

# **Managing Change in State Departments of Transportation**

## **Scan 2 of 8: Innovations in Private Involvement in Project Delivery**

**Prepared for:**

**National Cooperative Highway Research Program  
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### **DISCLAIMER**

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**This report has not been edited by TRB.**

## **FOREWORD**

### **Change Management in State DOTs**

State departments of transportation are operating in an environment of unprecedented change. Evolving demands for transportation services, new technologies, workforce composition, stakeholders' concerns, and a constantly changing political environment create continuing demands for institutional change. To address these challenges, many state DOTs are undertaking a range of initiatives such as strategic planning, organizational restructuring, performance measurement, process engineering, and outsourcing.

Both anecdote and survey suggest that change management is now the major preoccupation of senior management. However, the rate of change is very uneven and not well-understood. Indeed, there appears to be more *innovation* than *imitation* -- since the creative approaches being introduced are not documented or widely discussed. Little "literature" on state DOT change management has been developed -- either case studies or "how to" material.

### **AASHTO's Strategic Interest**

A 1998 AASHTO report on "The Changing State DOT" identified drivers of change and approaches being taken by state DOTs in change management. AASHTO's Year 2000 Strategic Plan activities then introduced an element concerned with facilitating institutional change. Meanwhile, a newly reorganized TRB Committee on Strategic Management, through calls for papers and annual meeting sessions, focused on studying the range of changes occurring in transportation organizations. This led to the formation of a committee to plan a special workshop on strategic management under the joint sponsorship of the Transportation Research Board Committee on Strategic Management, AASHTO Standing Committee on Quality, and the Federal Highway Administration (FHWA).

### **The Strategic Management Workshop**

The two-day workshop (June 25-27, 2000) in Minneapolis was organized to facilitate peer-to-peer discussions among the CEOs and senior staff of the state DOTs about their experiences in managing internal and external change. This workshop focused on sharing recent experiences with managing internal and external change and lessons learned. Twenty state DOT CEOs participated in the workshop, and 35 state DOTs were represented by CEOs or senior staff. Conference dialogue dealt with three principal management challenges:

1. Strategic planning-related initiatives
2. Workforce and reorganization-related initiatives
3. Process and program delivery-related initiatives

The discussions identified a wide range of specific issues within each area that attendees felt deserve organized review via case studies, assessment of the state of the practice, and identification of promising concepts, approaches, and tools. Workshop participants used the results of these discussions to identify research that would help state DOTs lead and manage their changing organizations. Twenty-two research problem statements were crafted around the three subject areas.

TRB, at the urging of AASHTO and participating CEOs, immediately set up an NCHRP panel, chaired by Mary Peters of Arizona DOT, to develop a multiyear NCHRP research program under the 20-24 program established for special AASHTO research related to DOT administration. The panel combined and prioritized problem statements into eight strategic management issues for priority research. In view

of the lack of written material on these subjects, the panel decided to start with broad "scans" of the state of the practice in each area to provide guidance for a substantive multiyear research program. Each scan would summarize the challenges, document examples of current innovations, and recommend the appropriate initial components of a research program. The eight-month scan program -- including presentations at AASHTO Board meeting roundtables -- represented a highly unusual rapid-response approach to the priority placed on these issues by AASHTO and TRB.

### **Cross-Cutting Findings from the Initial Eight Scans**

The eight scans produced considerable evidence of the number and breadth of change management initiatives within state DOTs. In general, these initiatives are concerned with the agencies as institutions, their mission and leadership, organization and workforce, process, and resources. The principal, common forces of change include:

1. Deliberate reorientation of strategic objectives in response to program limitations (Scan 3, operations), new technology (Scan 6, information technology), or funding (Scan 8, innovative finance)
2. Evolution of new forms of cooperation for improved service delivery with other public agencies (Scan 7, partnerships) and the private sector (Scan 2, outsourcing)
3. Workforce strategies (Scan 5) in response to downsizing, retirements, competition, and the need for new capabilities
4. The need to institutionalize and measure change management (Scan 1, strategic leadership) and improve agency image in the overall constituent context (Scan 4, positioning)

Overall, state DOTs today appear to be evolving away from single-purpose entities with standard approaches to producing a limited number of well-understood products and services. Instead, they are moving toward more flexible organizations designed to respond to constantly changing missions with ever-increasing efficiency through a shifting coalition of partners and stakeholders. Managers of these changes can clearly benefit from access to collective experience, including a better sense of the state of the practice and specific resources based on the more promising approaches. The scans identify some of the most valuable experience and provide important pointers to key issues for further dialogue and research.

### **Individual Scan Highlights**

Scan 1 -- Innovations in Strategic Leadership and Measurement for State DOTs: Strategic planning itself is increasingly widespread in state DOTs. However, many CEOs find that the process often breaks down in the implementation stage -- creating buy-in and "institutionalization" of key change vectors. Yet some promising solutions are being found, including widespread participation of a variety of stakeholders in the process, a customer focus in terms of strategy and priorities, top management commitment to implementing the strategic agenda, ongoing communication to promote it, and "omni-directional alignment" among goals, performance measures, and budgets. Further research in each of these areas is needed to strengthen and integrate strategic management practices. *(Scan by T.H. Poister and D.M. Van Slyke of Georgia State University)*

Scan 2 -- Innovations in Private Involvement in Project Delivery: Outsourcing -- commonly employed for construction and design services to cope with lumpy demands or staff downsizing -- is spreading to other functions within the project and service delivery functions. It is increasingly important to understand the relative costs and quality of work conducted in-house versus by external private firms. Current evidence is not conclusive, as cost comparisons may not have been systematic. More research and more collaborative efforts are required by transportation organizations to identify best practices and possible standard procedures. *(Scan by Dr. D. Hancher, P.E. and R. Werkmeister, P.E., University of Kentucky)* **This scan is the topic of this file.**

Scan 3 -- Innovations in Institutionalization of Operations: Systems operations and management is already considered a mission priority by many state DOTs. However, the several types of operations-related activities -- ranging from ITS to maintenance of traffic -- are stovepiped and decentralized in most state DOTs. In most cases, there appears to be no common department-wide policy framework around which to organize for efficient integration of services and sustainable funding. Some member departments are establishing performance measures by conducting customer surveys, but implementation for program management is still in the very early stages. Further case study research into promising approaches is needed to connect customer interests and performance measures to integrated operations activities. *(Scan by Philip J. Tarnoff)*

Scan 4 -- Innovations in DOT Communications, Image, and Positioning: The scan focused on states known to be addressing issues of communications, image, and positioning. Those that were most advanced focused on improving both internal communications with staff and external communications with the public, elected officials, and the media. Some innovative states are assessing their image and identifying ways in which to clarify and improve it with the public, recognizing that image enhancement and improved constituent communications may lead to an improved position for the agency, to new resources, and to a more supportive audience for the agency's work. Increasingly, states report that proactive efforts to better communicate and to position the agency positively with decision makers have led to increased public support and legislative funding for the DOTs. Additional research in communications, positioning, and marketing to various constituencies was felt to be needed. *(Scan by K. Stein and R. Sloane of Howard/Stein-Hudson Associates)*

Scan 5 -- Innovations in Work Force Strategies: State departments of transportation face severe challenges in recruiting and maintaining their workforces. Innovative approaches are being taken to recruitment of core competencies such as IT and senior civil engineering. Retention and succession approaches were also investigated, including mentoring and reverse mentoring. However, more case study and research are needed in defining, recruiting, and retaining the necessary workforce. *(Scan by C. Gilliland of the Texas Transportation Institute)*

Scan 6 -- Innovations in Organization Development as a Result of Information Technology: The rapidly changing environment of IT is challenging DOTs to deal with emerging opportunities and problems. This scan identified the range and types of new opportunities related to IT itself as well as related organizational development implications. Key issues include organization of the IT function, the cost-effective degree of outsourcing, and a range of management issues such as handling information overload, funding, procurement, and training. These areas suggest future research directions. *(Scan by C. Cluett and K. Baker of Battelle Seattle Research Center)*

Scan 7 -- Innovations in Public-Public Partnering and Relationship Building in State DOTs: A wide variety of partnerships among state DOTs; other state, local, and federal agencies; and public stakeholders are improving project and program delivery and increasing efficiency across agency or jurisdictional lines. Promising areas for partnering include achieving environmental streamlining, rationalizing state-local maintenance responsibilities, and joint community problem solving. Examination of successful partnerships and relationships identifies common elements of success and provides a starting point for the development of new partnering tools more applicable to longer-term, peer-to-peer relationships among DOTs; other state, local, and federal agencies; and non-governmental stakeholders. *(Scan by Mark Ford of HDR-Portland)*

Scan 8 -- Innovations in Project Financing: There is now a very rich menu of innovative revenue sources and finance techniques. New revenues are available from toll facilities, HOT lanes, value or congestion pricing, special assessments and fees, shared resource projects, and/or joint development. These revenues can be combined to leverage scarce federal aid through both debt and equity approaches, capitalizing on the new flexibility within the federal aid and some state programs. Such new approaches to project financing can also benefit from innovative project development approaches. Research is needed on promising approaches to mainstream these approaches within transportation agencies. *(Scan by A. Reno and L. Hussey of Cambridge Systematics, Inc.)*

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## **TABLE OF CONTENTS**

### **LIST OF FIGURES**

None

### **LIST OF TABLES**

Table 1	DOTs Contacted for Information on Outsourcing Primary DOT Functions
Table 2	The DOTs Responding by Outsourcing Topic
Table 3	Summary of Responses to Federal Lands Highway Contracting Out Study
Table 4	Summary of Survey Responses
Table 5	Sample DOT In-House versus Consultant Engineering Design Costs
Table 6	Possible Evaluation Criteria for Outsourcing Evaluations (NCDOT)

### **ACKNOWLEDGMENTS**

### **EXECUTIVE SUMMARY**

### **INTRODUCTION**

### **FINDINGS**

### **INTERPRETATIONS AND CONCLUSIONS**

### **SUGGESTED RESEARCH**

### **APPENDICES**

- A. Study Scope and Survey Form for DOT Input
- B. References for Report
- C. Completed Survey Forms

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## EXECUTIVE SUMMARY

There are many project-related functions carried out by a transportation department and all relate to its major responsibility for transportation project delivery. The primary function is that of senior management, which is often called **Program Management**. The more traditional functions are: **Planning, Design, Pre-construction, Construction, Operations and Maintenance**. In addition, the support functions of **Research & Development**, and **Administration** (public relations, human resources, finance, continuous quality improvement, etc.) are also important functions that require manpower, resources, and senior management attention in project delivery. The goal of the DOT is to optimize its efforts to get the best output for its general public budget that is possible with respect to its available resources.

For years DOTs have conducted most of their functions with their own resources. There has always been some outsourcing of work, especially for construction services and to a lesser extent, design services. The increasing demands on DOTs today, and changing resources, are causing investigation of alternative methods of accomplishing their essential functions. Some of the key drivers influencing DOTs demand for outsourcing are shown below, with the problem of downsizing of workforce being most prevalent:

1. Growth of the U.S. population and the resultant increase in travel demands.
2. Increased magnitude of the construction/reconstruction projects required.
3. User demand for better and quicker service, and minimal delays.
4. Reduction in workforce in DOTs and/or loss of in-house specialty capabilities.
5. Ability to handle peaks in demand for services.
6. Legislators like outsourcing.

This changing environment has necessitated that a DOT seek to develop feasible alternatives to its current project delivery processes. One option is to improve the efficiency of, or re-engineer, its current performance of key functions. Also, if adequate resources are available from outside sources to achieve successful results at a feasible price, more effort can be given to the overall management of the process, instead of carrying out the detailed functions with its own forces.

Each DOT must decide how much it can utilize outsourcing in its project delivery process to attain optimal return on investment and still provide excellent service to the general public. Regardless of the extent of outsourcing of a DOT's project delivery functions, it would still maintain the executive role of Program Management and be responsible for final project delivery and performance.

Most of the outsourcing being done by DOTs is for actual construction of projects (almost 100%) and for design-related services (ranging from 15% to 90%). Although many other services are being outsourced, such as planning, surveying, construction inspection, right of way purchasing, maintenance, and even major program management, the percentages of the total work being done externally are still very small. Many are not comfortable with the outsourcing of routine maintenance activities. However, most DOTs are faced with the problem of deciding what to do about more outsourcing in the future to meet program demands.

Several attempts have been made to evaluate the results obtained by outsourcing of different DOT functions with varying results. Most feel that the quality of the work performed by external firms was adequate and the time to complete the work was satisfactory; there is also a feeling that the general public was satisfied with the final projects. However, most feel that the cost of outsourcing work is more expensive than doing it in-house. A major concern raised here was the accuracy of the cost comparisons. Private firms have excellent records for both direct and overhead costs of their work, while it is uncertain if DOTs have properly included all their costs, such as costs for buildings and utilities, in such comparisons. Much more study is needed on the performance results and cost comparisons of in-house versus outsourcing of work. The key benefits and concerns associated with outsourcing of work are:

#### Potential Benefits of Outsourcing:

1. DOTs can provide projects for general public within growing resource constraints.
2. Costs are incurred only when services used.
3. A smaller workforce would be required with peak demands handled by outsourcing.
4. Potential for cost savings to DOT.
5. Access to special private sector skills on as-needed basis.

#### Potential Concerns of Outsourcing:

1. DOTs may have less control on the quality, time and cost of its primary functions.
2. DOTs may lose the skills and expertise to conduct essential functions in-house, or to effectively check, evaluate or approve the work of external sources.
3. Conflict with DOT workforce and possible legal restrictions.
4. DOTs would need new employees with different expertise and management skills.
5. DOTs would have less capacity to serve a traditional role for hiring entry-level engineers to gain competent experience in the road building industry.

Most of the research on the utilization of and benefits of outsourcing of primary DOT functions of project delivery has been by surveys or internal study teams. The results expressed have often been based on personal judgment and insufficient data collection; in fact, some of the data desired for comparisons is very hard to obtain. It is evident that more organized research is needed to address this major issue confronting transportation agencies. An effective evaluation of outsourcing versus in-house performed functions is the establishment and measurement of valid evaluation criteria, such as that developed by a North Carolina DOT study team:

- |                                      |                                     |
|--------------------------------------|-------------------------------------|
| ● Cost of product or service         | ● Quality of product or service     |
| ● Time to produce product or service | ● Effect on in-house personnel      |
| ● Availability of qualified firms    | ● Impact on DOT program delivery    |
| ● Cost to administer outsourcing     | ● Customer satisfaction with output |

Outsourcing offers many potential benefits to DOTs in delivering their future projects; however, more research and more collaborative efforts are required by transportation organizations to identify best practices and possible standard procedures.

## INTRODUCTION

### Study Scope

The focus of the study was to perform a scan of state DOT activities to identify and classify a range of approaches relevant to innovations in private involvement in project delivery. Key was the identification of innovations, noteworthy characteristics, context issues, pros and cons, and challenges in implementing each type of approach. Lessons learned to date of interest to state DOT CEOs was to be included. Example cases of practice meriting follow-up were to be noted. Also, the focus of a long-term research program, including key questions, the stakes at issue, likely sources of information, and suggested research approach and scope was to be developed.

### Study Approach

A limited scan was conducted with suggested DOTs who were known to be trying innovative approaches to project delivery. Considerable emphasis has been given innovative contracting, thus the study focused on outsourcing of key project functions. Eleven states were identified and contacted for input of their activities, first by telephone and then by survey document. The DOTs contacted and the project delivery function of interest is noted in Table 1. The survey form and study description sent to participants is noted in Appendix A. Information was requested on 37 different initiatives; responses were received on 26 of the initiatives as noted in Table 2.

**Table 1**  
**DOTs Contacted for Information on Outsourcing Primary DOT Functions**  
**(from TRB's "CEO Workshop on Managing Change," Minneapolis, June 2000)**

Primary DOT Project Delivery Function	Internal Process Improvement	Out-Sourcing of Project Functions	Privatizing	Cooperative Relations
Program Management		SC, MO		
Planning		TX, FL, MT		
Design		TX, FL, UT, KS, MT		
Pre-Construction	FL	TX, MO, UT, MT		
Construction Engr Services		FL, UT		FL
Operations		TX, MO, FL, NY, WV		
Maintenance		TX, MO, KS		
Administration	FL, MN, PA			
Other Functions		AL, CA, CT, DC		

A review of available literature on outsourcing was conducted; the primary references used in the report are listed in Appendix B. Input was also received from the FHWA, the North Carolina DOT and the Kentucky Transportation Cabinet. Major input also came from TRB reports and papers, especially the report on the “CEO Workshop on Managing Change in State Departments of Transportation” held in Minneapolis in June, 2000.

## **FINDINGS**

### Extent of Outsourcing in DOTs

All DOTs are involved in outsourcing of project delivery functions; however, comprehensive data on the exact amount done and the results achieved is not readily available for review. Most of the outsourcing being done by DOTs is for actual construction of projects (almost 100%) and for design-related services (ranging from 15% to 90%). Although many other services are being outsourced, such as planning, surveying, construction inspection, right of way purchasing, maintenance, and even major program management, the percentages of the total work being done externally appears to be very small.

A report on a study, “Contracting Out,” by the Federal Lands Highway group of the Federal Highway Administration was published in September 2000. It included summaries of information on outsourcing from several DOTs. A summary of this data is presented in Table 3.

### Catalysts for DOT Outsourcing

The increasing demands on DOTs today, and changing resources, are causing investigation of alternative methods of accomplishing their essential functions. Some of the key drivers influencing DOTs demand for outsourcing are shown below, with the problem of downsizing of workforce being most prevalent:

- Growth of the U.S. population and the resultant increase in travel demands.
- Increased magnitude of the construction/reconstruction projects required.
- User demand for better and quicker service, and minimal delays.
- Reduction in workforce in DOTs and/or loss of in-house specialty capabilities.
- Ability to handle peaks in demand for services.
- Legislators like outsourcing.

This changing environment has necessitated that a DOT seek to develop feasible alternatives to its current project delivery processes. One option is to improve the efficiency of, or re-engineer, its current performance of key functions. Also, if adequate resources are available from outside sources to achieve successful results at a feasible price, more effort can be given to the overall management of the process, instead of carrying out the detailed functions with its own forces.

**Table 2**  
**The DOTs Responding by Outsourcing Topic**

	Date	State	Outsource Topic
1	2-1-01	SC	Program Management
2	2-15-01	TX	Bridge Inspections
3	2-15-01	TX	Bridge Design
4	2-21-01	TX	Cultural Recourses Management
5	2-21-01	TX	Environmental Assessment
6	2-21-01	TX	Hazardous Materials Management
7	2-20-01	TX	Total Maintenance Contract
8	2-15-01	TX	Vehicle Axle Count
9	2-15-01	TX	Visual Vehicle Classification
10	2-15-01	TX	Field Data Collection
11	2-8-01	TX	Development of Route Location & Environmental Studies
12	2-23-01	FL	Construction Inspection
13	2-27-01	FL	Design
14	2-26-01	FL	General Planning
15	3-9-01	KS	Design
16	3-22-01	NY	ITS Command Center
17	2-9-01	MO	Guardrail Maintenance
18	2-9-01	MO	Preconstruction Surveying
19	2-9-01	MO	Preconstruction ROW Appraisal
20	2-14-01	UT	Design/Build Project Team

	Date	State	Privatized Outsource Topic
1	2-28-01	FL	Toll Collection Services
2	2-9-01	MO	Transportation Corporations

	Date	State	Cooperative Relationship Topic
1	2-21-01	FL	Pole Safety
2	2-21-01	FL	Advanced Utility Relocation
3	2-23-01	FL	Joint Participation Agreements

	Date	State	Improved Internal Process Topic
1	2-21-01	FL	Internet Usage

## Examples of Effective Outsourcing by DOTs

There are many cases of outsourcing in DOTs nationally; however, for this study only those identified in the brief survey will be mentioned. Table 4 shows a summary of the 28 cases reported on by seven agencies responding. All were believed working, but the net benefit was often not quantified. Even when working well, several of the agencies believed it may be more costly and/or they could do the function better with their own forces. Most will continue these relationships and continue to seek other opportunities. Comments on some of the reported outsourcing initiatives are listed below.

### **SC ~ Construction & Resource Management**

Faced with needing to deliver 200 highway construction projects in 7 years, which normally would take 27 years, SCDOT selected two firms to help with 93 of the projects. Acting as assistants to department staff, the CRM's manage projects from pre-construction through final construction inspection. After the first year, 28 projects are in preliminary design, 32 are in ROW stage, 23 are in construction plan stage, and 10 are under construction. Progress on the CRM projects has been good. The costs are not higher since the department does not have to hire additional personnel, which would be a problem with the current hiring freeze. The biggest problem has been climbing the 'learning curve' on this new relationship. The five year contracts may soon be extended for two additional years.

### **MO ~ Transportation Corporations**

Missouri law has been enacted to authorize not-for-profit corporations to fund, promote, plan, design, construct, maintain and operate one or more construction projects. With this option, worthy transportation projects may be built much sooner than the traditionally financed projects. Results have been very good and more utilization is expected for appropriate projects.

### **TX ~ Contracted Traffic Data Collection**

TXDOT has outsourced all of its data collection of vehicle classification counts (VVC) and axle counts (ACR). Service contracts were awarded on competitive bid basis. TXDOT has not done formal cost studies on this work, but have significantly reduced in-house staff who used to do the collection. This was very beneficial since hiring cuts were imposed. Inspections have shown the work of the consultants to be of high quality and quickly achieved. The consultants are very responsive to doing more of this work.

### **FL ~ Joint Participation Agreements with Utilities**

FLDOT has benefited from legislation passed that allows the department to include utilities relocation in their highway construction contracts. This greatly enhances project coordination of utility problems and reduces project delays. Utilities feel that it costs more up front and they don't have control over the contractor, but FLDOT has found that it saves on the total project cost. FLDOT continues to evaluate and adjust the process, but considers this a benefit to the public with an average of 63% cost savings with 57% less claims. 88% of utilities who have participated said they would continue in such ventures.

### **FL ~ Advanced Utility Relocations**

FLDOT has also benefited from legislation that allows the department to work closer with utilities on advanced relocation of utilities and the utility is permitted to charge customer for relocation expenses. This greatly reduces delays since utility relocation are known prior to construction. The cost savings to projects ranges from \$5 to 10 million dollars.

**Table 3**  
**Summary of Responses to Federal Lands Highway Contracting Out Study**

State	Outsourced Topic	Percent Contracted	Comment
AL	Design Construction Inspection	Most Most	
AK	Construction Contract Admin. Design	10% 31%	
CO	Design & Construction Oversight	51%	
CT	Design Construction Inspection	72% 61%	
DE	Design Construction Inspection	60% 60%	
GA	Design	25%	
ID	Design Construction Management	67% 10%	
IA	Construction Inspection Roadway Design Bridge Design Planning (Location & Environmental)	25% 62% 41% 18%	ROW 0%
KS	Design	70%	In-House Maintenance
KY	Professional Services Construction Services	80% 5%	Design, Environmental Studies, Planning, Underwater Bridge Inspections, Photogrammetry
ME	Highway Design Bridge Design Construction Engineering	30% 20% 13%	
MD	Plats, Surveys, Mapping Design	90, 33, 100% 60%	
MO	Highway Design Bridge Design	82% 16%	Construction Inspection 0%
NE	Design	35%	Construction Engineering 0%
NV	Design	99+%	
NH	Design	33%	
NJ	Design Construction	95% 30%	
NM	Design Services	40%	Pavement marking 100%, Signing 100%, Logo 100%, CM Services
ND	Construction Engineering Services Design	20% 50%	
OK	Design Construction Inspection Bridge Inspections	70% 10% 75%	
OR			
PR	Engineering Services	90%	
TN	Design Construction Inspection ROW Appraisals Environmental Studies	50% 100% 60% 60%	
TX	Preliminary Engineering Services Design Construction Engineering	51% 2%	
UT	Design	45%	Construction Inspections
WA	Design & Construction Services	Most	EIS, Design & Construction Inspections
WV	Preliminary Engineering Services	75%	Environmental Documents, Plans, Construction & Bridge Inspections, Materials Inspection & ROW

**Table 4 Summary of Survey Responses**

No	State	Category	Title	Implementation	Working?	Future Plans
1	FL	Pre-Construction	Utility Pole Safety	Full	Estimated 30% Savings	Continue to use.
2	FL	Construction	Construction Inspection	72%	10-20% more cost, but working	Increase to 80%.
3	FL	Design	Consultant Design	76%	Yes, but start-up problems with culture & communications	Seeking other areas to outsource.
4	FL	Pre-Construction	Advanced Internet Use	Full	Yes	Electronic Permitting.
5	FL	Pre-Construction	Joint Participation Agreement	Full, 5th yr.	63% cost savings, 57% less claims	Continue to use, monitor, improve process.
6	FL	Planning	General Planning Consultant	40% Central Office, 60% Districts	Yes, with additional benefits.	Increase Implementation Level.
7	FL	Pre-Construction	Advance Utility Relocation	Full, 1st yr.	Yes, \$45-10 Million cost savings & 5-7 month time savings.	Continue to use, monitor, improve process.
8	FL	Operations	Toll Collections	84%, 6th yr.	Yes, but took 3 yrs. to breakeven.	Expand current program.
9	KS	Design	Roadway Design	60%	Yes, but have problems.	Continue to use.
10	KS	Design	IT Design, Operations & Maintenance	Since '94	Yes, very well.	Continue to use.
11	MO	Maintenance	'On Call' Guardrail Maintenance	10 Districts (St. L., KC Springfield)	Yes	Expand to rural areas.
12	MO	Program Management	Transportation Corporation	Full	Yes	Continue to use.
13	MO	Pre-Construction	ROW Appraisal	Full, 35th yr.	Yes, same as MODOT cost.	Continue to use.
14	MO	Pre-Construction	Surveying	As part of Engineering Contracts	Yes	Continue to use.
15	NY	Operations	ITS Command Center	since '87	Yes, very well.	Continue to use for at least 5-10 yrs.
16	SC	Program Management	Construction & Resources Managers	Full, 1st yr.	Yes, 28 projects in preliminary design, 32 in ROW, 23 in construction planning, & 10 under construction.	Continue to use for 5 yrs.
17	TX	Planning	Field Data Collection	since mid 70's	Yes	Continue to use.
18	TX	Planning	Vehicle Data Collection	Full	Yes, with TXDOT supervision.	Further future needs anticipated.
19	TX	Design	Bridge Design	9 contracts for 2 yrs.	Yes, but more costly & quality varies.	Continue to use.
20	TX	Maintenance	Routine Bridge Inspection	85%, \$15 Million	Yes, but requires TXDOT Bridge Division supervision.	Continue to use.
21	TX	Maintenance	Total Maintenance Contract	(2) 5-yr contracts	Yes, but not as good as TXDOT.	Use performance based contracts in other areas.
22	TX	Planning	Cultural Resource Manager	Full	Yes, but more costly.	Continue to use & expand.
23	TX	Planning	Environmental Assessment	Full	Yes, but effectiveness is not measured.	Continue to use.
24	TX	Planning	General Engineering Consultant	6 mo Contract (\$2.1 Million)	Yes, with statewide coordination of I-69.	Not determined.
25	TX	Planning	Hazardous Material Management	2-yr Professional Services Contract	Yes	Continue to use & expand.
26	UT	Design	I-15 Design-Build Project	Full	Yes	Use on other projects with lessons learned.
27	UT	Pre-Construction	RFP Consultant	Full	Yes, TDOT did not have resources.	May use again with the right project.
28	UT	Construction	Contract QA	90%, (less materials)	Yes, but no evaluation.	Continue to use.



## Benefits and Concerns of Outsourcing

There are several potential benefits of outsourcing of work to external sources; there are also some concerns. Some of the major benefits and concerns with outsourcing are noted below:

### Benefits of Outsourcing:

- DOTs can provide projects for general public within growing resource constraints.
- Costs are incurred only when services used.
- A smaller workforce would be required with peak demands handled by outsourcing.
- Potential for cost savings to DOT.
- Access to special private sector skills on as-needed basis.

### Concerns of Outsourcing:

- DOTs may have less control on the quality, time and cost of its primary functions.
- DOTs may lose the skills and expertise to conduct essential functions in-house, or to effectively check, evaluate or approve the work of external sources.
- Conflict with DOT workforce and possible legal restrictions.
- DOTs would need new employees with different expertise and management skills.
- DOTs would have less capacity to serve a traditional role for hiring entry-level engineers to gain competent experience in the road building industry.

## Notes from AASHTO Roundtable in Wichita on May 20, 2001

A roundtable session on “Innovations in Private Involvement in Project Delivery” was held on May 20, 2001 at the AASHTO mid-year meeting in Wichita, KS. Donn Hancher made a brief presentation on the findings of the Task 2 study of the NCHRP 20-24(14) project and concentrated on “outsourcing.” Several CEOs from DOTs participated with the session moderated by Tom Barry of the Florida DOT. Listed below are highlights of the roundtable discussions:

- WIS: For outsourcing to be successful, the DOT must go through an attitude adjustment and learn to trust outsource partner!! A lot of contractors have very little experience with designers, except past disagreements. More interaction is needed to facilitate design-build partnerships and understanding.
- SC: Construction Resource Managers - Partnering is critical. Were able to triple the amount of work in annual program by hiring CRMs. Successful program to date. DOT staff were afraid at first that the CRMs would take away their work. Must maintain a core DOT staff for normal workload and all other work can be outsourced.

- UT: Opened I-15 ahead of schedule and will be below budget; will continue to do more DB work for all sizes of projects. Many advantages gained from the expertise of consultants and contractors on project. Need to lighten up and not specify work methods, personnel, materials, etc. Developed a Matrix of Risk for I-15
- FL: Authority to do DB for “enhancement projects,” many small projects. FL contractors have come out in support of DB for transportation projects.
- CO: Doing a lot of DB, also outsourcing design and finance, no maintenance. Partnering is very important for successful outsourcing. DB selection is based on “best value” not cost only; followed the lead by Utah. Have a \$1.7 billion project, larger than Utah. Utilities and Environmental studies done prior to selection of DB firm.
- MS: Very good partnering with city of Natchez and the Natchez Trace Commission for the Natchez Parkway project. City was able to buy R/W much quicker and cheaper than the DOT could have. Bonds were also secured by the city to facilitate project financing.

#### “DOT Clearinghouse for Outsourcing”

It would be very beneficial if a resource existed where DOTs could seek information on outsourcing experiences of other DOTs. A good search engine is needed to find hard data and documents, plus persons to contact for details. Examples: design-build, snow removal, financing, asset management, maintenance, RFPs, contracts, project management training, etc. (South Carolina now puts contracts on web)

When outsourcing, don’t ask consultants/contractors to “do it your way!” Let them utilize their expertise, innovations and new concepts for your projects.

VA, OK, FL, IN: Experience with maintenance outsourcing, check for results.

IN: Try to keep at least 5% of design work in-house to maintain expertise. Getting ready to hire 2 consultants to check the work of other consultants for quality. Oversight demand: a real fear of doing this with outside consultants, but can’t keep up with internal forces.

UT: DOTs have done a poor job of “managing consultants.” When you do check work, need to look for real problems and not just petty nit-picking. Engineers need to be more trained in project management during college and after gaining work experience for 4-5 years. Essential to have good project management skills in-house!!

#### “Research Needed on Project Management Training for DOTs “

FL: Does training programs on project management for consultants and DOT personnel.

CO: Need to concentrate on “outcomes based” work scopes for external consultants and not stressing “do it our way!”

SC: Problem: consultants are still responsible for their work even if the DOT reviews their work and misses something. The DOT is not liable for the work contracted for.

RI: More oversight during design development (**Constructibility Reviews**) are a much more productive use of DOT efforts than final plan checking!! Rhode Island does CR at 30% and 90% design. They call it Study and Development and have trained their own employees to do it.

FL: Hires ex-contractors to do constructibility reviews. Need to have consultants responsible for a total project package of plans and specs, not just plans.

**“Constructibility Reviews”** All agreed that this is very important and needed; however, very few DOTs are really doing formal CR on their projects.

CO, RI: Project Scoping is a very tough process when the FHWA requires you to have your funding requirements identified before you do environmental impact studies and any design.

## **INTERPRETATIONS AND CONCLUSIONS**

### Major Catalyst for Outsourcing of DOT Project Delivery Functions

There are several factors that are influencing DOTs to seek more external assistance to conduct their normal project delivery functions. Certainly, increased demand for construction and rehabilitation to meet increasing travel demands is important, as is the demand for quicker delivery of projects to relieve congestion or to minimize road user costs. However, the key catalyst appears to be the downsizing of DOT workforces prevalent throughout the country. Despite the increased volume of projects, most DOTs are experiencing reductions in force and loss of in-house expertise. This has necessitated seeking more assistance from external firms, the question is what to outsource and how much. A major concern is to maintain sufficient expertise and numbers of personnel to monitor the work of the external firms, in addition to quality, cost and schedule.

### General Results Achieved by Outsourcing

Most of the DOTs feel that the work done by external sources is satisfactory as to quality and schedule. They could not meet current demands for services in many instances without external assistance. They also feel that it costs more to outsource most functions than doing it in-house; however, there is some concern about whether current cost comparisons are accurate.

### Good Candidates for Outsourcing

All of the project delivery functions in a DOT are candidates for outsourcing to one extent or another. Design and construction are the most frequently outsourced functions. Some DOTs are outsourcing as much as 90% of their design; however, there is good concern that DOTs maintain

some design expertise in-house. Planning, right of way purchasing, surveying, construction inspection and traffic engineering are also good candidates for more outsourcing. These functions are being outsourced by several DOTs, but the total volume is still relatively small.

Major maintenance projects have been outsourced for years and several DOTs have outsourced routine maintenance activities. However, many are not comfortable with the outsourcing of routine maintenance due to the political sensitivity involved with poor performance. Some DOTs have outsourced major program management with reasonable success; however, most DOTs are not willing to give up this role.

### More Research is Needed

Although a considerable amount of outsourcing is ongoing, the results achieved are mostly anecdotal in nature. More data is needed on outsourcing efforts, plus processes for evaluating the actual results achieved. Best practices by DOTs need to be identified.

## **SUGGESTED RESEARCH**

Several DOTs are investigating outsourcing and some studies have been done in recent years; however, a comprehensive study on outsourcing of project delivery functions is needed. The following functions seem most feasible to evaluate:

1. Outsourcing Program Management
2. Outsourcing Planning and Design
3. Outsourcing Pre-Construction Functions (Surveying, RFPs, Bidding, ROW)
4. Outsourcing Surveying and Contractor Quality Control/Quality Assurance
5. Outsourcing Traffic Engineering
6. Outsourcing Maintenance

It seems most logical to do one comprehensive study on outsourcing than to do individual studies of each project delivery function. It would be highly repetitive and wasteful to do these separately and could result in several different reports with conflicting approaches and recommendations. Therefore, one major research project is proposed in the included Research Problem Statement, "Outsourcing of DOT Project Delivery Functions."

There are two major concerns to address in doing this research. One is the valid estimate of the cost of doing project delivery functions in-house, especially the calculation of DOT overhead charges. This problem is covered very well in the 1999 TRB paper, "In-House versus Consultant Design Costs in State DOTs" by Wilmot, Deis, Schneider and Coates. The concern raised here was the accuracy of the cost comparisons. Private firms have excellent records for both direct and overhead costs of their work, while it is uncertain if DOTs have properly included all their costs, especially overhead costs, in such comparisons. The Design Cost Ratio calculated as the average for several projects is shown in Table 5. As calculated it is cheaper to do design in-house; however, it is uncertain if the cost comparisons are valid.

**Table 5**  
**Sample DOT In-House versus Consultant Engineering Design Costs**  
(Louisiana DOT 1997)

**Design Cost Ratio (DCR)** = (In-House Design Cost)/(Consultant Design Cost)

Road Projects	Bridge Projects
0.88 or less	0.96 or less

**Costs Considered:**

- Contract Preparation & Supervision Costs
- Overhead Costs

The other concern to address in the proposed research is the development of comprehensive evaluation criteria for assessing the effectiveness of outsourcing activities as compared to performing the work in-house. It is not always possible to do all comparisons quantitatively, and other measures must be developed. If not done carefully and consistently, then the evaluation will be flawed and may be misleading. This was very effectively addressed in an outsourcing study done by the North Carolina DOT in 1997. The evaluation criteria they identified and used for their study are shown in Table 6.

**Table 6**  
**Possible Evaluation Criteria for Outsourcing Evaluations**  
(Proposed by North Carolina DOT Study Team, 1997)

- Cost of product or service
- Quality of product or service
- Time required to produce product or service
- Effect on in-house personnel (expertise/retention)
- Availability of qualified firms
- Effect on delivery of NCDOT program
- Cost of administering privatized work
- Customer satisfaction/services

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**  
TOPIC 2: Innovations in Private Involvement in Project Delivery

**RESEARCH PROBLEM STATEMENT**

**Proposed Title of Study:**     **“Outsourcing of DOT Project Delivery Functions”**

**Objectives of Study:**

1.     Review the current practices by DOTs for outsourcing primary project delivery functions.
2.     Evaluate the effectiveness, benefits, and concerns of the outsourcing of primary project delivery functions by DOTs.
3.     Develop guidelines for the outsourcing of project delivery functions by DOTs.

**Expected Benefits:**

1.     A better understanding of the potential benefits and concerns of the outsourcing of project delivery functions by DOTs.
2.     A process for evaluating the effectiveness of outsourcing project delivery functions.
3.     Guidelines for handling the outsourcing of project delivery functions by DOTs.

**Background:**

There are many functions carried out by a DOT and all relate to its major responsibility for transportation project delivery. The primary function is that of senior management, which is often called **Program Management**. The more traditional functions are: **Planning, Design, Pre-construction** (right of way, surveying, inspection), **Construction, Operations and Maintenance**. In addition, the support functions of **Research & Development**, and **Administration** (public relations, human resources, finance, continuous quality improvement, etc.) are also important functions that require manpower, resources, and senior management attention in project delivery. The goal of the DOT is to optimize its efforts to get the best output for its general public budget that is possible with respect to its available resources.

For years DOTs have conducted most of their functions with their own resources. There has always been some outsourcing of work, especially for construction services and to a lesser extent, design services. The increasing demands on DOTs today, and changing resources, are causing investigation of alternative methods of accomplishing their essential functions. Some of the key drivers influencing DOTs demand for outsourcing are shown below, with the problem of downsizing of workforce being most prevalent:

- Growth of the U.S. population and the resultant increase in travel demands.
- Increased magnitude of the construction/reconstruction projects required.
- User demand for better and quicker service, and minimal delays.
- Reduction in workforce in DOTs and/or loss of in-house specialty capabilities.
- Ability to handle peaks in demand for services

This changing environment has necessitated that a DOT seek to develop feasible alternatives to its current project delivery processes. A major option is to contract out more of its work to external parties, commonly called outsourcing. If adequate resources are available from outside sources to achieve successful results at a feasible price, more effort can be given to the overall management of the process, instead of carrying out the detailed functions with its own forces. The difficulty is deciding what and how much to outsource, and what to handle in-house.

All DOTs have been involved in some outsourcing of its project delivery functions, especially design and construction. Each DOT must decide how much it can utilize outsourcing in its project delivery process to attain optimal return on investment and still provide excellent service to the general public. Regardless of the extent of outsourcing of a DOT's project delivery functions, it would still maintain the executive role of Program Management and be responsible for final Project Delivery and Performance.

**Proposed Tasks:**

1. Survey of current practices by DOTs for outsourcing project delivery functions.
2. Develop a process for evaluating the effectiveness of outsourcing DOT functions.
3. Collect data on the effectiveness of outsourcing experiences in DOTs.
4. Identify the benefits and concerns of outsourcing of project delivery functions.
5. Develop guidelines for outsourcing of project delivery functions by DOTs.

**Estimated Cost:**      **\$350,000**      **Estimated Time to Complete:**      **2 Years**

**Comments or Suggestions:**

There are two major concerns with this study. One is the valid estimate of the cost of doing project delivery functions in-house, especially the calculation of DOT overhead charges. The other is the development of comprehensive evaluation criteria for assessing the effectiveness of outsourcing activities as compared to performing the work in-house.

**Submitted By:**      Dr. Donn E. Hancher, UK Civil Engineering Department

**Date:**      April 2001

## **APPENDICES**

- A. Study Overview Document and Survey Form for DOT Input
- B. Primary References for Report
- C. Sample of Completed Survey Forms



**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**  
**TOPIC 2: Innovations in Private Involvement in Project Delivery**

**APPENDIX A**

**STUDY OVERVIEW DOCUMENT**

**AND**

**SURVEY FORM**

**FOR**

**DOT INPUT ON OUTSOURCING**

## **Overview of NCHRP Project 20-24(14)**

### **Managing Change in State Departments of Transportation**

#### TOPIC 2: Innovations in Private Involvement in Project Delivery

#### **OPTIMAL FUNCTION DELIVERY IN DOTs**

There are many functions carried out by a DOT and all relate to its major responsibility for transportation project delivery. The primary function is that of senior management, which is often called **Program Management**. The more traditional functions are: **Planning, Design, Pre-construction, Construction, Operations and Maintenance**. In addition, the support functions of **Research & Development**, and **Administration** (public relations, human resources, finance, continuous quality improvement, etc.) are also important functions that require manpower, resources, and senior management attention in project delivery. The goal of the DOT is to optimize its efforts to get the best output for its general public budget that is possible with respect to its available resources.

#### **POSSIBLE CHANGES IN THE DOT PROJECT DELIVERY SYSTEM**

Considering the changing environments for DOTs, they may be better positioned to develop feasible alternatives to their current project delivery processes. One option is to improve the efficiency of its current performance of key functions. Also, as found with other industries, if adequate resources were available from outside sources to achieve successful results at a feasible price, more effort can be given to the overall management of the process, instead of carrying out the detailed functions with its own forces.

All DOTs have carried out Continuous Quality Improvement studies of some or all of its primary functions. All DOTs have also been involved in outsourcing of its project delivery functions, especially design and construction. DOTs may need to consider utilizing more outsourcing in its project delivery process to attain optimal return on investment and still provide excellent service to the general public.

One way to determine the effectiveness of a DOT's current project delivery processes is to ask the question, "**Can the needed *RESULTS* now be achieved, or is control of the *PROCESS* necessary to get the needed *RESULTS*?**" If the answer to the first part of this question is "no", then alternatives to the current process or function, such as outsourcing, need be considered. Regardless of the extent of outsourcing of a DOT's project delivery functions, it would still maintain the executive role of overall Program Management.

#### **DESCRIPTION OF THE ISSUES IN TOPIC 2**

The pressures of downsizing and the competition for resources, together with the need to access specialized technology services have led state departments of transportation (DOTs) to

experiment with new arrangements with private-sector entities to improve project delivery in terms of cost, efficiency, quality, and technology. Motives vary widely and include:

- Coping with staff shortages.
- Reducing fluctuation in department staff requirements.
- Reducing costs of service (inputs).
- Accessing special technical capabilities possessed by private entities.
- Accessing specialized management capabilities.
- Capitalizing on favorable cost structure of private entities, including asset agility.
- Improving project schedule and cost adherence.
- Transferring or sharing of project risk.
- Providing incentives for new or improved products or services.

## **FOCUS OF THE TOPIC 2 STUDY**

As directed in the NCHRP documents, the study will not cover all innovations in project delivery because there is literature on some already (e.g., contractor incentives and disincentives, turnkey procurements like design-build, guarantees/warranties, and toll roads/privatization are well documented). This study will focus on new and expanded roles for private-sector entities in conducting agency functions involved in the delivery of transportation projects.

The major tasks of the study are to assess the state of play regarding how much or what kind of innovations are being carried out, with some description of the key differences among approaches, and to identify key researchable issues such as the following:

- ◆ What is the overall level of use of each of these (and other) project delivery strategies?
- ◆ What are the types of contractual arrangements?
- ◆ What level of improved quality or efficiency has been experienced?
- ◆ What special demands have these approaches placed on agency staff and on core agency capabilities?
- ◆ What is the cost experience compared with agency costs?

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**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** \_\_\_\_\_

**Activity:**

**Agency:**

**Contact:**

**Description:**

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**Implementation Level:**

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**Measured Benefits:**

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**Implementation Barriers:**

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**Special Demands of Agency:**

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**Cost Impact:**

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**Future Plans:**

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**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**TOPIC 2: Innovations in Private Involvement in Project Delivery**

**APPENDIX B**

**PRIMARY REFERENCES FOR REPORT**

**“Strategic Management Research Needs for State Departments of Transportation,”** a report on the CEO Workshop on Managing Change in State Departments of Transportation, June 25-27, 2000 in Minneapolis, MN. Prepared by the TRB Committee on Strategic Management

**“Contracting Out: Bench Marking Study,”** Federal Lands Highway, Federal Highway Administration, Department of Transportation, Washington, DC, September, 2000.

**“In-House versus Consultant Design Costs in State Departments of Transportation,”** C.G. Wilmot, D.R. Deis, H. Schneider and C.H. Coates, Jr., Transportation Research Board, a paper for the 78<sup>th</sup> Annual Meeting, Washington, DC, January, 1999.

**“Outsourcing in North Carolina DOT,”** report by a Special Study Committee on Outsourcing/Privitization, North Carolina Department of Transportation,

**“The Changing State DOT,”** a report prepared by Steve Lockwood of Parsons Brinckerhoff Quade & Douglas for AASHTO, Washington, DC, 1998.

**“Infrastructure Outsourcing: Leveraging Concrete, Steel, and Asphalt with Public-Private Partnerships,”** A.T. Moore, G.F. Segal and J. McCormally, Study 272, Reason Public Policy Institute, The Reason Foundation, Los Angeles, CA, September, 2000.

**“Consultants for DOT Preconstruction Engineering Work,”** David Witheford, Synthesis 277, Transportation Research Board, Washington, DC, 1999.

**“Providing for Highway Maintenance by a Private Contractor,”** a report on Virginia DOT Maintenance Outsourcing by K. Hedlund and S. Taylor of Nossaman, Gunther, Knox & Elliott, LLP, Los Angeles, CA, 1998.

**“Meeting Great Expectations Through Performance Measures,”** Bryan Groden, KPMG Consulting LLC, Public Works Management & Policy, July 2000.

**“Competitive Government,”** a report from the Metropolitan Council, Minneapolis, MN, November 1997.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**TOPIC 2: Innovations in Private Involvement in Project Delivery**

**APPENDIX C**

**COMPLETED SURVEY FORMS FROM DOTS**

No	State	Category	Title
1	FL	Pre-Construction	Utility Pole Safety
2	FL	Construction	Construction Inspection
3	FL	Design	Consultant Design
4	FL	Pre-Construction	Advanced Internet Use
5	FL	Pre-Construction	Joint Participation Agreement
6	FL	Planning	General Planning Consultant
7	FL	Pre-Construction	Advance Utility Relocation
8	FL	Operations	Toll Collections
9	KS	Design	Roadway Design
10	KS	Design	IT Design, Operations & Maintenance
11	MO	Maintenance	'On Call' Guardrail Maintenance
12	MO	Program Management	Transportation Corporation
13	MO	Pre-Construction	ROW Appraisal
14	MO	Pre-Construction	Surveying
15	NY	Operations	ITS Command Center
16	SC	Program Management	Construction & Resources Managers
17	TX	Planning	Field Data Collection
18	TX	Planning	Vehicle Data Collection
19	TX	Design	Bridge Design
20	TX	Maintenance	Routine Bridge Inspection
21	TX	Maintenance	Total Maintenance Contract
22	TX	Planning	Cultural Resource Manager
23	TX	Planning	Environmental Assessment
24	TX	Planning	General Engineering Consultant
25	TX	Planning	Hazardous Material Management
26	UT	Design	I-15 Deign-Build Project
27	UT	Pre-Construction	RFP Consultant
28	UT	Construction	Contract QA

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 02/21/01

**Activity:** Pre-Construction - Cooperative Relationship with Utilities

**Agency:** Florida DOT, 605 Suwannee Street, MS 57, Tallahassee, FL 32399

**Contact:** Kenneth E. Weldon, FDOT State Utility Engineer,  
850-414-4364, 850-922-9293 Fax  
[kenneth.weldon@dot.state.fl.us](mailto:kenneth.weldon@dot.state.fl.us)

**Description:**

**POLE SAFETY:**

The FDOT adopted pole safety criteria as an integral part of its 1999 Utility Accommodation Manual through coordination with the Utility Industry in the Rule development process. The criteria/process identifies high crash locations (Control Zones) where Utilities must comply with new construction criteria even on RRR Projects to facilitate reductions in fatalities, injuries, and property damage. In turn, the FDOT does not require Utility relocation on similar projects in areas where crash statistics do not warrant relocation.

**Implementation Level:** Full

**Measured Benefits:**

The potential savings to the Utility is estimated up to 30 percent of their current fixed relocation cost budget. However, with a fixed budget the Utilities now have more funds to relocate poles on more projects and in more critical crash prone areas.

**Implementation Barrier:**

This process required extensive negotiation through the Rule development process and follow-up training. It required the FDOT to clearly distinguish criteria to be applied and sell the benefits. While it is easy to accomplish this task on new construction and RRR projects, there is still the gray area of interpretation regarding what criteria is always appropriate for reconstruction type projects. This process also requires documenting an engineering based justification when the criteria/process can not be complied with before any exceptions are allowed.

**Special Demands of Agency:** None

**Cost Impact:** Additional training and travel

**Future Plans:**

Monitor effectiveness and revise criteria / standards as appropriate. Currently (after one year) we are developing clearer standards to address reconstruction project definitions.



**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 02/23/01

**Activity:** Construction Inspection - 72% Outsourced due to Heavy Workload

**Agency:** Florida DOT, 605 Suwannee Street, MS 31, Tallahassee, FL 32399

**Contact:** Bill Albaugh, Highway Operations Director,  
850-414-4116, 850-410-5486 Fax  
[bill.albaugh@dot.state.fl.us](mailto:bill.albaugh@dot.state.fl.us)

**Description:**

Construction engineering inspection (CEI) is responsible for administration of the Department's construction program. CEI personnel are responsible to ensure contractors abide by all contract requirements, inspect the contractor's work to ensure the materials and workmanship going into the project meet contract requirements, samples and tests products used during the construction process, and is involved in public relations activities during the construction phase of each project. CEI is a critical component of the Department's construction program as it contributes to the overall quality and long term performance of constructed projects.

**Implementation Level:**

The FDOT currently contracts with consultant engineering firms for approximately 72% of its construction engineering inspection program.

**Measured Benefits:**

The benefits of contracting for CEI services include the ability to assign resources only during the time they are needed, provides the ability to quickly adjust to changes in the Department's work program, and provides for the ability to contract for specific expertise that is not readily available using in-house resources.

**Implementation Barriers:**

There is a perception by some that consultant CEI usage is significantly higher in cost than the use of in-house CEI resources.

**Special Demands of Agency:**

Special demands of the agency include finding ways to more cost effectively assign and use consultant CEI resources. The FDOT has been modifying its practices to gain efficiencies by grouping project assignments and modifying staffing requirements for consultant CEIs.

**Cost Impact:**

When compared on a project by project basis the use of consultant CEI is generally slightly higher (10% to 20%) than in-house CEI. But, when the overall program is considered, taking into consideration the efficiencies gained by the ability to assign resources only during the time they are needed and the ability to reassign resources in different areas of the state on short notice, the costs for consultant and in-house CEI are very comparable.

**Future Plans:**

The Department's plans over the next five years are to increase the use of consultant CEI to approximately 80% while reducing the overall percentage of CEI (consultant and in-house) costs by approximately 25%.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** February 27, 2001

**Activity:** Design - Over 70% Outsourced due to Heavy Workload

**Agency:** Florida DOT, 605 Suwannee Street, MS 57, Tallahassee, FL 32399

**Contact:** Billy Hattaway, Director, Office of Design  
850-414-4312, 850-922-9293  
[billy.hattaway@dot.state.fl.us](mailto:billy.hattaway@dot.state.fl.us)

**Description:**

Florida DOT has used consultants for design in increasing numbers, especially over the last 12 years.

**Implementation Level:**

Currently, consultants perform 76% of our design work, leaving 24% for in-house staff. This includes Project Development and Environment studies, all aspects of design and post-design services such as shop drawing review. In addition most of our Districts have General Engineering Consultants who perform in the Department's role in managing and reviewing other consultant's work.

As a percentage of our construction work program, the cost of using consultants is between 6.5-7.5% of our construction work program. In-house costs are 1.3-2.5% of our construction work program, including the costs for managing consultants.

**Implementation Barriers:**

A major barrier to implementation initially was overcoming the attitude that we (FDOT) can do it better than them.

Another was our communication system. Communicating information had been handled internally, through memorandums and e-mail. Initially, we did not have a system for sending e-mail to consultants. The problems with mail is that many times the information did not make it to the people doing the work, not unlike a large organization, but when you add outside workers to the equation, the problem was multiplied.

Related to communication was not having in some areas manuals which spelled out the requirements for our design and plans preparation. Much of that information had been communicated by word of mouth and through internal memos over the years. Every office now produces a manual, guidelines or some similar document that spells out our requirements.

Training became an issue as well. Much of the training received by our staff had been on-the-job training. Use of consultants highlighted that this method would not work. Many of them

were new to FDOT and Florida and were not fully aware of how we conducted our business. We developed and are continuing to develop training to address those concerns.

**Special Demands of Agency:**

Reassignment of in-house design staff and training in project management skills were required. A course for project managers was developed and is provided regularly across the state.

**Cost Impact:**

The Department has not done a recent evaluation of increased or reduced costs of using consultants. The trend in Florida is to reduce the size of permanent positions in state government, so our use of consultants is expected to increase.

Fiscal Year	00/01	01/02	02/03	03/04	04/05
Total Construction Budget	7014.0	5440.8	4766.5	5074.6	4503.3
Consultant Cost	498.1	359.3	332.7	285.1	281.9

**Future Plans:**

Our future plans are to begin requiring consultants to prepare their own specification packages. The Department has been preparing those packages for all projects. We are in the pilot training phase of this effort and expect to be complete by June of 2003.

Due to recent plans to reduce our entire staffing by 25% statewide, there is already discussion of the need to look at other areas of our business to more effectively use our staff and increase the utilization of consultants.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 02/21/01

**Activity:** Pre-Construction - Cooperative Relationship with Utilities

**Agency:** Florida DOT, 605 Suwannee Street, MS 57, Tallahassee, FL 32399

**Contact:** Kenneth E. Weldon, FDOT State Utility Engineer,  
850-414-4364, 850-922-9293 Fax  
[kenneth.weldon@dot.state.fl.us](mailto:kenneth.weldon@dot.state.fl.us)

**Description:**

**ADVANCED INTERNET USE:** The FDOT has 8 Districts and has taken the position that the internet should be optimized as a working environment and not just for obtaining general information. The Utility Office uses the internet on two major fronts. One, it publishes all of its Utility Forms, Executed Agreements, Manuals, Guides, and Signature of Incumbencies so that there is ready access and one source for required information to anyone. Two, under development is beta testing of electronic permitting.

**Implementation Level:** Full and Partial

**Measured Benefits:**

Documents published via the Web site has expedited access for FDOT Construction, Design, and Maintenance staff that must have this information to execute permits and contracts in a timely manner. This reduces the need for hard copies, the number of people and levels of staff that have to be involved in processing and getting the information out, and shortens access time by as much as three weeks. Requests for forms and documents by customers has been simplified and the need to involve staff has been reduced to less than 5% of what it was three years ago. This frees up staff hours and insures one source to obtain the most up to date information. One of the benefits is it facilitates standardization which can help in claims issues and eliminating problems associated with things being done differently in different Districts. Customers like this benefit as well as the any hour accessibility and assurance of the latest material.

**Implementation barrier:**

This process was hampered more by internal government concerns than industry over letting staff have access to the internet. This barrier has been reduced from an initial 10 % acceptance rate to probably a 75% acceptance rate. One major problem observed is that when you centralize documents in an 8 District agency you learn there is reluctance in the Districts to eliminate their own un-official generated forms and documents that have led to claims and interpretation problems. You also learn there are more of them than you were aware of. Sometimes the Districts may have conceded to points that are now in executed agreements and the Utility is reluctant to give up or comply with new conditions.

**Special Demands of Agency:**

The FDOT requires the use of a no-cost proprietary software for accessing and downloading documents. The Agency must be allowed to update its information readily

**Cost Impact:**

In the Centralized Office there is a 20% increase in time and dollars dedicated to cultivating the expertise required to do internet publishing and design. The cost and time is more than offset by not having to copy and process paper multiple times and sending it on to someone else who must do the same thing many times over. All associated training is done coincident with regular Utilities Liaison meetings and is effectively \$0.00.

**Future Plans:**

We will monitor effectiveness and revise the process as appropriate to serve our customers. They have shown favor by acknowledging the benefits of the Utility Web Site as being the second most used in the FDOT. They have also strongly expressed a desire for getting electronic permitting underway ASAP. We are pursuing this goal.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

Date: 02/21/01

**Activity:** Pre-Construction - Cooperative Relationship with Utilities

**Agency:** Florida DOT, 605 Suwannee Street, MS 57, Tallahassee, FL 32399

**Contact:** Kenneth E. Weldon, FDOT State Utility Engineer,  
850-414-4364, 850-922-9293 Fax  
[kenneth.weldon@dot.state.fl.us](mailto:kenneth.weldon@dot.state.fl.us)

**Description:**

**JOINT PARTICIPATION AGREEMENTS (JPA):** The FDOT actively encourages Utilities to allow the Roadway Contractor to install their facilities to expedite construction and improve coordination. To facilitate this, the FDOT submitted a bill and it passed the Legislature that allows the FDOT at its option to pay for Utility relocation costs in excess of 110% of the official estimate to do the work. To date we have a five year history with a growing interest by the Utilities because of a willingness on the part of the FDOT to look each year at process issues and make improvements.

**Implementation Level:** Full

**Measured Benefits:**

Studies done within the FDOT and by a Consultant completed in 1998 indicate an overall savings to the Tax Payers through reduced contract time, less claims associated with the Utility, and general acceptance by the Utility industry. The users of the JPA process reported a 63% cost savings with 57% less claims. While 12% of the participants said they won't do another one, 88 % said they would participate again and there were overall savings.

**Implementation barrier:**

This process has increased in use but there is a divided camp. Only 68% of the applicable Utility companies have used the JPA process and therefore it has not won acceptance across the board. Virtually all Utilities say it costs more up front and this is a major concern. One of the major issues preventing trying the JPA process is the Utility feels too much control is placed in the hands of the Contractor and they still must provide their own quality control. There is no contract between the Utility and the Contractor. The FDOT has not provided statewide training on some of the more attractive process revisions and therefore has not enjoyed as much acceptance by the Utility Industry as could be realized.

**Special Demands of Agency:**

The FDOT requires the use of a legal binding agreement between the Utility and the FDOT but there is no agreement between the Utility and the Roadway Contractor. This limits the Utilities input and control during construction and is perceived negatively by some.

**Cost Impact:**

The FDOT must be willing to fund costs in excess of 110% of the Utility Construction Official Estimate if at its option decides it is in the best interest of the public. A random sample of 18 JPA's revealed an overall up front bid savings of \$1.6 million. This does not substantiate the Utility statements of increased overall up front costs. The main concern of the FDOT is expediting construction, reducing claims and contract time. There has been no determination or accounting of actual dollars saved through reduced contract time or claims paid. The savings were realized by reductions in contract time by compressing non JPA proposed Utility relocation schedules.

**Future Plans:**

We will continue to monitor the effectiveness of this program and revise the process as appropriate to serve our customers. The statistics supplied are basically two years old and do not reflect increased acceptance by the Utility Industry as a result of revising processes to meet customer needs. Unfortunately staff limitations do not permit needed update training.



**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 2/26/01

**Activity:** Planning

**Agency:** Florida DOT, 605 Suwannee Street, MS 57, Tallahassee, FL 32399

**Contact:** Terry Kraft, Senior Transportation Planner,  
850-414-4801, 850-488-3567 Fax  
[terry.kraft@dot.state.fl.us](mailto:terry.kraft@dot.state.fl.us)

**Description:**

Consultants in the private sector are used in planning to relieve in-house staff workload, supplement in-house expertise and provide 'third party' assistance for specific joint planning projects (primarily with metropolitan planning organizations and local governments). Both central and district offices use "General Planning Consultants" who provide a variety of products and services. The contracts are structured so that particular "specialized" expertise can be easily obtained through additional subconsultants. The general consultants provide additional staff to support on going programs and analysis and for various planning research.

The majority of consultants are acquired for specific projects within a specific district or central office, although our districts are increasingly selecting consultants for major activities on a district-wide basis. Consultants are used in all core planning activities: policy planning, public outreach, corridor planning, systems planning, statistics, metropolitan planning organization activities, growth management, work program administration and other areas such as emergency/management planning, military re-use studies, interdepartmental coordination and support, performance monitoring, and technical assistance and training.

The degree to which consultants are used in various planning activities is more a matter of in-house staff availability and management preference than just specific expertise needs. The overall mix of in-house and consultant staff is more a matter of policy than quantifiable evaluation – it has been the traditional view of most legislative and executive leadership in Florida that the number of government employees should be minimized, with increases coming only at specific times for specific needs. Currently, Florida leadership is seeking to further increase the efficiency of government services through appropriate increases in the use of the private sector.

**Implementation Level:**

Consultants are used to accomplish approximately 40% of planning performed in the central office, which is responsible for policy and statewide programs. Consultants are used to accomplish over 60% – in some areas as high as 75% – of planning performed in the districts, which are responsible for all of the Department's regional, metropolitan and local planning responsibilities. Metropolitan planning organizations also use consultants extensively for their planning activities.

**Measured Benefits:**

Although the benefits of using consultants for planning activities have not been quantified, we have used various customer surveys to help identify the value of using consultants for specific projects, especially joint planning projects. In addition, indirect measures – such as increased citizen involvement, fewer complaints and criticism, and specific mention of appreciation for consultant involvement – have been received and shared over the years. Finally, knowing that projects would not have been completed or completed within a certain time without consultant assistance is strong support for continued consultant use.

**Implementation Barriers:**

A key difficulty with consultant use is the frequent shortage of available consultant staff with specific knowledge and experience in a specific planning activity at a specific point in time. Planning requires many disciplines to be available at the same time: technical, procedural, negotiating and interpersonal. This makes it difficult for consultants to have a stable – and profitable – planning component in their business.

Another difficulty is that planning requirements are rapidly changing, especially those calling for earlier citizen involvement and impact assessment. These, and other, planning requirements are often hard to quantify in advance because planning by its very nature is about blending differing opinions into an acceptable product.

A final key difficulty is the time and effort necessary to contract with consultants. This is partially a result of the Department's intent to provide all qualified consultants with "a level playing field" – to "spread the work" among many consultants. The majority of services contracts being awarded today are project specific – and almost all are district/central office specific. This requires a lot of staff time in each district and central office to develop and execute many separate contracts, rather than combining several contracts into a single large contract serving multiple projects within a particular district or serving multiple districts.

**Special Demands of Agency:**

Citizens and other customers place demands on government that often go beyond demands placed on consultants. Consultants are usually hired to produce specific results for specific purposes in a specific time. In contrast, government agencies are expected to do all that and look out for the public's welfare – something that is more difficult to ask consultants to do. Government agencies must respond quickly and accurately, but also must ensure that everyone has access to the decision-making process, and that their input is considered. This oft times takes longer than predicted, and costs more than expected – two things that make consultants sweat.

**Cost Impact:**

The cost comparison of private consultants versus in-house staff is difficult to estimate. Consultant costs are very specific, and often seem much higher than in-house costs. Most direct and fringe benefit costs for in-house staff can be reasonably estimated, but indirect/overhead costs are much more difficult to apply to specific staff within an agency. Then there are other costs to consider, such as employee retention and training, as well as the

costs of accumulated experience – with consultants, you have more opportunity to search for staff who have the experience and knowledge you need for a particular project, especially when it is non-recurring.

**Future Plans:**

Use of private sector consultants for planning is likely to further increase in the future. The more significant change is likely to involve consolidating services contracts to help reduce the total number of contracts awarded annually – potentially saving in contract administration and management costs. We must also pay more attention to what the proper mix of private and public staff should be to satisfy both efficiency and effectiveness expectations.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 02/21/01

**Activity:** Pre-Construction - Cooperative Relationship with Utilities

**Agency:** Florida DOT, 605 Suwannee Street, MS 57, Tallahassee, FL 32399

**Contact:** Kenneth E. Weldon, FDOT State Utility Engineer,  
850-414-4364, 850-922-9293 Fax  
[kenneth.weldon@dot.state.fl.us](mailto:kenneth.weldon@dot.state.fl.us)

**Description:**

**ADVANCE UTILITY RELOCATION:** The FDOT actively promotes advance Utility Location on two fronts, each of which involves coordination much earlier than three years ago and attempts to reduce the cost to the Utility which is hoped will be passed along to the rate payers. One is by creating a mechanism for the Utility to act in part as a Contractor and two is the FDOT providing Utility Locates at no cost and designing around the Utility where practical.

The Florida Statutes historically have not allowed reimbursement of Utility relocation unless there were prior compensable property rights or the Utility was located on Limited Access R/W. The FDOT submitted new Legislation that passed which allowed Utilities to be compensated for expenses incurred doing limited clearing and grubbing activities on candidate projects. This reimbursement must be associated with relocation efforts to facilitate State roadway construction.

As an inducement to get early Utility coordination, the FDOT agrees to do the initial Utility locates and design around the Utility infrastructure where practical. This requires the Utility to get involved and fund their infrastructure changes as much as two years ahead of what they have historically done.

**Implementation Level:** Full

**Measured Benefits:**

Early Utility relocation has many benefits. The potential savings to the Utility have not been determined but the number and cost associated with delay claims are expected to decrease. A Value Analysis of the savings to the FDOT has been determined based on a typical project. The cost savings per project averages between \$5 and \$10 million with actual construction time being reduced 5 to 7 months. This is a great benefit in reduced inconvenience, payment for MOT, hazard risk, and business damages. By getting early coordination the actual number of locates over the life (design & construction) of the project are reduced and there are less construction Utility delay claims. The Utility also has a better chance at determining where they can locate within the R/W.

**Implementation barrier:**

These processes require more extensive coordination up front to get a Utility to take on the additional work. Even though the cost is offset by reduced cost and claims exposure to them, there is a reluctance to spend money on projects that may be delayed or not constructed. The advanced selective clearing and grubbing process is only applicable to projects with sufficient existing R/W and room to work out of the pavement areas. This generally means application is limited to a non-urbanized environment.

**Special Demands of Agency:**

The FDOT requires entering into a special agreement for the limited clearing and grubbing operations as with any contractor.

**Cost Impact:**

Minor advance coordination and agreement processing for the FDOT but requires advance design funding of the Utility.

**Future Plans:**

We will monitor effectiveness and revise criteria / standards as appropriate. Currently (after one year) we have experienced much less interest or willingness statewide for Utilities to conduct this type work than anticipated. It is believed based on a cursory survey that we may not have done as effective a job of training regarding these option's availability as we need to do.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** February 28, 2001

**Activity:** Operations – Outsourced Toll Collections

**Agency:** Florida DOT, 605 Suwannee Street, MS 57, Tallahassee, FL 32399

**Contact:** Deborah Stemle, Director, Office of Toll Operations,  
850-488-5687, 850-922-5019 Fax  
[deborah.stemle@dot.state.fl.us](mailto:deborah.stemle@dot.state.fl.us)

**Description:**

In 1994, the Florida Department of Transportation initiated a program to privatize toll collection services. The program involved contracting toll collection services while retaining Department staff for toll facility supervision and management. This method allows the Department to maintain operational integrity, and internal control and custody of state funds, while achieving the objectives of privatization. This method also provided the Department the ability to gradually phase in privatization in a manner that reduced adverse impact on current career service employees. Contracts were awarded in the six toll regions to provide for toll collector services at an hourly rate. The beginning base of each of these contracts was the toll collector services previously provided by our Other Personnel Services (temporary) staffing, and additional positions needed for new and expanded toll facilities. As vacancies occurred through normal attrition, the hours were assigned to the service contract.

**Implementation Level:**

To date, our current privatization program has allowed the reduction of 973 positions, and eliminated the need for an additional 607 new positions. We are currently 84% privatized in our toll collector staff, and 96% privatized in our SunPass customer service operation.

**Measured Benefits:**

Significant operation improvements have been realized from the privatization initiatives.

While it is difficult to assign quantifiable cost savings to these improvements, a more productive work environment has resulted. The operational improvements include:

- The ability to increase or decrease staffing levels on an almost immediate basis to be more responsive to seasonal and unexpected traffic fluctuations.
- Work shift flexibility allowing coverage for morning and afternoon rush periods without the excessive non-peak coverage sometimes experienced with fixed career service work shifts.
- Flexibility in implementing alternative toll collection systems, such as SunPass.
- Ability to reduce staffing without the potential costs of layoff or unemployment compensation.
- Enhanced customer service as a result of management's focus being redirected from time-consuming personnel administration to providing quality service during each work shift.

- Significant decrease in time spent on recruiting, interviewing, and evaluating employee, allowing increased time spent on operational supervision and oversight of critical functions, such as internal control and safety.
- Ability to address individual collector performance problems by replacing personnel without a protracted administrative process.
- Improved screening of prospective employees, including drug testing and criminal background checks, resulting in the hiring of lower risk employees.

### **Implementation Barriers:**

Under the Department's privatization plan current career service employees were not adversely impacted. Additionally, since the Department retained staff for facility supervision and management, growth opportunities still existed. As a result, minimal resistance had been experienced from current career service employees and the Union covering the toll collector job class.

### **Special Demands of Agency:**

The goal of privatization is to lower program costs while maintaining delivery of quality service. Additionally, the privatization plan needed to provide assurance to bondholders that the Department's fiduciary obligations could be maintained.

### **Cost Impact:**

Cost savings as a result of toll collector privatization were not realized until the fourth fiscal year. In the first three fiscal years, the cost of contracted services was \$4,289,453 greater than DOT operation without contracted services. In the next three fiscal years, a savings of \$5,197,009 was realized with contracted services, for a net savings of \$907,556 over the six-year fiscal period. These cost savings were calculated solely on the comparison of DOT operation salary and benefits with and without contracted services. Additional cost savings have been realized. Other factors that have a direct bearing on the cost effectiveness of the toll-contracting project include savings in workers' compensation benefits, unemployment compensation claims and legal proceedings. In the first two years alone, the Department's claims for workers' compensation for toll collector injuries had dropped by over 76%, with estimated annual cost savings for the reduced claims level at \$774,416. During that same period, the contractor had incurred over \$29,000 in legal fees and \$70,000 in unemployment compensation claims. Without privatization, these costs would be directly paid by the Department, as well as all associated administrative costs. The savings in these areas continued to increase as the number of State employees decreased.

### **Future Plans:**

The Department has proposed a five year expanded privatization program for Toll Operations that results in a reduction of 915 positions, or 77.6% of current career service employees. It encompasses an expansion of our current program, based on lessons learned and benefits realized over the last seven years. The proposed reductions include a mix of operational, support and facility & equipment positions through expanded privatization, efficiency improvements, elimination of non-critical tasks and other potential changes that could result in smaller, smarter operation. The Operation's reductions include privatizing all the remaining toll collector positions, and expanding privatization to toll collector shift supervisor, laborer

and courier positions. The support plan includes position reductions in the Tolls Data Center, Toll Audit, and administration staff through privatization of specific functions. The majority of the proposed reductions in the Facilities and Equipment unit represent total privatization of toll equipment maintenance. The proposed five-year plan cannot be accomplished with routine attrition, however current employees will have the opportunity to be hired by private firm taking over the positions as a contractual requirement. It is the Department's intent to retain a staff of 264 positions to ensure that contractors perform satisfactorily, maintain accountability to bondholders, ensure on-going excellent service to toll road customers, respond directly to Expressway Authorities and the Turnpike District, and maintain an institutional knowledge of toll operations for future needs. The remaining staff will also be responsible for all contract management functions.



Envelope-to: hancher@engr.uky.edu  
X-Mailer: Novell GroupWise Internet Agent 5.5.3.1  
Date: Fri, 09 Mar 2001 15:11:36 -0600  
From: "Jim Kowach" <[kowach@ksdot.org](mailto:kowach@ksdot.org)>  
To: <hancher@engr.uky.edu>  
Subject: Re: Case Study Input for Outsourcing in DOTs

My name is Jim Kowach, Chief Bureau of Design, Kansas Department of Transportation and I am responding to your inquiry to Terry Heidner, the Director of Planning and Development, for the Kansas Department of Transportation. I regret to inform you that the Kansas DOT has not experimented much with project delivery methods. I do not think we can report any information on innovations in that area.

The Kansas DOT does out source a substantial amount of our design activities. Currently the Kansas Department of Transportation uses Consultant Engineers for about 60% of our highway design work. This has enabled the department to maintain project development during peak periods in the Current Transportation program. We have had problems in the past with consultant engineering firms adapting to KDOT form and content requirements, as well as maintaining our aggressive project development schedules. Our in house staff are an integral part of the plan development process, and have been unfortunately forced into quality control/quality assurance aspects on most consultant projects. We do retain as much in house work as our staff can manage. This in house work is critical to keeping staff proficient with the current design criteria, as well as being more cost effective. We have been working the Kansas Consulting Engineers (KCE) on continuous improvement and partnering. Due to current work load, I would expect Consultant Engineering Firms to continue to do a substantial amount of our design work in the future. We have not intentionally down sized, but due to the current difficulty in attracting and retaining qualified technical people (Engineers and Technicians), we do currently have over 20 vacancies in our design department. If you have any questions or comments, you can reach me at;

Jim L. Kowach, P.E.  
Chief Bureau of Design  
Kansas Department of Transportation  
(785) 296-3531  
[kowach@ksdot.org](mailto:kowach@ksdot.org)

>>> Donn Hancher <hancher@engr.uky.edu> 01/31/01 05:01AM >>>

Terry:

I enjoyed talking to you today about my NCHRP project to seek information on innovations in outsourcing of basic functions for transportation project delivery. I have attached the survey form for input on any new outsourcing activities that your DOT is involved in. I also attached a short description (Topic 2 Overview) of my project to clarify why I am contacting you for information. I do know that DOTs across the US are in various stages of increased involvement in outsourcing and I would be very interested in Kansas' activities.

Basically, I am just interested in what your experiences have been, what problems you encountered, what benefits you feel were attained and what you plan for the future. Please modify the form as you feel comfortable.

Thanks for your willingness to respond to my study. I look forward to hearing from you within the next two or three of weeks. It is tough to explain the whole process in a brief format, so please call if you have any questions.

Donn .....

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 3-8-2001

**Activity:** IT Out-Sourcing

**Agency:** Kansas DOT, Div of Planning & Development, Docking State Office Bldg.,  
8<sup>th</sup> Floor, Room 860-S, Topeka, KS 66612

**Contact:** Terry W. Heidner, Director,  
785-296-2252, 785-296-7173 Fax  
[terry@ksdot.org](mailto:terry@ksdot.org)

**Description:**

KDOT has been using contracts with consultants to provide programming and analysis resources since 1994. Originally, out-sourcing addressed the growing backlog of user requests that in-house staffing could not address as well as specialized maintenance issues such as metric conversion of systems. Today, we continue to out-source IT to meet increased demands for services and to use the expertise of specialized vendors in an ever-changing information technology environment.

**Implementation Level:**

IT out-sourcing occurs in several different areas with several different contracting methods. For major projects, we still issue a Request for Proposal and negotiate a specific contract for major project development. In addition, for the past 6 or 7 years, we have issued or renewed an RFP for generalized IT Integration Services. Under this contract, we issue work orders to 6 to 10 different vendors, based on the type of services needed and the vendors' qualifications, to perform routine maintenance on existing software, to enhance IT systems, to study and determine feasibility, and to provide technical guidance. We have also implemented or helped to implement contracts for equipment repair beyond warranty work.

**Measured Benefits:**

We have been able to keep up with demand without significant staff increases. Over the last 10 years, we would never have been able to move to client server technologies, new operating systems, and databases without the use of these contracts. Perhaps the biggest measure is that we continue to budget for these services and the demand continues to be greater than the resource (funding).

**Implementation Barriers:**

Funding is one barrier, although since 1994, we have been able to maintain a level funding stream for programming and analysis that is contracted out. Another barrier has been the inability, in some cases, of vendors to deliver resources. While we have tried to partner with these vendors to provide steady work, they have been unable to bring resources to our projects or retain them. This has delayed several projects and increased overall costs.

**Special Demands of Agency:**

In order to make IT out-sourcing work, we initiated a work order process in which we first describe the work that we want done, including deliverables, and then the vendor replies with a not-to-exceed price based on hours and contract costs/hour. The vendor is then paid for the actual amount of work performed, if under the not-to-exceed price. In no case, unless work order scope changes and both parties agree, is the consultant paid more than the bid price of the work order. The process is deliverables-based. Another demand on the agency is that our own staff is called upon to manage projects rather than design and code them. The state of Kansas provides training in project management and we have sent many of our employees (both in IT and in the user community) to this training. We will continue to stress the importance of project management.

**Cost Impact:**

The agency out-sources approximately \$3,500,000 to \$4,000,000 per year, unless there are major IT systems involved, in which case the total could be \$6 to \$7 million. Of that total, \$1,000,000 is allocated to specific budgeted projects. The remainder is for maintenance, enhancements, and technical support. The agency continues to recognize a benefit from these costs.

**Future Plans:**

We expect to continue this process, recently completing another RFP. The only difference in our out-sourcing scenario is that we expect to generate a little more competition between our consultants on contract by asking for work order estimates from more than one vendor. In that way, we can choose between the consultants who have the most resources at the lowest costs.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

Date: 2/09/01

**Activity:** Pre-Construction – Outsourcing of Guardrail Maintenance

**Agency:** Missouri DOT, P. O. Box 270, 105 Capitol, Jefferson City, MO 65102

**Contact:** J. T. Yarnell, Chief Engineer  
573-751-4622, 573-526-5419 Fax  
[yarnej@mail.modot.state.mo.us](mailto:yarnej@mail.modot.state.mo.us)

**Description:**

Guardrail/Guard cable repair is accomplished with an “on-call” contract and individual work orders. Estimated quantities are provided based upon historical data. Payment is made based upon quantities used, and type of traffic control required for each work order.

**Implementation Level:**

On-call guardrail repair contracts are being used in four of ten districts including the major metro areas of St. Louis, Kansas City and Springfield.

**Measured Benefits:**

Cost analysis has not been run.

**Implementation Barriers:**

In rural districts the relatively small amount of guardrail work and distance between potential work locations does not make an on-call guardrail contract very attractive to a contractor that must respond to work orders on short notice.

**Special Demands of Agency:**

Contractor is on-call 24 hours per day and may be required to respond to an emergency call within 24 hours.

**Cost Impact:** Analysis not complete.

**Future Plans:**

As more guard cable is erected on the interstate system. The on-call guardrail/cable program may be expanded to rural districts that currently do not see an on-call maintenance system as cost effective.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 2/9/01

**Activity:** Project Management – Transportation Corporations

**Agency:** Missouri DOT, P. O. Box 270, 105 Capitol, Jefferson City, MO 65102

**Contact:** J. T. Yarnell, Chief Engineer  
573-751-4622, 573-526-5419 Fax  
[yarnej@mail.modot.state.mo.us](mailto:yarnej@mail.modot.state.mo.us)

**Description:**

A special type of not-for-profit corporation, organized under Missouri law, Chapter 35 RSMo and Sections 238.300 to 238.367 RSMo. It may form to fund, promote, plan, design, construct, maintain and operate one or more transportation projects.

**Implementation Level:**

Fully implemented.

**Measured Benefits:**

Benefits result when projects are completed sooner than traditional financing would allow.

**Implementation Barriers:**

Lack of a finalized long-range plan for MoDOT and legislative indecision on additional transportation funding cause barriers. Project sponsors need a settled planning/financing environment in order to commit to project financing.

**Special Demands of Agency:**

All transportation corporations, projects, financing plans, bylaws, articles of incorporation; board members must be approved by the Missouri Highways & Transportation Commission.

**Cost Impact:**

The applicant submits a \$500 fee. Additionally, they pay all financing costs. If the project involves MoDOT repayment of financing, the sponsors must pay at least 1%/of acceleration years, up to 5% of the project costs.

**Future Plans:**

To continue to work with project sponsors to form transportation corporations for appropriate projects.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

Date: 2/08/01

**Activity:** Pre-Construction – Outsourcing of ROW Appraisals

**Agency:** Missouri DOT, P. O. Box 270, 105 Capitol, Jefferson City, MO 65102

**Contact:** J. T. Yarnell, Chief Engineer  
573-751-4622, 573-526-5419 Fax  
[yarnej@mail.modot.state.mo.us](mailto:yarnej@mail.modot.state.mo.us)

**Description:**

The outsourcing of appraisal work is a district right of way manager's decision based on workload of staff appraisers and/or the complexity of the appraisal. All appraisals of right of way acquisitions from property that MoDOT employees or Missouri Highway and Transportation Commission member have an interest in are outsourced.

**Implementation Level:**

All fee appraisers interested in doing appraisal work for MoDOT must submit a demonstration appraisal report along with an application to the MoDOT Right of Way Headquarters office for approval. Once approved the appraiser is added to an approved appraisers list. The district is responsible for taking proposals for appraisal work and executing a contract

**Measured Benefits:**

An estimated ten percent of annual appraisal work is outsourced. This outsourcing is primarily in St. Louis and Kansas City where the largest workload normally is. Outsourcing allows for MoDOT staff to be utilized in other phases of right of way acquisition work or allows the staff appraisers to appraise other projects and schedule for a timely construction letting.

**Implementation Barriers:**

MoDOT has been outsourcing appraisal work for more than 35 years and the most frequent barrier encountered is educating appraisers that have not previously done work for MoDOT, what our requirements are and what is or is not a legal item of damage in a before and after appraisal.

**Special Demands of Agency:**

The only special demand is that the district must prepare an analysis of the appraisal to be completed on each property to be appraised and determine a reasonable fee for the type appraisal required and be sure that everyone submitting a proposal is given the same information and understands what is expected.

**Cost Impact:**

Normally the cost involved is offset by the time served in utilizing fee appraisers. In fact, when employee's benefits are considered along with car expense, it is not much more of a cost than using MoDOT staff.

**Future Plans:**

It is anticipated that MoDOT's use of contract appraisers will increase somewhat in the next two years then decrease.



**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

Date: 2/9/01

**Activity:** Pre-Construction – Outsourcing of Surveying

**Agency:** Missouri DOT, P. O. Box 270, 105 Capitol, Jefferson City, MO 65102

**Contact:** J. T. Yarnell, Chief Engineer  
573-751-4622, 573-526-5419 Fax  
[yarnej@mail.modot.state.mo.us](mailto:yarnej@mail.modot.state.mo.us)

**Description:**

The Missouri Department of Transportation utilizes outsourcing for surveying services associated to both boundary surveys and engineering surveys. The outsourcing is managed in three forms: 1) where surveying is provided as an element of a consulting engineering contract, 2) where surveying is contracted directly and accounted for in a scope of services developed for that specific need, and 3) where surveying is contracted as an “on-call” professional service.

**Implementation Level:**

The outsourcing of surveying services as part of the larger engineering contract is a long established practice. Developing a unique scope of services for surveying only is a recent development within the department that has been utilized for the past two years. The newest means of outsourcing for surveys is the on-call service that has been in-lace for the past year.

**Measured Benefits:**

There has not been a formal study or measure of benefits to outsourcing. But, known benefits are identified in timely project completion. This has been the desired benefit from outsourcing. Project demands are such with the agency that existing department resources are not sufficient to meet all surveying needs. Where projects needs exceed department resources, surveying services are contracted as opposed to expansion for the provision of the services within the department.

**Implementation Barriers:** Not identified.

**Special Demands of Agency:**

Special demands include that survey information not only comply with statewide standards that surveys are subject to but that they comply with department policies and procedures. Other demands require the use of department standardized feature codes for topography and delivery of data in formats that are compatible to department utilized software.

**Cost Impact:** Has not been measured.

**Future Plans:**

The future holds an increasing use of the on-call services that allow for greater flexibility and latitude in consultant selection and project completion. Uniquely developed scopes of services will find less use due to recent upgrade to standard scopes of services to include an accounting of surveying services.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 3/22/01

**Activity:** Operations -- Outsourced ITS Command Center in Long Island

**Agency:** New York DOT, State Campus, 1220 Washington Ave, Albany, NY 12232

**Contact:** Richard Albertin, Director, Resource and Risk Management,  
(518) 457-2520, (518) 457-6246 - Fax  
[ralbertin@gw.dot.state.ny.us](mailto:ralbertin@gw.dot.state.ny.us)

**Description:**

INFORM is NYSDOTs traffic management system that manages traffic on Long Island, NY.

**Implementation Level:**

The existing INFORM system includes the following field elements:

- 150 centerline miles of freeway and arterial coverage
- 100 CCTV cameras for traffic monitoring
- 100 Permanent Variable Message Signs
- 75 Ramp Meters
- 150 central controlled traffic signals
- 2200 vehicle detectors
- 9 Road Weather Information sites
- 130 miles of freeway service patrol coverage
- Traffic Management Center located at Hauppauge, NY

The system currently covers the Long Island Expressway/Northern State Parkway Corridor on Long Island and is being expanded into a 20 mile corridor of the Southern State Parkway this summer. The system operates 24 hours per day/7 days per week.

**Measured Benefits:**

The FHWA contracted for an evaluation of the INFORM system following its start up in 1987.

Among the benefits estimated by the study were:

- AM peak period speeds increased 3 - 8 %
- 25% - 50% improvement in percent traffic flowing at congestion speeds (30 MPH or less)
- 5% reduction in accidents on LIE/Nassua Co. (vs. 13% increase on a control section of highway)
- 50% reduction in CO, 30% reduction in hydrocarbons
- Over 10M hours of delay reduction/year
- B/C of 8.27/1 vs. 1987 conditions (based on \$10M/yr annualized cost and \$8/veh-hr delay saved)
- A recent evaluation of the HELP freeway patrol program showed a benefit cost ratio of over 8:1.

**Implementation Barriers:**

Original implementation barriers related to getting proper resources (funding, expertise and level of personnel) lined up at the correct time for designing, constructing and operating a technology based system in a Department with skills and processes developed for traditional engineering projects. There was also a need to establish an internal mindset that operating the system was a necessary and cost-effective alternative to the construction of new capacity. Resources were a particular issue, as the system was deployed during a period in which there were extreme constraints on the state budget. In addition, there was little training available to develop the skills needed and there was not a good match between the skill needs and available Civil Service titles for in-house staff. These issues contributed to the decision to contract out for operations and maintenance as well as to shift the operations and maintenance budget over to the capital fund program when this option became available via ISTE.

**Special Demands of Agency:**

Special demands relate to the barriers described in item 4 which continue to be issues even after 13 years of operations. There is still a need for new technical skills and additional resources for designing, constructing and operating the system. It remains difficult to recruit and/or retain in-house staff skilled in freeway operations and technology systems. Even with contracted operations and maintenance, adequate skilled in-house staff are required to oversee the contractors and this has been difficult to maintain in a period of state government right-sizing. Funding for the ongoing system operations and maintenance as well as upgrade and expansion is a continual issue as the system must compete with traditional bridge and pavement programs. Program, project development and budgeting processes that were established for these traditional programs do not work well in all cases for a technology/operating system. In addition, continual effort must be made to ensure the benefits of the system are understood and supported.

**Cost Impact:**

The current annual costs for operating and maintaining the system are approximately:

- \$2.0M for contract operations
- \$2.5M for contract maintenance
- \$2M for electricity, communications, spare parts, etc..
- \$0.5M for in-house staff.

**Future Plans:**

It is expected that the system will continue to be expanded over the next 5 - 10 years to cover all critical congested corridors on Long Island. Many of the limited access facilities are already covered. As congestion increases, future emphasis will include system deployment and management of the arterial highway system.

**NCHRP Project 20-24(14)**  
Managing Change in State Departments of Transportation

**Date:** 2-1-01

**Activity:** Project Management – Construction Resource Managers (CRMs)

**Agency:** South Carolina DOT, P.O. Box 191, Columbia, SC 29202

**Contact:** Richard Stewart, Deputy Director of Executive Support,  
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**Description:**

A Construction and Resource Manager (CRM) is a firm, or group of firms, that have experience and expertise in highway/bridge design and construction including project management as well as financial management of projects and programs. Expecting to complete 200 construction projects in seven years, approximately 27 years under the agency's normal workload, the SCDOT selected Fluor Daniel and Parsons Brinckerhoff / LPA as the two CRMs to assist the Department in the management of approximately 93 of the 200 projects. The CRMs took over the management of projects in various stages and in some cases are managing the projects from the beginning of pre-construction through final construction inspection. The CRMs are allowed to develop projects through the environmental process, but then must hire outside consultants to produce right-of-way and construction plans. The CRMs have hired separate firms to acquire rights-of-way. The CRM contract places special emphasis on delivering the projects "on-time and on-budget", and the CRMs are graded on cost control, schedule, value and innovation, and financial management. They are also graded on safety, DBE content, and overall SCDOT satisfaction.

**Implementation Level:**

The contract signed in July of 1999 calls for each of the CRMs to assist in approximately \$750 million worth of road and bridge work to be done in the next seven years. The CRMs act as an extension of the SCDOT staff and do not modify the current decision-making process in place at the Department; no responsibilities are being abdicated and the Department makes all final decisions. The CRMs serve as assistants to the SCDOT Program Managers, who continue to oversee each project in their respective areas. After the first year of the CRM contract, 28 projects are in preliminary design, 32 are in the right-of-way plan stage, 23 are in the construction plan stage, and 10 are under construction.

**Measured Benefits:**

By hiring the CRMs, the Department avoided hiring approximately 500 additional employees which would have been needed to meet the demands of doubling and tripling our workload

during the next several years, thus avoiding the cost of additional office space, training, and personnel benefits. Also, the Department would have been faced the difficult task of a workforce reduction at the end of the seven years period. By accelerating the delivery of the projects through bonding of their financing, the public benefits by being able to use the roadways earlier.

**Implementation Barriers:**

The “learning curve” over the first year has been the biggest barrier to the full implementation of contract. Orientation of the two CRMs to the practices of the SCDOT and FHWA was the most challenging task before major progress on projects could be seen. Moreover, because this type of endeavor has never been undertaken on such a large scale, the language in the contract is quite general and sometimes lends itself to a wide interpretation.

**Special Demands of Agency:**

Seven statewide alignment sessions had to be held to introduce the CRM concept to the Department’s seven District Engineering areas as well as several alignment sessions at the Department’s Headquarters office. The sessions and the proceeding “ramping up” period to orient the CRMs to the way the Department conducts business taxed the agency’s personnel for a short time. Also, coordination between the two CRMs, FHWA, and the SCDOT demands time from various sections of the Department.

**Cost Impact:**

The cost of the Construction and Resource Managers is contained in the original costs of all the projects prior to the CRM contracts, i.e., there is no additional money associated with the delivery of the projects by the CRMs, as agreed to in the CRM contracts. Therefore, any negative cost impact on the Department is limited to the oversight efforts of Department personnel; however, such costs would have been occurred if the Department had hired individual consulting firms to accomplish the work the CRMs are doing. Thus, the CRMs are seen as a cost savings by being a “package deal” to deliver the agreed to projects on a set budget. Furthermore, the CRMs have been asked to produce cost savings, as called for in the contract under their duties of financial management of the projects, over the life of the contract by identifying and implementing efficiencies in the delivery of the projects.

**Future Plans:**

The contract is actually for a period of five years with an extension clause for two additional years. The progress on the CRM projects to date has been good, and the Department at this time plans to proceed with the CRM contract to help the Department deliver the promised 27 in 7 program. Continued transfer of technology between the CRMs and the Department will benefit our website and project status reporting systems as we move toward a GIS based information system.

## **NCHRP Project 20-24(14) Survey Managing Change in State Departments of Transportation**

**Date:** February 15, 2001

**Agency:** Texas DOT, DC Greer State Hwy Bldg, 125 E. 11<sup>th</sup> St., Austin, TX 78701

**Agency Contact:** Vic Holubec, 512 463-8623, [vholubec@dot.state.tx.us](mailto:vholubec@dot.state.tx.us)

**Staff Contact for Input:** Kim Hajek, 512 486-5052, [khajek@dot.state.tx.us](mailto:khajek@dot.state.tx.us)

**Major Project Delivery Function Involved:** Planning

### **Brief Description of Outsourced Activity:**

This outsourced activity was undertaken to address staff shortages, to access special technical capabilities possessed by private entities and to provide improved product delivery (data) to the 254 counties in the state of Texas and to the State Comptroller's Office, for county funding, on an annual basis. The Transportation Planning and Programming Division of TxDOT, (TPP), outsourced the field data collection of 141,000 miles of county roads in the state of Texas using Global Positioning System (GPS) and Distance-Measuring-Instrument (DMI) equipment. The outsourcing of this project allowed TPP to complete this inventory in 3 years, whereas, given existing staff levels this would have taken TxDOT over 14 years to complete with an inventory of approximately 10,000 miles annually. There are currently four staff members assigned to the field inventory work. This is a reduction from a staff of 75 during the mid-1970's.

### **Source of "Decision" to Outsource:**

The decision to outsource the field inventory of county roads was an Internal Initiative proposed to the Director of the TPP Division by the Director of Data Management, at the recommendation of the Roadway Records Branch Manager who is responsible for overseeing the field inventory work.

### **Type of Contractual Arrangement for Outsourced Activity:**

A contract was let with Universal Ensco, Inc. of Houston, Texas, at \$15/mile to collect the field inventory data, post-process the data and provide a database file and corresponding graphics files back to TPP. The contract was deliverables-based and was paid according to the mileage collected in each of 254 counties. The data sets were reviewed by TPP and returned to the vendor as needed, for corrections, until each data set was error-free. Payment was made once the data sets were approved throughout the three-year project. The contract vendor provided six 2-man field crews to collect the data and had approximately 4-5 staff in the Houston office involved in the post-processing of the data.

### **Level of Implementation (Outsourced vs In-House & Total - - in \$):**

During the contract, the vendor was paid approximately \$2,600,000 over the three-and ½ year period. During this same time period, in-house costs for staff and equipment was approximately \$1,300,000 for a total of \$3,900,000 dollars to complete the implementation.

**Level of Improved Quality or Efficiency (Cost/ Savings/ Measured Benefits):**

The use of new technology (GPS) to collect the field data improved the quality and accuracy of the data. Prior to the completion of this outsourced project, the data in the road inventory files at TPP was in some cases, thirty years old. Since this data is used to determine federal and state funding to TxDOT and to 254 Texas Counties, it was imperative to find new and innovative ways to collect this data in a more timely and accurate manner. With the help of outsourcing, the time to collect the entire state county-road system was reduced to three-years. The graphics data delivered from the project improved the accuracy of GIS mapping data ten-fold from approximately 20 meters to within 2 meters of accuracy. The Business processes at TPP were also improved to shorten the data review time for the database and graphics files from several weeks to only a few days per dataset.

**Describe Any Special Demands or Impact Realized by Direct Staff or on Core Agency Capabilities (as result of this outsourced activity):**

The impact to Direct Staff as a result of this outsourced activity required TPP to change some of the internal business procedures to accommodate the review and preparation of maps and data files in a timely manner to maintain the pace of the vendor conducting the field inventory. In the early stages of the project, the vendor was required to develop software to process the data. Once the large volume of data was delivered to TPP, there was a six-month shut-down of the field inventory so that we could get caught up with the data review. Once this was accomplished, there were no further delays to the project due to staff availability. However, there were project delays due to severe weather related events and periodic equipment breakdowns.

**Cost Experience:**

In the most recent fiscal year (FY00) the costs associated with the field inventory program were in-house costs only, since the project was completed PRIOR to fiscal year 2000. The in-house costs for FY00 was approximately \$800,000 for salaries, training and equipment. There is no comparison with a "pre-implementation" cost, since there was comparatively little or no field inventory work conducted by TPP, since the mid-1970s.

**Future plans (if applicable):**

The Transportation Planning and Programming Division will continue to utilize GPS technology and new data processing techniques for all future field inventory work, as a result of this very successful outsourced project. New business processes developed during this project which include increased efficiency in working with county and state officials will also be used in any future field inventory work. The graphics data sets provided by this project will continue to be used to support the agency GIS basemap as well as providing the transportation layer of the Statewide Strategic Map known as STRATMAP.



## **NCHRP Project 20-24(14) Survey**

### **Managing Change in State Departments of Transportation**

**Date:** 2/15/2001

**Agency:** Texas DOT, DC Greer State Hwy Bldg, 125 E. 11<sup>th</sup> St., Austin, TX 78701

**Agency Contact:** Vic Holubec, 512-463-8623, [vholubec@dot.state.tx.us](mailto:vholubec@dot.state.tx.us)

**Staff Contact:** Brian St. John, 512-465-7545, [bstjohn@dot.state.tx.us](mailto:bstjohn@dot.state.tx.us)

**Major Project Delivery Function Involved:** Planning

**Brief Description of Outsourced Activity:**

TxDOT contract vendors collect 24-hour vehicle axle counts and 24-hour Visual Vehicle Classification (VVC) data. Axle counts are acquired using Accumulating Count Recorders (ACR) with pneumatic road tubes. Annual ACR counts are taken at approximately 50,000 sites on the federal and state highway systems and at some 30,000 locations in urban areas. VVC data is obtained using crews of contract employees who sit beside the road and classify traffic at some 400 locations each year.

**Source of “Decision” to Outsource:**

In 1989, the Texas Legislature was exploring ways to outsource much of the work being done by state employees. TxDOT was under mandate to outsource 25% of highway maintenance work. Jon Underwood, then Director of Research, in an effort to get ahead of the curve, initiated the first routine service contract for the TxDOT ACR program. In 1995, prompted by the imposition of a hiring freeze and FTE cap, a service contract was initiated for VVC data collection.

**Type of Contractual Arrangement for Outsourced Activity:**

Purchase Order service contracts obtained via competitive bidding.

**Level of Implementation (Outsourced vs In-House & Total - - in \$):**

All ACR and VVC data collection for TxDOT planning purposes is contracted. TxDOT employees plan and inspect contract operations.

The FY 2001 State Planning and Research (SPR) Work Program budget is \$ 1,318,760 for the ACR contracts and \$ 500,000 for the VVC contract.

**Level of Improved Quality or Efficiency (Cost/ Savings/ Measured Benefits):**

Quality: No formal cost/benefit studies have been done. However, two TxDOT inspectors are able to examine approximately 5% of the ACR setups done annually by our contractors. Less than 1% of the setups inspected are found to be faulty in a way that would cause the count to be rejected. We think this demonstrates a high level of effort on the part of the contractors, which results in a high quality product.

Efficiency: We can expand and reduce data collection staff quickly based on actual need. We can move faster and do more work using contractors, and contractors are eager for additional

work - they never voice objection or feel mistreated when asked to produce more. The greatest advantage of outsourcing is the overhead remains constant regardless of the demand for product, within reasonable bounds.

**Describe Any Special Demands or Impact Realized by Direct Staff or on Core Agency Capabilities (as result of this outsourced activity):**

The most significant new demands placed on direct staff are the need for precise records keeping for contract billing, and the need for increased awareness of the ethical implications of decisions made and actions taken in the workplace.

The most obvious impacts on staff were a reduction in force of over 20 employees, changes in job duties for the remaining employees, the need for enhanced computer skills in some jobs, and the transition of field supervisors to field inspector status.

Regarding Core Agency Capabilities, we can collect more high quality traffic data quicker as a result of outsourcing, and without incurring common employee-related difficulties and expenses.

**Cost Experience:**

A cost saving was not the driving force behind outsourcing this work. No formal cost comparison has been done. However, no significant increase in project cost has been evident since outsourcing was instituted.

ACR contracting- In FY 1988, 61,123 ACR counts were taken at a cost of \$ 763,536 by fourteen full time data collection employees who we supplemented with an undocumented number of employees borrowed from other data collection projects and a few summer temporary hires. The unit cost per ACR count in FY 1988 was \$ 12.49. In FY 2000, 72,662 ACR counts were acquired by contractor's employees directed and supported by five state employees at a total cost of \$ 1,356,412. The average FY 2000 unit cost per ACR count was \$ 18.66. The unit price, adjusted for inflation using the Consumer Price Index (CPI) adjustment statistic of .726, is \$ 13.54 – an increase in cost of 8%.

VVC contracting – In FY 1988, six fulltime and eleven part-time State employees counted 420 locations at a unit cost of \$ 919. In FY 2000, contract employees, supported by one state employee fulltime and two state employees part of the time, counted 418 locations at an adjusted unit cost of \$ 1,036.61 – approximately 12% higher. FY 1988 is use for this comparison because it is the year prior to the introduction of automatic data collection and the commingling of the costs for both processes in a single account.

**Future plans (if applicable):**

We are currently in the process of creating a contract for collection of Automatic Vehicle Classification (AVC) data for data modeling needs and to satisfy FHWA data requirements for the local road system. We foresee a future need for contracts designed for the installation and maintenance of telemetric traffic data collection hardware.

**NCHRP Project 20-24(14) Survey**  
**Managing Change in State Departments of Transportation**

**Date:** 2-15-2001

**Agency:** Texas DOT, DC Greer State Hwy Bldg, 125 E. 11<sup>th</sup> St., Austin, TX 78701

**Agency Contact:** Vic Holubec, 512-463-8623, [vholubec@dot.state.tx.us](mailto:vholubec@dot.state.tx.us)

**Staff Contact:** Richard Wilkison, (512) 416-2276, [rwilkison@dot.state.tx.us](mailto:rwilkison@dot.state.tx.us)

**Description of Outsourced Activity:**

Design of bridge structures both on system and off system. The off system structure work also has elements of roadway design for the approaches, hydraulic design and foundation design as well as bridge design

**Source of "Decision" to Outsource:**

Mandated a minimum of 35% by the state legislature, a legislative cap on the number of employees in the Dept. of Transportation and a 50% increase in construction funding that can't be handled by the in-house staff.

**Type of Contractual Arrangement for Outsourced Activity:**

Indeterminate Delivery Contracts set up for two years and activated by work authorizations.

**Level of Implementation (Outsourced vs In-House & Total - - in \$):**

Our nine current contracts have a limit of \$33 million for the next two years, but the amount actually spent will be determined by the work authorizations signed. The work authorizations are dependent on the projects prioritized to be constructed during the next two years.

**Level of Improved Quality or Efficiency (Cost/ Savings/ Measured Benefits):**

We get the project plans out the door to go to contract to be built. The quality of outsource plans varies greatly depending on the consultant firm's staff. The cost is more than if it were done in-house since the private sector pays better than the public sector and the public sector is not required to make a profit. However the work gets done and that is all that matters.

Describe Any Special Demands or Impact Realized by Direct Staff or on Core Agency Capabilities (as result of this outsourced activity):

We are rapidly losing our core of experienced staff to the private sector since the private sector pays dramatically better than the public sector. The concern is that in the not too distant future the department of transportation will not have staff qualified enough to even manage the consultant contacts.

**Cost Experience:**

The per square foot cost of our structures has gone from about \$33 a square foot to build to about \$40 a square foot to build in the past several years.

**Future plans (if applicable):**

We will continue to use more and more consultants just to be able to produce the plans needed to go to construction.

**NCHRP Project 20-24(14) Survey**  
**Managing Change in State Departments of Transportation**

**Date:** 2-15-2001

**Agency:** Texas DOT, DC Greer State Hwy Bldg, 125 E. 11<sup>th</sup> St., Austin, TX 78701

**Agency Contact:** Vic Holubec, 512-463-8623, [vholubec@dot.state.tx.us](mailto:vholubec@dot.state.tx.us)

**Staff Contact:** Keith Ramsey, (512) 416-2250, [kramsey@dot.state.tx.us](mailto:kramsey@dot.state.tx.us)

**Description:** Routine Bridge Inspection

**Source of “Decision” to Outsource:**

Internal initiative that was driven by a lack of qualified personnel

**Type of Contractual Arrangement for Outsourced Activity:**

Two year contracts where work is issued by work authorizations

**Level of Implementation (Outsourced vs In-House & Total - - in \$):**

Outsourced: 85% - \$15,000,000

In-house: 15% - ????

**Level of Improved Quality or Efficiency:** Information not available

**Describe Any Special Demands or Impact Realized by Direct Staff or on Core Agency Capabilities (as result of this outsourced activity):**

Large amount of contract management duties are performed by the Bridge Division

**Cost Experience:** Information not available

**Future plans:** No changes anticipated

**NCHRP Project 20-24(14) Survey**  
**Managing Change in State Departments of Transportation**

**Date:** February 20, 2001

**Agency:** Texas DOT, DC Greer State Hwy Bldg, 125 E. 11<sup>th</sup> St., Austin, TX 78701

**Agency Contact:** Vic Holubec, 512-463-8623, [vholubec@dot.state.tx.us](mailto:vholubec@dot.state.tx.us)

**Staff Contact for Input:** Joe Graff, (512) 416-3195, [jgraff@dot.state.tx.us](mailto:jgraff@dot.state.tx.us)

**Major Project Delivery Function Involved (circle appropriate):** Maintenance

**Brief Description of Outsourced Activity:**

Developed a "Total Maintenance Contract" for the maintenance of IH 35 in our Waco District and another for IH 20 in the Dallas District. These are lump sum contracts for a period of 5 years with a 3 year extension clause. They are performance based.

**Source of "Decision" to Outsource:**

Internal decision, based upon external pressure by industry.

**Type of Contractual Arrangement for Outsourced Activity:**

Low Bid Contract through normal State Let Maintenance Contract

**Level of Implementation (Outsourced vs In-House & Total - - in \$):**

Texas was already contracting approximately 55% of a \$900M budget through conventional bid item contracts. These contracts for \$19.8M and \$11.3M are a very small percentage of our overall budget .

**Level of Improved Quality or Efficiency (Cost/ Savings/ Measured Benefits):**

Since we are only about 18 months into the contracts, the level of quality is yet to be determined. Performance to date has not been as good as we had expected. We expected the contractor to manage the "asset" and determine what needs to be done to meet the performance standards. To date, we have had to direct the contractor to perform a lot of the repairs. The prices bid were about the same as our last years cost, however, our cost was escalating annually. If the levels of service are maintained at a comparable level of service, we anticipate a cost savings over the life of the contracts.

**Describe Any Special Demands or Impact Realized by Direct Staff or on Core Agency Capabilities (as result of this outsourced activity):**

The biggest impact has been on our employees. One of our districts did a good job of selling their employees and as a result, very little concern has been expressed. In the other district, the maintenance section employees have been very slow to accept the change. It has allowed our maintenance sections to concentrate their limited resources on non-interstate highways.

**Cost Experience:**

Waco Previous three year average price - \$3,876,626  
Contract Price (five year average annual) - \$3,969,800  
Dallas Previous three year average price - \$2,522,696  
Contract Price (five year average annual) - \$2,260,000

**Future plans (if applicable):**

We are rewriting specification to include lessons learned to date. We anticipate utilizing this type of contract as another tool in getting the work performed. Several TxDOT districts are discussing the use of performance based contracting including Houston, Ft. Worth, Laredo and Pharr.

We are also preparing specifications to maintaining all of our safety rest areas by performance-based contracts. We will likely split the 100+ rest areas in the state into two contracts.

**NCHRP Project 20-24(14) Survey**  
**Managing Change in State Departments of Transportation**

**Date:** 02/21/01

**Agency:** Texas DOT, DC Greer State Hwy Bldg, 125 E. 11<sup>th</sup> St., Austin, TX 78701

**Agency Contact:** Vic Holubec, 512-463-8623, [vholubec@dot.state.tx.us](mailto:vholubec@dot.state.tx.us)

**Staff Contact for Input:** Lain Ellis, (512) 416-2109; [lellis@dot.state.tx.us](mailto:lellis@dot.state.tx.us)

**Project Delivery Function Involved:** Planning

**Brief Description of Outsourced Activity:**

Cultural Resources Management (CRM) services for compliance with Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas

**Source of “Decision” to Outsource:**

Internal initiative prompted by increasing workloads in an environment of legislatively set FTE limits, increasing regulatory requirements, and a general public expectation for governmental downsizing and increased outsourcing.

**Type of Contractual Arrangement for Outsourced Activity:**

Indefinite Delivery contracts for archeological services

**Level of Implementation (Outsourced vs In-House & Total - - in \$):**

- \$2.1. million committed during FY00 for outsourced CRM services
- \$769,000 in-house CRM costs;
- \$ 2.87 million total for CRM services

**Level of Improved Quality or Efficiency (Cost/ Savings/ Measured Benefits):**

Private sector services are more expensive, but are necessary to compensate for lower levels of in-house staffing relative to increasing work-load.

**Describe Any Special Demands or Impact Realized by Direct Staff or on Core Agency**

**Capabilities (as result of this outsourced activity):**

Requires Environmental Affairs Division archeological staff to acquire contract management skills that are not typically part of the required educational background.

**Cost Experience:**

Costs for contracting are on an increasing trajectory that tracks increasing construction budgets and increasing complexity of compliance requirements.

**Future plans (if applicable):**

We will continue and possibly expand our CRM contracting activities.



**NCHRP Project 20-24(14) Survey**  
**Managing Change in State Departments of Transportation**

**Date:** 02/21/01

**Agency:** Texas DOT, DC Greer State Hwy Bldg, 125 E. 11<sup>th</sup> St., Austin, TX 78701

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**Staff Contact:** Lain Ellis, (512) 416-2109; [lellis@dot.state.tx.us](mailto:lellis@dot.state.tx.us)

**Major Project Delivery Function Involved:** Planning

**Brief Description of Outsourced Activity:**

Contracts to provide for the necessary environmental studies and analyses and the production of Environmental Assessments (EAs).

**Source of "Decision" to Outsource:**

Internal initiative prompted by increasing workloads in an environment of legislatively set FTE limits, increasing regulatory requirements, and a general public expectation for governmental downsizing and increased outsourcing.

**Type of Contractual Arrangement for Outsourced Activity:**

Two Indefinite Delivery contracts for development and production of Environmental Assessments.

**Level of Implementation (Outsourced vs In-House & Total - - in \$):**

For the Environmental Affairs Division:

Outsourced: We expect to shortly issue \$2.0 million for a two-year period

In-house \$0.00. The Environmental Affairs Division currently does not produce Environmental Assessments

Total: \$2,000,000.00

**Level of Improved Quality or Efficiency (Cost/ Savings/ Measured Benefits):**

Cost savings, if any, are currently unknown, but environmental documentation services are necessary to accommodate high levels of agency-wide need and increasing work-load.

**Describe Any Special Demands or Impact Realized by Direct Staff or on Core**

**Agency Capabilities (as result of this outsourced activity):**

Requires Environmental Affairs Division staff to acquire contract management skills that are not typically part of the required educational background.

**Cost Experience:**

Costs represent a new expenditure for the Environmental Affairs Division.

**Future plans (if applicable):**

We will continue and possibly expand our environmental contracting activities.

**NCHRP Project 20-24(14) Survey**  
**Managing Change in State Departments of Transportation**

**Date:** 2/8/01

**Agency:** Texas DOT, DC Greer State Hwy Bldg, 125 E. 11<sup>th</sup> St., Austin, TX 78701

**Agency Contact:** Vic Holubec, 512-463-8623, [vholubec@dot.state.tx.us](mailto:vholubec@dot.state.tx.us)

**Staff Contact for Input:** Jack Foster, 512-486-5024, [jfoster@dot.state.tx.us](mailto:jfoster@dot.state.tx.us)

**Major Project Delivery Function Involved:** Planning

**Brief Description of Outsourced Activity:**

Using a General Engineering Consultant to assist in managing the development of route location and environmental studies for IH 69 (a 1,000 mile, new IH)

**Source of “Decision” to Outsource (i.e., External Mandate/ Internal Initiative):**

Internal initiative to cope with staff shortages.

**Type of Contractual Arrangement for Outsourced Activity:**

Cost plus fixed fee.

**Level of Implementation (Outsourced vs In-House & Total - - in \$):**

\$ 2.1 million for first six month – no in-house comparison available.

**Level of Improved Quality or Efficiency (Cost/ Savings/ Measured Benefits):**

Benefit will be a route alignment decision that is coordinated throughout the state.

**Describe Any Special Demands or Impact Realized by Direct Staff or on Core Agency Capabilities (as result of this outsourced activity):** None.

**Cost Experience:** General Engineering Contract not executed.

**Future plans (if applicable):** Not available/ applicable.

**NCHRP Project 20-24(14) Survey**  
**Managing Change in State Departments of Transportation**

**Date:** 2/21/01

**Agency:** Texas DOT, DC Greer State Hwy Bldg, 125 E. 11<sup>th</sup> St., Austin, TX 78701

**Agency Contact:** Vic Holubec, 512-463-8623, [vholubec@dot.state.tx.us](mailto:vholubec@dot.state.tx.us)

**Staff Contact:** James P. Barta, Jr., P.E., (512) 416-2109; [jbarta@dot.state.tx.us](mailto:jbarta@dot.state.tx.us)

**Major Project Delivery Function Involved:**

Planning, Design, Construction, Operations

**Brief Description of Outsourced Activity:**

Management of hazardous materials requires interaction with several function areas of project delivery including planning, design, construction, and facility operations. Hazardous Materials Management Section contracts for professional environmental engineering services including environmental site assessments, hazardous materials investigations, health-based risk assessment determinations and evaluations, remediation system design and oversight, corrective action and closure plans, and permit applications. Non-professional engineering services contracts include surveys and inspections for asbestos containing material (ACM), preparation of asbestos abatement plans, and monitoring of asbestos removal.

**Source of "Decision" to Outsource:**

Internal initiative prompted by increasing workloads, legislatively set FTE caps, limits on in-house expertise, increasing regulatory requirements, and a general public expectation for governmental downsizing and increased outsourcing.

**Type of Contractual Arrangement for Outsourced Activity:**

Twelve Indefinite Delivery contracts for professional engineering services over a two-year period. Eight purchase of service contracts (open purchase orders) for asbestos services over a two-year period.

**Level of Implementation (Outsourced vs In-House & Total - - in \$):**

\$9.0 million committed during two-year period for professional engineering services.

\$1.6 million committed during two-year period for asbestos services.

**Level of Improved Quality or Efficiency (Cost/ Savings/ Measured Benefits):**

Private sector services are more expensive, but are necessary to compensate for lower levels of in-house staffing relative to increasing work-load.

**Describe Any Special Demands or Impact Realized by Direct Staff or on Core Agency Capabilities (as result of this outsourced activity):**

Required HMM staff to acquire contract management skills that are not typically part of the required educational background.

**Cost Experience:**

Costs for contracting are on an increasing trajectory that tracks increasing construction budgets and increasing complexity of compliance requirements.

**Future plans (if applicable):**

We will continue and possibly expand our HMM contracting activities.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 02/14/01

**Activity:** Design - I-15 Design/Build Project Teaming

**Agency:** Utah DOT, 4501 South 2700 West, Salt Lake City, UT 84119

**Contact:** Thomas R. Warne, Executive Director and CEO,  
801-965-4027, 801-965-4338 Fax  
[twarne@dot.state.ut.us](mailto:twarne@dot.state.ut.us)

**Description:**

The Department developed an RFP where the design responsibility and authority was given to the design build contractor. The Department's design role was over sight. The design build consultant is actually the engineer of record for the I-15 project.

**Implementation Level:**

On a traditional project, the Department usually has fully authority and responsibility for the project's design. On this project, the Department believed that the contractor must assume this role. This would allow them the greatest flexibility to achieve/meet/exceed the project's performance specification. The thought was that this arrangement would provide the Department with the best design for the least cost. The Department performed 'over the shoulder' reviews of the work in progress, and participated in task forces which were developed to handle the various design parameters, eg. geotechnical. No interim approvals were required as in the traditional process. Only a final approval was required.

**Measured Benefits:**

The I-15 project design was completed about six months ahead of schedule. It is understood that the design firm received a large bonus for this effort. The design was accepted by the Department. Most personnel were happy with the task forces and how they addressed the various design problems.

**Implementation Barriers:**

The biggest problem was having the contractor, their consultant, as well as agency personnel learning the new way to do business. Once the culture shock was overcome, the groups worked well together. Also there was concern from outside agencies on how much authority and responsibility should be transferred to the contractor.

**Special Demands of Agency:**

The DOT spent many hours developing a good set of performance based specifications for the DB contractor/ consultant to use on the project. This required a changing in thinking from the traditional prescriptive specifications. Also, many working relationships with other entities, eg. FHWA, had to be modified in order to allow the new 'over the shoulder' review process to function.

**Cost Impact:**

The design cost for the I-15 project, as reported by the design builder was about \$100 million. This was within the engineer's estimate, so there were no direct change in cost impacts. Had this been a traditional design-bid-build project the cost may have been more since several different consultants would have been used. The Department did not have the manpower to design the project.

**Future Plans:**

The Dept. is generally satisfied with the design methods used on the I-15 project. There will be additional tweaking of the Department's role as more design build experience is obtained.

**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 02/14/01

**Activity:** Pre-Construction - I-15 Design/Build Project Teaming

**Agency:** Utah DOT, 4501 South 2700 West, Salt Lake City, UT 84119\

**Contact:** Thomas R. Warne, Executive Director and CEO,  
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**Description:**

The Department hired a consultant, Parsons Brinkerhoff, to provide various services to develop the I-15 project Request For Proposals (RFP) and other items needed to get the first highway design build project in the state 'off the ground'. PB provided expertise in contracting, developing specifications, etc. as well as provided manpower in other areas that was needed for the successful start of the project.

**Implementation Level:**

The Department fully implemented the use of PB as a resource to develop and meet every preconstruction task needed to develop the I-15 RFP and get the I-15 project going. PB employees were given authority and power equivalent to UDOT employees.

**Measured Benefits:**

The Department did not have the expertise or manpower to successfully perform all preconstruction operations/items within the tight time frame. With the assistance of PB, the Department successfully developed and RFP and advertised and awarded the I-15 design build contract within the specified time frame and budget.

**Implementation Barriers:**

Both Dept and consultant personnel were unfamiliar with these new roles, which created some problems with melding together as a team. There were also problems encountered with the use of Dept. and consultant equipment. This was overcome over a period of time as the Dept. established itself in the necessary leadership role.

**Special Demands of Agency:**

There was some significant start up costs, e.g. providing computers, etc. which will need to be budgeted. Also, the proper training in design build and the special teaming between consultant and Dept. is a must.

**Cost Impact:**

Consultants usually have higher overhead rates, but UDOT has been able to work with the consultant on the fee and other markups to an appropriate level. Also, the Dept. did not need to add FTEs for this function

**Future Plans:**

The Dept. may hire a consultant in this capacity on larger projects. For typically sized projects, UDOT has gain sufficient expertise to perform all necessary preconstruction and development tasks.



**NCHRP Project 20-24(14)**  
**Managing Change in State Departments of Transportation**

**Date:** 02/14/01

**Activity:** Construction - I-15 Design/Build Project Teaming

**Agency:** Utah DOT, 4501 South 2700 West, Salt Lake City, UT 84119

**Contact:** Thomas R. Warne, Executive Director and CEO,  
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[twarne@dot.state.ut.us](mailto:twarne@dot.state.ut.us)

**Description:**

On the I-15 Design-build project, much of the quality acceptance role was turned over to the contractor. The contractor is typically responsible for just the quality control aspects of the work. The Department's role was one of independent assurance and verification testing.

**Implementation Level:**

The Department turned over a significant portion of the quality acceptance role over to the contractor, in both materials and inspection areas. It was estimated that the Department would have had to have hired 200 to 300 additional construction inspection personnel had the Department kept all of the quality acceptance responsibilities. The Department hired another consultant to help with the materials verification testing, which performed the testing at approximately 10 percent of the contractor's level. The Department performed independent assurance testing of the contractor's and the Department's consultant.

**Measured Benefits:**

Having the contractor be responsible for the quality control and a portion of quality acceptance fits in with the design build concept. The contractor is best able to control his processes, and by having the responsibility and authority to make construction decisions streamlines the entire operation. Also, the potential for claims, delays, etc. is basically eliminated.

**Implementation Barriers:**

One of the biggest hurdles was federal law, which stated that the DOT must accept the work. There was much discussion on how much the Department could rely on contractor testing and inspection for acceptance. Working with our partners at FHWA, the Department was able to meet its goals while satisfying the FHWA requirements. Also, the Department inspectors were used to their traditional inspection roles. They needed to understand their new roles. This took some time for them to understand.

**Special Demands of Agency:**

The Department needs to providing an appropriate amount of training to its personnel so that they may understand how design build projects work, and what their role is on this new type of project.

**Cost Impact:**

The contractor indicated that the construction quality control/quality acceptance cost was \$11 million. This number is half of the engineer's estimate. At this point in the project, the contract agrees that his costs were light. Regardless, there is efficiency, by having the contractor responsible for a significant portion of the inspection and testing.

**Future Plans:**

The Department will continue to explore what the best mix of responsibilities and authority is best on design build projects. The Department is committed to have the contractor play a significant role in this area because of its advantages on this type of project.