



Construction & Demolition Waste Diversion

Construction and Demolition Waste (C&D Waste) Diversion is an essential practice of an efficient, responsible business. Maintaining a well-managed jobsite also has its rewards: builders save money through lower materials costs and fewer tipping fees (the charge for landfills to dispose of solid waste;) a cleaner site is safer to walk through, providing fewer opportunities for falls, injuries, or fire; and a cleaner site makes it easier and faster for workers to find smaller pieces of materials, reducing the waste of cutting large pieces into small ones. Finally, practicing waste diversion impresses clients that you care about their job and brings a higher sense of quality to the site and workers, which transfers to all other aspects of job performance. Although many contractors are not experienced with incorporating waste reduction strategies into their practices, once they've seen the benefits they invariably question why they waited so long to start!



DESIGN COMPARISONS

C&D Waste Diversion Practices

- Materials used efficiently
- Valuable material is recycled
- Useful material is reused
- Tipping fees are lower
- Preserves landfills longer

Conventional Waste Practices

- Materials are wasted
- "Locks up" valuable material
- Requires purchase of new material
- Tipping fees are higher
- Fills up landfills quickly

LEED CREDITS

Using this material potentially contributes to obtaining these credits in the US Green Building Council's LEED certification program:

Materials & Resources

MR Credit 2.1 Construction Waste Diversion (50% diversion)

MR Credit 2.2 Construction Waste Diversion (75% diversion)

LEED stands for Leadership in Energy and Environmental Design. To find out more about it, visit www.leedbuilding.org

DESIGN CONCEPTS

Effective recycling of materials generally requires that the waste materials be as clean and uncontaminated as possible. Consequently, waste such as painted gypsum board and painted wood cannot be recycled, though painted wood may be appropriate for some reuse applications. Unpainted wood and drywall can be used for compost, and useful wood is salvaged at the Berkeley Transfer Station (nails do not have to be removed) as well as other locations in Contra



Costa County. Concrete, metal, and asphalt are routinely recycled, and the recycling fee is a small fraction of the cost of disposal at a landfill or transfer station. Some firms will pick up materials directly from the construction site. Check with the local jurisdiction that you are working in for regulations regarding who can lawfully haul solid waste, mixed C & D recyclables, and/or separated recyclable materials. The building department may even have a list!

Because demolition waste is more likely to be composed of assemblies that cannot be practically separated, the rate of waste diversion will typically be lower than with construction waste. However, since demolition produces a much greater volume of waste than new construction, diverting as much demolition waste as possible is very important. Consider subcontracting the demolition work to a company that specializes in deconstruction and salvage. A growing number of non-profit deconstruction contractors can salvage 75% or more of waste and demolition materials. These subcontractors can appraise the value of the materials and arrange for the donation of materials to various community nonprofits. Because the materials are donated, the client can obtain a tax deduction, more than offsetting the additional cost of using the more labor-intensive deconstruction costs. These nonprofits also provide considerable community benefit, providing job training and employment for otherwise homeless and low-income workers.

Many for-profit firms are also available. They dismantle and remove reusable materials before traditional site clearing and then prepare them for re-sale. Hiring a salvage or deconstruction contractor can save significant money and resources. For a list of contractors, download the Builders' Guide (below), or see www.builditgreen.org/guide and search within the category *Job Site*.

The **Demolition Waste Diversion Strategy** is based on 2 R's: reuse and recycle.

1. Inventory everything that will be demolished and identify materials and products that can be salvaged. Some of the salvaged items may be appropriate to reuse for the same project.
2. Identify businesses or other facilities that will accept these materials and products. The Bay Area has an abundance of businesses that buy and sell salvaged materials, so finding a market is often quite simple. See the Resources section at the bottom of this factsheet for a listing of solid waste management authorities and links to salvage venues.
3. Carefully remove salvageable materials. Depending on the type, condition, and quantity of the materials, salvage businesses may pick up them up from the jobsite and/or pay for them.
4. Arrange to have jobsite bins for both recyclable and non-recyclable materials. If the jobsite is tight on space, find out what construction waste facilities can accept mixed C&D recyclables in order to considerably reduce the number of bins. Obtain a list from the building department, hauler or C&D waste recycling facility of what can and can't be recycled. Make sure the bins are clearly labeled.
5. Make sure all workers know what can and can't be recycled and that they understand why separating the materials is a priority. Let the demolition begin!

The **Construction Waste Diversion Strategy** is based on 3 R's: reduce, reuse, and recycle.

1. Reduce labor and material waste by designing the building to use materials efficiently. Because lumber and sheet material is typically milled in two foot increments, laying out a building on a two foot module can significantly reduce the time and waste of off-cuts. This approach is known as Advanced Framing or Optimum Value Engineering (OVE). The National Association of Home Builders Research Center (NAHBRC) is an excellent resource



that will tell you more about practices for reducing labor costs, material costs, and construction waste: www.nahbrc.org. Enter “OVE” in the search box and read the abstract on [Advanced Framing Techniques: Optimum Value Engineering \(OVE\)](#).

2. Donate any unused materials to nonprofit organizations such as Habitat for Humanity. In addition to reducing waste and supporting a good cause, the material donation may be tax deductible. Clean gypsum board, trim, and surplus products like windows, doors, and fixtures would be welcomed. List your unwanted materials on your local CalMAX Local Material Exchange portal at <http://www.ciwmb.ca.gov/calmax/MiniMAXs.htm>.
3. Check with the local jurisdiction in which you are working for regulations regarding who can lawfully haul solid waste, mixed C & D recyclables, or separated recyclable materials. Arrange to have jobsite bins for both recyclable and non-recyclable materials. Many construction waste facilities now accept mixed recyclables, so the number of bins on tight jobsites can be reduced considerably. Make sure the bins are clearly labeled. Obtain a list from the hauler or C&D waste recycling facility of what can and can't be recycled. See the Resources section for a list of building material recycling facilities.
4. Make sure all workers know what can and can't be recycled and that they understand why separating the materials is a priority. Let the construction begin!

ENVIRONMENTAL ATTRIBUTES

Resource Impacts

In the Bay Area, C&D waste accounts for approximately 20% of the total waste stream going to landfills. In addition to the loss of opportunity in reusing salvaged materials, the environmental cost of mining, fabricating, and transporting millions of tons of usable resources for construction and then sending them to landfills after not using them is considerable. If salvaged instead, these materials would reduce the amount of virgin resources extracted and the associated environmental impacts. Furthermore, as landfills fill up, waste needs to be transported to landfills that are further away, increasing transportation and environmental costs.

It's the law! Check with the local jurisdiction that you are considering working in, as many cities in the Bay area require at least 50% recycling of C&D waste, and some require 100% diversion of concrete and asphalt.

FUNCTIONAL CONSIDERATIONS

Cost

A number of case studies analyze savings from reducing C&D waste, and they demonstrate a net cost savings of \$0.10 to more than \$1.00 per square foot. Labor rates, local tipping fee rates, and the ever-changing cost of building materials are factors that will affect the equation. But, particularly in locations with tipping fees exceeding \$40 per ton, the cost savings will be significant.

Employing Advanced Framing techniques can result in even larger savings, since both material costs and waste costs are reduced. Case studies conducted by the NAHBRC in the 1990s found



cost savings ranging from \$0.24 to \$1.20 per square foot. In a 2000 square foot house, this amounts to approximately \$500 to \$2500 of net savings, which goes directly to profit.

RESOURCES

Bay Area Solid Waste Management/ Recycling

<p>Alameda County Waste Management Authority - ACWMA (510) 614-1699 www.stopwaste.org</p> <p>Builders' Guide to Reuse and Recycling https://www.stopwaste.org/docs/buildersguide-05.pdf</p> <p>Central Contra Costa Solid Waste Management Authority - CCCSWMA (925) 906-1801 www.wastediversion.org</p> <p>Contra Costa Builders' Guide to Reuse and Recycling www.wastediversion.org/pdffiles/CDGuide0303.pdf</p> <p>City of San Jose Environmental Services (408) 277-2700 www.sjrecycles.org</p> <p>Marin Hazardous and Solid Waste Joint Powers Authority - JPA www.marinrecycles.org</p>	<p>San Francisco Department of the Environment (415) 355-3700 www.sfenvironment.com</p> <p>Sonoma County Waste Management Agency - SCWMA www.recyclenow.org</p> <p>West Contra Costa Integrated Waste Management Authority - WCCIWMA (510) 215-3125 www.recyclemore.com</p> <p>California Integrated Waste Management Board - CIWMB (916) 341-6000 www.ciwmb.ca.gov</p>
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Building Material Salvage Businesses

www.builditgreen.org/guide

Dismantling/ Deconstruction/ Site Cleanup Contractors

www.builditgreen.org/guide

Building Material Recycling Facilities

www.stopwaste.org/home/index.asp?page=36

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