

Going Green:

Case
Studies
in



Outstanding Green
Business Practices

Building Green for the Long Haul

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Oregon's network of highways and bridges is worth billions of dollars, both in materials and utility: Every day, Interstate 5 alone carries more than 14,000 commercial vehicles through Oregon, bearing freight with a value of approximately \$650 million. But, as in many other states, our highway bridges date from the 1950s and 1960s, and are now at or nearing the end of their planned use.

In 2003, the Oregon Legislature dedicated \$1.3 billion to address the condition of Oregon's bridges. Charged with establishing and implementing the ambitious 10-year OTIA III State Bridge Delivery Program and repair or replace 365 highway bridges, we at the Oregon Department of Transportation began by developing an overarching decision-making framework called Context Sensitive and Sustainable Solutions, or CS³.

More than a guiding philosophy, CS³ is driving our success on the five program goals: stimulate Oregon's economy; employ efficient and cost-effective delivery practices; maintain freight mobility and keep traffic moving; build projects sensitive to their communities and landscapes; and capitalize on funding opportunities.

For the bridge program, CS³ is the tool for assessing a project so the agency can determine a solution that best satisfies multiple goals and the maximum number of stakeholders. It encompasses the processes, tools and knowledge that keep the agency, architects, engineers and contractors aligned with the goals and using the same approach.

By starting in this way, we are able to emphasize solutions that take into account the citizens of Oregon, the economy, as well as those solutions that keep faith with the our environmental goals.

The following are some lessons and examples of the initiatives that have resulted from viewing our program through the lens of CS³.

STEP ONE: REDUCE EFFORT

To address environmental needs program-wide, we worked with 11 federal and state regulatory agencies to develop a new approach to environmental compliance. A single set of environmental performance standards addresses the hundreds of highway bridges scheduled for work through the bridge program.

The streamlined environmental permitting standards, based on extensive environmental data collected by field teams for each bridge, meet the requirements of 14 different state and federal environmental laws, including the Clean Water Act, the Endangered Species Act and the National Historic Preservation Act. How to meet the standards is left up to the bridge designers, but a rigorous ODOT inspection program makes sure the standards are met.

The process does not avoid any regulations. It simply coordinates the requirements of multiple agencies, avoiding duplication while ensuring comprehensive environmental protection. The bottom-line result is better environmental stewardship and a substantial savings in time and money. Or, in Oregon Gov. Ted Kulongoski's words: "Our transportation network will be made safer sooner, and the environment will be protected and enhanced."

STEP TWO: SWEAT THE SMALL STUFF, EVEN WHEN IT'S NOT SO SMALL

Once program-level issues were addressed through the environmental programmatic permitting pro-

■ MANUFACTURING, PRINTING & DESIGN

cess, it was time for us to apply a CS³ mind-set to individual projects. We developed a set of guidelines for consultants and contractors to use when choosing materials and managing construction waste, resulting in excellent large-scale examples of the three R's: reduce, reuse and recycle.

While working on neighboring projects in western Oregon, two ODOT contractors exchanged approximately 30,000 cubic yards of demolition rubble; one saved a landfill fee while the other gained embankment material. And the Oregon landscape was spared the extraction of raw material as well as an enormous burden of waste.

Few people know that the most recycled material in the United States by volume and by percent reclaimed is not paper, glass, plastic or aluminum, it's asphalt. Recently, ODOT contractors contributed 130,000 tons toward the recycling effort when replacing two bridges and repaving 22 miles of six-lane highway south of Portland, Ore.

Sometimes the results are literally green, as in the landscaping of a project near Salem, Ore. Here the agency planted 35,000 trees, shrubs and ground cover along a newly widened section of I-5, using native plants such as Oregon white oak, big leaf maple and snowberry. Besides improving air quality and controlling erosion, native plants require little maintenance.

When our efforts allow us to collaborate with other agencies, we know the CS³ process is truly working. Approximately 300 trees had to be removed to replace five bridges near Cottage Grove, Ore., but the trees didn't go to waste. Through an agreement with the Oregon Department of Fish and Wildlife, they were transported to the Umpqua River basin to restore two creeks to prime habitat for Oregon Coast Coho salmon.

STEP THREE: BEING GREEN IS A COMMUNITY EFFORT

At every phase of bridge repair or replacement—planning, design and construction—we are proactively engaging Oregonians, asking them to weigh in on topics ranging from how a bridge will look to how traffic restrictions should be structured.

Intensive public involvement is critical in the historic Columbia River Gorge National Scenic Area along Interstate 84. Seventeen bridges in the Gorge are slated for repair or replacement, each along one of the most scenic roadways in Oregon.

■ Bats and Bridges

Bridges span water and connect land masses; they transport cars and trucks, people and freight. And if they're located in a warm, sunny spot, they probably also house hundreds or even thousands of bats.

Bats may not be the most popular mammal, but in a single night, one bat will eat thousands of insects, including mosquitoes, carrier of the sometimes fatal West Nile virus. Factor in that some species of bats are also pollinators whose eating habits can help farmers reduce pesticide use, and bats start edging out dogs as man's best friend.

The Oregon Department of Transportation wants to keep bridges bat-friendly because of this beneficial role in the web of life. Bats like bridges because the texture and crevices give them places to roost. At night, they use their roosts to rest between feedings, and during the daytime, to sleep. Most important, in the spring, mother bats congregate under bridges in colonies of 50 to 100 or more to raise their pups.

But while contemporary precast concrete structures improve efficiency and cost-effectiveness of bridges, they lack the texture and crevices bats need to be able to roost. So ODOT biologists, working with the Oregon Department of Fish and Wildlife and U.S. Forest Service, developed guidelines to ensure bridges are designed with bats in mind.

In some cases, contractors lay 80-grit sandpaper in the plywood forms so the bats have a textured surface to grip during roosting. In others, they place girders to encourage day roosting so the bats can adjust to fluctuating temperatures. Finally, after construction, they can install an innovation called the "Oregon wedge"—a simple plywood box designed to accommodate hundred of bats at a time.

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Before design began on the Gorge bridges, ODOT worked closely with community members and representatives of state and federal agencies to gather input on design elements, including landscaping and the needs of the region's wildlife. The resulting I-84 Corridor Strategy helps us improve the interstate in ways that meet public safety and transportation needs while also addressing National Scenic Area provisions.

STEP FOUR: DON'T STOP THINKING GREEN

Without bridge program funding, weight limits on Oregon's aging bridges would have become common, restricting the movement of freight and other traffic. Doing nothing had the potential to cost the state as much as \$123 billion in lost production and 88,000 lost jobs over the next 25 years.

For us at ODOT, the bridge program provided more than an opportunity to resolve these issues. It was a chance to stimulate the economy and do so in a way that minimized our impact on the natural world. The CS³ decision-making framework is an essential tool for us to accomplish our goals. PRN