

Project Saves \$1,197,310 By Deconstructing

In the historic Federal Hill area, a group of factory buildings dated 1911 were about to be updated from low rent loft spaces to marketable mixed-use buildings. The neighborhood is a vital part of Providence and a marketable draw for new residents. The winning demolition bid was lower than the others by a wide margin. Why? The contractor crushed concrete and brick on site and used it as much needed fill, saving the client over a million dollars and delivering higher air and water quality to the community. The project diverted over 99% of materials while allowing the client and contractor to split significant savings.



Class: Institutional
Site Type: Urban
Type: Demolition

Project Summary

- **Timeframe:** 1/02 – 6/03
- **Demolition:** 280,000 s.f.
- **Traditional Disposal:** \$80/ton

| Material | Salvage | Recycle | Disposal | Total |
|----------|---------|---------|----------|--------|
| ABC | 500 | 53,461 | | 53,961 |
| Timbers | 691 | | | 691 |
| Lumber | | 3,600 | | 3,600 |
| Metal | 1,100 | | | 1,100 |
| Roof | | | 149 | 149 |
| Debris | | | 200 | 200 |
| Totals | 2,291 | 57,061 | 349 | 59,701 |

Cost / Benefit

| | |
|---------------------------|-------------|
| Additional Hauling | \$ (6,570) |
| Avoided Disposal | \$1,113,220 |
| Labor Costs* | \$ unk |
| Materials Salvaged | \$ 90,660 |

¹ labor costs are 'part of the bid', so not broken out as a 'special' cost. Recycling is the chief reason the contract was won, considering the way site fill saved money for the project.

² - does not include avoided disposal of site fill.

Project Description

The contractor dismantled four structures in the first half of 2002, and the rest were to be refurbished into mixed-use buildings. The renovated buildings will be home to city dwellers as well as several retail stores, anchored by Shaw's Supermarkets. The demolition phase was condensed into six months due in part to delays in acquiring the property, but the anchor tenant's goal date could not move. This is when a resource plan done well in advance really pays off.

The project produced a total of 59,701 tons of waste, of which only 349 tons (less than 1%) went to landfill. Providence noticed, as did the River Commission. The project had a steady stream of spectators, some of whom went out of their way to express congratulations on how materials from the old factories were being prepared for new uses.

Spotlight on Timber

Old factory buildings are ideal for reclamation, but Costello also enjoys big dividends from their investment in technology. The precision arm of their Komatsu 'long arm'

allows them to pluck timbers from the building frame without damaging them. As a result, the materials bring a higher price, particularly old growth yellow pine, which Eagle Square had.

During a recession, markets for used building materials are vaporized. But factories largely use large timbers and bricks, both of which yield a revenue stream. The timbers in this project were milled into flooring, and all other wood was chipped into reusable wood product (largely biofuel). The bricks that were in good shape for resale were sold, and the rest were crushed for on site fill.

Costs and Benefits

During the project, the contractor found markets for brick and massive timbers, which comprised the majority of the value encased in the building materials. Palletizing the materials makes them easier for the buyer to handle and therefore raises the value. The contractor also anticipated market needs by bundling materials into quantities conducive to trucking (ex., timbers into 2000 board feet) and loading. They called ahead to ensure that receiving could handle lift capacity of the bundles. It's this attention to your buyer's needs that makes a huge difference in the price they'll offer.

Costello just celebrated over 500k hours of incident-free work, attributable in part to a more deliberate approach to material handling and worker safety and training. Daily safety training and planning (again) contribute to awareness on all levels. Quantifying labor costs is nearly impossible, because the payoff for the care in which materials are handled almost always saves time in the end.

The numbers speak for themselves but in no way tell the whole story. At the heart of Costello Dismantling is the strong assumption that materials have value after their first use. Costello shines in a project like this because they meticulously preserve the materials and know their markets. The benefits to the client and community are the real story here.

In terms of labor costs, Costello sees it all working out. A bit more front-end labor means less machine time, which is expensive, as well as a higher material market value. Isolating labor costs in this case is too much of an abstraction.

The market for roofing material at the time of the project was very young. Road surface companies have no tolerance for C&D that may be mixed in and generally refuse to accept demolished roofing material.

How to Replicate

Ways to maximize savings on any site:

- Planning and desire must be there from the start
- Use a systemic approach. By source separating, recycling and salvaging, costs automatically get cut. You can ultimately perform work in more competitively.

Salvage is more than a novelty to Costello. It's at the heart of the company, and it very much adds to the bottom line as revenue and avoided costs.

- Work with your supply chain ... the developer needs to be willing to use the material coming out of this methodology.
- Non structural (e.g. parking) projects are ideal candidates to receive recycled ABC
- Reduced emissions from avoided transport of materials allows contractor to lower impact on neighborhood air quality.

Resource Consultant

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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.