To the Graduate Council:

I am submitting herewith a thesis by Leonor C. Osorio de Pérez entitled "Historical Evolution of Cedar Bluff Road at Its Intersection with Executive Park Drive and Park West Boulevard: A Case Study." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science in Planning.

George E. Bowen, Major Professor

We have read this thesis
and recommend its acceptance:

Accepted for the Council:

The Graduate School

HISTORICAL EVOLUTION OF CEDAR BLUFF ROAD AT ITS INTERSECTION WITH EXECUTIVE PARK DRIVE AND PARK WEST BOULEVARD: A CASE STUDY

A Thesis

Presented for the

Master of Science in Planning

Degree

The University of Tennessee, Knoxville

Leonor C. Osorio de Pérez

August 1984

DEDICATION

My son, keep thy father's commandment, and forsake not
the law of thy mother:
Bind them continually upon thine heart and tie them
about thy neck.
When thou goest, it shall lead thee; when thou sleepest,
it shall keep thee; and when thou awakest, it shall
talk with thee.
For the commandment is a lamp; and the law is a light;
and reproofs of instruction are the way of life:

Proverbs 6: 20-23

To my parents, Rosario Granado de Osorio and Jorge E. Osorio Villate, without whose guidance and encouragement a good education would have never been achieved.

ACKNOWLEDGMENTS

The researcher/writer wishes to express her appreciation to those people who have been of assistance in the development and writing of this thesis. Particular gratitude is extended to Mr. George E. Bowen who spent numerous hours reviewing the various drafts and whose sound and valuable advice made its approval possible. Appreciation is also extended to the remaining members of the committee who studied and approved this thesis, Dr. Arun Chatterjee and Professor Joseph M. Prochaska.

The author wishes to extend a special note of appreciation to Mrs. Constanza Rodríguez de Pérez for her constant support. Finally, the author wishes to extend her deep appreciation to Alejandro, her husband, and Ailyn and Aldys, her daughters, for the patience, support, and understanding they provided throughout many years of study and during this long and difficult research effort.

ABSTRACT

Since the early 1960's Knoxville and Knox County have experienced major changes in their physical form. This is true especially in the vicinity of the I-40/Cedar Bluff Road interchange where massive development started to take place two decades ago. Two factors were primarily responsible for this change: (1) the construction of the Interstate highway through and around Knoxville, and (2) the suburbanization of Knoxville and, particularly, west Knox County.

To assess the way in which the development of the area occurred, public documents and official records were examined. In addition, interviews with the developers involved, and traffic engineering specialists were conducted in order to collect information regarding the key decision makers involved in the development of the area.

Based upon this research, the study reveals that as the area grew and traffic volumes increased, the intersections of Executive Park Drive and Park West Boulevard with Cedar Bluff Road became a focus of traffic problems due to their inadequate geometric configuration. The study also examines how decisions about the area were made. Specifically, it addresses the roles played by the developers, the staff of the Knoxville/Knox County Metropolitan Planning Commission and members of the Knox County Board of Commissioners who were ultimately responsible for the changes which occurred.

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CHAPTER I

INTRODUCTION

In order to understand the historical evolution of Cedar Bluff Road at its intersection with Executive Park Drive and Park West Boulevard, this thesis pursued three questions:

1. How land configuration within the study area changed over the years.
2. Why Executive Park Drive and Park West Boulevard were not properly designed in alignment to each other.
3. Who were those decision makers involved in the development of the area.

In relation to these three questions, a number of others needed to be addressed. Among these were:

1. Questions related to land uses in the study area. What are the predominant land uses? What was the sequence of development in the area? Were there key parcels which influenced the development of the intersecting roads? Or were the roads constructed prior to development of the area?
2. Questions related to the design of the offset intersection. How did this offset originate? What are the problems which resulted from the poor geometric design of the intersection? What has been done to alleviate these problems? How were decisions about the intersection made?

Who made them? Are there any future plans to solve the problems?

3. Questions related to the decision makers involved in the development of the area. Who were those key decision makers involved in the development of the area? How were decisions about the development of the roads made? Why were Executive Park Drive and Park West Boulevard permitted to be constructed where they are? What was the reasoning behind the design and location of these roads as they are?

1. ASSUMPTIONS AND LIMITATIONS

The nature of this study requires an examination of the area at various points in history, and an analysis and characterization of the changes that occurred from one period to the next. Equally spaced periods of time (four years) were used to ensure a degree of continuity. Five four-year periods were used as an approach to segmenting the major changes that led to the problem which exists in the area today.

The study was limited to the last 19 years since all the changes in the area have taken place during the last two decades.

The time periods used are as follows:

1. From January 1965 to December 1968.
2. From January 1969 to December 1972.
3. From January 1973 to December 1976.
4. From January 1977 to December 1980.
5. From January 1981 until today.

2. STUDY DESIGN AND RESEARCH METHODOLOGY

The basic research approach for this thesis is a case study. Four specific research techniques were employed in the data collection and analysis efforts:

1. Literature Review.
2. Land Use Survey.
3. Examination of Public Records.
4. Interviews.

Literature Review

Numerous books and reports were reviewed before conducting the case study. A list of these books and reports is included in the bibliography.

This literature review provided a basic framework for understanding and analyzing the design of intersections and location of roads in response to rapid growth and development. A broad overview of the general characteristics of the area and its traffic problems was also developed from this review. Chapters II and III are largely based on the literature review.

Land Use Survey

A land use survey was conducted in order to establish the land uses in the area. This survey, along with an examination of public records provided an understanding of the development sequence in the area. This information helped to determine whether the land uses

governed the location of the roads or the roads influenced the land uses. From this technique, some parcels were identified as being key in the development of the area. Chapters III and IV were partially based on the land use survey.

Examination of Public Records

Several public documents were examined, among them were: Minutes of the County Commission meetings, minutes of the Metropolitan Planning Commission meetings, City and County Planning Commission reports, newspaper reports, building permit records, and public hearing records. These provided a framework upon which the research was based.

Interviews

After key parcels were identified, both personal and telephone interviews were conducted with the developers involved. In addition, there were interviews conducted with local traffic engineering specialists, urban planners, and State and County road engineers.

Each person was asked a series of questions designed to assess development trends in the area, determine reasons for the location of the roads, identify traffic improvement decisions and projects, and collect information regarding who were the key decision makers involved in the development of the area.[1]

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[1]A complete list of persons interviewed for this study is included in the Bibliography.

3. ORGANIZATION OF THESIS

This thesis is organized into five chapters. Chapter II provides an overview of intersections, their characteristics and operational elements, intersection design and the effects that design has on traffic performance is also reviewed.

Chapter III describes the case study area, its location and boundaries, the offset intersection, and traffic performance problems. Also included in Chapter III is a description of the land uses in the area.

Chapter IV provides a chronological review of the way in which the study area has evolved. A brief description of the way the area looked before 1965 is also included.

Chapter V presents a brief summary of the most important events that occurred in the study area. This summary highlights key developments as well as the way in which the roads were constructed. Included in this chapter are the conclusions and recommendations.

CHAPTER II

OVERVIEW OF INTERSECTIONS AND HOW THEY WORK

1. INTERSECTION CHARACTERISTICS

An intersection is the area shared by two or more roads. The primary operational function of the intersection is to permit a change in travel route. Because of this, the intersection becomes a decision point. The motorist must decide on one of the available alternative choices. The highway designer must recognize the special problems of a driver passing through an intersection in order to make the driving as simple as possible by the use of good geometric design.[1]

Intersections are important to the traffic engineer because of their influence on the traffic flow and safety of motorists. The location of an intersection is determined by design, and the movements in an intersection are modified by regulation and control. While in the vicinity of an intersection, drivers must modify their movement by reducing speed and changing direction to avoid collision with other motorists. In the area of an intersection, the individual road user may (1) transfer from the route in which he has been traveling to another route or different bearing or (2) cross the

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[1]Theodore M. Matson, Wilbur Smith and Frederick Hurd, Traffic Engineering (New York, N.Y.: McGraw Hill Company, 1955), p. 135.

lanes of a separate traffic stream which flows between him and his destination. In the crossing function, there is no inherent requirement for interflow relationship; any interference which may be encountered is merely an annoyance or obstacle to the individual driver. In the transfer function, however, the interflow relationship is vital, since vehicles in one flow are associated with vehicles in another flow.[2]

2. PRINCIPLES OF INTERSECTION DESIGN

The following principles should be kept in mind as guides to intersection design:

1. The layout should be visible to the driver, and the moves he must or can make should be apparent.
2. Intersection layouts should be simple. All drivers must be able to sense what to expect so that they are not required to hesitate or to increase relative speeds while passing through the intersection.
3. Intersectional design should incorporate the informational signing necessary to guide vehicles through the intersection. Problems resulting from inadequate sign position and sign message can be avoided by good initial design of these components.

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[2]Wolfang S. Homburger and James H. Kell, Fundamentals of Traffic Engineering (Berkeley, CA.: Institute of Transportation Studies, University of California, Berkeley, California), p. 267.

4. The intersection should have adequate capacity for present and future traffic demands.
5. The intersection should be easy to cross. Excessively skewed intersections should be avoided because of the difficulties involved in crossing.
6. Intersections should be planned to permit installation of additional control devices as traffic flow increases.[3]

3. ELEMENTS OF INTERSECTION OPERATION

As a driver transfers from one flow to another or continues in his original flow, he will find it necessary to (1) diverge from, (2) merge with, or (3) intercept and cross the path of other road users.[4]

Diverging

Diverging to the right or left of the original flow is basic in every transfer made at an intersection. One variation of the diverging maneuver occurs when there is mutual departure by all drivers from the entering direction.

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[3]Larry A. Fites and Myron M. Jacobs, Fundamentals of Geometric Design, second edition (Berkeley, CA.: Institute of Transportation and Traffic Engineering, University of California, Berkeley, California), p. 71.

[4]Jason C. Yu, Traffic Engineering. Introduction to Planning, Design and Operations (New York, NY.: Elsevier Science Publisher, 1982), p. 165.

Merging

Once a driver diverges from a stream, he may remain in the new flow or merge with another stream. Merging may occur from the right, from the left, mutually, or in combination.

Crossing

Each driver who passes through an intersection or transfers to another flow at an intersection must cross the path of vehicles in all intervening flows between his point of entry to and exit from the intersection. Crossing may be made from the right or left of the intervening flow and may follow a diverging maneuver as a portion of the left turn transfer. If the angle between the path of the road user and the intervening flow is less than 90 degrees it is an opposed crossing.

Under some conditions, the driver making an oblique crossing must bend his path to conform with the path of the intervening flow, in which case the maneuver becomes a weave. This weave might be interpreted as a merging maneuver followed by a diverging maneuver.

4. CONFLICTS

Just as the intersection is a point of decision, it is also a point at which there are a number of possible conflicts. The movement of one vehicle can conflict with the movement of other vehicles in the same stream, the cross streams, the opposing stream, and pedestrians in crosswalks.

Conflict areas may be defined as those areas which include not only the area of potential or actual collision, but also the zones of influence surrounding such collision areas in which approaching drivers are delayed by a reduction in speeds below normal. An engineering analysis of an intersection is essentially a study of all aspects of the conflict problem. Good intersection design results from a minimization of the magnitude and characteristics of conflicts and a simplification of driver route selection decisions.[5]

There are three types of conflicts: crossing, merging, and diverging. Figure 1 illustrates these conflicts at a four approach intersection with two-way traffic.

An analysis of an intersection will show which of the possible conflicts are significant. The significance of a conflict depends on the type of conflict, the number of vehicles in each of the conflicting streams, the time spacings of the vehicular arrivals at the conflict point, and the speeds of the vehicles in the stream.

The relative speed of the conflicting vehicle streams is another factor affecting the significance of a conflict. Two vehicles approaching an intersection have a speed relationship to each other known as relative speed. This is defined as the difference of their velocity vectors.

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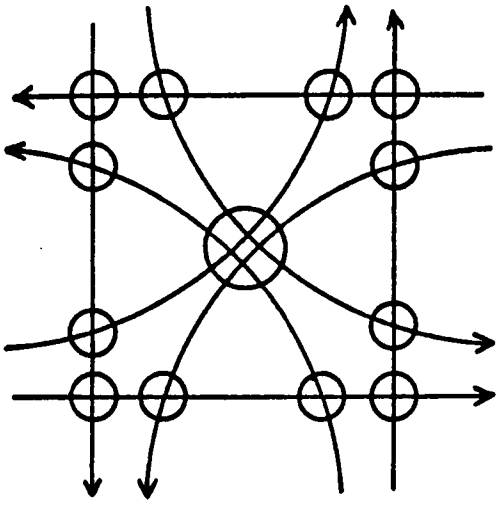
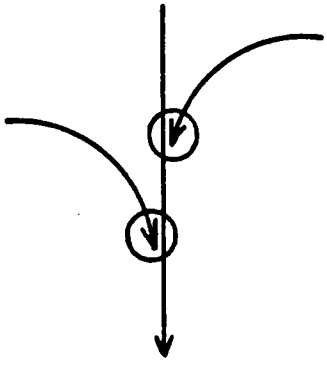
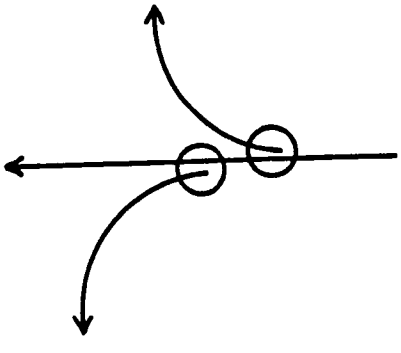
[5]U. S. Federal Highway Administrator (Urban Advisors), The Freeway and The City Principles of Planning and Design (Washington, D.C.: U.S. Government Printing Office, 1968), p. 48.



Crossing Conflicts



Merging Conflicts



Diverging Conflicts

FIGURE 1. Types of conflicts.

The benefit of providing for low relative speed is twofold. First, events unfold more slowly allowing more judgment time, and second, in case of an impact, the total relative energy to be absorbed is less and the damage is less. In addition, when the relative speed is low the average motorist will accept a smaller time-gap space between successive vehicles to complete his move. This condition increases roadway capacity.

5. NUMBER AND TYPE OF CONFLICTS

The number and types of conflict which develop at intersections are shown in Figure 2. The focal points indicated represent the area in which the conflict is more severe and a collision most likely. The normal right angle intersection of two two-way streams develops 32 conflict points. Sixteen of these points are of the more severe crossing type. If one stream is removed by design to make a "T" or "Y" intersection, this number of points is reduced to only nine conflict points, of which only three involve crossing maneuvers. If two of the flows are stopped simultaneously by signal control there remain only eight conflict points, of which only two involve the more severe crossing type of conflict. The number of entering and departing streams which flow at a given time modify the number and types of conflict points possible in intersection operation.[6]

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[6]Theodore M. Watson, op. cit., p. 141.

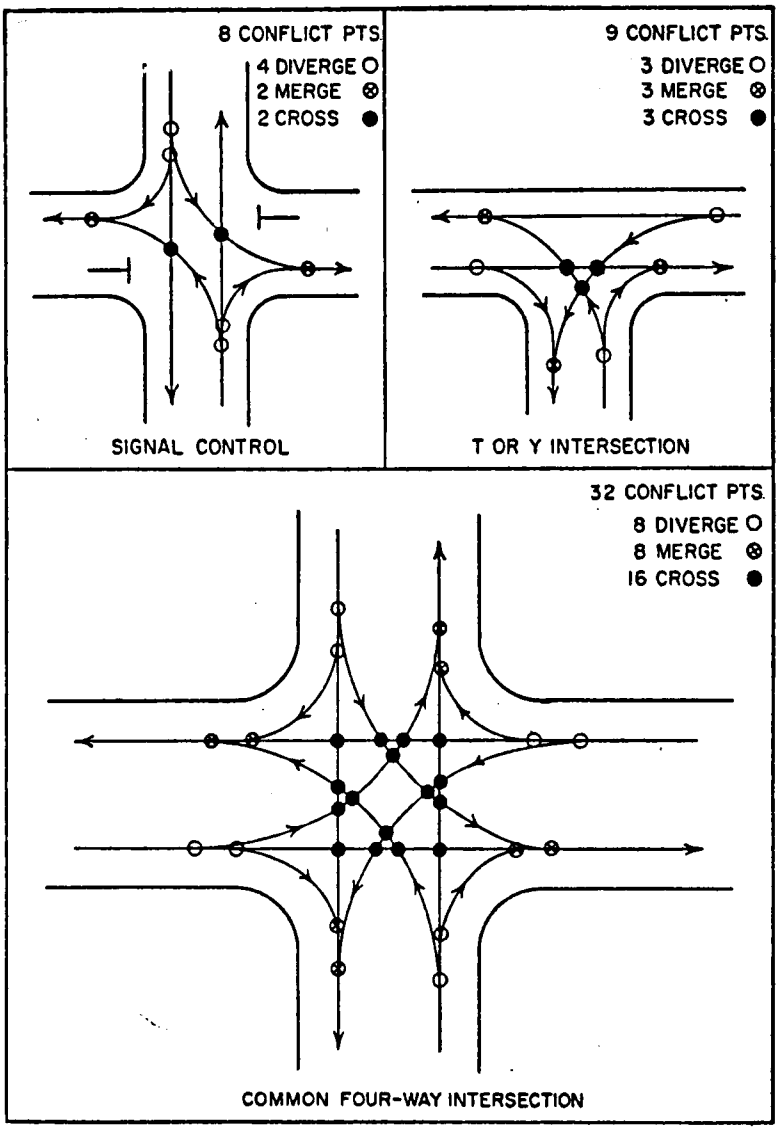

FIGURE 2. Conflict points at intersections.

6. FREQUENCY OF CONFLICT

The frequency of interference at conflict points is dependent on the volume of units found in each path of flow. For example, in the standard intersection shown in Figure 2, if each entering stream carries 200 vehicles per hour (vph), and 10 percent of each stream turns right, while 10 percent turns left, there will develop 1,200 potential conflicts per hour. The calculations leading to this fact are as follows:

Right-turn volume 20x4 approaches	=	80 vph
Left-turn volume 20x4 approaches	=	80 vph
Through volume 160x4 approaches	=	640 vph
Total	=	800 vph

Calculations from Figure 2 are as follows:

8 diverging conflicts for 8 turning movements		
1 conflict/turn (80+80)x1	=	160
8 merging conflicts for 8 turning movements		
1 conflict/turn (80+80)x1	=	160
12 crossing maneuvers involving 4 turn movements		
3 conflict/turn (80x3)	=	240
4 crossing maneuvers involving 4 through flows		
1 conflict/flow through (640x1)	=	640
Total conflicts/hour	=	1,200

This represents exactly the number of times per hour under the given conditions that one vehicle departs from, enters in front of, or crosses the path of any of the vehicles involved or the degree of hazard or delay encountered.

7. TYPES OF INTERSECTIONS

Intersections are classified as at-grade or grade separated depending upon the treatment of crossing conflicts. The grade separated intersections, commonly called interchanges, are characterized by the separation of one or more crossing conflicts by overpasses or underpasses.

Each of the two major categories of intersections may be further subdivided according to the number of intersecting roadway legs and the angles and locations at which they intersect.[7] Commonly used descriptions of intersections are:

1. Three-leg intersections. Right angle or "T", skewed, or "Y".
2. Four-leg intersections. Right angles, skewed, offset or jogged.
3. Multileg intersections. Intersection with five or more legs.
4. Rotary intersections. Also called traffic circles.

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[7]U.S. Federal Highway Administrator, op. cit., p. 95.

Figure 3 shows some of these basic intersection forms for at-grade intersections. It also shows the use of channalization for some intersections.

Offset Intersections

Offset intersections are acceptable under certain circumstances. They are in fact recommended in some local subdivision streets in order to discourage through traffic. When the distance between the center of the offset legs is greater than 185 feet, the offset intersection can be treated as two three-leg intersections. In addition, when traffic flow is greater in the main stream than in the offset legs, the offset intersection is acceptable and in most cases does not represent a problem.

On the other hand, offset intersections are not always desirable. They are never recommended on major collectors or arterials where traffic volumes are considerably higher and turning movements add to the already existing problems of congestion and safety. Intersections in these types of roads are recommended to be designed as regular four-leg intersections.

As an example of intersections in a major road, Figure 4 shows the path of flow of vehicles in a major arterial, at a given hour for both, a regular four-leg intersection and an offset intersection. The two diagrams in Figure 4 show how the distribution of vehicles in an intersection located in an arterial road becomes more complicated for an offset intersection as opposed to a regular four-leg intersection. In the regular four-leg intersection there are

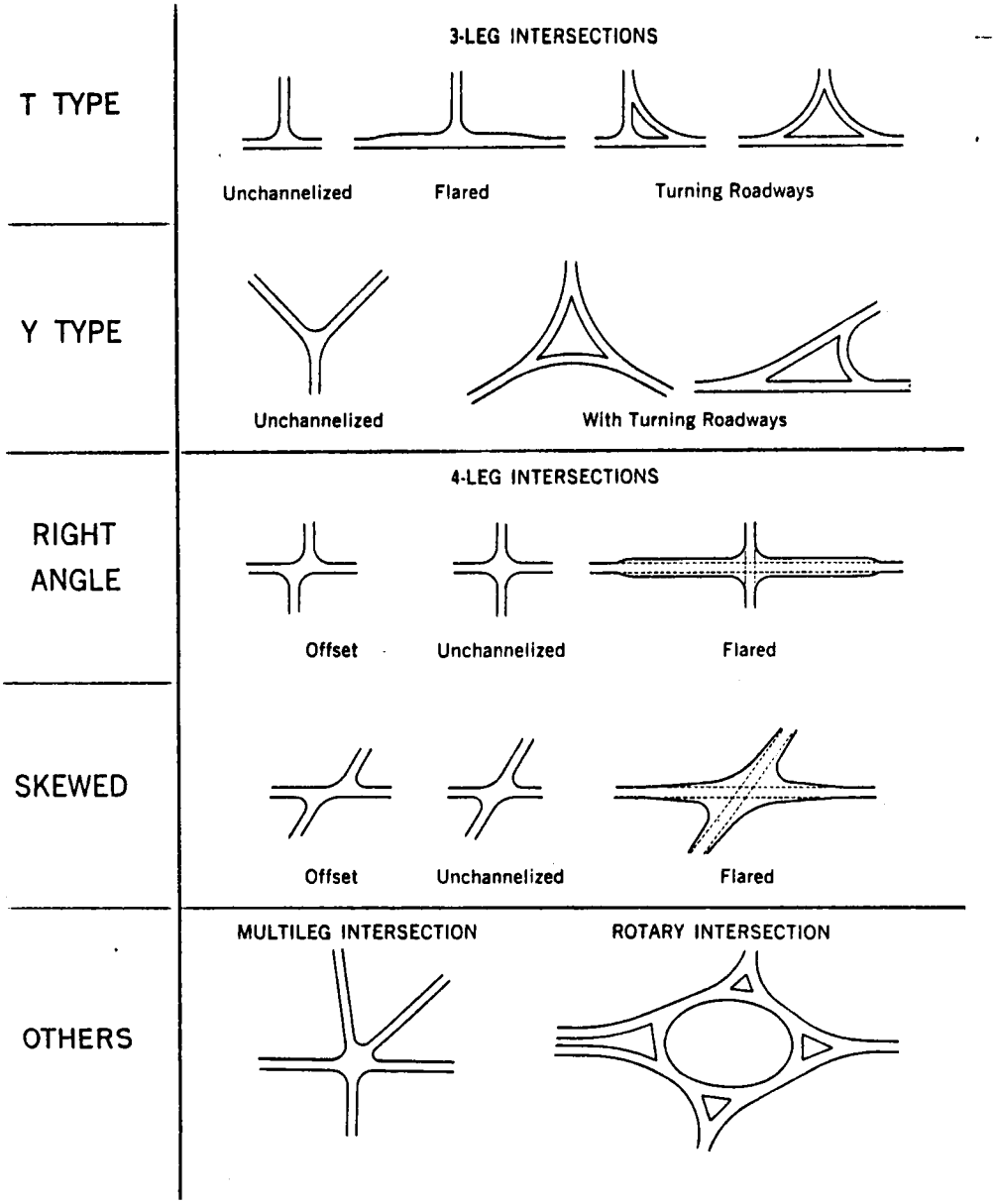

FIGURE 3. Types of at-grade intersections.

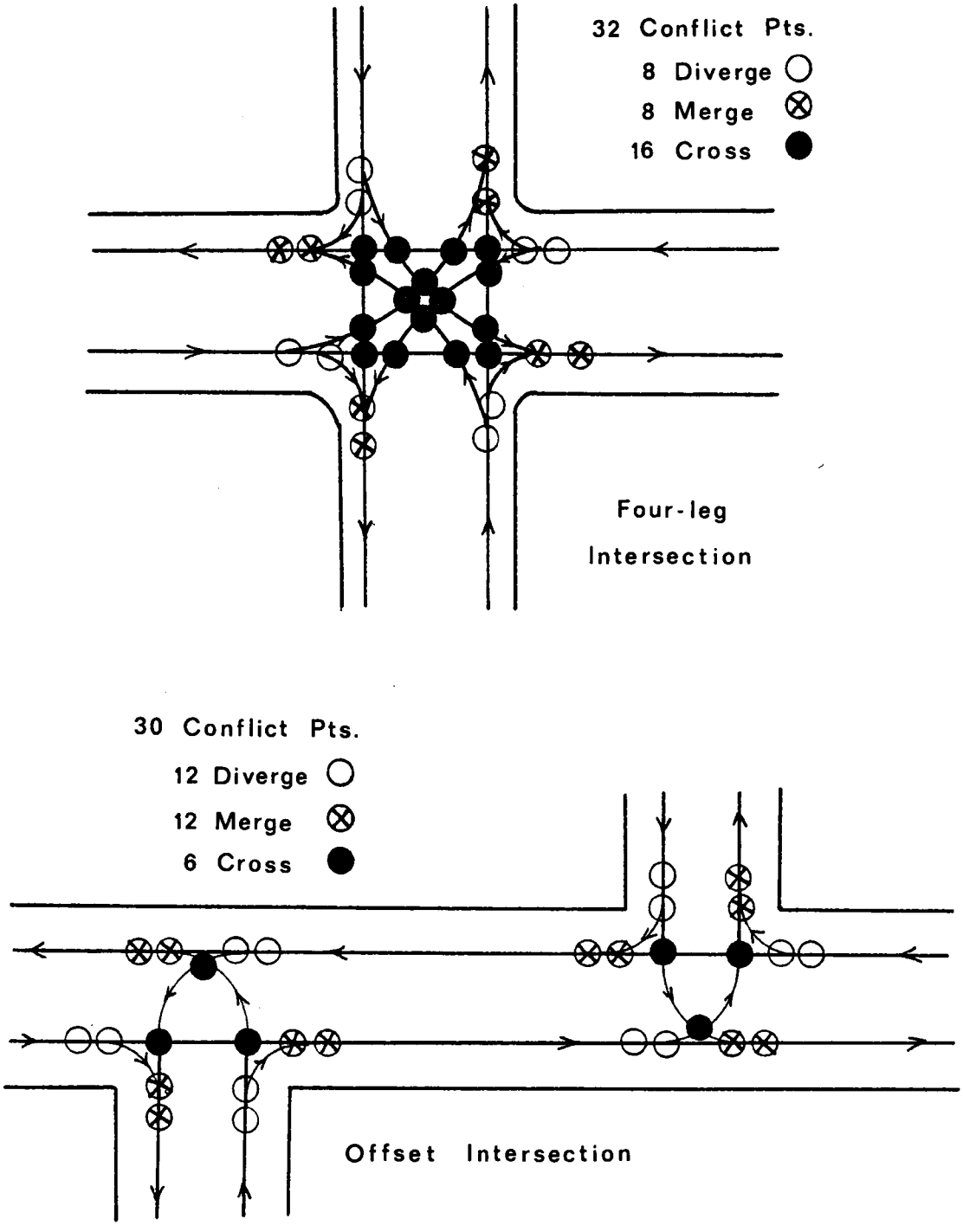

FIGURE 4. Path of flow of vehicles and conflict points at two types of intersections for a major road.

32 conflict points, as stated earlier. In the offset intersection, on the other hand, there are 30 conflict points. However, the flow of vehicles in the offset intersection is further complicated by the inadequate geometric configuration and, therefore, the lack of space for storing turning vehicles.

8. INTERSECTION PERFORMANCE

It is not possible to synthesize accurately intersection performance out of the diverse combinations of the three elemental maneuvers which may be predicted in a given case, as in many instances they are so closely interdependent that they require seriation in their development.

In the actual operation of intersections, safety as well as capacity is a matter of importance. In the interest of safety, many stops are made or required by regulations, whether or not they are required by actual conflict arising from the basic maneuvers (diverging, merging, crossing). Such delay diminishes the capacity of the entering streams in order to increase safety.

9. MODIFYING FACTORS

Traffic performance at an intersection is also modified by the composition, volume, and speed of the entering traffic streams, the form and arrangement of the intersectional area, environmental conditions of weather, light, and other values, including traffic regulations and controls.[8]

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[8]Theodore M. Matson, op. cit., p. 149.

CHAPTER III

THE STUDY AREA

Cedar Bluff Road is an arterial located in the western portion of Knox County, Tennessee. This facility lies immediately outside the western boundaries of the city of Knoxville, and runs in a north-south direction (see Figure 5).

The study area, for this thesis, includes the section of Cedar Bluff Road, north of the interchange of Interstate 40 (I-40), which encloses the intersections of Executive Park Drive and Park West Boulevard. On Executive Park Drive, the area is delineated by the end of the paved road and Corporate Square, an office complex. In the opposite direction, at the end of Park West Boulevard, Park West Hospital is the western boundary of the study area. On Cedar Bluff Road the study area is limited to 400 feet south from Executive Park Drive, and 400 north from Park West Boulevard (see Figure 6).

The intersections of Executive Park Drive and Park West Boulevard with Cedar Bluff Road is referred to as an offset intersection. Offset intersections are acceptable in design when the distance between the offset legs is adequate for weaving and storage of left turn vehicles. When the distance is adequate, they can be treated as two three-leg intersections. However, that is not the case in the study area. The distance between Executive Park Drive and Park West Boulevard is only 170 feet.[1] This fact creates the

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[1]This is the actual distance from the center of Executive Park Drive to the center of Park West Boulevard.

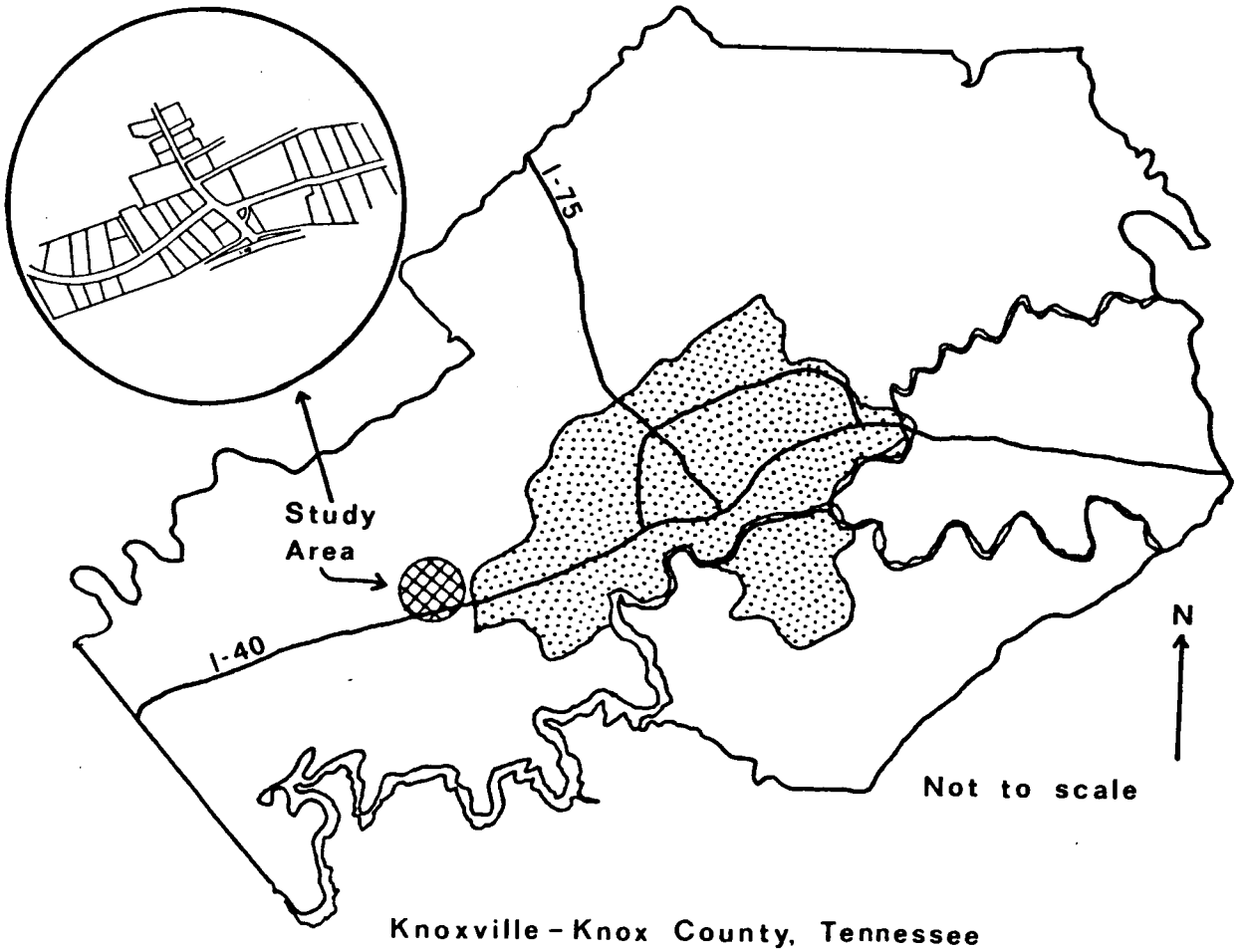

FIGURE 5. Location of the study area.

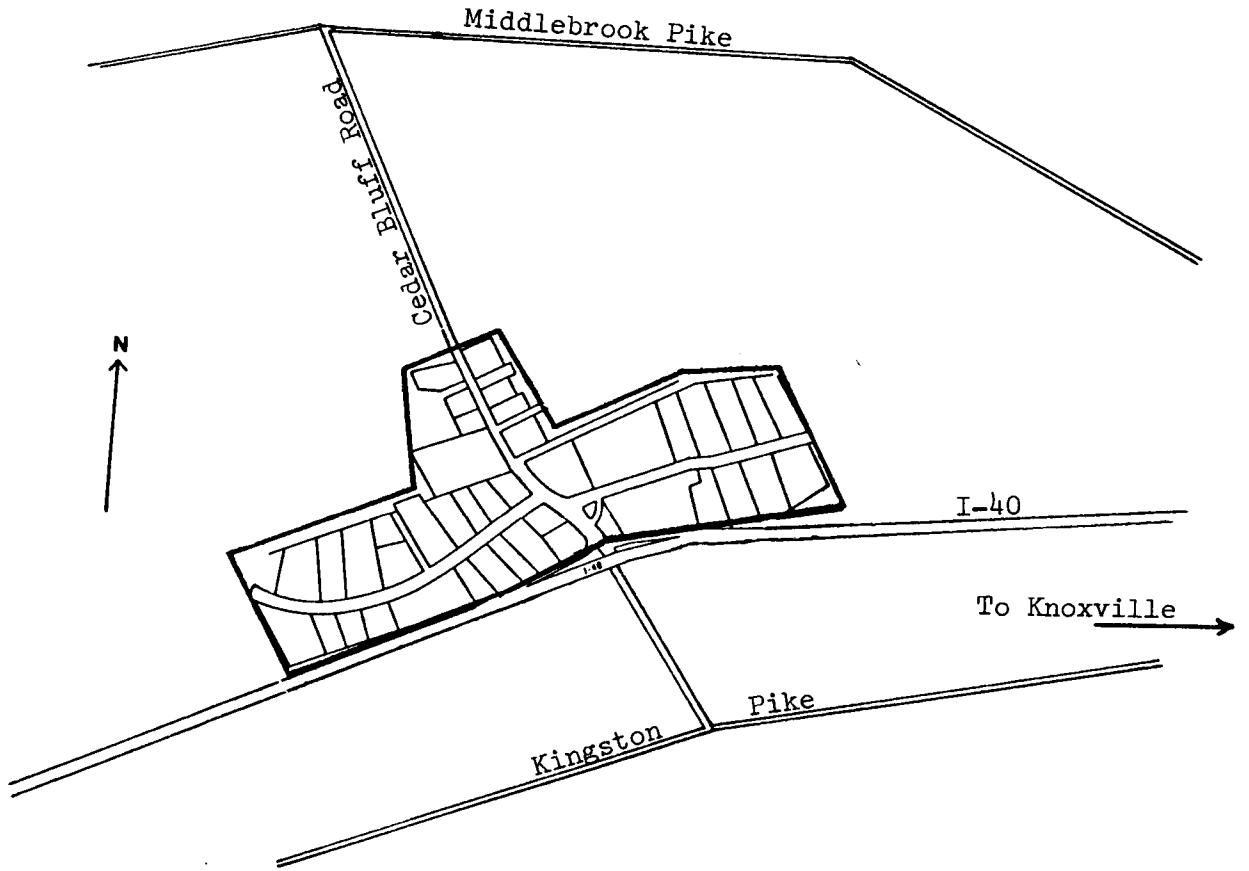

FIGURE 6. Boundaries of the study area.

following problems:

1. The intersections are not efficient since the distance between them is not adequate for storing sufficient left turning vehicles.
2. Due to the short distance between the offset legs the number of conflicting vehicular movements is very high. This contributes to a reduced traffic safety.
3. The intersections operate at an unacceptable level of service during peak hours, and therefore, the overall capacity of the roads is greatly reduced.
4. Even though the intersections are presently signalized, the geometric design calls for an extended cycle length and combined phasing, where more than one traffic movement receives the right of way simultaneously. This signalization affects the capacity of the roads and creates increased time delays and lost efficiency.[2]

Figure 7 shows the offset intersection and the conflict points of vehicular movement through the intersection. This intersection develops 30 conflict points, six of which are of the more severe crossing type. In addition, the flow of vehicles is further complicated by two factors: (1) the lack of sufficient space for storing left turning vehicles, and (2) one curb cut serving a gas station

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[2]Interview with Mr. John McAmis, Tennessee State Department of Transportation, June 1984.

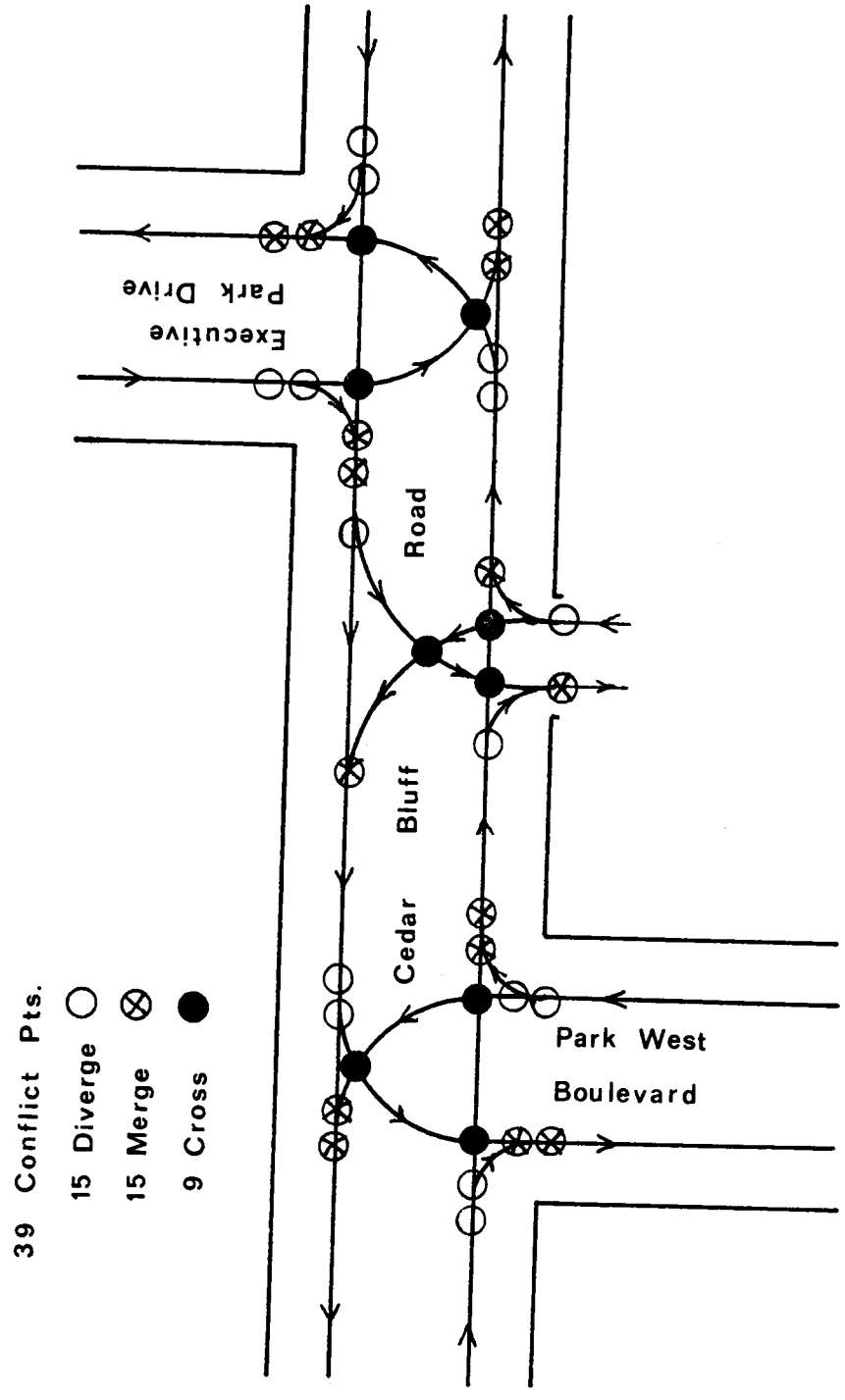

FIGURE 7. Flow of vehicles and conflict points in the offset intersection.

located in the west side of Cedar Bluff Road. This curb cut makes a "T" intersection with the road and, therefore, adds nine conflict points to the 30 already developed by the offset intersection. This intersection then has 39 conflict points in an area of approximately 170 feet long.

Presently, the area is a mixture of commercial highway uses, offices, banks, a hospital, and a shopping center. Along Cedar Bluff Road, which is the main road, service stations, banks, restaurants, and a motel make up approximately 80 percent of the total land uses. Retail stores account for the remaining 20 percent.

On the eastern right of way of Cedar Bluff Road, and perpendicular to it is Executive Park Drive. On this road development has been limited to office buildings except for a motel and a shopping center. The entire area is part of a Master Plan designed and developed since the late 1960's by C.G.S. Land Developing Company (C.G.S.). All buildings and surrounding landscapes and parking areas were planned to retain a similar architectural character. This plan results in an aesthetically attractive complex, which enhances the area.

The main road, Executive Park Drive, has a wide median strip in which grass is planted, landscaping developed, and light posts installed. The median strip is not a continuous median, but rather, has been divided into sections in order to permit left turning movements throughout the developments.

On the north side, and running parallel to Executive Park Drive, there is another road, Cross Park Drive, which also intersects

Cedar Bluff Road from the east. Executive Park Drive is connected with Cross Park Drive by two small roadways, Corporate Drive and Directors Drive (both roads running parallel to each other).

On the western side of Cedar Bluff Road and perpendicular to it, is Park West Boulevard. Development along this road includes a hospital, a motel, a few commercial establishments, a bank, and some offices. In addition, medical related offices which were developed in response to the location of Park West Hospital are located on Park West Boulevard.

Both the hospital and the road were constructed simultaneously by Mr. Hugh Parker who started developing the area in late 1972.

At one time during the late 1960's Mr. Hugh Parker owned the entire tract of land west of Cedar Bluff Road. It was after the construction of the hospital and the road that Mr. Parker began to sell parcels to developers. The road was initially built with a median strip which included landscaping, grass, and light posts.

Throughout the entire area serious traffic congestion and safety problems exist. There are three basic parts to the problem:

1. The design of the intersection of Executive Park Drive and Park West Boulevard with Cedar Bluff Road is not efficient.
2. There are an excessive number of intersections in a small area. Currently there are three intersections located in a 550 feet long strip.

3. In addition to the intersections, numerous curb cuts every few feet to service commercial establishments affect the overall capacity of the roadways as follows:
   a. Capacity is reduced by the large number of driveways allowed as a consequence of the many separate developments. Traffic movements, particularly left turn movements into and out of the driveways result in traffic congestion problems.
   b. The effect of numerous curb cuts every few feet along the roads cause multiple and conflicting turning movements in a concentrated area. Therefore, the accident potential is increased, while the capacity of the roadways is considerably reduced.

CHAPTER IV

CHRONOLOGICAL DEVELOPMENT OF THE AREA

For a better understanding of the historical evolution of the area under study, a description of the land prior to the year 1965 is presented. This descriptive overview will help to show how in a short period of time development occurred. In addition, it shows how the construction of the interstate highway system played an important role in stimulating growth in the area.

1. PRE 1965

Before 1960, Cedar Bluff Road was a minor collector street which provided a link between local streets and Kingston Pike. The road was constructed to provide access for persons interesting in living in a growing suburb of Knoxville in west Knox County.[1]

Later, during the first half of the 1960's, Interstate Route 40 West was built parallel to Kingston Pike.[2] Upon completion of I-40 West, a significant portion of Knoxville's growth occurred west of the city.

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[1]Lucile Deadrick, Heart of the Valley, a History of Knoxville (Knoxville, TN.: East Tennessee Historical Society's Publications, 1976), p. 126.

[2]Knoxville/Knox County Metropolitan Planning Commission, Comprehensive Transportation Study, Current Street Use Classification (Knoxville, TN.: Knoxville/Knox County Metropolitan Planning Commission, 1963), p. A-1.

> The planners apparently did not anticipate the power of Interstate 40 to attract residents into the west part of the County. . . . At any rate, development west of the city proceeded at an extremely rapid rate in the incorporated areas. During 1964, 65 percent of the net population increase that took place in Knox County, occurred in the western sector, with a trend toward heavier and heavier concentration of growth in this part of the County.[3]

With the completion of the interchange of I-40 with Cedar Bluff Road the local area experienced the beginning of rapid growth and development. A focus for this development was the area of Cedar Bluff Road north of the interchange, where some of the land had been rezoned from agriculture to residential and planned residential. During the later part of 1964 several scattered residential homes were developed in the area of Fox Lonas Lane and Dutch Lane. Both of these roads were local streets connecting to Cedar Bluff Road (see Figure 8).

2. 1965-1968

During these years the area of Cedar Bluff Road immediately north of the interchange with I-40 began to acquire a different character. Previously much of the land had been used for agricultural purposes, by then, however, the area to the east of Cedar Bluff Road had been bought by a development firm, C.G.S. Land Developing Company (C.G.S.). This firm had planned and designed an office park for the area and therefore had requested a rezoning of the land zoned agriculture to commercial as a transition between agriculture and commercial highway. The rezoning was granted by the Knox County

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[3]Lucile Deadrick, op. cit., p. 128.

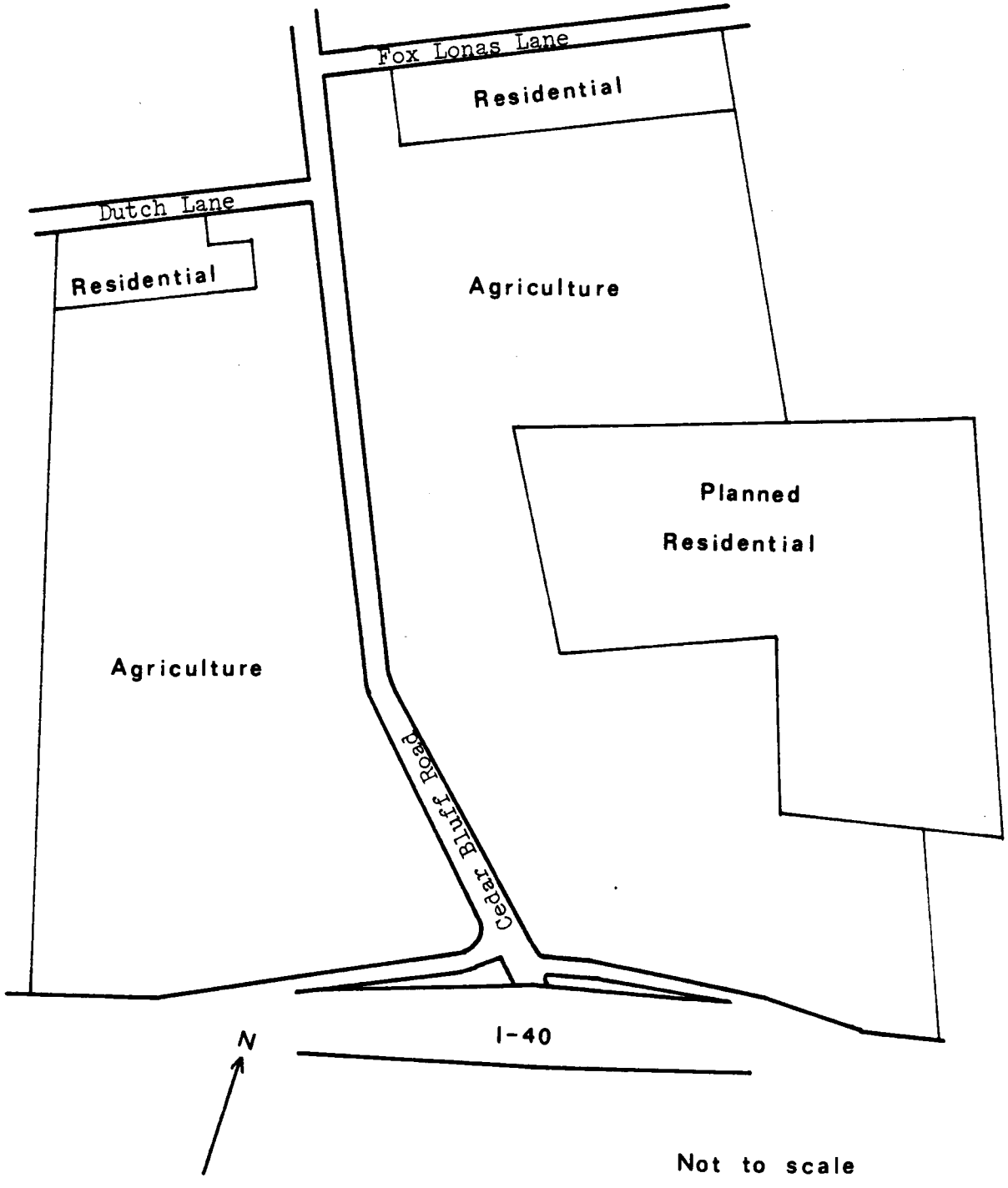

FIGURE 8. Zoning before 1965.

Board of Commissions which was composed of Commissioners William C. Tallent, John M. Beeler, and Charles C. Spangler.[4]

West of Cedar Bluff Road all the land was the property of Mr. Hugh Parker. The entire tract of land was zoned agriculture and commercial agriculture. By 1968 Mr. Parker had sold approximately two acres of land located in the western corner of the Interchange of I-40 with Cedar Bluff Road to the Shell Oil Company. Before the year was over, this parcel had been rezoned to commercial highway and a service station had been built (see Figure 9). The rezoning was granted by the same three commissioners who were representing at that time the Knox County Board of Commissioners.[5]

The period 1965-1968 marked the first change of character in the area from an agriculture area adjoining the interchange, to a commercial highway zone in which a gas station served both interstate highway users and residents of the area.

3. 1969-1972

After the Shell service station had been built, immediately north of the interchange of I-40 and Cedar Bluff Road, other related uses were being attracted into the area.

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[4]Knox County Board of Commissions, Minutes of Staff Meetings vol. 12 (Knoxville, TN.: Knox County Minutes Department, 1966), p. 215.

[5]Knox County Board of Commissions, Minutes of Staff Meetings vol. 13 (Knoxville, TN.: Knox County Minutes Department, 1968), p. 82.

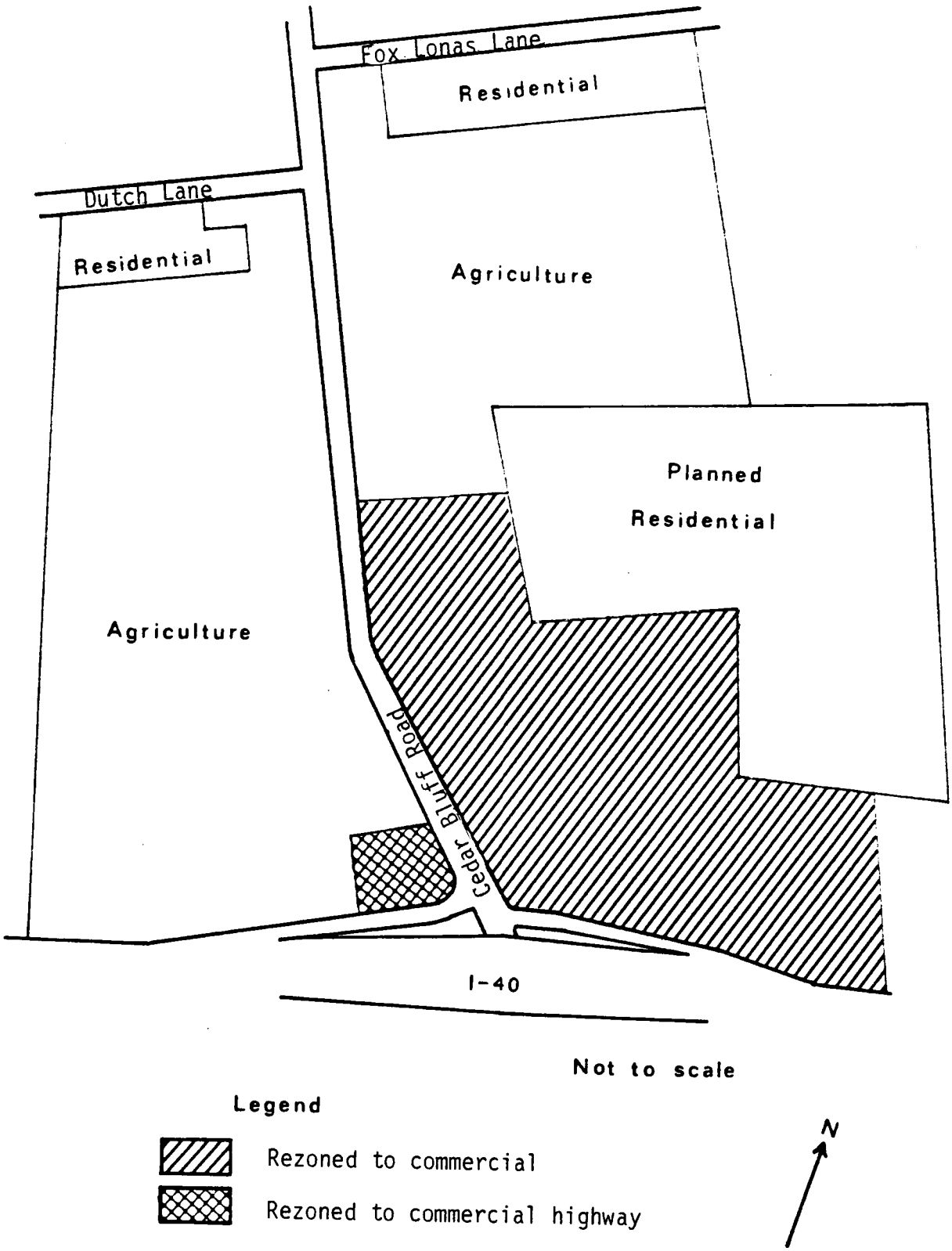

FIGURE 9. Zoning changes during 1965-1968.

In May of 1969, an area of approximately two acres west of Cedar Bluff Road adjacent to the north side of the Shell gas station was rezoned to commercial highway. Mr. Parker had requested the zoning change before the Knox County Board of Commissions. Mr. Turner and Mr. Thomas, both representing the Knoxville/Knox County Metropolitan Planning Commission had recommended the rezoning request to the Board of Commissions who in turn approved the rezoning.[6] Mr. Parker had planned to build a gas station on that tract of land, however, development did not take place for several years.

Later that year during the month of September, a building permit was issued at the request of Humble Oil and Refining Company in order to build an Exxon filling station.[7] This gas station was built on the eastern corner of the I-40/Cedar Bluff Road Interchange during the early part of 1970.

In December, at the request of the Knox County Board of Commissions, Mr. Hugh Parker agreed to dedicate land along his property for the widening of Cedar Bluff Road. According to the commissioners, the road would have to be widened from two to four lanes and have a right of way of no less than 100 feet. The modification of Cedar Bluff Road, however, did not occur until a few years later.

Before the end of 1969, Mr. Hugh Parker appeared again at a meeting of the Knox County Board of Commissions to request approval

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[6]Ibid.

[7]Knox County Code Administration Office. Review of Building Permit Records. Building Permit Number 6422, Sept. 1969.

of the rezoning of a large rectangular tract of land immediately adjacent to the back of the west side of the Shell gas station which extended from Cedar Bluff Road to approximately 1300 feet (see Figure 10). The Board of Commissions, headed by Mr. William C. Tallent, approved unanimously the rezoning request to commercial. This same tract of land was later rezoned to commercial highway in May of 1970.[8] During this meeting the Board of Commissions also granted the rezoning request for the rest of Mr. Parker's property which had remained in an agriculture and commercial agriculture zone. Mr. Parker had originally requested the rezoning of this portion of his land to commercial. However, in accordance with an amendment and following the recommendation of the Knoxville/Knox County Metropolitan Planning Commission, the Board of Commissions rezoned the entire tract to planned commercial.[9]

Two months later during a meeting of the Knox County Board of Commissions, C.G.S. presented a request for a rezoning approval. The area involved had previously been rezoned from agriculture to commercial during the 1965-1968 period (see Figure 9). This time the zoning request was to rezone to highway commercial and planned commercial. The parcel excluded a square tract in the middle of the area which was rezoned to shopping center (see Figure 10). The Knox County Board of Commissions approved the requested zoning changes which were to develop an "Executive Office Park Plan" in the area.

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[8]Knox County Board of Commissions, Minutes of Staff Meetings vol. 14 (Knoxville, TN.: Knox County Minutes Department, 1970), p. 118.

[9]Ibid.

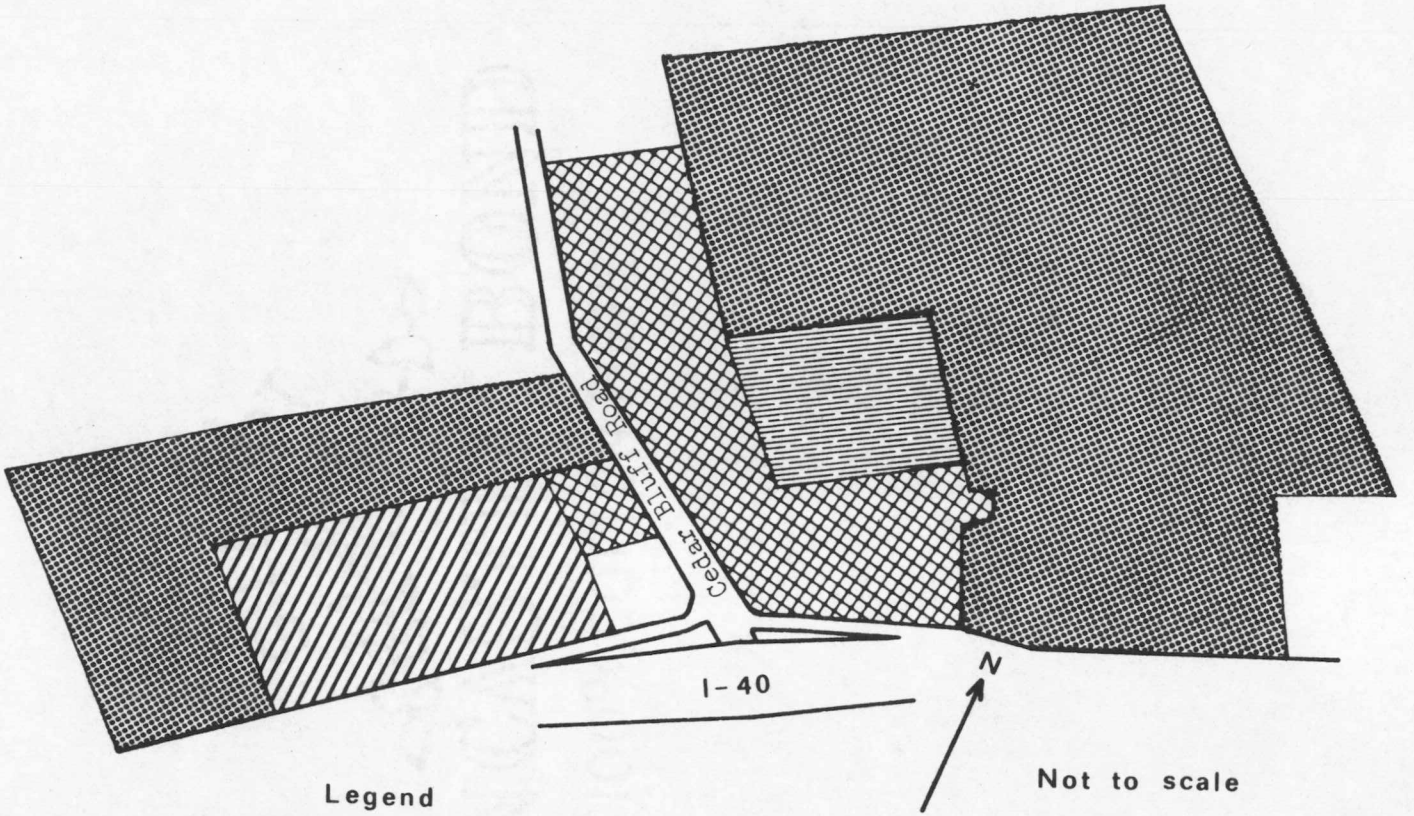

FIGURE 10. Zoning changes during 1969-1972.

> C.G.S. Land Developing Company appeared before the Knox County Board of Commissions in order to request approval of its development plans for an "Executive Office Park Plan." The plan includes an office park and a shopping center. Mr. William C. McCammon, Director of the Metropolitan Planning Commission recommended the plan before the Knox County Board of Commissions.[10]

The plan was approved by commissioner William C. Tallent and James A. McBee.

Immediately after the approval of the Executive Office Park Plan, C.G.S. requested another rezoning change for the area. This time the land involved was the tract of land east of Cedar Bluff Road which before 1965 had been zoned planned residential (see Figure 8). Commissioners John M. Beeler and James A. McBee approved the zoning change to planned commercial.[11]

Towards the end of 1970, and in response to the office park development in the area, the Landmarks Group of Knoxville purchased a tract of land from C.G.S. The parcel was approximately 1700 feet east of Cedar Bluff Road and adjacent to the northern right of way of I-40. During November of the same year, a building permit was issued to the Landmarks Group of Knoxville for the construction of a three-story office building which was built in 1971.

With the beginning of 1971 massive development started to take place in the entire area. First of all, a 2720 feet long road within the C.G.S. office park was being constructed.[12] The road extended

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[10]Knox County Board of Commissions, op. cit., p. 194.

[11]Knox County Board of Commissions, op. cit., p. 281.

[12]Knox County Board of Commissions, Minutes of Staff Meetings vol. 15 (Knoxville, TN.: Knox County Minutes Department, 1971), p. 397.

1900 feet east from Cedar Bluff Road and then turned south for another 820 feet. C.G.S. called this L-shaped road Executive Park Drive.[13] Second, a smaller road of approximately 470 feet in length was also being developed during this time. The road extended parallel to Executive Park Drive on the south side. This road was planned to accomodate access for a large motel and a future shopping center (see Figure 11).[14] C.G. S. called this road Executive Park Drive South.

During the month of November C.G.S. appeared before the Knox County Board of Commissions (after the roads were completed) in order to have them accepted by the County. Commissioners James A. McBee and John M. Beeler approved the motion made by Commissioner William C. Tallent and the roads were accepted by the County.[15]

During this year, the first two buildings of the office plan were constructed. One of them was a three-story building developed by the Landmarks Group of Knoxville which was called the 9040 Building. Its surrounding landscape and parking areas had been designed in accordance with the C.G.S. office park plan. The other building was the IBM building for IBM's administrative offices. This building was located at the eastern edge of the area and adjacent

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[13]Interview with Mr. Douglas Grey, president of C.G.S. Land Development Company, June 1984.

[14]Ibid.

[15]Knox County Board of Commissions, Minutes of Staff Meetings vol. 15 (Knoxville, TN.: Knox County Minutes Department, 1971), p. 356.

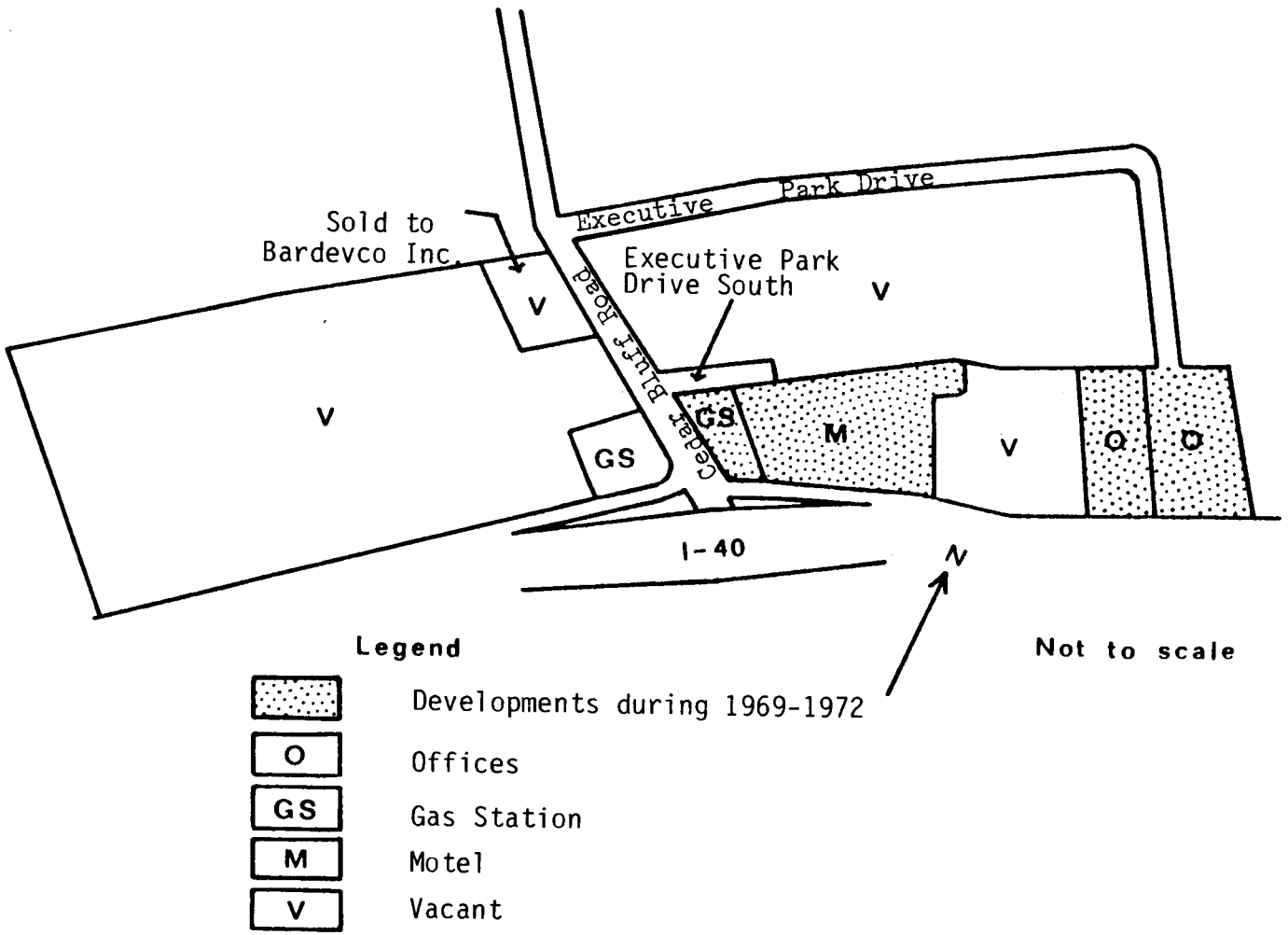

FIGURE 11. Specific land usage by 1972.

to the 9040 Building at the northern side of I-40. The IBM building had been constructed as part of a development called "Corporate Square."

During February of 1972 Mr. Hugh Parker obtained approval for a building plan.

> Mr. Hugh Parker was before the Knox County Board of Commissions to request approval of his "Master Building Plan" for Park 40 West which is in accordance with the new planned commercial zone for the County. Mr. Armstrong, chief of operations at the Metropolitan Planning Commission said that there was no opposition to this request. Mr. Parker stated that this included the road as well as the hospital. . . . Commissioner John M. Beeler approved the plan.[16]

Mr. Parker's plan was to build a hospital on a six-acre tract of land located at the western edge of the study area adjacent to the northern right of way of I-40. His plan also included the construction of a road which would run west from Cedar Bluff Road 2700 feet to the hospital. In order to raise the necessary funds for the construction of the hospital, the Knox County Health Care Corporation was formed.

> Mr. Hugh Parker was before the Knox County Board of Commissions announcing the formation of the Knox County Health Care Corporation. This new corporation has the purpose of improving the Knox County Indigent Health Care and executing related agreements. . . . The Knox County Health Care Corporation will issue and sell bonds for the construction of medical facilities including some nursing homes and a hospital. . . . The Knox County Health Care Corporation will be a non-profit corporation initially administered by a

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[16]Knox County Board of Commissions, Minutes of Staff Meetings vol. 16 (Knoxville, TN.: Knox County Minutes Department, 1972), p. 58.

> Board of Directors consisting of Mr. George Hunter, Mr. Hugh Parker, and Mr. John M. Beeler. . . . Later, four additional board members will be appointed.[17]

Immediately after the formation of the Knox County Health Care Corporation a building permit for the construction of the hospital was issued.[18]

Meanwhile, the location of the road on Mr. Parker's property was raising some controversy. Mr. Parker wanted to build the road starting from the northern side of a parcel that in May of 1969 had been rezoned to commercial highway (see Figure 10). Mr. Parker had planned to build a gas station there, but had not done so to date. The parcel, however, was to remain intact and the road would have to be constructed along its northern edge.[19]

Mr. Douglas Grey, president of C.G.S. tried to persuade Mr. Parker to change the location of the road a few feet south so it would be in alignment with Executive Park Drive South. Mr. Grey explained to Mr. Parker that C.G.S. had planned to extend Executive Park Drive South an additional 2000 feet, and both roads could be designed with a 70 to 80 feet right of way and still be in alignment with each other. Mr. Parker refused to change his plan. He stated that if he would

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[17]Knox County Board of Commissions, Minutes of Staff Meetings vol. 18 (Knoxville, TN.: Knox County Minutes Department, 1972), p. 58.

[18]Knox County Code Administration Office. Review of Building Records. Building Permit Number 9803, Dic. 1972.

[19]Interview with Mr. Hugh Parker, president of the Parker Company, May 24, 1984.

agree to Mr. Grey's proposition he would be losing money and would not be able to construct the gas station that he had planned for so long.[20]

In addition, during 1972, Mr. Parker had sold a parcel to Bardevco Inc. for the construction of a filling station.[21] The parcel was located on Cedar Bluff Road north of Mr. Parker's proposed location for the new road (see Figure 11). Mr. Parker thought that if he would build the road a few feet further south to align it with Executive Park Drive, he would be losing land on both sides of the new road.[22]

By December of that year the new road, Park West Boulevard was being constructed in accordance with Mr. Parker's plans. Before the year was over, C.G.S. had completed the motel at the end of Executive Park Drive and had sold it to the Sheraton Corporation.[23] The motel was called the Sheraton West.

With all the developments that had taken place to this date, traffic volumes began to increase in the area. It has been estimated that by this time approximately 3200 trips per day were generated

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[20]Interview with Mr. Douglas Grey, president of C.G.S. Land Development Company, June 13, 1984.

[21]Knox County Property Assessors Office. Review of Official Records. City and County Building, Knoxville, TN., 1983.

[22]Interview with Mr. Douglas Grey, president of C.G.S. Land Development Company, June 13, 1984.

[23]Knox County Property Assessors Office. Review of Official Records. City and County Building, Knoxville, TN., 1983.

in the area from the different land uses located there.[24] This estimate was obtained by translating acreage by land uses to trip generation.

4. 1973-1976

Three major developments took place in the area during the year 1973. First of all, Park West Boulevard was completed. The road ran from the west side of Cedar Bluff Road, 2700 feet into Mr. Hugh Parker's property. It was designed with a wide median strip in which landscaping, grass, and light posts were incorporated. However, the road was not built in alignment with Executive Park Drive South. It was laid out in accordance to Mr. Parker's plans. The construction of this road in such a location created an offset intersection with Cedar Bluff Road and Executive Park Drive South.

Also, Park West Hospital was constructed at the end of the new road. The four-story building was located on a six-acre tract of land.[25] This hospital was the first medical facility of such a size to be built in the western portion of Knox County.

In addition, the initial part of the shopping center, a White Stores supermarket, was constructed by the White Stores Company at the end of Executive Park Drive South across from the Sheration

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[24]The calculations for this figure are included in the Appendix.

[25]Knox County Property Assessors Office. Review of Official Records. City and County Building, Knoxville, TN., 1983.

West motel. The design of this development, as stated earlier, was in accordance with the development plans that C.G.S. had for the office park. The shopping center was not completed until 1976.

Immediately after Park West Boulevard was built, several developments were located along the new road. In 1974, Mr. Parker constructed the Parker Building, which consisted of several offices and a parking lot. This was the first of several medical office buildings that would be developed in Park West Boulevard in response to the location of the new hospital.[26] Later, during 1976, Mr. Parker built the Park West Physician Building on a parcel immediately adjacent to the hospital. This building would also be for medical related offices.[27] However, not all developments along Park West Boulevard were for medical related uses. In 1973 Mr. Parker had planned to build a motel, and by the end of that year the Primeway Inn was completed. This motel is located on the south side of Park West Boulevard midway between the hospital and Cedar Bluff Road.

During this period C.G.S. constructed some significant developments in the area. In 1974, Executive Park Drive South was extended 2000 feet to the "Corporate Square" development. At the same time, another road parallel to the L-shaped Executive Park Drive, and perpendicular to Executive Park Drive South was built. C.G.S. called this road Corporate Drive (see Figure 12).

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[26]Interview with Mr. Hugh Parker, president of The Parker Company, May 24, 1984.

[27]Knox County Property Assessors Office. Review of Official Records. City and County Building, Knoxville, TN., 1983.

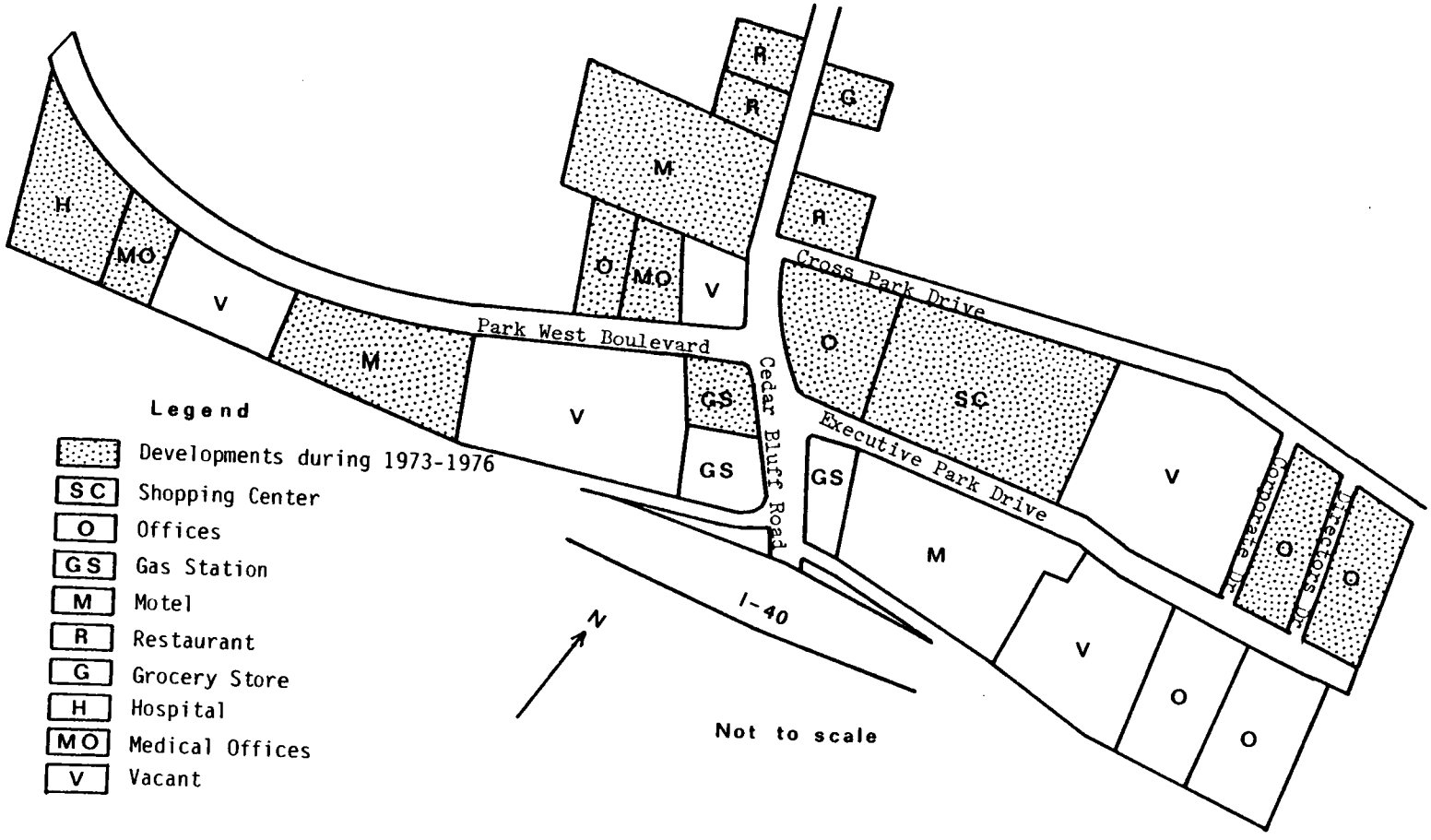

FIGURE 12. Specific land usage by 1976.

> C.G.S. was before the Knox County Board of Commissions to request that Executive Park Drive South extension 2000 feet, and Corporate Drive 769 feet, be accepted by this Board of Commissions as completed. . . . Commissioners McBee and Beeler approved the request.[28]

During 1975 the portion of Cedar Bluff Road between the interchange of I-40 and Executive Park Drive was widened to three lanes. Mr. Hugh Parker had dedicated land for this purpose several years before.

In May 1975 C.G.S. decided to change the names of several roads in the study area because they had become repetitive and were leading to confusion. The Knox County Board of Commissions consisting of Commissioners William C. Tallent, John M. Beeler, and Charles C. Spangler approved the following changes upon the request of C.G.S.:[29]

1. The name of the longest leg of the L-shaped Executive Park Drive was changed to Cross Park Drive.
2. The name of the short leg of Executive Park Drive was changed to Directors Drive.
3. Executive Park Drive South was changed to Executive Park Drive.[30]

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[28]Knox County Board of Commissions, Minutes of Staff Meetings vol. 21 (Knoxville, TN.: Knox County Minutes Department, 1974), p. 59.

[29]Knox County Board of Commissions, Minutes of Staff Meetings vol. 23 (Knoxville, TN.: Knox County Minutes Department, 1975), p. 174.

[30]Interview with Mr. Douglas Grey, president of C.G.S. Land Development Company, June 13, 1984.

By this time, with all the developments that had taken place, the area was suffering from a considerable increase in traffic. On Executive Park Drive the shopping center and the office buildings were generating large amounts of traffic. On Park West Boulevard, the hospital as well as medical related offices were main traffic generators. On Cedar Bluff Road, however, traffic was being generated from several other sources. First, all the traffic generated on Executive Park Drive and Park West focused on Cedar Bluff Road. Second, vehicles entering and leaving the interstate highway had to pass this section of Cedar Bluff Road. Third, numerous commercial establishments along Cedar Bluff Road, as well as the residential areas to the north were also generating large amounts of traffic.

This new generated traffic started to affect the performance of the roads, especially at the intersections of Executive Park Drive and Park West Boulevard with Cedar Bluff Road. By this time the capacity of the roads as well as safety had been affected by the increases in the overall traffic volumes, the complexity of the traffic movements in the offset intersection, and the numerous curb cuts and turning maneuvers required to serve the commercial establishments in the area.

According to studies conducted by the Knoxville/Knox County Metropolitan Planning Commission, during February 1975 traffic on Cedar Bluff Road had reached 13000 vehicles per day. They study concluded that in order to perform at an acceptable level of service,

Cedar Bluff Road would need to have at least seven lanes.[31] The study also stated that although the growth in traffic volumes accounted for the need to widen the roadway, the geometric configuration of the roadway, namely the offset intersection, was the primary cause of the need for an excessive number of traffic lanes.

In addition, traffic in the offset intersection had not been properly regulated. This made the situation even more difficult. As a result, a group of concerned citizens appeared before the Knox County Board of Commissions requesting that the offset intersection be signalized.

> Mr. Bruce Travis representing the Cedar Bluff Merchants Association was before this Board of Commissions requesting that a traffic signal be installed at the intersections of Executive Park Drive and Park West Boulevard with Cedar Bluff Road. Mr. Travis stated that the situation was bad, there were too many accidents already plus lots of congestion of traffic trying to get in the shopping center and nearby office buildings. He said there were three T-intersections very close together and very close to the State interchange. Commissioner Spangler said that he had been informed that there were state rights of way through Executive Park Drive from I-40 and he would have to get permission for this signal from the State Highway Department. Mr. Spangler explained that the control of the signal was a responsibility of the County, but the State controlled how the signal was installed. He said that if the Board of Commissions saw fit to grant this request, then the Board of Commissions would ask the State to design a light system and after the State approved it, the project would have to be funded by the County. Mr. Spangler said that the State thought that the relocation of some of the roads while property was still available was a better solution than trying to signalize those three intersections as they now exist. . . .

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[31]Knoxville/Knox County Metropolitan Planning Commission, Cedar Bluff Road Small Area Plan (Knoxville, TN.: Knoxville/Knox County Metropolitan Planning Commission, 1975), p. 15.

> Commissioner Beeler said that the State had not granted recent County's requests to install traffic signals at other intersections. . . . Commissioner Tallent moved that approval of this signal be made subject to the design and approval of the State.[32]

Despite all the efforts made by the Cedar Bluff Merchants Association, and the Knox County Board of Commissions in order to have the offset intersection signalized, the light system was not installed until a few years later.

Before the end of 1976, the study area had become a very attractive location for office buildings and commercial establishments. During this period the Executive Plaza complex, consisting of three one-story office buildings was completed. The complex was located at the end of the recently renamed Executive Park Drive and was part of the C.G.S. office park plan. Also, the Continental Telephone Building, a three-story office building located on the north corner of Executive Park Drive and Cedar Bluff Road was constructed. In addition, on the south corner of Park West Boulevard and Cedar Bluff Road, a third gas station in the area had been built. Furthermore, along Cedar Bluff Road north of the study area, many commercial establishments had been developed. Among them, the Roadway Inn, a grocery store, and three restaurants, McDonald, Wendy's, and Long John Silver.[33]

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[32]Knox County Board of Commissions, Minutes of Staff Meetings vol. 25 (Knoxville, TN.: Knox County Minutes Department, 1975), p. 16.

[33]Knox County Property Assessors Office. Review of Official Records. City and County Building, Knoxville, TN., 1976.

All these developments were bringing considerable increases in traffic volumes. When translating acreage by land use into trips generated in the area, it is safe to estimate that by the end of 1976, 27970 trips per day were being generated from the different developments there.[34]

5. 1977-1980

During 1977 and in response to the pressing issue of a traffic light for the offset intersection, the Knoxville/Knox County Metropolitan Planning Commission began to study the feasibility of signalization versus the realignment of Executive Park Drive and Park West Boulevard. The study showed that signalization would only be a short term solution. The study pointed out that even though signalization regulates traffic flow and increases the safety of traffic movements at the intersection, it cannot accomplish other objectives such as:

1. Compensating for inadequate geometric design configurations in the roadway, namely the offset intersection, an excessive number of intersections in a limited area, and too many curb cuts and turning maneuvers at abutting business establishments.
2. Increasing the capacity of the roadway.[35]

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[34]The calculations for this figure are included in the Appendix.

[35]Knoxville/Knox County Metropolitan Planning Commission, Overview of Traffic Related Problems on Cedar Bluff Road Near I-40 (Knoxville, TN.: Knoxville/Knox County Metropolitan Planning Commission, 1977), p. 16.

The study illustrated the effects of inadequate geometric design on signalization, and concluded that the offset intersection severely complicated signalization efforts in the area.

Several studies conducted by the Knoxville/Knox County Metropolitan Planning Commission showed and recommended that the realignment of the roads would be the best approach for the solution to the traffic problems in the area.

> The first step towards the solution to the traffic problems in the area is to realign Executive Park Drive with Park West Boulevard. Until this is done, any other alternative solution would alleviate the situation over the very short term.[36]

During 1977 and 1978 the issue of the realignment of the roads was mentioned in several meetings of the Knoxville/Knox County Metropolitan Planning Commission. In one meeting there was a clear consensus that the realignment of the roads over the signalization of the intersections was the preferred solution.[37] In another meeting, it was mentioned that the installation of a traffic signal without realigning the roads would only cause more traffic problems.[38]

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[36]Knoxville/Knox County Metropolitan Planning Commission, Deficiencies of Major Intersections in Knox County, vol. 1 (Knoxville, TN.: Knoxville/Knox County Metropolitan Planning Commission, 1983), p. 32.

[37]Knoxville/Knox County Metropolitan Planning Commission, Minutes of Staff Meetings (Knoxville, TN.: Knoxville/Knox County Metropolitan Planning Commission, 1977).

[38]Knoxville/Knox County Metropolitan Planning Commission, Minutes of Staff Meetings (Knoxville, TN.: Knoxville/Knox County Metropolitan Planning Commission, 1978).

In a newspaper report (February 9, 1978) the Knoxville/Knox County Metropolitan Planning Commission was reported as having talked about plans to relieve traffic problems in the Cedar Bluff area by realigning the roads.[39]

Despite the controversy over signalization versus realignment of the roads, the Tennessee State Department of Transportation announced in 1978 that the signalization project had been scheduled for that year.

> The signalization project will begin during Spring 1978 and end by the month of September. The light system will be placed on the intersections of Executive Park Drive and Park West Boulevard with Cedar Bluff Road. It will operate on the basis of detecting vehicles, rather than a fixed time movement. The green time can be adjusted according to the amount of vehicles passing.[40]

In addition to the traffic issue, during this period the area continued to grow and several new developments were constructed. On Executive Park Drive two office developments were completed, on Park West Boulevard three buildings intended for medical related uses were constructed, and on Cedar Bluff Road several restaurants and banks were established (see Figure 13).

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[39]The Knoxville Journal "Traffic Problems on Cedar Bluff Road to be Relieved Soon." Knoxville, TN., February 9, 1978.

[40]Letter from Mr. John McAmis, Tennessee State Department of Transportation, to Mr. Don Pernell, Director of the Knoxville/Knox County Metropolitan Planning Commission, Knoxville, TN., January 16, 1978.

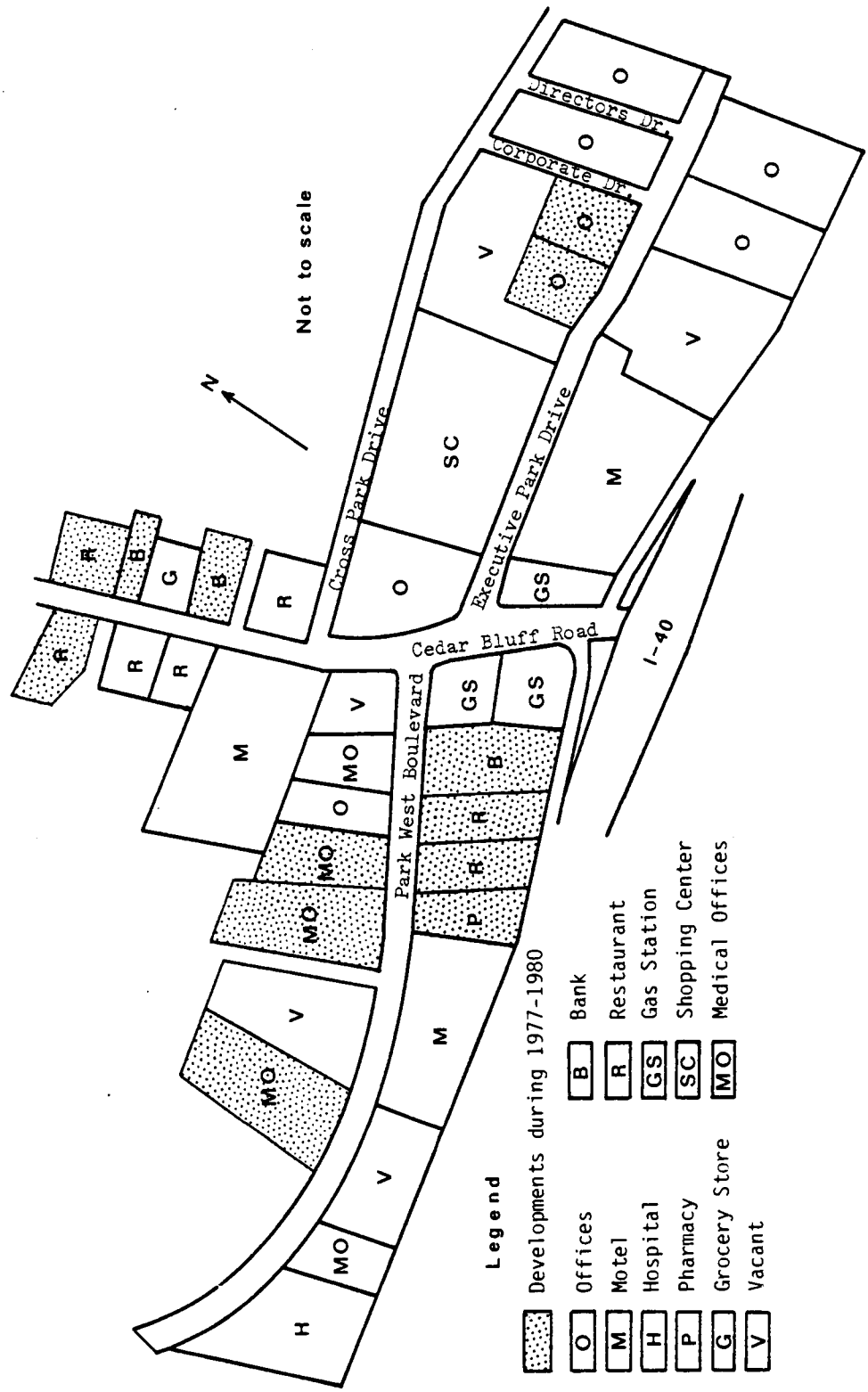

FIGURE 13. Specific land usage by 1980.

By the end of 1980, approximately 62240 trips per day were estimated to be generated from the different developments in the area.[41]

6. 1981-PRESENT

From 1981 to the present, with the exception of a few buildings, the area did not experience major changes. Among the new minor developments were three buildings for medical related uses on Park West Boulevard, a package store on the north corner of Cedar Bluff Road and Park West Boulevard, and an office building on Executive Park Drive.[42] On the south corner of Cedar Bluff Road and Executive Park Drive a driveway connecting these two streets was built in order to relieve traffic at the intersection. The driveway also increased access to the Exxon service station. This roadway was privately constructed by the Exxon Corporation (see Figure 14).[43]

Presently, it has been estimated that approximately 73000 trips per day are being generated from the development which has taken place during the last two decades.[44] This estimate becomes

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[41]The calculations for this figure are included in the Appendix.

[42]Knox County Property Assessors Office. Review of Official Records. City and County Building, Knoxville, TN., 1982.

[43]Interview with Mr. Peter McPhertherte, Knox County Transportation Engineer. Knox County Highway Department, May 16, 1984.

[44]The calculations for this figure are included in the Appendix.

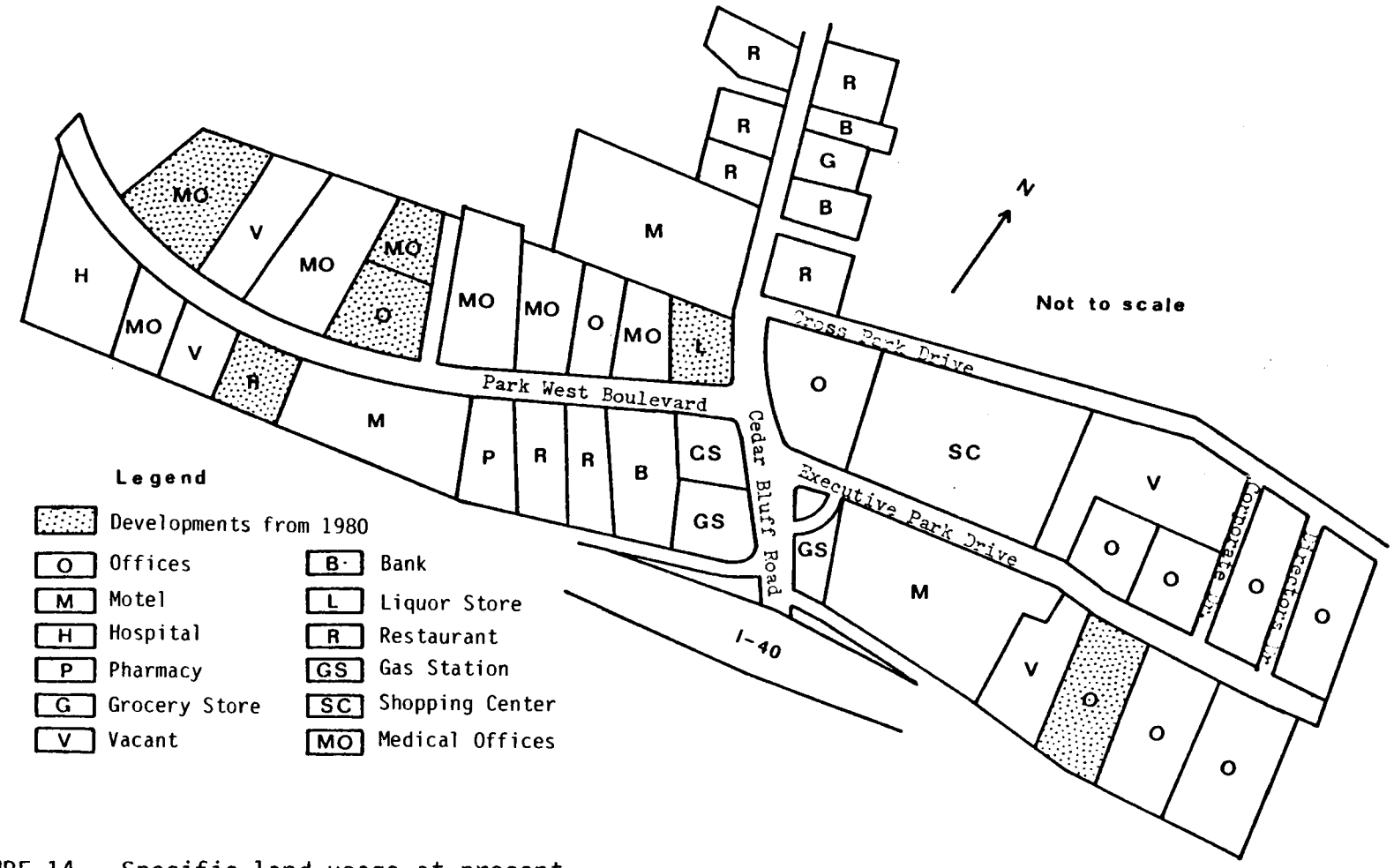

FIGURE 14. Specific land usage at present.

very useful when planning for future solutions to the traffic problems in the area.

During this period the Tennessee State Department of Transportation announced plans to widen I-40 in the area and reconstruct the Cedar Bluff Interchange. Although plans are not approved at this time, it appears the reconstruction of the interchange may take property currently occupied by the Exxon and Shell service stations. Should the reconstruction of the interchange also involve taking the Aztex service station property a realignment of the offset intersection could be possible.

CHAPTER V

SUMMARY AND CONCLUSIONS

Before offering conclusions a summary of the key information is presented. It is helpful to review some of the most important events, including key developments that took place, before attempting to advance an opinion on the factors involved in the historical evolution of the area.

1. SUMMARY

During the late 1960's and early 1970's and as a result of the location of the Interstate Route 40 West the study area began to change. The location of the highway system and its interchange with Cedar Bluff Road marked the beginning of a gradual, but steady change in the character of the area. The land, which was mostly zoned agriculture was rezoned to highway commercial and planned commercial in a period of less than five years.

Before the end of 1972 the area had experienced considerable growth. To the east of Cedar Bluff Road the beginnings of an office park were being constructed. This office park was being developed by C.G.S. Land Developing Company which owned that entire section of land.

Cross Park Drive and Directors Drive, which by that time were called Executive Park Drive, were the only roads running to Corporate Square and the 9040 Building, two developments which had been

completed in 1971. To the south, and parallel to this road Executive Park Drive, then called Executive Park Drive South, was only 470 feet long. This road serviced the Sheraton West Motel and later the shopping center.

Towards the end of 1973 another road, Park West Boulevard which intersected Cedar Bluff Road from the west, was also being privately developed. Mr. Hugh Parker, who owned the entire section of land, developed a hospital at the end of a 2700 feet long road. Immediately after the road had been completed, a motel, the Primeway Inn, which was located midway between the hospital and Cedar Bluff Road was constructed.

With the construction of Park West Boulevard the offset intersection originated. Mr. Parker built the road in its location in opposition to those who had expressed their concern about the consequences that this kind of intersection would have on traffic flow.

During the following years the area grew rapidly and construction of a variety of buildings took place. By 1977 on Executive Park Drive, the C.G.S.'s office park plan was nearly completed with very few parcels remaining vacant; Park West Boulevard was almost entirely occupied by medical related offices; and on Cedar Bluff Road commercial establishments were developed.

All this rapid growth brought to the area significant increases in traffic volumes. Soon, problems of congestion and safety began to complicate the traffic problem. In addition, the geometric

configuration of the offset intersection accounted for a deficiency in the capacity of the roads.

As a solution to these problems, in the spring of 1978 a traffic signal was placed at the offset intersection. This signal was to be a short term solution since the problems of congestion and safety would not be solved until Executive Park Drive and Park West Boulevard were aligned.

2. CONCLUSION

The growth and rapid development of the study area began in the mid 1960's. During the past two decades the physical character of the area has changed from a rural to a very modern and urbanized area.

Changes in the Land Configuration

Previous chapters have presented the sequence of development in the area and its predominant land uses. In the summary part of this chapter key developments were highlighted and their relation with the development of Executive Park Drive and Park West Boulevard was established.

At this point it is appropriate to conclude that Executive Park Drive originated as part of an office park plan that C.G.S. had designed during the late 1960's. This road, as well as Cross Park Drive, Corporate Drive, and Directors Drive serve the office park development. Park West Boulevard was constructed because

Mr. Hugh Parker, owner of the land to the west of Cedar Bluff Road, planned to build a hospital at 2700 feet from Cedar Bluff Road. Development of this road by Mr. Parker created the offset intersection.

The Offset Intersection

Soon, the inadequate geometric design of the intersection, coupled with the increases in traffic volume brought to the area as a consequence of the rapid growth, created problems of congestion and safety as well as substantially reducing the capacity of Cedar Bluff Road.

Three solutions to this problem were recommended by the Knoxville/Knox County Metropolitan Planning Commission.

First, signalization was believed to be one of those solutions, but when the issue was carefully studied, it was concluded that this approach would not alleviate the problem in the long run. The Knoxville/Knox County Metropolitan Planning Commission reported in a written study that signalization of the offset intersection would regulate the traffic flow and would increase the safety of the traffic movements in the area. However, the study also explained that the installation of a signal could not compensate for the inadequate design of the intersection and could not increase the capacity of the roadways.

The second alternative solution to the traffic problems in the area was to realign Executive Park Drive with Park West Boulevard. By realigning these two roads, a four-leg intersection would be

created. Traffic in the new intersection could be regulated with a traffic control device. As a result, the capacity and performance of the roadways would improve. This solution, on the other hand, was never carried out.

During mid 1978 the Tennessee State Department of Transportation installed a traffic light at the offset intersection. The installation of this regulatory device was intended to be a temporary solution while the project for the realignment of the streets was designed and funded.[1] To this date, such project has not been realized.

The third approach recommended by the Knoxville/Knox County Metropolitan Planning Commission to increase capacity and improve the level of service in the roadways was to widen Cedar Bluff Road up to seven lanes, reserving one for turning movements. The widening of the road would only need to be done from the interchange of I-40 up to Cross Park Drive and no realignment would be needed.[2] To date, that section of Cedar Bluff Road is only three lanes wide.

The Decision Makers

It is fair to conclude that the developers of both the roads and key developments in the study area, namely Mr. Douglas Grey, president of C.G.S. Land Developing Company, and Mr. Hugh Parker,

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[1]Interview with Mr. Peter McPhertherte, Knox County Transportation Engineer. Knox County Highway Department. May 16, 1984.

[2]Knoxville/Knox County Metropolitan Planning Commission, Overview of Traffic Related Problems on Cedar Bluff Road Near I-40 (Knoxville, TN.: Knoxville/Knox County Metropolitan Planning Commission, 1977), p. 7.

developer, played an important role in the growth of the area and the way in which it developed. In addition, the staff members of the Knoxville/Knox County Metropolitan Planning Commission, with its recommendations for approval of the plans to be carried out by the developers, were among the decision makers involved. Furthermore, since the study area is in Knox County jurisdiction, developments there had to be approved by the Knox County Board of Commissions. Most of the plans were recommended by the Knoxville/Knox County Metropolitan Planning Commission to the Knox County Board of Commissions which in turn approved them. The members of the Knox County Board of Commissions were Mr. William C. Tallent, Mr. John M. Beeler, Mr. Charles Spangler, and Mr. James A. McBee. These Commissioners then were also responsible for the way in which the area developed.

3. AREAS FOR FUTURE RESEARCH

Research serves two general purposes. The first is to provide answers to questions posed at the outset. This thesis, as a case study, attempted to plot the historical evolution of the configuration of a portion of the roadway network in West Knox County. Particular attention was paid to not only the evolution of the physical design of the roadway network, but also to the evolution of the development of private properties served by that network.

The second general purpose of research arises out of the first; that of uncovering questions still to be resolved. In that

regard, this research suggests further work needs to be done in two broad areas. The first of these would deal with the conflicts between private interests and those of the public. While not resolved within the context of this thesis, the research suggests there may have been a subordination of the public interest to the benefit of the vested private interests of certain public officials. To determine the degree to which this did occur (if it did), one would have to examine the records of property transfers during that period preceeding any development in the area through to the present. The chain of events, when correlated with the sequence of political decisions relating to zoning changes and those associated with roadway construction could reveal answers involving any conflicts of interest. Such research could also identify the extent to which rational planning for the area was distorted by that conflict of interests.

A second general question raised by this research but not answered relates to the role the Metropolitan Planning Commission played in the planning and development of the area. Specifically, the question is to what extent did the MPC staff examine the probable impacts of each land use and roadway change in the area? Such research could be directed toward the development of standard operating procedures in impact assessment such as a proportional evaluation method wherein the impacts of a proposed change in land use are estimated on the basis of a larger known development of similar character. There is a definable relationship between traffic

and land use. Through the quantification of that relationship and the incorporation of that quantification into an impact assessment model, many of the problems identified in the study area could be avoided in the future.

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Hugh Parker, president of the Parker Company.

Don Pernell, Director of the Knoxville/Knox County Metropolitan Planning Commission.

John McAmis, staff engineer of the Tennessee State Department of Transportation.

Peter McPhertherte, Knox County Transportation Engineer, Knox County Highway Department.

APPENDIX

TRAFFIC GENERATED BY THE DIFFERENT DEVELOPMENTS IN THE AREA

By the end of 1968:

Factor*	Land Usage		Vehicles/day
(748/unit)	Gas station (1) 1 x748	=	748
Total vehicles/day generated through 1968		=	748

By the end of 1972:

(748/unit)	Gas station (2) 2x748	=	1,496+
(145/acre)	Offices (4 acres) 4x145	=	580
(9.6/room)	One Motel (40 rooms) 40x9.6	=	384
			2,460
Vehicles/day generated through 1968		=	+ 748
Total vehicles/day generated through 1972		=	3,208

By the end of 1976:

(40/bed)	One hospital (78 beds) 78x40	=	3,120+
(425/acre)	Medical offices (2.5 acres) 2.5x425	=	1,060
(145/acre)	Offices (3.6 acres) 3.6x145	=	522
(748/unit)	Gas station (1) 1x748	=	748
(900/acre)	Grocery store (1 acre) 1x900	=	900
(9.6/room)	Two motels (47 rooms) 47x9.6	=	450
(1825/unit)	Three fast food restaurants 3x1825	=	5,470
(97/1000 ft.)	Shopping center (2.96 acres = 128,938 ft.) 128,938x.097	=	12,500
			24,770
Vehicles/day generated through 1972		=	+3,208
Total vehicles/day generated through 1976		=	27,970

By the end of 1980:

Factor*	Land Usage		Vehicles/day
(425/acre)	Medical offices (7 acres) 7x425	=	3,024+
(900/unit)	Pharmacy (1) 1x900	=	900
(932/acre)	Restaurant (1 acre) 1x932	=	932
(1825/unit)	Three fast food restaurants 3x1825	=	5,470
(145/acre)	Offices (2 acres) 2x145	=	290
(388/1000 ft.)	Three banks (1.4 acres = 60,980 ft. 60,980x.388	=	23,660
			34,276
	vehicles/day generated through 1976	=	+27,970
	Total vehicles/day generated through 1980	=	62,240

At the present time:

(425/acre)	Medical offices (4 acres) 4x425	=	1,700+
(145/acre)	Offices (4.5 acres) 4.5x145)	=	653
(577/1000 ft.)	One liquor store (.3 acres = 14,520 ft.) 14,520x.577	=	8,378
			10,731
	vehicles/day generated through 1980	=	+62,240
	Total vehicles/day generated throught the present	=	72,971

*This factor is taken from Table A-1, page 72.

TABLE A-1. Average Vehicle Trip Rates and Other Characteristics of Generators

Generator	Vehicle Trips to and From Per Day Per Sq. Ft.	Vehicle Trips to and From Per Day Per Employment	Vehicle Trips to and From Per Day Per Acre	Percent Trips in Hour Shown A.M. Peak	Percent Trips in Hour Shown P.M. Peak	Percent Trips in Hour Shown Peak Hr. of Gen.	Typical Auto Occupancy	Typical % Transit of Total Person Trips
Retail								
Free Standing Supermarket	135.3	-	1000	0	8.7	12.6	1.64	1
Discount Store	50.2	57.2	-	0	5.1	9.7	1.64	1
Discount Store with Supermarket	81.2	30.3	-	0	6.9	11.1	1.64	1
Department Store	36.1	32.8	900	-	-	-	1.64	2
Auto Supply	88.8	-	-	-	-	-	1.64	1
New Car Dealer	44.3	-	-	-	-	-	1.64	1
Convenience (24 hrs.)	577.0	-	-	-	-	-	1.64	1
(15-16 hrs.)	322.0	-	-	-	-	-	1.64	1
Shopping Center Regional (over 1 million sq. ft.)	33.5	30.9	580	1.9	9.7	11.5	1.64	3
(1/2-1 million sq.ft.)	34.7	20.4	370	2.8	9.6	-	1.64	3
Community (100,000-5000 sq. ft.)	45.9	20.6	330	-	11.2	11.3	1.64	3
Neighborhood (under 100,000 sq. ft.)	97.0	-	-	3.3	11.5	12.4	1.64	3
Central Area (High dens.)	40.0	-	900	-	-	-	1.64	12
Offices								
General	11.7	3.5	145	20.7	19.1	-	1.35	5
Medical	63.5	25.0	426	-	-	8.5	1.45	5
Governmental	48.3	12.0	66	8.5	16.0	-	1.35	5
Engineering	23.0	3.5	282	16.9	14.6	-	1.35	5
Civic Center	25.0	6.1	33	9.0	11.4	-	1.35	5
Office Park	21.0	3.3	277	16.9	14.6	-	1.35	5
Research Center	9.3	3.1	37	16.0	18.5	20.2	1.35	5
Restaurants								
Quality restaurant	56.3	-	200	1.8	6.0	12.5	1.93	3
Other sit-down	198.5	-	932	29.0	6.4	-	1.93	3
Fast food	533.0	-	1,825	16.0	5.7	-	1.93	1
Banks	388	75	-	-	-	-	1.45	-
Parks and Recreation								
Marina	-	259.0	18.5	-	-	-	2.05	-
Golf Course	-	34.2	7.4	-	-	-	2.05	-
Bowling	-	-	296.3	-	-	-	2.05	-
Participant sports	-	-	26.5	-	-	-	2.05	-
City Park	-	-	60.0	-	-	-	2.05	-
County Park	-	26.5	5.1	-	-	-	2.05	-
State Park	-	61.1	0.6	-	-	-	2.05	-
Wilderness Park	-	-	0.07	-	-	-	2.05	-
Hospitals	**Staff**	**Bed**						
All categories	6.1	14.8	40	-	-	11.7	1.40	-
General	5.9	14.0	-	18.0	9.0	-	1.42	17
Childrens	10.1	25.2	-	-	-	-	1.42	17
Convalescent	4.5	3.2	-	-	-	-	1.42	10
University	7.8	37.0	-	12.5	10.5	-	1.41	10
Veterans	2.2	3.8	-	11.0	16.5	-	1.32	10
Nursing Home	-	2.7	-	5.2	7.8	13.3	1.40	10
Clinics	5.9	-	-	-	-	-	1.40	10
Hotel/Motel	**Room**							
Hotel	10.5	11.3	-	7.9	5.7	8.3	1.56	2
Motel	9.6	10.6	-	6.7	5.9	9.0	1.56	0
Resort Hotel	10.2	10.3	-	2.6	6.8	7.8	1.93	0
Miscellaneous	**Station**	**Pump**						
Service Station	748	133	-	1.5	3.0	4.0	1.55	-
	Seat							
Race Track	0.61	1.08	-	-	-	-	2.05	-

[a]The trip rates given are based on a limited number of studies and thus must be used with caution. The ITE Trip Generation Report (6) provides current data which is also periodically updated. The vehicle trip rates include external-internal and internal-external trip ends at generators as well as trucks, taxis and bus.

[b]Most of the generators examined are located outside the central business districts of cities. The trip rate may thus be inapplicable to sites located within the dense urban core, particularly in large cities. Variations in generation rates may also exist because of the location of the generator either within a metropolitan area or outside that area.

[c]The vehicle trip rates presented are actually volumes into and out of the site. As such, they may include some trips that would be passing the site on the adjacent street system, in any case, while making a trip for another reason, and they are induced to stop for impulse or convenience shopping, personal business or to drop off or pick up a passenger. The proportion of these trips has not been identified. Note also that ranges in trip rates can be expected and these can vary depending upon local conditions.

[d]The typical transit percent shown has a wide range of variation based on location within an urban area, level of service provided, etc., and as such, should be used only to provide gross approximations.

VITA

Leonor C. Osorio de Pérez was born in Caracas, Venezuela on July 14, 1952. She attended elementary school in that city and later moved to Valencia where she graduated from Liceo Pedro Gual in July 1971. While working as a secretary for the Ministry of Health in Valencia, she also attended INCE technical school and obtained certificates of architectural and structural drafting in December 1973. The following November she traveled to the United States where for eight months she studied the English language. In the fall of 1979 she received a Bachelor of Science degree in Urban Planning from East Carolina University. From November 1974 to December 1979, she was the recipient of a scholarship from "Fundacion Gran Mariscal de Ayacucho" of the Venezuelan government.

In the summer of 1980, Mrs. Pérez entered The University of Tennessee, Knoxville Graduate School of Planning, and received the Master of Science degree in Planning in August 1984.

Mrs. Pérez is married to Cruz Alejandro Pérez Rodríguez from Caracas, Venezuela. They have two daughters named Ailyn and Aldys.