

OTIA III State Bridge Delivery Program Construction Waste Management Program: Saving Money, Protecting Resources

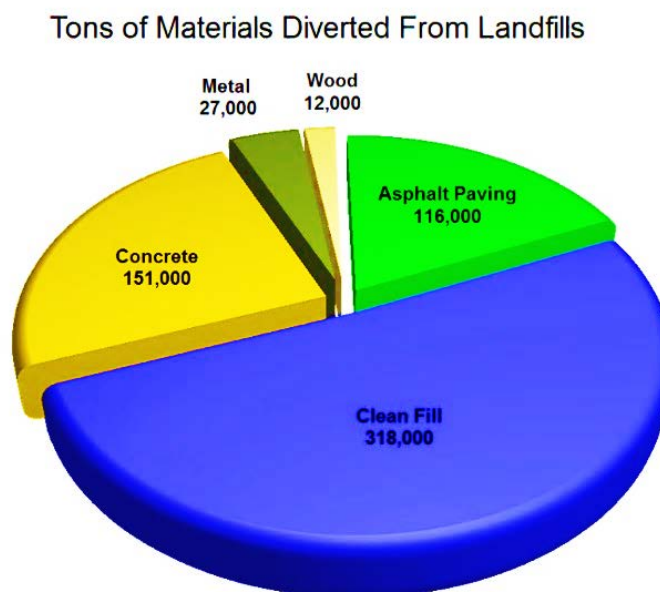
The Oregon Department of Transportation's \$1.3 billion OTIA III State Bridge Delivery Program, which repaired or replaced hundreds of aging highway bridges statewide over more than a decade, was certain to generate a significant amount of debris in the course of construction. In response, the bridge program's environmental team created a Construction Waste Management Program to help contractors operate sustainably and manage the waste to its best end use, saving money as well as protecting resources. From January 2006 through December 2013, the total estimated diversion savings¹ achieved through the Construction Waste Management Program was approximately \$21.3 million².

Bridge program staff consulted with Oregon's Associated General Contractors and the contracting community about how best to implement the program. Tracking waste streams would require them to complete a little more paperwork, so it was important to obtain their input.

The Construction Waste Management Program began in 2005 as a voluntary measure for contractors; reporting became a contractual requirement in 2007. Through the program, contractors produced a materials management plan prior to work, and reused and recycled materials and landfill-bound construction waste were tracked on a quarterly basis. Materials tracked included asphalt paving, clean fill, concrete, metal and wood. New requirements for biofuel, which reduces emissions of particulate matter to the atmosphere by 15 percent, were also implemented, so fuel usage was also tracked: nearly 800,000 gallons of ultra-low sulfur diesel and approximately 118,000 of biodiesel were used.

Under the program, from 2006 through 2013, contractors reported the following reuse and recycling totals — that is, materials diverted from landfills:

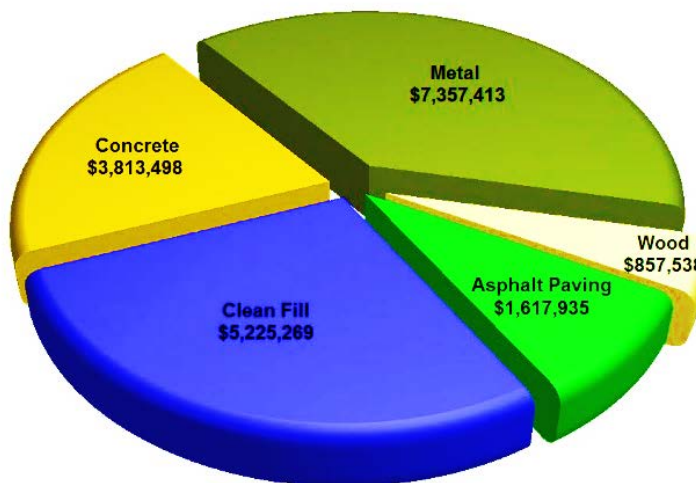
- 116,000 tons of asphalt paving
(enough to pave 74 lane miles of highway)
- 318,000 tons of clean fill
- 151,000 tons of concrete *(equal to approximately four spans of the new Whilamut Passage Bridge in Eugene-Springfield)*
- 27,000 tons of metal *(equal to 8 million feet, or approximately 1,500 miles of Class A guard rail)*
- 12,000 tons of wood



The Construction Waste Management Program guidelines encouraged design firms and construction companies to find new ways to reuse materials:

- Two contractors working on separate but nearby projects on Interstate 5 just south of Creswell were able to swap materials: Clean fill salvaged from one construction site was sent to the other to be used as fill under four bridge abutments. One contractor avoided landfill fees, and the other was able to avoid purchasing fill.
- On a project between Roseburg and Eugene that involved replacing 10 bridges, more than 90 percent of the 88 prestressed concrete box beams used to build detour bridges were reused on other projects after the new bridges were complete. Each box beam was worth approximately \$6,300, so the reuse efforts saved approximately \$500,000.
- When the temporary Interstate 5 bridge over the Willamette River in Eugene-Springfield was dismantled, 50 of its concrete and steel beams were reused to build a new bicycle viaduct in adjacent Whilamut Natural Area and Alton Baker Park.

Cost Savings Breakdown



As they realized the cost savings, contractors also developed their own conservation strategies.

Though the \$21.3 million in estimated savings is not a dollar savings to ODOT directly, the benefits to all Oregonians of reuse and recycling include reduced emissions; fewer natural resources mined, transported or disposed of in municipal landfills; and additional proactive environmental stewardship by ODOT's contractors. Information collected from contractors showed that the diversion rates were very high for these projects. Materials created through the bridge program construction process were reused or recycled at a rate of approximately 90 percent.

¹ The total estimated diversion was determined using a dollars-per-ton value of materials based on averaged ODOT bid prices. If ODOT bid prices were not available for an item, other industrial standard prices were used.

² Total savings for 2006-2013 is \$18.9 million. The difference from \$21.3 million can be attributed to savings estimated in 2004-2005 at \$2.4 million, and not broken down according to material.