STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

A PERFORMANCE AUDIT
OF THE

ARIZONA DEPARTMENT OF TRANSPORTATION STAFFING RELATIONSHIPS AND STAFFING TRENDS

FEBRUARY 1983

A REPORT TO THE
ARIZONA STATE LEGISLATURE

REPORT 83-3

DOUGLAS R. NORTON, CPA
AUDITOR GENERAL

STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

February 28, 1983

Members of the Arizona Legislature
The Honorable Bruce Babbitt, Governor
Mr. William A. Ordway, Director
Arizona Department of Transportation

Transmitted herewith is a report of the Auditor General, A Performance Audit of the Arizona Department of Transportation, Staffing Relationships and Staffing Trends. This report is the sixth of a series of reports to be issued on the Arizona Department of Transportation and is in response to Senate Bill 1001 enacted by the Thirty-fifth Legislature, Second Special Session in 1981.

The blue pages present a summary of the report; a response from the Arizona Department of Transportation is found on the yellow pages preceding the appendices.

My staff and I will be pleased to discuss or clarify items in the report.

Respectfully submitted,

Douglas R. Norton

Douglas R. Norton
Auditor General

Staff: William Thomson
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Enclosure

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OFFICE OF THE AUDITOR GENERAL

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SUMMARY

The Office of the Auditor General has completed a performance audit of staffing relationships and staffing trends in the Arizona Department of Transportation (ADOT). This audit was conducted in response to Senate Bill 1001, enacted by the Thirty-fifth Legislature, Second Special Session requiring a performance audit of ADOT and is one of a series to be completed on the Department.

ADOT is one of the largest State agencies as measured by the 3,871 budgeted FTEs for fiscal year 1982-83. Over 2,900 of these budgeted FTEs are either directly or indirectly related to highway maintenance or construction.

Although ADOT has undertaken several projects in recent years to improve the efficiency of its work force, previous performance audits of ADOT indicated overstaffing in several parts of the agency. Because of time constraints and ADOT's size, we could not perform a detailed study to specifically identify all instances of overstaffing. Therefore, this audit was designed to determine if the Department's highway-related operations, as a whole, appear to be overstaffed. Our analysis included 2 parts: 1) a study of 5-year staffing trends within ADOT and 2) a comparison of ADOT's staffing levels and relationships to highway agencies in 12 other western states.

The results of the five-year trend analysis were inconclusive. The comparison to other states' highway agencies indicated that ADOT may have been overstaffed in the administrative and support functions in recent years; however, a projected increase in construction activity is now expected to increase work load for some of these areas. Therefore, any staffing cuts should be made only after further study of the impact of this increased work load on individual units within ADOT.

INTRODUCTION AND BACKGROUND

The Office of the Auditor General has conducted a performance audit of staffing relationships and trends within the Arizona Department of Transportation (ADOT) in response to Senate Bill 1001 enacted by the Thirty-fifth Legislature, Second Special Session in 1981. This report is one of a series to be completed on the Department of Transportation.

ADOT is one of the largest State agencies as measured by budgeted FTEs for fiscal year 1982-83. ADOT's fiscal year 1982-83 budget shows a total of 3,871 FTEs, of which approximately 2,923 are directly or indirectly related to the construction or maintenance of the State highway system (that is, highway-related employees*).

The need for a study of ADOT's overall staffing relationships and trends became apparent when several of our previous performance audits of ADOT indicated overstaffing in several parts of the agency. Because of time constraints and ADOT's size, however, we could not perform a detailed study which would identify all areas of overstaffing in the agency. For this reason, a study of staffing relationships and trends was undertaken to determine the potential for personnel reductions in ADOT's highway-related operations as a whole.

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* We defined highway-related employees as all personnel directly involved in highway-related functions plus a proportionate share of administrative personnel as explained more fully on page 5. ADOT recently consolidated its seven districts into four districts. This district reorganization involved personnel reductions and transfers. If the net effect of these changes is applied to the fiscal year 1982-83 budgeted FTEs indicated above, total personnel would be reduced to 3,826 and highway-related personnel to 2,877. The fiscal year 1982-83 budgeted FTE levels are shown only for comparison purposes, as they do not reflect actual numbers of personnel employed by ADOT at any point in time.

Objectives of Audit

Our audit consisted of 2 parts: 1) a study of staffing trends within ADOT over the past 5 years and 2) a comparison of ADOT's staffing levels to the staffing levels of highway agencies in 12 other western states.

The three major objectives of the internal trend analysis were to determine if there have been any meaningful upward or downward trends over the past five years in 1) the ratio of staff (also referred to as administrative/support) personnel to line (also referred to as field) personnel, 2) the number of ADOT employees per lane mile constructed, or 3) the number of maintenance personnel per maintenance lane mile. This analysis did not reveal a notable upward or downward trend over the past five years for any of these three ratios. Trend analysis over a longer period of time (such as, 10 years) was not feasible because data was not readily available in the detail needed to do a proper study.

The three major objectives of the second part of our audit were to determine how ADOT compared to the highway agencies in other states with respect to 1) staff to line ratios, 2) number of administrative/support employees per maintenance lane mile, and 3) number of administrative/support employees per construction dollar expended. A survey of 12 other western states provided the data for this comparison. Our analysis of this survey data is the subject of the remainder of this report.

The Auditor General and staff express appreciation to the director of the Department of Transportation and his employees for their cooperation and assistance during the course of our audit.

FINDING

THE DEPARTMENT MAY HAVE BEEN OVERSTAFFED IN THE ADMINISTRATIVE AND SUPPORT AREAS IN RECENT YEARS; HOWEVER, A PROJECTED EXPANSION OF CONSTRUCTION ACTIVITY IS EXPECTED TO INCREASE WORK LOAD FOR SOME OF THESE AREAS.

The Arizona Department of Transportation (ADOT) appears to have a high level of administrative/support personnel when compared to other states. Specifically, ADOT has a high ratio of staff (administrative/support) employees to line (field) employees in comparison with the highway agencies of 12 other western states. Additionally, ADOT has a high number of administrative/support personnel per lane mile of State-maintained roadway and per construction dollar expended when compared to these 12 states. Taken together, these indicators suggest that ADOT may have been overstaffed in the administrative/support areas in recent years. However, the level of highway construction is expected to increase sharply in 1983, affecting the work load of many support units within ADOT. Therefore, any staffing cuts should be made only after further study of the impact of this increased work load on individual units.

ADOT has undertaken several projects in recent years to improve the efficiency of its work force. For the past 10 years ADOT has operated a highway maintenance management system called "PeCos"* which is used to measure and control the productivity of field maintenance crews. In 1981, ADOT created a "Venture Team" which has conducted management studies throughout the agency. In 1982, ADOT awarded a contract for development of an "Equipment Management System" with the goal of improving the productivity of ADOT's equipment repair shops. Also in 1982, ADOT awarded a contract for development of a "Construction Engineering Manpower Management System"; the purpose of this System is to plan and monitor the manpower levels for field construction activities. These studies and systems should help control overstaffing. However, our analysis of overall staffing levels indicates a need for further study of the staffing levels in the administrative/support units of ADOT.

* "PeCos" is an acronym for Performance Controlled System and is used to refer to the Arizona Highway Maintenance Management System.

Survey Methodology

We selected the highway agencies from 12 other western states for the purpose of comparing their staffing levels to ADOT's. The states selected were those western states having approximately 50 to 200 percent of Arizona's state-administered road miles and which were most similar to Arizona in at least two of the following four categories: 1) 1979 capital outlay, 2) 1979 maintenance expenditures, 3) 1979 vehicle miles traveled, and 4) 1981 estimated total vehicular registrations. The data for this preliminary analysis was obtained from Federal Highway Administration statistical publications.*

The highway agencies in these 12 states were sent questionnaires designed to obtain data on organization structure, number of employees per functional area and per organizational unit, lane miles constructed over the past five years and expenditures for road maintenance and construction.** This data was supplemented by telephone follow-ups with responsible officials in these agencies to ensure accuracy and comparability to Arizona.***

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* The four western states not selected were California, Texas, North Dakota and South Dakota. California and Texas were not selected because their highway systems are much larger than Arizona's. North and South Dakota were not selected because they fell too far below Arizona on three of the four criteria above.

** In an effort to be consistent, all states were provided with the definitions shown in Appendix I.

*** Appendix II presents the four most important criteria used to determine if surveyed agencies perform their highway functions in a manner similar to ADOT's. Appendix II also indicates any exceptions to these criteria.

Based on the data gathered in this manner, we determined the total number of highway-related personnel* in each agency and segregated this figure into field personnel and administrative/support personnel. Field personnel are defined as employees working at construction sites (for example, field inspectors and testers) or physically involved in the maintenance of roads. In order to be conservative in our comparison of ADOT to other states' agencies, we classified personnel in other states' agencies as administrative/support if there was any question as to how they should be classified.

The administrative/support category is made up of two subcategories, support and administration. Support personnel are defined as all nonfield employees who serve only highway-related functions (for example, road designers, nonfield maintenance, nonfield engineering supervisors and right-of-way personnel). Administrative personnel are defined as clerical, data processing, financial, and executive employees who serve the entire agency (for example, they are involved in both the highway-related and nonhighway-related functions of their agencies). These administrative personnel were allocated between the highway-related and nonhighway-related areas.**

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* We defined "highway-related personnel" as those personnel involved directly or indirectly in the planning, construction or maintenance of highways. This excluded, for example, motor vehicle registration personnel, highway law enforcement personnel and aviation-related employees.

** The following hypothetical example illustrates how this allocation was made. An agency with 2,500 total personnel has 1,000 field, 500 support and 200 administrative employees, plus a motor vehicle division (nonhighway-related) with 800 employees. To determine how many of the 200 administrative employees to allocate to the highway-related function, the following calculation is performed:

$$\frac{\text{1,000 field + 500 support}}{\text{2,500 total - 200 administrative}} \times \text{200 administrative}$$

This equals: $\frac{1,500}{2,300} \times 200 = 130$ highway-related administrative employees

Ratio of Administrative/Support Personnel to Field Personnel

ADOT has a high portion of its highway-related personnel in administrative/support positions when compared to the average for 12 other western states. According to our analysis, Arizona has 1.06 administrative/support employees per field employee, whereas the other 12 states average only 0.88. Table 1 shows the ratio for each of the 13 states, plus a breakdown of the highway-related employees into several subcategories.

TABLE 1

RATIOS OF HIGHWAY-RELATED ADMINISTRATIVE/SUPPORT TO FIELD PERSONNEL
FOR ARIZONA AND 12 SURVEYED STATES

	Administrative/Support Personnel			Field Personnel				
	Hwy-related Support	Allocated Admin-istration	Total	Construc-tion	Mainten-ance	Total	Total Hwy-related Personnel	Ratio: Admin/Support to Field
Idaho	647	127	774	155	395	550	1,324	1.41
Nevada	577	141	718	175	391	566	1,284	1.27
Utah	724	132	856	279	477	756	1,612	1.13
ARIZONA	1,192	282	1,474	622	771	1,393	2,867	1.06*
Washington	1,510	240	1,750	800	881	1,681	3,431	1.04
Wyoming	587	140	727	351	472	823	1,550	.88
Kansas	1,223	211	1,434	475	1,375	1,850	3,284	.78
Oregon	1,167	151	1,318	520	1,215	1,735	3,053	.76
New Mexico	853	259	1,112	410	1,144	1,554	2,666	.72
Nebraska	679	218	897	361	914	1,275	2,172	.70
Montana	583	97	680	372	610	982	1,662	.69
Oklahoma	882	319	1,201	472	1,455	1,927	3,128	.62
Colorado	887	162	1,049	397	1,393	1,770	2,819	.59

Average of 12 surveyed states (excluding Arizona)	.88
Average of 7 surveyed states with 2,000 or more total hwy-related personnel (excluding Arizona)	.74

Note: States are ranked according to their ratios of administrative/support personnel to field personnel.
* Arizona's ratio of 1.06 is based on staffing data as of December 1981. If January 1983 data is used, Arizona's ratio increases to 1.09.

As shown in Table 1, ADOT has the fourth highest ratio of administrative/support to field personnel. The three agencies with higher ratios than ADOT represent three of the four smallest agencies analyzed in that all have approximately one-half the number of highway-related employees that ADOT has.* The small size of these agencies may account for the higher ratios of administrative/support to field employees because of the need to maintain a minimum base of administrative/support personnel regardless of how small an agency is. The ratio of administrative/support to field employees by itself is not necessarily indicative of overstaffing in the administrative/support areas. Therefore, to extend our analysis we compared the number of highway-related personnel--and particularly administrative/support personnel--to each agency's work load. We used two broad indicators of work load: 1) the number of lane miles maintained and 2) capital outlay for roads and bridges.

Ideally, before comparing the number of personnel to these work load indicators, the personnel should be divided into two groups: 1) those related to maintenance and 2) those related to construction. However, the nature of the data we obtained from other states did not allow us to clearly allocate highway-related personnel between the maintenance and construction areas. Therefore, we compared total administrative/support personnel (highway-related) to each indicator. Because of this, both ratios must be considered together in order to be meaningful. For example, if a state is high on one ratio but low on the other, a conclusion cannot be drawn. However, if a state is above average on both ratios, this suggests overstaffing in either, or possibly both, the maintenance or construction area.

* For the 7 surveyed agencies with 2,000 or more highway-related employees (excluding ADOT), the average administrative/support to field ratio is 0.74--substantially lower than ADOT's ratio of 1.06.

Administrative/Support Personnel
per Lane Mile Maintained

Of the 13 states in our analysis, Arizona has the second highest number of administrative/support employees per lane mile maintained. ADOT has 0.089 administrative/support personnel per maintenance lane mile, compared with an average of 0.057 for the other 12 states. Table 2 shows the results for each of the 13 states.

TABLE 2

RATIOS OF HIGHWAY-RELATED PERSONNEL
PER LANE MILE FOR ARIZONA AND 12 SURVEYED STATES

	Maintenance Lane Miles	Total Hwy-related Personnel per Lane Mile	Hwy-related Admin/support per Lane Mile
Washington	17,000	.202	.103
ARIZONA	16,517	.174	.089*
Oregon	17,997	.170	.073
Idaho	11,400	.116	.068
Utah	13,000	.124	.066
Kansas	22,290	.147	.064
Nevada	14,183	.091	.051
Colorado	22,093	.128	.047
Wyoming	15,825	.098	.046
Oklahoma	25,920	.121	.046
New Mexico	27,274	.098	.041
Nebraska	21,858	.099	.041
Montana	19,084	.087	.036
Averages for 12 surveyed states (excluding Arizona)		.123	.057

Note: States are ranked according to their numbers of administrative/support personnel per lane mile.

* Arizona's ratio of .089 is based on staffing data as of December 1981. If January 1983 data is used, Arizona's ratio changes to .084.

As shown in Table 2, Washington is the only state higher than Arizona. Washington maintains approximately the same number of lane miles as ADOT. However, Washington has a much higher volume of construction activity than any of the other states (70 percent more capital outlay than ADOT in 1981). Highway construction requires a vast array of support personnel (for example, planners, right-of-way agents, designers, contract administrators) not needed for maintenance functions. This would at least partially explain why Washington ranks first in the number of administrative/support personnel per lane mile maintained. When the number of administrative/support personnel is compared to construction volume--as is done in the next section--Washington falls well below Arizona.

Administrative/Support Personnel Per Construction Dollar

Arizona ranks third among the 13 states in the number of administrative/support employees per $1,000 of capital outlay. Table 3 shows the ratio for each of the 13 states.

TABLE 3

RATIOS OF HIGHWAY-RELATED PERSONNEL PER $1,000
OF CAPITAL OUTLAY FOR ARIZONA AND 12 SURVEYED STATES

	1981 Capital Outlay for Roads and Bridges ($1,000s)*	Total Hwy-related Personnel per $1,000 of Capital Outlay	Hwy-related Adm/Support Personnel per $1,000 of Capital Outlay
Idaho	53,951	.0245	.0143
Nebraska	107,518	.0202	.0083
ARIZONA	181,640	.0158	.0081**
Colorado	131,404	.0215	.0080
Kansas	178,371	.0184	.0080
Nevada	93,647	.0137	.0077
Oregon	177,770	.0172	.0074
New Mexico	160,021	.0167	.0069
Utah	135,349	.0119	.0063
Wyoming	124,812	.0124	.0058
Washington	309,255	.0111	.0057
Oklahoma	212,833	.0147	.0056
Montana	125,797	.0132	.0054
Averages for 12 surveyed states (excluding Arizona)		.0163	.0075

Note: States are ranked according to their numbers of administrative/support personnel per $1,000 of capital outlay.

* Source: "Highway Statistics 1981" published by the U.S. Department of Transportation, Federal Highway Administration.

** Arizona's ratio of .0081 is based on staffing data as of December 1981. Although more recent staffing data is available, capital outlay figures for 1982 are not yet available, and a comparison of January 1983 staffing data with 1981 capital outlay would not be meaningful.

As shown in Table 3, ADOT has 0.0081 administrative/support personnel per $1,000 of capital outlay. This is slightly higher than the average of 0.0075 for the other 12 states.*

Limitations and Uses of the Analysis

Any survey of this nature and scope has inherent limitations. For example, we had to rely on the accuracy of the data provided by our contacts in each state. In addition, staffing levels and measures of work load used in this analysis represent a point in time which may not fully represent an agency's current condition. Furthermore, we cannot recommend exactly where ADOT could eliminate positions simply on the basis of this survey.

Despite these qualifications, the analysis cannot be disregarded. While none of the three ratios analyzed should be used alone as an indicator of overstaffing in the administrative/support areas, taken together the three ratios suggest that ADOT has been overstaffed in those areas. Table 4 summarizes our analysis by presenting and ranking all three ratios for each of the 13 states.

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* Idaho's unusually high ratio disproportionately skews the average upward. If Idaho's ratio is not included, the average for the other 11 states drops to .0068.

TABLE 4

A SUMMARY OF 3 RATIOS RELATING TO
ADMINISTRATIVE/SUPPORT STAFFING FOR ARIZONA
AND 12 SURVEYED STATES

	(1) Hwy-related Admin/support to Field		(2) Hwy-related Admin/support per Lane Mile		(3) Hwy-related Adm/support per $1,000 of Capital Outlay	
	Rank	Ratio	Rank	Ratio	Rank	Ratio
ARIZONA	4	1.06	2	.089	3	.0081
Colorado	13	.59	8	.047	4	.0080
Idaho	1	1.41	4	.068	1	.0143
Kansas	7	.78	6	.064	5	.0080
Montana	11	.69	13	.036	13	.0054
Nebraska	10	.70	12	.041	2	.0083
Nevada	2	1.27	7	.051	6	.0077
New Mexico	9	.72	11	.041	8	.0069
Oklahoma	12	.62	10	.046	12	.0056
Oregon	8	.76	3	.073	7	.0074
Utah	3	1.13	5	.066	9	.0063
Washington	5	1.04	1	.103	11	.0057
Wyoming	6	.88	9	.046	10	.0058
Averages for 12 surveyed states (excluding Arizona)		.88		.057		.0075

As mentioned earlier, the second and third ratios in Table 4 must be considered together in order to be meaningful. A high ranking in only one of these two ratios would not be meaningful because the comparisons use total administrative and support staff. However, if an agency is above average in both ratios this suggests that the agency may be overstaffed in administrative/support personnel in either, or possibly both, the maintenance area or construction area.

Table 4 shows that Arizona ranks high in all three ratios (fourth, second and third, respectively). In our opinion, this indicates ADOT has been overstaffed in the administrative/support areas. However, any staffing cuts should be made only after further study of individual units within ADOT and consideration of anticipated increases in work load.

Construction Activity Expected to Increase

ADOT projects a sharp increase in highway construction activity during 1983. This affects the staffing needs of many support units within ADOT long before actual construction begins.

ADOT expects the volume of highway construction to increase dramatically in 1983. We verified this by comparing the total value of contracts awarded in 1982 with the projected bid schedule for a six-month period in 1983. Over the entire year 1982, ADOT awarded construction contracts totaling $91 million. In comparison, for the six-month period February through July 1983, ADOT estimates it will award $195 million in construction contracts. In other words, in a six-month period ADOT expects to begin twice as much construction as was begun during all of 1982.

According to ADOT officials, this projected increase in construction has already increased the work loads of some support units within ADOT. These units are performing work which must be done months before actual construction begins--such as, determining exact location and alignment of the roadway, investigating the soil of the proposed roadbed and designing the highway and related structures.

CONCLUSION

Our analysis suggests that ADOT has been overstaffed in the administrative and support functions when compared to the highway agencies of 12 other western states. However, a projected increase in construction activity in Arizona for 1983 is expected to affect the work loads of some support units within ADOT.

RECOMMENDATION

ADOT management should continue to review the administrative and support functions within ADOT to determine where reductions in staff might be appropriate. In addition, future decreases in construction activity should be monitored closely so that corresponding reductions may be made in administrative/support units in a timely manner. Furthermore, because ADOT may have been overstaffed, the projected rise in construction activity should not be viewed as automatic justification for corresponding increases in support staff.

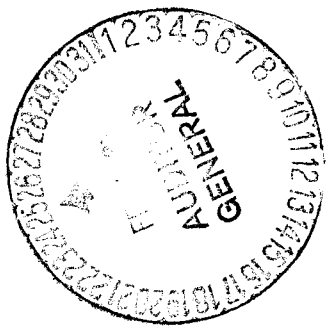
ARIZONA DEPARTMENT OF TRANSPORTATION

206 South Seventeenth Avenue Phoenix, Arizona 85007

BRUCE BABBITT
Governor

WILLIAM A. ORDWAY
Director

February 24, 1983



Mr. Douglas Norton
Auditor General
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Dear Doug:

Thank you for the opportunity to review the revised preliminary report draft of the Performance Audit of the Arizona Department of Transportation Staffing Relationships and Staffing Trends. Our comment concerning the finding and recommendation is attached.

Again, thanks for this opportunity to comment and for the cooperation extended by you and your staff.

Cordially,

Bill Ordway

W. A. Ordway
Director

WAO:dl

Enclosure

February 23, 1983

ADOT'S COMMENTS ON THE AUDITOR GENERAL'S PERFORMANCE AUDIT OF THE ARIZONA DEPARTMENT OF TRANSPORTATION STAFFING RELATIONSHIPS AND STAFFING TRENDS

The attempt by the Auditor General's office to determine the relationship of ADOT's staffing levels to those of other western states was an ambitious undertaking. Studies of this type, expanded to determine the proper ratio of support personnel to field personnel, have been attempted several times in past years by the Western Association of State Highway and Transportation officials.

These investigations have all proved to be inconclusive because of the many variables involved. The size of the highway construction program, the use of consultants, miles of highway to be maintained and the number of projects under development; these and perhaps twenty other variables effect the staffing levels and ratio of support personnel to field personnel for each State Department of Transportation.

The final conclusion drawn by the WASHTO committees was that because of these variables it was appropriate for each state to determine their own staffing levels. Intimate knowledge of individual programs are necessary to make the decisions regarding staffing and comparisons to staffing in other states, without exhaustive research into all programs, would not be meaningful.

The final recommendation made by the Auditor General that "ADOT management should continue to review the administrative and support functions within ADOT to determine where reductions in staff might be appropriate" generally supports the findings of the previous studies.

ADOT concurs in the finding and recommendation of the Auditor General. ADOT will continue to review not only the administrative and support functions but also the construction and maintenance functions to determine proper staffing levels.

The following definitions were provided to all surveyed states.

Road maintenance - Crack and pothole filling and limited flushing, sealing and coating (generally less than two inches thick and less than one mile in length) to maintain the integrity and ridability of the road surface and the usability of incidental structures and items.

Road construction - Construction is broken into the following three categories:

a. New construction - All phases of construction of a new road along a new alignment, and its related structures and incidental items.

b. Major reconstruction - Grading, draining, building of structures and placing base and surface materials, traffic signals, signs and other incidental items along an existing alignment.

c. Restoration - Rejuvenating the existing pavement, placing asphaltic concrete overlays, and applying seal coat to existing surfaces (generally more than one mile in length).

Field personnel - Employees working at construction sites (including field engineers, testers and inspectors) or physically involved in the maintenance of roads.

Administrative/support personnel - Includes clerical, nonfield management, nonfield testing, planning, design and development personnel.

Lane miles - Length of road, in miles, multiplied by the number of lanes of roadway (excluding breakdown lanes, access roads, etc.).

APPENDIX II

CRITERIA USED TO DETERMINE SIMILARITY BETWEEN ADOT AND HIGHWAY AGENCIES IN OTHER STATES

Except as noted below, all surveyed states met the following four criteria:

a. At least 95 percent of all maintenance work is performed by state forces,

b. All construction work is contracted out,

c. At least 90 percent of all design work is done in-house.

d. At least 90 percent of all materials testing is done in-house.

The following exceptions to the above criteria were noted.

Idaho - Approximately 10 percent of maintenance work done by state forces is restoration-type construction.

Kansas - Generally, approximately 35 percent of design work is contracted out; for over one year, however, all design work has been done in-house.

Nebraska - Approximately 20 percent of design work and approximately 7 percent of maintenance is contracted out.

Nevada - Most sand and chip seal projects are done by state forces.

New Mexico - 385 maintenance employees do construction-type work such as overlays. Approximately 40 percent of design work and 9 percent of maintenance is contracted out.

Oklahoma - Maintenance forces do construction-type overlays, but some routine maintenance is contracted out.

Washington - Approximately 14 percent of maintenance work is contracted out.