An Ounce of Prevention: Performance-Based Maintenance Contracting

By Christopher L. Warren, P.E. and Howard "Butch" Eley

You wouldn't buy a new car and drive it 100,000 miles without ever changing the oil. With regard to our treatment of the U.S. roadway system, however, that is exactly what we are doing. Usage of the U.S. roadway system has doubled in the last 25 years and yet new construction has increased system mileage only 1.5 percent. According to most transportation infrastructure studies, roadways and bridges are becoming more obsolete and structurally deficient and highways more crowded and unsightly. Meanwhile, bridge and roadway maintenance budgets are being diverted to patch problems rather than prevent them. We are, to continue with the car analogy, driving a vehicle that is decades old and still we are ignoring the service warning lights.

To address the demand for improved transportation infrastructure maintenance, some toll authorities are turning to the private sector for assistance. The concept is most often referred to as performance-based contracting through asset management. Agencies aggregate the needed maintenance services into long-term fence-to-fence contracts for a lump-sum price.

Under this model, the contracting agency's motive is to meet the desired level of service rather than to manage people, equipment, and short-term contracts with numerous service providers. Performance-based contracting saves the contracting agency time, money, and management headaches and seeks to ensure a pleasant and safe ride at all times for the motoring public.

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Performance-based contracting looks at maintenance from a "stewardship" perspective rather than a "necessary evil" point-of-view. The basic idea behind the performance-based contracting approach follows the old Benjamin Franklin adage "an ounce of prevention is worth a pound of cure." This concept is as applicable to roadways, bridges, and facilities as it is to our cars, our homes and our personal well-being.

Government Conundrum

Much has been written about the challenge faced by governments – departments of transportation in particular – to provide expanding services with fewer dollars. But the root of the problem does not lie within departments of transportation, nor does the solution. DOTs, for the most part, consist of dedicated public servants who understand the dilemma and could most likely solve the problem if given the resources to do so. It should be obvious by now, however, that the economic windfall needed to address the problem in the traditional manner is not going to appear.

The solution to the transportation infrastructure problem, therefore, must come from outside the current model for addressing bridge and roadway maintenance needs. The only real source available is innovation – the kind of thinking that spawned renewed interest in tolls as a viable way to increase the transportation infrastructure inventory.

A Private Solution to a Public Problem

One concept that has proved extremely successful and continues to expand is the development of public/private partnerships to create new toll roads. These roads provide much-needed new transportation corridors that actually pay for themselves. Government leaders and state departments of transportation should be applauded for the courage to engage in these partnerships.

Toll agencies deliver value to customers in the form of safety, service and convenience; and effective facility maintenance is an important contributor to customer service. Toll authorities are also focused on an asset's return on investment and the utilization of the private sector to maximize return. As toll assets develop into mature financial engines, greater and greater efficiencies turn into increased revenue for funding additional transportation. Toll authorities have increasingly turned to the private sector to ensure the roadways and structures for which they are responsible receive preventive maintenance in larger doses than repair maintenance.

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By aggregating maintenance needs under one long-term contract, toll authorities get more services for fewer dollars with fewer headaches. With the entire maintenance program of a particular toll road system undertaken by a single private company, the authority increases cost savings, achieves better and timelier resource allocation and improves the driving experience for the traveler.

While toll authorities have readily embraced comprehensive performance-based contracting, several state DOTs – namely Virginia, Florida and Texas – have also successfully implemented performance-based contracting as a part of their asset management program.

Win/Win

The performance-based or asset-management approach appropriately aligns the best interests of the owner/agency and the contractor. The owner/agency sets required standards and the contractor agrees to meet those standards for an agreed sum for a specified period. Success is measured by adherence to the overall standards, not by the work resulting from an individual work order.

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Owner/agencies and performance-based contractors share the same objective – keeping the lights on for the entire length of the contract. This is the best way to ensure true, long-term alignment of interests of all parties.

Cost Savings

Toll authorities and state departments of transportation (DOTs) that use maintenance asset management have all experienced significant cost savings. These savings, ranging from 10 to 20 percent, come from:

- More efficient resources utilization – Government operations are designed to handle peak workloads with regard to personnel and equipment. The government entity is burdened with expenditures for people and equipment regardless of workload. Asset management companies have the flexibility to put subcontractors in place for temporary workload increases and can act quickly and decisively to eliminate ineffective or underutilized resources.

- Better private-sector compensation incentives – A private company's ability to offer bonuses and other incentives (e.g., performance-based) creates an environment where employees have motivation to reduce costs.

- More Efficient Procurement Processes – A public entity's procedures for buying and paying for goods and services are constrained by regulations and bureaucracies that do not apply to private firms. A government agency often will not take the time to replace a poor performing subcontractor, whereas a private firm can respond immediately to resolve issues with its subcontractors.

- Cost-Effective Subcontracts – Government agencies are constrained by the structure and type of contracts they can create and award, while private contractors are able to redesign these contracts into lower cost, multiyear agreements, resulting in lower bids.

Shared Risks

In contracting with a private asset-management firm, the authority or government shares the operational risk of highway maintenance with the private company while creating a guaranteed operating budget, guaranteed cash flow and a guaranteed level of service. The guaranteed level of service is enforceable through payment withholdings and fines explicit in the executed contract. With asset management contracts, accountability is clear and measurable.

The Contract

The fence-to-fence total maintenance asset management concept provides all the services necessary to maintain a stretch of highway.

For example, Florida's Turnpike Enterprise originally implemented maintenance services through approximately 50 separate contracts with a variety of large and small private service providers. The Turnpike Enterprise not only administered each of these contracts, but also rebid them on an annual basis.

In 2002 the Turnpike Enterprise developed one comprehensive maintenance-services contract using the asset-management approach and issued a request for proposal (RFP). Three companies responded with a package that included how the work would be performed and a lump-sum price. The bidders were Infrastructure Corporation of America, VMS, Inc., and Roy Jorgenson & Associates. FTE ultimately awarded a contract to Infrastructure Corporation of America, one of the three firms holding major contracts in states where performance-based contracting is widely in use.

The work plan and the price submitted by the firms was derived from a combination of standardized road-condition assessments performed by the competing contractors and public historical costs for the roadway, calculated from the contracting entity and published maintenance figures.

The Work

Services included in the fence-to-fence contract fall into several categories:

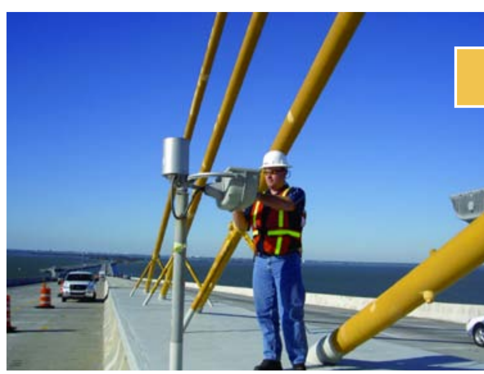
- Pavement maintenance
- Drainage maintenance
- Vegetation/aesthetics maintenance

- Roadside maintenance
- Traffic services
- Rest area/facility maintenance
- Bridge maintenance

In a comprehensive performance-based asset management contract, detailed requirements for each asset characteristic would establish specific performance criteria.

One-Stop Service

Now more than ever, public and private transportation officials must administer a wide range of transportation assets to meet the demands of the public, government leaders, board members, and other stakeholders. Performance-based asset management has proven to be a valuable tool to provide comprehensive services that reduce costs and allow the owner to focus on the desired outcome rather than the minutiae of daily maintenance. Although now only in its infancy, performance-based asset management has the potential to expand in both scope and markets.



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Commentary

By: Daniel L. Dornan, Vice President of AECOM Consult, Inc.

In "An Ounce of Prevention – Performance-Based Maintenance Contracting," Chris Warren and Butch Eley continue the theme of performance measurement and customer service from the Winter 2005 issue of *Tollways*. In this instance, the authors focus on performance-based asset maintenance contracting as a strategy for reducing the costs and improving the quality of highway maintenance, resulting in an improved driving experience for the traveling public. The article links the concepts of preventive maintenance, asset management, outsourcing, outcome-based accountability, private-public partnerships, and risk-sharing to demonstrate the many features of performance-based asset maintenance contracts. It shows how various tolling agencies and state DOTs have begun to embrace this innovative approach to preserving their fixed capital assets more cost-effectively, and suggests that many more toll authorities and highway agencies will turn to performance-based asset maintenance contracting to leverage their limited internal resources and improve the stewardship of their highway infrastructure assets.

As the most tradition-bound function in a state or local transportation agency, highway maintenance offers the greatest potential for improved cost-effectiveness through innovation, technology, and management. Companies that fully understand how to apply the concepts of asset management, preventive maintenance, and risk management to highway infrastructure preservation can save their clients money and improve roadway conditions, while also earning a reasonable return for their efforts. This is possible because of the high long-term costs of traditional maintenance activities and the significant efficiencies the private sector can bring to these functions.

The article highlights the few firms currently offering these services, reflecting the relative newness of this innovative approach. However, as more agencies discover the advantages of this approach and more opportunities arise for performance-based asset maintenance contracting, particularly among state and local transportation agencies, more firms will enter this market and provide further economies of scale and innovation to make these services even more cost-effective for sponsoring agencies.

Even more impressive are the potential cost savings to owners of highway infrastructure from so-called "performance-based total asset management contracting," whereby a public owner contracts for the development, delivery, operation, and preservation of highway facilities and/or networks on a life-cycle basis. This concept takes the performance-based contracting approach and applies it to the full life-cycle of the highway asset (facility, segment, or network). Instead of waiting for the asset to be constructed or after it has already incurred deferred maintenance, total asset management contracting holds the contractor responsible for the performance of the highway asset over its service life (or as long as the contract provides). The key to the cost-effectiveness potential of this more comprehensive contracting approach is that the contractor has the full opportunity to design and build in those features which will promote cost-effective preservation and lowest life-cycle costs. While this may require greater up front costs for higher design standards and greater inspection, it will result in lower costs of upkeep and extended service lives for these highway assets.

Performance-based asset maintenance contracting is a major step towards life-cycle total asset management contracting. The early success of this innovative approach will encourage greater involvement by public agency sponsors and private service delivery contractors. With greater experience and further innovation, these kinds of performance-based contracts offer tolling organizations and state and local transportation agencies significant opportunities to cut the costs of highway infrastructure preservation while improving the condition of these facilities. Sounds like a "win-win" situation to me – as Warren and Eley suggest in their article.

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