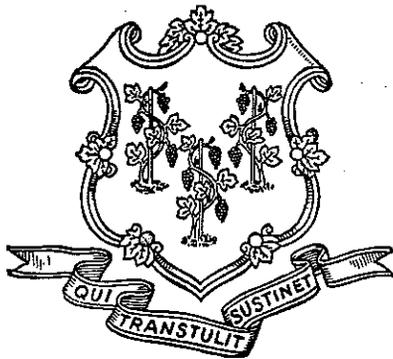


STATE CONTRACT MANAGEMENT

Connecticut

General Assembly



LEGISLATIVE
PROGRAM REVIEW
AND
INVESTIGATIONS
COMMITTEE

December 1995

**CONNECTICUT GENERAL ASSEMBLY
LEGISLATIVE PROGRAM REVIEW AND INVESTIGATIONS COMMITTEE**

The Legislative Program Review and Investigations Committee is a joint, bipartisan, statutory committee of the Connecticut General Assembly. It was established in 1972 to evaluate the efficiency, effectiveness, and statutory compliance of selected state agencies and programs, recommending remedies where needed. In 1975, the General Assembly expanded the committee's function to include investigations, and during the 1977 session added responsibility for "sunset" (automatic program termination) performance reviews. The committee was given authority to raise and report bills in 1985.

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LEGISLATIVE PROGRAM REVIEW
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State Contract
Mangement

DECEMBER 1995

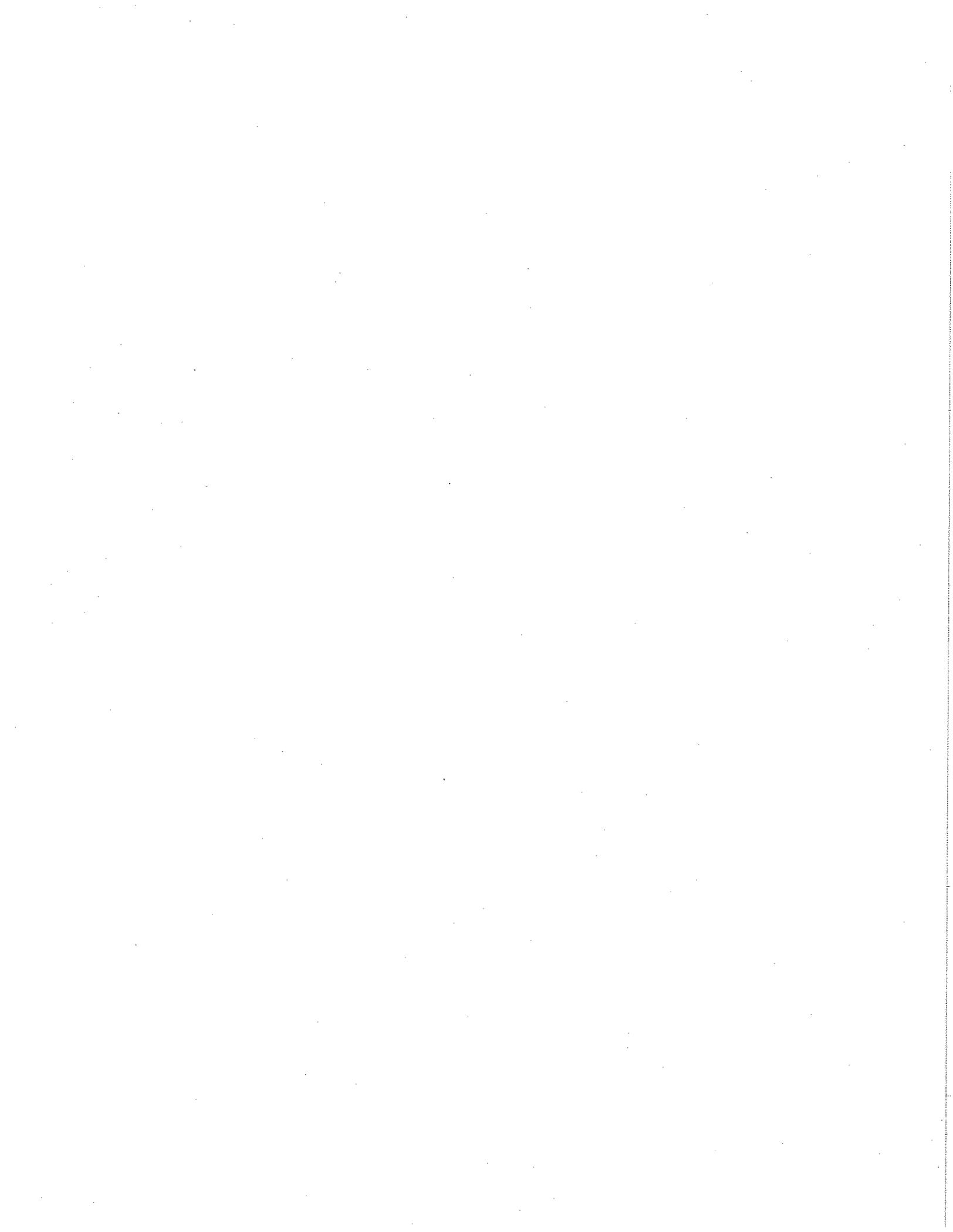


TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
INTRODUCTION	1
I. BACKGROUND	3
Roles of Specific Agencies	3
Model Practices	4
II. GOODS AND SERVICES	7
Contracting Authority	7
Purchase Orders	8
Personal Service Agreements	14
Contract Activity	17
Current Contract Management Practices	21
III. PUBLIC WORKS CONSTRUCTION CONTRACTS	25
Organization	28
Process	29
DPW Construction Contract Activities	36
Profile of Current Contracts	39
Client Agency Survey	43
IV. TRANSPORTATION CONSTRUCTION CONTRACTS	45
Organization	46
Process	47
DOT Construction Contract Activities	51
Profile of Completed Contracts	52

V.	FINDINGS AND RECOMMENDATIONS	57
	Goods and Services - Nonconstruction	57
	Oversight Practices	58
	Contractor Evaluations	59
	Construction Contracts	61
	Evaluating Construction Contractor Performance	69
	Managing Construction Contractor Performance	71
	DPW and Client Agencies	74
	DPW Restructuring	76
	Standardization of DOT Field Practices	78
	Idle DOT Projects	79
	DOT Construction Site Safety	80

APPENDICES

- A. Responses to LPR&IC Survey on State Agency Contract Management Practices
- B. Responses to LPR&IC Survey on State Construction Project Contract Management
- C. List of Department of Public Works Projects in LPR&IC Change Order Database
- D. List of Department of Transportation Projects in LPR&IC Change Order Database
- E. Department of Public Works Comments on the Findings and Recommendations
- F. Department of Transportation Comments on the Findings and Recommendations

EXECUTIVE SUMMARY

During FY 95, Connecticut expended at least \$1 billion for general goods or services. It paid contractors an additional \$520 million for construction projects. The state's objective when purchasing items is to obtain the specific goods and services it needs at a fair price at the time it needs them.

The procurement process begins with the decision to contract for an item and continues with the drafting of specifications, the selection of a vendor, and the awarding of a contract. It ends with the administration of the contract, which encompasses a variety of activities including approval of subcontractors, inspection and property control, accounting and payment for work completed, and modification of contract terms including the processing of change orders.

In March 1995, the Legislative Program Review and Investigations Committee voted to study the procedures used by state agencies to ensure contractor compliance with contract specifications, including time and cost parameters. Construction projects were given special attention within the review because they represent a significant subset of all goods and services purchased by the state.

Three state agencies were examined in detail. They were the Department of Administrative Services (DAS), which has a significant role in contracting for goods and services through its Bureau of Purchases, the Department of Public Works (DPW), and the Department of Transportation (DOT). The latter two agencies have primary responsibility for managing state construction projects. Other state agencies with indirect roles in managing contracts include the Office of Policy and Management (OPM), the attorney general, and the Office of the Comptroller.

For purposes of the study, items contracted for by the state were divided into three categories. *Goods* were defined as supplies, materials, and equipment purchased for use by state agencies, while *services* included personal and professional activities carried out under contract by persons other than state employees. *Construction Projects* involved a mix of services and goods used to build, repair, alter, or improve a highway, bridge, building, or other public structure.

Overall, it appears many elements of national models for contract management are already in place within the state system in Connecticut. These include procedures for monitoring and inspecting products, mechanisms for handling complaints and evaluating the performance of contractors, and enforcement tools to achieve compliance with contract specifications and state policies. The problems appear to be that procedures are not statutorily available to all state agencies and when available are not always used. In addition, up-front planning is weak, contract management is not emphasized as a priority, and little effort is expended to look at the total picture.

It also became clear to the committee during the study that actions taken during the pre-bid stage of the contracting process are factors in a successful contract management system. All participants in the planning process need to recognize the importance of a well-defined product.

Without that perspective, efforts to ensure contract provisions have been met will be made more difficult.

With respect to goods and services in general, the program review committee believes additional written information and training on contract management would be useful to state agencies, particularly to insure compliance with existing procedures. The committee also believes it is important for the state to begin compiling information on contractor performance.

In the area of construction contracts, the program review committee found overall that schedules or budgets or both were revised, sometimes significantly, for nearly all of the DOT and DPW projects in a sample of projects that was examined in detail. The reasons for the contract revisions were diverse, but the major categories were field conditions and measurements, design revisions (due to errors, omissions, or changes), and additional work.

The effect of the different types of changes on the scope, cost, and length of a project varied. In most cases, the impact was increased work or materials, and, therefore, higher costs. The effect on the amount of time required for a project was not as clear; few resulted in time increases. However, since most projects in the program review sample had not been finalized when the data were collected, time adjustments could still be made.

Both DOT and DPW are aware that a primary way to keep projects on time and within budget is to control change orders. Both have systems to track change orders, but primarily on a project basis. Little use is made of the information to identify patterns or trends across types of projects, designers, contractors, or other variables. The program review committee believes regular analysis of change order data would be one of the best ways to improve the quality of project plans and specifications as well as the accuracy of pre-bid cost and time estimates. Another source of information is the data from completed projects. By examining what has and has not worked in the past, the committee believes agencies can better anticipate what problems are likely to occur on future projects and possibly avoid revisions.

With respect to contractor evaluations, the program review committee proposed DPW adopt a system that parallels the one used by DOT, and both agencies share a database of contractor performance information that could be referenced by other state agencies and municipalities. The committee believes knowing a written performance record will be maintained and made available to potential customers can be a strong incentive to construction firms to achieve good ratings. Having such ratings be the major consideration in how emergency and other noncompetitive work is awarded by the DOT and DPW commissioners is recommended to provide a further incentive to earn a good performance evaluation.

An effective and commonly used way of enforcing compliance with contract provisions is to withhold contractor payments, which both DOT and DPW do when questions arise over work or materials on a construction project. By law, each can withhold no more than 2.5 percent of any payment due a contractor for a state construction project. The committee believes the extended time

periods for closing out projects experienced at both DOT and DPW indicate the current retainage level may be too low to be effective. To provide state agencies greater leverage over contractors to promptly correct deficiencies and supply required documents, the committee recommends the retainage amount be increased.

The effect of certain internal DOT and DPW operations on the management of state contracts was another area examined by the program review committee. Several recommendations aimed at improving communication within the agencies and implementing successful practices agencywide were proposed. Changes in the relationship between DPW and its state agency clients to ensure contingency funding is reserved for changes due to unforeseen conditions and to improve initial project planning were also recommended.

The final two areas addressed by the program review committee were DOT workzone activity and safety practices on transportation construction projects. Analysis of contractor activity data for August 1995 led the committee to recommend the department monitor inactive projects more closely. Only 183 of the approximately 500 DOT projects underway that month were worked on; the amount of activity ranged from 1 day to 30 days. Recognizing the importance of protecting workers and the general public from avoidable risk while construction is underway, the committee also recommends DOT make fuller use of available accident data and other resources to develop effective safety policies and practices.

RECOMMENDATIONS

GOODS AND SERVICES - NONCONSTRUCTION

- 1. The Department of Administrative Services Bureau of Purchases shall:
 - (a) review and update its existing inspection manual and distribute new copies;*
 - (b) develop and distribute to all state agencies material detailing how to resolve problems with a vendor and describing documentation that should be maintained to build a case against a vendor who is not performing satisfactorily; and*
 - (c) provide training, including information about inspection and testing techniques, on a regular schedule for individual state agency employees who are responsible for the direct receipt of goods obtained under purchase orders.**
- 2. The Department of Administrative Services Bureau of Purchases shall continue to offer its complaint resolution process as a troubleshooting service for individual state agencies.*

3. *The Office of Policy and Management shall: (a) deny approval of future personal service agreement contracts to any state agency that has failed to file required contractor evaluations, until such time as the agency complies with all provisions of General Letter No. 94-1 regarding such evaluations; and (b) sponsor training for state agency employees on the value and preparation of contractor evaluations.*
4. *State agencies shall make greater efforts to convey to employees at all levels in the organization the importance of good contract management practices.*

CONSTRUCTION CONTRACTS

5. *The Departments of Public Works and Transportation each shall routinely analyze change order data from their construction projects to determine if better estimates of materials and work required could have been made. The agencies should also use change order data to determine if more initial testing and surveying would be cost beneficial for specific types of jobs.*
6. *The Departments of Public Works and Transportation shall establish a process for conducting post-construction reviews of all completed projects to determine how effectively they were managed. Among the items that should be evaluated and reported on are the original and actual time frame and budget, compliance with wage and set-aside program requirements, safety issues, and the nature of any design changes required. The review should include input from all parties involved in the project, including agency staff, the contractor, the designer and, for public works projects, client agency representatives.*
7. *If the dollar value of change orders on an individual project is greater than 10 percent of the original value of the contract, then the Departments of Transportation and Public Works shall perform a cost overrun analysis of the project within 10 days of the approval of the change order that triggers the review.*
8. *The public works department shall establish a process for evaluating construction contractor performance by July 1, 1996, using the transportation department's system as a model. A standard form listing all items to be evaluated and describing the rating system to be applied should be developed, and all DPW staff with roles in monitoring contractors should be trained in how to conduct performance evaluations. As in the transportation department process, contractors should be evaluated annually and upon project completion and be permitted to review their evaluations with DPW staff.*

As an improvement to the DOT model, both the public works and transportation departments should develop rating systems that weight the various components of the contractor's performance to reflect relative importance.

Once the DPW system is in place, the public works and transportation departments should jointly establish a construction contractor performance database incorporating the information contained in the evaluations prepared by each agency. Finally, the formal contractor performance evaluations should be used by the commissioners of public works and transportation as the primary factor for selecting firms for noncompetitively awarded construction work such as emergency repair projects.

- 9. The public works department shall establish a system to prequalify bidders of its construction projects.*
- 10. C.G.S. Section 49-41b shall be amended to permit the state to retain up to 10 percent of any periodic or final payment to a contractor. DPW and DOT should include as a standard provision in their construction contracts the requirement that contractors must complete identified corrective work and supply all required documentation to the agency within 90 days of the project's substantial completion date.*
- 11. The transportation and public works departments each shall develop a manual and provide training on what is required to monitor, evaluate, and document contractor performance problems for agency staff responsible for overseeing construction contracts.*
- 12. As part of the agency's initiative to improve scope development, the Department of Public Works also shall develop a checklist for client agencies to use in preparing initial requests for capital projects.*
- 13. The Department of Public Works shall develop its policy and criteria for approving agency requests for changes to a construction project in writing and distribute it to all client agencies. The policy should include a requirement that agencies identify funding sources other than a project's contingency fund to pay for changes they request during construction. A request shall be submitted in writing by the head of the client agency and must include funding approval from the Office of Policy and Management. OPM shall process an*

14. *The Department of Public Works shall review its internal communication procedures to ensure that agency employees fully understand the mission of the department and their role in its implementation.*
15. *DPW shall undertake an immediate review to determine what staffing levels and organizational structure would be required to insure field inspectors are able to visit active construction projects on a daily basis.*
16. *The Department of Transportation central office shall periodically evaluate district office operations with respect to the management of construction projects to determine the areas of difference between each. The central office should then determine whether any of the practices that are successful in one region could be applied in the other districts to improve the department's construction management practices.*
17. *The Department of Transportation shall update and improve its categories of reasons for why construction orders are needed and require all field staff to use the coding system.*
18. *The Department of Transportation shall review all projects that have been idle for one month to determine the cause of the work stoppage and the steps needed to resume work.*
19. *At the end of each construction season, the transportation department shall compile and review all available data on work area safety incidents as another way to identify possible improvements.*

INTRODUCTION

During state fiscal year 1995, Connecticut expended at least \$1 billion for items that could be categorized as goods or services. During that same period, the Departments of Public Works and Transportation paid contractors an additional \$520 million for construction projects.

Like any consumer, the state's objective when purchasing something is to obtain the specific goods and services it needs at a fair price at the time it needs them. The typical procurement process, whether in the public or private sector, begins with an initial decision to contract for a required item rather than produce the good or perform the service with in-house resources. It continues with the drafting of specifications or a statement of work, the selection of a vendor, and the awarding of a contract. It ends with the administration or management of the contract.

Scope

In general, the goal of the existing state procurement systems is to maximize the value of the public's purchasing dollars, promote competition, assure integrity, and provide accountability. However, unlike a private buyer, the state also has to follow purchasing rules and regulations that incorporate public policy objectives unrelated to procurement. These include economic development considerations, affirmative action, and environmental protection measures.

The procedures used by the state to select vendors have been studied many times. As a result, a considerable body of law and regulation governs bid solicitations. Less attention has been given to examining the procurement process from the point when a contract is awarded through final acceptance and payment for the particular good or service.

In March 1995, the Legislative Program Review and Investigations Committee (LPR&IC) voted to study the procurement-related activities of state agencies during the post-bid phase of purchasing goods and services. Of particular interest were the procedures used to ensure contractor compliance with contract specifications, including time and cost parameters. Construction projects were given special attention within the overall review because they represent a significant subset of all goods and services purchased by the state.

Methodology

Information about contract management practices was obtained for state agencies in general, but three agencies were examined in detail. They were the Department of Administrative Services (DAS), which plays a significant role in contracting for goods and services for itself and other state agencies through its Bureau of Purchases, the Department of Public Works (DPW), and the Department of Transportation (DOT), the latter two agencies having primary responsibility for managing state construction projects.

Information about the procedures and operations of DAS, DPW, and DOT were compiled from state statutes and regulations, previous studies done by the program review committee, and interviews with current agency personnel. A random sample of active construction contracts was selected for in-depth examination. That review focused on compliance with time and cost requirements of the specific contracts and the incidence of changes during construction.

Data about state spending on goods and services in general were obtained from the state comptroller. Information about current DPW and DOT construction projects was obtained from each agency. A database of DOT projects completed between 1990 and 1994 was also acquired.

Two questionnaires were sent to executive branch agencies and the Judicial Department to obtain information about the activities and perceptions of individual state agencies. The first questionnaire concerned management practices related to the procurement of goods and services. Information was requested about procedures used to inspect commodities and evaluate services, the volume and the nature of the problems agencies have in dealing with contractors, and the responsiveness of vendors to complaints. The second survey asked the same agencies to evaluate their experiences in dealing with the Department of Public Works on construction projects.

Additional information about agency experiences with vendors was obtained by examining the records of complaints received by the DAS Bureau of Purchases between July 1993 and June 1995. Data were compiled on the agency making the complaint, the nature of the problem, the vendor providing the good or service, and the actions taken to resolve the problem. Evaluations on file at the Office of Policy and Management for contractors hired under personal service agreements since 1994 were also reviewed.

Report Format

The procedures, available data, and areas of analysis varied among the types of purchases examined in the study. To facilitate the presentation of information, the process descriptions have been separated into three categories: goods and services, DPW construction projects, and DOT construction projects. Each is presented in a separate chapter. Chapter V contains the committee's findings and recommendations.

The full text and the responses to the two surveys distributed by the committee are presented in Appendices A and B. Lists of the DPW and DOT projects included in the program review change order databases are contained in Appendices C and D.

Agency Comments

It is the policy of the Legislative Program Review and Investigations Committee to provide agencies subject to a study with an opportunity to review and comment on the recommendations prior to the publication of the final report. The response from the Department of Public Works is in Appendix E, and the response from the Department of Transportation is in Appendix F.

CHAPTER I

BACKGROUND

Contract management encompasses all actions taken to assure compliance with contract terms after the award phase of the procurement process. The primary goal of contract management is to ensure quality goods and services are received on time and at a reasonable price.

Contract management activities include approval of subcontractors, inspection and property control, accounting and payment for work completed, and modification of contract terms including the processing of change orders. Procurement managers are responsible for documenting the performance of the contractor, taking steps to resolve problems, applying sanctions if necessary, and closing out completed contracts.

For purposes of this study, the items contracted for by the state were divided into three categories -- goods, services, and construction projects. *Goods* were defined as supplies, materials, and equipment purchased for use by state agencies. Examples included office supplies, furniture, clothing, food, tools, printing, and motor vehicles.

Services were personal and professional activities carried out under contract by persons other than state employees. Examples included cleaning, security, appraisal, research, medical, and legal services. *Construction Projects* involved a mix of services and goods used to build, repair, alter, or improve a highway, bridge, building, or other public structure.

Roles of Specific Agencies

The two state agencies with primary responsibility for managing state construction projects are the Department of Public Works and the Department of Transportation. DPW is responsible for the planning, design, and construction of nearly all major state capital projects except those related to transportation systems. DOT oversees all construction projects related to highways, bridges, and marine, aviation, and public transportation systems. Details about the contract management functions of each agency are outlined in greater detail in Chapters III and IV of this report.

The Department of Administrative Services, through its Bureau of Purchases, plays a significant role in the procurement of goods and services, but all state agencies have some contract management responsibilities.¹ Those duties, which vary depending on the mechanism used to obtain a particular item, are described in more detail in Chapter II.

¹ The state's higher education systems have been granted broader direct purchasing and construction authority than many other state agencies. Although some information about their procedures is included in this report, they were not a specific part of the study.

Several state agencies have indirect roles in managing contracts. The attorney general's office reviews all contracts over \$3,000 for legal sufficiency as to form prior to execution of the contract. More relevant to the current study, attorneys in the office also provide advice and, when necessary, represent agencies if disputes arise or claims are filed regarding a contract.

Payments for many goods and services obtained through contracts are processed by the state comptroller. As part of its accounting function, the Office of the Comptroller confirms the purchasing agency has sufficient funds allocated to pay for the contract. Financial and other records may also be examined by the Auditors of Public Accounts. The auditors are concerned with assessing agency compliance with statutes, regulations, and contract provisions as well as evaluating an agency's internal controls for achieving such compliance.

By law, all state contracts must contain certain provisions related to affirmative action and equal opportunity policies. Most contractors for public works and transportation projects are additionally required to develop and implement affirmative action plans. The Commission on Human Rights and Opportunities (CHRO) monitors compliance with nondiscrimination statutes that apply to firms that contract with the state.

Role of the state as a contractor. Efforts to develop good contract management procedures for the state must take into consideration the fact the state may be both the consumer and provider of goods and services. When a state facility or bridge is rehabilitated or built, the state is a consumer of services.

Conversely, the central warehouse operated by the Department of Administrative Services performs a service close to that of a private contractor. The warehouse procures a variety of products, including office and cleaning supplies, food items, and certain articles of clothing from private vendors. In turn, warehouse employees assemble and deliver the items to individual state agencies that place orders.

Model Practices

A number of studies in recent years examined the issue of obtaining satisfactory performance from outside contractors. Solutions to several problems recur in these reports, suggesting consensus on at least some elements of a good contract management process. Those procedures are summarized briefly below.

The type and the length of the contract being entered into are the primary factors that determine which elements of contract management will be needed. Large and ongoing projects require more oversight than small, one-time deliveries of a routine commodity.

Generally, the components of contract management for goods involve qualitative and quantitative criteria that emphasize inspection, testing, and acceptance of the items. It is essential that

the person responsible for managing the contract have a copy of the purchase specifications in order to perform his or her monitoring function.²

With respect to services, several key elements of contract management have been identified. One of the most important is a start-up conference, attended by representatives of the contractor, purchaser, and subcontractors, if any, to clarify issues prior to the start of work on the contract. Participants should:

- review the specifications, terms, and conditions of the contract;
- clarify the payment process;
- specify security requirements for supplies, equipment, and working papers;
- enumerate documentation and reporting requirements; and
- raise any other questions requiring clarification.

Another factor that should be discussed is the process for making changes in the requirements of the contract after it begins. While the parties may allow minor changes upon verbal agreement of the contractor and the project manager, substantive changes should be allowed only after a review and written approval from the individual designated as the agent for the purchasing agency.³

The project manager for the contracting agency has multiple responsibilities. He or she should be the sole conduit for information between the contractor and the agency on matters material to the contract. The manager must develop a plan to monitor contractor compliance with the schedule in the contract as well as verifying the quality of the services conforms with established benchmarks. On-site visits should be made regularly.

Additional methods of oversight are particular to specific types of contracts. If client services are being provided, the project manager should obtain feedback from both agency personnel and clients. If a management study is being performed, a steering committee or task force should be established to assist the project manager in ensuring the contractor is staying on track and the finished product will be in the prescribed format.⁴

² John Short, *Issues in Public Purchasing: a Guidebook for Policymakers* (Lexington, KY: National Association of State Purchasing Officials and the Council of State Governments, 1992), p.54.

³ John Short, *The Contract Cookbook for Purchase of Services*, Second Edition (Lexington, KY: National Association of State Purchasing Officials and the Council of State Governments, 1990), pp. 41-45.

⁴ Ibid.

The use of past performance as a criterion in the selection of contractors means it is important that an agency document performance during the contract period. Areas that should be rated include quality, timeliness, cost control, business relations, customer satisfaction, and key personnel.⁵

The option of renewing a contract is an incentive an agency can use to encourage good performance. However, it is not a guaranteed method if competition is limited, solicitation of new bids is unlikely to alter the level or price of the service, or program needs favor continuity in the contractor.⁶

Likewise, the possibility of imposing penalties on a contractor or terminating the contract can serve as a management tool. However, it should be invoked only as a final avenue of remedy, after consultation with legal counsel. (If ongoing services will continue to be needed, an alternate contractor should be lined up before ending the first contract.)⁷

⁵ U.S., Office of Management and Budget, Office of Federal Procurement Policy, *A Guide to Best Practices for Past Performance*, Interim Edition (Washington, D.C., May 1995), pp. 38-39.

⁶ *Issues in Public Purchasing*, p. 57.

⁷ *Contract Cookbook*, p. 44.

CHAPTER II

GOODS AND SERVICES

Several mechanisms exist for the acquisition of goods and services, depending on the nature of the particular purchase. Before examining the efforts of the state to manage contracts for goods and services, a brief overview of the primary methods used to obtain those items is presented.

Contracting Authority

The commissioner of administrative services is statutorily responsible for purchasing or contracting for all supplies, materials, equipment, and contractual services required by executive branch agencies, except purchases of professional, personnel, and building construction services.⁸ Chief executive officers of the constituent units of the state system of higher education may purchase supplies, equipment, and contractual services without the approval of the Department of Administrative Services or the comptroller, provided they comply with procedures established by the higher education system.⁹

Exceptions to the centralized purchasing requirement have been adopted by DAS for 15 types of goods and services. In those instances, state agencies are allowed to make purchases without prior approval from DAS. Among the exemptions are:

- purchases of \$10,000 or less for occasional or nonrecurring commodities and services (provided term contracts are used and the item is not covered by an existing contract or is not available from the state's central warehouse);
- purchases from other governmental entities;
- services available only from a sole source (including association dues, fees, licenses, and transportation of patients to and from institutions);
- purchases of prescription drugs and medicines as well as specified medical items (such as eyeglasses, dentures, hearing aids, etc.); and
- fresh fruit and vegetable purchases of less than \$300 per week.

⁸ Contractual services are defined in C.G.S. Sec. 4a-50 as: any and all laundry and cleaning service, pest control service, janitorial service, security service, the rental and repair, or maintenance, of equipment, machinery and other state-owned personal property, advertising and photostating, mimeographing, data entry, data processing and other service arrangements where the services are provided by persons other than state employees.

⁹ C.G.S. Sec. 10a-151b

Purchase Orders

The Bureau of Purchases within the Department of Administrative Services carries out most of the purchasing duties of the department. (Data processing purchases are handled through the department's Bureau of Technical Services.)

The bureau's Procurement Section provides centralized purchasing services for the state. Its employees are responsible for processing state agency requisitions for items under the jurisdiction of DAS, preparing bids and contract awards, and, of particular importance to this study, ensuring the procurement and delivery of commodities according to established standards.

The Standards and Tests Section ensures the correctness, competitiveness, and suitability of the standards and specifications of the items purchased by the state, another key component of this review. The section oversees quality control for products and services purchased, and its employees conduct spot inspections of deliveries made to individual state agencies.

Vendor selection. Figure II-1 summarizes the major steps involved in the purchase of goods and services that come under the jurisdiction of the Department of Administrative Services. Whenever possible, the Bureau of Purchases chooses suppliers of goods and services on the basis of an open market system that requires competitive bidding. (Agencies making direct purchases must base their selections on competitive prices where possible and practical.)

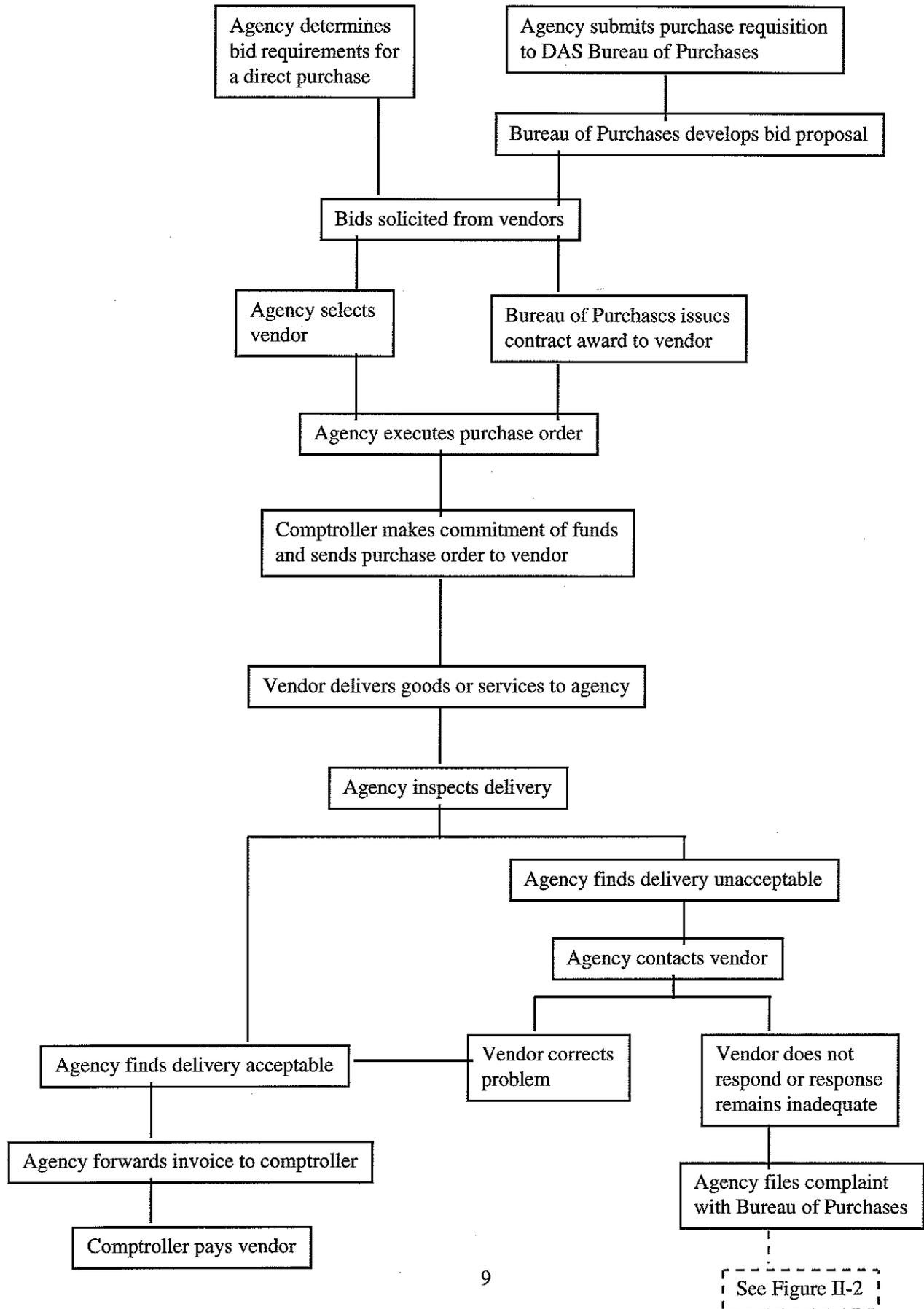
Upon receipt of a purchase requisition from an agency, the bureau develops a bid proposal form that describes the specifications of the item required. The bid proposal is mailed to vendors on the bureau's list for that particular good or service.¹⁰ Bids are also advertised in Connecticut daily newspapers when the value of a contract is estimated to exceed \$10,000. (In limited instances, usually involving time constraints, bureau staff may solicit telephone bids from three or more vendors selected at random from the applicable bidders' list.)

Among the statutorily required criteria to be considered in awarding a contract is a bidder's past performance. Specifically, the state must evaluate a bidder's skill, ability, and integrity in fulfilling past contract obligations. Consideration should also be given to past experience delivering supplies, materials, equipment, or contractual services of the size or amount of the bid being solicited. The lowest responsible qualified bidder who meets all specifications, terms, and conditions of the bid proposal is selected

Then the director of purchasing issues a contract award authorizing the purchase from that vendor. In order to actually obtain the item, a purchase order (PO) must be issued. The agency

¹⁰ Vendors that want to do business with the state are encouraged to apply for inclusion on the Bureau of Purchases Bidders' List. In order to be considered for inclusion, a vendor must submit business related information to the bureau and indicate the categories of commodities or services that he or she is interested in providing. Procedures for removal from the list as well as reinstatement are specified in the DAS *Vendor Manual*.

Figure II-1. Purchase Order Process for Goods and Services



seeking the item sends the purchase order to the comptroller's office, where a commitment of funds is made. The comptroller sends the purchase order to the vendor, who provides the good or service.

Monitoring. The agency issuing a purchase order is responsible for ensuring the performance of the contractor providing the goods or services. This duty includes verification that the quantity and the quality of the items received are in compliance with the terms of the contract. Agencies are responsible also for properly handling and storing the items received.

The Bureau of Purchases provides agencies with a manual that describes the components of the inspection process. In addition, inspectors from the bureau are authorized to spot check deliveries to state agencies.

Generally, an item is inspected after it is delivered to the purchasing agency. Under certain circumstances, an inspection may have to be made at the point of manufacture or at an intermediate point, such as a railroad siding. If possible, the purchase order or contract award should indicate a nonreceiving point of inspection will be used.

With respect to goods, shipments are to be inspected to determine whether they meet bid specifications (e.g., style, dimensions, color, quality, etc.), conform to bid samples, and are otherwise free of defects. The principal methods of inspection are:

- visual, which actually can include all five senses -- sight, taste, smell, hearing, and touch;
- certification, which means the commodity has already been determined to meet the grading rules established by an industrial group or other government agency such as the United States Department of Agriculture;
- mechanical, which involves using tools to determine the physical properties of an item;
- performance; and
- analytical.

Some products can be inspected using a single method, while other products require a combination of methods. Agencies are expected to apply measurement standards consistently to all suppliers of the same product. If necessary, samples can be taken from a delivery and sent to the Bureau of Purchases for a laboratory analysis.

Verification that the correct quantity of an item has been received is considered a separate function. This task may or may not be the responsibility of the same person who inspects the goods.

In the case of goods purchased for the state central warehouse, employees of the Bureau of Purchases inspect the items upon delivery. When the goods are transferred from the warehouse to a specific agency, the employees of the receiving agency are expected to confirm the correct items and quantities have been received.

Verification that services have been provided in accordance with a contract can be more complex. In addition to the fact that a service may be less well defined than a good, a service may also be provided over a period of time. In the latter case, the purchasing agency may need to inspect the work of the service contractor on an intermittent basis and may want to require submission of time sheets.

The Bureau of Purchases encourages agencies to resolve problems with vendors directly. If an agency is dissatisfied with goods or services, it is expected to contact the vendor at least once to ask for the adjustments or replacements that will bring the item into conformance with the requirements of the contract. If a vendor continues to be unresponsive, then the agency should contact the bureau.

State regulations specify that each user agency is responsible for enforcing guarantees for products purchased. The DAS inspection manual reminds agencies they must be cognizant of the expiration dates of guarantees and warranties and are required to ask the vendor to make any covered adjustments or replacements. If an agency cannot obtain satisfactory service, the matter should be referred to the director of purchases for action.

Likewise, in the case of defects that are not discernable until an item is put to use, agencies are supposed to notify the inspection section of DAS. If the vendor fails to remedy the conditions, the matter is to be referred to the deputy commissioner.

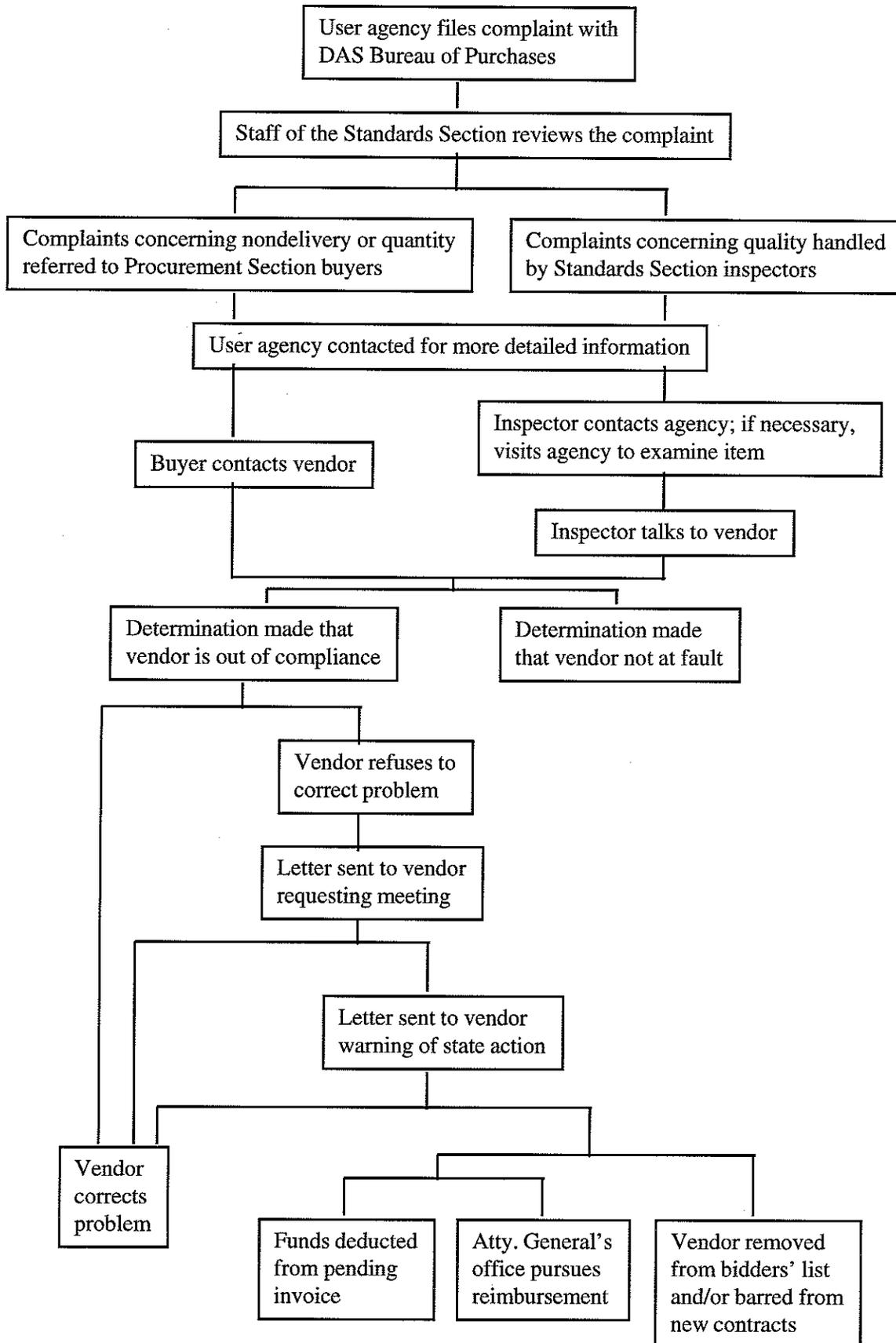
Prior to rebidding a commodity, the buyers in the Bureau of Purchases solicit assessments from agencies that have used the product in the past. The responsiveness of individual agencies varies. Generally, however, those who have had a problem with a vendor do return the assessment.

Complaint process. The Bureau of Purchases has established a formal complaint process for agencies to use when they are unhappy with a vendor. This process is summarized in Figure II-2.

If a product or service is unacceptable, the purchasing agency is supposed to submit a written complaint to the bureau. In an emergency, the complaint can be verbal, but it should be followed up in writing.

In general, bureau staff tries to work with contractors to help them do the job they were hired to do rather than taking punitive action. However, the written complaints are important evidence if consideration is being given to suspending or disqualifying a contractor.

Figure II-2. Bureau of Purchases Complaint Process



All complaints are reviewed initially by the Standards and Tests Section. Those about the quality of a good or service are investigated by section employees. Complaints involving nondelivery or delivery of the wrong quantity are considered procurement issues and are referred to the Procurement Section. The buyer for the particular product or service investigates the matter and returns the completed complaint form to the standards section upon resolution of the problem.

For complaints involving quality, the standards inspector begins the investigation by talking to a representative of the agency making the complaint in order to obtain additional details about the issue. If necessary, the inspector visits the agency to look at the problem and determine specific elements of the dispute. The vendor is usually asked to be present at such a visit, but if not, the inspector will talk with the vendor on the phone afterwards.

If the inspector determines the vendor has not violated the provisions of the contract, the inspector will meet with a representative of the agency and explain the decision. If the inspector finds the vendor is at fault, two outcomes are possible. The vendor may agree to correct the problem immediately, or the state may have to pursue additional steps to obtain satisfactory performance.

Depending on the circumstances of a particular complaint, the state may want the vendor to replace or remove the product in question. Or, if the vendor has already been paid, the state may want restitution for the value of the item in dispute.

In 1995, the attorney general's office helped DAS develop a conference process for resolving complaints concerning quality of service. A letter is sent to the vendor requesting an informal meeting. If the problem remains unresolved, a second letter is sent, indicating the state will be taking action against the vendor. If the vendor continues to refuse to correct the problem, the state can reduce payment on another invoice submitted by the vendor for an amount equal to the disputed claim. If there are no pending invoices, the matter can be turned over to the attorney general's office for collection. The Bureau of Purchases can also take the vendor off the bidders list for the product and refuse to award other contracts to the vendor.

A written record of each complaint received by the bureau is prepared, including information about the steps taken to resolve the problem. Additional information about the complaints received during the past two fiscal years is presented later in this chapter.

Payments. Once a purchasing agency confirms the goods or services received are in accordance with the contract award, the agency forwards an invoice to the comptroller. Payment is then sent to the vendor.

By statute, agencies must pay interest if they fail to pay a vendor in a timely manner. This requirement is waived in the case of good faith disputes. Such instances include the contention by the state that the goods delivered or services rendered were of a quantity or quality that was less than that ordered or specified by the contract, were faulty, or were installed improperly.

Sanctions. The standard bid and contract terms and conditions used by DAS specify the Bureau of Purchases can terminate a contract for a number of reasons. These include failure to make timely delivery, failure to make timely replacement of unacceptable or nonconforming goods after notice of rejection, and poor performance of contractual service contracts.

Samples submitted by winning bidders are retained by the bureau. If problems with an item occur, the department uses the sample as a benchmark for comparing the bid product with the delivered product. A vendor can be dropped as a supplier if the goods it delivers do not meet or exceed the original sample.

The commissioner of administrative services is statutorily allowed to disqualify individuals, firms, and corporations from bidding on contracts with DAS for up to two years. The reasons for disqualification include conviction or a guilty plea for certain offenses, noncompliance with contract provisions to a degree that indicates a lack of responsibility, and a recent record of failure to perform or unsatisfactory performance of one or more contracts.

Under C.G.S. Sec. 46a-56, the Commission on Human Rights and Opportunities may exempt a contractor from compliance with statutory nondiscrimination provisions in a specific contract. However, if the commission determines through its complaint process that a contractor or subcontractor is not complying with antidiscrimination statutes or contract provisions, then the state must retain 2 percent per month of the contract payment. In addition, the contractor is prohibited from participating in future contracts until two years have passed or the contractor has adopted policies consistent with such statutes.

Personal Service Agreements

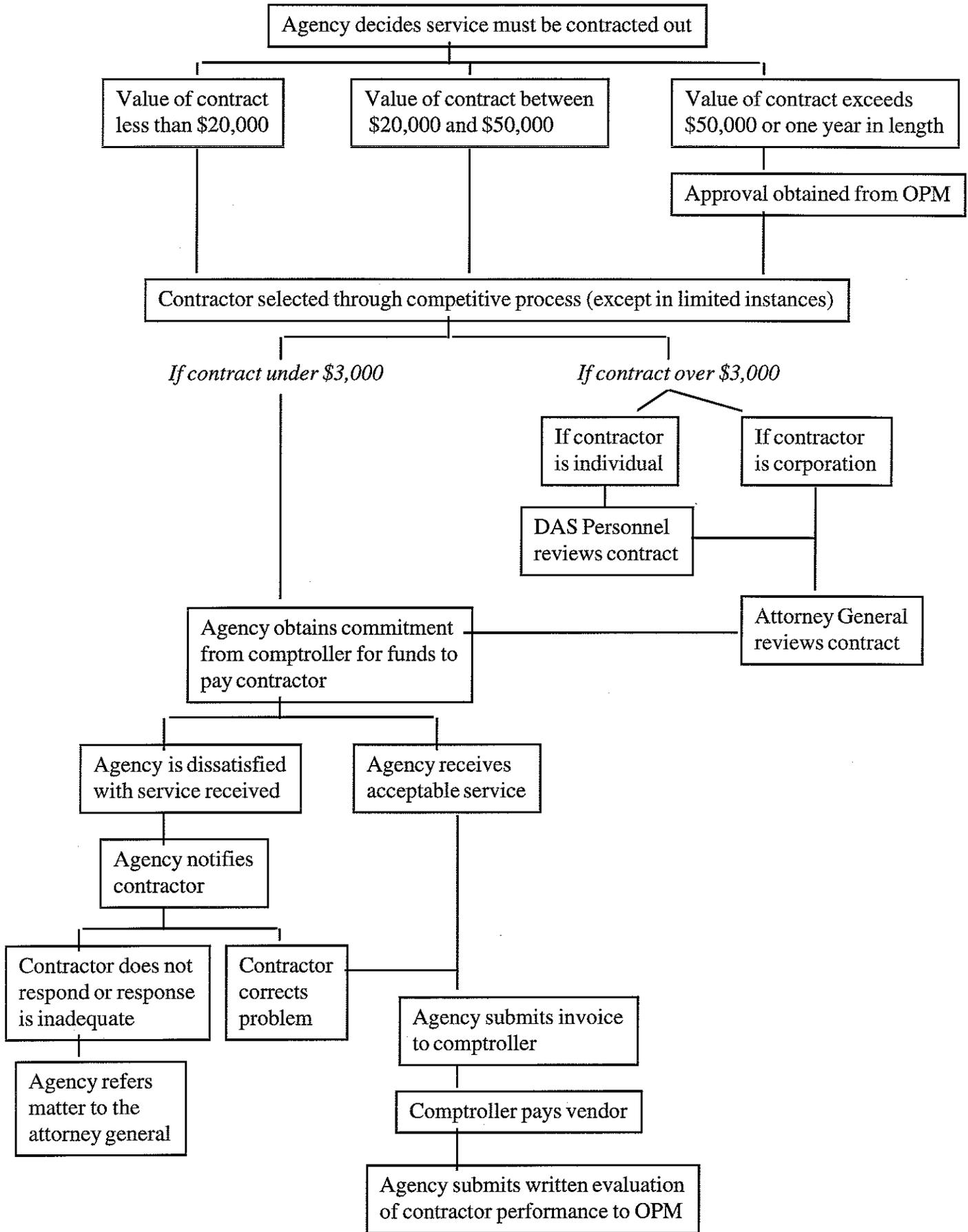
Another mechanism for entering into a contractual arrangement with a vendor is through the use of a personal service agreement (PSA). These contracts are used to hire persons, firms, or corporations to provide defined services or end products to a state agency. Figure II-3 summarizes the process for entering into a personal services agreement.¹¹

An agency using a PSA to hire a vendor may use one or more competitive processes. The dollar value of the contract determines the specific method used as well as whether other state agencies must approve the agreement.

There are two primary methods of selecting vendors. Under *competitive negotiations*, a request for proposal (RFP) describing the services needed is issued. Bids are submitted by interested vendors, and the proposals are evaluated by the agency. Upon completion of the rating, a contract

¹¹ The requirements described in this section are an outgrowth of the program review committee's 1992 study *Personal Service Agreements*. They do not apply to contractual services as defined in C.G.S. Sec. 4a-50, design professionals as defined in C.G.S. Sec. 4b-55, consultants as defined in C.G.S. Sec. 13b-20b, or government agencies.

Figure II-3. Personal Service Agreement Process for Services



is negotiated with the individual, firm or corporation selected for the job. Changes to the scope of services, the end products, and the price are subject to negotiation.

Under *competitive quotations*, the agency obtains oral or written price quotations from at least three responsible sources of supply. Then, a contract is awarded.

Contracts above statutorily set values or time periods must be approved by the Office of Policy and Management (OPM). Oversight of PSAs by DAS is limited to instances where an agency is hiring an individual to do more than \$3,000 of work. The agency must certify why a person outside the agency has to be hired to do the work. Staff from the DAS Personnel Division reviews the reasons given and must approve the contract.

The attorney general's office reviews all personal service agreements exceeding \$3,000 for legal sufficiency as to form. A contract may be sent back to an agency for corrections. The last agency to review a PSA is the comptroller's office. Staff checks the contract to ensure the required sections of the form are filled in, referenced attachments are included, terms and conditions are attached, and required signatures are on the contract. Information from the form is entered into the computer, and a "commitment" to pay for the contract is established.

The agency using a PSA is responsible for notifying the vendor to provide the contracted service and for overseeing the work performed. Under standards adopted by OPM in February 1994, an agency is supposed to assign a specific person to oversee each personal service agreement. The responsibilities of that person are:

- monitoring and reporting on the contractor's activities (including work progress, costs-to-date, current estimated completion dates, problems encountered, and solutions proposed);
- assuring an adequate flow of accounting and program information;
- ensuring appropriate agency assistance to the contractor;
- keeping appropriate records to evaluate the contractor's performance; and
- completing a contractor evaluation and forwarding it to OPM not later than 60 days after completion of work under the contract.

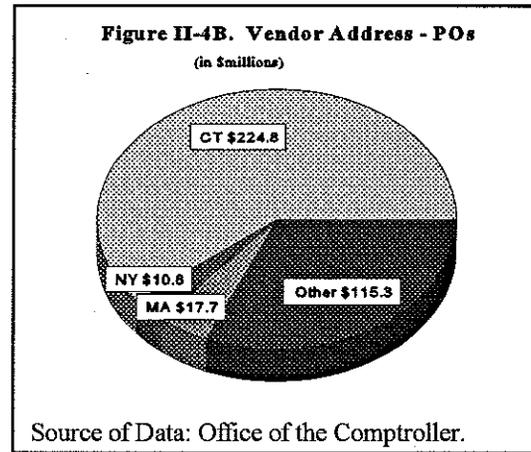
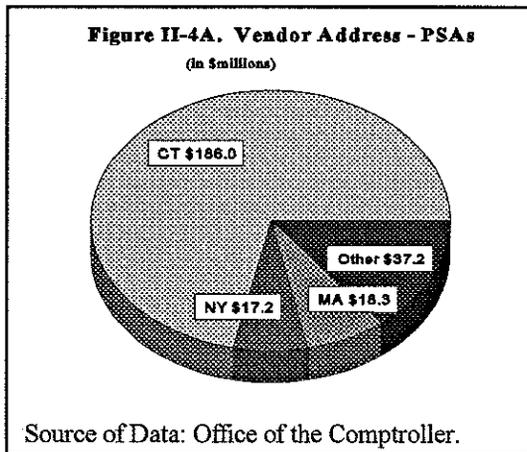
If a state agency has a problem with a contractor, the agency is expected to contact the vendor and try to solve the problem. If the matter cannot be resolved, the user agency should notify the attorney general's office. It will determine what, if any, action can be taken, including collection efforts to recover fees already paid.

Contract Activity

To evaluate the state's efforts at contract management with respect to goods and services, information about the nature of those purchases is needed. In particular, it is helpful to know which agencies are spending the most and what types of items are being bought. Using records obtained from the state comptroller for all purchase orders and personal service agreements on the comptroller's system on June 30, 1995, the program review committee developed a profile of spending patterns.¹²

Expenditures during state FY 95 for all of the PSAs in the program review database totaled \$258 million; the purchase orders totaled \$368 million. The value of the individual contracts in the database varied considerably. Some were for small, one-time expenditures of less than \$100. Others were multi-year in length with annual payments of millions of dollars. Only 2 percent of the POs showed FY 95 payments greater than \$100,000; 11 percent of the PSAs exceeded that level. Two-thirds of the POs had FY 95 payments below \$3,000; 43 percent of the PSAs were in that range.

Contract payments were made to vendors from nearly every state in the country. However, a majority of the money for both the PSAs and the POs in the database went to individuals and businesses with Connecticut addresses. Figures II-4A and II-4B show the distribution of contract dollars by vendor address for each contract mechanism.



¹² The detailed database used by the program review committee contains information from a specific point-in-time, the last day of state fiscal year 1995. The number of personal service agreements and purchase orders in it is slightly larger than the actual number of contracts because those with multiple components are listed separately for each category of good or service.

The database does not contain information about all goods and services purchased by the state last year. For example, some PSAs and POs filled early in the fiscal year had already been removed from the system. In addition, with minor exceptions, the only higher education institutions in the database are the community-technical colleges. The percentage of total state spending represented by the combined value of the PSAs and POs in the database for specific categories ranges from less than 10 percent to over 90 percent.

The amount of goods and services purchased by state agencies using PSAs and POs varies widely. Table II-5 lists the 10 agencies with the highest level of total expenditures on personal service agreements. The combined value of the expenditures by those agencies represents 90 percent of the total FY 95 expenditures for PSAs in the database.

TABLE II-5. Top 10 Agencies with Personal Service Agreement (PSA) State FY 95 Expenditures (based on data in the comptroller's system on June 30, 1995).			
AGENCY	FY95 Agency Expenditures	No. of PSAs	Percent of PSAs (N=3,170)
Department of Transportation	\$79.2M	581	18%
Department. of Administrative Services	\$66.7M	20	<1%
Office of the Treasurer	\$20.6M	63	2%
Department of Social Services	\$13.5M	267	8%
Department of Motor Vehicles	\$12.9M	14	<1%
Division of Special Revenue	\$10.2M	13	<1%
Department of Education	\$10.2M	158	5%
Department of Economic Development	\$8.5M	117	4%
Department of Public Works	\$5.6M	45	1%
Department of Public Health (CADAC)	\$5.4M (\$0.6M)	43 (90)	1% (3%)
Source of Data: Office of the Comptroller.			

In terms of quantity of activity, the records for the agencies in the table represent 44 percent of the PSAs in the database with FY 95 expenditures. Several agencies not included in the table were among the largest users of PSAs, but the dollar value of their expenditures was small. For example, the Historical Commission had 116 PSAs on the system, but it only expended \$52,000 on those contracts in FY 95. (Alternatively, the Health Care Access Commission only had 11 PSAs on the system, but its FY 95 expenditures totaled nearly \$1.5 million.)

Table II-6 lists the 10 agencies with the highest level of total expenditures on purchase orders during FY 95. The combined value of those expenditures represents 84 percent of the total FY95 expenditures. In terms of quantity of activity, the agencies in the table represent 65 percent of the purchase orders in the database with FY 95 expenditures.

TABLE II-6. Top 10 Agencies with Purchase Order (PO) State FY 95 Expenditures (based on data in the comptroller's system on June 30, 1995).

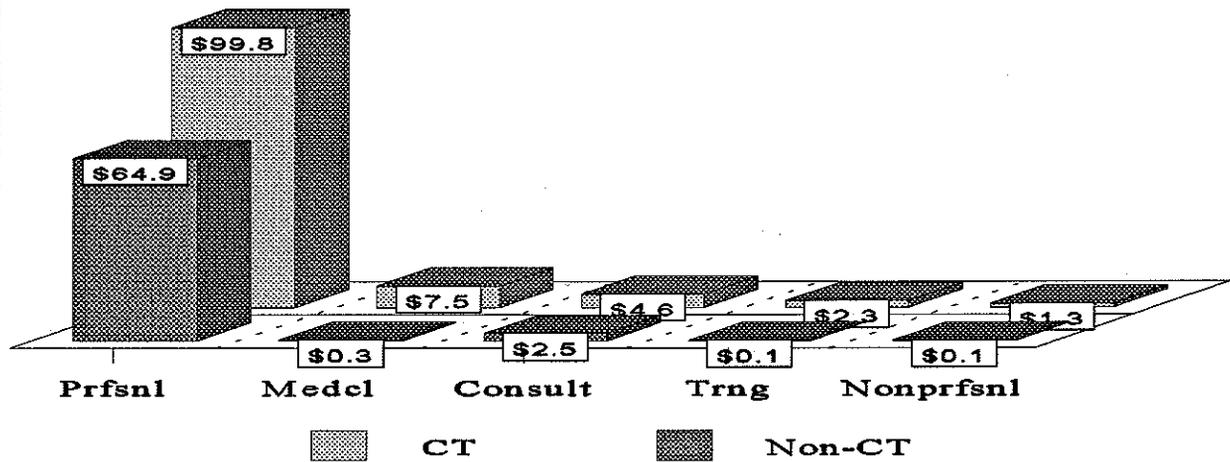
AGENCY	FY 95 Agency Expenditures for POs on the system	No. of POs	Percent of all POs (N=29,195)
Department. of Transportation	\$79.3M	4,905	17%
Division of Special Revenue	\$65.1M	247	1%
Department of Public Works	\$41.5M	1,746	6%
Department of Administrative Services	\$38.2M	1,313	4%
Department of Correction	\$21.8M	5,656	19%
Department of Social Services	\$19.6M	666	2%
Department of Public Safety	\$14.6M	953	3%
Department of Environmental Protection	\$11.4M	1,535	5%
Department of Mental Health	\$8.4M	1,542	5%
Department of Children and Families	\$8.0M	785	3%
Source of Data: Office of the Comptroller.			

Products consumed. The types of services obtained under personal service agreements are coded in very general terms. Nearly 90 percent of the PSAs in the database with FY 95 expenditures were assigned to only five categories of services, with 61 percent in the single, broad category "outside professional services." Fees for medical services covered another 16 percent of the PSAs, while "outside consulting services" and "training costs for nonemployees" each constituted 4 percent. Three percent of the PSAs were for "nonprofessional services."

Figure II-7 shows FY 95 expenditures for the five major categories of services for those PSAs in the database. Also indicated for each category is the proportion of spending that went to Connecticut vendors versus out-of-state vendors.

A much broader range of goods and services is obtained through the purchase order process. Nearly three dozen categories of items in the program review database had expenditures of over \$2 million during FY 95. Together, those categories accounted for approximately half of the volume and 91 percent of the FY 95 expenditures in the database. Table II-8 presents the top 10 categories based on expenditures.

**Figure II-7. Major Categories of PSAs
(in \$millions)**



Source of Data: Office of the Comptroller.

**TABLE II-8. Top 10 Categories of Purchase Orders with State FY 95 Expenditures
(based on data in the comptroller's system on June 30, 1995).**

SERVICE/PRODUCT CATEGORY	FY 95 expenditures on the system	Conn. vendors	Out-of-state vendors	Vendor state unknown
Lottery prizes	\$59.2M	\$8.7M	\$50.5M	- 0 -
General repairs	\$43.2M	\$37.2M	\$5.8M	\$0.2M
Motor vehicle equipment	\$28.8M	\$28.5M	\$0.2M	\$0.1M
EDP hardware	\$25.2M	\$10.3M	\$14.7M	\$0.2M
Outside professional services	\$25.2M	\$18.0M	\$7.1M	\$0.1M
Capital outlay - institution bldgs	\$25.2M	\$23.3M	\$1.6M	\$0.3M
Leasing of personal property	\$12.3M	\$10.0M	\$1.7M	\$0.6M
Office equipment	\$11.3M	\$7.8M	\$3.3M	\$0.2M
Sundry operating services	\$8.2M	\$5.9M	\$2.1M	\$0.2M
Motor vehicle supplies	\$7.3M	\$6.9M	\$0.3M	\$0.1M

Source of Data: Office of the Comptroller.

Current Contract Management Practices

One component of the program review committee's assessment of agency contract management practices is the identification of procedures not currently in place that could be of value in ensuring the state receives what it has set out to purchase. An equally important component of the evaluation is verification that oversight procedures already in place are in fact being adhered to.

The results of the program review committee survey of state agency contract management practices identified several areas where compliance does not appear to be uniform.¹³ The omissions affect both goods and services.

Only half of the 50 survey respondents indicated their agency has written procedures for evaluating the performance of a service. Further, less than one-third frequently or almost always prepare a written evaluation of a contractor upon completion of a contract. These answers are in conflict with OPM General Letter 94-1, which outlines requirements for the establishment of procedures for monitoring and evaluating the performance of contractors hired under personal service agreements.

Evidence of noncompliance was also found when program review committee staff reviewed the contractor evaluation reports on file at OPM. Only some agencies have submitted evaluation forms, and the value of the information in those is limited, with some forms even filled out incorrectly.

Even fewer survey respondents (35 percent) indicated their agency has written procedures describing the steps to be followed when inspecting commodities. While not a statutory mandate, this is surprising because the Bureau of Purchases indicated it has sent all state agencies a copy of its manual describing the components of such a process.

Despite the absence of written procedures, 84 percent of the agencies did indicate commodities received directly from vendors are almost always examined for conformance with contract specifications such as style, dimensions, and color. (This figure is 70 percent for items delivered from the state's central warehouse.) Even more respondents (92 to 94 percent) selected *almost always* to indicate how often the types of items received directly from a vendor or from the central warehouse are checked against the purchase order and the quantity of each type of commodity is counted.

The frequency with which actions related to oversight of services delivered by outside contractors were taken by agencies were not as consistent. Although 88 percent almost always review the end product required by a contract before they authorize final payment, only 65 percent

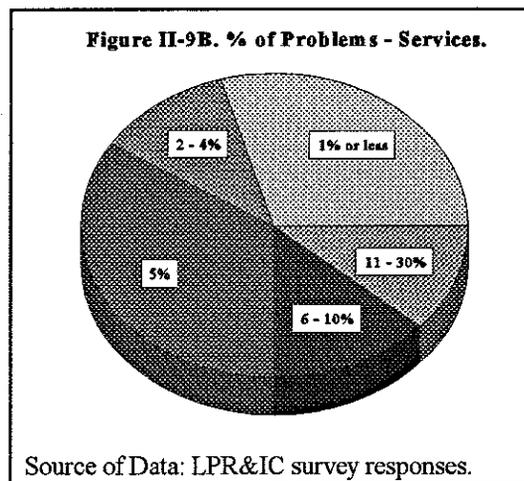
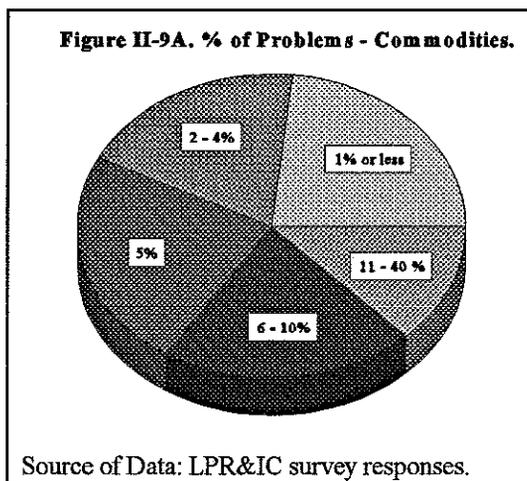
¹³ Fifty surveys were returned. In a few cases, this represents multiple responses from a single agency. This was allowed in order to reflect the different experiences of office and institutional operations.

almost always monitor ongoing performance for compliance with contract specifications. Sixty percent almost always monitor the number of hours worked by employees of a contractor.

Nearly 90 percent of the respondents only rarely refused to accept a delivery or an end product, and nearly 80 percent rarely refused to pay for a good or service. Between 15 and 25 percent of the respondents had sometimes deducted the value of an item or service from an invoice submitted by the same vendor for another contract.

Frequency of problems. Two related factors to consider in developing a contract management system are the frequency with which problems occur and the nature of those problems. Based on the responses to the program review committee survey, the volume of problems with goods and services is low.

Although one respondent had problems with commodities 40 percent of the time and another had problems with services 30 percent of the time, one-quarter of the respondents had problems in each area only 1 percent of the time. An additional 43 percent of the respondents experienced problems with commodities between 2 and 5 percent of the time. Almost half of the respondents had problems with services provided by outside contractors between 2 and 5 percent of the time. Figures II-9A and II-9B display the distribution of all of the responses for commodities and for services.



These rates are consistent with the findings in the 1989 program review committee report on the Bureau of Purchases. During that study, agency purchasing officers were asked to estimate the percentage of the time their agency encountered problems with vendor performance. Eighty-one percent of the respondents said 10 percent or less.

A low volume of problems does not mean the state should reduce the scrutiny it applies to the purchases it makes. The existence of oversight practices and awareness of those procedures

among vendors may, in fact, be what keeps the number of problems small. Likewise, even if there are only a few problems, they may have a major impact on the operations of an agency.

Types of problems. During the period from July 1, 1993, to June 26, 1995, the DAS Bureau of Purchases received 226 complaints alleging one or more problems. More than 30 different types of problems were described, but overwhelmingly quality was the issue.

Two-thirds of the complaints alleged the quality of the commodity or services rendered were inferior. The other most frequently listed complaints were: services not performed in accordance with contract specifications or requirements (13 percent); delivery not made or services not rendered on date ordered or promised (10 percent); and delivery made or services rendered at an unsatisfactory hour (6 percent). Eight complaints concerned receipt of a quantity less than ordered, while two each concerned an invoice price higher than authorized and the weight received at variance with the invoice or shipping ticket.

The survey sent to state agencies by the program review committee contained a list of some of the problems experienced by agencies filing complaints with the Bureau of Purchases. Respondents were asked to indicate how often their agency experienced the particular problem during the past two years. Table II-10 lists the specific problems and the percentage of respondents who said their agency experienced that problem at least *frequently*.

The problem the greatest number of respondents had for both commodities and services was timeliness. Half sometimes received commodities after the requested delivery date, while 16 percent frequently did. Nearly 40 percent experienced services being performed late sometimes, while 6 percent had this problem frequently.

Resolution of problems. While the mechanisms for dealing with problems with items obtained through purchase orders and personal service agreements differ somewhat, in all cases the agency experiencing the difficulty is expected to make the initial effort to alert the vendor to the problem. The program review contract management survey asked agencies about their dealings with vendors when there had been a problem with either a commodity or service

TABLE II-10. Percent of Respondents Experiencing Problems At Least "Frequently."	
Type of Problem	%
Commodities:	
received after requested date	16%
did not match specifications	4%
damaged or spoiled condition	2%
wrong quantity	2%
price higher than authorized	4%
Services:	
performed late	6%
below specified level	2%
end product not received	--
price higher than specified	2%

during the past two years. Although all indicated they contacted the vendor at least sometimes, only 73 percent said they almost always did.

When contacted by agencies, it appears vendors are generally responsive to complaints about problems. According to the survey respondents, all of the vendors frequently or almost always corrected a problem.

Information about the outcomes of half of the complaints on file at DAS was available. In 10 percent of those cases, the vendor corrected the problem or it no longer existed at the time the complaint was investigated. In 30 percent of the cases, the vendor made a monetary adjustment. In another 20 percent of the cases, the vendor and the agency were working to resolve the problem. Inspectors found no problem in 9 percent of the complaints.

CHAPTER III

PUBLIC WORKS CONSTRUCTION CONTRACTS

In general, responsibility for planning, designing, renovating, and constructing buildings used by state agencies is centralized in the Department of Public Works. However, as Table III-1 shows, there are many conditions attached to the department's authority to award and manage construction contracts and several major exemptions. Specifically, any state agency is permitted to undertake minor capital improvement projects (i.e., involving expenditures of \$250,000 or less), with only prior approval from DPW in most cases. The environmental protection and judicial departments and higher education system constituent units, have been authorized to carry out certain construction projects with higher dollar limits.

The Connecticut Marketing Authority and the legislative branch have been granted full authority to construct any facility under their jurisdiction. Similarly, the University of Connecticut was recently granted full authority to carry out an extensive capital improvement program known as "UConn 2000" established under Public Act 95-230. Table III-1 also points out construction contracts related to transportation facilities, which are described in the following section, are the sole responsibility of the Department of Transportation.

By law, the Department of Public Works must award construction contracts for major projects through a competitive process outlined in statute to the lowest responsible and qualified bidder except in cases of emergency or other special conditions.¹⁴ Among the criteria the DPW commissioner must consider in determining the low bidder is past performance, evaluating the bidder's skill, ability, and integrity in terms of fulfillment of contract obligations.

What constitutes a responsible bidder is not defined in statute, although the causes for disqualifying contractors from bidding on public works construction contracts are outlined in C.G.S. Section 37-57c. These include: commission of a criminal offense to obtain or in performance of a contract; commission of an offense indicating a lack of business integrity or honesty; violation of state or federal antitrust, collusion, or conspiracy laws; wilful failure to perform in accordance with contract provisions; wilful violation of legal requirements applicable to public contracts; and a history of failure to perform or unsatisfactory performance on one or more public contracts. DPW does not have a policy on responsible bidders at this time but is developing objective criteria for evaluating responsibility in the future.

The department is permitted by statute to retain up to 2.5 percent of the final payment due a contractor until all work is completed in an acceptable manner. Contractors awarded DPW projects are also required to post two types of bonds -- performance and payment.

¹⁴ Major public works projects subject to the competitive low bid process are statutorily defined as costing over \$250,000, or in the case of most higher education facilities, \$2 million.

TABLE III-1. AUTHORITY FOR STATE CONSTRUCTION PROJECTS.

Type of Project	Dollar Amount	Primary Authority	DPW Role
Highway, Bridge, Mass Transit, Marine, and Aviation Transportation Systems [13b-4(12)]	any	DOT	none
Buildings and other structures (not part of transportations systems) <i>except</i> those under control of <ul style="list-style-type: none"> - Higher education constituent unit - Ct. Marketing Authority - Legislative Management - Dept. of Environmental Protection and dams, flood/erosion control systems [4b-1, 4b-51(a)]* (*also, Judicial Dept. has full authority for projects, if design professional services cost less than \$25,000 or construction costs less than \$250,000 under 4b-1; and under 4b-52, Judicial Dept. projects of \$50,000 or less do not require DPW prior approval)	up to \$250,000	Agency	prior approval; technical assistance
	over \$250,000	DPW	full authority
<i>Exceptions:</i>			
<i>Higher education constituent unit</i> * Building/public work [4b-1, 4b-51(a), 4b-52] (*under P.A. 95-230, the University of Conn. has full authority for projects included in the capital improvement program known as UConn 2000)	under \$50,000		none
	up to \$2 million	constituent unit	prior approval
	over \$2 million	DPW	full authority
<i>Ct. Marketing Authority</i> Building/public work [4b-1, 4b-51(a)]	any amount	Ct. Marketing Authority	none
<i>Legislative Management</i> Building/public work [4b-1, 4b-51(a), 4b-52]	any amount	Leg. Mgt.	none
<i>Dept. of Environmental Protection</i> Real assets [22a-6]	under \$500,000	DEP	none
	between \$500,000 and \$1 million	DEP	prior approval
	\$1 million and over	DPW	full authority
<i>Dams, Flood and Erosion Control Projects</i> [4b-1, 22a-6]	any amount	DEP	none

A performance bond protects the state by insuring a construction project will be completed if the contractor defaults. DPW usually requires a performance bond cover 100 percent of a projects's estimated construction cost, with provisions for raising the bond amount if costs rise during construction. The surety company that writes the bond is obligated to perform work in accordance with all contract provisions including time frames and quality standards. In general, the surety company has the option of furnishing the state with sufficient funds to complete the work, hiring a new firm to finish the project, or providing financial support to the original contractor.

Payment bonds, statutorily required for any project costing more than \$25,000, provide protection to the suppliers of labor and materials on state projects. If a contractor fails to pay for labor or materials, the worker or supplier can seek compensation from the payment bond company. The time frame for paying suppliers and subcontractors along with the process for making a claim for payment are outlined in statute.

DPW construction contractors, like all firms doing business with the state, must agree to comply with a number of nondiscrimination and affirmative action provisions. In addition, contractors with 50 or more employees who are awarded DPW construction projects valued at \$50,000 or more must develop and file affirmative action plans with the Commission on Human Rights and Opportunities. Successful bidders for public works projects costing more than \$250,000 must have their plans approved by CHRO before the department can award the contract.

Construction firms that contract with the department must also comply with statutes concerning prevailing wage rates, limitations on work hours, and preferential hiring of state residents. Names of all subcontractors that will be used must be submitted as part a of contractor's bid proposal, and subcontractors, by law, cannot be changed without DPW approval.

DPW is prohibited from contracting with businesses not in compliance with state affirmative action and nondiscrimination policies. Contracts cannot be awarded to certain National Labor Relations Act (NLRA) or Occupational Health and Safety Administration (OSHA) violators or to businesses that fail to comply with the state minority and small contractor set-aside program.¹⁵ As noted above, DPW can also disqualify contractors from bidding on future contracts for cause, which is defined in statute to include a history of failure to perform or of unsatisfactory performance on public contracts, among other reasons.

Construction contractors for DPW projects are allowed by statute to bring court action against the state, or, as an alternative, submit to arbitration, in the event of a dispute over the award of a contract or the contract itself. Written notice of a claim must be given to the department within

¹⁵ Each state agency that contracts for goods, services, and construction valued at \$10,000 or more per year must set aside 25 percent of the average value of all contracts let over the previous three years for award on a competitive basis to certified small businesses. Of the amount set aside, 25 percent must be reserved for small businesses owned by minorities, defined as racial and ethnic minorities, women, and people with disabilities. To be eligible for certification, which the Department of Economic Development administers, a contractor must have been in business in Connecticut at least one year and have annual gross revenues of \$10 million or less.

two years of the state's acceptance of work or termination of the contract; action must be brought within three years.

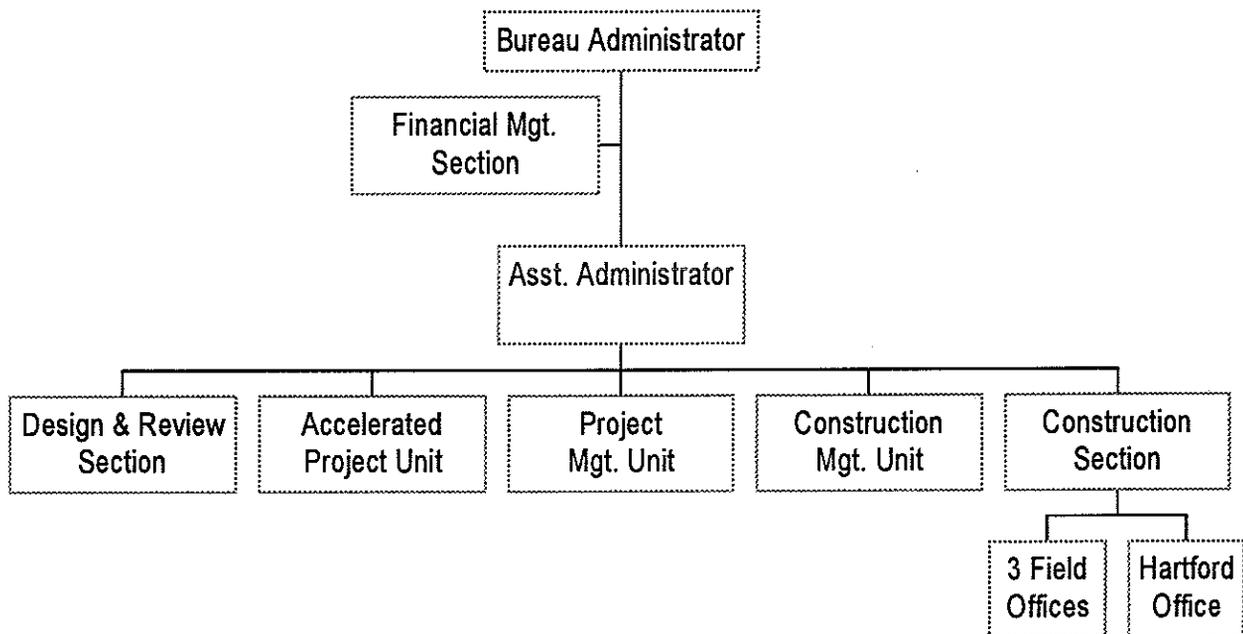
All state agency buildings and structures are subject to the state building code and since 1989, the public works department has been required to obtain building permits and certificates of occupancy from the state building inspector for certain major construction projects. Projects included at present are multi-story structures and large institutional and residential use buildings. Beginning in July 1997, the permit and certificate requirements will apply to any building or structure constructed or altered by the department.

Organization

Until recently, one bureau within the public works department -- facilities design and construction -- had primary responsibility for state construction projects. The bureau organization, illustrated in Figure III-2 included several sections and units that oversaw different phases of the construction process or certain types of projects.

Design and review section staff coordinated all activities related to developing plans and specifications for public works projects. Their duties included advising client agencies about their requests, overseeing the hiring of outside design consultants (e.g., architect or engineering firms), reviewing plans, specifications, and other submissions from the design consultants, and assisting with the construction contractor bidding process.

Figure III-2. DPW Bureau of Facilities Design & Construction Organization (February 1995)



Staff from the bureau's construction section and the project management and construction management units were responsible for the control, field supervision, and inspection of DPW projects from the time the construction contract was awarded through project close-out. In general, the construction section, which was organized into a central office and three district field offices, handled routine repairs and renovations as well as simple new construction and renovation projects, the majority of the department's work. Very large or complex projects such as those with multiple contractors or outside construction management firms were assigned to staff of the project or construction management units. Another specialized unit was established to handle projects with accelerated schedules such as the emergency correctional facilities built over the past few years.

At the time of the committee's review, DPW was undergoing a major reorganization. The management structure for all agency functions including construction were changing, and staffing levels were being reduced as well.¹⁶ In the future, all public works services -- design, construction, leasing, maintenance, and related administrative support -- will be provided to client agencies through a client agency team concept. Each team will serve as a single point of contact for its client agencies, managing all projects and issues from start to finish through whatever DPW procedures apply.

Most facilities design and construction bureau functions will not be eliminated but will be conducted by different staff or units. For example, project coordination tasks formerly handled by design and project management personnel will now be the responsibility of the team assigned to serve the requesting agency. Similarly, construction section field staff will still conduct on-site inspections but be supervised directly by the central office; districts, along with district-level supervisory positions, have been eliminated.

At present, construction projects are actually put out to bid by the bidding and contracts unit of the agency's administration bureau. Contract compliance staff, located within the administration bureau's affirmative action unit, are responsible for verifying agency and contractor compliance with nondiscrimination and affirmative action laws, monitoring compliance with the state set-aside program, and communicating with CHRO. Efforts to streamline bid procedures are also underway within the agency and may result in some reconfiguration of the administration bureau. Details of the department reorganization were still developing at the conclusion of the program review committee study.

Process

When outside services are needed to build or renovate a structure for state agency use, DPW staff is involved in all phases of the process from selecting an architect or engineer through inspecting a finished project. Most public works projects involve two phases -- design and construction -- and, therefore, at least two contracts to award and manage.

¹⁶ Full time employee positions within DPW totaled 375 on January 1, 1995. Through layoffs and attrition, this number was reduced to 307 positions on June 30, 1995

Preconstruction phase. The department's construction contract process usually begins once the legislature has authorized funding for a project and an agency submits a written agency request for design and/or construction services. Requests vary in detail, ranging from a few sentences to a full description and building layout.

When authorized to proceed by the public works commissioner, new projects are added to department's accounting and fiscal control systems by financial management staff within the administration bureau. In the past, a project coordinator or project manager from the facilities design and construction bureau would be assigned at this time to manage all aspects of the design process, including participation in the selection of the consulting architect or engineer (A/E). As noted earlier, once the department's reorganization is fully implemented, the client agency team will take over all coordinating functions for a project, including those related to the design phase.

When final plans and specifications for a project are found completely satisfactory to the requesting agency as well as DPW, they are forwarded to the bidding and contract unit of the agency's administration bureau. The contract unit is responsible for carrying out the bid process for all construction projects in accordance with state statute. The unit's duties include: checking submitted plans and specifications for accuracy and completeness; establishing a bidding schedule; advertising for bids; preparing all bidding materials; publicly opening and reading bids received; reviewing bids and determining the apparent low bidder; and overseeing the processing of bid protests, if any. By law, a DPW construction contract must be awarded within 60 days of the bid opening.

Before a contract is awarded, the unit verifies the apparent low bidder is in compliance with applicable nondiscrimination, labor relations, and employment regulations. No contract can be executed until the proposed contractor: 1) has been certified by CHRO as "not in non compliance" with state antidiscrimination policies; and 2) if required, has an affirmative action plan on file with and approved by that agency. To promote set-aside program compliance, the department also requires an apparent low bidder to submit copies of signed contracts from the certified small and minority businesses that will participate as subcontractors prior to contract execution

By department policy, contractors awarded projects worth more than \$25,000 are required to furnish performance and payment bonds in amounts equal to 100 percent of the contract price. After the DPW contracts unit determines all contractor requirements are met, bond commission approval has been obtained, and project funding is in place, a meeting to sign the contract document is scheduled.

Facilities design and construction bureau staff attend the contract signing. In addition to setting the official start date for the project, the construction staff will outline general contract conditions and any special aspects of the project for the contractor. A time for the start-up conference, the first step of a project's construction phase, is usually arranged during the signing meeting.

Construction phase. The department's general process for managing contracts once construction is underway is outlined in Figure III-3. The figure shows the steps used by the construction section to handle contracts for routine projects such as roof repairs, asbestos removal, building additions and modifications, and small to medium size (\$5 million and under) new construction and major renovation projects.

Although some procedures vary, the same basic steps apply to projects with an outside construction manager, which are overseen by construction management unit staff, as well as projects with multiple contractors, which are currently assigned to specialized project managers within the bureau's project management unit. With the department reorganization, client agency teams will assume primary responsibility for managing a project, with construction section staff providing support such as inspection services as required.

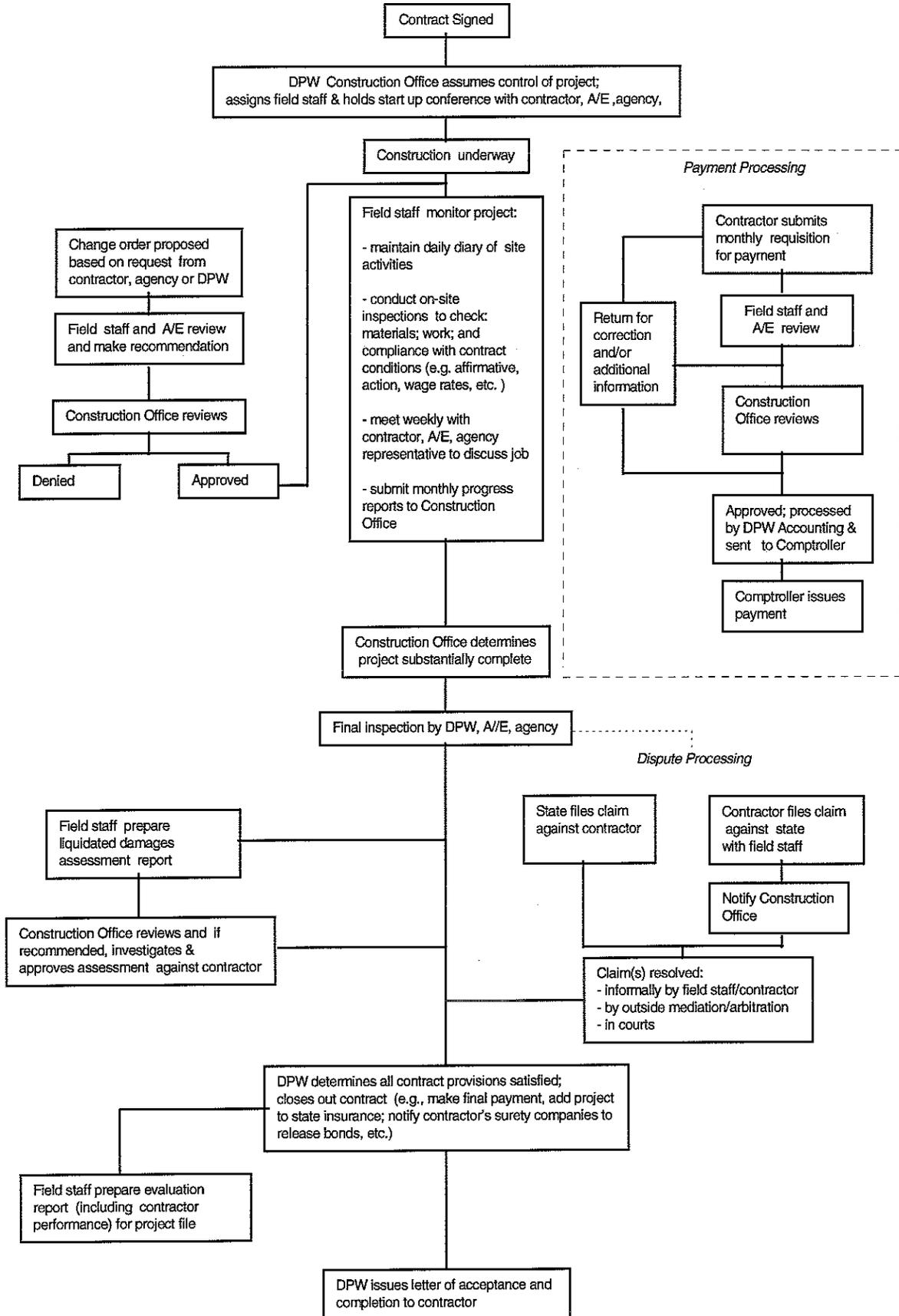
As Figure III-3 indicates, once the contract is signed, DPW construction field staff have primary responsibility for keeping a project running smoothly and on time. At the start-up conference public works staff, the contractor, the project's architect/engineer and a representative of the requesting agency all meet to go over plans, specifications, and general contract conditions line by line.¹⁷ A construction schedule, budget, and schedule of values, which the contractor is required to submit before starting work, also are reviewed and approved. The construction schedule establishes the overall time frame for the project and is used to monitor progress. The schedule of values, which serves as the basis for all contractor payments, is an itemized listing of all labor and materials needed for the project by unit, quantity, and estimated price. Modifications to any amounts or prices of work and materials listed in the schedule of values can only be made through the formal change order process described below.

When construction is underway, there are three main components to managing the contract: on-site monitoring and inspection; payment processing; and review and approval of contract changes. The overall goal is to make sure a project stays on schedule, within budget, and all work and materials comply with contract specifications and conditions.

The field staff assigned to the project carry out a number of on-site monitoring activities. They must keep a written log called the daily diary for each project, detailing site conditions, numbers and classifications of workers, the location and type of work carried on, and any accidents or other incidents that occur for every work day. Monthly progress reports summarizing project status in terms of time and budget are prepared and sent to the central office for review and approval.

¹⁷ Most department design contracts with outside A/E firms include provisions for construction administration services, which include such functions as checking contractor invoices, reviewing change orders, attending periodic job site meetings and otherwise advising DPW while a project is under construction. In most cases, the architect/engineer that designed the project is also responsible for preparing as-built drawings for the department upon completion of construction. DPW construction field staff have been responsible for ensuring design consultants fulfill these contract obligations during the construction phase. It is expected client agency teams will take on this function in the future.

FIGURE III-3. DPW CONSTRUCTION CONTRACT MANAGEMENT PROCESS



When on site, field staff also verify subcontractor information and review payroll records to ensure contractors are complying with prevailing wage rates and other employment requirements. In the future, field staff may also monitor and report on a contractor's workforce for affirmative action purposes. Field staff also arrange for and oversee the independent testing of critical construction materials, such as concrete or steel, and insure that progress photographs are taken at key points in the process as outlined in the contract.

Field staff generally meet at least weekly with the contractor, the project architect/engineer, and requesting agency representative to discuss job progress and any problems. If a contractor's performance is unsatisfactory field staff can order work suspended until deficiencies are corrected. Problems or disputes that cannot be resolved by field staff are referred to the central construction office management. The department can withhold contractor payments and in extreme cases terminate a contractor for failure to perform in compliance with contract provisions.

For most projects, contractors are paid monthly based on the amount of work completed and using the quantity and cost information contained in the schedule of values. Payment requests are initially reviewed and verified by field staff in informal meetings with the contractor and the architect/engineer. The contractor then submits a formal requisition, which must be signed by the architect/engineer and approved by the field staff. Approved requisitions are sent to the central construction office, which checks them for accuracy and completeness before forwarding them to the accounting office for final processing. In the future, client agency teams will be responsible for final approval and processing of requisitions.

Requests for any changes to the work, materials, or schedule outlined in a construction contract also are initially processed by field staff. Modification to a project under construction may be required for any of several reasons, including unforeseen field conditions (e.g., soil problems, presence of asbestos, etc.), design errors/omissions (e.g, flaws or oversights in plans or specifications), or because of changes requested by the client agency.

When field staff receive a request suggesting a change from the original contract, a form describing the change and its source is prepared and sent to the architect/engineer for review and a written recommendation. If the change is recommended by the architect/engineer, field staff then ask the contractor to prepare a proposal outlining the work, materials, and costs that would be involved. The contractor is also asked to assess whether a time extensions would be required and, if so, estimate the number of days added.

Field staff review the proposal prepared by the contractor to verify the information provided and to determine if the change is necessary for the betterment of the project or to meet conditions that developed during construction. If the change is found necessary and the proposal is accurate and complete, field staff prepare and forward a request for change order package to the central office for further processing.

At the central construction office, material and labor costs are analyzed to determine comparability to prevailing market prices and other department projects. If the analysis reveals unusually high costs or possibly cheaper alternatives, the results will be discussed with the contractor. Based on these negotiations, the scope of work, specifications or costs may be revised or if the department and contractor cannot reach agreement, existing contract provisions will remain in place. A three-person unit that carried out the cost review function for change orders on all projects was eliminated in the department reorganization; its duties have been taken over by field staff, the client agency team for the project, and the project's architect or engineer.

Construction section staff must make sure funds are earmarked within the project budget to pay the costs of the proposed change order before any final action is taken. The budgets of most department projects include 10 percent contingency funding for change orders and other unanticipated expenses. In some cases, the department must seek authorization through the state bond commission process to add funding to a project budget in order to cover the costs of a necessary change order.

Under the prior DPW organization, final approval over change orders involving less than \$10,000 could be granted by the director of the construction section, while approval from the DPW commissioner was required for change orders costing \$10,000 or more. New department policy that went into effect in November 1995 gives client agency teams authority over changes costing up to \$100,000. Approval of the agency's top management (i.e., a newly created position of administrator of client plans and programs) is required for change orders exceeding \$100,000.

When the field staff and the contractor reach agreement that a project is substantially complete, the construction section is notified and arrangements are made for a final inspection. Department field staff, the project architect/engineer, the agency representative, and the contractor make up the final inspection party. The purpose of the final inspection is to determine whether all work has been performed in full accordance with the terms and conditions of the contract, and, if not, to identify unacceptable items. A notice listing all deficiencies is prepared by the field staff and sent to the contractor immediately after the final inspection. A copy of this notice, also known as the "punch list," is forwarded to the director of the construction section. Under the department reorganization, the client agency team for the project will be actively involved in the final inspection and corrective action phases of construction.

When all punch list deficiencies have been corrected to the satisfaction of the field staff and client agency, and the contractor submits certain required documents (such as manuals, warranties, shop drawings, and information for as-built drawings), contract close-out can begin. A date for turning over the building to the client agency is set and the final contractor payment is processed. For projects under the jurisdiction of the state building inspector, a certificate of occupancy must be issued before the building can be used in part or whole.

Field staff compile all project documents and prepare an evaluation report on the project that includes a brief summary concerning contractor performance. The department issues a letter of

completion and acceptance to the contractor and sends release letters to the contractor's bond companies. Contractors have two years from the time an acceptance letter is issued to file any claims for damages against the state. The department generally will not completely close out a construction contract until any contractor claims or pending litigation related to the project are fully resolved.

In general, claims like other disputes with contractors are initially handled by the field staff. If the matter cannot be informally resolved by field staff or the management of the design and construction bureau, contractors can pursue claims in the courts or through arbitration. Advice from the department's assistant attorney general is sought for major claims and those involving complex legal issues. Responsibility for processing claims and compiling claims data was recently centralized in the agency's newly established claims management unit.

If a contractor fails to complete all work within the time frame stipulated in the contract, the state can seek liquidated damages. Liquidated damages are assessed at a per-day rate specified in the contract document to compensate the state for losses incurred from a project's delayed completion. Field staff are required to complete a liquidated damages assessment form and forward it to the construction section when a project is finished. If recommended by the construction section, damages will be assessed against the contractor and subtracted from the final project payment. Contractor disputes will be overseen by client agency teams under the department's reorganization.

The department's responsibility for a construction project ends for the most part when the contract is closed out. Field staff will, upon request, conduct an inspection of a completed project with a representative of the occupying agency, before the expiration of the contractor's one-year guarantee. If deficiencies are found, the contractor is notified of the corrective action required. The construction section also is informed and enforces the provisions of the contractor's guarantee. When the department's reorganization is fully implemented, it is expected client agency teams will handle problems that may arise after construction is completed.

Design-build projects. While the majority of public works construction projects are carried out using the traditional design-bid-build process outlined above, an alternative approach, design-build, has been used by the department in several cases. To date, DPW has completed three design-build projects and one is underway. Table III-4 provides descriptive information on all four projects.

Under the design-build method, an owner contracts with a single source, such as a partnership or joint venture of an A/E firm and a construction firm, for both design and construction services. The design-build process used by DPW incorporates the same general steps followed by other public sector entities as well as the private sector.

Proposals are solicited based on comprehensive scope-of-work documents that outline space needs, design goals, equipment requirements, site information, policy considerations such as minority business enterprise requirements, budget parameters, project time frame, and any special criteria. The request-for-proposals usually includes a detailed description of the selection process and the criteria that will be used to evaluate proposals. DPW also requires the client agency to review and approve

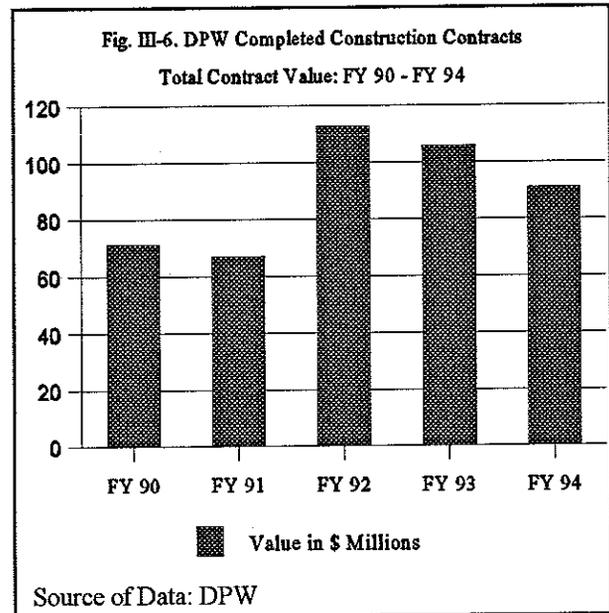
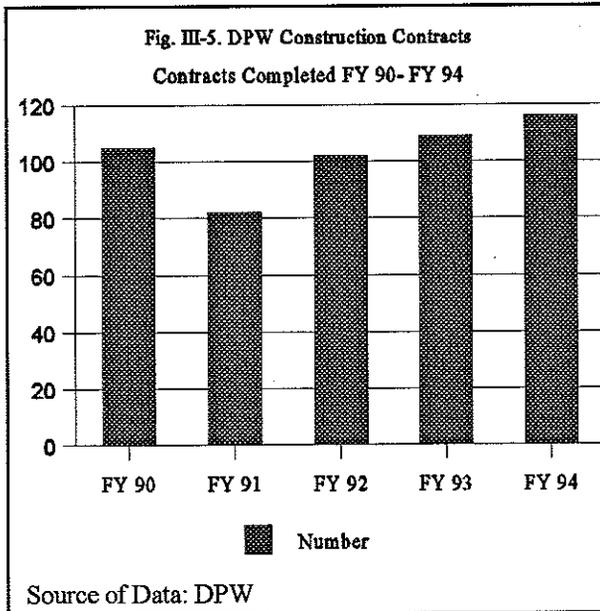
the RFP with the understanding no changes in the programmatic aspects of the design will be made after that point. Once a firm is selected, a fixed price and schedule for the project are negotiated and incorporated into a contract document. Funding for the full value of the project is authorized at this point.

Table III-4. Summary of DPW Design-Build Projects (Status as of Aug. 1995).				
PROJECT:	Middletown Courthouse	Vernon Courthouse	DOT Garage North Canaan	Comm.-Tech. College (Hartford)
CLIENT AGENCY:	Judicial	Judicial	DOT	Regional Comm.-Tech. Colleges
ORIG. COST:	\$36,047,027	\$20,430,000	\$2,598,255	\$27,300,000
FINAL COST:	\$36,047,027	\$20,430,000	\$2,646,348	N/A
START DATE:	12/23/91	6/7/93	10/18/93	3/6/95
FINISH DATE:	2/28/94	6/29/95	7/18/94	12/26/96
DEVELOPER:	Northland Dev.	Naek Const.	Gondolfo Const.	Fusco Corp.
Source of Data: Department of Public Works.				

In general, design-build projects are completed faster and with fewer change orders than traditional design-bid-build projects. However, as owners have little involvement in the design process or in daily oversight during construction, they may have less control over the final product of a design-build contract. Also, the success of the design-build method depends to a great extent on how clearly and completely the contract documents outline all requirements, making it best suited for new construction projects without site difficulties, environmental issues, or unknown conditions.

DPW Construction Contract Activities

Information on Department of Public Works construction contracts for projects completed from FY 90 through FY 94 is summarized in Figures III-5 and III-6. On average, the department closed out just over 100 contracts worth about \$90 million total each year over the 5-year period shown. In most cases, each contract represents a single project, although in some cases contracts are related to major phases (e.g., site work, masonry, electrical, plumbing, roofing, etc.) of very large new construction projects or incidental work (e.g., asbestos removal) related to a general renovation project.



Completed projects are only a partial indicator of the agency's contract management workload. However, the department does not compile comparable information on the other component of workload -- contracts for projects actively under construction. DPW has developed an automated system to track all current design and construction projects, but the data it contains are often incomplete or out-of-date, especially for the larger and more complex projects.

At present, the most reliable information on active contract workload is maintained by each of the various DPW units responsible for managing construction projects. Monthly work-in-progress reports are prepared by the public works construction section, which is responsible for overseeing the bulk of the department's projects. Comparable information from each of other units that handle the special types of construction projects (e.g., the construction management, project management, and accelerated projects units) was not readily available from the department.

Monthly workload. Table III-7 presents information on the construction section's monthly workload for June 1994 through May 1995. As the table shows, the section administered between 114 and 158 projects per month. The total contract value of the projects ranged from about \$123 million to \$203 million. On average, about two-thirds of the contracts overseen by section staff were related to projects actively under construction (up to 95 percent complete), just over one-quarter were at the substantially complete level (96-99 percent finished) and awaiting close-out, and less than 10 percent were closed out in all but one month during the 12-month period reviewed.

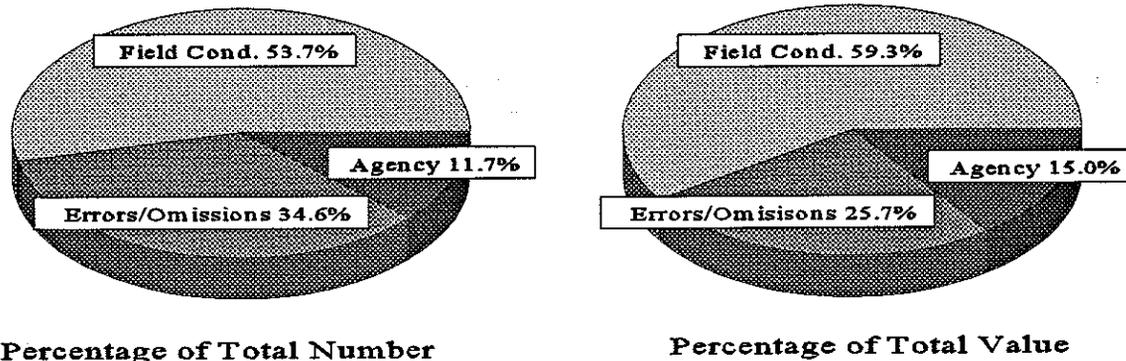
Table III-7. DPW Construction Section: Monthly Contract Management Workload.												
	May 95	Apr 95	Mar 95	Feb 95	Jan 95	Dec 94	Nov 94	Oct 94	Sept 94	Aug 94	July 94	June 94
Total \$ Value*	\$158	\$156	\$155	\$149	\$165	\$169	\$168	\$123	\$193	\$196	\$203	\$201
Total No.	121	114	115	116	124	125	127	136	152	157	155	158
No. 0-95% Complete	93	86	79	86	90	86	86	90	96	93	92	90
No. 96-99% Complete	28	26	27	29	26	33	35	33	37	51	55	61
No. Closed	0	2	9	1	8	6	6	13	19	13	8	7
* dollar value shown in millions												
Source of Data: Department of Public Works Construction Section Monthly Work-in-Place Reports.												

Concern over lengthy contract close-out times led the construction section to begin tracking how long projects remain at the substantially complete status. Monthly reports since October 1994 show around two-thirds (61 to 69 percent) of the projects reported as substantially complete had been at that level for at least 6 months. According to department staff, projects often remain at the 96-99 percent finished status for extended periods because contractors are slow to perform minor corrective work identified during the final inspection or supply manuals, warranties, drawings, and other paperwork required for closing out a project.

Change orders. One important aspect of managing construction contracts is processing change orders. The construction section's monthly change order data from June 1994 through May 1995 was analyzed to determine the volume and size of changes to public works projects. During this period, between 50 and 100 change orders were issued per month. The dollar value of all change orders issued each month ranged from around \$210,000 to almost \$1.5 million.

As described in the earlier section on the department's process for managing contracts, there are three main reasons that contract provisions may need to be changed during the construction process: unforeseen field conditions; design errors and/or omissions; and client agency requests. Figure III-8 shows the sources for all change orders issued by the construction section in terms of number and dollar value from June 1994 through May 1995. The primary source of change orders for construction section projects during this period was field conditions, which accounted for 54 percent of the 719 changes issued and 59 percent of the \$6.7 million total cost.

Figure III-8. Change Orders By Source
Construction Section Change Orders Issued 6/94 - 5/95



Source of Data: DPW Construction Section Monthly Work-in-Progress Reports.

The data needed to determine whether the sources of change orders for projects handled by other DPW units show similar patterns were not easily available from agency sources. Change order data for a random sample of 21 current public works projects were gathered by the committee in an effort to develop more detailed information on the sources, numbers, costs, and types of changes that occur during construction. Findings based on an analysis of these data are presented in Chapter V.

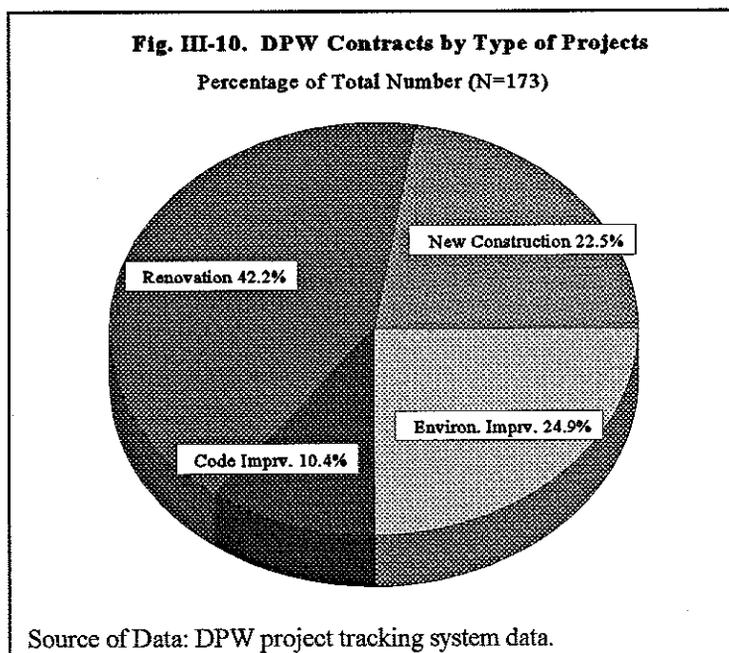
Profile of Current Contracts

A database on current public works construction contracts was assembled as part of the program review committee study. The database included 173 contracts identified through the DPW project tracking information system as “under construction” or “completed but not closed out.” The identified contracts represented the majority of active department projects in terms of both numbers and dollars. Contracts for several recent multi-phase and/or multi-contractor projects, such as the UConn law library building, which had never been added to the automated tracking system, were not included in the database. Budget and schedule data for a number of projects in the system, especially those involving outside construction management services, were also found to be incomplete or out-of-date.

A profile of the contracts included in the database is presented below. The overview includes descriptive information on construction status, client agencies, types of projects, contract values, client agencies, and contractors. Data on changes in contract costs and completions times are also presented, but due to the incomplete nature of the database, findings must be interpreted cautiously.

Construction status. Thirty-nine of the 173 contracts included in the database were at the 100 percent complete level awaiting formal close-out. Of the remainder, 65 were at the 96-99 percent stage and 69 were still in some phase of construction, with completion rates ranging from 4.7 percent to 95.7 percent.

Client agencies. The public works projects included in the current contract database were being carried out for a wide variety of client agencies. As Table III-9 shows, more than two dozen state agencies and institutions were represented. Projects DPW was managing for the units of the state higher education system and the Departments of Correction and Mental Health accounted for nearly 60 percent of the 173 contracts in the database.



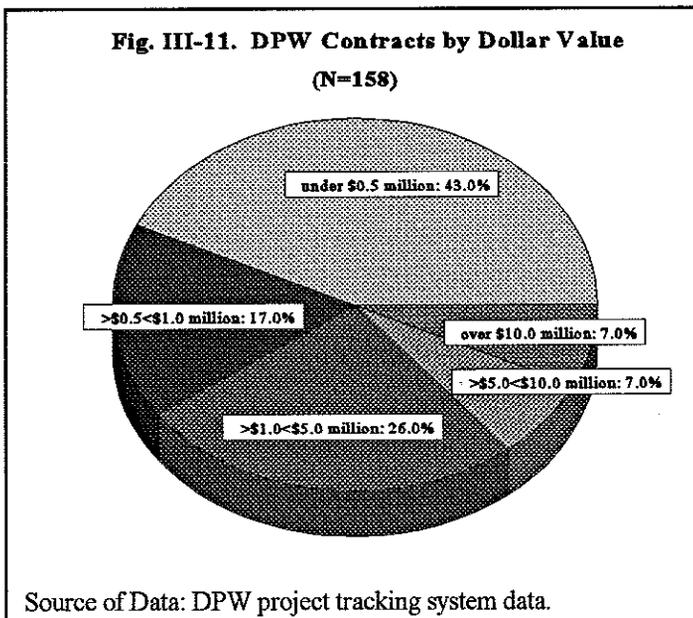
Types of projects. As Figure III-10 indicates, most of the contracts included in the database were for renovations and improvements of existing structure rather than for new buildings. Just under one-quarter of the contracts were related to new construction projects. The remainder were for general renovation projects, code improvement projects (e.g., adding sprinkler systems, making structures handicapped accessible, etc.), and projects to correct environmental problems (i.e., asbestos abatement, underground storage tank removal or replacement, and PCB abatement).

Contract values. Original contract values were known for 158 of the 173 projects in the database. Most of the 158 contracts (60 percent) involved projects with original cost estimates of \$1 million or less, as the information presented in Figure III-11 indicates. Complete cost information was not available for several major contracts in the database, including one prison project with a current estimated value of about \$96 million, and some minor environmental and small renovation projects. The addition of these missing cost data, however, would not significantly change the distribution shown in the figure, however.

Table III-9. Current DPW Contact Client Agencies.

CLIENT AGENCY	NO. CONTRACTS (TOTAL = 173)	PERCENTAGE OF TOTAL
Administrative Services	1	0.6
Alcohol & Drug	2	1.2
Children & Families	5	2.9
Comm./Tech. Colleges	10	5.8
Conn. Marketing Authority	1	0.6
Conn. Agricultural Exp. Station	1	0.6
Correction	22	12.7
Ct. State Police Assoc.	1	0.6
Education	10	5.8
Environmental Protection	5	2.9
Fire Prev. & Control Comm.	5	2.9
Higher Education	1	0.6
Judicial	5	2.9
Mental Health	19	11.0
Mental Retardation	9	5.2
Military	1	0.6
Motor Vehicles	1	0.6
Public Health	1	0.6
Public Works	8	4.6
Public Safety	5	2.9
State Library	2	1.2
State University	24	13.9
Univ. of Conn. Health Center	6	3.5
Univ. of Conn.	21	12.1
Various	4	2.3
Veterans Affairs	3	1.7

Source of Data: DPW project tracking system data.



Contractors. Contractor names were missing for 22 of the 173 contracts in the database. Names were known for 151 contracts, and 100 different firms were represented. The number of contracts per contractor ranged from one to five, with only one firm having five contracts. About two-thirds (67) had just one contract each; the remainder (33) had multiple contracts.

Analysis of the distribution of contracts among contractors by dollar value was limited since original contract value information was available for only 147 contracts. Based on the 147 contracts examined, the range in dollar value of awarded contracts per

contractor varied from less than 1 percent to about 10 percent of the combined value (\$377 million) of all contracts.

Cost increases. The database contains original and current budget information for 96 contracts at the substantially or 100 percent complete stage. Analysis showed contract values were increased by change orders for 79 percent, reduced for 7 percent, and remained unchanged at the original level for 14 percent of the 96 contracts. The number of changes a revision in original contract value represents could not be determined from the information available through the database.

The actual dollar value of the increases ranged from \$440 to about \$5.5 million. Increases over original budgets were 10 percent or less for 29 (38 percent) of the 76 over-budget contracts. In 6 cases, increases were more than 50 percent.

Contracts with revised budgets were examined in terms of type of project (new construction, renovation, etc.) and contract size, as represented by five categories of dollar value. The numbers involved in the comparisons were sometimes small, so results must be viewed conservatively. The analysis by project type revealed renovation projects were over-represented and environmental projects were under-represented within the group of contracts with cost increases. The distribution of new construction and code improvement work among all contracts and those with increases, however, did not vary significantly.

High proportions of new construction and code work projects (88 and 92 percent, respectively), as well as renovation projects (92 percent), experienced cost increases. In contrast, environmentally related projects like asbestos removal jobs had a 38 percent cost-increase rate.

Analysis of the distribution of contracts by size also showed variations. While the 25 smallest projects, (with values \$500,000 and under) account for 46 percent of all 96 contracts analyzed, they made up only 33 percent of all 76 over-budget projects. As one might expect, cost increases appeared more likely as projects increase in size; 100 percent of the 35 contracts with values over \$1 million experienced cost increases.

Time changes. Information on original and revised contractual deadlines available for 94 contracts at the substantially or 100 percent complete stage was also analyzed. For 57 contracts, completion times were found to have been increased by 3 to 612 days, while the days allowed to complete work were unchanged for the other 37 contracts.

The distribution of contracts with time changes, like that for cost changes, was examined by type of project and size. Only renovation projects seemed to be over represented within contracts with time increases, comprising 46 percent of that group but only 38 percent of the overall number of contracts (94). Renovation projects also were the most likely to experience time increases; original times had been revised upward for 72 percent of renovation projects versus about 50 percent for all other types.

No clear distribution patterns in terms of project size were evident, in part because of the relatively small numbers of contracts contained in some categories. For example, just 13 of the 88 contracts with complete time and project size data, fell into the upper two size categories.

Client Agency Survey

The program review committee surveyed DPW client agencies to obtain information about how the public works department manages its construction projects. Twenty-nine completed surveys were returned by state departments and higher education institutions. A copy of the survey with a tabulation of responses is contained in Appendix B.

The majority of individuals who completed the questionnaire, 73 percent, were agency representatives to DPW. Agency representatives serve as construction project liaisons, and, therefore, are usually the employees most familiar with specific projects as well as the general public works process. Other respondents included plant or facility engineers, facility management directors, fiscal officers, and other types of administrators.

Most of the responding agencies (80 percent) had more than one construction experience with DPW over the past five years. Thirteen agencies had 10 or more projects administered by the department since 1990, 11 had between 2 and 10, and 5 had only one. Projects involved primarily new construction for only a few agencies (17 percent); for most, projects were primarily renovation or rehabilitation (43 percent) or about an equal mix of new construction and rehabilitation/renovations projects (40 percent). In terms of size, all or most projects cost more than \$1 million for 37 percent of the responding agencies and less than \$1 million for 30 percent. For the remaining 33

percent, some construction projects administered by DPW cost less and some cost more than \$1 million.

Client agencies were asked to rate the job DPW generally does managing construction projects in terms of keeping a project on schedule and budget, ensuring workmanship and materials meet specified standards, and making sure the agency is satisfied. The department was rated most favorably concerning materials and workmanship compliance -- over 80 percent of respondents rated the agency's performance in these areas as 3 or 4 on a scale of 1 equals poor and 4 equals excellent. About 60 percent gave the agency similar high ratings for controlling costs and ensuring client satisfaction. Keeping a project on schedule was the least favorably rated activity with a majority of agencies (55 percent) ranking DPW's performance in this area as only 1 or 2.

Information about the construction project most recently completed by the public works department for client agencies was also gathered through the committee questionnaire. For about half (48 percent) of the 26 agencies who supplied responses, the most recently completed project was a major renovation versus new construction (41 percent) or other work (e.g., minor repairs, environmental improvements, etc.--10 percent). Projects ranged in size from about \$49,000 to more than \$46 million, but many were multi-million dollar undertakings; the median final cost for all projects was \$3.6 million. All of the projects had been initiated and completed within the last five years.

Two-thirds of the client agencies (68 percent) reported their most recent construction project was not completed by the original end date set in the contract document. The department seemed to do a better job keeping costs under control; less than half of the agencies (46 percent) reported their most recent project exceeded its original budget, including contingency funding. Although asked for their opinion as to the main reason the project was not completed on time or exceeded its budget, client agencies most frequently cited multiple reasons, making it difficult to analyze the responses. The most common single reason given both for overdue and over-budget projects (by 25 and 33 percent of respondents, respectively), was unforeseen field conditions.

Again using a scale of 1 equals poor and 4 equals excellent, client agencies were asked to rate how well DPW carried out a dozen different construction contract management tasks on their most recently completed project. Like the general performance ratings discussed above, the public works department received its most favorable ratings for just completed projects in the area of monitoring compliance with materials specifications and least favorable for keeping the contractor on schedule. The department was also rated highly by most clients (83 percent) in terms of responding to agency requests for changes on these projects. In addition to meeting deadlines, other problems areas appear to be resolving contractor disputes and helping to enforce guarantees and warranties.

CHAPTER IV

TRANSPORTATION CONSTRUCTION CONTRACTS

The Department of Transportation is responsible for the development and operation of a safe, efficient system of highway, mass transit, marine, and aviation transportation in the state. To carry out this mandate, the transportation commissioner has broad authority to call at any time for bids and award contracts for construction projects to the lowest bidder deemed responsible. The statutes allow the commissioner to establish the agency's process for soliciting and reviewing bids and for awarding construction contracts.

Contractors can be disqualified from bidding on DOT construction contracts in accordance with the provisions of C.G.S. Section 31-57d. The statutory causes as well as the process for disqualifying a DOT bidder parallel those established for public works contractors, described in the previous chapter.

Whether the lowest bidder for a project is "responsible" is determined on a case by case basis by Department of Transportation staff. Responsibility is not defined in statute or regulation. However, advice from the agency's assistant attorney general on determining bidder responsibility was adopted as department policy in February 1992. According to the policy, "... reasons for questioning bidder responsibility..." include:

- lack of financial or other resources to bring DOT projects to completion in a professional manner;
- serious violations of the law;
- flagrant or repeated violations of DOT contract provisions;
- lack of cooperativeness in working with DOT to solve problems on projects;
- lack of responsiveness to DOT directions on projects; or
- other matters calling into question the capacity, ability, or integrity of a contractor.

The DOT policy emphasizes that finding a bidder "not responsible" requires evidence of serious incapacity or flagrant and repeated contract violations.

Like DPW, the transportation department is authorized to withhold a portion of a contractor's requested payment, but not more than 2.5 percent of the amount due, until such time as the contract is completed in an acceptable manner. Payment and performance bonds like those required of public

works contractors, which were described in the previous chapter, must be furnished by bidders awarded DOT construction contracts.

Contractors hired for DOT construction projects also must comply with state employment laws and regulations concerning prevailing wage rates, limitations on work hours, and preferential hiring of state residents. In addition, state law requires any firm employing 50 or more employees that is awarded a highway construction or other public works contract worth more than \$50,000 to develop and file an affirmative action plan with the Commission on Human Rights and Opportunities.

The transportation department is also prohibited from contracting with businesses that fail to comply with state affirmative action and nondiscrimination policies or with the provisions of the state's minority and small business set-aside program. State statute also prohibits the agency from awarding contracts to certain violators of federal labor relations or occupational health and safety laws. As noted earlier, contractors can be disqualified from bidding if the department has found a history of failure to perform or of unsatisfactory performance on public contracts.

In the event of a dispute over the award of a contract or the contract itself, construction contractors for DOT projects can bring court action against the state or, as an alternative, submit the dispute to arbitration. Written notice of a claim must be given to the department within two years of the state's acceptance of work or termination of the contract; action must be brought within three years.

Organization

The Bureau of Engineering and Highway Operations within the Department of Transportation manages the design and construction of nearly all agency capital projects.¹⁸ The bureau's office of construction, headed by the construction administrator, carries out engineering and inspection functions related to DOT projects in the construction phase. A manager of construction operations assists the administrator by planning, coordinating, and administering the activities of field staff in four district offices as well as the administrative function of the central office.

Under the supervision of a district engineer, each DOT district office is responsible for on-site monitoring and management of the active construction projects within its geographic region. The assistant district engineer in each office assigns and oversees project engineers and the other field staff who conduct day-to-day inspection functions aimed at assuring all plans, specifications, and special provisions set by contract are met by the contractor.

¹⁸ Highway bureau staff carry out design and construction functions including contracting activities for road and bridge projects as well as those involving state-owned airports and maritime facilities, generally overseen by the aviation and ports bureau. They also handle capital improvement projects related to department-owned buildings such as garages, salt sheds, concession buildings, and other facilities under the purview of the agency's finance and administration bureau. Except for certain railroad improvement projects handled directly by the public transportation bureau, the highway bureau staff are additionally responsible for bus- and rail-related construction projects.

A chief inspector, working under the direction of a project engineer, is assigned to each project and carries out all daily construction management functions, such as record keeping, overseeing materials testing, reporting on work status, initially reviewing requests for contract changes, and meeting with the contractor to discuss problems as well as progress. The project engineer provides technical assistance when needed, interpreting plans or specifications if a dispute arises, and oversees inspection records for accuracy and completeness.

Detailed inspection work at the job site may be carried out by DOT employees or, for some projects, contracted out to private engineering firms. In either case, a DOT project engineer oversees the project and all staff, whether state or consultant employees, to ensure all construction and related engineering is performed in accordance with department policies and procedures. Currently, about 70 percent of the department's active projects are inspected by in-house forces while contracting engineers are used for the remainder.

Process

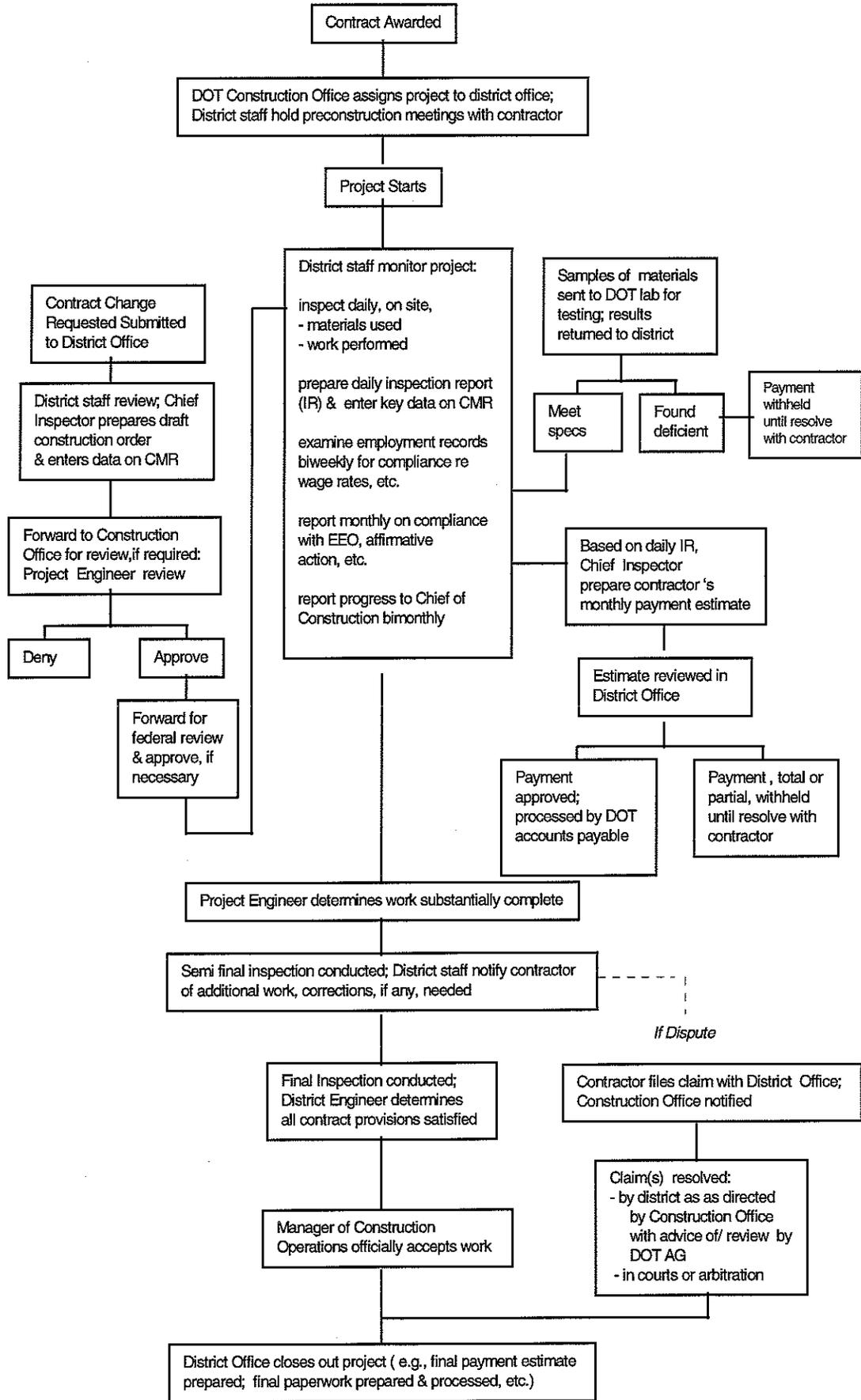
The transportation departments's process for managing its construction contracts is outlined in Figure IV-1. The process begins when a construction contract is awarded and the highway bureau's construction office assumes responsibility for seeing the project is completed on time, within budget, and in compliance with all contract provisions.

As Figure IV-1 indicates, many aspects of the DOT contract management process are automated. As soon as a construction contract is awarded, it is added to the department's computerized Construction Management and Reporting (CMR) system. The transportation department developed and implemented the system in the late 1980s to manage its construction program, which had grown from about 50 projects per year to more than 200 under the state's massive infrastructure improvement program.

The CMR system is the agency's primary tool for managing its construction contracts. It keeps track of payment, testing, contractor, and subcontractor information for all active projects. Detailed information is maintained for all contract items, both tasks and materials, in terms of quantity, unit price, and total cost. Itemized accounts of any contract changes that occur during construction such as new or additional work, decreased quantities or deleted tasks, and time extensions are also maintained. Information is updated daily and available on-line to agency managers as well as field staff.

The CMR system is also linked to the department's automated financial management system. The financial system (known as PCMS or preconstruction management system) keeps detailed records on funding sources and expenditures for each project. It additionally serves as the agency's automated system for tracking projects through the bid process.

Figure IV-1. DOT Construction Contract Management Process



Soon after a contract is awarded, a preconstruction meeting attended by contractor's representatives, the district personnel who will oversee the project and other key DOT staff, local officials, and representatives from affected utility companies, is held to discuss among other matters, inspection procedures and general contract management issues. Department staff also holds a separate conference to go over equal employment opportunity and affirmative action issues with contractors before construction starts.

Once work begins, district office staff monitor each project from start to finish on a daily basis. On-site inspection staff prepare daily inspection reports and enter key work progress data for the project on the CMR system. The inspection report provides an itemized listing, by type, quantity, and unit price, of all materials used and tasks performed on a particular workday, as well as information about site conditions, the contractor's workforce, and any accidents or other incidents that occur on site. Information on subcontractor performance and minority and disadvantaged firms participating through set-aside programs is also recorded during daily inspection. The daily inspection report, which is subject to review and approval by the district chief inspector or project engineer, is the basis for the monthly, or in some cases bimonthly, payments made to the contractor.

Using the daily inspection reports, the district chief inspector prepares the periodic payment estimates, which are reviewed by the project engineer and assistant district engineer for accuracy and completeness before they are forwarded to the agency's accounts payable staff for processing. If it is determined the cost of any payment estimate will exceed the approved, available funding for a project, district staff are responsible for determining the exact amount of additional money needed and initiating a project modification request to revise funding levels. Modification requests are processed by the department's financial management office.

District inspectors periodically review contractor biweekly employment records to check for compliance with various wage, hour, affirmative action, and preferential hiring requirements. The district staff also monitor and report monthly on contractor progress toward achieving set-aside program goals. At specified points in a project, inspectors prepare reports on the contractor's affirmative action accomplishments for the Construction Office.

Materials provided by construction contractors are tested for compliance with specifications at the department's own laboratory. A prescribed schedule of minimum testing requirements applies to all projects although the frequency and scope of materials testing varies depending on the type of materials involved and any special problems that may be encountered. The district chief inspector is responsible for ensuring adequate and sufficient testing occurs on all projects.

District inspectors forward samples of all testable items to the lab for testing. Testing requests are entered and results are received on-line through the CMR system. If items are found deficient, district staff seek corrective action and, if necessary, can withhold payment until compliance is achieved.

Requests from contractors for time extensions or changes to contract items are handled initially by district office staff. Any change to a contract, whether to increase or decrease work or

materials, add new work, or extend the project schedule, is processed by the department as a construction order. Authorized construction orders are officially incorporated into a project's contract document and may be enforced like the original provisions.

By department policy, only changes deemed essential to the successful completion of a project should be authorized. After determining a proposed change is essential and not covered in any way by existing contract provisions, district staff can initiate a construction order by completing a detailed form on the CMR system. The chief inspector prepares the final draft construction order, which is subject to review and approval by the project engineer and supervisory engineering personnel in the district office.

Contractors are also given an opportunity to review and comment on the draft construction order before it is forwarded to the Construction Office for final processing. If a project receives federal funding, review and approval by the Federal Highway Administration (FHWA) may also be required before a construction order can be executed. In addition, if it appears a proposed change will require design revisions, review and analysis by the department's Office of Engineering within the highway bureau will be sought by the construction staff.

When the project engineer determines a project is substantially complete, the assistant district engineer will be notified and a semifinal inspection will be scheduled. The inspecting party, which generally consists of the contractor, district construction staff, staff from other DOT units such as traffic or maintenance, and for federal projects, FHWA officials, carefully review all work details to determine if all contract obligations, including any additions, have been fulfilled. The contractor is notified in writing of inspection findings, unsatisfactory work items, if any, and expected corrections. A contract is not considered complete until all items noted in the inspection report are finished to the satisfaction of department field staff.

When the contractor notifies the district office all corrective work is completed, a completion notice is prepared and sent to the Construction Office. A final inspection by the district engineer or his or her representative is conducted to determine whether the project has been satisfactorily completed; if so, a written certification of completion will be issued to the contractor.

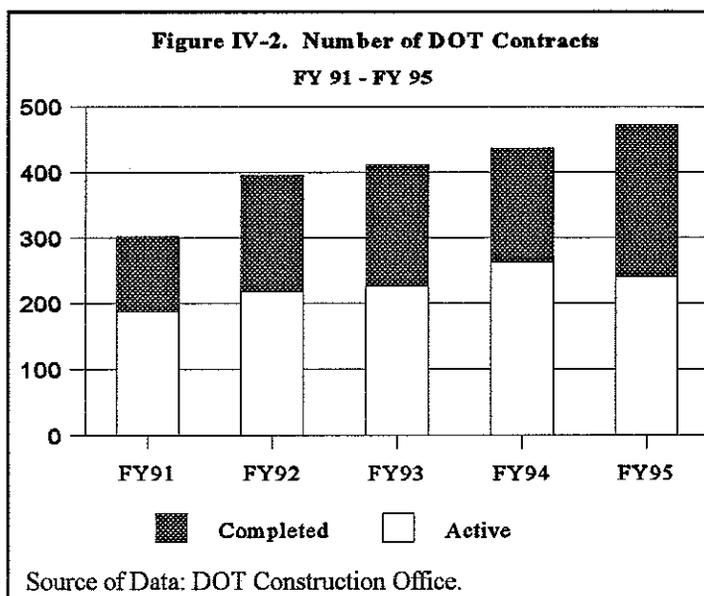
Following a final inspection, the district engineer prepares the paperwork necessary to officially accept the work and project and forwards it to the chief of construction for approval. The district engineer is also responsible for overseeing close-out of the contract including the processing of final payment estimates and all supporting documentation. Final payments are adjusted to include: a) any financial bonus (incentive payment) a contractor may have earned for completing a project ahead of schedule; or b) liquidated damages the contractor may owe the state for failing to meet a project's completion deadline.

The department will not completely close out a contract if litigation related to the project is pending or disputes such as contractor claims for damages remain outstanding. Disputes with contractors over contract provisions including formal claims made against the state are initially

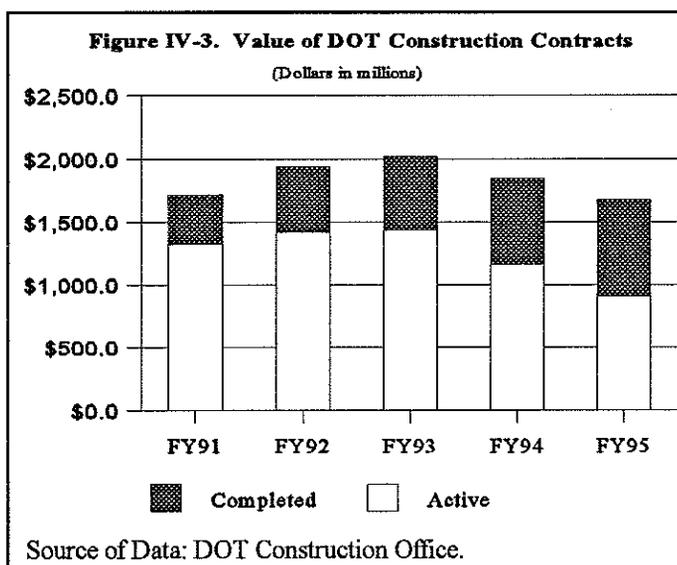
handled at the district office. Matters that cannot be settled informally by district personnel will be forwarded to the Construction Office for resolution. When notified of a formal claim, the Construction Office will consult with the department's assistant attorney general, if necessary, and then direct the district on how to proceed with the contractor. By law, contractor claims can be pursued in the courts or through arbitration.

DOT Construction Contract Activities

The number of Department of Transportation construction contracts that were active or completed over the past five fiscal years (FY 91-95) is illustrated in Figure IV-2. Active contracts ranged from 186 to 262, while an additional 116 to 232 were completed each year. As the figure shows, the combined number of contracts increased each year.



The annual combined dollar value of active and completed DOT contracts each year is shown in Figure IV-3. Dollar value peaked at just over \$2.0 billion in FY 93 and averaged \$1.8 billion during the period shown. The decline in the dollar value in the face of the rise in the number of projects probably indicates the scope of work of construction projects undertaken is decreasing.

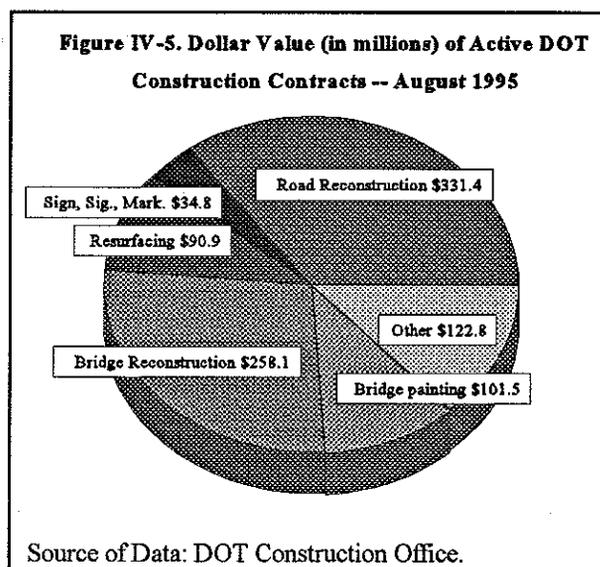
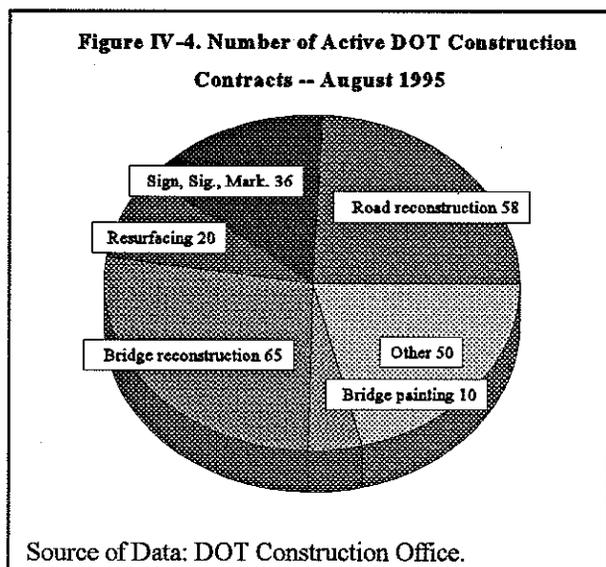


An overview of currently active construction contracts by type of project is shown in Figures IV-4 and IV-5. The data are for the 249 contracts classified as active on August 10, 1995.

Figure IV-4 shows that projects to rehabilitate, replace, or build new bridges make up the largest category in terms of numbers of contracts (65). If bridge painting is added, the number rises to 75, accounting for nearly one-third of all contracts shown in the figure. The second largest grouping with 60 contracts is the "other" category, which includes

bikeways, plantings, airports, rail operations, and transportation-related buildings (e.g., bus garages, stations, etc.). The road reconstruction and improvement category ranks third (58).

Figure IV-5 shows the distribution of active contracts by type based on dollar value. On this measure, the category road reconstruction and improvement ranks first, accounting for more than a third (35 percent) of the total contract value. Interestingly, bridge work surpasses the value of road work in dollar value if the two bridge categories (construction and painting) are combined. The “other” category, despite ranking a close second in numbers, is a distant third in dollar value, indicating it contains a large number of relatively small contracts.



Profile of Completed Contracts

To better understand DOT’s contract management performance a database on completed contracts, recently compiled by a department employee as part of a management training course, was examined. The database includes original and final cost and completion time statistics along with basic descriptive information for the 570 projects officially accepted by the agency (i.e., physical work satisfactorily completed, paperwork done, and final payment made) during calendar years 1991 through 1994. Unfortunately, different systems for classifying project types were used in compiling this database and the one for currently active contracts described above. Opportunities for comparisons, therefore, are limited.

Types of projects. Information on the types of construction projects included in the database of completed contracts is summarized in Table IV-6. As the table shows, the most prevalent type, accounting for about one-third of both the total number and dollar value of the 570 contracts, was bridge rehabilitation projects. Bridge replacement, reconstruction, resurfacing, and safety

improvement projects also comprised substantial parts of the total number and dollar value of completed projects.

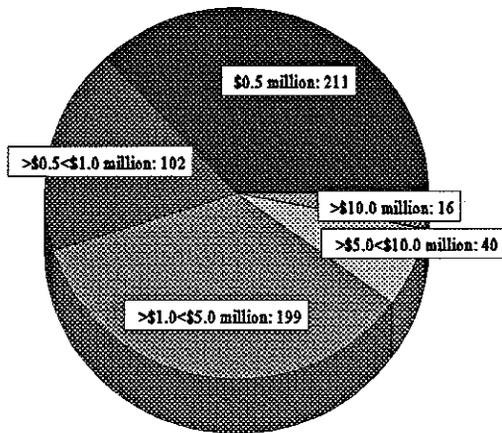
Table IV-6. DOT Projects Completed During 1991-1994 By Type and Value.				
TYPE	NUMBER	PERCENT TOTAL	FINAL \$ VALUE (IN MILLIONS)	PERCENT TOTAL
Bridge Rehab.	203	36%	\$508.5	36%
Bridge Replace.	40	7%	\$172.5	12%
Drainage	10	2%	\$6.6	0%
Intersection	39	7%	\$25.1	2%
Noise Barrier	15	3%	\$8.8	1%
Reconstruction	64	11%	\$263.3	18%
Realignment	10	2%	\$39.4	3%
Resurfacing	34	6%	\$215.1	15%
Safety Improve.	76	13%	\$76.4	5%
Widening	21	4%	\$14.9	1%
Other	58	10%	\$98.1	7%
TOTAL	570	100%	\$1,428.7	100%

Source of Data: DOT Office of Construction Bench marking Study prepared by Mark D. Rolfe, April 1995.

Contractors. A total of 152 different contractors had been awarded one or more of the 570 contracts included in the database. The number of contracts per firm ranged from 1 to 31. Twenty-five firms had contracts with a combined value of 1 percent or more, but for most firms (84 percent), the combined dollar value of their awarded contracts was less than 1 percent of the total value of all contracts. One contractor -- actually a joint venture of two firms -- accounted for 9.5 percent of the total \$1.4 billion in completed contracts.

Contract size. The distribution of completed contracts by size, represented as dollar value categories, is presented in Figure IV-7. The figure shows that the largest number of contracts (211) fell into the lowest dollar value grouping; conversely, the highest dollar grouping had the smallest number of contracts (16). The overall distribution was: 37 percent in the \$0 to 500,000 range; 18 percent in the over \$500,000 to \$1 million; 35 percent in the over \$1 million to \$5 million; 7 percent in the over \$5 million to \$10 million; and 3 percent over \$10 million.

**Figure IV-7. Completed DOT Contracts by Size:
Number by Dollar Value Category (N=568)**



Source of Data: DOT Benchmarking Study.

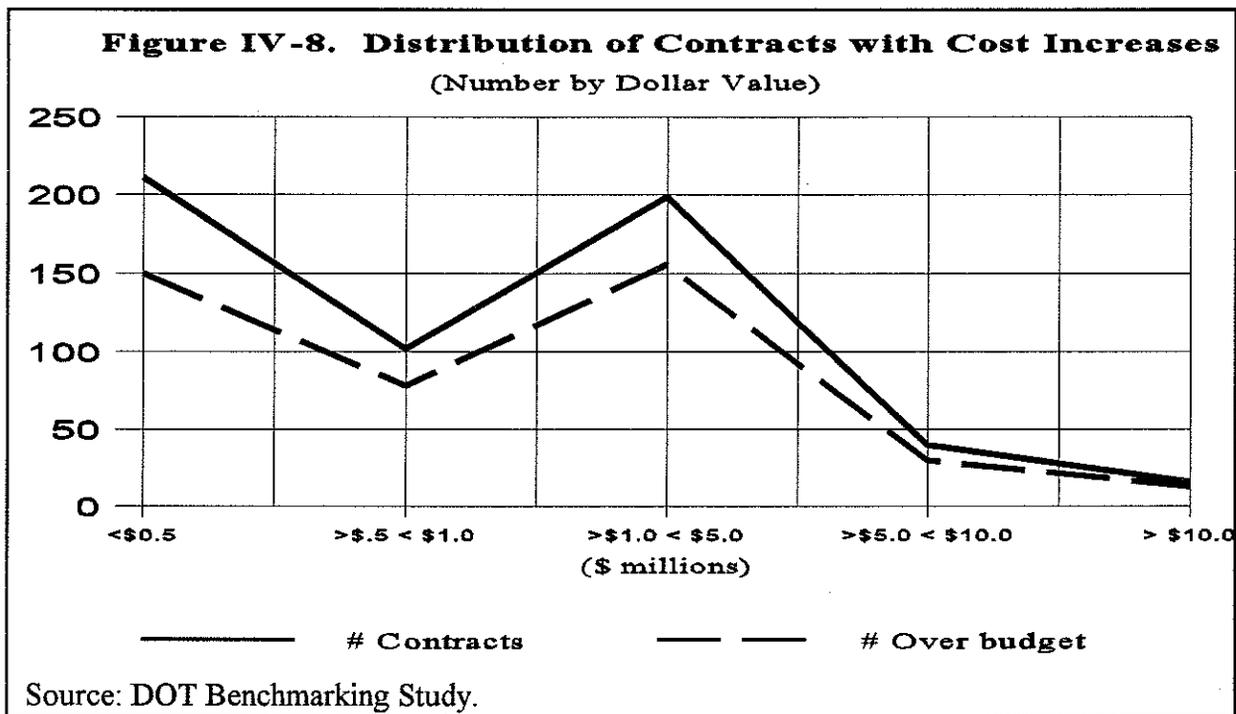
Cost changes. Analysis of the 568 contracts with complete cost information indicated original contract values were increased through change orders in 75 percent (427) of the cases. Final costs were less than the original contract value for 25 percent (140), and the original and final contract values were the same for one project.

The increase over the original contract amount was 10 percent or less for almost half (197) of all 427 over-budget projects. Forty-two of the over-budget projects exceeded their original contract values by 50 percent or more. For eight projects, costs more than doubled. Actual dollar increases ranged from a low of \$425 to a high of \$12 million.

The database does not contain information on whether cost increases were the result of one or several change orders nor is any data included on the reasons for cost changes. Detailed information on the number, type, and sources of change orders for a random sample of 33 current DOT contracts was collected and analyzed by the committee staff. Findings are presented in the following chapter.

An analysis of the distribution of cost increases by project type for the 570 completed contracts did not find any category accounting for a disproportionate share of the contracts with increases. For example, bridge rehabilitation projects represent 35 percent of all the contracts and 38 percent of those with cost increases. The most likely category to experience an increase in contract value was road widening; 90 percent had their budgets increased. The types of projects least likely to increase over original values were drainage and noise barrier, which each had over-budget rates of 60 percent.

An analysis of the contracts with cost increases in terms of size, represented by five dollar-value categories, is summarized in Figure IV-8. The top line in the figure tracks the number of contracts by category; the lower line shows the number that experienced cost increases. In essence, the findings are the same as for project type; contracts with cost increases do not appear to be over-represented in any dollar value category.



Time changes. Examination of the 568 contracts with complete time data showed the original number of days allowed by contract to complete work on construction projects was revised through change orders in 383 cases. Time was increased in two-thirds of the cases, remained unchanged in about one-third, and was reduced for six contracts. Increased times ranged from 1 to 1,830 days while times reduced were between 8 and 82 days.

Information on how many times a deadline was changed or the reasons for revisions in allowed completion time was not recorded. Data on changes in completion time were compiled for the sample of current DOT construction contracts, as noted above.

The completed contracts that had time revisions were approached in the same way as contracts with cost revisions. Analysis by project type found no significant differences; the distributions of contracts overall and those with increases mirrored each other. However, a difference in the distributions was revealed when contract dollar value was plotted against completion time revisions. This analysis found fewer contracts with time increases than would be expected were represented within the lowest value category (\$500,000 and under).

CHAPTER V

FINDINGS AND RECOMMENDATIONS

The primary focus of the program review committee's study was on the stage of the contracting process that occurs after a vendor has been selected. Of particular concern were actions taken to assure compliance with the terms of a contract, particularly ensuring quality goods and services are received on time and at a reasonable price.

During the study, it became clear that actions taken during the pre-bid stage of the contracting process are also factors in a successful contract management system. The two primary tasks during that phase are defining the item to be acquired and estimating its likely cost.

Overall, it appears many elements of national models for contract management are already in place within the state system. These include procedures for monitoring and inspecting products, mechanisms for handling complaints and evaluating the performance of contractors, and enforcement tools to achieve compliance with contract specifications and state policies.

The problems appear to be that the procedures are not statutorily available to all state agencies and when available are not always used. In addition, up-front planning is weak, contract management is not emphasized as a priority, and little effort is expended to look at the total picture.

GOODS AND SERVICES - NONCONSTRUCTION

Common sense, actual experience, and national models all suggest the best way to obtain what one wants from a vendor is to make that information clear as early as possible in the process. The program review committee believes state agencies need to give more attention to the relationship between the definition of the good or service to be obtained and oversight when the item is received.

Currently, the decision to obtain a good or service is influenced by the people in the individual state agencies who originally request acquisition of an item. It is also affected by the individuals in staff and line agencies authorized to enter into contractual transactions on behalf of the state.

Both groups have a role to play in drafting product specifications and statements of work. The goal is a description detailed enough to ensure the state will receive the item it needs without being so restrictive that competition is eliminated. In certain instances, items required by the state are unique, and only one supplier is available. In most instances, however, the goods and services can be provided by a number of businesses or individuals.

All of the participants in the planning process need to recognize the importance of a well-defined product. Without that perspective, efforts to ensure contract provisions have been met will be made more difficult.

Oversight Practices

All state agencies receive direct delivery from vendors of at least some goods and services. In addition, through the state's central warehouse, a wide range of other office, food, and clothing items have been purchased and distributed by the Department of Administrative Services. The central warehouse system is being restructured, and it is anticipated that in the future more products will be delivered directly from suppliers to individual agencies. As a result, the latter will have increased inspection duties and more responsibility for ensuring vendors comply with the terms of contracts.

Based on the results of a program review committee survey of state agencies in August 1995, there appears to be a general understanding among state agencies of the key components of contract management. However, some additional preparation may be warranted.

Only 35 percent of the 50 entities responding to the program review survey had written procedures describing the steps to be followed when inspecting commodities. However, 84 percent indicated staff *almost always* examine commodities received directly from a vendor for conformance with contract specifications such as style, dimensions, and color. Even more respondents (92 percent) *almost always* check the items against the purchase order and count the quantity of each type, another important aspect of contract management.

In addition, the number of problems with commodities was very low. One-quarter of the respondents experienced problems 1 percent or less of the time, while half had problems between 2 and 5 percent of the time.

The DAS Bureau of Purchases has sent all state agencies a copy of its manual describing the components of the process for inspecting commodities. The department has also produced a Vendor Manual that describes the responsibilities of successful bidders who enter into contracts with the Bureau of Purchases. The program review committee believes additional written information and training on contract management would also be useful.

The Legislative Program Review and Investigations Committee recommends the Department of Administrative Services Bureau of Purchases:

- (a) review and update its existing inspection manual and distribute new copies;**
- (b) develop and distribute to all state agencies material detailing how to resolve problems with a vendor and describing documentation that should be maintained to build a case against a vendor who is not performing satisfactorily;**
and

- (c) provide training, including information about inspection and testing techniques, on a regular schedule for individual state agency employees who are responsible for the direct receipt of goods obtained under purchase orders.**

In situations where individual agencies are unable to obtain full compliance with a contract, the program review committee believes outside assistance should continue to be available. Currently, agencies can file a complaint with the DAS Bureau of Purchases when a product or service is unacceptable. Depending on the nature of the allegation, the matter is investigated by either procurement or inspection staff.

These individuals have other primary responsibilities, and handle complaints within the context of that work. In general, the bureau staff tries to work with the contractor to help them do the job they were hired to do rather than taking punitive action. However, the department has developed a multi-step process to insure compliance with the provisions of state contracts, including referring contractors to the attorney general's office, if necessary.

The program review committee recommends the Department of Administrative Services Bureau of Purchases continue to offer its complaint resolution process as a troubleshooting service for individual state agencies.

To make the best use of the bureau's resources, DAS staff might become involved only when an individual agency responsible for receipt of a product or service has made more than one attempt to get the vendor to correct a problem, but is still unsuccessful. The bureau employee can serve as an independent investigator and bring the experience acquired in dealing with a wide variety of problems and vendors to the specific situation. This recommendation should enable the department to make the best use of its small inspection staff and provide assistance to more state agencies.

Contractor Evaluations

For certain products, DAS sends Term Contract Assessment Survey forms to all of the agencies known to have used the commodity that is going to be rebid. The agencies are asked to indicate whether they expect to buy items covered by the contract and whether they would like to see any changes in the contract. This information is taken into consideration when new bids are reviewed. Unfortunately, response rates vary considerably. The department indicated efficient agencies and those unhappy with a particular item are the only ones likely to return the form.

The Office of Policy and Management currently requires state agencies to establish procedures for monitoring and evaluating the performance of service contractors hired under personal service agreements. Verifying performance of a service can be more difficult than assessing a commodity because services are often less well defined, may be provided over a period of time, and generally have fewer objective measures. For those reasons, it is particularly important that an evaluation of a service contractor be prepared and used when it is time to decide to hire or re-hire the contractor.

According to the results of the program review survey of state agencies in August and a review of records at OPM, the system is not working as intended. Less than one-third of the survey respondents *frequently* or *almost always* prepare a written evaluation of a service contractor upon completion of the contract. With respect to the evaluations that have been sent to OPM, the information is limited in value (with some forms even filled out incorrectly), and the forms are simply placed in a file.

The committee recognizes how difficult it can be to prepare a meaningful but fair evaluation of a contractor. The Office of Federal Procurement Policy has suggested contractor performance can be rated in terms of quality, timeliness, cost control, business relations, customer satisfaction, and key personnel. It goes on to note that only the first three components can be rated objectively.¹⁹

The assessment criteria used by state agencies should be as objective as possible, with individual personality conflicts kept out of the process. In the current climate when news about lawsuits related to what one person has said about another are common, it can be difficult to get people to complete a detailed evaluation form.

Good contract management requires such efforts, however, and it is important for the state to begin compiling this information. A comprehensive evaluation can be an incentive for a contractor to improve the quality of his or her work, knowing the evaluation may be used in the future to select the contractor for another project. In addition, the evaluation can provide evidence if a payment disputes arises.

To insure compliance with existing procedures and improve the quality of the evaluations being prepared, the program review committee recommends the **Office of Policy and Management:**

- (a) deny approval of future personal service agreement contracts to any state agency that has failed to file required contractor evaluations, until such time as the agency complies with all provisions of General Letter No. 94-1 regarding such evaluations; and**
- (b) sponsor training for state agency employees on the value and preparation of contractor evaluations.**

Employees at all levels of state government need to understand that everyone who comes into contact with a good or service purchased from a contractor has a role to play in ensuring the state receives what it is paying for. **The program review committee recommends state agencies make a greater effort to convey to employees at all levels in the organization the importance of good contract management practices.**

¹⁹ U.S., Office of Management and Budget, Office of Federal Procurement Policy, *A Guide to Best Practices for Past Performance*, Interim Edition (Washington, D.C., May 1995), pp. 38-39.

If there was better understanding on the part of state employees about the importance of contract management, more information would be available about contractors. More agencies might complete the term contract assessment mentioned above, thereby making it a more useful tool.

Likewise, if all employees who find a particular product does not work bring that fact to the attention of the person responsible for ordering the product, he or she can determine how extensive the problem is. If warranted by the evidence, the vendor can be contacted about corrective action. The results of the incident can in turn be provided to those responsible for establishing the specifications for the product as well as those who evaluate and select vendors.

CONSTRUCTION CONTRACTS

In the construction area, key indicators of the state's success in managing contracts are the number of projects completed on time and within budget. The committee examined these indicators within the Department of Transportation and the Department of Public Works.

Although both DOT and DPW are responsible for new construction as well as repairs and renovations, there are basic differences between the types of work overseen by each. The construction managed by DOT, roads and bridges, usually involves surfaces at ground level and below. Unanticipated subsurface conditions and environmental factors are often issues for transportation projects. Public works projects involve vertical structures such as office buildings and residential facilities intended for human occupancy. Contract management for DPW usually centers on coordinating all the components and systems within a structure as well as a variety of construction trades.

In addition, while both agencies award nearly all construction work to lowest responsible bidders through a competitive process, they use different basic contracts. Bids on DOT projects include a total dollar cost, but also specify prices for dozens of separate components of the job. The latter (known as unit prices) are used to adjust payments when the quantities of particular items increase or decrease during the project. The department expects these adjustments to occur during the project, meaning the total bid price is an approximation of the actual project cost. The price of unexpected tasks not specified in the contract are negotiated during the project.

Nearly all contracts for public works projects are bid on a lump sum basis. If changes are required during the construction process, costs for revisions are negotiated by the contractor and the department at that time. For a special category of projects, design-build, the DPW selects contractors through a request-for-proposal process. A design-build contract, which fixes the price and time schedule for the project, is negotiated; in general, the only changes permitted are those due to unforeseen conditions.

In order to obtain detailed information about construction contract changes, the committee examined a sample of current transportation and public works projects in depth. Databases containing detailed cost, time, and change order information for 33 DOT and 21 DPW construction contracts were compiled from agency project files and information systems.²⁰ (The specific projects examined are listed in Appendices C and D.)

It is important to note that while the physical construction work on all of the projects in the sample was substantially complete at the time each was reviewed, most had not been finalized (i.e., "closed-out"). Until a project is closed-out, further changes to reduce or increase project costs or time can occur. At DOT, in fact, the number of days allowed by contract to finish a project is rarely revised until the final paperwork is prepared. Then, the number of contractual days is "adjusted" to take into account schedule delays that were beyond a contractor's control. Only eight of the DPW and five of the DOT projects in the sample had been finalized at the time the data were collected.

The DPW database contained 3 new construction and 18 renovation projects. The original value of the projects ranged from \$119,000 to \$15.7 million. The DOT database contained 13 bridge and 20 road projects. The original value of those contracts ranged from \$95,000 to \$93.8 million.

Overall, schedules or budgets or both were revised, sometimes significantly, for nearly all DOT and DPW projects included in the program review sample. Table V-1 summarizes information on completion time changes for the sample projects.

TABLE V-1. DOT and DPW: Schedule Revisions for Sample Projects (as of October 1995).

	Number of Projects	Number with Schedule Revisions (%)	Number with Completion Time Extended	Number with Completion Time Reduced	Range (in days) of Schedule Revisions
DOT	33	29 (88%)	19	10	-389 to +754
DPW	20*	15 (75%)	15	0	+12 to +612

* Completion dates were missing for one public works project.

²⁰ The DPW sample was selected randomly from 173 projects listed as substantially (96 to 100 percent) complete on the agency's automated project tracking system in June 1995. Projects of various sizes and involving different client agencies and contractors were included. The DOT sample was selected randomly from 240 projects shown as 95 percent or more complete on the agency's July 1995 progress report for active projects. The sample included projects of various sizes, carried out by different contractors, and handled by different district offices.

Although both DOT and DPW deal with construction contractors, there are differences in the way each processes and categorizes changes in projects. In order to standardize the information collected, the program review committee developed its own category definitions and applied those to the sample projects examined at each agency.

As the table shows, schedules had been revised for all but four of the DOT projects. In most cases (59 percent), the revised completion date was within about one or two months of the original deadline. However, for five transportation projects, deadlines were extended or reduced by more than a year.

Three-quarters of the DPW projects (15) underwent schedule changes. In all cases, the completion times were extended. Forty percent increased less than two months, while three projects were extended by more than one year. A majority (10) of the projects increased by at least 25 percent.

Contract values had changed from the original amount for all 33 DOT projects. At the time of the program review examination of the projects, the current value for one-third of the projects was within 10 percent of the original value.²¹ Costs for nine projects had increased by at least half of their original value, including three projects that more than doubled. The actual increase in 10 cases was over \$1 million.

Original and current contract values were also compared with DOT's pre-bid estimate of cost for 31 of the 33 sample projects. In the majority of cases (18), the estimate was within 10 percent (plus or minus) of the project's original contract price. Department estimates compared less favorably with current values. Estimates were within 10 percent of the current contract value for only 11 projects. For the majority of projects (16), the department estimates were under the current contract value by about 20 to 200 percent, at the time program review compiled the data.

Contract values for all but one of the DPW projects increased; the other project decreased. Current values for half of the projects, however, were within 10 percent of the original prices. The largest percentage increase was 59 percent. The addition to the original contract price was over \$1 million in one case and under \$500,000 for all but two others.

Department of Public Works pre-bid estimates were also compared to original and current contract values. The agency's estimated construction cost was within 10 percent of the original contract price in 6 cases and the current contract value in 3 cases. For half of the projects, department estimates were over or under both original and current values by at least 20 percent.

The committee analyzed the specific causes of the revisions to the projects in its sample by examining data gathered from the change orders (COs) associated with each project. At DPW, the number of change orders per project ranged from none to 161. The value of the changes ranged from a decrease of \$55,410 to an increase of \$333,271.

²¹ The term *original value* refers to the price contained in the contract signed by the contractor and the state. The term *current value* refers to the price of the project at the present time, based on all revisions made to the project as of that time. (In the case of the projects in the program review sample, the current value price was obtained in the fall of 1995.) The *pre-bid estimate* is the contracting agency's estimate of the cost of the project prior to soliciting bids. The *final cost* of a project is not available until it has been closed-out.

DOT change order documents can incorporate multiple revisions. Generally, each type of change included in a CO is described and costed out in a separate paragraph.

For purposes of the program review committee's analysis, each paragraph was coded separately. Table V-2 summarizes change order information for the two main categories of transportation department projects.

	No. of Projects	No. of COs	No. of Paragraphs, if have COs	\$ Range of CO Paragraphs
Bridges	13	0-58	5 - 117	(\$1.2M) to \$3.8M
Roads	20	0-26	2 - 76	(\$0.2M) to \$1.6M

DOT and DPW each had a few unique types of change orders. However, most COs in the program review sample involved adjustments, primarily increases, in the amount of materials or work required under the contract. Table V-3 lists the types of adjustments and the number of change orders by major category for both DOT and DPW projects.

	Quantity increase	Quantity decrease	Qty incr & decr	Substitutions	Adjust days	Related to other COs	Other (assorted)
DOT (N=838)	509	61	168*	46	11	24 (summary of other COs)	19
DPW (N=688)	601	32	3	40	**	6 (correct other COs)	6

* DOT frequently uses unit pricing for components of its contracts, which include an estimated quantity in the contract and determine final quantities from actual field measurements. These revisions up and down are combined in change orders.

** DPW may change the number of days through a change order, but it will be done as part of an adjustment to a project's scope of work.

The reasons for the contract revisions described in the change orders were diverse. Table V-4 lists the reasons for both the DOT and DPW change orders, as characterized by the program review committee. The major categories of reasons for change were field conditions and measurements, design revisions (due to errors, omissions, or changes), and additional work.

With respect to field and job conditions, the program review committee does not have the technical expertise to say that specific incidents described in change orders should have been handled differently. However, the high volume of changes this category represents raises questions about the adequacy of planning before projects are contracted out.

Likewise, change orders caused by design related changes, errors, and omissions seem a further indication of weak up-front planning. The issue of extra work also can be difficult to judge. Sometimes it makes more sense to perform a task while the equipment that would be needed to do it is already on site for another task.

Or, it may be preferable to perform additional underground work when the area is accessible, rather than having to reopen the site again in the near future. Concerns should be raised, if the frequency of extra work being added to jobs is high. This information is easy to obtain by monitoring change orders, but oversight of this nature does not regularly occur at either agency.

	DOT (N=838)	DPW (N=688)
Field/job conditions	236	289
Field measurements	185	9
Design changes	90	11
Spec/policy changes	40	19
Errors/omissions	55	192
Environmental	30	4
Requests*	17	26
Safety/security	37	23
Extra work	16	59
Re other COs	37	5
Multiple	38	2
Other (assorted)	57	49
* For DOT, from towns, citizens, utilities, etc.; for DPW, fire/building inspectors.		

The effect of the different types of change orders on the scope, cost, and length of a project varied. In a majority of cases, the impact of changes was increased work or materials, and, therefore, higher costs. The effect of change orders on the amount of time required for a project was not as clear. Few change orders resulted in time increases. However, since most projects in the program review sample had not been finalized when the data were collected, time adjustments could still be made.

Overall, 61 percent of the 838 DOT change orders had quantity increases, while three-quarters had cost increases, and 1 percent had time increases. Of the 688 DPW change orders in the program review database, 87 percent had quantity increases, 92 percent had cost increases, and 12 percent had time increases. The percentage of change orders with increased quantities of work or materials, costs, and time for the major categories of reason for change are presented in Table V-5 for both DOT and DPW.

Table V-5. DOT and DPW Change Orders (COs): Impact of Reason for Change on Quantities Used, Cost, and Time.								
Reason for Change	No. of COs		Increased Qty		Increased Cost		Increased Time	
	DOT	DPW	DOT	DPW	DOT	DPW	DOT*	DPW
Field conditions	236	289	77%	87%	88%	89%	<1%	11%
Field measurements	185	9	33%	67%	57%	78%	0%	0%
Design errors/omit	55	192	93%	98%	96%	99%	0%	14%
Design changes	90	11	68%	64%	79%	73%	3%	18%
Spec/policy changes	40	19	38%	95%	50%	95%	5%	21%
Requests**	17	26	94%	89%	94%	100%	0%	4%
Extra work	16	59	69%	90%	69%	98%	31%	10%

* As of date when data collected; at DOT, days may be added at end of project.
** For DOT, from towns, citizens, utilities, etc; for DPW, required by fire/building inspectors.

Note: The percentages in each cell are independent of the percentages in the other cells in the table.

Volume of change orders is not necessarily related to cost impact, as Tables V-6 and V-7 indicate. Certain types of changes, though small in number, can be high in cost. The tables present the categories of reasons for change with the largest total dollar value for DOT and DPW, respectively. Only about one-third of the DOT changes due to specification/policy changes had cost increases, but those changes cost nearly \$3 million. Alternatively, 69 percent of the DOT changes for extra work involved increased costs, but their total value was only \$266,832.

TABLE V-6. DOT Change Orders With Largest Total Dollar Value.		
Change Order Category	Total Value	Range of Values
Field conditions (N=236)	\$14,134,520	(\$208,933) to \$1,727,193
Multiple (N=38)	\$7,677,204	(\$227,110) to \$3,750,000
Design Changes (N=90)	\$5,853,543	(\$699,292) to \$1,326,712
Field measurements (N=185)	\$4,651,531	(\$1,163,947) to \$1,362,024
Design errors/omissions (N=55)	\$3,241,663	(\$3,000) to \$685,014

TABLE V-7. DPW Change Orders With Largest Total Dollar Value.		
Change Order Category	Total Value	Range of Values
Field conditions (N=289)	\$1,933,974	(\$24,225) to \$117,058
Design errors/omissions (N=192)	\$1,281,368	(\$4,650) to \$333,271
Extra work (N=59)	\$1,081,861	(\$23,991) to \$331,706
Fire/building inspector requirement (N=26)	\$414,419	\$341 to \$194,425
Specification/policy changes (N=19)	\$271,416	(\$250) to \$166,789

Both DOT and DPW are well aware that a primary way to keep projects on time and within budget is to control change orders. Both agencies have established systems to help track the sources and size of change orders, but primarily on a project basis. Little use is made of change order information to identify patterns or trends across types of projects, designers, contractors, or other variables.

DPW recently began an effort to track change orders due to architect/engineer errors so the agency can identify the nature of the problems and the specific designers responsible for those problems. This information will be used to seek reimbursement for cost increases that are the fault of outside design professionals.

A DOT internal audit conducted in 1993 identified the value that change order information could have in helping the agency improve its future construction projects. Among the recommendations, which have not been implemented to date, were ones for better classification of change orders and the provision of guidelines on how to classify changes, for use by field personnel.

The program review committee believes regular analysis of change order data would be one of the best ways to improve the quality of project plans and specifications as well as the accuracy of pre-bid cost and time estimates.

The program review committee recommends the Departments of Public Works and Transportation each routinely analyze change order data from their construction projects to determine if better estimates of materials and work required could have been made. The agencies should also use change order data to determine if more initial testing and surveying would be cost beneficial for specific types of jobs.

The more precise the state can be in outlining the requirements of a job before it is awarded, the less likely it is that costly revisions and extensions of time will be needed during construction. Obviously, the degree of specificity required at the pre-bid stage of the process has to be balanced against the expense and time involved in acquiring enough information to accurately define a project's

scope. In addition, there will always be decisions that can only be made after work has begun and conditions that can only be known after a project is underway.

Present automated information systems at DOT and DPW lack the capability to analyze overall change order or other performance data. However, both agencies are planning major system improvements. DOT is participating in a project sponsored by the national highway officials organization to develop a model system for monitoring transportation construction projects. DPW recently acquired personal computers and new project management software for some staff with construction management responsibilities. Meetings to identify additional automation needs of the department are ongoing.

Another source of information agencies can use to assist them in contract management is the data from completed projects. By examining what has and has not worked in the past, agencies can better anticipate what problems are likely to occur on future projects and possibly avoid revisions.

The program review committee recommends the Departments of Public Works and Transportation establish a process for conducting post-construction reviews of all completed projects to determine how effectively they were managed. Among the items that should be evaluated and reported on are the original and actual time frame and budget, compliance with wage and set-aside program requirements, safety issues, and the nature of any design changes required. The review should include input from all parties involved in the project, including agency staff, the contractor, the designer and, for public works projects, client agency representatives.

The Department of Transportation plans to initiate post construction reviews on a pilot basis on two or three projects over the next year. Partly in response to a Federal Highway Administration requirement, the department already prepares a final report, which includes much of the information mentioned above. However, the reports are prepared only by district staff, and they are not compiled in a central location for future reference.

The public works department does not have any specific plans at this time for formal evaluations of completed projects, but one of the duties of its system of client agency teams is to get feedback about the work of the department. DPW also prepare a final field evaluation report that could be more fully developed to meet the intent of the proposed post-construction review.

It is important to remember that the contract management goal for construction projects should be to complete them on time and within budget. These committee recommendations will allow DOT and DPW to know how close their original budget and time projections conform with actual conditions. When there is wide variance, the information obtained as a result of these recommendations should provide some answers.

The committee also believes oversight mechanisms should be established within DOT and DPW to trigger analysis of individual projects that exceed a specified level of changes while the

project is still underway. Generally, state construction projects budget 10 percent for contingencies. Increases beyond that figure should prompt scrutiny. **Therefore, the program review committee recommends that if the dollar value of change orders on an individual project is greater than 10 percent of the original value of the contract, then the Departments of Transportation and Public Works should perform a cost overrun analysis of the project within 10 days of the approval of the change order that triggers the review.**

The review should involve agency personnel familiar with the specific project. However, the analysis itself should be performed by a person outside the normal change order approval process for the project in question. Among the areas to be evaluated would be the proportion of change orders for extra work not originally included in the contract as well as changes for items for which a price increase or addition of time is not adequately documented. There was evidence that cost overrun analyses have occurred in the past, but there is no policy specifying under what circumstances such reviews should be made.

Evaluating Construction Contractor Performance

Model contract management practices include mechanisms for objectively evaluating contractor performance. Periodic review of key indicators such as work quality, cost control, timeliness, cooperation, and responsiveness help both the client and the contractor identify and resolve problems that may delay construction projects or increase costs. Information from contractor performance evaluations can also be used in future selection processes, to document decisions to disqualify bidders as "not responsible," and as evidence to counter contractor claims for additional compensation or damages.

The committee found both the transportation department and the Department of Public Works evaluate the performance of construction contractors. The DOT process, instituted in 1993, requires district office staff to complete an evaluation rating form for each prime contractor on an annual basis and at the completion of each project. Each subcontractor is also evaluated at the completion of a project.

The DOT rating form includes 31 items ranging from work quality and timeliness to compliance with labor, environmental, affirmative action, and other requirements, to prompt payment to subcontractors, and responsiveness to department directives. A narrative describing the numerical rating score for each item is attached. The ratings for all items are averaged to develop an overall score for each contractor.

The forms are prepared by field personnel, reviewed by the project engineer, and then reviewed with the contractor. Copies of completed evaluation forms are sent by the districts to the DOT Office of Construction, which maintains a central file and averages and compiles ratings from all districts for each contractor to develop a composite score.

In contrast, the Department of Public Works provides three lines on its field evaluation report form for field inspection staff to evaluate the contractor on quality and performance of work. The form is a one-page document that also summarizes change order and completion time information on finalized construction projects. No criteria or time frames are specified, and no guidelines for conducting an evaluation of contractor performance have been developed by DPW. Completed field evaluation reports, previously retained in individual project files, recently were compiled in one location as part of the agency's initiative to improve contractor oversight.

The program review committee recommends the public works department establish a process for evaluating construction contractor performance by July 1, 1996, using the transportation department's system as a model. A standard form listing all items to be evaluated and describing the rating system to be applied should be developed, and all DPW staff with roles in monitoring contractors should be trained in how to conduct performance evaluations. As in the transportation department process, contractors should be evaluated annually and upon project completion and be permitted to review their evaluations with DPW staff.

As an improvement to the DOT model, the committee further recommends both the public works and transportation departments develop rating systems that weight the various components of the contractor's performance to reflect relative importance.

Once the DPW system is in place, it is recommended the public works and transportation departments jointly establish a construction contractor performance database incorporating the information contained in the evaluations prepared by each agency. Finally, the committee recommends the formal contractor performance evaluations be used by the commissioners of public works and transportation as the primary factor for selecting firms for noncompetitively awarded construction work such as emergency repair projects.

An effective performance evaluation process benefits both the state and the construction contractors by identifying a firm's strengths and weakness in carrying out transportation and public works projects. Formal, written evaluations provide the state with an objective way to document a contractor's performance during claims negotiations or related litigation as well as in cases where a bid is rejected because the awarding agency considers the firm not responsible.

Under the present DOT system, ratings for each item evaluated are averaged to develop an overall score. A contractor could receive a low rating on a key indicator such as prompt payment to subcontractors that would be balanced out by a high rating on a less critical factor like job site cleanliness. Giving greater weight to items considered essential to good performance, which is done in the transportation department's system for evaluating the performance of its design consultants, would eliminate this potential problem.

Although DOT and DPW projects generally attract different types of construction contractors, there is some overlap in the pool of firms that seek work from these agencies. By sharing

performance evaluation data, each department can be aware of the other's experience, both good and bad, with contractors and subcontractors.

The recommended database additionally could be referenced by other state agencies with construction responsibilities and by municipalities. The committee believes knowing a written performance record will be maintained and made available to potential customers can be a strong incentive to construction firms to achieve good ratings from their state clients. The committee also believes having a contractor's performance rating the major consideration in how emergency and other noncompetitive work is awarded by the transportation and public works commissioners provides a further incentive to earn a good performance evaluation from DOT and DPW.

In addition to evaluating a contractor's performance when a project is completed, the Department of Transportation also uses a prequalification process to screen potential bidders for its construction contracts. The public works department has not established a system to prequalify bidders for its projects.

Under the DOT process, a contractor must submit and annually update a sworn statement containing information on financial capability, organization and personnel, references, and experience. Department staff review the statement and if the contractor is found qualified, assign a bidding capacity and work classification (e.g., general highway construction, bridges, paving, pavement markings, etc.). Only prequalified contractors can be issued a bid proposal form for a specific project.

The purpose of prequalification is to assess whether a contractor is qualified to bid on and undertake a construction project. Although outside the strict scope of contract management, prequalification contributes to the successful completion of a construction project by screening out contractors who lack the required resources or experience. **Therefore, the program review committee recommends the public works department establish a system to prequalify bidders of its construction projects.**

In addition to benefiting the contract management process, prequalification can also reduce paperwork and bidding expenses for contractors. Prequalification of construction contractors is a typical practice in the private sector. Contractor prequalification is recommended by the Federal Highway Administration, and most state transportation agencies have systems in place. Two recent study groups in Connecticut, the Commission on Innovation and Productivity for State Government and the Construction Fraud Task Force, recommended DPW establish a prequalification process.

Managing Construction Contractor Performance

A number of contractual and statutory tools are available to DPW and DOT to promote good performance by contractors on state construction projects. DOT and DPW construction contracts generally include provisions for liquidated damages, a penalty that can be imposed if a contractor exceeds the project deadline for reasons within his or her control. Also used in the private sector, liquidated damages are assessed at a daily rate, which can vary from a few hundred to several

thousand dollars, depending on how critical it is to complete the project on schedule. High per-day penalties can be a strong inducement for a construction contractor to complete work on time.

Neither DPW nor DOT compile information on liquidated damages assessments, although documentation is maintained in individual projects files. According to estimates from construction staff in each agency, liquidated damages have been imposed occasionally by DOT and almost never by DPW over the past 10 years. The experience at public works reflects in part a former policy to negotiate settlements with contractors rather than seek liquidated damages. The current DPW administration supports the use of sanctions like liquidated damages as well as incentives to achieve compliance with contract requirements.

As a final remedy, both agencies can terminate contracts with unsatisfactory firms and either rebid the project or call the contractor's performance bond. The committee found terminations and involvement by performance bond companies have occurred rarely at DOT and DPW.

The transportation department has terminated seven construction contracts since 1990, and none were canceled on the basis of performance. During the same time period, performance bond companies have become involved in 14 DOT projects, which were being carried out by 3 different contractors.

Performance bond companies have been called in on 4 DPW projects over the past 10 years. The department was unable to provide data on contract terminations, but agency officials reported some construction contracts have been terminated for reasons related to contractor performance.

Both the public works and transportation departments are authorized by law to disqualify contractors from bidding on construction projects for up to two years. Among the causes for disqualification outlined in statute (C.G.S. Sections 31-57c and 31-57d) are: wilful failure to perform in accordance with contract provisions; a history of failure to perform; unsatisfactory performance on one or more public contracts or wilful violation of statutes, regulations, or requirement applicable to a public contract.

The process DOT and DPW must follow to disqualify a contractor is also outlined in statute and requires notice, opportunity for hearing, and a written final decision. The contractor disqualification process, which became effective in 1993, has not been used by either agency to date.

The committee found the transportation department has, however, rejected apparent low bidders for projects on the basis of finding them not responsible. Since 1991, 11 contractors have been found not responsible for a wide variety of reasons, including: subcontractor prompt payment problems; violations of affirmative action, labor, or set-aside program requirements; unethical conduct; and participation in bid collusion.

To date, the Department of Public Works has not rejected any bidder as not responsible. At the direction of the current commissioner, agency construction staff are developing objective criteria

for evaluating bidder responsibility, and a stricter process for screening bidders and determining competency is planned.

One of the most effective and commonly used ways of enforcing compliance with contract provisions is to withhold contractor payments. Both the transportation and public works agencies can and do withhold contractor payments when questions arise over work or materials on a construction project.

It is also general practice, both in the public and private sectors, to retain a portion of the total value of a construction contract until the contractor completes the project to the owner's satisfaction. By law, DOT and DPW can withhold no more than 2.5 percent of any periodic or final payment due a contractor for a state construction project.

In the last stages of construction, particularly after a project is designated substantially complete, release of retainage is the primary incentive for a contractor to do final corrective work and supply required documents and paperwork. The committee believes the extended time periods for closing out projects experienced at both DOT and DPW indicate the current retainage level may be too low to be effective.

Two-thirds of the projects handled by the DPW construction section between October 1994 and May 1995 remained at the substantially complete level for six months or more. An internal DOT report prepared earlier this year showed the average times at the four district offices to close-out a contract after construction work was completed were 100, 200, 300, and 375 days, respectively, during 1993 (the latest time period available). The same report noted close-out times for transportation projects in 15 other states averaged 130 days.

The sample of DOT and DPW contracts examined by the program review committee also revealed problems finalizing projects. In a number of cases, the project files indicated construction work was essentially complete, but the contracts remained open for months and sometimes years because paperwork was pending or final payments were under negotiation.

Sometimes, particularly at DOT, close-out delays are related to that agency's internal paperwork or accounting requirements. However, project close-out is also prolonged when contractors are slow to complete corrective work identified during the final inspection or to supply final documentation like certified payrolls. Oftentimes, public works construction contracts cannot be finalized because contractors have not provided warranties, guarantees, as-built drawings, and demonstrations regarding building mechanical systems.

To provide a stronger incentive to contractors to correct deficiencies and supply required documents quickly, **the program review committee recommends C.G.S. Sec. 49-41b be amended to permit the state to retain up to 10 percent of any periodic or final payment to a contractor. The committee also recommends DPW and DOT include as a standard provision in their construction contracts the requirement that contractors must complete identified corrective**

work and supply all required documentation to the agency within 90 days of the project's substantial completion date.

At the 2.5 percent level, it can be more costly for a contractor to finalize work on a state construction project than to forfeit the retainage amount. In these circumstances, withholding final payment provides the state with little leverage. In the private sector, the standard retainage level is 10 percent, although amounts ranging from 5 to 15 percent are not uncommon.

Contractors who have performed satisfactorily can always request a reduction in the retainage amount at any point in the project. This occurs now at DPW and DOT. The committee believes the possibility of reduced retainage can be used by both agencies as an additional incentive for contractors to be responsive and comply with contract provisions during the construction process.

The higher retainage level could impose a hardship on small contractors or companies with limited cash flow. Contractors in this position could seek financial assistance from the state Department of Economic Development.

Including a deadline for completing corrective work and submitting required documentation as a contract provision gives DOT and DPW additional leverage over contractor performance during the final stage of construction. A record of failing to comply with this provision also could be taken into account when the contractor's performance is evaluated or responsibility as a bidder on a future project is being assessed.

The program review committee believes the transportation and public works agencies have considerable authority available to them to obtain effective contractor performance on state construction projects. Enforcement mechanisms have little impact, however, if they are rarely or never employed. The extent to which sanctions are imposed or incentives are offered by DOT and DPW seems more a matter of agency philosophy than any limit on authority.

One other factor that can inhibit an aggressive use of sanctions is concern a contractor will bring a claim or lawsuit against the state in response. The potential for successful legal actions by contractors can be alleviated by making sure construction management personnel at DOT and DPW know how to build a case against unsatisfactory contractors. **The committee recommends the transportation and public works departments each develop a manual and provide training on what is required to monitor, evaluate, and document contractor performance problems for agency staff responsible for overseeing construction contracts.**

DPW and Client Agencies

By statute, the Department of Public Works has primary authority and responsibility for managing construction contracts for most major state buildings. However, the department's client agencies also play an important role in whether a project stays on schedule and within budget. The

two areas where client agencies can have the most impact is through their participation in defining a project's scope and in requesting changes during the construction phase.

Models for contract management all emphasize the importance of a well-defined scope of work to a construction project's successful completion. Working with client agencies to fully identify building needs early in the construction process is a priority of the current DPW management.

Among the duties of the department's newly organized client agency teams is helping client agencies develop clearly defined construction project scopes. The teams are also supposed to insure space analyses and program requirements are fully developed and approved by client agencies before detailed designs are prepared. DPW efforts at better up-front planning are aimed at reducing the need to make costly changes during construction because items were overlooked or inadequately designed.

As part of the agency's initiative to improve scope development, the committee recommends the Department of Public Works also develop a checklist for client agencies to use in preparing initial requests for capital projects. The checklist should outline the major items agencies need to consider in defining a building project from the number and types of occupants to data processing and telecommunication requirements. Scheduling matters such as required completion date and possible limits on construction operations, along with budget issues, should also be included.

At present, agencies are required to submit requests for capital projects to the Department of Public Works in writing. However, there are no guidelines for what must be included and requests vary in detail from a few sentences to actual plans and specifications. The checklist should result in more complete requests and help agencies focus on elements critical to good planning.

The committee also believes client agencies need to take more responsibility for change orders they request during the construction process. As information presented in Chapter III indicated, state agency requests generally are the smallest, both in number and dollar terms, of the three categories DPW uses to describe change orders. (The other two categories are design errors and field conditions.) For example, change orders based on state agency requests for projects handled by the construction section from June 1994 through May 1995 accounted for 12 percent of the total number of changes (719) and 15 percent of the total dollar value (\$6.7 million).

While not the largest factor in construction cost increases, agency requested changes still are significant. The total value of all change orders for the 21 public works projects included in the sample examined by the program review committee was \$5.4 million; the value of changes due to agency requests was \$1.2 million or 22 percent of the total change order cost. The committee also found agency requested change orders in its sample had a higher median dollar value than changes due to other sources. The median value for agency changes was \$4,776 versus \$2,551 for changes due to field conditions and \$1,618 for changes attributed to design errors or omissions.

Unlike most changes due to field conditions and design flaws, agency requests for extra work are generally optional. According to DPW staff, the procedures for handling changes, including those resulting from agency requests, usually are discussed during the project scoping meeting, which is attended by client agency representatives. Nothing is provided in writing, however.

The program review committee recommends the Department of Public Works develop its policy and criteria for approving agency requests for changes to a construction project in writing and distribute it to all client agencies. The policy should include a requirement that agencies identify funding sources other than a project's contingency fund to pay for changes they request during construction. A request shall be submitted in writing by the head of the client agency and must include funding approval from the Office of Policy and Management. OPM shall process an agency's request for funding approval within 10 days of receiving it.

In the committee's opinion, project contingency funding should be reserved for unforeseen conditions. At present, there is little to discourage an agency from making as many requests as a project's contingency funding will cover. Having to find other funding sources including their own budgets should prompt client agencies to carefully consider how important the change really is to the overall project.

This requirement also provides agencies with an additional incentive to plan more thoroughly and identify needs early in the building process, since requests made during the design phase could be incorporated into the project's construction cost estimate. Finally, a clear policy and coordinated process for responding to agency requests should also promote a good working relationship between DPW and its clients.

DPW Restructuring

As discussed in Chapter III, the Department of Public Works is undergoing a major reorganization. Functional bureaus and units as well as district offices related to the agency's facilities design and construction duties were eliminated, and staffing levels were reduced.

Seven management teams have been formed to plan and implement public works design, construction, leasing, and property management services for their assigned client agencies. Major goals of the team approach are improved customer service, faster decision making, and clearer accountability.

Team members have responsibility for overseeing client agency projects from the initial planning stage through the completion of construction. They review and approve all contracts relating to a project as well as all change orders, claims, requisitions, and work orders. Clear authority for making project decisions and the continuity of the team structure is intended to facilitate effective contract management.

The new organization, if it meets its goals, also has the potential for addressing concerns client agencies identified in the program review committee's survey, discussed earlier in Chapter III. In the opinion of many client agencies, project timeliness, cost control, and customer satisfaction seemed to be the department's weaker areas. DPW's lowest performance ratings concerned keeping a project on schedule, keeping project costs within budget, and making sure the requesting agency is satisfied with the completed project.

The program review committee believes the new DPW structure and customer service mission offer many advantages for better management of construction contracts. However, the new roles and mission of the agency do not appear to have been communicated clearly throughout the department.

For example, the client teams work with other DPW employees, including the field personnel responsible for monitoring the day-to-day performance of contractors. A new approval process for changes to active building projects was recently initiated. However, the details of the new system were announced to field personnel through the distribution of a memo. The language in the document is ambiguous, and no formal effort appears to have been made to allow those directly affected by the change an opportunity to ask questions concerning how the new procedures are to be implemented.

It is clear the new organization is still evolving. As the restructuring process continues, the committee believes agency officials need to make sure roles and relationships between field staff and teams are clearly defined and effectively communicated throughout the agency. **The program review committee recommends the Department of Public Works review its internal communication procedures to ensure that agency employees fully understand the mission of the department and their role in its implementation.**

The committee is also concerned about the impact of agency restructuring on the field inspection function. On-site inspections are the most effective way of assuring compliance with contract requirements. At present, the on-site presence of DPW field staff is limited because of their project workload. Due to the recent employee layoffs within the agency, the field personnel with the DPW construction services division are now responsible for monitoring and reporting on 8 to 10 projects each.

It is the general policy of the transportation department to require full-time inspection staffing on its construction projects. While not all public works projects require an inspector's presence full-time, it is DPW policy that sites be visited every day activity is occurring. With the current workloads, it is uncertain whether this standard can be met. Given the critical importance of the field inspector's role in managing construction contracts, the department needs to insure resources are adequate to carry out the policy.

The program review committee believes the department needs to carefully examine the impact of its new structure on the construction field inspection function. **The program review committee recommends DPW undertake an immediate review to determine what staffing levels and**

organizational structure would be required to insure field inspectors are able to visit active construction projects on a daily basis.

Priority should also be given to developing a system that insures control over project costs and consistency regarding the handling of agency requests, contractor claims, and requests for time extensions. A mechanism for tracking all projects across the teams to identify patterns among contractors as well as trends in costs and other factors is another critical component to develop within the new agency structure.

Standardization of DOT Field Practices

Program review committee staff visited and examined records from all four Department of Transportation district offices. The department's practice of allowing the staff who are closest to the day-to-day work on specific construction projects to make most of the decisions about changes to the jobs helps keep the projects moving toward completion.

It appears, however, that each district is performing at least some tasks differently. This situation makes it difficult to fully analyze the information available for each project. For example, the format and content of preconstruction and update meetings with contractors, the format of change order documents, and the manner in which records are maintained all differ among the regions. Similarly, the department has its own coding system for categorizing construction orders, but the system is only used by some field personnel.

This finding of different practices among the DOT field offices is not new. In an April 1995 report prepared by a department employee, a number of examples of differences among the districts were noted. For example, change order processing times in 1994 averaged 47 days statewide, but ranged from 30 days to over 90 days for the different district offices. Likewise, close-out times averaged from 100 days to 375 days, depending on the district. Median increases in project costs and time were also found to vary by district. However, this may reflect differences in workload among the districts (e.g., types and sizes of projects handled) as well as office operations.

The program review committee recommends the Department of Transportation central office periodically evaluate district office operations with respect to the management of construction projects to determine the areas of difference between each. The central office should then determine whether any of the practices that are successful in one region could be applied in the other districts to improve the department's construction management practices.

In particular, the central office should examine the number and dollar value of change orders, the amount of time required to process a change order, the number and length of the time delays on projects, and the incidence of claims. Once successful practices are identified, this information should be conveyed to field personnel in the other districts as part of the training programs provided by the department during the winter shutdown period.

The program review committee also recommends the Department of Transportation update and improve its categories of reasons for why construction orders are needed and require all field staff to use the coding system.

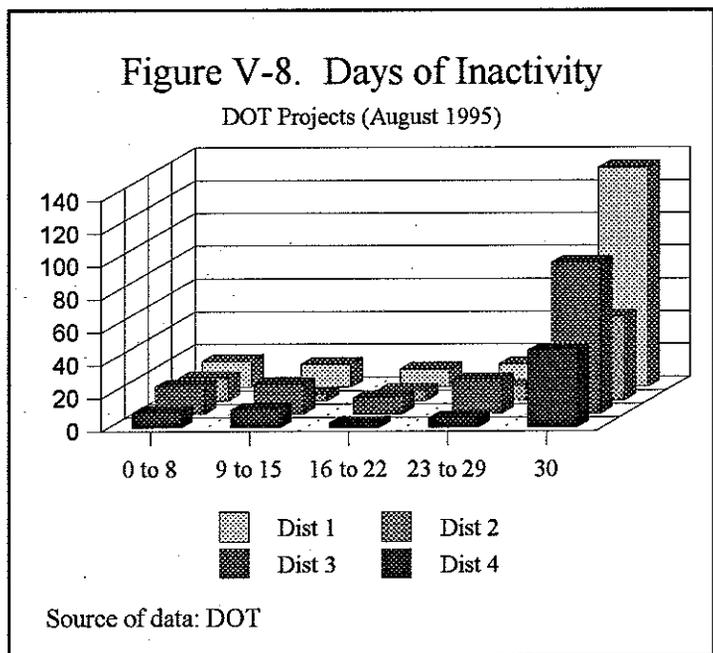
Idle DOT Projects

In August 1995, the Department of Transportation had approximately 500 projects underway throughout the state. About half were actively under construction, and half were in the process of being closed out.

A DOT generated contractor/subcontractor activity report for the month of August showed 183 projects with activity during the month. The number of days of activity per project ranged from 1 day to 30 days. Figure V-8 summarizes the number of days that work did not occur on DOT projects that month, broken down by district.

The number of projects with no activity ranged from nearly three-quarters of those in district one to 58 percent in district three. Approximately 60 percent of the projects in districts two and four had no listed activity in August.

For the driving public, especially those that pass a specific construction job site on a regular basis, the process of repairing a bridge or roadway in Connecticut can be very frustrating. Lanes may be reduced in size, breakdown areas may be shut down, and the speed in the area may be reduced. Yet the person traveling by the site may see no visible sign of activity.



DOT representatives have offered several explanations for this situation. First, work may in fact be going on at the site, but it is being done at an off time (e.g., nights or weekends), when it is less visible. Second, the area may be restricted to allow work in an area below the traveling surface (e.g., under a bridge deck).

Third, the contractor may not be able to proceed until another party performs work (e.g., a utility company moves wires or a pole). In that case, it may be more cost-effective to leave barriers in place rather than remove them for what is supposed to be a short period of time and then reinstall them. Or, fourth, the contractor may have essentially finished the project, except for a few close-out

items. The problem with the latter two reasons is that the duration of these types of stoppages can end up lasting for a long time.

The program review committee recommends DOT review all projects that have been idle for one month to determine the cause of the work stoppage and the steps needed to resume work. The department's automated information system is capable of producing a report listing the dates each contractor and subcontractor worked on a specific project during a given month. The program review committee believes that information can be used to develop a listing of all projects where no work occurred each month. The contractor responsible for the project should be required to explain the work stoppage and what steps will be taken to re-start work site activity.

The department indicated it receives inquiries about work stoppages on a regular basis now. This recommendation should assist them in having information readily available to answer those questions.

DOT Construction Site Safety

According to the Department of Transportation, protecting both the traveling public and workers from accidents and injuries related to activities at construction sites is a priority of the agency. Worker fatalities at DOT construction and maintenance project sites earlier this year prompted the department to conduct a review, at the governor's request, of its current safety practices for work zones. In its report to the governor, the agency concluded existing safety standards for work zones are appropriate; no findings were presented on the adequacy of safety measures at the specific accident sites since the accidents were still under police investigation.

In general, contractors must develop an approved plan for maintaining and protecting traffic during a project. Implementation is monitored by DOT field inspectors. To determine whether required traffic controls (e.g., signs, crash trucks, state troopers, etc.) are effective and operational, engineers from the DOT Office of Construction on a monthly basis monitor safety practices at randomly selected construction sites. If traffic safety problems develop at a construction site, field staff may request engineers within the department's traffic division investigate and propose improvements.

Conformance with both DOT and OSHA worker safety requirements is also required at transportation project construction sites. The safety division of the agency's personnel office is responsible for monitoring the working conditions of DOT employees. The division's safety officers and construction field inspection personnel report violations that affect contractor's employees to OSHA, but the contractor not the department is responsible for assuring the safety of those workers.

The overall effectiveness of department work zone safety practices, however, is not routinely examined. Information on traffic accidents is regularly collected and analyzed to determine if safety improvements are needed at certain locations on existing highways. The program review committee

believes the department should perform similar studies to patterns of safety problems related to construction site activities.

Through its automated construction contract information (CMR) system, the department already collects certain data on all reported accidents field staff are aware of at active construction sites. At present, this information is only used to help locate project-related paperwork, if a claim is later received regarding a specific incident at a DOT project.

Given the importance of protecting workers and the general public from avoidable risk while construction is underway, the agency should use all available resources to develop effective safety policies and practices. **The program review committee recommends at the end of each construction season the transportation department compile and review all available data on work area safety incidents as another way to identify possible improvements.** In addition to the accident data included on the CMR system, DOT could obtain information on work safety problems from the safety division and OSHA. Feedback on safety matters obtained through the post-construction reviews recommended earlier would be another source to consider.

APPENDICES

APPENDIX A
Survey of State Agency Contract Management Practices

NOTE: For purposes of this survey, *commodities* are defined as supplies, materials and equipment purchased for use by the state. *Services* are defined as personal and professional activities carried out under a contract (either a purchase order or a personal service agreement) by persons who are not state employees.

Name of your agency/institution _____

Name of person completing survey _____ job title _____
 tel. number _____

1. Which of the following best describes who in your agency is generally responsible for inspecting commodities that are delivered to your agency: (N=49)

- 14% (1) the person who processes the purchase or requisition order used to obtain the commodity
- 49% (2) the person who accepts delivery of the commodity from the vendor
- 6% (3) the person who puts the commodity into storage until it is going to be used
- 27% (4) the person who will use the commodity
- 4% (5) other (please specify) _____

2. Does your agency have written procedures describing the steps to be followed when inspecting a commodity that has been purchased by your agency? (N=49) yes 35% no 65%

3. Which of the following best describes when commodities delivered to your agency are usually inspected: (N=50)

- 56% (1) at the time of delivery
- 32% (2) shortly after delivery, when the items are being put in storage
- 6% (3) when the items are actually being put into use
- 6% (4) other (please specify) _____

4. For commodities delivered to your agency directly from a vendor, please indicate how often each action listed below occurs. (Please use a scale of 1 to 4, with 1 = rarely and 4 = almost always.) (N=50)

	Rarely	Some- times	Frequently	Almost Always
(A) Items are examined for conformance with contract specifications (e.g., style, dimensions, color, etc.)	--	10%	6%	84%
(B) Types of items received are checked against types of items listed on the purchase order	--	--	8%	92%
(C) Quantity of each type of item is counted	--	--	8%	92%

5. For commodities delivered to your agency from the state central warehouse, please indicate how often each action listed below occurs. (Please use a scale of 1 to 4, with 1=rarely and 4=almost always.)

	Rarely	Some- times	Frequently	Almost Always
(A) Items examined for conformance w/contract specifications (e.g., style, dimensions, color, etc.) (N=47)	9%	11%	11%	70%
(B) Types of items received are checked against types of items listed on the purchase or requisition order (N=48)	--	2%	4%	94%
(C) Quantity of each type of item is counted (N=48)	2%	2%	4%	92%

6. Approx. what percentage of the time does your agency experience a problem with the commodities purchased either directly from a vendor or through the central warehouse? ___ percent (N=47)

<u>23%</u> 1 percent or less	<u>21%</u> 6 to 10 percent
<u>19%</u> 2 to 4 percent	<u>13%</u> 11 to 40 percent
<u>23%</u> 5 percent	

7. Thinking back over the past two years, please estimate how often your agency has experienced each of the problems listed below with respect to commodities purchased either directly from a vendor or received through the central warehouse. (Please use a scale of 1 to 4, with 1=rarely and 4=almost always.) (N=50)

	Rarely	Some- times	Frequently	Almost Always
(A) Received commodity after requested delivery date	34%	50%	16%	--
(B) Received commodity that did not meet contract specifications (e.g., style, dimensions, color, etc.)	60%	36%	4%	--
(C) Received commodity that was in damaged or spoiled condition	68%	30%	2%	--
(D) Received wrong quantity of commodity	50%	48%	2%	--
(E) Received bill for a price that was higher than what was authorized in state contract	66%	30%	4%	--

8. Thinking back over the past two years, please estimate how often your agency has taken the actions listed below with respect to commodities purchased by your agency. (Please use a scale of 1 to 4, with 1=rarely and 4=almost always.)

	Rarely	Some- times	Frequently	Almost Always
(A) Refused to accept delivery (N=50)	84%	16%	--	--
(B) Refused to pay for delivered item(s) (N=50)	78%	20%	2%	--
(C) Deducted value of item(s) from an invoice submitted by same vendor for another purchase (N=49)	71%	25%	2%	2%

9. Which of the following best describes who within your agency is responsible for evaluating services received from outside contractors?

- (1) the person who processes the purchase or requisition order used to obtain the commodity
- (2) the person who accepts delivery of the commodity from the vendor
- (3) the person who puts the commodity into storage until it is going to be used
- (4) the person who will use the commodity
- (5) other (please specify) _____

[Note: Responses to the above question could not be used, due to the wording of the question.]

10. Does your agency have written procedures describing the components to be considered when evaluating the performance of a service? (N=48) yes 50% no 50%

11. For services provided to your agency by outside contractors, please indicate how often each action listed below occurs. (Please use a scale of 1 to 4, with 1 = rarely and 4 = almost always.)

	Rarely	Some- times	Frequently	Almost Always
(A) Ongoing performance is monitored for compliance with contract specifications (N=48)	--	4%	31%	65%
(B) Number of hours worked by employees of contractor is monitored (N=47)	6%	9%	26%	60%
(C) End product required by contract is reviewed before final payment is authorized (N=48)	--	2%	10%	88%
(D) Written evaluation of contractor is prepared upon completion of the contract (N=48)	46%	25%	4%	25%

12. Approximately what percentage of the time does your agency experience a problem with the services provided to it by outside contractors? ____ percent (N=44)

<u>30%</u> 1 percent or less	<u>14%</u> 6 to 10 percent
<u>11%</u> 2 to 4 percent	<u>11%</u> 11 to 30 percent
<u>34%</u> 5 percent	

13. Thinking back over the past two years, please estimate how often your agency has experienced each of the problems listed below with respect to services received from a contractor. (Please use a scale of 1 to 4, with 1=rarely and 4=almost always.) (N=48)

	Rarely	Some- times	Frequently	Almost Always
(A) Services were performed late	56%	38%	6%	--
(B) Services were performed at a level below that specified in the contract	63%	35%	--	2%
(C) End product specified in contract was not received	92%	8%	--	--
(D) Contractor billed agency at a rate higher than specified in the contract	92%	6%	2%	--

14. Thinking back over the past two years, please estimate how often your agency has taken the actions listed below with respect to services received by your agency. (Please use a scale of 1 to 4, with 1=rarely and 4=almost always.) (N=48)

	Rarely	Some- times	Frequently	Almost Always
(A) Refused to accept end product	88%	10%	--	2%
(B) Refused to pay for services	79%	19%	--	2%
(C) Deducted value of services from an invoice submitted by same vendor for another contract	81%	15%	--	4%

15. Thinking over the past two years when your agency had a problem with either a commodity or a service, indicate how often your agency took each of the steps listed below. (Please use a scale of 1 to 4, with 1=rarely and 4=almost always.)

	Rarely	Some- times	Frequently	Almost Always
(A) Contacted the vendor (N=48)	--	10%	17%	73%
(B) Filed complaint with DAS Bureau of Purchases (N=47)	47%	40%	6%	6%
(C) Referred problem to Office of Attorney General (N=47)	89%	11%	--	--

16. Thinking back over the past two years, when your agency had a problem with either a commodity or a service, estimate how often the outcomes listed below occurred. (Please use a scale of 1 to 4, with 1=rarely and 4=almost always.)

	Rarely	Some- times	Frequently	Almost Always
(A) Vendor corrected the problem (N=48)	--	--	19%	81%
(B) Vendor reimbursed agency for cost of the item (N=46)	41%	33%	7%	20%
(C) Vendor made attempts to solve problem, but never succeeded (N=46)	83%	15%	2%	--
(D) Vendor said it would look into the matter, but never responded again (N=46)	89%	11%	--	--
(E) Vendor said problem was not its fault (N=46)	70%	30%	--	--
(F) Vendor refused to discuss problem at all (N=46)	100%	--	--	--

17. Thinking back over all of the complaints, if any, your agency has filed with the DAS Bureau of Purchases during the past two years, please rate your agency's satisfaction level with that process. (Please use a scale of 1 to 4, with 1=poor and 4=excellent; select 5 = N/A, if your agency has not filed any complaints with the bureau during this time period.) (N=47)

Poor	Fair	Good	Excellent	N/A
2%	15%	34%	15%	34%

APPENDIX B
LEGISLATIVE PROGRAM REVIEW AND INVESTIGATIONS COMMITTEE
Agency Survey Regarding State Construction Project Contract Management

Agency/Institution: (30 state agencies and institutions returned surveys)

Respondent role in agency construction projects: 73% agency representative to Department of Public Works (DPW) (N=30)
27% other (describe) _____

1) Since 1990, approximately how many construction projects has the Department of Public Works administered for your agency? 3% none 17% one 37% between 2 and 10 43% over 10 (N=30)

If you answered none, please stop here and return your survey to the committee staff office.

1a) Were these projects primarily:

- (N=30) 17% (1) new construction
43% (2) renovation/rehabilitation
40% (3) about an equal mix of new construction and renovation/ rehabilitation

1b) What was the approximate cost of these projects?

- (N=30) 30% (1) all or most were under \$ 1 million
37% (2) all or most were over \$1 million
33% (3) some were under and some were over \$1 million

2) Using a scale where 1= Poor and 4 = Excellent, how would you rate the job the Department of Public Works generally does managing construction project contracts in terms of the following activities:

	PoorExcellent		
	1	2	3	4
a) Keeping a project on schedule (N=29)	24%	31%	31%	13%
b) Keeping project costs within budget (N=28)	11%	29%	39%	21%
c) Making sure workmanship meets specified standards (N=29)	7%	21%	55%	17%
d) Making sure materials meet specified standards (N=29)	7%	10%	66%	17%
e) Making sure the requesting agency is satisfied with the completed project (N=28)	11%	28% ²	46%	14%

Please provide the following information about the construction project the Department of Public Works **completed most recently** for your agency : (N=26)

3a) Type project: 41% new construction 48% major renovation 10% other _____
 (describe)

3b) Total final cost: ranged from \$0.049 million to \$46.990 million (median= \$3.6 million)

3c) Date construction began: ___ month ___ year (ranged from 4/90 to 5/95)

3d) Date construction ended: ___ month ___ year (ranged from 11/91 to 9/95)

3e) Which DPW staff unit administered the project:

- 3% (1) Accelerated Project Unit (APU)
21% (2) Construction Management Unit with outside construction management firm
41% (3) DPW construction section personnel
3% (4) Project Management Unit
17% (5) Other (describe) _____
14% (6) Unsur

4) Was this project completed by the original end date set in the contract? 32% YES 68% NO (N=28)

(N=20) 4a) IF NO, what was the main reason the project was not completed on schedule in your opinion?

- 5% (1) inadequate design
- 5% (2) poor initial planning
- 25% (3) unforeseen field conditions that necessitated major changes during construction/renovation
- 0% (4) agency requests for major changes during construction/renovation
- 0% (5) building and/or fire code changes during construction/renovation
- 0% (6) inadequate management by DPW
- 15% (7) inferior contractor
- 15% (8) other (describe:)
- 35% listed multiple reasons

5) Was this project completed within the original budget, including contingency funding? 54% YES 46% NO (N=26)

(N=12) 5a) IF NO, what was the main reason the project budget was exceeded in your opinion?

- 0% (1) inadequate design
- 0% (2) poor initial planning
- 33% (3) unforeseen field conditions that necessitated major changes during construction/renovation
- 0% (4) agency requests for major changes during construction/renovation
- 0% (5) building and/or fire code changes during construction/renovation
- 0% (6) inadequate management by DPW
- 8% (7) inferior contractor
- 8% (8) other (describe:)
- 50% listed multiple reasons

6) For this most recently completed project, how would you rate DPW's performance of each of the following tasks, using the scale of 1= Poor to 4 = Excellent.

	Poor	Excellent	Number Respondents
a) helping define the scope of work	0%	20%	50%	30%	20
b) ensuring final plans and specifications were complete and comprehensive	4%	33%	41%	22%	27
c) monitoring compliance with specifications for materials during construction/renovation	4%	12%	54%	31%	26
d) monitoring compliance with specifications for workmanship during construction/renovation	7%	19%	44%	30%	27
e) keeping the contractor on schedule	26%	26%	30%	19%	27
f) monitoring expenditures and keeping the project on budget	12%	15%	42%	31%	26
g) resolving problems including disputes with the contractor	15%	31%	27%	27%	26
h) minimizing change orders that add time/cost to the project	8%	19%	42%	31%	26
i) responding to agency requests for changes	4%	13%	54%	29%	24
j) getting deficiencies identified during the final inspection satisfactorily corrected by the contractor	12%	23%	42%	23%	26
k) ensuring the contractor provided manuals, warranties, drawings, and demonstrations for the completed project	5%	35%	45%	15%	20
l) helping enforce guarantees or warranties	19%	25%	25%	31%	16

APPENDIX C. Department of Public Works Construction Projects Included in the Legislative Program Review & Investigations Committee Sample Database.							
Project Number & Client Agency	Project Type	Original Contract Value	Current Contract Value & % Change (Fall 1995)	Original Days Allowed	Revised Days Allowed (Fall 1995)	Project Status (Fall 1995)	
BI-2B-816-AI DMH/CVH	Environ. Improvement	\$263,568	\$273,822 (+3.9%)	220	220	Final Payment Made	
BI-A-259-B ASB DMH/FHH	Environ. Improvement	\$510,000	\$559,452 (+9.7%)	342	737	Substantially Complete	
BI-A-259A DMH/FHH	Renovation	\$3,769,000	\$4,226,693 (+12.1%)	510	510	Substantially Complete	
BI-D-728 UConn	New Construction	\$3,979,000	\$4,358,615 (+9.5%)	600	618	Substantially Complete	
BI-D-775 UConn	Renovation	\$818,338	\$914,172 (+11.7%)	(not available)	(not available)	Substantially Complete	
BI-D-776 UConn	Renovation	\$1,995,000	\$2,235,650 (+12.1%)	215	285	Substantially Complete	
BI-DM-882 Uconn/Health Cen.	Renovation	\$524,542	\$545,710 (+4.0%)	180	668	Substantially Complete	
BI-EE-085-CM DOC/Cheshire	New Construction	\$15,672,000	\$16,950,944 (+8.2%)	460	460	Substantially Complete	
BI-I-249-A DHM/CVH	Renovation	\$2,095,000	\$2,247,429 (+7.3%)	480	591	Final Payment Made	
BI-JA-290 DOC/Bridgeport	Code Improvement	\$123,644	\$177,665 (+43.7%)	120	171	Final Payment Made	

Project Number & Client Agency	Project Type	Original Contract Value	Current Contract Value & % Change (Fall 1995)	Original Days Allowed	Revised Days Allowed (Fall 1995)	Project Status (Fall 1995)
BI-JD-052 JUD	Renovation	\$952,500	\$1,196,845 (+25.7%)	365	408	Final Payment Made
BI-MH-093 CMHC	Renovation	\$567,000	\$900,546 (+58.8)	270	326	Substantially Complete
BI-P-66 DEP	New Construction	\$553,592	\$632,182 (+14.2%)	180	526	Substantially Complete
BI-RCO-240 RCTC/MCC	Renovation	\$4,112,344	\$4,860,501 (+18.2%)	400	561	Substantially Complete
BI-RS-104/111 SCSU	Code Improvement	\$630,000	\$874,525 (+38.8%)	85	85	Final Payment Made
BI-RS-135 SCSU	Renovation	\$277,800	\$300,532 (+8.2%)	120	132	Final Payment Made
BI-RT-338 SDE/RVT	Code Improvement	\$9,464,000	\$10,096,760 (+6.7%)	540	1,152	Final Payment Made
BI-RT-621 SDE/RVT	Code Improvement	\$639,818	\$693,610 (+8.4%)	180	264	Final Payment Made
BI-RTC-103 RTC/TVTC	Renovation	\$118,621	\$114,496 (-3.5%)	180	310	Substantially Complete
BI-SS-92-A State Library	Renovation	\$248,960	\$251,877 (+1.2%)	90	90	Substantially Complete
BI-VV-028 DMH/CVH	Renovation	\$778,450	\$897,744 (+15.3%)	250	271	Substantially Complete

APPENDIX D. Department of Transportation Construction Projects Included in the Legislative Program Review & Investigations Committee Sample Database							
Project Number	DOT District	Project Type	Original Contract Value	Current Contract value (Fall 1995)	Original Contract Days	Revised Contract Days (Fall 1995)	Project Status (Fall 1995)
020117	4	Bridge Rehab.	\$103,000	\$300,000	90	37	99%
220099	2	Resurfacing	\$517,878	\$633,268	99	96 (final)	Accepted
250129	4	Bridge Rehab.	\$416,357	\$495,600	330	330	95%
280184	2	Other	\$153,303	\$208,938	119	119	97%
330112	1	Bridge Rehab.	\$451,697	\$518,140	320	312 (final)	Accepted
440132	2	Widening	\$1,367,721	\$1,445,507	360	360	92%
530160	1	Intersection	\$667,324	\$651,385	225	225	97%
550124	4	Safety Improv.	\$255,246	\$289,507	96	96	91%
560242	3	Bridge Rehab.	\$374,475	\$376,398	273	273	98%
610127	3	Resurfacing	\$8,664,678	\$10,726,833	476	476	99%
630487	1	Bridge Rehab.	\$2,898,250	\$2,876,923	280	280	99%
750120	2	Road Reconstr.	\$284,296	\$410,576	115	100 (final)	Accepted
830186	3	Bridge Rehab.	\$6,686,086	\$7313,131	440	440	99%
930108	1	Intersection	\$2,636,551	\$3,234,156	262	359 (final)	Accepted
1020215	3	Bridge Rehab	\$8,487,928	\$15,336,329	406	1728	99%
1020253	3	Bridge Rehab	\$782,774	\$1,225,969	182	297	83%
1050172	2	Bridge	\$93,811,427	\$105,718,274	1458	1,416 (final)	Accepted

Project Number	DOT District	Project Type	Original Contract Value	Current Contract value (Fall 1995)	Original Contract Days	Revised Contract Days (Fall 1995)	Project Status (Fall 1995)
1050185	2	Resurfacing	\$3,230,878	\$4,736,214	150	150	100%
1310172	1	Bridge Rehab.	\$275,724	\$1,181,479	204	240	88%
1320097	1	Road Reconstr.	\$13,329,562	\$13,997,369	497	560	99%
1320100	1	Widening	\$1,948,070	\$2,972,850	399	399	95%
1380187	3	Safety Improv.	\$2,739,244	\$3,403,085	540	540	97%
1380188	3	Bridge Rehab	\$8,430,387	\$14,536,394	488	488	100%
1420136	1	Road Reconstr.	\$4,213,689	\$8,570,637	233	233	94%
1460144	1	Resurfacing	\$6,644,582	\$10,069,743	240	240	94%
1460146	1	Intersection	\$320,245	\$282,599	134	134	82%
1660082	1	Safety Improv.	\$2,766,286	\$3,940,894	171	171	93%
1701037	1	Bridge Rehab.	\$268,092	\$296,023	90	95	100%
1710167	1	Bridge Rehab.	\$1,466,220	\$1,581,495	259	259	96%
1710234	1	Resurfacing	\$117,396	\$119,577	89	89	96%
1720241	2	Resurfacing	\$2,845,876	\$4,845,862	218	218	97%
1730237	3	Safety Improv.	\$298,688	\$327,002	113	113	84%
1740205	4	Other	\$95,000	\$102,100	98	98	98%

APPENDIX E

DEPARTMENT OF PUBLIC WORKS RESPONSE
AND COMMITTEE COMMENTS



STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC WORKS



T. R. Anson
Commissioner

Honorable Eileen M. Daily, Chairperson
Honorable Ann P. Dandrow, Chairperson
Program Review and Investigations Committee
Room 506
State Capitol
Hartford, CT 06106

January 26, 1996

Dear Senator Daily and Representative Dandrow:

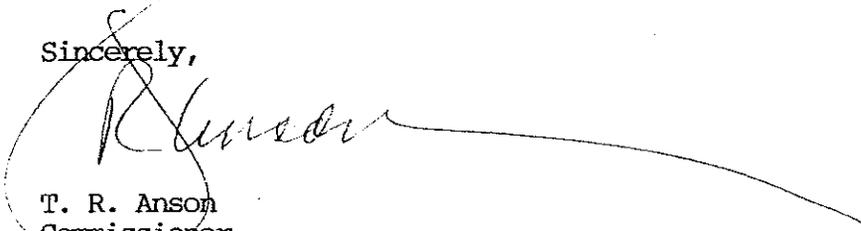
Enclosed is the Department of Public Works' response to the Committee's State Contract Management Report. We have addressed the Committee's recommendations and included additional information on architect/engineer errors and omissions and the design-build process.

For the most part, DPW is in agreement with the Committee's recommendations. You will see that, even in those instances where we are not in total agreement, we are not too far apart.

I want to compliment the Committee's staff for performing a difficult task with intelligence and professionalism. Examining an agency in the throes of a reorganization is a daunting assignment. I also appreciate the application of their skills to assist DPW in our process improvement.

Thank you again for your attention and your efforts.

Sincerely,


T. R. Anson
Commissioner

DPW Response to Recommendations

1. Recommendation

DPW & DOT routinely analyze change order data from their construction projects to determine if better estimates of materials and work required could have been made. The agencies should also use change order data to determine if more initial testing and surveying would be cost beneficial for specific types of jobs.

DPW Response

In the sample of projects examined by the Legislative Program Review Committee's staff, the vast majority (18 out of 21) projects were renovation projects. Job/field conditions in renovation projects are more difficult to predict than in new construction. Increasing borings and testing would not address this problem.

That is not to say that steps cannot be taken to improve detection of possible hidden problems on renovation projects. This is borne out by the figures presented by the committee staff in their report. According to Table V-4 in the report, 289 out of the sample's 688 change orders (42%) were due to field/job conditions. Based on this information in the report, the Commissioner of DPW has instructed his staff to prepare a plan to reduce field/job condition change orders.

Steps to be discussed for inclusion in the plan are better physical examination of the structure, more detailed reports on conditions, closer examination of the original construction documents and a proper consideration of the proposed project scope. In some instances it might also be advisable to require additional testing on systems. Occasionally, intrusive testing and examination of a structure is appropriate during the design phase of a project.

This effort might add to the up front cost of a project in DPW and/or consultants' fees and might slow the project design phase. The department believes that these efforts will be cost effective and pay off with reduced change orders. The department also believes that the design professional should be held more accountable for detecting potential job conditions in the design phase.

2. Recommendation

DPW & DOT establish a process for conducting post-construction reviews of all completed projects to determine how effectively they were managed. Among the items that should be evaluated and reported on are the original and actual time frame and budget, compliance with wage and set-aside program requirements, safety issues and the nature of any

design change required. The review should include input from all parties involved in the project, including agency staff, the contractor, the designer, and, for Public Works projects, client agency representatives.

DPW Response

DPW agrees with this recommendation and proposes immediate implementation of the following procedure. At the close of a project, team members will be required to gather contractor compliance information from the various DPW units responsible for monitoring the items, e.g. safety issues information collected by the Construction unit. DPW's Objective Criteria for a contractor's performance will be compared to the contractor's record of compliance for the project under review. The team will then convene all involved parties to conduct a roundtable review of the project data in relation to the DPW Objective Criteria.

3. Recommendation

If the dollar value of change orders on an individual project is greater than 10 percent of the original value of the contract, then the DPW & DOT should perform a cost overrun analysis of the project within 10 days of the approval of the change order that triggers the review.

DPW Response

DPW believes that analysis of change order data will be more effective when used to improve project development and contract management for future projects. The affect a cost overrun analysis could have on the current project, once in the construction phase, is questionable.

Under DPW's new organizational structure, approval authority for change orders has been removed from management level and placed with team members. The purpose of this policy is to allow those people who are most familiar with the projects to make decisions. To appoint someone outside of the approval process to evaluate their decisions, as the report proposes, would be in conflict with the intent of the policy which is to give authority to the team members who have responsibility for the projects.

The report specifies the proportion of change orders for extra work not originally included in the contract be included in the analysis. Under the new change order approval process, information on the cause of the change order is maintained by the teams but also dispersed to appropriate DPW units. For instance, information on A/E errors and omissions is directed to the Design and Review staff for action. The report also specifies change orders without adequate documentation

also be included in the analysis. The department recently adopted a new change order process which we believe will result in adequate documentation. Therefore, change orders for items for which a price increase or addition of time is not adequately documented would not have been approved in the first place.

4. Recommendation

DPW establish a process for evaluating construction contractor performance by July 1, 1996 using the DOT system as a model. A standard form listing all items to be evaluated and describing the rating system to be applied should be developed and all DPW staff with roles in monitoring contractors should be trained in how to conduct performance evaluations. As in the DOT process, contractors should be evaluated annually and upon project completion and be permitted to review their evaluations with DPW staff.

As an improvement to the DOT model, DPW & DOT should develop rating systems that weight the various components of the contractor's performance to reflect relative importance.

Once the DPW system is in place, DPW & DOT should jointly establish a construction contractor performance database incorporating the information in the evaluations prepared by each agency. Finally, the formal contractor performance evaluations should be used by the Commissioners of DPW & DOT as the primary factor for selecting firms for noncompetitively awarded construction work such as emergency repair projects.

DPW Response

DPW agrees that a process for evaluating construction contractors' performance is valuable. Since the Legislative Program Management Committee's staff reviewed DPW, the department has developed the DPW Objective Criteria for evaluating qualifications of bidders. Once finalized, the list of criteria will be provided to contractors in the bid package so that they are aware of what is expected of their performance. The same criteria will be applied when evaluating a contractor's performance at the end of a project and during future bid selections when determining if a bidder is "responsible".

The list of criteria was developed by department staff involved in all phases of DPW projects from bidding through construction. It addresses the common problems that develop during the life of a DPW project. DPW projects differ greatly from DOT projects in type, scope and complexity. For this reason, we do not believe that the DOT model could be effectively applied to DPW projects.

We do agree that weighting the criteria to reflect the relative importance of the various components would add to the value of the process. DPW will immediately apply this recommendation to our objective criteria procedure.

S.A. 94-10 mandated the Department of Administrative Services, in consultation with certain other state agencies, to develop a plan for establishing a construction contractors database for use by all state agencies. We agree with this legislation that DAS is the appropriate agency to serve as a state-wide repository for this information.

The DPW Objective Criteria will be the primary factor for selecting firms for noncompetitively awarded construction work such as emergency repair projects.

5. Recommendation

DPW establish a system to prequalify bidders of its construction projects.

DPW Response

The department is in the process of developing a prequalification procedure on a project-by-project basis. Heavy emphasis will be put on the DPW Objective Criteria to review the qualifications of the prequalified contractors and subcontractors for final bid award. DPW senior staff is working closely with the Attorney General's office to develop the prequalification procedure.

6. Recommendation

C.G.S. Sec. 49-41b be amended to permit the state to retain up to 10 percent of any periodic or final payment to a contractor.

DPW Response

DPW has proposed legislation for the 1996 session of the General Assembly that would increase the maximum allowable amount DPW can withhold from a contractor's periodic or final payment from 2.5% to 10% of the contract price. It would also increase the maximum allowable rate of retainage that a general contractor may withhold from a subcontractor from 2 1/2% to 10%. The proposal applies only to DPW projects, not to DOT or any other state agency.

The department's proposal also prohibits a general contractor from withholding a higher rate of retainage from a subcontractor than DPW is withholding from the general contractor on a particular project. This prohibition is added because the department is developing a policy

under which it would withhold less than 10% from those general contractors whose performance on previous DPW projects has been in compliance with the DPW Objective Criteria and would release payments for material suppliers. The language is included to protect the subcontractors in this situation.

DPW has proposed the increase in order to provide a greater incentive to the contractor to complete his work in a timely manner. It costs DPW approximately \$500,000 annually in administrative charges to attempt to close out projects that are 96% to 99% complete. Some of these projects have been 96% to 99% complete for as long as 2 1/2 years.

The private sector retainage rates range from 10% to 15%. The private sector is often held up as a model for state agencies. If we are going to "run the state more like a business" the state should have the same leverage that the private sector has.

7. Recommendation

DPW and DOT include as a standard provision in their construction contracts, the requirement that contractors must complete identified corrective work and supply all required documentation to the agency within 90 days of the projects substantial completion date.

DPW Response

DPW strongly endorses this recommendation. The construction contract, in its present form, establishes a clear start date but does not specify that the contractor must complete corrective work and supply all required documentation to the agency within a specified time frame. The provision that this be accomplished within 90 days of the project's substantial completion date will be added to the standard construction contract immediately. Compliance with this provision will also be included in the DPW Objective Criteria.

8. Recommendation

DPW & DOT develop a manual and provide training on what is required to monitor, evaluate and document contractor performance problems for agency staff responsible for overseeing construction contracts.

DPW Response

Providing the tools and skills to DPW staff to document contractor performance is a priority of the department. A manual would be an excellent tool to assist agency staff in documenting contractor performance. Such documentation would provide a solid defense against

a challenge to adverse decisions by DPW. However, a tool is only as good as the skills of the person using it. Proper training of DPW personnel is essential to ensure a consistent and meaningful approach to the identification of responsible contractors and the elimination of problem contractors. The training will include both in-house programs and sessions provided by industry professionals. DPW's Assistant Attorney General will be a part of the in-house training. A strong and continuing training program will result in more knowledgeable and effective staff interaction with all contractors, good and bad.

9. Recommendation

As part of DPW's initiative to improve project scope development, DPW should develop a checklist for client agencies to use in preparing initial requests for capital projects.

DPW Response

For several years, DPW has required client agencies to complete a Request to Initiate a Capital Project form at the start of a project. The questionnaire, which could also be considered a checklist, asked for information such as project description and site information. In the past, DPW did not utilize the questionnaire as a planning tool. In many cases, when agencies were not able or willing to complete the questionnaire, DPW did not pursue the information.

Over the past several months, DPW has expanded and improved the questionnaire and is putting an emphasis on eliciting meaningful project scope information from the agencies. Improvements include replacement, where possible, of technical terminology with layman's language and the development of a summary document which further explains each item in the questionnaire.

In order to ensure that the questionnaire provides adequate information, DPW has formed a unit (part of the A/E selection board) to review the agency request forms. If the unit determines that more information is required in order to determine the agency's space needs, it recommends one of the following options:

- o in-house program development by DPW staff
- o program development by on-call planners
- o pre-design study by a design professional

In areas of complex code issues and major renovations, the Department of Public Safety will be incorporated in this process.

While this review and scope development can delay actual project start-up, the department believes that the savings, in both time and money, achieved during the construction more than compensate.

10. **Recommendation**

DPW develop a written policy and criteria for approving agency requests for changes to a construction project and distribute to all client agencies. The policy should include a requirement that agencies identify funding sources other than a project's contingency fund to pay for changes they request during construction. A request shall be submitted in writing by the head of the client agency and must include funding approval from the Office of Policy and Management. OPM shall process an agency's request for funding approval within 10 days of receiving it.

DPW Response

DPW agrees that a written policy for approving agency requests for changes to a project would be helpful both to DPW and the client agencies. Change order approval is the responsibility of the team members. Development of the agency request criteria will be assigned to the teams immediately.

It is also our intent to reduce the occasion of agency requests for changes through use of the Request to Initiate a Capital Project questionnaire, discussed earlier.

DPW also concurs that the agency should be required to identify funding for requested changes but we do not think it is necessary to require OPM approval of the identified funding. The funding source identified by the agency will be from its own budget and therefore already approved by OPM. To require OPM's approval again would be redundant and add no value to the process.

11. **Recommendation**

DPW review its internal communication procedures to ensure that agency employees fully understand the mission of the department and their role in its implementation.

DPW Response

This recommendation concerns the need for a better internal communication procedure to ensure all employees better understand the DPW mission and their role in achieving it. This is a valid criticism. The agency leadership has recognized this problem and has taken several actions to mitigate it. There are five themes to the items below. One concerns the immediate actions the agency has taken

to engage employees. The second concerns the need for everyone to clarify his or her respective role. The third focuses on the obligations of managers in obtaining employee input on issues affecting them and communicating decisions to employees; for some DPW managers, this represents a culture shift and a digression from their past practice. The fourth is the support managers may need, as some may need to build motivation or refine their leadership skills in this area. And the fifth concerns creating an accountability system for managers so a clear message is sent that there are consequences for not engaging employees.

- o DPW closed three district offices and placed all DPW staff in one facility. The goal was for the physical proximity to foster better communication as well as standardization of work products and services.
- o DPW senior leaders must be aligned behind the agency vision and must visibly create and sustain the customer focus. All managers have participated in the development of the agency mission, vision, values, goals, and strategies which form the basis of a strategic plan. They have been asked to share this information with staff.
- o The Commissioner has instituted monthly round tables in addition to a round of agency-wide meetings with all staff to hear directly from employees and to communicate DPW goals and critical issues to them first hand. Suggestions from employees are tracked and acted upon where appropriate.
- o An agency-wide quarterly newsletter is being issued as an effort to communicate directly with employees.
- o To engage employees as a resource and to ensure communication in both directions, several agency-wide teams are being created with broad representation (e.g., Recognition Team, and the Technology Advisory Committee.)
- o The agency is embarking upon an ambitious plan to revamp its internal work processes. Employees will be involved in three ways; participating in process improvement training and being on the process improvement teams, generating manuals or training in the new processes, and running interactive training sessions in the new procedures for other employees.
- o All managers are required to lead a planning and objective-setting process yearly in their respective work areas. With input from associates and customers, managers will determine bottom line results for their respective work units. All managers are required

to establish quantifiable goals and plans. These goals must be communicated to all associates and progress against goals will be reviewed monthly by the manager.

Several managers have already deployed this plan using a high employee involvement approach. The suggested approach was described at a December 7, 1995 meeting with senior leadership where they were presented guidelines on how to do this, how to make objective setting and measurement relevant for each staff member, given sample forms, provided with opportunity to ask questions, and given explicit direction from the Commissioner to begin this in their own work units. The products from these sessions will be routed to the Director of Human Resources for incorporation into the statewide PARS forms.

- o Managers are expected to model and reinforce such values with all staff and must create a direct link between DPW's performance goals and the day-to-day operations in their units. Thus far, deployment of this has not been consistent. Also, managers will participate in departmental and cross-unit teams, serve as advisors to the improvement teams, meet regularly with key customers and with staff to obtain feedback on how to improve operations. This year, managers will be held accountable for doing this via a new, revamped Performance Appraisal and Review Systems (PARS) where their leadership skills in 15 areas (including ability to translate the vision) are weighted equally with performance on their objectives.
- o During the planning cycle for the next fiscal year, each manager will submit at least two objectives on improving internal work processes with a game plan for how they intend to do this involving employees. To aid the managers in this process, all managers will participate in mandatory objective-setting sessions supplemented with individual coaching on how to set objectives, determine measurements, and obtain staff input. This service is planned for the Spring of 1996.
- o To create the appropriate work climate and to engage all levels of employees more fully, DPW is sponsoring Customer Service Excellence Training beginning in the Spring of 1996. Here, a "vertical slice" or a work unit attend as a group to identify performance problems and develop innovative ways to prevent or solve them. Managers will attend with their employees. Managers are expected to actively lead the improvement of work processes in their units and to provide active, visible support for innovations and suggestions from employees.

- o Managers have been encouraged to use a "360 degree feedback approach" (from peers, associates, supervisors, as well as customers and suppliers) to assess their leadership skills. This will be voluntary this year, it is likely this will be mandatory in subsequent years.

As the reorganization continues to evolve, DPW is considering a further level of consolidation in the organizational structure. Support staff in the A/E and Construction Services unit may be distributed among the teams to serve customers better, build a better understanding of roles, and engage in cross-training.

11. Recommendation

DPW undertake an immediate review to determine what staffing levels and organizational structure would be required to ensure field inspectors are able to visit active construction projects on a daily basis.

DPW Response

The department's current organizational structure supports field inspections. As to adequate staffing levels, that figure would vary depending on the number of projects the department is managing. When the department determines that additional field staff is necessary, DPW can use on-call private contractors as special inspectors. Prior to our reorganization the Construction Section had 43 inspectors in the field. Currently the Construction Services Unit consist of 21 inspectors in the following categories:

- 14 Construction Coordinators
- 5 Mechanical Specialists
- 2 Electrical Specialists

These 21 inspectors are responsible for all of the field inspection of our current 137 construction projects, all at various stages of construction.

Field inspections are important but need not necessarily occur on a daily basis on all phases of all projects. Increased supervision on target projects based on the type of work and/or the value of the project would be more valuable to our client agency and our department. Just as important as frequency is the timing of site visits to coincide with significant project tasks.

DPW staff has been working with the Department of Public Safety to define those critical times in a project, e.g. the pouring of concrete, when field inspectors should be present. The department has also made it a priority to provide training to its field inspectors to ensure that they have the skills to do a meaningful quality assurance sampling.

Other DPW Comments

Architect/Engineer Errors and Omissions

The report makes reference to the department's recent initiative to track change orders due to architect/engineer errors and omissions in order to seek reimbursement for their resulting cost increases. The department is continuing this effort but also believes that prevention of errors and omissions should also be pursued. Toward that end, the department is developing a procedure for the evaluation of design professionals' performance during the life of the project.

The A/E "report card" will be used, during the design phase, to indicate the department's evaluation of the quality of the plans and how well the design professional listened to the client agency. During the construction phase it will be a reflection of how well the design professional administered the project. The "report card" is a quality improvement tool, not a penalty device. The department's goal is improved performance during the process and the evaluation will define the level of effort required.

The primary purpose of the "report card" is to alert the architect/engineer to areas where the department thinks his/her performance needs improvement to achieve better quality in the current project. A secondary purpose of the "report card" is for use in improving the design professional selection process.

Design/Build Projects

The description of the design/build process in the report suggests that the owner, i.e. DPW and/or the client agency, have little involvement in the design process or the daily oversight of construction and, as such, less control over the final product. This is not the case. In fact, the successes DPW has had with design/build are the direct result of the process that requires client agency participation in the contractor selection process, extensive pre-programming, detailed review and sign off by DPW and the end user agency of all designs and DPW oversight of construction to ensure compliance with plans and specifications. Given this process, there have been very few mismatches between the expectations of the state and the final product.

ADDENDUM

Legislative Program Review and Investigations Committee Comments on Department of Public Works Response

Page E-3: Response to Recommendation 3 (Cost Overrun Analysis)

The cost overrun analysis recommended by the committee is intended to be an objective review of the reasons a project is exceeding its budget, not a check on the change order approval process. The analysis should be aimed at determining why a project's costs have increased beyond original estimates plus contingency (at the typical 10 percent level) and what, if any, steps can be taken to avoid or reduce further increases on the specific project.

Pages E-4 and E-5: Response to Recommendation 4 (Contractor Performance Evaluation)

Transportation department procedures for evaluating contractor performance incorporate elements recommended in national models. The committee recommendation requires DPW to formally establish an evaluation process that incorporates these model procedures (e.g., annual evaluations, a standard rating form, etc.). While some criteria DOT uses to evaluate contractor performance may not be appropriate for public works department projects, the steps in the DOT process are applicable to any type of project involving an outside contractor.

The Department of Administrative Services has identified a number of obstacles, including the need for certain statutory changes, to implementing the contractor database as outlined by S.A. 94-10 and has recommended alternatives be considered. The committee's recommendation that DPW and DOT share basic contractor information by compiling their performance evaluation results in a joint database is offered as an alternative that can be implemented almost immediately.

Page E-8: Response to Recommendation 10 (Agency Request Approval)

The committee recommendation is intended to increase accountability for changes that add costs to publicly funded construction projects. OPM, as the central budget authority, would independently determine whether an agency-requested change is necessary and the best use of the available funds.

APPENDIX F

DEPARTMENT OF TRANSPORTATION RESPONSE
AND COMMITTEE COMMENTS





STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546



Office of the
Commissioner

January 26, 1996

An Equal Opportunity Employer

Mr. Michael L. Nauer
Director
Legislative Program Review
and Investigations Committee
State Capitol
Room 506
Hartford, CT 06106-1591

Dear Mr. Nauer:

Subject: Final Committee Report
State Contract Management

The Department of Transportation has reviewed the Final Report on State Contract Management as it pertains to the Department of Transportation operations. Our review has not found any factual matters which require correction and we welcome the opportunity to comment on the findings and recommendations of the Committee.

Enclosed are specific comments related to the ten recommendations for improvements to the Department's operations. In several areas, improvements had already been planned prior to the Committee's study and the Department is proceeding with implementing those administrative changes. In other areas, no initiatives will be undertaken to implement the Committee's recommendations. In some cases, the Department has concerns regarding the Committee's recommendations, and comments pertaining to these concerns are provided as well.

If the Committee or its staff has any questions regarding the Department's comments or concerns, please contact Arthur W. Gruhn, Construction Administrator, 594-2680, for further information.

Very truly yours,

A handwritten signature in cursive script, appearing to read "James E. Sullivan", written over the typed name "J. William Burns".

J. William Burns
Commissioner

Enclosure

CONNECTICUT DEPARTMENT OF TRANSPORTATION COMMENTS
STATE CONTRACT MANAGEMENT STUDY
JANUARY 26, 1996

CHANGE ORDER DISCUSSION (Pages 61-67)

The Committee report includes a detailed discussion of the change orders which are processed on construction projects by both DOT and DPW. The discussion centers around the number and reasons for the issuance of change orders on construction projects. While we cannot comment on the change order process at DPW, the Department believes some additional clarification of the process at DOT would be helpful to the committee.

As stated in the report, Department of Transportation construction projects are bid on a unit price basis. The quantities included in the proposal estimate are the engineers best estimate of the work which is required to be performed. Rarely, if ever, is the actual quantity the same as the initial quantity estimated for the work. The reasons for the quantity changes are numerous and include such things as differing site conditions, differences in material weights and/or volumes, minor changes in the limits of the work, unknown subsurface conditions, environmental concerns, contaminated materials to name a few. It is, therefore, expected that quantities will vary on construction projects of this nature.

The unit price method of contracting offers protection to both the State and the contractor on projects involving work at or below the ground level. The contractor is assured that payment will be made for all of the work which is performed in constructing the project so there is no need to build into the bid a contingency in case the estimate is not accurate. At the same time, the State is assured that payment is only made for work performed even if the work was less than the estimated amount.

While there is no question that quantity revisions frequently occur on DOT work projects, this is a normal occurrence for this type of work. In addition, the very fact that the largest portion of DOT is involved in the rehabilitation of our transportation system, means that quantity estimates may at times vary significantly. This is due to the fact that the actual conditions of a pavement or a structure may be quite different from the conditions which are visible or apparent through non-destructive testing procedures. This is explained in more detail in our comments concerning the committee's recommendations on Page 67 of the report.

The number of construction orders is also affected by the Department's policy to adjust the contract as necessary during the course of the project to reflect the latest estimate for the project. This allows the Department to pay the contractor in a timely manner for work that has been performed. It also allows the Department to release funds committed to one project if they are no longer needed thereby making other transportation related work possible.

1. PROGRAM REVIEW COMMITTEE RECOMMENDATION: (Page 67)

The program review committee recommends the Department of Works and Transportation each routinely analyze change order data from their construction projects to determine if better estimates of materials and work required could have been made. The agencies should also use change order data to determine if more initial testing and surveying would be beneficial for specific types of jobs.

DOT RESPONSE:

The DOT currently has a system of plan reviews during the design phase of a project. The purpose of these design reviews is to identify and address design and construction related issues prior to the project being bid. As a result of this review process, changes to the plans are frequently made which refine cost and quantity estimates, address field conditions which can be identified, and revise the plans to avoid recurring problems.

Additional testing, survey and investigations are performed where feasible on many DOT projects. The nature of DOT rehabilitation work, however, makes advance testing difficult and expensive. As an example, on bridge deck repair projects the only way to evaluate how much repair to the deck is required is to remove the asphalt overlay on the deck. This in itself is an expensive and time-consuming process which has a major impact on the traveling public. In addition, once the additional survey is complete, the bridge must be repaved until the project is designed and construction undertaken. It is difficult to justify the expense of such studies, as well as the inconvenience to the public.

In order to improve on the quality of the DOT's construction plans, the Office of Construction and Office of Engineering will be establishing a joint committee to identify design and construction issues. This committee will establish a reporting mechanism for identifying issues which were not adequately addressed in a project design. The committee will evaluate the issues identified, determine if they were project specific or potentially recurring issues and establish a mechanism for addressing the issue on future project designs. It is anticipated the committee will meet on a quarterly basis to review design issues and make recommendations for improvements to the design process in an effort to reduce construction change orders.

2. REVIEW COMMITTEE RECOMMENDATION: (Page 68)

The program review committee recommends the Departments of Public Works and Transportation establish a process for conducting post-construction reviews of all completed projects to determine how effectively they were managed. Among the items that should be evaluated and reported on are the original and actual time frame and budget, compliance with wage and set-aside program requirements, safety issues, and the nature of any design changes required. The review should include input from all parties involved in the project, including agency staff, the contractor, the designer and, for public works projects, client agency representatives.

DOT RESPONSE:

Prior to the contracting practices review by the committee's staff, the DOT had begun the process of establishing a pilot program to conduct post construction reviews on several construction projects. This program was established as a joint effort of the DOT, Connecticut Engineers in Private Practice, and the Connecticut Construction Industries Association. The initial project reviews were to be conducted in December 1995, however, the winter weather conditions prevented conducting field reviews which are considered an important part of the process. The reviews will, therefore, be scheduled for early spring 1996.

3. PROGRAM REVIEW COMMITTEE RECOMMENDATION: (Page 69)

The program review committee recommends that if the dollar value of change orders on an individual project is greater than 10 percent of the original value of the contract, then the Departments of Transportation and Public Works should perform a cost overrun analysis of the project within 10 days of the approval of the change order that triggers that review.

DOT RESPONSE: The Department of Transportation currently has a process for reviewing contract increases which exceed ten (10) percent of the contract value. Under the established procedures, the project forces prepare a proposed construction order which then must be reviewed by supervisory personnel at the district level. If the construction order exceeds the amount of the project contingency (typically five percent of the contract value) then additional funding must be requested for the project. As part of the funding request, which is outside of the normal construction order approval process, an explanation must be provided of the need for the additional funding. This project modification is then reviewed by senior district management, department fiscal personnel, and ultimately must be approved by the Bureau Head. At any point in this process, questions may be raised regarding the appropriateness of the change.

It perhaps should be explained that, in many cases on transportation projects, once the project is under construction there is little flexibility to abandon the work if field conditions require cost increases. In many cases, the existing facility no longer exists when the problem is encountered and there is really no feasible alternative but to complete the project. Even if the project could be conveniently abandoned due to the existence of unforeseen conditions, the costs of terminating a construction contract are significant, many times in the hundreds of thousands of dollars in termination costs.

The Department of Transportation believes that the current system provides safeguards to ensure that any changes in excess of ten percent are appropriate and that senior DOT management is informed of the changes being made. The Department continually reviews processes such as the one described and makes refinements to the procedures as appropriate to ensure adequate safeguards are maintained.

4. REVIEW COMMITTEE RECOMMENDATION: (Page 70)

EVALUATING CONSTRUCTION CONTRACTOR PERFORMANCE

As an improvement to the DOT model, the committee further recommends both the public works and transportation departments jointly develop rating systems that weight the various components of the contractor's performance to reflect relative importance.

Once the DPW system is in place, it is recommended the public works and transportation departments jointly establish a construction contractor performance database incorporating the information contained in the evaluations prepared by each agency. Finally, the committee recommends the formal contractor performance evaluations be used by the commissioners of public works and transportation as the primary factor for selecting firms for noncompetitively awarded construction work such as emergency repair projects.

DOT RESPONSE:

The Department of Transportation is currently taking its contractor rating form and developing weighted factors on the major categories. This weighted system would be similar to what DOT is currently using for consulting engineering firms doing business with the Department. Currently the DOT does maintain a data base of contractors performance and is more than willing to share this with DPW and any other state agencies. From a practical standpoint, DOT feels that it would be better to maintain separate databases, but as stated above, share them with DPW etc.

On the issue of selecting firms for non-competively awarded emergency construction work, DOT does look at the performance of the contractor when selecting firms for non-competitive work.

5. REVIEW COMMITTEE RECOMMENDATION: (Page 73)

To provide a stronger incentive to contractors to correct deficiencies and supply required documents quickly, the program review committee recommends C.G.S. Sec. 49-41b be amended to permit the state to retain up to 10 percent of any periodic or final payment to a contractor.

DOT RESPONSE:

The amount retained on periodic payments has been gradually reduced by Statute during the past twenty years to its current amount, 2½%.

The construction industry complained, due to the economy, that contractors had insufficient cash flow. Labor rates and costs of materials were significantly increasing and the contractors needed as much of their earnings as possible. In particular, smaller contractors were the majority of those incurring the financial problem.

The DOT received numerous complaints from Disadvantaged Business Enterprise (DBE) sub-contractors that prime contractors were retaining too much money. (Primes pass the retainage on to the sub-contractor). The reduction of the retainage to 2 1/2% assisted the D.B.E. sub-contractors by increasing their cash flow.

Increasing the retainage to 10% will have a negative financial affect on a majority of the contractors working on DOT projects.

6. PROGRAM REVIEW COMMITTEE RECOMMENDATION: (Page 74)

The committee recommends the transportation and public works departments each develop a manual and provide training on what is required to monitor, evaluate, and document contractor performance problems for agency staff responsible for overseeing construction contracts.

DOT RESPONSE:

The DOT presently has a construction manual and a claims procedure which explains in detail how our inspectors are to monitor and document contractor performance. Training is provided to our inspectors every winter in how to properly monitor contractor's performance and also on how to prevent disputes that could lead to claims and performance problems.

The Department already has a contractor evaluation program which we believe works well and has lead us to find contractors non-responsible in the past. The Department will continue its training of staff in the documentation of contractor performance problems but does not believe a separate manual for this function is required.

7. REVIEW COMMITTEE RECOMMENDATION: (Page 78)

The program review committee recommends the Department of Transportation central office periodically evaluate district office operations with respect to the management of construction projects to determine the areas of difference between each. The central office should then determine whether any of the practices that are successful in one region could be applied in the other districts to improve the department's construction management practices.

DOT RESPONSE:

The DOT Office of Construction conducts periodic meetings of the senior management staff from each district at which management issues, policies and procedures are discussed. The intent of these meetings is to provide general guidance in the management of the Department's construction program, policies and procedures without "micro managing" the district operations. The District management must be free to utilize their manpower and resources as efficiently as possible to meet the particular needs of each district and the programs they are responsible for.

As a result of these meetings, many changes and improvements are implemented as the ever changing needs of the Department warrant. These policy and procedure improvements are implemented through a series of "Construction Advisory Memorandums" which are issued to all Office of Construction staff and consultants working for the Office of Construction.

In addition to the Office of Construction periodic management meetings, the District Engineers meet on a regular basis to discuss issues common to the Districts. The Office of Construction also conducts annual meetings of its inspection staff at which policy and procedure issues are discussed and the staff is encouraged to provide suggestions on improving the operations of the Department in managing its construction projects. Many suggestions are received which are evaluated and implemented to improve the DOT's ability to manage its construction projects.

The DOT's Office of Construction has formed a committee composed of District Engineers to identify five to ten performance measures which will be utilized to evaluate the operations of the Office of Construction and identify areas where possible improvements are required.

In addition, DOT has established a joint committee with the Connecticut Construction Industries Association whose purpose is to identify issues of concern to the industry and the DOT in the management of the construction programs of the DOT.

8. PROGRAM REVIEW COMMITTEE RECOMMENDATION: (Page 79)

The program review committee also recommends the Department of Transportation update and improve its categories of reasons for why construction orders are needed and require all field staff to use the coding system.

DOT RESPONSE:

The construction order categories were established as a part of the DOT's automated Construction Management and Reporting system (CMR) which was developed in the mid-1980s. Due to the technology available at the time the CMR system was developed, changes to this system are difficult and time consuming to implement. The DOT has recently joined an effort by the American Association of State Transportation Officials (AASHTO) to jointly develop and implement a Construction Management System (CMS).

The AASHTO-CMS is currently under design with a target completion and implementation date of the fall of 1998. The design of the CMS will include a procedure for identifying and tracking the reasons for construction change orders.

Due to the level of effort required to implement changes on the current CMS System, the DOT does not believe changing the current construction order classification categories is feasible at this time. The design of the AASHTO CMS will incorporate an improved construction change classification system. Any CMR change would only be in effect for a short period of time before the AASHTO CMS were available.

9. REVIEW COMMITTEE RECOMMENDATION: (Page 80)

The program review committee recommends DOT review all projects that have been idle for one month to determine the cause of the work stoppage and the steps needed to resume work.

DOT RESPONSE:

The DOT project personnel are in most cases aware of why contractors have stopped work for more than 30 days. Stoppages that are considered normal for the construction industry are for reasons such as: weather/temperature; contract restrictions; utility delays; labor union strikes; delays in receiving manufactured materials; and major design revisions initiated by the DOT.

In a case where a contractor is not on the job for no apparent reason, the district contacts the contractor in a matter of days. It is true the public inquires why a contractor is not working on a project even for one day. Historically the public complains when travel lanes are closed and there is no contractor presence. District management personnel are aware of any lack of activity for no apparent reason and pursue the resumption of work under the contract provisions for enforcement.

The AASHTO-CMS that will be available in 1998 will have the ability to produce a list of idle projects (30 days or more) with reasons. Because of the difficulty in revising the current CMR system, the Department will pursue incorporating the review committee's recommendation in the proposed AASHTO-CMS program.

10. PROGRAM REVIEW COMMITTEE RECOMMENDATION: (Page 81)

The program review committee recommends at the end of each construction season the transportation department compile and review all available data on work area safety incidents as another way to identify possible improvements.

DOT RESPONSE:

The Department takes highway construction safety very seriously. Major accidents are reported to the Office of Construction immediately. Any information considered critical for the prevention of similar types of incidents are conveyed at once to all district offices for action.

The Department is currently arranging to send eleven employees to a Worksite Traffic Supervisors Training Course sponsored by The American Traffic Safety Services Association (ATSSA). The course will be held on March 6-8, 1996 and is designed to assist participants in identifying and applying workable concepts and control systems; in monitoring the effectiveness of safety installations and implementing needed changes; and in understanding legal, environmental, and administrative problems and relevant solutions. After passing an examination, participants will be certified as a worksite traffic supervisor (WTS) or a Worksite Traffic Technician (WTT). It is intended that the eleven DOT participants (five from Construction, five from Maintenance, and one from Traffic) will return to their respective districts/offices and utilize their newly acquired knowledge to enhance safety within their areas of concern.

In addition, the Office of Construction conducts an annual training school for all inspectors during the winter period. Construction safety is included as one of the topics discussed during this yearly event and work zone safety issues which developed during the past construction season are reviewed with all construction field personnel.

ADDENDUM

Legislative Program Review and Investigations Committee Comments on Department of Transportation Response

Pages F-4 and F-5: Recommendation 3 (Cost Overrun Analysis)

Cost reviews currently conducted by DOT are triggered when the cost of a proposed change would exceed the project's available contingency funding. The committee's recommendation requires an analysis of cost overruns whenever a project exceeds its budget by 10 percent, either because of one change or the cumulative effect of multiple changes. The present review process focuses on justifying a particular change while the analysis proposed by the committee is aimed at identifying why project costs have increased and what if anything can be done to control future increases on the specific project.

Pages F-5 and F-6: Recommendation 4 (Contractor Performance Evaluation)

The committee's proposal of a joint database of contractor performance information does not mean a single computerized system linking the two agencies must be established. Rather, DPW and DOT should regularly compile and share the results of their contractor evaluations.

The committee's recommendation is that past performance be the primary factor, not just one of the factors, in selecting firms for non-competitively awarded state construction work.

Page F-6: Recommendation 5 (Retainage)

The committee's recommendation is to amend current statutes to permit the state to retain *up to* 10 percent of any payment to a contractor for a state construction project. To prevent a financial hardship, DOT could require a retainage amount of less than 10 percent and, as is current practice, can always release retained payments before the completion of a project upon a contractor's request.

Page F-7: Recommendation 7 (District Office Operations)

The committee recommendation is intended to build on DOT mechanisms for reviewing and improving district office operations in place at the time of the study. In accordance with the committee proposal, it appears monitoring in the future will focus on measuring performance and promoting successful contract management practices throughout the districts.