

## SMITH COLLEGE FORD HALL ENGINEERING AND SCIENCE BUILDING DECONSTRUCTION, DEMOLITION, NEW CONSTRUCTION



Smith College's Ford Hall is a 140,000 sq ft, \$73 million structure designed to house Smith's engineering, chemistry, and computer science programs. A LEED Silver project, Ford Hall incorporates and uses sustainable design, construction, and operating elements as teaching tools for Smith students. In this light, Smith sought to maximize and document the financial costs and benefits of jobsite recycling, as a demonstration for Smith students, faculty, and staff – and for the broader academic community. Ford Hall was built on the site of a mixed residential and commercial area near the heart of Smith's campus, offering unique opportunities to highlight deconstruction as a waste and cost minimizing practice.

### Summary

**Project:** Partial deconstruction followed by demolition of five existing wood and brick structures. New construction of 140,000 sq ft engineering and science laboratory/classroom building of poured-in-place concrete.

**Reuse+Recycling Rate:** 97%

### Challenges

- Congested site at the heart of Smith's campus; little room for waste or recycling containers.
- Large volumes of multiple materials generated simultaneously during all phases of the project.
- Smith and contractor project staff had no prior experience with recycling, and approached the project believing that recycling would delay the schedule and add cost.
- Deconstruction of five nearly century-old buildings that presented a complex mix of techniques and materials.

### Results

#### Deconstruction and Recycling Results

Material	Deconstructn, Demolition	New Construction	Project Totals
Deconstruction	41.0	--	41.0
Ceiling Tiles	1.6	--	1.6
Trees & Chips, Wood	13.5	177.3	190.8
Metal	38.7	67.7	106.4
Asphalt, Brick, Concrete	646.2	775.0	1,421.2
Surplus Property	--	17.1	17.1
Gypsum Wallboard	--	58.6	58.6
Cardboard	--	18.2	18.2
Mixed Debris Recycled	403.4	191.0	594.4
<b>Recycling Totals (Tons)</b>	<b>1,144.4</b>	<b>1,304.9</b>	<b>2,449.3</b>
Mixed Debris Disposed	41.5	47.0	88.5
<b>Project Recycling Rate</b>	<b>96.5%</b>	<b>96.5%</b>	<b>96.5%</b>

**Costs & Savings**

Including the cost of waste management planning and documentation, contractor William A. Berry calculated savings of about 25% against their budgeted waste disposal cost. There was an increase in labor for site cleanup, but this was more than offset by the savings. At the end of the day, Berry achieved three LEED points and saved money at the same time.

**Keys to Success:**

- Owner commitment. Strong, comprehensive recycling specification that clearly laid out recycling goals, performance requirements, and deliverables.
- Consistent support from contractor home office management.
- Communication and support to contractor field management (super and labor foreman), which succeeded in overcoming concerns about recycling and winning cooperation.
- Planning and service. Assuring that material handling and transportation did not interfere with the work, pickups were timely when called for, etc.
- Timely tracking and reporting, allowing owner and contractor staff to monitor recycling progress, facilitating public relations, generating enthusiasm and support from contractor onsite personnel.
- Not missing a waste, i.e., capitalizing on unusual materials that added significantly to the recycling bottom line, including landclearing debris, recycled asphalt pavement, wood, deconstruction materials, and items damaged upon delivery or delivered in error.

**Critical Factor:  
Deconstruction**

The Ford Hall site encompassed a downtown residential/commercial block that was a local landmark, and planned demolition of the block triggered controversy. Deconstruction was an important part of Smith's response, assuring the community that as much as possible of the five affected structures would be recovered and reused.

Deconstruction was comprehensive down to interior finishes, and recovered the following: furniture and appliances, flooring; trim; mantels, doors, windows, cabinets and casework, kitchen and bath fixtures, exterior benches and landscaping elements (e.g., pavers). To keep accurate track of materials recovered from each building, they were stockpiled and transported on separate trucks, each containing the recovered materials from a single structure.

This level of attention carried through to demolition of the remaining shells. "Source separation" – that is, onsite separation of wastes into their constituent components – was practiced as much as possible, yielding homogeneous loads of wood, metals, wood, and ceiling tiles. This practice had no impact on the demolition schedule, and had the double benefit of reducing disposition costs and increasing recycling rates.

**Project Team**

**Building Owner:** Smith College, Department of Facilities Management, Northampton, MA, 01063.  
Web: [www.smith.edu/physplant](http://www.smith.edu/physplant)

**General Contractor:** William A. Berry & Son, Inc., Danvers, MA, 01923. Telephone: 978-774-1057.  
Web: [www.berry.com](http://www.berry.com).

**Recycling:** The Institution Recycling Network, 7 South State Street, Concord, NH 03301.  
Telephone 603-229-1962. Web: [www.WasteMiser.com](http://www.WasteMiser.com).