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## **Deconstruction: Smart Demolition**

by Robin Snyder

Are you treating demolition projects like business as usual: razing structures with one swing of a wrecking ball or a single dynamite blast and hauling the rubble to a landfill? Guess what? There is another method for clearing sites that yields economic and environmental benefits and may save as much as 30-50% when compared to traditional demolition costs. Known as deconstruction, this technique is gaining momentum as a new approach to demolition and site clearance.

### **Deconstruction vs. Demolition**

With most HOPE VI revitalization plans calling for total or partial demolition of severely distressed buildings, PHAs are generally familiar with the standard demolition process in which buildings are broken down into manageable pieces and hauled away for disposal. In rare cases, traditional demolition is preceded by the removal of components such as doors, cabinets, windows and appliances. But, even when those materials are removed, what is the fate of the remaining structural timbers, wood flooring and brick walls? The current "state of the art" dictates that these materials will be left behind to be destroyed, mixed together and land filled in the process of demolishing the building. That type of demolition process wastes valuable resources and squanders limited landfill space.

### **Deconstruction offers an alternative to demolition.**

Peter Yost of the National Association of Home Builders-Research Center (NAHB-RC) says, "Deconstruction is a new term to describe an old process--the selective dismantling or removal of materials from buildings before or instead of demolition." Instead of crushing and burying valuable building materials, a deconstruction process salvages not just the most readily available components but also extracts additional materials such as oak flooring, oak stair treads and structural timbers. Deconstruction means breaking down walls not destroying them. It means preserving and possibly reusing material, not wasting it.

### **Deconstruction Pilot Project**

In an effort to change the status quo with respect to demolition and move this new technique into the mainstream, the Environmental Protection Agency (EPA) and NAHB-RC have launched a pilot project to assess the feasibility of deconstruction. The project, currently being developed in conjunction with the Baltimore Development Corporation and the Housing Authority of Baltimore City, will involve six to eight units of two story, brick veneer slab-on-grade public housing that were slated for demolition but will now undergo a deconstruction process. It is estimated that six workers will be involved in the deconstruction of these units over the course of six weeks. This process will cost roughly \$20,000.

The pilot is expected to take longer and require more labor than an average deconstruction project because NAHB-RC will be gathering extensive data on the process of disassembly including the quantity, quality and type of materials recovered, hours and type of labor required, and marketability of salvaged materials. Preliminary research indicates that wood

framing, wood sheathing, oak strip flooring, wood shelving, wooden doors, galvanized pipe, steel brick lintels, wiring and metal ducting can be profitably salvaged at this site. If these materials are reused during the construction of new buildings at the site, there would be a 100% savings on that particular item or set of materials. If the recovered materials are sold for salvage, it is estimated that a return of 50 cents on the dollar for each salvaged item could be realized.

According to Robin Snyder of the Urban and Economic Development Division at the EPA, this project, and deconstruction in general, is intended to "provide job training opportunities for unskilled workers, create infrastructure to support small business development, divert valuable resources from landfills into profitable reuses, and present a model that can be replicated across the nation."

At the conclusion of the pilot project, a document comparing deconstruction to demolition will be compiled. Based on the work conducted at the pilot site, deconstruction guidelines for a range of building types will be developed.

## **The Benefits of Deconstruction**

- **Cost Savings**

Preliminary research indicates that deconstruction may cost 30 to 50% less than straight demolition. While labor costs are higher due to the nature of the work, they are offset by lower equipment costs. Because deconstruction does not require as much heavy equipment but rather relies primarily on hand tools and small machinery, equipment rental costs are lower.

The items removed through deconstruction can be reused during the construction of new developments or sold to a salvaging company. Research shows that the market value for salvaged material is greater when a deconstruction process has been implemented because of the careful removal of items. The money made through salvaging can be used to offset other redevelopment costs.

Lastly, disposal costs are lower with deconstruction because the process reduces the amount of waste produced by up to 75%.

- **Job Creation and Small Business Development**

Many urban revitalization projects involving demolition are underway across the nation in places where a large pool of unemployed, low-skilled workers is available. Deconstruction requires low-skilled work crews who are trained to extract salvageable materials from buildings slated for demolition. By implementing deconstruction techniques, a new range of employment opportunities are made available to a low-skilled work force. In addition, small businesses could be created to handle the salvaged material which would enable HOPE VI PHAs to link a deconstruction project to economic development and job training efforts.

- **Good Management of Existing Assets**

The buildings being demolished under HOPE VI are the products of investments made by the PHA in years past. Deconstruction enables PHAs to "recycle" those investments by reusing or salvaging resources from them. In doing so, the original investment is not wasted but rather transferred in some form to the new project. In a time of increased scrutiny about public spending, deconstruction may be a way to creatively and responsibly manage previous investments and older assets.

- **Preservation of the Environment**

The environmental benefits of deconstruction should not be overlooked. The solid waste problem in many localities is so severe that landfills are at capacity. Jurisdictions are now being forced into developing incentive programs so that they are able to meet solid waste reduction goals. One focus of these programs may well be the construction industry as studies indicate that twenty-six percent of the material in landfills is building-related. Because deconstruction reduces the amount of building-related waste produced during site clearance, a PHA using this technique will contribute to waste reduction efforts. In addition, every foot of timber saved and every metal fitting salvaged translates into conservation of natural resources, a worthwhile goal in a time and atmosphere in which our actions increasingly threaten and damage the environment.

## How to Pursue Deconstruction

There are two ways to incorporate deconstruction into demolition plans for severely distressed public housing developments. It should be noted that implementing any type of deconstruction process requires a significant amount of pre-planning.

- **Participate in a Deconstruction Effort**

EPA/NAHB-RC would like to undertake additional projects across the country to further refine the deconstruction technique and continue to analyze outcomes. Toward that end, they are actively seeking partners, including HOPE VI public housing authorities, who are willing to explore the costs and benefits of deconstruction with them.

- **Incorporate Deconstruction into Demolition**

Not all housing authorities are prepared to explore full-scale deconstruction and not all buildings can undergo total deconstruction and still realize a profit. Nevertheless, there are ways to incorporate a limited deconstruction process into a traditional demolition plan. Almost all buildings will yield some materials that can be "cherry-picked" out of the building prior to the impact of the wrecking ball. Demolition debris such as rubble can be used for foundation fill materials instead of being hauled to a landfill. PHAs have the authority to structure demolition contracts so that wrecking companies are required to recover, recycle and reuse a set quantity of materials. A company's willingness to engage in a limited deconstruction process could be used as a criteria when evaluating proposals.

While deconstruction is a new concept and data are still being developed on the exact outcomes of the process, the general economic and environmental benefits of deconstruction are unquestioned and, thus, make it an attractive alternative to demolition. HOPE VI encourages creativity and the exploration of cutting edge ideas and, as such, may provide a unique opportunity to pursue deconstruction. For the sake of the environment and the pursuit of economic opportunities, deconstruction deserves serious consideration. Contact: Robin Snyder, EPA, 202-260-8331.

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Text-Based Table of Contents

**HOME:** Home Page | About Smart Growth | About the SGN | What's New! | Mission | Principles | Partners | **MEMBERS:** Members' Area | About Membership | Join Today | **RESOURCES:** Tool Catalogue | Bibliographies | Presentations | **NEWS:** News Index | Smart Growth State by State | Press Releases | **ANNOUNCEMENTS:** Calendar | Suggest an Event |

Calls for... | Jobs | **BOOKSTORE:** SGN Bookstore | **LIBRARY:** Document Index | Case Studies | PDF Index | Bibliographies | Bibliography Database | **SITE MAP:** Table of Contents | **ARCHIVE:** Overview | Calendar | Ballot Watch | Governors | Databases | **SEARCH:** General Site | News | Databases | **COMMENTS:** Guest Book | Suggest a Resource

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