

\$15,854 Avoided Cost in Historic Renovation

St. Paul's Cathedral is an enormous, 130-year-old landmark in the center of the largest city in central Massachusetts. Working with virtually no room for project staging or extra dumpsters, as well as a 'fast track' schedule, the contractor managed to successfully implement a sweeping waste management plan that saved \$15,484. All told, the project diverted 79% of materials coming out of the renovation from local landfills, further underscoring the old saying that 'cleanliness is next to godliness'!

Project Summary

Timeframe	3/02 – 8/02
Projected Square Footage	
Renovation	10,200 s.f.
Total Waste	183.76 tons
Demolition	173.27 tons
Construction	10.49 tons
Diverted	145.06 tons
Demolition	139.57 tons
Construction	5.49 tons
Disposed*	38.70 tons
Demolition	33.70 tons
Construction	5.00 tons
Disposal Cost	\$83/ton
Savings from Recycling and Salvage	
Additional Hauling	(\$1,164)
Avoided Disposal	\$455
Labor Costs *	(\$3,500)
Materials Salvaged	\$9,000
Saved Tip Fees	\$11,063

**Note – since this pilot, gypsum recyclers have been contracted for future projects. This would have diverted significant additional materials*

use. This alone diverted in excess of two tons of material from local landfills.

The project supervisor had little more than a small parking lot in which to store dumpsters as well as construction machinery. He worked around the constraint, scheduling recyclers to haul debris away from the site a few times a day to minimize the number of dumpsters needed in the cramped quarters. The extra planning significantly contributed to the high C&D diversion rate.



Spotlight on Paneling and Doors

The existing space contained beautiful ash paneling and doors in good condition. The architect made it a point of initial discussions to stress the value and benefit of preserving the original woodwork. The millwork in the reception area was custom made for the cathedral, dating back to renovations done at the turn of the century. By saving the woodwork, the project team not only reduced costs but also preserved an important piece of the building's history.

After the project reports were final, greenGoat compared the price of new ash with the labor costs for careful separation of existing wainscoting from walls, denailing, sanding and re-installation. The price of rehabbed woodwork was about \$5.80 per board. Similar stock to the original would be hard to find, according to a local lumber supplier¹. New 'select' ash wainscoting is \$4.50 per board, but the price for antique boards would be about triple that.

Project Description

The renovated space is a 10,200 square foot basement reception area. The Diocese of Worcester engaged a contractor that not only specialized in historic preservation, but also practiced pioneering resource management techniques. These methods would eventually save the client money by sending valuable existing materials back into the renovated space.

The church called in parishioners to help remove and preserve pews in the project area. Members of the neighboring community as well as the local Boy Scouts pitched in, saving the pews and all scrap, which were stored for future

¹ Downes & Reader Hardwood Company of Stoughton, MA

Aside from wood, the main material coming out of the project space was concrete -- over 139 tons of it. The contractor researched local gravel companies who might recycle 'clean' (i.e. no rebar) concrete. They found one, and the concrete was removed and hauled by Consigli at under \$10 per ton. This saved the company most of the discounted disposal costs.

Costs and Benefits

A typical deconstruction project always spends extra labor for added material recovery receipts. Anyone deconstructing a building can tell you that all the materials have value, however, and with a little planning, that value can quickly turn into healthy offset costs for the contractor and building owner.

In this case, salvaged wood saved the contractor an estimated replacement cost of \$15/board (or \$9,000) which 'paid' for the labor of removing and denailing (\$3,500). Refinishing costs are not included, since the replacement lumber would need to be refinished as well. This, of course, assumes that the project could match the grain of the wood that was used, which was not so easy with turn-of-the-century stock.

The savings gained from planning ahead for reusing existing woodwork more than offset the 175 hours of labor required to preserve the materials. Some spots paneling needed to be replaced, and this took considerable labor; matching the old style was important to the client and took labor time as well.

How to Replicate

There are some general tips that can be used at any site to maximize savings:

- Talk to the client during the planning stage to review the materials currently in use to estimate their value, were they to be reused in the renovation.
- Part of any waste management plan is researching markets. In this case, the gravel company came in with a per ton disposal rate that was a fraction of the C&D rate.
- If there is no room for dumpsters, hire a hauler that is willing to make daily (or more frequent) trips for debris.
- The client may be willing to help organize an auction of more valuable items, like cabinetry. Churches and schools are community-based, and very good candidates for this approach.

Labor for source separating concrete was *nil*. Since all project work over those days was focused on breaking up concrete, source separation was natural.

- Include replacement costs and avoided transport of salvaged materials as a benefit.
- The ability to keep from outsourcing tasks ('self perform') lowers dependency on external factors, making waste management easier.
- Urban areas have more building material reuse centers; rural areas are more apt to participate in on-site material auctions

Resource Consultant

greenGoat
PO Box 441911, Somerville, MA 02144
Contact: Amy Bauman
Phone: 617-504-2095
Email: abauman@greengoat.org
Web Site: www.greengoat.org

Client

St. Paul's Cathedral
38 High St., Worcester, MA 01609
Contacts: Father Richard Ready
Gary Gagne, Bldg Supervisor
Phone: 508-799-4193

Contractor

Consigli Construction Co., Inc.
197 Main Street, Milford, MA 01757
Project Manager: Mike Socci
Phone: (508)473-2580 x359
Email: msocci@consigli.com
Superintendent: John LaPerle
Web Site: www.consigli.com

greenGoat diverts *post-industrial* (i.e. construction debris) and *post-consumer* (i.e. demolition debris) building materials out of landfills and back into other structures ... even other industries.

We would like to thank Massachusetts Department of Environmental Protection and their grant for us to show the financial viability of recycling demolition debris. Frequent updates on the project were given at the C&D Subcommittee, which made recommendations for future C&D Debris Diversion to the state legislators. The ban of asphalt paving, brick, concrete, wood, and metal has a proposed effective date of January 2005.