

Building Materials Salvage

Environmental and business development opportunity



About the project

Building type: two single family homes with detached garages

Square feet: 1000, 1600 (including garage)

Year built: 1920s, 1950s

Location: West Seattle

Construction: wood frame, one slab on grade foundation, one below-grade basement

Diversion method: manual deconstruction

Project completed: September 2008

These two neighboring homes were removed as part of a Seattle Public Utilities flood control program.

Approach

The homes were located on adjacent properties providing an opportunity to conduct a simultaneous "hybrid deconstruction" approach. However, schedule conflicts related to obtaining demolition permits prohibited this approach, making the houses available for deconstruction at different times.

Instead, a "controlled collapse" method was used where structural components are removed and the building cut at strategic locations, allowing sections to fall in on one another. The framing is then safely and quickly pulled from the shiplap siding. Upon inspection, the shiplap was deemed unsalvageable due to its poor condition. The salvage crew set up one bin for commingled demolition debris and one for clean wood. This approach lowers disposal costs and takes advantage of the opportunity for onsite separation of clean materials afforded by manual deconstruction.

The deconstruction process began with site safety training and a thorough review of the materials diversion plan. Inspection of the homes revealed asbestos, which was targeted for abatement. Layout of the tool area, de-nailing station, break area and roll-off cans were determined. Roll-off cans for recycling were ordered and the security plywood

Project participants

Owner:

Seattle Public Utilities
www.seattle.gov/util

Deconstruction services:

RE Store
www.re-store.org
Earthwise Salvage
www.earthwise-salvage.com

Hauler:

Grayhawk (206-248-6231)

Recycling facility:

Grayhawk
Glacier Northwest
www.glaciernw.com

Electronics recycling:

Total Reclaim
www.totalreclaim.com

Lead abatement:

Long Painting Company
www.longpainting.com

Longfellow Creek Deconstruction

Using machinery-focused methods, an attempt is made to simultaneously deconstruct two neighboring homes to capture economic benefits and minimize costs. Timing realities, however, result in a manual deconstruction approach that still succeeds in diverting 97 percent of waste from the landfill.

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/

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www.seattle.gov/util

This information available in other formats upon request.

Building Materials Salvage

Longfellow Creek Deconstruction Case Study

covering the doors and windows was removed, allowing the homes to air out. Trash and household hazardous waste were disposed. Obstructing brush, telephone and cable lines were removed. Interiors were salvaged of non-structural goods.

Once permits were secured, the roofs were removed. Ferrous metals were recycled; lumber was hauled to the RE Store. The crew then executed the controlled collapse. After the walls were disassembled, the floor joists were removed. One home's cinderblock foundation had sufficiently soft mortar to allow the blocks to be salvaged; the other was crushed and recycled. Salvaged items included: wrought iron railings, fir flooring, lighting, doors, sinks, casework and cabinetry, siding, dimensional lumber, plywood, car decking, pier blocks and beams, windows, pavers, and furniture.

Schedule

Week 1: Site and crew prep. Non-structural salvage starts.
Week 2 + 3: Demolition permits secured; roofs removed; controlled collapse of House 1; floor joists removed. Foundation dismantled and cleaned. Electronics recycled.
Week 4: Roof and interior walls of second house removed.
Week 5 + 6: Garage roof removed; controlled collapse of House 2; sub-floor salvaged; foundation recycled.

Lessons learned

Schedule and permitting issues created equipment rental and work force inefficiencies and limited the source-separated materials recycling. Communication issues further compounded delays; for instance, trash remaining in the homes was not removed in advance of the salvage crew, complicating the salvage efforts.

Asbestos testing facilities may evaluate a project under the assumption that it is a conventional demolition, which relies on hazardous materials being mixed with inert materials during the demolition. This process does not occur on a deconstruction project. *All* asbestos present in a building slated for deconstruction must be abated in order to maintain the health and safety of workers.

Beginning each day with a crew check-in and safety review minimizes the chance of workplace injuries. This structure keeps productivity up, paperwork accurate, and safety at the forefront.

Project costs

Deconstruction services	\$40307.87
Recycling + disposal fees	\$6883.00
Market value of salvaged materials	-\$7073.00
Disposal cost savings*	-\$8496.00
*Based on tons diverted; assumes \$120 per ton disposal rate	
Total project cost	\$31,621.87

Materials recovered

Material	House 1	House 2
Salvage	8.5	11.9
Recycling		
- Scrap metal	1.2	1.4
- Wood	3.9	0.0
- Electronics	0.2	0.0
- Commingled	26.9	17.0
Disposal	1.2	1.2
Total generated (tons)	41.9	31.5
Total diverted (tons)	40.7	30.3
Diversion rate	97%	96%