

PROCURING AND ADMINISTERING OUTSOURCED SERVICES

Apart from examining the reasons for outsourcing, another purpose of this study was to identify the methods by which DOTs obtain services when they decide to outsource. The number of survey responses from the DOTs was gratifying, with nearly 500 individual outsourced activities reported on within the seven activity groups. The data volume has provided much valuable information about the types of contractors most frequently used for a particular service, method of procurement, how the payment process is structured, and management of the contract. This chapter examines the results of these responses.

TYPES OF CONTRACTORS

The survey data show that a wide variety of contractors provide services for the state DOTs. In concert with what had been undertaken for the preparation of *NCHRP Synthesis 246*, the survey offered the states six choices of contractors for each of the activities reported on.

- General Contractor,
- Specialty Contractor,
- Consultant,
- Minority/Disadvantaged Firm,
- Another Public Agency, and
- Other.

The raw data in Table 10 show the distribution of activities among different types of contractors. A summation of all activities reveals that the vast majority (82%) of outsourcing goes to General Contractors, Specialty Contractors, and Consultants. Perhaps the most interesting of the data elements in the table is the relatively high number of

outsourced activities actually going to Another Public Agency. At 8%, this represents a surprisingly sizeable portion of outsourced work. Valuable insights from these data can be gained from looking at the specific numbers for each category of contractor and relating them to the activities. For example, General Contractors were used in 14% of the activities outsourced. However, only one activity in Administration and two in Construction were reported to have used this type of contractor to perform their services. Only two Planning activities used a General Contractor and only six in the Right-of-Way activity group did. However, in the areas of Maintenance and Operations, General Contractors ranked second behind Specialty Contractors in the number of activities that were outsourced. The major point to be gleaned from this information is that the type of contractor used is very specific to the type of activity and that certain activities are more suited for a particular contractor type.

Two of the most routinely used providers of outsourced services are Consultants, with 37% of the activities, and Specialty Contractors, with 31%. Each has broad penetration in the outsourcing market among state DOTs except for certain categories. That is, consultants have a single reported role in the area of Maintenance, and Specialty Contractors have only a small share of the Design and Construction activity groups.

In considering the types of activities outsourced, it is clear why Specialty Contractor ranks high in many areas but lower in others. As presented in the previous chapter, one of the reasons that DOTs outsource is their need for specialized skills or equipment, which logically implies the need for a Specialty Contractor. In addition, the nature of

TABLE 10
TYPE OF CONTRACTORS (1996 vs. 2002)

Activity Group	General Contractor	Specialty Contractor	Consultant	Minority Contractor	Another Public Agency	Other
Administration	2	12	13	2	7	1
Construction	3	5	20	2	4	0
Design	10	9	59	4	1	1
Maintenance	57	62	5	6	8	2
Operations	18	32	6	2	0	0
Planning	4	12	19	0	12	6
Right-of-Way	1	19	18	0	0	0
Other	9	15	9	6	2	4
Total Activities	104	166	149	22	34	14
% Reported in 1996	21	34	30	5	7	3
% Reported in 2002	14	31	37	7	8	3

the services provided by Consultants makes their suitability for Maintenance activities very low.

The most common activity group for Consultants was Design. Within the Design activity group were a number of areas wherein this type of firm did a large portion of the outsourced work. In order of frequency, Consultants were used most often in

- Environmental impact studies,
- Engineering/design,
- Plans and specifications, and
- Locations.

There may have been some overlap in responses relating to engineering/design as well as plans and specifications. The original study examined plans and specifications only and not engineering/design. However, in this current study, it was felt that there were some engineering/design activities, such as geotechnical studies, drainage studies, and others that were not fully captured in the description given by plans and specifications. Analysis of the particular data must be done in that context.

For Specialty Contractors, the most commonly outsourced activities were found in Maintenance. The activities most often using this type of contractor were

- Roadside,
- Bridges,
- Traffic signals, and
- Traffic signs.

The activities under Another Public Agency that were outsourced by state DOTs merit further attention. For example, the Administration activity group received 12 responses, with the most commonly cited activities including training and database management. It is clear that other public agencies are also involved in Planning (21 activities cited) and Maintenance (14 activities cited). The most common activities under each of these activity groups were as follows:

- Planning
 - Traffic surveys,
 - Nonhighway activities,
 - Traffic studies, and
 - Research.
- Maintenance
 - Traffic signals,
 - Roadside maintenance, and
 - Traffic signs.

Table 10 also shows results from *NCHRP Synthesis 246* relating to the frequency of use for different contractor types. Note that the ranking for each type of contractor has not changed, nor has there been a significant change in

frequency for any contractor types. Ultimately, it is the type of activity that influences the type of contractor selected for a particular outsourced service.

SELECTION METHODOLOGY

The selection methodology for a particular activity was also sampled in this study. With a wide variety of activities being outsourced and a number of methods available for this procurement, the intent was to determine trends in that significant aspect of outsourcing. The survey presented the DOTs with five choices for selection method.

- Low bid—Selection is based on price alone.
- Negotiated agreement—This method is a hybrid between the consultant and sole source processes; however, it occurs often enough as to merit its own category.
- Consultant—This method is based on the federal legislation often referred to as the Brooks Act, which requires that engineering services be procured based on qualifications and not on price. From this act came the principle of Qualifications Based Selection (QBS), which is used in most states to select consulting services.
- Sole source—This method is used when a specific vendor or service provider is desired. The vendor usually offers a very specific skill or knowledge that may be unique and not readily available from other vendors. Generally, a laborious process is employed for procuring services in this method because of strict procurement codes in the states.
- Other—This method pertains to any other procurement method not specifically mentioned in the other four categories.

Table 11 shows the data gathered for the *NCHRP Synthesis 246* study in aggregate format. Four choices (including “other”) were given to the DOTs regarding the selection method used. The table also shows the data gathered as part of this study, which added a fifth category of selection method, consultant. With many contracts going through a QBS process, it appeared that this additional category would be relevant to the overall selection methodology.

A review and comparison of the data from both studies show consistency between the two in the selection methods used by the DOTs. For example, a majority of the procurements are done through low bid, negotiated agreement, and consultant in this study, as well as low bid and negotiated agreement in the earlier study. In both cases, sole source and other are cited less frequently.

The analysis performed for selection method is similar to that performed for type of contractor review. Again,

TABLE 11
CONTRACTOR SELECTION METHOD (1996 vs. 2002)

Activity Group	Low Bid	Negotiated Agreement	Consultant	Sole Source	Other
Administration	9	16	20	14	2
Construction	7	5	15	2	2
Design	4	36	40	3	3
Maintenance	92	15	0	4	5
Operations	55	16	7	3	7
Planning	5	40	38	19	7
Right-of-Way	33	51	15	13	15
Total Activities	205	179	135	58	41
% Reported in 1996	43	45	5	7	—
% Reported in 2002	33	29	22	9	7

which selection method to use is determined by the type of activity being outsourced. For example, the low bid method is used very heavily in the Maintenance activity group, where activities such as grass cutting, litter removal, and others are more conducive to a straight evaluation by price. On the other hand, activities in the Administration activity group such as database management and staff programs are based more on value and deliverability and less on price, thus showing a tendency toward the consultant method.

In the case of the consultant selection methods, including QBS, the most frequently cited activities were in the Planning and Design activity groups, with some distribution in Administration, Construction, Operations, and Right-of-Way. Historically, sole source procurements are used judiciously in state DOTs. This is confirmed in both this study and the work performed for the earlier synthesis. The Planning activity group showed the highest frequency of sole source procurement, although the most frequently outsourced activities were procured using negotiated agreement. Therefore, even in the activity group in which sole source is the most prevalent method, the most frequently outsourced activities do not use this procurement method. This situation further confirms the conclusion that sole source is reserved for very specific circumstances and is a distant fourth as a method of procurement. From the survey results, it was found that the area of training within the Administrative activity group was the activity that was most often procured using the sole source method.

PAYMENT METHODS

Payment for services is another attribute of outsourcing that differs from activity to activity. For the purposes of both the previous synthesis and this study, the following five payment methods were examined within the scope of each of the 31 activities surveyed:

- Unit price—Payment is made to the contractor based on an agreed upon price per unit of work performed. For example, this may be payment for 1 mi of litter pickup or a payment per right-of-way appraisal performed.
- Lump sum—This is a method of compensating the contractor for a defined amount of work. Final payment is agreed upon as a fixed amount, and no other compensation is offered or available.
- Cost plus—This method establishes an agreed upon process in accounting for the direct costs of performing the outsourced work. Also, a modifier is established to account for overhead expenses, profit, and other indirect costs.
- Hourly rate—This method consists of an agreed upon hourly rate combining direct costs, indirect costs, and profit as a unit that has been condensed to an hourly rate to be charged for the work performed. No other charges or costs are considered, because everything is included at the hourly rate.
- Other—Other methods of payment exist; however, they are generally hybrids of the previous categories.

The survey results for payment method are found in Table 12. The two most common methods of payment for outsourced services are unit price and lump sum. These two methods combined account for more than 62% of the 495 activities reported on by the states. To a lesser extent, cost plus and hourly rate were also used with a combined frequency of 35%.

An examination of the data reveals that most activity groups use a variety of methods for payment. The type of activity appears to be the most important predictor of payment method. For example, in the Maintenance activity group are activities more commonly procured using a low bid method, whose price and payment structure follows the unit price format. In the Design activity group, the most frequently outsourced activities use cost plus, with the exception of design/build, where the payment method is lump sum. This finding reflects that different procurement methods are used in the design/build segment of outsourced activities.

By a wide margin, the Operations activity group has unit price as its most common form of payment. An examination of the most frequently outsourced activities in Operations

TABLE 12
CONTRACTOR PAYMENT METHOD

Activity Group	Unit Price	Lump Sum	Cost Plus	Hourly Rate	Other
Administration	17	20	7	20	3
Construction	9	4	12	8	2
Design	5	24	43	11	5
Maintenance	80	22	3	19	4
Operations	54	14	9	4	4
Planning	15	44	31	20	3
Right-of-Way	53	29	6	22	1
Total Activities	233 (37%)	157 (25%)	111 (18%)	104 (17%)	22 (3%)

(pavement markings, signal installation, and ITS) indicates why this is so. All of these activities lend themselves to a unit price format for payment.

The Design and Planning activity groups have the broadest cross section of payment methods among the seven groups. Although hourly rate and unit price rank third and fourth for both activity groups, it is useful to ob-

serve that some activities within those groups still use the two methods. However, the activities paid for by using these two methods rank very low in frequency among the overall list of outsourced activities in each group. As with the other facets of outsourcing reviewed in this survey, payment method reflects trends in the states. The type of activity being outsourced continues to influence the payment method used.

EFFECTIVENESS OF OUTSOURCING

The effectiveness of outsourcing is the subject of much discussion and consideration in public transportation. However, the challenge of determining effectiveness lies in how it is defined. Definitions vary from DOT to DOT and may be different within activity groups depending on the activity being outsourced. Some examples of effectiveness measures are

- Cost-effectiveness,
- Schedule constraints,
- Product delivery,
- Compliance with legal requirements, and
- Fulfilling legislative or executive intent.

Although not all of these definitions are relevant to each activity being outsourced, each is a possible element in the decision about whether an activity has been successfully or effectively outsourced.

COST-EFFECTIVENESS

Even within these definitions, variations arise in the interpretation of effectiveness. For example, it might be suggested that if the cost-effectiveness concept were used to measure success, then it would be achieved only if the outsourced activity were to cost less than it would if provided by in-house employees. That may not always be the case.

This study shows at least two approaches to examining outsourcing and evaluating cost-effectiveness. The first considers the cost of outsourced versus in-house services in terms of an immediate or “current cost.” In this case, direct costs of labor, equipment, and overhead between the private sector and in-house resources are considered. The two values are compared and a conclusion is reached.

A second approach to cost-effectiveness goes beyond the current cost associated with outsourcing and examines the life-cycle cost of the decision. The life-cycle approach considers expenses associated with the current cost of both private and public efforts and then adds in long-term costs incurred by both approaches. In the public-sector case, costs associated with labor and overhead continue to accrue as long as those resources (employees and equipment) are a part of the organization. For outsourced services, once the task is completed, then the private company, its employees, and equipment go away. Many would propose

that the only way to make a valid case on the cost-effectiveness of outsourcing is to use the life-cycle approach.

A discussion of cost-effectiveness goes beyond the basic analysis of direct and indirect costs of private versus public delivery of products and services. Perhaps the most significant cost for delivery of a project relates to the delivery deadline. For example, if there is a project requiring engineering/design work, a DOT will have to decide whether to perform the work in-house or outsource it to an engineering firm. Direct analysis of costs may show that this type of design work could be performed for less money by in-house staff, but that work might be delayed because of a heavy project backlog. When such a project is delayed, additional costs must be considered. For example, there can be an inflation increase to the construction costs and also a relative increase in design costs. All together, they represent larger cost factors than the small incremental increases that might be incurred with outsourced engineering/design. The argument that the public sector is cheaper and should therefore perform all activities loses its validity if state forces are unable to perform the work for some period because of workload constraints.

SCHEDULE CONSTRAINTS

Many states cited staffing issues as a reason to outsource agency activities. DOT comments often reflected a need to complete projects within a given time, but also frustration that in-house resources were not adequate. Not having the luxury of sufficient time, they turn to outsourcing to achieve the goal of delivering a product or service. Therefore, schedule constraints, although not always mentioned, are implied in a response relating to staffing shortages. If an agency defines success as adhering to certain time lines, then an outsourced activity delivering within those time lines could be considered a success.

PRODUCT DELIVERY

Product delivery is another area commonly mentioned among survey responses. Some DOTs are under pressure to deliver products and services for which they are not equipped. For example, some DOTs are unable to accommodate networking or database activities incident to information technology functions. As a result, they then out-

source these activities. Some of the activities in the Operations activity group, such as those dealing with ITS, also fall within this scenario. Effectiveness of the activity is gauged by the success of the private contractor in accomplishing a task the state was unable to perform.

LEGAL REQUIREMENTS

Sometimes legal requirements motivate DOTs to outsource; therefore, a new definition of success emerges in those states. For example, in South Carolina, legislation has mandated an increasing amount of privatization in maintenance operations. In Washington, Arizona, and Utah, statutory limits exist on the amount of work maintenance forces can perform. Anything exceeding that amount must be outsourced. In defining effectiveness in these situations, compliance with the law and successful product delivery become major considerations for evaluating success.

LEGISLATIVE OR EXECUTIVE INTENT

Fulfilling legislative or executive intent is another measure of effectiveness in evaluating outsourced activities. For example, the Florida DOT was recently required by the governor to achieve a 25% reduction in staff over a 3-year period. With new funding from TEA-21 and state sources, the DOT has had to increase the amount of outsourcing. In addition to increasing the number of firms hired directly to complete Florida's work, the DOT has undertaken the largest design/build program in the country. Design/build, using a team consisting of a contractor and an engineer, has thus been used to deal effectively with one major consequence of executive intent. Other states such as South Dakota and Iowa have undergone similar staff reductions, resulting in increased outsourcing to accommodate their workloads.

SATISFACTION WITH OUTSOURCING

This project and the results from *NCHRP Synthesis 246* indicate varying levels of satisfaction with outsourced activities. In both surveys, respondents were asked if they were satisfied with their outsourcing efforts. In *NCHRP Synthesis 246*, the vast majority responded in the affirmative. Responses from DOTs to this project survey included states' satisfaction with the outsourced activity. Table 13 includes a summary of the satisfaction ratings for all seven activity groups and their principal activities, using a numerical score of from 1 to 10, with 10 signifying the highest level of satisfaction. No numerical data were collected

ranking satisfaction for the earlier synthesis, therefore, no comparisons will be made here.

TABLE 13
SATISFACTION LEVELS WITH OUTSOURCED
ACTIVITIES

Satisfaction Levels	Rating
Administration	7.69
Construction	6.75
Design	7.05
Maintenance	7.55
Operations	7.55
Planning	7.19
Right-of-Way	6.61
Average	7.20

A review of the activity groups shows that Administration, Maintenance, and Operations ranked higher than the other groups in this evaluation. On the other hand, Construction and Right-of-Way were ranked last, with average ratings of 6.75 and 6.61, respectively, out of a possible 10. The average of all ratings reported was 7.20.

The data reveal high and low scores for each activity. No activity received a low satisfaction rating of 1, although a few activities recorded a rating of 10. The highest rated activity was staff programs, with an average of 9.0. The lowest rated activity was relocation in the Right-of-Way activity group, at 5.57. Database management was the second lowest, with a rating of 6.0. A complete listing of each activity within the seven activity groups is provided in Appendix C.

For two activity groups, Maintenance and Operations, states reported using primarily low bid as the basis for selection. In the industry there are arguments for and against the use of the low bid method. Those in favor cite the ability to receive the most competitive price, the avoidance of any procurement problems and favoritism, and a long history of successes. Groups opposed to the low bid method feel that the owner receives more value when not always constrained to the low bidder, and that the low bid environment encourages mediocrity. The survey data reflect high levels of state satisfaction with the use of low bids in these two categories than for all other activity groups, with the exception of Administration. The results of this survey do support the arguments made by those in favor of the low bid method of selection.

Throughout the DOT survey responses there is a strong trend toward future outsourcing owing to staff constraints and the need for specialized skills or equipment. Contrasted with the average ratings reflected for most of the activities, it is clear that overwhelming satisfaction is not a driving force behind the decision to outsource.

MOST COMMONLY OUTSOURCED ACTIVITIES AND THEIR ATTRIBUTES

This study attempted to obtain the most comprehensive collection of data possible relating to the subject of outsourcing. State transportation agencies detailed nearly 500 activities, providing a wealth of information about outsourcing, both by state and collectively. The information was reviewed for trends, common themes, and characteristics, and to present additional insight. This chapter summarizes these trends, themes, and characteristics.

APPROACH

For the purposes of this chapter it was necessary to separate each activity group and review their individual activities. Data were sorted to determine which activities were most often outsourced. Not all activity groups had the same number of responses, nor were they all the same in terms of the number of activities emerging as most common. Therefore, in some cases, observations showed two activities in one activity group, whereas other groups yielded up to seven. Each activity group is then shown with the most frequently outsourced activities, with conclusions offered as appropriate.

ADMINISTRATION

The following three specific activities emerged from a review of the survey responses:

- Training,
- Staff programs, and
- Database management.

In all, 16 DOTs reported outsourcing these activities, representing 42% of the responding states. The aggregate of all survey responses revealed a number of consistent characteristics, which will be presented here. This pattern of review will follow for each of the seven activity groups. The volume of contracting out depends on the type of service. Training is on the high end (40–59%), whereas database management is split between the low end (0–19%) and the high end (40–59%), depending on the state responding. The dollar value of outsourced work performed under these private contracts is between \$100,000 and \$499,000, and states anticipate that this level would remain about the same for the next 2 years.

Relative uniformity exists in the contracting process and provider type for activities within the Administrative activity

group. For example, services are generally provided by a consultant that has gone through a form of consultant selection process, such as QBS. In addition, management is done both by local units (a district or region) and the central agency office. The method of payment for both staff programs and database management is done on an hourly basis, reflecting what could be concluded as both an inability to define scope and the need for flexibility in staffing levels for these services. On the other hand, payment for training activities is made by lump sum, indicating what could be concluded as the ability to define a specific deliverable and time frame to the point of reducing pricing complexities.

CONSTRUCTION

The Construction activity group has two activities, construction engineering and materials testing, emerging as the most commonly outsourced among the DOTs.

A total of 24 DOTs outsource one or both of these activities, representing 63% of all DOTs responding to the survey. For construction engineering, the dominant amount outsourced was in the 0% to 19% range, which probably reflects that most DOTs continue to assign field inspection and engineering work to their own employees. The dollar amount mentioned most consistently was between \$100,000 and \$499,000 in annual volume; however, several states are outsourcing more than \$1 million annually in this area. DOTs foresee that this activity will increase in volume in the next 2 years.

From the survey responses it was determined that construction engineering most often is done by a consultant that has been prequalified and is paid by a cost plus contract. The most common reason cited for outsourcing construction engineering is staff constraints.

In examining materials testing it was found that a higher percentage of work is contracted out (60–79%), but that the annual dollar amount is approximately the same. DOTs anticipate that these amounts will remain about the same for the next 2 years. Other important characteristics of materials testing are that it is usually performed by a consultant that may be paid hourly and that was selected by either low bid or through a consultant process. Again, the most frequently cited reason for outsourcing this activity is staff constraints.

DESIGN

The Design activity group has many and varied responses and much diversity among the activities that were reported on. The seven most often cited were

- Surveying and mapping,
- Location studies,
- Plans and specifications,
- Environmental impact studies,
- Design/build,
- Program management, and
- Engineering/design.

A total of 14 DOTs reported outsourcing one or more of these activities. The amount of outsourcing varies by activity with design/build and program management on the low end at 0% to 19% and environmental impact studies on the opposite end, with some reports as high as 80% to 99%. Except for design/build and engineering/design, the DOTs anticipate the level of outsourcing to remain about the same for the next 2 years for the Design activity group.

A distinct difference between the Design activity group and the others is the dollar amounts involved. Three of the seven predominant activities reported by the DOTs, environmental impact studies, design/build, and engineering/design, showed annual amounts in excess of \$10 million, although the design/build numbers may be skewed because they are inseparable from the construction or capital work associated with the projects involved. Nevertheless, the significance in volume for all three should be noted.

In the Design activity group the most frequently reported activities are performed by consultants that had been prequalified. Hiring would be through the consultant or negotiated agreement method, with the exception of the design/build activity, which would generally be awarded through a low bid. Again, the combining of both design and construction in the design/build area causes this anomaly in the results. Such contracts are also unique in that they are most likely to be paid as cost plus, whereas such is not the case with most of the other regularly outsourced activities.

The reason repeatedly cited for outsourcing activities in the Design activity group is staff constraints, with some mention of policy directive for design/build.

MAINTENANCE

The Maintenance activity group includes the following six activities that were mentioned with high frequency:

- Roadway surface,
- Roadside,

- Drainage,
- Bridges,
- Traffic signals, and
- Traffic signs.

A review of the basic characteristics of these activities reveals considerable homogeneity. For example, they all report their expected future level of outsourcing to be about the same as it is now. All activities are performed by either general contractors or specialty contractors. Their contracts are awarded based on a low bid and they are paid by unit price. Reasons for outsourcing in the Maintenance activity group are specialty skills or equipment and staff constraints.

In several other characteristics these activities did differ from one to another. For example, they are about evenly split on whether or not the potential contractors would be prequalified. The percentage of work outsourced varied from activity to activity, with roadway surface in the 80% to 99% range and drainage, traffic signals, and traffic signs in the 0% to 19% range. The others fell in between these two values. Annual volumes also varied considerably, from drainage, showing a \$0 to \$99,000 annual amount, to roadway surface, with an amount of more than \$10 million.

OPERATIONS

The following six activities are frequently mentioned in the survey responses with regard to Operations:

- Pavement markings,
- Signal installation,
- Sign installation,
- ITS,
- Toll collection, and
- Traffic information services.

The grouping of ITS (80–99%), toll collection (100%), and traffic information services (100%) represents the activities with the highest percentage outsourced among all the groups in the survey. However, even though the percentage outsourced is high for these three activities, dollar volumes are relatively low, with the exception of a report on ITS outsourcing from Arizona, where the annual amount reported was in excess of \$10 million.

Substantial consistency exists among these six activities in terms of other features. For example, they all use specialty contractors, they all go through a prequalification process, unit price is the method of payment, and the reasons for outsourcing these activities fall into two categories, staff constraints and the need for specialty skills or equipment. In addition, the DOTs anticipate the level of outsourcing in the Operations activity group as remaining approximately the same over the next 2 years.

PLANNING

The Planning activity group received more than 20 responses. Review showed that the following four activities are the most frequently outsourced among the states.

- Traffic surveys,
- Nonhighway studies,
- Traffic studies, and
- Research.

Each of these activities is outsourced in the 80% to 99% range and at dollar levels of \$100,000 to \$499,000 for the first three and \$1 million to \$1.99 million for research. In all cases, consultants are used to provide these services, and their selection is either through a negotiated agreement or consultant process. The most commonly stated reasons for outsourcing these activities are staff constraints and specialty skills or equipment.

These activities within the Planning activity group reflect the most variation in payment method of any of the groups. Depending on the activity, the method of payment could be unit price, cost plus, or lump sum.

RIGHT-OF-WAY

The final activity group considered is Right-of-Way. Facing higher program dollar amounts and consequential demands for service, DOT right-of-way sections are increasingly turning to outsourcing. The three activities most often reported by the DOTs are

- Appraisals,
- Acquisitions, and
- Relocation.

Appraisals had the highest percentage outsourced, at 80% to 99%, whereas the other two, acquisitions and relocations, were reported at 0% to 19% and 20% to 39%,

respectively. All three have annual dollar volumes of less than \$499,000. DOTs anticipate that outsourcing of acquisitions and relocation will increase in the next 2 years, whereas appraisals are expected to stay about the same.

In all cases, the most common means of providing these services is through a consultant that has been prequalified and that is being paid by the unit price method. The only reason reported for outsourcing these three activities is staff constraints. The selection method is by negotiated agreement, although in some cases for appraisals it is by low bid.

OBSERVATIONS

The following observations may be made from data received from the DOTs on all seven activity groups and the most frequently outsourced activities. First, the consistency within the activity groups reflects many commonalities among the individual activities. Second, the methods of selection and payment have great similarity for specific activities from DOT to DOT. Clear patterns exist in almost all the activity groups in areas such as the type of contractor selected and whether or not the contractor is prequalified. Probably most striking among all seven activity groups are the responses from the DOTs pertaining to influencing factors for deciding to outsource these common activities. The results of both studies reflect that the principal reasons for outsourcing these activities were staff constraints and the need for specialty skills or equipment. None of the other influencing factors mentioned in responses to this survey are given for the activities most often outsourced.

There is much to learn and understand from these activity groups and these outsourcing activities. The public sector can model programs based on the successes reported. For the private sector, there is significant value in knowing how these programs are established and in understanding their characteristics.

CONCLUSIONS

The passage of the Transportation Equity Act for the 21st Century (TEA-21) increased state capital improvement expenditures by an average of 44% in basic programs and to more than 50% if RABA (Revenue Aligned Budget Authority—a complex mechanism tying highway funding to fuel tax receipts) adjustments are included. This new federal money, coupled with additional state revenues, has increased state highway program funding to record levels. With growing expenditures comes a relative increase in all other programs within a state department of transportation (DOT). The ability of DOTs to contract with the private sector for specific activities allows them to address this ever-increasing demand on in-house resources.

This project report is an update of *NCHRP Synthesis 246: Outsourcing of State Highway Facilities and Services*. Trends identified in the 1997 study are further confirmed by the results of this project: state DOTs continue to use outsourcing as an integral tool for delivering products and services to their citizens.

Several trends emerged from reviewing the data compiled for this study. First, and perhaps most fundamental, is that 95% of all the activities sampled grew or stayed at the same high levels during the last 5 years. In addition, 89% are anticipated to continue at the same or increasing levels in the next 2 years.

DOTs outsource a variety of activities, ranging from the simplest of tasks, such as litter removal, to the most complex computer or engineering activity. The lack of sufficient staff and the right combination of skills are the predominant forces motivating states to outsource. Cost-effectiveness was infrequently mentioned as a reason for outsourcing.

Past studies and reports have focused on a variety of the attributes of outsourcing, including policy issues and cost-

effectiveness. Many efforts have attempted to compare the cost of outsourced engineering to in-house efforts. However, no study emerges as the defining work on the subject of cost-effectiveness. What is most evident from these published reports is the complexity of comparing in-house costs and outsourced expenses, as well as the lack of sufficiently accurate data from which to draw definitive conclusions.

Each DOT attempts to secure the most advantageous business relationship with the private sector through a variety of tools, including prequalification, specific selection processes, contracting methodology, and the method of payment. The data reflect that the means and methods for selecting and managing a private contractor are unique to the activity being outsourced. On the other hand, there is a high level of correlation among similar activities in their attributes and the practices used by the DOTs to secure and administer these services.

Measuring the effectiveness of outsourcing efforts is done in a variety of ways. The reported overall satisfaction across the seven activity groups was 7.2 on a scale of 1 to 10 (with 10 being very satisfied), ranging from 6.61 to 7.69. Other measures of effectiveness come in the form of successful program delivery, fulfilling schedule commitments, an ability to bring complex projects to fruition, and meeting legal requirements. As each of these elements is achieved, the DOTs can define the activity as successful. Ultimately, effectiveness is defined by each agency and is often related to the unique circumstances in a given state.

Outsourcing will continue to be a part of state DOT efforts to deliver projects and services to their constituencies. These practices will continue to mature and improve as they become more common and routine in the day-to-day business practice in the DOTs.