

State of Washington: A Case Study in Construction Waste Management

Excerpted and adapted from a case study by the Department of General Administration of the State of Washington. January 2008

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SUMMARY

Construction waste management (CWM) is one of the 50 strategies outlined in the AIA's 50 to 50 resource. 50 to 50 is a tool to assist architects and the construction industry in moving toward the AIA's public goal of a minimum 50 percent reduction of buildings' fossil fuel consumption by 2010 and carbon neutrality by 2030.

One noteworthy example of innovative CWM can be seen in the renovation of the Old Federal Building by the State of Washington's Department of General Administration Engineering and Architectural Services.



Old Federal Building. Photograph from the Olympia Heritage Commission Collection. Credit: Thurston Regional Planning Council Web site.

BACKGROUND—WHAT IS CWM?

The AIA 50 to 50 resource defines CWM as the practice of minimizing and diverting construction waste, demolition debris, and land-clearing debris from disposal and redirecting recyclable resources back into the construction process. Waste management affects carbon-reduction efforts by impacting one or more of the following:

- Energy consumption (specifically, combustion of fossil fuels) associated with manufacturing, transporting, using, and disposing the product or material that becomes a waste
- Nonenergy-related manufacturing emissions, such as the carbon dioxide released when limestone is converted to lime (which is needed for aluminum and steel manufacturing)
- Methane emission from landfills

It is estimated that anywhere from 25 to 40 percent of the national solid waste stream is building-related waste, and only 20 percent of construction and demolition debris (C&D) is actually recycled. In 1998 the U.S. Environmental Protection Agency estimated that 136 million tons of building-related waste is generated in the United States annually.

CASE STUDY: STATE OF WASHINGTON

When the Department of General Administration took possession of the Old Federal Building in

Olympia, Wash., in 1998, what started out as a simple remodel and restoration project became a demolition waste recycling success story. Since renamed, the James Dolliver Building is a showcase modern office in a historic property.

The original goal of the project was to restore the building to house a new Secretary of State's office while at the same time recapturing the historic building's original grandeur. However, once the project began the Division of State Services (DSS) expressed a third goal—to incorporate demolition waste recycling wherever feasible. Under the direction of Stuart Simpson of the Division of Engineering and Architectural Services the CWM initiative was a success. In the end, more than 141,000 pounds of construction debris—equal to 66 percent of the total construction and demolition building material—was diverted from landfills and recycled.

The Dolliver Building's recycling success can be attributed to a collaborative response from subcontractors and material suppliers. To see the effectiveness of CWM at the Dolliver Building this Best Practice will review the participants' roles.

Simpson began by working with Correctional Industries (CI), which had been hired to do the demolition and to perform asbestos abatement and removal. Fortunately, CI was a willing participant, providing the inmates with additional skills in the

recycling of demolition waste. Simpson then set out to find local companies who wanted to partake in the recycling efforts.

One of the first partners was 2nd Use of Olympia, a salvage and retail company that deals in the residential and light commercial market. Scott Royer of 2nd Use came through the building prior to any activities by CI to identify doors, light fixtures, paneling, molding, and wood studs with resale value. 2nd Use removed some of the doors and continued to work with CI throughout the demolition process to salvage additional materials.

DSS was able to salvage some light fixtures and doors for use in a proposed visitor center at the Cascades Gateway Center (formally Northern State Hospital).

The DuPont Corporation saw the renovation of the Dolliver Building as a good demonstration project for its carpet recycling program. They provided a 30-cubic-yard bin to collect the carpet, and then trucked the carpet and loaded it on rail cars for shipment to Georgia, where it will be recycled into car parts and/or carpet, all at no additional cost.

Pacific Disposal provided hauling and the bins needed for recycling materials, at \$1,958. They recycled the metal from ceiling track light fixtures and heating, ventilating, and air conditioning (HVAC) equipment, and hauled masonry materials to Jones Quarry for use as road bed material.

Sepia, the local tile supplier for Armstrong Ceiling Tile, worked with Armstrong to recycle cellulose and mineral fiber ceiling tiles. Tiles were stacked on pallets and transported to Armstrong's manufacturing plant in Portland for recycling into future ceiling tiles.

Most of the materials that could not be salvaged or recycled were handled by the City of Olympia, which provided hauling services and a bin for mixed waste slated for the landfill. Wood waste, usually a good material for recycling, was minimal because of materials salvaged by 2nd Use, and was included in the mixed waste.

Many of the ballasts from the fluorescent fixtures removed contained PCBs, a hazardous waste. The ballasts were packed into a special 55-gallon drum. Because the amount was relatively small, the Division of Capitol Facilities took the drum and included it in its program for proper disposal of hazardous waste.

Although there were some learning bumps along the way, the amount of material salvaged and recycled was impressive.

As a result of CWM

- Hauling and dumping costs were reduced
- Local employment opportunities were created through salvage and retail activities
- Demand for raw materials were reduced through the recycling of masonry materials, ceiling tile, and metal

The recycling initiative at the Dolliver Building serves as a model for demolition waste recycling, in which there are no losers, only winners.

RESOURCES

For More Information on This Topic

To read more about this case study and others from the Department of General Administration, go to www.ga.wa.gov/eas/cwm/index.html.

To read more about the AIA's 50 to 50 program, go to www.aia.org/fiftytofifty.

See also "LEED® Certification Services" by John A. Boecker, AIA, in *The Architect's Handbook of Professional Practice Update 2005*, page 133. *The Handbook* can be ordered from the AIA Bookstore by calling 800-242-3837 (option 4) or sending an e-mail to bookstore@aia.org.



More Best Practices

The following AIA Best Practices provide additional information related to this topic:

- 18.11.09 Steps Toward LEED Certification
- 19.07.01 Green Building Postoccupancy Evaluations: Learning from Experience
- 19.08.04 Measuring Floor Area for Commercial Leases

Feedback

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Key Terms

- Building performance
- Sustainability
- AIA 50 to 50