

State Examples From AASHTO's *Rough Roads Ahead* Report

State	Type of Example	Example	Report Page #
Indiana	Building Faster, Cheaper, Safer	The Indiana DOT's Hyperfix Project in 2003 provides an example of a successful fast-track Interstate renovation. The project involved reconstruction of two heavily traveled Interstates in Indianapolis. The highways carried 175,000 vehicles daily – compared with a design capacity of 61,000. Because of the magnitude of the reconstruction and expected traffic delays, the project team decided to close the highway completely and use a fast-track round-the-clock construction plan. Work was completed in 55 days – 30 days ahead of schedule, saving taxpayers an estimated \$1 million in lost wages and lost productivity for each day that traditional construction would have added. Special commuter buses and parking lots were used to keep traffic moving without turning alternative routes into parking lots. A series of community meetings were held well before construction began to ensure that everyone understood the plans and alternate commuter options. As a result, the public was prepared for traffic impacts long before blasting, drilling, milling, and paving began.	33
Missouri	Building Faster, Cheaper, Safer	The Missouri DOT challenges project engineers to use non-traditional project design methods to develop efficient solutions for today's needs. DOT officials say practical design is rooted in the principle that building a series of good, not great, projects will result in a great system. It maximizes the value of a project by ensuring that it is the correct solution for its surroundings.	33
Oregon	Identifying Investment Needs	• The Oregon DOT needs \$200 million per year to maintain current performance levels over the next 10 years compared with a current investment level of \$130 million.	13
Rhode Island	Identifying Investment Needs	• The Rhode Island DOT needs \$639.5 million annually to preserve its highway system. The state has only \$354 million available each year to meet the need -- leaving an annual funding gap of \$285 million.	13
Alabama	Identifying Investment Needs	• Alabama needs an immediate investment of \$1.4 billion to bring about 4,000 miles of deficient roadways to an adequate performance level. For Interstates, 70 miles must be resurfaced each year to maintain current levels at a cost of \$140 million per year. The FY 2009 Interstate maintenance appropriation is \$120 million.	13
Pennsylvania	Identifying Investment Needs	• The Pennsylvania DOT pegs its need at \$2.19 billion per year to maintain the entire state highway system at desired preservation cycles. That estimate doesn't include the current backlog of substandard pavements.	13
Nebraska	Identifying Investment Needs	• The Nebraska Department of Roads estimates it will need \$270 million annually to preserve its highway system. Faced with declining revenue and growing needs, NDOR decided to make asset preservation its top priority to keep roads and bridges at current performance levels. No funding will be allocated to capital improvements until all preservation needs have been met.	14
Washington	Identifying Investment Needs	Tight budgets force creative strategies for sustaining pavement preservation plans. In Washington state, the DOT has an identified need for \$1.7 billion in concrete pavement restoration -- but less than \$20 million per year has been budgeted. To compensate for reduced funding, WSDOT uses a triage strategy -- investing first in pavements whose life can be greatly extended if treated immediately, and deferring work on pavements that need complete replacement. The strategy improves and extends the life of the greatest number of lane-miles with available funds. Despite budget constraints and soaring construction costs, pavement condition has continued to improve over the years with less than 7 percent of state-maintained roads are in poor condition.	29
Texas	Identifying Investment Needs	• The Texas DOT estimates that \$73 billion will be required during the next 22 years to maintain current condition. Today, the Department is spending \$900 million per year and losing ground. Officials say each one percent drop in good or better pavement condition is another 1,900 lane miles to fix and an additional \$760 million in needs.	13
Pennsylvania	Managing Transportation Assets	Pennsylvania DOT's focus is fix it first -- paying attention to basic day-to-day practices that help us be more successful. Otherwise, you can spend too much time and money chasing after potholes while watching the system fall farther and farther behind.	27

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Nebraska	Managing Transportation Assets	The Nebraska Department of Roads recently implemented a Pavement Optimization Program (POP) to manage its highway network and allocate funds to keep the system at its current performance level. POP uses current pavement conditions, pavement deterioration rates, and cost/benefit ratios to develop budget scenarios to ensure effective allocation of funds. The Department uses two recently purchased pathway profilers to collect data about the severity and extent of pavement distress to assist in making investment decisions.	28
Michigan	Managing Transportation Assets	The Michigan DOT uses a network pavement strategy that provides a "mix of fixes" to extend the life of the road. The three types of fixes are: reconstruction and rehabilitation; capital preventive maintenance; and reactive maintenance. Decisions about which fix to use are based on an assessment of the current pavement conditions and a projection of the number of years before it will require reconstruction or rehabilitation using a measure known as remaining service life (RSL).	28
Washington	Managing Transportation Assets	The Washington State DOT relies on data collection, analysis, and innovative reporting methods to manage its transportation assets, which include 20,000 lane miles of state roads and 3,000 bridges. The department uses data not only to assess project costs and benefits, but also to analyze tradeoffs in allocating limited funds between preservation and improvement programs and between highway construction and highway maintenance. The department's <i>Measures, Markers and Milestones</i> report is a critical part of the system, linking performance measures to overall strategic objectives. The state's efforts to communicate its performance led to public support for two funding increases -- a five cent gas tax increase in 2003 and a nine-cent gas tax increase in 2005.	29
Utah	Managing Transportation Assets	The Utah DOT, which manages 6,000 miles of highway, uses dTIMS CT software to support its asset management, bridge management and pavement management systems. The systems help the department identify the most efficient use of funding based on the current condition of the asset and available funding for preserving it. Because of recent funding limitations, however, the asset management model recommends work that has to be done instead of the work that should be done.	30
Missouri	Managing Transportation Assets	The Missouri Department of Transportation (MoDOT) relied on public opinion to shape its Smooth Roads Initiative. Key elements of the Missouri Smooth Roads Initiative were: SMOOTHER - pavements were resurfaced, where needed. SAFER - striping and delineation improvements were made at all sites in the program. SOONER - the entire program for improving 2,300 miles of roadway was completed in only two years.	1
Pennsylvania	Preserving the Interstate	The Pennsylvania DOT has 128 miles or 10 percent of its Interstate system in need of major rehabilitation and reconstruction. Funding is in place to complete work on 77 of those miles.	20
Iowa	Preserving the Interstate	The Iowa DOT has several major Interstate rehabilitation and reconstruction programs underway including: • A \$45 million project to grade, pave, and construct 10 new bridges along with roadway improvements on the Interstate 35-80-235 system interchange near Des Moines. The three-year project, which is nearing completion, will improve overall interchange traffic operations and meet existing and expected short-term traffic growth. The state went with a less costly short-term solution because funds were not available for total reconstruction. • Addition of one lane in each direction to a 7.3 mile segment of Interstate 80 along with replacement of the entire original 46-year-old pavement at a cost of \$96.5 million.	20

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Oregon	Preserving the Interstate	The Oregon DOT is rehabilitating nine miles of pavement on a segment of Interstate 84 in the eastern part of the state. The section was originally built in the 1960s and has been resurfaced three times to address damage from increased traffic and environmental conditions. Because truck traffic generally uses the slow lane in this rural part of Oregon, the \$27 million project will reconstruct that lane -- which is in poor condition -- with new concrete pavement, and resurface the existing fast lanes with asphalt pavement. This "black and white" pavement type has been successfully used in three other locations in the Oregon.	21
Nebraska	Preserving the Interstate	The Nebraska Department of Roads is working on a six-lane reconstruction of Interstate 80 between Omaha and Grand Island, the state's two largest cities, which serves thousands of travelers daily. Upgrading from four to six lanes will improve safety and ease congestion in the state's fastest growing corridor. The \$37 million project will be completed in mid-2011. This project is one component in a needed – but unfunded – reconstruction of the entire length of I-80 in Nebraska at projected cost of \$100 million per year.	21
Washington	Using Smart Tools	The Washington state DOT's Materials Lab identified these tools for pavement preservation: <ul style="list-style-type: none"> • Dowel-bar retrofits installed in aging concrete to improve smoothness and longevity and help traffic flow smoothly from one concrete slab to the next. State officials believe the technique could add 10-15 years to 30-year-old concrete highways. • Pavement recycling using reclaimed asphalt from older, failed pavements and blending it into a new asphalt mix. • Warm-mix asphalt using chemical additives that allow construction at lower temperatures resulting in lower emissions and improved construction. • Bonded concrete overlays on an existing asphalt pavement to add structure and provide a longer-lasting surface. Ultra-thin white topping using a two-to-four inch thick layer of concrete over an existing asphalt road can be installed fairly quickly with minimal traffic disruption. 	29
Oregon	Using Smart Tools	The Oregon DOT has a chip-seal preservation program to treat about 780 lane miles of highway at a cost of \$7 million per year. The program complements the department's \$125 million preservation program, which resurfaces about 1,000 lane miles during the same period. The chip-seal program lowers the annual cost to maintain good pavement by increasing the time between higher-cost resurfacing treatments. Over the long-term, the preservation strategy will save \$16 million per year in resurfacing costs.	28
Michigan	Using Smart Tools	The Michigan DOT has used ground-penetrating radar to assess conditions that could affect pavement life such as locating sink holes, and mapping technology to help assess remaining service life on pavements. A laptop computer along with a GPS receiver are used to track road locations on a region map and quickly gather data about the previous service life rating, historic data on the road segment, and previous fix types.	28
Maryland	Using Smart Tools	The Maryland DOT uses an automatic road analyzer to collect information on roughness, rutting, and cracking as well as a skid truck to collect friction data. The data is fed into the pavement management system to identify targets for both pavement preservation and rehabilitation fixes.	32
Oregon	Using Smart Tools	Last summer, the Oregon DOT began assessing pavement conditions on a portion of the network using a vehicle equipped with a profiler to measure roughness and scanning lasers to measure rutting. All of the data was collected in a single pass of one vehicle at normal speeds.	32
Rhode Island	Using Smart Tools	Rhode Island uses an automated distress survey to assess pavement conditions and calculate crack density that helps define the appropriate preventive maintenance treatment. In addition, the RDOT pavement management team selects 100-foot-long monitoring sections representing all of the different treatments, stress levels, and traffic volumes to visually assess effectiveness of the preservation strategy.	32

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Minnesota	Using Smart Tools	The Minnesota DOT evaluates its 14,000 miles of highway annually using a van equipped with lasers to measure the smoothness of pavement and cameras to help engineers evaluate the quality of the pavement. The state uses three indicators to report and quantify pavement conditions – ride quality index, which measures pavement roughness; surface rating, which measures pavement distress; and a pavement quality index.	32
Rhode Island	Using Stimulus Funding	Virtually all of the Rhode Island DOT's \$137 million in economic recovery funding is devoted to preservation and maintenance projects -- resurfacing, bridge rehabilitation, striping, guardrail and traffic projects. The extra funds represent about 50 percent of the state's funding shortfall for 2009 -- or about five percent of the shortfall for the next 10 years.	15
South Dakota	Using Stimulus Funding	The South Dakota DOT said the stimulus money will provide about one year's worth of preservation funding to help with its backlog of needs. "Although this helps in the short-term, it is not a long-term solution," said South Dakota DOT Director of Planning and Engineering Joel M. Jundt.	15
Idaho	Using Stimulus Funding	The Idaho DOT is using its stimulus income to pay for projects that would not be possible without extra federal funding. The projects include major highway widening, bridge replacement/relocation/realignment, and pavement restoration.	15
Maryland	Using Stimulus Funding	The \$431 million that the Maryland DOT received will help offset some of the \$1.3 billion reduction in the state's highway capital program. The funds will be used primarily to keep roads in the best shape possible until the economy and federal and state revenues recover.	15
Alabama	Using Stimulus Funding	The Alabama DOT will spend \$225 million on system preservation projects on non-Interstate routes, \$70 million for an Interstate reconstruction project, and \$8 million for bridge replacement and widening.	15
Texas	Using Stimulus Funding	The Texas DOT is using a significant part of its stimulus funds to get its pavement preservation program back on track after three years of losing ground. Overall pavement conditions in Texas were improving when the state spent \$1.7 billion per year for rehabilitation and maintenance. Today, Texas spends about \$900 million per year and has not been able to keep up with needed investments. Eight hundred million dollars in stimulus funds will help Texas stabilize pavement and bridge conditions for the next few years.	15

New Technologies Cited in the Report

<ul style="list-style-type: none"> Asphalt perpetual pavements can be designed and built to last longer than 50 years without requiring major structural rehabilitation or reconstruction. Longer-lasting asphalt pavement mixes combine smoothness and safety advantages of traditional asphalt with an advanced, multi-layer paving design that extends the life of a roadway with routine maintenance. 	34
<ul style="list-style-type: none"> Superpave gives highway engineers and contractors tools to design and construct asphalt pavements that meet specific climate and traffic conditions. Although it has been in use since the 1990s, current research focuses on measuring resistance to ruts and cracks to come up with even longer-lasting mixes. 	34
<ul style="list-style-type: none"> Stone matrix asphalt, which is also called Gap-grade Superpave, is a new mix that can be used to reduce splash and spray and may have some value in noise reduction. Its main advantage is its durability, providing a long-lasting pavement surface. 	34
<ul style="list-style-type: none"> Fast-track concrete pavement produces the strength benefits of traditional concrete with a much shorter preparation time -- making it possible to be ready for opening in 12 hours or less after laying. Generally fast-track concrete provides good durability because it has a relatively low water content, which improves strength and decreases salt permeability which, in turn, contributes to deterioration. 	34
<ul style="list-style-type: none"> Roller-compacted concrete, another drier mix, can be installed using asphalt paving equipment and compacted with rollers. It has the strength to withstand heavy loads and can resist freeze-thaw cycles. 	34