Building Materials Salvage

Environmental and business development opportunity

About the project

Building type: four single-family homes
Square feet: 1000-1500 each (5500 total)
Year built: 1920s-1950s
Construction: Three wood frame homes with slab on grade foundations (one single story with detached garage, two identical two-story). One concrete masonry unit home, two stories, with perimeter foundation and crawl space.
Diversion method: non-structural salvage; demolition materials to construction and demolition recycler
Location: Wedgwood neighborhood, Seattle
Project completed: March 2008

Four houses near Thornton Creek were purchased for decommissioning by the City of Seattle (Seattle Public Utilities–SPU) due to repeated flooding in the area. The site is slated for rehabilitation into wetland and creek habitat.

Approach

For this project, the Northwest Building Salvage Network (NBSN, comprised of three Seattle area salvage companies: RE Store, Second Use Building Materials, and Earthwise Salvage) was contacted to salvage non-structural materials from the homes prior to demolition. The City of Seattle maintains a “no cost” salvage contract with the NBSN, which allows the companies to salvage materials from city-owned properties which would otherwise be sent to landfill. The salvaged materials were removed from the buildings and distributed among the three member businesses of the NBSN.

SPU then contracted with the Seattle Conservation Corps (SCC), a City service that trains youth in trade skills, to conventionally demolish the houses. Demolition debris from each of the houses was hauled to a different

Project participants

Owner:
Seattle Public Utilities
www.seattle.gov/util
Salvage contractors:
Northwest Building Salvage Network
Earthwise, Inc.
www.earthwise-salvage.com
Second Use
www.seconduse.com
RE Store
www.re-store.org
Hauler:
Allied Waste
www.rabanco.com
Recyclers:
Allied Waste
Recovery 1
www.recovery1.com
CDL Recycle
www.cdlrecycle.com
Glacier Recycling
www.glacierrecycle.com

Thornton Non-Structural Salvage

Four single family homes in a flood-prone area were removed, setting the stage for a creek and habitat restoration project. Non-structural elements were salvaged from the homes, followed by conventional demolition with waste routed to recycling facilities.

Resources

City Green Building, in Seattle's Department of Planning and Development, provides resources, education and technical assistance towards improving the environmental performance of buildings in Seattle. Materials salvage resources include a Green Home Remodel guide on Salvage & Reuse, sample deconstruction specifications and how to information on salvaging windows, doors and flooring.
www.seattle.gov/dpd/GreenBuilding

King County GreenTools provides an online directory of recycling and salvage services for construction materials, lists recycling rates for local companies handling construction and demolition materials, and has additional deconstruction case studies.
www.greentools.us

Seattle Dept. of Planning + Development Client Assistance Memos (CAMs)
CAM 336: Reuse of Building Materials
CAM 337: Demolition Permits
CAM 1302: Building Material Salvage + Recycling
www.seattle.gov/dpd/publications/

WA Dept. of Ecology: Demolition Debris
Describes the solid waste and hazardous waste elements of demolition debris.
www.ecy.wa.gov/programs/hwtr/demodebris/

For more information
Seattle Public Utilities
Joel Banslaben
joel.banslaben@seattle.gov
(206) 684-3936

Seattle Public Utilities

www.seattle.gov/util

This information available in other formats upon request.

Building Materials Salvage

Thornton Non-Structural Salvage Case Study

recycling facilities in the Seattle-Tacoma area that sort and process commingled construction and demolition waste. This was done to evaluate the recycling rates of the different facilities. The concrete masonry unit home was sent to a concrete recycler rather than to a mixed construction and demolition recycler.

After the structures were demolished, SCC crushed the foundations of the first three structures and sent the rubble to a concrete recycler. Finally, the site was filled and seeded with grass, setting the stage for habitat restoration activities. The demolition labor itself tallied by the SCC totaled 948 hours. It took an average crew of three 41 days to demolish all four houses.

Schedule

Week 1: Non-structural salvage materials removed from the four houses
Weeks 2-4: SCC crews demolish houses and send debris to recycling facilities
Week 5: Site restoration activities

Lessons learned

The project attained high diversion rates (combining salvage and recycling). However, the house made of concrete masonry units, an easily recyclable and heavy material, inflated the recycling rate. Regardless, the high diversion percentages are also due to identifying and using CDL recyclers with high facility recycling rates.

Full deconstruction would have increased diversion rates by expanding salvage opportunities to structural elements of the building. Also, working with a standard demolition contractor would likely have saved money, however the flexibility of working with SCC allowed for variations in schedule and ability to try different techniques.

Sending each home's waste to a separate demolition waste recycling facility made it difficult to track the destination of materials. Additionally, the weight of the one house, which was constructed of concrete masonry units (CMU), reduced the total salvage percentages on that project, even though the salvaged materials tonnages were quite similar.

In general, building materials salvage is a jobs creator; materials that would otherwise be mechanically demolished and sent to landfill or "downcycled" into hog fuel (burning wood for energy) or landfill cover are retained and reincorporated into the building stock. Additionally, the Seattle Conservation Corps staff received training in a new skill; one that they can apply to future projects.

Materials analysis

	Recycling facility	Recycled (tons)	Disposed (tons)	Recycling rate
House 1	Allied (3rd + Lander)	14.9	19.8	43%
House 2	Recovery 1	32.8	0.7	98%
House 3	CDL Recycle	41.2	0.8	98%
House 4*	Glacier Recycling	117.2	2.2	98%
Total		206.1	23.5	

Total diversion rate: 90%**

* House # 4 tonnage includes 75.6 tons concrete from CMU walls recycled as concrete

**Diversion rate = total tons recycled / total tons (does not include tons salvaged)

Project costs

"No cost" salvage contract	$0.00
Demolition labor (945 hours)	$35000.00
Demolition equipment rental	$6000.00
Commingled C+D recycling /disposal	$12645.00
Foundation hauling + recycling	$6000.00
Total project cost (four homes)	**$59,645.00**