



# **PERFORMANCE AUDIT REPORT**

## **Reviewing Selected Projections and Cost Estimates for the 1989 Comprehensive Highway Program**

**A Report to the Legislative Post Audit Committee  
By the Legislative Division of Post Audit  
State of Kansas  
March 1989**

# **Legislative Post Audit Committee**

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## **PERFORMANCE AUDIT REPORT**

### **REVIEWING SELECTED PROJECTIONS AND COST ESTIMATES FOR THE 1989 COMPREHENSIVE HIGHWAY PROGRAM**

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#### **OBTAINING AUDIT INFORMATION**

This audit was conducted by Elyn Rullestad and Ron Green, Senior Auditors, and Tom Vittitow, Auditor, of the Division's staff. If you need any additional information about the audit's findings, please contact Ms. Rullestad at the Division's offices.

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# REVIEWING SELECTED PROJECTIONS AND COST ESTIMATES FOR THE 1989 COMPREHENSIVE HIGHWAY PROGRAM

## Summary of Legislative Post Audit's Findings

This audit was requested to answer questions about the projections and cost estimates for the 11-year, \$3.7 billion 1989 comprehensive highway program proposed by the Special Committee on Transportation during the 1988 interim. Following an overview of the proposed highway program, the audit addresses three questions.

**How do the Department's projected inflation figures and anticipated interest costs for the life of the highway program compare with other comparable indices?** The Department of Transportation assumed an annual inflation rate of 5.2 percent in estimating the costs of the highway program through the year 2000. A comparison of that rate with other estimates showed that the Department's estimate was slightly higher than the average for 1989, but was slightly lower than the long-term inflation estimates provided by two sources. The 1989 program anticipated issuing bonds in 1996, and the Department assumed an interest rate for those bonds of 7.875 percent. A comparison of that rate with other estimates showed that this figure was within a reasonable range. Predicting interest rates so far in the future is difficult, at best.

**What is the average useful-life expectancy of Kansas highways compared with the proposed length of financing?** Kansas highways are designed according to 20-year design standards. This means that the highways are constructed to last at least 20 years under the assumed traffic and weight levels. Bridges in Kansas are designed on a 50-year basis. Both these design periods are longer than the 15-year bonds proposed by the Special Committee.

**How accurate are the Department's cost estimates for a sample of highway projects?** To estimate the cost of reconstructing the proposed 1,900 miles of highways in most need, the Department calculated an average cost per mile of \$550,000. To make this calculation, the Department estimated the costs of individual projects and then developed an average. The Department's methodology for estimating construction costs, based on historical cost data for similar projects, is a reasonable approach. Calculating an average cost per mile using the cost estimates should account for the fact that some estimates are high, while others are low, according to Department officials. Our review of 11 projects showed that the let price was higher than the initial estimates in seven cases, and lower in four. Overall, however, the let price was 30 percent lower than the initial estimates. Because our sample was so small, may not be representative of all the Department's major modification projects, and because our results were so sensitive to fluctuations in individual projects, we could not draw any overall generalizations about the accuracy of the Department's cost estimates or the accuracy of the cost-per-mile calculation.

This report includes a recommendation that the Department develop a tracking system to allow it to determine how accurate their cost estimates have been in the past. We would be happy to discuss this recommendation or any other items in the report with any legislative committees, individual legislators, or other State officials.



Meredith Williams  
Legislative Post Auditor

## **REVIEWING SELECTED PROJECTIONS AND COST ESTIMATES FOR THE 1989 COMPREHENSIVE HIGHWAY PROGRAM**

At its meeting March 8, 1989, the Legislative Post Audit Committee directed the Legislative Division of Post Audit to address questions about the projections and cost estimates for the 1989 comprehensive highway program proposed by the Special Committee on Transportation during the 1988 interim.

That proposal would provide for the reconstruction or improvement of 1,900 miles of roadway and substantial bridge replacement and repair by fiscal year 2000. Under this proposal, enhancements to the current program would be funded through a 15-year bond issuance and increases in motor fuels taxes, registration fees, the sales tax transfer from the State General Fund to the Highway Fund, and the State sales tax.

This proposal was amended by the House Transportation Committee during the 1989 legislative session. At the time of the audit, the proposal had been amended again, passed by the full House of Representatives, and sent to the Senate. Because of the nature of the request and the fact that program changes are likely to continue during the 1989 legislative session, this audit focuses on the highway proposal that was developed by the Special Transportation Committee. The audit addresses three specific questions:

- 1. How do the Department's projected inflation figures and anticipated interest costs for the life of the highway program compare with other comparable indices?**
- 2. What is the average useful-life expectancy of Kansas highways compared with the proposed length of financing?**
- 3. How accurate are the Department's cost estimates for a sample of highway projects?**

To answer these questions, we interviewed Department of Transportation staff, reviewed the Department's methodology for estimating total costs, and reviewed the cost estimates and let prices for a sample of projects. We also contacted officials in other states and at other agencies to gather comparative information. In general, we found that the Department's projected inflation and interest figures were in line with estimates from other sources. Kansas builds its highways to a 20-year design standard, which is greater than the 15-year bonds proposed by the Special Committee. Finally, although the Department bases its cost estimates for highway projects on reasonable assumptions, we were not able to determine the accuracy of those estimates. The report discusses these findings in more detail following a brief overview of the proposed highway program.

## Overview of the 1989 Comprehensive Highway Program

The 1989 highway program proposal was developed by the 1988 Special Committee on Transportation. The 11-year proposal was intended to provide for an adequate level of substantial maintenance for the State highway system, major modifications to bridges and to the 1,900 highway miles judged to be in most need using the Department's priority-setting formula, a pool of money for unspecified system enhancements to be proposed by the Department and approved by the Legislature, money for elderly and handicapped transportation services, additional dollars for city connecting links, and additional money to be transferred to the Special City and County Highway Fund. The proposal would be funded through increases in the gasoline tax, registration fees, the sales tax transfer from the State General Fund to the Highway Fund, and the State sales tax, and through the issuance of bonds.

As the following table shows, total expenditures over the life of the program would be \$3.75 billion. This amount would pay for new highway improvements and would maintain the existing highway improvement program at its current level. (Without the additional revenues, the Department has projected a shortfall in the State Highway Fund that would require a reduction in the existing highway program.)

The expenditure figure also includes \$254 million in bond debt service. However, the bonds would not be repaid by the end of the program. Debt service would continue for the full 15-year bond period until at least the year 2010. And, at the end of that period, the bond principal would have to be repaid as well.

Revenues, including tax increases and bond proceeds, are projected to be \$3.8 billion over the program's life.

### Summary of Total Expenditures and Revenues For the 1989 Comprehensive Highway Program (a)

<u>Expenditures (000's)</u>		<u>Revenues (000's)</u>	
Enhancements to Existing Program		Enhancements	
Major Modification of Roads, Bridges	\$1,404,264	Motor Fuel Tax	\$1,032,738
System Enhancements	700,000	Retail Sales Tax	
City and County Highway Fund	519,300	State portion	865,463
Increases in Substantial Maintenance	229,349	City/County	519,300
Elderly and Handicapped Services	3,300	Sales Tax Transfer	329,408
City Connecting Links	<u>9,130</u>	Registration Fees	318,000
<b>Subtotal Enhancements</b>	<b><u>\$2,865,343</u></b>	Interest	<u>85,187</u>
		<b>Subtotal Enhancements</b>	<b><u>\$3,150,096</u></b>
Additional Expenditures to Continue			
Existing Program at Current Level	632,954		
Debt Service for Bonds	<u>254,419</u>	Bond Proceeds	<u>662,075</u>
<b>Total</b>	<b><u>\$3,752,716</u></b>		<b><u>\$3,811,171</u></b>

(a) Annual cash flow projections for the 1989 program can be found in Appendix A.

The 1989 program was more ambitious than the one proposed by the Governor during the 1987 Special Session. Under the 1987 proposal, expected to last for nine years, more money would have been spent for major modifications on specified highway projects, but less would have been spent for substantial maintenance and system enhancements. The funding mechanism was similar, although the 1987 proposal did not envision increases in sales taxes and would have authorized about twice the level of bonding as in the 1989 proposal.

More detailed information about the highway programs can be found in Appendix B.

## **How Do The Department's Projected Inflation Figures and Anticipated Interest Costs for the Life of the Highway Program Compare with Other Comparable Indices?**

We obtained inflation estimates from several sources in Kansas, as well as from other firms in the financial services business. The Department's estimate was slightly higher than the average for 1989, but was slightly lower than the long-term inflation estimates provided by two sources.

We also sought estimates of bond interest rates to compare with the Department's estimate of 7.875 percent for 15-year bonds. The Department's rate was slightly higher than current rates estimated by several firms, but it was within a reasonable range. These findings are discussed in the following sections.

### **The Department's Estimated 5.2 Percent Annual Inflation Rate Was in Line with Other Available Estimates for the Short Run**

The Department used a 5.2 percent inflation rate to estimate the costs of the 1989 proposed highway program through the year 2000. This rate was based on a model that used forecasts of the Consumer Price Index, available from Data Resources, Incorporated, an economic consulting firm, to estimate the Highway Construction Cost Index, because of the strong correlation between the two indices. The inflation rate assumption is important because the Department uses it to estimate the cost of highway projects that would be done each year through 2000. If the actual rate of inflation is higher than projected, the costs of construction would probably increase, and fewer highway projects could be completed.

For comparative purposes, we obtained inflation information from Data Resources, Kansas University's Institute for Policy Planning and Business Research, Associated General Contractors of Kansas, Kansas Turnpike Authority, Moody's Investors Service, B. C. Christopher (an investment firm), the Federal Highway Administration, and the State of Iowa. The average of these groups' inflation estimates for 1989 was 4.9 percent, or 0.3 percent below the Department's estimate.

Only two sources we contacted were willing to provide longer-term inflation estimates through the year 2000. The Department's 5.2 percent estimate is about the same as Data Resources' projection of 5-5.5 percent, but is less than the 6-6.5 percent estimate from Associated General Contractors of Kansas.

The 5.2 percent inflation rate used in the 1989 highway proposal was lower than the rates used by the Department for the 1987 Special Session (6.1-7.7 percent). The earlier rates were based on an adjusted forecast of the Highway Construction Cost Index. According to Department officials, these higher rates also took into account the Department's assumption that the 1987 program would result in higher inflation for highway costs, because the greater volume of highway projects could not be absorbed by contractors in the area.

After the 1987 Special Session, the Department revised its estimates downward and based future inflation rates on the Consumer Price Index rather than on the Highway Construction Cost Index forecast. According to Department officials, this revised rate does increase the risk that the rates assumed will be too low and that projected projects might not be completed.

### **The Department's Estimate of Bond Interest Rates Fell Within a Reasonable Range**

Under the proposal formulated by the Special Committee on Transportation, 15-year bonds would be issued in 1996 with a rate of 7.875 percent to help finance the highway program. To determine this rate, the Department examined weekly bond yields for 20-year bonds. The examination showed that yields were averaging from 7.5-8.0 percent. As a result, Department staff said they found no compelling reason to change the estimate they had made for the 1987 Special Session. (That rate, 8.25 percent for 20-year bonds, was a composite based on information supplied by several bond houses.) Department staff did make an adjustment to account for the relationship between 20-year and 15-year bond yields.

For comparative purposes, we contacted the Kansas Turnpike Authority, B. C. Christopher, and Moody's Investors Services to obtain estimates of highway bond interest rates. These sources indicated that if 15-year, tax-exempt bonds were issued in mid-March, the interest rate would be about 7.5 percent. We also learned that the Oklahoma Turnpike Authority issued \$558 million in revenue bonds March 1 at an average yield of 7.8 percent. (Interest rates for revenue bonds are usually slightly higher than for government bonds fully backed by the issuer.)

Two sources said that if 15-year bonds were issued in 1996, the rate might range from 6.6 percent to 8 percent. The Department's estimate of 7.875 percent is within the range suggested by one source (7-8 percent), but more than one percentage point higher than the other source (6.6-6.7 percent). Both sources indicated that predicting bond interest rates (like inflation rates) is difficult, especially when looking 7 years to 10 years into the future.

## **What Is the Average Useful-Life Expectancy of Kansas Highways Compared with the Proposed Length of Financing?**

The actual life of a highway is influenced by a myriad of factors, such as the quality and type of pavement materials, the weather, the amount of salt or other chemicals applied, the amount of traffic, and the weight of traffic (especially heavy trucks). In addition, the major components of a highway have different lengths of physical life. According to a publication of the American Association of State Highway and Transportation Officials:

Right-of-way and grading might be considered to have a life expectancy of 100 years, minor drainage structures and base courses 50 years, bridges 25 to 100 years, and surfacing 10 to 30 years, all assuming adequate maintenance....

Data on the actual useful life of highways is not readily available, so we based our comparisons on the design standard period used in Kansas and other states. The 20-year design period used by the Kansas Department of Transportation appears to be common.

### **Kansas Highways Are Designed According to 20-year Design Standards, Which Is Longer Than the 15-year Bonds Proposed by the Interim Committee**

A 20-year design period means that the highway is constructed so that pavement should last at least 20 years under the assumed traffic and weight levels. However, routine maintenance will still be necessary within the 20 years. The Department's policy on 20-year design standards is comparable to design standards used by the federal government and by surrounding states, although Iowa often uses a 30-year design period. According to a publication of the American Association of State Highway and Transportation Officials, a period of 20 years is widely used as a basis for design.

The 20-year design period used on Kansas highway projects applies to new construction and to major modifications. (Major modifications include resurfacing, restoration, and rehabilitation work to preserve and extend the service life and enhance the safety of the existing highway system.) Department officials said that bridges in Kansas are designed on a 50-year basis. Both these design periods are longer than the 15-year bonds proposed by the Special Committee.

Kansas officials told us that Kansas highways and bridges generally live up to their design period unless unanticipated changes occur, such as increased weight limits for trucks.

Transportation officials from Kansas and other states said that, at the end of a highway's 20-year design period, the road would not be used up. It might require overlay work or other work to improve the pavement or shoulders, but the road's basic foundation should still be sound and the highway should continue to serve its intended purpose. Several officials pointed out that, eventually, it becomes more cost-effective to replace the entire road surface rather than to continue patching or overlaying it.

## **How Accurate Are the Department's Cost Estimates For a Sample of Highway Projects?**

In response to the proposed highway program developed by the Special Committee on Transportation, the Department was asked to determine how much the total program would cost over its 11-year life. The Department also had to estimate the cost of some of the individual program components. Overall, we found that the Department's cost estimates were based on reasonable assumptions, but that the accuracy of the estimates could not be readily verified.

### **The Department's Estimates for the Total Cost Of the Highway Program Followed the Assumptions And Requirements of the Special Committee's Proposal**

Once the Special Transportation Committee specified the major elements of its 1989 highway program, the Department of Transportation developed an estimate of the total cost of the proposed 1989 highway program using the assumptions and requirements set forth by the Special Committee. For instance, the Committee wanted the 1989 program to include \$300,000 annually for elderly and handicapped transportation services. In light of earlier Department testimony about inadequate funding for road maintenance, the Committee also wanted to increase substantial maintenance expenditures to an adequate level of funding. Our review of the Department's cost estimates showed that the Department followed all the Committee's assumptions and requirements.

Because the 1989 highway proposal spanned 11 years (fiscal years 1990 through 2000), the Department also had to build some assumptions about the expected rate of inflation into its total cost estimates. As discussed earlier, the Department assumed that the annual inflation rate would be 5.2 percent for the 11-year period. We found that the total cost estimates accurately included this inflation factor.

A major element of the proposed 1989 highway program was the major modification or reconstruction of 1,900 miles of the State highway system. Because estimating the cost of this element of the program was more extensive than estimating most of the other costs, the rest of this audit focuses on the reasonableness of the cost estimates for the 1,900 miles requiring major modifications.

### **The Department's Method for Estimating Highway Construction Costs Appeared to Be Based on Reasonable Assumptions, But We Could Not Determine How Accurate Those Estimates Were**

The Special Committee proposed that 1,900 miles of State highways be reconstructed. This number represented the 20 percent of the highways judged to be most in need. Although the Special Committee did not specify individual major modification projects that would be completed, it did instruct the Department to use the Department's priority formula system in determining which projects would be undertaken.

In developing the total cost of this element of the Committee's proposal, the Department relied on cost estimates it had prepared for its priority list of projects. The Department's cost estimating method changed slightly in fiscal year 1989, but in essence that method can be described as follows: the Department assesses the condition of a road, estimates the types of improvements that will be needed by the time the project is undertaken, and estimates the cost of performing that work using average cost figures from recently let projects or other recent estimates for similar projects.

As these planned projects get closer to their start dates, the Department begins actual design work and updates the cost estimates on its priority list based on more detailed design specifications. All projects on that list are updated each year for inflation.

To develop its cost estimates for the highway proposal, the Department added the estimated costs for the first 640 miles on its priority list, divided the total by the number of miles, and arrived at an average construction cost per mile of \$550,000. A factor was then added to account for other project costs such as utilities, rights-of-way, and the like, and the result was an average project cost of \$575,000 per mile. (Because of the audit's time constraints, we were not able to test whether the amount added to account for other projects costs was correct.) The Department used that \$575,000 figure, adjusted by 5.2 percent each year for inflation, to project a total cost for the 1,900 miles in the highway proposal.

We reviewed the Department's methodology for estimating construction costs in some detail, and concluded that the method represented a reasonable approach. The \$550,000 per-mile figure the Department used to estimate construction costs for the highway program was based in large part on historical cost data for similar projects.

Department officials told us that an average cost-per-mile figure should take into account the fact that some projects will be estimated on the high side, while other will be estimated on the low side. They also said that they do not have a system in place for determining whether their cost estimates are accurate.

As a way of trying to test the accuracy of this assumption for the Department's construction cost estimates used in its priority list within the time constraints of this audit, we reviewed 14 non-interstate reconstruction projects let in fiscal year 1988 and compared those projects' initial construction cost planning estimates with their let prices. Let prices do not include costs for rights-of-way, staff engineering, and the like, so let prices for these projects should be comparable to the Department's construction cost planning estimates. We later excluded three projects from our sample of 14 because they had a change in project scope after the initial planning estimate had been made. As a result, the let prices for those three projects would be expected to be different from the initial planning estimates.

Of the remaining 11 projects, the let price was higher than the planning estimate in seven cases, and lower in four. Overall, however, the total let price of all 11 projects was \$6.4 million, or 30 percent lower than the total planning estimate.

### Comparison of Planning Estimates to Let Prices

<u>Project Number</u>	<u>Planning Estimate (1988 dollars)</u>	<u>Let Price</u>	<u>Difference (Let-Estimate)</u>
K-1067-02	\$315,600	\$194,000	(\$121,600)
K-2885-01	109,848	128,000	18,152
K-2418-05	875,000	2,021,000	1,146,000
K-3147-01	37,135	93,000	55,865
K-1829-05	56,000	118,000	62,000
K-2903-01	1,074,600	660,000	(414,600)
K-2354-01	343,616	492,000	148,384
K-3025-02	53,050	82,000	28,950
K-2881-01	17,550,396	9,980,000	(7,570,396)
K-2849-01	590,832	530,000	(60,832)
K-2076-01	594,720	858,000	263,280
<b>Total</b>	<u>\$21,600,797</u>	<u>\$15,156,000</u>	<u>\$(6,444,797)</u>

Because of the small number of projects examined, individual projects had a great influence on the total results. For example, the let price for one project was about half the planning estimate. According to Department officials, this was an unusual project. When this project is removed from the analysis, the total let price of the remaining 10 projects was about \$1.1 million (28 percent) higher than the total estimated price. Again, one project accounts for nearly all this difference.

Because our sample is so small, may not be representative of all the Department's major modification projects, and because the results were so sensitive to fluctuations in individual projects, we could not draw any overall generalizations about the accuracy of the Department's cost estimates or the accuracy of the cost-per-mile calculation.

It is worth noting that the changes the Department made in its cost estimation methods in fiscal year 1989 were designed to increase the accuracy of the cost estimates by using more detailed information about the type of improvements needed. To date, no projects whose costs were estimated using this new method have been let. However, to test the accuracy of the method, the Department examined four recently let projects and made cost estimates of the projects using the new cost estimation methodology. They found that the estimated cost was within three percent of the let price for all four cases.

We also wanted to determine whether the let price was close to the actual construction expenditures. Most projects have change orders. To the extent that change orders result in actual expenditures different from the let amount, the cost estimates will be either understated or overstated. We reviewed 16 recently completed projects to compare the let price to actual expenditures on a project and found that the actual

expenditures were 2.6 percent higher than the let price in those cases. Again, we do not know whether our sample was representative of the Department's overall experience.

One final point: even though the cost estimates for the highway program appear to be based on reasonable assumptions, this may not mean that 1,900 miles of highway will be reconstructed. A variety of factors could affect the total miles constructed, including the following:

- The competitive environment of the highway construction industry in Kansas may affect costs or bids in unforeseen ways.
- Inflation rates may differ from the assumed annual rate of 5.2 percent.
- A different mix of projects may affect the average costs per mile. For example, if the actual projects undertaken are either relatively more or less expensive than the projects on which the costs per mile were based, the total costs of reconstructing 1,900 miles will be either higher or lower.
- Unforeseen or unanticipated changes in revenue may affect the amount of work that can be completed.

Although the Department has developed an elaborate method for estimating project construction costs, which was used as the basis for developing estimates for the highway program, it does not have a method for tracking the accuracy of those estimates compared with either let prices or actual project costs. By tracking that information, the Department could adjust its cost estimation process if it found that its estimates were considerably different from actual costs.

#### **Recommendation**

The Department of Transportation should consider developing a tracking system that would allow Department officials to determine how accurate their planning and design estimates have been in the past. If the estimates historically have been different from actual costs, then the Department would be able to take that into account and make cost projections more accurate.

## APPENDIX A

This appendix shows the annual cash-flow analysis for the 1989 Comprehensive Highway Program. The first page shows the revenue side and the second page shows the expenditure side.

The information was prepared by the Legislative Research Department.

KANSAS DEPARTMENT OF TRANSPORTATION -- HIGHWAY FUND CASH FLOW ANALYSIS

Revenue Assumptions for Existing and Adequate Programs by Fiscal Year (\$000)

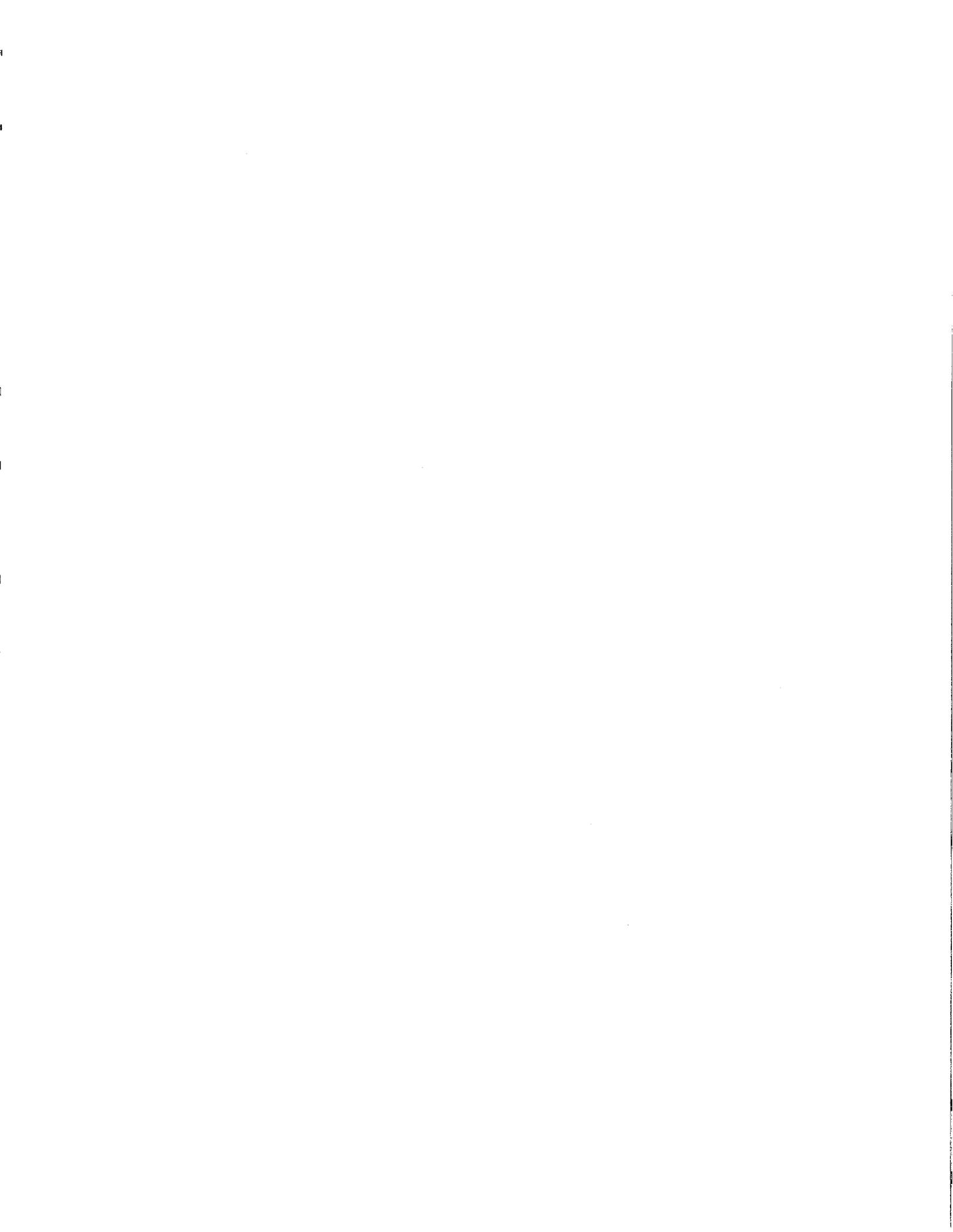
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
Beginning Balance	\$38,443	\$146,351	\$256,961	\$351,023	\$350,686	\$253,575	\$87,287	\$22,991	\$39,013	\$50,383	\$51,433	\$
<b>EXISTING REVENUES:</b>												
State Highway Fund												
Motor Fuel Tax	82,300	83,500	83,500	83,500	83,500	83,500	83,500	83,500	83,500	83,500	83,500	917,300
Registration and Title Fees(a)	72,500	70,500	70,500	70,500	70,500	70,500	70,500	70,500	70,500	70,500	70,500	777,500
SGF (Sales Tax Transfer)	44,555	49,325	51,298	53,350	55,484	57,703	60,011	62,411	64,908	67,504	70,204	636,753
Misc. Revenue	20,077	18,356	17,900	9,325	9,325	9,325	9,325	9,325	28,230	28,310	28,310	187,808
Subtotal	\$219,432	\$221,680	\$223,197	\$216,674	\$218,808	\$221,027	\$223,335	\$225,735	\$247,137	\$249,813	\$252,513	\$2,519,355
Fed. & Local Aid Reimbursement	\$120,640	\$125,874	\$114,992	\$113,178	\$110,945	\$108,321	\$110,522	\$111,448	\$112,360	\$112,723	\$113,583	\$1,254,586
<b>TOTAL EXISTING REVENUES</b>	\$340,072	\$347,554	\$338,189	\$329,852	\$329,754	\$329,349	\$333,857	\$337,183	\$359,498	\$362,536	\$366,096	\$3,773,940
<b>REVENUE ENHANCEMENTS:</b>												
Motor Fuel Tax (b)	\$55,348	\$60,379	\$88,053	\$90,569	\$104,406	\$105,664	\$105,664	\$105,664	\$105,664	\$105,664	\$105,664	\$1,032,738
Registration Fees	18,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	318,000
SGF (Sales Tax) Transfer(c)	18,867	25,865	26,900	27,976	29,095	30,259	31,469	32,728	34,037	35,399	36,815	329,408
Retail Sales Tax	59,368	67,140	69,826	72,619	75,524	78,545	81,687	84,954	88,352	91,886	95,562	865,463
Interest on Funds	0	13,127	19,476	22,541	19,273	10,771	0	0	0	0	0	85,187
<b>TOTAL REVENUE ENHANCEMENTS</b>	\$151,583	\$196,511	\$234,255	\$243,704	\$258,297	\$255,238	\$248,819	\$253,346	\$258,053	\$262,949	\$268,040	\$2,630,795
Total Before Bonding	\$491,654	\$544,066	\$572,444	\$573,557	\$588,051	\$584,586	\$582,677	\$590,529	\$617,551	\$625,485	\$634,137	\$6,404,735
Bond Sales (98.5%) Interest	\$0	\$0	\$0	\$0	\$0	\$0	\$153,660	\$281,710	\$197,000	\$8,865	\$0	\$641,235
Net from Bond Sales	\$0	\$0	\$0	\$0	\$0	\$0	4,994	9,156	6,403	288	0	20,840
<b>TOTAL REVENUES</b>	\$491,654	\$544,066	\$572,444	\$573,557	\$588,051	\$584,586	\$741,331	\$881,395	\$820,953	\$634,638	\$634,137	\$7,066,810

**KANSAS DEPARTMENT OF TRANSPORTATION -- HIGHWAY FUND CASH FLOW ANALYSIS**  
**Expenditure Assumptions for Existing and Adequate Programs by Fiscal Year (\$'000)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
<b>EXISTING (A-Level) Expenditures: (d)</b>												
State Ops. and Misc.	(\$177,244)	(\$187,242)	(\$192,026)	(\$201,906)	(\$212,541)	(\$222,593)	(\$233,418)	(\$244,786)	(\$256,723)	(\$269,257)	(\$282,420)	(\$2,480,157)
Substantial Maintenance	(51,867)	(50,518)	(53,145)	(55,909)	(58,816)	(61,874)	(65,092)	(68,477)	(72,037)	(75,793)	(79,724)	(693,243)
Major Modification	(125,014)	(121,441)	(112,932)	(112,231)	(109,362)	(106,343)	(107,741)	(108,501)	(109,920)	(109,904)	(110,105)	(1,233,494)
<b>TOTAL A-LEVEL EXPENDITURES</b>	<b>(\$354,125)</b>	<b>(\$359,201)</b>	<b>(\$358,103)</b>	<b>(\$370,045)</b>	<b>(\$380,719)</b>	<b>(\$390,810)</b>	<b>(\$406,251)</b>	<b>(\$421,764)</b>	<b>(\$438,680)</b>	<b>(\$454,945)</b>	<b>(\$472,249)</b>	<b>(\$4,406,894)</b>
<b>EXPENDITURE ENHANCEMENTS:</b>												
B-Level Increase over A-Level	(\$7,423)	(\$17,506)	(\$18,410)	(\$19,362)	(\$20,363)	(\$21,416)	(\$22,522)	(\$23,686)	(\$24,911)	(\$26,199)	(\$27,553)	(\$229,349)
Highway Initiative(e)	(17,267)	(52,649)	(102,001)	(178,536)	(280,319)	(328,524)	(356,315)	(373,183)	(274,385)	(74,827)	(4,610)	(2,042,616)
Additional State Operations(f)	(552)	(1,613)	(3,094)	(5,390)	(8,443)	(9,889)	(10,723)	(11,229)	(8,265)	(2,278)	(172)	(61,648)
Elderly & Handicapped	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(3,300)
City Connecting Links	(830)	(830)	(830)	(830)	(830)	(830)	(830)	(830)	(830)	(830)	(830)	(9,130)
New Debt Service @7.875% Term = 15	0	0	0	0	0	0	(8,953)	(34,320)	(62,213)	(74,208)	(74,724)	(254,419)
<b>TOTAL ENHANCED EXPENDITURES</b>	<b>(26,372)</b>	<b>(72,898)</b>	<b>(124,635)</b>	<b>(204,418)</b>	<b>(310,255)</b>	<b>(360,959)</b>	<b>(399,643)</b>	<b>(443,548)</b>	<b>(370,904)</b>	<b>(178,642)</b>	<b>(108,189)</b>	<b>(2,600,462)</b>
<b>TOTAL EXPENDITURES</b>	<b>(\$380,497)</b>	<b>(\$432,099)</b>	<b>(\$482,738)</b>	<b>(\$574,463)</b>	<b>(\$690,974)</b>	<b>(\$751,769)</b>	<b>(\$805,894)</b>	<b>(\$865,313)</b>	<b>(\$809,584)</b>	<b>(\$633,586)</b>	<b>(\$580,439)</b>	<b>(\$7,007,356)</b>
<b>ANNUAL SURPLUS (DEFICIT)</b>	<b>\$111,158</b>	<b>\$111,967</b>	<b>\$89,705</b>	<b>(\$907)</b>	<b>(\$102,923)</b>	<b>(\$167,182)</b>	<b>(\$64,564)</b>	<b>\$16,082</b>	<b>\$11,368</b>	<b>\$1,051</b>	<b>\$53,698</b>	<b>\$</b>
<b>ENDING BALANCE WITH ADEQUATE PROG.(g)</b>	<b>\$146,351</b>	<b>\$256,961</b>	<b>\$351,023</b>	<b>\$350,686</b>	<b>\$253,575</b>	<b>\$87,287</b>	<b>\$22,931</b>	<b>\$39,013</b>	<b>\$50,383</b>	<b>\$51,433</b>	<b>\$105,131</b>	
<b>ENDING BALANCE WITHOUT ADEQUATE PROG.(g)</b>	<b>\$21,140</b>	<b>\$8,136</b>	<b>(\$7,422)</b>	<b>(\$47,045)</b>	<b>(\$92,199)</b>	<b>(\$152,767)</b>	<b>(\$224,954)</b>	<b>(\$309,534)</b>	<b>(\$388,717)</b>	<b>(\$481,125)</b>	<b>(\$587,277)</b>	

(a) Registration fees will decline from \$72.5 million in FY 1990 to \$70.5 million in FY 1991 because the Vehicle Information Processing System (VIPS) fee on titles sunsets in FY 1990.  
 (b) The motor fuel tax revenue enhancement assumes a one-month collection lag as the result of a July 1 effective date on each one-cent tax increase.  
 (c) Because this table includes only State Highway Fund revenues and expenditures, the sales tax distribution to the Special City and County Highway Fund is not included.  
 (d) Current level of expenditures assumes 5.0 percent annual growth in salaries and other operating expenditures and 5.2 percent annual growth in substantial maintenance.  
 (e) "Highway Initiatives" includes \$700 million for the FY 1991-FY 2000 period for undesignated special system enhancements, geometric improvement for city connecting link set-asides, and economic development set-aside projects.  
 (f) "Additional State Operations" includes preconstruction administration, design, and support of field staff.  
 (g) "Ending Fund Balance" includes funds available for expenditure, but does not include funds held in escrow.

Prepared by Legislative Research Department



## APPENDIX B

### Comparison of the Proposed 1989 Highway Program with the Proposed 1987 Highway Program (Modified from a Legislative Research Department Summary)

	<u>H.B. 2014 As Recommended by Special Committee on Transportation</u>	<u>Governor's Recommendation to 1987 Special Session</u>
<b>Duration of the Highway Program</b>	FY 1990-FY 2000 (11 years)	FY 1988-FY 1996 (9 years, but new revenues began in FY 1989)
<b>Revenue Enhancements Under the Highway Program</b>		
Gasoline Tax Increase	4 cents FY 1990 2 cents FY 1992 1 cent FY 1994	5 cents -- FY 1989 + future increase indexed
\$ increase:	\$1,032.7 million	\$1.044 billion (\$901 million to Hwy Fund + \$143 million to SCCHF)
Registration Fees Increase	52% average for passenger vehicles and 30% for freight	50% to 100% for passenger vehicles and 50% for freight; future increases indexed
\$ increase:	\$318 million	\$528 million
Sales Tax Transfers	Increased to 10%	NA
\$ increase:	\$329.4 million	
Sales Tax Increase	0.5% increase	NA
\$ increase:	\$1.385 billion (\$865.5 million to Hwy Fund + \$519.3 million to SCCHF)	
Bonding	\$651 million, 15-year bonds @ 7.875%	\$1.299 billion, 20-year bonds @ 8.25%
<b>Expenditure Enhancements Under the Highway Program</b>		
Substantial Maintenance (Increase to adequate level under existing + enhanced program)	\$932 million	\$639 million
Major Modifications	\$1,404 million	\$1,471 million
System Enhancements (State Portion)	\$700 million	\$248 million
Elderly and Handicapped	\$300,000/year	\$333,000/year
\$ increase:	\$3.3 million	\$3.0 million

**H.B. 2014 As  
Recommended by Special  
Committee on Transportation**

**Governor's  
Recommendation to  
1987 Special Session**

Expenditure Enhancements Under the  
Highway Program (continued)

City Connecting Links	Increase from \$1,250 to \$2,000 per lane mile \$ increase: \$5 million	Increase from \$1,250 to \$1,750 per lane mile \$9.1 million
Special City and County Highway Fund (SCCHF)	\$519.3 million (from sales taxes)	\$143 million (from fuel taxes)

**Definitions of Specific Terms  
(Prepared by Legislative Research Department)**

**Sales Tax Transfer.** The current statutory rate for the October 1, 1989 transfer to the State Highway Fund is scheduled to be 71.4 percent of 9.19 percent. The 9.19 percent figure was based on what was considered to be that portion of the sales tax generated by sales of new and used motor vehicles.

**Substantial Maintenance.** Also known as contract maintenance; includes such work activities as the 1R resurfacing program, minor interstate resurfacing, KLINK 1R, minor bridge repair, bridge painting, culvert repair, emergency repair, and small safety projects. Funding levels for substantial maintenance are defined as:

**Current.** Existing expenditures in current year plus reasonable inflation. Over the long run would not maintain the current surface condition. Funding is such that bridge repair is very minimal and bridges could only be repainted on a 96-year cycle which is not the recommended 20-year cycle.

**Adequate.** Funding at a rate such that the current surface condition is maintained and slightly improved. Will not allow for a significant increase in bridge repair funds to allow more super structure and deck repair and would put bridge painting on a 20-year cycle.

**Appropriate.** Also known as enhanced. More funds for surfacing and bridge repair would be provided such that there would be noticeable improvement in surface and bridge condition.

**Major Modifications.** Similar to 3R work (resurfacing, restoration, rehabilitation), this work preserves and extends the service life and enhances the safety of the existing highway system.

**System Enhancements.** Additions and special projects to the state highway system which substantially improve safety, relieve congestion, and improve access. (During the 1987 Special Session, such projects generally were called "debottleneckers.")

**Elderly and Handicapped.** The term refers to proposals to provide state funding to assist in the financing of local transportation programs for elderly and handicapped persons. Federal funding is provided under Sections 16 and 18 of the federal Urban Mass Transportation Act of 1964. The proposed state assistance would supplement funds that are provided from federal and local sources of these programs. Greater coordination of programs and a reduction of duplicated services often are considered as objectives to be accomplished in tandem with state financial support.

**Special City and County Highway Fund (SCCHF).** 40.5 percent of net receipts from state motor fuels taxes are credited to the Special City and County Highway Fund. This money is distributed to counties

for road and highway purposes. Cities receive 43 percent of the funds on the basis of population. Counties receive 57 percent, as follows: \$5,000 for each county; the balance generally is distributed 50 percent on the basis of motor vehicle registration fees and 50 percent on the basis of average daily vehicle miles traveled in the county, excluding travel on the interstate highways. The amount received by county is allocated 50 percent to county and 50 percent to cities on basis of city population in Sedgwick and Shawnee counties; 10 percent to the county and 90 percent to cities in Wyandotte County; 90 percent to county and 10 percent to cities in Butler, Cowley, Crawford, Douglas, Leavenworth, Lyon, Montgomery, Reno, Riley, and Saline counties; and 100 percent to county in all other counties. Townships share in the amount retained by counties which have not adopted the county-unit road system.



## **APPENDIX C**

### **Agency Response**

On March 21, 1989, we sent a copy of the draft audit report to the Department of Transportation for review and comment. The Department's written response is included in this appendix.

STATE OF KANSAS



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KANSAS DEPARTMENT OF TRANSPORTATION

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Horace B. Edwards  
*Secretary of Transportation*

Mike Hayden  
*Governor of Kansas*

March 22, 1989

Mr. Meredith C. Williams  
Legislative Post Auditor  
Legislative Division of Post Audit  
301 Mills Building  
109 West 9th Street  
Topeka, Kansas 66612



REGARDING: Draft of Legislative Post Audit Review of  
Selected Projections and Cost Estimates  
for the 1989 Comprehensive Highway  
Program

Dear Mr. Williams:

We appreciate the opportunity to review the draft of your findings. We were pleased to note that your review of the agency's projected inflation figures and anticipated costs for the life of the highway program confirmed that our estimates were reasonable. We also appreciate the confirmation provided by your report that the design life of Kansas highways would exceed the anticipated bond term in H.B. 2014 as introduced.

We agree with your findings that the Department needs to establish a tracking system that provides the capability of comparing cost estimates with actual let prices. Therefore, the Department has included in its FY 1990 Budget Request the funds necessary to develop a Pre-Construction Management System which will include an

Mr. Meredith C. Williams  
Audit Review  
March 22, 1989

automated tracking system that will assist the Department in evaluating the accuracy of its cost estimates and its estimating procedures. Currently, the Department annually checks the total of the preceding year's cost estimates against the total of the year's actual let prices.

The audit notes that the inflation estimate used for the special session was higher than the current estimate because of concern with the ability of contractors to absorb the increased workload. Our concern was not with their ability to absorb the workload but rather that the increase in workload would result in additional costs; that is, demand driven inflation increase.

We, again thank you for the opportunity to review the draft of your findings and for the work performed by the Legislative Division of Post Audit. Staff of my Department will be pleased to provide any further information that may be needed.

Sincerely,



HORACE B. EDWARDS  
SECRETARY OF TRANSPORTATION