PERFORMANCE AUDIT

ARIZONA DEPARTMENT OF TRANSPORTATION

HIGHWAY DESIGN PROCESS

CONTRACTOR CLAIMS PROCESS

Report to the Arizona Legislature
By the Auditor General
June 1990
90-3

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June 13, 1990

Members of the Arizona Legislature
The Honorable Rose Mofford, Governor
Mr. Charles L. Miller, Director
Arizona Department of Transportation

Transmitted herewith is a report of the Auditor General, A Performance Audit of the Arizona Department of Transportation (ADOT), Highway Design Process and Contractor Claims Process. This report is in response to the requirements of Chapter 68 of the 1988 Session Laws.

We found few problems with the overall quality of ADOT's highway designs. However, ADOT needs to strengthen its design review process and needs a more effective system for managing design costs.

In reviewing the contractor claims process, we found claims are not a substantial expenditure in relation to total construction costs. However, ADOT needs to maintain more complete and accurate information on claims. ADOT also needs to improve the timeliness of its claims handling.

The Department generally agrees with the findings of this report and has already taken action to implement many of our recommendations. A response from the Department is found on the yellow pages of this report.

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

Sincerely,

Douglas R. Norton
Auditor General

DRN:lmn

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SUMMARY

The Office of the Auditor General has conducted a performance audit of the Arizona Department of Transportation's (ADOT) highway design process and contractor claims process in response to the requirements of Chapter 68 of the 1988 Session Laws. This is the first in a series of reports addressing the requirements of Chapter 68.

HIGHWAY DESIGN PROCESS

ADOT's Highway Development Group is responsible for advancing projects through the design process, a vital part of all projects involving the construction of new highways or the reconstruction of existing facilities. Design often involves studying highway location and environmental concerns, developing general plans, acquiring land, and preparing engineering drawings and construction plan details. Our review found few problems, overall, with the quality of designs developed through the ADOT process.

ADOT Needs To Strengthen the Design Review Process (see pages 5 through 9)

ADOT has not routinely performed timely design reviews. Design review provides needed assurance a road can be constructed as intended and that it will function safely and efficiently when built. Design review is especially vital since much of ADOT's design work has been contracted out to engineering consultants. Reviews should be performed when designs are 30, 60, and 90 percent complete. During our audit, we reviewed all 53 highway design contracts for fiscal years 1987 through 1989. Of the 29 projects 90 percent or more completed, 10 had not been reviewed at one or more of the 30, 60, and 90 percent completion stages.

Even when reviews were completed, review comments were not always submitted on time. ADOT staff did not provide timely review comments for

half of the projects reviewed. Late comments may cause delays and impact project costs. Several projects we examined required change orders due to untimely review.

To correct this problem, ADOT is developing uniform procedures and guidelines to address key areas of responsibility and specify expectations at each design review phase. To encourage broader participation in the review process, ADOT should also consider adopting a more realistic scheduling system.

ADOT Needs a More Effective System for Managing Design Costs (pages 11 through 17)

Financial management of urban highway design projects needs to be strengthened, as design costs on numerous projects have significantly exceeded original budgets.

Twelve projects, reviewed in detail, were more than double the original budget. In three of these, design cost overruns occurred because original budgets were not meaningful, and represented only the first phase of multi-phase work. On the remaining 9 projects, ADOT placed greater emphasis on addressing citizen and municipal concerns and maintaining schedules than on strict adherence to original budgets. Upon passage of the half-cent sales tax, ADOT committed itself to a challenging schedule of construction bid dates. Concurrently, original project budgets (established by ADOT immediately after passage of the sales tax) did not anticipate the future changes requested by citizen groups and municipalities -- changes that would ultimately cause delays and increase project costs.

Compounding this problem, ADOT has not kept adequate financial information available on individual project budgets and expenditures. Corridor engineers, for example, are unable to monitor project budgets through ADOT's Transportation Accounting System (TRACS). At the time of our audit, the system lacked a "roll-up" capability to accumulate and report budget and expenditure data for each section of a highway and for the highway as a whole. The Department is presently addressing some of these TRACS deficiencies.

Cost Reduction Through More Competitive Consultant Procurement (see pages 19 through 24)

While ADOT generally adheres to sound procurement practices for consultants, and its Engineering Consultant Services Section consistently follows prescribed procedures (well documented in contract files), the Department might be able to reduce costs by utilizing a more competitive approach in the selection of consultants for its Highway Development Group.

Cost competition for the selection of an engineering consultant is limited. ADOT negotiates hourly rates and fees after selecting a consultant. This approach, although preferred by the engineering consultant community, does not ensure that ADOT pays appropriate and competitive rates.

In addition, ADOT should consider disclosing its policy of spreading work among many engineering firms. This policy is not clearly disclosed in its bid notices and requests for proposals, and may be unfair to some firms. ADOT may also want to consider adopting procurement rules or policies for engineering consultant services. Because ADOT is exempt from the procurement code, and no other statutory provisions or ADOT rules apply to engineering services, ADOT is under no obligation to continue sound procurement practices.

CONTRACTOR CLAIMS PROCESS

Contractor claims for more money are common in highway construction. Contractors may file claims based on delays, additional work, differing site conditions, and for numerous other reasons. When a disagreement between ADOT and a contractor arises, ADOT and the contractor can frequently reach an agreement and resolve the matter. However, if the contractor and ADOT cannot agree on a solution, the claims process allows the contractor to pursue the dispute.

ADOT established a Claims Branch in 1982. Currently, the Claims Branch is responsible for maintaining a claims database, providing training on claim avoidance and claim handling to ADOT field personnel, coordinating necessary actions on appealed claims, and assisting district staff upon request.

ADOT Lacks a Complete and Accurate Picture of the Statewide Claims Situation **(see pages 35 through 43)**

ADOT currently lacks accurate and complete information on the number, status and outcome of claims departmentwide. Although the Claims Branch should centrally gather claims information, claim files maintained by the Claims Branch are often incomplete. Our review of Claims Branch files revealed that some files lacked basic documents necessary to determine the status of the corresponding claim. For example, some files lacked claim report forms, project or district denial letters, letters of settlement or offers to settle, and general correspondence between ADOT and the contractor regarding the claim. Further, we identified problems with file organization and maintenance. Although the Claims Branch sees its role as a resource for assistance or advice on handling claims, the lack of complete information on claims and the poor organization of claim files limit the branch's ability to provide these services to ADOT management and district staff.

In addition to incomplete files, the computerized, departmentwide report on claims is flawed. The branch maintains a database to track the status of claims and report this information to management and district staff. However, of the 25 active files we reviewed, only 10 cases had a database status which matched the actual status of the claim. In addition, the information reported by the Claims Branch regarding costs associated with claims is misleading. For example, some costs (such as $241,000 in consultant costs on one claim) are not captured, tracked, or reported. Finally, information reported by the Claims Branch lacks detail and provides no evidence of in-depth analysis of claims.

During the course of our audit, ADOT recognized many of the problems identified above and began taking corrective action. The branch has recently developed goals and objectives which clarify its role in the

claims process and should improve branch operations. However, other improvements are needed. For example, the branch needs to revise its method of reporting claim information and should conduct more in-depth analysis of claim information.

ADOT Needs to Implement Changes to Ensure Timely Resolution of Claims (see pages 45 through 50)

ADOT needs to implement changes to promote the timely resolution of claims submitted by contractors. We attempted to determine ADOT's overall timeliness in claim resolution, but ADOT does not maintain the basic data needed to do so. Although data is not available on how long it takes ADOT to accept or reject a claim, we were able to track the time it took for ADOT to process a contractor's appeal of a rejected claim. We found that contractors wait almost five additional months to receive a determination on an appeal to second level review.

ADOT's lack of procedures may have caused these delays. ADOT has developed specifications which define both ADOT's and the contractor's role in claim resolution. However, the specifications are vague in several areas which may contribute to delays in claim resolution. For example, although contractors must follow specific time guidelines in filing claims, there are few time requirements for ADOT actions. The specifications also fail to provide clear guidance for contractors in filing a claim, and do not require ADOT to provide written decisions.

In addition to vague specifications, ADOT lacks internal procedures for monitoring the progress of claims. However, the Claims Branch's new goals and objectives indicate that it plans to develop a "tickler" database to signal when ADOT actions are required. The Claims Branch also plans to visit districts to update information on claim status and provide training on claims resolution.

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HIGHWAY DESIGN PROCESS

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INTRODUCTION AND BACKGROUND

The Office of the Auditor General has conducted a performance audit of the Arizona Department of Transportation's (ADOT) highway design process in response to the requirements of Chapter 68 of the 1988 Session Laws. This is the first in a series of reports addressing the requirements of Chapter 68.

The design process is a vital part of all projects involving construction of new highways and related facilities as well as reconstruction and improvement of existing roads. Specific design activities necessary prior to construction will vary depending upon the nature of the project. However, design often will require studies of highway location and environmental concerns, development of the project's general plan, acquisition of land, and the preparation of construction plan details.

Highway Development Group Oversees Design Process

The ADOT Highway Division's Highway Development Group is responsible for advancing projects through all phases of the design process. Headed by a Deputy State Engineer, the Group is composed of the Design, Location, Right-of-Way, Structures, and Urban Highway Sections. Each Section's responsibilities are as follows:

- **Design Section** is responsible for the design and development of roadway construction plans for all highways not on the urban highway system, and uses engineering design consultants to provide design services on individual projects. A project monitor is assigned to administer the design consultant contracts.

  All projects prepared by ADOT or by engineering consultants under contract to ADOT, are routed to contracts and specifications services in the Design Section for final project approval, and bid advertisement.

- **Location Section** is composed of two units -- location services and photogrammetry and mapping services. Location services is responsible for conducting highway location and design studies, and for preparing project assessment documents. Photogrammetry and

mapping services provide support (field surveys, aerial photographs, and a variety of engineering maps) to various divisions within the Department.

- **Right-of-Way Section** is responsible for all activities involved in the acquisition of right-of-way for highways. The section provides services for plan and transfer documents preparation, and appraisal, relocation, acquisition, and condemnation.

- **Structures Section** is responsible for the design and preparation of plans for all bridge-related projects, drainage design services on all highway and bridge projects, and bridge inspection services.

- **Urban Highway Section** is responsible for developing all highway projects on the Urban Highway system, and assumes all responsibility for the Urban Highway process, with the exception of right-of-way acquisition and final processing of bid documents used in bid advertising.

Additionally, traffic design services, environmental planning services, the materials section, preconstruction engineering management, and the four ADOT districts all provide significant support to the Highway Development Group.

Statewide and Urban Highway Design

Currently, ADOT design efforts focus primarily on the Department's statewide program and on the development of regional urban freeway systems. Although ADOT staff are performing much of the design work on statewide projects, most regional urban freeway design has been contracted out to engineering consultants. Design-related contract costs for fiscal year 1989-90 are estimated to be $69 million.(1)

As responsibilities for the Urban Highway Program increased drastically, impacting ADOT's statewide construction program and the Group's overall resources, the Department addressed the increased workload by employing outside management and design consultants to perform activities previously handled by ADOT's own staff.

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(1) Contracts costs fiscal year 1989-90 include obligations from prior years.

According to the Department, passage of the Maricopa half-cent sales tax was instrumental in the dramatic expansion of design-related activities. Presently, the Urban Highway Program receives the majority of ADOT's funding and activity. In fiscal year 1988-89, ADOT expended $234.7 million on the program -- approximately 11.5 percent (or $27.1 million) of this amount was paid for design-related services.

Staff and Budget

For fiscal year 1989-90, the Highway Development Group employs 500 full-time employees (FTEs), maintains an administrative budget of $20 million, and is responsible for a statewide construction program of approximately $460 million.

Audit Scope

Our audit was conducted to evaluate the effectiveness of ADOT's highway design process. An overall review indicated ADOT had very few problems with design quality. Following a preliminary review of the Highway Development Group's activities, our efforts focused on the Department's design review process, design costs, staffing, and procurement of engineering consulting services. Our findings address three specific areas:

- the effectiveness of ADOT's quality control process for highway design,
- the methods that could be utilized to strengthen financial management of urban highway design, and
- the adequacy of ADOT's procedures for procurement of engineering consultant services.

This report also contains other pertinent information on design staffing (see page 25).

Our audit was conducted in accordance with generally accepted governmental auditing standards.

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

FINDING I

DESIGN REVIEW PROCESS NEEDS TO BE STRENGTHENED

ADOT's design review process can be improved. We found costly delays and contract change orders can occur when reviews are not routinely performed and comments are not submitted on a timely basis. ADOT has adopted uniform written procedures to improve its design review, and should consider additional measures to promote a more effective design review process.

Importance of design review - Design review, a common procedure in the transportation industry, provides the needed assurance a road can be constructed as intended, and that it will function safely and efficiently when built. All states contacted during our audit review designs during their development to ensure quality. Design review can also provide additional benefits by identifying construction time and cost savings.

Timely design review is especially important as ADOT relies heavily on outside design consultants, many of whom have not worked with ADOT before and are therefore unfamiliar with its technical standards and other requirements. Review of consultant work is also necessary to ensure sections designed by different firms are compatible in design and safety features.

ADOT assigns each project a monitor who distributes design plans to various ADOT sections, district offices, and other outside agencies for review comments, and is responsible for design review.

Design Reviews Not Done on a Routine Basis

Although needed to ensure quality, the Department is not routinely performing timely and consistent design reviews. According to ADOT,

reviews should be conducted at three distinct stages: when designs are 30, 60, and 90 percent complete. Our analysis of project files found comments are not always submitted at these 30, 60, and 90 percent stages of completion and, even if submitted, comments are often late. Some projects may have experienced delays and cost increases because design review comments were not submitted on time.

We reviewed all 53 highway design contracts, in various stages of completion, for fiscal years 1987-89 to determine if ADOT procedures were being followed. Because 12 of the 53 highway design projects had not completed 30 percent reviews, we concentrated only on the remaining 41.

Untimely reviews - Our examination of highway design files found that design review has not always been consistent and timely. For example, 10 of the 29 projects 90 percent or more completed had not been reviewed at one or more of the 30, 60, and 90 percent stages -- a result, at least partly caused by inconsistent review practices by project monitors. Some monitors ask ADOT sections to review plans at all three interim design stages, while others requested reviews only once. District involvement has also been inconsistent. In some cases, districts have reviewed plans at the 30 or 60 percent completion stage of design, in other cases, district review has not occurred until the 90 percent completion stage.

Even when reviews were conducted, comments were frequently submitted late. In fact, ADOT district staff or other ADOT sections did not provide timely review comments for 21 of 41 projects past the 30 percent review stage. Reviewers generally have 14 days to submit comments. Comments are considered late, if a reviewer fails to respond within the specified time frame.

Cost increases - Late design review comments can delay projects and may result in costly change orders. Several management consultant project monitors have complained about ADOT's pervasive late review problem. One consultant in particular has raised concerns about this problem in every

report he has written to ADOT in the past 11 months. Another consultant informed us late review comments by certain Highway Development Group sections are also a continuing problem.

The following are four specific examples of project delays and change orders caused by late design review:

- Late reviews on the Indian School Road Traffic Interchange Project have resulted in design development problems and an $11,600 change order. Reviews at the 60 and 90 percent stages of completion were two and seven weeks late, respectively. Of the six ADOT sections which were supposed to review the design plans, only one submitted comments on time, the others were 4 to 52 days late. Other important ADOT engineering sections never submitted review comments at all. Late comments also resulted in a change order to address landscaping, detour construction details, and traffic sign structure requests.

- Late reviews resulted in extra ADOT design and project delays on the 40th Street traffic interchange project. An ADOT review section submitted 60 percent review comments to design consultants after project designs were complete. These comments suggested significant changes in the design, forcing construction delay. Correspondence from an ADOT administrator indicated that had these comments been received at or close to the appropriate time, changes could have been made routinely, with minimal additional cost. In the end, ADOT staff had to redesign plans the consultant had been paid to develop.

- According to the East Papago Project monitor, late review comments have resulted in change orders on all the East Papago highway sections. For example, justification for change orders on the second section of the East Papago indicated that, in some cases, necessary reviews were up to three months late. In fact, the change orders indicate late reviews also caused other elements of the design development process to go poorly.

- The need to re-analyze pavement design on an Outer Loop Highway Project resulted in a $50,174 change order. ADOT comments on the pavement design were late and, because the consultant had already completed the design, a change order was submitted authorizing payment approval for additional work caused by late comments.

Uniform Procedures and Written Guidelines are Necessary

At the time of our audit, ADOT design review had been inconsistent because the Department had not established and enforced formal, uniform procedures. Project monitors, for example, did not have standard procedures indicating who should review designs at each stage in the design development process. Consequently, some project monitors

distributed plans and other design documents for review at the 30, 60, and 90 percent completion stages, while others did not. District office involvement in, and responsibility for, design review had also not been clarified. On some projects, districts had not participated in design review until late in the development process.

ADOT has responded to this problem by preparing a comprehensive manual on the highway development process, which it plans to finalize and implement in the summer of 1990. According to the Deputy State Engineer for Highway Development, the manual, which has been under development since February 1989, will greatly improve the current process in two distinct ways. First, it provides a uniform review process for all highway design projects. Secondly, it clearly defines and establishes specific guidelines for each design review stage and outlines the specific, formalized responsibilities of project monitors at each stage.

To supplement the manual, ADOT has also developed a policy memorandum on district involvement in design review. The memorandum (which was implemented in April 1990) will require district involvement in each stage of the design process -- the development and review of pre-design documents (i.e., project assessments), the review of all design plans and documents, and participation in all design-related field site visits.

Additional efforts - While ADOT's highway development manual and policy memorandum on district involvement will address many of the deficiencies we identified, the Department may wish to consider additional measures to promote a more effective design review process. The manual, for example, does not specify how much time ADOT will allow for design review. In many cases, the Department has allowed two weeks for section staff to review design plans and documents. Unit staff and design managers have stated two weeks are not always sufficient to accomplish review, especially when they have competing priorities. The staff also indicated three to four weeks may be necessary for adequate and complete design review. Consultants we spoke with also agree that the two-week review period may not be adequate. They suggested a longer period should be planned when first developing a project schedule.

As ADOT reviewers have not always submitted their comments on time, and some have not responded at all, ways to facilitate timely response and participation in the design review process should also be considered. Current procedures rely heavily on individual desk reviews and submission of detailed written comments. This can be tedious and time consuming for those reviewing designs.

To minimize this problem, the Colorado Department of Transportation has developed a method that reduces reliance on individual written comments. Plans are distributed in advance and reviewers attend meetings in which all comments are discussed. Meetings are organized so engineers from similar disciplines meet at the same time to discuss areas of common responsibility. During meetings, detailed notes are taken and all comments recorded. According to Colorado highway officials, attendance at these meetings has been high and the process has been effective. ADOT may be able to promote greater and more timely participation in design review by adopting similar procedures.

RECOMMENDATIONS

1. The Department should adopt the policy and guidelines mandated in the Highway Development Group's design review draft manual.

2. The Department also needs to consider additional ways to strengthen the design review process. Specifically, they should:

    a. allow more time for reviewers to submit comments, and

    b. adopt methods reducing reliance on individual written comments.

FINDING II

ADOT NEEDS A MORE EFFECTIVE SYSTEM FOR MANAGING DESIGN COSTS

ADOT's financial management of the urban highway design process needs to be strengthened. Design costs increased substantially during the first four years of the Urban Highway Program. Rather than strict adherence to project budgets, until recently, emphasis has been placed on meeting bid schedules and satisfying citizen requests. Lack of adequate financial information on project budgets and expenditures has also further limited ADOT's ability to monitor and control design costs.

Substantial Design Cost Increases

Urban highway design, like the program as a whole, has had substantial cost increases. Analysis of the reasons for these increases suggests some original design budgets understated funds needed to complete design work, while other budgets favored meeting schedules over cost control.

Program costs increase - The current projected cost to complete the 20-year Urban Highway Program is considerably higher than the 1985 estimate of approximately $3.2 billion. Adjusted for inflation, this 1985 estimate represents approximately $3.9 billion. ADOT currently projects the cost of the Program to be $6.1 billion in 1989 dollars,(1) or a 56 percent cost increase.(2)

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(1) According to ADOT staff, the following are some of the reasons for the increase: in 1985 ADOT underestimated some costs; right-of-way cost estimates have doubled; traffic projections have increased on average 90 percent; the number of miles depressed below grade has more than doubled; additional mid-mile bridges and fully directional interchanges are being designed and constructed; and drainage requirements increased.

(2) This increase, combined with an expected revenue shortfall, results in a need for additional funding to complete the proposed system. Projected revenues for the 20-year life of the Urban Highway Program have decreased each year since the excise tax legislation was enacted in 1985. Total projected revenues in fiscal year 1986 were $6.009 billion; by fiscal year 1989 this estimate had decreased to $4.049 billion. Taking bond proceeds, debt service, and other revenues into account, the total revenue available to the Urban Highway Section becomes $3.2 billion (1989 dollars). Thus, $2.9 billion of the $6.1 billion cost remains unfunded.

Design projects, like other elements of the Urban Highway Program, have also experienced cost increases. Because approximately 95 percent of the design on the Program will be completed by consultants, design cost increases are due predominately to increased consultant costs.

To determine the magnitude of and causes for increased design costs, Auditor General staff reviewed budget data for all open urban highway design projects as of November 1989. Of the 59 projects identified through ADOT's Transportation Accounting System (TRACS), 12 projects originally totaling approximately $25 million, had budget increases of more than 25 percent or greater than $100,000[1], and contract change orders totaling approximately $55 million. Thus, the total cost of the projects represented by these contracts increased 218 percent. Table 1 (page 13) shows specific contract amounts and total change orders for the contracts reviewed.

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(1) Budget increases were determined by comparing "original" budgeted amounts to the "current" budgeted amounts as stated in ADOT's Transportation Accounting System. As noted later, these budgeted amounts may not be accurate.

TABLE 1

DESIGN COST INCREASES
12 DESIGN CONTRACTS

Contract Description	Contract Amount	Change Orders		Percent Increase
NW Outer Loop TI	$ 4,954,900	$ 2,615,009		52.78
Outer Loop TI @ State Rt. 360	3,924,300	2,958,875		75.40
SE Loop & Price Rd	2,765,200	324,314		11.73
Paradise Corridor	2,733,700	1,015,856		37.16
I-10 & 99th Ave. TI	2,048,900	1,469,270		71.71
Squaw Peak Gen'l Consultant	1,829,300	5,607,378	(a)	306.53
Colton Lane-NW Loop	1,716,800	2,158,472		125.73
Hohokam-Sky Harbor Interchange	1,480,200	779,114		52.64
Outer Loop Mgmt Consultant	2,393,752	33,932,281	(a)	1,417.54
Squaw Peak Extension	823,681	481,836		58.50
Hohokam Archaeological	266,800	3,268,500	(a)	1,225.07
E. Papago Storm Drain	197,918	236,980		119.74
Total	**$25,135,451**	**$54,847,885**		

(a) Change orders were largely for additional phases of multi-phase work. See discussion below.

Source: Auditor General review of Engineering Consultant Services contract files

Budgets not meaningful - ADOT did not initially establish meaningful budgets for some design projects. For example, three of the largest change order increases occurred because original project budgets represented only the initial phase of work. The $34 million change order increase in the Outer Loop management consultant contract reflects this problem. The original budgeted amount was for the development of a general design, and represented only the first phase of a multi-phase project. Although the additional phases were anticipated at the time this contract was developed, they were not reflected in the original budget figures. The budget was significantly exceeded when the subsequent phases were implemented by negotiating change orders with the consultant.

Likewise, most of the $5.6 million change order increase for the Squaw Peak general consultant contract was needed to pay for an additional phase of this multi-phase project. The $3.2 million increase in the Hohokam Archaeological contract was also the result of additional testing and data recovery not included in the first phase of the project.

Meeting schedules a priority - For the remaining 9 contracts, addressing citizen requests and maintaining project schedules took precedence over original budgetary issues. Design changes made in response to public concerns were therefore a primary factor in at least portions of these cost increases.[1] ADOT originally budgeted for "basic" freeways. Because the original budgets did not anticipate the public and municipal concerns raised later, more freeway miles depressed below grade had to be designed than were originally planned, and more location and design alternatives had to be studied and developed. ADOT viewed these changes as necessary, in part, to keep projects on schedule.

Meeting schedules with original budgets proved a monumental task. When the Urban Highway Section was created, ADOT management pressured it to meet a rigorous construction bid date schedule. (Although the half-cent sales tax proposition was not passed until early October 1985, construction was originally scheduled to begin on all six projects in 1986 -- the first in the "early part of the 1986," the "final freeway in January 1987.") At that time, with only four staff, the Urban Highway Section was expected to develop plans for all six freeway sections so construction could begin in early 1986.

To accomplish this goal, ADOT had to hire outside design and management consultants to expedite the design process. (It currently takes 27 weeks to award a design contract.) Original project budgets, established by ADOT immediately after passage of the half-cent sales tax, did not anticipate future changes that would be requested by citizen groups and municipalities -- changes that would cause both delays and cost

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(1) Citizen input is not the only factor precipitating cost increases. Some cost increases may be initiated by ADOT in order to reduce construction costs later. By contrast, some cost increases may have been unnecessary and avoidable. (For example, see Finding I, pages 6 through 7.)

increases. In some instances, when forced to make a choice between original budgets and schedules, management placed greater emphasis on meeting schedules than on adherence to budget limitations.

Lack of Adequate Financial Information

Compounding this problem, ADOT has not had adequate financial information available on individual project budgets and expenditures. ADOT's Transportation Accounting System (TRACS) and other financial tools available to program managers did not provide accurate and timely budget and expenditure information that may have helped restrain cost increases by enabling urban highway managers to assess the impact of citizen and municipal requests on overall freeway budgets.

Decisions made without needed information - Five corridor engineers oversee design of the Urban Highway Program, and are responsible for supervising highway design budgets. They review work performed by engineering consultants under contract with the Department, and recommend contract modifications and change order approvals. They are also required to sign a statement certifying funds are available to pay for change orders. Some crossed out or modified this statement because they do not receive the detailed financial information necessary to properly assess the impact of change orders.

Corridor engineers are unable to monitor project budgets through financial information obtained from TRACS, because:

- At the time of our audit, TRACS did not have a "roll-up" capability so that budget and expenditure data for each section of a highway could be accumulated and reported for the highway as a whole. ADOT was working to develop this capability and produced its first prototype report in May 1990. Corridor engineers therefore cannot review budget variances for an entire highway and analyze the effects of a design change in one section on the overall highway budget. The TRACS feature which would allow these roll-ups to occur will not be operational until next fiscal year.

- Current design project budgets are still not meaningful for financial control purposes. Most projects have exceeded their current budget amounts because original budgets had not been updated. Contract

obligations (the sum of the contract and change order amount) were, on average, 33 percent higher than current budget values. One contract -- with a current budget of $18.7 million -- had obligations of more than $35 million. Measuring expenditures against budgets is less meaningful when budgets have already been exceeded.

- Urban Highway management has not played a sufficiently active role in defining and updating budget information. Budgets are established by Administrative Services Division staff. The staff base current budget amount on contract amount. No contingencies for change orders or incomplete project scopes are included.

- The system lacks accurate data. Some design contracts have more than one TRACS project number, and TRACS descriptions are often misleading. As a result, TRACS descriptions may not match contract descriptions, and expenditures may be charged to the wrong TRACS account.

Urban Highway staff are addressing financial deficiencies - To improve financial management of the program, Urban Highway staff are addressing some of the TRACS deficiencies. During our audit, Urban Highway staff increased their efforts to identify and implement TRACS project descriptions and report format enhancements. ADOT staff, for example, are reviewing all projects to ensure TRACS descriptions match project descriptions, and expenditures are not being charged to the wrong account. As of late January 1990, 60 percent of the TRACS project numbers had been reviewed. At the end of our audit, ADOT formed a committee to plan and supervise a more extensive TRACS clean-up effort. Additionally, ADOT is instituting training requirements for all corridor engineers.

Until recently, Urban Highway managers have made design decisions, resulting in cost increases, without the ability to evaluate and discuss with citizen groups and municipalities the impact of these decisions on project, highway, and overall program budgets. However, new TRACS financial enhancements should allow corridor engineers to evaluate such decisions. A "roll-up" capability, for example, would provide budget variance information that could assist corridor engineers in determining the overall impact of any design changes. Corridor engineers could also use this information to reject significant cost changes, or suggest less expensive alternatives.

RECOMMENDATIONS

1. ADOT should develop more realistic project design budgets and update budgets on a more timely basis.

2. Urban Highway staff should continue to develop financial tools that provide accurate budget and expenditure data so decisions affecting design cost increases can be made in view of their impact on individual project, highway, and overall Urban Program budgets.

3. Urban Highway staff should issue an annual report explaining significant variances between highway budgets and expenditures.

FINDING III

ADOT MAY BE ABLE TO REDUCE COSTS BY MAKING ITS CONSULTANT PROCUREMENT PROCESS MORE COMPETITIVE

The Department may be able to reduce costs through a more competitive approach in selecting consultants. A review of contract files indicated that the Department follows sound procurement practices in advertising and in its use of committees to review proposals in selection of consultants. However, ADOT could potentially reduce costs by introducing some cost competition prior to consultant selection. In addition, ADOT should consider: 1) disclosing its policy of spreading work among firms, and 2) adopting procurement rules for engineering consultant services.

Scope of consultant procurement - ADOT's Highway Development Group contracts consultant services including highway design and drawings, landscape design, and bridge and structural designs. In fact, the majority of the new urban highway system design is being developed by consultants. In addition, the Department contracts consultants to provide other services related to or needed for highway design and construction. For example, ADOT awards contracts to consultants to perform archaeological survey and data collection. The Highway Development Group's Engineering Consultant Services (ECS) Section administers the process used for hiring consultants. As of September 27, 1989, ADOT had current contracts of approximately $325 million for design-related services -- design engineering, archaeological services, and management consultants.

Sound Procurement Practices Followed

ADOT's Highway Development Group adheres to sound procurement practices in the selection of consultants. The ECS Section consistently follows

prescribed procedures, and all actions are well documented in contract files. The Department also consistently uses appropriate staff committees to evaluate proposals.

To obtain an engineering consultant, ADOT publicly advertises and invites qualified firms to submit statements of interest. These statements are then evaluated by a staff committee which reduces the number of consultant candidates to a "short list" of several firms. Short-listed firms are then invited to submit technical proposals that are evaluated by a second staff panel. This second panel then ranks these firms and submits its recommendations to ADOT management.

We reviewed a random sample of 41 ECS consultant contracts (about 50 percent of all contracts awarded during the years 1987-89) to test ADOT's compliance with its internal procedures governing the selection process.

We found ADOT consistently follows well-documented procurement procedures. Only one of the 41 consultant contracts examined did not include documentation of approval with appropriate sign-off by selection committee members and management. In all except one file, consultant projects were advertised at least twice.[1] In addition, we found multiple firms submitting statements of interest in a project, indicating ADOT made its selection from several firms.

Further, our review indicates ADOT routinely uses staff committees to evaluate proposals, and consistently uses a number of technical staff on their short-list and selection panels. Participants on both the short-list and selection panels include various staff from appropriate ADOT engineering sections, as well as staff from other agencies representing a particular project. Projects, for example, involving highway design through a national forest included the appropriate federal staff as participants on the panel.

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(1) In both instances, the necessary documentation was lacking in the files we reviewed. It is possible that the information was misplaced as there was no indication of problems in the overall selection process in these cases.

Evidence indicates both panels evaluated statements of interest and technical proposals on clearly-stated criteria, and ranked applicants on these criteria. In addition, management made consultant selections, in most cases, based on the panel's ranking.

Competition May Reduce Costs

Although ADOT generally follows sound procurement practices, cost competition prior to selection is limited. In addition, ADOT should consider disclosing its policy of spreading work among firms and adopting administrative rules governing procurement of engineering services.

No cost competition - The Department's current procurement process does not provide for any cost competition prior to selection. Although consultants must submit man-hour estimates, cost proposals are not required. After selecting a consultant, ADOT negotiates hourly rates and fees based on historical costs. This approach, a common practice in the highway construction industry, is preferred by the engineering consulting community.[1]

This approach, however, also does not ensure ADOT pays a competitive rate. For example, ADOT negotiated an overhead rate of 145 percent with one firm. Later, during the final audit, the contract auditor's preliminary work indicated that the firm's overhead was actually 89 percent. The auditors did not pursue further work nor report on the firm's overhead because ADOT had already negotiated and agreed to an overhead rate of 145 percent. Thus, ADOT may have paid 56 percent more overhead than the firm's actual rate for the project. Although the department has since revised its contract language so that negotiated overhead rates are now subject to change following a final audit, this example suggests negotiations may not provide the lowest rates that ADOT might obtain.

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(1) This process is also supported by the Brooks Act for federal highway projects.

ADOT may be able to reduce costs by initiating some cost competition prior to selection; projects using federal funds, however, might require the approval of the Federal Highways Administration. Agencies covered by the procurement code have the option of soliciting cost proposals from engineering firms before making a final selection. Arizona Revised Statute §41-2578.D.2 allows cost proposals to be solicited from the three top-ranked firms, if consideration of a fee proposal is deemed advantageous to the State. While no contract may be awarded solely on the basis of price, cost may be taken into consideration in awarding a contract.

Given the amount of funds contracted by the Department, it may be advantageous to consider a similar procedure for securing engineering consultants. The State purchasing office has found costs have been reduced when competition has been introduced into the procurement process. The State purchasing director indicated it is also reasonable to assume a 10 percent savings on professional services contracts by introducing competition. With an estimated budget of $69,711,200 for 1990, a cost reduction of only 5 percent could result in an annual savings in engineering consultant services of almost $3.5 million.

According to the state of Maryland's general services selection board representative, Maryland implemented a competitive bid process for architectural and engineering consultant services that proved highly effective in reducing total construction costs. In 1986, however, due to opposition from architectural and engineering professional groups, the state returned to a negotiated cost process resulting in increased architectural and engineering contract costs as a percentage of total construction costs.

"Spreading the work around" policy - In addition, ADOT should consider disclosing its policy of spreading work among many engineering firms, since it may be unfair and costly to some firms.

According to ADOT officials, to avoid hiring two or three international firms for all consultant work, management has adopted an unwritten policy of "spreading the work around." Although ADOT already considers the

current workload of firms as a selection criteria, some firms may later be removed from final consideration if they have had a large number of contracts with ADOT in the past. According to the executive director of the Arizona Consulting Engineers Association, they encouraged ADOT to adopt this unwritten policy, because they felt it was necessary so that Arizona firms would not be limited from securing contracts.[1]

ADOT has eliminated firms from consideration based on the amount of the firm's prior work with ADOT. In 15 of the 41 cases reviewed, management modified the short list and eliminated most of the firms that had received substantial work from ADOT in the past. In 6 other cases, management decided not to award the contract to the selection panel's top choice because the firm had substantial prior work.

This practice may be unfair to some firms. The use of historical workload as a factor is not mentioned in advertising for a specific project. On a recent landscape design project, we contacted three design consultants on the short list, and found none had been notified of the Department's unofficial, unwritten policy of "spreading the work around." All three also felt that being eliminated from future ADOT design contracts because of their workload was unfair. Further, these contractors indicated they might hesitate before bidding on future ADOT contracts as, all three noted, firms incur substantial costs in preparing technical proposals. One contractor indicated his firm spent $5,000 - $6,000 in developing such proposals. This firm also felt this expenditure was excessive when the final contract amount was $50,000, and the firm's chances of securing the contract were significantly reduced due to ADOT's unwritten policy.

Rules may be needed - Finally, because ADOT is exempt from the procurement code, and no other statutory provision or ADOT rules apply to engineering consultant services, the Department is under no legal

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(1) An ADOT analysis of 112 firms which are currently active indicates that 45 percent are Arizona firms, and 39 percent are out-of-state firms which have established and maintained local Arizona offices for at least five years. The remaining firms are out-of-state firms which have maintained local offices for less than five years (11 percent) or have no Arizona office (five percent).

obligation to continue sound procurement practices. Changes in personnel or management policies could result in deterioration of procurement practices to the detriment of the State.

Our review of ADOT's exemption indicates it was based on consideration of construction contracting for which ADOT had separate statutes at the time the code was adopted. However, ADOT has never had separate statutes for procuring engineering services -- an area that has grown considerably in terms of the number of contracts awarded since the code was adopted.

Some larger agencies, exempt from the procurement code, are required to adopt a rule establishing procurement procedures "substantially equivalent" to provisions of the code. For example, the courts, the university system, and the State lottery must all adopt a procurement rule. As ADOT follows procurement practices consistent with the code, adopting such rules or an internal policy would not appear unreasonable nor require ADOT to make substantial changes in present procurement procedures.

RECOMMENDATIONS

1. ADOT should continue to follow public advertising, consistent technical evaluation, and other current practices that have provided a strong procurement system for design consultants.

2. ADOT management should reconsider its policy of "spreading the work around," and if a determination is made to continue it, this policy should be disclosed in advertising and materials distributed to interested firms and selection committee members.

3. ADOT management should consider introducing some cost competition prior to selection of a design consultant.

4. The Legislature may wish to consider requiring ADOT to promulgate rules comparable to the State's procurement code for departmental purchasing not covered by other legislation. As an alternative, ADOT could adopt an internal policy addressing procurement of engineering consultant services.

OTHER PERTINENT INFORMATION

In response to Chapter 68 of the 1988 Session Laws, we developed other pertinent information on staffing levels for highway design.

Design Staff Increases Have Been Moderate

In the past five years, ADOT's Highway Development Group's staff increased only moderately as a direct result of the initiation and growth of the Urban Highway Program. The overall increase in staffing (see Table 2, below, and Table 3, page 26) and construction program budgets (see Table 4, page 26) indicates staff has not changed significantly, even with additional workload. From fiscal year 1985-86 through 1989-90 the Highway Development Group staff has increased only 17 percent.

TABLE 2

HIGHWAY DEVELOPMENT GROUP
FTEs FOR FISCAL YEAR 1985-86 THROUGH 1989-90

Section	1985-86	1986-87	1987-88	1988-89	1989-90
Administration	3	4	4	7	6
Research	0	0	0	0	0
Location	100	105	114	114	114
Design	122	120	129	127	131
Right of Way	135	155	157	156	159
Structures	61	61	56	55	55
Local Government[a]	4	4	0	0	0
Project Scheduling	0	0	0	0	0
Eng. Consultants[a]	0	5	0	0	0
Urban Highway	1	17	25	29	35
TOTAL	426	471	485	488	500

(a) After fiscal year 1986-87, FTEs (four local government and five engineering consultants) were moved to the urban highway and design sections.

Source: Arizona Department of Transportation, Highway Development Group, February, 1990.

Construction funding however, during the same period[1] has increased approximately 60 percent.

TABLE 3

HIGHWAY DEVELOPMENT GROUP FTE INCREASES BY SECTION BETWEEN FISCAL YEAR 1985-86 AND 1989-90

Section	FTE Increase/Decrease
Administration	+ 3
Research	0
Location	+14
Design	+ 9
Right of Way	+24
Structures	- 6
Local Government	- 4
Urban Highway	+34
TOTAL	+74

Source: Auditor General analysis of ADOT FTEs figures for fiscal year 1985-86 through 1989-90

TABLE 4

ADOT CONSTRUCTION PROGRAM COST BY FISCAL YEAR

Year	Amount (in Millions)
1985-86	463.0
1986-87	611.3
1987-88	768.5
1988-89	875.1

(Figures in constant dollars)

Source: Organizational Report, Arizona Department of Transportation, Highway Development Group

(1) ADOT's construction funding began to increase dramatically in fiscal year 1985-86, due to the beginning of the Urban Highway Program.

Based on acceleration of the Urban Highway Program within Maricopa County, the Highway Development Group's overall 17 percent FTE increase during the five-year period appears reasonable as staff in other sections affected by the Urban Highway Program (i.e. location, design and right-of-way) increased by 9 percent or 47 positions.

According to the Deputy State Engineer of the Highway Development Group, there are no plans at the present time to significantly increase FTEs within any sections of the Highway Development Group, and whenever possible, additional work will be handled by existing staff or, if necessary, through outside professional service contracts.

Extensive use of outside consultants - Estimated consultant costs for both the statewide and Urban Highway Programs for fiscal year 1989-90 are $69,711,200. Instead of hiring additional full-time staff, ADOT's Highway Development Group has engaged engineering consultant firms to design and manage development of new State highways. Only about 30 percent of present statewide project design work is done by ADOT staff, the other 70 percent is done by outside consultants. In the Urban Highway Program, almost all design activities are provided by outside consultants.

Consultants have extensive duties - Both design and management consultants have extensive duties. Design consultants translate ADOT's conceptual ideas and those of federal and local agencies into designs for the actual highway sections or structures in conformance with ADOT technical standards. Management consultants direct all management activities for particular highway sections. They meet with local community groups and oversee expenditures to contain costs of various design consultants' work on sub-projects and other related activities.

Additional benefits of consultants - There are several reasons why ADOT uses consultants. First, when ADOT obtained funding for the expansion of the highway system in Maricopa County, the Department chose to use outside consultants, rather than increase agency staff so design and construction work could begin more rapidly.

In addition, ADOT lacked the experience to manage numerous design consultants, and also lacked the specialized expertise needed for design of some of the complicated structures in the concept plans (i.e. the "Stack" at I-10 and I-17 or the "Deck" at I-10 and Central Avenue). The use of design and management consultants also allowed ADOT to make significant progress without delay and few staff increases.

Finally, consultants are being used so ADOT will not have idle staff when workload declines. Significant numbers of idle staff could force the Department to layoff employees. Thus, use of consultants allows ADOT to maintain a consistent level of staff and, at the same time, provide enhanced job security for its employees.

CONTRACTOR CLAIMS PROCESS

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INTRODUCTION AND BACKGROUND

The Office of the Auditor General has conducted a Performance Audit of the Arizona Department of Transportation's (ADOT) contractor claims process for highway construction. This performance audit was conducted in response to the requirements of Chapter 68 of the 1988 Session Laws which directed us to review contractor claims for highway construction.

Contractor claims are common in highway construction because many factors influence each construction project and not all can be anticipated in the contract. Contractors may file claims based on delays, additional work, differing site conditions, and for numerous other reasons. When a disagreement between ADOT and a contractor arises, ADOT and the contractor can frequently reach a solution prior to the dispute escalating to a claim. If ADOT and the contractor agree that extra compensation is justified, the matter is resolved by change order or force account.(1) However, if the contractor and ADOT cannot agree on a solution, the claim process allows the contractor to pursue the dispute.

Several Factors Impact Frequency Of Claims

According to a 1983 Transportation Research Board study, a number of factors contribute to the incidence of claims.(2) On the contractor's part, there may be inadequate investigation of the site before bidding, overoptimism in bidding, and deliberate bidding under cost. The department can also contribute to claims by changing plans during construction, giving inadequate bidding information, and including specifications that are overly restrictive.

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(1) If ADOT and the contractor agree on the total price, a change order is issued. If they cannot determine an agreeable price, the contractor keeps detailed records of costs, which ADOT inspectors verify daily, and a force account is used to repay the costs plus a fixed percentage of profit based on the standard specifications. Auditors reviewed ADOT's internal controls over these supplemental agreements. Nothing came to our attention to suggest those controls are not adequate.

(2) Construction Contract Claims: Causes and Methods of Settlement, Transportation Research Board, National Research Council (November 1983).

According to ADOT staff, the underlying cause of many claims is increased competition in the construction industry. This has caused contractors to cut their profit margins to the extent that they can no longer afford to absorb any extra costs. However, the department acknowledges it also plays a role, since it writes the plans and specifications. ADOT reported that a frequent cause of claims is different interpretations of contract documents. Finally, both ADOT and contractors told us that claims sometimes arise due to personality clashes on the job.

Early Resolution Is Important

Literature on claims resolution stresses the importance of resolving claims at a low level of authority. Resolution at this level generally is less costly to the State because higher level resolution can add legal fees, outside consultants costs, and interest charges to the basic claim. For example, a 1981 claim for $652,769 more than doubled (to $1,321,694.65) when the Arizona Supreme Court affirmed an award to the contractor of $557,000 plus interest and attorney's fees. Contractors also benefit from resolution of claims at a low level of authority since they can obtain reimbursement for their legitimate costs more quickly.

Claim Process Has Several Steps

ADOT's Standard Specifications for Road and Bridge Construction define the stages of the claim process. These specifications are part of every construction contract. Before starting the disputed work, the contractor submits notice of claim, in writing, indicating the claim's basis and nature. During the course of the work, both project staff and the contractor keep detailed records of labor, equipment, and materials used. The contractor submits an estimate of total cost within 10 days after notice of claim is given. Within 60 days after all costs are incurred, the contractor submits a claim, which includes a detailed presentation and explanation of costs. ADOT project staff make the initial decision to accept or reject the claim after discussion with district staff.

The contractor can pursue further avenues if dissatisfied with ADOT's decision or if no decision is made within a defined time frame. He or she may request a second level review, which is an administrative hearing before ADOT engineering staff. Whether or not there is a second level review, the contractor may demand arbitration for claims of less than $100,000. Arbitration follows procedures defined by the American Arbitration Association, and the arbitrator's decision cannot be appealed. Contractors may take legal action if the claim is over $100,000. The Attorney General's Transportation Section handles these cases for ADOT, with technical assistance from ADOT personnel.

Claims Branch Was Created To Assist In Process

ADOT established a Claims Branch in 1982. Its earliest responsibility was to provide technical assistance to the Attorney General's office, which at the time was defending ADOT against a large lawsuit brought by a contractor.

The Claims Branch was reorganized and expanded in 1985. It took on other duties including maintaining a claims database, providing training on claim avoidance and claim handling to ADOT field personnel, coordinating necessary actions on appealed cases, and assisting district staff upon request.

As part of its activities, the branch distributes to each district a monthly report regarding the status of current claims. The Federal Highways Administration (FHWA) has praised the "emphasis area" which begins each quarterly issue of the report. The emphasis area is an article about some aspect of claims: it is a supplement to ADOT's periodic claims training, and it keeps district staff aware of the issues. Recent titles include "Unexpected Claims," "Claim Defense Package," "Tips for Witnesses," "Claims Avoidance," and "Negotiating." The FHWA was so impressed with the concept that it sent copies to all its regional offices.

Currently, the branch is part of Construction Analysis Services within the Construction Section of the Highway Operations Group in ADOT's

Highways Division. The branch is overseen by the manager of Construction Analysis Services and has 4.5 additional FTEs including a claims engineer, a project analysis engineer, a legal analyst, an administrative records worker, and an administrative secretary.

Claims Small In Relation To Total Construction Costs

ADOT's data indicates that claims are not a substantial expenditure in relation to the amount of highway construction. The total amount expended on claims from 1985 through 1989 was less than 1 percent of the value of construction projects started during the same period. Further, from 1985 through 1989, ADOT paid out an average of only 32 percent of the amount requested by contractors. Table 1 (see page 33) shows the trends in construction and claims over the past five years.(1)

Comparable data on claims is not available from other states. We contacted eight other states and attempted to obtain claims information. We found that not all states tracked claims, and some of those that did defined the term "claim" differently than ADOT. For example, some states track claims only after they have been presented to the central office for a decision, while ADOT begins tracking when notice of a potential claim is received.

The Transportation Research Board reported in 1983 that "there is an almost total lack of nationwide data on the claims experience of highway agencies."(2)

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(1) This data is presented to show the general magnitude and trend of claims. As discussed in Finding I, auditors did not find ADOT's claims data to be reliable. Although the actual dollar amounts may not be correct, we believe the general conclusion about the significance of claims in relation to construction is valid.

(2) Construction Contract Claims: Causes and Methods of Settlement, Transportation Research Board, National Research Council, (November 1983): 5.

TABLE 1

CONTRACTOR CLAIMS STATISTICS
CALENDAR YEARS 1985 THROUGH 1989
(as of February 7, 1990)

Year	Amount of Construction Projects Awarded	Amount of Claims Filed Including Pending and Resolved Claims(a)	Settlement Amount of Resolved Claims(b)(c)	Percent of Claims Paid to Project Amount
1985	$ 206,118,912	$19,848,597	$ 4,918,418	2
1986	324,555,891	7,164,333	2,222,891	1
1987	285,413,653	9,871,295	1,473,812	1
1988	323,544,669	9,706,337	1,784,844	1
1989	441,256,640	6,634,013	181,500	0
TOTAL	$1,580,889,765	$53,224,575	$10,581,465	1%

(a) Claims whose notice of claim was filed during the year. May pertain to a project begun in a prior year.

(b) Settlement amount is based on paid claims which were filed during the year, although payment may have been in a subsequent year.

(c) Outstanding claims exist for each of the calendar years; therefore, the settlement amounts will increase as pending claims are resolved. For example, claims representing almost two-thirds of the total amount claimed during 1989 were still pending as of February 7, 1990.

Source: Information on construction projects from ADOT Contracts and Specifications Services. Claims data from ADOT Claims Branch database. Percents and totals calculated by Auditor General staff.

Audit Scope and Purpose

Our audit focused on the performance of ADOT's Claims Branch in supporting claims handling throughout the department. In addition, we reviewed claim decisions made by ADOT's district and management staff. The report presents detailed findings in two major areas:

- The need for complete and accurate information on the number, status, and outcome of claims departmentwide
- The timeliness of ADOT's claims handling.

During the course of our audit, we developed Other Pertinent Information regarding: ADOT's lack of reliable management information and second level review board composition.

This audit was conducted in accordance with generally accepted government auditing standards.

The Auditor General and staff express appreciation to ADOT's director and employees for their cooperation and assistance during the audit.

FINDING I

ADOT LACKS A COMPLETE AND ACCURATE PICTURE OF THE STATEWIDE CLAIMS SITUATION

ADOT currently lacks accurate and complete information on the number, status, and outcome of claims departmentwide. Although the Claims Branch should centrally gather claims information, claim files maintained by the Claims Branch are often incomplete and poorly maintained. Further, statewide claims information disseminated by the branch fails to provide an accurate and comprehensive picture of contractor claims. During the course of our audit, ADOT management recognized these problems and began taking corrective action.

The Claims Branch is ADOT's central repository of contractor claim data. Although ADOT project staff maintain their own claim file and are initially responsible for handling and making decisions regarding claims, the Claims Branch establishes and maintains a central file on all claims filed against ADOT by contractors. The branch uses an automated system to track the status and resolution of claims and produces a monthly report which captures departmentwide claim activity.[1] The branch is ADOT's only composite source of management information regarding claims. In fact, ADOT relies on information compiled by this branch to evaluate how well it is handling claims.

Claims Branch Files Are Incomplete and Poorly Organized

Files maintained by the Claims Branch are incomplete and poorly maintained. As a result, the status of the claims cannot be determined from review of central office files. Further, the Claims Branch's ability to provide advice and assistance is hindered.

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(1) Specifically, the report breaks out by district each active claim, the status of the claim, any dollar amount claimed, and a brief description of the claim. The resolved claim listing shows the dollar amount paid out on the claim.

Central office claim files are incomplete - We reviewed 25 active claim files and 28 closed claim files maintained by the central office Claims Branch and attempted to identify the progress and status of a claim by the contents in the file.[1] Our review found that many files lacked basic documents necessary to determine what was happening, or had happened, with the claim. For example, in 10 of the 25 active files the most recent documentation was at least 6 months old. In addition, our review of 28 closed claim files found that resolution information was not always contained in the file. Basic items which were missing from some files included:

- Claim report forms which capture basis, dollar amount and date of claim.
- Project or district denial letters which would indicate when the department responded to the claim.
- Letters of settlement or offers to settle which would indicate ADOT's efforts to address the claim.
- General correspondence between ADOT and the contractor regarding the claim which would document any efforts taken to resolve or address the claim.
- Change orders or supplemental receivers indicating the amount for which the claim was settled.

Other useful information regarding the handling of a claim is not always documented in the Claims Branch file. For example, project staff and the contractors may hold various meetings while trying to resolve a claim. However, several project staff told us that the minutes of and decisions from these meetings are not included in the claim file. Also, telephone conversations between Claims Branch staff and project staff regarding a claim are frequently not documented in the claim file. Thus, action may be occurring on a claim that would not be evident from the file. Further, the difficulty of identifying a claim's status from the file is compounded by the lack of summaries for both claim file contents and activities related to the claim.

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(1) Thirty closed claims were selected. However, only 28 were actually reviewed. One claim was a duplicate and another could not be located.

Some of the problems with missing data are due to project staff's failure to send the information to the Claims Branch. Procedures outlined in the August 1989, ADOT Construction Report require project staff to submit claim information to the Claims Branch. However, branch staff indicated that project personnel do not always relay claim information. We reviewed and compared 12 claim files at the project offices to the corresponding claim files maintained at the Claims Branch and found that, in each case, project files contained information not found in Claims Branch files. Important documents missing from Claims Branch files but contained in project office files included three denial letters and one letter offering settlement. In one of the 12 cases, the Claims Branch had no information on the claim.

Central office claim files poorly maintained - Not only are the Claims Branch files incomplete but they are also poorly maintained. The current lack of order to the files prevents them from being an efficient tool from which to gain information. Our review of claim files found:

- Files frequently contain multiple copies of the same document.
- File contents are not in any identifiable systematic order.
- Many files lack summaries of file contents or a composite listing of actions taken on the claim.
- Individual claim files might consist of more than one folder. However, there was no indication that the claim was continued elsewhere.
- Several different and confusing filing systems are in use in the office.

In addition, staff do not use a file checkout system, which makes it difficult to locate files when needed. Claims Branch staff admitted they frequently have difficulty locating files. In fact, files are occasionally lost. A records management supervisor from the Department of Library, Archives, and Public Records reviewed the Claims Branch files at our request and verified the above problems. His observations and recommendations for correcting the problems are included in Appendix I.

Claims Branch's ability to provide assistance is hindered - Incomplete and poorly organized information limits the branch's ability to provide

sound advice and assistance to ADOT management and district staff. The branch sees its role to be a resource to which district and administrative staff can go to obtain assistance or advice on handling claims. Therefore, branch staff should be able to refer to the claim file to review the circumstances, actions, and status of the claim in order to respond to questions or provide assistance regarding the handling of a claim. Not having complete information at their disposal places branch staff at a disadvantage because they may be requested to provide advice without having the privilege of perusing all information associated with the claim.

Claims Information Reported Is Deficient

Claim information compiled and reported by the Claims Branch is flawed and sometimes inaccurate. In addition, the manner in which costs associated with claims is reported is misleading. Also, the reports sent to the project staff and central office staff contain no detailed information or in-depth analysis of claims.

Reported status information not entirely accurate - ADOT has established an automated database which tracks claim status. This database information is reported to ADOT central office staff as well as project staff via a monthly construction report. However, our review of 25 active files revealed that in only 10 cases did the data-base status match the actual status of the claim. In some cases the inaccurate status is a direct result of having inadequate information in the claim file. For example, we found four claims identified as active on the database, that ADOT project personnel informed us had been dropped or settled. However, there was no information in the Claims Branch file to reflect the change in status. Claims Branch file contents are the main source of information used to establish a claim record on the database as well as a source for tracking claim status.

Even when the branch has information on a claim, it is not always captured on the database. We found instances where the branch failed to use the information in the file to update the claim status. In 9 of the

25 active claims we reviewed, the branch files contained information which impacted the status of a claim, yet the database did not reflect the file status. For example, four claim files in our sample contained written documentation that the contractor had dropped the claim. Ideally, this information should have been used to remove the claims from the active database file and transfer them to the resolved database file. However, some of these claims were identified as active on the database as many as 9 months after the documentation to drop the claim was received by the branch. In addition, one claim file contained documentation indicating that the claim had been denied by the deputy State engineer, yet this change in status was not reflected on the claims database. Claims Branch staff could provide no explanation as to why this information had not been used except that it was an oversight.

Reported claim amount information is misleading - In addition to the inaccuracies in reported status, information reported by the Claims Branch regarding costs associated with claims is misleading. For example, some costs which should be captured and included as claim costs are not being tracked and reported.

- **Consultant costs** - ADOT sometimes uses consultants to help with its defense of a contractor claim, and the charges can be substantial. For example, as of September 27, 1989, ADOT had paid $240,939 to consultants for their assistance in the defense of a $7 million claim. However, these types of costs are never reflected in the actual claim costs reported by the Claims Branch.

- **Arbitration costs** - Costs associated with defending a claim in arbitration are not identified or included as part of the claim cost. Arbitration costs average several hundred dollars ranging from $150 to $875 per arbitration case during the 1989-90 fiscal year.

Furthermore, some costs included in the reported claim amounts should be isolated to provide a more realistic picture of how much ADOT actually paid out on a claim. Claims involving time extensions (liquidated damages), penalties, city projects, and federal participation are all cases in which ADOT's reporting is misleading. For example:

- ADOT can fine a contractor for failing to complete a job on schedule. Consequently, some contractors file claims because they

believe they are entitled to more time to finish the job and do not believe they should be financially penalized. Typically, the contractor will try to obtain a time extension and, in essence, mitigate the dollar amount the contractor would be penalized for completing the job late. An amount equivalent to the monetary penalty would be claimed.

The reporting problem arises if ADOT agrees to give the contractor the time extension requested. Rather than reporting these types of claims separately from regular claims, the reported information may show a dollar amount claimed by the contractor and a zero resolved amount, indicating ADOT paid out nothing on the claim. However, in essence the contractor was compensated. Therefore, ADOT's failure to isolate these costs results in the reporting of misleading information.

- ADOT may impose penalties on contractors if the end product of the project does not meet contract specifications. If a contractor believes he or she was penalized improperly, the contractor can file a claim for the amount of the penalty. We identified one case in which ADOT later waived the penalty. However, the information is presented so that it appears the contractor lost the claim since ADOT shows no money being paid out where money was claimed. Reporting the information this way makes ADOT look as if it is paying out a lower percentage of claims than it actually is. Again, reporting the information in this manner misrepresents what actually happened with the claim.

In addition, in some instances the Claims Branch is reporting information on claims for which the State is not financially liable. For example, some city projects are partially funded by federal dollars, but the federal funds must pass through ADOT. As a result, ADOT contracts for the job but the city provides supervision and incurs all liability associated with the project, including any claims. However, the contractor files its claim with ADOT. In these cases, a dollar amount claimed will be reported, and a zero dollar amount paid will be indicated even though some other entity, such as the city, may have actually paid a portion of the claimed amount. By including only the claimed amount and no amount paid, the percent of claim dollars actually paid is artificially lowered.

Further, the Claims Branch fails to identify claim costs which may have been paid by the federal government, making it appear as if all claim

costs paid were paid by ADOT.[1] For example, the federal government through the FHWA participated in the amount of $1,006,817 of a $1.7 million delay claim. However, ADOT's reporting mechanism gives no indication of federal assistance.

Information reported is limited - In addition to the inaccuracies and misleading information contained in the report, the information reported and distributed to the districts and ADOT management provides no detailed information or analysis on claims. The Claims Branch monthly report lists active claims organized by districts and sorted by resident engineer, claim number, and project number. In addition, any dollar amount claimed is noted along with a brief description of the claim. However, no information regarding the history of a claim is published. Therefore, one cannot readily identify the age of the claim, the last date of any action on the claim, or the action that has been taken on the claim. Currently, this type of information is not captured on the database. However, planned revisions to the automated system will allow this information to be tracked and reported.

Also, we found little evidence of any routine in-depth analyses being performed on the claim information by the Claims Branch. The branch compiles and reports information. However it appears to be used primarily to list the status of claims. Although the volume of claims may indicate ADOT's need to improve its claim settlement and prevention procedures, they do not suggest what parts of the construction process or the contracting system need attention. Therefore, it is necessary to evaluate what aspects of construction are most frequently the subject of claims.

ADOT's contracting claim experience can be analyzed to indicate specific changes in the contracting process that are likely to reduce the number of claims or the severity of the disputes. Periodic analysis of the

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(1) The federal government may participate in paying claims in projects where federal money is funding all or a portion of the project. However, FHWA's agreement to participate in the cost of the claim does not entitle Arizona to additional federal funds but gives ADOT permission to use existing federal funds to pay claim costs.

available information may reveal trends or identify areas in which improvements or changes are needed in order to mitigate the number of future claims.

ADOT Is Taking Steps to Improve

During the course of our audit, ADOT management became aware of many of the problems mentioned above, and began corrective action. Claims Branch personnel are taking a more active role to assimilate claim data. For example, staff have begun making regular trips to each district to review district claim files to ensure comparability with their own files. Other planned improvements include:

- Updating information contained on the database.
- Revising and expanding the type of claim information captured on the database to incorporate relevant actions and dates in order to facilitate easier status determination.
- Establishing and maintaining a tickler database of all claim notices.
- Providing summaries of file contents and actions in all claim files.

In addition, the branch has recently developed goals and objectives which should clarify the branch's role in the process and improve operations. Also, the branch plans to delineate staff responsibilities regarding the processing of claim information. Finally, based on some of the recently developed objectives, it appears more analyses of claim information will be performed.

RECOMMENDATIONS

1. ADOT should continue to implement improvements as outlined in its goals and objectives statement for the Claims Branch.

2. ADOT should revise its method of reporting claim information to more accurately reflect claim dollar amounts.

3. ADOT should analyze claims information in various ways. The analyses might be used to identify and correct problem areas in plans, specifications, or other contract documents which may be the cause or subject of frequent claims.

4. ADOT should consider implementing some of the recommendations proposed by records management in order to better utilize and manage its Claims Branch files including developing a set of office procedures, providing case summaries for each file, and improving file security.

FINDING II

ADOT NEEDS TO IMPLEMENT CHANGES TO ENSURE TIMELY RESOLUTION OF CLAIMS

ADOT needs to implement changes to promote the timely resolution of claims submitted by contractors. ADOT has not handled some claims in a timely manner. By developing a more formal claims process and tracking claims to ensure they adhere to the guidelines, ADOT may be able to resolve claims more quickly.

Some Claims Have Had Delays in Resolution

Although ADOT does not maintain the data necessary to determine its overall performance in timely claim resolution, it appears that some claims are delayed longer than necessary. We attempted to determine ADOT's timeliness in complaint resolution by reviewing 30 recently closed claims but could not obtain the basic data we needed from them. The review proved inconclusive due to several problems: 1) some files contained no evidence of when a notice of intent to file claim became a formal claim: therefore we could not determine the length of time between filing the claim and ADOT's actions;[1] 2) over half of the files containing formal claims lacked a written decision by ADOT to accept, modify, or reject: therefore there was no record of when the initial decision was reached; and 3) if ADOT responded to the claim by initiating negotiations and discussions with contractors, as some ADOT staff told us, we could not determine when this took place, since no written record was made for the files. These three factors made it impossible to calculate the length of time between the contractor's filing a claim and ADOT's response.

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(1) Before beginning disputed work, contractors submit a notice of intent to file claim, which allows ADOT to begin keeping its own records of the work but does not require a response. Later, when the work is completed and all costs have been incurred, if the contractor still believes additional compensation is justified, the contractor will file a formal claim. ADOT then makes its decision to accept, modify, or reject the claim.

Although we could not review the amount of time it took ADOT to reach its initial decision on a claim, we were able to track the time it took for ADOT to process a contractor's appeal of the decision. We reviewed all 22 of the cases which had second level review hearings between 1987 and 1989.[1] In these cases, ADOT took an average of 97 days from the contractor's request for a hearing to the hearing date, and an additional 47 days from the hearing to notify the contractor of its decision.[2] Thus, on average contractors wait almost five additional months to receive a determination on the appeal of an initial ADOT decision.

While the data was not available to track ADOT's overall timeliness in handling claims, a survey of 20 contractors produced examples of delayed claims. Twelve of the 20 contractors we surveyed are dissatisfied with the amount of time taken by ADOT to resolve claims.[3] Three contractors accused ADOT of dragging out the process so that the contractor would drop the claim. The following cases illustrate delayed claims.

- A claim filed July 25, 1988, for $26,800 was initially denied at the project level August 5, 1988. The contractor subsequently requested an administrative review of the claim on August 16, 1988. The hearing was scheduled and held December 13, 1988 (119 days later). The review board made a recommendation to the ADOT State Engineer on January 11, 1989, but the decision letter to the contractor (awarding a portion of the claim amount) was not sent out until March 13, 1989 - 90 days after the hearing was held.

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(1) Second level review hearings are administrative hearings held before ADOT engineering staff.

(2) Average time to schedule hearing is based on 19 of the 22 cases. One case was excluded because the file was not available for our review. The hearing in that case was held on May 25, 1989, and as of January 3, 1990, the reviewer had not made a decision and still had the file. A second case was excluded because the process was prolonged by the contractor's need to postpone the hearing while he finished gathering cost information. The third case was not a second level review but a final administrative review as required by the 1982 specifications, which called for attorneys on both sides, court reporters, and final attorneys' briefs presented after the hearing. Time frames on that case would not be comparable to ordinary second level reviews. Average time to issue a decision is based on the 14 of those 19 cases for which a decision had been given at the time of our review. Four of the 19 cases were still awaiting a decision, and one had been settled before a decision was made.

(3) We surveyed 20 contractors who had active claims with ADOT as of December 6, 1989. See Appendix II for further information obtained from contractor survey.

- A contractor waited over 8 months from the time he requested an administrative review until the hearing was held, and he waited 2 more months to receive the decision from the review. The contractor requested an administrative review on June 24, 1987, after the claim was denied at the project level. The hearing was not held until March 16, 1988, 266 days later. Furthermore, a recommendation regarding the claim was not reached until May 3, 1988 (48 days after the hearing) and the contractor was notified of the decision in a letter dated May 20, 1988.

In some cases, contractors maintain ADOT's failure to resolve claims in a timely manner may cause them financial hardship. For example:

- A contractor estimates an unresolved 6 month old claim could cost his company $300,000 in missed profit on other work. As of February 2, 1990, ADOT had not made a determination regarding a claim filed by this contractor on July 27, 1989, although a decision should have been made within 90 days. ADOT district staff believe the claim is valid but have not reached an agreement on costs.

  The delay in resolving this claim has impacted the company's ability to bid on other jobs since ADOT and bonding companies determine the size job a contractor can bid by reviewing the contractor's liquid assets. Since the claim costs have not been reimbursed, the company's liquid assets are diminished. The contractor said he could qualify for jobs up to ten times the amount of liquid assets, so this $136,000 claim could have reduced his ability to bid by up to $1.36 million.

ADOT Lacks Formal Procedures for Timely Resolution

ADOT's lack of procedures to ensure the timely resolution of claims may have caused these delays. ADOT has developed specifications which define both ADOT's and the contractor's role in claim resolution. However, the specifications are vague in several areas which can contribute to delays in claim resolution. In addition, ADOT lacks internal procedures for monitoring the progress of claims.

No time frames for ADOT actions - Although the specifications include time guidelines for contractors to follow throughout the resolution process, the specifications do not contain similar requirements for

ADOT. The specifications require only that ADOT make an initial decision within 60 or 90 days (depending on the size of the claim). Once an initial decision is made, ADOT has no further time guidelines to meet during the appeal process. Other states have developed guidelines for each phase of the resolution process. Oklahoma, for example, has set deadlines for each phase of the process so that the final administrative decision can be given within 40 days of the formal claim submission.

Claim submittal is informal - ADOT specifications give only general guidance for filing a claim, resulting in informal and incomplete claims which in turn lead to timeliness problems. The contractor is to submit the claim along with cost information to ADOT within 60 days after all costs associated with a claim have been incurred. However, the specifications do not define the format of the claim. Consequently, some files we reviewed contained no evidence of when a notice of intent to file claim became a formal claim. Without being able to determine when a claim becomes "formal," tracking of decision due dates becomes difficult, if not impossible. Georgia establishes a formal claim filing date by requiring contractors to fill out a claim certification form.

Further, ADOT specifications are unclear as to exactly what supporting documentation is needed. As a result, contractors frequently submit incomplete claims which delays processing until the contractor supplies the missing data. In contrast, Washington's specifications clearly detail the minimum information to be supplied by contractors when they submit a claim.

Written decisions are not required - ADOT specifications do not require ADOT to provide contractors with written decisions on claims submitted. Although ADOT specifications indicate that ADOT is to render a decision within 60 or 90 days of receipt of a claim, the specifications do not require a written decision. Instead, the specifications indicate that if the contractor does not receive a decision from ADOT within the 60 or 90 days, the contractor can assume the claim is denied. Many of the project files we reviewed lacked a written decision. Although most of the contractors we surveyed indicated that ADOT generally did provide a

written decision, some of those that did not receive a written decision were uncertain as to whether ADOT truly denied the claim, or whether ADOT was just late in reaching a decision. Six of the eight states we surveyed require department staff to make all decisions in writing.[1]

Claim progress is not monitored - Although ADOT management indicated that it is the district's responsibility to monitor claims prior to the administrative review stage, some district staff indicated that they rely on the Claims Branch to monitor claims and issue reminders. However, the Claims Branch has not actively monitored the progress of claims at any level.

We found that even those claims which have reached the central office review stage are not being monitored to ensure timely resolution. Once a claim has been denied at the project or district level, the contractor can request an administrative review. Although the Claims Branch plays a key role in scheduling claims for the administrative review, the branch does not always schedule hearings in a timely manner, and it also fails to follow up on the progress of claims after review to ensure timely decisions have been rendered.

The Claims Branch's new goals and objectives indicate that it plans to take a stronger role in monitoring claims. The branch is planning to develop a "tickler" database to signal when ADOT actions are required. Further, the branch will be visiting districts to update information on claim status, and to provide training to district staff on claim resolution.

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(1) We surveyed eight states regarding all aspects of their claims-handling process. We chose these states (North Dakota, Colorado, Washington, Georgia, Florida, Maryland, Michigan, and California) based on recommendations from the Federal Highway Administration, the American Association of State Highway and Transportation Officials, and a national claims consultant, who said these states had good claims processes or many claims. We also discussed time limits with Oklahoma, New Mexico, and Nevada, because our review of literature and conversations with contractors indicated these states had shorter time requirements.

RECOMMENDATIONS

1. ADOT should establish time guidelines for each step in the claim process.

2. ADOT should formalize the claim submission process by:

   - Requiring contractors to submit a claim form indicating the date, basis, and amount of the claim.

   - Clarifying what items the contractor must submit with a claim.

3. The Claims Branch should develop and implement a system for monitoring the progress of claims, and issue reminders when appropriate to ensure that time guidelines are met.

4. ADOT should establish procedures requiring a written decision for every formal claim.

OTHER PERTINENT INFORMATION

During the course of our audit we developed information on ADOT's lack of critical management information and the appeals process.

ADOT Does Not Keep Accurate Composite Information on Project Costs

ADOT could not readily provide the history of all costs associated with its construction projects. We requested composite information regarding projects, specifically: 1) the initial bid amount of a project, 2) change orders, 3) force accounts, 4) claims, and 5) total payments made to contractors. However, we discovered that no such compilation of information exists. Although ADOT reports significant overruns monthly to the Transportation Board, it does not compile the data needed to perceive a pattern over time. A number of unconnected computer systems track related project information.

We found that neither computer data nor handwritten records were completely reliable. ADOT staff wrote a special computer program to compile part of the data we requested from two of its systems. However, the resultant report contained inaccurate figures for change orders and force accounts. Also, the payment records maintained manually by one ADOT section are incorrect. Both problems appear to stem from recording information when only estimates are known, and not correcting it when accurate figures become available. As a result, efforts to test this data were abandoned and the information was not used.

Appeals Process

ADOT has developed an administrative review process to give contractors a second chance to present their case, but some contractors believe the reviews are biased. We examined ADOT's records but reached no definite conclusion on whether hearings are actually biased. Several other states use different appeal processes, but their processes were not evaluated.

Currently, several options are available for a contractor to appeal ADOT's initial (project level) decision on a claim:

- Second level review is available at the contractor's option for any size claim. One or three reviewers, all ADOT engineers, are selected on a case-by-case basis to hear the case and make a recommendation to the State Engineer. The State Engineer's decision binds ADOT, but the contractor may appeal to arbitration or court.
- Arbitration is the final recourse for claims under $100,000. Contractors with larger claims may drop the excess in order to go to arbitration. The American Arbitration Association provides a list of arbitrators from which ADOT and the contractor can select. The decision is final and cannot be appealed to court.
- Litigation is available only for claims over $100,000.

According to ADOT staff, the second level review is an opportunity for contractors to present their case to an engineer not associated with the project who may overturn the project staff's initial decision. Prior to 1987, contractors were required to pass through formal hearings within the department before going to arbitration or court. This was considered unproductive, so requirements were changed to allow the contractor to go directly to arbitration or litigation if ADOT's first response is unsatisfactory. However, the State Engineer wanted to give the contractors a chance to present their case to higher level ADOT officials so he reinstated the top level administrative review as an optional step.

Although the second level review is optional, many contractors appear to believe it is biased against them. Nine of the fifteen contractors we surveyed who had been through a second level review (see Appendix III) said ADOT's second level review hearings were biased. To determine whether there was any apparent bias, we reviewed ADOT's records on all the second level reviews held since the new specifications took effect. Since only two cases went on to arbitration after the second level review, and one outcome favored ADOT while the other favored the contractor, we could not tell whether an independent party would have reached a different conclusion than ADOT's reviewers. We also found that overall, 60 percent of second level review hearings resulted in complete denial of the claim, while only 30 percent of arbitrations held since

1984 resulted in denial. In addition, no second level reviews awarded the full claimed amount, although 20 percent of arbitrations awarded the full amount. However, it should be noted that contractors may not appeal to arbitration unless they feel they have a very strong case, which may explain the lower denial rate.

In addition to reviewing contractors' concerns that the second level review is biased, we studied the appeal processes used by other states. We found ADOT's review process is not unique, but there may be a trend towards different procedures. In 1984, Arizona was one of six states with an internal review board which made recommendations to a department authority and whose decisions could be appealed to court.[1] Alaska, Nevada, New Jersey, Oregon, and South Dakota shared those characteristics with ADOT. However, when we contacted the other five states we found that four had made or are making modifications to include outsiders on the board or to allow the board to make a decision instead of a recommendation. Only New Jersey reported no change. Our conversations with those states, review of the FHWA report, and survey of eight additional states found several different appeal processes, including:

- Internal boards with more authority, fixed membership, or regular schedules. Like ADOT, states which use these boards usually allow subsequent appeal to outside courts or arbitrators. Some boards make the department's final decision instead of recommending a decision to a top department official. Some boards have constant membership and meet regularly to hear claims instead of utilizing case-by-case appointments and scheduling.

- Boards with members from outside the department. In some states, the department and the contractor each select one member, and those members select an independent member. Boards with outside members generally allow subsequent appeal to court or arbitration.

- Separate boards or courts which hear claims. Some states have established Courts of Claims, Boards of Contract Appeals, or Boards of Claims which have jurisdiction over claims. These entities are not controlled by the department of transportation, but are independent or are part of the court system. In some states, their decisions may be appealed to other courts.

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(1) State Laws and Regulations Governing Settlement of Highway Construction Contract Claims and Claim Disputes, FHWA-TS-84-209, October 1984.

- No board. Some states have no hearing process, and contractors may go directly to court or arbitration after obtaining a final department decision.

We did not evaluate the potential impact on Arizona of adopting any of these alternatives, or determine whether contractors in those states are more satisfied than those in Arizona. Further research is needed to evaluate the consequences of a change.

ARIZONA DEPARTMENT OF TRANSPORTATION

206 South Seventeenth Avenue Phoenix, Arizona 85007

ROSE MOFFORD
Governor

CHARLES L. MILLER
Director

June 4, 1990

Mr. Douglas R. Norton, Auditor General
Office of the Auditor General
2700 N. Central, Suite 700
Phoenix, Arizona 85004

Dear Mr. Norton:

I appreciated the opportunity to comment on your findings regarding ADOT's Construction Design Process and Contractor Claims Process. The opportunity to discuss the findings as they were being developed allowed our staff to respond in a positive way before receipt of the draft report. I endorse this process and encourage its continuance as it strengthens the audit and response activity.

We are substantially in concurrence with the findings contained in the report. We have taken the report as constructive criticism, and have utilized the information to initiate revisions to our procedures.

Attached are the specific responses to the report so that you may better understand our view with regard to the design and claims processes. Additionally, where applicable, added data and information have been provided to clarify statements or correct misunderstandings within the report.

Thanks again for the opportunity to make comments on the findings. Please accept my compliments to your staff for the professional manner in which they conducted themselves while visiting our agency.

Sincerely,

Charles L. Miller

CHARLES L. MILLER
Director

CLM/cdd
Attachments

RESPONSE TO THE AUDIT OF CONSTRUCTION DESIGN

FINDING 1: DESIGN REVIEW PROCESS NEEDS TO BE STRENGTHENED.

Response: We concur.

Discussion: We began development of guidelines to strengthen design reviews last Fall. This effort culminated in Highways Division Procedure Memorandum No. 90-12. The Highway Development Process Manual will also address the design review process and will support the Procedure Memorandum. Since highway projects vary considerably in complexity, the number of reviews required varies among projects, but we will have a consistent policy by project type.

We will schedule increased review time, commensurate with the complexity of the project. Increased emphasis will also be placed on adherence to review schedules. Late design reviews will be reduced through staffing modifications and clarified review procedures.

Recommendations:

1. The Department should adopt the policy and guidelines mandated in the Highway Development Group's design review draft manual.

   The Department will publish the Highway Development Process Manual with policy direction for its use.

2. The Department also needs to consider additional ways to strengthen the design review process. Specifically they should:

   a. allow more time for reviewers to submit comments.

      We have already directed that more time be allocated for schedule review and will incorporate the additional time into our project scheduling system.

   b. adopt methods reducing reliance on individual written comments.

      We will investigate the review system used by Colorado and other states for application in Arizona.

FINDING 2: ADOT NEEDS A MORE EFFECTIVE SYSTEM FOR MANAGING DESIGN COSTS.

Response: We concur.

Discussion: Financial management of urban highway design projects is strong. We carefully monitor the cost of urban highway design projects, and the fact that design costs on numerous projects have significantly exceeded original budgets does not signify weak financial management. Original budgets are established on the basis of project knowledge before design begins. However, design by its very nature is a discovery process, and change from original estimates or budgets are a certainty unless the original budget is artificially inflated.

Our consultant design process is strongly managed financially. Consultants are brought under contract with specific scopes of work and dollar limitations. Any changes in scope or increase in contract financial limits must be authorized by supplemental contractual agreements (i.e., change orders). For example, as stated in the original contract for the outer loop management consultant, work is expected to begin in July, 1985, and may continue a minimum of 5 to 10 years". ADOT stated in that contract that it intended to award a contract for phase 1 and 2 work, and that phase 3 would be added later as necessary. Both the Project Monitor and Engineering Consulting Services closely monitor the project expenditures throughout the billing process and payments are not made which exceed the current budget as defined by the original contract and supplemental contractual agreements.

ADOT has placed a greater emphasis on addressing citizen and municipal concerns and schedule above our concern for the original budgets. Emphasis on community participation and schedules pays large benefits. The original urban controlled access system as presented to the voters had not progressed to the point of detailed engineering and cost estimating. Shortly after the election, MAG took official action to establish a schedule for completing the system, thus creating public expectations. Legislative leadership also established time expectations for placing the urban controlled access system under construction.

ADOT has been very successful in meeting early construction commitments. An analysis for the Squaw Peak showed users will benefit nearly $4,000,000 per year for each mile of freeway open to traffic. Consideration of citizen and municipal concerns are vital to the successful implementation of any public works project; as is required by law for all federally-funded projects and by ADOT's own procedures for State-funded projects. The Department has adopted a partnership philosophy of working with the community to make its projects compatible with the environment and goals of the community. This process takes time and resources, but results in the best product. Construction of the system could not take place without this partnership.

ADOT has kept adequate financial information on individual project budgets and expenditures. We have precise information on engineering, construction and right of way budgets and expenditures. We agree that this information has not been readily available to project monitors. We are working to consolidate that information into one system--TRACS, so that budgets and expenditures for related projects may be summarized and aggregated in an automated procedure, and the information will be easily accessible by project monitors.

TRACS, a new comprehensive system which replaced five individual systems, is completing its final stage of implementation. This phase includes issues such as, enhancements to increase roll-up capabilities and expanded data availability. The Department is addressing <u>all</u> of the TRACS issues mentioned in the report.

The use of the term "change order" is really a misnomer, the term "Supplemental Agreements to the Contracts" is the most appropriate and descriptive term. A comparison of original contract amounts and subsequent total amounts contracted is not the means by which one should measure whether or not ADOT's budgets for design are meaningful, adhered to or accurate. The contracts are merely the mechanism for letting the work.

<u>Recommendations</u>:

1. ADOT should develop more realistic project design budgets and update budgets on a more timely basis.

   We have made a significant effort in developing realistic design budgets for this year's 5-Year Construction Program update. New procedures have been established for design, budget and expenditure management, including a monthly status report.

2. Urban Highways staff should continue to develop financial tools that provide accurate budget and expenditure data so decisions affecting design cost increases can be made in view of their impact on individual project, highway, and overall Urban Program budgets.

   The comprehensive effort underway to complete the implementation of TRACS and its productivity enhancements will result in a powerful tool to provide accurate budget and expenditure data at the project, corridor and program levels.

3. Urban Highway staff should issue an annual report explaining significant variances between highway budgets and expenditures.

The Department will determine how it should best report variances between highway budgets and expenditures. Several reports of this nature are presently produced for specific purposes. A single annual report may not fulfill all of the needs.

FINDING 3: ADOT MAY BE ABLE TO REDUCE COSTS BY MAKING ITS CONSULTANT PROCUREMENT PROCESS MORE COMPETITIVE.

Response: We are willing to explore the concept of other contracting methods for consultant services.

Discussion: To address cost reduction through competitive consultant procurement, the Department will undertake a value engineering study to review its engineering consultant contracting procedures.

The phrase "spreading the work around" whether used in the report or by ADOT staff--does not reflect the true nature of our selection policy or criteria. More precisely, consideration is given to existing residual resources of a firm prior to selection. Further, consideration is given to the location at which the work is to be performed.

Our procurement practices are subject to close scrutiny and approval--externally by the Attorney General and the Federal Highway Administration; and internally by our own management and auditors. ADOT practices are carefully watched by the consulting community. Most importantly, however, ADOT has an obligation to the public to continue sound procurement practices.

ADOT has never eliminated a firm from consideration at either the short listing or final selection stages because of substantial prior ADOT work. We have eliminated firms from consideration because of the amount of their current ADOT work and their capabilities. In ADOT's review of the 206 contracts awarded in calendar years 1987, 1988 and 1989, management modified the short list recommendation on only 22 projects (10.7%) and the final selection recommendation on only 10 projects (4.9%). In both cases, modifications were not primarily related to the amount of current ADOT work.

Recommendations:

1. ADOT should continue to follow public advertising, consistent technical evaluation, and other current practices that have provided a strong procurement system for design consultants.

   We will continue our strong procurement system for consultants.

2. ADOT management should reconsider its policy of "spreading the work around," and if a determination is made to continue it, this policy should be disclosed in advertising and materials distributed to interested firms and selection committee members.

   ADOT's selection process is based upon a consultant's current ADOT workload, other factors, and the firm's capabilities as clearly expressed in the short list and selection criteria, and emphasized in preproposal meetings. ADOT will continue to emphasize the importance of this understanding.

3. ADOT management should consider introducing some cost competition prior to selection of a design consultant.

   ADOT believes the current system does indirectly consider cost as a selection factor.

4. The Legislature may wish to consider requiring ADOT to promulgate rules comparable to the State's procurement code for departmental purchasing not covered by other legislation.

   ADOT believes the current procedures which have been reviewed and approved by the Federal Highway Administration and the Attorney General's office are more than adequate.

RESPONSE TO THE AUDIT OF

CONSTRUCTION CONTRACTOR CLAIMS

FINDING 1: ADOT LACKS A COMPLETE AND ACCURATE PICTURE OF THE STATEWIDE CLAIMS SITUATION

Response: We partially concur.

Discussion: The Claims Branch was created at the request of the Office of the Attorney General to act as a liaison between it and the Department. Major functions of this office include training and assistance to field personnel in claims avoidance and claims resolution. The results of our efforts have reduced the claims payout as a percent of the dollar amount of construction projects awarded from two percent in 1985 to nearly zero percent in 1989 as documented in your report.

It was never intended that this new office duplicate all the claims records which are kept at the project offices; nor was it intended that this office maintain duplicate copies of all the accounting records for the project, which are maintained more appropriately by other sections with ADOT.

The Claims Branch has already implemented many of the recommendations regarding our central office files. The following are the recommendations which the Claims Branch has already implemented with regard to its files:

- Inactive files have been moved off-site.
- Active files are secured and a strict sign-out system has been implemented, limiting access to staff directly involved in the claims process.
- All claims files have been reviewed; duplicate records have been eliminated; documents are organized chronologically in each file.
- Each active file has a summary sheet to reflect all actions which have been referred to the Claims Branch.
- Internal office procedures have been established for the claims office and a manual documenting these procedures is forthcoming.

Recommendations:

1. **ADOT should continue to implement improvements as outlined in its goals and objectives statement for the Claims Branch.**

   We agree and are continuing to implement improvements.

2. **ADOT should revise its method of reporting claim information to more accurately reflect claim dollar amounts.**

   We partially agree. We will report waivers of liquidated damages and end product penalties but not administrative costs.

3. **ADOT should analyze claims information in various ways. The analyses might be used to identify and correct problem areas in plans, specifications, or other contract documents which may be the cause or subject of frequent claims.**

   We agree; the process is already underway.

4. **ADOT should consider implementing some of the recommendations proposed by records management in order to better utilize and manage its Claims Branch files including developing a set of office procedures, providing case summaries for each file, and improving file security.**

   We agree and have already implemented much of this recommendation.

FINDING II: ADOT NEEDS TO IMPLEMENT CHANGES TO ENSURE TIMELY RESOLUTION OF CLAIMS

Response: We concur.

Discussion: The appeals process offered by ADOT in the form of a review by the State Engineer's office has been a successful procedure. Hearing Officers are urged to base their decisions solely on the merits of the claim as brought out in the evidence presented at the hearing by the contractor and the District. The hearing officers are counseled to be unbiased and impartial in judging the claim and to find in favor of the contractor if the evidence demonstrates that entitlement is warranted.

Lack of a standard form to use to file the formal claim has never been a problem; we use the contractor's letter accompanied by a form composed by the District. Each claim filed by a contractor is unique and may not be one that would fit into a form with all required information appropriate to the particular claim. Section 105 (B) of our Standard Specifications itemizes all necessary information required to be included in a claim. The lack of a specified list of minimum items to go into a formal claim has also not proven to have been a problem.

Although we are amending our Standard Specifications, we also have sent our district personnel a written procedure which directs the District to send the contractor written notification when ADOT denies a claim. We are developing a policy to include a time limit for ADOT to make a decision following the administrative review of an appeal.

Recommendations:

1. **ADOT should establish time guidelines for each step in the claim process.**

   Time guidelines for the submission and processing of claims are set out in the Standard Specifications.

2. ADOT should formalize the claim submission process by:

   - Requiring contractors to submit a claim form indicating the date, basis, and amount of the claim.
   - Clarifying what items the contractor must submit with a claim.

   It should be stressed again that each claim by a contractor is unique and may not lend itself to submission in a form. The Standard Specifications (Sec. 105.17, Page 3a) clearly indicate the required contents of a notice and a claim.

3. The Claims Branch should develop and implement a system for monitoring the progress of claims, and issue reminders when appropriate to ensure that time guidelines are met.

4. ADOT should establish procedures requiring a written decision for every formal claim.

   We concur with recommendation Nos. 3 and 4 and are currently in the process of implementing changes.

APPENDIX I

State of Arizona
DEPARTMENT OF LIBRARY, ARCHIVES AND PUBLIC RECORDS
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Director

RECORDS MANAGEMENT DIVISION
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MARTIN RICHELSOPH, CRM
Division Director

TO: Shan Hays
Auditor General/Performance Audit Division

FROM: Hal Holady
Dept of Library, Archives & Public Records/Records Mgmt Division

SUBJECT: Staff Assistance Visit

On December 19th, you and I visited the ADOT office which processes contract adjustment claims. Based upon our discussion and my observations, I offer the following comments:

1. The staff frequently has difficulty in locating files. Files are occasionally lost.

2. ADOT Records Manual 1-85-41, page 14, schedule 5, item 127, requires microfilming all these files. We do not believe microfilming is practical or cost effective.

3. Because of staff shortages, nobody was assigned specific responsibility for managing the claims case files. A Mike Marietti was to be assigned this task in the near future.

4. Files contained many duplicate records. Eight copies of the same letter had been filed in one folder I examined.

5. No systematic filing order had been established for placing documents within a case file. Each document was filed randomly and every search conducted from "scratch".

6. There were several different filing systems in use in the same office. Thefiling system was confusing.

7. File security left a lot to be desired. File cabinets were located in a common area where they were easily accessed by anyone and everyone.

8. Individual cases might consist of one folder or several folders. There was no indication that a case was continued elsewhere.

9. Out cards were not being used, although several were stacked on top of one cabinet.

10. A file check out system was not enforced, although a clip board was hanging from the wall above one cabinet. Apparently, it was intended that folders be signed out when removed from the files.

11. Filing equipment was inefficient in terms of floor space and labor required. Open shelf filing would decrease floor space requirements by about 40% and increase labor productivity by 30-40%.

Based upon the above observations and concerns, I suggest the following actions be taken:

1. A new records retention and disposition schedule should be written to include claims files, as required by ARS 41-1346. The claims engineer suggests (and I concur) that files be maintained two years in the office and three years at the records center, after the case is resolved.

2. Inactive records should be rotated out of the office and into the records center. More office space would then be made available for active files.

3. One individual should be assigned responsibility for managing all claims files.

4. When funds become available, files should be converted to open shelving and color coded side tab folders. Color coding would substantially reduce the number of misfiles.

5. Cases should be filed in sectioned file folders with pre-designated sections for various components of the case. This would enable critical data from a case to be retrieved much more easily (and rapidly). A summary of each case should be filed inside the cover of each case file.

6. The ADOT file plan for claims files should be reviewed, updated and followed. Our office would be happy to assist in this project later this year.

7. A set of office procedures should be developed for the claims office. The present system operates by "word of mouth".

8. File security needs to be strictly enforced. Access should be limited, files should always be signed out and out cards should be USED routinely.

I hope the above suggestions are helpful in your study. Please contact me at 542-3741 if I can be of any further assistance.

APPENDIX II

CONTRACTOR SURVEY RESULTS

During the course of the audit, a small sample of highway construction contractors were surveyed to determine their opinions about the claims process. The contractors surveyed were associated with 25 active claims we randomly selected for a file review, as well as the population of 22 claims that had received a second level review. From both sources, twenty different contractors (29 percent of the total population of contractors) who have filed claims with ADOT were identified.(1)

Although this sample is small and not statistically significant, the survey population represents those contractors who have filed 67 percent of the total claims from September 1984 to September 1989. Consequently, the responses provide a meaningful and qualitative assessment of the claim resolution process.

Methods

This survey was conducted by telephone. Questions covered the claims process in general, the contractor's specific procedures regarding claims, and the quality and timeliness of ADOT's claim decisions. (A copy of the questionnaire is attached.) Opinions were also solicited regarding the contractor's opinions about the second level review process and the composition of the review board.

Analysis

Overall rating/criticisms - Over half (12 of 20) of the contractor representatives in the sample rated ADOT's handling of claims as either POOR (3 of the 12) or VERY POOR (9 of the 12). Of the remainder, four rated it FAIR, three rated it GOOD, and one had no opinion.

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(1) Although 20 different contractors were identified, one was determined to be out of business, and the company that has filed the most claims overall was contacted twice. Consequently, the survey consists of responses from 20 different contractor representatives, from 19 different companies.

Some contractor representatives were critical of ADOT for untimely claim decisions and responses. Other criticisms were based on perceptions that ADOT is unwilling to negotiate or work with the contractor, and that most claims are resolved at the district level or higher. The most commonly mentioned improvements to the process were in these three areas.

Timeliness of decisions - Nineteen of the 20 contractor representatives surveyed were aware of the claims process and the options available for appeal of an unfavorable decision. These nineteen had a basic idea of the time frames for the process as far as their submission of information, but only five contractors knew the time frames in which ADOT must respond to claims.

Twelve of the twenty contractor representatives said that ADOT did not resolve claims in a timely manner. Interestingly, when asked what they would propose as an acceptable time frame, the time frames offered by the contractors ranged from within 30 days for complete resolution to within 6 months. This wide range indicates the lack of consensus regarding an acceptable time frame.

Decision-making authority - Although ADOT policy states that claims be resolved at the lowest possible level, most (14 of 20) contractor representatives felt that claim decisions are made at the district level or higher. Some felt that project staff should be able to resolve claims, because the process would be quicker and less costly.

The majority (13 of 20) also said that ADOT is not willing to negotiate. Five contractor representatives stated that ADOT policy is to deny all claims, forcing the contractor to take further action (i.e., second level review, arbitration, or litigation). In the opinion of one contractor, this unwillingness to negotiate is due to the fact that ADOT district staff and below do not have the authority to negotiate claims. Three contractor representatives stated that even when ADOT does negotiate, their settlement offers are unreasonably low, sometimes only $.10 or $.15 on the dollar.

Nine contractor representatives stated that they were not adequately compensated for their claims. This occurs mostly because, in their opinion, ADOT never offers a reasonable settlement amount. However, eight replied they could not offer an opinion because their claims had not been settled yet. Also, most (12 of 20) said that the biggest impact on their operation from a poorly handled claim by ADOT is unnecessary expenditure of time and money.

Second level review - Fifteen of the twenty contractor representatives had been through a second level review, but only eleven had received a decision since four cases were still pending. Of these eleven, all had been through the process only once or twice, and only one responded that the decision was favorable. Eight said that the decision was unfavorable, while two said it was mixed (didn't favor either side).

Overall, seven contractor representatives responded that the second level review process needed significant improvement. Three felt the review was good but needed modifications, and only one approved of the process. Nine contractor representatives stated they felt the review board was biased against the contractor, and nine also said they would like to see review board members who were not ADOT employees. Despite these criticisms, seven of the fifteen contractor representatives said they would request a second level review again.