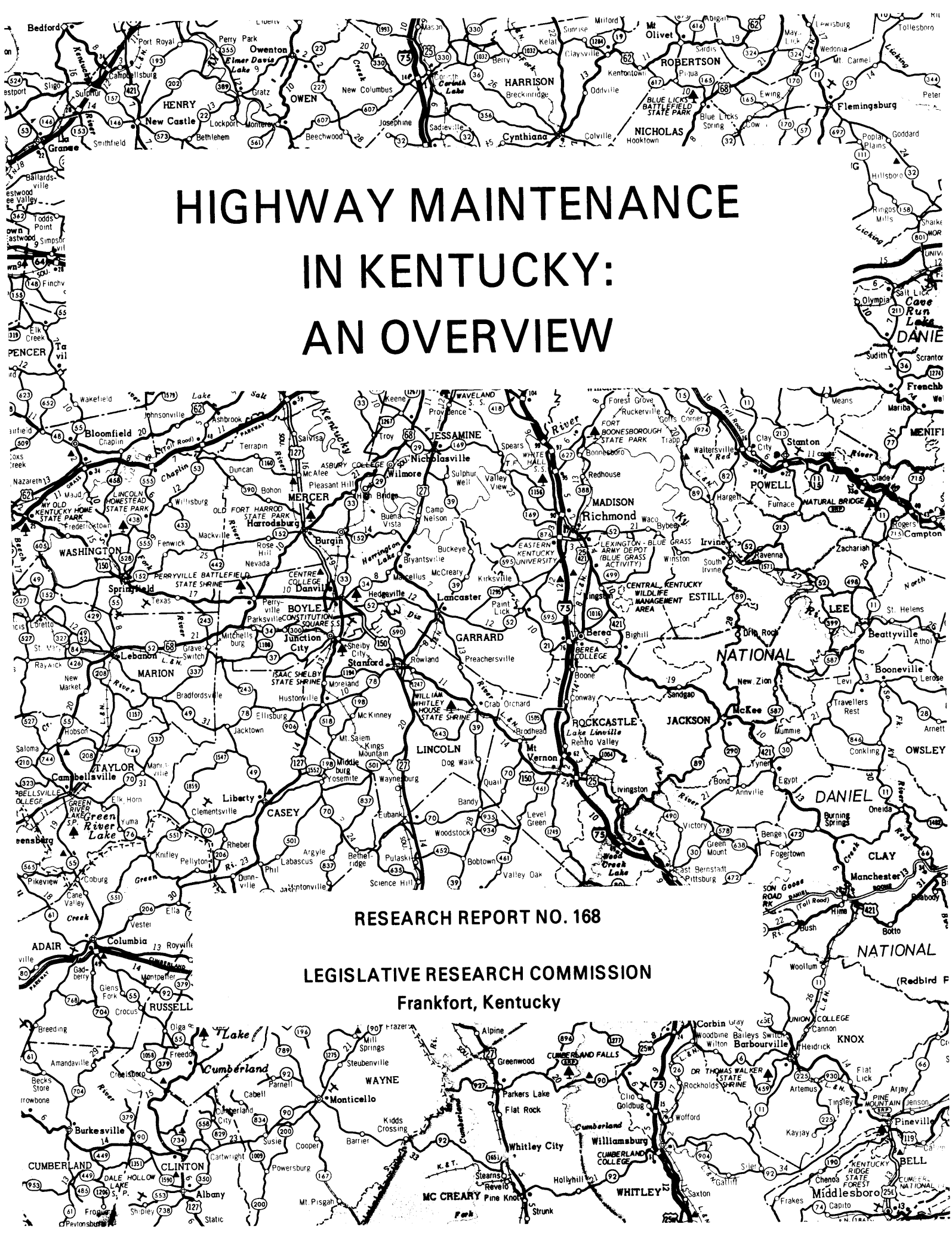
# HIGHWAY MAINTENANCE IN KENTUCKY: AN OVERVIEW



**RESEARCH REPORT NO. 168**

**LEGISLATIVE RESEARCH COMMISSION**

**Frankfort, Kentucky**

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# HIGHWAY MAINTENANCE IN KENTUCKY: AN OVERVIEW

Report of the
Interim Joint Committee
on
Highways and Traffic Safety

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**Research Report No. 168**

*Legislative Research Commission*
*Frankfort, Kentucky*
*January, 1980*

This Report was prepared by the Legislative Research Commission and paid for from state funds.

# FOREWORD

The condition of the roads and highways in Kentucky has long been a concern of both the taxpayer and the legislator alike. In recent years, however, severe winter weather and increased traffic on coal haul roads have combined to draw attention to the maintenance needs of Kentucky's highway system.

So that the public and their representatives in the General Assembly might better understand the process by which Kentucky roads are maintained, the Legislative Research Commission directed the Interim Joint Committee on Highways and Traffic Safety to study the Commonwealth's highway maintenance effort. This report summarizes the committee's findings.

Legislators and other interested citizens will find this information helpful in devising means of improving highway maintenance in Kentucky. The Highways and Traffic Safety Committee gratefully acknowledges the cooperation of the Department of Transportation, the highway construction industry and local government officials for their aid in our efforts.

The report was prepared by James Monsour and James Roberts of the LRC staff. Beth Wilson prepared the manuscript for publication.

VIC HELLARD, JR.
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The Capitol
Frankfort, Kentucky
January 1980

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## SUMMARY

Testimony for this report has been gathered from officials of both the public and private sectors of the economy over the past fourteen months. Public hearings, committee meetings and surveys have helped the committee to understand the problems of the individual citizens, local government officials, industry spokesmen and both line and staff employees of the Department of Transportation.

The research document resulting from the committee's efforts presents findings in each of the chapters and offers various alternatives for consideration. Alternatives are limited in the operations area. The committee's role will primarily be a monitoring one with regard to the department's operations.

Another area of concern to the committee was public awareness of maintenance responsibility. The committee discovered that constituents had difficulty determining road maintenance responsibility on various local roads, and the confusion was compounded upon request for maintenance from state or local officials.

As a result of these interim studies, three committee bills were prefiled by the committee. These pieces of legislation related to equipment and personnel. The following are summaries of those prefiled bills:

* BR 545 - creates a meritorious service program for state government employees.

* BR 546 - penalizes the equipment vendor for non-delivery of equipment.

* BR 547 - amends the purchasing chapters to permit an expenditure of up to $6,000 for equipment parts without advertising for bids.

The research document also presents findings and additional alternatives to be considered in regard to proposed legislation or committee activity.

The financing of the state's highway maintenance effort, the scheduling of maintenance activity, equipment procurement and distribution, materials acquisition, personnel policy and statutorily mandated state maintenance programs have been examined in considerable detail. It is the committee's feeling that its study of the state road maintenance program can serve as a useful overview of this subject to those interested individuals and legislators unfamiliar with the process by which their roads and streets are maintained. It is hoped that this study will provide impetus not only for further examination, but for future legislation to improve the transportation system of the Commonwealth of Kentucky.

# CHAPTER ONE

## INTRODUCTION

On August 7, 1978, the Interim Joint Committee on Highways and Traffic Safety was authorized by the Legislative Research Commission to undertake an investigation of highway maintenance in Kentucky. Specific issues designated for study were purchase and allocation of equipment, supply and demand on maintenance materials, financial aspects of the maintenance program and personnel procedures.

As a result of the specific mandate regarding operational issues, the committee initiated a policy of meeting with industry officials, departmental staff and line personnel, and local elected government officials. Eleven meetings of the Highways and Traffic Safety Committee and seven meetings of the Highway Finance Subcommittee were held during the interim. The majority of these meetings were initiated from issue areas of the study.

The committee held three days of meetings in Eastern Kentucky in an effort to view the road conditions and comprehend the highway problems of that area. Meetings were also held in Frankfort with highway district engineers, various departmental division directors, members of the aggregate, asphalt, and contracting industries and county judges/executive.

Committee staff has traveled into each highway district for interviews with the district engineers and operations engineers and contacted members of the department's staff in Frankfort. County judges/executive were also surveyed regarding road problems, operational aspects of the department and possible solutions.

This study is a compilation of data obtained from those meetings and interviews. The study provides the reader with information on the method of selection and implementation of highway maintenance projects. Efforts have been made to illustrate the methods of assigning equipment and personnel to projects, accounting for equipment usage, personnel performance and procedures used for payment of maintenance projects.

The chapters of the highway maintenance study should provide the legislative committees with guidelines to enable legislators to monitor the department's maintenance operation for effectiveness and efficiency. It is the Highways and Traffic Safety Committee's intention that this study serve as the impetus for future examination of the highway maintenance effort, as well as areas of new legislation to improve road maintenance throughout the Commonwealth.

## CHAPTER TWO

## FINANCING HIGHWAY MAINTENANCE AND CONSTRUCTION

Recently published reports have examined a variety of highway topics ranging from the sufficiency of the state's highway system to the conditions of county roads in Kentucky. No study, however, has described the administration of the state's highway maintenance operations. The intention of this report is to provide an overview of those operations.

This study will encompass not only the financing of the state's maintenance program, but also the scheduling of maintenance activity, the procurement of equipment and materials, the utilization of personnel and the efficiency of the state's revenue sharing programs.

In order to understand how all of these areas combine to produce a maintenance program, a review of the financing of maintenance is essential. Hopefully, the following analysis of the state road fund will allow the reader to put the financing of road maintenance in perspective and will point out the budgetary constraints within which the state's maintenance program is undertaken.

### General Findings

* The state's general fund is growing at a much faster rate than the road fund.

* The three major expenditure areas within the Kentucky Department of Transportation's Budget are: Bonded Indebtedness, Federal Matching and State Revenue Sharing Programs.

* The state's revenue sharing program (County Road Aid , Rural Secondary Aid and Municipal Aid) accounts for 20 percent of state road fund expenditures. The roads in these programs constitute approximately 80 percent of the state road mileage and 25 percent of the vehicle miles traveled.

* General Construction and Maintenance needs are being suffocated by the lack of growth in the road fund.

### Kentucky Department of Transportation Receipts

The money to maintain and improve Kentucky's roads is generated primarily

by federal and state taxes. State road fund receipts for this purpose amounted to approximately $382,446,998 for fiscal year 1977-78. Of this total, $190,424,310 was provided by a $.09 per gallon state tax on motor fuels, $107,502,830 was provided by the motor vehicle usage tax, $19,517,424 came from the registration of passenger cars and $12,311,656 was provided from truck registration. The balance of the state's share of the road fund revenue was collected from departmental sales, fees and rentals, interest earned on investments and toll road fares.

The expenditure of state road fund revenue is limited by the state constitution and revenue sharing program formulas set out in Chapter 177 of the Kentucky Revised Statutes. Section 230 of the Constitution restricts the use of road fund receipts to the maintenance and construction of roads. In theory, Section 230 establishes the state road fund and is equivalent to a user tax, with the motoring public paying for the maintenance and construction of state highways.

> § 230. Money not to be drawn from treasury unless appropriated-Annual publication of accounts-Certain revenues usable only for highway purposes.-No money shall be drawn from the State Treasury, except in pursuance of appropriations made by law; and a regular statement and account of the receipts and expenditures of all public money shall be published annually. No money derived from excise or license taxation relating to gasoline and other motor fuels, and no moneys derived from fees, excise or license taxation relating to registration, operation, or use of vehicles on public highways shall be expended for other than the cost of administration, statutory refunds and adjustments, payment of highway obligations, costs for construction, reconstruction, rights of way, maintenance and repair of public highways and bridges, and expense of enforcing state traffic and motor vehicle laws.

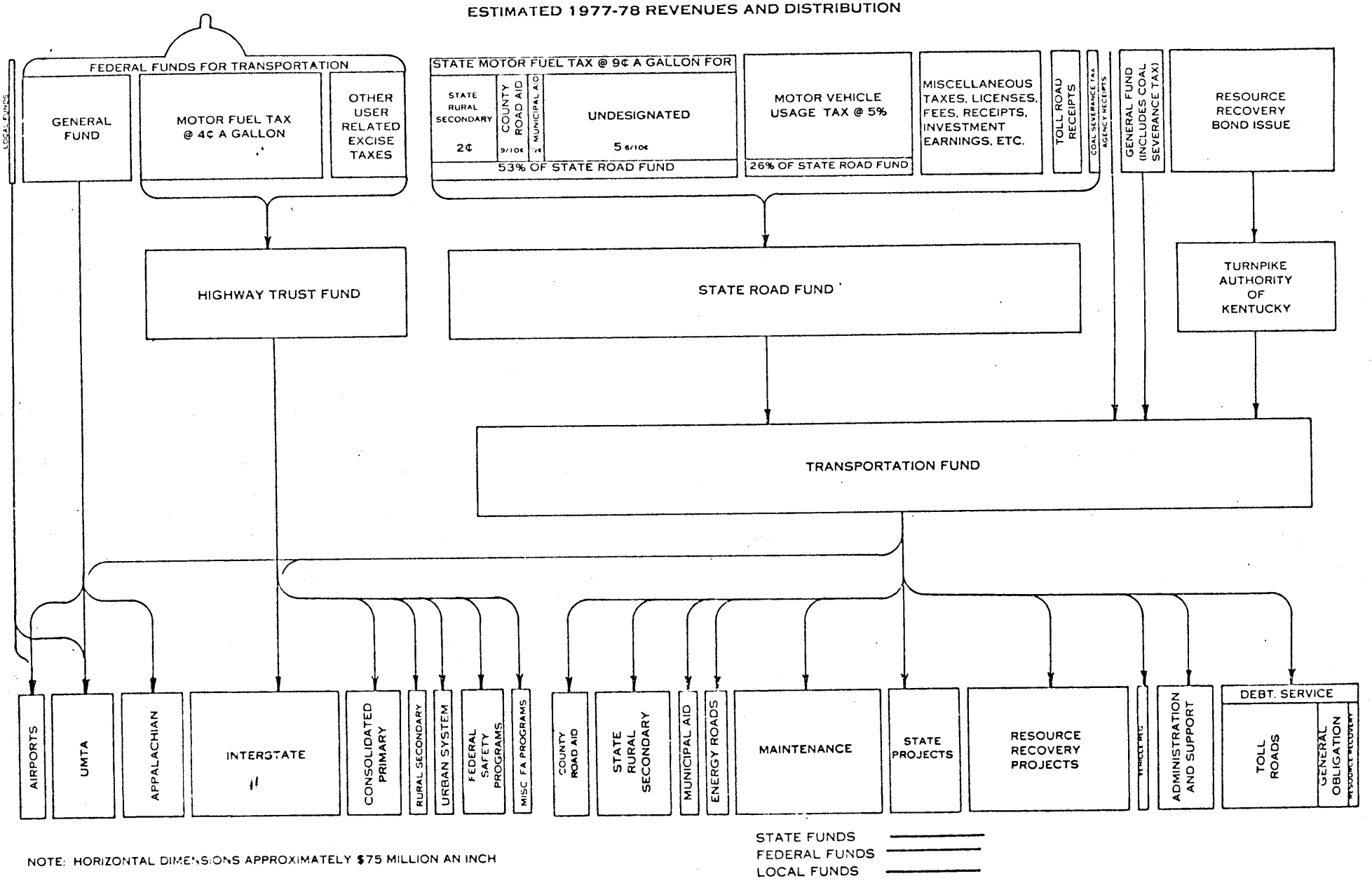
State legislation further limits the expenditure of road fund receipts by providing for the disbursement of funds through specific statutory road programs. These are: the Rural Secondary (RS) program; the County Road Aid (CRA) program; and the Municipal Aid (MA) program. Through each program, funds are distributed on a formula basis. Of the $.09 per gallon motor fuels tax, $.02 goes to the Rural Secondary program, 9/10 of $.01 is designated for county roads and 1/2 of $.01 is designated for the Municipal Aid program. The remaining 5 3/5 cents per gallon is earmarked for general use of the Kentucky Department of Transportation, specifically for roadway purposes.

Road fund revenue, however, is not the sole source of financing for the Kentucky Department of Transportation. Funds are also received from resource recovery bond issues, turnpike authority bonds, federal appropriations and matching programs and the state general fund. The following chart depicts the sources of funds available to the department and the area of expenditures.

In any one year, revenue earmarked for three program areas, bond indebtedness, federal matching and state revenue sharing programs, contributes to a majority of expenditures from monies available to the Department of Transportation.

TABLE 1

KENTUCKY DEPARTMENT OF TRANSPORTATION
ESTIMATED 1977-78 REVENUES AND DISTRIBUTION




NOTE: HORIZONTAL DIMENSIONS APPROXIMATELY $75 MILLION AN INCH

Source: Kentucky Department of Transportation, 1977

## Debt Service

The top expenditure priority of the department is the debt service obligation. The debt service program is designed to meet payment schedules on general obligation bonds and parkway lease rental requirements. These bonds were issued to match federal funds for construction of the Interstate and Appalachian System, the toll road system and the construction of the Kentucky 80 project. Annual debt service payments made by the Kentucky Department of Transportation for debts incurred is $88.3 million.

The debt service is repaid by the department through either road fund receipts or a general fund appropriation. The Toll Road Lease Rental and general obligation bonds are retired by revenues generated by road use taxes, and the resource recovery bonds are repaid by a general fund appropriation to the Department of Transportation. Obligations of road funds for debts encompass $72,779,700, and the general fund appropriation includes $15,577,900.

The following table illustrates the major bond issues of the department and the annual repayment of each bond. The payment schedule takes approximately 23 percent of the state road fund and will not decrease drastically until 1995.

TABLE 2
Debt Service Expenditures
Department of Transportation

| SUBPROGRAM | EXPENDITURE | FISCAL YEAR |
|---|---|---|
| Toll Road Lease Rental | $54,516,900 | 1979-80 |
| General Obligation Bonds | 18,262,800 | 1979-80 |
| Resource Recovery Lease Rental | 15,577,900 | 1979-80 |
| Total | $88,357,600 | 1979-80 |

Source: Kentucky Executive Budget 1978-1980

## Revenue Sharing Programs

The second priority of the Bureau of Highways budget is the statutorily mandated revenue sharing programs. The General Assembly passed legislation authorizing the expenditure of funds for three programs (Kentucky Revised Statutes, Chapter 177), thus making these programs an unavoidable expenditure. The three programs are: Rural Secondary, County Road Aid and Municipal Aid. Table II shows the statutory funding level and the revenue required by the program for fiscal year 1977-78.

TABLE 3
Funds Allocated to Highway
Revenue Sharing Programs
Fiscal Year 1977-78

| SUBPROGRAM | FUNDING YEAR | REVENUE GENERATED |
|---|---|---|
| Rural Secondary | $.02 | $42,800,000 |
| County Road Aid | 9/10 of $.01 | $19,260,000 |
| Municipal Aid | 1/2 of $.01 | $10,700,000 |
| Total | $.03 2/5 of $.09 | $72,760,000 |

Source: Kentucky Executive Budget 1978-1980

State road fund receipts for fiscal year 1977-78 generated $382,446,998. The revenue sharing programs, which are funded totally by state generated receipts, encompassed approximately 20 percent of the state road fund expenditures.

Federal Matching Programs

State road funds designated to secure federal funds is another priority expenditure within the Bureau of Highways budget. The federal government is involved in many programs which allows state participation by meeting matching fund requirements. Interstate construction, interstate restoration, rehabilitation and resurfacing, consolidation of primary federal aid roads and bridge replacement are a few of the federal programs in which a state can participate.

The matching ratio can vary from 90-10 to 70-30, depending upon the program. An advantage to participation is that a state can receive up to $9 for every $1 it expends on interstate projects and $7 for every $3 spent on other federally matched programs. Kentucky's participation with the United States Department of Transportation involved $45.6 million of state road funds in 1977-78. These funds were used to match $160 million provided by the federal government.

Table III illustrates the percentage of the state road fund expenditures which belong to the three priority programs described.

TABLE 4
Percentage Expenditures
Bureau of Highways Priority Programs

| PROGRAM | EXPENDITURES | ROAD FUND RECEIPTS | PERCENT OF RECEIPTS | FISCAL YEAR |
|---|---|---|---|---|
| Debt Service | $72,779,700 | $382,446,998* | 19.0 | 77-78 |
| Revenue Sharing | 72,760,000 | 382,446,998 | 19.0 | 77-78 |

TABLE 4, Continued

| PROGRAM | EXPENDITURES | ROAD FUND RECEIPTS | PERCENT OF RECEIPTS | FISCAL YEAR |
|---|---|---|---|---|
| Federal Match Programs | 45,600,000 | 382,446,998 | 12.0 | 77-78 |
| Total | $191,139,700 | | 50.0 | |

Source: Kentucky Department of Transportation, Fiscal Year 1977-78

These three priority programs have provided the Commonwealth with a major portion of the state highway system. Problems occur with roads ineligible for funding from toll road revenue bonds, federal aid or matching programs. Construction and maintenance of these roads must take place with 100 percent state funding; they are thus subject to limited or reduced maintenance efforts. The major reason for inadequate maintenance is insufficient levels of funding.

## Alternative Policies

Policy and priority changes need to be reviewed within the Kentucky Department of Transportation. The policy changes would logically occur within the three major expenditure programs. Changes in these programs are necessary to facilitate a sufficient reallocation of funds to support other programs. Some changes which may be deemed necessary will require new legislation.

Debt service expenditures, revenue sharing programs and federal-state matching programs could be altered with specific policy and legislative changes. In contemplating funding changes, the need for highway programs financed with general fund monies has to be assessed in relation to the need for programs and services provided by other agencies of state government dependent on the same funding source.

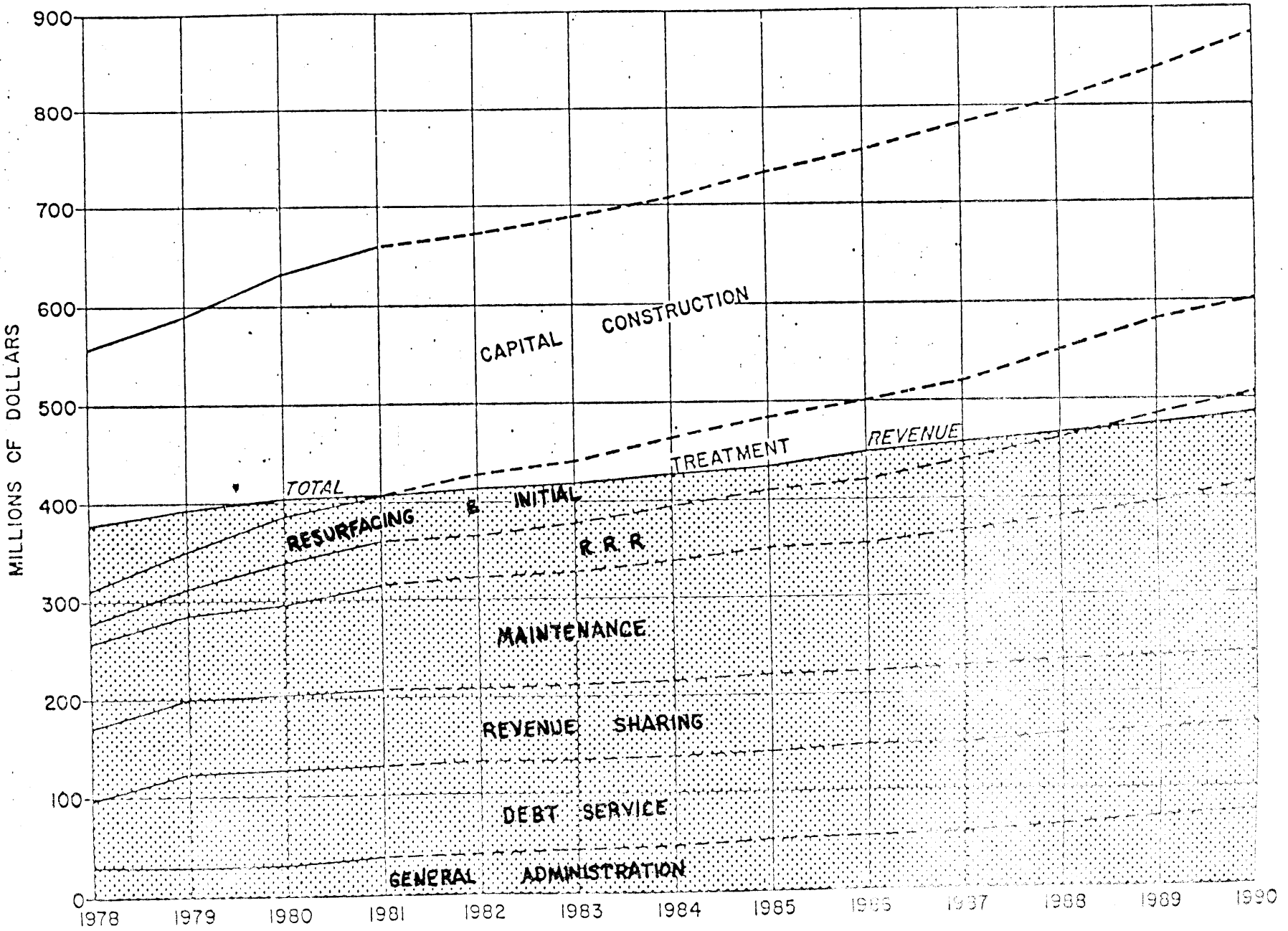
## Debt Service

The debt service requirement of the Kentucky Department of Transportation is approximately $88.4 million per fiscal year. The 1978-1980 Executive Budget divides the debt service program into toll road lease rental, general obligation bonds and resource road rental. Table II reflects the state road fund obligation to each of these bond categories.

The toll road lease rental encompasses the Kentucky turnpike system, which is managed by the Kentucky Turnpike Authority. The parkways encompass 632 miles of the state highway system, the longest toll system in the nation. This system includes the Green River , Cumberland, Daniel Boone, Mountain, Audubon, Western Kentucky, Blue Grass, Jackson Purchase and Pennyrile Parkways.

TABLE 5

# HIGHWAY NEEDS VS REVENUE




Source: Kentucky Department of Transportation, 1978

The Kentucky Turnpike Authority financed the original construction of the parkways by selling revenue bonds. Repayment of the bonds is being made through a lease agreement between the turnpike authority and the Kentucky Department of Transportation. The department makes a payment to the turnpike authority, which uses the funds to meet the debt obligations.

The debt service payments made by the department are funded primarily with state road fund monies. The debt service payments for the Resource Recovery Road program are generated from general fund tax receipts. The following graph depicts the debt obligation payments in comparison with other program needs. General construction and maintenance are being thwarted by the lack of growth in the road fund, and, as the graph indicates, revenues may soon become insufficient for necessary road construction and repair.

One alternative for repayment of the debt obligations for highway construction is to place the burden of debt service or a portion of it on the general fund. A change of this nature would require action by the General Assembly. Legal changes to the indebtedness agreement would also provide a forum for road maintenance priorities to be evaluated with other services being provided by state government. This policy would place Kentucky highway obligations in direct competition for funds currently being received by other agencies. The importance of highways could be placed on a priority scale with other state service functions and appropriations, based on the perceived need.

Two methods are available to increase general fund receipts returned to the Department of Transportation. The obvious alternative would be a cutback in state services currently being provided by other state agencies. In this instance, the General Assembly would have to decide which services either are not needed or are wasteful. Prioritizing on this basis could prove difficult.

A second method would be a moratorium on new programs in any governmental agency. Each fiscal year, the general fund experiences some growth (Table 6). This growth could be applied to existing maintenance or debt obligations rather than new governmental programs. Again, such an action would require a decision of the General Assembly, but it would provide a forum to compare program needs of one particular department to programs of another department.

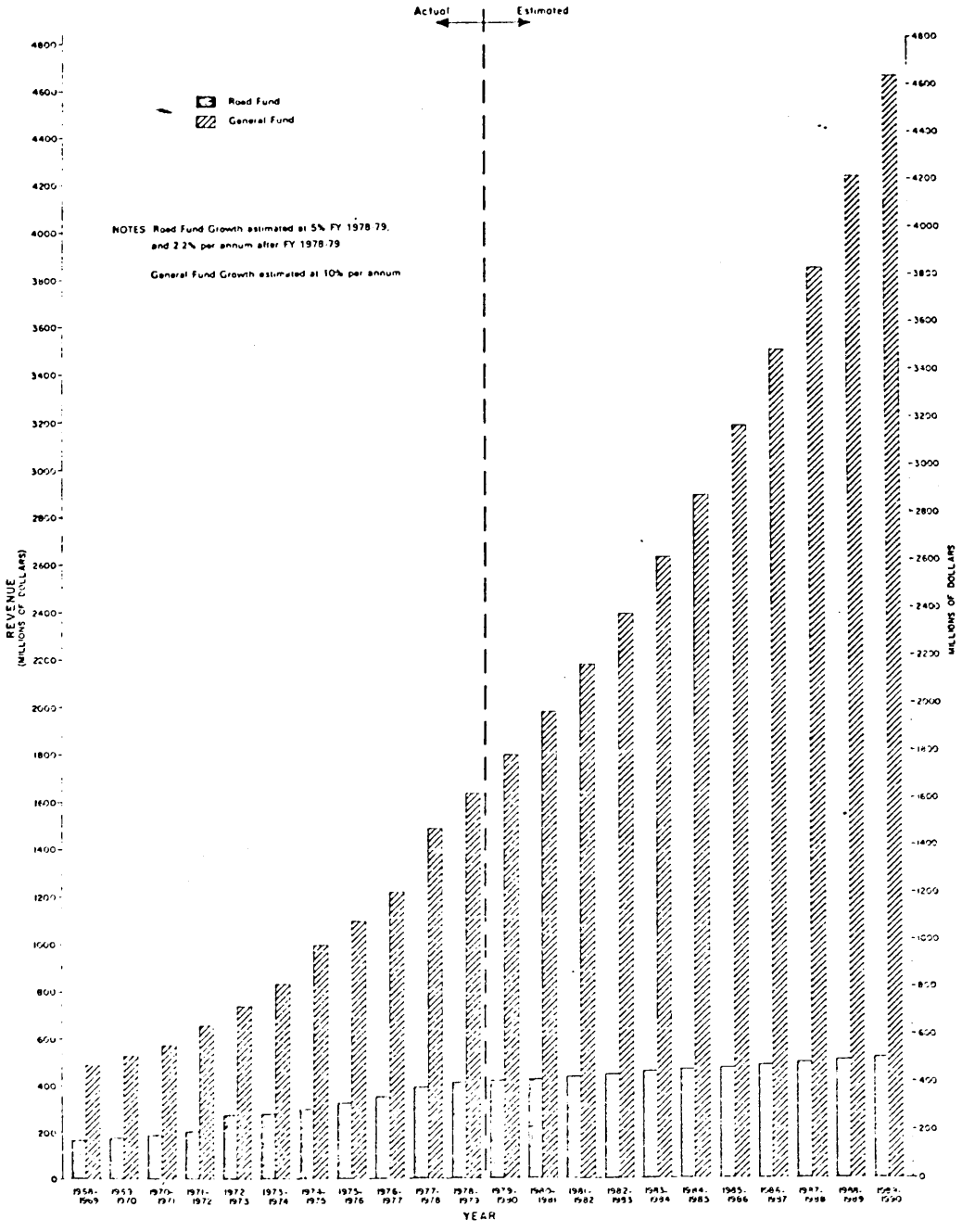
The funding of highway programs from the General Fund is justified, in part, by the highway system's ability to generate additional revenues to the general fund. Toll Roads: Economic Impact, a report published in 1971 by the Legislative Research Commission, established that a positive economic impact resulted from the parkway construction. Concluding remarks of the study state that economic benefits accrued in each area after the construction of a toll highway. The construction was especially beneficial in those areas which were considered to be underdeveloped. The 1971 study indicated that the toll roads have generated increased revenue through sales tax, personnel income and real estate appreciation.*

The increase in personal income and sales tax receipts aid the economy of the state. These benefits should permit state government to provide greater services. An argument for repaying the debt service from the general fund could logically be based on the toll system's benefits to others besides the highway user.

*Toll Roads: Economic Impact;Legislative Research Commission, Report No. 60; Prepared by Office Bsn. Devel. & Gov't. Services, University of Kentucky; Dr. Claude Vaughn; Frankfort, Ky; Sept., 1971; VI 4-5.

TABLE 6

## COMPARISON OF THE GENERAL FUND AND ROAD FUND REVENUE BY YEAR




Source: Kentucky Department of Transportation, 1978

There are some problems inherent in shifting the debt obligation from the transportation fund to the general fund, however. Among immediate problems is the effect upon the bond rating and lease agreement by enacting legislation. A second issue is the amount of the debt service to transfer and the priority position of the highway program with regard to other governmental services.

The Kentucky Constitution prohibits state agencies from committing financial revenues. The turnpike authority is funded by a renewable lease. The lease agreement provides for an automatic renewal for two years, unless a notice of election not to renew is given before the last day of April immediately preceding the beginning of the renewal term.

The bond agreement establishes the provision that, as long as the lease is in effect, the rental payments are the obligation of the Department of Transportation. Debt obligations are repaid from the revenues generated by the transportation fund. The funds for repayment are generated by levies on highway users. An alternative method to transfer the debt obligation would occur through an appropriation to the department from the general fund.

A shift in policy to provide transportation debt service payments from the general fund would initially place highway programs in direct competition with other governmental services. Studies have shown that economic benefits resulted statewide from the construction of toll facilities; however, other government services already in place, would be reduced if general fund money were used for repayment of debt obligations. The impact of any policy shift must be weighed by the executive and legislative branches with emphasis on the effect on the lease agreement and additional burdens to be placed on other state programs.

## Revenue Sharing Programs

Four revenue sharing highway programs which are administered by the Department of Transportation are the Rural Secondary, County Road, Municipal and Energy programs. The Energy Road program is funded by earmarking a portion of the general fund; the remainder of the programs receive appropriations from the road fund. This study will focus on the County Road and Rural Secondary programs. These two programs are tightly controlled by the department and, hence, are more amenable for review. Program funds are retained by the department and distributed to the county by either reimbursement or charges against the county allocation.

## Rural Secondary Program

The Rural Secondary program was created by the Kentucky General As-

sembly in 1948. The scope of the program was to improve and maintain the system of farm-to-market roads. Revenue for the projects is generated by the motor fuels tax. Two cents of the nine cents per gallon motor fuels tax is allocated to the Rural Secondary program.

Each county is allocated a portion of the funds according to a formula passed by the 1962 General Assembly. The formula requires that one-fifth of the rural secondary funds be divided equally among the counties; the remainder of the funds are allocated by county on the basis of each county's rural population, road mileage and acreage. Any portion of a county's allotment unspent during the fiscal year is carried forward to the same county the next fiscal year.

The development of annual programs by the Bureau of Highways is based on recommendations which have been received from locally elected officials, civic organizations and interested citizens. Recommendations are submitted to the Department of Transportation and decisions about projects are incorporated into the Rural Secondary programs and implemented on the advice of the Deputy Commissioner of the Bureau of Highways and Deputy Commissioner for Rural and Municipal Aid. The Department of Transportation retains responsibility for administration and management of funds.

## County Road Aid Program

The County Road Aid program was initiated by the 1936 General Assembly. The initial program was named the Rural Highway program. The thrust of the program is to provide another method of distributing state road funds to counties for maintenance and improvement of local roads.

Revenue is generated by designating nine-tenths of one cent of the total nine cents tax on each gallon of motor fuel sold in Kentucky. The statutory "one-fifth" formula used to distribute Rural Secondary money is the basis for dispersing county road funds. The county allocation is spent by the Department of Transportation on projects selected by citizens of the county and the fiscal court.

The roads included in the county program are the responsibility of the county. The role of the state is to provide aid to the county. More than 39,000 miles of public roads depend on county government for attention, and the County Road program provides the majority of support.

## Municipal Aid Program

The Municipal Aid program was created by the 1972 General Assembly. The purpose is to provide aid to municipal governments for their street system. The program is supported by revenue produced from one-half cent of the nine cent tax on motor fuels.

All incorporated cities and towns or unincorporated areas with a population of 2,500 or more identified in the most recent census are eligible for municipal road aid. The amount each area receives is based upon population.

Again, the federal census is used to determine population.

Responsibility for the management of the program and administration of funds remains with the Department of Transportation. The department notifies eligible areas of the funds to be received. Local officials must develop a plan for use of the funds. In cities, the mayor and council, or commission, are responsible for selection; in unincorporated areas the responsibility lies with the fiscal court.

## Federal Programs

The state funds provided to match federal dollars encompassed about twelve percent of the state road fund expenditures. The state used $45,620,631 to match $166,545,121 of federal funds during the 1977-78 fiscal year. The federal government provides funds under approximately thirty project titles. Programs which receive a higher portion of the aid are interstate construction, federal aid, primary and secondary, and urban system highways. A shift in emphasis has recently occurred, providing additional support for interstate maintenance and bridge replacement. Other programs include highway safety, outdoor advertising and ride-sharing.

The state highway system has become dependent upon the federal government for support. Although all roads in the state system are not eligible for federal aid, a substantial number are dependent on federal support. Table 7 provides a breakdown of the miles of Kentucky roads by classification and the vehicle miles traveled on each class road. Table 8 provides the same information on a percentage basis.

The tables note that the state has responsibility for 38 percent of the highway system; local government is responsible for 62 percent. However, the interstate, state primary and state secondary systems, encompassing 18 percent of the total highway system, carry 82 percent of the vehicular traffic.

The roads carrying the traffic burden are receiving the majority of the federal aid. However, in many cases, the federal aid may not reflect the needs of state government. Interstate construction is a top priority, yet Kentucky has completed a majority of its interstate system. The priority need of the state is in maintenance, but federal aid is limited in this area.

Federal funds for maintenance require that federal standards for roadways be implemented. For instance, federal funds used to maintain a road of twenty feet in width, may require widening before the road is eligible for state funds. The federal definition for maintenance is attuned to state definitions for reconstruction or resurfacing. As a result of the stricter federal maintenance guidelines, only a limited number of roads can be considered eligible for federal maintenance funds.

Critics of the federal programs believe a policy shift should be made to decrease emphasis on the federal matching programs. State funds which are normally made available for federal match could be shifted into state mainte-

TABLE 7
1975 MILEAGE AND VEHICLE MILES OF TRAVEL (VMT)
ON THE STATE HIGHWAY SYSTEM

| ADMINISTRATIVE CLASSIFICATION | MILES RURAL | RURAL VMT* | MILES URBAN | URBAN VMT* | TOTAL MILES | | TOTAL VMT* | |
|---|---|---|---|---|---|---|---|---|
| Interstate | 570 | 3,292 | 79 | 1,337 | 649 | 2.6% | 4,629 | 22.2% |
| State Primary*** | 3,657 | 5,064 | 398 | 2,624 | 4,055 | 16.2% | 7,688 | 36.9% |
| State Secondary | 7,120 | 4,158 | 399 | 1,604 | 7,519 | 30.0% | 5,762 | 27.6% |
| Rural Secondary | 9,677 | 1,622 | 205 | 449 | 9,882 | 39.4% | 2,071 | 9.9% |
| Other** | 2,804 | 386 | 162 | 317 | 2,966 | 11.8% | 703 | 3.4% |
| Total State | 23,828 | 14,522 | 1,243 | 6,331 | 25,071 | | 20,853 | |
| Local Roads & Streets | 38,732 | 1,293 | 4,575 | 2,369 | 43,307 | | 3,662 | |
| Grand Total | 62,560 | 15,815 | 5,818 | 8,700 | 68,378 | | 24,515 | |

*Annual Vehicle Miles of Travel in Millions
**Includes Unclassified Roads and State Property Service Roads
***Includes Toll Facilities

Source: Kentucky Department of Transportation
1. 1972 & 1974 TF-1 Tables
2. Special Tabulation - State Classified System Mileage, December 31, 1974

TABLE 8
COMPARISON OF THE PERCENTAGE OF TOTAL MILEAGE
AND TRAVEL DEMAND (VMT) ON THE STATE ADMINISTRATIVE SYSTEM

| Administrative Classification | Rural | | Urban | | Total | |
|---|---|---|---|---|---|---|
| | % Miles | % VMT | % Miles | % VMT | % Miles | % VMT |
| Interstate | 0.9 | 20.8 | 1.4 | 15.4 | 0.9 | 18.9 |
| State Primary | 5.8 | 32.0 | 6.8 | 30.2 | 5.9 | 31.4 |
| State Secondary | 11.4 | 26.3 | 6.9 | 18.4 | 11.0 | 23.5 |
| Rural Secondary | 15.5 | 10.3 | 3.5 | 5.2 | 14.5 | 8.4 |
| Other | 4.5 | 2.4 | 2.8 | 3.6 | 4.3 | 2.9 |
| State Total | 38.1 | 91.8 | 21.4 | 72.8 | 36.6 | 85.1 |
| Local Roads and Streets | 61.9 | 8.2 | 78.6 | 27.2 | 63.4 | 14.9 |
| Grand Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Kentucky Department of Transportation 1974

nance or construction accounts. This policy shift would have to be reflected in the text of the Executive Budget.

There are some disadvantages to shifting policy totally away from federal matching funds. As mentioned, these roads carry 80 percent of the traffic and receive up to 90 percent federal funding. A policy shift would mean the state would give up the $166,545,121 of federal funds and all work would be 100 percent state-funded.

Advantages to the department would occur, though, through less stringent guidelines for construction. Environmental impact, planning, construction and quality of material standards are also stricter on federal aid projects. In cases where emergency action is warranted, the state has responded much more quickly without pursuing federal assistance.

However, the federal assistance may often provide funds which otherwise would make projects impossible. The department must ensure that federal matching funds meet state needs and pass over any federal programs not imperative to the state's total transportation plans and allocate those funds to more demand-responsive projects.

## Alternatives

There are several legislative alternatives available to the General Assembly during the 1980 session when the financing of highways is considered. If the state legislators determine that an increase of revenue is warranted, three types of legislation could be enacted:

1) An increase of the fee and taxation items which are designated to the road fund, such as registration fees and the motor fuels tax.

2) The levying of motor fuels tax on a percentage basis rather than a fixed rate. This would involve placing the motor fuels tax collection on a system similar to the sales tax. The rationale behind this type of change is that it would allow the road fund receipts to increase in step with inflation.

3) Greater appropriations from the general fund for the Department of Transportation.

In establishing any tax increase or appropriation from the general fund, the legislature should establish priorities and the intent of such an increase, thus mandating to the department which system of roads or administrative functions should receive top priority.

## CHAPTER THREE

## OPERATIONS MANAGEMENT

Prior to 1972, the Bureau of Highways Division of Maintenance had no consistent method to measure actual maintenance work accomplished. Day-to-day maintenance work undertaken was the decision of the district operations staff, maintenance engineers and the county foremen. No work schedule was followed nor was a yearly maintenance objective established.

During the 1960s, the Federal Highway Administration began to work with the individual states on a technical level to implement management information systems for maintenance operations. These systems, once in place, are designed to furnish the states with information that allows them to plan, direct and control highway maintenance activities.

In Kentucky, the implementation of a maintenance management system now enables the Bureau of Highways to plan yearly maintenance objectives, to schedule specific types of maintenance work and to determine how much maintenance work is actually being accomplished. The following description of this system is based on conversations with the Division of Maintenance and the state's twelve highway district engineers.

### Findings

* The Maintenance Management Program allows the Department of Transportation to better plan, direct and control the statewide maintenance effort.

* Fifty to sixty percent of maintenance work undertaken in each district is scheduled.

* Standards for work crews and maintenance work by job type are statewide rather than regional.

* Since the inception of operations management, the department has been able to determine the amount of funds expended for productive and non-productive work.

* The practice of county road foremen charging non-productive time on state revenue sharing program roads to state maintenance accounts rather than to state revenue sharing program accounts is common.

## Maintenance Management Program

To implement the Maintenance Management Program, the entire state highway system was inventoried and classified by type. Each road was assigned a number and each mile of each road was labeled with a mile marker. Individual maintenance activities were then categorized into ten different maintenance areas. Pothole patching, machine patching and extraordinary patching activities, for example, were placed in the surfacing category. Similarly, other maintenance work was classified as shouldering, drainage, mowing, snow and ice removal, etc. With these two changes, the Division of Maintenance could begin to better identify exactly what type of maintenance work was being undertaken on which section of a particular road.

Work standards and maintenance crew quotas were then established. These standards covered every type of maintenance activity and prescribed the amount of personnel, time, equipment and materials needed to accomplish specific tasks. Procedures to be followed when undertaking a specific maintenance activity were also delineated. These standards are updated annually and published in a field operation guide manual. (See Exhibit 1)

The Maintenance Management Program works as follows: Each year the previous year's maintenance accomplishments are reviewed at the district level. A trial budget is then prepared, with certain types of maintenance work, such as ditching, shouldering and pothole patching, budgeted in accordance with maintenance standards prescribed by the Division of Maintenance. For example, each road within a district should be ditched on average at least once every three years. After reviewing the ditching accomplished for a previous year, the district engineer can schedule the ditching needed for the upcoming year and budget it accordingly.

Once a district budget is approved, all scheduled work to be undertaken that year is divided into jobs. These jobs in turn are scheduled on workday cards, which the division sends to each district. When maintenance work is accomplished, the personnel time, equipment and materials expended are transferred from the workday cards to a payroll form. Payroll data are transmitted to Frankfort. The maintenance monthly and quarterly information taken from these forms is in turn summarized and returned to the district in labor, equipment and materials distribution reports, along with maintenance management reports. These reports are used by the district office to track time, equipment and materials used and to plan the next budget.

## Scheduled Work

In the course of this study, it was discovered that fifty to sixty percent of the maintenance activity undertaken in each district is planned or scheduled in advance. This allows the county foreman to plan each day's maintenance work and at the same time permits some leeway in case of emergencies. Not all work to be undertaken, for example, can be planned. Rock slides, snow storms and the like require varying maintenance efforts that cannot be anticipated.

Nevertheless, scheduling work in advance results in more work being

EXHIBIT I

| PERFORMANCE STANDARD<br>DIVISION OF MAINTENANCE | RECOMMENDED CREW SIZE<br>5 | SUB-LEDGER CODE B01<br>SHEET 1 OF 2 |
|---|---|---|
| ACTIVITY: SHOULDERS-SPOT PREMIX BITUMINOUS PATCHING | | EFFECTIVE DATE:<br>June 16, 1974 |

DESCRIPTION: The hand patching of shoulders with premix bituminous materials, to correct abrupt depressions, potholes, and other potential shoulder surface hazards.

SCHEDULING: Hazardous shoulder failures should be repaired immediately upon discovery throughout the year. Unless the failure presents a dangerous condition to the motorists, allow the area to dry before repairing the failure.

PERSONNEL

| NO. | SKILL | CODE |
|---|---|---|
| 2 | Light Equipment Oper. | 7333 |
| 1 | Laborer | 7334 |
| 2 | Traffic Control | 7334 |

EQUIPMENT

| NO. | TYPE | CODE |
|---|---|---|
| 2 | Dump Truck (3 Ton) | 005 |
| 1 | Bituminous Heater (Tarpot) or other container for tack | 121 |

MATERIAL

| QUANTITY | DESCRIPTION | CODE |
|---|---|---|
| 12 Tons | Premix Bituminous Material | 714 T |
| 69 Gals | Bituminous Asphalt Opt. | 216C |
| | Sand Opt. | 188I |

PERFORMANCE VALUES

| MAN HOURS PER UNIT | DAILY PRODUCTION | WORK MEASURE UNIT |
|---|---|---|
| 3.33 | 12 | Ton |

| PERFORMANCE STANDARD<br>DIVISION OF MAINTENANCE | RECOMMENDED CREW SIZE<br>5 | SUB-LEDGER CODE P01<br>SHEET 2 OF 2 |
|---|---|---|
| ACTIVITY: SHOULDERS-SPOT PREMIX BITUMINOUS PATCHING | | EFFECTIVE DATE:<br>June 16, 1974 |

RECOMMENDED PROCEDURE:

1. Place safety devices, signs and flagmen.

*2. Clean out and square up potholes using hand tools.

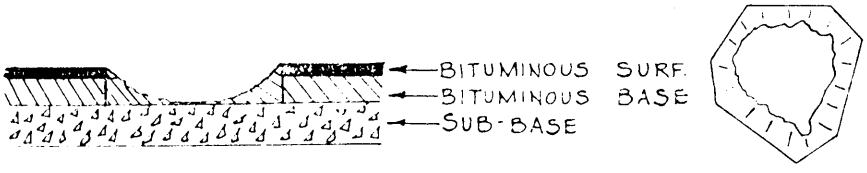
3. If liquid asphalt material is available and needed, apply tack coat to area being repaired. Be sure tack is applied to total area of pothole.

4. Shovel materials into potholes. Material should be placed in layers not exceeding two inches in depth. Each layer should be hand tamped before the next layer is placed.

5. Final layer should be flush with pavement after compaction.

6. Pick up safety devices and signs.

NOTE: Patching operations should be performed when the roadway surface is dry and potholes are not ponding water.




*Above sketch is an example of "squaring" a patch. Note that it does not necessarily mean four equal sides. It does mean to eliminate all rounded points of contact between old material and new material.

| RECOMMENDED BY A. R. Romine<br>DIRECTOR DIV OF MAINT<br>OK J.W.S. DATE 1-30-74 | APPROVED BY J. K. Harbison<br>STATE HIGHWAY ENGR<br>DATE 2-4-74 |
|---|---|

accomplished than had been the case prior to the implementation of the Maintenance Management Program.

## Statewide Standards

A performance standards panel comprised of district engineers and personnel from the divisions of equipment, maintenance and materials meets annually to formulate statewide performance standards for each type of maintenance activity. Recommended crew sizes and the equipment, materials and man-hours required for the accomplishment of maintenance tasks are determined in this manner.

In the course of the present study, however, it was learned that these performances are not applicable statewide. In eastern Kentucky, for example, ditching on individual roads, because of the terrain, is required more frequently than once every three years, as prescribed by the Division of Maintenance. Further, the equipment recommended to undertake ditching in western Kentucky may not be adequate to accomplish the job in the eastern part of the state.

Efforts are made to apply standards statewide, but it is recognized that additional personnel may be required for traffic control in urban areas and on rural facilities with inferior roadway alignment. There may be other deviations from crew size, such as number of truck drivers required to haul materials in support of an operation.

The quantity standards, which establish the scheduled amount of a particular work item, may vary from district to district. Once again, ditching is generally scheduled more often in mountain areas than flat terrain. The work burden of ditching in eastern Kentucky will mean that another maintenance function, such as seal coating, will be of less importance for scheduling purposes.

## Overhead

Prior to 1972, all maintenance work, including labor, was charged to the project rather than to a specific maintenance activity. With maintenance management, all non-productive time is specified by an activity code. This allows the bureau to isolate non-productive time and compute overhead. Non-productive work on each job is now charged to inclement weather, equipment service time, equipment breakdown - whatever the case may be. As a result, the work accomplishments can include distinct productive and non-productive allotments by expenditure.

Each district has many individual budgets or separate sources of funds for district-wide road maintenance. Every district, for example, has Rural Secondary program funds and County Road Aid program funds available for each county within the district. Additional money is available for federal or state programs on designated federal primary, state primary or off-system roads. Lastly, money is available from the bureau's general maintenance budget. District 2 has eleven counties and five toll roads, and their maintenance program consists of 36 management budgets.

In the course of this study, it was learned that virtually all of the non-productive time in each district was charged to general maintenance. Equipment breakdown, and other down-time occurring as a result of work on rural secondary projects is charged against the state's general maintenance. The practice is so prevalent that the general maintenance account is carrying the burden of all non-productive or overhead work in the district.

According to the Division of Maintenance, approximately $20 million of its $64 million general maintenance budget is for overhead and non-productive time. A number of other factors account for such a high overhead figure. Among these are the lack of preventive maintenance on road equipment, inferior equipment, a shortage of field mechanics, inclement weather, training overhead and removal of abandoned vehicles. Exhibit 2 depicts the categories which are considered non-productive.

## Maintenance Account Mischarges

The maintenance account's primary function is to provide money for the maintenance of all roads which are not toll roads or are not included in the revenue sharing programs of the state. It is the standard policy, however, for county road foremen to charge non-productive time incurred on revenue sharing program projects to the state's maintenance account.

Another reporting technique is that of charging work which is accomplished on rural secondary roads, for example, to the maintenance account. It is difficult to determine how prevalent this practice may be, but departmental officials stated that the misreporting has occurred on occasion. The department has also documented cases where disciplinary action, as a result of misreporting work, has occurred.

The incentive to misrepresent maintenance performed pertains to the method of accounting for work completed. By misreporting, funds intended for maintenance or rural secondary aid is not expended. These funds in turn may then be used for improvements to county roads. The department does not condone this reporting practice and is working to alleviate it through disciplinary actions.

## Force Account Work

Force account work consists of small construction jobs undertaken by maintenance crews. In most instances, road work exceeding $50,000 has to be let to competitive bid. However, in emergency situations, when plans cannot be developed, bids let or reasonable bids obtained, the secretary has authority to authorize force account work in excess of $50,000.

Force account jobs are usually considered as maintenance, but may also include work which does not require extensive planning. Small bridge replacement is an example.

Interviews with the district engineers revealed that increasingly, state maintenance crews are involved in force account work for the counties. This

EXHIBIT 2

# PERFORMANCE VALUES IN LIEU OF PERFORMANCE STANDARDS

The following activities will not have a crew size, the work measure unit will be reported in man hours, there will be no planned daily production, and man hours per unit will not have meaning in the typical application:

N01 BUILDING AND GROUND HOUSEKEEPING

Includes housekeeping of building and grounds of maintenance crew headquarters. This housekeeping includes janitorial supplies, mowing, grass, sweeping, orderly arranging of tools and materials, etc. This sub-ledger does not include the repair of buildings, utilities, equipment or servicing of equipment.

N04 EQUIPMENT SERVICE

The service of equipment at the maintenance facility or on the project. This does not include any repair related work at the repair garage, maintenance facility, or project by maintenance personnel or equipment personnel.

N05 INCLEMENT WEATHER AND STANDBY

Standby time for maintenance personnel due to weather conditions. This does not include snow and ice standby. When Building and Ground Maintenance is performed due to inclement westher, the time will not be charged against this sub-ledger.

N06 STANDBY DUE TO EQUIPMENT BREAKDOWN

Standby time of maintenance personnel due to equipment breakdown. This shall not exceed one half day for any activity for a specific day.

N08 ENGINEERING AND RIGHT OF WAY

This sub-ledger is for state personnel other than maintenance personnel, who perform services for the Division of Maintenance and District Maintenance Section, such as engineering, legal, right-of-way, etc.

N10 MAINTENANCE OF PROTECTIVE DEVICES AT RAILROAD CROSSINGS

This sub-ledger is to be used in paying the various railroads for cost incurred at railroad crossings for maintenance of protective devices.

January 14, 1976

N11 SAFETY

This sub-ledger is to be used for all maintenance expenditures related to safety, personal safety equipment, the safety equipment in maintenance facilities. This includes such items as time for safety schools, training sessions, purchases of hard hats, safety glasses, flags, vest, and other related items.

N12 TRAINING OVERHEAD

Any schools, training sessions, seminars, conducted for Central Office, District, or Crew personnel other than Safety. Both instructors and participants shall use this sub-ledger.

N13 PERMITS SUPERVISION

Charges made by District and Central Office personnel assigned to Maintenance who work on the evaluation and issuance of permits including the District Permits Engineer, his assistants and/or inspectors. This is not to include the clerical personnel who are assigned to the District Office.

N14 CENTRAL OFFICE

Charges made for all expenditures of a general nature which cannot be charged to a project.

N15 DISTRICT OFFICE

All District Office Maintenance personnel, except those covered by the Permits Supervision sub-ledger Code, and their related expences which cannot be charged to a project. This includes the District Maintenance Engineers, Engineer Technicians, and Agronomists.

N16 DISTRICT MAINTENANCE SUPERVISOR

Charges made for all expenditures of a general nature which cannot be charged to a project. This would include the Supervisor's salary, purchase and repair of small tools.

N17 COUNTY CREW

Charges made for all expenditures of a general nature which cannot be charged to a project. This would include the County Foreman, and Timekeeper's salaries, utilities, and purchase and repair of small tools.

N18 SPECIAL CREW

Charges made for all expenditures of a general nature which cannot be charged to a project. This would include utilities for crew headquarters if different from maintenance crew headquarters and purchases and repair of small tools.

N19 REMOVAL OF ABANDONED VEHICLES FROM STATE OWNED RIGHT OF WAY

Charges made for all expenditures in the removal of abandoned vehicles from state owned right-of-way.

N20 EQUIPMENT OVERHEAD

The travel and other non-productive time required to have a piece of equipment repaired and returned and other related functions to make the equipment operable other than repair done by the equipment garage.

N99 MISCELLANEOUS MAINTENANCE

Any bona fide maintenance activity not covered by sub-ledgers A01 through N98.

RECOMMENDED BY A. R. Romine
DIRECTOR DIV OF MAINT

APPROVED BY J. T. Anderson
STATE HIGHWAY ENGINEER

OK JWS.

DATE 3-8-74

DATE 3/18/74

involvement, of course, reduces the amount of road maintenance work which can be undertaken. As a result, it is not uncommon for some districts, lacking the personnel for simultaneously conducting extensive force account work and road maintenance, to let force account projects to private construction firms through equipment rental contracts. Similarly, other maintenance activities such as mowing, ditching and heavy patching, are let to contract.

The increase in construction costs may warrant an increase in the $50,000 limit relating to force account work. Projects which were previously completed on a no bid arrangement may now have to be let because of increased costs. The letting may increase cost further as a result of detailed planning, the letting procedure and delays in getting projects under construction.

The increase to the $50,000 level occurred through an amendment to KRS 176.121 in 1974. The General Assembly may wish to review this statute to determine if inflation has increased enough to justify an additional change. If an amendment is determined necessary, action could be taken by the General Assembly in the 1980 session.

## Possible Legislative Concerns

Although legislative action pertaining to the department's operations may not be necessary, legislative knowledge of the programs is imperative. Thus the General Assembly may wish to undertake the following oversight activities:

* Review of the activity in the overhead and non-productive account to ascertain if productivity is changing.

* Analysis of operations management to determine if any appreciable cost-savings can be documented.

* Program review of total maintenance activity to determine productivity.

* Examination of the equity of state maintenance accounts carrying the burden of the bulk of non-productive time.

These and similar issues should be brought to the attention of the interim committees for further activity.

# CHAPTER FOUR

## EQUIPMENT

To a large extent, the state's highway maintenance effort is dependent on the number of pieces of equipment it owns, their make and serviceability and their distribution within the state. Equipment purchasing, maintenance and down-time effect the actual performance of road maintenance work and dictate the types of maintenance work undertaken.

In order to assess the status of equipment utilized for state highway maintenance, interviews were conducted with the Kentucky Department of Transportation central administration, the Division of Equipment and the twelve highway district engineers. The findings are listed below.

### General Findings

* The Department of Transportation is currently adopting an equipment management system which will aid in the management and purchase of state highway equipment.

* The Division of Equipment has implemented a monthly equipment charge for use of state equipment. This measure provides a method to determine the amount of use of each piece of equipment and prohibits the district offices and other equipment users from retaining unutilized equipment.

* The purchasing process itself can and does contribute to long delays in the acquisition of road equipment.

* The late delivery of equipment from vendors doing business with the state is a commonplace occurrence.

* State contracts for the purchase of road equipment are awarded to low bidders. This results in a multiplicity of vehicle makes and may result in the acquisition of inferior equipment.

* "Down-time," or the period of time a piece of equipment is inoperative and in need of repair, is a constant problem. As much as 25 percent of a particular type of equipment may be awaiting repair at any one time.

* Preventive maintenance is not consistently practiced at this time in the state's 26 equipment repair garages.

* To service and repair road equipment, the Division of Equipment maintains a parts inventory valued at between $3 and $5 million. Much of this inventory is obsolete.

* Major replacement parts which cannot be stocked and must be ordered are frequently delivered late. All replacement parts costing $1,500 and up must be purchased through a bid procedure.

## Equipment Replacement Program

The department developed an equipment replacement program during the 1960s, founded on the premise that eventually each piece of highway machinery or equipment becomes a liability, costing more to maintain than purchasing a replacement unit. The purpose of the program was to establish a replacement schedule based on determined standards of maximum age and usage.

Initially the program was underfunded and not all types of equipment could be replaced on schedule. Due to escalating equipment costs in later years, and a static equipment replacement budget, the department fell further behind in its replacement schedule. It became evident in the mid-1970s that the gap between equipment needs and available funds had widened so much that the existing replacement program was insufficient.

Efforts to purchase equipment have since been based on a district priority method. The department admits this is a stopgap policy to fulfill basic needs until additional funds are made available. The previous two budgets contained sufficient funds to maintain an adequate replacement schedule; however, current funds are not sufficient to meet all past replacement needs.

## Equipment Rental Charges

Machinery received by the Division of Equipment is distributed to the various users. The users are charged monthly rental on the equipment they possess. The department has an equipment rental charge for each type of equipment, and all users are charged on the same basis.

In an effort to control equipment usage, the department has a policy of charging a minimum monthly dollar amount for possession of all types of equipment. The current system checks the price of equipment and its usage charge. If the usage charge is not as high as the monthly minimum, then the additional amount is charged to the possesser of the equipment. In the event the charges exceed the minimum monthly, then only the usage charges are applied.

This charge was established after departmental officials noted that some districts possessed an inordinate amount of equipment. The situation was most noticeable when districts requested equipment in line for surplus sale. Department administrators have a policy that any equipment which a user desires will not be sold as surplus. Since much of the equipment was only charged as used, the districts were able to possess excess equip-

ment at little liability. The final result was to further exacerbate the department's repair problems through the accumulation of an inordinate amount of obsolete fleet equipment.

Equipment used for transportation, such as sedans, station wagons, pick-up trucks and dump trucks, is rented on a mileage basis. Heavy equipment, such as graders, front-end loaders and bulldozers, is rented on an hourly basis. Rental on chain saws, jackhammers and other power tools is charged by possession, usually monthly. Some equipment, such as road stripers, have both possession and user charges.

The equipment charges, based either on the miles or hours used, are reported on the daily work sheets along with payroll. These charges are levied against the operating accounts of the user. The result has been a reduction in the overall size of the equipment fleet, since many users do not have sufficient operating budgets to carry extra equipment charges. Exhibit 3 illustrates the minimum monthly charge use of departmental equipment.

Department administrators believe the Kentucky procedure for equipment charges is unique and effective. Other states have adopted portions of the equipment rental concept into their management system. Properly used, this method forces department managers to assign equipment on an economic basis and motivates the user to hold his equipment fleet to a usable size.

## District Request for Equipment

Requests for road equipment tendered by the district offices are arbitrary to some extent in that more equipment is requested than the Division of Equipment can possibly provide. In addition, the equipment requested reflects the highway engineer's perceived need rather than the number of miles to be maintained within the district, the ratio of traffic bound (gravel) roads to bituminous surface (paved) roads in need of maintenance, and related considerations.

The present system also produces an imbalance in the distribution of certain types of equipment and may result in one district's having up-to-date and readily serviceable equipment at the expense of another district. To cite an example, the western Kentucky districts, because of their topography, do not use certain types of specialized equipment, such as front-end loaders, as much as eastern Kentucky does.

The department is relying on the minimum monthly rental to counterbalance any misjudgement in the equipment purchases. The rental program will document all equipment usage, enabling administrators to carefully scruntinize district purchase requests. In addition, department officials believe that the rental charges will alleviate equipment distribution imbalances caused by the unnecessary stockpiling of equipment.

While departmental managers are concerned with misjudgement and misuse of equipment, however, they view actual equipment shortages as the major problem still to be resolved.

EXHIBIT 3

OFFICIAL ORDER 83629

SUBJECT: SCHEDULE OF EQUIPMENT RENTAL RATES

A list of rates has been established within the Department of Transportation for equipment rentals. It is hereby ordered that the following schedule of rates be effective July 1, 1978.

| RATE CODE | DESCRIPTION | PROPOSED RATES | PROPOSED MONTHLY CHARGES | |
|---|---|---|---|---|
| | Trucks | | | |
| | Classification Code 000 | | | |
| 001 | Friction Testing Equipment and Profilometer | .20 Per Mi. | 75.00 | |
| 002 | ½ ton Pickups, 3/4 ton Pickups | .20 Per Mi. | 150.00 | |
| 003 | 2½ and 3 ton Dump Trucks | .33 Per Mi. | 265.00 | |
| 004 | 8 - 10 ton Tandem Dumps | .56 Per Mi. | 465.00 | |
| 005 | Trucks with Permanent Hopper Spreader | .40 Per Mi. | 800.00 | 5 Mo. |
| 006 | Aerial Boom Trucks | .58 Per Mi. | 550.00 | |
| 007 | Trucks with Water Tanks | .50 Per Mi. | 75.00 | |
| 008 | Line Maintenance Truck | .70 Per Mi. | 800.00 | |
| 009 | Crew Cabs, 1 ton Truck, ½ ton Blazer, 3/4 ton Utility, ½ ton Truck with Auto and Power Steering, 3/4 ton Suburban and 1 ton Vault Truck | .20 Per Mi. | 200.00 | |
| 010 | 3/4 ton Suburban 4 x 4 | .30 Per Mi. | 225.00 | |
| 011 | ½ ton Pickups and 3/4 ton Pickup and Crew Cab for Construction | .20 Per Mi. | 150.00 | 8 Mo. |
| 012 | Special Equipped Trucks | .38 Per Mi. | 265.00 | |

## Low-Bid Requirement

Equipment is purchased by the Kentucky Department of Transportation through state price contracts with individual road equipment vendors. As previously mentioned, before contracts are awarded, specifications are written by the Division of Equipment to insure that the contract to supply the type of equipment requested by the districts will be bid on competitively. The low bidder, by law, is awarded the contract.

A number of problems, including the multiplicity of equipment makes in the state fleet, inferior equipment, and the inability to order specialized equipment, are attributable to this requirement. To illustrate, the low bidder for pick-up trucks one year may not be awarded the contract the next, leaving each district with two, three or four makes of trucks to service. Districts needing trucks during this period would thus have to rely on inferior equipment or use older equipment in need of replacement. The inability to order special equipment, such as that needed to expedite ditching in areas with rugged terrain, occurs when the necessary specifications limit the number of bidders, and hence make the bidding noncompetitive.

## Late Delivery of Equipment

Contracts awarded to vendors of road equipment specify delivery dates. However, in many instances, vendors treat the state highway department as the buyer of last resort. Because no penalties are assessed for late delivery, and vendors are not required to be bonded, equipment manufacturers may fill more lucrative orders from the private sector first, and dispose of orders from the Department of Transportation at their convenience. This results in the delay of road equipment essential for seasonal maintenance work. Road graders and snow blades may arrive in the spring, even though they were ordered the previous summer in anticipation of the winter snow and ice removal. Likewise, lawn mowing equipment may be delivered in the fall or winter after the mowing season has ended.

Slow or late delivery of equipment is a nationwide problem which affects all purchasers of heavy equipment. Problems are compounded for government units, due to additional paper work. A portion of the additional work includes writing competitive specifications. Sometimes the specifications are vague or create confusion as to lowest bidder and thus they create delays.

## Division of Equipment's Lack of Supervisory Authority

Under the present organization of the Kentucky Department of Transportation, the function of the Division of Equipment is to purchase road equipment, tools and replacement parts and distribute them to the state's twelve highway districts. The division has no line authority to supervise the maintenance of equipment once it has been distributed, nor can it routinely take action

against the equipment operators, county maintenance foremen and equipment supervisors who are responsible for the upkeep of the equipment. The division feels this lack of line authority results in improperly maintained and even abused equipment.

Currently, it is the responsibility of the county maintenance foreman to assign operators to the equipment. Many of the operators, however, are novices, unaware of proper maintenance procedures. Others who operate equipment are reckless or unnecessarily hard on the machines they operate. In the course of this study, it was discovered that the misuse of equipment was common but that equipment operators were seldom reprimanded and rarely discharged.

Additionally, there is a considerable turnover of qualified equipment operators, especially in urban areas and eastern Kentucky. Typically, a short time after a man is trained to operate a piece of equipment and has acquired some experience in its operation, he will leave state government to work in private industry, especially in areas having a large number of construction firms or where coal is mined.

## Preventive Maintenance

At the time of this writing, the Division of Equipment is attempting to implement a preventive maintenance program in its 26 garages. Previously, no consistent preventive vehicle maintenance was carried out, even though oil changes, radiator flushing, the monitoring of tire pressure, and other such maintenance were required at designated intervals. Without a closely monitored preventive maintenance program, the useful lifetime of equipment is reduced and its efficiency is diminished significantly.

## Down-Time

The amount of time that equipment is inoperative and awaiting repairs is a constant source of complaint within the Division of Equipment. These complaints are generated by equipment users and maintenance personnel. A number of factors contribute to this problem. Among them are:

*Lack of field mechanics;

*Unqualified mechanics in the maintenance garages;

*Long delays in receiving ordered parts; and

*The $1,500 limit on replacement parts which can be purchased without a state purchase contract.

According to the Division of Equipment, an ample number of garage mechanics are currently employed by the department to maintain the approximately 13,000 pieces of equipment it owns. There is a severe shortage, however, in field mechanics who can repair equipment when it breaks down

on the job. As a result, this equipment has to be towed into a garage for repair, costing the district money for time lost on the job, rescheduling of the work crew and equipment rental for towing.

A majority of the district engineers interviewed feel that there is a distinct lack of qualified mechanics in the maintenance garages. In District Five (Louisville), for example, a majority of equipment needing repairs is towed to Frankfort because of the shortage of mechanics in the district. Likewise, mechanics are in short supply in the coal fields, where the Department of Transportation wages cannot compete with the salaries of mechanics in private industry.

The lack of competent mechanics of course increases down-time. The turnover of trained mechanics contributes further to down-time. The longest delays in repairing road equipment, however, are attributable to the late delivery of replacement parts which cannot be stocked and must be ordered. The department does allow the purchase of parts up to $500 without the bid process, but parts needed for major repairs often cost much more. Delays in receiving parts can average six months, since parts vendors may have problems similar to those of equipment suppliers. A second problem is that ordered parts may be quite old or unique production models. Finally, some road equipment, regardless of the maintenance schedule, breaks down at frequent intervals because it is in need of replacement rather than repair.

## Parts Inventory

To maintain its equipment fleet, the Division of Equipment stocks certain replacement parts such as batteries, tires, and spark plugs at its 26 garages. An inventory of approximately $3 million in parts, with an estimated $1 million stored in Frankfort, is stocked by the division in its repair facilities.

Parts are received in Frankfort and distributed to the districts. Once in the district, they may be moved from one equipment repair garage to another. Because of the multiplicity of makes for each vehicle type, a separate inventory has to be maintained for each make. As discussed earlier, if a district has Dodge, Ford, GM and International Harvester trucks, four separate inventories are required to keep the truck fleet operative. When a particular make of truck is replaced, however, the parts stocked for its maintenance become obsolete. The division estimates that approximately $2 million of its parts inventory may thus be obsolete.

## Surplus Equipment

Equipment for which a particular district has no further use, equipment which has been replaced, and equipment in general disrepair is sent to the division headquarters in Frankfort. Here it may be redistributed to another district, stripped for parts, or disposed of by the Department of Finance at a surplus equipment auction.

Before road equipment is auctioned, Kentucky's county judges are informed of the available surplus and may purchase the equipment in advance of the actual sale. Many county judges decline to acquire equipment in this manner, however, because it is often unusable.

The Division of Equipment has been able to acquire surplus equipment from the General Services Administration (GSA). This equipment is purchased for ten percent of the original purchase price, painted or repaired as required and then distributed to the districts. Under terms of the agreement with the GSA, however, this equipment is not available to the counties until two years after its acquisition by the division.

## Options

Late delivery of equipment and the $1,500 limit on replacement parts are two fundamental problem areas which can be mitigated through legislative action. Options available to the General Assembly include the development of legislation allowing:

1) Bonding of vendors, who would be permitted to bid on equipment contracts, with penalty provisions on the bond for late delivery.

2) Increasing the limit (presently $1,500) for purchase of replacement and re-evaluating bid procedures on replacement parts.

It has been pointed out that sufficient funds have not been available for a viable equipment replacement schedule. The department, however, has taken some management steps to try to increase the working life of currently purchased equipment through consistent preventive maintenance. Efforts should be made to ascertain the efficiency of this program in the interim sessions.

Finally, the implementation of the minimum monthly equipment program should enable the department to thoroughly examine equipment needs. This management tool should aid in developing more efficient methods of purchasing, distributing and utilizing equipment. Hopefully, it will provide a more productive life for each piece of equipment. This program will provide a focus for continuing legislative review of the Department of Transportation's efforts to improve equipment purchase, utilization and maintenance procedures.

# CHAPTER FIVE

## PERSONNEL

Highway maintenance, like other endeavors, is dependent in part upon the quality of the workers involved. To maintain the approximately 25,000 miles of road in the state road system, the Bureau of Highways must rely, to a large extent, on those people directly responsible for the accomplishment of specific maintenance tasks; i.e., the district field personnel. The stability of the district work force, especially the road maintenance crews, the recruitment of qualified people, and their training in the operation of equipment directly effects the scheduling of maintenance work and its actual performance.

To determine the role personnel plays in the state's highway maintenance effort, various personnel practices from application of a prospective employee to termination of employment were examined. Personnel policy and salaries were also investigated. Both district officials and the Department of Transportation's Division of Personnel provided information.

The Kentucky Department of Transportation is faced with several personnel problems at the district level. These problems include the hiring and retention of professionals and laborers, offering competitive salaries, hiring procedures and coping with inexperienced labor.

### General Findings

* Salaries are not competitive with those in the private sector for comparable job classifications.

* In many counties, salaries are higher for maintenance crews affiliated with the county than salaries for comparable job skills provided by the state.

* The length of the hiring procedure impedes the recruitment of new personnel, especially engineers.

* Personnel turnover is considerable and the recruitment of new employees is difficult, especially in urban areas and in the coal fields.

* There is either a shortage of field mechanics or a low ratio of garage mechanics to equipment in every district.

* There is a shortage of engineers in every district and in the central office in Frankfort.

* Training programs for light and heavy equipment operators cannot keep up with the demand for these skills.

## Personnel Administration

The approximately 9,000 employees of the Department of Transportation are subject to the regulations of two personnel offices. Within the transportation department a Division of Personnel is resonsible for screening prospective employees, hiring acceptable applicants and reviewing job performance. However, any change in job classification, salary improvement, new classifications or testing matters is the responsibility of the Kentucky Department of Personnel.

## Personnel Procedures

The procedures for hiring, retention and termination of personnel are causes for considerable concern among Department of Transportation officials attempting to attract qualified people, reduce the 30 percent annual turnover rate and terminate unproductive employees. For example, personnel procedures are such that it may take up to thirty days before the new employee is actually on the job; after being trained, equipment operators are likely to leave state government; and termination of unsatisfactory personnel can be a time-consuming process, with the final decision outside the jurisdiction of the district supervisory official.

A flow chart depicting the employment process (Exhibit 4) is shown on the following page to illustrate the many steps in the hiring process. The number of days to complete each step is listed in parentheses. The actual employment procedure is not as lengthy as the chart would indicate if the position to be filled has already been created. Nevertheless, if a register of qualified applicants is filled, approximately two weeks would be needed to hire the desired applicant.

In conversation with the district engineer in Covington it was noted that the employment process is too time-consuming and hence, acts as a deterrent to the recruiting of qualified personnel. The district once needed an engineer, which is an established position within the department. The procedure for employment entailed the applicant's taking an exam, being placed on the register and the application's being approved and processed by the Department of Personnel. Officials in the Covington district have documented that this process took six weeks to complete, and by that time the applicant had found other work.

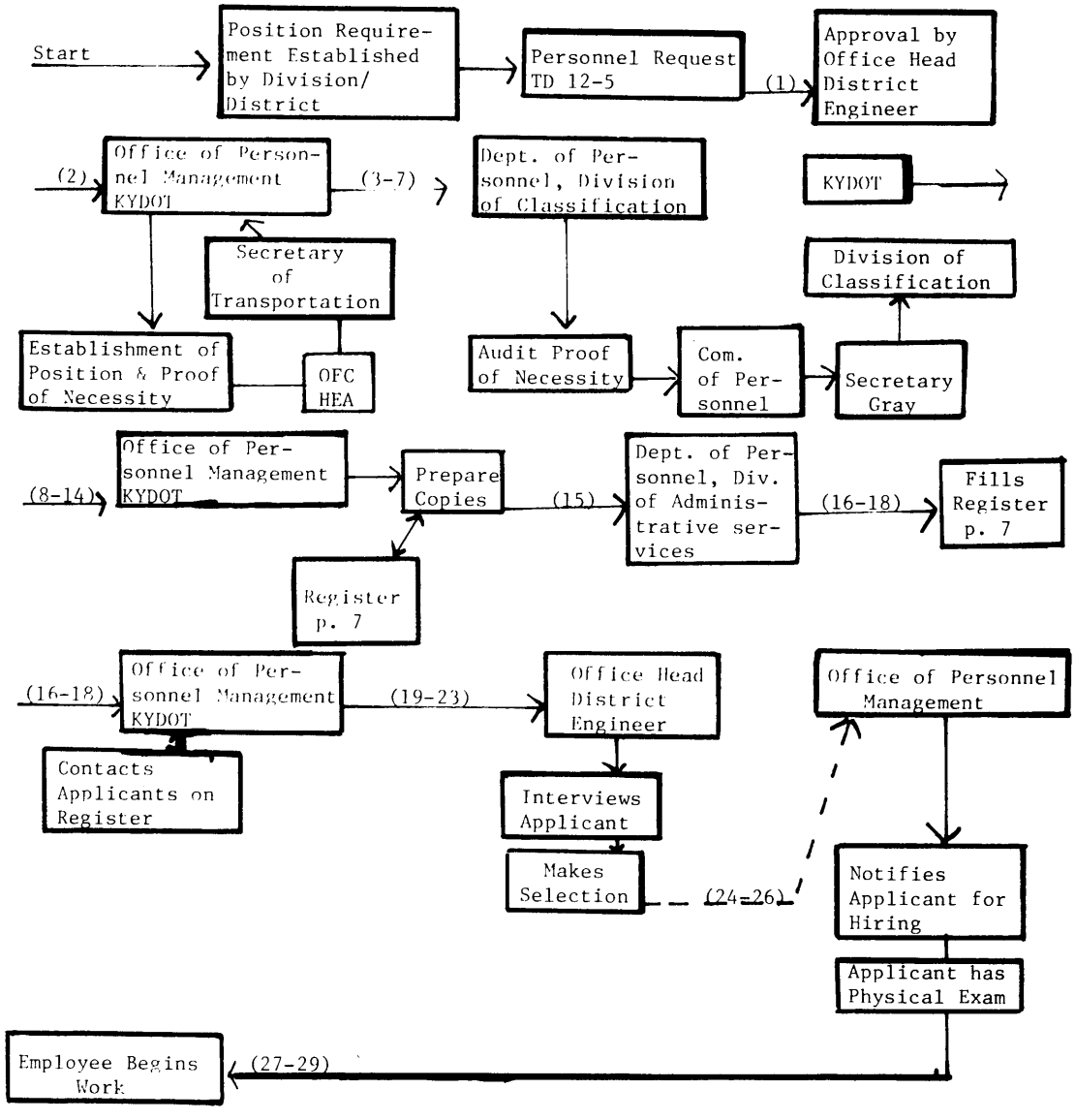
Another deterrent to prospective applicants is the length of time elapsed before a check is received. By state policy, the first check cannot be received by a new employee until four weeks after employment begins. The applicant may go for a period of ten weeks before the employment process is finally completed and compensation provided. Qualified applicants, especially engineers, often settle on employment more speedily elsewhere, and the employment process in the private sector may provide compensation two to three weeks after the date of application.

On the district level patronage was cited as adding to personnel problems,

EXHIBIT 4

EMPLOYMENT PROCESS

Time Phase



especially in regard to the hiring of unqualified mechanics and the retention of unproductive laborers. The employment process is influenced by citizens with close ties to state government administration in Frankfort, and these people, in return for political favors, aid prospective job applicants in obtaining employment.

## Other Personnel Concerns

In interviews with district engineers it was learned that disrespect for supervisory officials has surfaced as a result of decisions made by the personnel board in instances of personnel suspensions. By regulation, the district engineer does not have the authority to fire an employee, only to suspend him without pay. When employees have appealed their suspensions, the district engineer in almost all cases has been overruled by the state personnel board, the suspended employee reinstated and paid back wages for the period of suspension. In most instances, appeals are upheld due to lack of documentation by district officials in the case, or because the suspension did not follow prescribed procedural policies. Therefore, although suspension or even termination is warranted in many cases, laxity on the part of supervisory personnel contributes to poor working relations and ultimately a poor maintenance effort.

## Employment Input of District Engineer

The district engineers stated that often the applicants are not interviewed through the district office. The authorization for employment is transmitted from Frankfort without the district engineer having any knowledge of the applicant or his abilities. A majority of engineers interviewed for this study indicated that they would prefer that personnel decisions be made at the district level rather than having people of unknown ability being recommended from Frankfort.

The Department of Transportation has attempted to resolve disagreements or misunderstandings over department personnel policy through the establishment of guidelines for district engineers and their personnel managers. As recently as September 12, 1979, guidelines pertaining to employment policies were outlined by Secretary Grayson.

Exhibit 5 is a memorandum from the secretary describing a nine-point program, and addressing many areas the district engineers cited as problems. The district engineer in this personnel outline not only has the authority to interview, but is given some encouragement to appeal the hiring of any undesirable personnel.

## Salary Problems

A very basic problem that directly affects the state's road maintenance efforts is the salary differential between the public and private sectors for comparable job classifications. Salaries for comparable work and skills are nearly twice as high in private enterprise as in state government. Similarly, salaries on county road maintenance crews are uniformly higher than those salaries for the Bureau of Highways road maintenance crews performing the same

EXHIBIT 5

MEMORANDUM

TO: District Engineers
Administrative Managers

FROM: Calvin G. Grayson
Secretary of Transportation

DATE: September 19, 1979

SUBJECT: September 12, 1979 Meeting

The attached is a summary of decisions and directions which were given at the subject meeting. I hope that you will review these items and keep them in mind when working with personnel matters. Particular emphasis should be given to improve communications not only between the district and the Office of Personnel Management, but between the District Engineer and the Administrative Manager. You should also place more emphasis on written communications in an effort to cut down misunderstanding and to clarify positions taken relative to personnel matters.

I call your attention to Item 9 on the summary which probably is the most important decision which was made during this meeting. The responsibility for this Department's effort to reach a goal in minority employment in the district is solely on each District Engineer and Administrative Manager. You know what your goal for your particular district is and you should make every effort to hire minorities to achieve that goal. Do not forget that the turnover of personnel creates a need for a continued effort in minority employment, if you are to not only achieve your goal but stay at that level of employment.

I will be reviewing as often as possible the results of your efforts to determine as soon as possible whether or not the Department as a whole will reach its overall goal. I reserve the right and the privilege to withdraw at anytime I deem necessary the decisions which were made in the September 12 meeting, if I determine that they are producing negative results toward our minority employment goals.

As I have stated in the past and will restate here, our current status within the Equal Employment Opportunity Program is not good, and I do not intend for the Department to be placed in an embarrassing position next January when the Federal review officers come from Atlanta to review the progress of this Department.

Attachment

DISTRICT ENGINEERS
ADMINISTRATIVE MANAGERS
MEETING
September 12, 1979
First Floor Auditorium

The following is a summary of decisions and direction given at the September 12 meeting. Hopefully it will provide understanding as to what resulted from the meeting concerning personnel administration in the districts.

1. District Engineers and Administrative Managers were instructed to document personnel occurrences and problems in writing so we could accomplish better communications and hopefully cut out some misunderstandings relative to personnel actions.

2. District Engineers and Administrative Managers' authority on interviewing and appointing applicants was clarified as follows:
   a. District Engineers and Administrative Managers have the right to interview an applicant which is forwarded to them by teletype from the Office of Personnel Management.
   b. If in their judgment that applicant will not work out in the job assignment, they should advise the Office of Personnel Management with written documentation of the reasons why that applicant would not or could not do the job.
   c. If the Office of Personnel Management continues to feel that the applicant should be employed, District Engineers and Administrative Managers should attempt to work out with the Office of Personnel Management a suitable arrangement that they both can agree upon.

d. If an agreement cannot be reached, the District Engineer should take the case to the State Highway Engineer for resolution.

3. We will not exceed crew quotas for hiring purposes under normal circumstances.

4. District Engineers and Administrative Managers were instructed to comply with the regulations concerning transfer of employees within their district. Advisory letters to the employees concerning the transfer as well as advising of the appeal rights are requirements of the Personnel Rules and Regulations and they should be followed by the District Engineer.

5. The District Engineers and Administrative Managers were advised to pursue and document all disciplinary cases within their district. The employee not performing his job or is not qualified, the district has a responsibility to press for a solution of the problem and can only do this through adequate and proper justification of that personnel case.

6. The districts and the Office of Personnel Management were instructed to use their judgment on the placement of employees in district positions without concern of the previous employee's county or residence and without concern of who feels that they have claims on that particular job.

7. The problem of drivers and employees having drivers licenses on maintenance crews as well as the problem of the employees being capable of driving our equipment was given to Mr. Kemper to review and resolve.

8. It was agreed that the districts would be provided a copy of an application with the first teletype.

9. The effect of many decisions during the meeting was to place in the District Engineers and Administrative Managers' position the responsibility for meeting recently established EEO and minority employment goals. It was agreed that the Office of Personnel Management would accept the District Engineers' judgments on applicants. It will, however, still be the responsibility of the Office of Personnel Management to keep the Secretary informed on progress department-wide on minority hiring.

job tasks.

For example, heavy equipment operators are employed at a starting salary of $3.97 per hour on state road crews. This salary can be doubled by both coal operators in the eastern Kentucky coalfields and the construction industry throughout the state.

Laborers assigned to state road crews receive $3.27 per hour. The department believes that at this salary, they cannot attract quality personnel to complete work tasks. Again, these salaries are not even competitive with county and city maintenance crews performing the same functions.

A survey on county, city and state salaries for maintenance personnel has been completed by the state's Flemingsburg District Office. The following chart depicts salary levels at the time of the survey. Since that time, the state has upgraded some job classifications, but recent conversation with the Division of Personnel officials indicates that the state continues to lag behind counties for road maintenance personnel.

TABLE 9
Salaries for Highway Maintenance Crews
as of February 1, 1978

| COUNTY | LABORERS | LIGHT EQUIPMENT | HEAVY EQUIPMENT |
|---|---|---|---|
| Bath | $2.85 | $3.00 | $160 per week |
| Boyd | 4.27 | 4.49 | 5.11 |
| Carter | - | 4.75 | 5.25 |
| Elliott | - | 3.25 | 3.50 |
| Fleming | 3.00 | 3.75 | 4.00 |
| Greenup | 3.50 | 3.75 | 4.00 |
| Lewis | - | 3.00 | 3.50 |
| Mason | 3.00 | 3.00 | 3.00 |
| Nicholas | 3.50 | 3.75 | 4.25 |
| Rowan | 2.65 | 3.75 | 4.50 |
| CITY | | | |
| Ashland | 3.98 | 4.26 | 4.43 |
| STATE | | | |
| Kentucky | 2.69 | 2.82 | 3.27 |

Likewise, the Department of Transportation has secured some pay increases for equipment operators since February, 1978, but it is safe to assume that local governments have also provided salary increments. In only one case was the salary on the local crews below state salary levels, and in several instances, salaries for comparable positions were a dollar per hour greater at the local level.

The Pikeville and Jackson districts reported that pay for their maintenance personnel is so low that laborers are still qualified for government assistance. Job competition is strong in the coal fields, so qualified personnel will usually seek employment outside of government. Indeed, the situation in the eastern Kentucky region may warrant an expansion of the pay differential policy to the coal producing counties.

A shortage of engineers is apparent in every district. With contract engineers being paid $22,000 to $25,000, the coal industry, consulting firms and the construction industry are both attracting the bulk of graduating engineers each year and luring experienced engineers away from the Bureau of Highways. Offering beginning engineers $13,860, the bureau is unable to even replace the engineers it loses through attrition. To offset this trend, the department is attempting to attract new engineers by means of a scholarship program. This program has provided the department with engineers, but as beginning salaries in the private sector continue to increase at a faster rate than those in state government, the effectiveness of the program is diminishing.

It is now commonplace for students enrolled in the scholarship program to buy out of their obligation to work for the department with a portion of the higher beginning salaries they receive when recruited by firms in the private sector. The paucity of new engineers entering the department and the attrition of engineers from the department to the private sector is combining to produce a critical shortage of engineers. Table 10 illustrates the situation.

As was mentioned previously, equipment operators have also been in short supply in a number of highway districts. The greatest shortage of equipment operators is in the coal regions of eastern and western Kentucky. Efforts have been made to recruit equipment operators through training seminars sponsored by the department, held three or four times per year. These sessions are located primarily in eastern Kentucky. After the training is completed, retention of the operators is difficult. The Pikeville district reported that 20 out of 36 operators trained during one period reported to the coal companies immediately upon the completion of their training. Success of the program in other areas was better, with 60-70 percent being retained, but eventually the coal companies employed the majority of these people as well.

The equipment operators who are retained by the bureau are reportedly less competent and quite hard on road equipment. The inability of the district to retain qualified equipment personnel affects not only the physical work accomplishment in each district, but additionally the costs for repair or replacement of misused or abused machinery.

The shortage of qualified mechanics is prevalent in all twelve highway districts. District officials point out that quotas may be filled, but often those in the mechanic job classification are less competent for their positions than private sector counterparts.

Each district operates equipment repair facilities, but the effectiveness in repair of equipment depends on the ability of the mechanic. New mechanics cannot be recruited with low salaries, and in districts where quotas are filled, new positions must await approval.

## Salary Improvement Program

The department is aware that it cannot compete with the private sector for laborers, equipment operators and for other job skills necessary to undertake road maintenance. It is attempting, however, to be competitive with local government pay scales. Memoranda from the Secretary of Transportation's office indicate an ongoing effort to upgrade salaries throughout the department. These efforts have shown mixed success.

The Department of Transportation has upgraded some maintenance positions in recent years. Secretary Grayson stated before a legislative committee that maintenance workers received a ten percent increase in November, 1977, and fifteen percent in November of 1978. Table I shows laborers making $2.82 per hour as of February, 1978, and information provided by the Division of Personnel in August, 1979, noted an increase to $3.27 per hour.

Salaries were also upgraded for equipment operators during 1978. Starting salaries for heavy equipment operators increased from $3.27 per hour to $3.97 per hour. Light equipment operators have been increased from $2.82 per hour to $3.27 per hour. However, these salaries are still far from competitive with those of private sector equipment operators.

Because the final decision on salaries lies with the Department of Personnel, which must consider salary improvement requests from other agencies of state government, and despite the increases which have been obtained, the Secretary of Transportation is not satisfied that the state Department of Personnel is adequately meeting the needs of Transportation. The only alternative for the Department of Transportation is to continue to request changes through the Department of Personnel.

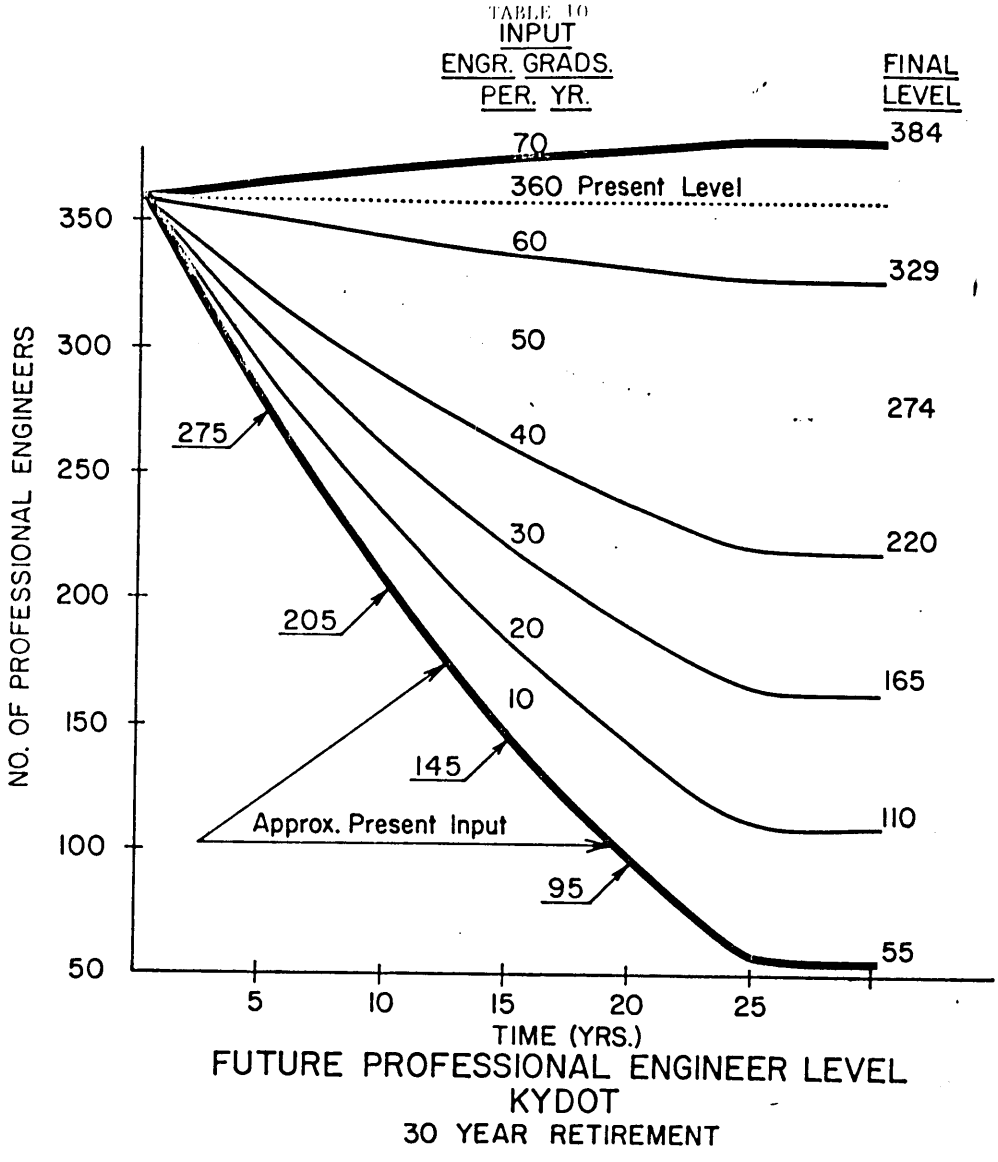
## Recruitment

To attract and retain maintenance personnel in urban areas of the state, the Department of Personnel authorizes starting salaries in excess of those salaries for the same job classification in rural areas. This pay differential is commonly in the range of 25 to 50 cents per hour. Eight urban areas in the Commonwealth are classified as high-cost areas: Jefferson, Fayette, Hardin, Campbell, Kenton, Boone, McCracken, and Boyd Counties.

Opinion is divided among critics of the pay differential policy and whether it is attracting qualified personnel who are willing and able to perform required maintenance tasks. Turnover remains high with bureau personnel in urban areas and rural maintenance personnel consistently outperform their counterparts in the urban areas.

The district office in Covington has provided information indicating that salaries in the urban areas are still insufficient to stimulate job interest, but nevertheless, the Division of Personnel feels that without a salary differential policy, the Bureau of Highways could not fill road maintenance crews in urban areas.

TABLE 10




SOURCE: Kentucky Department of Transportation, 1978

Personnel Workload

The workload of mechanics is extremely high throughout the Commonwealth. The Covington district office provided statistics to document an equipment/ mechanic ratio of 18 to 1. For each mechanic, there are 18 pieces of major equipment; and if one mechanic is not totally competent, a larger burden is placed on the competent mechanic.

The department is faced with losing several district mechanics through retirement. The district engineers in many areas said the most qualified mechanics are lifetime employees of the department and many may be retiring in the near future. The low salary hampers recruitment of new mechanics and the most qualified people are currently working with machinery dealers or privately-owned repair shops. Equipment down-time cannot be sufficiently reduced until a sufficient amount of competent mechanics are employed.

Another area of personnel concerns is with the highway laborer. The lowest grade classification of the district field maintenance personnel is the laborer, whose starting salary is $3.27 per hour.

In the course of their employment, these people may clear brush, load and unload trucks, move or haul such items as supplies or building materials, remove trash, dig ditches, run errands, assist with the maintenance of equipment or act as flagmen for traffic control. Special skills required are knowledge of equipment and materials used in maintenance, an ability to follow instructions and skill in use of common hand tools.

Even though general laborers require only the simplest skills, district officials believe many workers to be unqualified. In many districts, the highway engineers felt that the position of laborer with the Highway Department was the only work people who fill these positions could get. This opinion is encouraged by the fact that a considerable number of highway laborers with families qualify for governmental assistance (i.e., food stamp programs).

Several laborers have other work outside the highway program. Rural districts may employ farmers who are looking to supplement their income. District officials in these instances have cited the use of flex time in their operations, which allows the employee to perform the job task with enough daylight left to complete farm chores.

The farmer doubling as a highway laborer contributes, however, to an absentee problem. Absenteeism is high in rural areas during the spring plowing season and the fall harvest. Thus a direct conflict with district office pothole patching projects or the spreading of rock on roads in preparation of winter arises. As a result, the general maintenance work of the department falls behind schedule, with many roads being neglected.

Absenteeism is a problem in urban areas also. Officials in the urban districts believe the salary and the quality of persons attracted to highway work are the main reasons. At any given time, as much as ten percent of the work force may be absent, while district officials feel another ten percent are not capable of completing assigned job tasks.

Absenteeism in a maintenance crew which already has vacancies can mean that as much as 25 to 30 percent less than the required crew may be available to undertake the day's scheduled road maintenance work. Turnover within the department as Secretary Grayson has noted, has been 20 to 25 percent, making both job planning and work accomplishments difficult to ascertain.

A department or division can only function to the capability of its employees. If pay scales are low, the quality of work cannot be expected to be different. The department is faced with general policy problems in personnel relations and must operate in spite of high turnover and the retention of unqualified personnel in field maintenance positions.

## Alternatives for Personnel

The General Assembly has limited legislative responsibility regarding personnel problems. Action which could be taken would involve either financial commitments or further research. Examples of action which could be taken are as follows:

* Monitor action for pay increases to maintenance during the interim.
  - -Ask for copies of salary reclassification requests and ascertain state Department of Personnel response and rationale for action.
  - -Appropriate funds for salary increases with expressed intent as to personnel to receive such increases.
  - -Designate changes in pay differential areas where qualified laborers are difficult to attract or retain.

* Review hiring procedures.
  - -Reduce time frame in hiring personnel.
  - -Establish more flexible guidelines for reporting disciplinary action.
  - -Review responsibilities and actions of Department of Personnel for request for salary adjustment and authorization for job re-classifications.

Legislation may not necessarily be appropriate on policy or procedural matters. However, any salary improvement or incentive programs may require enactment of legislation.

# CHAPTER SIX

# MATERIALS

Aggregate, asphalt, concrete pipe and other materials are essential to road maintenance. The availability and cost of these items directly effects the scheduling of maintenance activity and can determine the rate at which a project is completed.

The Kentucky Department of Transportation relies solely on the private sector of the economy to provide the necessary materials for road maintenance. Within the private sector, aggregate and asphalt suppliers are among the major beneficiaries of materials contracts awarded by the state. This section will examine the relationship between the department and the aggregate and asphalt industries so that readers may better understand the department's dependence on materials suppliers and the resulting effect on road maintenance.

The information presented was gathered in interviews with industry officials and with central administration and district highway personnel.

## General Findings

* Demand on aggregate and asphalt often exceeds available supply.

* Alternate solutions to high material demands are being utilized by the department in cooperation with producers.

* Cost of operations in the contracting and materials supply industry are escalating faster than the funds available to the road fund.

* Department policy prohibits receiving price contract bids for aggregate and asphalt from out-of-state suppliers.

## Aggregate Supply

The aggregate industry in Kentucky supplies sand, gravel and crushed limestone to the Bureau of Highways directly or through bureau contracts to various county road departments. The state and county road departments, however, compete with two larger consumers, namely, the plant mix asphalt industry and the construction industry, for available supplies of crushed stone. This situation is an important factor in the completion as well as the cost of maintenance work.

Availability and price of aggregate are variables which must be considered in any highway project. Although the state possesses considerable limestone deposits, the state's aggregate producers cannot meet the demand for their products, especially during booms in the coal and construction industries. Additionally, the past two severe winters have caused producers to

curtail winter production and hence have diminished stockpiles of their products. As a result of recent increases in demand and consecutively poor winter production seasons, the supply of crushed stone has been greatly reduced in some regions of the Commonwealth. The eastern Kentucky coal region has been especially affected because of the demand for stone by the coal industry and the paucity of limestone formations in the region.

Aggregate Usage

The Bureau of Highways routinely uses or purchases for the counties two gradations of limestone for road maintenance projects, #57 and #610. Gradation #57 is a larger stone preferred by the bureau for road base construction and replacement rock on traffic bound or gravel roads. Unfortunately, this size is also preferred by the construction industry in the manufacture of concrete.

Because #57 stone is in high demand, the Bureau of Highways cannot always be assured that a ready supply of this gradation will be available for scheduled road maintenance. Nevertheless, throughout the state bureau, maintenance operations specify size #57. Industry officials maintain that gradation #610, a smaller stone, is an acceptable substitute for #57, and because demand for this size is less, it is more readily available. They further maintain that if size #610 stone were used more extensively in road maintenance, delays resulting from bureau insistance on size #57 could be reduced significantly.

But figures provided by the state highway engineer's office indicate that considerably more #610 stone is purchased by the state than #57 already. In fiscal year 1977-78 the Department of Transportation purchased 448,415 tons of #610 stone, and only 169,864 tons of #57.

Purchasing Aggregate

Prices for crushed limestone vary considerably across the state, depending on the amount of stone quarried locally. In eastern Kentucky, limestone deposits are few and prices for crushed stone are high. Conversely, large limestone deposits in central Kentucky contribute to low prices for aggregate in the Bluegrass region. The following table illustrates crushed stone prices in each of the state's twelve highway districts.

TABLE 11
Comparative Prices of #610 and #57 Stone
By Highway District
Bin Prices

| COUNTY | PRODUCER | HIGHWAY DISTRICT | #610 TON PRICE | #57 TON PRICE |
|---|---|---|---|---|
| Livingston | Reed Creek Stone Company | 1 | 2.25 | 2.25 |
| Webster | Hopkinsville Stone | 2 | 5.50 | 5.60 |
| Todd | Kentucky Stone Inc. | 3 | 3.25 | 3.35 |
| Grayson | Ragland Quarry Inc. | 4 | 3.25 | 3.50 |
| Jefferson | Martin Marietta | 5 | 3.00 | 3.40 |
| Harrison | Genet Stone Inc. | 6 | 2.85 | 3.25 |

TABLE 11, Continued

| COUNTY | PRODUCER | HIGHWAY DISTRICT | #610 TON PRICE | #57 TON PRICE |
|---|---|---|---|---|
| Madison | Boonesboro Quarry | 7 | 3.00 | 3.00 |
| Clinton | Shamrock Stone Inc. | 8 | 3.10 | 3.45 |
| Boyd | Standard Slag Co. | 9 | 4.05 | 4.25 |
| Lee | Kentucky Stone | 10 | 3.60 | 3.65 |
| Jackson | M.A. Walter Co. | 11 | 3.50 | 3.75 |
| Pike | Medusa Aggregate | 12 | 7.00 | 7.15 |

The Bureau of Highways and most county road departments let bids for aggregate contracts on both #57 and #610 gradations of limestone even though they wish to use size #57 exclusively. One contract is usually let, with specifications broad enough to include both gradations. Thus, if size #57 is in short supply, road maintenance projects can proceed as scheduled by using #610 gradation.

Contract Awards

The department awards three types of contracts to crushed stone vendors. Awards are made through contract bin prices, based on the delivery of stone to a particular site, or through weekly bid letting by the department. The bin contracts and transportation contracts are awarded to each vendor who submits a bid. The weekly contracts are awarded to a single producer on competitive bids.

Bin and transportation contracts are awarded on a yearly basis. The vendor quotes the Bureau of Highways a price for materials at the bin and a price for materials delivered. Maintenance personnel will either dispatch a truck to pick up aggregate or request the vendor to deliver stone to a specific site. These prices remain intact throughout the year.

The vendor has no guarantee the department will ever purchase stone pursuant to these contracts. The contracts are convenient to the maintenance personnel, should an immediate purchase or a small load of rock become necessary. They also provide the vendor with the knowledge of the price received prior to any state purchases.

State awarded contracts present problems for aggregate suppliers, due to scheduling of bid lettings and certain contractual provisions. Contracts for aggregate are let on a weekly basis. The stone may be required for a variety of purposes, but the completion date for delivery remains open-ended. Often these contracts are left open from three months to one year, with the vendor bound to a previously quoted price.

This situation affects the material supplier in two ways. First, the cash flow of the quarry operator is affected. Payment from the department is not received until the contract is completed. Therefore, the material supplier receives no payment for previous delivery until all materials are delivered. Money is tied up in production costs, but reimbursement is not received for delivered goods.

A second consequence of carrying forward a material contract is the production cost of unused material. The weekly contracts are awarded to a vendor who is notified of the award and the size of the order. However, the vendor cannot deliver stone until maintenance personnel make a request. One adverse result of open-ended contracts occurs when the vendor has produced the material and the buyer has not requested delivery. The aggregate will be in the inventory of the producer, who must decide whether to sell the material to other buyers or hold it in inventory.

A decision to sell the produced stone means the aggregate may not be available to the department on demand or that production costs may have increased during the time lag between bid and award. The stockpiling of material while waiting on a request for delivery means an investment of the vendor in the production of unused material.

The problems cited above could be resolved in two ways. First, the department could specify a delivery date. This would allow the vendor to produce the stone and sell it at a predetermined time. Secondly, the department could institute some form of penalty for non-compliance in meeting the contractual date specified.

Vendors also have some reservations about the reduction clause in the state contracts. The reduction clause states that the aggregate producer is responsible for meeting department specifications. Should the material fail to meet department standards, the department has the option to reject and remove the materials or accept the materials at a reduction in contract unit price, which could include no payment.

Inspection is made for compliance with specification standards at the stockpile on the quarry site. If the material is determined to be below standard, then the reduction clause can be enforced.

The industry has a concern that inspection may be completed after delivery or placement. Should this take place, it would be uneconomical for the producer to remove the material and virtually force acceptance of the reduction clause. In alleviating this concern, it might be appropriate to specifically state a period of time and a place in which the material would be inspected before the reduction clause is enacted.

The producers can control the production of their stone, yet if that stone does not meet state standards, the reduction clause provides the state with the option of retaining the material at a reduced price. Material suppliers would rather the department reject the material as unusable and let the supplier adhere to standards. Producers believe that if material is not suitable for use, it should not be used, and if the material is used, the contract price should be paid.

State highway officials believe in the reduction clause; this policy is applied in the purchasing of other materials. The state very rarely uses the reduction clause, however, and producers have the option of not selling materials at a reduced price.

Another contractual provision within the state annual bin and transportation contracts is a clause which forbids the department from considering bids from quarries and yards located outside the state. This provision prohibits the department from sending its vehicles across state boundaries for the purpose of purchasing crushed stone.

As mentioned, shortages of aggregate are being faced in several regions of the Commonwealth. If materials are needed and cannot be supplied by Kentucky producers, should the department be forced to do without aggregate?

There are several producers located on the Kentucky borders who may wish to participate as vendors. Allowing this competition could provide the state with more competitively priced stone and the assurance of greater availability.

Safety Regulations

The aggregate industry is also suffering from escalating costs of doing business. Heavy equipment, labor and other expenses of quarry operations have all increased. In testimony before a legislative subcommittee, one highway contractor stated that the cost of maintenance materials increased by 45 percent in one year.

Besides the increased cost of materials necessary to produce crushed stone, many suppliers blame increased costs on the new federal regulations relating to safety and the environment. The crushed stone industry is regulated for safety by the Mining Safety and Health Administration (MSHA) and for environmental safeguards by the Environmental Protection Agency (EPA). The industry does not oppose the intent of the program, but feels the regulating agencies have not taken into consideration differences in operations or lack of consistency in enforcing regulations.

For instance, MSHA regulates all mining safety operations in the same manner. This means that limestone quarry safety operations are treated in the same manner as coal operations. Regulations enforced in the coal fields are adopted by inspectors of limestone operations.

Quarry operators feel that the need for many regulations has not been documented and that the distinction between different mining operations should be considered. MSHA requires two mine safety rescue teams at a quarry, yet ambulances could drive right to the location of an injured quarry worker. MSHA requires forty hours of training for each new employee, and no distinction is provided for different classifications of employees.

The Kentucky Crushed Stone Association, through a survey of their members concerning turnover rate and an examination of equipment needs for mine rescue teams, has developed a cost figure for the implementation of these regulations. Based on a turnover rate of 23 percent, the industry in Kentucky will spend $250,000 in salaries for safety training of personnel. This does not include cost for lost production. Equipment needed to meet regulations on the mine rescue teams will cost $120,000.

All of these costs are considered non-productive. Yet the producer must pass these costs on to the consumer as a production cost. The Department of

Transportation will eventually pay for these regulations, as stone is consumed for highway maintenance and construction.

Environment Regulations

Environmental regulations have also impacted the industry. Limestone quarries are subject to air, water and noise pollution standards. Reported problems include inconsistency of enforcement by inspectors and discretionary enforcement of offending industries.

An example of regulatory enforcement standards is the visible emissions regulation pertaining to air pollution. The regulation states that there shall be no visible emissions across property lines. The misunderstanding concerns a question of whether the inspector should cite the quarry if emissions are seen from across property lines or if the emissions are restricted to inside the quarry boundaries.

The Environmental Protection Agency in Washington, D.C. has the responsibility for implementation of these regulations. The state legislature and state agencies have little recourse for action. Requests for changes can be made, but these requests usually meet with limited success.

Noise pollution standards were developed through the creation of a Noise Advisory Committee. This committee worked with a consultant regarding noise pollution offenders. The study pointed to highway noise as the worst offender, yet the Division of Air Pollution regards the worst offenders as coal operators, quarries and asphalt plants. It appears from this action that regulatory agencies could be disregarding their data and adopting discretionary enforcement criteria. Again, methods of satisfying regulations add to the cost of business without increasing productivity.

Demand for Crushed Stone

The demand for limestone has been increasing concurrently with increased construction, mining and building enterprises. In many areas, the demand can be met, but in areas where geological formations of limestone are not present, severe shortages are prevalent.

Demand is placed upon the aggregate industry for state highway maintenance, county road maintenance, coal producers, private construction and plant mix asphalt production. Any shortage of stone will affect one of these activities.

The Bureau of Highways district personnel and some central office staff believe the burden of the shortage is borne by the maintenance and construction programs. District engineers have reported instances where state vehicles have returned empty from bins or requested delivery is not provided.

Blame for shortages is placed on competition with industries. Specifications for aggregate are not required for private construction or coal mining use. Budgets for private and commercial use are not fixed, so prices paid for aggregate are often higher when sold to these consumers. In essence, department officials believe the Bureau of Highways has become the aggregate producer's buyer of last resort.

Three alternatives are available to combat short supply of aggregate:

* Provide additional competition and supplies by permitting out-of-state producers bidding privileges.

* Increase production of limestone within the state.

* Develop alternate sources of aggregate where limestone is not available.

The first alternative has already been explored with the Contract Award Subsection. The second and third alternatives need additional explanation.

Increased Limestone Production in Kentucky

The industry was unable to meet the demand for stone in early spring in the past few years. Efforts to improve production can only occur if business is willing to make capital improvements to upgrade production. Unfortunately, most limestone businesses are not willing to take such risks.

One reason for the lack of incentive to take these risks is the department's inability to provide a long-range expenditure plan for maintenance and construction. Capital improvements made to increase production cannot be recovered over the short term. The increased demand must be continued or remain steady over a long period in order to justify upgrading quarry production.

The private sector producers feel that constraints of the biennial budget and the fixed rate of the motor fuels tax are not conducive to long-range planning. The aggregate industry can only be sure of funding levels for a two-year period. The fixed tax rate on motor fuels, coupled with escalating costs, means less work is being performed with available funds. As less work is being completed, demand for stone is reduced and risk taking becomes unat-tractive.

Again, state highway officials take exception to this viewpoint. Long-range planning can be achieved through an analysis of the methods for generating revenue for the road fund. Predictions are made on revenues produced by the $.09 motor fuels tax and $12.50 passenger car registration fee. The problem is not planning, they maintain, but prioritizing needs with the available funds.

Complaints may also be unwarranted regarding Congress' inability to promote planning. Congress passed a comprehensive five-year program with funding in November, 1978. This program should provide state departments of transportation with a greater ability to examine needs and program work in the years to come.

Alternate Sources of Aggregate

Alternate sources of aggregate are available in areas where limestone is not prevalent. Sandstone is considered to be a possible alternate aggregate in some areas, though limestone is admittedly a better quality aggregate.

There are problems, however, with sandstone production. Sandstone is highly abrasive, causing problems with crushing equipment. The market is undeveloped, the material performance for some uses is unknown, and cost/benefit has not been verified. Sandstone could be used, but a policy for use should be developed by the department.

The Plantmix Asphalt Industry of Kentucky has adopted a three-point policy toward the use of sandstone. This policy is as follows:

(1) Investigate supply and availability of sandstone;

(2) Establish equivalency ratios to supplement sandstone for limestone; and

(3) Establish procedures for issuance of alternate bids for sandstone and limestone.

Supply of sandstone is fairly well established in eastern Kentucky. However, research needs to document the quantities of sandstone necessary to provide the same service level as limestone. Sandstone in paving mixtures may have lower strength and require greater thickness of sandstone mixtures.

Once the equivalency rates are developed, alternate bids should be established in order to promote competition and ensure the best price. For instance, if 1-1/2 tons of sandstone are necessary to replace one ton of limestone, bids for these two amounts should be compared.

In order to establish the use of sandstone, it may be necessary to restrict the bids to sandstone on a limited number of projects, this providing the department with experimental projects for performance data collection on sandstone. However, once the experimental projects are implemented, alternate bids could become the policy of the department.

Asphalt Production

Asphalt is a petroleum derivative used in the maintenance and construction of highways. The production of asphaltic concrete is dependent upon the supply of limestone, petroleum and natural sand. All of these commodities vary in price and supply, and the asphaltic concrete producers have been unable to satisfy to the high demand.

Limestone for asphaltic concrete production is in short supply in some areas of the state. Severe winters have limited stockpiling, and the spring maintenance season, over the past two years, has begun with limited supplies in some areas. Production of asphalt has been close to demand, but not without the expense of overtime and constant operation of production equipment. These factors contribute to increased costs, which are met by the consumer.

Asphalt concrete production is also generally limited to daylight hours. Daylight is not sufficient to work two eight-hour shifts. The consumers of asphaltic concrete must be content with the production which occurs during these hours.

Nor can the production of asphalt concrete continue year-round. Availability is normally limited to March through November, since quality work cannot be accomplished in cold weather. As a result of the severity of recent winters, production of limestone and asphalt products has begun about the same time. The result of aggregate producers' inability to produce in winter has been high limestone demand and limited availability of asphalt concrete.

Previously, one other problem with the plant mix asphalt production was the lack of lead time in development of the resurfacing program of the Bureau of Highways. Resurfacing began late in the asphalt concrete production season and producers were not prepared for or aware of the high demand. As a result, contractors suffered some liquidated damages and producers were often held responsible for bids in the previous season.

This problem has been resolved through communications between the department and producers. Program demands were made known earlier in the current (1979) resurfacing season and production has been able to stay abreast with the needs.

The asphalt cement industry has also taken measures to recycle asphalt. In Rockcastle County, a resurfacing project was being completed on the interstate highway. The old pavement was milled and the cuttings stockpiled and being prepared for recycling. The practice is not fully developed in Kentucky, but recycling may one-day provide for a reduction in material requirements. The cost-effectiveness is under review.

Both the aggregate and the plant mix asphalt industry work with the Department of Transportation on problem areas. Specification input from the industry is important to the department. There appears to be good rapport between the state and the service industries, and it is important that cooperation continue. The areas of apparent conflict would be better resolved by changing policy than by enacting legislation.

Materials Summary

The issues regarding materials consist of differences between the industry and the department. The industry seems to have a good working relationship with the Bureau of Highways.

The areas of conflict have also involved policy differences and not statutory constraints. For this reason, the role of the General Assembly in solving problems cannot be clearly defined.

The Kentucky Department of Transportation should have flexibility to initiate policies to insure the completion of maintenance work. The General Assembly should be aware of the policies and direct policy changes, if it can be determined that a specific policy change could be of greater benefit. Statutory changes are not necessary in the materials operations, however; interim action could focus on material policies to determine if policy changes may be cost-effective.

## CHAPTER SEVEN

## RURAL SECONDARY PROGRAM

The Rural Secondary (RS) program was created by the 1948 General Assembly to improve and maintain a system of rural and secondary roads. Also known as the state's "farm-to-market" roads, these highways are connectors from agricultural producer areas to secondary feeder roads or primary market routes.

All roads in the Rural Secondary program are owned and maintained by the state. Approximately 9,800 miles of roads, which handle ten percent of the total vehicle miles driven in the state, are included in the RS system. Owing to the relatively light volume of traffic utilizing rural secondary roads, the maintenance of these roads is a lower priority than those roads classified as interstate, state primary or state secondary, which account for 86 percent of the total vehicle miles driven in the state.

The financing of and maintenance project selection on rural secondary roads are provided by statute. Under present law, the Kentucky Department of Transportation is responsible for the administration of funds, the selection of projects, and the coordination of maintenance activity on rural and secondary roads.

### General Findings

* The Rural Secondary program is the only earmarked maintenance fund for state-owned roads.

* The Rural Secondary program provides approximately $42 million annually for the maintenance of approximately 10,000 miles of road.

* Approximately 22 percent of the Rural Secondary program funds are used off the rural secondary system for improvement projects on other county roads.

* County fiscal courts meet with the Bureau of Highways annually to aid in the determination of maintenance work to be undertaken on state-owned roads within their county. Their agreements, however, are not binding.

* Revenue and expenditure reports submitted by the Kentucky Department of Transportation do not provide details on county balances. As a result of this lack of information, it is difficult to ascertain actual activity within a county's rural secondary account.

## Rural Secondary Maintenance

The program for maintenance of the rural and secondary roads is the only state system with designated maintenance funds. Other roads for which the state has maintenance responsibility, (i.e., interstate, primary and secondary system roads) are maintained with funds drawn from department general maintenance accounts. By statute, two cents of each nine cents of the motor fuels tax is earmarked for the maintenance of rural secondary roads. Each of the state's 120 counties, in turn, is allocated these earmarked funds according to a formula which considers the total number of rural road miles within the respective counties, their rural population and other factors.

Table 12 provides a comparison of the state system mileage and vehicular traffic. The rural secondary mileage encompasses 39.4 percent of the state mileage and 9.9 percent of the traffic volume.

TABLE 12

Mileage and Vehicle Miles on the State Highway System

| SYSTEM | MILES | % MILEAGE | TOTAL VEHICLE MILES (millions) | % VEHICLE MILES |
|---|---|---|---|---|
| Interstate | 649 | 2.6 | 4,629 | 22.2 |
| State Primary* | 4,055 | 16.2 | 7,688 | 36.9 |
| State Secondary | 7,519 | 30.0 | 5,762 | 27.6 |
| Rural Secondary | 9,882 | 39.4 | 2,071 | 9.9 |
| Unclassified** | 2,966 | 11.8 | 703 | 3.4 |
| Total | 25,071 | 100.0 | 20,853 | 100.0 |

*Includes Toll Highways
**Includes State Property Service Roads

Rural and secondary program funds are not limited to maintenance undertaken on roads solely within the rural secondary classification system. As a result of the statutory definition of rural and secondary roads, state secondary, unclassified and county roads may also receive maintenance funding from this program. This occurs because these other roads, while not classified as rural secondary roads for administrative purposes, are nevertheless considered either "rural or secondary" by definition in KRS 177.320 (1).

The Rural Secondary highway system accounts for the highest total mileage in the state road system, yet ranks next to the last in vehicular usage on state roads. Critics of the RS program have stated that even though these roads are not high priority maintenance roads, they do not have to compete for maintenance funds with other state roads.

Advocates for change in the Rural Secondary program believe that the program has outlived its utility. They argue that earmarked maintenance funds provided for the state revenue sharing programs are not available for use on highways with higher vehicle travel. Furthermore, they point to the fact that

local revenue sharing programs, of which the Rural Secondary program is one, receive approximately $73 million for roads that carry less than 20 percent of the traffic. The other highway systems receive $85 million in maintenance and are burdened with over 80 percent of Kentucky's traffic. Critics believe that the revenue sharing program is a distortion, in terms of the ratio between funding levels maintenance needs based on vehicle usage. The question the General Assembly must decide is whether the road maintenance priorities need to be re-established and whether the current highway classification matches maintenance demands.

Proponents of the Rural Secondary Aid program comment that the rural and secondary roads are the Commonwealth's best maintained system. Advocates of the revenue sharing programs point to the fact that the $73 million is being applied to 55,000 miles of roads and city streets, and the $85 million is provided to only 15,000 miles of road. The revenue sharing programs are providing less money for more roads, and in the opinion of some, doing a better job.

Additionally, advocates of the Rural Secondary system feel that even though the traffic volume is low, the roads serve as an important connection in the highway system. Rural secondary roads, without the assurance of any funds and given a low priority status, would quickly deteriorate.

## Programming of Rural Secondary Funds

A common occurrence in the RS program is the authorization of improvement projects for county roads outside the state Rural and Secondary system with RS program funds. An example of this occurrence is shown on project authorization forms 24457 and 27515 (Exhibits 6 and 7). Authorization form #24457 shows maintenance work performed on County Road 1036 in Cumberland County, and charged to account number 629. Authorization form #27515 also demonstrates this practice with work performed on County Road 1039 in the same county being charged against Account 629. The Department of Transportation Account Manual shows accounts 601-750 as program expenditures for Rural Secondary program funds.

The manual also identifies the object code for charges. The improvements to these roads were recorded as being performed by state forces, yet the bulk of the expenditures are charged to Object Code 4, the object classification for contractual services. The contracting service in this instance was equipment rental; however, the same object code is also used to denote services provided by any vendor.

## Maintenance Reporting Problems

The Department of Transportation depends on the county foreman to properly report any maintenance performed. One criticism of the reporting system is its reliance on the maintenance foremen, many of whom charge maintenance work performed on revenue sharing program roads to the state's general maintenance account instead of to the county's rural secondary or county road aid accounts. This practice has the effect of burdening the general maintenance account with

EXHIBIT 6

Obj. 1 - 5,083.50
" 4 - 12,000.00
" 5 - 9,500.00
" 6 - 4,541.00

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF TRANSPORTATION
FRANKFORT, KENTUCKY

TD 10 1
Rev. 2-75

## PROJECT AUTHORIZATION

OFFICIAL ORDER-
AUTHORIZATION NO. 24457

It is hereby ordered that the project described herein be undertaken and accomplished.

PROJECT IDENTIFICATION | BEGINNING RP | ENDING RP

| 1. District | County | Route Number | Project Control Number |
|---|---|---|---|
| 8 | Cumberland | CR 1036 | SRF 29-5036-A-1C<br>State - RF 29-797-1C1 Federal - |

| 2. Road System | Road Name | Program Item |
|---|---|---|
| County | L. C. Allen | RS 6 (77-78) |

3. Project Description and Type of Work Begins KY 379 and extends North 0.70 mile.

Grade, Drain & LTS

| 4. Design Class | Traffic | Project Length |
|---|---|---|
| 6 | Present - Est. 20 Projected - 22 | 0.70 Mile |

RESPONSIBILITIES

| 5. Design | Right of Way | Title Deeded To |
|---|---|---|
| Not Applicable | County | County |
| **6. Utility** | **Construction** | **Maintenance** |
| County | Bureau of Highways (State Personnel & Equipment) | County |

SOURCE OF FUNDS AND ESTIMATED COST

| | Estimated Cost | Account Number | Fiscal Year |
|---|---|---|---|
| 7. Design: Not Applicable | -- | -- | -- |
| 8. Right of Way: County | None to Bureau | -- | -- |
| 9. Utilities: County | None to Bureau | -- | -- |
| 10. Construction: Bureau of Highways | 31,124.50 | 629 | 1977-78 |

| 11. Total Estimated Cost | Project Completion Date (month and year) |
|---|---|
| 31,124.50 | November, 1977 |

12. Remarks:

Having found that one or more of the enumerated conditions provided for in KRS 176.121 exist, it is hereby ordered that this work be performed by the employees of the Bureau of Highways.

PROJECT APPROVAL RECOMMENDED BY

J. D. Chisholm
Signature

3-28-77
Date

R#1
~~R#1 ~~
~~4/6/77~~
7/1/77

SIGNED AND APPROVED

Commissioner of Highways
or Designated Representative

3-28 1977
Date

-6-

EXHIBIT 7

DEPARTMENT OF TRANSPORTATION
FRANKFORT, KENTUCKY

PROJECT AUTHORIZATION

TD 10-1
Rev. 3-78

AUTHORIZATION NO. 27515

IT IS HEREBY ORDERED THAT THE PROJECT HEREIN DESCRIBED BE UNDERTAKEN AND ACCOMPLISHED WITHIN THE FUNDING LEVELS AUTHORIZED.

| PROJECT IDENTIFICATION | A. PROJECT ID NO. | B. FED PROJ NO. | C. DISTRICT HWY | C. DISTRICT ADD | D. COUNTY NAME | E. ITEM NO. |
|---|---|---|---|---|---|---|
| | SRF 29-5039-A-1C<br>RF 29-857-2C1 | | 8 | | Cumberland | RS 6 (78-79) |

| TYPE OF PROJECT | G. FACILITY NAME | H. CLASSIFICATION | I. PROJECT LENGTH |
|---|---|---|---|
| Highway | (CR 1039)<br>Old Amandaville | County | 0.10 Mile |

SCOPE OF PROJECT

Grade, Drain & L.T.S.: Begins KY 704 and extends NE 0.10 mile

| PROJECT PHASES AND RESPONSIBILITY | A. PLANNING | C. RIGHT OF WAY | E. CONSTRUCTION BOH | G. OTHER |
|---|---|---|---|---|
| | | County | State Forces | |
| | B. DESIGN | D. UTILITIES | F. MAINTENANCE | H. TITLE DEEDED TO |
| | | County | County | County |

FUNDING & TIME ACCOUNTABILITY

PARTICIPATING AGENCIES

FEDERAL KYDOT BOH LOCAL OTHER

| PHASE | FISCAL YEAR | ACCT NO | ORIGINAL ESTIMATED COST | CLASS | CURRENT ESTIMATED COST | CLASS | TOTAL AUTHORIZED FUNDING | CURRENT FUNDING REQUEST | ORIGINAL COMPLETION DATE | CURRENT COMPLETION DATE |
|---|---|---|---|---|---|---|---|---|---|---|
| PLANNING | | | | | | | | | | |
| DESIGN | | | | | | | | | | |
| RIGHT OF WAY | | | | | | | | | | |
| UTILITIES | | | | | | | | | | |
| CONSTRUCTION | 77-78 | 629 | 4,461.60 | A | | | 4,461.60 | 4,461.60 | 11-79 | |
| PROJECT TOTAL | | | 4,461.60 | | | | 4,461.60 | 4,461.60 | | |
| CURRENT ESTIMATE PROVIDED BY | | | | | DATE | | | | | |

REMARKS

Obj. 1 - 396.96
" 4 - 2,400.00
" 5 - 1,400.00
" 6 - 264.64

Having found that one or more of the enumerated conditions provided for in KRS 176.121 exist, it is hereby ordered that this work be performed by the employees of the Bureau of Highways.

R# 1
7/1/78

PROJECT APPROVAL RECOMMENDED BY

[signature] 5-22-78

SIGNATURE DATE

SIGNED AND APPROVED BY

[signature] 5-22-78

SECRETARY OF TRANSPORTATION OR DESIGNATED REPRESENTATIVE

FD/jc

work for which other money has already been provided. In turn, it reduces the funds available for maintenance work on those roads which are not eligible for revenue sharing project funds.

The reporting of revenue sharing maintenance programs in general maintenance programs permits a greater portion of revenue sharing funds to be retained in the county. The balance carried forward can then be used in the county for larger improvement projects.

The practice of misreporting maintenance projects may not be widespread. The only index of the extent of the practice is records of disciplinary action taken against employees. The department, in taking disciplinary action, is making an effort to curtail this practice. Department officials can document disciplinary action against employees who have submitted inaccurate reports.

Inaccurate reporting results not only in the general maintenance fund bearing the financial burden of work performed on revenue sharing projects, but it also distorts the actual maintenance work accomplished on revenue sharing program roads. The accumulation of unexpended funds in the revenue sharing accounts in turn allows counties sufficient funds for capital improvements, when these funds were earmarked for maintenance already accomplished.

The retention of unexpended RS program funds by the county after each fiscal year may reflect either inability of the department to perform work, or the attitude of the fiscal court regarding the use of program funds for capital improvements.

## Accumulation of Rural Secondary Funds

An initial objective in undertaking this study was to determine available money in the revenue sharing programs. Expenditures versus revenues were examined for all 120 counties to determine spending patterns. If a large free balance appeared available or the county seemed to be overspending its budget, additional information was requested. Data for revenue were taken from the Official Orders of the Kentucky Department of Transportation and expenditures were determined from the Lybrand and Cooper audit reports for five fiscal years, beginning 1973-74.

Table 13 illustrates the revenue and expenditure patterns for six counties in the Rural Secondary program. Three of the counties seemingly underspent their allocations and the remainder overspent their budgets.

The review of free balance involves holding county activity static at a particular time to review activities. While the account is examined for expenditure activity, projects are still being completed. For this reason, department officials believe that a review of free balance information could not accurately reflect the total activity of any county.

The policy of the Division of Rural and Municipal Aid, which administers the RS program, is to refrain from programming all RS program funds available to the respective counties. This insures that a portion of each county's appropriation will be available for emergency maintenance projects. Thus for

example, the Winter of 1977 rural secondary funds were available for the purchase of replacement stone for winter damaged roads.

Jefferson, Hardin and Harlan Counties overspent their budgets by a substantial amount. Bullitt, Campbell and Madison Counties appeared to have a large free balance. On the basis of the information, the Division of Rural Roads was questioned as to how a county could overspend its budget.

TABLE 13
Revenue & Expenditures in Rural Secondary
Program in Six Selected Counties

FY 1973-1978

| COUNTY | 1973-74 | 1974-75 | 1975-76 | 1976-77 | 1977-78 | TOTAL |
|---|---|---|---|---|---|---|
| Bullitt | $281,047 | $285,820 | $249,199 | $309,167 | $322,316 | $1,492,549 |
| Campbell | 176,934 | 179,938 | 185,214 | 194,636 | 202,913 | 939,635 |
| Hardin | 412,612 | 428,772 | 441,342 | 463,796 | 483,520 | 2,239,042 |
| Harlan | 389,266 | 395,877 | 407,482 | 428,213 | 446,425 | 2,237,944 |
| Jefferson | 331,434 | 337,063 | 346,944 | 364,594 | 380,102 | 1,670,137 |
| Madison | 352,866 | 358,859 | 369,379 | 388,171 | 404,679 | 1,873,954 |

FY 1973-1978

| COUNTY | 1973-74 | 1974-75 | 1975-76 | 1976-77 | 1977-78 | TOTAL |
|---|---|---|---|---|---|---|
| Bullitt | $101,784 | $405,303 | $281,924 | $335,026 | $ 95,242 | $1,219,279 |
| Campbell | 74,657 | 169,267 | 221,017 | 176,374 | 117,703 | 759,018 |
| Hardin | 406,592 | 366,417 | 910,274 | 432,985 | 462,223 | 2,578,491 |
| Harlan | 341,384 | 122,687 | 1,232,900 | 561,799 | 280,693 | 2,539,463 |
| Jefferson | 356,666 | 359,943 | 783,841 | 445,303 | 374,342 | 2,370,095 |
| Madison | 144,752 | 75,384 | 84,559 | 330,306 | 236,842 | 871,843 |

Comparison of Revenue and Expenditures

| COUNTY | REVENUES 73-78 | EXPENDITURES 73-78 | PERCENT EXPENDED |
|---|---|---|---|
| Bullitt | $1,492,549 | $1,219,279 | 81.7% |
| Campbell | 939,635 | 759,018 | 80.8% |
| Hardin | 2,239,042 | 2,578,491 | 115.2% |
| Harlan | 2,237,944 | 2,539,463 | 113.5% |
| Jefferson | 1,670,137 | 2,320,095 | 138.9% |
| Madison | 1,873,954 | 871,843 | 46.5% |

When presented with the evidence from Table 13, both LRC staff and Division of Rural Roads staff contacted the Kentucky Department of Transportation's Division of Accounts.

In all these cases, Accounts and Rural Roads showed the counties with an available balance. Situations where counties had seemingly overspent resulted from allowing funds to lapse in previous years. Counties which had left large sums unexpended had traditionally allowed funds to lapse.

Table 14 illustrates Jefferson and Madison Counties expenditures and allotments through an accounting breakdown. These records are kept by the Department of Transportation's Division of Accounts. These two counties were selected because they represent the extremes of the program account spectrum. Jefferson County seemingly overspent its budget by 38.9 percent and Madison County retained 53.5 percent of the total allotment.

TABLE 14

Account Details of Jefferson County and Madison County RS Program Funds

| | Jefferson County | | | Madison County | | |
|---|---|---|---|---|---|---|
| | 75-76 | 76-77 | 77-78 | 75-76 | 76-77 | 77-78 |
| Original Allotment | $ 336,052 | $ 375,486 | $ 380,102 | $357,783 | $399,767 | $404,679 |
| Balance Carried Forward | 559,460 | 522,435 | 609,794 | 492,564 | 370,826 | 441,556 |
| Encumbrance Forwarded | 459,040 | 117,907 | 69,918 | 126,318 | 21,280 | 20,012 |
| Emergency Transfers | 9,261 | 116,546 | 990 | 0 | 0 | 0 |
| Emergency Returns | 22,982 | 7,360 | 1,000 | 0 | 0 | 0 |
| Receivables Current Year | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Allotments | $1,424,184 | $1,125,014 | $1,059,803 | $976,665 | $791,873 | $866,247 |
| Less | | | | | | |
| Expenditures | 783,841 | 445,303 | 374,342 | 584,559 | 330,306 | 236,842 |
| Encumbrances | 117,907 | 69,918 | 27,185 | 21,280 | 20,012 | 158,096 |
| Balance | $ 522,435 | $ 609,794 | $ 658,276 | $370,826 | $441,556 | $471,308 |

In the case of both counties, only a portion of the RS program money had been spent. Jefferson County's apparent overexpenditure did not, in fact, occur. The retaining of $559,460 for future use and encumbering $459,040 prior to FY 74-75 resulted in a large balance. This balance prevented Jefferson County from overspending. Similarly, Madison County spent more than $200,000 over their appropriation in 1975-76, but because funds could be retained, more than $975,000 was available from previous years for use in the county's RS program.

According to Bureau of Highways officials, the practice of allowing program funds to accumulate occurs because major projects are often not completed within a one-year time frame. For this reason, it is necessary for the counties to allow program funds to accumulate before they can afford to undertake larger projects. Hence, it is commonplace for counties to forward large portions of their respective allocations from one year to the next. Examples of these

types of projects in Madison County are Barnes Mill Road (Ky. 876), and Union City-Doylesville Road (Ky. 1986). In order to complete these projects, funds had to be allowed to accumulate.

The other counties selected for examination show an available balance forwarded from the 1977-78 fiscal year. In only one case is the balance forwarded to fiscal year 78-79, less than 50 percent of the original allotment of 1977-78. Table 15 illustrates this fact.

TABLE 15

Original Allotment and Balance Forwarded
for RS Program in 1977-78

| COUNTY | ORIGINAL ALLOTMENT | STATE BALANCE FORWARDED | % OF ALLOTMENT |
|---|---|---|---|
| Bullitt | $322,316 | $492,704 | 152.9% |
| Campbell | 202,913 | 155,841 | 77.7% |
| Harlan | 483,520 | 206,003 | 42.6% |
| Hardin | 446,425 | 730,444 | 163.6% |

Funds lapsing from the counties examined in this study totaled $2,714,516 for fiscal year 1978-79. This figure does not include encumbrances. The department provides accounting data which shows future expenditures in each of the counties mentioned. Appendix I provides the later breakdown of expenditures and shows a significantly reduced balance in 1979-80 in four of the counties.

In summary, the free balance in these six counties illustrates that not all RS funds are programmed. Two factors explain this policy: Counties routinely allow funds to accumulate before undertaking larger projects; and a small percentage of the total program allocation is withheld by the department to be used in emergencies.

Additionally, it was found that RS funds are authorized for use off-system. This is illustrated in Exhibits 6 and 7. The state, in these instances, is burdened with using maintenance funds, intended for the maintenance of the state road system, on county roads. This practice does not unnecessarily burden the program financially, but one consequency is that for every county road maintained under the RS program, a state road is neglected. Also, it was learned that when county road maintenance is performed by state maintenance crews, local residents are confused as to whether the state or the county has maintenance responsibility for that road.

The General Assembly's role in this area is to decide which system of roads should receive maintenance priority and act accordingly. A variety of legislative alternatives exist, ranging from abolishing revenue sharing programs to allocating a majority of funding to local roads. Any changes of highway programs would require legislation and would serve to mandate new priorities for the Department of Transportation.

## Fiscal Court Involvement

There are some similarities between the involvement of the fiscal courts in the Rural Secondary Aid program and the County Road Aid program. Meeting requirements are similarly described by the statutes, the disbursement formula is the same and the Department of Transportation is responsible for administration of both programs. The major difference between the Rural Secondary Aid program and the County Road Aid program is that the recommendations of the fiscal court are not binding in the RSA program.

County judges seem concerned with the rationale for meeting with the fiscal court for Rural Secondary recommendations. There is no assurance that the fiscal court recommendations will be accepted, meetings with the department are time-consuming and the statutes provide the Secretary of Transportation with final approval of RSA projects.

Department officials counter this argument by stating that 22 percent of RSA funds are spent on county roads. Although county projects are not formally approved at the time of the initial fiscal meeting, court recommendations are included in RSA projects. The problem the department encounters relates to the scope of the court recommendations.

The fiscal court will usually recommend to the department allocation of Rural Secondary program funds for projects on county roads. The fiscal court does have the prerogative to made recommendations regarding state roads, but is usually more interested in obtaining local projects. Because the Rural Secondary program is primarily for state-owned public roads, the total demands of the fiscal court cannot be met.

Finally, more distinct separation of the state and county systems may be in order. The General Assembly may wish to review statutes relating to the meeting with the fiscal courts (KRS 177.330) and the language describing the roads eligible for improvement. Although the department provides maps depicting maintenance jurisdiction, the public is confused about the source of responsibility. This confusion is justified by:

*Instances of state maintenance on off-system roads;

*Fiscal court recommendations that county projects be undertaken with state funds; and

*Failure of state and county officials to respond adequately to public complaints regarding maintenance responsibility for rural roads.

The involvement of local officials and citizens in the selection of roads to receive funding under the RS program is important. However, suggestions for maintenance could be taken in a less structured manner. Decisions on the RS program should be flexible enough to ensure adequate response to the needs for all highway maintenance. The rural secondary roads are state-owned facilities, yet county government advises the state on expenditures, which only serves to compound the confusion of the general public toward maintenance responsibility.

## Alternatives for Rural Secondary Aid Program

The General Assembly is responsible, in part, for establishing priorities and mandating policies for the executive agencies. There are several directons the legislature could take with regard to the revenue sharing programs. These are listed below.

The following alternatives include some possibilities for legislative action:

* Stricter controls on the Rural Secondary Aid Program, including
  -Restricting roads eligible for aid to a single system of state roads through statutory definition.
  -Binding agreement with fiscal court for use of program funds of Transportation and the fiscal court.
  -Prohibiting project authorization off the state highway system.

* Greater flexibility for Rural Secondary Program.
  -Actively promoting use of funds off-system.
  -Combining of rural secondary and county road aid programs into single program for local roads.
  -Excluding requirement for meeting between fiscal court and Bureau of Highways.

* Abolishment of Rural Secondary Road program.
  -Repealing program and funding either state or county system of roads with available funds.
  -Forcing rural secondary aid roads to compete for funds with balance of the highway system.
  -Deeding a percentage of rural secondary aid roads to county, with increased county road aid funding provision.

* Maintaining status quo.
  -No legislative changes.

These alternatives simply provide options available to the General Assembly and are not meant to reflect priorities or recommendations. The final decision for changes deemed necessary rests with the General Assembly and must be based on perceived needs.

The listed alternatives are not all inclusive. However, if any changes are to be made, the department should be clearly informed of intent and specific priorities. For instance, if the General Assembly decides local roads should receive maintenance priority, that intent should be expressed.

CHAPTER EIGHT

# COUNTY ROAD AID PROGRAM

The need to provide state fund money for the improvement and maintenance of county roads was first recognized in 1936, when the General Assembly passed legislation to implement what was then known as the Rural Highway program. Although several statutory changes have occurred since its inception, the intent of this program, now called the County Road Aid program, has remained the same. Today, roads and streets within the County Road Aid program are the responsibility of the respective counties, with the state providing road fund money and in some cases, materials and equipment to aid the counties in the improvement and maintenance of their roads.

The Commonwealth of Kentucky contains approximately 69,000 miles of public highways. Of these, 39,000 miles are the counties' responsibility, 5,000 are the responsibility of municipalities, and the remainder are under state jurisdiction. Due to funding limitations, only a portion of the local or county roads receive maintenance aid through state programs. The Kentucky Department of Transportation, as program administrator, is required by statute to meet with the fiscal courts in an effort to determine which county roads will be included in the program. Interviews with local and state officials on the County Road Aid program produced the following findings.

## Findings

* Gasoline tax revenues provide approximately $19 million per year for the maintenance of 39,000 miles of county roads.

* The County Road Aid program is one of several sources of funds available for the maintenance of county roads.

* To maximize the maintenance effort on local roads, the Department of Transportation has implemented a cooperative arrangement with 90 of the state's 120 counties.

* The maintenance of county roads is the lowest work priority at the state level. As a result, response time to needed maintenance may be slow or repairs may go unattended in counties not participating in the cooperative arrangement.

* Due to the present road classification system, the limited number of roads eligible for the County Road Aid program and the presence or lack of a co-operative arrangement between individual counties and the state, the general public is confused as to which agency is responsible for road maintenance.

## Method of Selection

Kentucky Revised Statute 179.420(2) provides that at least once per calendar year the Bureau of Highways meets with the fiscal court of each county to select the county roads to be included in the County Road Aid program. At these meetings, recommendations for roads to be included in the program are tendered by the county fiscal court. The Kentucky Department of Transportation is required by statute to accept the court's recommendation.

The Bureau of Highways is required to provide assistance for the submitted recommendations and, pursuant to fiscal court approval, to contract with the county to perform the maintenance work on projects or roads which both parties deem as necessary.

Should the fiscal court be unable to reach an agreement with the Bureau of Highways on projects to be included in the program within thirty days after the beginning of a new fiscal year, KRS 179.420(4) provides that the Bureau of Highways shall proceed with work on the priority schedule delineated by the fiscal court, less any funds previously obligated for maintenance or construction.

## County Co-Op Program

Because of budgetary, personnel and equipment limitations, as well as the demand for maintenance of the state's higher priority or more heavily traveled roads, the Bureau of Highways is unable to maintain all 39,000 miles of rural roads. Many of the state's 120 counties lack the necessary funds, equipment and materials to initiate maintenance work on those roads which the state cannot maintain.

In order to adequately maintain local roads, the Bureau of Highways began inviting counties during the early 1960s to participate in a co-operative program. Only recently has the bureau intensified its effort to bring all the counties into the program. Today approximately 90 of the state's 120 counties participate in the co-op program.

The cooperative agreement is designed to maximize local maintenance efforts through sharing of maintenance responsibilities. Agreements between the bureau and the counties can be either partial or full co-op.

Under a partial co-op agreement, the county assumes responsibility for the maintenance of a portion of those roads included in the County Road Aid agreement. In counties favoring this arrangement, the state is often responsible for maintenance of the bituminous or paved county roads, while the county agrees to perform the needed work on the traffic bound or gravel roads. Additionally, counties which are partial co-op may be reimbursed by the Bureau for county equipment used to maintain roads which are contracted under state aid programs. A full co-op agreement means the county will perform all work on county roads and be reimbursed by the state solely for equipment or materials used.

Those counties which have entered into a co-op agreement have their own work crews and equipment. Through their county road engineers, they also have the authority to set work priorities within the County Road program. Work performed is reimbursed by the bureau.

The thirty non-co-op counties, ranging in size from Trimble to Pike Counties, lack crews and equipment to undertake their own road maintenance. Thus, they must rely on the state Bureau of Highways to set work priorities and accomplish the needed maintenance on their roads. As previously indicated, county road maintenance is a low priority with the bureau and only a limited number of roads can be included in a county's County Road Aid agreement. Not surprisingly then, maintenance of non-co-op county roads suffers.

Although improved road maintenance seems to be an adequate inducement for a county to join in a co-op agreement, several reasons are given for non-participation, ranging from lack of funds to political considerations.

Participation in a co-op agreement requires that a county purchase road equipment and hire a road engineer and work crew. Several counties can't afford large capital investments in equipment or to employ salaried road engineers and laborers. Therefore, the initial investment required for a co-op agreement is often too great for less affluent counties.

Larger counties with numerous county roads and extensive land area, must have several county equipment garages and the staff to service the various job sites. Rather than making a large capital investment in county garages, some of these larger counties have chosen to leave the maintenance of county roads with the Bureau of Highways.

State officials are likely to charge non-participating fiscal courts with seeking political immunity from road problems. By not participating in a co-op arrangement, county officials can claim that road work not being performed is the responsibility of the Bureau of Highways. However, in interviews with district highway officials, it was pointed out that citizen complaints received by the district office are often requests for maintenance on roads not selected for the County Road Aid program, and hence roads that are not the maintenance responsibility of the state.

Likewise, county officials may charge that it is the state Bureau of Highways that wishes to insulate itself from county road problems by claiming that a road enrolled in the County Road Aid program is the maintenance responsibility of the county.

The numerous comments received from both state and local officials regarding maintenance responsibility for county roads indicate that a problem exists in the acceptance of road maintenance responsibilities. Until this problem is resolved, county roads in need of maintenance will continue to be unattended, and will thus need more extensive as well as more expensive maintenance at a later date.

## Program Appropriations

KRS 177.320 provides that nine-tenths of one ninth of all funds generated through the motor fuels tax be set aside for the construction, reconstruction and maintenance of county roads and bridges. Approximately $19 million is generated annually by this statute.

Provisions of the County Road Aid program, its allocation formula and

program administration are described in three different sections of the Kentucky Revised Statutes. KRS 179.420 provides the method of selecting roads for inclusion into the program. KRS 177.320 provides program revenue. Allocations are disbursed on the basis of four considerations, as described by KRS 177.360.

The four variables in the allocations formula are:

1) One-fifth of the available funds are apportioned equally among the 120 counties;

2) One-fifth of available funds are apportioned among the 120 counties on the basis of the ratio of the rural population of each county to the total rural population of the state. (Rural population is defined as the population of counties outside of cities and towns having a population of 2,500 or more, as shown by the most recent decennial census of the U.S.

3) One-fifth of available funds are apportioned among the 120 counties on the basis of the ratio of public road mileage outside of cities, towns and urban areas having a population of 2,500 or more to the mileage of such roads for the entire state.

4) Two-fifths are apportioned among the 120 counties on the basis of the ratio of the square-mile rural area of the county to the total square mile rural area of the state. (Rural area is defined as the area of the county outside cities, towns and urban areas having a population of 2,500 or more, as shown by the most recent decennial census of the U.S.)

In addition, KRS 177.360 contains a provision which authorizes the Bureau of Highways to retain 6 percent of the program funds for administration and 6 percent of the program funds for emergencies.

Awards to the counties from the County Road Aid program during fiscal year 1978 ranged in size from $348,478 (Pike County) to $58,928 (Robertson County). As evidenced by these figures, the sums available to the counties for road maintenance are relatively modest.

Nevertheless, a review of allocations and expenditures of County Road Aid program funds by county reveals that some counties did not spend their full allocation. Such was the case with Letcher County. A review of official orders and an independent audit report showed the following expenditure pattern:

TABLE 16
County Road Aid Program Appropriations
and Expenditures in Letcher County

| FISCAL YEAR | APPROPRIATIONS | EXPENDITURES |
|---|---|---|
| 1973-74 | $105,628 | $85,084 |
| 1974-75 | 105,628 | 27,937 |
| 1975-76 | 105,628 | 118,932 |
| 1976-77 | 150,108 | 9,643 |
| 1977-78 | 156,491 | 60,006 |
| TOTAL | 623,483 | 301,602 |

These figures indicate that over a five-year period, Letcher County expended less than 50 percent of its county road aid allotment. Since funds not expended in one year are carried forward to the county's account balance for the next, many counties chose this strategy to accumulate the funds required to undertake large road projects. Funds to be expended on large projects are encumbered one year and expended in the following years. As program administrator, the Department of Transportation is required to account for program expenditures, including encumbrances. The Division of Accounts provided the following information on Letcher County expenditures and encumbrances for the last two fiscal years:

TABLE 17
County Road Aid Program
Account Statement
Letcher County

| FISCAL YEAR | 1976-77 | 1977-78 |
|---|---|---|
| I. Appropriations | | |
| a) Original Allotment | $150,108.00 | $156,491.00 |
| b) Balance Forwarded | 73,258.26 | 186,525.30 |
| c) Encumbrance Forward | 24,050.00 | 80,807.00 |
| d) Off-Systems | 29,559.33 | 50,468.89 |
| e) Emergency Transfers | -0- | 20,725.00 |
| TOTALS | $276,975.59 | $495,017.19 |
| II. Expenditures | | |
| a) Program Expenditures | 9,643.29 | 60,005.75 |
| b) Program Encumbrances | 80,807.00 | 93,655.99 |
| TOTALS | $90,450.29 | $153,661.74 |
| III. Balance | $186,525.30 | $341,355.45 |

Figures taken from the Letcher County account balance indicate that:

1) The county encumbered funds in fiscal year 1976-77, yet did not spend this encumbrance the next year (See lines (a) and (b) under Expenditures);

2) Even though Letcher County did not expend its allotment in 1976-77, it nevertheless received emergency money, as indicated on line (e) in the appropriation section. Had no emergency transfer occurred, Letcher County would still have had a free balance of $320,600, which had accumulated over a 3 and 1/2 year period.

To update information on the Letcher County Program, the Department of Transportation provided additional information which shows that as of September 27, 1979, Letcher County had an unexpended balance of $123,891. The later fiscal year appropriations are contained in Appendix 2.

Further examination of the official orders and audit report revealed not only that some counties are spending less than their appropriations, but also that other counties appear to be spending more than they are allotted. The Bath County account, which follows, serves as an illustration.

TABLE 18
County Road Aid Program Appropriations and Expenditures in Bath County

| FISCAL YEAR | APPROPRIATIONS | EXPENDITURES |
|---|---|---|
| 1973-74 | $ 79,530 | $ 93,973 |
| 1974-75 | 79,530 | 88,105 |
| 1975-76 | 79,530 | 91,398 |
| 1976-77 | 113,019 | 119,129 |
| 1977-78 | 118,150 | 375,620 |
| TOTAL | $ 469,759 | $ 768,225 |

The above figures indicate that Bath County's expenditures exceeded its County Road Aid program allotments by 64 percent over a five-year period. In fiscal year 1977-78 alone, this county spent 2 and 1/2 times its appropriation.

The program account from the Department of Transportation's Division of Accounts provided the following information.

TABLE 19
County Road Aid Program
Account Statement
Bath County

| FISCAL YEAR | 1976-77 | 1977-78 |
|---|---|---|
| I. Appropriations | | |
| a)Original Allotment | $113,019.00 | $117,827.00 |
| b)Balance Forward | 35,388.49 | 537,175.93 |
| c)Encumbrances Forward | -0- | 6,723.00 |
| d)Off-System | 21,410.76 | 37,999.22 |
| e)Emergency Transfers | 362,482.00 | 1,969.00 |
| f)Receivable in Current Year | 130,727.94 | -0- |
| TOTALS | $663,028.19 | $699,726.41* |
| II. Expenditures | | |
| a)Program Expenditures | 119,129.96 | 375,619.81 |
| b)Program Encumbrances | 6,723.00 | 10,362.92 |
| TOTALS | $125,852.96 | $385,982.73 |
| III. Balance | $537,175.23 | $313,744.18 |

*$1,967.24 was returned to the emergency fund in 1977-78.

Further information received from the Department of Transportation's Division of Accounts noted the transfer of $215,077.35 from the Bath County account to the overall program emergency account for fiscal year 1978-79. If this figure is then subtracted from the 1977-78 balance, approximately $98,000 is left as the balance to be forwarded into the county's 1978-79 program budget, even though the county seemingly overspent its last budget.

Appendix 3 illustrates the accounting action taken in more recent fiscal years involving Bath County. A portion of the emergency money was returned to the bureau and reimbursement was made by the Forest Service. This amounted to $215,007. The unappropriated balance as of September 27, 1979 for Bath County was $95,909.

## Emergency Appropriations

Kentucky's statutes authorize the Bureau of Highways to retain six percent of the program receipts for emergency authorization. The bureau uses these funds to correct immediate and hazardous problems on county roads. Typical emergency projects are deteriorating or fallen bridges and mud or rock slides on county roads.

In January of 1978, $10,000 was made available to each county out of the County Road Aid Emergency Account for snow removal. Each judge was notified as to the amount and purpose of this money. The bureau stated that the providing of funds for other emergencies would be the direct result of the fiscal court's notifying the district highway offices.

Interviews with the county judges/executive undertaken for this study revealed that some judges were unaware of the availability of emergency funds or of the local fiscal court's responsibility for requesting an emergency authorization. Whether the department contact was inadequate, or the judges did not completely understand the nature of the authorization, is unclear. Nonetheless, an increased effort on the part of the Bureau of Highways to better inform local government officials of the uses of funds both for emergencies and the administration of the aid programs seems indicated.

## Other Sources of Revenue

The authorization of funds from other sources for maintenance and reconstruction of county roads was found to be a statewide practice. Commonly, Rural Secondary program funds are spent on project improvements to county roads authorized by the Bureau of Highways. For example, in Cumberland County, two such projects were authorized in fiscal year 1977-78. Project authorization order #24457 for fiscal year 1977-78 shows $31,124.50 provided from Cumberland County's rural secondary account (account number 629) for a project on county route 1036. Likewise, project authorization order #27515 shows $4,461.60 was from the same account for a project on county route 1039.

District highway engineers surveyed for this study indicated that they seldom recommend spending rural secondary funds on county road projects. The impetus for these project authorizations appears to be generated from the fiscal courts, local residents or the central office of the Kentucky Department of Transportation. All projects must be approved by the Bureau of Highways.

Although money earmarked for the Rural Secondary program is spent on county roads, the statutory language does not expressly forbid this practice. KRS 177.320 provides that rural secondary money can be spent on "secondary

and rural roads." The Bureau of Highways regards county roads as falling within this definition. Therefore, the funding of county road projects from the Rural Secondary program occurs, resulting in less money being available for state maintained secondary roads.

Proponents of this practice argue that due to higher maintenance priorities on more heavily traveled state maintained roads and because the statutory formula for the Rural Secondary program contributes a considerable amount to the maintenance of "rural" roads, the Bureau of Highways can neither perform the required maintenance on designated rural secondary roads nor expend the funds allocated for this purpose.

Critics argue that the Rural Secondary program allocations should be reduced and redistributed to the County Road Aid program, rather than continuing the practice of authorizing funds intended for the state highway system maintenance for use on local roads (for which counties are responsible). The continual use of Rural Secondary program funds by the County Road program contributes to confusion among some local officials and county residents, as to which roads are enrolled in various programs, and hence whether local or state government is responsible for maintenance.

Other sources of funds are made available for the maintenance of local roads besides the 22 percent of RS funds that are authorized for county roads. Approximately $50 million was expended from the state's "210," or discretionary, construction account and from the state's "140," or general maintenance, account.

## Problem Areas

Clearly, the current system of road classification is a fundamental problem with the County Road Aid program. Kentucky Administrative Regulation Chapter 603 3:030 provides for the classification of the state highway system as follows:

1) Classified System
   a) Interstate Highways;
   b) Parkways (Toll Roads);
   c) State Primary;
   d) State Secondary;
   e) Rural Secondary

2) Unclassified Roads

The Bureau of Highways concedes that county roads for which it has maintenance responsibility are not adequately maintained. Primarily, this is the result of the low priority status of county roads compared to all other classes of roads. Shouldering, mowing and other maintenance on state roads is likely to be given preference over pothole patching on county roads. Because the bureau is pressed to perform this required maintenance on the roads in the state system, many feel that the bureau cannot properly maintain county roads too.

Most county officials, on the other hand, believe that local roads are the source for most of the traffic on state roads and therefore deserve a better maintenance effort. When these roads are neglected, they argue, it becomes increasingly difficult for those who reside on county roads to gain access to the state roads.

The extensive categorization of roads may cloud rather than clarify the highway maintenance picture. Public confusion regarding maintenance responsibility is a direct result. Citizen requests for maintenance work are often passed from county officials to the state's district highway office and vice versa, which only contributes to increasing public dissatisfaction with the road maintenance effort. At the same time, the present classification system, and the multiplicity of programs and arrangements between the state and local governments provide those charged with road maintenance convenient alibis when maintenance is left undone.

## Alternatives

The alternatives available to the General Assembly are similar to those presented in the section on the Rural Secondary Aid program. The legislature must decide which system of roads requires priority maintenance programs and delineate the responsibility. Specifically, the General Assembly may wish to:

(1) Prioritize local road maintenance and designate responsibilities of local governments.

(2) Designate the same maintenance priorities, but place a greater burden on the state Bureau of Highways.

(3) Prioritize completion of state maintenance work and provide counties with greater maintenance responsibilities.

For example, a program described in the first alternative would allocate more revenue to local maintenance and mandate a local co-operative agreement. The second alternative would provide the same maintenance effort on local roads, but place the burden of work completion on the state. Finally, the third alternative, by mandating a local co-operative agreement, would mean less state funds going to local roads. Several variations of these alternatives may also be considered.

It should be kept in mind that the foregoing are only alternatives and not recommendations. The issue for the General Assembly to consider is that of prioritizing a funding mechanism for highway maintenance. At the same time the desirability of assigning, by statute, specific or designated maintenance responsibilities, needs to be assessed.

APPENDICES

I. Available Balance As of June 30, 1979 of Rural Secondary Fund in

Campbell County . . . . . .
Harlan County . . . . . .
Hardin County . . . . . .
Bullitt County . . . . . .

II. County Road Aid Account Details

Letcher County . . . . . .

III. County Road Aid Account Details

Bath County . . . . . .

APPENDIX I

Available Balance for
Campbell County
June 30, 1979

Campbell -19

| | 1977-78 | 1978-79 | 1979-80 8-31-79 |
|---|---|---|---|
| Original Allotments | 20291300 | 21144800 | 19781300 |
| Balance carried forward | 15584168 | 15035677 | 26285158 |
| Encumbrances forwarded | 4207568 | 13277088 | 5866888 |
| Emergency transfers | 0 | 170203 | 0 |
| Emergency returns | 0 | 0 | 0 |
| Receivable - current year | 0 | 0 | 0 |
| Total allotments | 40083036 | 49627168 | 51933346 |
| Less | | | |
| Expenditures | 11770271 | 17475722 | 11812062 |
| Enc at 6/30 | 13277088 | 5866888 | 8959445 |
| Balance | 15035677 | 26285158 | 31161839 |
| Maintenance & projects in process | balances | | 9721103 |
| TD 10-1 #22621 RS19-1936 Utilities | | | 1500000 |
| TD 10-1 #22621 RS19-1936 | | | 17493588 |
| Co. Judge Executive | | | 360000 |
| Unprogrammed balance | | | 2087148 |

APPENDIX I

Available Balance for
Harlan County
June 30, 1979

Harlan -48

| | 1977-78 | 1978-79 | 1979-80 8-31-79 |
|---|---|---|---|
| Original Allotments | 44642500 | 46519900 | 43520200 |
| Balance carried forward | 3075036 0 | 7304441 8 | 2791397 1 |
| Encumbrances forwarded | 1024273 9 | 535450 1 | 2425140 6 |
| Emergency transfers | 2083261 5 | 732679 9 | 0 |
| Emergency returns | 0 | 0 | 0 |
| Receivable - current year | 0 | 0 | 0 |
| Total Allotments | 10646814 | 13224561 8 | 9517455 7 |
| Less | | | |
| Expenditures | 2806929 5 | 8248424 1 | 1733721 1 |
| Enc at 6/30 | 535450 1 | 2178140 6 | 3392124 5 |
| Balance | 7304441 8 | 2791397 1 | 4449112 1 |
| Maintenance & projects in process balances | | | 3864908 5 |
| TD 10-1 # 25164 SRS 48-840 | | | 1980000 |
| TD 10-1 # 19437 SRS 48-840 | | | 400000 |
| Co. Judge Executive | | | 360000 |
| Emgr. project closed | | | + 256510 |
| Unprogrammed balance | | | 3354546 |

APPENDIX I

Available Balance for
Hardin County
June 30, 1979

Hardin -47

| | 1977-78 | 1978-79 | 1979-80 8-31-79 |
|---|---|---|---|
| Original Allotments | 4835200 | 5038500 | 4713500 |
| Balance carried forward | 1194976 | 2060092 | 1403101 |
| Encumbrances forwarded | 118599 | 0 | 791700 |
| Emergency transfers | 533495 | 0 | 0 |
| Emergency returns | 0 | 0 | 0 |
| Receivable - current year | 0 | 0 | 0 |
| Total allotments | 6822590 | 7098592 | 6908401 |
| Less | | | |
| Expenditures | 4622298 | 4903819 | 2056256 |
| Enc at 6/30 | 0 | 791700 | 1264179 |
| Balance | 2060292 | 1403101 | 3587984 |
| Maintenance Projects in process balances | | | 2204182 |
| TDOT # 27628 SR 47-583 | | | 2087255 |
| TDOT # 27629 SR 47-583 | | | 100000 |
| Amendment #1 | | | 186592 |
| Co Judge Expenses | | | 360000 |
| Unprogrammed balances | | | 942479 |

APPENDIX I

Available Balance for
Bullitt County
June 30, 1979

Bullitt - 15

| | 1977-78 | 1978-79 | 1979-80 8-31-79 |
|---|---|---|---|
| Original Allotments | 32231600 | 33587100 | 31421200 |
| Balance Carried Forward | 32651285 | 49270392 | 56324646 |
| Encumbrances forwarded | 222783 | 6311102 | 11029595 |
| Emergency Transfers | 0 | 0 | 0 |
| Emergency Returns | 0 | 0 | 0 |
| Receivables - current year | 0 | 0 | 0 |
| Total allotments | 65105568 | 89168594 | 98775441 |
| Less | | | |
| Expenditures | 9524174 | 21814353 | 6746081 |
| Encumbrances at 6/30 | 6311102 | 11029595 | 8262061 |
| Balance | 49270392 | 56324646 | 83761299 |
| Maintenance & Inspection forces balances | | | 9964742 |
| TD 10-1 # 23090 RS 15-824 | | | 26111140 |
| TD 10-1 # 19513 SRS 15-1526 | | | 29360000 |
| TD 10-1 # 30996 SRS 15-1526 | | | 16499780 |
| Co Judge Expenses | | | 360000 |
| Unprogrammed balance | | | 1471637 |

LETCHER COUNTY

COUNTY ROAD AID

APPENDIX II

| | 1976-77 | 1977-78 | 1978-79 | 1979-80 | |
|---|---|---|---|---|---|
| Original allotment | 150,108.00 | 156,491.00 | 284,951.00 | 239,351.00 | |
| Balance carried forward from previous year | 73,258.26 | 186,525.30 | 341,355.45 | 152,626.96 | |
| Encumbrances forward | 24,050.00 | 80,807.00 | 93,655.99 | 111,112.84 | |
| Off-System | 29,559.33 | 50,468.89 | 0 | 0 | |
| Emergency transfer | 0 | 20,725.00 | (81,706.23) | 0 | |
| Total Allotment | 276,975.59 | 495,017.19 | 638,256.21 | 503,090.80 | |
| Less: | | | | (obligated) | |
| Expenditures | 9,643.29 | 60,005.75 | ø 373,939.33<br>577.08 | 152,559.00 | for co-op program |
| Encumbrances 6/30 | 80,807.00 | 93,655.99 | 111,112.84 | 11,043.66 | for off-systems |
| | 90,450.29 | 153,661.74 | 485,629.25 | 62,746.52 | SCR GR79 0000017 |
| Balance | 186,525.30 | 341,355.45 | 152,626.96 | | |
| | | | ø Maintenance | | |

| 1979-80 Fiscal Year | | |
|---|---|---|
| Allotments | 239,351.00 | |
| Encumbrances forwarded | 111,112.84 | |
| Free Balance carried forward | 96,372.02 | |
| Maintenance Balance carried forward | 14,518.02 | |
| Project balances forward | | 152,626.96 |
| HC Group 4(79) Engineering | 7,439.11 | |
| Off-Systems Balance forward | 34,297.81 | |
| | | 503,090.80 |

Letcher County

APPENDIX II

| | | |
|---|---|---|
| Obligated | | |
| Co-op Program | 152,559.00 | |
| Off-Systems 79-80 Program | 11,043.66 | |
| SCR Group 17 (79) | 62,746.52 | |
| Off-Systems Balance forward | 34,297.81 | |
| HC Group 4(79) Engineering | 7,439.11 | |
| Encumbrances from 78-79 | 111,112.84 | 379,198.94 |
| Free Balance | | 123,891.86 |

BATH COUNTY

COUNTY ROAD AID

APPENDIX III

| | 1976-77 | 1977-78 | 1978-79 | 1979-80 |
|---|---|---|---|---|
| Original allotment | 113,019.00 | 117,827.00 | 214,546.00 | 180,213.00 |
| Balance carried forward from previous year | 35,388.49 | 537,175.33 | 313,744.18 | 60,056.01 |
| Encumbrances forward | 0 | 6,723.00 | 10,362.92 | 815.64 |
| Off-System | 21,410.76 | 37,999.22 | 0 | 0 |
| Emergency Transfer | *362,482.00 | (1,967.24) 1,969.60 | **(239,040.28) | 0 |
| Receivable in current year | 130,727.94 | 0 | 0 | |
| Total Allotment | 663,028.19 | 699,726.91 | 299,612.82 | 241,084.65 |
| Less: | | | | (obligated) |
| Expenditures | 119,129.96 | 375,619.81 | ø 172,905.98<br>65,835.17 | for co-op<br>114,865.00 program |
| Encumbrances | 6,723.00 | 10,362.92 | 815.64 | 8,315.03 for off-systems |
| | 125,852.96 | 385,982.73 | 239,556.79 | 123,180.03 |
| Balance | 537,175.23 | 313,744.18 | 60,056.03 | |

ø Maintenance

Emergency funds were returned to the emergency account in 1978-79 in the amount of $216,428.60

*Explanation of Emergency Transfer

| 10-1 # | Date | |
|---|---|---|
| 22539 | 5-18-76 | 318,000.00 |
| 23357 | 9-14-76 | 3,972.00 |
| 24450 | 4-6-77 | 15,510.00 |
| 24495 | 4-21-77 | 20,000.00 |
| 25359 | 6-16-77 | 5,000.00 |
| | | 362,482.00 |

** Explanation of Emergency Transfer

| 10-1 # | Date | | |
|---|---|---|---|
| 22539 | 5-18-76 | 318,000.00 | |
| 15933A | 8-3-73 | 35,000.00 | |
| Available from emergency | | 353,000.00 | Budget Charge |
| Returned to emergency | | (188,492.20) | H76 |
| " | | (17,500.00) | H88 |
| " | | (1,421.25) | H81 |
| " | | (9,015.15) | H95 |
| Other emergency projects | | (22,611.68) | |
| Returned in 1978-79 | | 239,040.28 | |