further that the road and house numbering system which this study indicates to be feasible for Illinois will have application in other states with similar pertinent characteristics.

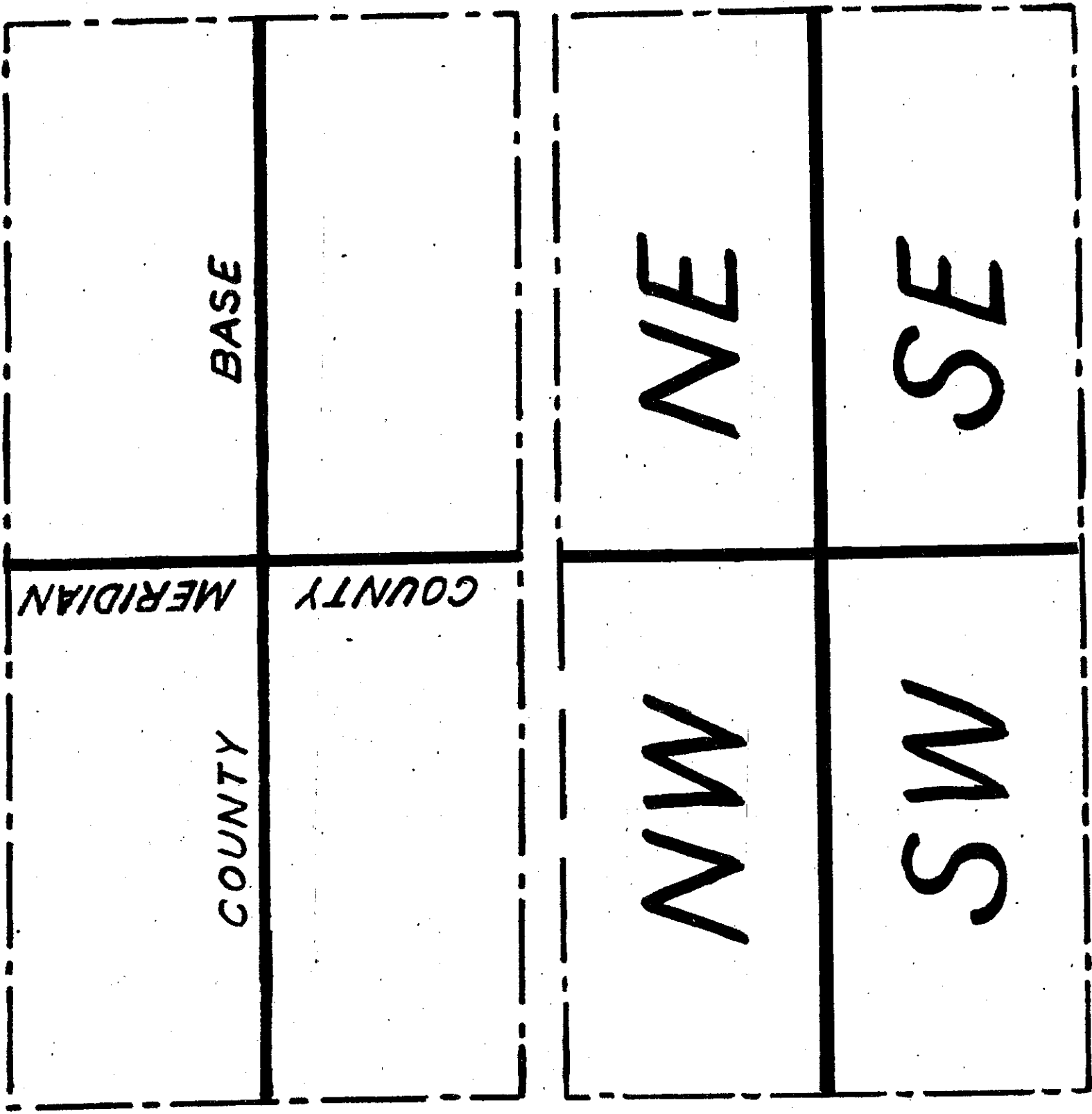


FIGURE 3.

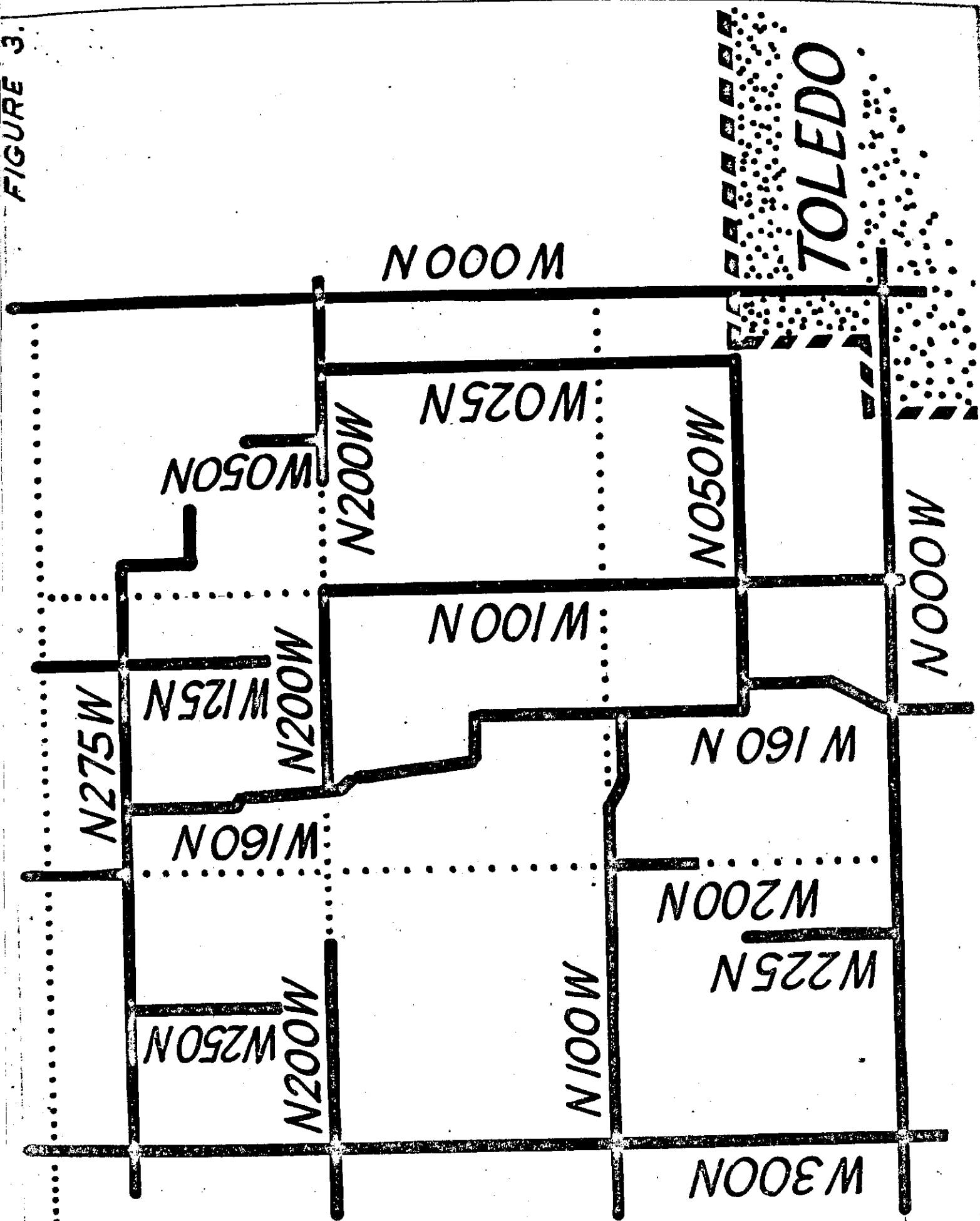


FIGURE 4

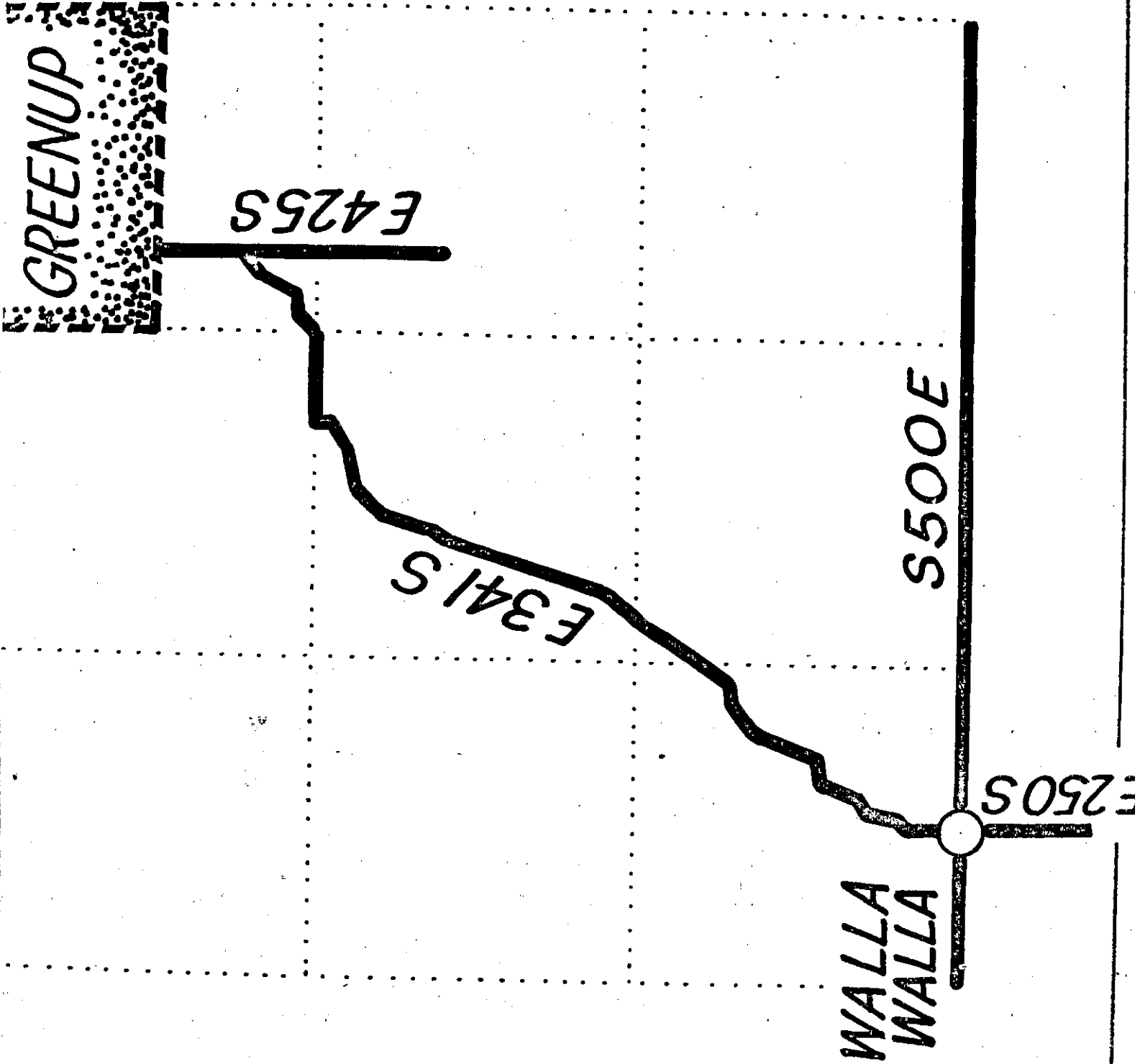


FIGURE 5.

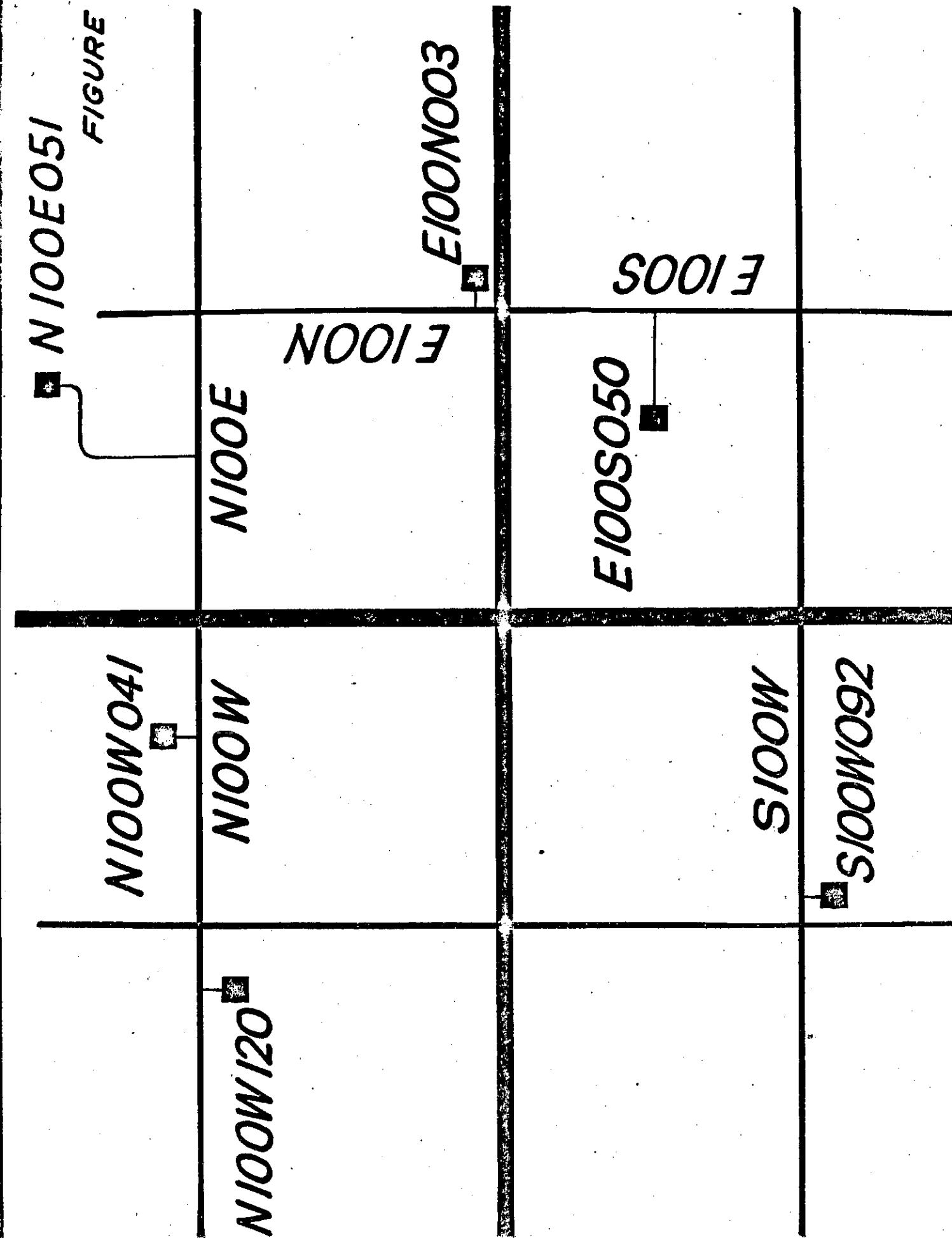


FIGURE 6.

