

# The Mississippi Legislature



## A Review of the Mississippi Department of Transportation's Procedures for the Procurement of Professional Engineering Services

October 19, 1992

Since July 1, 1989, the Mississippi Department of Transportation (MDOT), formerly the State Highway Department, has utilized its own engineers to design 437 projects and has awarded twenty-seven engineering design services contracts totalling \$5,417,626 to private-sector engineers. MDOT awarded ten of these contracts (37%), totalling \$2,987,253, to out-of-state engineering firms.

Although MDOT has complied with federal regulations concerning procurement of engineering services, it has not complied with MISS. CODE ANN. Section 73-13-45 (1972) in four of the ten contracts awarded to out-of-state engineering firms. In addition, MDOT's Internal Auditor serves on the Consultant Selection Committee, which is inconsistent with internal audit standards.

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The Mississippi Legislature  
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PEER Committee



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October 19, 1992

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MEMBERS OF THE MISSISSIPPI STATE LEGISLATURE

At its meeting of October 19, 1992, the PEER Committee authorized release of the report entitled **A Review of the Mississippi Department of Transportation's Procedures for the Procurement of Professional Engineering Services.**

  
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Senator Bill Canon, Chairman

**This report does not recommend increased  
funding or additional staff.**

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# A Review of the Mississippi Department of Transportation's Procedures for the Procurement of Professional Engineering Services

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## Executive Summary

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### Introduction

Since July 1, 1989, the Mississippi Department of Transportation (MDOT), formerly the State Highway Department, has utilized its own engineers to design 437 projects and has awarded twenty-seven engineering design services contracts totalling \$5,417,626 to private-sector engineers. MDOT awarded ten of these contracts (37%), totalling \$2,987,253, to out-of-state engineering firms. Of 1,211 engineering contracts awarded by Mississippi's four surrounding states and Kentucky between 1989 and 1992, only two Mississippi engineering firms received contracts.

**Overview:** *Although MDOT has complied with federal regulations concerning procurement of engineering consultants, it has not complied with state law.*

MDOT awarded twenty-seven engineering contracts between July 1, 1989, and June 30, 1992, including ten, or 37%, to non-resident firms. MDOT is in compliance with federal law regarding the procurement of professional engineering services, but violated MISS. CODE ANN. Section 73-13-45 (1972) in four of ten contracts awarded to non-resident firms. Section 73-13-45 requires MDOT to place the same rules and requirements on non-resident engineering firms doing work in Mississippi which are placed on Mississippi firms doing business in the firms' states. Such noncompliance removed \$2.9 million from the state's economy and decreased state general fund tax revenue by approximately \$144,678. In addition, MDOT's Internal Auditor serves on the Consultant Selection Committee, which is inconsistent with internal audit standards. An internal auditor cannot be objective if performing functions which are subject to internal audit.

### Federal, State and Agency Requirements Concerning Procurement of Engineering Services

#### Federal Regulations

In addition to its own policies and procedures, MDOT is governed by federal regulations and state laws concerning procurement of engineering services. Section 111(b) of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (*Public Law 100-17* [1987]) provides state and local agencies three means of compliance concerning engineering services procurement: the Brooks Bill, equivalent qualifications-based procedures or establishment of formal statutory procurement procedures by August 1, 1989. A state must utilize only one means of compliance in its procurement of all engineering services; MDOT utilizes its standard operating procedures, which were already approved by the Federal Highway Administration, to comply with Section 111(b).

#### State Law

MISS. CODE ANN. Section 73-13-45 (1972) governs MDOT's award process for engineering design service contracts when federal funds are not utilized to pay for such services. The Legislature amended this section in 1989 to give preference to resident Mississippi engineering firms in the awarding of professional engineering design contracts. A non-resident engineering firm may qualify as a resident engineer if the firm maintains an office in Mississippi for at least two years prior to submitting a proposal for engineering services.

#### Agency Procedures

MDOT's standard operating procedures provide three conditions under which MDOT may procure

professional engineering services for a project, rather than provide them in-house:

- The magnitude of the work involved in a particular project may so tax the department's available staff that it would be necessary to defer other essential work if the work were performed by MDOT's own staff.
- The work required in a project may be of such specialized nature that MDOT must go outside its own staff for experts in appropriate fields to accomplish the work.
- The time frame within which the work must be accomplished may be such that the department cannot undertake the work and maintain its program on schedule.

MDOT's procedures for procuring engineering services are detailed in Exhibit A, page ix.

## Findings

**MDOT's standard operating procedures governing the selection of engineering consultants comply with applicable federal regulations.**

As noted above, MDOT must adhere to qualifications-based procurement procedures for engineering services in any project in which such services will be paid with federal funds. In April 1983, FHWA's regional and division administrators approved MDOT standard operating procedures which prescribe the procurement of engineering services. MDOT revised the procedures in 1987 and in 1990, with the FHWA approving both revisions. Personnel in FHWA's Jackson division office stated that MDOT's standard operating procedures were in full accordance with applicable federal regulations. By selecting engineering services in accordance with federal law, MDOT has not risked losing federal aid dollars.

**During fiscal years 1990 through 1992, fourteen percent of engineering contracts entered into by MDOT were not in compliance with state law. Had MDOT complied with state law, at least a portion of the \$2.9 million in economic impact associated with these contracts would have affected Mississippi. This could**

**have generated as much as \$144,678 in state general fund tax revenue.**

PEER reviewed the project files and the contracts of all ten engineering services contracts awarded to out-of-state engineering firms during fiscal years 1990 through 1992. Four of these contracts were not awarded in compliance with MISS. CODE ANN. Section 73-13-45 (1972) because MDOT did not require these firms to abide by the same provisions which a Mississippi engineering firm has to meet in their home states.

According to Section 73-13-45 (2)(a), "*nonresident professional engineers shall be awarded Mississippi public contracts only on the same basis as the nonresident professional's state awards contracts to Mississippi professional engineers under similar circumstances.*" The four contracts not in compliance with state law were awarded to either Arkansas or Kentucky firms, and MDOT should have required these firms to abide by the same provisions which a Mississippi engineering firm has to meet in those states. MDOT did not require out-of-state engineers to submit copies of their states' award criteria for a non-state firm as part of their contract proposals.

**MDOT's Internal Auditor's serving on the Consultant Selection Committee is inconsistent with internal audit standards.**

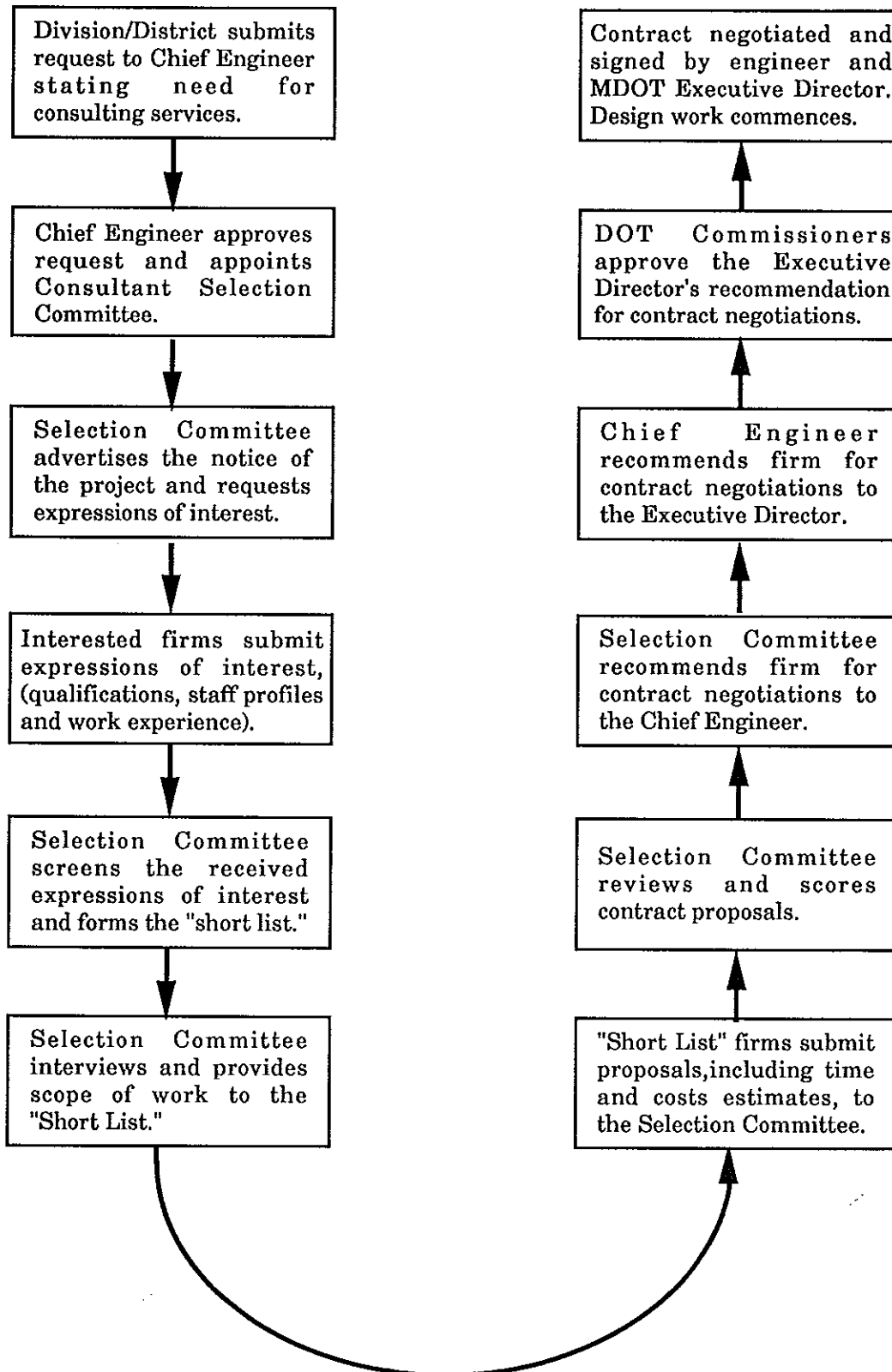
MDOT standard operating procedures provide for MDOT's internal auditor to serve as a member of the Consultant Selection Committee, which reviews all project proposals and recommends contract negotiations to the Chief Engineer. The Institute of Internal Auditors' *Standards for the Professional Practice of Internal Auditing* provides that internal auditors must be independent of the activities they audit. Such independence allows internal auditors to conduct their work objectively. MDOT's internal auditor cannot be an objective auditor if he or she performs operating functions, such as participating in the selection of professional contractors, which may be subject to internal audit.

## Value Engineering

Value engineering, a management technique which utilizes a systematized approach to find the best functional balance between the cost, reliability and performance of a product or a project, seeks to

## Exhibit A

### Mississippi Department of Transportation's Standard Operating Procedures for the Selection of Engineering Consultants



identify and remove any unnecessary costs in a project. Value engineering breaks a system down into functions to determine where the majority of costs are going. This done, designers can eliminate unnecessary components and search out less expensive solutions to costly problems or areas.

Every MDOT construction contract has a value engineering clause in it allowing the contractor to conduct value engineering on the designs. MDOT must review and approve any contractor's change proposal, with MDOT and the contractor splitting any savings identified by the value engineering. When asked the department's position on value engineering, MDOT personnel reported that MDOT would like to have its own value engineering team, but personnel and budgetary constraints do not allow such an internal team.

### Recommendations

1. MDOT should comply with MISS. CODE ANN. Section 73-13-45 (1972) to insure that preference is given to Mississippi engineers and to insure that nonresident professional engineers be awarded Mississippi public contracts only on the same basis as the nonresident professional's state awards contracts to Mississippi professional engineers under similar circumstances.

In order to be aware of other states' requirements, MDOT should adhere to MISS. CODE ANN. Section 73-13-45 (1972) and require a non-resident professional engineer to attach copies of his or her state's current statute, resolution,

policy, procedure or executive order to the project proposal.

2. Beginning July 1, 1993, and for the next three fiscal years, the State Auditor should review all MDOT engineering services contracts awarded to non-resident engineers to determine MDOT's compliance with MISS. CODE ANN. Section 73-13-45(2)(a) (1972).

In the event that MDOT is not in compliance, the State Auditor should issue a demand letter in accordance with MISS. CODE ANN. Section 7-7-211(g) requiring repayment of any funds wrongfully expended. If MDOT fails to repay such funds, the State Auditor shall institute suit against the Transportation Commission to recover misspent funds and the Attorney General shall provide all necessary assistance in prosecuting such suit.

3. In order to insure objective and impartial audits, MDOT should revise standard operating procedure ADM-24-01-00-000 to provide that the MDOT internal auditor should not serve on the Consultant Selection Committee.
4. The Transportation Commission should study the feasibility of MDOT's conducting value engineering analyses of designs and drawings submitted by consulting engineers. One way to accomplish this could be to realign department personnel to develop an interdisciplinary team to study and draw conclusions concerning the proper balance between the cost, performance, and reliability of each design project.

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# **A Review of the Mississippi Department of Transportation's Procedures for the Procurement of Professional Engineering Services**

## ***Introduction***

### **Authority**

In response to a legislative request, the PEER Committee began this review of the Mississippi Department of Transportation (MDOT) at its May 27, 1992, meeting. The review was conducted in accordance with MISS. CODE ANN. Section 5-3-57 (1972).

### **Purpose and Objectives**

The purpose of this review is to determine:

- MDOT compliance with federal laws governing the selection of engineering consultants;
- MDOT compliance with MISS. CODE ANN. Section 73-13-45 (1972) requiring "preferential treatment" to resident professional engineers;
- the estimated financial impact of any failure to comply with federal and state laws; and,
- corrective actions required.

PEER identified the number of out-of-state professional engineering consultants who have been awarded engineering contracts in Mississippi and the number of Mississippi engineers who have been awarded contracts in the four surrounding states. PEER also identified the number of Mississippi engineers awarded engineering contracts in Kentucky because two Kentucky firms entered into such contracts with MDOT.

### **Scope and Methodology**

In conducting this review, PEER:

- reviewed Mississippi and federal statutes and regulations governing the selection of professional engineering consultants;

- interviewed representatives of the Federal Highway Administration's regional office;
- reviewed Mississippi Department of Transportation's standard operating procedures for the selection of engineering consultants;
- reviewed standard operating procedures for the selection of engineering consultants in Alabama, Arkansas, Kentucky, Louisiana and Tennessee;
- reviewed all MDOT engineering contracts for the period of FY 1990 through FY 1992;
- interviewed members of MDOT's consultant selection committee;
- interviewed representatives of the Mississippi Consulting Engineers' Council, which represents seventy-five Mississippi engineering firms; and,
- reviewed available information concerning value engineering.

### Overview

MDOT awarded twenty-seven engineering contracts between July 1, 1989, and June 30, 1992, including ten, or 37%, to non-resident firms. MDOT is in compliance with federal law regarding the procurement of professional engineering services, but violated MISS. CODE ANN. Section 73-13-45 (1972) in four of ten contracts awarded to non-resident firms. Section 73-13-45 requires MDOT to place the same rules and requirements on non-resident engineering firms doing work in Mississippi which are placed on Mississippi firms doing business in the firms' states. Such noncompliance removed \$2.9 million from the state's economy and decreased state general fund tax revenue by approximately \$144,678. In addition, MDOT's Internal Auditor serves on the Consultant Selection Committee, which is inconsistent with internal audit standards. An internal auditor cannot be objective if performing functions which are subject to internal audit.

## *Background*

MDOT procures professional engineering services for road and bridge designs. Since July 1, 1989, MDOT has utilized its own engineers to design 437 projects and has awarded twenty-seven engineering design services contracts totalling \$5,417,626 to private sector engineers:

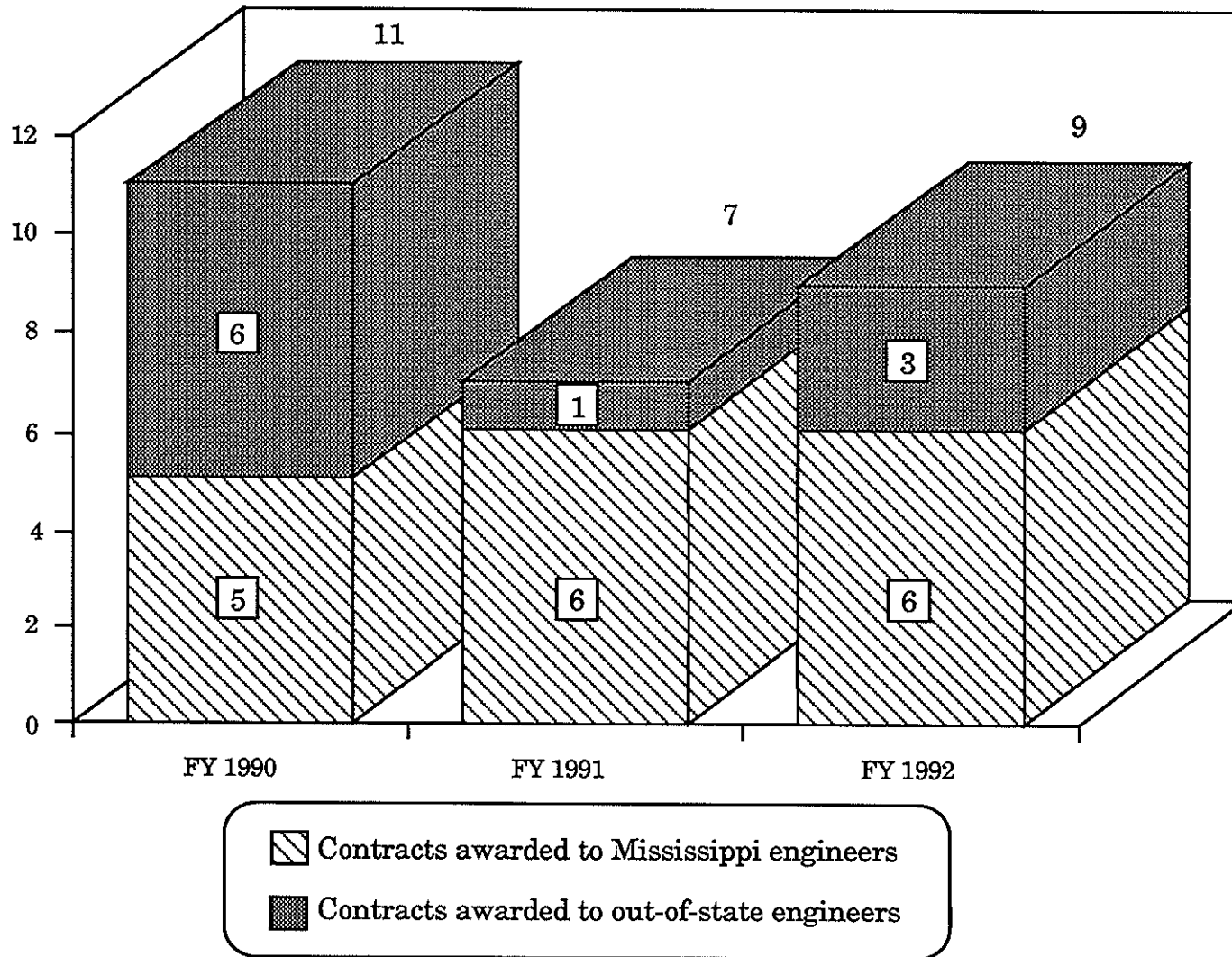
Fiscal Year	Internal Projects	Projects Contracted Out	Total
1990	160	11	171
1991	178	7	185
1992	<u>99</u>	<u>9</u>	<u>108</u>
<b>Total</b>	<b>437</b>	<b>27</b>	<b>464</b>

MDOT awarded ten of these contracts (37%), totalling \$2,987,253, to out-of-state engineering firms (See Exhibit 1, page 4, and the Appendix, page 18). Mississippi's four surrounding states and Kentucky issued a total of 1,211 engineering contracts between 1989 and 1992. Only two Mississippi engineering firms were awarded design services contracts in other states during this period. Louisiana issued four contracts, totalling \$418,348, to these two Mississippi engineering firms, while Tennessee awarded two contracts, totalling \$627,545, to one of the firms.

MDOT's expenditures for professional engineering services do not constitute a large part of the department's total expenditures. In fiscal years 1990, 1991 and 1992, contract expenditures for engineering services constituted less than one percent of MDOT's total expenditures:

Fiscal Year	Total MDOT Expenditures	Contractual Engineering Fees	% of Total Expenditures
1990	\$374,764,826	\$2,475,170	.38%
1991	459,213,587	1,011,997	.22%
1992	503,621,753	1,930,459	.66%

**Exhibit 1**  
**Engineering Contracts Awarded by the Mississippi**  
**Department of Transportation**  
**Fiscal Years 1990-1992**



SOURCE: PEER staff analysis of MDOT documents.

MDOT's standard operating procedure ADM-24-01-00-000 provides the three conditions which make it necessary for MDOT to procure professional engineering services rather than provide them in-house:

1. *Magnitude of the Work Involved on a Project:* The magnitude of the work involved in a particular project may so tax the department's available staff that it would be necessary to defer other essential work if the work were performed by MDOT's own staff.
2. *Complexity of the Work Involved on a Project:* The work required in a project may be of such specialized nature that MDOT must go outside its own staff for experts in appropriate fields to accomplish the work.
3. *Time Required to Perform the Work on a Project:* The time frame within which the work must be accomplished may be such that the department cannot undertake the work and maintain its program on schedule.

The primary concern of the legislator requesting this review is that MDOT may not be procuring engineering services in accordance with applicable federal and state laws and regulations. The Mississippi Consulting Engineers' Council (MCEC) shares this concern. A summary of applicable federal and state laws with respect to the procurement of professional engineering and design services follows.

### **Federal Regulations**

Section 111(b) of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (*Public Law 100-17 (1987)*) amended 23 U.S.C. Section 112(b) and made the procurement of engineering and design services qualifications-based. 23 CFR Part 172 provides that state and local agencies:

*award engineering and design service contracts using Federal-aid highway funds in accordance with the provisions of title IX of the Federal Property and Administrative Services Act of 1949, commonly called the "Brooks Bill," or use equivalent State qualifications-based procedures unless they have established or choose to establish a formal procurement procedure by State statute. (emphasis added)*

Section 111(b) provided three means of compliance: the Brooks Bill, equivalent qualifications-based procedures or establishment of formal statutory procurement procedures by August 1, 1989. Although Section 111(b) provides three means, a state must utilize only one in its procurement of all engineering services. MDOT utilized its standard

operating procedures, which were already approved by the Federal Highway Administration (FHWA), to comply with Section 111(b) (see subsequent section on page 7).

All federal-aid contracts for engineering services authorized after April 2, 1987, are subject to the provisions of the Surface Transportation and Uniform Relocation Assistance Act. The FHWA revised section 23, part 172, of the *Code of Federal Regulations* on April 23, 1991, to describe acceptable procurement procedures for engineering and design services. The regulations required states' written procurement procedures to be approved by the FHWA.

### State Law

MISS. CODE ANN. Section 73-13-45 (1972) governs MDOT's award process for engineering design service contracts when federal funds are not utilized to pay for such services. Prior to 1989, this section simply mandated that neither the state nor any of its public entities engage in the construction of any public work unless the plans and specifications for such work had been prepared by a registered professional engineer. The Legislature amended this section in 1989 to give preference to resident Mississippi engineering firms in the awarding of professional engineering design contracts. A non-resident engineering firm may qualify as a resident engineer if the firm maintains an office in Mississippi for at least two years prior to submitting a proposal for engineering services.

MISS. CODE ANN. Section 73-13-45 (1972) requires:

- MDOT to award personal services contracts to a "non-Mississippi resident" firm on the same basis that the home state of this firm awards its engineering design services work to a "Mississippi resident" firm, i.e., out-of-state firms must meet the same qualifications in Mississippi that a Mississippi engineering firm has to meet in their home states;
- Non-Mississippi-resident firms to submit a copy of their state's award criteria for a non-state resident firm as part of their project contract proposals;
- MDOT to grant preference to a Mississippi resident firm over a non-Mississippi resident firm in the same manner and to the same extent as provided by state of domicile for the non-Mississippi resident firm; and,
- MDOT to not apply the provisions of the statute to any design services contract which would not receive federal funding due to the preference requirements of the statute.

A basic issue in the selection process is the use of competitive bidding for engineering services. In the 1980's the Mississippi State Board of Registration for Professional Engineers and Land Surveyors, hereafter referred to as the board, maintained that engineers should be chosen based strictly on qualifications and not on price. The board at one time prohibited solicitation or submission of proposals for professional services by engineers on the basis of competitive bidding. MDOT, then known as the Mississippi State Highway Department, considered its procedures to be competitive negotiations and questioned the authority of the board to prohibit competitive bidding. MDOT and the board both requested Attorney General's opinions in 1985. The Attorney General's Office held that the board only had the authority to promulgate rules restricting, not prohibiting, competitive bidding. The Attorney General also held that MDOT's procedures were negotiations rather than competitive bidding.

### **MDOT Standard Operating Procedures**

MDOT standard operating procedure ADM-24-01-00-000 governs the selection of engineering services. Exhibit 2, page 8, depicts the procedure for the procurement of engineering services. This procedure provides that the Chief Engineer, after approving a request for professional services, appoint the Consultant Selection Committee to handle the selection. As a standard, the committee consists of MDOT's Internal Auditor, the district engineer of the district where the project will be located, MDOT's Assistant Chief Engineer of Planning and Design, the Bridge Design Engineer and the Roadway Design Engineer.

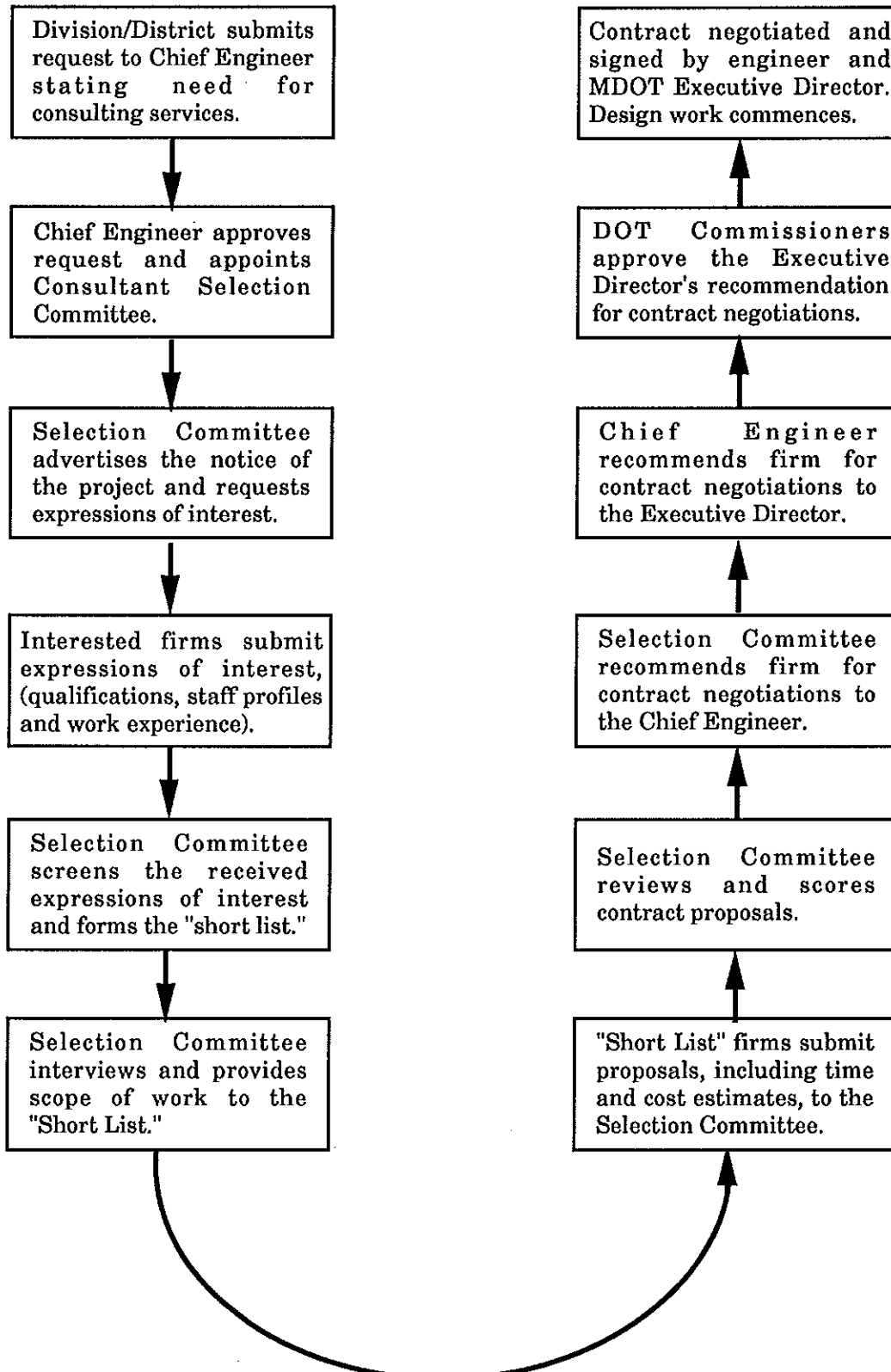
MDOT publishes a legal notice in a statewide newspaper to request expressions of interest. MDOT does not directly notify out-of-state engineering firms of the need for professional services unless the project is of a highly specialized nature in which a Mississippi firm does not have experience. MDOT officials reported that non-resident engineers subscribe to clipping services in Mississippi and are made aware of the opportunity in the same manner as Mississippi engineers. The Consultant Selection Committee reviews all expressions of interest and analyzes each interested firm's qualifications, staff and related work experience.

MDOT standard operating procedure ADM-24-01-00-000 provides that the following factors, which are to be addressed by interested firms in their "expressions of interest," be considered by the Selection Committee:

- professional reputation of the firm;
- experience of the firms in performing specific services related to the project;
- qualifications and experience of the principals of the firms;

## Exhibit 2

### Mississippi Department of Transportation's Standard Operating Procedures for the Selection of Engineering Consultants



SOURCE: PEER Analysis of MDOT Standard Operating Procedures



- size and experience of the firm's professional and technical staff with respect to the magnitude of the project;
- the extent of in-house capabilities of the firms to perform specialized services required by the project;
- quality of workmanship and performance of the firms;
- depending on the nature of the project, the location of the firms with respect to the project site may be important; and,
- financial standing of the firm.

No weights are assigned to these factors. Based on individual professional judgement, each member of the committee independently ranks the "expressions of interest" received. The ranks assigned by each member of the committee are then added to arrive at the final ranking of all expressions of interest. The committee then devises the "short list," which consists of the three to five firms determined to be the most qualified by the committee as a whole.

The Consultant Selection Committee holds a meeting with the firms on the short list, at which time the committee provides the firms with the scope of work for the particular project. The short-listed firms must then submit project proposals which provide both time and cost proposals for the project and their firm's related experience. The Consultant Selection Committee evaluates each shortlisted firm's project proposal in relation to the subfactors of time, cost and qualifications to determine which firm should be recommended for contract negotiations. A score from 0-10, with 10 being the best score, is assigned to each subfactor and then multiplied by that subfactor's weight. Time carries a weight of .35, cost is .30 and qualifications of a firm are weighted by .35. For example, assume that an engineering firm's cost and time proposals are each awarded an 8 on the ten-point scale, while its qualifications are awarded a 7. The firm's total score would be computed as follows:

$$\begin{array}{r}
 \text{Time:} \quad (8)(.35) = 2.8 \\
 \text{Cost:} \quad (8)(.30) = 2.4 \\
 \text{Qualifications:} \quad (7)(.35) = \underline{2.45} \\
 \text{Total:} \quad 7.65
 \end{array}$$

Each short-listed firm's proposal is reviewed and scored as discussed above. The committee recommends the firm receiving the highest score to the Chief Engineer for contract negotiations, along with the second and third choices as alternates. The Chief Engineer must recommend to the Director that authority be obtained from the Transportation Commission to initiate negotiation of a contract. If negotiations do not result in execution of a contract with the top-ranked short-listed firm, negotiations can be terminated and begun with the second-ranked firm.

## *Findings*

### **MDOT's standard operating procedures governing the selection of engineering consultants comply with applicable federal regulations.**

As discussed earlier, Section 111(b) of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (*Public Law 100-17 (1987)*) amended 23 *U.S.C.* Section 112(b) to require that federal-aid highway engineering and design service contracts be awarded in accordance with the provisions of Title IX of the Federal Property and Administrative Services Act of 1949, commonly called the Brooks Bill, or by using equivalent state qualifications-based procedures. The Brooks Bill's mandated qualifications-based negotiations apply to all projects which utilize federal funds. There are three phases in a highway project: design/preliminary engineering, right-of-way and construction. Federal funds may be utilized in any or all of these phases. MDOT must adhere to qualifications-based procurement procedures for engineering services in any project in which such services will be paid with federal funds.

The FHWA revised Section 23, part 172, of the *Code of Federal Regulations* on April 23, 1991, to describe acceptable procurement procedures for engineering and design services. These regulations required state and local agencies to evaluate and select firms using either qualifications-based procedures or procedures based on state statute. The regulations required states' written procurement procedures to be approved by the FHWA.

MDOT's procedures for the procurement of engineering services meet all applicable federal government regulations. FHWA's regional and division administrators approved MDOT standard operating procedure ADM-24-01-00-000 (see Exhibit 2, page 8) in April 1983. MDOT made revisions to the standard operating procedures in 1987 and in 1990, with the FHWA approving both. Personnel in FHWA's Jackson division office stated that MDOT's standard operating procedures were in full accordance with applicable federal regulations.

The federal government does not impose penalties for not complying with federal rules and regulations regarding the procurement of engineering and design services; it simply does not release any federal funds to MDOT until the FHWA has approved the procurement of such services. 23 CFR part 630.114(g) states, "*Federal funds shall not participate in costs incurred prior to date of authorization to proceed.*" That is, states cannot enter into contracts which utilize federal funds without the approval of FHWA. Failure to comply with federal laws and regulations results in the FHWA not approving the contract, thus not supplying any federal funds.

Jackson Division FHWA personnel reported no problems with MDOT's procurement of engineering services utilizing federal funds.

MDOT has utilized federal funds only once to pay for engineering services since July 1, 1989. FHWA approved both the engineering firm chosen by MDOT to develop the designs for project 54-0059-02-067-10 in Jones County and MDOT's procurement of the firm. By selecting engineering services in accordance with 23 CFR part 172, MDOT does not risk losing federal aid dollars.

**During fiscal years 1990 through 1992, fourteen percent of engineering contracts entered into by MDOT were not in compliance with state law. Had MDOT complied with state law, at least a portion of the \$2.9 million in economic impact associated with these contracts would have affected Mississippi. This could have generated as much as \$144,678 in state general fund tax revenue.**

PEER reviewed the project files and the contracts of all ten engineering services contracts awarded to out-of-state engineering firms and found that four, or fourteen percent (14%) of all contracts let, were not awarded in compliance with MISS. CODE ANN. Section 73-13-45 (1972) because MDOT did not require these firms to abide by the same provisions which a Mississippi engineering firm has to meet in their home states. According to Section 73-13-45 (2)(a), *"nonresident professional engineers shall be awarded Mississippi public contracts only on the same basis as the nonresident professional's state awards contracts to Mississippi professional engineers under similar circumstances."* Exhibit 3, page 12, provides the qualifications imposed upon out-of-state engineering firms by Alabama, Arkansas, Kentucky, Louisiana and Tennessee. Each state requires an engineer to be registered to do work in that state in order to be awarded an engineering design contract. Arkansas and Kentucky require out-of-state engineers to establish a working office within the state for the life of the project. Arkansas allows an out-of-state contractor to associate with an Arkansas sub-contractor to fulfill the working office requirement. Kentucky will allow an office within forty miles of the state line to qualify as a working office.

All four of the professional services contracts found out of compliance with MISS. CODE ANN. Section 73-13-45 (1972) were awarded to either Arkansas or Kentucky firms. MDOT should have required these firms to abide by the same provisions which a Mississippi engineering firm has to meet in their home states, which includes the establishment of a working office within Mississippi for the life of the project. MDOT did not. Nor did MDOT require out-of-state engineers to submit copies of their states' award criteria for a non-state firm as part of their contract proposals. MDOT personnel reported that with today's modern transportation and technology, such as facsimile machines, it is not necessary to require working offices within the State of Mississippi and that conversations with transportation officials in other states enable the department to stay abreast of changes in other states' award criteria. MDOT's position is that, according to documentation and conversations with transportation officials

**Exhibit 3**

**Surrounding States' Requirements for Professional  
Engineering Contracts and Contracts  
Awarded to Mississippi Firms  
(Fiscal Years 1990-1992)**

<b>State</b>	<b>Statutory &amp;/Or Standard Operating Procedure Requirements</b>	<b>Contracts Awarded to Mississippi Firms</b>	<b>Total Contracts Awarded</b>
Alabama	Registered in Alabama	0	50
Arkansas	Registered in Arkansas  Working Office in Arkansas (Out-of-state engineer may associate with an Arkansas sub-contractor)	0	19
Kentucky	Registered in Kentucky  Working Office in Kentucky (Office within 50 miles of state line fulfills this requirement)	0	220
Louisiana	Principal Registered in Louisiana  At Least One Principal Must Have 5 Years' Experience	4	302
Tennessee	Registered in Tennessee	2	620

SOURCE: PEER staff analysis of other states' statutes and standard operating procedures and interviews with transportation officials in other states.

in other states, Arkansas's and Kentucky's working office requirements are not enforced.

It is the opinion of MDOT attorneys that MISS. CODE ANN. Section 73-13-45 (1972) grants preference to Mississippi engineers over nonresident professional engineers residing in a state whose statutes grant preference to residents of that state. MDOT contends that neither Arkansas nor Kentucky's laws grant preference to resident engineers. MDOT did not consider other states' standard operating procedure requirements. MDOT personnel stated that the working office requirement might be a policy of these states, but that it is not necessarily a practice.

PEER acknowledges that neither Arkansas nor Kentucky's statutes grant preference to resident engineers. However, both Arkansas and Kentucky's standard operating procedures require working offices to be established in the states for the life of the project. MISS. CODE ANN. Section 73-13-45 (1972) encompasses a state's statutes, resolutions, policies, procedures or executive orders as the reciprocal state's requirements. PEER obtained copies of both Arkansas' and Kentucky's standard operating procedures for the procurement of engineering services, both of which require working offices. Transportation personnel in management positions in both states informed PEER that working offices are required. PEER obtained Arkansas State Highway and Transportation Department letters to interested engineers dated 1983, 1991 and 1992 stating that it would be necessary for a working office to be established in Arkansas.

The four professional services contracts awarded in non-compliance with Section 73-13-45 totalled \$1,172,152. By using a multiplier developed by the Universities Research Center, PEER determined that these four contracts decreased the state's economic activity by as much as \$2,940,929. That is, if the entire \$1,172,152 associated with these four contracts had been spent in Mississippi, the multiplier effect (the process of local spending generating local jobs and income) would have resulted in \$2.9 million in economic activity within the state. However, because these contractors were not required to maintain working offices in Mississippi, all or part of this \$2.9 million in economic activity was lost to the state. (MDOT did not have data showing what portion, if any, of the funds associated with contracts awarded in non-compliance with state law were spent in-state.) If the full \$1,172,152 had been spent in the state by Mississippi firms or by out-of-state firms with Mississippi working offices, Mississippi's general fund revenue collections would have been \$144,678 higher than if all of the funds associated with these four contracts were spent in other states. Because MDOT failed to comply with MISS. CODE ANN. Section 73-13-45 (1972), the statute did not meet its intent of assisting Mississippi engineers in receiving design services contracts in Mississippi as well as in other states, and the state may have lost as much as \$144,678 in tax revenue.

PEER has no evidence that the four contracts awarded in violation of MISS. CODE ANN. Section 73-13-45 (1972) would have been awarded to Mississippi contractors if MDOT had placed the same rules and regulations on the out-of-state engineers which are placed on Mississippi engineers in their states. The Consultant Selection Committee reviews each short-listed firm's proposal for qualifications and time and cost proposals. PEER noted in its review of project files and project proposals that in each of the four contracts which violated state law, Mississippi firms submitted proposals for which time and/or cost proposals were higher than those of the firm awarded the contract. MDOT officials stated that they would not expect cost proposals to increase dramatically if they required Arkansas and Kentucky engineers to establish working offices. Until Mississippi firms acquire the experience and resources comparable to larger out-of-state firms, they will not be able to submit proposals comparable to more experienced firms. MDOT must protect Mississippi's taxpayers' interest; however, it is also the responsibility of MDOT to comply with MISS. CODE ANN. Section 73-13-45 (1972) to give preference to Mississippi firms in all instances where qualifications, time and cost are even and where the reciprocity nature of the law has been met.

**MDOT's Internal Auditor's serving on the Consultant Selection Committee is inconsistent with internal audit standards.**

As mentioned earlier, MDOT's standard operating procedure ADM-24-01-000 provides for MDOT's internal auditor to serve as a member of the Consultant Selection Committee. This committee reviews all project proposals and recommends contract negotiations to the Chief Engineer.

The Institute of Internal Auditors' *Standards for the Professional Practice of Internal Auditing* provides that internal auditors must be independent of the activities they audit. Such independence allows internal auditors to conduct their work objectively. Section 100 of the *Standards* states, "*Independence permits internal auditors to render the impartial and unbiased judgements essential to the proper conduct of audits.*" In addition, section 120 (.02)(.4) states, "*Internal auditors should not assume operating responsibilities.*"

In order to insure objective and impartial audits, MDOT's internal auditor should not serve on the Consultant Selection Committee. MDOT's internal auditor cannot be an objective auditor if he or she performs operating functions, such as participating in the selection of professional contractors, which may be subject to internal audit.

## *Value Engineering*

During the course of this review, Mississippi engineers expressed concern at MDOT's lack of value engineering. Engineers proposed that Mississippi might be losing money by not conducting value engineering on designs submitted to MDOT. PEER reviewed the available information concerning value engineering to determine if it might enable savings to be identified.

Value engineering is a management technique which utilizes a systematized approach to seek the best functional balance between the cost, reliability and performance of a product or a project. Value engineering seeks to identify and remove any unnecessary costs in a project. Studies invariably show that all designs have unnecessary cost regardless of how excellent the engineering team may be. Value engineering breaks a system down into functions to determine where the majority of costs are going. This done, designers can eliminate unnecessary components and search out less expensive solutions to costly problems or areas. Five questions lie at the root of every value engineering analysis: What is it? What does it do? What does it cost? What else can do the job? And, how much does the alternative cost?

Value engineering dates back to World War II when a purchasing agent at General Electric was forced to redevelop a product using different materials. The purchasing agent discovered that spalding fiber could be used instead of stainless steel, which was unavailable due to the war effort, at one-third the cost of the original stainless steel. The materials and the designs changed, but the function remained the same. After the war, the value engineering concept expanded to include the functional concept--that is, that people need to be pushed a bit to be motivated beyond their normal habit solutions. The Department of Defense adopted value engineering by the mid 1950's and the construction industry adopted it between 1963 and 1965. Federal procurement regulations require a value engineering clause to be in every contract in excess of \$100,000, but this is rarely pursued.

Value engineering is voluntary, in most cases, by the construction contractor. Every MDOT construction contract has a value engineering clause in it allowing the contractor to conduct value engineering on the designs. MDOT must review and approve any contractor's change proposal, with MDOT and the contractor splitting any savings identified by the value engineering. When asked the department's position on value engineering, MDOT personnel reported that MDOT would like to have its own value engineering team, but personnel and budgetary constraints do not allow such an internal team. MDOT personnel reported conducting value engineering on about a half dozen projects three to four years ago, with very little savings identified. MDOT personnel stated that the department believes that the most qualified engineer is chosen to develop the designs and that the engineer will use the most feasible and efficient materials in the design.

Although other states also allow value engineering, none reported notable savings recognized by value engineering. The Alabama Highway Department and Kentucky's Department of Highways allow the construction contractor to have value engineering performed on the engineer's designs, with any savings split 50-50 with the department. The Arkansas State Highway Commission has not found a need to have value engineering conducted on designs it receives from professional engineers. Louisiana Department of Transportation and Development officials reported that value engineering is conducted internally and that such value engineering tends to focus more on alignments and property value than design standards. The Tennessee Department of Transportation internally conducts value engineering on all of its projects, but will allow a construction contractor to have value engineering performed on designs if the project is for \$2 million or more. As in Alabama and Kentucky, any savings are split fifty-fifty between the contractor and the department.



## *Recommendations*

1. MDOT should comply with MISS. CODE ANN. Section 73-13-45 (1972) to insure preference be given to Mississippi engineers and to insure that nonresident professional engineers be awarded Mississippi public contracts only on the same basis as the nonresident professional's state awards contracts to Mississippi professional engineers under similar circumstances. In order to be aware of other states' requirements, MDOT should adhere to MISS. CODE ANN. Section 73-13-45 (1972) and require a nonresident professional engineer to attach copies of his or her state's current statute, resolution, policy, procedure or executive order to the project proposal.
2. Beginning July 1, 1993, and for the next three fiscal years, the State Auditor should review all MDOT engineering services contracts awarded to non-resident engineers to determine whether MDOT's compliance with MISS. CODE ANN. Section 73-13-45(2)(a) (1972). In the event that MDOT is not in compliance, the State Auditor should issue a demand letter in accordance with MISS. CODE ANN. Section 7-7-211(g) requiring repayment of any funds wrongfully expended. If MDOT fails to repay such funds, the State Auditor shall institute suit against the Transportation Commission to recover misspent funds and the Attorney General shall provide all necessary assistance in prosecuting such suit.
3. In order to insure objective and impartial audits, MDOT should revise standard operating procedure number ADM-24-01-00-000 to provide that the internal auditor should not serve on the Consultant Selection Committee.
4. The Transportation Commission should study the feasibility of conducting value engineering analyses of designs and drawings submitted by consulting engineers. One way to accomplish this could be to realign department personnel to develop an interdisciplinary team to study and draw conclusions concerning the proper balance between the cost, performance, and reliability of each design project.

APPENDIX

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION PROFESSIONAL ENGINEERING  
SERVICES CONTRACTS, FISCAL YEARS 1990-1992**

<b>Contractor</b>	<b>Home State Requirements</b>	<b>Violate MS State Law</b>	<b>Contract Date</b>	<b>Project Number</b>	<b>Project Description</b>
<i>(Roadway Design Division)</i>					
A. Garner Russell & Assoc P.O. Box 1677 Gulfport, MS 39501			3/9/92	79-0008-01-058-10	U.S. 49 Forrest County
Guest-Long, Inc. P.O. Box 999 Brandon, MS 39043-0999			3/27/92	97-0002-02-025-10	U.S. 45 Clarke County
Neel-Schaffer P.O. Box 22625 Jackson, MS 39225-2625			3/27/92	54-0020-01-106-10	I-20 Warren County
<b>Florence &amp; Hutcheson, Inc.</b> <b>P.O. Box 7267</b> <b>Paducah, KY 42002-7267</b>	<b>Working Office</b>	<b>Yes</b>	<b>4/14/92</b>	<b>97-0002-02-026-10</b>	<b>U.S. 45</b> <b>Clarke County</b>
<b>Garver &amp; Garver Engineers</b> <b>P.O. Box C-50</b> <b>Little Rock, AR 72203-0050</b>	<b>Working Office</b>	<b>No</b> <b>(Subcontracted</b> <b>w/ MS firm)</b>	<b>4/17/92</b>	<b>97-0002-02-020-11&amp;12</b>	<b>U.S. 45</b> <b>Clarke &amp; Wayne</b> <b>counties</b>
Neel-Schaffer, Inc. P.O. Box 22625 Jackson, MS 39225-2625			7/12/91	19-9111-00-001-10	Norrell Road Hinds County
Michael Baker, Jr., Engineers P.O. Box 9997 Jackson, MS 39206			7/9/91	97-0002-03-055-10	U.S. 45 Kemper County
Guest-Long, Inc. P.O. Box 999 Brandon, MS 39043-0999			1/24/91	79-0032-01-011-10	SR 43 Pearl River County
<b>Florence &amp; Hutcheson, Inc.</b> <b>P.O. Box 7267</b> <b>Paducah, KY 42002-7267</b>	<b>Working Office</b>	<b>Yes</b>	<b>12/25/91</b>	<b>75-0910-00-066-10</b>	<b>I-55 (Papermill)</b> <b>Grenada County</b>
Michael Baker, Jr., Inc. P.O. Box 9997 Jackson, MS 39206			2/12/91	97-0072-03-005-10 97-0072-04-012-10	U.S. 49 Humphreys and Sunflower counties
Williams, Williams & Clark P.O. Box 567 Yazoo City, MS 39194			2/12/91	97-0072-03-006-10	U.S. 49 W Humphreys County

SOURCE: Contract data provided to PEER staff by MDOT personnel.

NOTE: Bold print denotes professional service contracts awarded to non-resident engineers.

Contract Amount	Time Proposal *	Cost Proposal	Rejected Bidders	State
\$171,661.00	32	\$164,942.00	Fisher-Phillips-Arnold Florence & Hutcheson Howard-Bergendoff Neel-Schaffer	Tennessee Kentucky Louisiana Mississippi
\$534,942.02	29	\$467,804.95	Batson & Brown Buchart-Horn Garver & Garver Neel-Schaffer	Mississippi Tennessee Arkansas Mississippi
\$69,300.00	17	\$69,300.00	Michael Baker, Jr. Garver & Garver Howard-Bergendoff	Mississippi Arkansas Louisiana
\$304,587.12	28	\$296,652.83	Michael Baker, Jr., Inc. Batson & Brown, Inc. Buchart-Horn, Inc. Garver & Garver	Mississippi Mississippi Tennessee Arkansas
\$524,058.00			Michael Baker Neel-Schaffer Guest-Long A. Garner Russell	Mississippi Mississippi Mississippi Mississippi
\$87,551.17			Not advertised - Negotiated with Hinds County	
\$88,353.00			Not advertised	
\$117,812.63	24	\$108,506.34	Michael Baker, Jr., Inc. Batson & Brown, Inc. A. Garner Russell & Assoc Neel-Schaffer, Inc.	Mississippi Mississippi Mississippi Mississippi
\$84,931.06	7.5	\$64,051.54	Michael Baker, Jr., Inc. Fisher, Phillips, Arnold Guest-Long Neel-Schaffer, Inc.	Mississippi Tennessee Mississippi Mississippi
\$70,283.00			Not advertised, negotiated with original consultant	
\$19,621.80			Not advertised, negotiated with original consultant	

\* Time proposals are presented in weeks.

## APPENDIX (continued)

Contractor	Home State Requirements	Violate MS State Law	Contract Date	Project Number	Project Description
Garver & Garver Engineers P.O. Box C-50 Little Rock, AR 72203-0050	Working Office	No (Subcontracted w/ MS firm)	11/1/90	97-0007-01-067-10 97-0007-01-065-10	U.S. 72 Benton and Tippah counties
Neel-Schaffer P.O. Box 22625 Jackson, MS 39225-2625			11/13/90	97-0014-02-004-10	U.S. 98 Lamar County
Neel-Schaffer P.O. Box 22625 Jackson, MS 39225-2625			4/10/90	96-0011-03-039-10	U.S. 82 Webster County
Florence & Hutcheson, Inc. P.O. Box 7267 Paducah, KY 42002-7267	Working Office	Yes	4/10/90	96-0011-02-061-10	U.S. 82 Montgomery County
Garver & Garver P.O. Box C-50 Little Rock, AR 72203-0050	Working Office	Yes	4/10/90	96-0002-05-021-11&12	U.S. 45 Lowndes and Monroe counties
A. Garner Russell & Associates P.O. Box 1677 Gulfport, MS 39501			11/21/89	79-9390-00-005-10	MS 613 Jackson County
Guest-Long, Inc. P.O. Box 999 Brandon, MS 39043-0999			11/1/89	79-2713-00-007-10	U.S. 51 Grenada County
David Volkert & Associates P.O. Box 7434 Mobile, AL 36607	None	No	7/10/89	97-0009-01-072-10	U.S. 61 Wilkinson County
Neel-Schaffer, Inc. P.O. Box 22625 Jackson, MS 39225-2625			11/1/89	79-7302-00-001-10	I-55 Madison County
<i>(Bridge Division)</i>					
Charles Clark Assoc. 714 Hillcrest Dr. Laurel, MS 39441-8000			1/24/91	79-9396-00-003-10	U.S. 11 Jones County
Neel-Schaffer P.O. Box 22625 Jackson, MS 39225-2625			1/24/91	79-1132-00-001-10	MS 63 Greene County

Contract Amount	Time Proposal	Cost Proposal	Rejected Bidders	State
\$386,600.00	17	\$368,600.00	Michael Baker, Jr. Florence & Hutcheson Guest-Long Neel-Schaffer	Mississippi Kentucky Mississippi Mississippi
\$196,246.00	12	\$180,752.00	Michael Baker, Jr., Inc. Batson & Brown, Inc. Garver & Garver A. Garner Russell & Assoc	Mississippi Mississippi Arkansas Mississippi
\$532,370.60	17	\$480,606.06	Michael Baker, Jr. Florence & Hutcheson Garver & Garver Howard-Borgendoff	Mississippi Kentucky Arkansas Louisiana
\$245,633.83	11	\$177,227.00	Michael Baker, Jr. Garver & Garver Howard-Bergendoff Neel-Schaffer	Mississippi Arkansas Louisiana Mississippi
\$537,000.00	21	\$491,200.00	Michael Baker, Jr. Florence & Hutcheson Howard-Bergendoff Neel-Schaffer	Mississippi Kentucky Louisiana Mississippi
\$53,976.00	30	\$53,976.00	Garver & Garver Gulf Engineers & Conslt Johnson-McAdams Firm Neel-Schaffer	Arkansas Louisiana Mississippi Mississippi
\$89,157.40	12	\$83,763.41	Garver & Garver Hazelet & Erdal Johnson-McAdams Neel-Schaffer	Arkansas Kentucky Mississippi Mississippi
\$221,468.67	22	\$188,046.00	Michael Baker, Jr. Florence & Hutcheson, Inc. Garver & Garver Howard-Bergendoff	Mississippi Kentucky Arkansas Louisiana
\$45,922.67	12	\$40,223.60	Garver & Garver Guest-Long Hazelet & Erdal Johnson-McAdams Firm	Arkansas Mississippi Kentucky Mississippi
\$48,393.89	10.5	\$44,897.00	Michael Baker, Jr., Inc. Batson & Brown, Inc. Guest-Long Neel-Schaffer	Mississippi Mississippi Mississippi Mississippi
\$173,039.72	10	\$162,549.00	Michael Baker, Jr., Inc. Garver & Garver Maxwell T. Huff Guest-Long	Mississippi Arkansas Mississippi Mississippi

APPENDIX (continued)

Contractor	Home State Requirements	Violate MS State Law	Contract Date	Project Number	Project Description
Maxwell T. Huff 455 Woodland Hills Bldg 3000 Old Canton Road Jackson, MS 39216			9/12/91	79-0028-01-014-10	MS 26/LA 10 Pearl River County
Garver & Garver P.O. Box C-50 Little Rock, AR 72203-0050	Working Office	No (Utilized Federal funds)	4/10/90	54-0059-02-067-10	I-59 Jones County
Maxwell T. Huff 455 Woodland Hills Bldg 3000 Old Canton Road Jackson, MS 39216			5/9/90	79-2171-00-013-10	U.S. 11 Forrest County
Hazelet & Erdal, Inc. 100 E. Liberty Street, Ste 800 Louisville, KY 40202-1434	Working Office	No	11/8/89	79-6000-00-001-10, 11, 12, and 13	U.S. 90 & I-10 Harrison County
Howard-Bergendoff 100 St. James St. Suite J-200 Baton Rouge, LA 70802	1 Principal Registered in LA	No	11/11/89	79-0010-01-047-10	I-10 East Hancock County
					Total Contracts:

Contract Amount	Time Proposal	Cost Proposal	Rejected Bidders	State
\$65,075.00	7	\$45,903.00	Michael Baker, Jr., Inc. Batson & Brown Guest-Long Neel-Schaffer	Mississippi Mississippi Mississippi Mississippi
\$347,050.00	12	\$278,000.00	Michael Baker, Jr., Inc. Beiswenger, Hoch & Assoc Howard-Bergendoff Neel-Schaffer	Mississippi Florida Louisiana Mississippi
\$66,667.00	7	\$62,776.00	Michael Baker, Jr., Inc. Garver & Garver Modjeski and Masters Howard-Bergendoff	Mississippi Arkansas Pennsylvania Louisiana
\$152,797.00			Not advertised; negotiated with original consultant	
\$183,127.00			Not provided by MDOT	
\$5,417,625.58				

AGENCY RESPONSE

Zack Stewart  
Northern District Commissioner

Wayne O. Burkes  
Central District Commissioner

Ronnie Shows  
Southern District Commissioner



John R. Tabb  
Executive Director

James D. Quin  
Deputy Executive Director/  
Chief Engineer

Mississippi Department of Transportation / P.O. Box 1850 / Jackson, Mississippi 39215-1850 / FAX (601) 359-2233

October 12, 1992

Mr. John Turcotte  
Executive Director  
PEER Committee  
P. O. Box 1204  
Jackson, MS 39215-1204

Dear Mr. Turcotte:

SUBJECT: Review of MDOT's Procedures for the Procurement  
of Professional Engineering Services

Thank you for giving us the opportunity to preview your report on MDOT's procedures for the procurement of professional engineering services. We appreciate PEER's review of these procedures and are pleased to note that we are in compliance with all federal laws and regulations.

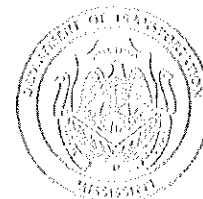
The Department will take necessary action to comply with your recommendations for compliance with Mississippi Code of 1972, Annotated, Section 73-13-45. The savings in cost on the cost proposals submitted by the out-of-state consultants are much greater than taxes lost, resulting in a net savings to Mississippi taxpayers.

Our internal/external auditor on the Consultant Selection Committee will be replaced with some other employee with knowledge of consultants' overhead rates. Although MDOT is under a mandate from the Legislature to reduce personnel by 10% over a five-year period, we will study the feasibility of conducting value engineering analyses and will develop an interdisciplinary team to review these values.

Sincerely,

*John R. Tabb*  
John R. Tabb  
Executive Director

JRT:ar





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## PEER Staff

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### Director

John W. Turcotte  
Janet Moore, Administrative  
Assistant

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Betty Heggy  
Ann Hutcherson  
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Ted Booth  
John Fraiser  
Barbara Hamilton  
Susan Harris  
Kelly Lockhart  
Joyce McCants  
Danny Miller  
Katherine Stark  
Larry Whiting

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