Turning Trash INTO CASH

BY DAVID DOBBS & WENDY TALARICO

As disposal costs rise, contractors are finding that recycling is not just a feel-good exercise, but a financial necessity

Because of rising disposal costs, some contractors are taking a closer look at their trash piles, recycling what they can, and saving money in the process.

Within the past few years, as landfill space has become precious, disposal of construction and demolition waste has become a major expense for many contractors. While tipping fees (the fee charged for dumping waste at a landfill or other solid-waste facility) vary from state to state and county to county, average fees rose 73% from 1982 to 1987, according to the National Solid Waste Management Association. In some areas of the country, builders have seen their disposal costs rise as much as 1000% over the last five years.

Prices are highest on the East Coast. In Florida, tipping fees run around $60 per ton. Tipping fees in New Jersey, New York, and New England generally run around $100 per ton or higher; a few New York counties charge as much as $270 per ton.

By contrast, tipping fees in the San Francisco Bay area average about $27 per ton. In parts of the Midwest, costs can be as low as $5 per ton.

Why So High?

The main factor driving disposal costs upward is a lack of landfill space due to population density. When landfills close, public opposition and environmental concerns make siting new ones difficult. So solid waste must be either trucked to distant sites (running up the cost) or handled at expensive trash-to-energy incineration plants.

In addition, the new facilities that replace the old landfills — both new landfills and trash-to-energy incineration plants — must meet higher, more expensive standards than ever before.

The bottom line is that higher disposal fees are here to stay — and they won't be limited to the Northeast. Even in less populated areas, many landfills will fill over the next few years. The Environmental Protection Agency predicts that more than half the nation's landfills will close by 1995. As a result, tipping fees in excess of $50 and even $100 per ton will become common in almost every part of the country. These fees will make disposal costs a significant part of every construction job's budget.

Recycling Comes to Construction

For contractors, keeping disposal costs down will become crucial to keeping bids competitive. The roofer who can dispose of a torn-off roof for $200 instead of $400 will have an edge, as will the remodeler who can cheaply dispose of a job's wood waste. The key to such cost reductions will be recycling.

Facilities that recycle construction and demolition debris — from old foundations to old roofs — are already operating in areas

End-use Markets for Recovered Construction Waste

Waste Type	End Use
Wood	Fuel, landscaping, composting animal bedding, manufactured building products
Masonry, concrete, and asphalt	Re-used as masonry; fill in landscaping; crushed and used as aggregate in roadbeds and parking lots
Tar- or asphalt-based roofing	Shredded for fill or road aggregate
Metals, white goods	Scrap metal buyers or appliance recyclers
Gypsum	Recycled into new wallboard; also in fertilizer products

where high tipping fees make recycling economically viable. C.T. Donovan Associates, a Burlington, Vt., environmental consulting firm, identified 50 construction and demolition (C/D) waste recycling facilities in the six New England states, New York, and New Jersey, with dozens more in the planning stages. Other areas with high disposal costs, such as Florida and some population centers of the Midwest and West Coast, are also seeing growing numbers of C/D waste recyclers.

Contractors using these facilities are disposing of up to 80% of their construction debris at reduced rates. By doing so, they reduce their disposal costs by as much as half or more. And their waste, instead of ending up in a landfill, is being turned into a variety of useful products (see table above).

For instance, commercial remodeler Simon Levy, president of Levy Construction in Haddonfield, N.J., started recycling when he was faced with charges of $600 per dumpster load at his local landfill. Levy turned to a local recycler who will take dumpsters of separated wood and concrete for about $100 each. Now Levy uses two or three dumpsters on almost every site. They take up a lot of space, but even if he fills them only halfway, he saves hundreds of dollars on each job.

What's in the Scrap Pile

Just what's in construction debris? The few studies that have attempted to answer that question have come up with widely varying numbers. But it seems clear that the majority — 60% to 90% — of residential C/D debris is composed of just two components:

- Wood makes up 60% to 80% of the volume and 20% to 40% of the weight.
- Masonry and concrete rubble account for 5% to 25% by volume, 50% to 75% by weight.

The remaining 10% to 30% of residential C/D debris is a hodgepodge of wallboard, roofing materials, metals, plaster, plastics, textiles (mainly carpet), glass, ceramic plumbing fixtures, and (especially in new homes) cardboard packaging.

New construction vs. remodeling. Peek in a dumpster at a new construction site and one at a remodel and you'll find two very different collections of waste. At new sites, the majority of the waste is wood off-cuts, drywall pieces, and packaging (see Figure 1). Remodelers, however, must deal not only with these materials, but also with old plaster and lath, painted wallboard, old cabinets, roofing, siding, and woodwork, mangled flooring of every type, even old appliances and boilers. This greater variety of materials, along with cramped quarters and clients concerned with clutter, can make the remodeler's recycling task more difficult.

Fortunately, the majority of waste materials on both new and remodeling sites are recyclable (see "What's Recyclable, What's Not," page 35). In most cases, simply recycling wood and concrete and masonry debris can reduce disposal costs considerably.

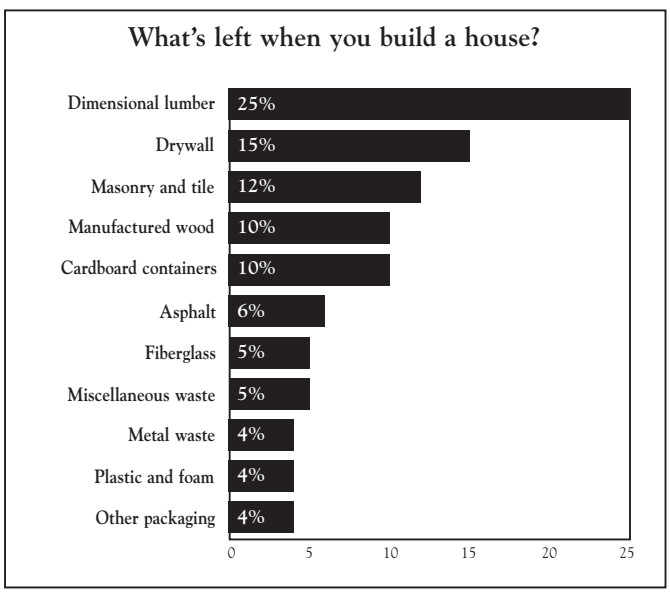

Figure 1. *A study by the Toronto Home Builders Association shows that wood, drywall, and masonry/asphalt products are the biggest components of debris left from new home construction, together totaling 68% of the volume.*

Making It Practical

Recycling is practical only when it saves money or time. This depends largely on how a recycling facility or transfer station (where materials are separated and then sent to recycling centers and landfills) operates. Several key factors determine how easy or difficult it is to recycle.

Separation anxiety. To recycle a material, someone — either the contractor or the recycling facility — has to separate it from the rest of the waste stream. Some recycling facilities require the contractor to do all the separating; others will take "mixed loads" and do much or even all of the separation. Of the facilities that take mixed loads, some take everything but household trash. Others take only two or three materials, most commonly wood, masonry and concrete, and possibly roofing.

In general, the more materials you separate yourself, the less you'll pay in tipping fees. But if you have to separate too much, such as four or five different categories, you may spend too much time and money separating and delivering the materials.

The best solution is usually a facility that accepts mixed loads: one that takes wood, masonry, and perhaps roofing materials will probably serve you best, since these materials usually account for most of a contractor's debris.

Fortunately, the trend in construction waste recycling is toward such facilities. In New England, for instance, more than a dozen major mixed-load facilities already exist; at least four of them opened in the past two years, and several more should open in the next year or two.

Paying for it. Recycling tipping fees vary almost as much as landfill fees do, both from place to place and time to time. Generally, recycling facilities must charge less than landfills do to make recycling cost-efficient. In places where tipping fees are moderate — say $25 to $40 per ton — recycling centers may save you only 5% to 10% over landfills. In more expensive areas, you can save up to 60% or 70% compared to landfill fees.

Getting it there. Transportation is another major factor determining the practicality of recycling. Some facilities require that you transport the materials; others pick them up or supply dumpsters.

If you transport materials yourself, using a facility that takes mixed loads becomes more important, so you don't have to make multiple trips. Location also becomes more important: A distant facility isn't worth using unless it charges a low tipping fee; a close one might be cost-effective even if it charges slightly more than a distant landfill.

The space factor. It's hard to recycle in cramped quarters. Remodeling sites often pose this problem, which can be aggravated if the clients don't like to see two or three different piles of debris accumulating. In such cases, contractors may need to separate and remove recyclable debris to another site daily, reduce the number of materials recycled, or forego recycling altogether.

Deciding to Recycle

Even if a recycling facility is nearby and offers relatively low tipping fees, recycling your construction debris can seem a daunting prospect, particularly if you are a remodeler. Yet most contractors and subs we talked to for this story, including remodelers, found recycling to be less trouble than they expected.

The Environmental Protection Agency predicts that more than half the nation's landfills will close by 1995. Tipping fees in excess of $50 and even $100 per ton will become common in almost every part of the country.

Breaking old habits. Steve Spratt, a remodeler in Fredericksburg, Va., is probably typical of remodelers who recycle. He recycles both his wood and masonry waste at the same recycling center, even though he has to separate the two materials. Spratt's crew transports the loads; he pays about $25 per ton to dump them, as opposed to $30 at the landfill. Though he only saves $5 per ton, he still finds it worthwhile to recycle, mainly because the recycling center is closer to town than the landfill is — 2 miles as opposed to 10 or 12.

"Recycling hasn't been too much of an adjustment," says Spratt, "because most of our waste is wood and rubble. We don't have to pull the nails out of the wood because their chipper can handle that. And the concrete stuff they'll take mixed with dirt. So we just put things in three different piles — the scrap wood, the heavy masonry and dirt, and the trash."

Spratt, like most contractors we talked to for this story, said the hardest thing was simply learning to keep the trash out of the recyclables — the coffee cups, soda cans, and drywall scraps that normally get flung on top of the

What's Recyclable, What's Not

Some types of construction and demolition debris are more recyclable than others. Generally, if you recycle your wood and concrete/masonry debris, you'll recycle from 60% to 90% of your waste. Add roofing and gypsum and you can make further reductions.

Here's a run-down of the main components of construction debris and what's involved in recycling them.

After running through the Gypchipper, ground-up drywall scraps are easily recycled into new gypsum products.

Wood

Wood makes up the bulk of most small contractors' debris piles, composing up to 80% by volume and up to 50% by weight. Wood-waste recycling facilities commonly chip it and use it either as fuel for wood-burning power plants (called "biomass" plants) or as mulch or surfacing for landscaping and agricultural uses.

Clean vs. treated. Whether you can recycle your wood debris may depend on whether it has been chemically treated or painted. Clean wood debris — unpainted and untreated, such as framing lumber off-cuts — is widely recycled without restrictions.

But some states restrict the use, either as mulch or fuel wood, of painted woods, which potentially contain lead, and/or of woods treated with CCA or creosote. Regulators worry that using these woods as mulch or fuel may expose the public to toxic levels of these chemicals.

Presently, regulations concerning burning or mulching of treated and painted woods vary by state. Some states regulate burning and some regulate mulching, but most regulate neither. Regulation of both uses may become more consistent after EPA research into the environmental impact of burning wood waste gets underway this year. For now, contractors wishing to recycle wood debris should check with local recycling companies to see whether they'll accept treated or painted woods.

What's involved. Recycling wood requires setting it aside in a separate pile or, if your recycling facility takes mixed loads, including it in a pile or dumpster with other materials such as concrete or roofing materials. Some facilities require that you remove the nails and any attached metal or gypsum scraps, but most will accept these minor contaminants.

Masonry and Concrete

Though they usually don't take up the most space in the dumpster, concrete and masonry rubble are usually the heaviest components of residential C/D waste. They are also the most widely recycled, and can usually be recycled together. Many recycling centers, as well as concrete and asphalt manufacturers, accept mixed masonry and concrete rubble. This may include concrete, brick, ceramic tile, plaster, stone, and in some cases, ceramic plumbing fixtures. Asphalt (in either block form or roofing materials) is acceptable, and some facilities even accept dirt mixed in with the rest of the rubble. These recyclers operate even in areas where no other C/D waste materials are recycled.

Rubble is typically sent through a crusher that breaks it into small chunks. A system of screens sorts these chunks by size. A belt magnet then pulls out metals, which are sent to local scrap yards. The finished product is used as a paving base for roads and bridges or an aggregate for concrete mix. Some goes into drainfields or is used for fill.

Many small contractors don't produce enough rubble to make an extra dumpster worthwhile. But with rubble recyclers charging only $5 to $25 per ton, it can be worthwhile hauling a load yourself if your tipping fees are on the high side. If a nearby facility accepts mixed loads, you can mix the rubble with other debris.

Asphalt Roofing

Asphalt roofing materials have long been recycled in many parts of the country. The recyclers are usually asphalt companies, fill suppliers, or concrete manufacturers. These companies chop and shred the roofing and use it as fill or as components in new asphalt paving.

From a contractor's point of view, roofing makes an excellent recycling prospect. Because it is heavy, recycling it can save a lot in tipping fees. And it's usually easy to keep separate from other debris.

Recyclers often accept roofing even in areas where tipping fees are relatively low; to find one, ask both at recycling companies and asphalt companies in your area. Some will require roofing to be separated, though many will accept it mixed with concrete/masonry rubble or wood.

On the Horizon: Gypsum

Gypsum can make up a big part of the debris pile on some jobs. Unfortunately, gypsum is not yet heavily recycled, except near a handful of wallboard manufacturing plants, which supply nearby gypsum recycling plants with a steady stream of broken and defective wallboard.

But a new generation of smaller, more portable, and less expensive gypsum chippers may make gypsum recycling more widespread. One such chipper is made by National Gypchipper of Austin, Tex (see photo above). Weighing 500 pounds and costing about $8000, these chippers are mobile and affordable enough that local and regional recycling facilities and transfer stations can buy or lease them and begin accepting wallboard scrap from contractors. Such networks of gypsum transfer stations may become widespread as tipping fees rise.

debris pile. Once this habit is broken, however (a matter of educating employees and subs), recycling becomes, as remodeler Simon Levy put it, "just a matter of throwing stuff in one pile or another. It's a matter of getting used to it."

One notable exception seems to be plaster attached to lath. Jim Newman, a Boston-area remodeler, told how his crew spent about $1000 worth of time separating plaster from lath for recycling, for which the company saved $400 in dumping fees — a loss of $600. Newman no longer recycles plaster and lath.

Finding a recycler. Look for C/D waste recyclers in the Yellow Pages under "Recycling Centers" or "Waste Reduction Disposal and Recycling — Industrial." Your state's environmental affairs department or your town's sanitation department may also know of facilities that recycle or burn construction waste. It's also worth asking your local private waste hauler (ask the drivers as well as the sales people).

Once you find some recycling facilities, find out what materials each will and won't accept, and how "clean" the debris needs to be. For instance, some want only clean, unpainted wood scraps; others will take painted wood, nails and all, mixed in with rubble, roofing, and dirt. You should also check whether a minimum-sized load is required and whether the company provides dumpsters or pick-up service. ■

David Dobbs is an associate editor with The Journal of Light Construction. *Wendy Talarico is editor of the eastern edition.*

For More Information:

Solid Waste Information
Clearing House
P.O. Box 7219
Silver Spring, MD 20910
800/677-9424

National Assn. of
Demolition Contractors
4415 West Harrison St.
Hillside, IL 60162
708/449-5959

C.T. Donovan Associates, Inc.
P.O. Box 5665
Burlington, VT 05402
802/658-9385

Toronto Home Builders Assn.
20 Upjohn Road
North York, Ontario
Canada M3B 2V9
416/391-3445

The National Solid Waste
Management Association
1730 Rhode Island Ave., NW
Suite 1000
Washington, DC 20036
202/659-4613