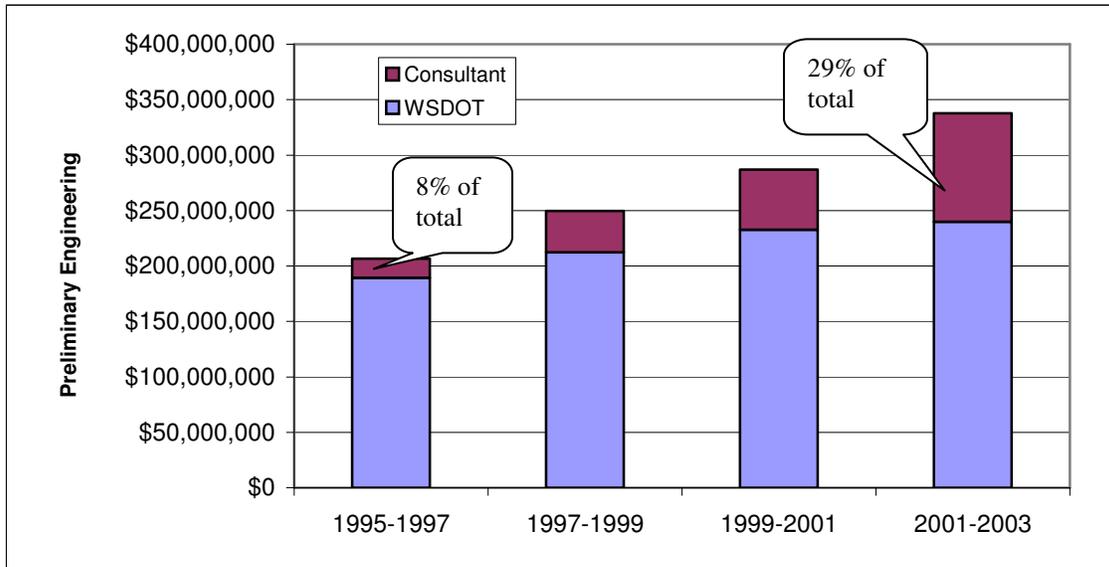


Report to the Legislative Transportation Committees
SSB 5248, Part One
Alternative Delivery Procedures for Construction Services
December 2004

This is the first report prepared in accordance with Section 103(3) of SSB 5248 (2003) on the use of construction engineering services from private firms in the delivery of the highway construction program. The types of services whose use was authorized by SSB 5248 include real estate services and construction management, construction administration, materials testing, materials documentation, contractor payments, and general administration, construction oversight and inspection and surveying. (See Section 102 of SSB 5248).

This report describes the Washington State Department of Transportation’s initial experience under this program and reports generally on the assessment of the benefits and costs associated with using construction engineering or other construction services from firms and a comparison of public sector versus private sector costs.¹

Over recent biennia, WSDOT has increased the overall share of its highway engineering and design work performed by private sector firms from about 8 percent in the 95-97 biennium to about 29 percent in the 03-05 biennium. This represents an increase from about \$17 million in 95-97 to about \$42 million in 01-03.



WSDOT Preliminary Engineering Expenditures 1995-2003

¹ Any discussion of outsourcing under SSB 5248 should note that WSDOT typically contracts with the private sector for virtually all construction work. In the 2001-2003 biennium, construction work contracted to the private sector totaled close to \$1.4 billion

Use of Private Firms on Construction Engineering and Other Authorized Services Under SSB 5248

The legislature in 2003 authorized the Washington State Department of Transportation (WSDOT) to use private firms to provide construction services and construction engineering services in the highway construction program where this would be appropriate to augment WSDOT's own workforce capacity and the services in question could not be delivered through its existing or readily available workforce (SSB 5248, Section 103(2)).

Under this authority, WSDOT has engaged private sector firms to work in the following situations:

Real Estate Services

Under the SSB 5248 authorization, WSDOT has contracted with ten consulting firms to provide real estate acquisition services for WSDOT projects.

Details of the actual tasks that each firm performs vary with the individual WSDOT project. Some include full "turnkey" services, including appraisal review. On other projects, WSDOT has requested the private firm perform only certain phases of the acquisition process, while leaving other portions to WSDOT staff. As of October 1, 2004, consultant firms have been tasked with acquisition responsibilities for approximately 150 parcels for WSDOT projects; this work represents a total consultant contract value of \$2.5 million. (Note that this figure is for the consultant work involved in acquisition and relocation, not the money actually paid in compensation to property owners for property acquisition or for relocation benefits.)

The authorization in SSB 5248 has been very helpful to WSDOT because this clearly has been an area in which WSDOT's own forces (which have in their own right been very busy on similar work on many other projects) needed to be augmented to meet the aggressive delivery schedules of the program.

WSDOT's experience with the private firms is that in general they are achieving fast turnaround times and a good result for the money. The experience, however, is not unmixed. Some of the outsourced situations have proceeded very well, and a few have been satisfactory but required significant levels of WSDOT supervision, intervention and support.

Through the end of November, 2004, the total paid for real estate services provided by private firms on these ten agreements is \$1,410,390. Total work authorized on these ten agreements to date is \$2,684,772. WSDOT expects that all currently authorized work on these agreements will be complete by December, 2005. However, there will almost certainly be new work authorized during the next year.

Construction Engineering Services

Until the passage of SSB 5248, contracting out for this work by WSDOT was not allowed by state law.

WSDOT used the SSB 5248 authority on a pilot basis on the SR-121, Maytown Interchange to 93rd Interchange paving project. This project is typical of many projects in which WSDOT enters into construction contracts with private contractors, but performs construction engineering services in-house. For this pilot project, the firm of Kris Betty and Associates was engaged by WSDOT to provide construction administration, inspection, surveying and materials testing services. WSDOT performed oversight of the consultant's work, including examination of testing personnel and equipment, and also reviewed test results to make sure that materials and processes were within allowable parameters.

An important factor in the selection of the consultant for this work was its employees' experience with WSDOT. They had a thorough understanding of WSDOT practices, specifications, and expectations. With the benefit of that experience, they performed the project administration, inspection and documentation well. They performed the proper inspections in the correct manner, provided the daily documentation of work completed by the contractor, and filed all reports in a manner consistent with WSDOT requirements. There were very few complaints from the public regarding traffic delay, an indication that the consultant was working effectively with the contract on traffic control. The work performed by the consultant was acceptable and comparable to the work performed by WSDOT employees on this type of project. WSDOT staff stated that they would hire this consultant again to do the same type of work.

The cost of the construction engineering services on this project was 17.7 percent, (including WSDOT's administrative cost), compared to a statewide average cost of 14 percent on this type of project.²

²Large scale use of out-sourced construction management and construction engineering services is currently a major topic of concern in the nationwide highway construction arena because of the unfolding revelations regarding Boston's Big Dig. On that project a joint venture of Bechtel and Parsons Brinckerhoff (Bechtel/Parsons) performed construction management, administration, and inspection under a very large contract with the Commonwealth of Massachusetts. The latest in a long series of concerns about the success of their services involved the adequacy of inspection and supervision of contractor corrective work with respect to leaks in one of the Big Dig tunnels. Concerns have also been expressed about whether Bechtel/Parsons has adequately supervised (or, in the aftermath, pursued "cost recovery" from) a large number of private design engineering service firms to whom the design work on the project was assigned. See the Boston Globe's investigative series on the Big Dig. Also see "The Boston Globe's Big Dig: A Disservice to the Truth" (Bechtel/Parsons) and "Analysis of Bechtel/Parsons Reply to the Boston Globe's series", by Commonwealth of Massachusetts Office of the Inspector General.

Public Sector and Private Sector: Relative Costs

WSDOT's own experience under essentially just one year of the SSB 5248 experience is too limited for drawing broad generalizations on cost.

It is important to note, however, that cost is only one factor, and often not the most important factor, when deciding whether or not to outsource construction engineering and other kinds of engineering services. Other factors may include:

- The best location – in-house or outsourced – for accessing specialized knowledge necessary for the most effective delivery of the work.
- The best mechanism – in-house or outsourced – for the management of workload peaks and valleys.
- The best opportunity – in-house or outsourced – for bringing innovation to the project.
- The best dividends – in-house or outsourced – in building the body of institutional knowledge that can be applied to future challenges in the general engineering arena.
- The best structure – in-house or outsourced – for assuring the integration of the highway construction aspects of the program with long term concerns for efficient and cost-effective facilities operation and maintenance.
- The best arrangement – in-house or outsourced – for assuring effective supervision and accountability in performance of the work.

Having noted that the factors above will influence the out-sourcing decision, we can now turn to the cost question.

The most recent thorough review of literature and experience in this area is *In-House Versus Consultant Design Costs in State Departments of Transportation*³. It concludes that: “The comparison of in-house and consultant design costs in the past have produced widely varying results although the majority have concluded that consultants are more expensive. This research, done for the Transportation Research Board, utilized three separate methods to compare costs. The collective interpretation of the researchers was that for the Louisiana DOT (where the study was performed), “in house designs are on the order of 80 percent of the cost of consultant designs.” However, the report also concludes that virtually all of this cost difference is due to the additional cost incurred by the DOT to prepare and administer the contract.

Other research in this area has generally concluded that consultant work is more costly than the same work done by state employees, although one study done by Caltrans indicated equal costs.

While WSDOT believes that hours spent for a given task are roughly the same for a consultant or for a WSDOT staff person, there are at least five other factors that would

³ Wilmot, C. G., D.R. Deis, H. Schneider, C.H. Coates, Jr. *In-House Versus Consultant Design Costs in State Departments of Transportation*. Transportation Research Record Paper No. 99-1403. Washington D. C., 1999.

generally lead to the conclusion that state workforce costs would be lower in a project-specific cost analysis.

- State wages are typically lower than consultant's wages for the same workforce hour.
- Private sector overheads (office rents, more extensive training and development benefits, etc.) are generally higher than their counterpart costs associated with the public sector workforce.
- Private sector costs include profits for the firm.
- Private sector costs sometimes include "start-up" expenses for the familiarization of private consultants with state standards and practices used everyday by public sector counterparts.
- Additional state costs are incurred in developing and negotiating a contract and providing follow-up liaison and administration activities when a private firm is engaged (transaction costs). A rough estimate for WSDOT consultant transactional costs is 15 percent, although the number would vary widely based on type of work, firm involved, etc.

One necessary step in improving the ability to compare costs would be to build a pro forma "overhead" rate to apply to the direct hourly rates of public sector employees for comparison to the contract costs of using private firms. (WSDOT's contracts with private engineering firms today provide for "multipliers" or overhead rates applied to direct hourly salaries that range from 100 percent to 200 percent. Development of a pro forma overhead rate for state workers would require many intricate and sometimes judgment-laden calculations and this work has not been performed. Some of the initial considerations are described in Appendix B.

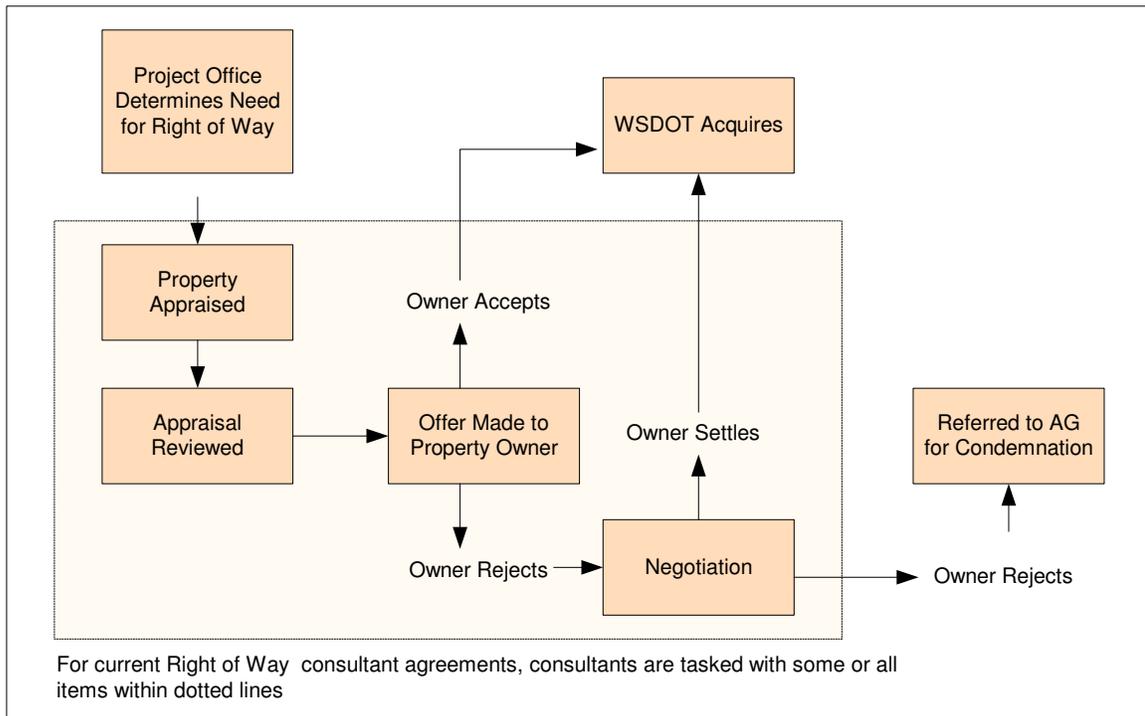
Conclusions

WSDOT currently expects to continue to use the contracting-out authorization contained in SB 5248, in accordance with its terms, mostly in order to supplement in-house workforce numbers. This will enable the timely delivery of individual projects on the schedules that the legislature has often specified and to which WSDOT is committed. This will also allow WSDOT to access specialized technical expertise where, for example, part-time utilization is all that is required and it would not be cost-effective for WSDOT to maintain full-time staff resources.

WSDOT also believes that it is important for the state to maintain a skilled and experience core workforce so that WSDOT can always play a strong owner role through the continuation of strong technical expertise, fulfilling its role as the accountable party for project delivery and reporting, and providing the linkages with other parts of the department outside the direct design and construction delivery chain (e.g. maintenance and operations).

Appendix A. Additional Information on Real Estate Services

For most of WSDOT’s history, acquisition of real estate and related relocation services have been accomplished entirely by state employees, with the exception of appraisal work and some negotiation work that has been contracted out from time to time to augment state workforce during times of peak workload. Most real estate is acquired for use as state highway right of way, including pavement, shoulders, “clear zone” adjacent to shoulders, environmental mitigation sites built and maintained in conjunction with highway work, and other miscellaneous highway purposes. WSDOT also owns some land used for maintenance facilities, materials mining sites, and office sites. The flowchart below shows the major steps in acquiring real estate for highway use.



The appraisal review part of this real estate acquisition process is very sensitive because it results in the determination of property value. It is critical that the department produces consistent, fair and accurate appraisals, and that the final determination of value includes all considerations relevant to making the appropriate offer to the property owner. These considerations can include proximity damages, values of the remaining property, and any special benefits accrued to the property as a result of the roadway improvement. WSDOT has traditionally completed this step with its own staff.

WSDOT began contracting out for real estate services shortly after passage of SSB 5248, in the fall of 2003. As of October 1, 2004, consultant firms have been tasked with acquisition responsibilities for approximately 150 parcels for WSDOT projects, with a total consultant contract value of \$2.5 million. (Note that this figure is for the consultant work involved in acquisition and relocation, not the money actually paid in compensation to property owners)

for property acquisition or for relocation benefits.) For comparison purposes, WSDOT expects to acquire a total of 840 parcels using state workforce during the 2003-2005 biennium.

WSDOT is working to implement the following measures to evaluate and compare consultant real estate acquisition with state employee provided services. Data are being gathered for WSDOT and consultant comparable projects.

Measurement Area	Goal of the Measurement
Quality Comparison (subjective, WSDOT evaluation) – Are documents prepared by the consultant the same as, better, or not as good as same documents prepared by WSDOT?	Is quality of the documents better? What quality differences matter?
Length of Time for Appraisals: 1. Length of time in appraisal 2. Length of time in appraisal review as a function of appraisal quality 3. Length of time to fix the appraisal	Are consultant hired appraisals completed faster, slower or the same? Are WSDOT hired appraisals completed faster, slower or the same? Are WSDOT staff appraisals completed faster, slower or the same? What is the reason for the difference?
Length of Time for Appraisal Review	Are consultant hired reviews completed faster, slower or the same? Are WSDOT staff reviews completed faster, slower or the same? What is the reason for the difference?
# of Appraisals Rejected by Reviewer	Is there a difference between the consultant rate and WSDOT rate?
Time to Negotiate a Settlement	Is there a difference in consultant vs. staff negotiation time and if so, what is cause?
Administrative Settlements 1. % of Administrative Settlements	Is there a difference between the consultant rate and WSDOT rate? What is the cause of the difference?

2. Reason for A.S. 3. Amounts of A. S.	
# of Parcels to Condemnation	Is there a difference between the consultant rate and WSDOT rate? What is the cause of the difference?

Data gathered to date are not yet adequate to form conclusions about consultant efficiency, cost, and schedule. In general, however, the WSDOT staff working with these consulting firms state that they are achieving fast turnaround and a good product for the price while supplementing state workforce efforts to deliver the projects on time.

Appendix B

Overhead Rates

The question of overhead rates introduces much complexity and possible confusion into comparing the relative costs of private and public sector sourcing of engineering design and construction engineering services.

Consulting firms typically include all ancillary services and capital such as accounting, executive, plant and equipment, etc. in their overhead rates. To compare the costs of government employees doing similar work, it would be useful if a similar overhead rate and fixed fee schedule could be determined. The problem is that governmental agencies provide a number of services to the public that cannot appropriately be charged as overhead in such a comparison. For instance, WSDOT provides permits for oversize/overweight trucks using the highway, maintains state highways, develops and updates standards and policies for state highway construction, and does planning work and design work for state highways. Also, WSDOT administrative services are provided across the board to the entire agency. Finally, accounting methodologies differ between private corporations and government agencies. Given existing governmental and private sector accounting standards, it is difficult to break out the separate costs for these and other segments of the agency's business that might not warrant being included in an overhead calculation.

However, the agency has spent considerable time and effort to approximate an overhead rate for WSDOT (this methodology is available upon request) that is somewhat comparable to a consulting engineering firm's overhead rate. The WSDOT analysis was based on some best estimates and assumptions while acknowledging that a direct correlation is simply not possible based on conditions previously described.

The approximated WSDOT overhead rate for engineering services is in the range of 135 percent to 145 percent of a direct labor base. Engineering consulting firms that WSDOT contracts with typically charge overhead rates in the range of 100 percent to 200 percent of direct labor.