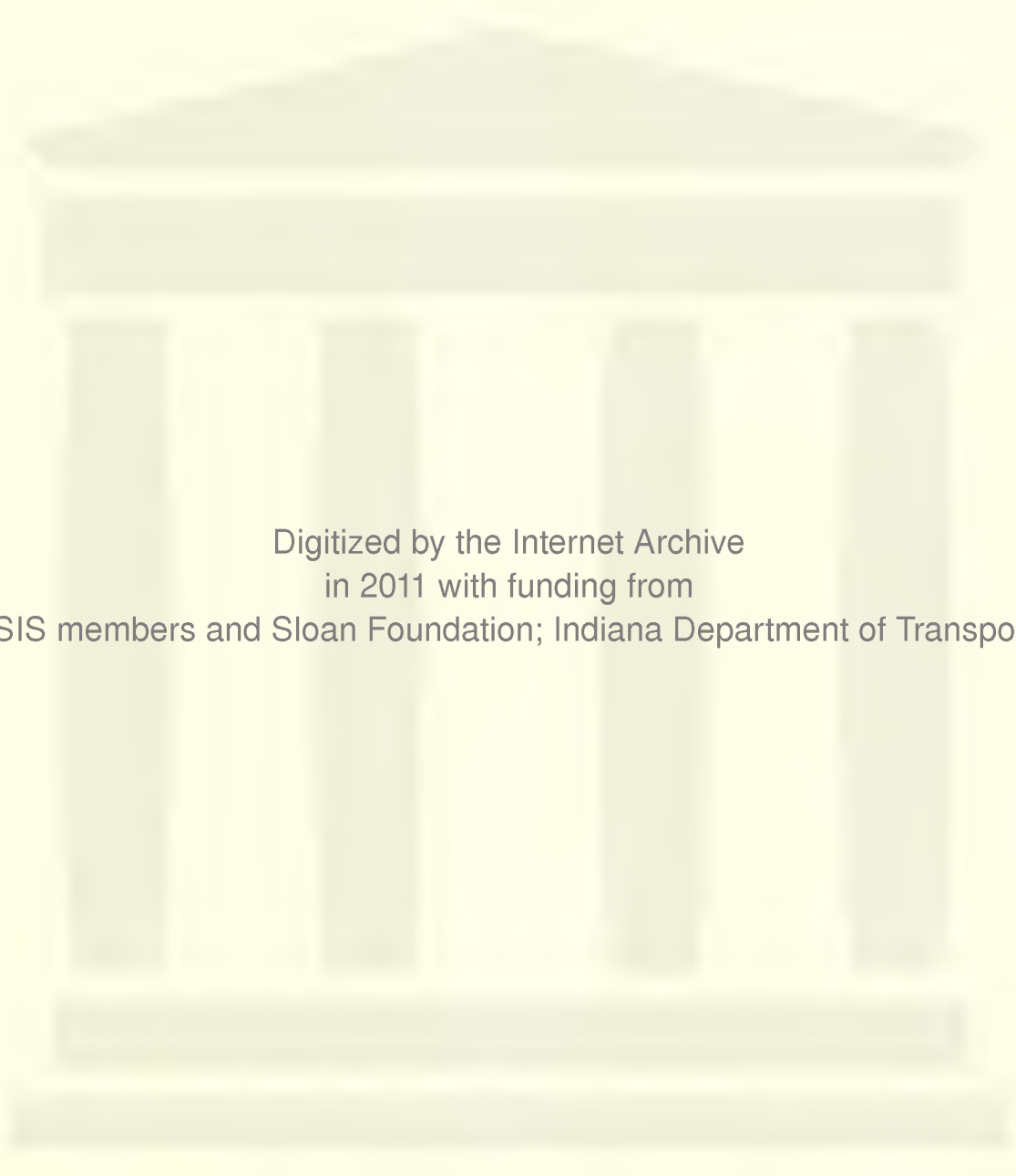




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**JOINT HIGHWAY RESEARCH PROJECT**

**FHWA/IN/JHRP-96/8**

**Final Report**

**CONGESTION ESTIMATES FOR  
INDIANA STATE HIGHWAY SYSTEM**

**Robert K. Whitford**

**Jennifer L. Opsuth**

FINAL REPORT  
FHWA/IN/JHRP-96/8

CONGESTION ESTIMATES  
FOR  
INDIANA STATE HIGHWAY SYSTEM

by

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Indiana Department of Transportation and  
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The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration and the Indiana Department of Transportation. This report does not constitute a standard, specification, or regulation.

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# CONGESTION ESTIMATES FOR INDIANA STATE HIGHWAY SYSTEM

## CHAPTER 1: INTRODUCTION

The highway network in Indiana is becoming increasingly congested in some parts of the state, and without some form of mitigation, drivers in those areas will experience increasing travel delay and frustration. National statistics indicate that motor vehicle registrations have increased seven percent from 1990-1993, and the number of vehicle kilometers traveled per person increased 31 percent from 1985-1993. Since Americans are traveling more, not less, future traffic, particularly that on the interstate system, will increase at an alarming rate.

Federal legislation has mandated that each state with non-attainment air quality areas produce and implement a Congestion Management System (CMS). The State of Indiana initiated the development of a CMS with a framework analysis (Gunawardena and Sinha, 1994) for the Metropolitan Planning Organizations (MPOs) and Indiana Department of Transportation (INDOT) to use in analyzing congestion in their jurisdictions. Only two areas of the state, Gary and Jeffersonville, are in a non-attainment status. The MPOs of those areas are actively working on mitigation of traffic congestion.

Purdue University was requested to identify the congestion on the state highway network. Utilizing the framework analysis and methodology from the Highway Capacity Manual (HCM, 1985 and 1994<sup>\*</sup>), the present study identifies the potential links in the Indiana state highway system where congestion is likely to occur. Therefore, the principal focus of the study was state highways not under the jurisdiction of a MPO. However, it seemed prudent to apply the methodology to the entire state network. Therefore, a statewide, county-by-county, congestion analysis was performed to identify congestion over a 20-year time span from 1995 to 2015. Two analyses were performed; the more conservative set of results indicates a maximum of 149 kilometers (91 miles) of state highway that currently experience some congestion during peak hour. Congestion on an additional 1,057 kilometers (656 miles) of state highway is likely to occur some time over the next 20 years, if no mitigation is implemented. More significantly, P.M. peak hour travel congestion faced by Indiana drivers is estimated to increase from about nine percent of the Vehicle Kilometers Traveled (VKT) today to 43 percent in 2015. Most of

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\* The 1985 version of HCM was used for the equations and tables referred to in the report. The 1994 version of the HCM was consulted for any new material that could significantly alter the conclusions. The few differences are noted where it seems appropriate.

that congestion will occur on the interstate highway system. The analysis shows that 48% of Indiana interstate will face P.M. peak hour congestion by the year 2015.

This report provides a county-by-county analysis indicating potential congestion on all state highway links whether under jurisdiction of a MPO or not. Further study of each specific congested link will be required in order to determine appropriate congestion mitigation strategies in the future. Chapter 2 describes the background of the study, while Chapter 3 outlines the method taken in examining all the various highway links. Chapter 4 looks at the examination of four specific counties. The results for the state are summarized in Chapter 5. Chapter 6 discusses future implementation and additional studies that could be beneficial for the State to conduct. A series of Appendices describe the results of the analysis: (A) for congested counties as shown on county maps; (B) provides for the details of VKT for non-congested counties; (C) provides a county by county summary; (D) details congestion on all the non-interstate highways; and (E) illustrates a sample from the spreadsheet showing its layout and important calculations.

It is important to note that within this type of analysis there are several limitations to consider. This analysis scans the entire state highway system for places where congestion is likely to exist or will exist in the future if the vehicle travel growth rates continue at the same rate as they have during the last five years. The two values of V/C are used.

1. The lower number called the benchmark V/C attempts to account for the usual overstatement of capacity made for non-interstate highways where intersections, traffic controls, driveways, etc. often add to the potential for congestion to occur.
2. However, even roads that indicate no congestion because the V/C in this analysis is below the benchmark, may, in fact, exhibit some congestion. U.S. 31 around Kokomo is one example. Local officials will need to be contacted to determine where congestion may occur in spite of analysis results to the contrary. Sometimes congestion results from poor setting of traffic signals or the existence of non-warranted traffic controls.
3. The interstate congestion is often shown to occur in the later years of the study (2010 to 2015). This appears to be due to high growth rates for the traffic. The suggestion is made in the conclusions that the growth rates used be reexamined. Can the interstate VKT continue to grow at about 5% or 4% for urban and rural interstates respectively? If it can, what does this mean about the usage of diversion routes and their future congestion?

## CHAPTER 2: BACKGROUND

The population of Indiana has increased 5.4 percent between 1985 and 1994, and the population is expected to increase 9.3 percent between 1994 and 2010 (U.S. Dept. of Commerce, 1995). Suburban areas of Indiana have experienced a relatively large increase in population growth as compared to Indiana cities and towns. Thus, a higher level of traffic originating in the suburbs with destinations in the urban area is likely to add to the peak hour congestion resulting in increased air pollution. The state, also, has experienced a high level of industrial growth, particularly in its northern and eastern regions. Increasing employee and business traffic for industrial development also adds to the congestion experienced by commuters, most of whom continue to operate their own car as single occupants.

The Congestion Management System (CMS) is important because of the cost of increasing highway capacity through the addition of new physical facilities. The mandates of the Intermodal Surface Transportation Efficiency Act (ISTEA) [PL 102-240] require the reduction of congestion and evaluation of alternative strategies to reduce congestion. Much of today's congestion can be attributed to the lack of an integrated multimodal transportation system, weak transportation/land development planning, and the continuing preference of travelers to drive alone. (Hoeft, 1994)

According to Hoeft's research, several trends are affecting the nation's transportation system; they are the following:

1. Seventy-five percent of the nation's population lives in metropolitan areas. Therefore, more people are traveling in metropolitan areas where much of the congestion occurs.
2. More people are traveling by automobile. 73 percent of all commuters drove alone to work in 1990 compared with 64 percent who drove alone to work in 1980. This increase substantially reduces the number of travelers using other modes, such as transit and carpools.

3. More travel is occurring among increasingly dispersed locations, as residential and business growth takes place in the suburbs. 86 percent of the nation's population growth in the last few years has occurred in suburban areas.
4. More travel is taking place in areas where there is insufficient capacity to accommodate the new demand or where the traveling public perceives there to be no reasonable alternative to driving alone. The suburb-to-suburb job travel rate continues to increase where it is now double the traditional suburb-to-center-city rate.

The 1995 Statistical Abstract shows that nationwide passenger travel by automobile increased 28 percent from 1970 to 1985 and another 31 percent from 1985 to 1993. Motor Vehicle Registrations have also been increasing nationally; from 1990 to 1993 the number of registrations for autos, trucks, and buses increased by seven percent, where 73 percent of all registrations were for automobiles. In Indiana alone, the number of vehicle registrations for autos has increased 18 percent from 1980 to 1993, and for trucks, 16 percent from 1985 to 1993.

Texas Transportation Institute (TTI) issued the sixth annual report of their 10-year study to measure and monitor urban mobility in 50 urbanized areas throughout the U.S. Ranging in population size from New York (just under 17 million) to Corpus Christi (285,000), the group of areas included 32 with a population of one million or more. The results showed over 50 percent of the areas examined experienced at least a 20 percent growth in congestion from 1982 to 1991. Only three of the 50 areas have come close to maintaining a constant congestion level during this same period. And no area showed a decrease in congestion levels between 1990 and 1991. (FHWA, 1995)

Both the 1990 Clean Air Act Amendments (CAAA) [PL 101-549] and the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) [PL 102-240] require a reduction of congestion for the threefold purpose:

1. to improve air quality,
2. to use existing transportation facilities more efficiently, and
3. to increase mobility of people and goods.

It is possible that the CAAA were enacted by Congress in an attempt to get those in the transportation industry more involved in determining ways to solve a problem that is only getting worse. It threatens our future

quality of life. The 1990 CAAA strengthened provisions requiring that transportation plans, programs, and projects in non-attainment areas conform to the purpose of State Implementation Plans (SIP) for the attainment of federal standards for transportation-related air pollution. These included greater integration of transportation planning and changes in transportation management. Non-attainment areas can have no new violations, no worsening of existing conditions, and no delay in the timely attainment of the standards. (FHWA, 1995)

Dr. Thomas Larson, Federal Highway Administrator (1988 to 1992), considered the CAAA and ISTEA as the singularly most important recent legislation affecting transportation. He stated:

“ The CAAA may have a greater effect on the Nation’s transportation over the next 20 to 30 years than any non-highway law enacted since the 1960’s. More than a decade in the making, the CAAA recast the planning function to ensure that, in areas experiencing air quality problems, transportation planning is geared to improved air quality as well as mobility. Fortunately, the CAAA were followed by the ISTEA in 1991. Under ISTEA, our restructured surface transportation programs give state and local officials the tools to adapt their plans to the requirements of the CAAA. Together the CAAA and ISTEA provide us with the means to help achieve both mobility and clean air.” (FHWA-PD-92-023)

The Intermodal Surface Transportation Efficiency Act (ISTEA), which was signed into law in December 1991, stipulated that each state must establish a statewide planning process and develop six management systems for the state. These six systems are: pavement maintenance, bridge maintenance, highway safety, traffic congestion, public transportation, and intermodal transportation facilities.

The traffic congestion management system (CMS) required by ISTEA has the purpose of identifying areas of congestion and developing mitigation strategies to control, reduce, or eliminate the congestion. The CMS is to provide for the most efficient use of existing and future transportation facilities in all areas of the state, including metropolitan and non-metropolitan areas, where congestion is occurring or is expected to occur. The Congestion Management System, CMS, should have five main components:

- I. performance measures,
2. data collection and system monitoring,
3. identification and evaluation,
4. implementation of strategies, and
5. evaluation of the effectiveness of implemented strategies. (TRB Record, No.1499)

There are four activities that make up the basic components of a CMS: (a) monitoring and evaluation of transportation system performance, (b) identification of alternative strategies to alleviate congestion, (c) assessment and implementation of cost-effective strategies, and (d) evaluation of the effectiveness of the implemented actions. (Hoefl, 1994)

This report covers that portion of (a) above providing state transportation officials a methodology for screening the state highway system by identifying links of potential congestion throughout the state highway network. A link-by-link capacity analysis of each of the 13,835 links in the database of the state highway system was combined with traffic data to determine the potential for peak hour congestion. The present study uses performance measures developed in a previous study entitled, "The Development of a Prototype Congestion Management System For the State of Indiana: Phase I" (Gunawardena and Sinha, 1994). That report develops benchmark factors for use in converting two-way traffic counts into peak hour directional traffic estimates. From this, links showing the potential for current and future congestion are identified. The results from use of the factors developed by Gunawardena and Sinha are called, in this report, the "benchmark" analysis results.

This report contains an initial determination of congested links in the state highway system for all of the 92 counties within Indiana. Once identified, these potential areas of congestion should be subjected to further study to more accurately assess congestion and to consider the strategies appropriate to mitigate congestion. Thus, it includes not only rural areas and small cities, but also those urban areas under the jurisdiction of the Metropolitan Planning Organizations (MPOs). Those regions and counties of the state served by MPOs will each develop their own local congestion management plan which will include the local, as well as the state, roads.

### Indiana's Congestion Management System

The development of the Indiana Congestion Management System (CMS) began in June, 1993. The Joint Transportation Research Program (JTRP) of Purdue University and the Indiana Department of Transportation (INDOT) undertook a study to develop the framework of a prototype CMS for Indiana (Gunawardena and Sinha, 1994). This framework guided individual Congestion management Plans in the state. The plan includes all activities that should be completed in developing the Indiana Congestion Management System, those agencies to be

involved in the process, recommended performance measures and standards, and a procedure to identify and quantify roadway congestion (INDOT, 1994).

By definition, a Congestion Management System is a systematic process for evaluating and developing transportation strategies and plans for addressing existing and future traffic congestion. The Indiana CMS will consist of two components: the urban or MPO component and the statewide/rural component. The urban CMS will be composed of several Congestion Management plans developed by each of the 13 MPOs in the state. The statewide/rural component of the Indiana CMS is being developed by the Indiana Department of Transportation's Divisions of Roadway Management and Planning. It includes all roads on the state network (Gunawardena and Sinha, 1994).

According to the report by Gunawardena and Sinha, the CMS is required to monitor congestion levels throughout the state on a continuing basis through a comprehensive data collection and system-monitoring program and to identify and implement appropriate strategies that will mitigate current and future congestion. The emphasis of the CMS will be on implementation, with particular attention given to areas in non-attainment of air quality standards.

The purpose of this report is to screen the entire state highway system and identify those links for further analysis because they show a strong potential for current and/or future congestion.

### Identifying Congested Links

This study defines congestion by determining the volume to capacity ratio (V/C) during peak hour traffic for each particular link. <sup>1)</sup> The procedure identifies congested links at a macroscopic level using the average daily traffic data with general factors that have been developed to reduce AADT to directional peak hour volumes. <sup>2)</sup> These volumes can then be compared with the capacities using the established performance measures and usual highway design techniques from the 1985 Highway Capacity Manual. The 1994 Highway Capacity Manual gives about 10% higher capacity than the 1985 Manual for freeways. For this report, that difference was not considered significant enough to warrant redoing the entire analysis. For V/C's greater than 0.7 the review of the link for congestion begins. The approach is generally conservative, for the benchmark congestion analysis, because only



LOS A } 0.9 0.8 0.7 0.7 0  
 LOS B }  
 LOS C }  
 LOS D }  
 LOS E }  
 LOS F }

when a link is found to be operating at a V/C less than 0.7 (LOS C or better) is it eliminated from further analysis. This evaluation reduces the links being considered from 13,835 to 5,095. When the actual benchmark V/Cs, which range from 0.7 to 0.9 depending on the classification of the road considered, 760 links showed congestion by the year 2015.

The study not only examined the potential traffic congestion on the present state highway system, but also used trend growth factors of traffic to project congestion in 2000, 2005, 2010, and 2015.

A principal objective of capacity analysis is the estimation of the maximum amount of traffic that can be accommodated by a given facility. Capacity analysis would, however, be of limited utility if this were its only focus. Traffic facilities generally operate poorly at or near capacity, and facilities are rarely designed or planned to operate in this range. Capacity analysis is also intended to estimate the maximum amount of traffic that can be accommodated by a facility while maintaining prescribed operational qualities. (HCM, 1994)

Capacity analysis is, therefore, a set of procedures used to estimate the traffic-carrying ability of facilities over a range of defined operational conditions. It provides tools for the analysis and improvement of existing facilities and for the planning and design of future facilities. (HCM, 1994)

Generally speaking, road facilities are designed to operate under "LOS C," which marks the beginning of the range of flow in which the operation of individual users becomes significantly affected with others in the traffic stream. However, the links identified as very congested are operating under conditions where the level of service is at "LOS E" or "LOS F." "LOS E" represents operating conditions at or near capacity and "LOS F" defines forced or breakdown flow. (HCM, 1994)

The classification of roadways is consistent statewide. Since volume to capacity ratio is the key indicator of the degree to which the highway system is being utilized, a standard definition of 'capacity' was established. Capacity is defined for prevailing roadway, traffic and control conditions on a highway facility (McShane and Roess, 1990). It gives conservative ideal capacities in one direction for multilane highways and freeways to be 2,000 passenger cars per hour per lane (pcphpl). Two lane highways must consider moving traffic in both directions with the ideal flow to be 2,800 pcphpl. These ideal conditions, however, need to be adjusted to the prevailing conditions on the highway. Highway capacity is obtained from the following equation:

$$c = c_1 * f_1 * f_2 * f_3 * \dots * f_i \quad (\text{Eq. 1})$$

where,  $c$  = capacity of a facility under prevailing conditions

$c_1$  = capacity of a facility under ideal conditions

$f_i$  = adjustment factors accounting for non-ideal conditions (lane width, shoulder width, trucks, etc.)

The use of equation 1 to calculate capacity utilizes the detailed inventory of the roadway network with respect to prevailing geometric and traffic mix conditions. This information is available through INDOT's State Road Inventory. The data provided by INDOT and the capacity equation above are used to estimate the capacities of roadway facilities throughout the state. However, capacity can also be reduced when lights, stop signs, side streets and driveways are included. These are not taken into account in the analysis. Using a benchmark V/C of 0.7 suggests that congestion occurs at 70% of the capacity and therefore the impacts of roadway lights and side entrances may in fact be generally included.

Peak hour volumes obtained from Gunawardena and Sinha (1994) are divided by the highway capacities to obtain both A.M. and P.M. peak hour V/C ratios. The "V/C" ratios are then compared with the established performance standards referred to as benchmark values (Gunawardena and Sinha, 1994), and further discussed in Chapter 3. From this, links whose V/C exceeds the benchmark value are suspected to be congested at peak hour. Each link, so identified, will need to undergo further detailed analysis to determine the extent of congestion and the manner in which the congestion might be mitigated, if necessary.

Peak hour volumes are determined by using INDOT's ADT from the Road Inventory data and converting them to directional peak hour volumes. Appropriate values for directional and peaking factors, referred to as K and D factors, were previously developed (Gunawardena and Sinha 1994) using data from 60 permanent traffic counting stations in Indiana.

Vehicle kilometers traveled, VKT, during the P.M. peak hour are developed by multiplying each link's length by the ADT and the appropriate K and D factors as indicated in equation 2.

$$VKT_{PM\ Peak\ Hour} = ADT * K_{PM\ Peak\ Hour} * D_{PM\ Peak\ Hour} \quad (Eq. 2)$$

Where ADT = average daily traffic,  
K = peak hour volume factor, and  
D = peak hour directional factor

Severity of congestion was assessed by examining a range of DF/C values according to criteria determined in the present study. The range used was from the so-called benchmark value developed by by Gunawardena and Sinha (1994), further explained in Chapter 3.

This report identifies potential congestion within the state of Indiana for the state road links only. These links should be analyzed in more detail. It recommends which links should receive priority review. Several tables have been provided that may be useful for priority setting.

### CHAPTER 3: ANALYSIS APPROACH

This chapter discusses the procedure used in determining the congested road links. In Chapter 2, it was explained that an analysis of congestion at the macroscopic level was necessary in order to initially identify links that have the potential to be congested. While the macroscopic analysis may not be sufficient to fully determine congestion, its conservatism suggests that only those links identified with congestion need to be subjected to further analysis. Most links will be refined by a further microscopic analysis in later stages of the CMS planning. As mentioned, the volume to capacity ratio,  $V/C$ , is the key to determining if a congested link exists.

The procedure used to identify congestion can be explained by a flow diagram shown in Figure 3.1. The diagram shows the overall procedure used in determining if a link is congested either currently or some time over the next 20 years.

The process starts by gathering the data necessary to perform the capacity and volume calculations. The data used are taken directly from the INDOT Road Inventory Database and combined with numbers from the report by Gunawardena and Sinha (1994). Once the data were retrieved, the volume was calculated for each link, and according to the Highway Capacity Manual's equations, the capacity was calculated for each link according to road type. Next, volume to capacity ratios were calculated for current traffic conditions, where the current condition is representative of the year 1995. \*\* By applying the appropriate growth rate factors, future  $V/C$  ratios were calculated. Finally, all calculated  $V/C$  ratios were compared to both the benchmark  $V/C$  equal to the benchmark corresponding to functional classification and for a severity measure  $V/C$  equal is set to equal to 1.0. If a calculated  $V/C$  was greater than either of the performance standards, the link was then identified as congested. A more detailed explanation of each step in the process is described throughout this chapter.

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\*\* Not all data in the Road Inventory represent the most current conditions of all the roads.

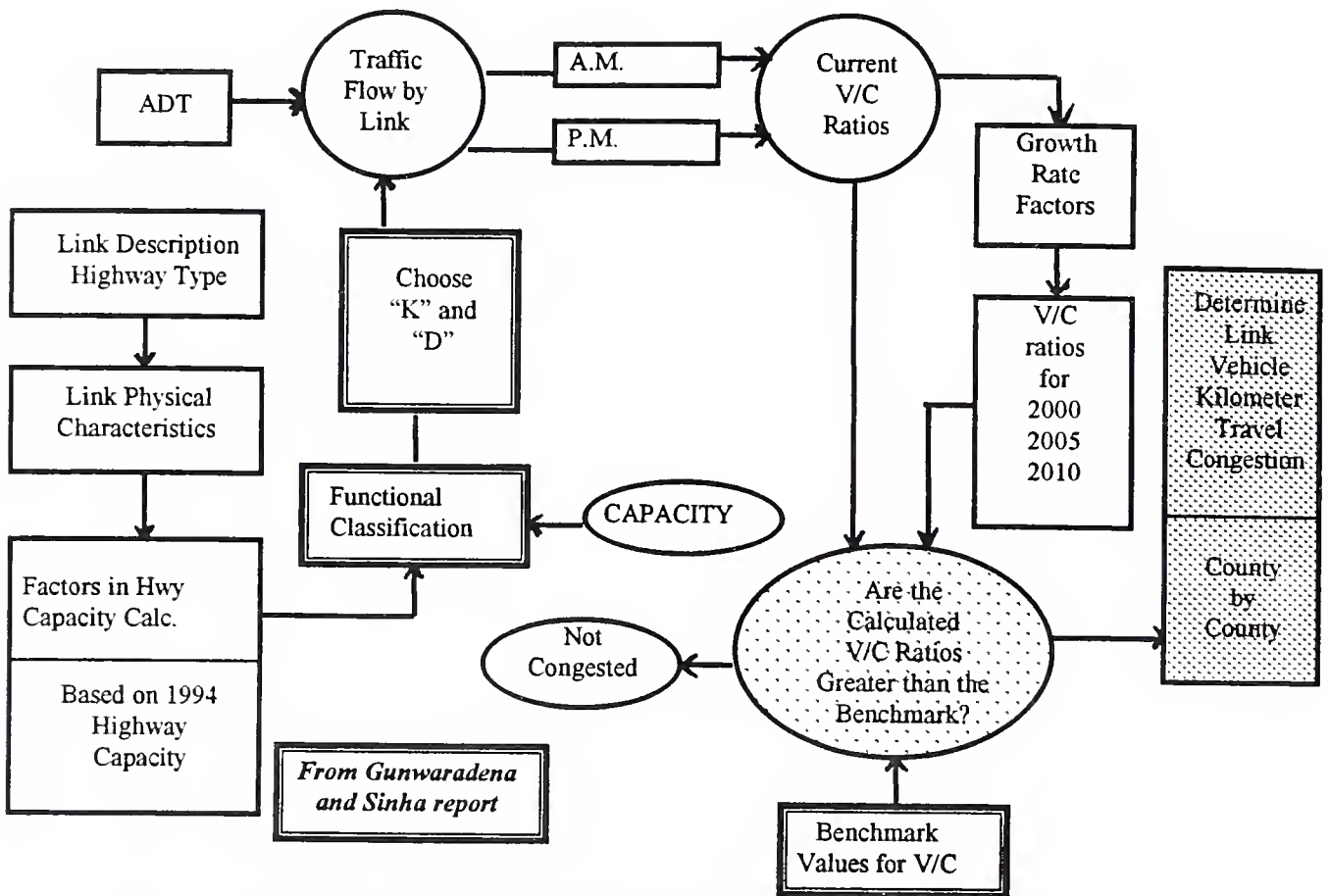


Figure 3.1 Flow Diagram of Procedure Used to Estimate Congestion

Table 3.1 below identifies the functional classification used for this analysis.

Table 3.1 Functional Classifications.

#	Functional Classification
1	Urban Interstate
2	Urban Freeways, Principal and Minor Arterials Collectors and Locals
3	Rural Interstates
4	Rural Freeways, Principal and Minor Arterials
5	Rural Major and Minor Collectors and Locals

The state highway inventory, however, provides 12 functional classifications for the highway system. Since the K and D factors developed by Gunawardena and Sinha are only for five major classifications of highway, the 12 classifications of highway data had to be mapped into those five road types. Each of the links was reviewed and the functional class assigned according to the five categories indicated in Table 3.1. The mapping from the 12 classifications to the five was not always easy or straightforward. For example, there are several stretches of non-interstate road, such as urban arterial, where the most likely classification is that of an interstate because it connects with an interstate or provides a high speed frontage road, such as Route 31 does going south on I-65 near the Ohio River. If this section is classified as a "1", then it will be subjected to the high growth rates of an interstate. If it is a "2", traffic will grow much slower. In all cases, the classification for interstate was applied strictly to interstates.

#### Determining the Volume of a Link

In order to calculate the volume of peak hour traffic on each link, several types of data were needed: volume counts for each specific link and the peak factors for the type of link in question. The volume counts were provided by the state through the Road Inventory Data on diskettes. These data are continuously taken around the state as the measuring devices are moved from place to place. Indian's 60 telemetry stations collect data on a continuous basis. The peak hour factor (K) and the peak directional factor (D) developed in the study (Gunawardena and Sinha, 1994), utilized data from the 60 stations to develop the peak factors according to five different types of roadway functional classifications. These factors, which appear in Table 3.2, are a direct reflection of the their analysis.

Once the data were collected, the directional peak hour volumes were calculated according to equation 2. Initially, both A.M. and P.M. peak hour volumes were calculated in order to determine the greatest volume. However, after the analysis was complete, the P.M. peak-hour volumes were consistently higher than the A.M. volumes.

Table 3.2 K and D factors.

Factor Type	FUNCTIONAL CLASSIFICATION				
	1	2	3	4	5
AM "K"	0.070	0.074	0.075	0.075	0.076
PM "K"	0.082	0.080	0.085	0.082	0.073
AM "D"	0.573	0.555	0.560	0.558	0.578
PM "D"	0.579	0.581	0.572	0.594	0.620

Source: (Gunawardena and Sinha, 1994)

Determining the Capacity of a Link

Calculating the capacity of each link was more involved than calculating the volume on the link. The data needed to calculate the capacity was provided from INDOT’s Road Inventory Data. These data include area type (i.e. urban or rural), road type (i.e. 2-lane, freeway, multilane), number of lanes, functional classification (i.e. urban freeway, urban arterial, rural freeway, etc.), lane width, and shoulder width.

Capacity was calculated according to road type. The three equations used were (HCM, 1985):

$$\text{Freeway: } SF = c * N * f_w * f_{HV} * f_p * (v/c)_i, \tag{Eq. 3}$$

$$\text{Multilane: } SF = c * N * f_w * f_{HV} * f_p * f_E * (v/c)_i, \tag{Eq. 4}$$

$$\text{2-lane: } SF = c * f_w * f_{HV} * f_d * (v/c)_i, \tag{Eq. 5}$$

- where, SF = maximum flow that can be serviced,
- c = capacity under ideal conditions,
- N = number of lanes in one direction,
- f<sub>w</sub> = factor due to lane width,
- f<sub>HV</sub> = factor due to percent heavy vehicles,
- f<sub>p</sub> = factor due to driver population,
- f<sub>E</sub> = factor due to environment,
- f<sub>d</sub> = factor due to directional distribution, and
- (v/c)<sub>i</sub> = rate of flow under ideal capacity,

The following sections will discuss each of the factors involved in the capacity calculations; where they came from, how they were used, and assumptions that were made when determining a value to use.

### Factor Due to Lane Width

The factor due to lane width,  $f_w$ , is used in each of the capacity calculations and takes into account lane and shoulder widths of the road link. Using the tables from the HCM-1984, regression equations were developed to enhance the use of spreadsheet calculations. Values for the lane and shoulder widths taken from INDOT's Road Inventory Data were inserted directly into the equations. The equations developed from the tables relating to the lane width and shoulder dimensions are as follows:

$$\text{freeway: } f_w = (b_1 * w) + (b_2 * s) + a, \quad (\text{Eq. 6})$$

$$\text{multilane: } f_{w\text{-undivided}} = (b_1 * w) + (b_2 * s) + a, \quad (\text{Eq. 7})$$

$$\text{multilane: } f_{w\text{-divided}} = (b_1 * w) + (b_2 * s) + a, \quad (\text{Eq. 8})$$

$$\text{2-lane: } f_w = (b_1 * w) + (b_2 * s) - a, \quad (\text{Eq. 9})$$

where,  $f_w$  = factor due to lane width,  
 $w$  = lane width (9 - 12 ft.), and  
 $s$  = shoulder width (0 - 6 ft.)  
 $a$  = constant term  
 $b_1$  = coefficient corresponding to lane width  
 $b_2$  = coefficient corresponding to shoulder width

The equations listed were used in place of a look-up table to include the factor due to shoulder width and lane width for calculating the capacity. Table 3.3 shows the results of performing a statistical analysis for each of the road types. The table shows the coefficients used in the equations ( $a$ ,  $b_1$ ,  $b_2$ ) and the Coefficient of Multiple Determination ( $R^2$ ) value calculated for each of the equations.



Table 3.3 Results From Regression of Factor Due to Lane Width,  $f_w$ .

FREEWAY***				TWO-LANE			
$b_1$	$b_2$	a	$R^{2*}$	$b_1$	$b_2$	a	$R^{2*}$
0.060	0.021	0.186	0.860	0.084	0.044	-0.274	0.980
MULTILANE-UNDIVIDED				MULTILANE - DIVIDED			
$b_1$	$b_2$	a	$R^{2*}$	$b_1$	$b_2$	a	$R^{2*}$
0.068	0.015	0.108	0.925	0.060	0.021	0.186	0.819

\* $R^2$  = Coefficient of Multiple Determination

The main criterion that was used to evaluate the regression models was the Coefficient of Multiple Determination or  $R^2$  statistic. Coefficient of Multiple Determination values in excess of 0.8 for the type of data available in this study were considered ample for the models to be used with a high degree of confidence.

Factor Due to Percent Heavy Vehicles

The factor due to percent heavy vehicles,  $f_{HV}$ , was used in each of the capacity equations and was held constant at a value of 0.9. This value was held constant during all of the capacity calculations and represents a percentage of truck traffic of approximately 16% on multilane highways and freeways and 11% on two-lane roads. All highways, were considered to be essentially level.

A listing of “Percent Commercial Vehicles 1991-1994,” prepared by INDOT, gives data showing the amount of truck traffic on selected links. This data was reviewed and supports the acceptability of the value used in this study,  $f_{HV} \geq 0.9$ . In particular, the  $f_{HV}$  value used in this study is reflective (and may be conservative) of the approximate average percent commercial vehicles on the roadways during peak hours. During peak hours, the increase in passenger car volume coupled with the fact that most truck drivers prefer to travel during non-peak hours may mean that the percent trucks will be reduced causing the factor to be closer to one.

### Factor Due to Driver Population

The factor due to driver population,  $f_p$ , was used in the capacity calculations for the freeway and multilane highway links. This factor is used to reflect the influence of driver population. The use of this factor calls for judgment in determining an exact value; a value of 1.0 represents a population of commuters and a value of 0.7 represents a population of unfamiliar drivers. The capacity calculations in this study used a consistent value of 0.9, which is believed to be a reasonable value to represent drivers on Indiana state highways. Again, this value is probably somewhat conservative since peak-hour drivers are largely commuters so that a factor between .95 and 1 is more probable.

### Factor Due to Environment

The factor due to development, environment, and type of multilane highway,  $f_E$ , was used from Table 7-10 in the Highway Capacity Manual (HCM, 1985). This factor is dependent upon the area type (urban or rural), and the highway type (divided or undivided). There were not many links that were classified as multilane<sup>\*\*\*</sup> highway therefore, the values for  $f_E$  shown in Table 3.4 of this report, were used.

Table 3.4 Factor Due to Environment,  $f_E$ .

TYPE	DIVIDED	UNDIVIDED
Rural	1.00	0.95
Suburban	0.90	0.80

Source: Highway Capacity Manual, 1994.

### Factor Due to Directional Distribution

The factor due to directional distribution,  $f_d$ , is used in the capacity calculation for two-lane highway links and is used to take into account a distribution that is not a 50/50 split. For the purpose of this study, an  $f_d$  value of

<sup>\*\*\*</sup> One problem with multilane highways is to properly classify them; some are unprotected from cross and entering traffic, others are partially protected, and some are freeways. All such roads are treated in this study as principal arterials. Even fully protected freeways were examined as principal arterials. The only differences are in the growth rates.

0.94 was used, which accounts for a directional distribution varying as high as a 60/40 split. This value was relatively close to the peak directional, “D”, factor values shown in Table 3.2.

Values of V/C Ratio in Capacity Calculations

Two of the capacity equations, freeway and multilane, contain a (V/C) parameter. This parameter represents the volume to capacity ratio for the rate of flow under ideal conditions. Under ideal conditions, traffic level of service E (LOS E) is the beginning of congestion, which occurs at a V/C ratio of 1.0.

Determining Congestion Using V/C Ratio

Once the peak hour volume and the capacity of a link was found, the V/C ratio was then calculated. The benchmark V/C (Gunawardena and Sinha, 1994) serves as the criterion for determining congestion on a link. These benchmark values are presented as Column 1 of Table 3.5. The table also indicates the performance standards used according to the severity analysis. The severity analysis identifies all links with a calculated V/C  $\geq$  1.0. All links were identified according to that performance measure are operating under LOS “F” and are congested during peak hour.

Table 3.5 Performance Standards.

Functional Classification	Benchmark V/C	Severe Congestion
1	0.90	1.00
2	0.80	1.00
3	0.70	1.00
4	0.70	1.00
5	0.70	1.00

The benchmark value of 0.7 as an indicator for congestion is considered conservative since it only eliminates links operating under LOS C. Because this is a screening analysis, the conservative values are used in examining all links and in preparing the county maps showing congestion in Appendix A. The severe congestion analysis which indicates where the probability of congestion on a link is much higher is shown for reference only.

Growth Rate Factors for Future V/C Ratios

Once the V/C ratios were calculated for a link, it was possible to use that ratio, and a growth rate factor, to determine if future congestion will be a threat. Growth rate factors were determined by taking a Telemetry Station Report and performing a trend analysis of the data extending back five years. Under this determination was the assumption that the same rate of growth would occur over the next 20 years and growth rate was assumed to increase at a constant rate over time. These factors are defined according to the functional classification of the link, refer to Table 3.1, and are listed in Table 3.6.

Table 3.6 Growth Rate Factors.

Functional Classification	Growth Factor
1	5.03%
2	1.06%
3	4.00%
4	1.90%
5	2.50%

Determining Future Congestion

Once the current V/C was found, constant growth rate factors were directly applied. Future V/C ratios for the years 2000, 2005, 2010, and 2015 were calculated. Looking at the V/C performance standards shown in Table 3.5, potential congested links were identified. This study can only be a “screening” analysis, with the links identified appropriately examined by a more specific analysis.

## CHAPTER 4: RESULTS OF COUNTY ANALYSIS

The total results of each county are found in the detailed tables in the appendices and are shown on maps. Three counties are used as examples. The presentation establishes the general format for all other counties analyzed. The three counties used for discussion as examples are Adams (1), Hancock (30), and Putnam (67). In addition, Marion County's results are discussed due to the relatively large amount of potential future congestion indicated.

The counties mentioned were chosen to show the breadth of results that are obtained through this congestion analysis. The results indicate areas of congestion within each county over a study period of 20 years. Any future congestion is based on the applicability of the trend growth rate factors used, refer to Table 3.7.

### Adams County

Adams County, with its 176.8 kilometers (109.8 miles) of state highway, is an example of one of 50 counties in Indiana that currently does not experience congestion, nor is there any indication that it will experience congestion over the next 20 years. According to this analysis, Adams County can be eliminated from any further congestion analysis.

Table 4.1 shows the results of the congestion analysis. All calculations were performed using a spreadsheet format. Table 4.2 shows only the results section of the spreadsheet; the actual spreadsheet is much larger and contains all of the different data used in the capacity and volume calculations. Appendix E presents an example of the spreadsheet used for all the calculations.

Shown in Columns 1 through 3 of Figure 4.1 are the descriptions of the 125 links that comprise the INDOT road inventory of state roads for Adams County. Column 4 presents the benchmark value from the Gunawardena and Sinha report. Column 5 is the present calculated V/C ratio. Columns 6 through 9 are the V/C ratios with the growth factors applied. Column 10 is the Route Number, while Column 11 gives the route length in miles. Comparing the V/C ratios in Columns 5-9 with the benchmark V/C ratio in Column 4 shows that there is no congestion.

Table 4.1 Summary of results for Adams County

1	2	3	4	5	6	7	8	9	10	11
CO	RECORD	COMMENTS	bench	1995	2000	2005	2010	2015	KTEL	LENG(mi)
01	0002000	B US.27 JAY CO. LINE	0.7	0.14	0.15	0.17	0.18	0.20	27	0.9
01	0003000	DETAIL ITEM CHANGE	0.7	0.14	0.15	0.17	0.18	0.20	27	0.1
01	0005000	GENEVA CORP. LINE	0.7	0.13	0.14	0.15	0.17	0.18	27	0.1
01	0006000	NORTH ST (IR 174 RT & IR 6 LT)	0.7	0.19	0.20	0.22	0.25	0.27	27	0.4
01	0011000	6TH ST RT	0.7	0.19	0.20	0.22	0.25	0.27	27	0.1
01	0012000	SHACKLEY ST	0.7	0.25	0.28	0.31	0.33	0.37	27	0.1
01	0013000	SR.116 (LINE ST.)	0.7	0.21	0.24	0.26	0.28	0.31	27	0.5
01	0019500	DETAIL ITEM CHANGE	0.7	0.16	0.17	0.19	0.21	0.23	27	0.6
01	0021000	GENEVA CORP. LINE	0.7	0.16	0.17	0.19	0.21	0.23	27	0.6
01	0022500	DETAIL ITEM CHANGE	0.7	0.16	0.17	0.19	0.21	0.23	27	0.2
01	0023500	DETAIL ITEM CHANGE	0.7	0.16	0.17	0.19	0.21	0.23	27	1.7
01	0025000	IR 20 (700 S.)	0.7	0.23	0.25	0.28	0.30	0.33	27	0.1
01	0026000	BERNE CORP. LINE	0.7	0.23	0.25	0.28	0.30	0.33	27	0.3
01	0029000	PARKWAY ST	0.7	0.23	0.25	0.28	0.30	0.33	27	0.2
01	0034000		0.7	0.24	0.26	0.29	0.32	0.35	27	0.2
01	0035000	BERNE CORP. LINE	0.7	0.24	0.26	0.29	0.32	0.35	27	0.1
01	0037000	DETAIL ITEM CHANGE	0.7	0.31	0.34	0.38	0.41	0.45	27	0.1
01	0039000	SR.218 (MAIN ST.)	0.7	0.31	0.34	0.37	0.41	0.45	27	0.2
01	0042000		0.7	0.23	0.25	0.28	0.30	0.33	27	0.3
01	0047000	PARR RD RT	0.7	0.15	0.17	0.19	0.20	0.22	27	0.3
01	0048000	BERNE CORP. LINE	0.7	0.15	0.17	0.19	0.20	0.22	27	0.2
01	0049000	IR 24 (500 S.-MCINTOSH RD)	0.7	0.15	0.17	0.19	0.20	0.22	27	5.0
01	0058000	SR. 124	0.7	0.18	0.20	0.22	0.24	0.26	27	1.3
01	0059000	IR 213 RT (FAIRGROUND RD.)	0.7	0.28	0.31	0.34	0.37	0.41	27	2.1
01	0062000	IR 52 (300 N.)	0.7	0.25	0.27	0.30	0.32	0.36	27	1.0
01	0065000	US.33 SOUTH RT/IR 126 LT (400N)	0.7	0.30	0.33	0.36	0.40	0.44	27	0.1
01	0066000	BR 7508 O BORUM RUN DITCH	0.8	0.27	0.29	0.31	0.32	0.34	27	0.9
01	0068000	DECATUR CORP. LINE	0.8	0.38	0.40	0.42	0.44	0.46	27	0.3
01	0069000	DETAIL ITEM CHANGE	0.8	0.49	0.51	0.54	0.57	0.60	27	0.4
01	0077000	MADISON ST	0.8	0.49	0.51	0.54	0.57	0.60	27	0.1
01	0078000	US.224 EAST RT & MONROE ST. LT	0.8	0.49	0.52	0.55	0.58	0.61	27	0.1
01	0080000	JACKSON ST RT	0.8	0.49	0.51	0.54	0.57	0.60	27	0.1
01	0081000	US.224 WEST LT & NUTTMAN AV. R	0.8	0.26	0.28	0.29	0.31	0.33	27	0.9
01	0086500	SECOND ST (WINCHESTER RD)	0.8	0.33	0.35	0.37	0.39	0.41	27	0.2
01	0087000	BR 1983 O ST.MARY'S RIVER	0.7	0.30	0.33	0.36	0.40	0.44	27	1.4
01	0090500	DETAIL ITEM CHANGE	0.7	0.20	0.22	0.25	0.27	0.30	27	0.3
01	0092000	DETAIL ITEM CHANGE	0.7	0.20	0.22	0.25	0.27	0.30	27	3.4
01	0097000	IR 125 (300 W.-1100 N.)	0.7	0.20	0.22	0.25	0.27	0.30	27	1.4
01	0150000	B US.33 OHIO STATE LINE	0.7	0.12	0.14	0.15	0.16	0.18	33	2.7
01	0155000	B SR.101 TRAVEL O US.33	0.7	0.16	0.17	0.19	0.21	0.23	33	0.2
01	0158000	SR.101 NORTH RT	0.7	0.17	0.18	0.20	0.22	0.24	33	0.1
01	0161000	DETAIL ITEM CHANGE	0.7	0.14	0.15	0.17	0.19	0.20	33	2.5
01	0163000	DETAIL ITEM CHANGE	0.7	0.13	0.14	0.15	0.17	0.19	33	0.6
01	0164000	IR 183 (SALEM RD.)	0.7	0.11	0.12	0.13	0.14	0.15	33	0.4
01	0166000	IR 55 (200 E.)	0.7	0.11	0.12	0.13	0.14	0.15	33	2.0
01	0266000	B US.224 WELLS CO. LINE	0.7	0.07	0.08	0.09	0.10	0.10	224	3.0
01	0282000	DETAIL ITEM CHANGE	0.7	0.09	0.10	0.11	0.12	0.13	224	0.0
01	0284000	IR 23 RT (400 W.)	0.7	0.14	0.16	0.17	0.19	0.21	224	0.2
01	0285000	DETAIL ITEM CHANGE	0.7	0.12	0.13	0.14	0.15	0.17	224	1.9
01	0289000	IR 33 RT (200 W.)	0.8	0.11	0.11	0.12	0.12	0.13	224	1.0
01	0290000	BR 1546 O HOLTHOUSE DITCH	0.8	0.12	0.12	0.13	0.14	0.14	224	0.0
01	0291000	IR 275 RT (100 W.)	0.8	0.13	0.14	0.15	0.15	0.16	224	0.6
01	0293000	DECATUR CORP. LINE	0.8	0.13	0.14	0.15	0.15	0.16	224	0.1
01	0295000	16TH ST RT	0.8	0.24	0.26	0.27	0.29	0.30	224	0.2
01	0298000	E US.224 TRAVEL O US.27/US. 33	0.8	0.18	0.19	0.20	0.21	0.22	224	0.3
01	0299000	8TH ST	0.8	0.18	0.19	0.20	0.21	0.22	224	0.1
01	0299500	6TH ST LT	0.8	0.23	0.24	0.25	0.27	0.28	224	0.3
01	0300000	MERCER ST. RT & 2ND ST L	0.8	0.30	0.31	0.33	0.35	0.37	224	0.1
01	0301500	DETAIL ITEM CHANGE	0.8	0.30	0.31	0.33	0.35	0.37	224	0.1
01	0302000	BR 5788 O ST.MARY'S RIVER	0.8	0.33	0.35	0.37	0.39	0.41	224	0.1
01	0302500	DETAIL ITEM CHANGE	0.8	0.23	0.24	0.25	0.27	0.28	224	0.1

Table 4.1(continued) Summary of results for Adams County

CO	RECORD	COMMENTS	bench	1995	2000	2005	2010	2015	RTEL	LENG(mi)
01	0304000	MONROE ST. RT	0.8	0.13	0.14	0.15	0.16	0.17	224	0.6
01	0307000	DECATUR CORP. LINE	0.8	0.15	0.16	0.16	0.17	0.18	224	0.6
01	0309000	IR 57 (200 E.)	0.8	0.10	0.11	0.12	0.12	0.13	224	1.0
01	0310000	IR 61 (300 E.)	0.7	0.11	0.13	0.14	0.15	0.17	224	1.0
01	0311000	B SR.101 TRAVEL O US.224	0.7	0.10	0.11	0.12	0.13	0.15	224	1.0
01	0313000	E SR.101 TRAVEL O US.224	0.7	0.08	0.09	0.10	0.11	0.12	224	2.1
01	0366000	B SR.101 SR.124	0.7	0.02	0.02	0.02	0.02	0.03	101	2.0
01	0370000	IR 50 LT (200 N.)	0.7	0.02	0.02	0.03	0.03	0.04	101	0.1
01	0373000	E SR.101 TRAVEL O US.33	0.7	0.02	0.02	0.02	0.03	0.03	101	0.1
01	0375000	IR 124 RT (225 N.)	0.7	0.02	0.02	0.02	0.02	0.03	101	2.2
01	0382000	IR 64 (450 N.-WATER ST.)	0.7	0.01	0.01	0.02	0.02	0.02	101	2.0
01	0387000	E SR.101 TRAVEL O US.224	0.7	0.04	0.04	0.05	0.05	0.06	101	1.5
01	0390000	IR 76 (800 N.)	0.7	0.03	0.03	0.04	0.04	0.05	101	4.0
01	0405000	B SR.116 WELLS CO. LINE	0.7	0.04	0.05	0.06	0.06	0.07	116	2.0
01	0406000	SR.218	0.7	0.02	0.03	0.03	0.03	0.04	116	3.1
01	0413000	IR 12 (900 S.)	0.7	0.02	0.02	0.02	0.03	0.03	116	1.5
01	0416000	IR 93 RT (550 W.)	0.7	0.02	0.03	0.03	0.03	0.04	116	2.5
01	0419000	IR 29 (300 W.)	0.7	0.03	0.03	0.04	0.04	0.05	116	1.0
01	0420000	GENEVA CORP. LINE	0.7	0.07	0.08	0.09	0.10	0.11	116	0.5
01	0423000	WINCHESTER RD. LT (150 W	0.7	0.06	0.07	0.08	0.09	0.10	116	0.2
01	0426000	US.27 (MAIN ST.)	0.7	0.06	0.06	0.07	0.08	0.09	116	0.1
01	0427000	WASHINGTON ST LT	0.7	0.06	0.06	0.07	0.08	0.09	116	0.1
01	0430000	RAILROAD ST	0.7	0.02	0.02	0.03	0.03	0.03	116	0.1
01	0434000	GENEVA CORP. LINE/HALE	0.7	0.02	0.03	0.03	0.04	0.04	116	0.5
01	0436000	IR 141 RT (050 W.)	0.7	0.02	0.02	0.02	0.03	0.03	116	1.7
01	0439000	IR 147 (100 E.)	0.7	0.01	0.02	0.02	0.02	0.02	116	4.0
01	0445000	SR.116 TURN RT/IR 90 LT (11	0.7	0.00	0.00	0.00	0.00	0.01	116	3.0
01	0500000	B SR.124 WELLS CO. LINE &	0.7	0.06	0.07	0.08	0.09	0.10	124	6.2
01	0513000	US.27	0.7	0.06	0.07	0.08	0.09	0.10	124	0.3
01	0514000	MONROE CORP. LINE	0.7	0.07	0.08	0.09	0.10	0.12	124	0.1
01	0515000	ADAMS ST. RT (050 W.)	0.7	0.10	0.11	0.12	0.14	0.16	124	0.2
01	0516000	PARK ST RT	0.7	0.07	0.08	0.09	0.10	0.12	124	0.2
01	0517000	POLK ST.(FAIRGROUND RD.)	0.7	0.05	0.05	0.06	0.07	0.08	124	0.2
01	0521200	STUDEBAKER ST LT	0.7	0.07	0.07	0.08	0.09	0.11	124	0.0
01	0522000	MONROE CORP. LINE	0.7	0.07	0.07	0.08	0.09	0.11	124	0.0
01	0523000	KELLER ST RT	0.7	0.06	0.07	0.07	0.08	0.09	124	0.8
01	0524000	IR 47 LT	0.7	0.06	0.07	0.07	0.08	0.09	124	1.0
01	0526000	IR 55 LT (200 E.)	0.7	0.06	0.07	0.07	0.08	0.09	124	1.0
01	0528000	IR 59 (300 E.)	0.7	0.03	0.04	0.04	0.05	0.05	124	2.0
01	0531000	SR.101 LT	0.7	0.03	0.03	0.03	0.04	0.04	124	2.0
01	0590000	B SR.218 WELLS CO. LINE &	0.7	0.03	0.03	0.03	0.04	0.04	218	1.2
01	0592000	SR.116	0.7	0.05	0.06	0.06	0.07	0.08	218	0.8
01	0595000	IR 15 (500 W.)	0.7	0.07	0.08	0.09	0.10	0.11	218	2.0
01	0599000	IR 29 (300 W.)	0.7	0.09	0.10	0.11	0.13	0.15	218	1.0
01	0600000	IR 31 LT (200 W.)	0.7	0.09	0.10	0.11	0.13	0.15	218	0.5
01	0602000	BERNE CORP. LINE	0.7	0.09	0.10	0.11	0.13	0.15	218	0.0
01	0603000	BERNE CORP. LINE	0.7	0.11	0.13	0.14	0.16	0.18	218	0.1
01	0604000	ALUMNI ST LT	0.7	0.12	0.14	0.16	0.18	0.20	218	0.1
01	0605000	BERNE CORP. LINE	0.7	0.13	0.15	0.17	0.19	0.21	218	0.1
01	0608000	LINN GROVE AVE	0.7	0.15	0.16	0.19	0.21	0.24	218	0.1
01	0609000	US.27 (CHURCH AV.)	0.7	0.16	0.18	0.20	0.23	0.26	218	0.0
01	0610000	STATE ST LT	0.7	0.16	0.18	0.20	0.23	0.26	218	0.1
01	0612000	INDIANA ST RT & COLUMBI	0.7	0.20	0.22	0.25	0.28	0.32	218	0.1
01	0613000	BALTIMORE ST LT	0.7	0.20	0.22	0.25	0.28	0.32	218	0.2
01	0620000	BEARING ST	0.7	0.08	0.09	0.10	0.12	0.13	218	0.0
01	0621000	DETAIL ITEM CHANGE	0.7	0.08	0.09	0.10	0.12	0.13	218	0.0
01	0622000	BROWN ST RT	0.7	0.08	0.09	0.10	0.12	0.13	218	0.3
01	0628000	SHORT ST RT	0.7	0.07	0.07	0.08	0.10	0.11	218	0.3
01	0631000	BERNE CORP. LINE	0.7	0.07	0.07	0.08	0.10	0.11	218	0.1
01	0632000	IR 39 LT (000)	0.7	0.05	0.05	0.06	0.07	0.08	218	0.0
01	0633000	IR 153 RT (000)	0.7	0.05	0.06	0.06	0.07	0.08	218	2.0
01	0636000	IR 53 LT (200 E.)	0.7	0.03	0.04	0.04	0.05	0.06	218	3.6
01	0645000	IR 75 RT (550 E.)	0.7	0.02	0.02	0.02	0.03	0.03	218	1.2
01	0649000	DETAIL ITEM CHANGE	0.7	0.02	0.02	0.02	0.02	0.03	218	0.4

Adams County's results are very common. This study identified that 51 of Indiana's 92 counties will not experience congestion at any point in time for which this analysis covers. These are generally rural counties. There may be some exceptions, like Howard County, where no congestion is indicated; however, the present traffic conditions on Route 31 would indicate that further study might be appropriate.

### Hancock County

Hancock County is an example of a county that experiences some congestion throughout the entire time-period the analysis covers. Table 4.2 contains a portion of the link results showing the significant results of this county's congestion analysis.

The results from the congestion analysis are set-up in spreadsheet format identical to that for Adams County. Columns 5 through 9 represent the calculated V/C ratios for the state links within the county. Comparing the calculated V/C values with the benchmark V/C value in Column 4, and identifying links where the benchmark is exceeded, shows that there are some areas of congestion. These have been highlighted in bold typeface. Again, each link has a description of its location, the route number to which the link is assigned and the length of the link.

First, it was necessary to identify any currently congested areas; these areas, of course, will also be areas of future congestion. Looking directly down "Column 5, 1995", route I-70 has a link in which the calculated V/C well exceeds the benchmark. This is a congested link, 3.51 kilometers (2.18 miles) long, where I-70 meets the Marion County line. There are no other links currently congested in Hancock County. Looking under "Column 6", any congestion which occurs in five years (the year 2000) can be identified. Ignoring that link currently congested, the calculated V/C for 2000 exceeds the benchmark on I-70 for a total length of 23.16 kilometers (14.39 miles). Column 3 gives a description of where these congested links are located on I-70.



Table 4.2 Summary of results for Hancock County (part of county showing congestion)

1	2	3	4	5	6	7	8	9	10	11
CO	RECORD#	COMMENTS	Bench mark	1995	2000	2005	2010	2015	Route No.	Length Miles
30	0000250	B I-70 MARION CO. LINE	0.7	<b>1.48</b>	<b>1.80</b>	<b>2.19</b>	<b>2.66</b>	<b>3.24</b>	70	2.18
30	0002000	BR 5386 IR 11 (MT.COMFORT	0.7	0.61	<b>0.75</b>	<b>0.91</b>	<b>1.10</b>	<b>1.34</b>	70	6.40
30	0004750	GREENFIELD CORP.LINE & UA	0.9	0.60	0.78	<b>1.01</b>	<b>1.30</b>	<b>1.68</b>	70	1.30
30	0005100	BR 5130 SR 9 O I-70	0.9	0.57	0.73	<b>0.95</b>	<b>1.23</b>	<b>1.59</b>	70	0.48
30	0005500	GREENFIELD CORP. LINE	0.9	0.57	0.73	<b>0.95</b>	<b>1.23</b>	<b>1.59</b>	70	0.77
30	0005800	LEAVE GREENFIELD UAB.	0.7	0.58	<b>0.70</b>	<b>0.85</b>	<b>1.04</b>	<b>1.26</b>	70	2.24
30	0006750	RAMP 106A FROM REST PARK	0.7	0.58	<b>0.70</b>	<b>0.85</b>	<b>1.04</b>	<b>1.26</b>	70	5.75
30	0010000	B SW RAMP 096A AT I 70 EB	0.7	0.26	0.31	0.38	0.46	0.56	70	0.27
30	0010050	B SE RAMP 096 B AT IR 11	0.7	0.09	0.10	0.13	0.15	0.19	70	0.30
30	0010100	B NE RAMP 096C AT I 70 WB	0.7	0.08	0.09	0.11	0.13	0.16	70	0.30
30	0010150	B NW RAMP 096 D AT IR 11	0.7	0.28	0.34	0.41	0.50	0.61	70	0.27
30	0010200	B SW RAMP 104A AT I 70 EB	0.9	0.27	0.35	0.46	0.59	0.77	70	0.31
30	0010250	B SE RAMP 104B AT SR 9	0.9	0.07	0.09	0.12	0.16	0.20	70	0.27
30	0010300	B NE RAMP 104C AT I 70 WB	0.9	0.06	0.07	0.09	0.12	0.15	70	0.31
30	0010350	B NW RAMP 104D AT SR 9	0.9	0.25	0.32	0.42	0.54	0.70	70	0.27
30	0015000	B SR.9 SHELBY CO. LINE	0.7	0.12	0.13	0.15	0.16	0.18	9	2.83
30	0018000	DETAIL ITEM CHANGE	0.7	0.12	0.13	0.15	0.16	0.18	9	0.29
30	0018500	IR 14 (300 S.)	0.7	0.14	0.15	0.17	0.18	0.20	9	1.03
30	0019520	ENTER GREENFIELD UAB	0.8	0.12	0.13	0.14	0.15	0.15	9	0.30
30	0019820	GREENFIELD CORP. LINE	0.8	0.12	0.13	0.14	0.15	0.15	9	0.71
30	0021000	INV ST #26 (100 S.-DAVIS	0.8	0.24	0.25	0.26	0.28	0.29	9	0.20
30	0021200	DETAIL ITEM CHANGE	0.8	0.31	0.33	0.34	0.36	0.38	9	0.54
30	0022150	OSAGE ST	0.8	0.31	0.33	0.34	0.36	0.38	9	0.11
30	0022350	DETAIL ITEM CHANGE	0.8	0.31	0.33	0.34	0.36	0.38	9	0.08
30	0022500	US 40 (MAIN ST)	0.8	0.44	0.47	0.49	0.52	0.55	9	0.17
30	0022850	GRANT ST RT	0.8	0.44	0.47	0.49	0.52	0.55	9	0.42
30	0023700	BOYD AVE	0.8	0.68	0.71	0.75	0.79	<b>0.83</b>	9	0.10
30	0023800	OHIO ST LT	0.8	0.68	0.71	0.75	0.79	<b>0.83</b>	9	0.20
30	0024100	MICHIGAN ST LT	0.8	0.68	0.71	0.75	0.79	<b>0.83</b>	9	0.09
30	0024310	MCKENZIE RD	0.8	0.34	0.35	0.37	0.39	0.42	9	0.23
30	0024350	DETAIL ITEM CHANGE	0.8	0.34	0.35	0.37	0.39	0.42	9	1.08
30	0026200	DETAIL ITEM CHANGE	0.8	0.34	0.35	0.37	0.39	0.42	9	0.06
30	0026300	DETAIL ITEM CHANGE	0.8	0.34	0.36	0.38	0.40	0.42	9	0.10
30	0026400	BR 5130 O I-70	0.8	0.20	0.21	0.22	0.23	0.25	9	0.34
30	0027000	DETAIL ITEM CHANGE	0.8	0.25	0.26	0.27	0.29	0.30	9	0.19
30	0027400	GREENFIELD CORP. LINE	0.8	0.20	0.21	0.22	0.23	0.25	9	0.99
30	0029400	IR 46 (400 N.)	0.7	0.22	0.24	0.26	0.29	0.32	9	1.00
30	0030950	IR 52 (500 N.)	0.7	0.17	0.19	0.21	0.23	0.25	9	0.98
30	0032200	IR 56 (600 N.)	0.7	0.15	0.16	0.18	0.20	0.22	9	2.00
30	0035300	SR 234	0.7	0.12	0.13	0.14	0.16	0.17	9	1.99
30	0039250	IR 66 (1000 N.)	0.7	0.08	0.09	0.10	0.11	0.12	9	1.03
30	0060200	B SR.13 US.36/SR.67(BROAD	0.7	0.09	0.11	0.12	0.14	0.15	13	0.08
30	0060350	MAIN ST. RT/PEARL ST. RT	0.7	0.09	0.11	0.12	0.14	0.15	13	0.20

Column 7 values of V/C indicate the links on which congestion begins in the year 2005. There are three links not previously congested, where the calculated V/C exceeds the benchmark value. The three links identified all exist on route I-70 and have a total length of 4.10 kilometers (2.55 miles). Likewise, Column 8 shows V/C for the links in the year 2010. There are no links identified in this column, except those previously identified. The three links highlighted in Column 9 suggest potential congestion in 2015 on Route 9. This is over a short distance of 0.63 kilometers (0.39 miles).

The complete county analysis shows that Hancock County has a total of 10 links totalling 31.27 kilometers (19.43 miles), which experience congestion at present or will do so some time over the next 20 years. Figure 4.1 is a map of Hancock County and has the congested links color-coded according to the year congestion is expected to occur. The map indicates the generalized area of the county in which the congested links are located and the length of each congested section in miles.

Table 4.3 presents a summary of the data for Hancock County. A table like this has been prepared for each county where the V/C ratios indicate some congestion in the next 20 years. For each county the table appears in Appendix A across the page from a map of the county color-coded for the year when congestion begins. The table presents not only the length of congested links, but the amount of congestion experienced in term of Vehicle Kilometers Traveled (VKT).

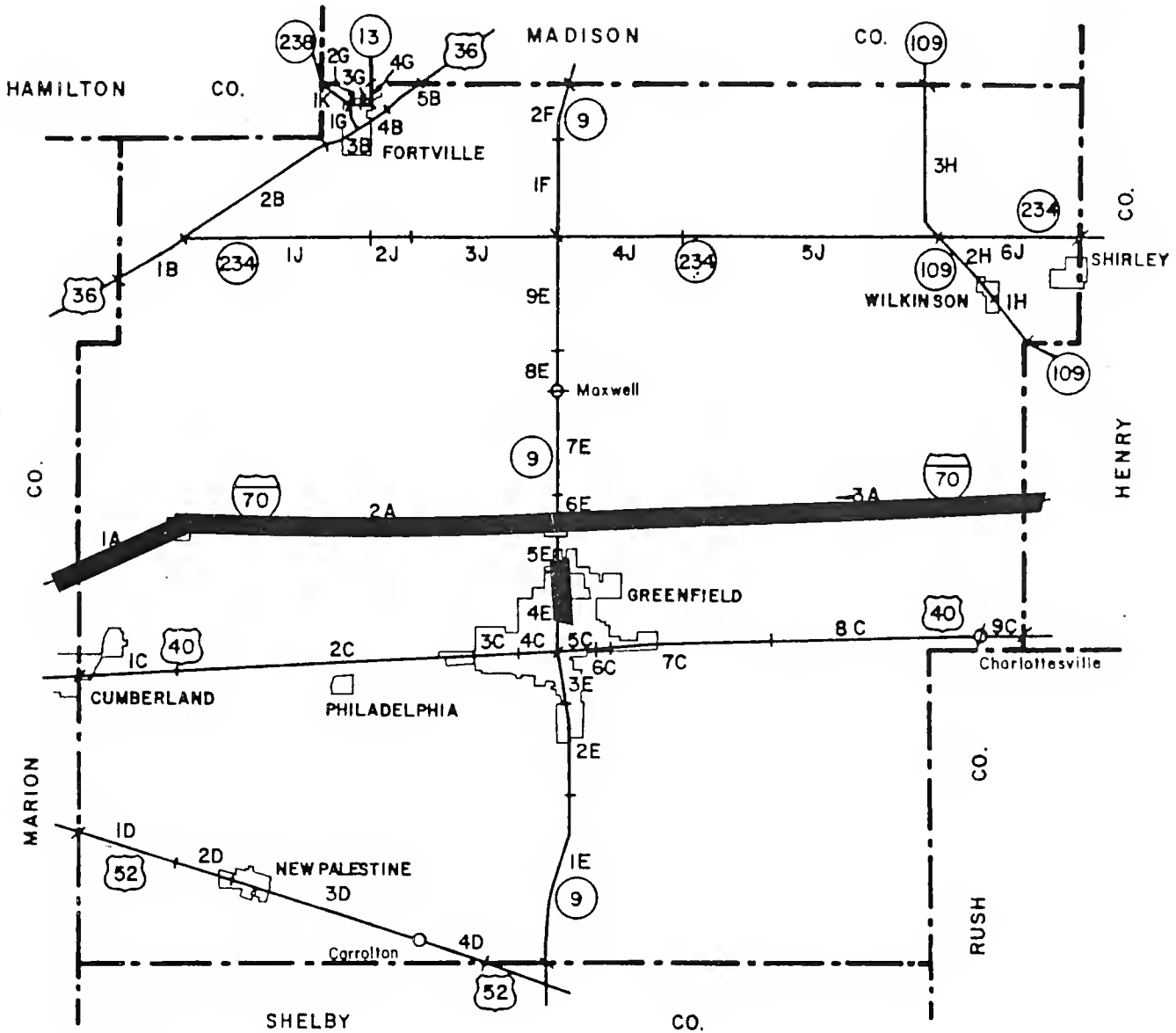
#### Putnam County

Putnam County is an example of a county that only experiences congestion starting in the year 2010. This is common in a large number of counties. There are more than 25 counties in the state that are not experiencing congestion at present and which do not expect to see some congestion until 15 or 20 years from now.

Table 4.4 gives the summary data for the county and Figure 4.2, a color-coded map, shows the county's congestion links. There are only five links which experience congestion in 2010. These links are located on route I-70 and extend a total of 32.6 kilometers (20.24 miles) as shown.

Figure 4.1 Map of Hancock County.

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
 Indiana Department of Transportation  
 Color Added

Table 4.3 Summary of Table of Hancock County Congestion.

**30 HANCOCK COUNTY**

STATE ROADS	159 KM	99 MILES
1995 DAILY TRAVEL	2,266,914 VKT	1,408,634 VMT
1995 AM PEAK HOUR TRAVEL	95,251 VKT	59,188 VMT
1995 PM PEAK HOUR TRAVEL	108,400 VKT	67,358 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,266,914	2,655,248	3,120,765	3,680,135	4,353,819
AM PK-HR VKT	95,251	111,568	131,128	154,631	182,938
PM PK-HR VKT	108,400	126,969	149,229	175,978	208,192

**CONGESTION SUMMARY**

**USING BENCHMARK V/C**

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	3.5	26.7	30.8	30.8	31.4
LENGTH (mi)	2.2	16.6	19.1	19.1	19.5
LENGTH (%)	2.2%	16.7%	19.3%	19.3%	19.7%
AM PK-HR VKT	13,253	16,105	51,745	99,599	122,039
AM PK-HR VKT (%)	13.9%	14.4%	39.5%	64.4%	66.7%
PM PK-HR VKT	15,342	67,936	94,398	115,635	142,286
PM PK-HR VKT (%)	14.2%	53.5%	63.3%	65.7%	68.3%

**USING V/C = 1**

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	3.51	3.51	5.60	30.77	30.77
LENGTH (mi)	2.18	2.18	3.48	19.12	19.12
LENGTH (%)	2.2%	2.2%	3.5%	19.3%	19.3%
AM PK-HR VKT	13,253	16,105	19,571	36,719	122,039
AM PK-HR VKT (%)	13.9%	14.4%	14.9%	23.7%	66.7%
PM PK-HR VKT	15,342	18,643	28,867	115,635	141,711
PM PK-HR VKT (%)	14.2%	14.7%	19.3%	65.7%	68.1%

\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	5.97	0.00	0.00	4.10	4.10	4.10
UPA	19.17	0.00	0.00	0.00	0.00	0.63
RI	28.50	3.51	26.67	26.67	26.67	26.67
RPA	52.61	0.00	0.00	0.00	0.00	0.00
RMA	53.03	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>159.27</b>	<b>3.51</b>	<b>26.67</b>	<b>30.77</b>	<b>30.77</b>	<b>31.40</b>

UI = Urban Interstate; UPA = Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI = Rural Interstate; RPA = Rural Freeways, Principal & Minor Arterials; RMA = Rural Major & Minor Collectors and Locals

Table 4.4 Summary Table of Putnam County Congestion Analysis.

STATE ROADS	215 KM	133 MILES
1995 DAILY TRAVEL	1,745,444 VKT	1,084,598 VMT
1995 AM PEAK HOUR TRAVEL	73,664 VKT	45,774 VMT
1995 PM PEAK HOUR TRAVEL	83,893 VKT	52,130 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,748,654	2,034,283	2,372,389	2,773,320	3,249,548
AM PK-HR VKT	73,664	85,697	99,940	116,830	136,892
PM PK-HR VKT	83,893	97,596	113,816	133,051	155,899

CONGESTION SUMMARY

USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (kms)	0.0	0.0	0.0	32.7	32.7
LENGTH (mi)	0.0	0.0	0.0	20.3	20.3
LENGTH (%)	0.0%	0.0%	0.0%	15.2%	15.2%
AM PK-HR VKT	0	0	0	29,574	84,810
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	25.3%	62.0%
PM PK-HR VKT	0	0	0	80,792	98,178
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	60.7%	63.0%

USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (kms)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					

\* VKT =Vehicle Kilometers Travelled

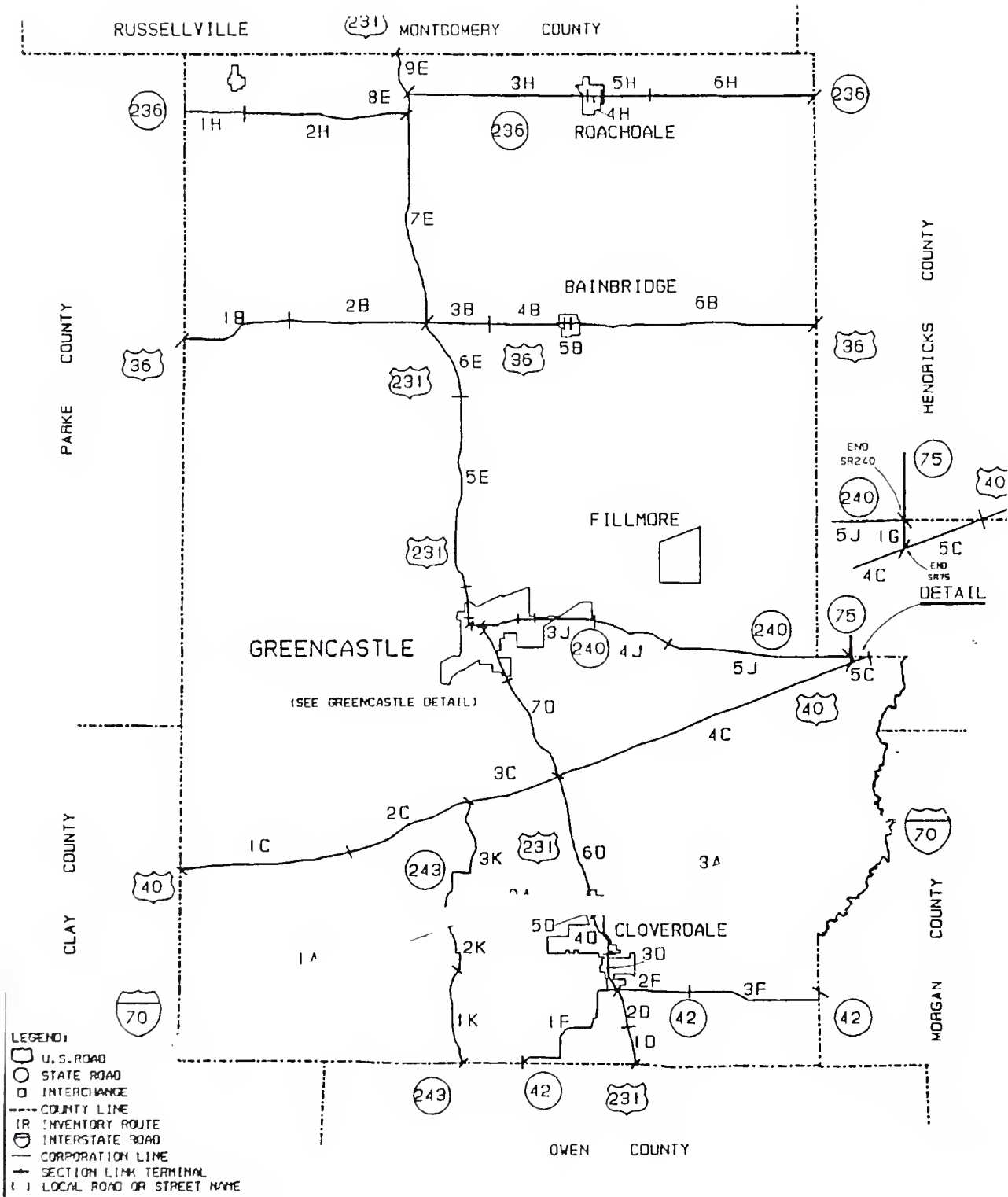
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	6.21	0.00	0.00	0.00	0.00	0.00
RI	36.14	0.00	0.00	0.00	32.73	32.73
RPA	73.64	0.00	0.00	0.00	0.00	0.00
RMA	98.65	0.00	0.00	0.00	0.00	0.00
TOTAL	214.65	0.00	0.00	0.00	32.73	32.73

UI=Urban Interstate; UPA=Urban Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

Figure 4.2 Map of Putnam County Showing Congested Links.

NOW	
2000	
2005	
2010	
2015	



### Severe Congestion Analysis of Results

The benchmark V/C is often well below the point where traffic becomes unstable. It is certainly a level of traffic where drivers begin to experience delay and/or difficulty maneuvering. However, it seemed important to determine where traffic reaches the level of stop and go. This usually occurs when the volume of traffic is just equal to or exceeds the capacity of the link, i.e.,  $V/C = 1$ . In each case, therefore, the links were also analyzed for a  $V/C = 1$ .

Identical data review techniques apply, except that  $V/C = 1$  is the value at which congestion is considered to exist. This eliminates some counties like Putnam (see Table 4.4) from consideration. Likewise, it eliminates or postpones the congestion indicated on many links. Its effects can be seen in Figure 4.3, which illustrates the change in counties with congestion. The darkened counties do not exhibit any congestion. Those on the left at V/C set equal to the benchmark value and those on the right where V/C is one.

#### Hancock County

According to the performance standard, Hancock County had a total of 10 links experiencing congestion at some time during the 20-year period. Reanalyzing the calculated V/C ratios, using  $V/C=1.0$ , the number of links congested decreases and the time at which congestion occurs is later than previously expected by the benchmark analysis.

Comparing calculated V/C ratios to the new performance standard of 1.0 on Table 4.2 yields the following congestion results. In 1995 there is one link on I-70 of 3.51 kilometers (2.18 miles); in 2005 there is one link on I-70 of 2.09 kilometers (1.3 miles); and in 2010 there are five links on I-70 of 25.17 kilometers (15.64 miles). These results show a total of seven congested links, making up a total of 30.8 kilometers (19.12 miles), as compared to the previous result of 10 links and 31.4 kilometers (19.51 miles) in length.

Figure 4.3. Change in Congestion Benchmark When Comparing Benchmark V/C to V/C=1

2015

V/C = Benchmark					County	V/C = 1				
1995	2000	2005	2010	2015		1995	2000	2005	2010	2015
					Allen					
					Bartholomew					
					Boone					
					Cass					
					Clark					
					Clay					
					Clinton					
					Dearborn					
					Dekalb					
					Delaware					
					DuBois					
					Elkhart					
					Floyd					
					Franklin					
					Grant					
					Hamilton					
					Hancock					
					Harrison					
					Hendricks					
					Henry					
					Jackson					
					Jasper					
					Johnson					
					Lake					
					Laporte					
					Madison					
					Marion					
					Marshall					
					Monroe					
					Montgomery					
					Morgan					
					Newton					
					Porter					
					Putnam					
					St. Joseph					
					Scott					
					Shelby					
					Tippecanoe					
					Vigo					
					Wayne					
					White					



### Putnam County

Putnam County is a county which experiences congestion starting in the year 2010, according to the performance standards established to use for the benchmark congestion analysis. The amount of congestion identified was of a significant length, 20.15 kilometers (12.52 miles), all along the I-70 corridor. Table 4.4 shows the results obtained by setting the calculated V/C ratios equal to one. Putnam County would now be classified as “congestion-free” for the entire period of this study, according to the severe performance standard of 1.0. At no point do any of Putnam County’s calculated V/C ratios in excess of 1.0. Therefore, except for unusual circumstances, traffic never reaches LOS ‘F’.

### Severe Congestion Analysis Summary

By reanalyzing the calculated V/C ratios for a performance standard of 1.0, many links identified as congested by the benchmark value, were ruled out as priority links. This severe congestion analysis is recommended as a valuable way of identifying the links that are experiencing a more substantial degree of congestion or will be in the future. Since these links may need immediate attention and/or mitigation, greater priority should be placed in the CMS on these potential “hot spots”.

### Marion County

Marion County is identified as the most heavily congested county in the State of Indiana, therefore, a detailed analysis is included. The Indianapolis MPS is currently reviewing ITS techniques, as well as its route structure, to attempt to mitigate this potential congestion. Marion County has a total of 463.30 kilometers (287.89) of state highway. Currently, it is suspected, using the benchmark analysis, that 67.8 kilometers (37.8 miles), or 13.1 percent of the total, are congested during the peak hour; the severe congestion analysis reduces this amount to 10.3 percent for current congestion. The results also show that in 2015, 218.5 kilometers (136 miles), or 47 percent, and 206 kilometers (128.3 miles), or 44.5 percent of the state highways, are expected to be congested according to the benchmark analysis and the severe congestion analysis, respectively. Table 4.5 presents a summary of the Marion County analysis. Of more significance is the startling result that by 2015 over 85% of the vehicle distance traveled during the P.M. peak hour will be congested.

Table 4.5 Summary Table for Marion County

**49 MARION COUNTY**

<b>STATE ROADS</b>	<b>463 KM</b>	<b>288 MILES</b>
<b>1995 DAILY TRAVEL</b>	<b>19,361,817 VKT</b>	<b>12,031,204 VMT</b>
<b>1995 AM PEAK HOUR TRAVEL</b>	<b>779,469 VKT</b>	<b>484,353 VMT</b>
<b>1995 PM PEAK HOUR TRAVEL</b>	<b>916,290 VKT</b>	<b>569,372 VMT</b>

<b>YEAR</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>DAILY VKT</b>	19,361,817	24,198,779	30,408,043	38,389,348	48,659,640
<b>AM PK-HR VKT</b>	779,469	974,196	1,224,169	1,545,481	1,958,943
<b>PM PK-HR VKT</b>	916,290	1,145,197	1,439,047	1,816,759	2,302,796

**CONGESTION SUMMARY**

**USING BENCHMARK V/C**

<b>YEAR</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>LENGTH (km)</b>	60.8	113.6	159.3	199.7	215.6
<b>LENGTH (mi)</b>	37.8	70.6	99.0	124.1	134.0
<b>LENGTH (%)</b>	13.1%	24.5%	34.4%	43.1%	46.5%
<b>AM PK-HR VKT</b>	189,594	487,704	811,355	1,219,157	1,693,536
<b>AM PK-HR VKT (%)</b>	24.3%	50.1%	66.3%	78.9%	86.5%
<b>PM PK-HR VKT</b>	340,310	687,778	1,086,718	1,539,703	2,022,155
<b>PM PK-HR VKT (%)</b>	37.1%	60.1%	75.5%	84.7%	87.8%

**USING V/C = 1**

<b>YEAR</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>LENGTH (km)</b>	47.78	98.23	148.10	180.63	206.22
<b>LENGTH (mi)</b>	29.69	61.04	92.03	112.24	128.14
<b>LENGTH (%)</b>	10.3%	21.2%	32.0%	39.0%	44.5%
<b>AM PK-HR VKT</b>	98,423	366,721	749,547	1,174,415	1,677,238
<b>AM PK-HR VKT (%)</b>	12.6%	37.6%	61.2%	76.0%	85.6%
<b>PM PK-HR VKT</b>	279,096	630,955	1,038,477	1,487,004	2,007,009
<b>PM PK-HR VKT (%)</b>	30.5%	55.1%	72.2%	81.8%	87.2%

\* VKT = Vehicle Kilometers Travelled

<b>ROAD CLASS</b>	<b>TOTAL KM BY TYPE</b>	<b>CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)</b>				
		<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>UI</b>	311.43	60.36	113.13	158.87	198.85	214.29
<b>UPA</b>	151.27	0.42	0.42	0.42	0.82	1.30
<b>RI</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>RPA</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>RMA</b>	0.60	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	463.30	60.78	113.55	159.29	199.67	215.60

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

Regardless of which analysis is chosen, it is clear that Marion County is experiencing a significant amount of congestion, not only in the state but within the county itself. Table 4.6 indicates along which state highways congestion exists or is expected to begin. The table also indicates the length of each corridor and the length along the corridors where congestion is likely.

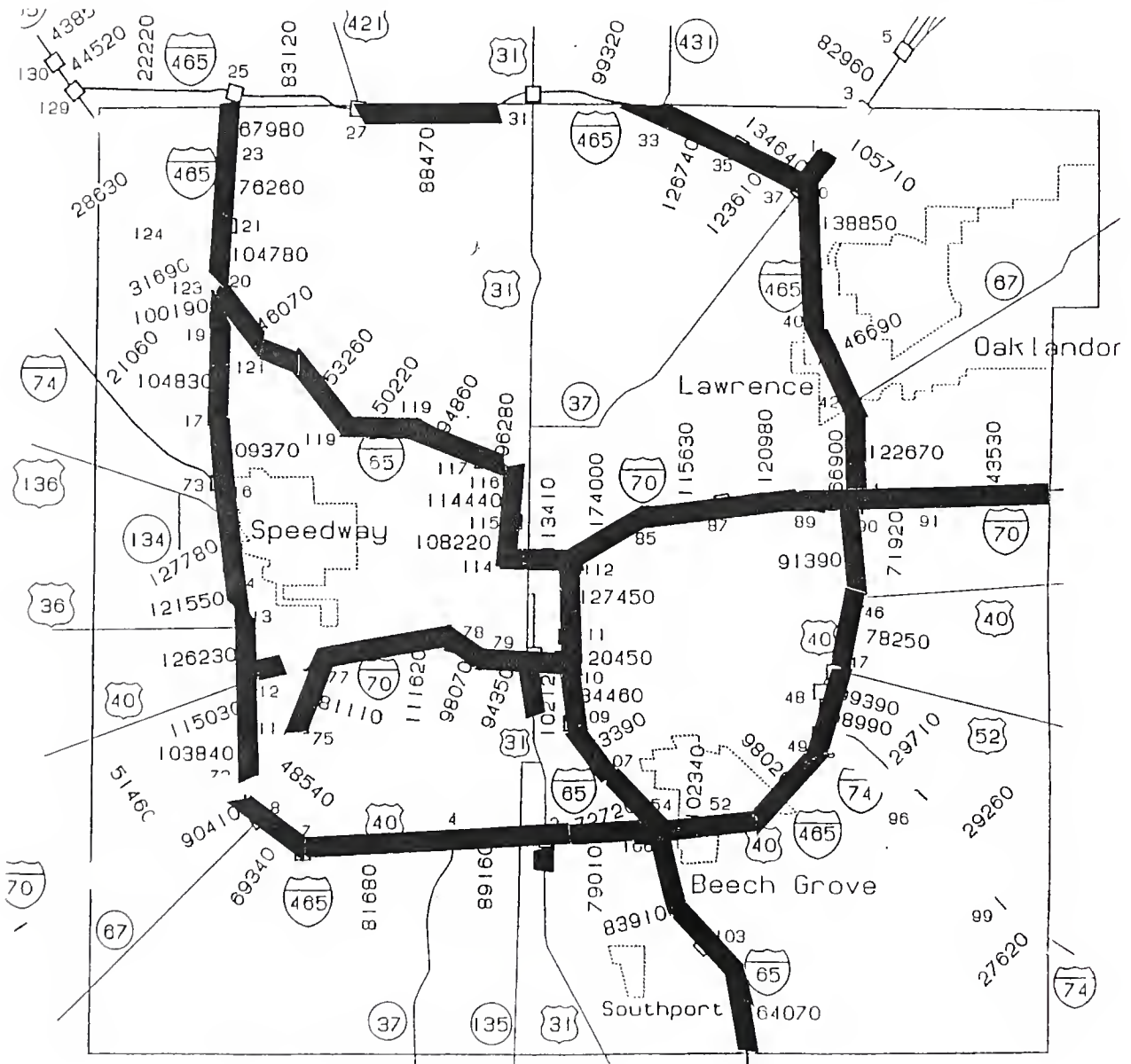
Table 4.6 Marion County Congestion Analysis Results Along Corridors for Benchmark Analysis.

Corridor	Total Kilometers	Total Amount of Congested Miles Identified Along Corridor				
		1995	2000	2005	2010	2015
I-65	81.9	10.9	28.0	40.2	42.0	46.5
I-70	69.0	16.3	19.5	30.6	44.9	47.2
I-465	131.5	36.2	58.4	76.6	81.6	87.4
I-69	6.9	4.0	4.0	4.4	6.0	6.0
I-74	26.9	0.0	0.0	0.0	5.6	6.9
SR37	12.0	0.0	0.0	0.0	0.5	0.5
SR100	7.4	0.0	0.0	0.0	0.0	1.5
US40	38.0	0.0	0.0	0.0	0.0	0.5
US31	37.2	0.5	0.5	0.5	0.5	2.1

The congestion indicated by Table 4.6 is the amount expected to occur if no congestion mitigation strategies are implemented. It is shown that the I-465 corridor experiences the most total miles congested currently and in the future. This level of congestion means that Indianapolis drivers will experience congestion for almost 90 percent of the distance traveled during the P.M. commuting hour. Other interstates, such as I-70, I-69, I-74, and I-65, also experience a substantial amount of congestion during the peak hours. The map of Marion County is shown in Figure 4.4. Pages A-57, 58, and 59 of Appendix A show other maps.

Figure 4.4 Map of Indianapolis Area Showing Congestion Using the Benchmark V/C

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
 Indiana Department of Transportation  
 Color Added

## CHAPTER 5: STATEWIDE SUMMARY

The analysis of congestion for each of the 92 counties in the State of Indiana was performed. A summary of these results will be discussed here with several tables and graphs included. The results for every county, including all of the “non-interstate” highways that appear to have potential congestion are included in Appendices A, B, C, and D. Figure 5.1 presents a summary set of statements about the congestion under the benchmark V/C ratio.

Figure 5.1 Summary Statements About Congestion

## IN INDIANA THERE ARE

- 92 COUNTIES
- 18,807 KILOMETERS IN THE STATE HIGHWAY SYSTEM
- VKT THAT GROWS FROM 154 MILLION IN 1995 TO 302.5 MILLION IN 2015
- P.M. PEAK HOUR VKT INCREASES FROM 6.7 MILLION TO 12.7 MILLION KILOMETERS

## IN 1995 CONGESTION IS EXPERIENCED

- BY 18.5 OF THE COUNTIES
- ON 0.8% OF THE HIGHWAY LENGTH
- BY 9% OF THE STATE'S P.M. PEAK HOUR VKT

## IN 2000 CONGESTION IS EXPERIENCED

- BY 22.8% OF THE COUNTIES
- ON 1.7% OF THE HIGHWAY LENGTH
- BY 21% OF THE STATE'S P.M. PEAK HOUR VKT
- HIGHEST P.M. PEAK HOUR CONGESTION OCCURS IN MARION (60% OF VKT), HANCOCK (54%), AND LAKE (41%) COUNTIES

## IN 2005 CONGESTION IS EXPERIENCED

- BY 36.2% OF THE COUNTIES
- ON 2.9% OF THE HIGHWAY MILES
- BY 27% OF THE P.M. PEAK HOUR VKT
- HIGHEST P.M. PEAK HOUR CONGESTION OCCURS IN MARION (75% OF VKT), HANCOCK (63%) HENRY (58%), CLARK (56%), JOHNSON (53%), AND LAKE (50%)

## IN 2010 CONGESTION IS EXPERIENCED

- BY 41.4% OF THE COUNTIES
- ON 4.8% OF THE HIGHWAY LENGTH
- BY 32% OF THE P.M. PEAK HOUR VKT
- HIGHEST P.M. PEAK HOUR CONGESTION OCCURS IN MARION (85% OF VKT), HANCOCK (66%), CLARK (63%), FLOYD (63%), PUTNAM (61%), LAKE (61%), AND HENRY (60%)

## IN 2015 CONGESTION IS EXPERIENCED

- BY 45.7% OF THE COUNTIES
- ON 6.5% OF THE HIGHWAY KILOMETERS
- BY 42.6% OF THE P.M. PEAK HOUR VKT
- HIGHEST P.M. PEAK HOUR CONGESTION OCCURS IN MARION (88% OF VKT), SCOTT (72%), CLARK (70%), LAKE (70%), HANCOCK (68%), HENRY (67%) AND FLOYD (67%)

The maps shown in Figures 5.2 and 5.3 illustrate statewide congestion. Figures 5.4 and 5.5 give the summary data for 1995 and 2015 respectively.

Comparison of the results for the benchmark  $V/C$  to those for  $V/C = 1$  shows that many of the congested links are still below a LOS of 1.0 in the year 2015. The county-by-county data with both  $V/C$  ratios appear in Appendix A. Presently, 76 of the 92 counties in Indiana do not indicate any areas of congestion. Fifty-one of these counties remain “congestion-free” during the 20 years of the study. Likewise, the number of counties with congestion increases from 16 in 1995 to 41 in 2015. When the  $V/C = 1$  condition is considered, 85 of the state’s 92 counties show no congestion now, while 32 indicate congestion in 2015.

The results were also analyzed according to the total number of links in the state system; there are 13,835 links, of which 121 were congested in 1995, and 754 are expected to be congested in 2015. When  $V/C = 1$ , those numbers change to 75 that are congested in 1995, and 519 are expected to be congested in 2015.

Of the 6.5% of total state highway miles congested in 2015, the majority are under the jurisdiction of a MPO and/or are located in metropolitan areas of the state.

#### Simplified Congested Road Analysis

Also presented is the type of road that is subject to congestion. Table 5.6 shows that the largest amount of congestion occurs on highways classified as interstate. It is this stretch of road that represents only 13.5 percent of the state road system that receives most of the traffic. As indicated in Chapter 3, the road classification used for interstate includes only designated interstate highways and does not include protected arterials, even though some arterials have many of the characteristics of an interstate. All of the non-interstate state roads, regardless of how they were classified, were examined, and those experiencing congestion are listed in Appendix D. There are 101 links so identified covering about 50.7 kilometers (31.5 miles). In general, these are short pockets of congestion that will need to be analyzed in more detail. They do not represent major level congestion in a state which has over 1,000 kilometers of interstate that will become congested. This is almost 45 percent of the total interstate system.

Figure 5.2 Map of Indiana Showing Counties that are Congested for V/C = Benchmark

NOW	
2000	
2005	
2010	
2015	

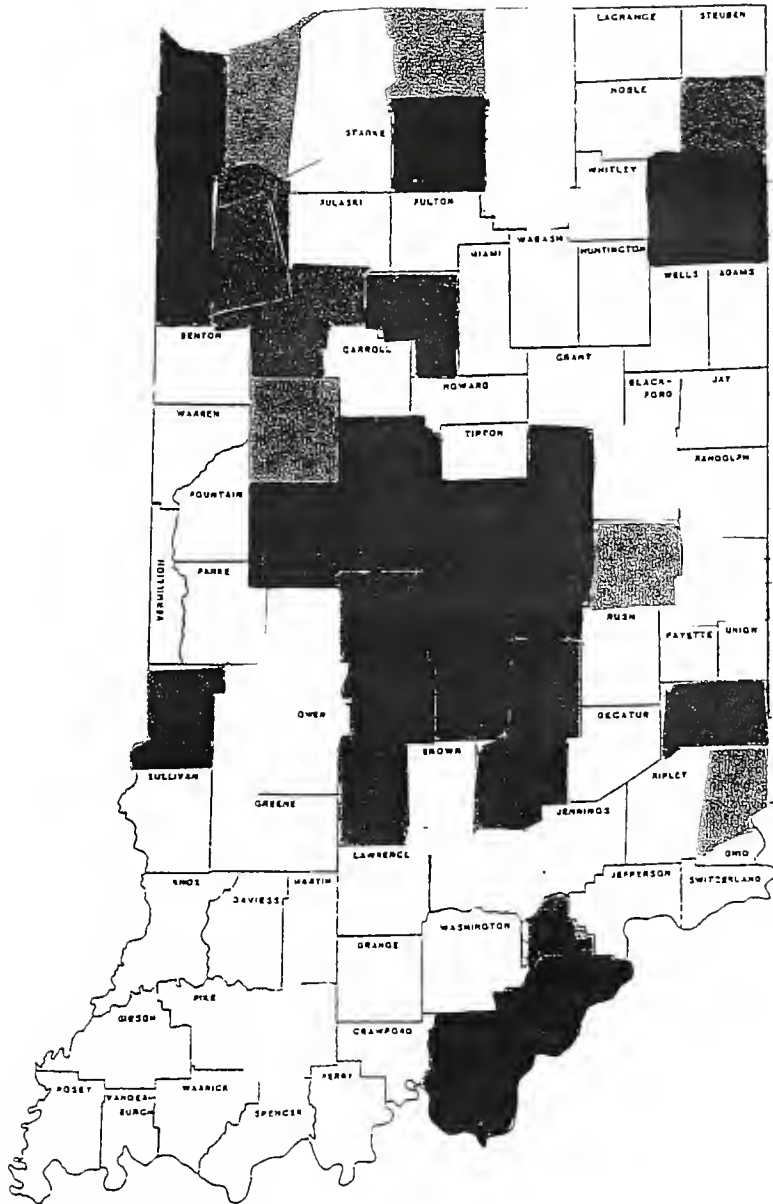


Figure 5.3 Map Showing Major Congested Portions of the Interstate (V/C = Benchmark)

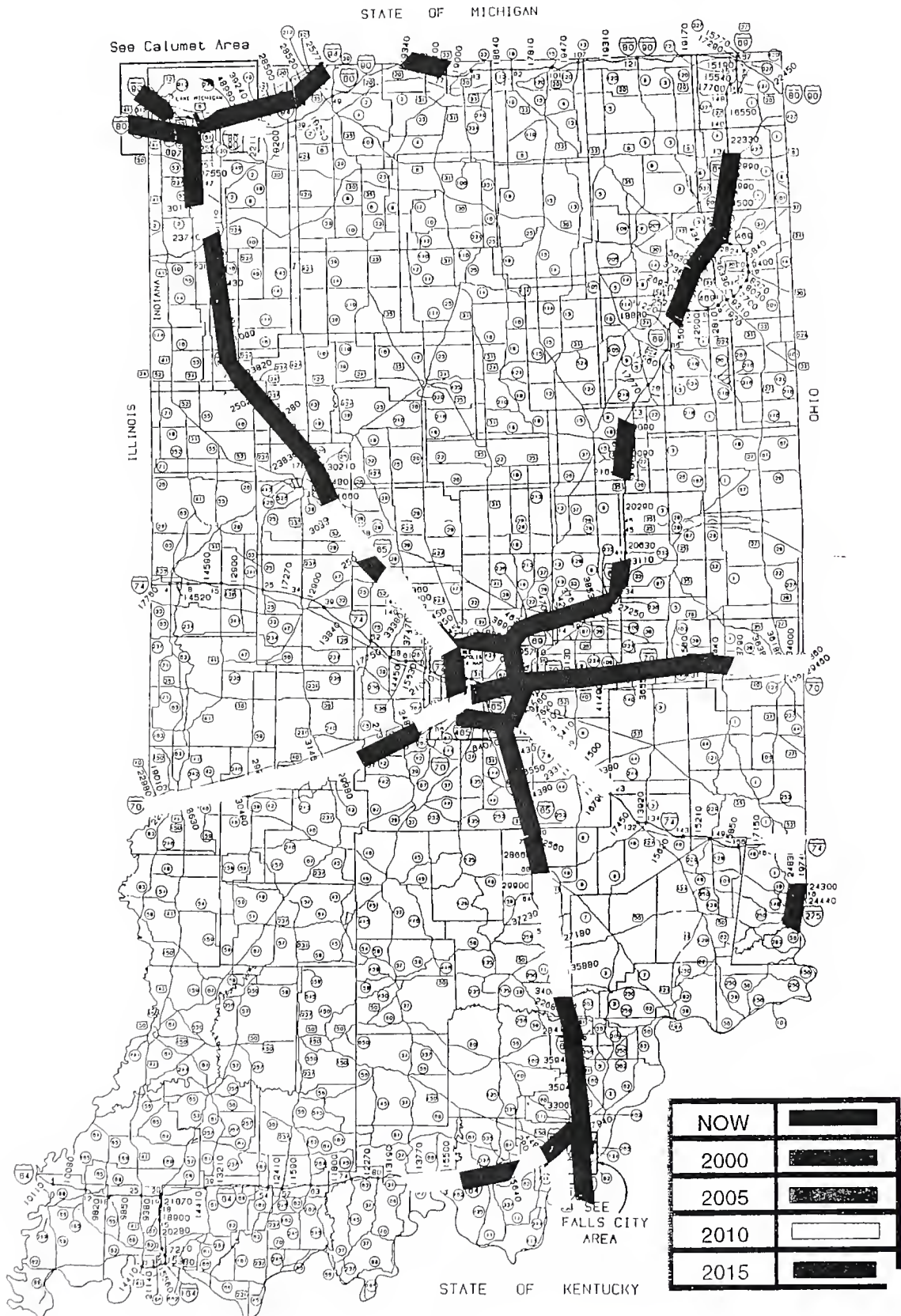




Figure 5.4 Congestion summary; county by county basis in 1995 - a.) Counties showing no congestion

COUNTIES WITH NO CONGESTION IN 1995

No.	COUNTY	HIGHWAY			1995		TBT
		KM	MILES	YKT	YKT		
1	ADAMS	176.62	109.75	801,931	498,311		
2	BARTHOLOMEW	203.77	126.62	2,331,462	1,448,743		
3	BENTON	178.12	110.68	352,878	219,274		
4	BLACKFORD	70.13	43.58	233,179	144,895		
5	BROWN	86.56	53.79	322,932	200,666		
6	CARROLL	164.58	102.27	568,271	353,117		
7	CASS	226.59	140.80	971,184	603,482		
8	CLAY	197.45	122.69	1,176,840	731,274		
9	CLAYTON	170.70	106.07	616,013	382,783		
10	DAVIESS	134.75	83.73	612,542	380,626		
11	DEARBORN	202.34	125.73	1,459,509	906,922		
12	DECATUR	134.67	83.68	1,015,334	630,917		
13	DEKALB	194.21	120.68	1,331,929	827,645		
14	DELAWARE	214.07	133.02	2,319,978	1,441,607		
15	DUBOIS	203.38	126.38	1,008,823	626,871		
16	ELKHART	322.17	200.19	3,347,037	2,079,809		
17	FAYETTE	60.67	37.70	352,264	218,893		
18	FOUNTAIN	222.07	137.99	691,778	429,863		
19	FRANKLIN	145.59	90.47	1,044,453	649,011		
20	FULTON	160.95	100.01	556,339	345,702		
21	GIBSON	233.83	145.30	1,380,427	857,781		
22	GREENE	267.76	166.38	906,145	563,068		
23	HENDRICKS	271.46	168.68	2,764,454	1,717,799		
24	HENRY	228.56	141.90	2,040,638	1,268,028		
25	HOWARD	123.26	76.59	1,129,146	701,638		
26	HUNTINGTON	295.29	183.49	1,535,728	954,283		
27	JACKSON	287.47	178.63	1,720,930	1,069,366		
28	JASPER	275.09	170.94	960,773	597,013		
29	JAY	153.75	95.54	477,590	296,769		
30	JEFFERSON	198.12	123.11	747,050	464,208		
31	JENNINGS	116.27	72.25	614,242	381,683		
32	KNOX	247.69	153.91	1,283,144	797,331		
33	KOSCIUSKO	225.06	139.85	1,521,407	945,384		
34	LAGRANGE	194.89	121.10	1,551,195	963,894		
35	LAPORTE	398.56	247.66	3,928,417	2,441,072		
36	LAWRENCE	208.92	129.82	1,051,216	653,213		
37	MARTIN	117.69	73.13	382,521	237,694		
38	MIAMI	201.50	125.21	990,839	615,696		
39	MONROE	141.88	88.16	1,645,306	1,022,374		
40	MORGAN	215.05	133.63	2,073,332	1,288,344		
41	NOBLE	182.33	113.30	1,071,323	665,708		
42	OHIO	46.25	28.74	101,544	663,098		
43	ORANGE	140.59	87.36	437,909	272,111		
44	OWEN	138.01	85.76	542,623	337,179		
45	PARKE	143.77	89.34	435,843	270,828		
46	PERRY	219.38	136.32	625,036	388,390		
47	PIKE	179.08	111.28	470,097	292,113		
48	PORTER	328.17	203.92	4,912,098	3,052,320		
49	POSEY	160.69	99.85	904,610	562,114		
50	PULASKI	152.05	94.48	374,433	232,668		
51	PUTNAM	214.65	133.38	1,748,654	1,086,593		
52	RANDOLPH	207.81	129.13	667,490	414,770		
53	RIPLEY	238.59	148.13	949,953	590,289		
54	RUSH	132.51	82.34	489,006	303,863		
55	ST. JOSEPH	322.76	200.56	4,232,610	2,630,094		
56	SCOTT	137.51	85.45	953,668	592,598		
57	SHELBY	156.63	97.33	1,010,644	628,002		
58	SPENCER	243.33	151.20	1,010,644	628,002		
59	STARKE	168.48	104.69	656,368	407,860		
60	STEUBEN	229.45	142.58	1,804,566	1,121,336		
61	SULLIVAN	172.69	107.31	748,897	465,356		
62	SWITZERLAND	139.99	86.99	169,791	105,506		
63	TIPPECANOE	304.75	189.37	3,325,447	2,066,394		
64	TIPTON	96.80	60.15	742,473	461,364		
65	UNION	60.85	37.81	205,678	127,806		
66	VANDERBURGH	152.26	94.61	2,850,178	1,771,067		
67	VERMILION	156.89	97.49	875,403	543,965		
68	VIGO	224.61	139.57	2,520,536	1,566,231		
69	WABASH	210.90	131.05	801,413	497,989		
70	WARREN	165.79	103.02	389,972	242,324		
71	WARRICK	229.97	142.90	1,621,790	1,007,761		
72	WASHINGTON	186.41	115.83	548,230	340,664		
73	WAYNE	242.36	150.60	2,219,310	1,379,053		
74	WELLS	164.55	102.25	550,543	342,101		
75	WHITE	222.57	138.30	960,773	597,013		
76	WHITLEY	215.89	134.15	1,206,196	749,516		
<b>TOTAL</b>		<b>7514.34</b>	<b>4669.32</b>	<b>46,100,535</b>	<b>28,646,328</b>		

Figure 5.4 Congestion summary; county by county basis in 1995 - b.) Counties showing congestion

COUNTIES WITH CONGESTION IN 1995

Co No.	COUNTY	HIGHWAY		1995 VEHICLE		Congested		AM PkHr VKT		PM PkHr VKT		%
		Km	Miles	Km traveled	Ml traveled	Km	Miles	Congested	Total	Congested	Total	
1	ALLEN	364.78	226.67	5,154,566	3,202,986	0.35	0.22	583	211,195	660	242,112	0.3%
2	BOONE	278.09	172.80	2,434,050	1,512,490	1.30	0.81	1,615	102,031	4,745	116,335	4.1%
3	CLARK	227.43	141.32	3,255,293	2,022,801	8.80	5.47	4,462	134,335	26,906	154,854	17.4%
4	CLINTON	209.10	129.93	1,210,873	752,422	2.12	1.32	61	050,869	1,583	58,117	2.7%
5	FLOYD	125.19	77.79	1,920,600	1,193,438	0.23	0.14	0	079,691	252	91,191	0.3%
6	GRANT	264.87	164.59	1,858,448	1,154,818	0.29	0.18	0	077,766	410	88,243	0.5%
7	HAMILTON	233.16	144.88	3,958,888	2,460,006	4.04	2.51	1,531	164,940	16,373	189,134	8.7%
8	HANCOCK	159.27	98.97	2,266,914	1,408,634	3.51	2.18	13,253	095,251	15,342	108,400	14.2%
9	HARRISON	264.91	164.61	1,355,945	842,568	6.26	3.89	0	053,299	8,239	59,599	13.8%
10	JOHNSON	165.73	102.98	2,642,604	1,642,083	15.42	9.58	0,429	111,117	34,320	126,047	27.2%
11	LAKE	491.35	305.32	11,073,836	6,881,151	34.10	21.19	125,242	450,391	165,881	522,999	31.7%
12	MADISON	272.20	169.14	2,773,202	1,723,235	1.64	1.02	0	115,576	3,755	131,656	2.9%
13	MARION	463.30	287.89	19,361,817	12,031,204	60.78	37.77	189,594	779,469	340,310	916,290	37.1%
14	MARSHALL	275.19	171.00	1,671,469	1,038,631	2.49	1.55	3,510	070,360	4,085	79,882	5.1%
15	MONTGOMERY	261.98	162.79	1,373,966	853,766	0.56	0.35	0	058,224	513	63,147	0.8%
16	NEWTON	190.54	118.40	627,548	389,951	4.63	2.88	4,621	026,272	5,350	30,190	17.7%
		4247.07	2639.08	62,940,828	39,110,185	146.54	91.06	344,901	2,196,230	628,726	2,978,195	21.1%
NO CONGESTION		14560.38	9047.65	92,954,971	28,646,328				3,704,991		3,765,582	
INDIANA STATE TOTAL		18807.45	11686.73	155,894,941	57,761,089	146.54	91.06	344,901	5,901,221	628,726	6,743,777	9.3%

Figure 5.5 Congestion summary; county by county basis in 2015 - a.) Counties showing no congestion

No.	COUNTY	HIGHWAY		2015		
		KM	MILES	VKT	VMT	
1	1	ADAMS	185.51	109.75	1,221,712	722,778
2	4	BENTON	187.08	110.68	562,924	333,032
3	5	BLACKFORD	73.66	43.58	346,983	205,279
4	7	BROWN	90.92	53.79	495,598	293,201
5	8	CARROLL	172.87	102.27	890,182	526,641
6	13	CRAWFORD	179.29	106.07	1,283,836	759,532
7	14	DAVIES	141.53	83.73	964,810	570,792
8	16	DECATUR	141.44	83.68	2,006,251	1,186,920
9	21	FAYETTE	63.72	37.70	467,808	276,761
10	23	FOUNTAIN	233.24	137.99	1,374,558	813,204
11	25	FULTON	169.05	100.01	815,168	482,262
12	26	GIBSON	245.60	145.30	2,441,837	1,444,617
13	28	GREENE	281.23	166.38	1,448,669	857,048
14	34	HOWARD	129.46	76.59	1,613,073	954,312
15	35	HUNTINGTON	310.15	183.49	2,909,779	1,721,457
16	38	JAY	161.49	95.54	725,988	429,503
17	39	JEFFERSON	208.09	123.11	1,124,202	665,090
18	40	JENNINGS	122.12	72.25	912,880	540,070
19	42	KNOX*	260.15	153.91	2,261,484	1,337,918
20	44	LAGRANGE	204.70	121.10	2,989,030	1,768,343
21	47	LAWRENCE	219.43	129.82	1,362,801	806,248
22	51	MARTIN	123.61	73.13	587,255	347,427
23	52	MIAMI	211.64	125.21	1,519,623	899,025
24	57	NOBLE	191.51	113.30	1,650,688	976,565
25	58	OHIO	48.58	28.74	159,389	094,296
26	59	ORANGE	147.66	87.36	755,153	446,757
27	60	OWEN	144.96	85.76	841,922	498,090
28	61	PARKE	151.01	89.34	671,345	397,175
29	62	PERRY	230.42	136.32	1,143,699	676,625
30	63	PIKE	188.10	111.28	770,519	455,848
31	65	POSEY	168.78	99.85	1,606,734	950,561
32	66	PULASKI	159.70	94.48	581,161	343,821
33	68	RANDOLPH	218.27	129.13	1,072,667	634,602
34	69	RIPLEY	250.38	148.13	1,678,885	993,247
35	70	RUSH	139.18	82.34	733,430	433,905
36	74	SPENCER	255.57	151.20	1,730,224	1,023,619
37	75	STARKE	176.96	104.69	1,042,422	616,708
38	76	STEUBEN	241.00	142.58	3,677,379	2,175,578
39	77	SULLIVAN	181.39	107.31	1,163,879	688,563
40	78	SWITZERLAND	147.04	86.99	272,989	161,503
41	80	TIPTON	101.67	60.15	1,156,114	683,970
42	81	UNION	63.91	37.81	312,925	185,130
43	82	VANDEBURGH	159.92	94.61	4,722,293	2,793,760
44	83	VERMILLION	164.79	97.49	1,528,442	904,243
45	85	WABASH	221.51	131.05	1,223,785	724,005
46	86	WARREN	174.13	103.02	617,154	365,115
47	87	WARRICK	241.54	142.90	2,796,701	1,654,559
48	88	WASHINGTON	195.79	115.83	818,749	484,381
49	90	WELLS	172.83	102.25	849,404	502,517
50	92	WHITLEY	226.75	134.15	1,907,213	1,128,328
			<b>8879.38</b>	<b>5253.14</b>	<b>63,606,120</b>	<b>37,630,078</b>

\*County No. 43, Kosciusko, should be included in this list. Its data are shown in Figure 5.5b.

Figure 5.5 Congestion summary, county by county basis in 2015 - b.) Counties showing congestion

Rank	County	Start Highway		2015 Vehicle		Congestion		AM PMTR VKTI		PM/PRH VKTI		%
		Kilometers	Miles	Km Traveled	Miles traveled	Km	Miles	Congested	Total	Congested	Total	
1	ALLEN	383.14	226.67	8,689,543	5,170,829	51.40	30.41	128,459	356,032	199,194	408,151	48.8%
2	BARTHOLOMEW	214.03	126.62	4,450,611	2,633,030	38.07	22.52	077,705	186,006	090,548	210,728	43.0%
3	BOONE	292.08	172.80	5,282,785	3,125,354	38.86	22.99	102,397	221,445	136,933	252,490	54.2%
4	CASS	237.99	140.80	1,567,925	927,602	1.49	0.88	000,000	065,419	002,182	073,029	3.0%
5	CLARK	238.87	141.32	6,740,918	3,988,001	47.31	27.99	182,893	193,802	225,167	320,666	70.2%
6	CLAY	207.38	122.69	2,247,886	1,329,874	21.18	12.53	000,000	094,908	062,459	107,344	58.2%
7	CLINTON	219.62	129.93	2,310,100	1,366,681	20.84	12.33	051,747	000,001	059,842	110,875	54.0%
8	DEARBORN	212.52	125.73	2,692,372	1,592,837	11.22	6.64	010,664	113,859	020,110	129,338	15.5%
9	DEKALB	203.99	120.68	2,592,653	1,533,842	30.78	18.21	016,537	109,613	076,014	123,964	61.3%
10	DELAWARE	224.84	133.02	4,451,621	2,653,628	19.15	11.33	009,382	185,445	051,768	214,629	24.1%
11	DUBOIS	213.62	126.38	1,591,770	941,700	0.30	0.18	000,000	067,508	000,469	074,306	0.6%
12	ELKHART	338.38	200.19	5,516,675	3,263,725	0.86	0.51	000,487	233,571	001,197	262,148	0.5%
13	FLOYD	131.49	77.79	4,120,495	2,437,730	29.61	17.52	110,583	170,972	130,917	195,643	66.9%
14	FRANKLIN	152.92	90.47	2,112,462	1,249,756	1.42	0.84	000,000	090,485	002,161	025,822	8.4%
15	FRANKLIN	278.21	164.59	3,321,135	1,964,820	3.45	2.04	001,421	138,972	009,000	157,695	5.7%
16	HAMILTON	244.89	144.88	7,323,131	4,332,444	30.39	17.08	145,110	305,105	179,032	349,859	51.2%
17	HANCOCK	167.29	98.97	4,572,958	2,705,412	32.98	19.51	128,182	192,146	149,447	218,671	68.3%
18	HARRISON	278.24	164.61	2,604,967	1,541,127	29.48	17.44	056,435	102,394	065,297	114,497	57.0%
19	HENDRICKS	285.12	168.68	5,122,507	3,030,531	19.25	11.39	063,885	215,515	074,889	244,331	30.7%
20	HENRY	239.85	141.90	4,041,726	2,391,130	34.33	20.31	111,848	170,786	129,477	193,132	67.0%
21	JACKSON	301.94	178.63	3,313,945	1,960,566	26.22	15.51	063,039	139,371	073,171	157,923	46.3%
22	JASPER	288.94	170.94	1,656,339	979,908	37.66	22.28	007,785	155,561	094,480	176,822	53.4%
23	JOHNSON	174.07	102.98	4,985,622	2,949,549	32.15	19.02	122,283	209,637	142,228	237,804	59.8%
24	KOSCIUSKO*	236.39	139.85	2,635,896	1,559,425	5.07	3.00	005,744	111,392	017,309	124,359	13.9%
25	LAKE	516.08	305.32	25,173,055	14,892,655	113.84	67.35	654,497	1,023,829	828,279	1,188,883	69.7%
26	LAPORTE	418.62	247.66	7,051,585	4,171,795	12.42	7.35	048,268	295,472	055,876	338,031	16.5%
27	MADISON	285.90	169.14	5,143,473	3,042,935	31.14	18.42	109,659	214,360	128,062	244,183	52.4%
28	MARION	486.62	287.89	51,328,295	30,366,382	227.94	134.85	1,778,776	2,066,378	2,128,408	2,429,089	87.6%
29	MARSHALL	289.04	171.00	2,802,616	1,658,058	7.32	4.33	018,935	117,976	022,274	133,941	16.6%
30	MARSHALL	149.02	88.16	2,770,218	1,638,892	6.19	3.66	001,002	115,682	018,426	131,592	14.0%
31	MONTGOMERY	275.16	162.79	2,922,951	1,729,250	7.05	4.17	008,447	123,865	010,196	134,337	7.6%
32	MORGAN	225.87	133.63	3,674,214	2,173,705	15.45	9.14	045,790	153,393	053,007	176,464	30.0%
33	NEWTON	200.13	118.40	1,046,884	619,348	4.87	2.88	010,584	043,827	012,253	050,364	24.3%
34	PORTER	344.69	203.92	9,819,102	5,809,088	43.49	25.73	201,907	405,558	253,702	401,484	63.2%
35	PUTNAM	225.45	133.38	3,413,106	2,019,231	34.38	20.34	089,079	143,782	103,119	163,745	63.0%
36	ST. JOSEPH	339.01	200.56	8,181,393	4,840,202	11.56	6.84	026,255	336,999	034,961	385,026	9.1%
37	SCOTT	144.44	85.45	2,022,535	1,196,554	19.52	11.55	052,934	084,907	068,905	096,148	71.7%
38	SHELBY	164.52	97.33	3,631,629	2,148,511	28.46	16.84	081,109	150,508	094,502	174,286	54.2%
39	TIPPECANOE	320.09	189.37	5,841,679	3,456,001	41.92	24.80	090,738	243,433	132,618	278,151	47.7%
40	VIGO	235.92	139.57	4,467,792	2,643,195	23.60	13.96	047,853	184,027	077,536	210,479	36.8%
41	WAYNE	254.56	150.60	4,398,812	2,602,385	38.93	23.03	070,658	334,876	122,862	203,757	60.3%
42	WHITE	233.77	138.30	1,656,339	979,908	51.45	30.44	000,000	070,835	013,147	078,065	16.8%
43	WHITE	10874.70	6433.59	239,291,723	141,567,605	1283.01	759.04	4,733,077	9,939,654	6,151,425	11,302,251	54.4%

\* A re-analysis of Kosciusko County showed no congestion and therefore it should be eliminated from this chart.

Figure 5.6 Road Type and Distance Summary of Statewide Highway System

**SUMMARY OF ALL COUNTIES IN INDIANA  
HIGHWAY TYPE BY DISTANCE**

ROAD CLASS	CONGESTED HIGHWAY MILES BY YEAR					NON-CONGESTED OVER THE 20 YEAR PERIOD	TOTAL FOR EACH FUNCTIONAL CLASS
	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>		
UI	97.88	177.67	268.91	406.88	467.02	47.22	871.05
UPA	10.83	13.45	24.22	29.64	39.48	472.76	2367.30
RI	35.71	115.81	241.59	448.61	683.42	442.16	1529.48
RPA	4.39	4.39	8.42	10.67	12.57	3522.19	6558.44
RMA	0.00	0.00	0.61	0.76	1.40	3978.72	7283.05
<b>TOTAL</b>	<b>148.81</b>	<b>311.32</b>	<b>543.75</b>	<b>896.56</b>	<b>1203.89</b>	<b>8463.05</b>	<b>18069.32</b>

**PERCENT OF EACH ROAD BY CLASS**

FUNCTIONAL ROAD CLASSIFICATION	TOTAL BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEARS				
		<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>
Urban Interstate	871.05	11.24%	20.40%	30.87%	46.71%	53.62%
Urban Freeways, Arterials, Collectors & Locals	2367.30	.46%	.57%	1.02%	1.25%	1.67%
Rural Interstate	1529.48	2.33%	7.57%	15.80%	29.33%	44.68%
Rural Freeways, Principal & Minor Arterials	6558.44	.07%	.07%	.13%	.16%	.19%
Rural Major & Minor Collectors, Locals	7283.05	0.00%	0.00%	.01%	.02%	.02%

Table 5.1 summarizes the percent of the total state highway system that is congested compared with the total state VKT that is affected by congestion. Table 5.2 summarizes the number of counties affected by congested roads comparing the benchmark V/C ratio to a V/C of one.

Table 5.1 Percentage of State Highway Miles Congested Over Time.

Percentage of Total Length and Total P.M. Peak Hour VKT Experiencing Congestion		
Year	Kilometers	VKT
1995	0.8	9
2000	1.7	21
2005	2.9	27
2010	4.8	32
2015	6.5	43

Table 5.2 Number of Counties Indicating Current and/or Future Potential Traffic Congestion.

Year	Number of Congested Counties	
	V/C = bench	V/C = 1.0
1995	16	9
2000	21	11
2005	30	15
2010	38	19
2015	41	31

## CHAPTER 6: IMPLEMENTATION

The objective of this report has been to identify current and/or future possible traffic congestion on the state highway system in Indiana. This report presents the results of the analysis performed to identify potential traffic congestion problems. The next step in the statewide CMS development includes a determination of priority from among the potential congested links identified in this report.

Each link identified as potentially congested needs a detailed examination to make sure that the physical characteristics are correct and that its place in the system indicates that it is truly congested. Not considered in this study were things such as signal lights and stop signs. These are links that, if proven congested, should receive attention of planners as to which of the several congestion mitigation strategies and procedures are most appropriate.

From a State perspective, it is clear that the potential congestion efforts should focus on further analysis of both urban and rural interstate highways. Likewise, the congested areas internal to the road system under the jurisdiction of the MPOs will be a part of their Congestion Management Plan. That leaves a number of counties with short stretches of non-interstate that will need to be addressed individually by INDOT in the coming years. Perhaps a survey of these counties would be the next logical step.

Results from both analyses indicated that Marion County and Lake County have the greatest amount of congested miles identified within any particular county in the state. These counties should be the first to have immediate attention paid to them. Figure 6.1 lists the counties most in need of congestion work, primarily based on the Percent VKT that is congested. The 43 percent of P.M. peak hour VKT that will be congested in the year 2015 is very high and illustrates what is already known, namely, that mitigation strategies are very necessary and need to be started now in order to be effective during the time period of this study. The notations on the chart indicate where MPOs have partial or full jurisdiction.

Figure 6.1 Statewide Summary of Counties with Congestion

v/c = benchmark

County	Miles	1995 VMT	1995	2000	2005	2010	2015
2 Allen	226.67	3,202,986					
3 Bartholomew	126.62	1,448,743					
6 Boone	172.80	1,512,490					
9 Cass	140.80	603,482					
10 Clark	141.32	2,022,801					
11 Clay	122.69	731,274					
12 Clinton	129.93	752,422					
15 Dearborn	125.73	906,922					
17 DeKalb	120.68	827,645					
18 Delaware	133.02	1,441,607					
19 DuBois	126.38	626,871					
20 Elkhart	200.19	2,079,809					
22 Floyd	77.79	1,193,438					
24 Franklin	90.47	649,011					
27 Grant	164.59	1,154,818					
29 Hamilton	144.88	2,460,006					
30 Hancock	98.97	1,408,634					
31 Harrison	164.61	842,568					
32 Hendricks	168.68	1,717,799					
33 Henry	141.90	1,268,028					
36 Jackson	178.63	1,069,366					
37 Jasper	170.94	597,013					
41 Johnson	102.98	1,642,083					
45 Lake	305.32	6,881,151					
46 LaPorte	247.66	2,441,072					
48 Madison	169.14	1,723,235					
49 Marion	287.89	12,031,204					
50 Marshall	171.00	1,038,631					
53 Monroe	88.16	1,022,374					
54 Montgomery	162.79	853,766					
55 Morgan	133.63	1,288,344					
56 Newton	118.40	389,951					
64 Porter	203.92	3,052,320					
67 Putnam	133.38	1,086,593					
71 St. Joseph	200.56	2,630,094					
72 Scott	85.45	592,598					
73 Shelby	97.33	1,058,385					
79 Tippecanoe	189.37	2,066,394					
84 Vigo	139.57	1,566,231					
89 Wayne	150.60	1,379,053					
91 White	138.30	597,013					



Finally, the study suffers from the weakness that it does not address seasonal or periodic congestion that can come about because of special events or travel periods such as visits to experience the fall foliage colors in Brown County. Those events need to be identified and categorized. Capacity calculations will need to account for traffic control devices and roads entering the highway.

Performing another, more detailed analysis of the state roadway system may be necessary to identify precise areas of traffic congestion within the state, and where congestion mitigation may need to be introduced as a way to alleviate the congestion and air pollution problems. This task is suggested as an accurate and economical way to define the areas that need current or near future congestion mitigation. A microscopic analysis of the state roadway system is highly recommended for those links with potential congestion, especially where mitigation is necessary and feasible.

Another procedure may need to be developed, which would include updating the current data and recalculating the congestion on the links, in future years, in order to track the actual congestion that is occurring. This study has produced many proven procedures for identifying capacity and hence congestion when traffic levels are known. Periodic updating of the state road inventory database is needed to maintain an up-to-date understanding of the congestion locations and effects. Also, a change in volume counts or growth rate factor can be included to obtain more updated results.

With any luck, those in the transportation industry will find new and better ways to keep the traffic on the roads moving and prevent the current conditions from getting worse.

## LIST OF REFERENCES

- Federal Highway Administration, (1995), Congestion Management News, Volume 1, Number 2, March 1995.
- Federal Highway Administration, (1995), Three Day Training Course: Congestion Management for Technical Staff, FHWA-HI-94-046, NHI Course No. 15259, August 1995.
- Federal Highway Administration, (1992), FHWA-PD-92-023, 1992.
- Gunawardena, Nishantha R. and Sinha, Kumares C., (1994), The Development of a Prototype Congestion Management System For the State of Indiana: Phase I, Joint Highway Research Project, FHWA/IN/JHRP-94/2.
- Hoelt, Brian, (1994), Developing Congestion Management Systems, TR News 173, Transportation Research Board National Research Council, July-August 1994.
- Indiana Department of Transportation, (1994), Annual Telemetry Station Report.
- Indiana Department of Transportation, (1991), Highway Traffic Statistics 1991, INDOT Average Annual Daily Traffic (AADT) County Flow Maps.
- Indiana Department of Transportation, INDOT Road Inventory Database, on computer diskettes.
- Indiana Department of Transportation, INDOT Road Inventory Computer Print-out Supplement: A User's Guide.
- Indiana Department of Transportation, (1994), INDOT Percent Commercial Vehicles 1991-1994, 1994.
- Indiana Department of Transportation, (1994), Workplan for the Development of the State of Indiana Congestion Management System.
- Mannering, Fred L. and Kilareski, Walter P., (1990), Principles of Highway Engineering and Traffic Analysis, John Wiley and Sons, Inc., New York, 1990.
- McShane, William R. and Roess, Roger P., (1990), Traffic Engineering, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1990.
- Netter, John, Wasserman, William, and Whitmore, G.A., (1993), Applied Statistics, 4th Edition, Allyn and Bacon, Boston, 1993.
- Papacostas, C.S. and Prevedouros, P.D., (1993), Transportation Engineering and Planning, Second Edition, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1993.
- Skinner, Samuel K., (1992), A Summary: Intermodal Surface Transportation Efficiency Act of 1991, U.S. Department of Transportation.

Transportation Research Board, (1985), Highway Capacity Manual, Special Report 209, 3rd edition, TRB, National Research Council.

Transportation Research Board, (1995), Planning and Administration, TRB Record No. 1499, National Research Council, National Academy Press, Washington, D.C., 1995.

United States Department of Commerce, (1995), The National Data Book, 115th Edition, September 1995.

U.S. Statutes at Large, 101st Congress, 2nd Session, (1990), Volume 1, Part 4, pp. 2353-3358, U.S. Government Printing of Washington, 1991.

U.S. Statutes at Large, 102nd Congress, 1st Session, (1991), Volume 105, Part 3, pp. 1914-2779, U.S. Government Printing of Washington, 1992.

**APPENDIX A**  
**COUNTY BY COUNTY**  
**CONGESTION DATA AND MAPS**

# APPENDIX A

## COUNTY BY COUNTY CONGESTION DATA AND MAPS

The chart below shows each county that exhibits some congestion. Those that start in later years have the potential for congestion in the year shown.

Co #	1995	2000	2005	2010	2005	PAGE
2	ALLEN	ALLEN	ALLEN	ALLEN	ALLEN	A-2
3			BARTHOLOMEW	BARTHOLOMEW	BARTHOLOMEW	A-4
6	BOONE	BOONE	BOONE	BOONE	BOONE	A-6
9			CASS	CASS	CASS	A-8
10	CLARK	CLARK	CLARK	CLARK	CLARK	A-10
11				CLAY	CLAY	A-12
12	CLINTON	CLINTON	CLINTON	CLINTON	CLINTON	A-14
15		DEARBORN	DEARBORN	DEARBORN	DEARBORN	A-16
17					DEKALB	A-18
18				DELAWARE	DELAWARE	A-20
19				DUBOIS	DUBOIS	A-22
20				ELKHART	ELKHART	A-24
22	FLOYD	FLOYD	FLOYD	FLOYD	FLOYD	A-26
24			FRANKLIN	FRANKLIN	FRANKLIN	A-28
27	GRANT	GRANT	GRANT	GRANT	GRANT	A-30
29	HAMILTON	HAMILTON	HAMILTON	HAMILTON	HAMILTON	A-32
30	HANCOCK	HANCOCK	HANCOCK	HANCOCK	HANCOCK	A-34
31	HARRISON	HARRISON	HARRISON	HARRISON	HARRISON	A-36
32			HENDRICKS	HENDRICKS	HENDRICKS	A-38
33		HENRY	HENRY	HENRY	HENRY	A-40
36				JACKSON	JACKSON	A-42
37					JASPER	A-44
41	JOHNSON	JOHNSON	JOHNSON	JOHNSON	JOHNSON	A-46
43				KOSCIUSKO	KOSCIUSKO	A-48
45	LAKE	LAKE	LAKE	LAKE	LAKE	A-50(51a)
46				LAPORTE	LAPORTE	A-52
48	MADISON	MADISON	MADISON	MADISON	MADISON	A-54
49	MARION	MARION	MARION	MARION	MARION	A-56
50	MARSHALL	MARSHALL	MARSHALL	MARSHALL	MARSHALL	A-60
53			MONROE	MONROE	MONROE	A-62
54	MONTGOMERY	MONTGOMERY	MONTGOMERY	MONTGOMERY	MONTGOMERY	A-64
55			MORGAN	MORGAN	MORGAN	A-66
56	NEWTON	NEWTON	NEWTON	NEWTON	NEWTON	A-68
64		PORTER	PORTER	PORTER	PORTER	A-70
67				PUTNAM	PUTNAM	A-72
71		ST JOSEPH	ST JOSEPH	ST JOSEPH	ST JOSEPH	A-74
72			SCOTT	SCOTT	SCOTT	A-76
73			SHELBY	SHELBY	SHELBY	A-78
79		TIPPECANOE	TIPPECANOE	TIPPECANOE	TIPPECANOE	A-80
84			VIGO	VIGO	VIGO	A-82
89				WAYNE	WAYNE	A-84
91					WHITE	A-86

## APPENDIX A CONGESTION DATA

### 02 ALLEN COUNTY

<b>STATE ROADS</b>	<b>365 KM</b>	<b>227 MILES</b>
1995 DAILY TRAVEL	5,154,566 VKT	3,202,986 VMT
1995 AM PEAK HOUR TRAVEL	213,563 VKT	132,706 VMT
1995 PM PEAK HOUR TRAVEL	244,853 VKT	152,149 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	5,154,566	5,907,463	6,813,525	7,909,909	9,243,539
AM PK-HR VKT	213,563	244,757	282,297	327,722	382,977
PM PK-HR VKT	244,853	280,617	323,657	375,738	439,088

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.4	8.0	13.0	32.9	51.2
LENGTH (mi)	0.2	5.0	8.1	20.5	31.8
LENGTH (%)	0.1%	2.2%	3.6%	9.0%	14.0%
AM PK-HR VKT	583	615	24,102	68,050	125,619
AM PK-HR VKT (%)	0.4%	0.4%	13.7%	33.4%	52.8%
PM PK-HR VKT	660	23,774	44,683	116,366	195,626
PM PK-HR VKT (%)	0.4%	13.6%	22.2%	49.8%	71.7%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.35	10.06	17.99	23.69
LENGTH (mi)	0	0.22	6.25	11.18	14.72
LENGTH (%)	0.0%	0.1%	2.8%	4.9%	6.5%
AM PK-HR VKT	0	0	21,553	41,068	85,789
AM PK-HR VKT (%)	0.0%	0.0%	12.3%	20.2%	36.0%
PM PK-HR VKT	0	696	37,702	78,488	123,832
PM PK-HR VKT (%)	0.0%	0.4%	18.7%	33.6%	45.4%

\* VKT = Vehicle Kilometers Travelled

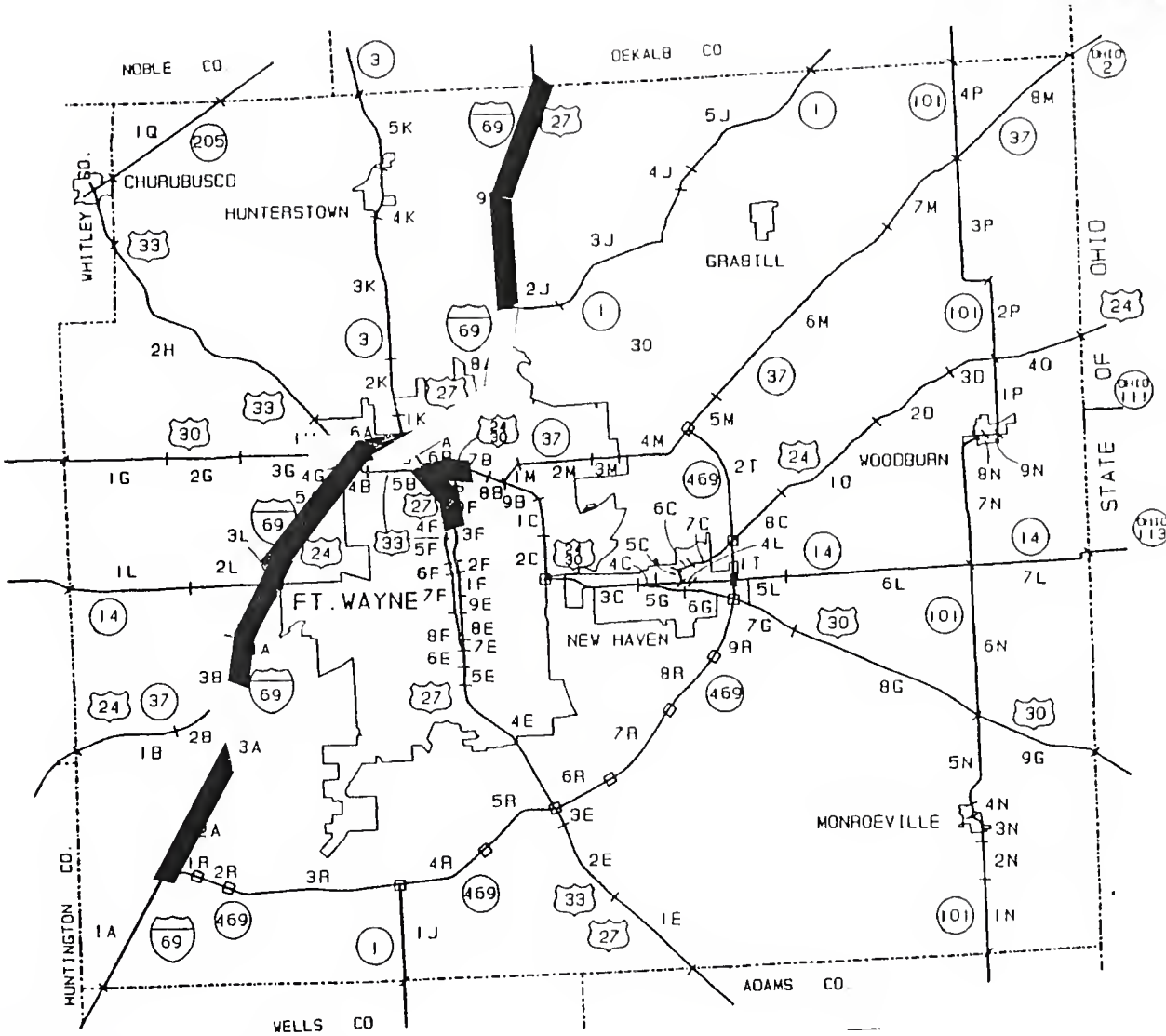
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR				
		1995	2000	2005	2010	2015
UI	40.07	0.00	6.39	9.06	21.97	21.97
UPA	70.60	0.35	1.66	3.91	6.18	10.57
RI	63.62	0.00	0.00	0.00	4.78	18.70
RPA	93.44	0.00	0.00	0.00	0.00	0.00
RMA	97.06	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>364.78</b>	<b>0.35</b>	<b>8.05</b>	<b>12.97</b>	<b>32.93</b>	<b>51.24</b>

UI = Urban Interstate; UPA = Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI = Rural Interstate; RPA = Rural Freeways, Principal & Minor Arterials; RMA = Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS ALLEN COUNTY

NOW	
2000	
2005	
2010	
2015	



- LEGEND:**
- U.S. ROAD
  - STATE ROAD
  - INTERCHANGE
  - COUNTY LINE
  - INVENTORY ROUTE
  - INTERSTATE ROAD
  - CORPORATION LINE
  - SECTION LINK TERMINAL
  - LOCAL ROAD OR STREET NAME

NOTE: Volumes Are Adjusted For Three Or More Axles.

**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 03 - BARTHOLOMEW COUNTY

<b>STATE ROADS</b>	<b>204 KM</b>	<b>127 MILES</b>
1995 DAILY TRAVEL	2,331,462 VKT	1,448,743 VMT
1995 AM PEAK HOUR TRAVEL	97,440 VKT	60,548 VMT
1995 PM PEAK HOUR TRAVEL	110,390 VKT	68,595 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,331,462	2,686,025	3,110,593	3,621,086	4,237,335
AM PK-HR VKT	97,440	112,258	130,002	151,338	177,093
PM PK-HR VKT	110,390	127,178	147,281	171,452	200,630

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	0.11	0.30
LENGTH (mi)	0.0	0.0	0.0	0.1	0.2
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	0.1%
AM PK-HR VKT	0	0	0	10,988	73,981
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	11.7%	67.2%
PM PK-HR VKT	0	0	10,927	28,783	86,209
PM PK-HR VKT (%)	0.0%	0.0%	11.9%	27.0%	69.2%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.00	16.50
LENGTH (mi)	0	0	0	0	9.76
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	7.7%
AM PK-HR VKT	0	0	0	0	15,880
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	14.4%
PM PK-HR VKT	0	0	0	0	18,797
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	15.1%

\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR				
		1995	2000	2005	2010	2015
UI	13.44	0.00	0.00	0.00	7.35	10.36
UPA	45.93	0.00	0.00	0.00	0.00	0.00
RI	28.85	0.00	0.00	5.34	5.34	25.88
RPA	49.07	0.00	0.00	0.00	0.00	0.00
RMA	66.48	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	203.77	0.00	0.00	5.34	12.70	36.24

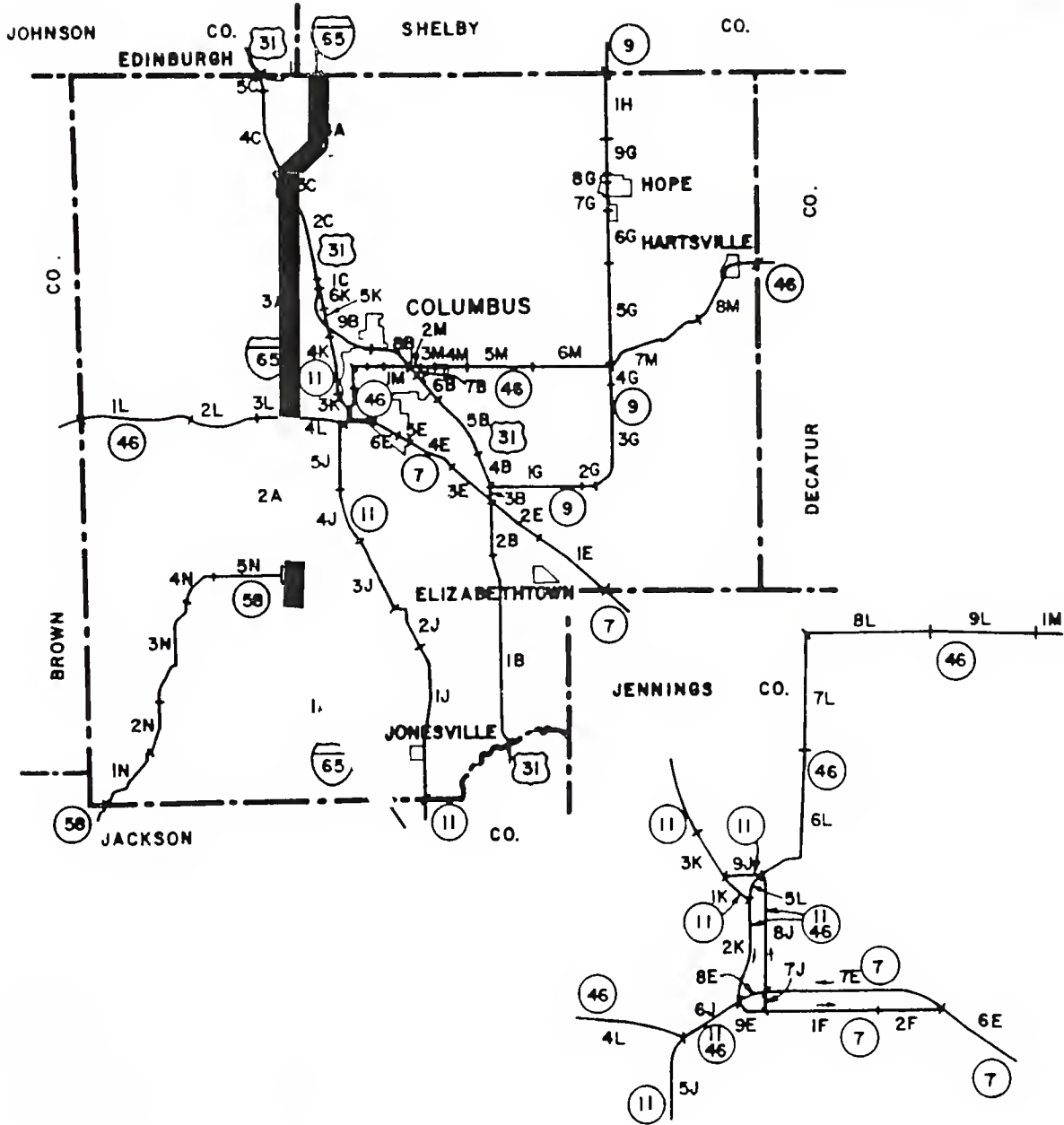
UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals



**APPENDIX A  
CONGESTION MAPS  
BARTHOLOMEW COUNTY**

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 06 - BOONE COUNTY

<b>STATE ROADS</b>	<b>278 KM</b>	<b>173 MILES</b>
1995 DAILY TRAVEL	2,434,050 VKT	1,512,490 VMT
1995 AM PEAK HOUR TRAVEL	102,031 VKT	63,401 VMT
1995 PM PEAK HOUR TRAVEL	116,335 VKT	72,289 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,434,050	2,903,959	3,476,237	4,174,845	5,029,632
AM PK-HR VKT	102,031	121,729	145,718	175,002	210,833
PM PK-HR VKT	116,335	138,794	166,146	199,536	240,390

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	1.3	13.3	15.3	29.0	37.0
LENGTH (mi)	0.8	8.3	9.5	18.0	23.0
LENGTH (%)	0.5%	4.8%	5.5%	10.4%	13.3%
AM PK-HR VKT	1,615	4,847	36,341	54,540	97,490
AM PK-HR VKT (%)	2.5%	6.4%	40.1%	50.2%	74.4%
PM PK-HR VKT	4,745	35,193	48,085	91,757	130,371
PM PK-HR VKT (%)	6.6%	40.8%	46.6%	74.0%	87.3%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.53	0.53	1.30	19.25	23.46
LENGTH (mi)	0.33	0.33	0.81	11.96	14.58
LENGTH (%)	0.2%	0.2%	0.5%	6.9%	8.4%
AM PK-HR VKT	0	1,927	2,307	17,604	71,362
AM PK-HR VKT (%)	0.0%	2.5%	2.5%	16.2%	54.5%
PM PK-HR VKT	1,912	2,281	6,777	44,379	60,782
PM PK-HR VKT (%)	2.6%	2.6%	6.6%	35.8%	40.7%

\* VKT = Vehicle Kilometers Travelled

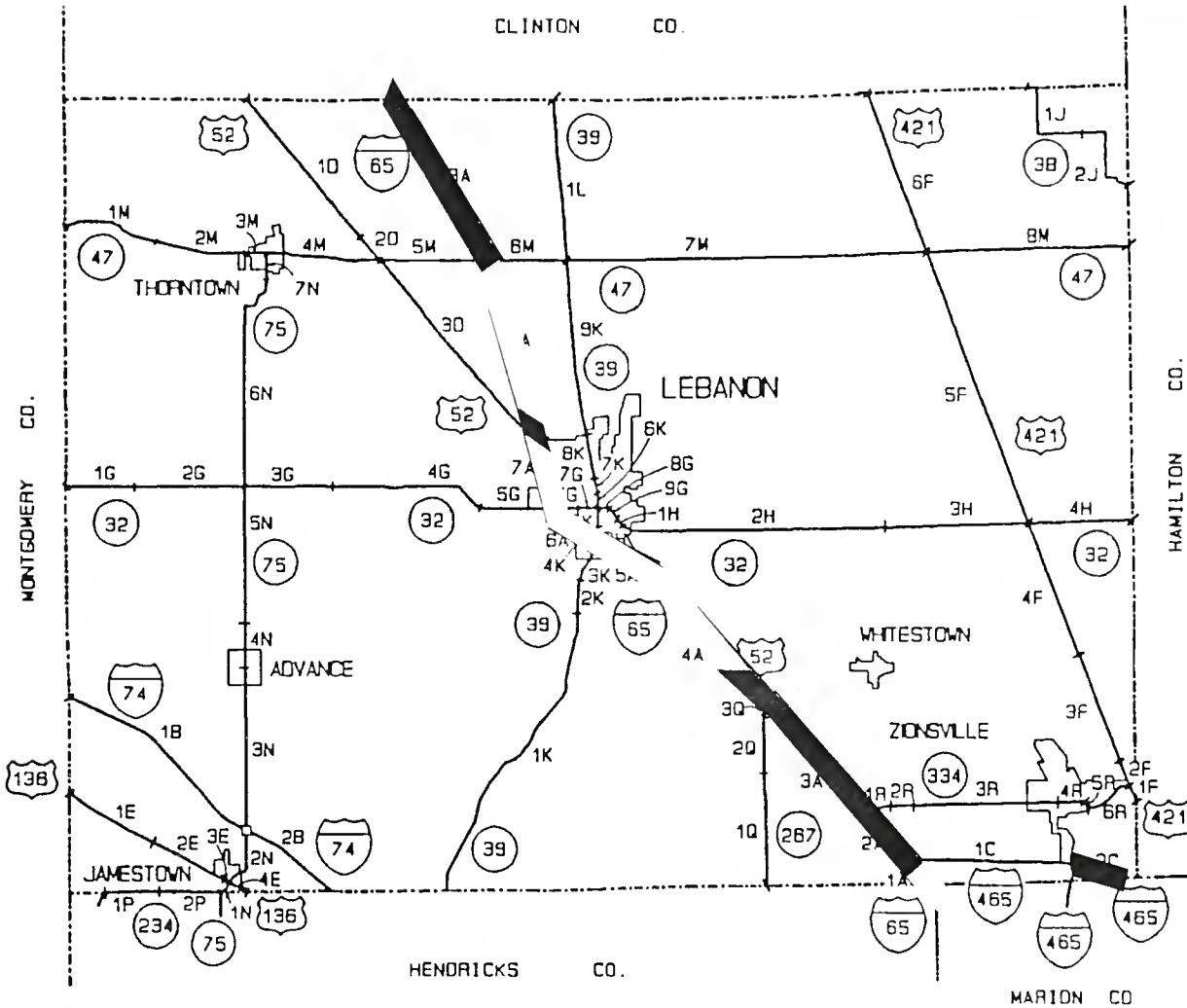
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C=BENCHMARK)				
		1995	2000	2005	2010	2015
UI	17.80	0.53	0.53	2.54	9.51	10.99
UPA	17.07	0.00	0.00	0.00	0.00	0.00
RI	50.03	0.77	12.78	12.78	19.44	26.01
RPA	67.40	0.00	0.00	0.00	0.00	0.00
RMA	125.78	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>278.09</b>	<b>1.30</b>	<b>13.31</b>	<b>15.32</b>	<b>28.95</b>	<b>37.00</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS BOONE COUNTY

NOW	
2000	
2005	
2010	
2015	



**LEGEND:**

- U. S. ROAD —
- STATE ROAD —
- INTERSTATE ROAD —
- INTERCHANGE
- COUNTY LINE
- INVENTORY ROUTE
- CORPORATION LINE
- SECTION LINK TERMINAL
- LOCAL ROAD OR STREET NAME

SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.

Indiana Department of Transportation

*Color Added*

## APPENDIX A CONGESTION DATA

### 09 - CASS COUNTY

STATE ROADS	250 KM	155 MILES
1995 DAILY TRAVEL	971,184 VKT	603,482 VMT
1995 AM PEAK HOUR TRAVEL	40,521 VKT	25,179 VMT
1995 PM PEAK HOUR TRAVEL	45,234 VKT	28,108 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	971,184	1,073,413	1,191,904	1,330,206	1,492,789
AM PK-HR VKT	40,521	44,786	49,730	55,500	62,284
PM PK-HR VKT	45,234	49,996	55,515	61,956	69,529

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.6	0.8	1.4
LENGTH (mi)	0.0	0.0	0.4	0.5	0.9
LENGTH (%)	0.0%	0.0%	0.2%	0.3%	0.6%
AM PK-HR VKT	NONE				
AM PK-HR VKT (%)	NONE				
PM PK-HR VKT	0	0	787	1,062	2,077
PM PK-HR VKT (%)	0.0%	0.0%	2.3%	2.8%	4.8%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					

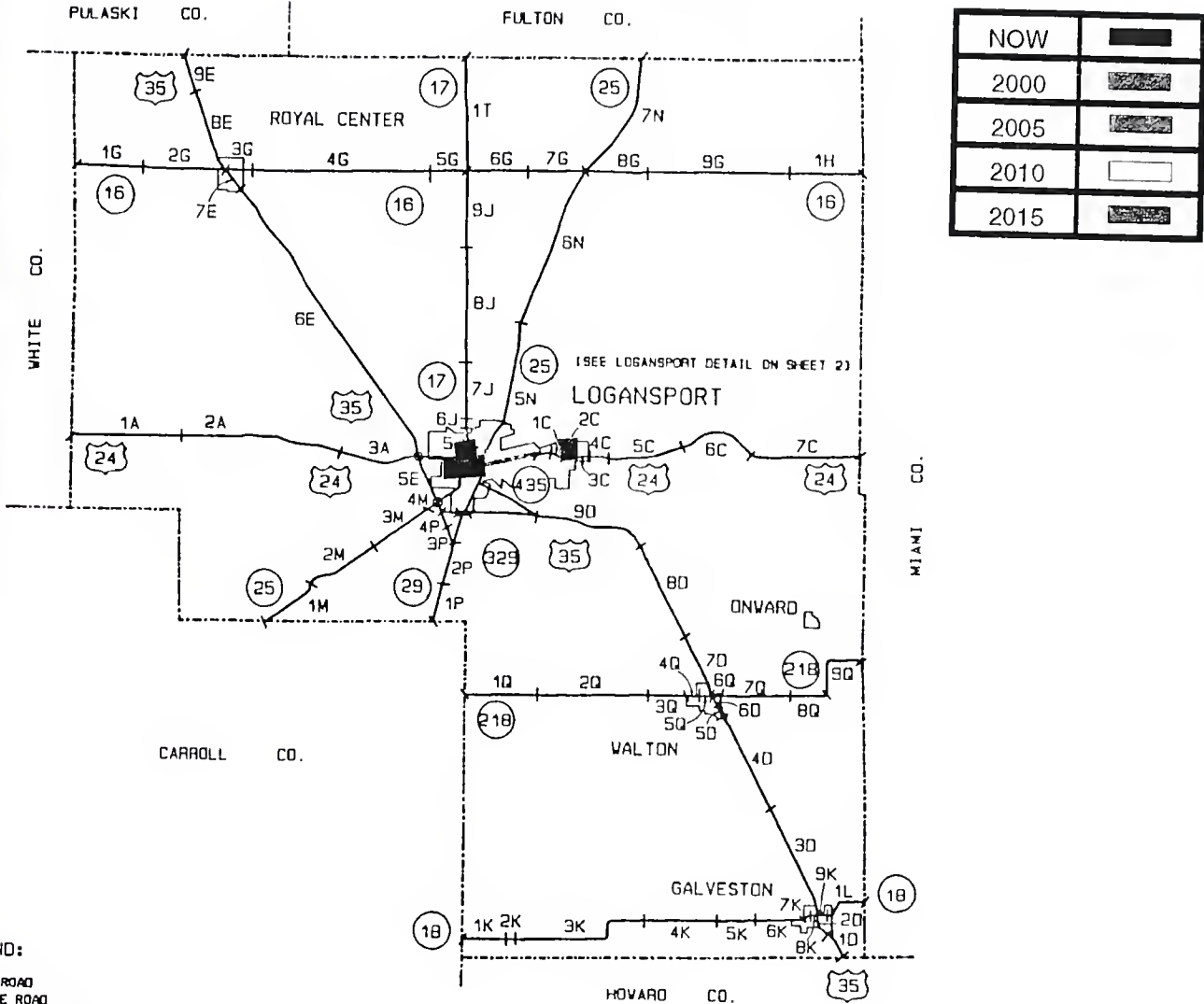
\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C=BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	43.55	0.00	0.00	0.61	0.76	1.42
RI	0.00	0.00	0.00	0.00	0.00	0.00
RPA	130.93	0.00	0.00	0.00	0.00	0.00
RMA	52.11	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	226.59	0.00	0.00	0.61	0.76	1.42

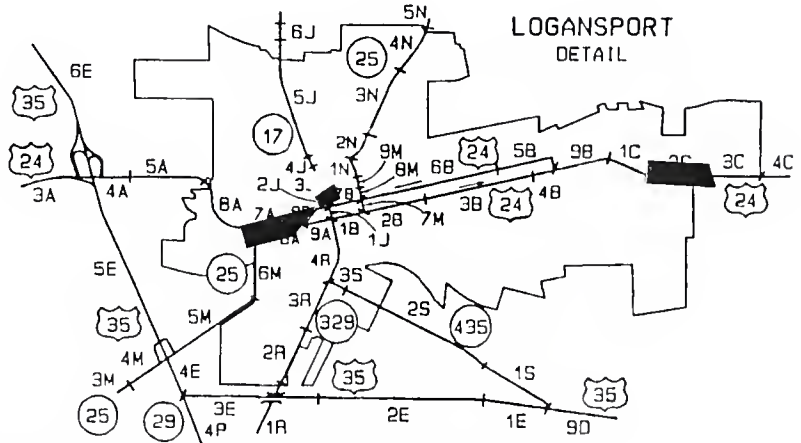
UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS CASS COUNTY



NOW	
2000	
2005	
2010	
2015	



**SOURCE:** County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added

## APPENDIX A CONGESTION DATA

### 10 CLARK COUNTY

<b>STATE ROADS</b>	<b>227 KM</b>	<b>141 MILES</b>
1995 DAILY TRAVEL	3,255,293 VKT	2,022,801 VMT
1995 AM PEAK HOUR TRAVEL	134,335 VKT	83,474 VMT
1995 PM PEAK HOUR TRAVEL	154,854 VKT	96,225 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	3,255,293	3,767,332	4,471,284	5,340,525	6,417,890
AM PK-HR VKT	134,335	155,465	184,515	220,385	264,844
PM PK-HR VKT	154,854	179,212	212,699	254,049	305,299

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	8.8	11.8	37.0	41.2	45.2
LENGTH (mi)	5.5	7.4	23.0	25.6	28.1
LENGTH (%)	3.9%	5.2%	16.3%	18.1%	19.9%
AM PK-HR VKT	4,462	29,393	76,070	134,027	177,996
AM PK-HR VKT (%)	4.6%	26.4%	57.6%	84.9%	93.8%
PM PK-HR VKT	26,906	43,880	120,060	163,561	214,564
PM PK-HR VKT (%)	17.4%	24.5%	56.4%	64.4%	70.3%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	1.11	8.80	12.47	25.25	43.55
LENGTH (mi)	0.69	5.47	7.75	15.69	27.06
LENGTH (%)	0.5%	3.9%	5.5%	11.1%	19.1%
AM PK-HR VKT	4,462	21,369	47,935	72,376	146,204
AM PK-HR VKT (%)	4.6%	19.2%	36.3%	45.8%	77.1%
PM PK-HR VKT	5,281	34,792	57,819	116,939	212,240
PM PK-HR VKT (%)	3.4%	19.4%	27.2%	46.0%	69.5%

\* VKT = Vehicle Kilometers Travelled

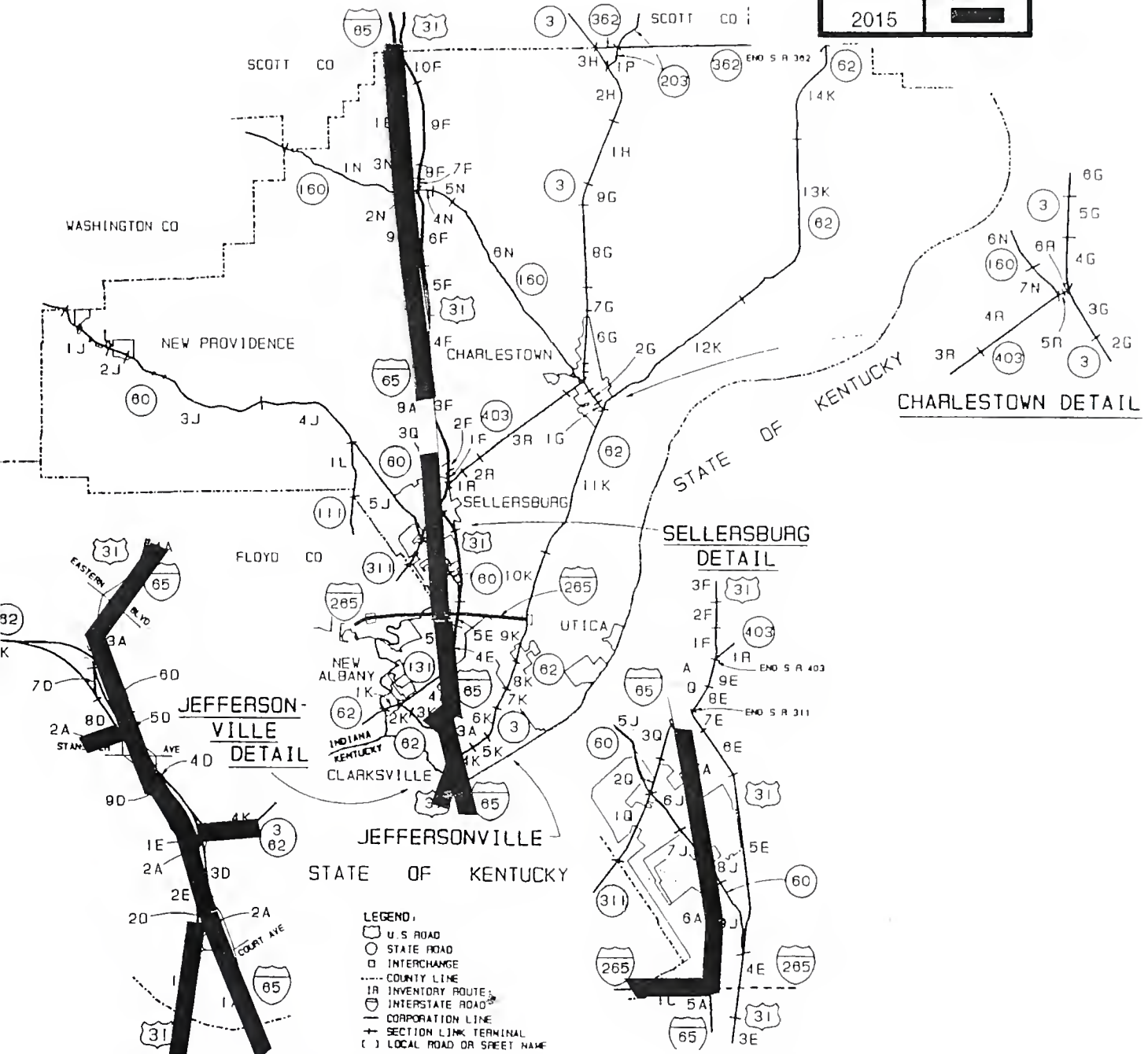
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C=BENCHMARK)				
		1995	2000	2005	2010	2015
UI	31.22	8.80	11.84	15.27	18.07	20.45
UPA	51.45	0.00	0.00	0.00	1.43	3.01
RI	24.46	0.00	0.00	21.71	21.71	21.71
RPA	68.83	0.00	0.00	0.00	0.00	0.00
RMA	51.47	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>227.43</b>	<b>8.80</b>	<b>11.84</b>	<b>36.98</b>	<b>41.21</b>	<b>45.17</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS CLARK COUNTY

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added

## APPENDIX A CONGESTION DATA

### 11 - CLAY COUNTY

<b>STATE ROADS</b>	<b>197 KM</b>	<i>123 MILES</i>
1995 DAILY TRAVEL	1,176,840 VKT	731,274 VMT
1995 AM PEAK HOUR TRAVEL	49,687 VKT	30,875 VMT
1995 PM PEAK HOUR TRAVEL	56,198 VKT	34,921 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,176,840	1,360,974	1,578,350	1,835,471	2,140,166
AM PK-HR VKT	49,687	57,462	66,640	77,495	90,360
PM PK-HR VKT	56,198	64,991	75,371	87,650	102,200

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	20.2	20.2
LENGTH (mi)	0.0	0.0	0.0	12.5	12.5
LENGTH (%)	0.0%	0.0%	0.0%	10.2%	10.2%
AM PK-HR VKT	NONE				
AM PK-HR VKT (%)	NONE				
PM PK-HR VKT	0	0	0	48,935	59,466
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	55.8%	58.2%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					

\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	13.44	0.00	0.00	0.00	0.00	0.00
RI	21.90	0.00	0.00	0.00	20.16	20.16
RPA	69.07	0.00	0.00	0.00	0.00	0.00
RMA	93.03	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	197.45	0.00	0.00	0.00	20.16	20.16

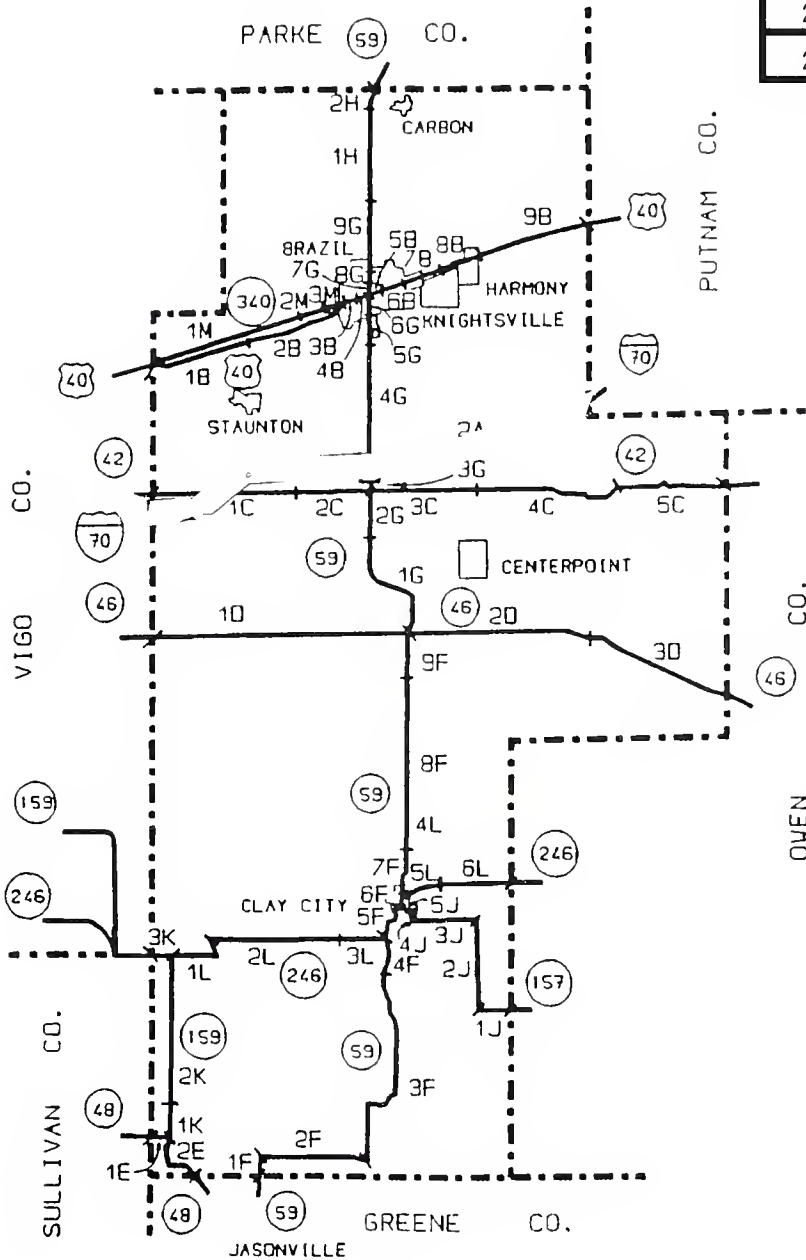
UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals



**APPENDIX A  
CONGESTION MAPS  
CLAY COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 12 - CLINTON COUNTY

<b>STATE ROADS</b>	<b>209 KM</b>	<b>130 MILES</b>
1995 DAILY TRAVEL	1,210,873 VKT	752,422 VMT
1995 AM PEAK HOUR TRAVEL	50,869 VKT	31,609 VMT
1995 PM PEAK HOUR TRAVEL	58,117 VKT	36,113 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,210,873	1,382,189	1,582,888	1,818,627	2,096,220
AM PK-HR VKT	50,869	58,066	66,497	76,401	88,062
PM PK-HR VKT	58,117	66,339	75,972	87,286	100,609

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	2.1	2.1	6.9	19.8	20.0
LENGTH (mi)	1.3	1.3	4.3	12.3	12.4
LENGTH (%)	1.0%	1.0%	3.3%	9.5%	9.6%
AM PK-HR VKT	61	1,114	1,174	12,799	49,267
AM PK-HR VKT (%)	0.1%	1.9%	1.8%	16.8%	55.9%
PM PK-HR VKT	1,583	1,669	12,939	47,223	57,112
PM PK-HR VKT (%)	2.7%	2.5%	17.0%	54.1%	56.8%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.08	0.08	1.62	6.02
LENGTH (mi)	0	0.05	0.05	0.96	3.56
LENGTH (%)	0.0%	0.0%	0.0%	0.7%	2.7%
AM PK-HR VKT	0	0	0	1,434	6,728
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	1.9%	7.6%
PM PK-HR VKT	0	73	77	1,400	17,175
PM PK-HR VKT (%)	0.0%	0.1%	0.1%	1.6%	17.1%

\* VKT = Vehicle Kilometers Travelled

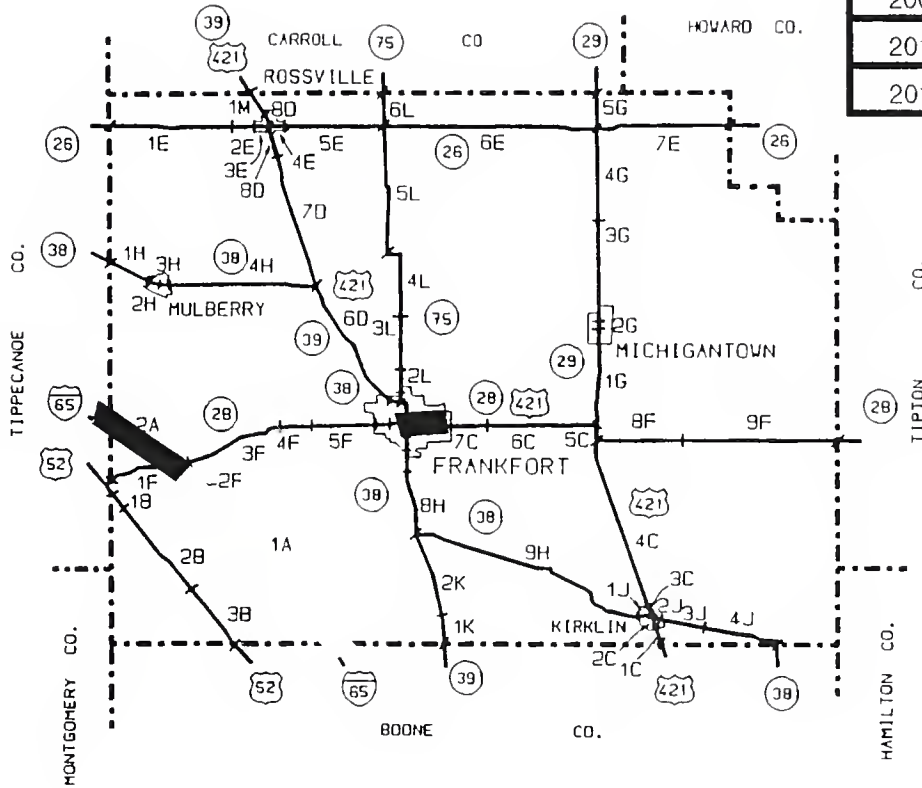
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	18.12	0.58	0.58	0.58	0.58	0.58
RI	18.73	0.00	0.00	4.18	16.85	16.85
RPA	150.58	1.54	1.54	2.16	2.41	2.56
RMA	21.66	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	209.10	2.12	2.12	6.92	19.84	19.99

UI=Urban Interstate; UPA=Urban Freeway, Principal & Minor Arterials, Collectors & Locals

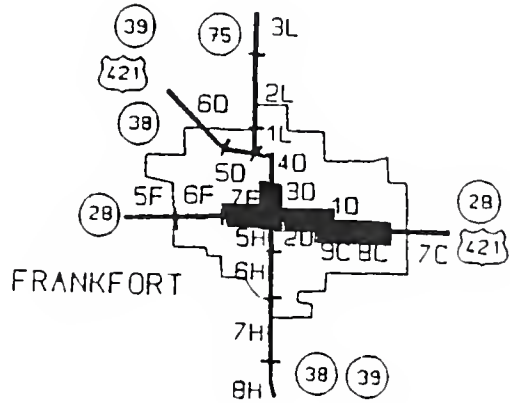
RI=Rural Interstate; RPA=Rural Freeway, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS CLINTON COUNTY

NOW	
2000	
2005	
2010	
2015	



LEGEND:  
 SECTION LINE TERRITORIAL, IN-CLIMATE ROUTE NO.  
 INTERSTATE ROAD, U.S. ROAD, STATE ROAD, INTERCHANGE  
 LOCAL ROAD OR STREET NAME, COUNTY LINE, CORPORATION LINE



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
 Indiana Department of Transportation  
 Color Added

## APPENDIX A CONGESTION DATA

### 15 - DEARBORN COUNTY

<b>STATE ROADS</b>	<b>202 KM</b>	<b>126 MILES</b>
1995 DAILY TRAVEL	1,459,509 VKT	906,922 VMT
1995 AM PEAK HOUR TRAVEL	61,722 VKT	38,353 VMT
1995 PM PEAK HOUR TRAVEL	70,113 VKT	43,567 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,459,509	1,662,309	1,916,012	2,203,450	2,540,315
AM PK-HR VKT	61,722	70,298	81,027	93,182	107,428
PM PK-HR VKT	70,113	79,855	92,043	105,851	122,034

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.1	0.4	4.1	10.6
LENGTH (mi)	0.0	0.1	0.2	2.5	6.6
LENGTH (%)	0.0%	0.1%	0.2%	2.0%	5.2%
AM PK-HR VKT	0	0	0	265	10,109
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.5%	15.1%
PM PK-HR VKT	0	257	760	9,078	18,821
PM PK-HR VKT (%)	0.0%	0.5%	1.3%	13.8%	24.8%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					






\* VKT = Vehicle Kilometers Travelled

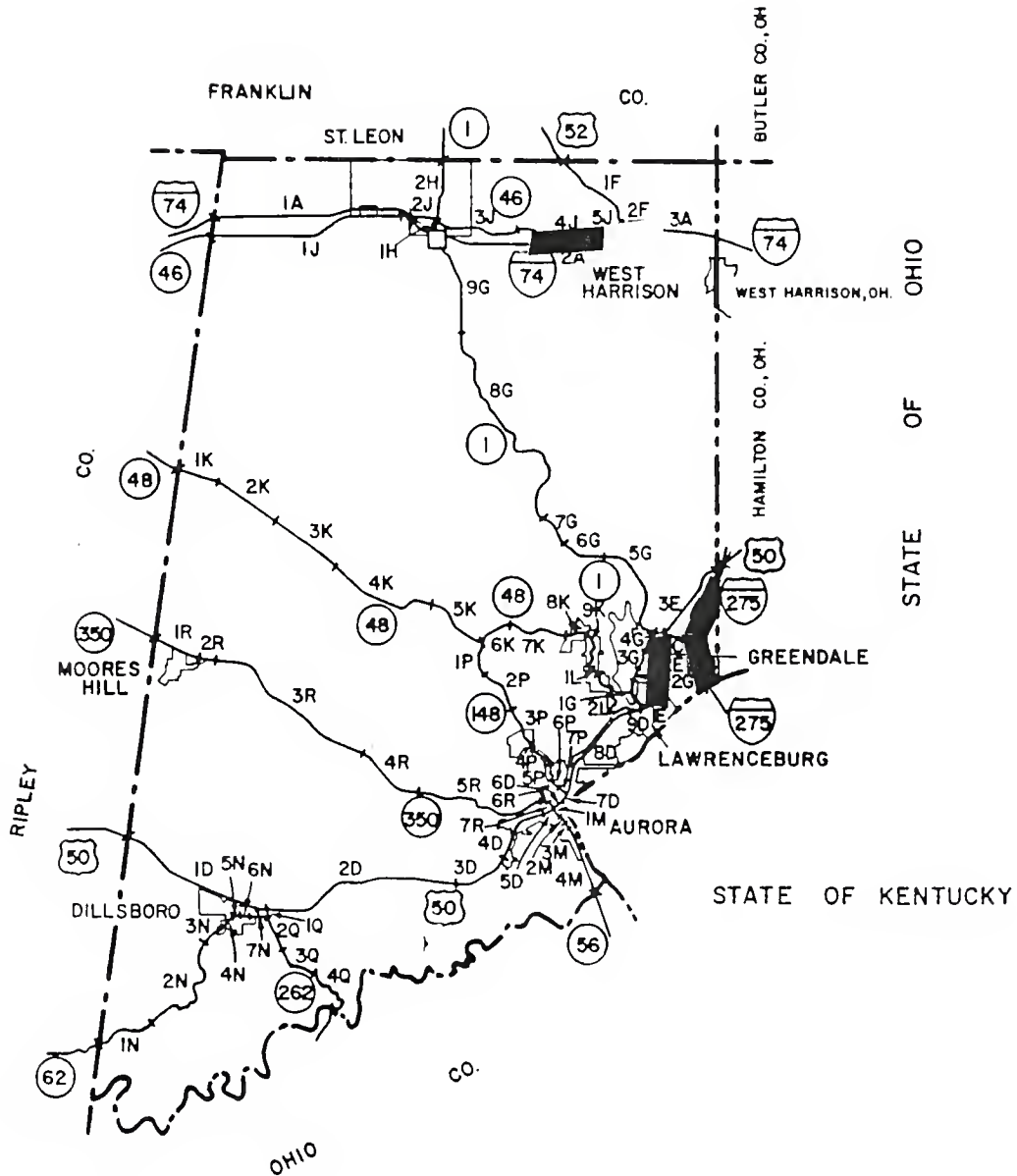
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C= BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	31.11	0.00	0.14	0.39	0.39	0.72
RI	35.81	0.00	0.00	0.00	3.67	9.83
RPA	51.48	0.00	0.00	0.00	0.00	0.00
RMA	83.94	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>202.34</b>	<b>0.00</b>	<b>0.14</b>	<b>0.39</b>	<b>4.06</b>	<b>10.56</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS DEARBORN COUNTY

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added

## APPENDIX A CONGESTION DATA

### 17 DEKALB COUNTY

<b>STATE ROADS</b>	<b>194 KM</b>	<b>121 MILES</b>
1995 DAILY TRAVEL	1,331,929 VKT	827,645 VMT
1995 AM PEAK HOUR TRAVEL	56,312 VKT	34,991 VMT
1995 PM PEAK HOUR TRAVEL	63,684 VKT	39,573 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,331,929	1,548,311	1,804,378	2,107,942	2,468,411
AM PK-HR VKT	56,312	65,460	76,286	89,120	104,360
PM PK-HR VKT	63,684	74,030	86,274	100,788	118,024

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	0.0	29.3
LENGTH (mi)	0.0	0.0	0.0	0.0	18.2
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	15.1%
AM PK-HR VKT	0	0	0	0	15,744
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	24.3%
PM PK-HR VKT	0	0	0	0	72,371
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	98.7%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)	NONE				
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					
PM PK-HR VKT (%)					

\* VKT =Vehicle Kilometers Travelled

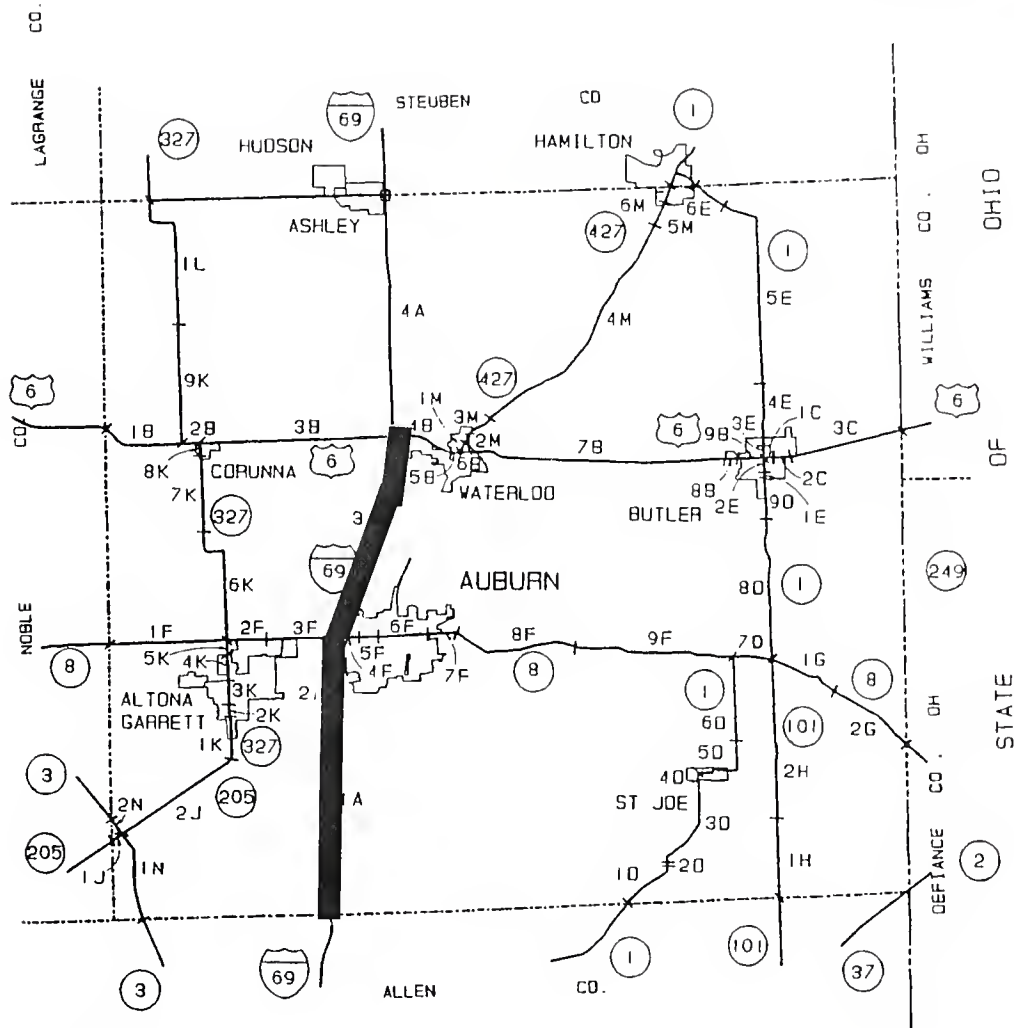
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	9.49	0.00	0.00	0.00	0.00	0.00
RI	34.83	0.00	0.00	0.00	0.00	29.31
RPA	37.27	0.00	0.00	0.00	0.00	0.00
RMA	112.62	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	194.21	0.00	0.00	0.00	0.00	29.31

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS DEKALB COUNTY

NOW	
2000	
2005	
2010	
2015	



LEGEND:  
 U.S. ROAD  
 STATE ROAD  
 INTERCHANGE  
 COUNTY LINE  
 INVENTORY ROUTE  
 INTERSTATE ROAD  
 CORPORATION LINE  
 SECTION LINK TERMINAL  
 LOCAL ROAD OR STREET NAME

SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
 Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 18 DELAWARE COUNTY

<b>STATE ROADS</b>	<b>214 KM</b>	<i>133.02 MILES</i>
1995 DAILY TRAVEL	2,319,978 VKT	<i>1,441,607 VMT</i>
1995 AM PEAK HOUR TRAVEL	96,646 VKT	<i>60,054 VMT</i>
1995 PM PEAK HOUR TRAVEL	111,855 VKT	<i>69,505 VMT</i>

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,319,978	2,749,020	3,113,463	3,540,363	4,042,228
AM PK-HR VKT	96,646	109,031	123,485	140,417	160,322
PM PK-HR VKT	111,855	126,189	142,918	162,514	185,552

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	5.0	25.8
LENGTH (mi)	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>3.1</i>	<i>16.0</i>
LENGTH (%)	0.0%	0.0%	0.0%	2.3%	12.0%
AM PK-HR VKT	0	0	0	0	15,099
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	9.4%
PM PK-HR VKT	0	0	0	11,770	67,244
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	7.2%	36.2%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.00	0.53
LENGTH (mi)	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0.33</i>
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	0.2%
AM PK-HR VKT	NONE				
AM PK-HR VKT (%)	NONE				
PM PK-HR VKT	0	0	0	0	3,247
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	1.7%

\* VKT = Vehicle Kilometers Travelled






ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR				
		1995	2000	2005	2010	2015
UI	5.31	0.00	0.00	0.00	0.00	1.40
UPA	75.15	0.00	0.00	0.00	0.00	0.00
RI	34.05	0.00	0.00	0.00	2.93	13.84
RPA	79.84	0.00	0.00	0.00	0.00	0.00
RMA	19.71	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>214.07</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2.93</b>	<b>15.24</b>

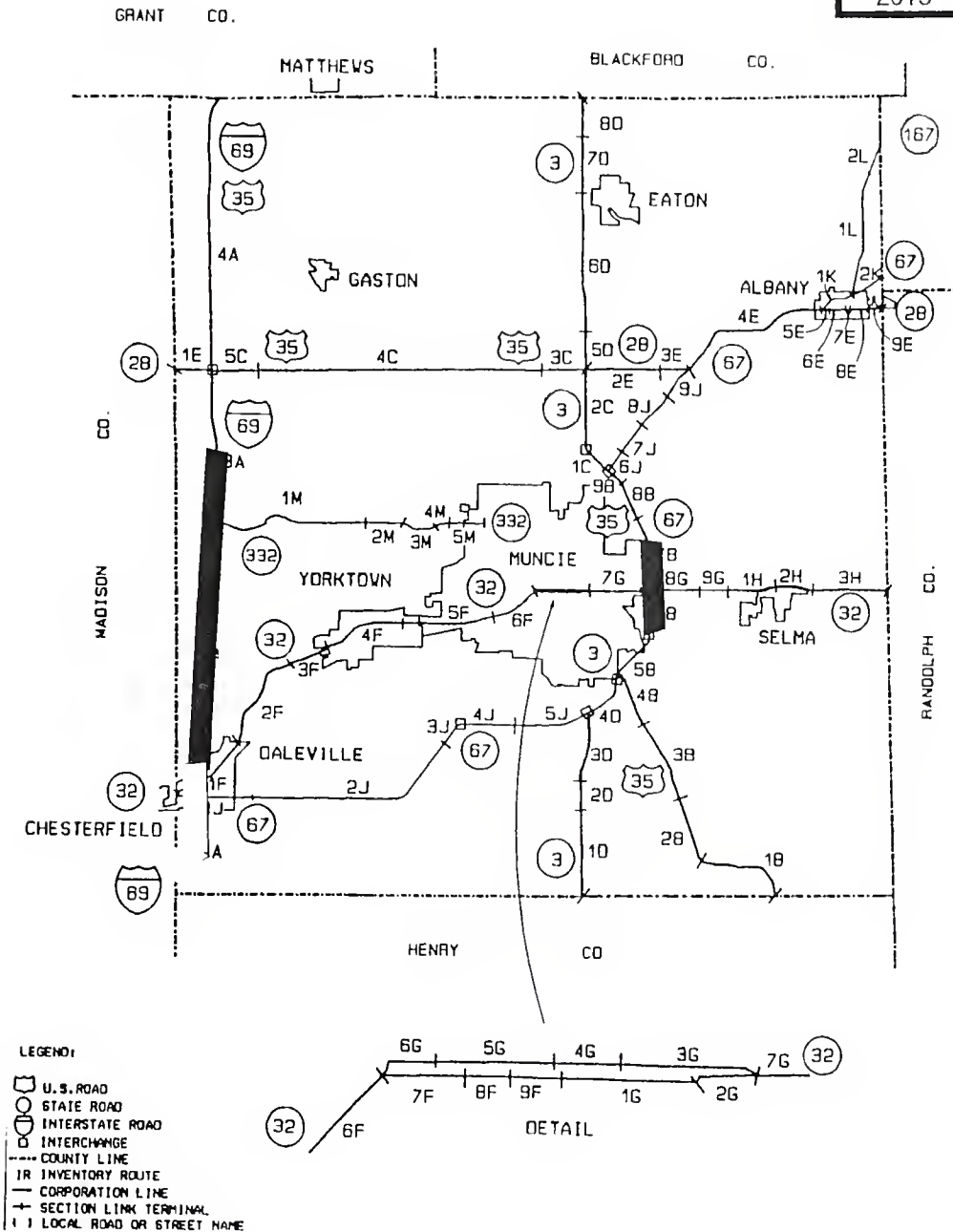
UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals



# APPENDIX A CONGESTION MAPS DELAWARE COUNTY

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 19 DUBOIS COUNTY

<b>STATE ROADS</b>	<b>203 KM</b>	<i>126 MILES</i>
1995 DAILY TRAVEL	1,008,823 VKT	626,871 VMT
1995 AM PEAK HOUR TRAVEL	42,785 VKT	26,586 VMT
1995 PM PEAK HOUR TRAVEL	47,093 VKT	29,263 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,008,823	1,113,969	1,231,948	1,364,540	1,513,803
AM PK-HR VKT	42,785	47,244	52,248	57,871	64,202
PM PK-HR VKT	47,093	52,001	57,509	63,698	70,666

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	0.3	0.3
LENGTH (mi)	0.0	0.0	0.0	0.2	0.2
LENGTH (%)	0.0%	0.0%	0.0%	0.1%	0.1%
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT	0	0	0	424	446
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	1.1%	1.0%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					

\* VKT = Vehicle Kilometers Travelled

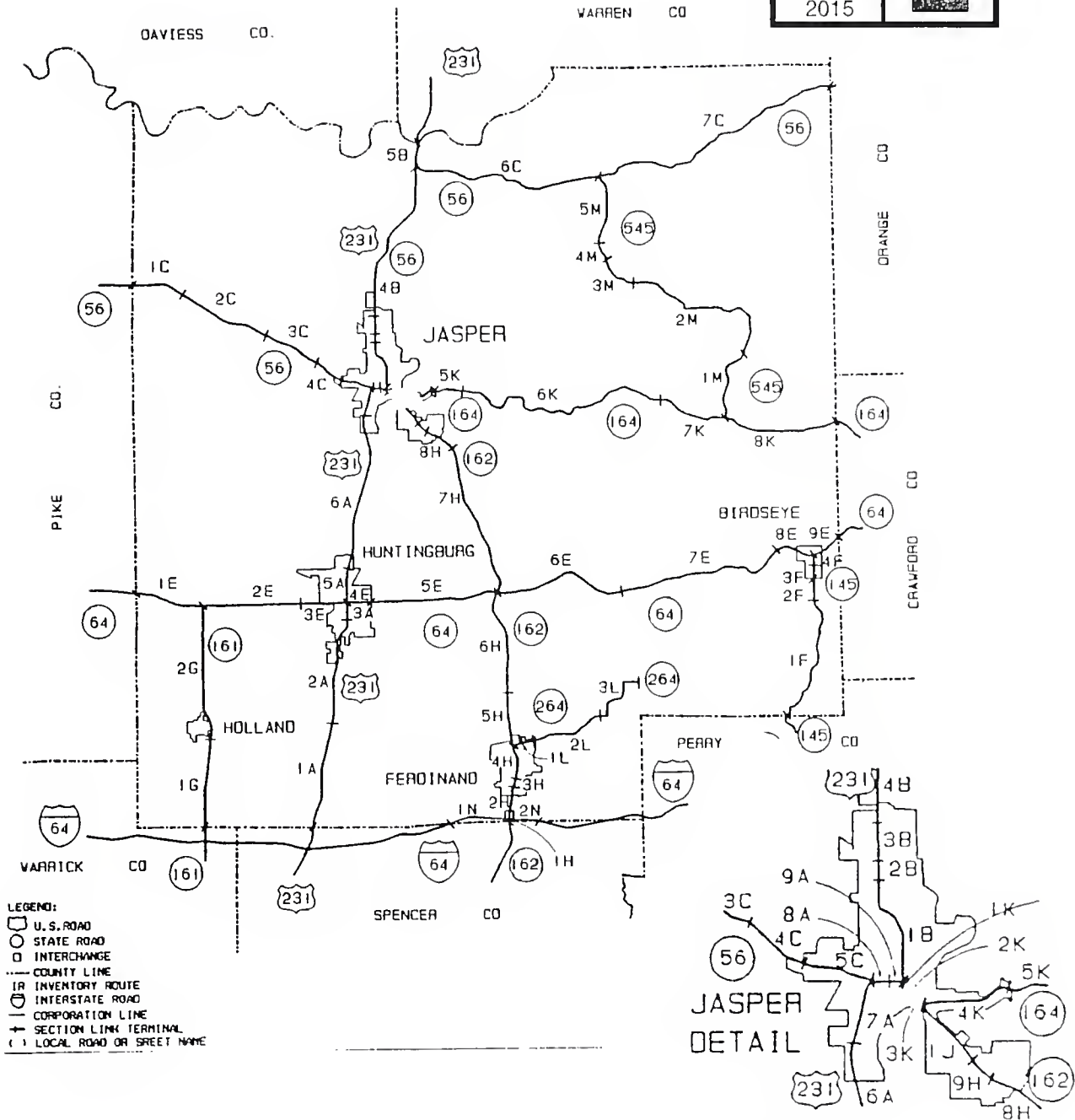
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C= BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	28.39	0.00	0.00	0.00	0.29	0.29
RI	7.19	0.00	0.00	0.00	0.00	0.00
RPA	50.02	0.00	0.00	0.00	0.00	0.00
RMA	117.78	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	203.38	0.00	0.00	0.00	0.29	0.29

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS DUBOIS COUNTY

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 20 ELKHART COUNTY

<b>STATE ROADS</b>	<b>322 KM</b>	<b>200 MILES</b>
1995 DAILY TRAVEL	3,347,037 VKT	2,079,809 VMT
1995 AM PEAK HOUR TRAVEL	141,711 VKT	88,057 VMT
1995 PM PEAK HOUR TRAVEL	159,048 VKT	98,831 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	3,347,037	3,722,331	4,156,606	4,661,727	5,252,313
AM PK-HR VKT	141,711	157,600	175,987	197,373	222,378
PM PK-HR VKT	159,048	176,882	197,518	221,521	249,585

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	0.5	0.8
LENGTH (mi)	0.0	0.0	0.0	0.3	0.5
LENGTH (%)	0.0%	0.0%	0.0%	0.1%	0.3%
AM PK-HR VKT	0	0	0	0	464
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	0.2%
PM PK-HR VKT	0	0	0	628	1,140
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.3%	0.5%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					

\* VKT =Vehicle Kilometers Travelled

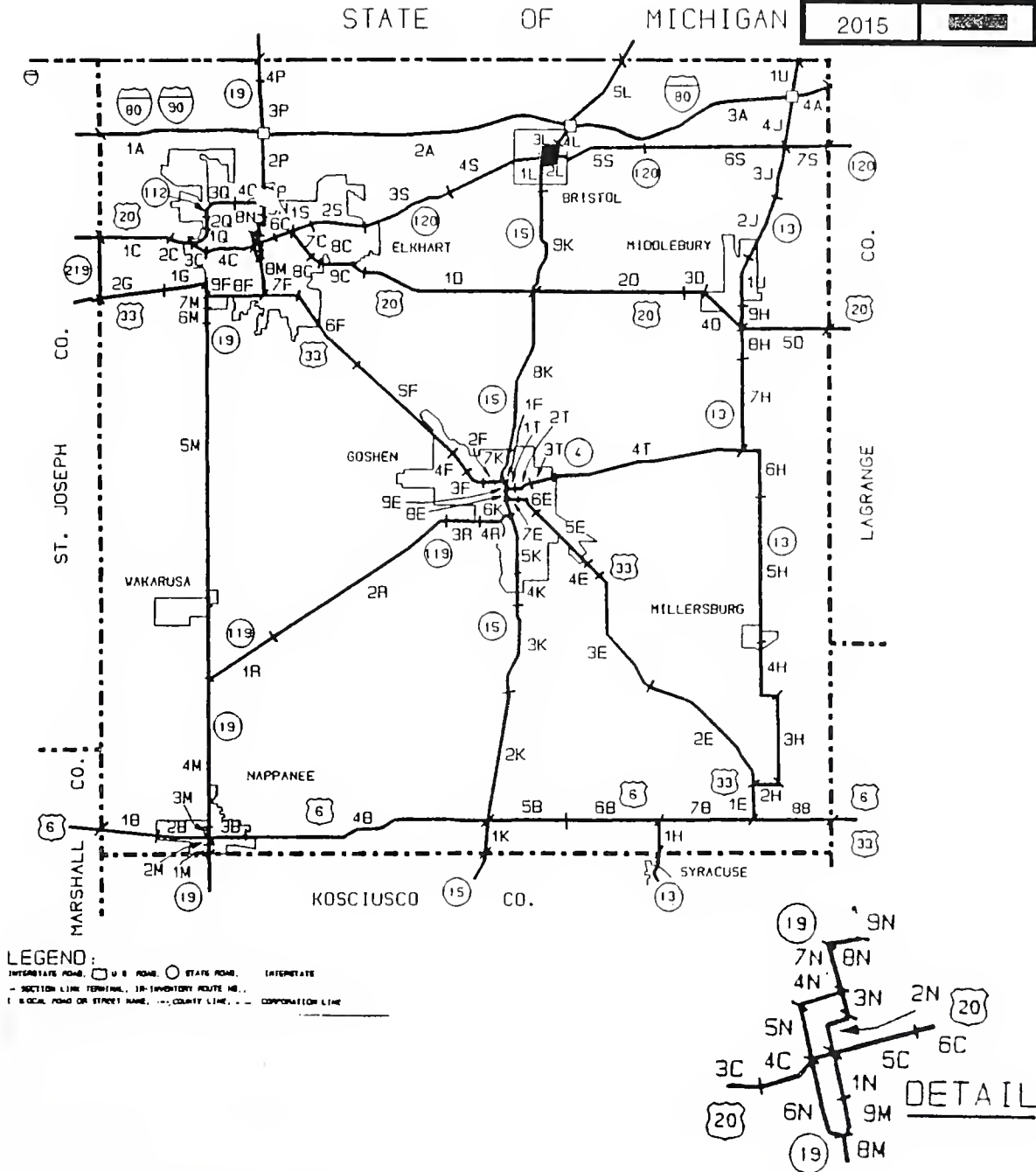
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C= BENCHMARK)				
		1995	2000	2005	2010	2015
UI	12.86	0.00	0.00	0.00	0.00	0.00
UPA	107.94	0.00	0.00	0.00	0.45	0.45
RI	26.49	0.00	0.00	0.00	0.00	0.00
RPA	86.44	0.00	0.00	0.00	0.00	0.00
RMA	88.45	0.00	0.00	0.00	0.00	0.37
<b>TOTAL</b>	<b>322.17</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.45</b>	<b>0.82</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS ELKHART COUNTY

NOW	
2000	
2005	
2010	
2015	



**SOURCE:** County Flow Maps, Highway Traffic Statistics, 1996.  
 Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 22 FLOYD COUNTY

<b>STATE ROADS</b>	<b>125 KM</b>	<b>78 MILES</b>
1995 DAILY TRAVEL	1,920,600 VKT	1,193,438 VMT
1995 AM PEAK HOUR TRAVEL	79,691 VKT	49,519 VMT
1995 PM PEAK HOUR TRAVEL	91,191 VKT	56,665 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,920,600	2,273,072	2,705,885	3,239,354	3,899,204
AM PK-HR VKT	79,691	94,317	112,275	134,410	161,790
PM PK-HR VKT	91,191	107,927	128,477	153,806	185,136

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.7	6.9	14.2	26.4	27.8
LENGTH (mi)	0.5	4.3	8.9	16.4	17.3
LENGTH (%)	0.6%	5.5%	11.4%	21.1%	22.2%
AM PK-HR VKT	0	7,675	23,263	50,220	103,572
AM PK-HR VKT (%)	0.0%	8.1%	20.7%	37.4%	64.0%
PM PK-HR VKT	1,166	20,219	46,901	96,060	122,617
PM PK-HR VKT (%)	1.3%	18.7%	36.5%	62.5%	66.2%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.74	3.83	16.32	20.00
LENGTH (mi)	0	0.46	2.38	10.14	12.43
LENGTH (%)	0.0%	0.6%	3.1%	13.0%	16.0%
AM PK-HR VKT	0	0	1,855	34,963	85,535
AM PK-HR VKT (%)	0.0%	0.0%	1.7%	26.0%	52.9%
PM PK-HR VKT	0	1,698	13,003	70,708	102,082
PM PK-HR VKT (%)	0.0%	1.6%	10.1%	46.0%	55.1%

\* VKT = Vehicle Kilometers Travelled

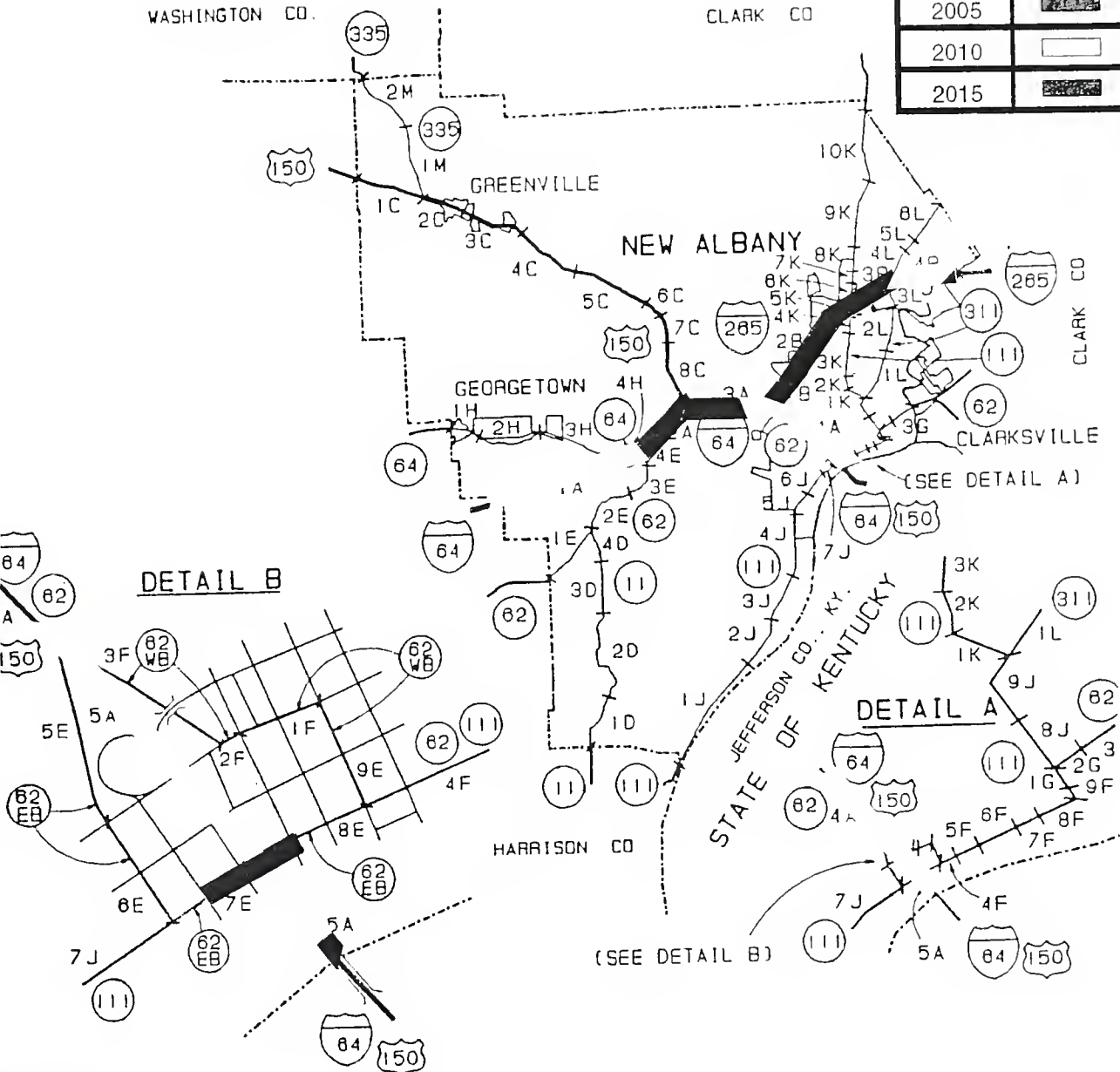
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	22.03	0.51	0.74	7.63	13.15	13.55
UPA	24.33	0.00	0.00	0.00	0.00	0.00
RI	16.27	0.00	5.91	6.39	13.05	14.02
RPA	16.96	0.23	0.23	0.23	0.23	0.23
RMA	45.59	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	125.19	0.74	6.87	14.24	26.42	27.79

UI = Urban Interstate; UPA = Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI = Rural Interstate; RPA = Rural Freeways, Principal & Minor Arterials; RMA = Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS FLOYD COUNTY

NOW	
2000	
2005	
2010	
2015	



- LEGEND:**
- U.S. ROAD
  - STATE ROAD
  - INTERCHANGE
  - COUNTY LINE
  - INVENTORY ROUTE
  - INTERSTATE ROAD
  - CORPORATION LINE
  - SECTION LINK TERMINAL
  - LOCAL ROAD OR STREET NAME

**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
 Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 24 FRANKLIN COUNTY

<b>STATE ROADS</b>	<b>146 KM</b>	<b>90 MILES</b>
1995 DAILY TRAVEL	522,226 VKT	324,505 VMT
1995 AM PEAK HOUR TRAVEL	22,369 VKT	13,900 VMT
1995 PM PEAK HOUR TRAVEL	24,584 VKT	15,276 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,044,453	1,163,384	1,296,381	1,444,878	1,610,698
AM PK-HR VKT	44,738	49,832	55,529	61,890	68,992
PM PK-HR VKT	49,169	54,767	61,028	68,019	75,825

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	0.0	0.6
LENGTH (mi)	0.0	0.0	0.0	0.0	0.4
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	0.4%
AM PK-HR VKT	NONE				
AM PK-HR VKT (%)	NONE				
PM PK-HR VKT	0	0	0	0	726
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	1.0%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)	NONE				

\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	0.00	0.00	0.00	0.00	0.00	0.00
RI	7.76	0.00	0.00	0.00	0.00	0.00
RPA	75.01	0.00	0.00	0.00	0.00	0.61
RMA	62.83	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	145.59	0.00	0.00	0.00	0.00	0.61

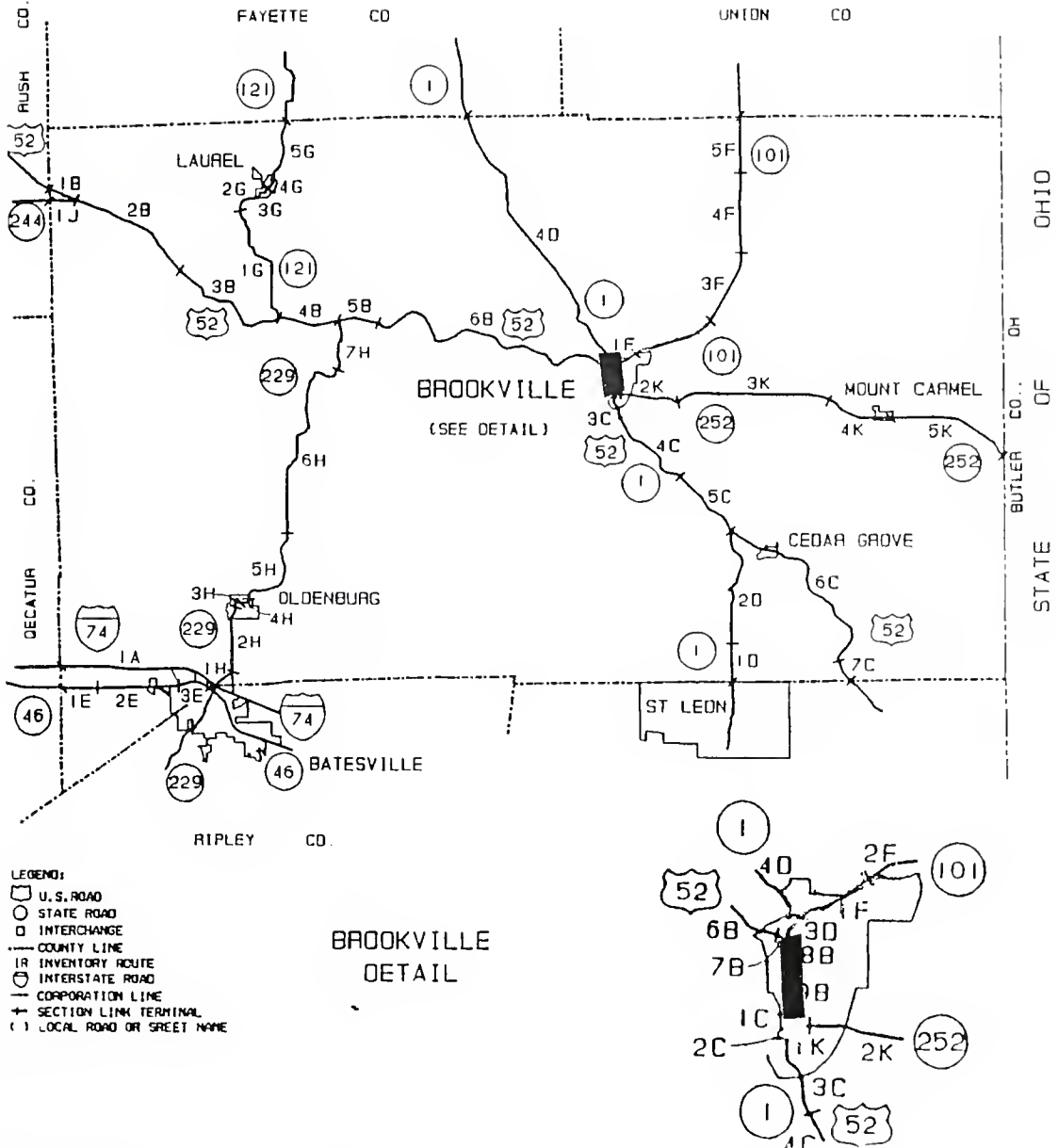
UI = Urban Interstate; UPA = Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI = Rural Interstate; RPA = Rural Freeways, Principal & Minor Arterials; RMA = Rural Major & Minor Collectors and Locals



# APPENDIX A CONGESTION MAPS FRANKLIN COUNTY

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 27 GRANT COUNTY

<b>STATE ROADS</b>	<b>265 KM</b>	<b>165 MILES</b>
1995 DAILY TRAVEL	1,858,448 VKT	1,154,818 VMT
1995 AM PEAK HOUR TRAVEL	77,766 VKT	48,323 VMT
1995 PM PEAK HOUR TRAVEL	88,243 VKT	54,833 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,858,448	2,108,316	2,402,385	2,749,847	3,161,984
AM PK-HR VKT	77,766	88,222	100,527	115,067	132,313
PM PK-HR VKT	88,243	100,108	114,071	130,569	150,138

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.3	0.3	0.9	0.9	3.3
LENGTH (mi)	0.2	0.2	0.6	0.6	2.0
LENGTH (%)	0.1%	0.1%	0.4%	0.4%	1.2%
AM PK-HR VKT	0	0	402	424	1,353
AM PK-HR VKT (%)	0.0%	0.0%	0.4%	0.4%	1.0%
PM PK-HR VKT	410	432	1,378	1,453	8,569
PM PK-HR VKT (%)	0.5%	0.4%	1.2%	1.1%	5.7%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.00	0.29
LENGTH (mi)	0	0	0	0	0.18
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	0.1%
AM PK-HR VKT	0	0	0	0	0
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	0.0%
PM PK-HR VKT	0	0	0	0	506
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	0.3%

\* VKT = Vehicle Kilometers Travelled

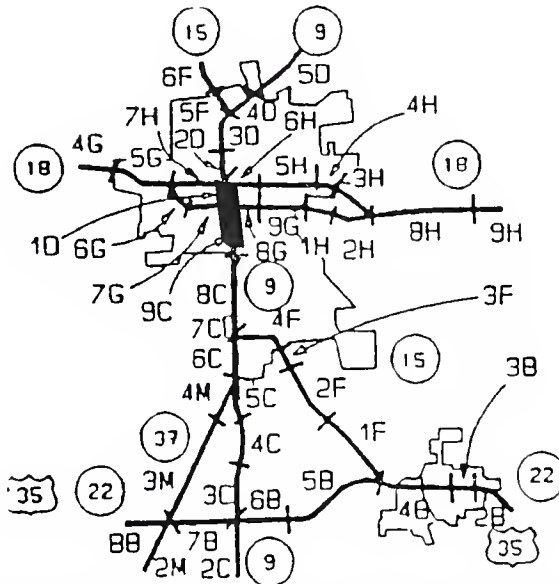
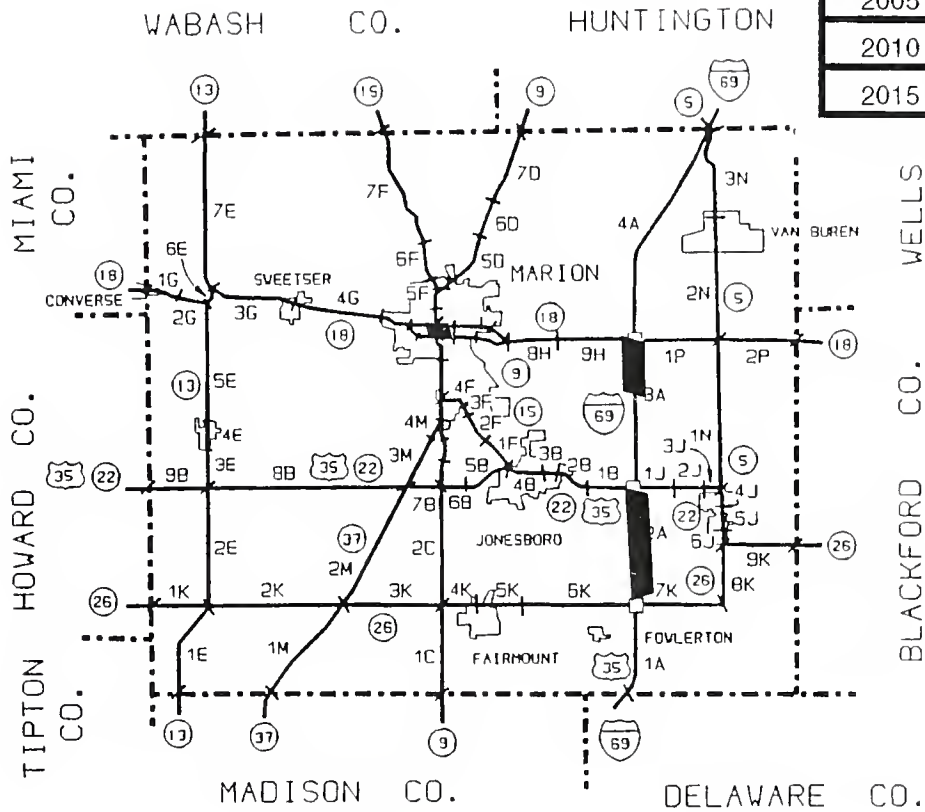
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	7.66	0.00	0.00	0.00	0.00	2.33
UPA	63.10	0.29	0.29	0.95	0.95	0.95
RI	27.99	0.00	0.00	0.00	0.00	0.00
RPA	70.55	0.00	0.00	0.00	0.00	0.00
RMA	95.58	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>264.87</b>	<b>0.29</b>	<b>0.29</b>	<b>0.95</b>	<b>0.95</b>	<b>3.28</b>

UI = Urban Interstate; UPA = Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI = Rural Interstate; RPA = Rural Freeways, Principal & Minor Arterials; RMA = Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
GRANT COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
Indiana Department of Transportation  
Color Added**

## APPENDIX A CONGESTION DATA

### 29 HAMILTON COUNTY

<b>STATE ROADS</b>	<b>233 KM</b>	<b>145 MILES</b>
1995 DAILY TRAVEL	3,958,888 VKT	2,460,006 VMT
1995 AM PEAK HOUR TRAVEL	164,940 VKT	102,492 VMT
1995 PM PEAK HOUR TRAVEL	189,134 VKT	117,525 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	3,958,888	4,525,975	5,200,168	6,005,560	6,972,203
AM PK-HR VKT	164,940	188,567	216,656	250,211	290,484
PM PK-HR VKT	189,134	216,226	248,435	286,912	333,093

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	4.0	16.0	22.5	27.4	28.9
LENGTH (mi)	2.5	9.9	14.0	17.0	18.0
LENGTH (%)	1.7%	6.9%	9.6%	11.8%	12.4%
AM PK-HR VKT	1,531	29,353	70,009	104,920	138,156
AM PK-HR VKT (%)	0.9%	15.6%	32.3%	41.9%	47.6%
PM PK-HR VKT	16,373	65,591	100,035	134,011	170,453
PM PK-HR VKT (%)	8.7%	30.3%	40.3%	46.7%	51.2%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.43	2.80	8.38	18.02	23.80
LENGTH (mi)	0.27	1.74	5.21	11.2	14.79
LENGTH (%)	0.2%	1.2%	3.6%	7.7%	10.2%
AM PK-HR VKT	1,464	1,893	30,016	61,208	133,382
AM PK-HR VKT (%)	0.9%	1.0%	13.9%	24.5%	45.9%
PM PK-HR VKT	1,733	16,661	56,868	105,946	156,000
PM PK-HR VKT (%)	0.9%	7.7%	22.9%	36.9%	46.8%

\* VKT = Vehicle Kilometers Travelled

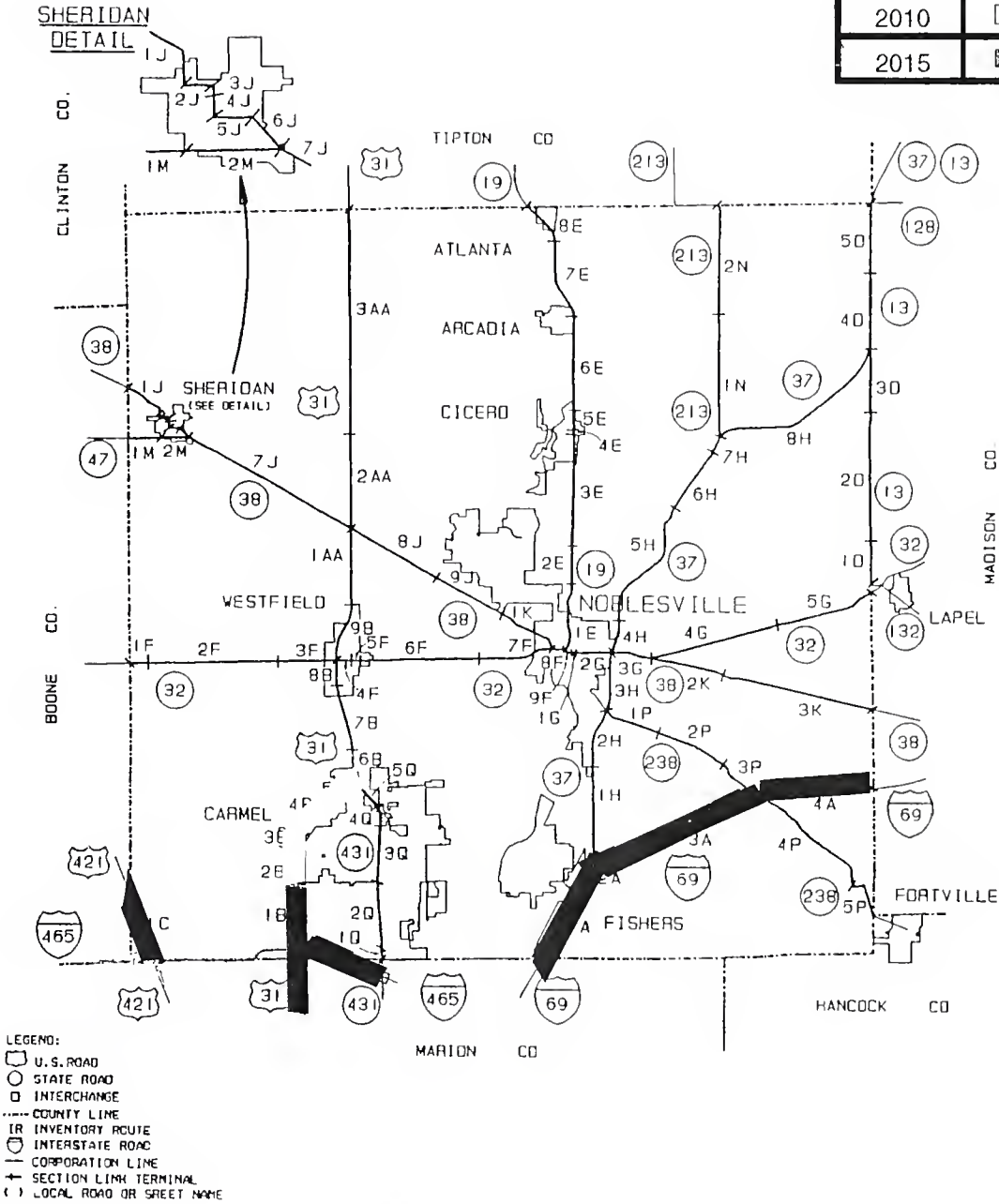
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	10.32	0.43	4.91	4.91	7.43	7.76
UPA	37.51	0.00	0.00	0.00	0.00	0.00
RI	19.63	3.48	10.94	16.24	16.62	17.81
RPA	85.31	0.13	0.13	1.35	3.35	3.36
RMA	80.38	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>233.16</b>	<b>4.04</b>	<b>15.98</b>	<b>22.50</b>	<b>27.41</b>	<b>28.94</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
HAMILTON COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added**

**APPENDIX A  
CONGESTION DATA**

**30 HANCOCK COUNTY**

<b>STATE ROADS</b>	<b>159 KM</b>	<b>99 MILES</b>
<b>1995 DAILY TRAVEL</b>	<b>2,266,914 VKT</b>	<b>1,408,634 VMT</b>
<b>1995 AM PEAK HOUR TRAVEL</b>	<b>95,251 VKT</b>	<b>59,188 VMT</b>
<b>1995 PM PEAK HOUR TRAVEL</b>	<b>108,400 VKT</b>	<b>67,358 VMT</b>

<b>YEAR</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>DAILY VKT</b>	2,266,914	2,655,248	3,120,765	3,680,135	4,353,819
<b>AM PK-HR VKT</b>	95,251	111,568	131,128	154,631	182,938
<b>PM PK-HR VKT</b>	108,400	126,969	149,229	175,978	208,192

**CONGESTION SUMMARY**

**USING BENCHMARK V/C**

<b>YEAR</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>LENGTH (km)</b>	3.5	26.7	30.8	30.8	31.4
<b>LENGTH (mi)</b>	2.2	16.6	19.1	19.1	19.5
<b>LENGTH (%)</b>	2.2%	16.7%	19.3%	19.3%	19.7%
<b>AM PK-HR VKT</b>	13,253	16,105	51,745	99,599	122,039
<b>AM PK-HR VKT (%)</b>	13.9%	14.4%	39.5%	64.4%	66.7%
<b>PM PK-HR VKT</b>	15,342	67,936	94,398	115,635	142,286
<b>PM PK-HR VKT (%)</b>	14.2%	53.5%	63.3%	65.7%	68.3%

**USING V/C = 1**

<b>YEAR</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>LENGTH (km)</b>	3.51	3.51	5.60	30.77	30.77
<b>LENGTH (mi)</b>	2.18	2.18	3.48	19.12	19.12
<b>LENGTH (%)</b>	2.2%	2.2%	3.5%	19.3%	19.3%
<b>AM PK-HR VKT</b>	13,253	16,105	19,571	36,719	122,039
<b>AM PK-HR VKT (%)</b>	13.9%	14.4%	14.9%	23.7%	66.7%
<b>PM PK-HR VKT</b>	15,342	18,643	28,867	115,635	141,711
<b>PM PK-HR VKT (%)</b>	14.2%	14.7%	19.3%	65.7%	68.1%

\* VKT =Vehicle Kilometers Travelled

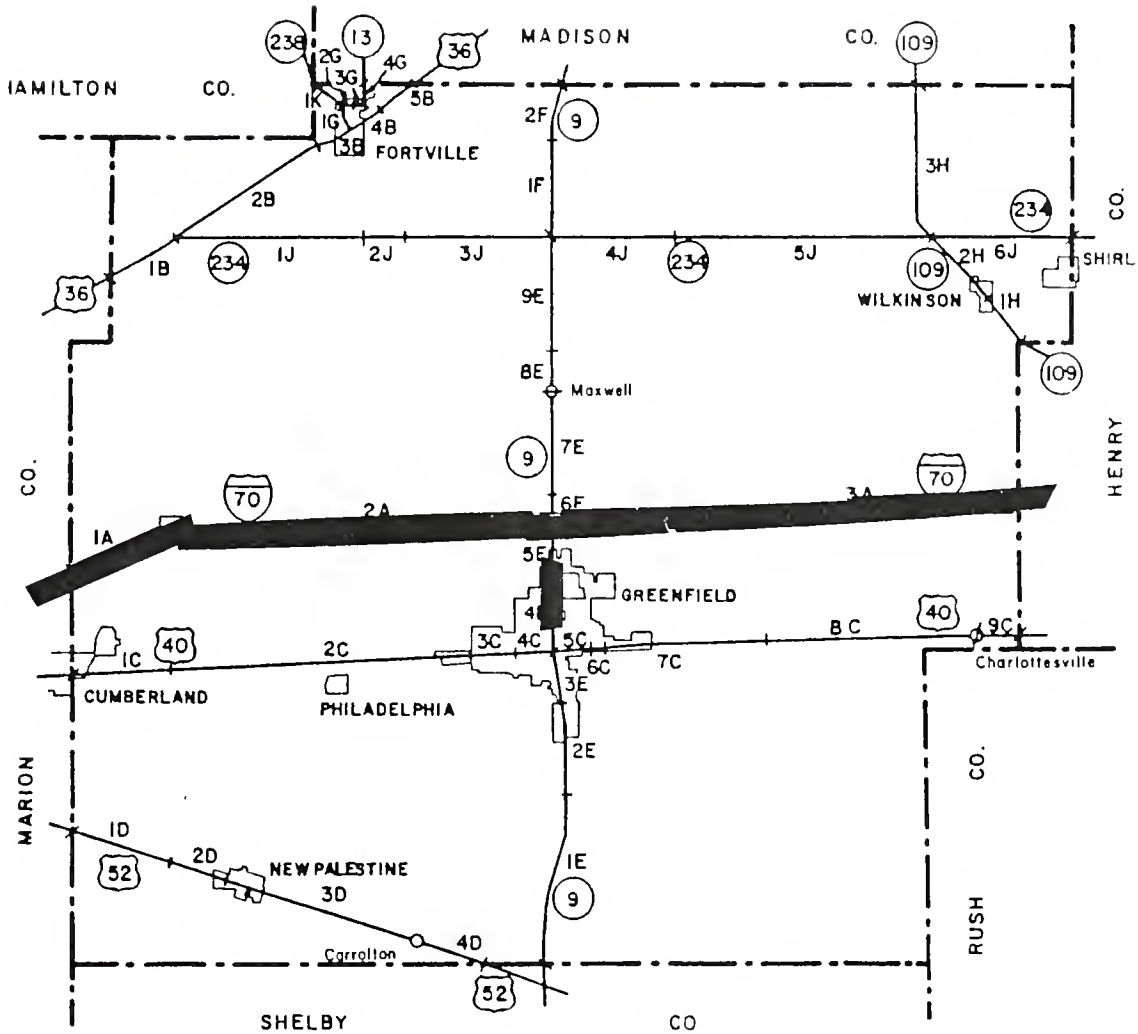
<b>ROAD CLASS</b>	<b>TOTAL KM BY TYPE</b>	<b>CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)</b>				
		<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
<b>UI</b>	5.97	0.00	0.00	4.10	4.10	4.10
<b>UPA</b>	19.17	0.00	0.00	0.00	0.00	0.63
<b>RI</b>	28.50	3.51	26.67	26.67	26.67	26.67
<b>RPA</b>	52.61	0.00	0.00	0.00	0.00	0.00
<b>RMA</b>	53.03	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	159.27	3.51	26.67	30.77	30.77	31.40

UI =Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS HANCOCK COUNTY

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 31 HARRISON COUNTY

<b>STATE ROADS</b>	<b>265 KM</b>	<b>165 MILES</b>
1995 DAILY TRAVEL	1,252,154 VKT	778,074 VMT
1995 AM PEAK HOUR TRAVEL	53,299 VKT	33,119 VMT
1995 PM PEAK HOUR TRAVEL	59,599 VKT	37,034 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,355,945	1,572,400	1,826,885	2,126,590	2,480,136
AM PK-HR VKT	53,299	61,807	71,810	83,591	97,488
PM PK-HR VKT	59,599	69,112	80,298	93,471	109,011

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	6.3	14.1	14.1	28.1	28.1
LENGTH (mi)	3.9	8.8	8.8	17.4	17.4
LENGTH (%)	2.4%	5.3%	5.3%	10.6%	10.6%
AM PK-HR VKT	0	8,649	22,947	27,885	53,730
AM PK-HR VKT (%)	0.0%	14.0%	32.0%	33.4%	55.1%
PM PK-HR VKT	8,239	21,860	26,564	51,174	62,168
PM PK-HR VKT (%)	15.5%	35.4%	37.0%	61.2%	63.8%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	6.26	14.08	14.08
LENGTH (mi)	0	0	3.89	8.75	8.75
LENGTH (%)	0.0%	0.0%	2.4%	5.3%	5.3%
AM PK-HR VKT	0	0	0	27,885	33,886
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	33.4%	34.8%
PM PK-HR VKT	0	0	12,166	32,280	39,227
PM PK-HR VKT (%)	0.0%	0.0%	16.9%	38.6%	40.2%

\* VKT =Vehicle Kilometers Travelled






ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	0.00	0.00	0.00	0.00	0.00	0.00
RI	32.20	6.26	14.08	14.08	27.89	27.89
RPA	58.34	0.00	0.00	0.00	0.00	0.00
RMA	174.37	0.00	0.00	0.00	0.00	0.18
<b>TOTAL</b>	<b>264.91</b>	<b>6.26</b>	<b>14.08</b>	<b>14.08</b>	<b>27.89</b>	<b>28.07</b>

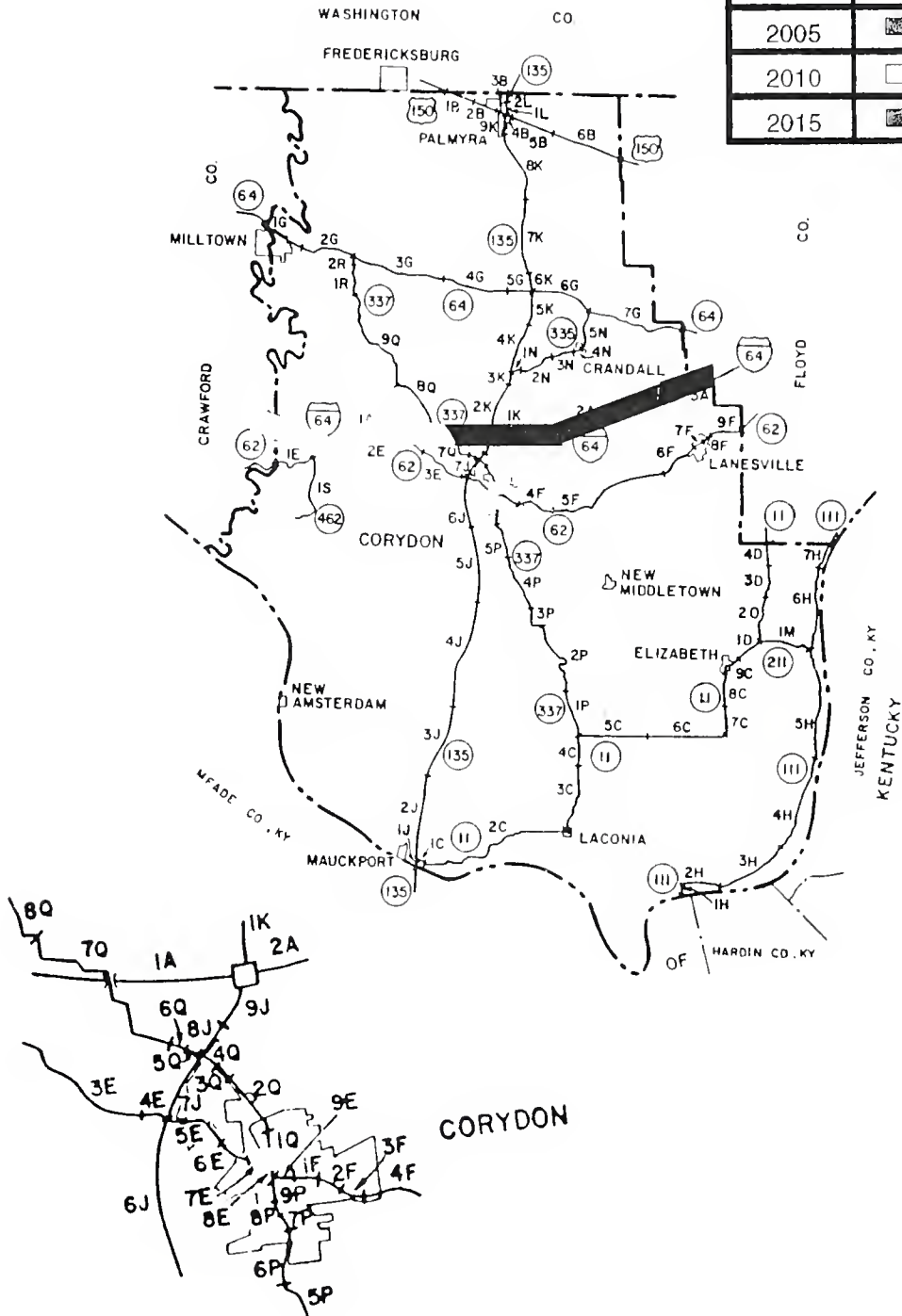
UI =Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals



# APPENDIX A CONGESTION MAPS HARRISON COUNTY

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 32 HENDRICKS COUNTY

<b>STATE ROADS</b>	<b>271 KM</b>	<b>169 MILES</b>
1995 DAILY TRAVEL	2,764,454 VKT	1,717,799 VMT
1995 AM PEAK HOUR TRAVEL	116,306 VKT	72,271 VMT
1995 PM PEAK HOUR TRAVEL	131,858 VKT	81,935 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,764,454	3,169,607	3,646,652	4,209,970	4,877,034
AM PK-HR VKT	116,306	133,352	153,422	177,122	205,187
PM PK-HR VKT	131,858	151,182	173,936	200,805	232,622

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	13.4	18.0	18.3
LENGTH (mi)	0.0	0.0	8.3	11.2	11.4
LENGTH (%)	0.0%	0.0%	4.9%	6.6%	6.8%
AM PK-HR VKT	0	0	0	25,135	37,795
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	14.2%	18.4%
PM PK-HR VKT	0	0	38,533	57,942	71,300
PM PK-HR VKT (%)	0.0%	0.0%	22.2%	28.9%	30.7%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.00	13.36
LENGTH (mi)	0	0	0	0	8.3
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	4.9%
AM PK-HR VKT	NONE				
AM PK-HR VKT (%)	NONE				
PM PK-HR VKT	0	0	0	0	56,901
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	24.5%






\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	6.36	0.00	0.00	0.00	0.00	0.00
UPA	27.44	0.00	0.00	0.00	0.00	0.37
RI	43.74	0.00	0.00	13.36	17.96	17.96
RPA	56.84	0.00	0.00	0.00	0.00	0.00
RMA	137.08	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>271.46</b>	<b>0.00</b>	<b>0.00</b>	<b>13.36</b>	<b>17.96</b>	<b>18.33</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
HENDRICKS COUNTY**

NOW	
2000	
2005	
2010	
2015	

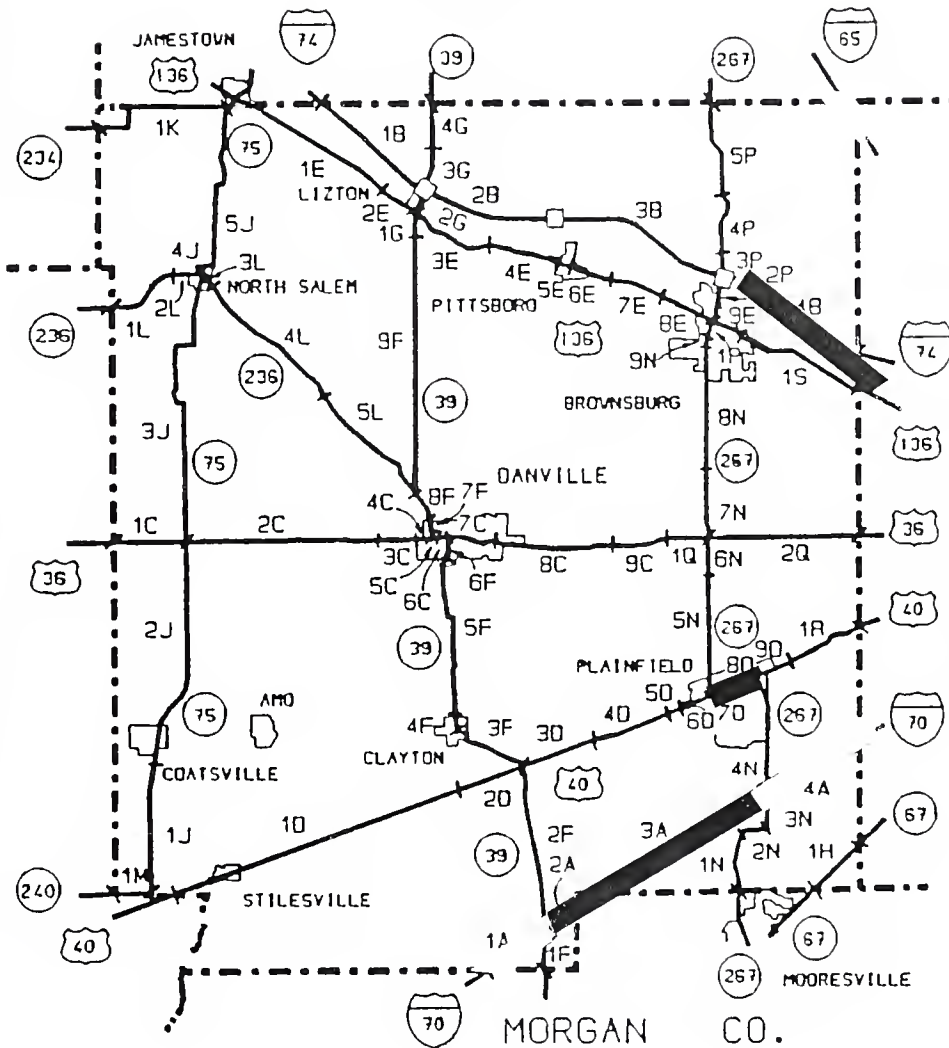
MONTGOMERY CO.

MONTGOMERY CO.

BOONE CO.

CO.

PUTNAM CO.



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 33 HENRY COUNTY

STATE ROADS	228 KM	142 MILES
1995 DAILY TRAVEL	2,040,638 VKT	1,268,028 VMT
1995 AM PEAK HOUR TRAVEL	86,229 VKT	53,581 VMT
1995 PM PEAK HOUR TRAVEL	97,511 VKT	60,592 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,040,638	2,382,420	2,788,551	3,271,912	3,848,045
AM PK-HR VKT	86,229	100,671	117,832	138,257	162,602
PM PK-HR VKT	97,511	113,843	133,250	156,347	183,877

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	12.8	29.1	29.1	32.7
LENGTH (mi)	0.0	7.9	18.1	18.1	20.3
LENGTH (%)	0.0%	5.6%	12.7%	12.7%	14.3%
AM PK-HR VKT	0	0	33,207	80,918	106,488
AM PK-HR VKT (%)	0.0%	0.0%	28.2%	58.5%	65.5%
PM PK-HR VKT	0	31,634	77,084	93,672	123,272
PM PK-HR VKT (%)	0.0%	27.8%	57.8%	59.9%	67.0%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	12.78	29.08
LENGTH (mi)	0	0	0	7.94	18.07
LENGTH (%)	0.0%	0.0%	0.0%	5.6%	12.7%
AM PK-HR VKT	0	0	0	0	49,037
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	30.2%
PM PK-HR VKT	0	0	0	46,713	113,829
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	29.9%	61.9%

\* VKT = Vehicle Kilometers Travelled

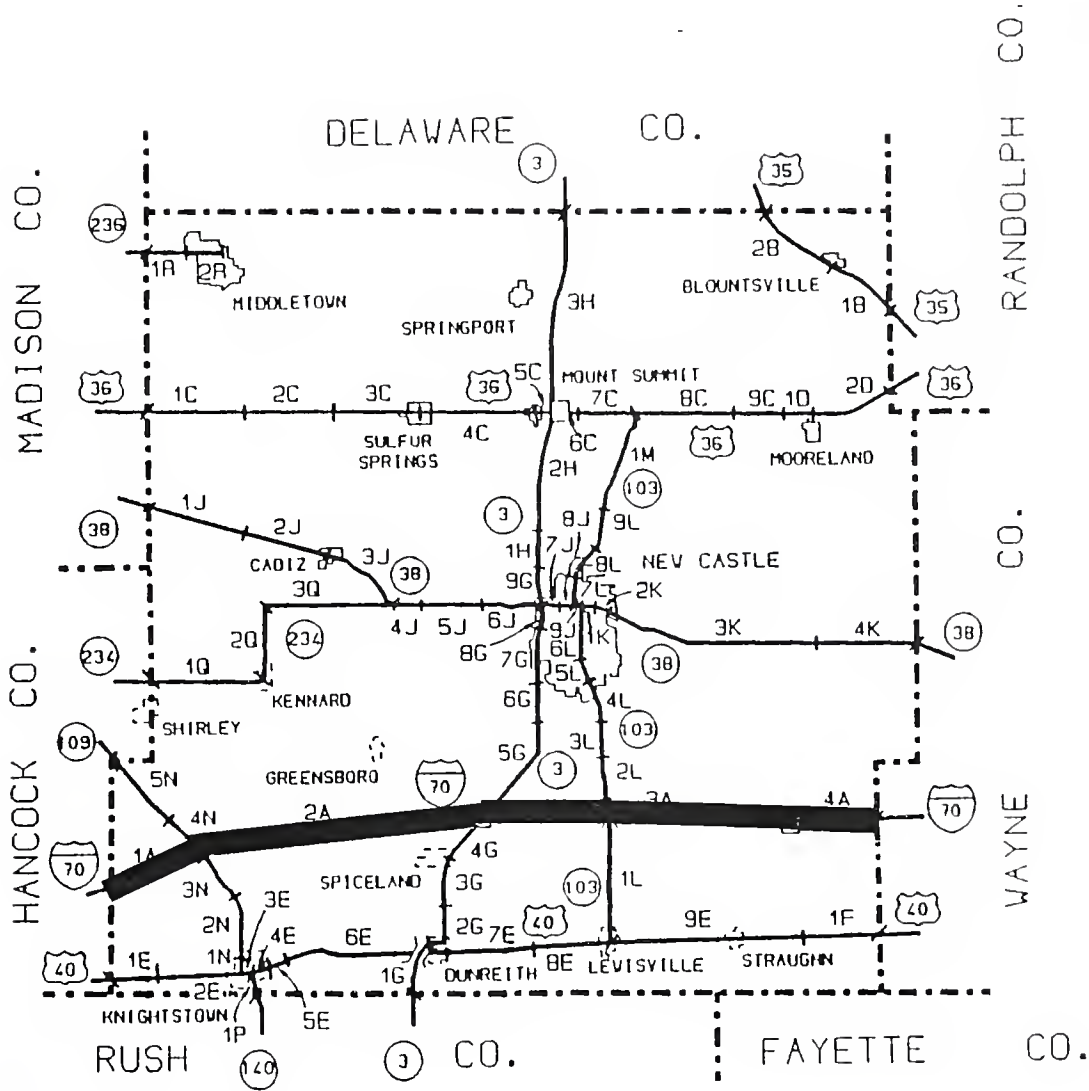
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	18.72	0.00	0.00	0.00	0.00	0.00
RI	37.90	0.00	12.78	29.08	29.08	32.68
RPA	40.51	0.00	0.00	0.00	0.00	0.00
RMA	131.24	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	228.36	0.00	12.78	29.08	29.08	32.68

UI = Urban Interstate; UPA = Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI = Rural Interstate; RPA = Rural Freeways, Principal & Minor Arterials; RMA = Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
HENRY COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added**

## APPENDIX A CONGESTION DATA

### 36 JACKSON COUNTY

<b>STATE ROADS</b>	<b>287 KM</b>	<b>179 MILES</b>
<b>1995 DAILY TRAVEL</b>	<b>1,720,930 VKT</b>	<b>1,069,366 VMT</b>
<b>1995 AM PEAK HOUR TRAVEL</b>	<b>72,375 VKT</b>	<b>44,973 VMT</b>
<b>1995 PM PEAK HOUR TRAVEL</b>	<b>82,010 VKT</b>	<b>50,960 VMT</b>

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,720,930	1,991,725	2,313,536	2,696,222	3,155,139
AM PK-HR VKT	72,375	83,764	97,298	113,392	132,692
PM PK-HR VKT	82,010	94,914	110,250	128,486	150,356

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	2.0	25.0
LENGTH (mi)	0.0	0.0	0.0	1.3	15.5
LENGTH (%)	0.0%	0.0%	0.0%	0.7%	8.7%
AM PK-HR VKT	0	0	0	0	60,018
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	45.2%
PM PK-HR VKT	0	0	0	4,781	69,665
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	3.7%	46.3%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.00	2.40
LENGTH (mi)	0	0	0	0	1.49
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	0.8%
AM PK-HR VKT	NONE				
AM PK-HR VKT (%)	NONE				
PM PK-HR VKT	0	0	0	0	8,493
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	5.6%






\* VKT = Vehicle Kilometers Travelled

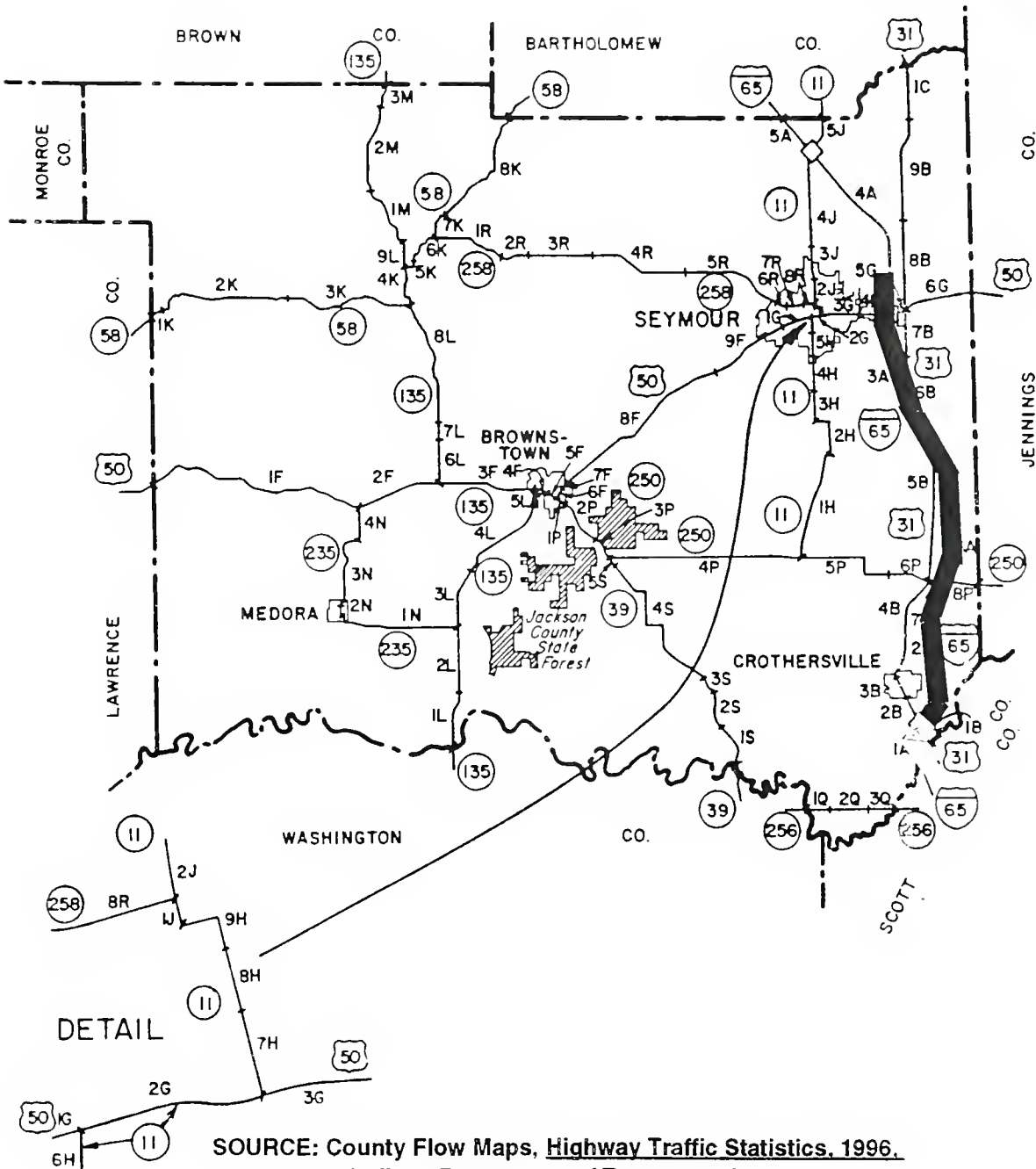
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	6.44	0.00	0.00	0.00	0.00	2.40
UPA	24.16	0.00	0.00	0.00	0.00	0.00
RI	36.77	0.00	0.00	0.00	2.03	22.56
RPA	80.06	0.00	0.00	0.00	0.00	0.00
RMA	140.04	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>287.47</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2.03</b>	<b>24.96</b>

UI = Urban Interstate; UPA = Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI = Rural Interstate; RPA = Rural Freeways, Principal & Minor Arterials; RMA = Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
JACKSON COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
Indiana Department of Transportation  
Color Added**

## APPENDIX A CONGESTION DATA

### 37 JASPER COUNTY

<b>STATE ROADS</b>	<b>275 KM</b>	<b>171 MILES</b>
1995 DAILY TRAVEL	1,783,645 VKT	1,108,336 VMT
1995 AM PEAK HOUR TRAVEL	75,380 VKT	46,840 VMT
1995 PM PEAK HOUR TRAVEL	85,682 VKT	53,242 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,783,645	2,106,008	2,491,814	2,952,287	3,517,571
AM PK-HR VKT	75,380	89,003	105,308	124,769	148,658
PM PK-HR VKT	85,682	101,168	119,701	141,821	168,976

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	0.0	51.5
LENGTH (mi)	0.0	0.0	0.0	0.0	32.0
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	18.7%
AM PK-HR VKT	0	0	0	0	7,412
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	5.0%
PM PK-HR VKT	0	0	0	0	125,550
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	74.3%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					

\* VKT =Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	9.24	0.00	0.00	0.00	0.00	0.00
RI	59.11	0.00	0.00	0.00	0.00	51.51*
RPA	72.53	0.00	0.00	0.00	0.00	0.00
RMA	134.22	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>275.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

UI =Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

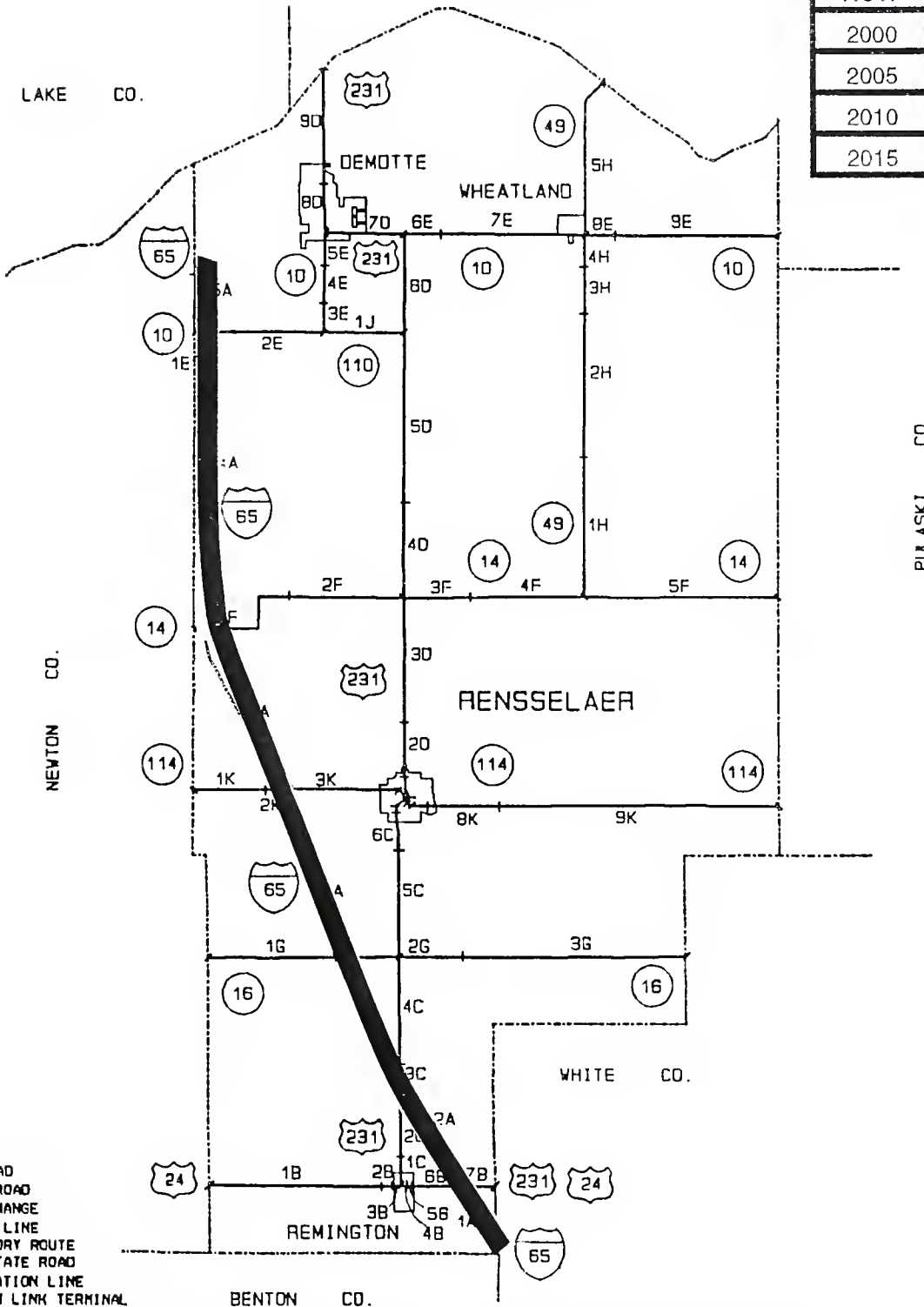
\*There are 7.5 Kilometers of ramps that are not congested accounting for the difference in interstate congested mileage.



# APPENDIX A CONGESTION MAPS JASPER COUNTY

PORTER CO.

NOW	
2000	
2005	
2010	
2015	



- LEGEND:
- U.S. ROAD
  - STATE ROAD
  - INTERCHANGE
  - COUNTY LINE
  - INVENTORY ROUTE
  - INTERSTATE ROAD
  - CORPORATION LINE
  - SECTION LINK TERMINAL
  - LOCAL ROAD OR STREET NAME

**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
 Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 41 JOHNSON COUNTY

<b>STATE ROADS</b>	<b>166 KM</b>	<b>103 MILES</b>
1995 DAILY TRAVEL	2,642,604 VKT	1,642,083 VMT
1995 AM PEAK HOUR TRAVEL	111,117 VKT	69,047 VMT
1995 PM PEAK HOUR TRAVEL	126,047 VKT	78,324 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,642,604	3,043,576	3,517,631	4,079,427	4,746,709
AM PK-HR VKT	111,117	127,977	147,910	171,533	199,591
PM PK-HR VKT	126,047	145,172	167,784	194,580	226,408

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	15.4	17.9	28.2	29.1	30.6
LENGTH (mi)	9.6	11.1	17.5	18.1	19.0
LENGTH (%)	9.3%	10.8%	17.0%	17.6%	18.5%
AM PK-HR VKT	429	36,027	53,500	95,244	116,423
AM PK-HR VKT (%)	0.4%	28.2%	36.2%	55.5%	58.3%
PM PK-HR VKT	34,320	50,965	88,050	110,470	135,412
PM PK-HR VKT (%)	27.2%	35.1%	52.5%	56.8%	59.8%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.68	15.42	18.51	28.85
LENGTH (mi)	0	0.42	9.58	11.5	17.93
LENGTH (%)	0.0%	0.4%	9.3%	11.2%	17.4%
AM PK-HR VKT	0	521	633	65,013	82,643
AM PK-HR VKT (%)	0.0%	0.4%	0.4%	37.9%	41.4%
PM PK-HR VKT	0	603	50,680	78,592	134,331
PM PK-HR VKT (%)	0.0%	0.4%	30.2%	40.4%	59.3%

\* VKT = Vehicle Kilometers Travelled

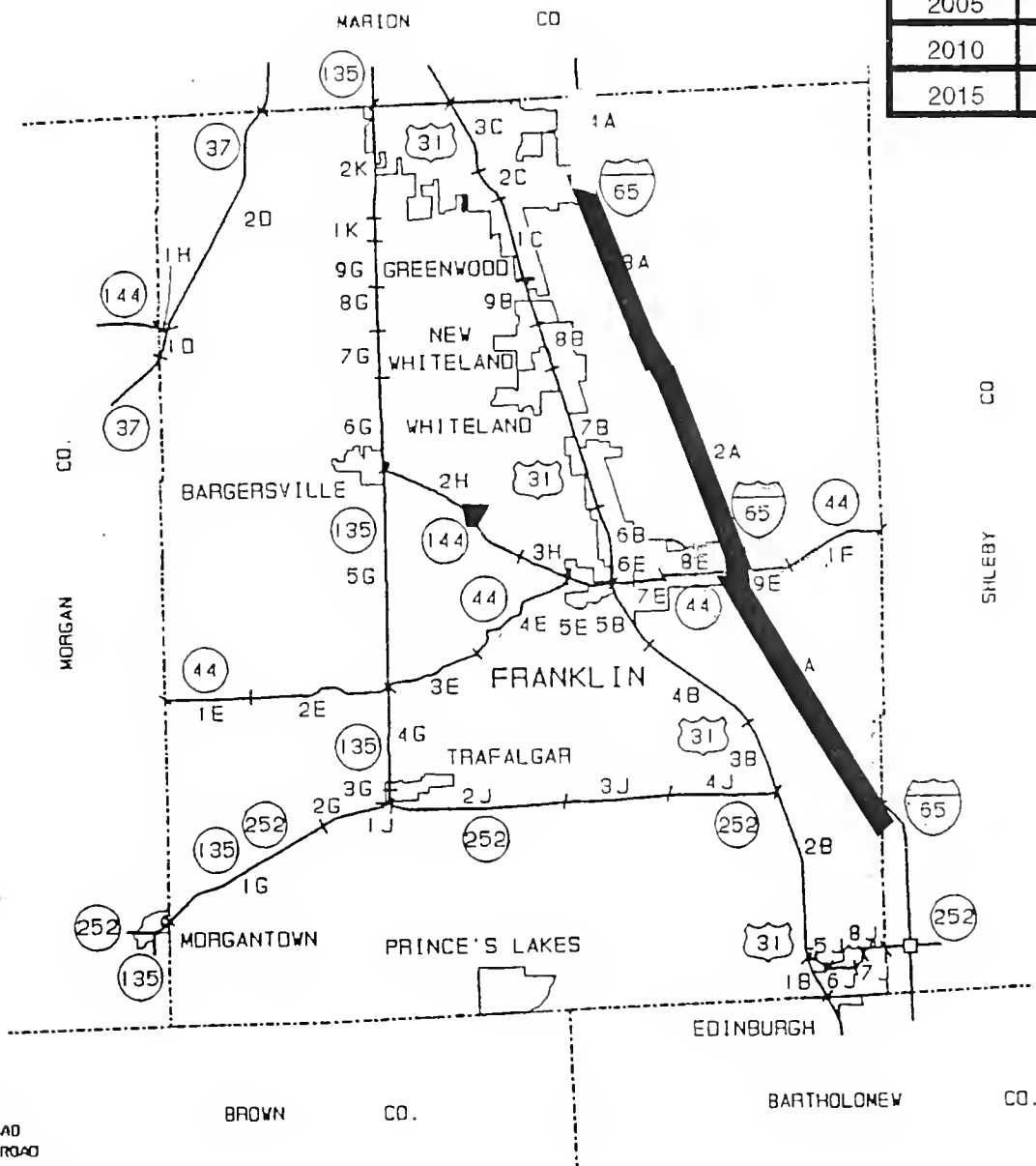
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	1.77	0.00	0.00	0.00	0.64	0.64
UPA	29.74	0.00	0.00	0.00	0.00	0.00
RI	31.69	15.42	17.86	28.21	28.47	29.97
RPA	36.84	0.00	0.00	0.00	0.00	0.00
RMA	65.69	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>165.73</b>	<b>15.42</b>	<b>17.86</b>	<b>28.21</b>	<b>29.11</b>	<b>30.61</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS JOHNSON COUNTY

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

**APPENDIX A  
CONGESTION MAPS  
LAKE COUNTY (NORTH)**

**45 LAKE COUNTY**

STATE ROADS	491 KM	305 MILES
1995 DAILY TRAVEL	11,073,836 VKT	6,881,151 VMT
1995 AM PEAK HOUR TRAVEL	450,391 VKT	279,868 VMT
1995 PM PEAK HOUR TRAVEL	522,999 VKT	324,986 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	11,073,836	13,036,876	15,490,255	18,572,865	22,459,741
AM PK-HR VKT	450,391	530,231	630,014	755,389	913,475
PM PK-HR VKT	522,999	615,711	731,580	877,167	1,060,737

**CONGESTION SUMMARY**

**USING BENCHMARK V/C**

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	35.9	43.7	53.7	77.7	102.3
LENGTH (mi)	22.3	27.2	33.4	48.3	63.6
LENGTH (%)	7.3%	8.9%	10.9%	15.8%	20.8%
AM PK-HR VKT	125,242	183,707	279,807	409,256	559,534
AM PK-HR VKT (%)	27.8%	34.6%	44.4%	54.2%	61.3%
PM PK-HR VKT	170,811	251,935	349,553	506,314	714,243
PM PK-HR VKT (%)	32.7%	40.9%	47.8%	57.7%	67.3%

**USING V/C = 1**

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	32.49	38.64	41.00	55.23	70.23
LENGTH (mi)	20.19	24.01	25.48	34.32	43.64
LENGTH (%)	6.6%	7.9%	8.3%	11.2%	14.3%
AM PK-HR VKT	102,917	168,357	253,751	351,108	494,387
AM PK-HR VKT (%)	22.9%	31.8%	40.3%	46.5%	54.1%
PM PK-HR VKT	161,625	235,844	313,165	445,889	621,478
PM PK-HR VKT (%)	30.9%	38.3%	42.8%	50.8%	58.6%

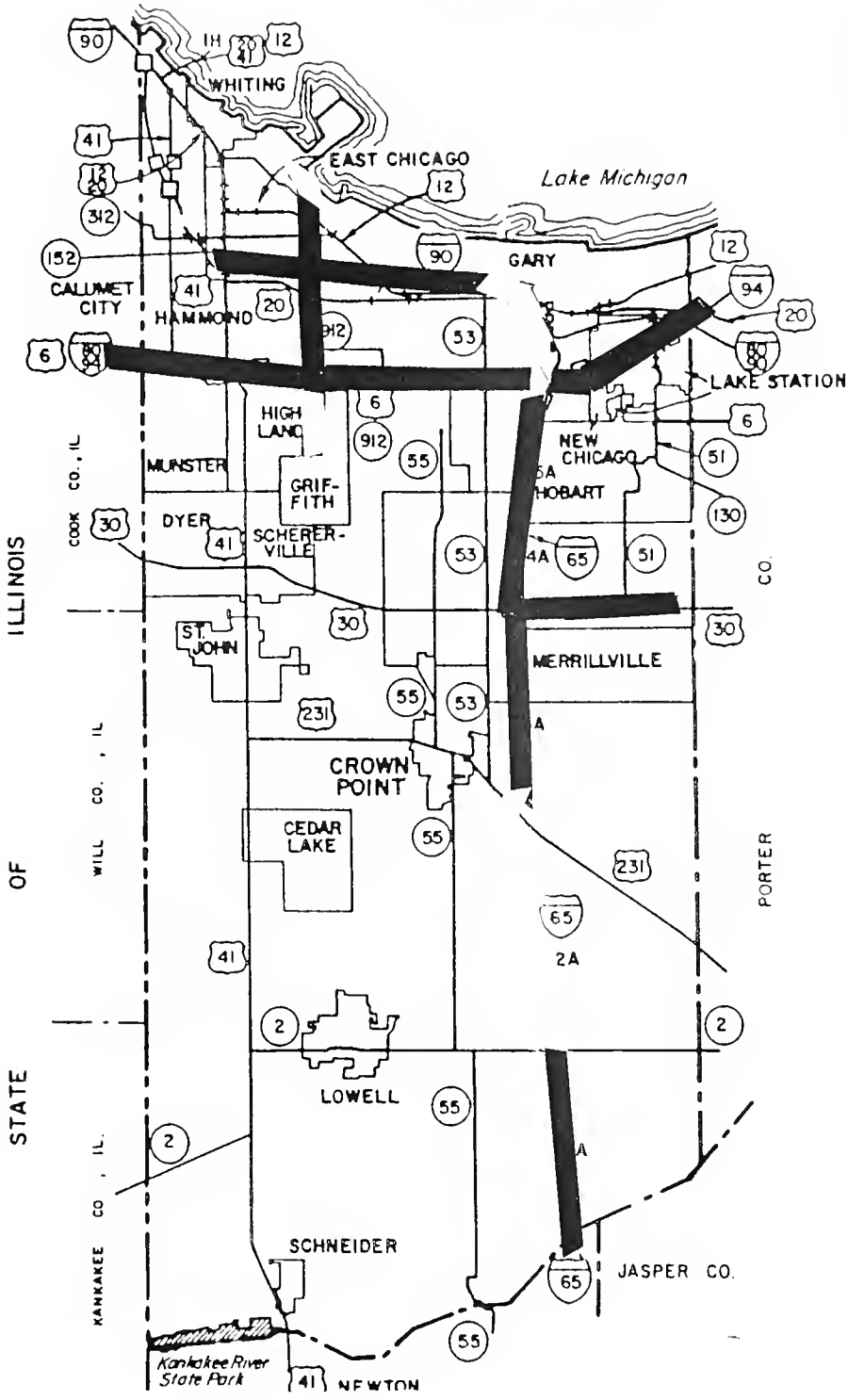
\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	136.73	27.23	34.47	39.77	51.26	67.04
UPA	243.58	8.63	9.27	9.27	9.96	9.96
RI	29.16	0.00	0.00	4.63	16.50	25.33
RPA	43.18	0.00	0.00	0.00	0.00	0.00
RMA	38.70	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>491.35</b>	<b>35.86</b>	<b>43.74</b>	<b>53.67</b>	<b>77.71</b>	<b>102.34</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

APPENDIX A  
 CONGESTION MAPS  
 LAKE COUNTY



NOW	
2000	
2005	
2010	
2015	

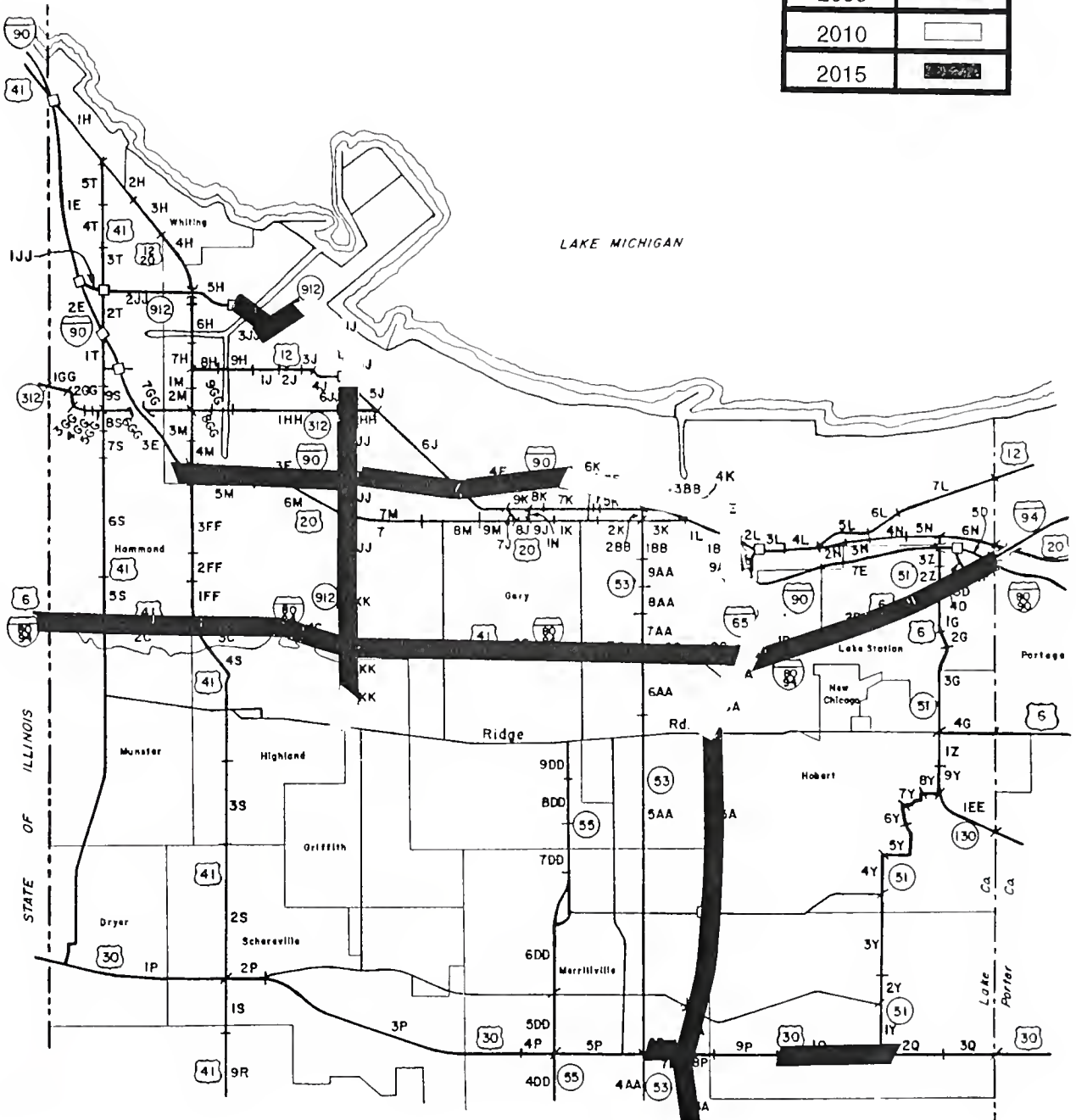
SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
 Indiana Department of Transportation  
 Color Added

**APPENDIX A  
CONGESTION DATA  
COUNTY MAPS**

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# APPENDIX A CONGESTION MAPS LAKE COUNTY (NORTH)

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 46 LAPORTE COUNTY

STATE ROADS	399 KM	248 MILES
1995 DAILY TRAVEL	3,928,417 VKT	2,441,072 VMT
1995 AM PEAK HOUR TRAVEL	164,607 VKT	102,285 VMT
1995 PM PEAK HOUR TRAVEL	188,316 VKT	117,017 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	3,928,417	4,468,864	5,100,946	5,842,186	6,713,669
AM PK-HR VKT	164,607	187,252	213,738	244,797	281,313
PM PK-HR VKT	188,316	214,223	244,523	280,056	321,832

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	8.6	11.8
LENGTH (mi)	0.0	0.0	0.0	5.4	7.4
LENGTH (%)	0.0%	0.0%	0.0%	2.2%	3.0%
AM PK-HR VKT	0	0	0	0	45,955
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	16.3%
PM PK-HR VKT	0	0	0	33,368	53,198
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	11.9%	16.5%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					

\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	81.12	0.00	0.00	0.00	0.00	0.00
RI	71.76	0.00	0.00	0.00	8.64	11.83
RPA	154.65	0.00	0.00	0.00	0.00	0.00
RMA	91.02	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	398.56	0.00	0.00	0.00	8.64	11.83

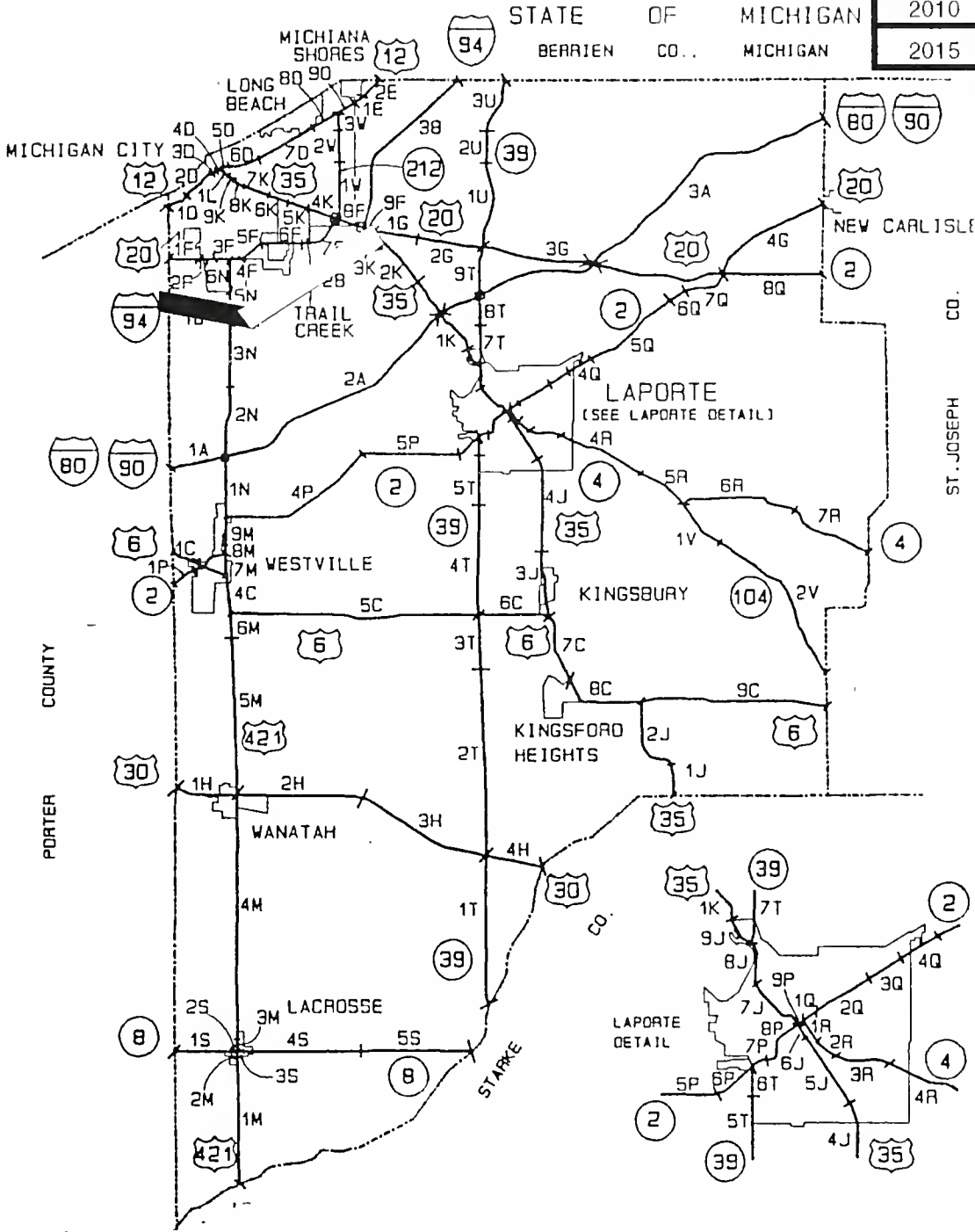
UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals



# APPENDIX A CONGESTION MAPS LAPORTE COUNTY

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added

## APPENDIX A CONGESTION DATA

### 48 MADISON COUNTY

<b>STATE ROADS</b>	<b>272 KM</b>	<b>169 MILES</b>
1995 DAILY TRAVEL	2,773,202 VKT	1,723,235 VMT
1995 AM PEAK HOUR TRAVEL	115,576 VKT	71,818 VMT
1995 PM PEAK HOUR TRAVEL	131,656 VKT	81,810 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,773,202	3,171,162	3,645,551	4,213,651	4,896,995
AM PK-HR VKT	115,576	132,162	151,933	175,609	204,088
PM PK-HR VKT	131,656	150,549	173,070	200,041	232,482

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	1.6	8.5	21.4	27.9	29.6
LENGTH (mi)	1.0	5.3	13.3	17.4	18.4
LENGTH (%)	0.6%	3.1%	7.9%	10.3%	10.9%
AM PK-HR VKT	0	3,942	32,933	65,914	104,404
AM PK-HR VKT (%)	0.0%	3.0%	21.7%	37.5%	51.2%
PM PK-HR VKT	3,755	21,753	62,762	93,498	121,925
PM PK-HR VKT (%)	2.9%	14.4%	36.3%	46.7%	52.4%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	1.64	20.60	22.26
LENGTH (mi)	0	0	1.02	12.8	13.83
LENGTH (%)	0.0%	0.0%	0.6%	7.6%	8.2%
AM PK-HR VKT	0	0	0	53,643	82,115
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	30.5%	40.2%
PM PK-HR VKT	0	0	5,545	76,979	101,927
PM PK-HR VKT (%)	0.0%	0.0%	3.2%	38.5%	43.8%

\* VKT = Vehicle Kilometers Travelled

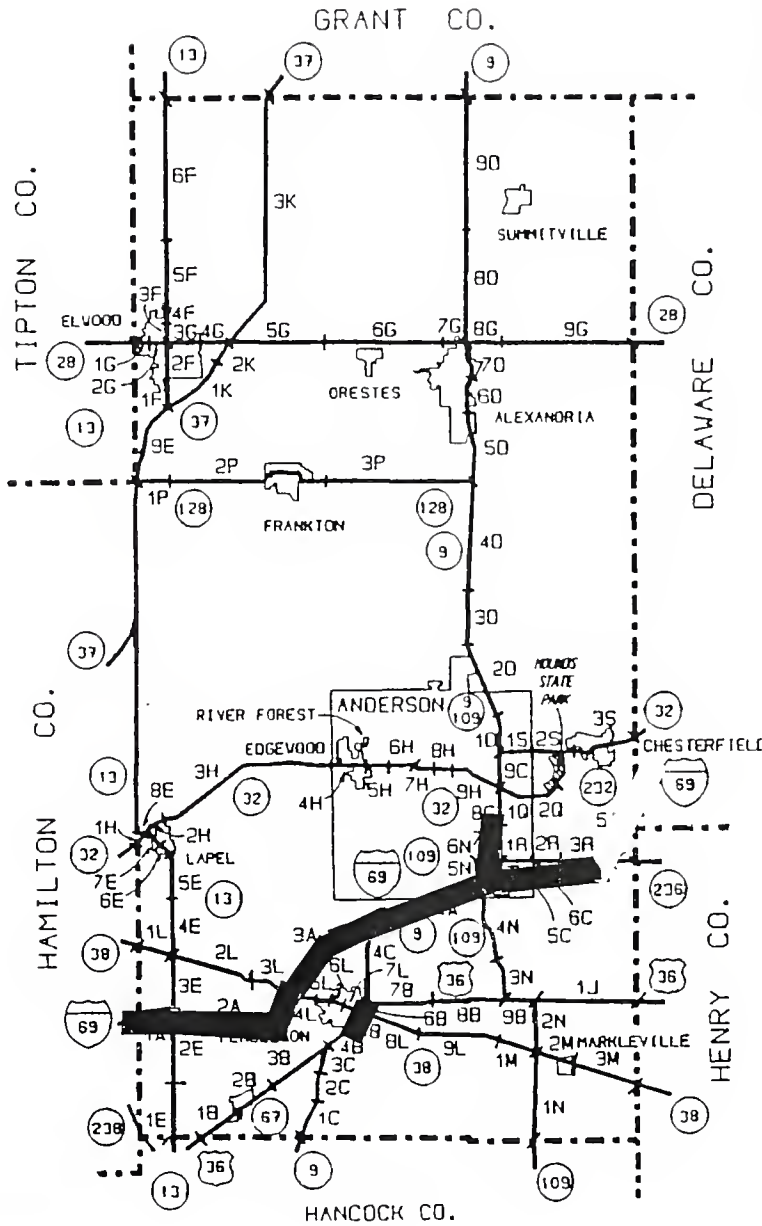
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	9.45	0.00	0.00	7.79	7.79	9.45
UPA	62.70	0.00	0.00	0.79	0.79	0.85
RI	25.97	1.64	8.48	12.81	19.34	19.34
RPA	89.32	0.00	0.00	0.00	0.00	0.06
RMA	84.76	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	272.20	1.64	8.48	21.39	27.92	29.70

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
MADISON COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

**APPENDIX A  
CONGESTION DATA**

**49 MARION COUNTY**

<b>STATE ROADS</b>	<b>463 KM</b>	<b>288 MILES</b>
1995 DAILY TRAVEL	19,361,817 VKT	12,031,204 VMT
1995 AM PEAK HOUR TRAVEL	779,469 VKT	484,353 VMT
1995 PM PEAK HOUR TRAVEL	916,290 VKT	569,372 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	19,361,817	24,198,779	30,408,043	38,389,348	48,659,457
AM PK-HR VKT	779,469	974,196	1,224,169	1,545,481	1,958,936
PM PK-HR VKT	916,290	1,145,197	1,439,047	1,816,759	2,302,788

**CONGESTION SUMMARY**

**USING BENCHMARK V/C**

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	60.8	113.6	159.3	199.7	215.6
LENGTH (mi)	37.8	70.6	99.0	124.1	134.0
LENGTH (%)	13.1%	24.5%	34.4%	43.1%	46.5%
AM PK-HR VKT	189,594	487,704	811,355	1,219,157	1,693,536
AM PK-HR VKT (%)	24.3%	50.1%	66.3%	78.9%	86.5%
PM PK-HR VKT	340,310	687,778	1,086,718	1,539,703	2,022,146
PM PK-HR VKT (%)	37.1%	60.1%	75.5%	84.7%	87.8%

**USING V/C = 1**

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	47.78	98.23	148.10	180.63	206.22
LENGTH (mi)	29.69	61.04	92.03	112.24	128.14
LENGTH (%)	10.3%	21.2%	32.0%	39.0%	44.5%
AM PK-HR VKT	98,423	366,721	749,547	1,174,415	1,677,238
AM PK-HR VKT (%)	12.6%	37.6%	61.2%	76.0%	85.6%
PM PK-HR VKT	279,096	630,955	1,038,477	1,487,004	2,007,009
PM PK-HR VKT (%)	30.5%	55.1%	72.2%	81.8%	87.2%

\* VKT = Vehicle Kilometers Travelled

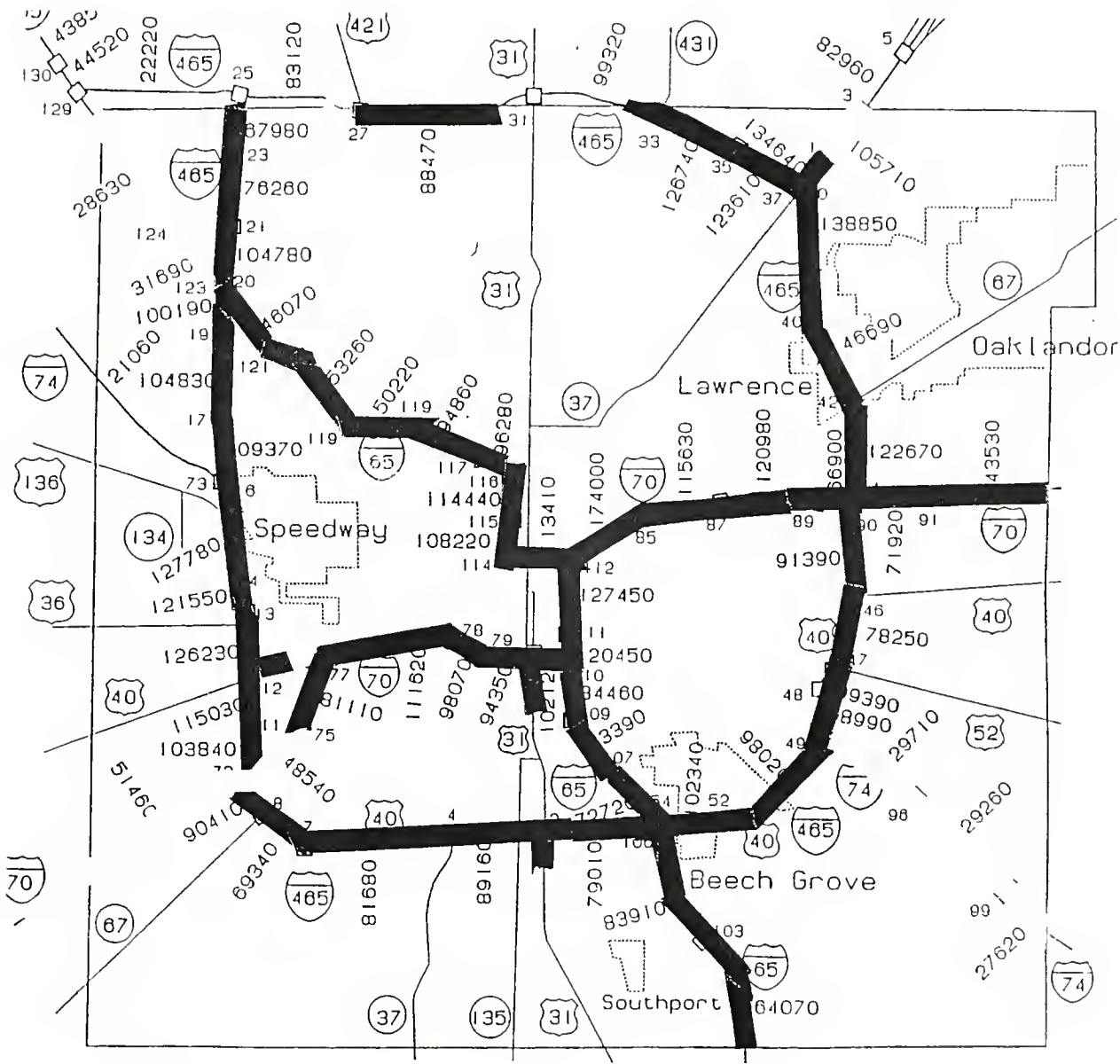
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	311.43	60.36	113.13	158.87	198.85	214.29
UPA	151.27	0.42	0.42	0.42	0.82	1.30
RI	0.00	0.00	0.00	0.00	0.00	0.00
RPA	0.00	0.00	0.00	0.00	0.00	0.00
RMA	0.60	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	463.30	60.78	113.55	159.29	199.67	215.60

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

APPENDIX A  
CONGESTION MAPS  
MARION COUNTY

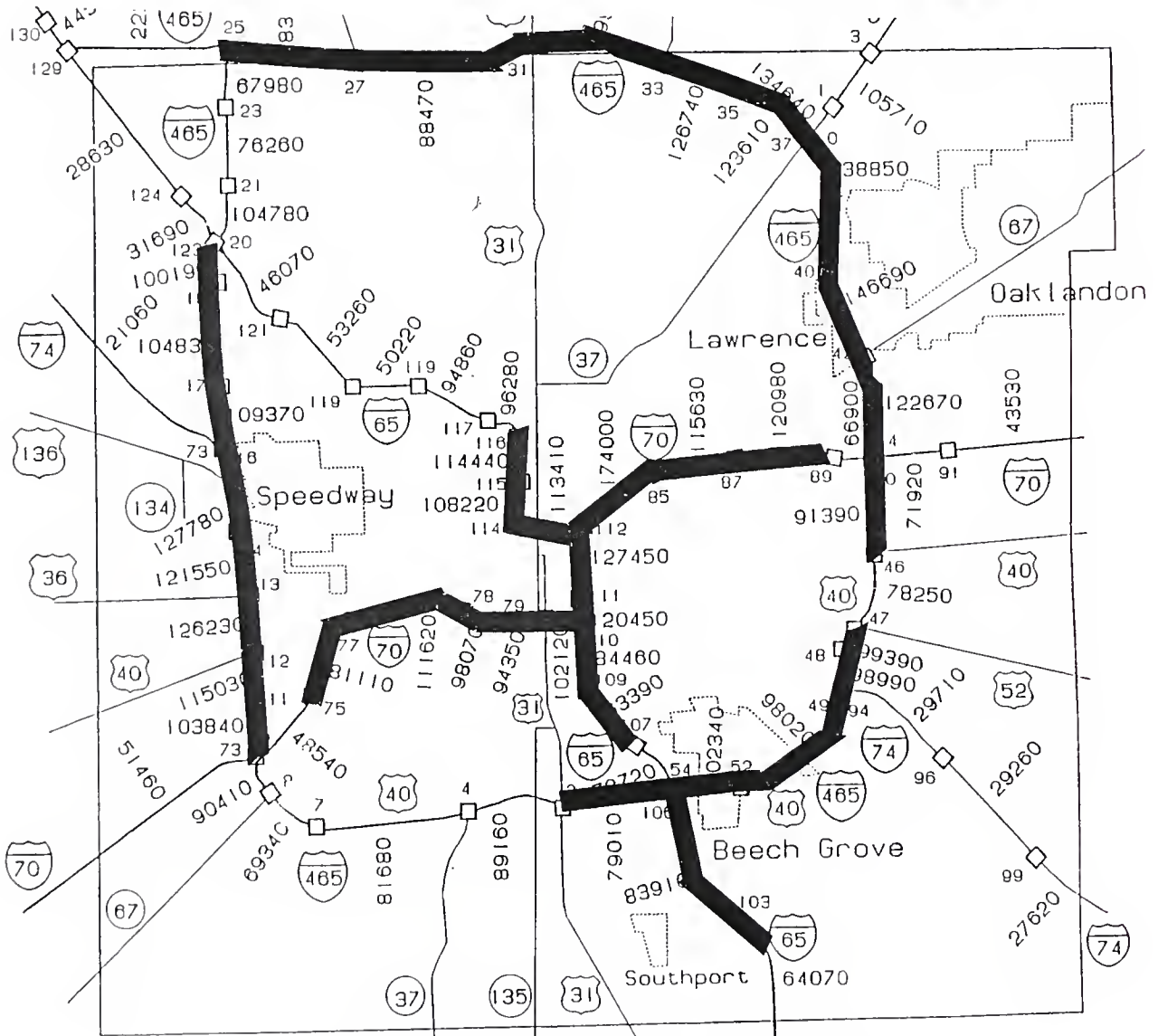
NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
Indiana Department of Transportation  
Color Added

**APPENDIX A  
CONGESTION MAPS  
MARION COUNTY**

NOW	
2000	
2005	
2010	
2015	

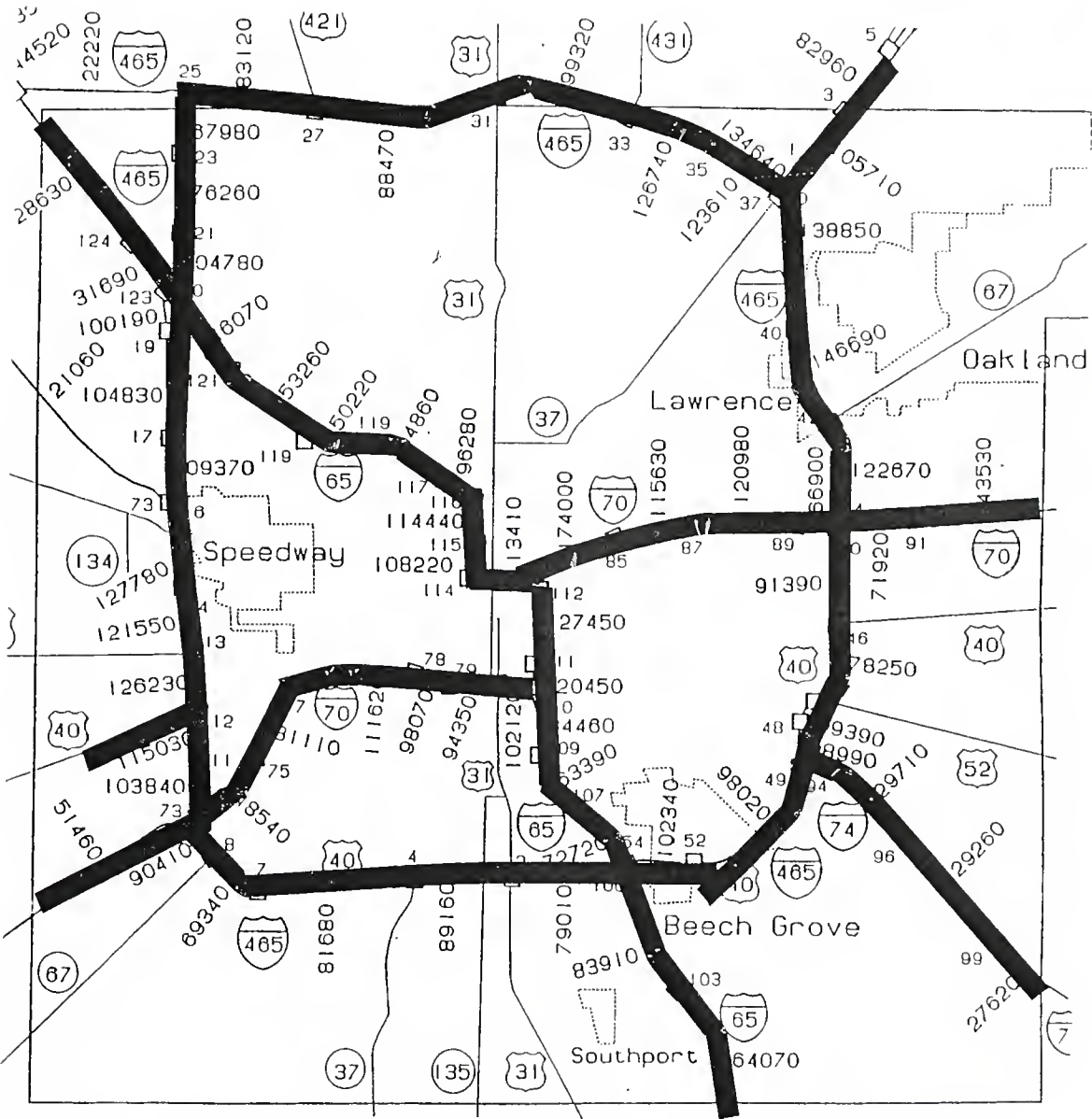


INDIANAPOLIS AREA

**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
Indiana Department of Transportation  
Color Added**

**APPENDIX A  
CONGESTION MAPS  
MARION COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added**

## APPENDIX A CONGESTION DATA

### 50 MARSHALL COUNTY

STATE ROADS	275 KM	171 MILES
1995 DAILY TRAVEL	1,671,469 VKT	1,038,631 VMT
1995 AM PEAK HOUR TRAVEL	70,360 VKT	43,721 VMT
1995 PM PEAK HOUR TRAVEL	79,882 VKT	49,638 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,671,469	1,836,407	2,018,440	2,219,411	2,441,366
AM PK-HR VKT	70,360	77,303	84,966	93,426	102,769
PM PK-HR VKT	79,882	87,765	96,464	106,069	116,676

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	2.5	2.5	7.0	7.0	7.0
LENGTH (mi)	1.6	1.6	4.3	4.3	4.3
LENGTH (%)	0.9%	0.9%	2.5%	2.5%	2.5%
AM PK-HR VKT	3,510	3,850	4,224	6,091	6,682
AM PK-HR VKT (%)	5.0%	5.0%	5.0%	6.5%	6.5%
PM PK-HR VKT	4,085	4,481	11,798	12,714	13,706
PM PK-HR VKT (%)	5.1%	5.1%	12.2%	12.0%	11.7%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	2.49	2.49	2.49
LENGTH (mi)	0	0	1.55	1.55	1.55
LENGTH (%)	0.0%	0.0%	0.9%	0.9%	0.9%
AM PK-HR VKT	0	0	0	4,634	5,084
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	5.0%	4.9%
PM PK-HR VKT	0	0	4,916	5,393	5,917
PM PK-HR VKT (%)	0.0%	0.0%	5.1%	5.1%	5.1%

\* VKT = Vehicle Kilometers Travelled






ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	12.76	0.00	0.00	3.01	3.01	3.01
RI	0.00	0.00	0.00	0.00	0.00	0.00
RPA	108.13	2.49	2.49	3.96	3.96	3.96
RMA	154.30	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	275.19	2.49	2.49	6.97	6.97	6.97

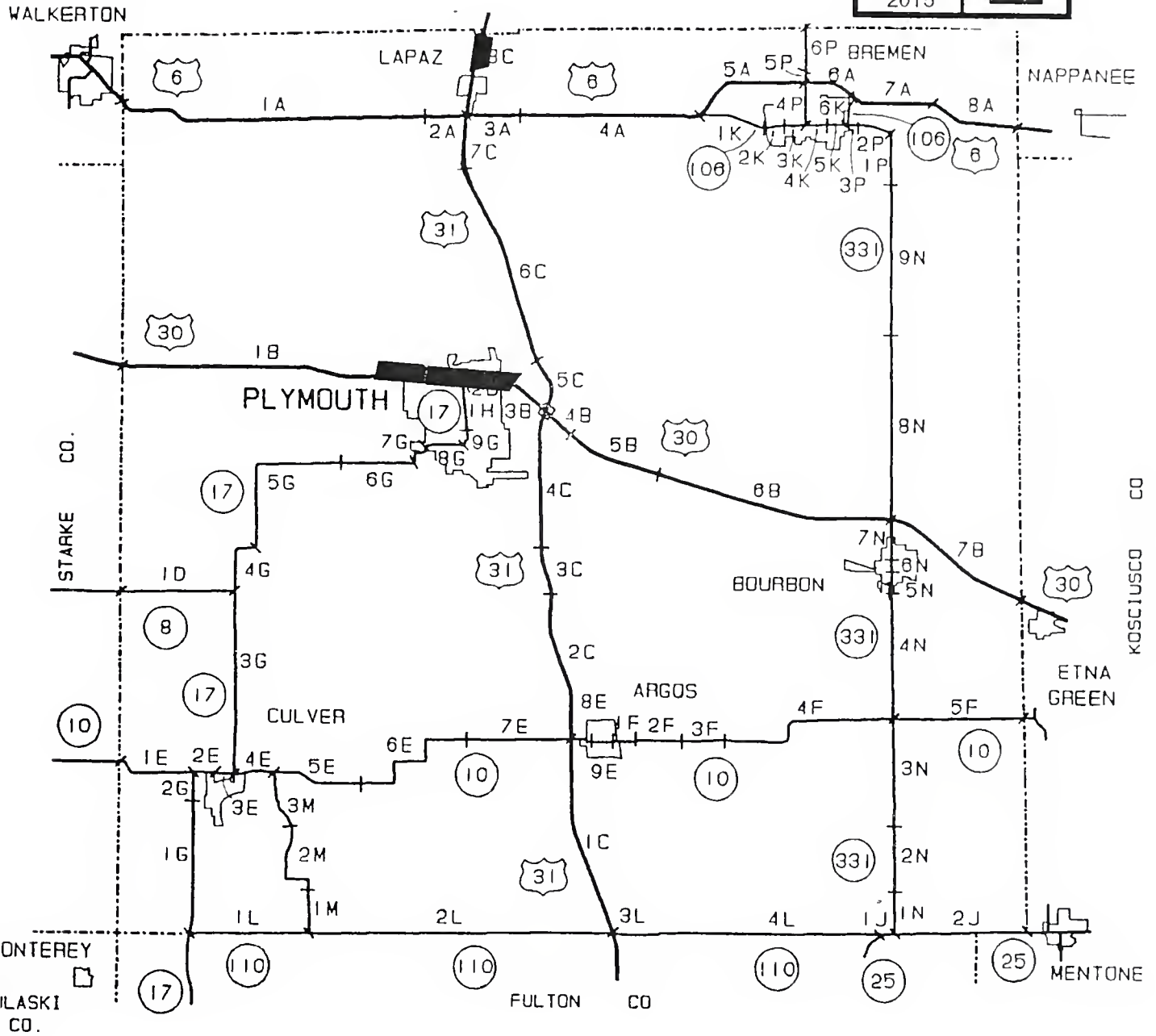
UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals



**APPENDIX A  
CONGESTION MAPS  
MARSHALL COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996,  
Indiana Department of Transportation  
Color Added**

## APPENDIX A CONGESTION DATA

### 53 MONROE COUNTY

<b>STATE ROADS</b>	<b>142 KM</b>	<b>88 MILES</b>
1995 DAILY TRAVEL	1,645,306 VKT	1,022,374 VMT
1995 AM PEAK HOUR TRAVEL	68,707 VKT	42,694 VMT
1995 PM PEAK HOUR TRAVEL	78,156 VKT	48,565 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,645,306	1,788,338	1,945,044	2,117,085	2,305,263
AM PK-HR VKT	68,707	74,680	81,224	88,408	96,266
PM PK-HR VKT	78,156	84,950	92,394	100,567	109,506

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.7	0.7	1.0
LENGTH (mi)	0.0	0.0	0.5	0.5	0.6
LENGTH (%)	0.0%	0.0%	0.5%	0.5%	0.7%
AM PK-HR VKT	0	0	0	0	954
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	1.0%
PM PK-HR VKT	0	0	922	1,024	1,480
PM PK-HR VKT (%)	0.0%	0.0%	1.0%	1.0%	1.4%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.00	0.00
LENGTH (mi)	NONE				
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					






\* VKT =Vehicle Kilometers Travelled

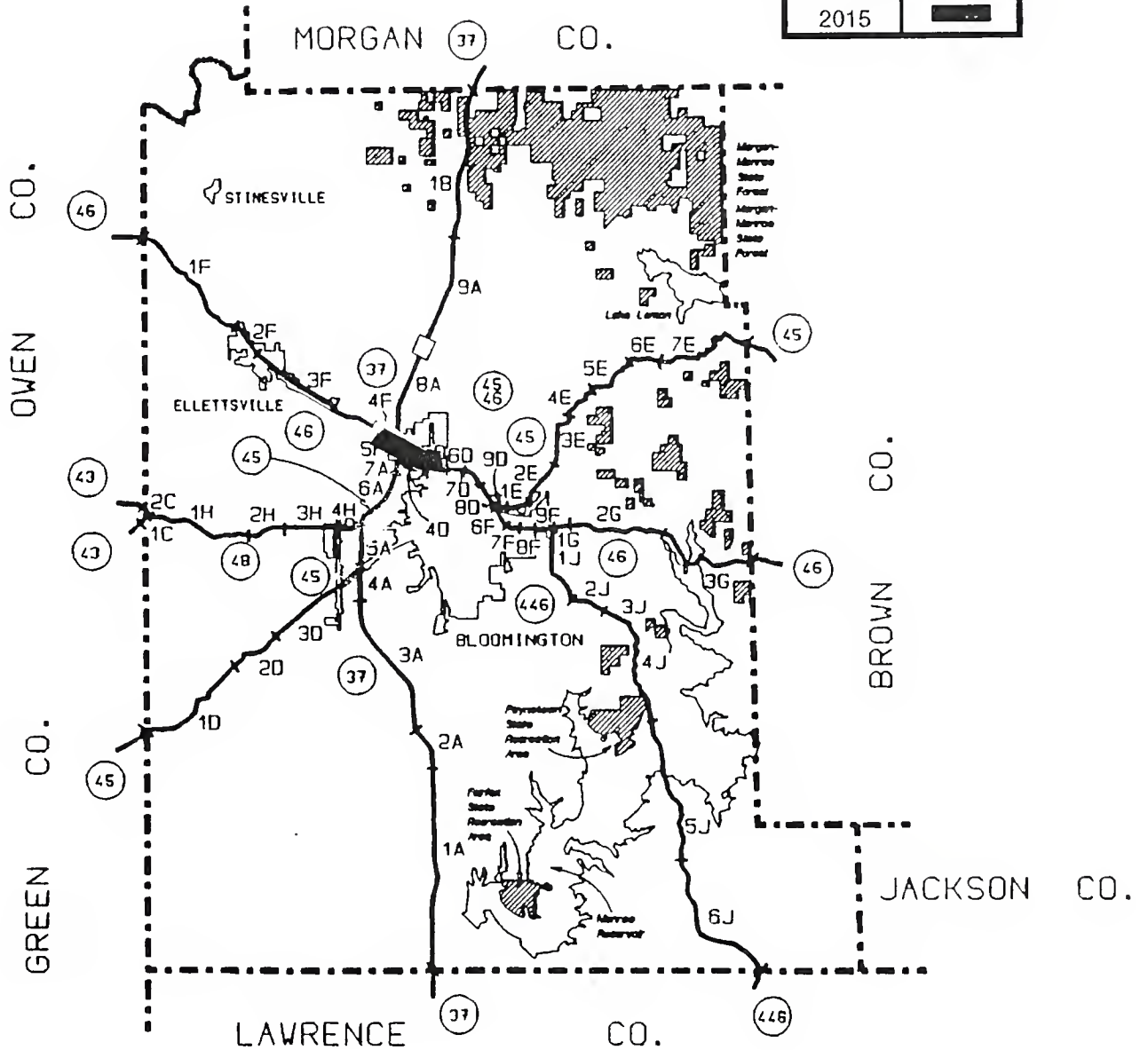
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	33.33	0.00	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00	0.00	0.00
RPA	56.20	0.00	0.00	0.72	0.72	0.97
RMA	52.35	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>141.88</b>	<b>0.00</b>	<b>0.00</b>	<b>0.72</b>	<b>0.72</b>	<b>0.97</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
MONROE COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 54 MONTGOMERY COUNTY

<b>STATE ROADS</b>	<b>262 KM</b>	<b>163 MILES</b>
1995 DAILY TRAVEL	1,373,966 VKT	853,766 VMT
1995 AM PEAK HOUR TRAVEL	58,224 VKT	36,180 VMT
1995 PM PEAK HOUR TRAVEL	63,147 VKT	39,239 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,373,966	1,622,876	1,929,684	2,309,780	2,782,882
AM PK-HR VKT	58,224	68,772	81,774	97,881	117,930
PM PK-HR VKT	63,147	74,586	88,687	106,156	127,899

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.6	1.4	5.5	5.7	6.7
LENGTH (mi)	0.4	0.9	3.4	3.5	4.2
LENGTH (%)	0.2%	0.6%	2.1%	2.2%	2.6%
AM PK-HR VKT	0	0	817	6,590	8,042
AM PK-HR VKT (%)	0.0%	0.0%	1.0%	6.7%	6.8%
PM PK-HR VKT	513	1,450	5,844	7,134	9,708
PM PK-HR VKT (%)	0.8%	1.9%	6.6%	6.7%	7.6%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.26	4.89
LENGTH (mi)	0	0	0	0.16	3.04
LENGTH (%)	0.0%	0.0%	0.0%	0.1%	1.9%
AM PK-HR VKT	0	0	0	0	423
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	0.4%
PM PK-HR VKT	0	0	0	359	7,419
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.3%	5.8%






\* VKT = Vehicle Kilometers Travelled

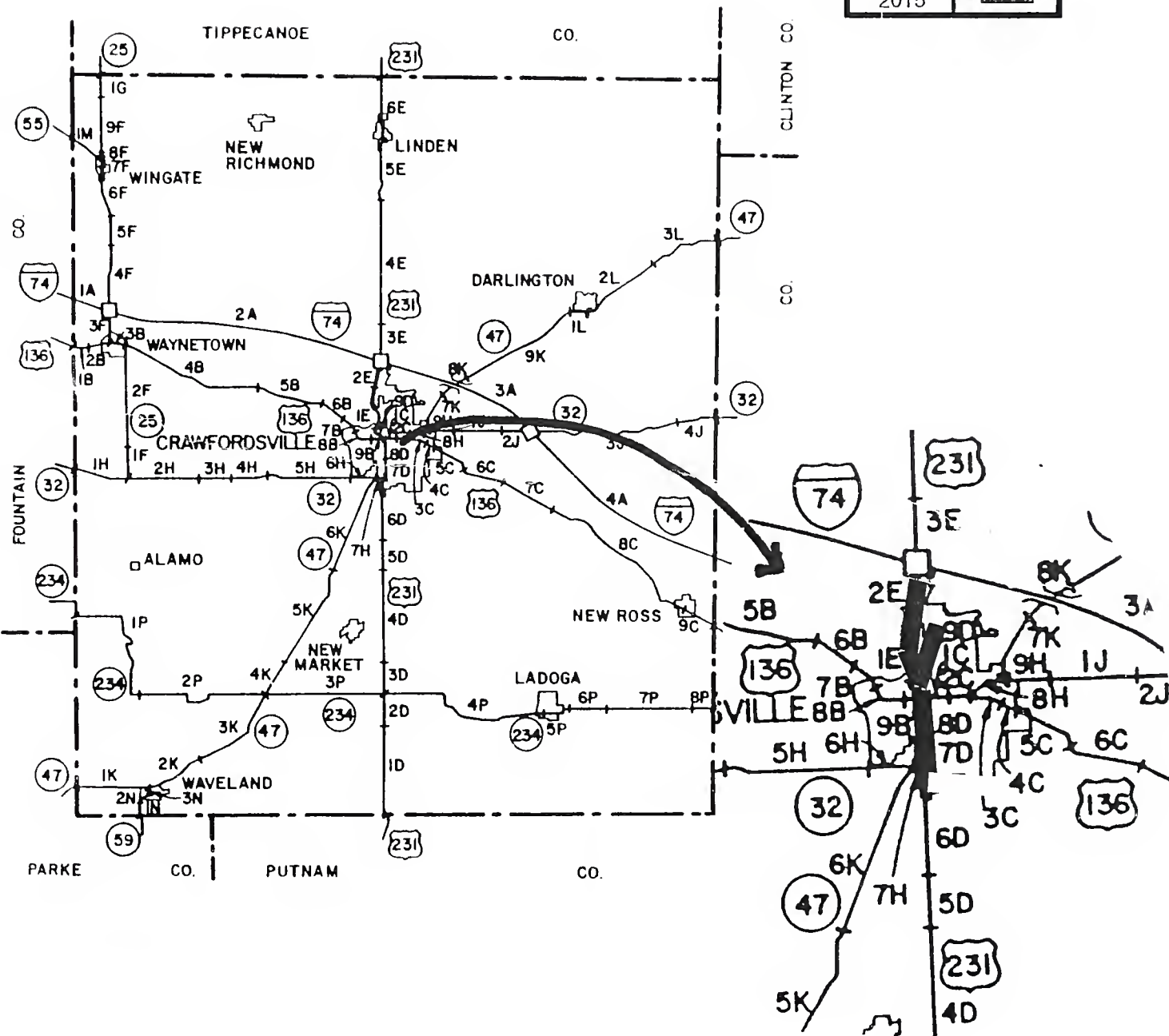
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	38.32	0.00	0.00	0.00	0.00	0.00
UPA	30.27	0.56	1.45	5.52	5.70	6.71
RI	3.54	0.00	0.00	0.00	0.00	0.00
RPA	189.85	0.00	0.00	0.00	0.00	0.00
RMA	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>261.98</b>	<b>0.56</b>	<b>1.45</b>	<b>5.52</b>	<b>5.70</b>	<b>6.71</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS MONTGOMERY COUNTY

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 55 MORGAN COUNTY

<b>STATE ROADS</b>	<b>215 KM</b>	<b>134 MILES</b>
1995 DAILY TRAVEL	2,073,332 VKT	1,288,344 VMT
1995 AM PEAK HOUR TRAVEL	86,559 VKT	53,787 VMT
1995 PM PEAK HOUR TRAVEL	99,578 VKT	61,876 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,073,332	2,316,109	2,594,179	2,913,607	3,281,620
AM PK-HR VKT	86,559	96,694	108,303	121,639	137,003
PM PK-HR VKT	99,578	111,238	124,593	139,934	157,609

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	12.5	14.7	14.7
LENGTH (mi)	0.0	0.0	7.8	9.1	9.1
LENGTH (%)	0.0%	0.0%	5.8%	6.8%	6.8%
AM PK-HR VKT	0	0	0	35,875	43,595
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	29.5%	31.8%
PM PK-HR VKT	0	0	29,531	41,530	50,467
PM PK-HR VKT (%)	0.0%	0.0%	23.7%	29.7%	32.0%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (kzs)	0.00	0.00	0.00	0.00	12.54
LENGTH (mi)	0	0	0	0	7.79
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	5.8%
AM PK-HR VKT	0	0	0	0	7,155
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	5.2%
PM PK-HR VKT	0	0	0	0	43,609
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	27.7%

\* VKT =Vehicle Kilometers Travelled

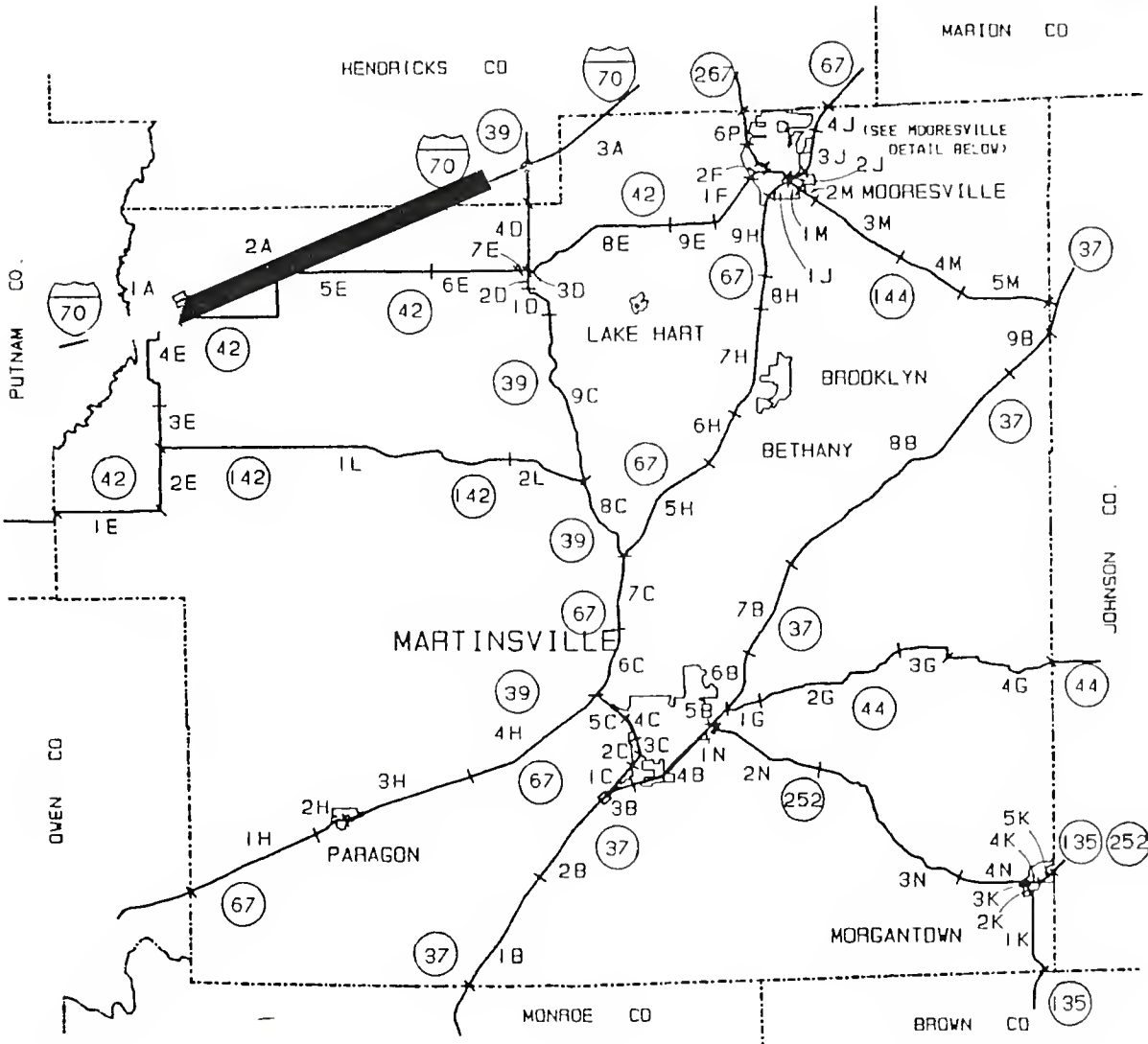
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	38.16	0.00	0.00	0.00	0.00	0.00
RI	16.13	0.00	0.00	12.54	14.71	14.71
RPA	79.50	0.00	0.00	0.00	0.00	0.00
RMA	81.27	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>215.05</b>	<b>0.00</b>	<b>0.00</b>	<b>12.54</b>	<b>14.71</b>	<b>14.71</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
MORGAN COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 56 NEWTON COUNTY

<b>STATE ROADS</b>	<b>191 KM</b>	<b>118 MILES</b>
1995 DAILY TRAVEL	624,338 VKT	387,956 VMT
1995 AM PEAK HOUR TRAVEL	26,272 VKT	16,325 VMT
1995 PM PEAK HOUR TRAVEL	30,190 VKT	18,760 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	627,548	703,284	789,448	887,691	996,717
AM PK-HR VKT	26,272	29,442	33,050	37,163	41,727
PM PK-HR VKT	30,190	33,834	37,979	42,705	47,950

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	4.6	4.6	4.6	4.6	4.6
LENGTH (mi)	2.9	2.9	2.9	2.9	2.9
LENGTH (%)	2.4%	2.4%	2.4%	2.4%	2.4%
AM PK-HR VKT	4,621	5,616	6,824	8,293	10,077
AM PK-HR VKT (%)	17.6%	19.1%	20.6%	22.3%	24.2%
PM PK-HR VKT	5,350	6,501	7,900	9,600	11,666
PM PK-HR VKT (%)	17.7%	19.2%	20.8%	22.5%	24.3%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	4.63	4.63	4.63	4.63	4.63
LENGTH (mi)	2.88	2.88	2.88	2.88	2.88
LENGTH (%)	2.4%	2.4%	2.4%	2.4%	2.4%
AM PK-HR VKT	0	5,616	6,824	8,293	10,077
AM PK-HR VKT (%)	0.0%	19.1%	20.6%	22.3%	24.2%
PM PK-HR VKT	5,350	6,501	7,900	9,600	11,666
PM PK-HR VKT (%)	17.7%	19.2%	20.8%	22.5%	24.3%

\* VKT = Vehicle Kilometers Travelled

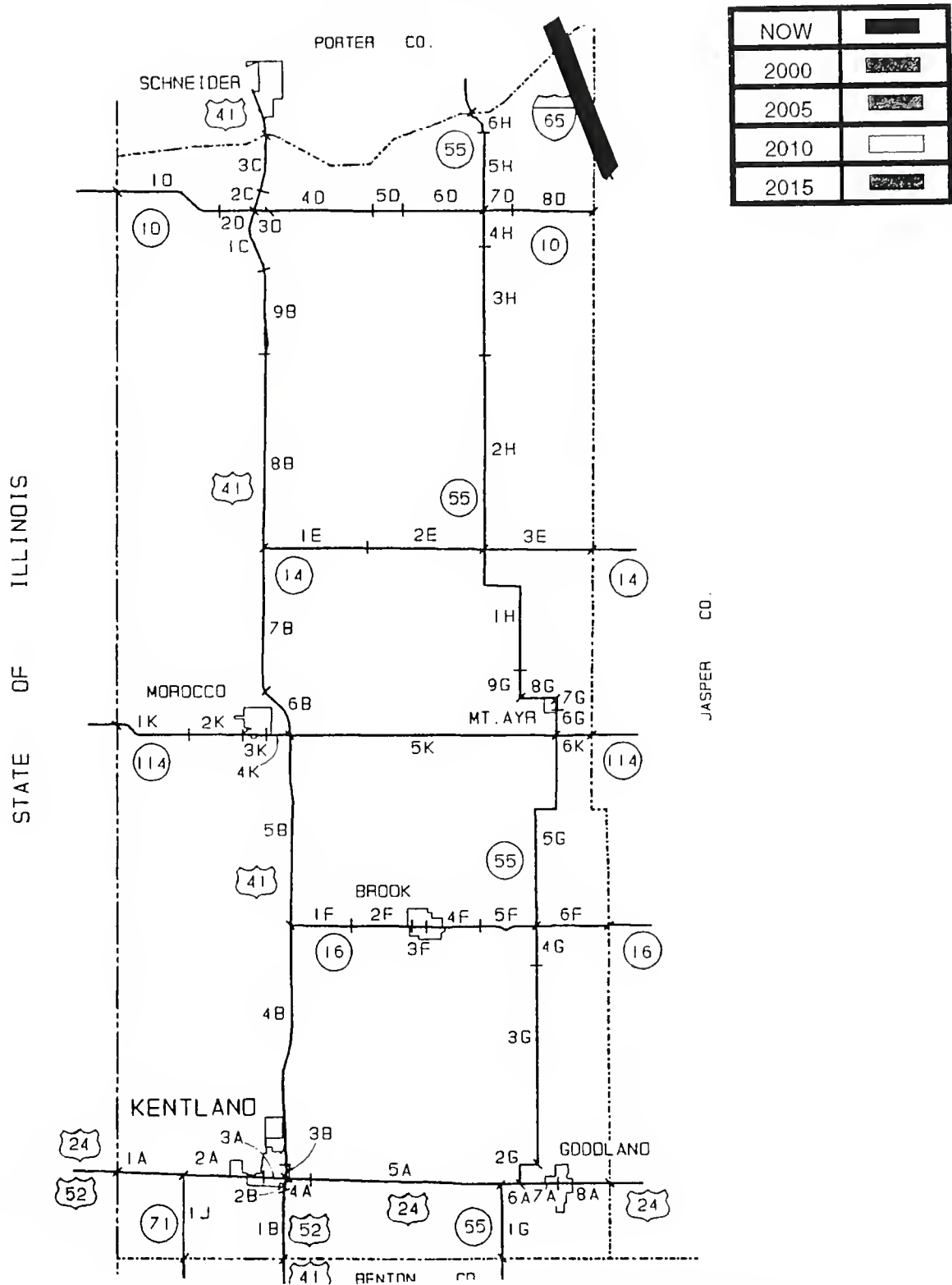
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	0.00	0.00	0.00	0.00	0.00	0.00
RI	4.63	4.63	4.63	4.63	4.63	4.63
RPA	105.63	0.00	0.00	0.00	0.00	0.00
RMA	80.27	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	190.54	4.63	4.63	4.63	4.63	4.63

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals



# APPENDIX A CONGESTION MAPS NEWTON COUNTY



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
 Indiana Department of Transportation  
 Color Added

## APPENDIX A CONGESTION DATA

### 64 PORTER COUNTY

STATE ROADS	328 KM	204 MILES
1995 DAILY TRAVEL	4,912,098 VKT	3,052,320 VMT
1995 AM PEAK HOUR TRAVEL	202,884 VKT	126,070 VMT
1995 PM PEAK HOUR TRAVEL	232,818 VKT	144,671 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	4,912,098	5,707,617	6,679,855	7,874,234	9,348,565
AM PK-HR VKT	202,884	235,741	275,898	325,229	386,123
PM PK-HR VKT	232,818	263,541	298,318	337,684	382,245

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	5.6	22.9	31.3	41.4
LENGTH (mi)	0.0	3.5	14.3	19.4	25.7
LENGTH (%)	0.0%	1.7%	7.0%	9.5%	12.6%
AM PK-HR VKT	0	0	26,821	128,381	192,232
AM PK-HR VKT (%)	0.0%	0.0%	9.7%	39.5%	49.8%
PM PK-HR VKT	0	24,553	104,970	166,385	241,544
PM PK-HR VKT (%)	0.0%	9.3%	35.2%	49.3%	63.2%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	11.46	19.15	35.07
LENGTH (mi)	0	0	7.12	11.9	21.79
LENGTH (%)	0.0%	0.0%	3.5%	5.8%	10.7%
AM PK-HR VKT	0	0	0	86,343	147,338
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	26.5%	38.2%
PM PK-HR VKT	0	0	59,909	119,744	226,681
PM PK-HR VKT (%)	0.0%	0.0%	20.1%	35.5%	59.3%

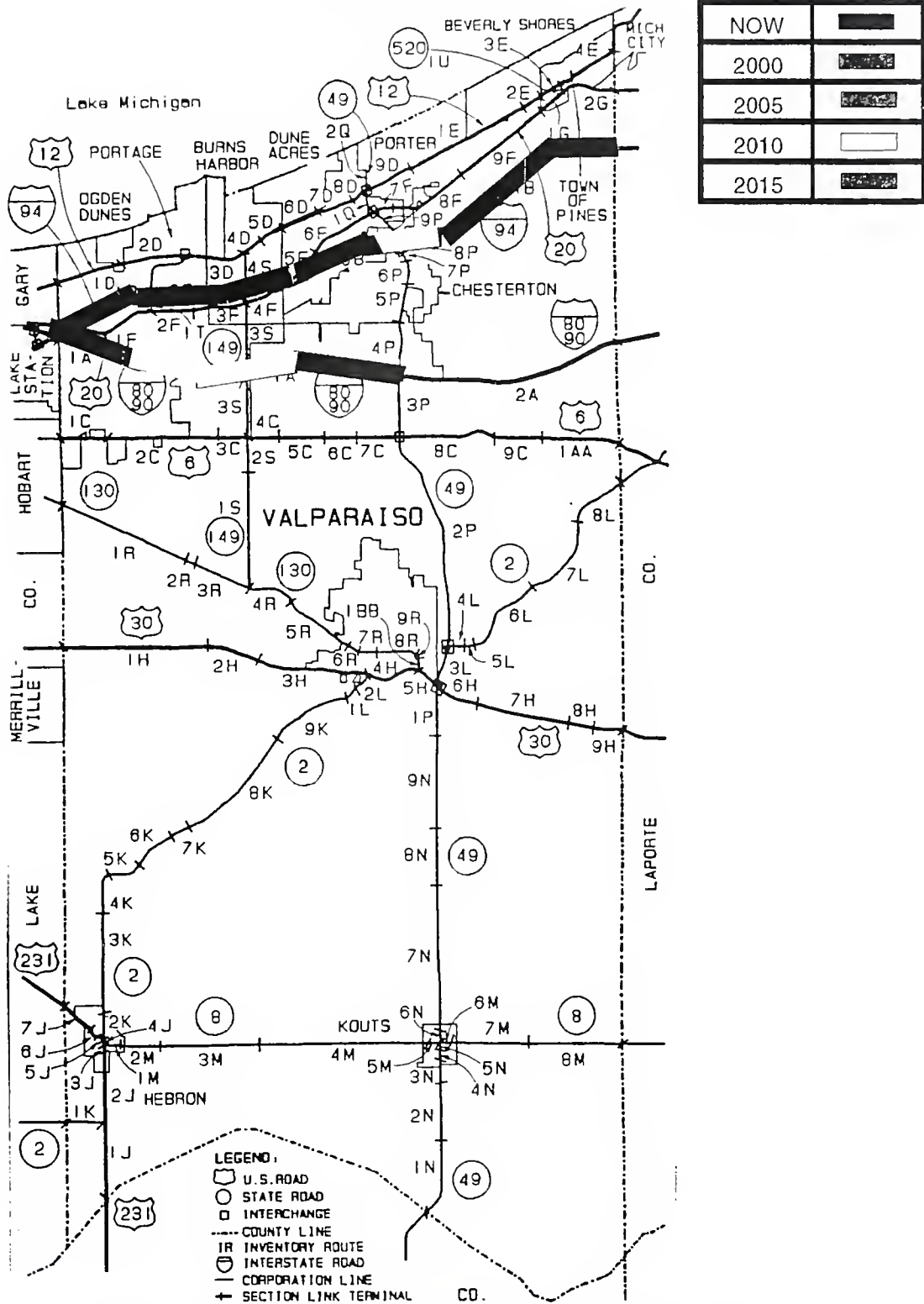
\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	35.47	0.00	5.65	15.76	24.11	27.89
UPA	117.01	0.00	0.00	0.00	0.00	0.00
RI	25.07	0.00	0.00	7.18	7.18	13.52
RPA	72.52	0.00	0.00	0.00	0.00	0.00
RMA	78.10	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	328.17	0.00	5.65	22.93	31.28	41.41

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS PORTER COUNTY



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 67 PUTNAM COUNTY

<b>STATE ROADS</b>	<b>215 KM</b>	<i>133 MILES</i>
1995 DAILY TRAVEL	1,745,444 VKT	1,084,598 VMT
1995 AM PEAK HOUR TRAVEL	73,664 VKT	45,774 VMT
1995 PM PEAK HOUR TRAVEL	83,893 VKT	52,130 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,748,654	2,034,283	2,372,389	2,773,320	3,249,548
AM PK-HR VKT	73,664	85,697	99,940	116,830	136,892
PM PK-HR VKT	83,893	97,596	113,816	133,051	155,899

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	32.7	32.7
LENGTH (mi)	0.0	0.0	0.0	20.3	20.3
LENGTH (%)	0.0%	0.0%	0.0%	15.2%	15.2%
AM PK-HR VKT	0	0	0	29,574	84,810
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	25.3%	62.0%
PM PK-HR VKT	0	0	0	80,792	98,178
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	60.7%	63.0%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	NONE				
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					

\* VKT = Vehicle Kilometers Travelled

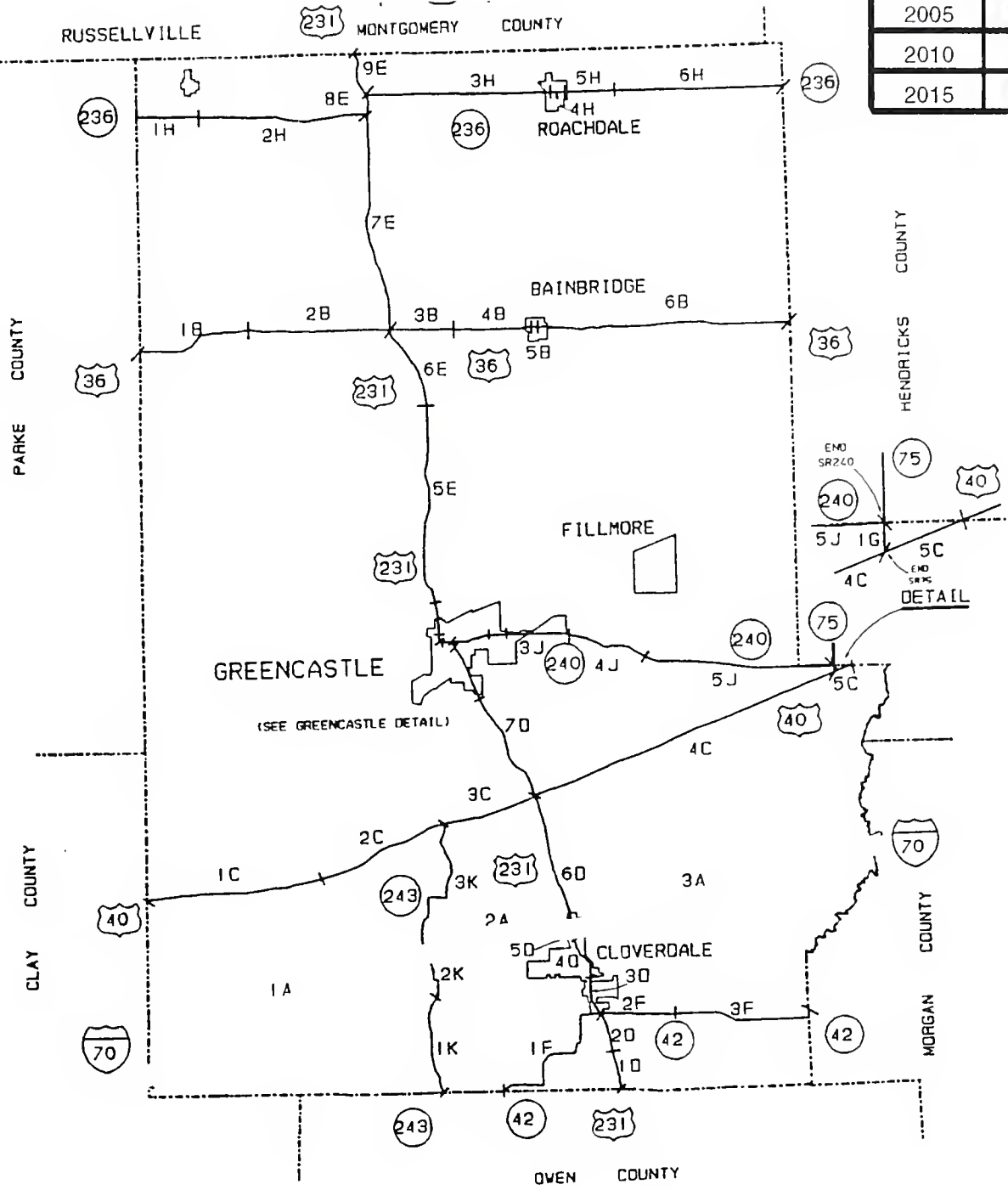
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	6.21	0.00	0.00	0.00	0.00	0.00
RI	36.14	0.00	0.00	0.00	32.73	32.73
RPA	78.15	0.00	0.00	0.00	0.00	0.00
RMA	94.14	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	214.65	0.00	0.00	0.00	32.73	32.73

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

# APPENDIX A CONGESTION MAPS PUTNAM COUNTY

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 71 ST. JOSEPH COUNTY

<b>STATE ROADS</b>	<b>323 KM</b>	<b>201 MILES</b>
1995 DAILY TRAVEL	4,232,610 VKT	2,630,094 VMT
1995 AM PEAK HOUR TRAVEL	174,345 VKT	108,336 VMT
1995 PM PEAK HOUR TRAVEL	199,191 VKT	123,775 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	4,232,610	4,693,339	5,234,137	5,873,619	6,635,287
AM PK-HR VKT	174,345	193,323	215,599	241,940	273,314
PM PK-HR VKT	199,191	220,874	246,324	276,419	312,264

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.2	0.2	0.8	11.0
LENGTH (mi)	0.0	0.1	0.1	0.5	6.8
LENGTH (%)	0.0%	0.1%	0.1%	0.3%	3.4%
AM PK-HR VKT	0	0	0	237	24,997
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.1%	9.1%
PM PK-HR VKT	0	242	255	1,170	33,286
PM PK-HR VKT (%)	0.0%	0.1%	0.1%	0.4%	10.7%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.00	8.14
LENGTH (mi)	0	0	0	0	5.06
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	2.5%
AM PK-HR VKT	NONE				
AM PK-HR VKT (%)	NONE				
PM PK-HR VKT	0	0	0	0	29,292
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	9.4%

\* VKT = Vehicle Kilometers Travelled

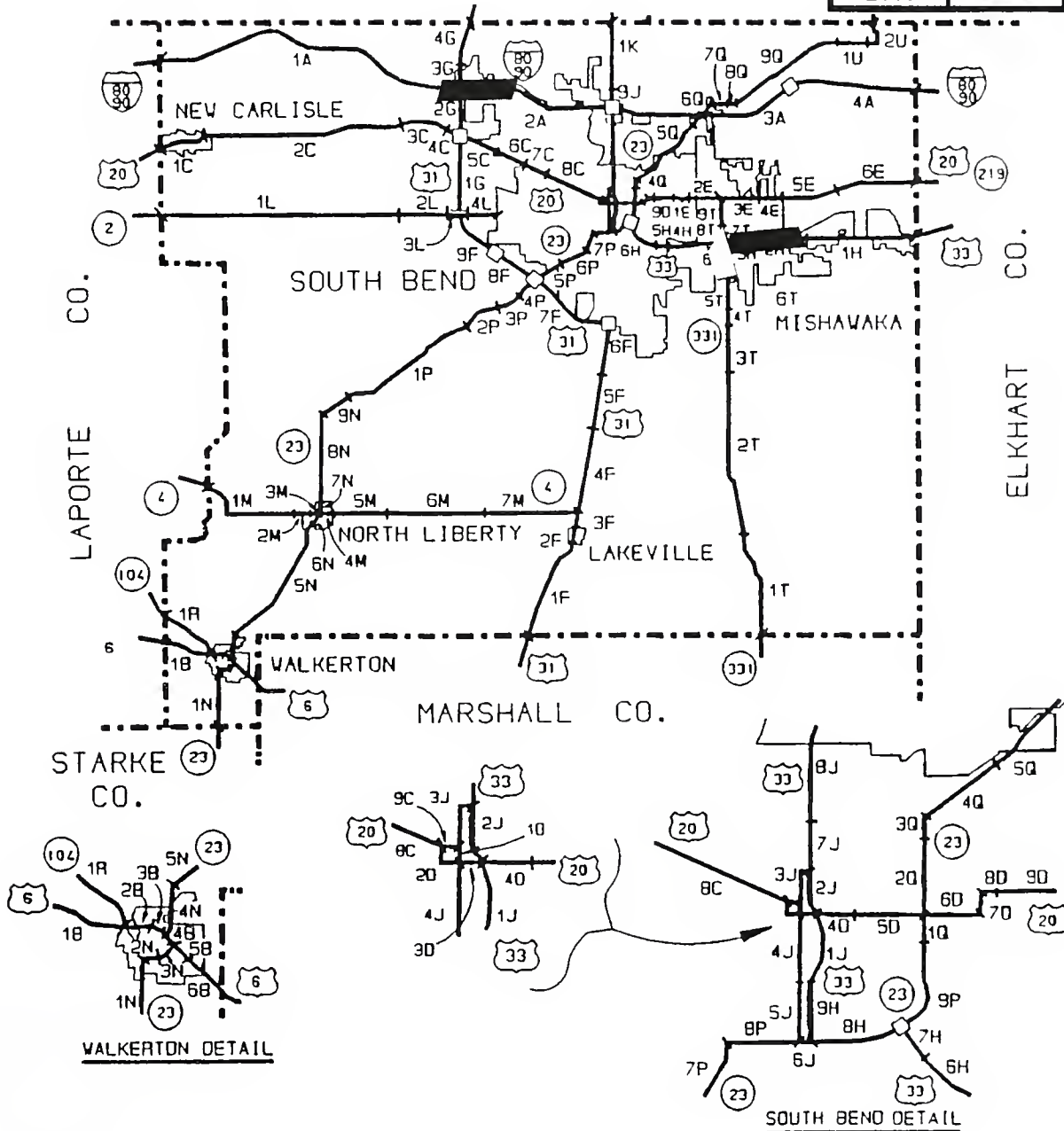
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	33.26	0.00	0.00	0.00	0.00	8.14
UPA	160.48	0.00	0.18	0.18	0.84	2.86
RI	15.87	0.00	0.00	0.00	0.00	0.00
RPA	30.54	0.00	0.00	0.00	0.00	0.00
RMA	82.61	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>322.76</b>	<b>0.00</b>	<b>0.18</b>	<b>0.18</b>	<b>0.84</b>	<b>11.01</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
ST. JOSEPH COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 72 SCOTT COUNTY

<b>STATE ROADS</b>	<b>138 KM</b>	<b>85 MILES</b>
1995 DAILY TRAVEL	953,668 VKT	592,598 VMT
1995 AM PEAK HOUR TRAVEL	40,036 VKT	24,878 VMT
1995 PM PEAK HOUR TRAVEL	45,336 VKT	28,171 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	953,668	1,130,606	1,345,364	1,606,722	1,925,614
AM PK-HR VKT	40,036	47,464	56,479	67,451	80,839
PM PK-HR VKT	45,336	53,747	63,956	76,381	91,541

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	7.3	15.8	18.6
LENGTH (mi)	0.0	0.0	4.6	9.8	11.6
LENGTH (%)	0.0%	0.0%	5.3%	11.5%	13.5%
AM PK-HR VKT	0	0	0	25,151	50,397
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	37.3%	62.3%
PM PK-HR VKT	0	0	18,894	47,364	65,603
PM PK-HR VKT (%)	0.0%	0.0%	29.5%	62.0%	71.7%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	1.71	12.31
LENGTH (mi)	0	0	0	1.06	7.65
LENGTH (%)	0.0%	0.0%	0.0%	1.2%	9.0%
AM PK-HR VKT	0	0	0	0	30,977
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	38.3%
PM PK-HR VKT	0	0	0	6,293	48,419
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	8.2%	52.9%

\* VKT =Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	7.32	0.00	0.00	0.00	4.99	4.99
UPA	9.83	0.00	0.00	0.00	0.00	0.00
RI	16.09	0.00	0.00	7.32	10.77	13.60
RPA	18.25	0.00	0.00	0.00	0.00	0.00
RMA	86.02	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	137.51	0.00	0.00	7.32	15.76	18.59

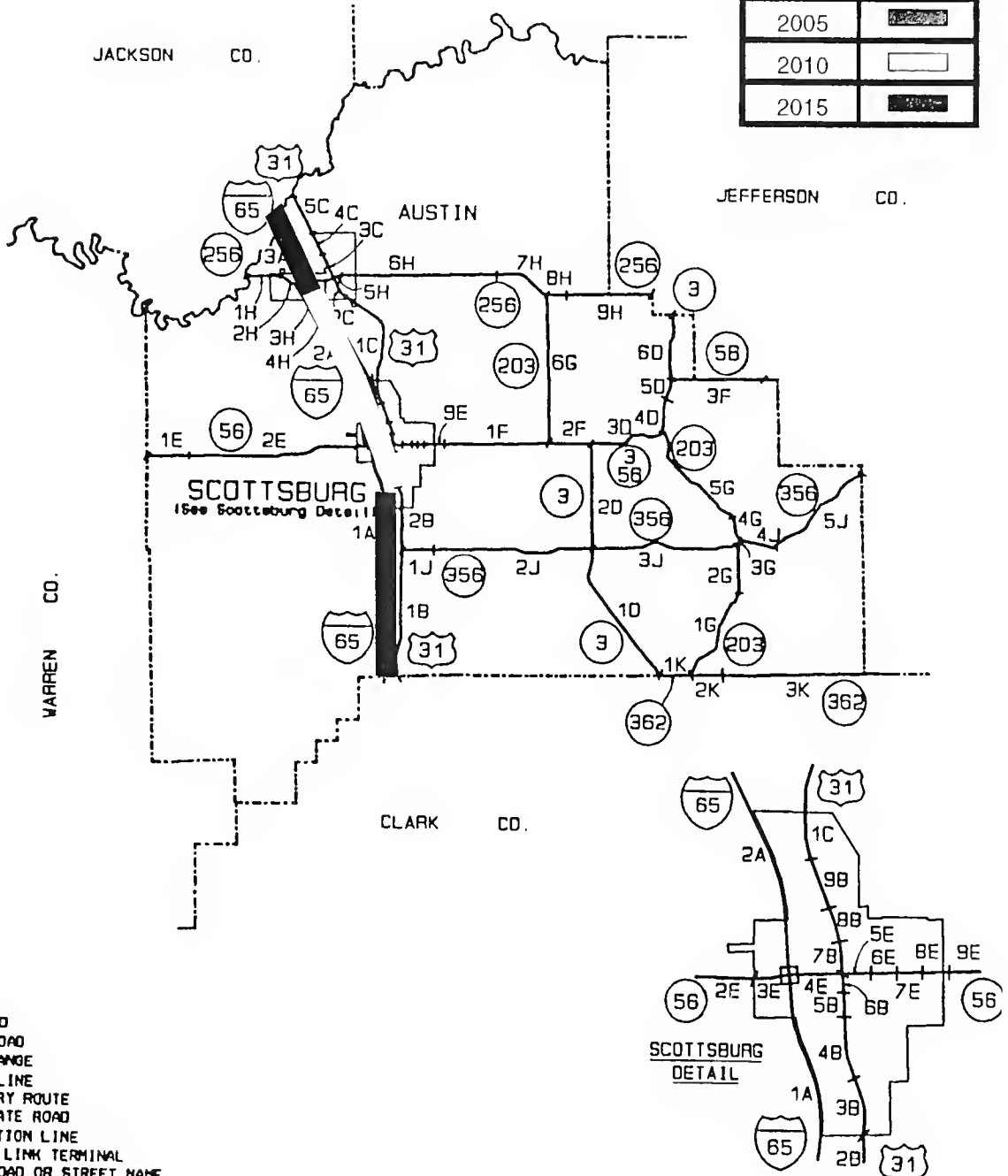
UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals



# APPENDIX A CONGESTION MAPS SCOTT COUNTY

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

## APPENDIX A CONGESTION DATA

### 73 SHELBY COUNTY

<b>STATE ROADS</b>	<b>157 KM</b>	<b>97 MILES</b>
1995 DAILY TRAVEL	1,700,048 VKT	1,056,390 VMT
1995 AM PEAK HOUR TRAVEL	70,589 VKT	43,863 VMT
1995 PM PEAK HOUR TRAVEL	81,741 VKT	50,793 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	1,703,258	2,019,593	2,405,612	2,881,901	3,457,599
AM PK-HR VKT	70,589	83,699	99,697	119,436	143,295
PM PK-HR VKT	81,741	96,922	115,448	138,306	165,934

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	7.0	25.5	27.1
LENGTH (mi)	0.0	0.0	4.4	15.9	16.8
LENGTH (%)	0.0%	0.0%	4.5%	16.3%	17.3%
AM PK-HR VKT	0	0	0	25,098	77,222
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	21.0%	53.9%
PM PK-HR VKT	0	0	17,109	68,445	89,973
PM PK-HR VKT (%)	0.0%	0.0%	14.8%	49.5%	54.2%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.00	17.24
LENGTH (mi)	0	0	0	0	10.71
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	11.0%
AM PK-HR VKT	0	0	0	0	0
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	0.0%
PM PK-HR VKT	0	0	0	0	61,593
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	37.1%






\* VKT = Vehicle Kilometers Travelled

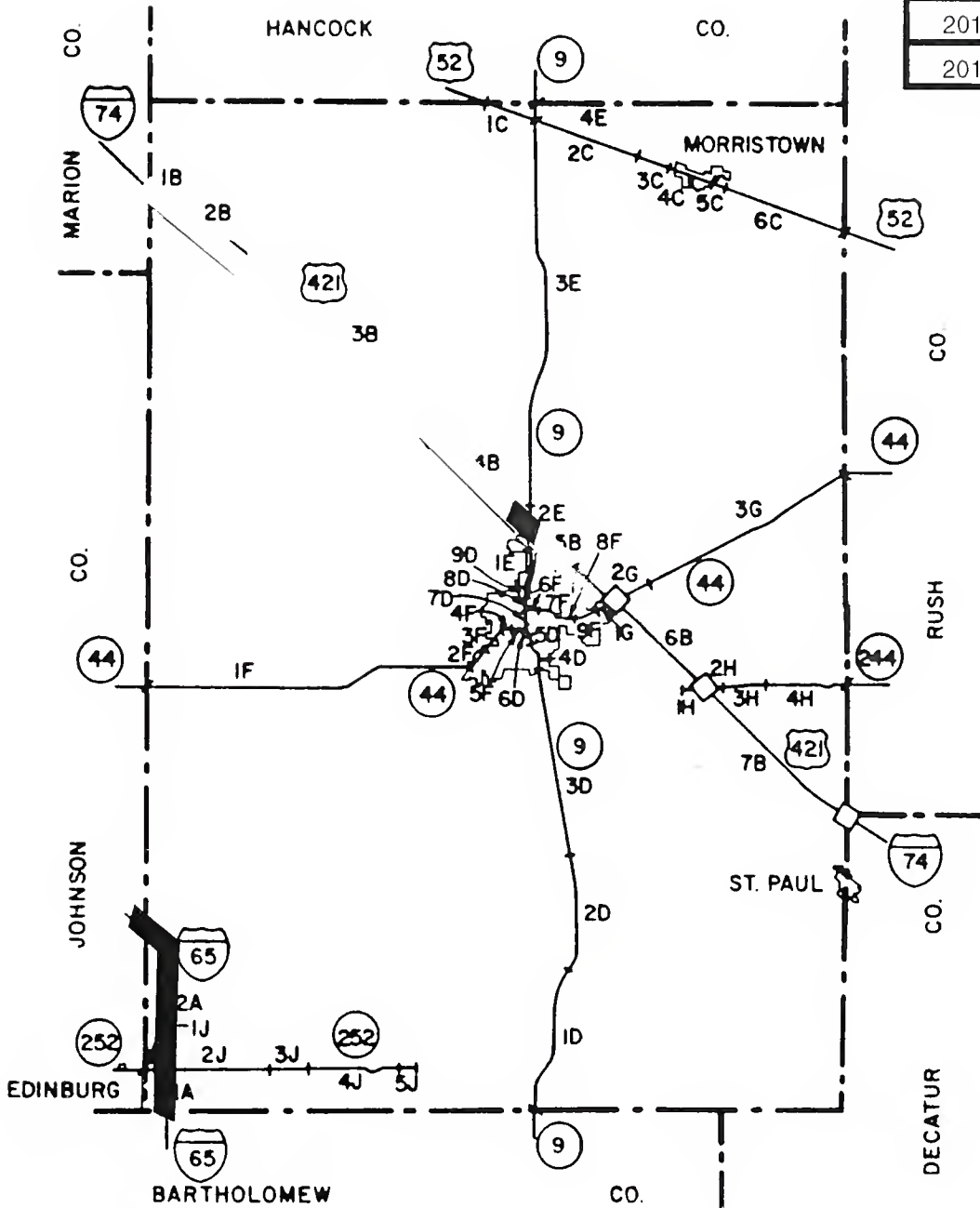
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	18.01	0.00	0.00	0.00	5.50	7.10
UPA	23.22	0.00	0.00	0.00	0.00	0.00
RI	37.13	0.00	0.00	7.02	20.00	20.00
RPA	61.35	0.00	0.00	0.00	0.00	0.00
RMA	16.93	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>156.63</b>	<b>0.00</b>	<b>0.00</b>	<b>7.02</b>	<b>25.51</b>	<b>27.10</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
SHELBY COUNTY**

NOW	
2000	
2005	
2010	
2015	



SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
*Color Added*

## APPENDIX A CONGESTION DATA

### 79 TIPPECANOE COUNTY

<b>STATE ROADS</b>	<b>305 KM</b>	<i>189 MILES</i>
1995 DAILY TRAVEL	3,325,447 VKT	2,066,394 VMT
1995 AM PEAK HOUR TRAVEL	138,711 VKT	86,193 VMT
1995 PM PEAK HOUR TRAVEL	158,494 VKT	98,486 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	3,325,447	3,759,818	4,265,149	4,859,627	5,561,743
AM PK-HR VKT	138,711	156,678	177,736	202,509	231,767
PM PK-HR VKT	158,494	179,023	203,085	231,391	264,822

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	1.8	10.9	29.6	39.9
LENGTH (mi)	0.0	1.1	6.8	18.4	24.8
LENGTH (%)	0.0%	0.6%	3.6%	9.7%	13.1%
AM PK-HR VKT	0	0	3,994	70,425	86,390
AM PK-HR VKT (%)	0.0%	0.0%	2.2%	34.8%	37.3%
PM PK-HR VKT	0	3,973	27,845	82,879	126,262
PM PK-HR VKT (%)	0.0%	2.2%	13.7%	35.8%	47.7%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	4.89	28.55
LENGTH (mi)	0	0	0	3.04	17.74
LENGTH (%)	0.0%	0.0%	0.0%	1.6%	9.4%
AM PK-HR VKT	0	0	0	10,741	19,787
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	5.3%	8.5%
PM PK-HR VKT	0	0	0	18,333	100,167
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	7.9%	37.8%

\* VKT = Vehicle Kilometers Travelled

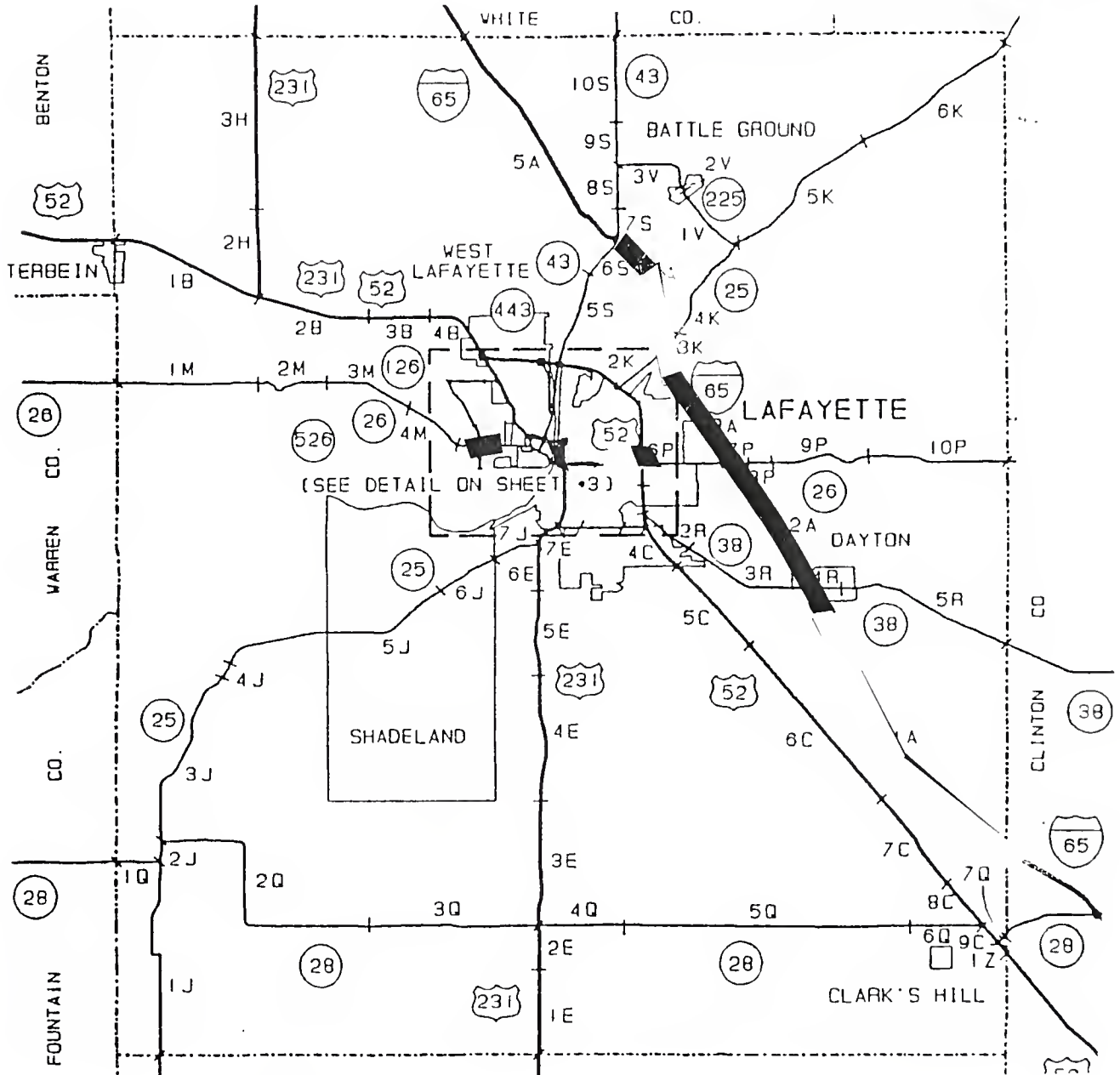
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	6.34	0.00	0.00	3.22	3.22	3.22
UPA	66.11	0.00	0.11	0.23	1.06	1.75
RI	39.22	0.00	1.67	7.42	25.33	34.68
RPA	127.41	0.00	0.00	0.00	0.00	0.26
RMA	65.68	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>304.75</b>	<b>0.00</b>	<b>1.79</b>	<b>10.86</b>	<b>29.61</b>	<b>39.91</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
TIPPECANOE COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added**

## APPENDIX A CONGESTION DATA

### 84 VIGO COUNTY

<b>STATE ROADS</b>	<b>225 KM</b>	<b>140 MILES</b>
1995 DAILY TRAVEL	2,520,536 VKT	1,566,231 VMT
1995 AM PEAK HOUR TRAVEL	103,820 VKT	64,513 VMT
1995 PM PEAK HOUR TRAVEL	118,743 VKT	73,785 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,520,536	2,843,799	3,229,597	3,693,137	4,253,694
AM PK-HR VKT	103,820	117,135	133,026	152,119	175,208
PM PK-HR VKT	118,743	133,972	152,147	173,984	200,392

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	15.4	22.5
LENGTH (mi)	0.0	0.0	0.0	9.6	14.0
LENGTH (%)	0.0%	0.0%	0.0%	6.9%	10.0%
AM PK-HR VKT	0	0	0	0	45,560
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	26.0%
PM PK-HR VKT	0	0	38	42,943	73,820
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	24.7%	36.8%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.00	0.00	0.00	0.00	7.79
LENGTH (mi)	0	0	0	0	4.84
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	3.5%
AM PK-HR VKT	0	0	0	0	25,175
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	14.4%
PM PK-HR VKT	0	0	0	0	29,799
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	14.9%






\* VKT = Vehicle Kilometers Travelled

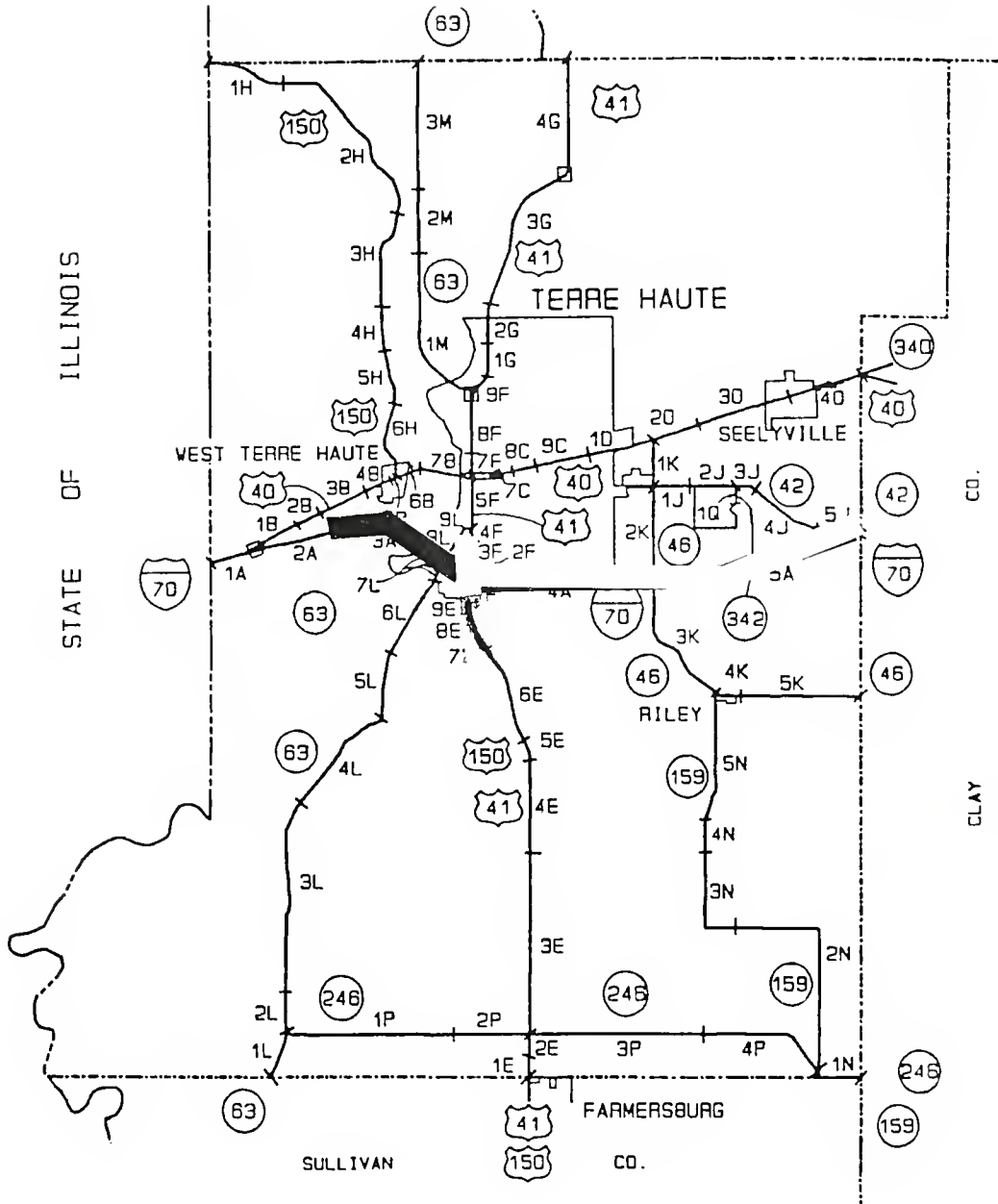
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	23.61	0.00	0.00	0.00	7.79	13.33
UPA	73.30	0.00	0.00	0.02	0.02	1.50
RI	7.64	0.00	0.00	0.00	7.64	7.64
RPA	44.09	0.00	0.00	0.00	0.00	0.00
RMA	75.96	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>224.61</b>	<b>0.00</b>	<b>0.00</b>	<b>0.02</b>	<b>15.45</b>	<b>22.47</b>

UI=Urban Interstate; UPA=Urban Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Principal & Minor Arterials, RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
VIGO COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added**

## APPENDIX A CONGESTION DATA

### 89 WAYNE COUNTY

<b>STATE ROADS</b>	<b>242 KM</b>	<b>151 MILES</b>
1995 DAILY TRAVEL	2,218,184 VKT	1,378,353 VMT
1995 AM PEAK HOUR TRAVEL	95,622 VKT	59,418 VMT
1995 PM PEAK HOUR TRAVEL	102,748 VKT	63,846 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	2,218,184	2,578,733	3,014,322	3,556,920	4,186,628
AM PK-HR VKT	95,622	111,165	129,942	153,332	180,478
PM PK-HR VKT	102,748	119,449	139,626	164,760	193,928

### CONGESTION SUMMARY

#### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (kms)	0.0	0.0	0.0	30.5	37.1
LENGTH (mi)	0.0	0.0	0.0	19.0	23.0
LENGTH (%)	0.0%	0.0%	0.0%	12.6%	15.3%
AM PK-HR VKT	0	0	0	0	98,571
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	54.6%
PM PK-HR VKT	0	0	0	80,105	116,974
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	48.6%	60.3%

#### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (kms)	0.00	0.00	0.00	0.00	14.47
LENGTH (mi)	0	0	0	0	8.99
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	6.0%
AM PK-HR VKT	0	0	0	0	20,606
AM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	11.4%
PM PK-HR VKT	0	0	0	0	55,650
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	28.7%

\* VKT = Vehicle Kilometers Travelled

ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI*	24.25	0.00	0.00	0.00	14.47	14.47
UPA	42.45	0.00	0.00	0.00	0.00	0.00
RI*	25.39	0.00	0.00	0.00	16.06	22.59
RPA	80.00	0.00	0.00	0.00	0.00	0.00
RMA	70.26	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>242.36</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>30.53</b>	<b>37.06</b>

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

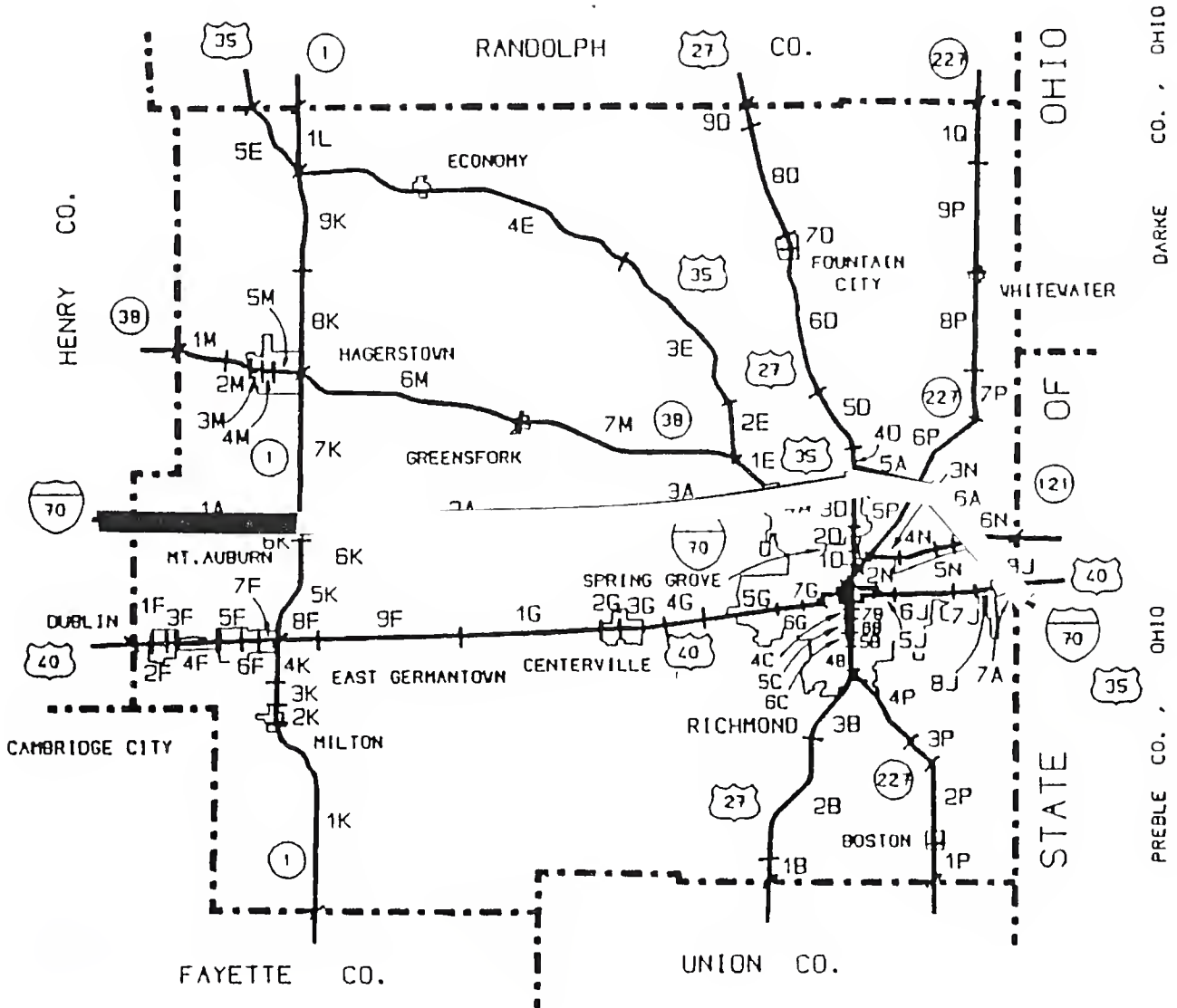
RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

\*There are 12.56 kilometers on 31 ramps associated with the interstate accounting for the difference in congested and non congested interstate



**APPENDIX A  
CONGESTION MAPS  
WAYNE COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.**  
**Indiana Department of Transportation**  
*Color Added*

# CONGESTION DATA

## 91 WHITE COUNTY

<b>STATE ROADS</b>	<b>223 KM</b>	<b>138 MILES</b>
1995 DAILY TRAVEL	480,387 VKT	298,507 VMT
1995 AM PEAK HOUR TRAVEL	20,544 VKT	12,766 VMT
1995 PM PEAK HOUR TRAVEL	22,641 VKT	14,069 VMT

YEAR	1995	2000	2005	2010	2015
DAILY VKT	480,387	542,369	613,312	694,981	788,484
AM PK-HR VKT	20,544	23,195	26,229	29,721	33,720
PM PK-HR VKT	22,641	25,562	28,906	32,755	37,162

## CONGESTION SUMMARY

### USING BENCHMARK V/C

YEAR	1995	2000	2005	2010	2015
LENGTH (km)	0.0	0.0	0.0	0.0	24.5
LENGTH (mi)	0.0	0.0	0.0	0.0	15.2
LENGTH (%)	0.0%	0.0%	0.0%	0.0%	11.0%
AM PK-HR VKT	NONE				
AM PK-HR VKT (%)					
PM PK-HR VKT	0	0	0	0	6,259
PM PK-HR VKT (%)	0.0%	0.0%	0.0%	0.0%	16.8%

### USING V/C = 1

YEAR	1995	2000	2005	2010	2015
LENGTH (km)					
LENGTH (mi)					
LENGTH (%)					
AM PK-HR VKT					
AM PK-HR VKT (%)					
PM PK-HR VKT					
PM PK-HR VKT (%)					

\* VKT =Vehicle Kilometers Travelled

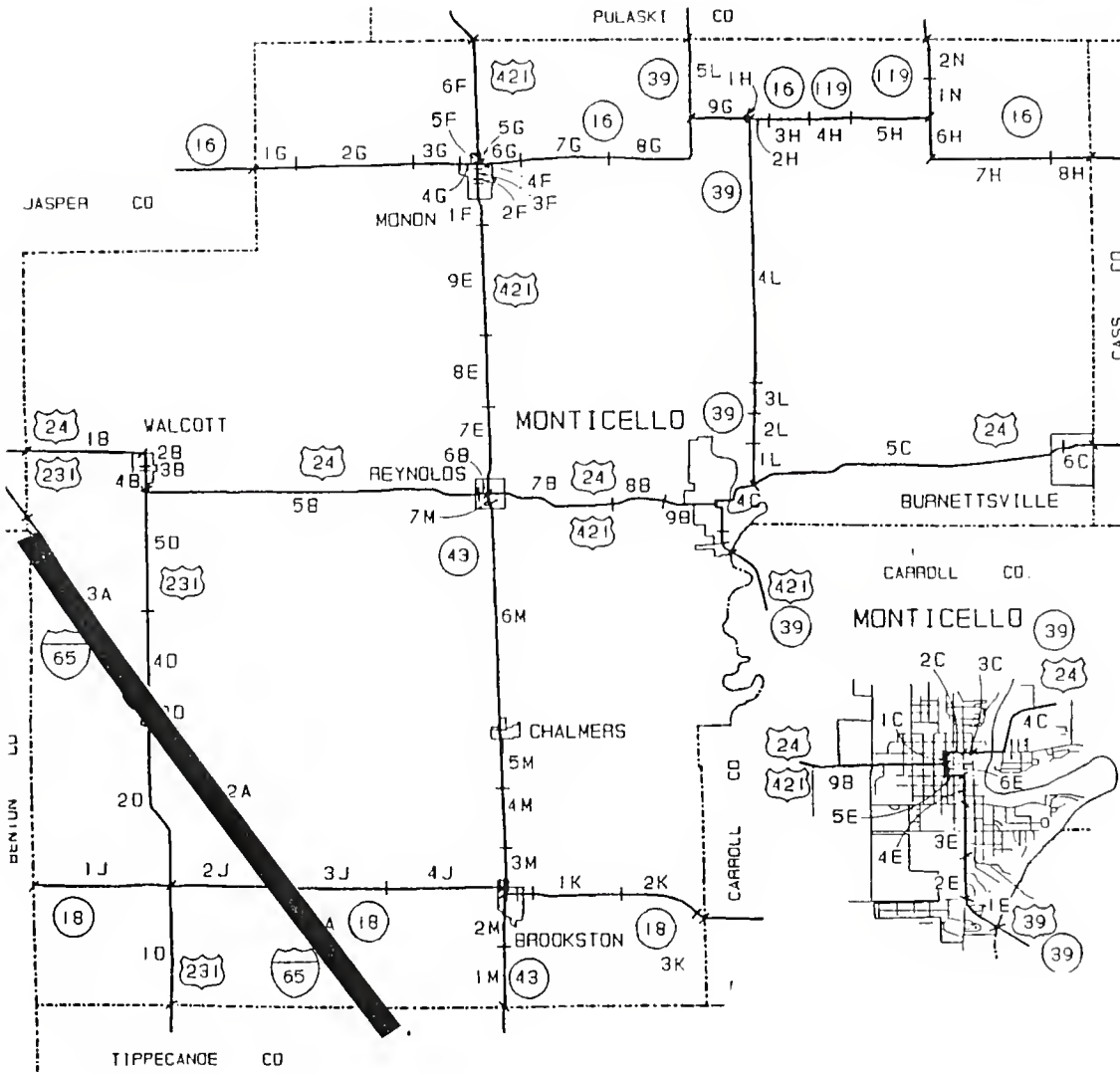
ROAD CLASS	TOTAL KM BY TYPE	CONGESTED HIGHWAY KILOMETERS BY YEAR (V/C = BENCHMARK)				
		1995	2000	2005	2010	2015
UI	0.00	0.00	0.00	0.00	0.00	0.00
UPA	5.68	0.00	0.00	0.00	0.00	0.00
RI	28.29	0.00	0.00	0.00	0.00	24.49
RPA	81.67	0.00	0.00	0.00	0.00	0.00
RMA	106.92	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>	222.57	0.00	0.00	0.00	0.00	24.49

UI=Urban Interstate; UPA=Urban Freeways, Principal & Minor Arterials, Collectors & Locals

RI=Rural Interstate; RPA=Rural Freeways, Principal & Minor Arterials; RMA=Rural Major & Minor Collectors and Locals

**APPENDIX A  
CONGESTION MAPS  
WHITE COUNTY**

NOW	
2000	
2005	
2010	
2015	



**SOURCE: County Flow Maps, Highway Traffic Statistics, 1996.  
Indiana Department of Transportation  
Color Added**

**APPENDIX B**  
**CONGESTION DATA**  
**COUNTIES WITHOUT CONGESTION**

PERIOD THROUGH 2015  
NUMBER OF COUNTIES: 51

**APPENDIX B  
INDIANA CONGESTION ANALYSIS  
STATEWIDE SUMMARY COUNTIES WITH NO CONGESTION BETWEEN NOW AND 2015**

NUMBER OF COUNTIES		51			
STATE ROADS		8678.94 KILOMETERS			
YEAR	1995	2000	2005	2010	2015
DAILY VKT	40,946,115	45,823,981	51,423,691	57,699,350	63,606,120
AM PEAK-HOUR VKT	1,724,824	1,930,805	2,174,550	2,445,244	2,756,678
PM PEAK-HOUR VKT	1,953,955	2,187,363	2,463,692	2,770,495	3,123,508

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE		BY TYPE	
UI	47.22		29.34	
UPA	483.35		300.35	
RI	442.16		274.75	
RPA	3599.26		2236.54	
RMA	4106.95		2552.01	
<b>TOTAL</b>	<b>8678.94</b>		<b>5392.99</b>	

**FUNCTIONAL CLASSIFICATION based on GUNAWARDENA & SINHA**

URBAN 1	Interstate
URBAN 2	Freeways, Principal & Minor Arterials & Collectors
RURAL 3	Interstate
RURAL 4	Freeways, Principal & Minor Arterials;
RURAL 5	Major & Minor Collectors and Locals

**APPENDIX B  
CONGESTION DATA  
COUNTIES WITHOUT CONGESTION  
1995 - 2015**

**SUMMARY #1**

NUMBER OF COUNTIES		1398.87 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	5,567,121	6,277,852	7,101,182	8,052,569	
AM PEAK-HOUR VKT	235,136	265,182	299,986	340,206	
PM PEAK-HOUR VKT	265,671	299,630	338,971	384,438	

**01 - ADAMS COUNTY**

STATE ROADS		176.62 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	801,931	879,480	964,957	1,163,167	
AM PK-HR VKT	33,776	37,043	40,643	48,991	
PM PK-HR VKT	38,243	41,941	46,017	55,469	

**05 - BLACKFORD COUNTY**

STATE ROADS		70.13 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	233,179	254,155	277,194	302,514	
AM PK-HR VKT	9,791	10,671	11,639	13,871	
PM PK-HR VKT	11,046	12,040	13,131	15,650	

**08 - CARROLL COUNTY**

STATE ROADS		164.58 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	568,271	627,829	693,748	847,524	
AM PK-HR VKT	24,044	26,564	29,353	35,860	
PM PK-HR VKT	27,245	30,100	33,260	40,633	

**14 - DAVIES COUNTY**

STATE ROADS		134.75 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	612,542	677,188	749,147	918,576	
AM PK-HR VKT	26,135	28,893	31,963	39,192	
PM PK-HR VKT	28,648	31,671	35,036	42,960	

**21 - FAYETTE COUNTY**

STATE ROADS		60.67 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	352,264	370,783	394,008	445,391	
AM PK-HR VKT	14,638	15,408	16,373	18,508	
PM PK-HR VKT	16,584	17,456	19,719	20,969	

**04 - BENTON COUNTY**

STATE ROADS		178.12 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	352,878	390,644	433,520	481,964	
AM PK-HR VKT	14,977	16,580	18,400	20,456	
PM PK-HR VKT	16,841	18,643	20,689	23,001	

**07 - BROWN COUNTY**

STATE ROADS		86.56 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	322,932	355,012	390,303	429,130	
AM PK-HR VKT	13,559	14,905	16,387	18,017	
PM PK-HR VKT	15,657	17,212	18,923	20,805	

**13 - CRAWFORD COUNTY**

STATE ROADS		170.70 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	616,013	729,881	865,791	1,222,314	
AM PK-HR VKT	26,303	31,165	36,968	52,191	
PM PK-HR VKT	29,201	34,598	41,041	57,941	

**16 - DECATUR COUNTY**

STATE ROADS		134.67 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	1,015,334	1,183,928	1,384,680	1,910,110	
AM PK-HR VKT	42,597	49,670	58,093	80,137	
PM PK-HR VKT	49,058	57,204	66,903	92,290	

**23 - FOUNTAIN COUNTY**

STATE ROADS		222.07 KILOMETERS			
YEAR	1995	2000	2010	2015	
DAILY VKT	691,778	808,952	947,833	1,308,689	
AM PK-HR VKT	29,316	34,282	40,167	55,460	
PM PK-HR VKT	33,150	38,765	45,420	62,712	

**APPENDIX B  
COUNTIES WITHOUT CONGESTION**

**SUMMARY #2**

NUMBER OF COUNTIES		2216.86 KILOMETERS				
		KILOMETERS				
YEAR		1995	2000	2005	2010	2015
DAILY VKT		11,702,411	13,067,514	14,814,463	16,601,819	18,652,837
AM PEAK-HOUR VKT		492,658	550,144	623,704	698,970	785,338
PM PEAK-HOUR VKT		557,652	622,801	706,287	791,638	889,601

**25 - FULTON COUNTY**

STATE ROADS		160.95 KILOMETERS				
YEAR		2000	2005	2010	2015	
DAILY VKT		610,687	657,073	713,896	776,105	
AM PK-HR VKT		23,427	25,716	27,669	30,062	32,681
PM PK-HR VKT		26,149	28,704	30,884	33,555	36,479

**26 - GIBSON COUNTY**

STATE ROADS		233.83 KILOMETERS				
YEAR		1995	2000	2005	2010	2015
DAILY VKT		1,380,427	1,528,213	1,897,305	2,098,504	2,324,823
AM PK-HR VKT		58,092	64,312	79,844	88,311	97,835
PM PK-HR VKT		66,482	73,599	91,375	101,065	111,964

**28 - GREENE COUNTY**

STATE ROADS		267.76 KILOMETERS				
YEAR		2000	2005	2010	2015	
DAILY VKT		1,005,793	1,116,921	1,240,894	1,379,248	
AM PK-HR VKT		38,759	43,021	47,774	53,077	58,995
PM PK-HR VKT		42,471	47,142	52,350	58,161	64,646

**34 - HOWARD COUNTY**

STATE ROADS		123.26 KILOMETERS				
YEAR		1995	2000	2005	2010	2015
DAILY VKT		1,129,146	1,218,224	1,315,166	1,420,734	1,535,774
AM PK-HR VKT		47,056	50,768	54,808	59,208	64,002
PM PK-HR VKT		53,306	57,512	62,088	67,072	72,503

**35 - HUNTINGTON COUNTY**

STATE ROADS		295.29 KILOMETERS				
YEAR		2000	2005	2010	2015	
DAILY VKT		1,771,957	2,050,522	2,379,887	2,770,341	
AM PK-HR VKT		74,700	86,444	100,329	116,789	
PM PK-HR VKT		84,929	98,280	114,066	132,781	

**38 - JAY COUNTY**

STATE ROADS		153.75 KILOMETERS				
YEAR		1995	2000	2005	2010	2015
DAILY VKT		477,590	523,424	573,956	629,693	691,198
AM PK-HR VKT		20,126	22,057	24,186	26,535	29,127
PM PK-HR VKT		22,698	24,876	27,277	29,926	32,849

**39 - JEFFERSON COUNTY**

STATE ROADS		198.12 KILOMETERS				
YEAR		1995	2000	2005	2010	2015
DAILY VKT		747,050	816,586	893,150	977,434	1,070,330
AM PK-HR VKT		31,425	34,350	37,570	41,116	45,024
PM PK-HR VKT		35,425	38,722	42,352	46,349	50,755

**40 - JENNINGS COUNTY**

STATE ROADS		116.27 KILOMETERS				
YEAR		1995	2000	2005	2010	2015
DAILY VKT		614,242	669,526	730,077	796,421	869,134
AM PK-HR VKT		25,700	28,013	30,546	33,322	36,365
PM PK-HR VKT		29,431	32,079	34,981	38,159	41,643

**42 - KNOX COUNTY**

STATE ROADS		247.69 KILOMETERS				
YEAR		2000	2005	2010	2015	
DAILY VKT		1,450,632	1,646,919	1,878,395	2,153,112	
AM PK-HR VKT		60,630	68,834	78,509	89,991	
PM PK-HR VKT		61,438	69,457	78,855	89,938	103,092

**43 - KOSCIUSKO COUNTY**

STATE ROADS		225 KILOMETERS				
YEAR		1995	2000	2005	2010	2015
DAILY VKT		1,521,407	1,673,417	1,842,007	2,029,127	2,236,978
AM PK-HR VKT		64,294	70,718	77,843	85,751	94,534
PM PK-HR VKT		71,779	78,950	86,904	95,733	105,539

**44 - LAGRANGE COUNTY**

STATE ROADS		194.89 KILOMETERS				
YEAR		1995	2000	2005	2010	2015
DAILY VKT		1,551,195	1,799,055	2,091,387	2,436,834	2,845,794
AM PK-HR VKT		65,407	75,858	88,185	102,750	119,994
PM PK-HR VKT		74,867	86,830	100,939	117,612	137,350

**APPENDIX B  
CONGESTION DATA  
COUNTIES WITH NO CONGESTION  
1995 - 2015**

**SUMMARY #3**

NUMBER OF COUNTIES		1577.53 KILOMETERS			
		1995	2000	2010	2015
DAILY VKT	6,108,950	7,403,371	8,162,471	9,008,953	
AM PEAK-HOUR VKT	257,375	318,860	355,690	397,426	
PM PEAK-HOUR VKT	292,700	362,593	404,458	451,900	

**47 LAWRENCE COUNTY**

STATE ROADS		208.92 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	1,051,216	1,181,174	1,167,881	1,230,984	1,297,495
AM PK-HR VKT	43,914	49,343	55,682	63,131	71,941
PM PK-HR VKT	50,055	56,243	63,468	71,958	82,001

**52 MIAMI COUNTY**

STATE ROADS		201.50 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	990,839	1,088,910	1,196,895	1,315,816	1,446,802
AM PK-HR VKT	41,656	45,779	50,319	55,319	60,825
PM PK-HR VKT	47,796	52,527	57,736	63,472	69,791

**58 OHIO COUNTY**

STATE ROADS		46.25 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	101,544	112,242	124,089	137,212	151,751
AM PK-HR VKT	4,300	4,753	5,254	5,810	6,426
PM PK-HR VKT	4,863	5,375	5,943	6,571	7,267

**60 OWEN COUNTY**

STATE ROADS		138.01 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	542,623	598,103	659,339	726,940	801,577
AM PK-HR VKT	22,876	25,215	27,797	30,647	33,793
PM PK-HR VKT	26,152	28,826	31,778	35,036	38,633

**62 PERRY COUNTY**

STATE ROADS		219.38 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	625,036	714,991	820,257	943,731	1,088,893
AM PK-HR VKT	26,319	30,106	34,539	39,738	45,850
PM PK-HR VKT	29,947	34,257	39,300	45,216	52,171

**51 MARTIN COUNTY**

STATE ROADS		117.69 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	382,521	420,557	462,403	508,447	559,114
AM PK-HR VKT	16,063	17,660	19,417	21,350	23,478
PM PK-HR VKT	18,542	20,386	22,414	24,646	27,102

**57 NOBLE COUNTY**

STATE ROADS		182.33 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	1,071,323	1,178,447	1,296,712	1,427,316	1,571,587
AM PK-HR VKT	45,197	49,716	54,705	60,215	66,302
PM PK-HR VKT	51,236	56,359	62,015	68,261	75,161

**59 ORANGE COUNTY**

STATE ROADS		140.59 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	437,909	495,695	561,107	635,151	718,966
AM PK-HR VKT	18,488	20,927	23,689	26,815	30,354
PM PK-HR VKT	21,062	23,841	26,987	30,549	34,580

**61 PARKE COUNTY**

STATE ROADS		143.77 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	435,843	479,564	527,714	580,751	639,174
AM PK-HR VKT	18,324	20,163	22,187	24,417	26,873
PM PK-HR VKT	21,089	23,205	25,534	28,101	30,928

**63 - PIKE COUNTY**

STATE ROADS		179.08 KILOMETERS			
YEAR		2000	2005	2010	2015
DAILY VKT	470,097	525,231	586,971	656,124	733,596
AM PK-HR VKT	20,240	22,613	25,271	28,249	31,584
PM PK-HR VKT	21,958	24,534	27,418	30,648	34,266



**APPENDIX B  
CONGESTION DATA  
COUNTIES WITH NO CONGESTION  
1995 - 2015**

**SUMMARY #4**

NUMBER OF COUNTIES		10				
STATE ROADS		1845.38 KILOMETERS				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	7,775,758	8,799,046	9,977,301	11,337,089	12,909,978	
AM PEAK-HOUR VKT	329,091	372,400	422,267	479,816	546,383	
PM PEAK-HOUR VKT	371,447	420,325	476,604	541,553	616,681	

**65 POSEY COUNTY**

STATE ROADS		160.69				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	904,610	1,027,549	1,170,225	1,336,202	1,529,738	
AM PK-HR VKT	38,213	43,406	49,433	56,445	64,620	
PM PK-HR VKT	43,108	48,966	55,765	63,674	72,897	

**66 PULASKI COUNTY**

STATE ROADS		152.05				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	374,433	412,751	455,049	501,747	553,312	
AM PK-HR VKT	15,788	17,403	19,187	21,156	23,330	
PM PK-HR VKT	18,043	19,889	21,927	24,178	26,662	

**68 - RANDOLPH COUNTY**

STATE ROADS		207.81				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	667,490	741,112	823,726	916,610	1,021,264	
AM PK-HR VKT	28,321	31,445	34,950	38,891	43,332	
PM PK-HR VKT	31,638	35,128	39,043	43,446	48,407	

**69 RIPLEY COUNTY**

STATE ROADS		238.39				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	949,953	1,079,202	1,228,061	1,399,834	1,598,432	
AM PK-HR VKT	40,437	45,939	52,276	59,588	68,042	
PM PK-HR VKT	45,175	51,321	58,400	66,568	76,013	

**70 RUSH COUNTY**

STATE ROADS		132.51				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	489,006	534,324	584,013	638,507	698,284	
AM PK-HR VKT	20,473	22,370	24,450	26,732	29,234	
PM PK-HR VKT	23,538	25,719	28,111	30,734	33,611	

**74 SPENCER COUNTY**

STATE ROADS		243.33				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	1,010,644	1,139,313	1,286,278	1,454,464	1,647,311	
AM PK-HR VKT	42,875	48,333	54,568	61,703	69,884	
PM PK-HR VKT	48,295	54,443	61,466	69,503	78,718	

**75 STARKE COUNTY**

STATE ROADS		168.48				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	656,368	727,606	806,753	894,706	992,469	
AM PK-HR VKT	27,917	30,947	34,314	38,055	42,213	
PM PK-HR VKT	31,226	34,616	38,381	42,565	47,216	

**76 STEUBEN COUNTY**

STATE ROADS		229.45				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	1,804,566	2,122,601	2,502,514	2,956,939	3,501,157	
AM PK-HR VKT	76,219	89,652	105,698	124,891	147,877	
PM PK-HR VKT	86,343	101,560	119,738	141,480	167,519	

**77 SULLIVAN COUNTY**

STATE ROADS		172.69				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	748,897	825,795	910,713	1,004,501	1,108,105	
AM PK-HR VKT	31,592	34,836	38,418	42,374	46,745	
PM PK-HR VKT	36,061	39,764	43,853	48,370	53,358	

**78 SWITZERLAND COUNTY**

STATE ROADS		139.99				
KILOMETERS		2010				
YEAR	1995	2000	2005	2010	2015	
DAILY VKT	169,791	188,792	209,970	233,579	259,907	
AM PK-HR VKT	7,256	8,068	8,973	9,982	11,107	
PM PK-HR VKT	8,021	8,919	9,919	11,035	12,278	

ROAD CLASSIFICATION FOR COUNTIES WITH NO CONGESTION

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	47.22	29.34
UPA	483.35	300.35
RI	442.16	274.75
RPA	3,599.26	2,236.54
RMA	4,106.95	2,552.01
TOTAL	8,678.94	5,392.99

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	0.00	0.00
RI	0.00	0.00
RPA	107.65	66.89
RMA	56.94	35.38
TOTAL	164.58	102.27

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	0.00	0.00
RI	31.83	19.78
RPA	0.63	0.39
RMA	138.24	85.90
TOTAL	170.70	106.07

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	11.65	7.24
RI	0.00	0.00
RPA	38.62	24.00
RMA	84.47	52.49
TOTAL	134.75	83.73

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	2.04	1.27
UPA	8.84	5.49
RI	40.15	24.95
RPA	66.82	41.52
RMA	16.82	10.45
TOTAL	134.67	83.68

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	13.26	8.24
RI	0.00	0.00
RPA	65.93	40.97
RMA	97.43	60.54
TOTAL	176.62	109.75

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	0.00	0.00
RI	0.00	0.00
RPA	63.73	39.60
RMA	114.39	71.08
TOTAL	178.12	110.68

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	12.67	7.87
RI	0.00	0.00
RPA	33.76	20.98
RMA	23.70	14.73
TOTAL	70.13	43.58

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	0.00	0.00
RI	0.00	0.00
RPA	71.97	44.72
RMA	14.60	9.07
TOTAL	86.56	53.79

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	24.03	14.93
RI	0.00	0.00
RPA	26.65	16.56
RMA	9.99	6.21
TOTAL	60.67	37.70

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	0.00	0.00
RI	30.09	18.70
RPA	51.95	32.28
RMA	140.03	87.01
TOTAL	222.07	137.99

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	10.94	6.80
RI	0.00	0.00
RPA	80.75	50.18
RMA	69.25	43.03
TOTAL	160.95	100.01

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UI	0.00	0.00
UPA	7.69	4.78
RI	10.41	6.47
RPA	104.07	64.67
RMA	111.65	69.38
TOTAL	233.83	145.30

UI=Urban Interstate  
 RPA=Rural Freeways, Principal & Minor Arterials,  
 RMA=Rural Major & Minor Collectors and Locals

01 - ADAMS COUNTY

04 - BENTON COUNTY

05 - BLACKFORD COUNTY

07 - BROWN COUNTY

08 - CARROLL COUNTY

13 - CRAWFORD COUNTY

14 - DAVIESS COUNTY

16 - DECATUR COUNTY

21 - FAYETTE COUNTY

23 - FOUNTAIN COUNTY

25 - FULTON COUNTY

26 - GIBSON COUNTY

**ROAD CLASSIFICATION FOR COUNTIES WITH NO CONGESTION**  
(continued)

28 - GREENE COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	8.27	5.14
RI	0.00	0.00
RPA	91.59	56.91
RMA	167.90	104.33
<b>TOTAL</b>	<b>267.76</b>	<b>166.38</b>

40 - JENNINGS COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	13.84	8.60
RI	0.00	0.00
RPA	66.85	41.54
RMA	35.58	22.11
<b>TOTAL</b>	<b>116.27</b>	<b>72.25</b>

51 - MARTIN COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	0.00	0.00
RI	0.00	0.00
RPA	76.88	47.77
RMA	40.81	25.36
<b>TOTAL</b>	<b>117.69</b>	<b>73.13</b>

34 - HOWARD COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	28.76	17.87
RI	0.00	0.00
RPA	58.13	36.12
RMA	36.37	22.60
<b>TOTAL</b>	<b>123.26</b>	<b>76.59</b>

42 - KNOX COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	22.39	13.91
UPA	11.59	7.20
RI	0.00	0.00
RPA	99.94	62.10
RMA	113.78	70.70
<b>TOTAL</b>	<b>247.69</b>	<b>153.91</b>

52 - MIAMI COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	8.90	5.53
RI	0.00	0.00
RPA	100.81	62.64
RMA	91.79	57.04
<b>TOTAL</b>	<b>201.50</b>	<b>125.21</b>

35 - HUNTINGTON COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	13.18	8.19
RI	39.01	24.24
RPA	82.33	51.16
RMA	160.77	99.90
<b>TOTAL</b>	<b>295.29</b>	<b>183.49</b>

43 - KOSCIUSKO COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	23.91	14.86
RI	0.00	0.00
RPA	64.74	40.23
RMA	136.40	84.76
<b>TOTAL</b>	<b>225.06</b>	<b>139.85</b>

57 - NOBLE COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	8.93	5.55
RI	0.00	0.00
RPA	109.88	68.28
RMA	63.52	39.47
<b>TOTAL</b>	<b>182.33</b>	<b>113.30</b>

38 - JAY COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	12.39	7.70
RI	0.00	0.00
RPA	81.00	50.33
RMA	60.36	37.51
<b>TOTAL</b>	<b>153.75</b>	<b>95.54</b>

44 - LAGRANGE COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	0.00	0.00
RI	42.07	26.14
RPA	106.97	66.47
RMA	45.85	28.49
<b>TOTAL</b>	<b>194.89</b>	<b>121.10</b>

58 - OHIO COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	0.00	0.00
RI	0.00	0.00
RPA	16.04	9.97
RMA	30.21	18.77
<b>TOTAL</b>	<b>46.25</b>	<b>28.74</b>

39 - JEFFERSON COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	20.13	12.51
RI	0.00	0.00
RPA	87.34	54.27
RMA	90.65	56.33
<b>TOTAL</b>	<b>198.12</b>	<b>123.11</b>

47 - LAWRENCE COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	30.69	19.07
RI	0.00	0.00
RPA	75.20	46.73
RMA	103.03	64.02
<b>TOTAL</b>	<b>208.92</b>	<b>129.82</b>

59 - ORANGE COUNTY

ROAD CLASSIFICATION	TOTAL KM BY TYPE	TOTAL MILES BY TYPE
UT	0.00	0.00
UPA	0.00	0.00
RI	0.00	0.00
RPA	88.99	55.30
RMA	51.59	32.06
<b>TOTAL</b>	<b>140.59</b>	<b>87.36</b>

ROAD CLASSIFICATION FOR COUNTIES WITH NO CONGESTION  
(continued)

60 OWEN COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	78.20	48.59	48.59	48.59
RMA	59.82	37.17	37.17	37.17
TOTAL	138.01	85.76	85.76	85.76

66 PULASKI COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	98.86	61.43	61.43	61.43
RMA	53.19	33.05	33.05	33.05
TOTAL	152.05	94.48	94.48	94.48

75 STARKE COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	64.69	40.20	40.20	40.20
RMA	103.78	64.49	64.49	64.49
TOTAL	168.48	104.69	104.69	104.69

61 PARKE COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	108.29	67.29	67.29	67.29
RMA	35.49	22.05	22.05	22.05
TOTAL	143.77	89.34	89.34	89.34

68 - RANDOLPH COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	8.74	5.43	5.43	5.43
RI	0.00	0.00	0.00	0.00
RPA	81.96	50.93	50.93	50.93
RMA	117.11	72.77	72.77	72.77
TOTAL	207.81	129.13	129.13	129.13

76 STEUBEN COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	1.88	1.17	1.17	1.17
LPA	14.44	8.97	8.97	8.97
RI	76.36	47.45	47.45	47.45
RPA	26.76	16.63	16.63	16.63
RMA	110.01	68.36	68.36	68.36
TOTAL	229.45	142.58	142.58	142.58

62 PERRY COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	7.13	4.43	4.43	4.43
RI	24.77	15.39	15.39	15.39
RPA	46.24	28.73	28.73	28.73
RMA	141.25	87.77	87.77	87.77
TOTAL	219.38	136.32	136.32	136.32

69 RIPLEY COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	16.35	10.16	10.16	10.16
RPA	98.14	60.98	60.98	60.98
RMA	123.90	76.99	76.99	76.99
TOTAL	238.39	148.13	148.13	148.13

77 SULLIVAN COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	77.94	48.43	48.43	48.43
RMA	94.76	58.88	58.88	58.88
TOTAL	172.69	107.31	107.31	107.31

63 - PIKE COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	44.77	27.82	27.82	27.82
RMA	134.31	83.46	83.46	83.46
TOTAL	179.08	111.28	111.28	111.28

70 RUSH COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	11.52	7.16	7.16	7.16
RI	0.00	0.00	0.00	0.00
RPA	89.82	55.81	55.81	55.81
RMA	31.17	19.37	19.37	19.37
TOTAL	132.51	82.34	82.34	82.34

78 SWITZERLAND COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	56.05	34.83	34.83	34.83
RMA	83.94	52.16	52.16	52.16
TOTAL	139.99	86.99	86.99	86.99

65 POSEY COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	9.74	6.05	6.05	6.05
RI	31.16	19.36	19.36	19.36
RPA	46.33	28.79	28.79	28.79
RMA	73.46	45.65	45.65	45.65
TOTAL	160.69	99.85	99.85	99.85

74 SPENCER COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	16.50	10.25	10.25	10.25
RPA	92.52	57.49	57.49	57.49
RMA	134.31	83.46	83.46	83.46
TOTAL	243.33	151.20	151.20	151.20

80 TIPTON COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
LI	0.00	0.00	0.00	0.00
LPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	53.54	33.27	33.27	33.27
RMA	43.26	26.88	26.88	26.88
TOTAL	96.80	60.15	60.15	60.15

**ROAD CLASSIFICATION FOR COUNTIES WITH NO CONGESTION**  
(continued)

81 UNION COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
UI	0.00	0.00	0.00	0.00
UPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	60.85	37.81	37.81	37.81
RMA	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>60.85</b>	<b>37.81</b>	<b>37.81</b>	<b>37.81</b>

82 - VANDERBURGH COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
UI	18.46	11.47	11.47	11.47
UPA	65.68	40.81	40.81	40.81
RI	26.20	16.28	16.28	16.28
RPA	19.73	12.26	12.26	12.26
RMA	22.19	13.79	13.79	13.79
<b>TOTAL</b>	<b>152.26</b>	<b>94.61</b>	<b>94.61</b>	<b>94.61</b>

83 VERMILLION COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
UI	0.00	0.00	0.00	0.00
UPA	6.73	4.18	4.18	4.18
RI	12.83	7.97	7.97	7.97
RPA	73.67	45.78	45.78	45.78
RMA	63.66	39.56	39.56	39.56
<b>TOTAL</b>	<b>156.89</b>	<b>97.49</b>	<b>97.49</b>	<b>97.49</b>

85 - WABASH COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
UI	0.00	0.00	0.00	0.00
UPA	24.03	14.93	14.93	14.93
RI	0.00	0.00	0.00	0.00
RPA	87.13	54.14	54.14	54.14
RMA	99.74	61.98	61.98	61.98
<b>TOTAL</b>	<b>210.90</b>	<b>131.05</b>	<b>131.05</b>	<b>131.05</b>

86 WARREN COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
UI	0.00	0.00	0.00	0.00
UPA	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00
RPA	76.28	47.40	47.40	47.40
RMA	89.51	55.62	55.62	55.62
<b>TOTAL</b>	<b>165.79</b>	<b>103.02</b>	<b>103.02</b>	<b>103.02</b>

87 - WARRICK COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
UI	2.45	1.52	1.52	1.52
UPA	24.03	14.93	14.93	14.93
RI	44.43	27.61	27.61	27.61
RPA	64.60	40.14	40.14	40.14
RMA	94.47	58.70	58.70	58.70
<b>TOTAL</b>	<b>229.97</b>	<b>142.90</b>	<b>142.90</b>	<b>142.90</b>

88 WASHINGTON COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
UI	0.00	0.00	0.00	0.00
UPA	16.54	10.28	10.28	10.28
RI	0.00	0.00	0.00	0.00
RPA	101.58	63.12	63.12	63.12
RMA	68.28	42.43	42.43	42.43
<b>TOTAL</b>	<b>186.41</b>	<b>115.83</b>	<b>115.83</b>	<b>115.83</b>

90 - WELLS COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
UI	0.00	0.00	0.00	0.00
UPA	14.53	9.03	9.03	9.03
RI	0.00	0.00	0.00	0.00
RPA	55.04	34.20	34.20	34.20
RMA	94.98	59.02	59.02	59.02
<b>TOTAL</b>	<b>164.55</b>	<b>102.25</b>	<b>102.25</b>	<b>102.25</b>

92 - WHITLEY COUNTY

ROAD CLASSIFICATION	TOTAL KM		TOTAL MILES	
	BY TYPE	BY TYPE	BY TYPE	BY TYPE
UI	0.00	0.00	0.00	0.00
UPA	10.59	6.58	6.58	6.58
RI	0.00	0.00	0.00	0.00
RPA	77.07	47.89	47.89	47.89
RMA	128.23	79.68	79.68	79.68
<b>TOTAL</b>	<b>215.89</b>	<b>134.15</b>	<b>134.15</b>	<b>134.15</b>

## **APPENDIX C**

**PRESENTATION OF COUNTY SUMMARY DATA**

**BY YEARS 1995, 2000, 2005, 2010 AND 2015**

**OF LENGTH AND VEHICLE KILOMETERS  
TRAVELLED**

**WITH AND WITHOUT CONGESTION**

# COMPARISON OF COUNTY CONGESTION FOR THE BENCHMARK VIC AND VIC=1

The chart below shows each county that exhibits some congestion. Those that start in later years have the potential for congestion in the year shown  
**V/C = 1**

PAGE:	1995	2000	2005	2010	2005	2005	1995	2000	2005	2010	2015
A-2	Allen	Allen	Allen	Allen	Allen	Allen	Allen	Allen	Allen	Allen	Allen
A-4	Bartholomew	Bartholomew	Bartholomew	Bartholomew	Bartholomew	Bartholomew	Bartholomew	Bartholomew	Bartholomew	Bartholomew	Bartholomew
A-6	Boone	Boone	Boone	Boone	Boone	Boone	Boone	Boone	Boone	Boone	Boone
A-8	Clark	Clark	Cass	Cass	Cass	Cass	Clark	Clark	Clark	Clark	Clark
A-10	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton
A-12	Dearborn	Dearborn	Dearborn	Dearborn	Dearborn	Dearborn	Dearborn	Dearborn	Dearborn	Dearborn	Dearborn
A-14	Delaware	Delaware	Delaware	Delaware	Delaware	Delaware	Delaware	Delaware	Delaware	Delaware	Delaware
A-16	DuBois	DuBois	DuBois	DuBois	DuBois	DuBois	DuBois	DuBois	DuBois	DuBois	DuBois
A-18	Elkhart	Elkhart	Elkhart	Elkhart	Elkhart	Elkhart	Elkhart	Elkhart	Elkhart	Elkhart	Elkhart
A-20	Floyd	Floyd	Floyd	Floyd	Floyd	Floyd	Floyd	Floyd	Floyd	Floyd	Floyd
A-22	Franklin	Franklin	Franklin	Franklin	Franklin	Franklin	Franklin	Franklin	Franklin	Franklin	Franklin
A-24	Grant	Grant	Grant	Grant	Grant	Grant	Grant	Grant	Grant	Grant	Grant
A-26	Hamilton	Hamilton	Hamilton	Hamilton	Hamilton	Hamilton	Hamilton	Hamilton	Hamilton	Hamilton	Hamilton
A-28	Hancock	Hancock	Hancock	Hancock	Hancock	Hancock	Hancock	Hancock	Hancock	Hancock	Hancock
A-30	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison	Harrison
A-32	Hendricks	Hendricks	Hendricks	Hendricks	Hendricks	Hendricks	Hendricks	Hendricks	Hendricks	Hendricks	Hendricks
A-34	Henry	Henry	Henry	Henry	Henry	Henry	Henry	Henry	Henry	Henry	Henry
A-36	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson	Johnson
A-38	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake
A-40	Laporte	Laporte	Laporte	Laporte	Laporte	Laporte	Laporte	Laporte	Laporte	Laporte	Laporte
A-42	Madison	Madison	Madison	Madison	Madison	Madison	Madison	Madison	Madison	Madison	Madison
A-44	Marion	Marion	Marion	Marion	Marion	Marion	Marion	Marion	Marion	Marion	Marion
A-46	Marshall	Marshall	Marshall	Marshall	Marshall	Marshall	Marshall	Marshall	Marshall	Marshall	Marshall
A-48	Montgomery	Montgomery	Montgomery	Montgomery	Montgomery	Montgomery	Montgomery	Montgomery	Montgomery	Montgomery	Montgomery
A-50	Newton	Newton	Newton	Newton	Newton	Newton	Newton	Newton	Newton	Newton	Newton
A-52	Porter	Porter	Porter	Porter	Porter	Porter	Porter	Porter	Porter	Porter	Porter
A-54	St. Joseph	St. Joseph	St. Joseph	St. Joseph	St. Joseph	St. Joseph	St. Joseph	St. Joseph	St. Joseph	St. Joseph	St. Joseph
A-56	Scott	Scott	Scott	Scott	Scott	Scott	Scott	Scott	Scott	Scott	Scott
A-58	Shelby	Shelby	Shelby	Shelby	Shelby	Shelby	Shelby	Shelby	Shelby	Shelby	Shelby
A-60	Tippecanoe	Tippecanoe	Tippecanoe	Tippecanoe	Tippecanoe	Tippecanoe	Tippecanoe	Tippecanoe	Tippecanoe	Tippecanoe	Tippecanoe
A-62	Vigo	Vigo	Vigo	Vigo	Vigo	Vigo	Vigo	Vigo	Vigo	Vigo	Vigo
A-64	Wayne	Wayne	Wayne	Wayne	Wayne	Wayne	Wayne	Wayne	Wayne	Wayne	Wayne
A-66	White	White	White	White	White	White	White	White	White	White	White
A-68											
A-70											
A-72											
A-74											
A-76											
A-78											
A-80											
A-82											
A-84											
A-86											

APPENDIX C  
COUNTIES WITH CONGESTION IN 1995

Co No	COUNTY	HIGHWAY		1995 VEHICLE		Congested		AM PKHr VKT		PM PKHr VKT		%
		Km	Miles	Km traveled	Mi traveled	Km	Miles	Congested	Total	Congested	Total	
1												
2	ALLEN	364.78	226.67	5,154,566	3,202,986	0.35	0.22	583	213,563	660	244,853	0.3%
3	BOONE	278.09	172.80	2,434,050	1,512,490	1.30	0.81	1,615	102,031	4,745	116,335	4.1%
4	CLARK	227.43	141.32	3,255,293	2,022,801	8.80	5.47	4,462	134,335	26,906	154,854	17.4%
5	CLINTON	209.10	129.93	1,210,873	0,752,422	2.12	1.32	61	50,869	1,583	58,117	2.7%
6	FLOYD	125.19	77.79	1,920,600	1,193,438	0.74	0.14	0	79,691	1,166	91,191	0.3%
7	GRANT	264.87	164.59	1,858,448	1,154,818	0.29	0.18	0	77,766	410	88,243	0.5%
8	HAMILTON	233.16	144.88	3,958,888	2,460,006	4.04	2.51	1,531	164,940	16,373	189,134	8.7%
9	HANCOCK	159.27	98.97	2,266,914	1,408,634	3.51	2.18	13,253	95,251	15,342	108,400	14.2%
10	HARRISON	264.91	164.61	1,355,945	0,842,568	6.26	3.89	0	53,299	8,239	59,599	13.8%
11	JOHNSON	165.73	102.98	2,642,604	1,642,083	15.42	9.58	429	111,117	34,320	126,047	27.2%
12	LAKE	491.35	305.32	11,073,836	6,881,151	35.86	21.19	125,242	450,391	170,811	522,999	31.7%
13	MADISON	272.20	169.14	2,773,202	1,723,235	1.64	1.02	0	115,576	3,755	131,656	2.9%
14	MARION	463.30	287.89	19,361,817	12,031,204	60.78	37.77	189,594	779,469	340,310	916,290	37.1%
15	MARSHALL	275.19	171.00	1,671,469	1,038,631	2.49	1.55	3,510	70,360	4,085	79,882	5.1%
16	MONTGOMERY	261.98	162.79	1,373,966	0,853,766	0.56	0.35	0	58,224	513	63,147	0.8%
17	NEWTON	190.54	118.40	627,548	0,389,951	4.63	2.88	4,621	26,272	5,350	30,190	17.7%
		4247.07	2639.88	62,940,020	39,110,185	148.81	91.06	344,901	2,583,155	634,569	2,980,956	21.3%
NO CONGESTION		14560.38	9047.65	92,954,921	28,646,328						3,765,582	
INDIANA STATE TOTAL		18807.45	11686.73	155,894,941	67,756,512	148.81	91.06	344,901	6,288,146	634,569	6,746,588	9.4%

IN 1995 THE INDIANA STATE HIGHWAY DISTANCE IS 18,907 KILOMETERS

IN 1995 THE INDIANA AVERAGE DAILY VEHICLE TRAVEL IS 155,894,635 KILOMETERS

IN 1995 CONGESTION IS EXPERIENCED BY 18.5% OF THE COUNTIES

IN 1995 CONGESTION IS EXPERIENCED ON 0.8% THE HIGHWAY DISTANCE

IN 1995 CONGESTION IS EXPERIENCED BY 9.3% OF THE P.M. PEAK-HOUR VKT



COUNTIES WITHOUT CONGESTION IN 1995

No.	COUNTY	HIGHWAY			1995	
		KM	MILES	VKT	YMT	
1	ADAMS	176.62	109.75	801,931	498,311	
2	BARTHOLOMEW	203.77	126.62	2,331,462	1,448,743	
3	BENTON	178.12	110.68	352,878	219,274	
4	BLACKFORD	70.13	43.58	233,179	144,895	
5	BROWN	86.56	53.79	322,932	200,666	
6	CARROLL	164.58	102.27	568,271	353,117	
7	CASS	226.59	140.80	971,184	603,482	
8	CLAY	197.45	122.69	1,176,840	731,274	
9	CRAWFORD	170.70	106.07	616,013	382,783	
10	DAVIESS	134.75	83.73	612,542	380,626	
11	DEARBORN	202.34	125.73	1,459,509	906,922	
12	DECATUR	134.67	83.68	1,015,334	630,917	
13	DEKALB	194.21	120.68	1,331,929	827,645	
14	DELAWARE	214.07	133.02	2,319,978	1,441,607	
15	DUBOIS	203.38	126.38	1,008,823	626,871	
16	ELKHART	322.17	200.19	3,347,037	2,079,809	
17	FAYETTE	60.67	37.70	352,264	218,893	
18	FOUNTAIN	222.07	137.99	691,778	429,863	
19	FRANKLIN	145.59	90.47	1,044,453	649,011	
20	FULTON	160.95	100.01	556,339	345,702	
21	GIBSON	233.83	145.30	1,380,427	857,781	
22	GREENE	267.76	166.38	906,145	563,068	
23	HENDRICKS	271.46	168.68	2,764,454	1,717,799	
24	HENRY	228.36	141.90	2,040,638	1,268,028	
25	HOWARD	123.26	76.59	1,129,146	701,638	
26	HUNTINGTON	295.29	183.49	1,535,728	954,283	
27	JACKSON	287.47	178.63	1,720,930	1,069,366	
28	JASPER	275.09	170.94	960,773	597,013	
29	JAY	153.75	95.54	477,590	296,769	
30	JEFFERSON	198.12	123.11	747,050	464,208	
31	JENNINGS	116.27	72.25	614,242	381,683	
32	KNOX	247.69	153.91	1,283,144	797,331	
33	KOSCIUSKO	225.06	139.85	1,521,407	945,384	
34	LAGRANOE	194.89	121.10	1,551,195	963,894	
35	LAPORTE	398.56	247.66	3,928,417	2,441,072	
36	LAWRENCE	208.92	129.82	1,051,216	653,213	
37	MARTIN	117.69	73.13	382,521	237,694	
38	MIAMI	201.50	125.21	990,839	615,696	
39	MONROE	141.88	88.16	1,645,306	1,022,374	
40	MORGAN	215.05	133.63	2,073,332	1,288,344	
41	NOBLE	182.33	113.30	1,071,323	665,708	
42	OHIO	46.25	28.74	101,544	663,098	
43	ORANGE	140.59	87.36	437,909	272,111	
44	OWEN	138.01	85.76	542,623	337,179	
45	PARKE	143.77	89.34	435,843	270,828	
46	PERRY	219.38	136.32	625,036	388,390	
47	PIKE	179.08	111.28	470,097	292,113	
48	PORTER	328.17	203.92	4,912,098	3,052,320	
49	POSEY	160.69	99.85	904,610	562,114	
50	PULASKI	152.05	94.48	374,433	232,668	
51	PUTNAM	214.65	133.38	1,748,654	1,086,593	
52	RANDOLPH	207.81	129.13	667,490	414,770	
53	RIPLEY	238.39	148.13	949,953	590,289	
54	RUSH	132.51	82.34	489,006	303,863	
55	ST. JOSEPH	322.76	200.56	4,232,610	2,630,094	
56	SCOTT	137.51	85.45	953,668	592,598	
57	SHELBY	156.63	97.33	1,010,644	628,002	
58	SPENCER	243.33	151.20	1,010,644	628,002	
59	STARKE	168.48	104.69	656,368	407,860	
60	STEUBEN	229.45	142.58	1,804,566	1,121,336	
61	SULLIVAN	172.69	107.31	748,897	465,356	
62	SWITZERLAND	139.99	86.99	169,791	105,506	
63	TIPPECANOE	304.75	189.37	3,325,447	2,066,394	
64	TIPTON	96.80	60.15	742,473	461,364	
65	UNION	60.85	37.81	205,678	127,806	
66	VANDERBURGH	152.26	94.61	2,850,178	1,771,067	
67	VERMILION	156.89	97.49	875,403	543,965	
68	VIGO	224.61	139.57	2,520,536	1,566,231	
69	WABASH	210.90	131.05	801,413	497,989	
70	WARREN	165.79	103.02	389,972	242,324	
71	WARRICK	229.97	142.90	1,621,790	1,007,761	
72	WASHINGTON	186.41	115.83	548,230	340,664	
73	WAYNE	242.36	150.60	2,219,310	1,379,053	
74	WELLS	164.55	102.25	550,543	342,101	
75	WHITE	222.57	138.30	960,773	597,013	
76	WHITLEY	215.89	134.15	1,206,196	749,516	
<b>TOTAL</b>		<b>14560.38</b>	<b>9047.65</b>	<b>92,954,921</b>	<b>57,761,089</b>	

**APPENDIX C  
COUNTIES WITH CONGESTION IN 2000**

Co No.	COUNTY	HIGHWAY		2000 VEHICLE		Congested		AM PkHr VKT		PM PkHr VKT		%
		Km	Miles	Km traveled	MH traveled	Km	Miles	Congested	Total	Congested	Total	
1	ALLEN	364.78	226.67	5,740,840	3,567,290	7.40	4.60	615	243,946	22034	279,688	8.2%
2	BOONE	278.09	172.80	2,903,959	1,804,486	13.31	8.27	4847	121,729	35193	138,794	25.4%
3	CLARK	227.43	141.32	3,767,332	2,340,976	11.84	7.36	29393	154,749	43880	178,387	24.5%
4	CLINTON	209.10	129.93	1,398,081	868,751	2.12	1.32	1114	058,066	1669	66,339	2.5%
5	DEARBORN	202.34	125.73	1,674,657	1,040,612	0.14	0.09	0	070,298	257	79,855	0.3%
6	FLOYD	125.19	77.79	2,276,721	1,414,728	6.87	4.27	7675	094,317	20219	107,927	18.7%
7	GRANT	264.87	164.59	2,108,316	1,310,083	0.29	0.18	0	088,222	432	100,108	0.4%
8	HAMILTON	233.16	144.88	4,525,975	2,812,387	15.98	9.93	29353	188,567	65591	216,226	30.3%
9	HANCOCK	159.27	98.97	2,655,248	1,649,940	26.67	16.57	16105	111,568	67936	126,969	53.5%
10	HARRISON	264.91	164.61	1,572,400	977,071	14.08	8.75	8649	061,807	21860	69,112	31.6%
11	HENRY	228.36	141.90	2,382,420	1,480,408	12.78	7.94	0	100,671	31634	113,843	27.8%
12	JOHNSON	165.73	102.98	3,043,576	1,891,242	17.86	11.10	36027	127,977	50965	145,172	35.1%
13	LAKE	491.35	305.32	13,266,997	8,243,955	43.47	27.01	183707	530,231	251935	615,711	41.0%
14	MADISON	272.20	169.14	3,171,162	1,970,522	8.48	5.27	3942	132,162	21753	150,549	14.4%
15	MARION	463.30	287.89	24,230,799	15,056,732	113.55	70.56	487704	974,196	687778	1,145,197	60.0%
16	MARSHALL	275.19	171.00	1,871,150	1,162,710	5.50	3.42	3850	077,303	4481	87,765	12.0%
17	MONTGOMERY	261.98	162.79	1,622,876	1,008,436	1.45	0.90	0	068,772	1450	74,586	1.9%
18	NEWTON	190.54	118.40	703,284	437,012	4.63	2.88	5616	029,442	6501	33,834	19.2%
19	PORTER	328.17	203.92	5,707,617	3,546,645	5.65	3.51	0	235,741	24553	263,541	9.3%
20	ST. JOSEPH	322.76	200.56	4,870,012	3,026,168	0.18	0.11	0	193,323	242	220,874	0.1%
21	TIPPECANOE	304.75	189.37	3,759,818	2,336,306	1.79	1.11	0	156,678	3973	179,023	2.2%
		5633.45	3500.56	93,253,239	57,946,460	314.05	195.15	818,597	3,819,766	1,364,336	4,393,500	31.1%

IN 2000 THE INDIANA STATE HIGHWAY LENGTH IS 18,807 KILOMETERS (11,686 MILES)

IN 2000 THE STATE AVERAGE DAILY VEHICLE TRAVEL IS 181 MILLION KILOMETERS

IN 2000 CONGESTION IS EXPERIENCED BY 22.8% OF THE COUNTIES

IN 2000 CONGESTION IS EXPERIENCED ON 1.7% OF THE HIGHWAY LENGTH

IN 2000 CONGESTION IS EXPERIENCED BY 30% OF THE PEAK HOUR VKT IN THE EFFECTED 21 COUNTIES  
HIGHEST PEAK-HOUR CONGESTION OCCURS IN MARION (60%OF VKT), HANCOCK(54%) AND LAKE (41%)

**APPENDIX C  
COUNTIES WITH NO CONGESTION IN 2000**

No.	COUNTY	HIGHWAY		2000	
		KM	MILES	VKT	VMT
1	ADAMS	176.62	109.75	849,162	527,659
2	BARTHOLOMEW	203.77	126.62	2,737,322	1,700,939
3	BENTON	178.12	110.68	381,498	237,058
4	BLACKFORD	70.13	43.58	243,931	151,576
5	BROWN	86.56	53.79	343,467	213,426
6	CARROLL	164.58	102.27	610,498	379,356
7	CASS	226.59	140.80	1,048,876	651,759
8	CLAY	197.45	122.69	1,388,948	863,076
9	CRAWFORD	170.70	106.07	761,896	473,433
10	DAVISS	134.75	83.73	659,249	409,650
11	DECATUR	134.67	83.68	1,218,519	757,173
12	DEKALB	194.21	120.68	1,587,853	986,673
13	DELAWARE	214.07	133.02	2,731,800	1,697,508
14	DUBOIS	203.38	126.38	1,084,648	673,988
15	ELKHART	322.17	200.19	3,657,813	2,272,922
16	FAYETTE	60.67	37.70	346,727	215,452
17	FOUNTAIN	222.07	137.99	834,093	518,296
18	FRANKLIN	145.59	90.47	1,272,280	790,580
19	FULTON	160.95	100.01	578,224	359,302
20	GIBSON	233.83	145.30	1,669,629	1,037,487
21	GREENE	267.76	166.38	982,890	610,756
22	HENDRICKS	271.46	168.68	3,209,054	1,994,068
23	HOWARD	123.26	76.59	1,157,346	719,161
24	HUNTINGTON	295.29	183.49	1,804,459	1,121,270
25	JACKSON	287.47	178.63	2,035,912	1,265,091
26	JASPER	275.09	170.94	1,079,427	670,743
27	JAY	153.75	95.54	505,081	313,851
28	JEFFERSON	198.12	123.11	785,955	488,383
29	JENNINGS	116.27	72.25	642,468	399,222
30	KNOX	247.69	153.91	1,449,288	900,571
31	KOSCIUSKO	225.06	139.85	1,707,164	1,060,811
32	LAGRANGE	194.89	121.10	1,840,421	1,143,616
33	LAPORTE	398.56	247.66	4,488,832	2,789,307
34	LAWRENCE	208.92	129.82	1,027,736	638,623
35	MARTIN	117.69	73.13	406,915	252,852
36	MIAMI	201.50	125.21	1,053,268	654,488
37	MONROE	141.88	88.16	1,816,682	1,128,865
38	MORGAN	215.05	133.63	2,351,342	1,461,096
39	NOBLE	182.33	113.30	1,141,107	709,070
40	OHIO	46.25	28.74	109,198	667,855
41	ORANGE	140.59	87.36	493,774	306,826
42	OWEN	138.01	85.76	580,219	360,541
43	PARKE	143.77	89.34	464,389	288,566
44	PERRY	219.38	136.32	721,826	448,534
45	PIKE	179.08	111.28	516,535	320,969
46	POSEY	160.69	99.85	1,029,798	639,904
47	PULASKI	152.05	94.48	400,443	248,830
48	PUTNAM	214.65	133.38	2,087,702	1,297,274
49	RANDOLPH	207.81	129.13	724,879	450,431
50	RIPLEY	238.39	148.13	1,080,693	671,530
51	RUSH	132.51	82.34	513,932	319,351
52	SCOTT	137.51	85.45	1,184,176	735,833
53	SHELBY	156.63	97.33	2,116,939	1,315,441
54	SPENCER	243.33	151.20	1,131,925	703,365
55	STARKE	168.48	104.69	709,942	441,150
56	STEUBEN	229.45	142.58	2,202,213	1,368,429
57	SULLIVAN	172.69	107.31	801,427	497,997
58	SWITZERLAND	139.99	86.99	184,773	114,816
59	TIPTON	96.80	60.15	795,301	494,191
60	UNION	60.85	37.81	217,838	135,362
61	VANDERBURGH	152.26	94.61	3,109,660	1,932,306
62	VERMILLION	156.89	97.49	988,015	613,941
63	VIGO	224.61	139.57	2,842,045	1,766,013
64	WABASH	210.90	131.05	849,364	527,785
65	WARREN	165.79	103.02	421,065	261,645
66	WARRICK	229.97	142.90	1,828,688	1,136,325
67	WASHINGTON	186.41	115.83	574,714	357,120
68	WAYNE	242.36	150.60	2,653,704	1,648,981
69	WELLS	164.55	102.25	586,421	364,395
70	WHITE	222.57	138.30	1,079,427	670,743
71	WHITLEY	215.89	134.15	1,301,025	808,442
		<b>13174.00</b>	<b>8186.17</b>	<b>87,793,827</b>	<b>54,554,047</b>

**APPENDIX C  
COUNTIES WITH CONGESTION IN 2005**

Co No.	COUNTY	HIGHWAY		2005 VEHICLE			Congested		AM PkHr VKT		PM PkHr VKT		%
		Km	Miles	Km traveled	Ml traveled	Km	Miles	Congested	Total	Congested	Total		
1	ALLEN	364.78	226.67	6,436,636	3,999,649	12.60	7.83	24,102	263,724	43,680	302,331	14.4%	
2	BARTHOLOMEW	203.77	126.62	3,110,593	1,932,886	5.34	3.32	36,341	145,718	10,927	147,281	7.4%	
3	BOONE	278.09	172.80	3,476,237	2,160,093	15.32	9.52	76,070	184,515	48,085	166,146	28.9%	
4	CASS	226.59	140.80	1,191,904	740,635	0.61	0.38	1,174	68,062	0,787	55,515	1.4%	
5	CLARK	227.43	141.32	4,471,284	2,778,403	36.98	22.98	1,174	68,062	120,060	212,699	56.4%	
6	CLINTON	209.10	129.93	1,620,131	1,006,730	6.92	4.30	23,263	112,631	0,782	77,759	16.6%	
7	DEARBORN	202.34	125.73	1,925,719	1,196,619	0.39	0.24	70,009	216,656	48,112	92,509	0.8%	
8	FLOYD	125.19	77.79	2,714,450	1,686,727	14.64	9.10	22,947	71,810	77,084	128,884	37.3%	
9	FRANKLIN	145.59	90.47	1,445,773	898,386	0.61	0.38	33,207	117,832	0,743	24,584	3.0%	
10	GRANT	264.87	164.59	2,402,385	1,492,814	0.95	0.59	11,010	88,398	1,378	114,071	1.2%	
11	HAMILTON	233.16	144.88	5,200,168	3,231,323	22.50	13.98	71,315	131,128	100,035	248,435	40.3%	
12	HANCOCK	159.27	98.97	3,120,765	1,939,206	30.77	19.12	71,315	131,128	94,398	149,229	63.3%	
13	HARRISON	264.91	164.61	1,826,885	1,135,205	14.08	8.75	22,947	71,810	26,564	80,298	33.1%	
14	HENDRICKS	271.46	168.68	3,646,652	2,265,986	13.36	8.30	33,207	117,832	38,533	173,936	22.2%	
15	HENRY	228.36	141.90	2,788,551	1,732,773	29.08	18.07	33,207	117,832	77,084	133,250	57.8%	
16	JOHNSON	165.73	102.98	3,517,631	2,185,815	28.21	17.53	53,500	147,910	88,050	167,784	52.5%	
17	LAKE	491.35	305.32	16,031,736	9,961,932	57.45	35.70	292,783	652,037	378,423	757,153	50.0%	
18	MADISON	272.20	169.14	3,645,551	2,265,302	21.39	13.29	32,933	151,933	62,762	173,070	36.3%	
19	MARION	463.30	287.89	30,483,198	18,941,899	159.29	98.98	811,355	1,227,195	1,086,718	1,442,604	75.3%	
20	MARSHALL	275.19	171.00	2,099,986	1,304,907	6.97	4.33	11,010	88,398	14,493	100,361	14.4%	
21	MONROE	141.88	88.16	2,064,411	1,282,801	0.72	0.45	0,817	81,774	0,922	98,065	0.9%	
22	MONTGOMERY	261.98	162.79	1,929,684	1,199,083	5.52	3.43	0,817	81,774	5,844	88,687	6.6%	
23	MORGAN	215.05	133.63	2,671,980	1,660,337	12.54	7.79	6,824	33,050	29,531	128,329	23.0%	
24	NEWTON	190.54	118.40	789,448	490,553	4.63	2.88	6,824	33,050	7,900	37,979	20.8%	
25	PORTER	328.17	203.92	6,679,855	4,150,783	22.93	14.25	26,821	275,898	104,970	298,318	35.2%	
26	ST. JOSEPH	322.76	200.56	5,648,809	3,510,103	0.18	0.11			0,255	265,839	0.1%	
27	SCOTT	137.51	85.45	1,345,364	835,993	7.32	4.55			18,894	63,956	29.5%	
28	SHELBY	156.63	97.33	2,405,612	1,494,819	7.02	4.36	3,994	177,735	17,109	115,448	14.8%	
29	TIPPECANOE	304.75	189.37	4,265,120	2,650,295	10.86	6.75			27,844	203,083	13.7%	
30	VIGO	224.61	139.57	3,229,597	2,006,833	0.02	0.01			0,038	152,147	0.0%	
		7,356.54	4,571.27	132,186,113	82,138,888	549.21	341.27	1,598,868	4,248,532	2,467,863	6,199,751	39.8%	

IN 2005 THE INDIANA STATE HIGHWAY LENGTH IS 18,807 KILOMETERS (11,686.73 MILES)  
 IN 2005 THE STATE AVERAGE DAILY VEHICLE TRAVEL IS 211 MILLION KILOMETERS (131 MILLION MILES)  
 IN 2005 CONGESTION IS EXPERIENCED BY 36.2% OF THE COUNTIES  
 IN 2005 CONGESTION IS EXPERIENCED ON 2.9% OF THE HIGHWAY MILES  
 IN 2005 CONGESTION IS EXPERIENCED BY ALMOST 40% OF THE PEAK HOUR VKT IN THE EFFECTED 30 COUNTIES  
 HIGHEST PEAK-HOUR CONGESTION OCCURS IN MARION (75% OF VKT), HANCOCK (63%), HENRY (58%),

**APPENDIX C  
COUNTIES WITH NO CONGESTION IN 2005**

No.	COUNTY	HIGHWAY		2005	
		KM	MILES	VKT	FMT
1	ADAMS	176.62	109.75	964,957	599,613
2	BENTON	178.12	110.68	433,520	269,384
3	BLACKFORD	70.13	43.58	277,194	172,245
4	BROWN	86.56	53.79	390,303	242,530
5	CARROLL	164.58	102.27	693,748	431,087
6	CLAY	197.45	122.69	1,578,350	980,768
7	CRAWFORD	170.70	106.07	865,791	537,992
8	DAVISS	134.75	83.73	749,147	465,511
9	DECATUR	134.67	83.68	1,384,680	860,424
10	DEKALB	194.21	120.68	1,804,378	1,121,219
11	DELAWARE	214.07	133.02	3,104,318	1,928,986
12	DUBOIS	203.38	126.38	1,232,555	765,895
13	ELKHART	322.17	200.19	4,156,606	2,582,866
14	FAYETTE	60.67	37.70	394,008	244,832
15	FOUNTAIN	222.07	137.99	947,833	588,972
16	FULTON	160.95	100.01	657,073	408,298
17	GIBSON	233.83	145.30	1,897,305	1,178,963
18	GREENE	267.76	166.38	1,116,921	694,041
19	HOWARD	123.26	76.59	1,315,166	817,228
20	HUNTINGTON	295.29	183.49	2,050,522	1,274,170
21	JACKSON	287.47	178.63	2,313,536	1,437,604
22	JASPER	275.09	170.94	1,226,622	762,208
23	JAY	153.75	95.54	573,956	356,649
24	JEFFERSON	198.12	123.11	893,130	554,981
25	JENNINGS	116.27	72.25	730,077	453,661
26	KNOX	247.69	153.91	1,646,919	1,023,376
27	KOSCIUSKO	225.06	139.85	1,939,959	1,205,468
28	LAGRANGE	194.89	121.10	2,091,387	1,299,563
29	LAPORTE	398.56	247.66	5,100,946	3,169,667
30	LAWRENCE	208.92	129.82	1,167,881	725,708
31	MARTIN	117.69	73.13	462,403	287,332
32	MIAMI	201.50	125.21	1,196,895	743,737
33	NOBLE	182.33	113.30	1,296,712	805,762
34	OHIO	46.25	28.74	124,089	077,107
35	ORANGE	140.59	87.36	561,107	348,665
36	OWEN	138.01	85.76	659,339	409,706
37	PARKE	143.77	89.34	527,714	327,916
38	PERRY	219.38	136.32	820,257	509,698
39	PIKE	179.08	111.28	586,971	364,737
40	POSEY	160.69	99.85	1,170,225	727,164
41	PULASKI	152.05	94.48	455,049	282,762
42	PUTNAM	214.65	133.38	2,372,389	1,474,175
43	RANDOLPH	207.81	129.13	823,726	511,854
44	RIPLEY	238.39	148.13	1,228,061	763,102
45	RUSH	132.51	82.34	584,013	362,899
46	SPENCER	243.33	151.20	1,286,278	799,278
47	STARKE	168.48	104.69	806,753	501,307
48	STEUBEN	229.45	142.58	2,502,514	1,555,033
49	SULLIVAN	172.69	107.31	910,713	565,906
50	SWITZERLAND	139.99	86.99	209,970	130,473
51	TIPTON	96.80	60.15	903,751	561,580
52	UNION	60.85	37.81	247,543	153,820
53	VANDEBURGH	152.26	94.61	3,533,704	2,195,802
54	VERMILLION	156.89	97.49	1,122,744	697,660
55	WABASH	210.90	131.05	965,186	599,755
56	WARREN	165.79	103.02	478,483	297,324
57	WARRICK	229.97	142.90	2,078,054	1,291,278
58	WASHINGTON	186.41	115.83	653,084	405,819
59	WAYNE	242.36	150.60	3,015,573	1,873,842
60	WELLS	164.55	102.25	666,388	414,085
61	WHITE	222.57	138.30	1,226,622	762,208
62	WHITLEY	215.89	134.15	1,478,438	918,684
		<b>11,450.91</b>	<b>7,115.46</b>	<b>78,653,537</b>	<b>48,874,378</b>

**APPENDIX C  
COUNTIES WITH CONGESTION IN 2010**

Co No.	COUNTY	HIGHWAY		2010 VEHICLE		Congested		AM PMHr VKT		PM PkHr VKT		%
		Km	Miles	Km Traveled	Mi Traveled	Km	Miles	Congested	Total	Congested	Total	
1	ALLEN	364.78	226.67	7,269,164	4,516,972	32.93	20.46	67,070	297,835	116,366	141,435	34.1%
2	BARTHOLOMEW	203.77	126.62	3,621,086	2,250,100	12.70	7.89	10,988	151,338	28,783	171,452	16.8%
3	BOONE	278.09	172.80	4,174,845	2,594,200	28.95	17.99	54,540	175,002	91,757	199,536	46.0%
4	CASS	226.59	140.80	1,330,206	826,574	0.76	0.47		55,500	1,062	61,956	1.7%
5	CLARK	227.43	141.37	5,340,525	3,318,539	40.26	25.02	134,027	184,515	161,191	254,049	63.4%
6	CLAY	197.45	122.69	1,835,471	1,140,540	20.16	12.53		77,495	48,935	87,650	55.8%
7	CLINTON	209.10	129.93	1,884,280	1,170,870	19.84	12.33	12,799	79,159	47,223	90,437	52.2%
8	DEARBORN	202.34	125.73	2,219,311	1,379,053	4.06	2.52	276	93,853	9,114	106,613	8.5%
9	DELAWARE	214.07	133.02	3,618,101	2,248,245	2.93	1.82		150,723	6,963	174,442	4.0%
10	DUBOIS	203.38	126.38	1,365,613	848,575	0.29	0.18		57,917	424	63,748	0.7%
11	ELKHART	322.17	200.19	4,661,727	2,896,742	0.45	0.28		197,373	0,628	221,521	0.3%
12	FLOYD	125.19	77.79	3,254,483	2,022,297	26.83	16.67	51,544	135,038	97,627	154,525	63.2%
13	FRANKLIN	145.59	90.47	1,704,177	1,058,956	0.82	0.51		72,996	1,145	24,584	4.7%
14	GRANT	264.87	164.59	2,749,847	1,708,723	0.95	0.59	424	115,067	1,453	130,569	1.1%
15	HAMILTON	233.16	144.88	6,005,560	3,731,784	27.41	17.03	104,920	250,211	134,011	286,912	46.7%
16	HANCOCK	159.27	98.97	3,680,135	2,286,793	30.77	19.12	99,599	154,631	115,635	175,978	65.7%
17	HARRISON	264.91	164.61	2,126,590	1,321,438	28.07	17.44	27,885	83,591	51,174	93,471	54.7%
18	HENDRICKS	271.46	168.68	4,209,970	2,616,025	17.96	11.16	40,449	177,122	57,942	200,805	28.9%
19	HENRY	228.36	141.90	3,271,912	2,033,128	29.08	18.07	80,918	136,257	93,672	156,347	59.9%
20	HICKORY	287.47	178.63	2,697,006	1,673,888	2.03	1.26		113,425	4,781	128,524	3.7%
21	JOHNSON	165.73	102.98	4,079,427	2,534,908	29.11	18.09	95,244	171,533	110,470	194,580	56.8%
22	LAKE	491.35	305.32	19,529,161	12,135,190	82.77	51.43	452,839	794,283	557,221	922,331	60.4%
23	LAPORTE	398.56	247.66	5,842,186	3,630,265	8.64	5.37		244,797	33,368	280,056	11.9%
24	LADUE	272.20	169.14	4,213,651	2,618,313	27.92	17.35	65,914	175,609	93,498	200,041	46.7%
25	MARION	463.30	287.89	38,522,104	23,937,180	199.67	124.07	1,219,157	1,550,825	1,539,703	1,823,042	84.5%
26	MARSHALL	275.19	171.00	2,363,456	1,468,623	6.97	4.33	14,865	99,489	17,475	112,953	15.5%
27	MONROE	141.88	88.16	2,327,686	1,446,396	0.72	0.45		97,202	1,012	110,571	0.9%
28	MONTGOMERY	261.98	162.79	2,309,780	1,435,270	5.70	3.54	6,590	97,881	7,134	106,156	6.7%
29	MORGAN	215.05	133.63	3,051,037	1,895,878	14.71	9.14	35,875	127,376	41,530	146,535	28.3%
30	NEWTON	190.54	118.40	887,691	551,601	4.63	2.88	8,293	37,163	9,600	42,705	22.5%
31	PORTER	328.17	203.92	7,874,234	4,892,956	31.28	19.44	128,381	325,229	166,385	337,684	49.3%
32	PUTNAM	214.65	133.38	2,773,320	1,723,308	32.73	20.34	29,574	116,830	80,792	133,051	60.7%
33	ST JOSEPH	322.76	200.56	6,606,104	4,104,955	0.84	0.52	237	272,112	1,170	310,891	0.4%
34	SCOTT	137.51	85.45	1,606,712	998,398	15.76	9.79	25,151	67,451	47,364	76,381	62.0%
35	SHELBY	156.63	97.33	2,405,612	1,494,819	20.00	12.43	25,098	119,274	52,408	138,118	37.9%
36	TIPPECANOE	304.75	189.37	4,859,627	3,019,715	29.61	18.40	70,425	202,509	82,879	231,391	35.8%
37	VIGO	224.61	139.57	3,693,137	2,294,872	15.45	9.60		152,119	42,943	173,984	24.7%
38	WAYNE	242.36	150.60	3,544,130	2,202,281	25.19	15.65		269,810	64,182	164,167	39.1%
39	TOTALS	9436.65	5863.82	183,509,075	114,030,370	878.94	546.16	2,863,082	7,682,542	4,019,020	8,629,191	46.6%
40	INDIANA STATE TOTAL	18,807	11,687	246,007,118	152,865,915	878.94	546.16	2,863,082	11,387,533	4,019,020	12,394,773	32.4%

IN 2010 THE INDIANA STATE HIGHWAY LENGTH IS 18,807 KILOMETERS (11,687.73 MILES)  
 IN 2010 THE STATE AVERAGE DAILY VEHICLE TRAVEL IS 246 MILLION VEHICLE KILOMETERS  
 IN 2010 CONGESTION IS EXPERIENCED BY 41.4% OF THE COUNTIES  
 IN 2010 CONGESTION IS EXPERIENCED ON 4.7% OF THE HIGHWAY LENGTH  
 IN 2010 CONGESTION IS EXPERIENCED BY 46.6% OF THE PEAK HOUR VKT IN THE EFFECTED 39 COUNTIES  
 HIGHEST PEAK-HOUR CONGESTION OCCURS IN MARION (85% OF VKT), HANCOCK (66%), CLARK (63%),

**APPENDIX C**  
**COUNTIES WITH NO CONGESTION IN 2010**

No.	COUNTY	HIGHWAY		2010	
		KM	MILES	VKT	VMT
1	ADAMS	176.62	109.75	1,059,206	658,178
2	BENTON	178.12	110.68	481,964	299,486
3	BLACKFORD	70.13	43.58	302,514	187,979
4	BROWN	86.56	53.79	429,130	266,656
5	CARROLL	164.58	102.27	766,723	476,432
6	CRAWFORD	170.70	106.07	1,028,159	638,886
7	DAVISS	134.75	83.73	829,286	515,308
8	DECATUR	134.67	83.68	1,624,057	1,009,170
9	DEKALB	194.21	120.68	2,107,942	1,309,850
10	FAYETTE	60.67	37.70	418,835	260,259
11	FOUNTAIN	222.07	137.99	1,112,696	691,416
12	FULTON	160.95	100.01	713,896	443,606
13	GIBSON	233.83	145.30	2,098,504	1,303,986
14	GREENE	267.76	166.38	1,240,894	771,077
15	HOWARD	123.26	76.59	1,420,734	882,827
16	HUNTINGTON	295.29	183.49	2,379,887	1,478,834
17	JASPER	275.09	170.94	1,389,959	863,704
18	JAY	153.75	95.54	629,693	391,284
19	JEFFERSON	198.12	123.11	977,434	607,366
20	JENNINGS	116.27	72.25	796,421	494,886
21	KNOX	247.69	153.91	1,878,395	1,167,212
22	KOSCIUSKO	225.06	139.85	1,939,959	1,205,468
23	LAGRANGE	194.89	121.10	2,436,834	1,514,220
24	LAWRENCE	208.92	129.82	1,230,984	764,919
25	MARTIN	117.69	73.13	508,447	315,943
26	MIAMI	201.50	125.21	1,315,816	817,632
27	NOBLE	182.33	113.30	1,427,316	886,917
28	OHIO	46.25	28.74	137,212	85,262
29	ORANGE	140.59	87.36	635,151	394,675
30	OWEN	138.01	85.76	726,940	451,712
31	PARKE	143.77	89.34	580,751	360,872
32	PERRY	219.38	136.32	943,731	586,424
33	PIKE	179.08	111.28	656,124	407,708
34	POSEY	160.69	99.85	1,336,202	830,300
35	PULASKI	152.05	94.48	501,747	311,780
36	RANDOLPH	207.81	129.13	916,610	569,571
37	RIPLEY	238.39	148.13	1,399,834	869,840
38	RUSH	132.51	82.34	638,507	396,761
39	SPENCER	243.33	151.20	1,454,464	903,787
40	STARKE	168.48	104.69	894,706	555,960
41	STEUBEN	229.45	142.58	2,956,939	1,837,407
42	SULLIVAN	172.69	107.31	1,004,501	624,185
43	SWITZERLAND	139.99	86.99	233,579	145,143
44	TIPTON	96.80	60.15	997,306	619,714
45	UNION	60.85	37.81	271,570	168,751
46	VANDEBURGH	152.26	94.61	3,972,217	2,468,289
47	VERMILLION	156.89	97.49	1,276,445	793,168
48	WABASH	210.90	131.05	1,060,155	658,768
49	WARREN	165.79	103.02	530,176	329,445
50	WARRICK	229.97	142.90	2,352,275	1,461,676
51	WASHINGTON	186.41	115.83	713,331	443,255
52	WELLS	164.55	102.25	733,869	456,017
53	WHITE	222.57	138.30	1,389,959	863,704
54	WHITLEY	215.89	134.15	1,638,057	1,017,869
		<b>9370.81</b>	<b>5822.91</b>	<b>62,498,043</b>	<b>38,835,545</b>

**APPENDIX C  
COUNTIES WITH CONGESTION IN 2015**

County	State Highway		2015 Vehicle		Congested		AM PkHr VKT		PM PkHr VKT			
	Kilometers	Miles	Km Traveled	Miles traveled	Km	Miles	Congested	Total	Congested	Total	%	
1												
2	364.78	226.67	9,115,752	5,664,420	48.63	28.77	116,442	377,682	184,764	433,018	42.7%	
3	203.77	126.62	4,237,335	2,633,030	00.30	00.18	73,981	177,093	86,209	200,630	43.0%	
3	278.09	172.80	5,029,632	3,125,354	37.00	21.89	97,490	210,833	130,371	240,390	54.2%	
4	226.59	140.80	1,489,112	925,316	01.32	00.78		62,130	1,956	69,358	2.8%	
5	227.43	141.32	6,304,631	3,917,623	42.39	25.08	171,798	260,170	206,777	299,912	68.9%	
6	197.45	122.69	2,140,166	1,329,874	20.16	11.93		90,360	59,466	102,200	58.2%	
7	209.10	129.93	2,096,264	1,302,594	19.99	11.82	49,267	88,064	57,114	100,611	56.8%	
8	202.34	125.73	2,540,315	1,578,522	10.56	06.25	10,109	107,428	18,821	122,034	15.4%	
9	194.21	120.68	2,468,411	1,533,842	29.31	17.34	15,744	104,360	72,371	118,024	61.3%	
10	214.07	133.02	4,042,228	2,511,793	25.76	15.24	15,099	160,322	67,244	185,552	36.2%	
11	203.38	126.38	1,513,803	940,659	00.29	00.17		64,202	0,446	70,666	0.6%	
12	322.17	200.19	5,252,313	3,263,725	00.82	00.49		222,378	1,140	249,585	0.5%	
13	125.19	77.79	3,899,204	2,422,919	27.79	16.44	103,572	161,790	122,617	185,136	66.2%	
14	145.59	90.47	1,610,698	1,000,868	00.61	00.36		68,992	0,726	75,825	1.0%	
15	264.87	164.59	3,161,984	1,964,820	03.28	01.94	1,353	132,313	8,569	150,138	5.7%	
16	233.16	144.88	6,972,203	4,332,444	28.94	17.12	138,156	290,484	170,453	333,093	51.2%	
17	159.27	98.97	4,353,819	2,705,412	31.40	18.58	122,039	182,938	142,286	208,192	68.3%	
18	264.91	164.61	2,480,136	1,541,127	28.07	16.60	53,730	97,488	62,168	109,011	57.0%	
19	271.46	168.68	4,877,686	3,050,936	19.23	11.38	37,795	205,215	73,496	232,654	31.6%	
20	228.36	141.90	3,848,045	2,391,130	32.68	19.34	106,488	162,602	123,272	183,877	67.0%	
21	287.47	178.63	3,155,139	1,960,566	24.96	14.77	60,018	132,692	69,665	150,356	46.3%	
22	275.09	170.94	3,517,571	2,185,777	51.51	30.48	7,412	148,658	125,550	168,976	74.3%	
23	165.73	102.98	4,746,709	2,949,549	30.61	18.11	116,423	199,591	135,412	226,408	59.8%	
24	491.35	305.32	22,459,741	13,956,217	102.34	60.54	559,534	913,475	714,243	1,060,737	67.3%	
25	398.56	247.66	6,713,669	4,171,793	11.83	07.00	45,955	281,313	53,198	321,832	16.5%	
26	272.20	169.14	4,896,995	3,042,935	29.64	17.54	104,404	204,088	121,925	232,482	52.4%	
27	463.30	287.89	48,659,640	30,236,525	215.60	127.55	1,693,536	1,958,943	2,022,155	2,302,796	87.8%	
28	275.19	171.00	2,441,366	1,517,036	06.97	04.12	6,682	102,769	13,706	116,676	11.7%	
29	141.88	88.16	2,305,263	1,432,463	00.97	00.57	954	96,266	1,480	109,506	1.4%	
30	261.98	162.79	2,782,882	1,729,250	06.71	03.97	8,042	117,930	9,708	127,899	7.6%	
31	215.05	133.63	3,281,620	2,039,160	14.71	08.70	43,595	137,003	50,467	157,609	32.0%	
32	190.54	118.40	996,717	619,348	04.63	02.74	10,077	41,727	11,666	47,950	24.3%	
33	328.17	203.92	9,348,565	5,809,088	41.41	24.50	192,232	386,123	241,544	382,245	63.2%	
34	214.65	133.38	3,249,548	2,019,231	32.73	19.37	84,810	136,892	98,178	155,899	63.0%	
35	322.76	200.56	6,635,287	4,123,089	11.01	06.51		273,314	33,286	312,264	10.7%	
36	137.51	85.45	1,925,614	1,196,554	18.59	11.00	50,397	80,839	65,603	91,541	71.7%	
37	156.63	97.33	3,457,599	2,148,511	27.10	16.03	77,222	143,295	89,973	165,934	54.2%	
38	304.75	189.37	5,561,796	3,456,035	22.41	13.61	86,390	231,770	126,265	264,825	47.7%	
39	224.61	139.57	4,253,694	2,643,195	39.97	23.29	45,560	175,208	73,820	200,392	36.8%	
40	242.36	150.60	4,186,628	2,601,521	37.06	21.93	98,571	180,478	116,974	193,928	60.3%	
41	222.57	138.30	788,484	489,546	24.50	15.22		33,720	6,259	37,162	16.8%	
42	10,129	6,294	222,798,265	138,444,208	1163.78	689.23	4,404,879	9,202,938	5,771,342	10,497,323	55.0%	
43	8,679	5,393	63,606,120	37,630,078				3,704,991		3,765,582		
44	18,807	11,687	286,404,385	176,074,286	1163.78	689.23	4,404,879	12,907,929	5,771,342	14,262,905	40.5%	



**APPENDIX D**

**PRESENTATION OF COUNTY SUMMARY DATA**

**BY YEARS 1995, 2000, 2005, 2010 AND 2015**

**OF ALL CONGESTED STATE HIGHWAYS**

**THAT ARE NOT INTERSTATE**

**BY COUNTY AND BY HIGHWAY ROUTE NUMBER**

APPENDIX D  
ARTERIALS AND NON INTERSTATE ROADS WITH CONGESTION

County	Funct Class Segment #	Total Length (Km)	1995	2000	2005	2010	2020	Route Number	Length (mi)	Length (km)	Funct. Class
<b>Allen</b>											
02	0067300	INVESTMENT DR LT	0.67	0.71	0.75	0.79	0.83	24	0.31	0.50	2
02	0067410	EXECUTIVE BLVD LT	0.67	0.71	0.75	0.79	0.83	24	0.56	0.90	2
02	0069900	CLINTON ST	0.74	0.78	0.83	0.87	0.92	24	0.67	1.08	2
02	0107750	WILLIAMS ST LT	0.80	0.84	0.89	0.93	0.98	27	0.04	0.06	2
02	0107800	LASELLE ST RT	0.74	0.78	0.82	0.87	0.92	27	0.29	0.47	2
02	0108150	BR 2488 N/S RR & CONRAIL O US27	0.74	0.78	0.82	0.87	0.92	27	0.21	0.34	2
02	0109350	SUPERIOR ST	0.70	0.73	0.77	0.81	0.86	27	0.97	1.56	2
02	0110400	STATE BLVD	0.70	0.73	0.77	0.81	0.86	27	0.22	0.35	2
02	0110650	US 27 SB LT (CLINTON ST.)	0.79	0.83	0.87	0.92	0.97	27	0.37	0.60	2
02	0111050	US 27 FOLLOWS NORTHRUP ST	0.67	0.71	0.75	0.79	0.83	27	1.01	1.63	2
02	0111650	WELLS ST LT & RICHARDS S	0.67	0.71	0.75	0.79	0.83	27	0.08	0.13	2
02	0114500	B US 27 SB US 27 NB	0.99	1.05	1.10	1.16	1.23	27	0.22	0.35	2
									4.95	7.97	
<b>Cass</b>											
09	0042000	B SR 25 TRAVEL O US 24	0.50	0.55	0.60	0.66	0.73	24	0.15	0.24	4
09	0045000	BROWN ST	0.51	0.56	0.62	0.68	0.75	24	0.12	0.19	4
09	0047000	BR 4178 O EEL RIVER	0.51	0.56	0.62	0.68	0.75	24	0.08	0.13	4
09	0079000	GEORGE ST RT	0.60	0.68	0.77	0.87	0.99	24	0.38	0.61	5
09	0386000	WHEATLAND AV LT	0.53	0.58	0.64	0.71	0.77	17	0.09	0.14	5
									0.82	1.32	
<b>Clark</b>											
10	0409000	E SR 62 TRAVEL O US 31	0.67	0.71	0.75	0.79	0.83	62	0.14	0.23	2
									0.14	0.23	
<b>Clinton</b>											
12	0053400	MAISH RD	0.88	0.93	0.98	1.03	1.08	421	0.17	0.27	2
12	0053550	DETAIL ITEM CHANGE	0.65	0.68	0.72	0.76	0.80	421	0.09	0.14	2
12	0053700	ST MARYS AV LT & FUDGE AV	0.75	0.79	0.84	0.88	0.93	421	0.25	0.40	2
12	0053900	TURN RT ONTO HOKE AV.	0.99	1.04	1.10	1.16	1.22	421	0.05	0.08	2
12	0054000	TURN LT ONTO WALNUT ST	0.88	0.93	0.98	1.03	1.09	421	0.68	1.09	2
12	0054800	BR 4387 O PRAIRIE CREEK	0.88	0.93	0.98	1.03	1.09	421	0.06	0.10	2
12	0054900	US 421 TURN RT ONTO JACKS	0.74	0.78	0.82	0.86	0.91	421	0.07	0.11	2
12	0055000	CLINTON ST	0.74	0.78	0.82	0.86	0.91	421	0.06	0.10	2
12	0103900	DOYAL ST LT	0.81	0.85	0.90	0.94	1.00	28	0.30	0.48	2
12	0104500	MAIN ST	0.81	0.85	0.90	0.94	1.00	28	0.06	0.10	2
12	0202200	GADDIS ST	0.56	0.62	0.68	0.74	0.82	26	0.16	0.26	2
									1.95	3.14	
<b>Dearborn</b>											
15	0149000	SR 48 LT (BELBY RD)	0.61	0.65	0.72	0.78	0.84	50	0.15	0.24	2
15	0151000	CONRAIL #025	0.66	0.70	0.77	0.84	0.90	50	0.09	0.14	2
15	0155000	FRONT ST	0.52	0.54	0.60	0.65	0.71	50	0.21	0.34	2
									0.45	0.72	
<b>DuBois</b>											
19	0282500	MILL ST	0.72	0.75	0.79	0.84	0.88	164	0.13	0.21	2
19	0284000	RIVERSIDE DR LT	0.72	0.75	0.79	0.84	0.88	164	0.05	0.08	2
									0.18	0.29	
<b>Elkhart</b>											
20	0134550	SR 112 LT & BRISTOL ST R	0.70	0.74	0.78	0.83	0.87	19	0.28	0.45	2
20	0099050	SR 15 TURNS RT ONTO VISTU	0.44	0.50	0.56	0.64	0.72	15	0.23	0.37	5
									0.51	0.82	
<b>Floyd</b>											
22	0153700	NE RAMP 119C LT FROM I-64	0.75	0.82	0.90	0.99	1.08	150	0.14	0.24	4
									0.14	0.24	

APPENDIX D  
ARTERIALS AND NON INTERSTATE ROADS WITH CONGESTION

2015

County	Funct Class Segment #	Total Length (Km)	1995	2000	2005	2010	2020	Route Number	Length (mi)	Length (km)	Funct Class
Grant											
27	0048000	10TH ST	0.75	0.79	0.84	0.88	0.93	9	0.18	0.29	2
27	0048100	7TH ST	0.75	0.79	0.84	0.88	0.93	9	0.23	0.37	2
27	0048350	SR.18 WB (2ND ST)	0.85	0.89	0.94	0.99	1.04	9	0.18	0.29	2

0.59 0.95

Hamilton

29	0094000	B US.421 MARION CO. LN	0.75	0.83	0.91	1.00	1.09	421	0.08	0.13	4
29	0025000	B US.31 MARION CO. LINE	0.63	0.69	0.75	0.83	0.91	31	0.22	0.35	4
29	0025100	BR 5280 E&W I-465 O US.31	0.63	0.69	0.75	0.83	0.91	31	0.20	0.32	4
29	0025200	IR 691 RT (TIMBER LN-102	0.60	0.66	0.72	0.79	0.87	31	0.21	0.34	4
29	0025250	IR 484 RT (103RD ST.)	0.60	0.66	0.72	0.79	0.87	31	0.13	0.21	4
29	0025270	DETAIL ITEM CHANGE	0.57	0.63	0.69	0.76	0.83	31	0.25	0.40	4
29	0025500	IR 116 (111TH ST.)	0.53	0.58	0.64	0.70	0.77	31	0.20	0.32	4
29	0025560	LEAVE ENDFLS UAB	0.53	0.58	0.64	0.70	0.77	31	0.09	0.14	4
29	0025600	CARMEL CORP. LINE & 116TH	0.53	0.58	0.64	0.70	0.77	31	0.70	1.13	4

2.08 3.35

Hancock

30	0023700	BOYD AVE	0.68	0.71	0.75	0.79	0.83	9	0.1	0.16	2
30	0023800	OHIO ST LT	0.68	0.71	0.75	0.79	0.83	9	0.2	0.32	2
30	0024100	MICHIGAN ST LT	0.68	0.71	0.75	0.79	0.83	9	0.09	0.14	2

0.39 0.63

Harrison

31	0011900	SR.62 TURNS RT ONTO CAPIT	0.49	0.56	0.63	0.72	0.81	62	0.11	0.18	5
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0.11 0.18

Henricks

32	0094750	E SR.267 TRAVEL O US.40	0.66	0.70	0.74	0.78	0.82	40	0.23	0.37	2
32	0095250	PLAINFIELD CORP LINE	0.65	0.68	0.72	0.76	0.80	40	0.56	0.90	2

0.79 1.27

Lake

45	0259700	SIGNALIZED MALL ENTRANCE	0.76	0.80	0.84	0.89	0.93	30	0.40	0.64	2
45	0260850	BR 4903 I-65 O US.30	0.68	0.72	0.76	0.80	0.84	30	0.20	0.32	2
45	0267000	SR.51 LT/RT 1243 RT (GRAN	0.83	0.87	0.92	0.97	1.02	30	1.00	1.61	2
45	0800850	RAMP 004A RT TO MICHIGAN	0.58	0.75	0.97	1.25	1.61	912	0.67	1.08	2
45	0801200	RAMP 004V RT FROM MICHIGA	0.50	0.64	0.83	1.07	1.38	912	0.57	0.92	2
45	0801350	EAST CHICAGO/GARY CORP L	0.50	0.64	0.83	1.07	1.38	912	0.10	0.16	2
45	0801400	RAMP 005B LT FROM GUTHRIE	0.54	0.70	0.91	1.18	1.52	912	0.24	0.39	2
45	0801500	RAMP 008Q LT & RAMP 008N	0.82	1.06	1.37	1.77	2.28	912	0.22	0.35	2
45	0801550	BR 5088 O US.12	0.89	1.15	1.49	1.92	2.48	912	0.10	0.16	2
45	0801600	BR 5086 RAMP 008N O SR.	0.89	1.15	1.49	1.92	2.48	912	0.16	0.26	2
45	0801650	RAMP 003B RT & RAMP 003C	0.57	0.74	0.95	1.23	1.59	912	0.43	0.69	2
45	0801800	RAMP 007A RT TO CLINE AV	0.88	1.14	1.48	1.91	2.47	912	0.61	0.98	2
45	0802050	BR 2352B O GARY AV. & VUL	1.12	1.45	1.87	2.42	3.13	912	0.49	0.79	2
45	0802200	BR 2365 O I-90 & CSS&SB R	1.12	1.45	1.87	2.42	3.13	912	0.47	0.76	2
45	0802400	BR 4112 O US.20	1.21	1.56	2.02	2.61	3.37	912	1.06	1.71	2
45	0802700	BR 5613 15TH AV./169TH	1.21	1.57	2.03	2.62	3.39	912	1.25	2.01	2
45	0803100	BR 3671 I-80/1-94 O SR.	0.70	0.91	1.17	1.52	1.96	912	0.13	0.21	2
45	0803250	KENNEDY INDUSTRIAL PARK D	0.70	0.91	1.17	1.52	1.96	912	0.10	0.16	2

8.20 13.20

APPENDIX D  
ARTERIALS AND NON INTERSTATE ROADS WITH CONGESTION

2015

County	Funct Class Segment #	Total Length (km)	1995	2000	2005	2010	2020	Route Number	Length (mi)	Length (km)	Funct. Class
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Madison

48	0183250	60TH ST	0.74	0.77	0.82	0.86	0.91	109	0.49	0.79	2
48	0119350	SR.38 (NEW CASTLE PIKE)	0.51	0.56	0.61	0.67	0.74	36	0.04	0.06	4
									0.53	0.85	

Marion

49	0102275	DETAIL ITEM CHANGE	0.94	0.99	1.05	1.10	1.16	31	0.26	0.42	2
49	0304500	BR. 5024 O PLEASANT RUN CR	0.69	0.72	0.76	0.81	0.85	37	0.25	0.40	2
49	0403950	IR 891 (HIGH SCHOOL RD.)	0.65	0.69	0.72	0.76	0.80	40	0.3	0.48	2
									0.81	1.30	

Marshall

50	0010800	IR 215 (QUEEN RD.) LT	0.91	1.00	1.10	1.20	1.32	30	1.55	2.49	4
50	0011000	IR 219 (PINE DR.) & ENTER	0.73	0.77	0.81	0.85	0.90	30	1.57	2.53	2
50	0011300	PLYMOUTH CORP. LINE	0.73	0.77	0.81	0.85	0.90	30	0.30	0.48	2
50	0031850	DETAIL ITEM CHANGE	0.62	0.68	0.75	0.82	0.90	31	0.91	1.46	4
									4.33	6.97	

Monroe

53	0097550	MATTHEWS DR LT	0.61	0.66	0.73	0.81	0.88	46	0.45	0.72	4
53	0098450	DETAIL ITEM CHANGE	0.49	0.54	0.59	0.65	0.71	46	0.15	0.24	4
									0.60	0.97	

St. Joseph

71	0195150	DETAIL ITEM CHANGE	0.66	0.69	0.73	0.77	0.81	33	0.09	0.14	2
71	0195250	CAPITOL AVE LT	0.66	0.69	0.73	0.77	0.81	33	0.5	0.80	2
71	0196000	HOME ST	0.66	0.69	0.73	0.77	0.81	33	0.5	0.80	2
71	0202200	US.33 SB FROM LT & EDDY S	0.77	0.82	0.86	0.91	0.96	33	0.11	0.18	2
71	0206000	B US.33 (SECTION #2)	0.67	0.70	0.74	0.78	0.83	33	0.1	0.16	2
71	0250750	MISHAWAKA AVE	0.65	0.68	0.72	0.76	0.80	331	0.07	0.11	2
71	0250800	GROVE ST	0.70	0.74	0.78	0.82	0.86	331	0.41	0.66	2
									1.78	2.86	

Tippecanoe

79	0112900	SR.26 EB TURNS RT ONTO 15	0.79	0.83	0.87	0.92	0.97	26	0.07	0.11	2
79	0114050	18TH ST LT & 17TH ST RT	0.70	0.74	0.78	0.82	0.87	26	0.01	0.02	2
79	0114100	LINCOLN ST RT	0.70	0.74	0.78	0.82	0.87	26	0.51	0.82	2
79	0114750	26TH ST	0.68	0.71	0.75	0.79	0.84	26	0.23	0.37	2
79	0114950	30TH ST	0.68	0.71	0.75	0.79	0.84	26	0.06	0.10	2
79	0130000	B SR.26 WB (#2) SR.26 EB	0.72	0.76	0.81	0.85	0.89	26	0.07	0.11	2
79	0104100	DETAIL ITEM CHANGE	0.49	0.53	0.58	0.64	0.71	25	0.16	0.26	4
79	0111500	INTRAMURAL DR	0.68	0.71	0.75	0.79	0.83	26	0.14	0.23	2
									1.25	2.01	

Vigo

84	0035150	TERRE HAUTE CORP. LINE	0.73	0.77	0.81	0.86	0.90	41	0.01	0.02	2
84	0035200	MARGARET AV	0.68	0.72	0.76	0.81	0.84	41	0.92	1.48	2
									0.93	1.50	

31.53 50.76

**APPENDIX E**  
**SPREADSHEET LAYOUT WITH**  
**EQUATIONS USED**

**APPENDIX E**  
**SPREADSHEET LAYOUT WITH EQUATIONS USED**

THE BASIC SPREADSHEET IS PRESENTED ON THE NEXT 11 PAGES. THE DATA ARE FROM HANCOCK COUNTY. NOT SHOWN ARE THE REGRESSION EQUATIONS AND THE MAPPING OF THE FUNCTIONAL CLASSIFICATION TABLE. THESE ARE DISCUSSED IN THE BODY OF THE REPORT. THESE WERE PUT IN USING VISUAL BASIC AND LINKAGES THROUGHOUT THE SPREADSHEET.

COLUMNS	DESCRIPTION
A-C AND J-AH	THE DATA FROM THE ROAD INVENTORY AND ITS COMBINATION TO DETERMINE THE SERVICE FLOW AT CAPACITY
D AND AN-AQ	THE VALUES FROM THE GUNAWARDENA AND SINHA REPORT FOR K, D, AND BENCHMARK V/C.
AM,AJ,AND AL	THE ADT AND THE PEAKHOUR DIRECTIONAL FLOWS FOR AM AND PM.
E-I	THE V/C CALCULATIONS DEVELOPED FROM THE SERVICE FLOW AT CAPACITY AND THE PEAKHOUR DIRECTIONAL FLOWS. APPLYING THE GROWTH FACTORS AS INDICATED IN THE REPORT
AR-BN	FOR DEVELOPING THE CONGESTED LENGTHS, TOTAL, AND PM AND AM VMT FOR THE BENCHMARK V/C.
BO-CJ	FOR DEVELOPING THE CONGESTED LENGTHS, TOTAL, AND PM AND AM VMT FOR V/C=1.
CK-CR	SET ASIDE FOR CALCULATING THE COUNTY-BY-COUNTY TABLES USED IN THE REPORT AND IN APPENDIX A
CS-CW	THE VMT CALCULATIONS
CY-DC	SEPARATES THE ROAD SEGMENTS INTO THEIR FUNCTION CLASSIFICATIONS
DD-DS	USED TO EXAMINE THE ROAD LINKS WHERE CONGESTION OCCURS.
DT-EP	FOR DETERMINING THE LENGTH BY FUNCTIONAL CLASS OF CONGESTED LENGTHS.

**APPENDIX E  
SPREADSHEET LAYOUT USED IN THIS ANALYSIS  
FROM COLUMN A TO EP**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1					V/C														
2					A/R/AIS														
3				Benchmark	Current	$E^{*(1+i)^5}$	$E^{*(1+i)^{10}}$	$E^{*(1+i)^{15}}$	$E^{*(1+i)^{20}}$	L*0.1	0.01*M								
4					Values														
5																			
6																			
7	CO	RECORD#	COMMENTS	bench	1995	2000	2005	2010	2015	RTEL	LENG	RTEL	LENG	U	J	FC	F	LN	N
8	30	0000250	B I-70 MARION CO. LINE	0.7	1.48	1.80	2.19	2.66	3.24	70	2.18	700	218	0	1	3	1	5	4
9	30	0002000	BR 5386 IR 11 (MT.COMFORT	0.7	0.61	0.75	0.91	1.10	1.34	70	6.4	700	640	0	1	3	1	5	4
10	30	0004750	GREENFIELD CORP. LINE & UA	0.9	0.60	0.78	1.01	1.30	1.68	70	1.3	700	130	1	1	1	1	5	4
11	30	0005100	BR 5130 BR-9 O I-70	0.9	0.57	0.73	0.95	1.23	1.59	70	0.48	700	48	1	1	1	1	5	4
12	30	0005500	GREENFIELD CORP. LINE	0.9	0.57	0.73	0.95	1.23	1.59	70	0.77	700	77	2	1	1	1	5	4
13	30	0005800	LEAVE GREENFIELD UAB.	0.7	0.58	0.70	0.85	1.04	1.26	70	2.24	700	224	0	1	3	1	5	4
14	30	0006750	RAMP 100A FROM REST PARK	0.7	0.58	0.70	0.85	1.04	1.26	70	5.75	700	575	0	1	3	1	5	4
15	30	0010000	B SW RAMP 096A AT I 70 EB	0.7	0.26	0.31	0.38	0.46	0.56	70	0.27	700	27	0	1	3	1	1	1
16	30	0010050	B SE RAMP 096 B AT IR 11	0.7	0.09	0.10	0.13	0.15	0.19	70	0.3	700	30	0	1	3	1	1	1
17	30	0010100	B NE RAMP 096C AT I 70 WB	0.7	0.08	0.09	0.11	0.13	0.16	70	0.3	700	30	0	1	3	1	1	1
18	30	0010150	B NW RAMP 096 D AT IR 11	0.7	0.28	0.34	0.41	0.50	0.61	70	0.27	700	27	0	1	3	1	1	1
19	30	0010200	B SW RAMP 100A AT I 70 EB	0.9	0.27	0.35	0.46	0.59	0.77	70	0.31	700	31	1	1	1	1	1	1
20	30	0010250	B SE RAMP 100B AT IR 9	0.9	0.07	0.09	0.12	0.16	0.20	70	0.27	700	27	1	1	1	1	1	1
21	30	0010300	B NE RAMP 100C AT I 70 WB	0.9	0.06	0.07	0.09	0.12	0.15	70	0.31	700	31	1	1	1	1	1	1
22	30	0010350	B NW RAMP 100D AT IR 9	0.9	0.25	0.32	0.42	0.54	0.70	70	0.27	700	27	1	1	1	1	1	1
23	30	0015000	B BR-9 BRELET CO. LINE	0.7	0.12	0.13	0.15	0.16	0.18	9	2.83	90	283	0	9	4	3	2	2
24	30	0018000	DETAIL ITEM CHANGE	0.7	0.12	0.13	0.15	0.16	0.18	9	0.29	90	29	0	9	4	3	2	2
25	30	0018500	IR 14 (300 B-1)	0.7	0.14	0.15	0.17	0.18	0.20	9	1.03	90	103	0	9	4	3	2	2
26	30	0019520	ENTER GREENFIELD UAB.	0.8	0.12	0.13	0.14	0.15	0.15	9	0.3	90	30	2	9	2	3	2	2
27	30	0019820	GREENFIELD CORP. LINE	0.8	0.12	0.13	0.14	0.15	0.15	9	0.71	90	71	1	9	2	3	2	2
28	30	0021000	IRV BT #26 (100 B.-DAVIS)	0.8	0.24	0.25	0.26	0.28	0.29	9	0.2	90	20	1	9	2	3	2	2
29	30	0021200	DETAIL ITEM CHANGE	0.8	0.31	0.33	0.34	0.36	0.38	9	0.54	90	54	1	9	2	3	2	2
30	30	0022150	GRADE ST	0.8	0.31	0.33	0.34	0.36	0.38	9	0.11	90	11	1	9	2	3	2	2
31	30	0022350	DETAIL ITEM CHANGE	0.8	0.31	0.33	0.34	0.36	0.38	9	0.08	90	8	1	9	2	3	2	2
32	30	0022500	UB-40 (MAIN ST.)	0.8	0.44	0.47	0.49	0.52	0.55	9	0.17	90	17	1	9	2	3	2	2
33	30	0022850	GRANT ST RT	0.8	0.44	0.47	0.49	0.52	0.55	9	0.42	90	42	1	9	2	3	2	2
34	30	0023700	BIDD AVE	0.8	0.68	0.71	0.75	0.79	0.83	9	0.1	90	10	1	9	2	3	2	2
35	30	0023800	OHIO ST LT	0.8	0.68	0.71	0.75	0.79	0.83	9	0.2	90	20	1	9	2	3	2	2
36	30	0024100	MICHIGAN BT LT	0.8	0.68	0.71	0.75	0.79	0.83	9	0.09	90	9	1	9	2	3	2	2
37	30	0024310	MCKENZIE RD	0.8	0.34	0.35	0.37	0.39	0.42	9	0.23	90	23	1	9	2	3	2	4

**APPENDIX E  
SPREADSHEET LAYOUT USED IN THIS ANALYSIS  
FROM COLUMN A TO EP**

T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
			Left Shoulder Width	Right Shoulder Width		N-B Road Width	S-B Road Width	Lane Width	Ideal Capacity	Factor Heavy Vehicles	Factor for Driver	Factor lane Width	V/C used in eqn	Factor Direct Flow	Service Flow Calc	P.M.Pk-Hr Direct Volume
			RI	RI		RI	RI	RI								
6	area type	road type	LSW	RSW	S	INBW	ISBW	w	c	EHV	fP	fw	v/c	fd	SP	PHDV-pm
1	rural	undivided freeway	4	10	4	24	24	12	2000	0.9	0.9	0.91	1	0.94	2,947	4,373
2	rural	undivided freeway	4	10	4	24	24	12	2000	0.9	0.9	0.91	1	0.94	2,947	1,809
3	urban	undivided freeway	4	10	4	24	24	12	2000	0.9	0.9	0.91	1	0.94	2,947	1,776
4	urban	undivided freeway	4	10	4	24	24	12	2000	0.9	0.9	0.91	1	0.94	2,947	1,674
5	urban	undivided freeway	4	10	4	24	24	12	2000	0.9	0.9	0.91	1	0.94	2,947	1,674
6	urban	undivided freeway	4	10	4	24	24	12	2000	0.9	0.9	0.91	1	0.94	2,947	1,705
7	urban	undivided freeway	4	10	4	24	24	12	2000	0.9	0.9	0.91	1	0.94	2,947	1,705
8	urban	undivided freeway	3	6	3	16	00	12	2000	0.9	0.9	0.89	1	0.94	1,440	367
9	urban	undivided freeway	3	8	3	16	00	12	2000	0.9	0.9	0.89	1	0.94	1,440	122
10	urban	undivided freeway	3	8	3	16	00	12	2000	0.9	0.9	0.89	1	0.94	1,440	108
11	urban	undivided freeway	3	7	3	16	00	12	2000	0.9	0.9	0.89	1	0.94	1,440	404
12	urban	undivided freeway	4	5	4	16	00	12	2000	0.9	0.9	0.91	1	0.94	1,474	404
13	urban	undivided freeway	4	9	4	16	00	12	2000	0.9	0.9	0.91	1	0.94	1,474	106
14	urban	undivided freeway	4	8	4	16	00	12	2000	0.9	0.9	0.91	1	0.94	1,474	82
15	urban	undivided freeway	4	9	4	16	00	12	2000	0.9	0.9	0.91	1	0.94	1,474	370
16	urban	undivided freeway	5	7	5	24	00	12	2800	0.9	0.9	0.96	1	0.94	2,172	264
17	urban	undivided 2-lane	5	6	5	24	00	12	2800	0.9	0.9	0.96	1	0.94	2,172	264
18	urban	undivided 2-lane	5	6	5	24	00	12	2800	0.9	0.9	0.96	1	0.94	2,172	301
19	urban	undivided 2-lane	5	6	5	24	00	12	2800	0.9	0.9	0.96	1	0.94	2,172	269
20	urban	undivided 2-lane	5	6	5	24	00	12	2800	0.9	0.9	0.96	1	0.94	2,172	269
21	urban	undivided 2-lane	5	6	5	24	00	12	2800	0.9	0.9	0.96	1	0.94	2,172	516
22	urban	undivided 2-lane	0	0	0	36	00	12	2800	0.9	0.9	0.74	1	0.94	1,672	516
23	urban	undivided 2-lane	0	0	0	36	00	12	2800	0.9	0.9	0.74	1	0.94	1,672	516
24	urban	undivided 2-lane	0	0	0	45	00	12	2800	0.9	0.9	0.74	1	0.94	1,672	516
25	urban	undivided 2-lane	0	0	0	40	00	12	2800	0.9	0.9	0.74	1	0.94	1,672	742
26	urban	undivided 2-lane	0	0	0	29	00	12	2800	0.9	0.9	0.74	1	0.94	1,672	742
27	urban	undivided 2-lane	0	0	0	18	18	9	2800	0.9	0.9	0.48	1	0.94	1,099	742
28	urban	undivided 2-lane	0	0	0	18	18	9	2800	0.9	0.9	0.48	1	0.94	1,099	742
29	urban	undivided 2-lane	0	0	0	18	18	9	2800	0.9	0.9	0.48	1	0.94	1,099	742
30	urban	undivided 2-lane	0	0	0	18	18	9	2800	0.9	0.9	0.48	1	0.94	1,099	742
31	urban	undivided freeway	0	0	0	26	26	12	2000	0.9	0.9	0.83	1	0.94	2,678	901



**APPENDIX E  
SPREADSHEET LAYOUT USED IN THIS ANALYSIS  
FROM COLUMN A TO EP**

AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY
A.M.Pk-Hr	Funct	Avg Ann												
Direct	Class	Daily	K and D Factors developed in											
Volume	Revert	Traffic	Gunwarandana and Sinha Report											
PHDV-arr	FC	AADT	k-am	d-am	k-pm	d-pm	Report #	Description	Rte No	Beach mark	Length Miles	1995 VMT	Congested Links at Bench 1995	2000
8	3,778	89,944	0.075	0.56	0.085	0.572	0000250	B I 70 MARION CO. LINE	70	0.7	2.18	196,078	2.18	2.18
9	1,563	37,213	0.075	0.56	0.085	0.572	0002000	BR 5386 IR 11 (MT COMFORT	70	0.7	6.4	238,163	0	6.4
10	1,500	37,404	0.07	0.573	0.082	0.579	0004750	GREENFIELD CORP LINE & U	70	0.9	1.3	48,625	0	0
11	1,414	35,258	0.07	0.573	0.082	0.579	0005100	BR 5130 SR 9 O 1 70	70	0.9	0.48	16,924	0	0
12	1,414	35,258	0.07	0.573	0.082	0.579	0005500	GREENFIELD CORP. LINE	70	0.9	0.77	27,149	0	0
13	1,473	35,077	0.075	0.56	0.085	0.572	0005800	LEAVE GREENFIELD UAB.	70	0.7	2.24	78,572	0	2.24
14	1,473	35,077	0.075	0.56	0.085	0.572	0006750	RAMP 106A FROM REST PARK	70	0.7	5.75	201,693	0	5.75
15	317	7,555	0.075	0.56	0.085	0.572	0010000	B SW RAMP 096A AT I 70 EB	70	0.7	0.27	2,040	0	0
16	106	2,519	0.075	0.56	0.085	0.572	0010050	B SE RAMP 096 B AT IR 11	70	0.7	0.3	756	0	0
17	93	2,226	0.075	0.56	0.085	0.572	0010100	B NE RAMP 096C AT I 70 WB	70	0.7	0.3	668	0	0
18	349	8,311	0.075	0.56	0.085	0.572	0010150	B NW RAMP 096 D AT IR 11	70	0.7	0.27	2,244	0	0
19	341	8,506	0.07	0.573	0.082	0.579	0010200	B SW RAMP 104A AT I 70 EB	70	0.9	0.31	2,637	0	0
20	89	2,229	0.07	0.573	0.082	0.579	0010250	B SE RAMP 104B AT SR 9	70	0.9	0.27	602	0	0
21	69	1,718	0.07	0.573	0.082	0.579	0010300	B NE RAMP 104C AT I 70 WB	70	0.9	0.31	533	0	0
22	312	7,784	0.07	0.573	0.082	0.579	0010350	B NW RAMP 104D AT SR 9	70	0.9	0.27	2,102	0	0
23	227	5,420	0.075	0.558	0.082	0.594	0015000	B SR 9 SHELBY CO. LINE	9	0.7	2.83	15,339	0	0
24	227	5,420	0.075	0.558	0.082	0.594	0018000	DETAIL ITEM CHANGE	9	0.7	0.29	1,572	0	0
25	259	6,183	0.075	0.558	0.082	0.594	0018500	IR 14 (300 S)	9	0.7	1.03	6,368	0	0
26	238	5,791	0.074	0.555	0.08	0.581	0019520	ENTER GREENFIELD UAB.	9	0.8	0.3	1,737	0	0
27	238	5,791	0.074	0.555	0.08	0.581	0019820	GREENFIELD CORP. LINE	9	0.8	0.71	4,112	0	0
28	456	11,099	0.074	0.555	0.08	0.581	0021000	INV ST #26 (100 S-DAVIS	9	0.8	0.2	2,220	0	0
29	456	11,099	0.074	0.555	0.08	0.581	0021200	DETAIL ITEM CHANGE	9	0.8	0.54	5,993	0	0
30	456	11,099	0.074	0.555	0.08	0.581	0022150	OSAGE ST	9	0.8	0.11	1,221	0	0
31	456	11,099	0.074	0.555	0.08	0.581	0022350	DETAIL ITEM CHANGE	9	0.8	0.08	888	0	0
32	656	15,962	0.074	0.555	0.08	0.581	0022500	US 40 (MAIN ST.)	9	0.8	0.17	2,714	0	0
33	656	15,962	0.074	0.555	0.08	0.581	0022850	GRANT ST RT	9	0.8	0.42	6,704	0	0
34	656	15,962	0.074	0.555	0.08	0.581	0023700	BOYD AVE	9	0.8	0.1	1,596	0	0
35	656	15,962	0.074	0.555	0.08	0.581	0023800	OHIO ST LT	9	0.8	0.2	3,192	0	0
36	656	15,962	0.074	0.555	0.08	0.581	0024100	MICHIGAN ST LT	9	0.8	0.09	1,437	0	0
37	796	19,375	0.074	0.555	0.08	0.581	0024310	MCKENZIE RD	9	0.8	0.23	4,456	0	0

**APPENDIX E  
SPREADSHEET LAYOUT USED IN THIS ANALYSIS  
FROM COLUMN A TO EP**

AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM
1													
2	For 2005 Calc					For 2005 Calc					For 2005 Calc		
3	IF(G8<\$D8,0,\$A\$V8)					IF(G8<\$D8,0,\$B\$8/\$E8)					IF(G8*(\$A\$8/\$A\$J8)<\$D8,0,\$B\$8)		
4													
5													
6	mark V/C - MBtes												
7	2005	2010	1995 PM pkhr*VMT	Congested VMT PM pkhr @ Benchmark V/C - veh.mL		2005	2010	2015	1995 AM pkhr*VMT	Congested VMT AM pkhr @ Benchmark V/C - veh.m		2005	2010
8	2.18	2.18	9533	9533	11585	14078	17107	20788	8235	8235	10007	IF(G8*(\$	14778
9	6.4	6.4	11579	0	14071	17099	20779	25250	10003	0	0	14771	17950
10	1.3	1.3	2309	0	0	3860	4992	6454	1950	0	0	0	4217
11	0.48	0.48	804	0	0	1344	1737	2246	679	0	0	0	1468
12	0.77	0.77	1289	0	0	2155	2787	3604	1089	0	0	0	2354
13	2.24	2.24	3820	0	4642	5641	6,855	8,330	3300	0	0	4873	5922
14	5.75	5.75	9806	0	11917	14481	17,597	21,384	8471	0	0	12509	15201
15	0	0	99	0	0	0	0	0	86	0	0	0	0
16	0	0	37	0	0	0	0	0	32	0	0	0	0
17	0	0	32	0	0	0	0	0	28	0	0	0	0
18	0	0	109	0	0	0	0	0	94	0	0	0	0
19	0	0	125	0	0	0	0	0	106	0	0	0	0
20	0	0	29	0	0	0	0	0	24	0	0	0	0
21	0	0	25	0	0	0	0	0	21	0	0	0	0
22	0	0	100	0	0	0	0	0	84	0	0	0	0
23	0	0	747	0	0	0	0	0	642	0	0	0	0
24	0	0	77	0	0	0	0	0	66	0	0	0	0
25	0	0	310	0	0	0	0	0	267	0	0	0	0
26	0	0	81	0	0	0	0	0	71	0	0	0	0
27	0	0	191	0	0	0	0	0	169	0	0	0	0
28	0	0	103	0	0	0	0	0	91	0	0	0	0
29	0	0	279	0	0	0	0	0	246	0	0	0	0
30	0	0	57	0	0	0	0	0	50	0	0	0	0
31	0	0	41	0	0	0	0	0	36	0	0	0	0
32	0	0	126	0	0	0	0	0	111	0	0	0	0
33	0	0	312	0	0	0	0	0	275	0	0	0	0
34	0	0	74	0	0	0	0	92	66	0	0	0	0
35	0	0	148	0	0	0	0	183	131	0	0	0	0
36	0	0	67	0	0	0	0	82	59	0	0	0	0
37	0	0	207	0	0	0	0	0	183	0	0	0	0

**APPENDIX E  
SPREADSHEET LAYOUT USED IN THIS ANALYSIS  
FROM COLUMN A TO EP**

1	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	Congested Links at V/C = 1 - Miles				Congested 1995											
														2005	2010	2015	1995 PM plus VMT												
2	2015	Record #	Description	Rate No	Length Miles	Vehicle Mi Traveled '95																							
1																													
2																													
3																													
4																													
5																													
6																													
7																													
8	17958	0000250	B I-70 MARION CO. LINE		70	2.18	196078	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	9533	9533	0	
9	21812	0002000	BR 5386 IR 11 (MT COMFOR		70	6.4	238163	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
10	5453	0004750	GREENFIELD CORP LINE &		70	1.3	48625	0.00	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	2309	0	0
11	1898	0005100	BR 5130 SR 9 0 I 70		70	0.48	16924	0.00	0.00	0.00	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	804	0	0
12	3044	0005500	GREENFIELD CORP LINE		70	0.77	27149	0.00	0.00	0.00	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	1289	0	0
13	7196	0005800	LEAVE GREENFIELD UAB		70	2.24	78572	0.00	0.00	0.00	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	3820	0	0
14	18472	0006750	RAMP 106A FROM REST PA		70	5.75	201693	0.00	0.00	0.00	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	9806	0	0
15		0 0010000	B SW RAMP 096A AT I 70 E		70	0.27	2040	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99	0	0
16		0 0010050	B SE RAMP 096 B AT IR 11		70	0.3	756	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37	0	0
17		0 0010100	B NE RAMP 096C AT I 70 W		70	0.3	668	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32	0	0
18		0 0010150	B NW RAMP 096 D AT IR 11		70	0.27	2244	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	109	0	0
19		0 0010200	B SW RAMP 104A AT I 70 E		70	0.31	2637	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	125	0	0
20		0 0010250	B SE RAMP 104B AT SR 9		70	0.27	602	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29	0	0
21		0 0010300	B NE RAMP 104C AT I 70 W		70	0.31	533	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25	0	0
22		0 0010350	B NW RAMP 104D AT SR 9		70	0.27	2102	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100	0	0
23		0 0015000	B SR 9 SHELBY CO. LINE		9	2.83	15339	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	747	0	0
24		0 0018000	DETAIL ITEM CHANGE		9	0.29	1572	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77	0	0
25		0 0018500	IR 14 (300 S)		9	1.03	6368	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	310	0	0
26		0 0019520	ENTER GREENFIELD UAB		9	0.3	1737	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81	0	0
27		0 0019820	GREENFIELD CORP LINE		9	0.71	4112	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	191	0	0
28		0 0021000	INV ST #26 (100 S-DAVIS		9	0.2	2220	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	103	0	0
29		0 0021200	DETAIL ITEM CHANGE		9	0.54	5993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	279	0	0
30		0 0022150	OSAGE ST		9	0.11	1221	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57	0	0
31		0 0022350	DETAIL ITEM CHANGE		9	0.08	888	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41	0	0
32		0 0022500	US 40 (MAIN ST)		9	0.17	2714	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126	0	0
33		0 0022850	GRANT ST RT		9	0.42	6704	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	312	0	0
34		0 0023700	BOYD AVE		9	0.1	1596	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74	0	0
35		0 0023800	OHIO ST LT		9	0.2	3192	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	0	0
36		0 0024100	MICHIGAN ST LT		9	0.09	1437	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67	0	0
37		0 0024310	MCKENZIE RD		9	0.23	4456	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	207	0	0

**APPENDIX E**  
**SPREADSHEET LAYOUT USED IN THIS ANALYSIS**  
**FROM COLUMN A TO EP**

	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ
1										
2	For 2005 Calc									
3	IF(G8<1,0,\$BY8*(G8/\$E8))									
4										
5										
6	MT PM p/hr @ V/C=1 veh mi									
7	2000	2005	2010	2015	1995 AM p/hr VMT	1995	2000	2005	2010	2015
8	11585	14078	17107	20788	8235	8235	10007	12161	14778	17958
9	0	0	20779	25250	10003	0	0	0	0	21812
10	0	3860	4992	6454	1950	0	0	0	4217	5453
11	0	0	1737	2246	679	0	0	0	1468	1898
12	0	0	2787	3604	1089	0	0	0	2354	3044
13	0	0	6855	8330	3300	0	0	0	0	7196
14	0	0	17597	21384	8471	0	0	0	0	18472
15	0	0	0	0	86	0	0	0	0	0
16	0	0	0	0	32	0	0	0	0	0
17	0	0	0	0	28	0	0	0	0	0
18	0	0	0	0	94	0	0	0	0	0
19	0	0	0	0	106	0	0	0	0	0
20	0	0	0	0	24	0	0	0	0	0
21	0	0	0	0	21	0	0	0	0	0
22	0	0	0	0	84	0	0	0	0	0
23	0	0	0	0	642	0	0	0	0	0
24	0	0	0	0	66	0	0	0	0	0
25	0	0	0	0	267	0	0	0	0	0
26	0	0	0	0	71	0	0	0	0	0
27	0	0	0	0	169	0	0	0	0	0
28	0	0	0	0	91	0	0	0	0	0
29	0	0	0	0	246	0	0	0	0	0
30	0	0	0	0	50	0	0	0	0	0
31	0	0	0	0	36	0	0	0	0	0
32	0	0	0	0	111	0	0	0	0	0
33	0	0	0	0	275	0	0	0	0	0
34	0	0	0	0	66	0	0	0	0	0
35	0	0	0	0	131	0	0	0	0	0
36	0	0	0	0	59	0	0	0	0	0
37	0	0	0	0	183	0	0	0	0	0

**APPENDIX E  
SPREADSHEET LAYOUT USED IN THIS ANALYSIS  
FROM COLUMN A TO EP**

CK	CL	CM	CN	CO	CP	CQ	CR	CB	CT	CU	CV	CW
1												
2												
3		Area for Summary Chart								VMT calculations		
4												
5												
6												
7												
8												
9												
10		STATE ROADS		98.97 MILES								
11		1995 DAILY VMT		1,408,634	VEHICLE MILES							
12		1995 AM PKHR VMT		59,188	VEHICLE MILES							
13		1995 PM PKHR VMT		67,358	VEHICLE MILES							
14												
15	YEAR	1995	2000	2005	2010	2015						
16	DAILY VMT	1,408,634	1,649,940	1,939,206	2,286,793	2,705,412			918	1,116	1,356	1,648
17	AM PK-HR VMT	59,188	69,327	81,481	96,086	113,675		668	812	986	1,198	1,456
18	PM PK-HR VMT	67,358	78,897	92,729	109,350	129,368		2,244	2,727	3,314	4,027	4,893
19								2,637	3,410	4,409	5,701	7,372
20								602	778	1,006	1,301	1,683
21		USING BENCHMARK V/C						533	689	891	1,151	1,489
22	YEAR	1995	2000	2005	2010	2015		2,102	2,718	3,514	4,544	5,876
23	LENGTH (mi)	2.18	16.57	19.12	19.12	19.51		15,339	16,827	18,461	20,253	22,218
24	LENGTH (%)	2.2%	16.7%	19.3%	19.3%	19.7%		1,572	1,724	1,892	2,075	2,277
25	AM PK-HR VMT	8,235	10,007	32,153	61,889	75,834		6,368	6,987	7,665	8,409	9,225
26	AM PK-HR VMT	13.9%	14.4%	39.5%	64.4%	66.7%		1,737	1,831	1,930	2,034	2,144
27	PM PK-HR VMT	9,533	42,215	58,658	71,854	88,415		4,112	4,334	4,568	4,815	5,075
28	PM PK-HR VMT	14.2%	53.5%	63.3%	65.7%	68.3%		2,220	2,340	2,466	2,599	2,740
29								5,993	6,317	6,659	7,018	7,398
30	USING V/C = 1							1,221	1,287	1,356	1,430	1,507
31	YEAR	1995	2000	2005	2010	2015		888	936	986	1,040	1,096
32	LENGTH (mi)	2.18	2.18	3.48	19.12	19.12		2,714	2,860	3,015	3,178	3,349
33	LENGTH (%)	2.2%	2.2%	3.5%	19.3%	19.3%		6,704	7,066	7,448	7,850	8,275
34	AM PK-HR VMT	8,235	10,007	12,161	22,817	75,834		1,596	1,682	1,773	1,869	1,970
35	AM PK-HR VMT	13.9%	14.4%	14.9%	23.7%	66.7%		3,192	3,365	3,547	3,738	3,940
36	PM PK-HR VMT	9,533	11,585	17,938	71,854	88,058		1,437	1,514	1,596	1,682	1,773
37	PM PK-HR VMT	14.2%	14.7%	19.3%	65.7%	68.1%		4,456	4,697	4,951	5,218	5,500

**APPENDIX E  
SPREADSHEET LAYOUT USED IN THIS ANALYSIS  
FROM COLUMN A TO EP**

	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK
1														
2													Congestate	Roads On
3									IF (AZ8>0, \$T8, 0)					IF (AZ8>0
4									Congestate	Roads Only				
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
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**APPENDIX E  
SPREADSHEET LAYOUT USED IN THIS ANALYSIS  
FROM COLUMN A TO EP**

DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY
1													
2			Congeste	Roads Only									
3													
4				AZ8									
5													
6	2010	2015	1995	2000	2005	2010	2015	FC	1995	2000	2005	2010	2015
7				MILES				Functional class 1					
8	freeway	freeway	2.18	2.18	2.18	2.18	2.18	3	0	0	0	0	2.18
9	freeway	freeway	0	6.4	6.4	6.4	6.4	3	0	0	0	0	0
10	freeway	freeway	0	0	1.3	1.3	1.3	1	0	1.3	1.3	1.3	0
11	freeway	freeway	0	0	0.48	0.48	0.48	1	0	0.48	0.48	0.48	0
12	freeway	freeway	0	0	0.77	0.77	0.77	1	0	0.77	0.77	0.77	0
13	freeway	freeway	0	2.24	2.24	2.24	2.24	3	0	0	0	0	0
14	freeway	freeway	0	5.75	5.75	5.75	5.75	3	0	0	0	0	0
15	0	0	0	0	0	0	0	3	0	0	0	0	0
16	0	0	0	0	0	0	0	3	0	0	0	0	0
17	0	0	0	0	0	0	0	3	0	0	0	0	0
18	0	0	0	0	0	0	0	3	0	0	0	0	0
19	0	0	0	0	0	0	0	1	0	0	0	0	0
20	0	0	0	0	0	0	0	1	0	0	0	0	0
21	0	0	0	0	0	0	0	1	0	0	0	0	0
22	0	0	0	0	0	0	0	1	0	0	0	0	0
23	0	0	0	0	0	0	0	4	0	0	0	0	0
24	0	0	0	0	0	0	0	4	0	0	0	0	0
25	0	0	0	0	0	0	0	4	0	0	0	0	0
26	0	0	0	0	0	0	0	2	0	0	0	0	0
27	0	0	0	0	0	0	0	2	0	0	0	0	0
28	0	0	0	0	0	0	0	2	0	0	0	0	0
29	0	0	0	0	0	0	0	2	0	0	0	0	0
30	0	0	0	0	0	0	0	2	0	0	0	0	0
31	0	0	0	0	0	0	0	2	0	0	0	0	0
32	0	0	0	0	0	0	0	2	0	0	0	0	0
33	0	0	0	0	0	0	0	2	0	0	0	0	0
34	0	2-lane	0	0	0	0	0.1	2	0	0	0	0	0
35	0	2-lane	0	0	0	0	0.2	2	0	0	0	0	0
36	0	2-lane	0	0	0	0	0.09	2	0	0	0	0	0
37	0	0	0	0	0	0	0	2	0	0	0	0	0

**APPENDIX E**  
**SPREADSHEET LAYOUT USED IN THIS ANALYSIS**  
**FROM COLUMN A TO EP**

DZ	RA	EB	EC	ED	EE	EF	EG	BH	BI
1									
2	Congeste Roads Only				Congeste Roads Only				
3	IF(\$DS8=3,DP8,0)					DP8- (DV8+EA8)			
4									
5									
6	functional class 3		functional class 2,4,5		functional class 2,4,5		functional class 2,4,5		FC
7	2000	2010	2015	1995	2000	2005	2010	2015	
8	2.18	2.18	2.18	0	0	0	0	0	3
9	6.4	6.4	6.4	0	0	0	0	0	3
10	0	0	0	0	0	0	0	0	1
11	0	0	0	0	0	0	0	0	1
12	0	0	0	0	0	0	0	0	1
13	2.24	2.24	2.24	0	0	0	0	0	3
14	5.75	5.75	5.75	0	0	0	0	0	3
15	0	0	0	0	0	0	0	0	3
16	0	0	0	0	0	0	0	0	3
17	0	0	0	0	0	0	0	0	3
18	0	0	0	0	0	0	0	0	3
19	0	0	0	0	0	0	0	0	1
20	0	0	0	0	0	0	0	0	1
21	0	0	0	0	0	0	0	0	1
22	0	0	0	0	0	0	0	0	1
23	0	0	0	0	0	0	0	0	4
24	0	0	0	0	0	0	0	0	4
25	0	0	0	0	0	0	0	0	4
26	0	0	0	0	0	0	0	0	2
27	0	0	0	0	0	0	0	0	2
28	0	0	0	0	0	0	0	0	2
29	0	0	0	0	0	0	0	0	2
30	0	0	0	0	0	0	0	0	2
31	0	0	0	0	0	0	0	0	2
32	0	0	0	0	0	0	0	0	2
33	0	0	0	0	0	0	0	0	2
34	0	0	0	0	0	0	0	0.1	2
35	0	0	0	0	0	0	0	0.2	2
36	0	0	0	0	0	0	0	0.09	2
37	0	0	0	0	0	0	0	0	2



APPENDIX E  
 SPREADSHEET LAYOUT USED IN THIS ANALYSIS  
 FROM COLUMN A TO EP

	RJ	RK	EL	RM	EN	EO	EP
1							
2							
3							
4							
5							
6		Miles by road type					
7							
8				30 HANCOCK COUNTY			
9	ROAD	TOTAL	1995	2000	2005	2010	2015
10	CLASS	BY TYPE	1995	2000	2005	2010	2015
11	UI	3.71	0.00	0.00	2.55	2.55	2.55
12	UPA	11.91	0.00	0.00	0.00	0.00	0.39
13	RI	17.71	2.18	16.57	16.57	16.57	16.57
14	RPA	32.69					
15	RMA	32.95					
16	TOTAL	98.97	2.18	16.57	19.12	19.12	19.51
17							
18							
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