

US EPA ARCHIVE DOCUMENT

Calculating Effectiveness: The Waste Management Plan

Development of a waste management plan is essential in establishing your commitment to waste reduction on the job. The purpose of a waste management plan is to: 1) predict the quantities and types of waste that will be generated during a construction, renovation, or demolition project, 2) identify the final destination of that waste, and 3) estimate waste management costs.

In preparing an effective plan consider including waste diversion goals and objectives, exploration of recycling and reuse alternatives, and identification of locally available recycling and reuse outlets.

- x The first step in creating a plan is to identify a waste diversion goal for your project. For example: "50% of all project wastes will be reused or recycled." Try to keep the goal realistic, but don't underestimate potential resources. Locally available C&D recyclers are making it possible for area contractors to obtain diversion rates above 80%.
- x A critical second step in development of a plan will be to predict the project's waste generation. Break your project down into phases and make your best prediction of the types and quantities of wastes that will be generated. Remember, these are estimates and can be revised as necessary.
- x The next step will be to devise handling procedures for all project wastes. Make sure you have the proper containers and adequate space to implement your plan. Some haulers and recyclers may have special requirements or restrictions on the condition and types of materials they will accept.
- x The final step in outlining your plan will be identification of a destination for each material that is generated on your project. Focus on reuse and recycling before considering disposal options.

Jobsite waste diversion goals can be accomplished in two ways: the general contractor can take responsibility for all project waste; or responsibility can be divided so that each subcontractor manages waste their own waste. In either case, the designated parties should have a written waste management plan, update it as necessary, and execute its implementation.

If the general contractor takes responsibility for waste management, either in part or total, then waste management activities should be included in the contractor's budget. When the general contractor shares responsibility for waste management with subcontractors, their cooperation is required in order to keep a complete audit of waste leaving the site.



Bright Ideas

A Waste Management Plan is valuable because it places waste in a featured role. Taking the time to outline goals and a strategy for obtaining them lets project crew, subcontractors and suppliers know that you are serious about waste prevention.

Additional Information

The C&D Waste Reduction and Recycling series consists of 9 fact sheets, each focusing on a different aspect of waste management. Factsheets in this series include:

- What's in a Building: Composition Analysis of C&D Debris
- Onsite Source Reduction: Cutting the Scrap
- Setting up a Jobsite Recycling Program
- Deconstruction: New Opportunities for Salvage
- Calculating Effectiveness: The Waste Management Plan
- Reducing Waste for Building Owners
- Waste Recycling Through Commingled Recovery: the Summerland Heights Residential Development
- Deconstruction on Commercial Renovation Projects: the Victoria Street Presbyterian Sanctuary
- Source Reduction in Residential Remodeling: the Las Alturas Adobe

Other resources:

<i>Environmental Resource Guide</i> , American Institute of Architects	(800) 365-2724
<i>Environmental Building News</i> and <i>GreenSpec Product Directory</i>	(802) 257-7300
<i>Environmental Design & Construction Magazine</i>	(847) 291-5224
<i>Deconstruction</i> (video), Materials for the Future Foundation	(415) 561-6530
<i>Builder's Field Guide</i> , National Association of Home Builders	(202) 822-0200
<i>WasteSpec: Model Green Building Specifications</i> , Triangle J Council of Governments	(919) 549-0551
<i>Sustainable Building Technical Manual</i> , U.S. Green Building Council	(202) 828-7422

Visit these web sites for downloadable publications, listserv information, and links to other green building sites:

www.ciwmb.ca.gov	www.tjcog.dst.us/cdwaste.htm	www.EDCmag.com
www.epa.gov/greenbuilding	www.buildinggreen.com	www.materials4future.org
www.aia.org	www.oikos.org	www.usgbc.org

The C&D Waste Reduction and Recycling Series is a joint project of the Santa Barbara County Solid Waste and Utilities Division, The Community Environmental Council, and The Sustainability Project.

For more information please contact the U.S. EPA, Region 9 Office of Pollution Prevention and Solid Waste at (415) 972-3282.

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Economics of the Waste Management Plan

When preparing a waste management plan, you will need to determine: tipping and/or disposal fees at the various destinations that will receive your waste; recycling service options; whether you will provide your own containers for materials or rent them; and whether you will self-haul materials or contract with a hauler.

Disposal fees will have a significant influence on recycling economics. For example, tipping fees at Santa Barbara County's Tajiguas landfill are \$67 and the hauling distance is 25 miles from the city of Santa Barbara. This is a set fee per ton, which allows for some predictability. Mixed C&D debris costs \$55 per ton at the County landfill and South Coast Transfer Station. Local recycling facilities also charge a tipping fee for self-hauled debris; these vary, but are generally competitive or lower than landfill tipping fees.

Depending on available space and the amount and variety of materials generated, you will need to designate an area for materials collection and/or separation. Temporary bins can be built from scrap wood and then taken down and recycled along with their contents. If you decide to self-haul materials, make certain to account for transportation costs including vehicle ownership, operation and labor costs.

Local recyclers often rent storage containers and contract for hauling services. If you go this route, remember to budget monthly fees for container rental and hauling. This can be difficult to predict if construction schedules are extended for any significant period of time.

Use the following chart to determine appropriate container size:

Weight to Volume Conversion Table

Material	Conversion	
Wood	300 lbs/cu yd	6.7 cu yd/ton
Cardboard	30-100 lbs/cu yd	20-50 cy yd/ton
Drywall	400 lbs/cu yd	5 cu yd/ton
Mixed waste	350 lbs/cu yd	5.7 cu yd/ton



Remember that small changes can add up to significant dollar savings. Keep receipts from recycling and disposal facilities and track any savings to help determine the cost effectiveness of recycling in future projects.

Labor Costs

It takes about two and one half hours to handle one ton of materials on site, and separating wastes for recycling may require additional time. Actions can be taken to offset this expense. Adapting efficient traffic patterns on the jobsite will reduce time spent managing wastes.

Take into consideration that there is a learning curve. Once new procedures become familiar, the extra time spent will be minimized. It also is possible that labor hours will actually decrease with a well-planned jobsite recycling program.

Sample Waste Management Plan

Waste Generated On Site

Location: _____

Type of material	Total weight	% recycled or reused	Container	Hauler	Destination
DryWall	2,500 lbs	95%	40 yd. roll-off	MarBorg	Santa Clara Organics

Action Items

- Complete this form and post on-site.
- Have each subcontractor fill out a copy of this form.
- Review recycling goals at job-site safety meetings.