

# The Remodeler's Guide to Construction Debris

A thoughtful plan is the key to minimizing waste and maximizing profit

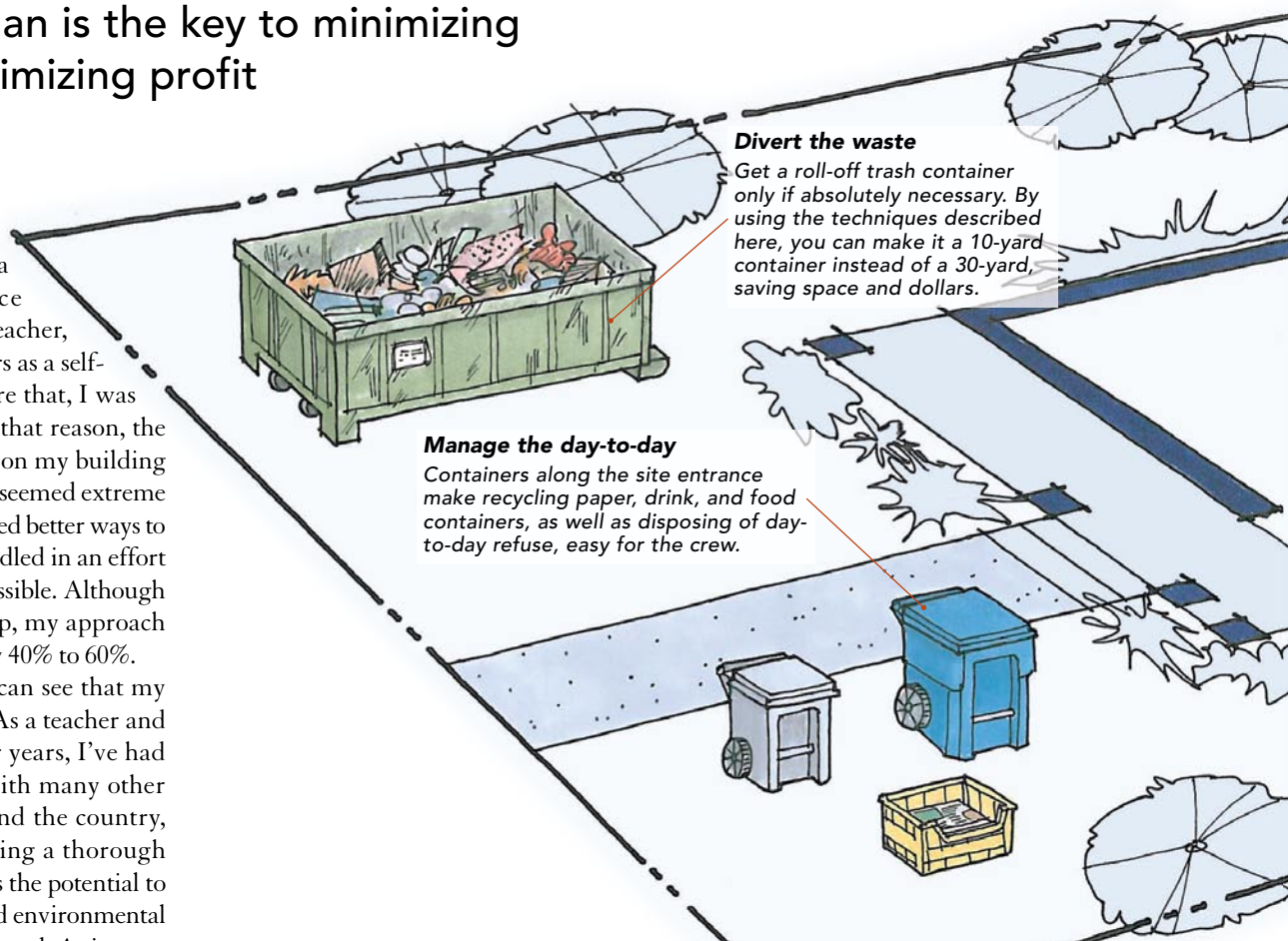
BY ROB MOODY

**B**efore I became a building-science consultant and teacher, I spent seven years as a self-labeled green builder. Before that, I was an ecology teacher, and for that reason, the amount of waste generated on my building and remodeling sites always seemed extreme to me. As a builder, I developed better ways to manage the material we handled in an effort to create as little waste as possible. Although the learning curve was steep, my approach reduced our waste stream by 40% to 60%.

In retrospect, however, I can see that my methods were elementary. As a teacher and consultant for the past four years, I've had the opportunity to work with many other builders and officials around the country, and I've learned that creating a thorough waste-management plan has the potential to reap even better financial and environmental rewards than the system I'd used. As it turns out, code officials are seeing the potential impact as well: In some areas of the country, such as Boulder, Colo., and San Mateo, Calif., a plan is required by law.

## Avoid the landfill to save money

Even if your municipality doesn't require a waste-management plan, you can still benefit from one. Using thoughtful, systematic strategies to divert materials from the landfill



## Ditch the Dumpster and save money

Rather than dump everything, divert from the landfill as much of the unusable material as possible. You'll keep tipping fees to a minimum, optimize everyone's time on site, and in some cases even get paid for salvaging material.

Start with a written waste-management plan, which includes a site plan and a procedure for handling each material. Identify materials and estimate their weight or volume. Then present the plan to all the workers on site. Doing so will keep the job organized, clean, and moving along efficiently.

**Metals**  
 0.07 lb. per sq. ft.  
**Diverted weight:**  
 140 lb.  
**Cost: – \$7.00**  
 Metals like aluminum, cast iron, and copper can be taken to a salvage yard.

**Masonry and other inert debris**  
 0.5 lb. per sq. ft.  
**Nondiverted weight:**  
 1000 lb.  
**Cost: \$10**  
 Use as much as possible on site for backfill. Any debris that can't be used on site should be taken to the landfill.

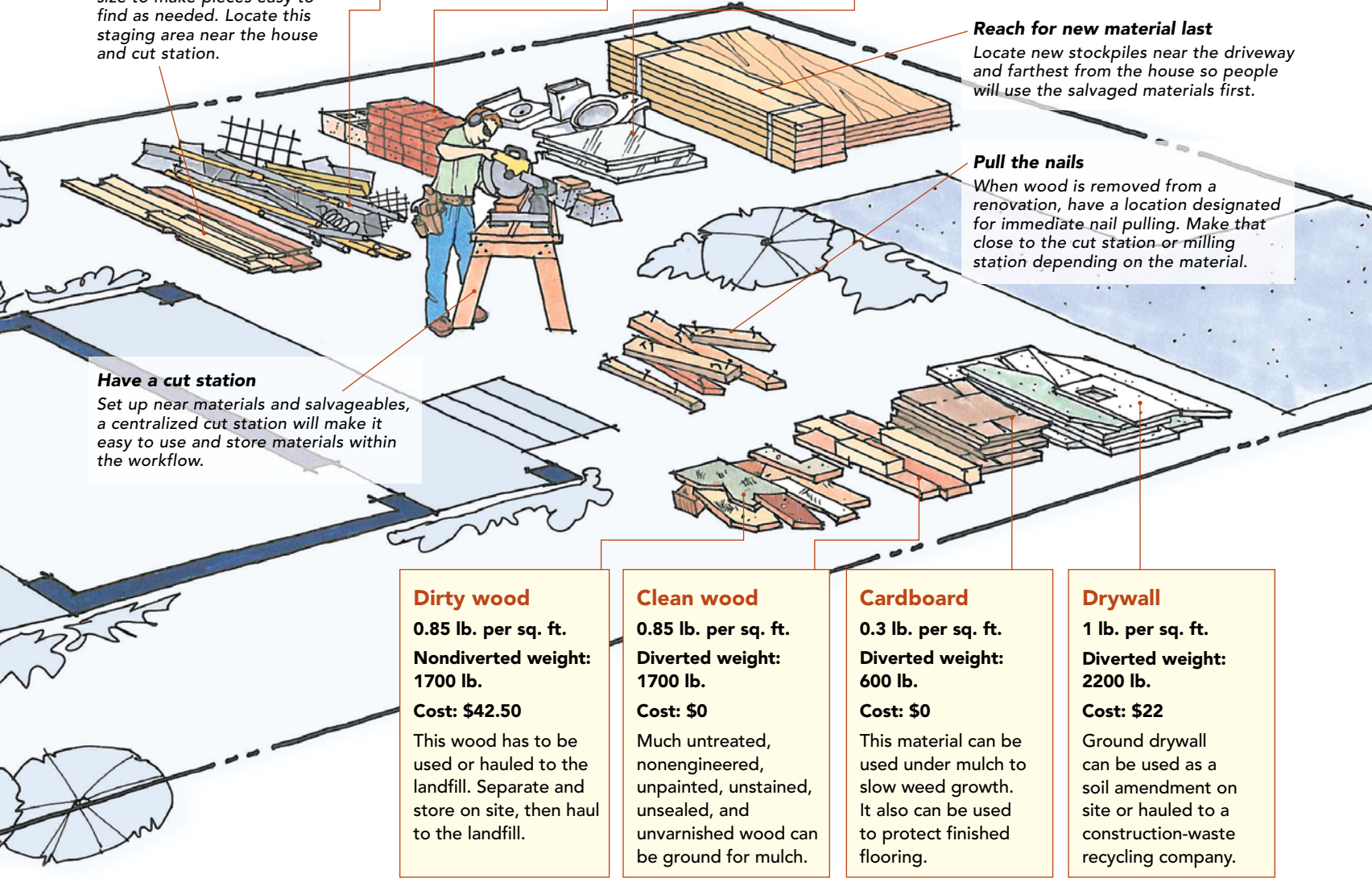
**Other waste**  
 0.5 lb. per sq. ft.  
**Nondiverted weight:**  
 1000 lb.  
**Cost: \$25**  
 Materials that can't be categorized above, like sinks and glass, should be donated to a re-store or hauled to the landfill.

**Keep usable material close**  
 Stack salvaged trim and framing lumber according to size to make pieces easy to find as needed. Locate this staging area near the house and cut station.

**Reach for new material last**  
 Locate new stockpiles near the driveway and farthest from the house so people will use the salvaged materials first.

**Pull the nails**  
 When wood is removed from a renovation, have a location designated for immediate nail pulling. Make that close to the cut station or milling station depending on the material.

**Have a cut station**  
 Set up near materials and salvageables, a centralized cut station will make it easy to use and store materials within the workflow.



**Dirty wood**  
 0.85 lb. per sq. ft.  
**Nondiverted weight:**  
 1700 lb.  
**Cost: \$42.50**  
 This wood has to be used or hauled to the landfill. Separate and store on site, then haul to the landfill.

**Clean wood**  
 0.85 lb. per sq. ft.  
**Diverted weight:**  
 1700 lb.  
**Cost: \$0**  
 Much untreated, nonengineered, unpainted, unstained, unsealed, and unvarnished wood can be ground for mulch.

**Cardboard**  
 0.3 lb. per sq. ft.  
**Diverted weight:**  
 600 lb.  
**Cost: \$0**  
 This material can be used under mulch to slow weed growth. It also can be used to protect finished flooring.

**Drywall**  
 1 lb. per sq. ft.  
**Diverted weight:**  
 2200 lb.  
**Cost: \$22**  
 Ground drywall can be used as a soil amendment on site or hauled to a construction-waste recycling company.

Separate materials by type, and organize piles based on the order in which they are removed (or order in which they will be put back in or taken off site). For a major renovation of a 2000-sq.-ft. house (shown above), the amount of waste generated can total 8340 lb. Sending all of that debris to the landfill will cost more than \$800: \$250 in labor, \$209 in tipping (average \$.025 per lb.), and \$360 in Dumpster fees. Implementing a waste-management plan and diverting as much of the material as possible can shave nearly \$300 off that figure.

**Debris specific hauling.** Some recycling centers will provide multiple bins to keep materials separate. Delivery and pickup fees tend to be fixed, and handling fees are based on weight or volume of the material. On large jobs, having bins allocated for specific materials not only saves tipping fees but also labor.



is the simplest way to reduce tipping fees and to protect your bottom line.

For example, tipping fees can be significantly lower for items like “clean” wood. Clean wood lacks glue, paint, stain, varnish, and chemical treatment. Our local county landfill takes clean wood at \$20 per ton compared to almost \$43 per ton for mixed construction and demolition waste. You might be able to find a local stump dump—a place that produces mulch and wood chips—that will accept clean lumber scrap for even less.

What I didn’t know early on is that there’s actually a market for certain waste materials. Separating valuable materials like metal (from 2¢ to 10¢ per lb., depending on the market) can actually help to recoup some Dumpster tipping fees while minimizing how much is going into the landfill.

Different companies charge for waste differently. Some have time-based rental fees for Dumpsters, while others charge per ton or per cubic yard, including the Dumpster delivery and pickup. When you consider taking pickup-truck loads to the transfer station, make sure you take into account not only the tipping fee, but also the distance traveled to the landfill.

Just as with bulk disposal to the landfill, you’ll have to account for fuel charges, vehicle maintenance, and a driver’s time. Often, recycling facilities are closer to city centers for convenience, and that may or may not be

convenient to a job site. Additionally, many landfill transfer stations won’t accept construction and demolition debris.

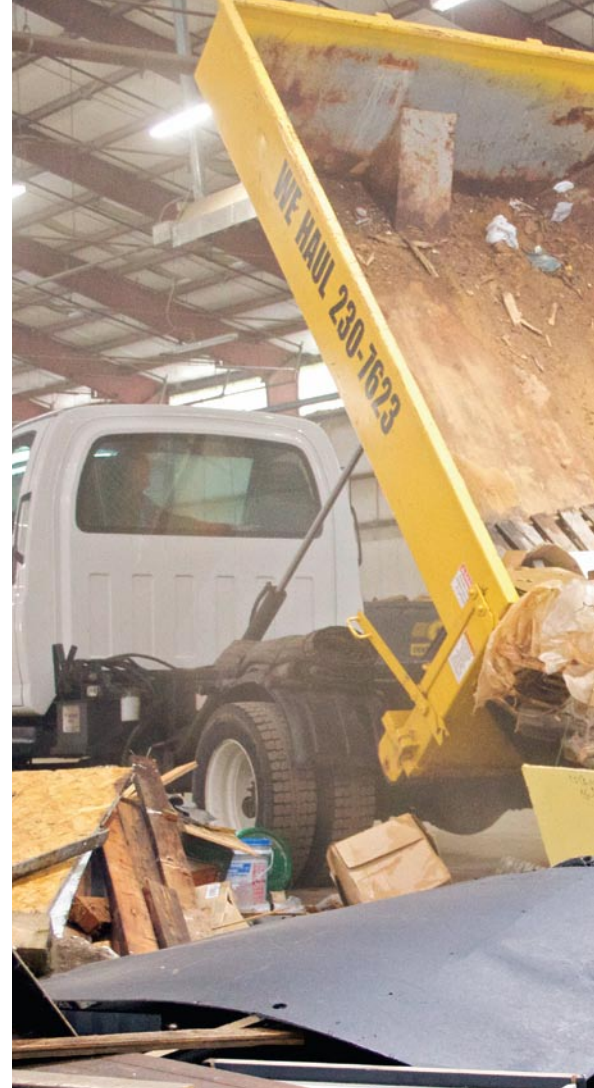
### Start with an inventory

Estimate the makeup of your baseline waste stream by looking at the waste-hauling records from your projects. Look at the tonnage or volume of waste produced, and apply standard percentages from national data to get an idea. You could also measure the volume of the various types of waste from current jobs and estimate their weight. You want to zero in on an estimate, but it doesn’t have to be 100% accurate.

According to the National Association of Home Builders’ Research Center, wood creates the biggest stream of construction waste both by weight and volume (42% and 24%, respectively). This includes clean wood; painted, stained, or varnished wood; and engineered wood, such as OSB, plywood, and I-joists, for example.

Drywall makes up 25% of job-site construction waste weight, although a lesser 11% by volume due to its high density and because it’s easily stacked.

Cardboard recovery is mandated in many municipalities and makes up 38% of construction waste by volume and 4% by weight, which is important to note if you pay for hauling by volume. Oftentimes, cardboard recycling is free.



**The material that pays you back.** Scrap metal usually can be salvaged. While you won’t get rich from diverting metal to the salvage yard, you’ll avoid paying tipping fees while earning a few dollars. Some salvage yards will pick up and separate materials for you.

## RESOURCES

**C&D MATERIAL TRADER**  
[www.cdmaterialtrader.org](http://www.cdmaterialtrader.org)

**CARPET AMERICA RECOVERY EFFORT**  
[www.carpetrecovery.org](http://www.carpetrecovery.org)

**THE CONSTRUCTION INDUSTRY COMPLIANCE ASSISTANCE CENTER**  
[www.cicacenter.org](http://www.cicacenter.org)

**REGREEN**  
[www.regreenprogram.org](http://www.regreenprogram.org)

**REUSEALLIANCE**  
[www.reusealliance.org](http://www.reusealliance.org)

**TOOLBASE**  
[www.toolbase.org](http://www.toolbase.org)

**U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)**  
[www.epa.gov](http://www.epa.gov)

**WHOLE BUILDING DESIGN GUIDE**  
[www.wbdg.org](http://www.wbdg.org)



## Checklist for a waste-management plan

- Outline the recycling and disposal resources in your area and their fee schedules.
- Conduct an inventory of materials for each job. List each item that has the potential to enter the waste stream. For each item, list in which phase of the project the item will enter your plan, followed by handling procedures.
- Estimate the weight and volume of each material.
- Determine the least expensive diversion path for each material based on resource fees, and note any labor involved in moving them off site.
- Draw a site plan that illustrates the layout of all necessary containers for each item type. Make sure that the whole team—including subs—knows the requirements and the final destination for each container.
- Have subs manage their own waste, and don't have a Dumpster on site.
- Offer to pay for waste management unless there is traceable trade-specific contamination.
- Inform persons from each trade what the repercussions are for contaminating waste. For example, back-charge them for it and include a liquidated-damages clause about contamination in the contract.

**One-stop dump and recycle.** Renting a Dumpster from a waste-recovery service is a good option on small jobs. These companies provide a Dumpster for a fixed price that includes hauling, separating, and recycling debris. Nonrecoverable waste is then charged by weight or volume.

Metals have one of the highest values in recycling and can be hauled to a metal recycler to offset waste-management costs. Carpet is recyclable in many locations across the country (see “Resources,” facing page), and inert materials such as soil, concrete, block, and brick can have outlets for diversion as well.

Check with local recycling centers to see what types of plastics they accept. Vinyl is typically recyclable, as is polyethylene terephthalate (PETE, type-1 plastic) and high-density polyethylene (HDPE, type-2 plastic). Types 3 through 6 plastic can be recycled, but are more difficult, and type 7 is rarely recyclable.

Solvents, paints, and adhesives must be disposed of as hazardous materials, and lead- and asbestos-containing materials have special requirements. Painted drywall and plaster are not recyclable and could contain hazardous materials such as asbestos and lead. Painted materials should be tested if you're working in a home built before 1978. If they are free of lead or asbestos and can't be reused, they must be disposed of in a landfill.

If they contain lead or asbestos, contact your local landfill for proper disposal methods.

### Know your disposal options

Get to know the local recycling and disposal landscape by finding out your municipality's permitting requirements for waste from new construction, demolition, and renovation. Also, look into re-stores, recyclers, haulers, and waste companies in your area.

Consider options while deciding what your best course of action will be for handling, temporary storage, and hauling. If you decide to haul materials yourself, you may want to invest in a dump trailer or truck if you don't already have one. We used flat-bed trailers equipped with site-made sides and parked them in strategic locations on site for the largest recyclables: clean wood and drywall.

I've known builders who build reusable plywood baffles to create on-site storage bins. One strategy we used often was to request the smallest container available for the waste that had no alternative but the landfill. Doing so forced everyone on the job to think twice about adding to the container.

There are also local options for recycling appliances, including some utility incentives for homeowners. Our local utility offers \$50 and will pick up refrigerators or freezers from customers.

A tow-behind grinder makes quick work of clean wood and drywall for mulch and soil amendment, respectively. Check your local ordinances to be sure it is acceptable to spread construction and demolition waste on site. Also, determine the definitions of construction and demolition. In some states, a building material becomes waste the minute it hits a job site; others consider only painted materials waste.

Keep a record of the weights of waste materials. This is helpful for green-building certification and for marketing your waste-diversion rate in terms of total tons kept from the landfill. Finally, write down your waste-management plan and make it available to your employees and subcontractors.

Rob Moody is a building-science consultant and educator with Organic Think Inc. Photos by the author.