Don't Demolish That Building — Deconstruct It

This deconstruction project benefitted the environment in that most of the materials were recycled and reused, not dumped in a landfill.

by Marisa Miller Hegyesi and Brian Yeoman

The Graduate School of Biomedical Sciences before deconstruction began.

Photos courtesy UTHSCH

You are faced with removing an old building to make room for a new, state-of-the-art building. Do you simply demolish it, or do you invest a little extra time and money to deconstruct it? Do you dump the demolition debris in a landfill because the tipping fees are inexpensive? Or, do you recycle and reuse, taking a small step toward protecting the environment?

When faced with these questions, administrators at the University of Texas Health Science Center (UTHSCH) discussed with Berkebile Nelson Immenschuh McDowell Architects (BNIM) how the old Graduate School of Biomedical Sciences (GSBS), a 37,368-sq.-ft. building built in 1974, could be deconstructed and recycled, resulting in little negative impact on the environment. Demolition is nothing new, but deconstruction and recycling/reuse is new. Landfill costs in Texas are low, and the land is cheap. The average rate for a local landfill is $9.95 per cubic yard. Therefore, it is often hard to sell the idea of deconstruction. However, it is time to change.

The goal, at first, was to have no materials dumped in the land fill. This goal was impossible. Therefore, BNIM went to work. After creating drawings, writing specifications and developing guidelines, a goal was set to recycle/reuse 70 percent of the total building.

A joint venture between Jacobs Engineering and Vaughn Construction as construction managers, and D.H. Griffin of Texas, Inc., as the deconstruction contractor, played a major role in supporting UTHSCH's new deconstruction policy. UTHSCH made a commitment to generate the least amount of waste possible, and maximize the salvage of material being removed from this project.

Before the asbestos abatement, the metal hardware from the doors was removed and separated for recycling. The wood doors were taken and chipped into landscape cover. UTHSCH inventoried the furniture and equipment so that it could be taken to surplus or reused. After the desired items were taken to surplus or reused, A.G.V., Inc., auctioneers and liquidators specializing in refurbishing and selling used office furniture, removed and sold the majority of the remaining furniture. Laboratory Construction Specialists, Inc. (LCS), was able to salvage a great deal of the laboratory casework and laboratory bench tops. Both UTHSCH and private individuals salvaged the casework items not salvaged by LCS. Iso-Tex Diagnostics, Inc., was able to salvage and reuse several large pieces of laboratory equipment, including two large glass refriger-

ation units, a subzero refrigerator and an autoclave.

Much of the landscaping that surrounded the GSBS building, such as small deciduous trees, palm trees, shrubs, plants, light poles and benches, were removed and relocated throughout the campus. Large trees that could not be transplanted were cut down and taken to UTHSCH's Urban Ecology Research Park to be chipped into mulch by a solar-powered chipper.

Almost all of the 1,012-sq.-yards of carpet were removed and given to DuPont Antron for recycling. The remaining carpet was reinstalled in Iso-Tex Diagnostics, Inc.'s, Friendswood, Texas, facility.

The age and energy inefficiency of the fluorescent lights removed from the building did not make them good candidates for reuse. Therefore, only the ballasts, bulbs, metal housing and plastic lenses were recycled.

Through Armstrong's Ceiling Reclamation Program, 14.28 tons of ceiling tiles were recycled. The tiles were taken to the local Armstrong plant where they were added to the raw mix and reemulsified to create new ceiling tiles. This program not only diverts waste material from the landfill but also reduces the amount of fresh raw material depleted from the earth.

In an effort to reuse building materials, the face brick (approximately 50,000 bricks) was removed from the building before the deconstruction. The brick was then stockpiled so it could be cleaned and palletized for use at a later date. UTHSCH even went so far as to remove the canopy connecting the North and South wings of the building so that it can be reused in a new location.

In the end, UTHSCH, with the assistance from BNIM, Jacobs, Vaughn, D. H. Griffin and others, not only met their goal of recycling/reusing 70 percent of the facility, they surpassed it at 77 percent (see table, above right).

In the future, if the university plans on deconstructing other buildings, they will use the same environmental and sustainable building practices. The University of Texas Health Science Center at Houston will continue its quest to become a more sustainable organization. What about you?

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Deconstruction Table

Landfill Materials

Material	Weight (Tons)
Construction and demolition waste	6.2
Asbestos (friable and nonfriable)	570.0
Concrete mixed with asbestos mastic	832.0
Subtotal	1,408.2

Salvaged/Recycled Materials

Material	Weight (Tons)
Concrete	3,700.0
Land clearing debris	20.0
Wood	26.6
Masonry	496.0
Misc. Scrap Metal	431.0
Furniture	37.0
Fixtures and equipment	30.5
Metal casework/cabinetry/shelves	4.8
Canopy and skylight	7.5
Subtotal	4,753.4
TOTAL	6,161.6

The Graduate School of Biomedical Sciences as brick is being removed at the beginning of the deconstruction process