Contractors Guide

SEATTLE/KING COUNTY 2002-2003

Save money and resources through job-site recycling and waste prevention

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INTRODUCTION

This guidebook provides recycling and waste prevention how-to's for all builders, from the handyman and remodeler to large commercial contractors. It is your handbook for saving money and resources by recycling and preventing waste on the job-site.

This guide should be used with the *Construction Recycling Directory*, a comprehensive listing of construction material recyclers in Seattle/King County. View the recycling directory and an on-line searchable database of recyclers at *www.metrokc.gov/greenworks* or call the King County and Seattle numbers below to request a printed copy. Seattle also has a recycling database to help you locate a recycler for your materials, available at *www.resourceventure.org/database.htm*

Other resources are listed in this guide under *Where to Get More Information,* Page 29.

NEED HELP?

In **King County** call the King County Customer Service Representatives at (206) 296-4466 or the King County Construction Recycling and Green Building program at (206) 263-6037. You may also find answers to commonly asked questions on King County's website at: *http://www.metrokc.gov/greenworks*.

King County provides a wide range of free information on Green Building including developing job-site Waste Management Plans, specifying recycled-content building materials, and sponsoring training and educational opportunities on green building strategies and techniques. King County also promotes the *Construction Works*, BUILT GREEN™, and LEED™ programs. Learn more about these programs on the following pages.

In **Seattle**, the Business and Industry Resource Venture provides Seattle design and construction professionals with free information, assistance, and referrals to help improve the environmental performance of their building projects. Call their hotline at (206) 389-7304. You also may find this information on their website at: *www.resourceventure.org*.

The Resource Venture can help you with: general sustainable building education, LEED™ and BUILT GREEN™ certification, City of Seattle incentive programs, construction waste management, green building materials, stormwater management, and water conservation.

WHY RECYCLE AND PREVENT WASTE?

Recycling and reducing waste on the job-site is **good business** and has additional **environmental benefits**. Managing your project to minimize and recycle waste allows you to save money and resources.

GOOD BUSINESS

Waste reduction activities, such as reusing salvaged building materials and minimizing packaging cuts your waste disposal costs and reduces materials expenses.

If recycling costs more than garbage disposal, consider the marketing advantages. The *Construction Works* program promotes construction companies that prevent waste, recycle, and use recycled-content materials on their job-sites (see next page for more information).

In addition, your company's experience in waste prevention and recycling is a valuable marketing tool for bidding on projects that participate in local and national green building certification programs. Your efforts to prevent waste, recycle, and use recycled-content materials on a project can help the project team earn points towards qualifying for the following programs:

- BUILT GREEN™ is a residential green building program sponsored by the Master Builders Association of King and Snohomish Counties in partnership with King County, Snohomish County, and Fannie Mae. For more information visit *www.builtgreen.net*

Built Green™
Master Builders Association of King and Snohomish Counties
In partnership with:
King County Snohomish County

- LEED™, sponsored by the U.S. Green Building Council, is a nationally recognized green building rating program for commercial buildings. For more information visit *www.usgbc.org*.

LEED™
LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN

ENVIRONMENTAL BENEFITS

Preventing waste and recycling the wastes that are generated:

- Reduces dependence on natural resources such as trees, oil, and minerals.
- Creates less pollution by reducing manufacturing and transportation related emissions.
- Uses less energy and water since recycling many materials requires less energy and water compared to products made from virgin materials.
- Reduces greenhouse gasses by using less energy for manufacturing and transportation.

Construction Works

The *Construction Works* program recognizes construction companies in King County and the City of Seattle that recycle, reduce waste, and use recycled materials on the job-site.

To become a *Construction Works* member, a job-site must:

- Recycle 60% of its waste
- Practice at least six waste reduction strategies
- Use at least six recycled-content materials
- Conduct at least three activities that promote waste prevention, recycling and/or the use of recycled-content products to their employees, customers and/or the community.

To sign-up:

Job-sites in **King County**, contact Katie Spataro at (206) 263-6037 or *katie.spataro@metrokc.gov*

Job-sites in **Seattle**, contact Karen Geissinger at (206) 389-7281 or *kareng@resourceventure.org*

For a *Construction Works* application form, see *Appendix A* on page 15.

CASE STUDY: KATESRIDGE

A QUADRANT HOMES - WOODINVILLE LUMBER PARTNERSHIP

Project: Katesridge is a 148-unit housing development in Maple Valley, WA. Houses at the Katesridge project are single family dwellings certified under the BUILT GREEN™ program. Quadrant Homes partnered with Woodinville Lumber on the project to reduce job-site wastes through the use of pre-fabricated structural panels.

Working closely with Quadrant's design team, Woodinville Lumber built wall panels at their manufacturing yard, acheiving maximum material usage and cost savings. The pre-fabricated panels were delivered to the job-site with framing support materials and skilled framers for assembly. As a result, the project successfully reduced wood waste on and off-site, lowering disposal costs and satisfying customer needs.

Both Quadrant Homes and Woodinville Lumber are publicly recognized for their extra efforts in waste prevention, recycling and using recycled-content materials through the *Construction Works* program.

Program Highlights:

- Quadrant recycled 75% of the on-site waste including drywall, cardboard, wood, roofing and landclearing. Recycled on-site: 531 tons.
- Woodinville Lumber recycled 74% of the waste produced at their facility including wood, metals, cardboard, engineered wood and plastic film. Average per month recycled: 420 tons.

PREVENTING WASTE IN THE FIRST PLACE

Waste prevention is more beneficial than recycling. Why? Activities that prevent the production of waste, such as reusing materials on-site and reducing packaging, minimize material use and expenses. Small changes to building practices can add up to significant savings for the builder and the environment.

DESIGN TO PREVENT WASTE

Identifying potential waste early in the design process decreases waste generated during construction. Suggest the following ideas to the architect or designer.

- Design with standard sizes for all building materials.
- Specify materials and assemblies that can be easily disassembled at the end of their useful life.
- Choose durable interior finishes or materials such as carpet tiles that can easily be removed and recycled when worn or damaged.
- Design spaces to be flexible for changing uses.
- Consider reusing materials (on-site) or installing salvaged materials from off-site sources.

PLAN FOR WASTE PREVENTION

Plan ahead and incorporate the following into standard construction practices for maximum waste prevention.

- Set waste prevention goals and target specific waste producing practices.
- Include waste prevention plans in a Waste Management Plan. See *Appendix E, Sample Waste Management Plans,* page 27.
- Communicate your waste prevention plan at meetings, post it on-site, and promote the results.

CONSTRUCTION METHODS THAT PREVENT WASTE

Many construction methods are inherently less wasteful because they use materials more efficiently. For example:

- For wood construction, use advanced framing techniques (e.g. 24" on-center, and insulated headers), trusses for roof or floor framing, finger-jointed studs and trim, and engineered wood products.
- Consider using wood frame wall panels prefabricated off-site.
- For concrete construction, use precast concrete members.

PREVENT WASTE THROUGH JOB-SITE PRACTICES

Many on-site practices can make a difference in the amount of waste produced, such as:

- Set up central cutting areas for wood and other materials. Make sure the crew uses all the reusable pieces before cutting a new piece.
- Reuse concrete forms on the job and on other job-sites. Wood forms can frequently be used up to 15 times. Alternatively, use reusable metal or fiberglass forms.
- Clearly mark areas key to waste prevention, such as the material storage, central cutting, and recycling stations.
- Practice material storage and handling procedures that prevent loss from weather and other damage.
- Clean and maintain equipment properly to get the full life out of equipment.

PURCHASE TO PREVENT WASTE

Purchasing decisions have a major impact on the amount of waste generated on a project.

- Purchase reused, recycled, or recycled-content materials and equipment whenever possible. See *Salvage and Reuse,* page 6 and *Recycled-Content Building Materials,* page 14 for more information.
- Re-evaluate estimating procedures to make sure the correct amount of each material is delivered to the site.
- Maintain an up-to-date material ordering and delivery schedule to minimize the amount of time that materials are on-site and reduce the chance of damage.
- Replace toxic materials with less toxic or non-toxic products to reduce hazardous packaging waste.
- Choose products that come with minimal or no packaging.
- Ask suppliers to deliver supplies using sturdy, returnable pallets and containers. Have them pick up the empty containers when delivering new supplies. Also require suppliers to take back or buy-back substandard, rejected, or unused items. See *Sample Letter to the Vendor* in *Appendix E*, page 28.

SALVAGE & REUSE OF BUILDING MATERIALS

Reusing items on-site and donating or selling salvaged items cuts waste and reduces purchasing costs, and sometimes brings in revenue. Reuse is a viable outlet for materials such as painted doors that may not be recyclable.

In some cases, reused materials may also provide your client functional or aesthetic features not available in new materials. For example, salvaged wood is often of a quality and variety of species that is difficult to find in the marketplace.

The following ideas will help you get started reusing and salvaging building materials on your projects.

ASSESS REUSE POTENTIAL

Start early! Advanced planning is crucial for success. Spending a few hours early in the project to assess reuse and salvage potential can have significant pay-off during construction.

Before demolition, identify potentially reusable or salvageable items from either on-site or off-site sources. See the *Reusable Building Materials* box on this page for ideas. For each item ask yourself:

- Can the material be removed and separated from other building materials without undue damage? Look for materials attached with mechanical fasteners (rather than glued).
- Does it have a unique or antique feature that would make it worth saving? Some materials like true old divided windows have high resale value.
- Alternatively, is the material new enough to be reused easily? A remodeling project might have materials that are only a few years old.

After developing a list of possible materials, discuss reuse options with key players:

- Discuss proposed reuse ideas with the project owner, architect, and designer.
- Discuss proposed reuse ideas with your building departments, especially if materials will be reused in structural applications.

RESEARCH SALVAGE AND REUSE OPTIONS

King County has a strong market for salvaged building materials. Here are some ways to access this market:

- Contact a salvage company who will come on-site to remove valuable materials. Refer to the *Construction Recycling Directory* for resources.
- Take materials to one of the reuse stores in the area. See the *Construction Recycling Directory* for resources.
- List the items in a materials exchange such as King County's Reusable Materials Exchange (RBME) or the Industrial Materials Exchange (IMEX).
- Advertise reusable items in the newspaper.
- Conduct a "yard sale" on the job-site to sell reusable items. For liability reasons, do not allow customers to remove materials from a building—sell items from a curb or safe area.
- Allow workers to remove wood or other salvageable items for their own use.
- Ask subcontractors to reuse or recycle their own materials Consider asking for or requiring documentation to verify reuse or recycling.

REUSABLE BUILDING MATERIALS

These materials can be salvaged, donated, or sold locally.

- Appliances
- Bathroom Fixtures
- Bricks
- Cabinets
- Carpeting
- Ceiling Tiles
- Dimensional Lumber
- Doors
- Ductwork
- Flooring
- Insulation
- Landscaping Materials
- Lighting Fixtures
- Marble
- Metal Framing
- Paneling
- Pipes
- OSB & Plywood
- Shelving
- Siding
- Tile
- Trim
- Windows
- Wood Beams

QUESTIONS TO ASK SALVAGE COMPANIES

Refer to the *Construction Recycling Directory* for companies who accept donated building materials. Ask them the following questions about their services:

- What materials do they accept?
- Will they come to remove the material?
- How long will it take them to remove the material?
- Is there a fee for the salvage service? Will they pay you for the items?
- Will they visit the site and place a bid?
- Will they accept drop-offs at their location?
- What are the charges/payment for materials that are dropped off?
- If the items are being donated to charity, can the company receive a tax deduction?

CONSIDER THE BENEFITS AND COSTS

Consider how you will track the cost/savings of salvaged and reused building materials for future projects. Ask yourself the following questions before finalizing your plans:

- What disposal fees are avoided by reducing landfill costs?
- How are purchasing costs affected from reusing materials on-site or purchasing off-site salvaged items?
- What revenue does reselling materials not reused on-site generate?
- What is the time and associated labor costs of managing the reused and or salvaged items?
- What is the tax benefit to donating items to charities?
- What is the functional or aesthetic value of having reused material on-site?
- What are the associated marketing and public relations benefits to reuse and salvage?
- What environmental costs are avoided by reusing materials? Consider the cost of resource extraction, processing, and transportation of new materials.
- Where and at what cost are the materials to be stored until reuse?

DEVELOP A PLAN

Once you've surveyed your reuse and salvage potential, make a reuse and salvage plan. Be sure to include this information in contract documents and in your *Waste Management Plan* (see page 27). Your reuse and salvage plan should include:

- List of items being reused in place or elsewhere on-site
- List of items for reuse off-site through salvage, resale, or donation
- Plan for protecting, dismantling, handling, storing, and transporting the reuse items.

MAKING IT WORK

Clear and consistent communication is central to your reuse and salvage efforts. Inform your crew of your salvage plans, procedures, and expectations. Since careful removal and handling of your reuse and salvage materials is crucial to their marketability, the key to success is communicating your priorities, making detailed plans, and carefully monitoring the progress to insure success.

CAUTION!

Be aware that some building materials may not be reusable, as they may be contaminated with hazardous materials such as lead paint and will need to be disposed of at a hazardous waste facility. Learn more about hazardous material disposal in King County at *www.metrokc.gov/hazwaste*

SETTING UP A JOB-SITE RECYCLING PROGRAM

Recycling construction materials saves money by cutting disposal costs. It reduces waste going to the landfill and attracts clients who value environmental responsibility. Other benefits include a cleaner, safer site and improved community relations. Follow these steps to set up a successful, cost-effective job-site recycling program.

START EARLY

Incorporate recycling early on to guarantee success.

ANALYZE PROJECT WASTE

- Based on the project type and size, use the following to estimate the quantity of waste material that will be generated:
  - Engineering estimates
  - Previous material purchasing records
  - Waste disposal records from similar projects
- Estimate material quantities weight. Recyclers typically charge by the cubic yard or by the ton.
- Include wastes from demolition phases of the project.
- Determine when wastes will be generated over the course of the project.

IDENTIFY RECYCLABLES

- Refer to the *Construction Recycling Directory* to determine what materials might be recyclable or reusable.
- See *Preventing Waste in the First Place* on page 4 and *Salvage and Reuse of Building Materials* on page 6 for more information on reusing materials on-site and salvaging for resale or donation.
- Include recyclable materials such as plastic, ceiling tiles, paint, asphalt roofing, and carpet padding as well as commonly recycled materials such as wood, metals, concrete, and cardboard.

RESEARCH RECYCLING OPTIONS

- Refer to the *Construction Recycling Directory* for listings of recycling processors and haulers.
- Decide whether to self-haul recyclables to the recycling facility or contract with a commercial recycling hauler.
  - Using a **commercial hauler** works well on projects where large quantities of materials are generated, such as demolition, multifamily, and commercial projects. Some recyclers offer smaller drop boxes or drop boxes with several compartments for home construction and tenant improvement projects.
  - **Self-hauling** is a good choice for projects where small quantities of materials are generated, such as residential construction and remodeling. Recyclable materials are collected on-site in piles or temporary containers and taken to recycling facilities in the contractor's own vehicles.
- For commercial collection, determine if you will co-mingle recyclables or source-separate them for collection. See the box *Co-mingled or Source Separated, Which is Best For Your Project?* page 9 for more information.
- Reusing materials on-site such as chipping land clearing debris for mulch or erosion control, and grinding concrete and asphalt for fill, are inexpensive recycling options.

QUESTIONS TO ASK RECYCLERS

When researching recycling options, ask recyclers the following questions:

- What materials do they accept?
- Is co-mingled recycling available?
- What are the specific guidelines for each material? For example, do they accept forming plywood in "clean wood"?
- If you are planning to self-haul, do they accept materials for drop off? What are the tipping fees?
- What are the charges for pick-up services including drop box rental, hauling, and tipping fees?
- What types of drop boxes do they offer for pick-up service?
- What are the collection options? Do you need to call for service or do they monitor the drop boxes?
- Will they help set up the program and provide training for the crew?
- Are receipts available for tracking the types and quantities of recyclables collected? This information is required for effective Waste Management Plans, as described in the next section.

CO-MINGLED OR SOURCE SEPARATED, WHICH IS BEST FOR YOUR PROJECT?

DEFINITIONS:

Source separated recycling service involves collecting recyclables in separate containers as they are generated. The recycling hauler takes the materials directly to a recycler or a transfer site.

Co-mingled recycling service allows contractors to put select recyclables such as wood, cardboard, and metals in one container. The recycling company takes the materials to a sorting facility where the materials are separated for recycling. Some services will take mixed loads that include garbage.

Items such as concrete, drywall, carpet, film plastic, and ceiling tiles must still be source separated for recycling. They are not generally recycled through co-mingled programs.

PROS & CONS:

The recycling rate on co-mingled programs can be significantly lower than source separated programs. In co-mingled programs, many recyclables, such as drywall and carpet, are disposed of as garbage. These materials must be source-separated for recycling. It is also challenging to quantify the amount of materials recycled on a particular project. Co-mingled recycling is cheaper than garbage disposal but source-separated recycling saves more money.

On job-sites where space is a premium, however, having fewer recycling containers on-site and co-mingling the recyclables saves valuable space and labor. (Check out *Making Your Program Work* on page 12 for tips for source separating on tight sites.)

MAKING CO-MINGLED RECYCLING WORK:

- Co-mingled recycling is particularly suited for residential demolition—after salvaging all reusable materials, of course.
- Even when using co-mingled recycling services, set up separated recycling for recyclables not accepted in your program, such as carpet, ceiling tiles, drywall, film plastic and concrete.
- For projects where the recycling rate is being tracked to qualify for programs such as LEED™, Built Green™ and *Construction Works*, the source separated recycling method provides the most accurate documentation. Use only facilities with a high co-mingled recycling rate.

DECIDE WHICH MATERIALS TO RECYCLE

Once you determine potentially recyclable materials and the recycling method, it is time to determine what to recycle on the project.

- Use the *Recycling Economics Worksheets* in *Appendices C & D*, pages 20-24 to calculate potential costs and savings for recycling on a project.
- Based on your calculations, identify what materials will be recycled. It may be most cost-effective to only recycle the basics such as wood, metal, and cardboard, or it might be appropriate to institute a full-fledged recycling program.

DESIGN A WASTE MANAGEMENT PLAN

A Waste Management Plan identifies materials to be recycled on a project, including materials subcontractors will be responsible for recycling. The plan outlines recycling procedures, expectations, and results.

A Waste Management Plan does not need to be lengthy or complicated to be effective. A successful plan should:

- **Identify a Designated Coordinator** responsible for implementing the plan, and monitoring, collecting, and promoting the results.
- **Set Waste Management Goals:** Measureable goals such as "Reuse or recycle 50% of project wastes" or a list of materials to be recycled are best.
- **Identify Project Waste.** Determine what types of wastes the project will create. Refer to *Are there Dollars in your Dumpster?* on page 11 for help. Remember to include reusable and salvageable materials.
- **Identify Disposal Methods,** indicating whether each material will be reused in place, reused elsewhere on-site, salvaged, recycled, or landfilled.
- **Describe the Material Handling Procedures,** including the removal, separation, storage, and/or transportation required for each item.
- **Include Communication Plans** for relaying the plan to all crew members. Always include waste management requirements on all project documents, including subcontracts and specifications. See *Appendix E* for sample specifications and a letter to vendors.

SET UP THE SITE

Work with your recycler and crew to setup your site for maximum recycling. Suggestions include:

- Place recycling drop boxes and trash bins near each other so trash is not thrown in the recycling.
- Clearly label the recycling drop boxes. Post lists of what is and what is not recyclable.
- Place garbage bins and recycling drop boxes close to the point of waste generation, but out of the traffic pattern.

Are there Dollars in your Dumpster?

Before and during construction, take a proactive role to reduce disposal costs by finding "dollars in your dumpster."

The Seattle/King County area has a well-developed infrastructure for recycling construction materials such as asphalt, concrete, drywall, cardboard, metals, and wood. These materials are almost always less expensive per ton to dispose of than garbage. Other materials recycled locally include ceiling tiles, plastic film, carpet, and fluorescent lights.

Turn trash into treasure: *Construction Recycling Directory*. Online at *www.metrokc.gov/greenworks*

COMMUNICATE THE PLAN

Educate everyone on the job-site about the waste management program.

- Discuss waste handling requirements with crew and subcontractors prior to beginning a project. See *Appendix E* for sample specifications, plan, and letters to the vendor.
- Post easy to read signs and provide written information about the recycling program.
- Continue education as the project progresses. Consider making recycling updates part of your safety program.

MONITOR THE PROGRAM

An effective recycling program includes occasional monitoring.

- Check bins periodically for contamination.
- Regularly check the wastes in the garbage dumpsters to see if recyclables are being thrown away or if there are additional materials that could be recycled.
- Call the recycler before drop boxes are full to arrange for pick-up.

TRACK YOUR SUCCESS

Tracking the quantities and cost savings of diverted materials is important for future estimating. It is also required for BUILT GREEN™ and LEED™ certification.

- Once construction has started, keep the receipts from recycling and garbage disposal. Furnish receipts to your company's estimating department for planning future waste management budgets.
- Use the *Recycling Economics Worksheets*, *Appendices C & D*, to track the results and cost savings from recycling on your project.

Preventing waste and recycling on a job-site reduces disposal and supply costs. However, even the best programs may encounter difficulties. Here are solutions to some of the challenges of developing and implementing a Waste Management Plan. Builders have successfully used these suggestions across the country.

"Recycling is a part of our building practices—it would cost me money not to recycle!"

—Local builder

MANAGING YOUR PROGRAM

What is a cost-effective way to manage a successful waste management program?

- Designate a person to manage the details of creating and implementing the program. On residential projects, this might be the contractor, site supervisor, or crew chief.
- For larger projects, form a waste management team consisting of key people such as the owner, designer, project managers, and site supervisor. This will ensure that the program is designed to provide opportunities for everyone to participate.

INVOLVING SUBCONTRACTORS & SUPPLIERS

What is the best way to handle the wastes subcontractors and suppliers generate?

- Require subcontractors and suppliers to use the recycling and disposal bins on-site. This allows the most control of recycling activities. Be sure to provide recycling for the variety of wastes generated.
- Alternatively, ask the subcontractors and suppliers to take back and recycle their own waste, but require written reports. Since many subcontractor and supplier wastes are homogeneous, it is easy to separate the wastes for recycling.
- Use a combination of methods, depending on the type and quantity of wastes generated. Obtain reports from recycling haulers.
- Involve subs in choosing convenient locations for the recycling drop boxes and waste bins for the different construction phases.

FINDING APPROPRIATE SPACE

How can you find space to separate recyclables on space-constrained sites?

- Choose smaller containers and more frequent collection. There are a variety of container sizes and service options available through recycling service providers.
- Use scrap lumber to divide one container into separate compartments for storing recyclables and trash on-site instead of having multiple containers.
- Ask recycling service providers about single containers with multiple compartments.
- Rent a trailer for the major recyclable material generated in the first phase of construction. When full, haul it directly to the recycler. Bring it back to collect the next quantity of material generated.
- Use smaller containers, on wheels if possible, that are collected at the end of the day and dumped into a larger container for pick up.
- If self-hauling, build custom containers to fit the space requirements using scrap or damaged plywood, concrete forms, or barrier fencing.
- Use trashcans and other small containers to collect recyclables generated in smaller amounts.
- Consider co-mingling small quantities of wood, cardboard, and metals to make one larger load of recyclables.

MAKING IT CONVENIENT

- Place the recycling dumpsters as close to the work as possible.
- Always provide a container for trash with the recycling.
- Make maps of the job-site so haulers can be shown exactly where to place and pickup their dumpsters.

PROMOTION AND EDUCATION

How do you educate your crew and subcontractors? How do you ensure their participation?

- Treat waste management like a safety program. Integrate recycling training into the safety education, or design a separate recycling education program.
- Create a name or slogan for the program to be used in education and promotion. Inexpensive rewards such as hats, T-shirts, or decals can provide incentives to make the plan work.
- Share the success. Let subcontractors and crew know how effective they have been by regularly posting the volumes of materials reused or recycled.
- Use signage to communicate, remembering to use simple clear instructions and include pictures to help non-English speaking workers understand easily. See *Signage Examples* in *Appendix B*, page 19.
- Be positive! When the crew and subcontractors are motivated and understand the goals, they will figure out creative ways to overcome obstacles and work efficiently.
- Include everyone in the process. Encourage suggestions on more efficient methods, or additional materials that can be recycled.
- Become a *Construction Works* member. The *Construction Works* program publicizes construction companies in King County and the City of Seattle that recycle, reduce waste, and use recycled products on the job-site. See the *Construction Works* box on page 3 for contact information. See *Appendix A*, page 15 for a copy of the application.

PREVENTING CONTAMINATION

How can you prevent contamination of recyclables?

- Laminate a poster with pictures describing the recycling program and post it in visible locations. See *Signage Examples* in *Appendix B*, page 19.
- Clearly label the recycling bins. Post lists of what is and what is not recyclable.
- Provide enough trash bins to collect unrecyclable items. Have them emptied regularly so the overflow does not end up in the recycling bin.
- Consider locating bins in a locked or supervised area, or having bins with lids to discourage contamination by the public.
- Conduct regular site visits to verify that bins are not contaminated. Provide reports and educate subcontractors and crew on the results.
- Dump out contaminated loads and have the subcontractors and/or crew pull out the contaminants themselves. It may take some time the first time, but there won't likely be a second time.

USING RECYCLED-CONTENT BUILDING MATERIALS

Recycled-content building materials are durable and quality products, competitively priced with conventional materials, and they help conserve natural resources such as timber and oil.

Many common building products like Homasote paneling and blown-in cellulose insulation, both made from reclaimed newspapers, have contained recycled materials for years. New products using recycled materials, such as carpet and plastic lumber, are being developed every day.

Buying recycled-content building materials supports efficient use of our natural resources without compromising building standards.

HOW TO BUY RECYCLED

- Obtain information on recycled products. Locally, there are several excellent free or low-cost resources available. Refer to *Appendix F, Where to Get More Information,* page 29, for help. Also, contact suppliers and manufacturers for product specifications and samples.
- Consistently communicate your interest in recycled-content building materials in your specifications, policies, and in your job-site meetings.
- Look for products with the highest recycled-content available, especially postconsumer content that meets your strength and durability specifications.
- Look for recycled-content products for your office or job shack. Copy paper, toner cartridges, and desk supplies are readily available with recycled-content.

POSTCONSUMER VS. PRECONSUMER

Postconsumer recycled-content products contain materials that have been used by consumers, like a contractor, and collected for reprocessing.

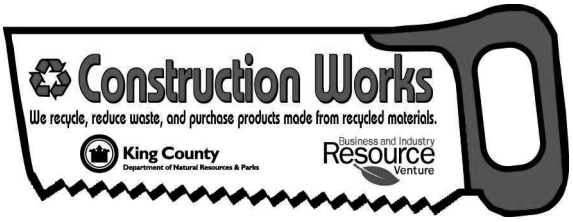
Preconsumer or postindustrial recycled-content products contain "waste" materials created as a by-product of manufacturing that are collected and reincorporated into the manufactured product.

RECYCLED-CONTENT BUILDING PRODUCTS

The following are just a few of the building products made with recycled materials:

BUILDING MATERIALS:	SITE WORK:
Cellulose Insulation	Asphalt
Ductwork	Base Coarse
Exterior Sheathing	Building Blocks
Fences/Posts	Building Panels
Fiberboard	Compost
Fiberglass Insulation	Concrete
Floor Joists	Concrete Masonry Units
Floor Mats	Fill Material
Flooring	Glassphalt
Lumber	Parking Stops
Paint	Plastic Lumber
Pilings	Recycling Containers
Roofing	
Structural Steel	
Underlayment	
Wallboard	

CONSTRUCTION WORKS APPLICATION



Construction Works Application Form

The Construction Works program provides free assistance and recognition to builders for recycling and waste prevention. Construction Works assists builders with setting up job-site recycling and waste reduction programs while providing industry recognition to construction companies who encourage the wise use of resources. Builders are awarded an annual membership in Construction Works by job-site and can apply for multiple awards.

To be recognized as a *Construction Works* Member, a job-site is required to:

- Implement 6 waste prevention strategies
- Recycle at least 60% of its construction waste
- Use 6 or more recycled-content building materials
- Conduct at least three activities that promote waste prevention, recycling and/or the use of recycled-content products to their employees, customers and/or the community

Based on the location of your job-site, contact the appropriate program coordinator below for:

- Assistance with completing this application
- Setting up a job-site recycling and waste reduction program
- Finding recycling haulers or drop-off facilities for your materials

Job-Sites in Seattle:

The Business & Industry Resource Venture
attn: Karen Geissinger
1301 Fifth Avenue
Suite 2400
Seattle, WA 98101

206-389-7281 phone
kareng@resourceventure.org

Job-Sites in King County, outside Seattle City Limits:

King County Solid Waste Division
attn: Katie Spataro
King Street Center
201 South Jackson Street, Suite 701
Seattle, WA 98104-3855

206-263-6037 phone
katie.spataro@metrokc.gov

PLEASE SEND COMPLETED APPLICATION FORMS TO THE APPROPRIATE PROGRAM COORDINATOR ABOVE

CONSTRUCTION WORKS APPLICATION

Please fill out an application form for each job-site seeking *Construction Works* membership. Use additional pages if necessary.

Company Profile

Application Date: _____

Company Name: _____

Company Address: _____

_____

Contact Person and Title: _____

Contact Phone Number: _____

Contact Email: _____

Project Profile

Project Title/Description (i.e., type of project being constructed - commercial concrete tilt-up, single family dwelling, etc.,- include square footage): _____

_____

Job-Site Address: _____

Site Contact Person and Title: _____

Site Contact Phone Number: _____

Approximate construction start and completion dates: _____

_____

Job-Site Recycling

Check the materials your company collects on this job-site.

- ☐ Acoustical ceiling tiles
- ☐ Asphalt
- ☐ Asphalt Shingles
- ☐ Cardboard
- ☐ Carpet and carpet pad
- ☐ Concrete
- ☐ Drywall
- ☐ Landclearing debris (vegetation, stumpage, dirt)
- ☐ Metals
- ☐ Paint (through hazardous waste outlets)
- ☐ Plastic film (sheeting, shrink wrap, packaging)
- ☐ Window glass
- ☐ Wood
- ☐ Fluorescent lights and ballasts
- ☐ Other (please list) _____

_____

Recycling Rate (60% minimum requirement)

Your recycling rate equals the total volume or tonnage of materials recycled divided by the total tonnage or volume of materials recycled plus materials disposed. If you are using co-mingled recycling debris boxes you **must** include a sample weight ticket from your hauler or drop-off facility.

Recycling Rate = Tons/Volume of material recycled
Tons/Volume of material recycled and disposed

Job-site recycling rate (What percentage of material is being recycled from your total waste stream?):

_____

Garbage Service/Name of Garbage Hauler: _____

Recycling Service/Names of Recycling Haulers/Facilities Used:_____

_____

_____

Waste Prevention (minimum of 6 required)

Identify all waste prevention strategies your company uses on this job-site.

Examples:

- Reused landscaping during site preparation (relocating plants, chipping and using wood waste on-site)
- Designs used standard dimensions (eight-foot lengths) to reduce cut-offs of lumber and wallboard.
- Asked suppliers to deliver supplies in returnable pallets or containers.
- Used salvaged items.
- Re-used formwork
- Centralized woodcutting operations to make it easier to find cut-offs and to reduce the need to cut full-length lumber.

1._____

_____

2._____

_____

3._____

_____

4._____

_____

5._____

_____

6._____

_____

Closing the Loop: Buying Recycled-Content Building Materials (minimum of 6 required)

Check the **recycled-content building materials** used by your company on this job-site. For each material checked, provide information on the type of material or manufacturer (i.e. Thermoguard cellulose insulation or finger-jointed studs) and an estimate of quantities used.

Material — Manufacturer — Estimated Quantity

- ☐ Compost & Soil Amendments _____
- ☐ Drainage or backfill aggregate _____
- ☐ Concrete or Asphalt mix _____
- ☐ Framing _____
- ☐ Insulation _____
- ☐ Roofing _____
- ☐ Wallboard _____
- ☐ Carpet _____
- ☐ Tile _____
- ☐ Paint _____
- ☐ Countertops _____
- ☐ Ceiling Tile _____

Other recycled-content materials used on this job-site:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Promotional Activities (minimum of 3 required)

Construction Works members must conduct at least three activities that involve their employees, customers, suppliers or the general public in waste prevention, recycling and using recycled products. Please describe these activities in the space provided below.

Examples:

- Display job-site banners promoting your recycling efforts
- Include vendors/subcontractors in recycling and waste reduction education programs
- Participate in LEED™ or BUILT GREEN™ sustainable building programs
- Provide incentives/rewards for job-sites and staff who conduct outstanding waste management practices

1. _____

_____

2. _____

_____

3. _____

_____

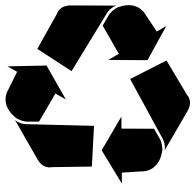
APPENDIX B:
SIGNAGE EXAMPLES

Use these sample signs as a guide to developing your own. When creating signage, remember to use simple clear instructions and include pictures to help non-English speaking workers on the job-site understand. Be sure to inquire with your recycler to determine which materials they actually do accept.

General signage for your job-site:

general contractor inc.

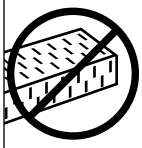
We prevent waste and recycle on this job-site to save resources and strengthen our communities and the environment.



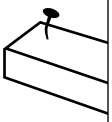
Sign for a "clean wood" dumpster:

CLEAN WOOD ONLY

NO:
- Treated wood



OK:
- Nails



general contractor inc.

Sign for a co-mingled dumpster:

CO-MINGLED

NO:
- Concrete
- Drywall
- Carpet

YES:
- Wood
- Cardboard

general contractor inc.

APPENDIX C:

COMMERCIAL RECYCLING ECONOMICS WORKSHEETS

INSTRUCTIONS:

Use this section for calculating the savings or cost of recycling materials through a commercial hauler. See sample spreadsheet on page 21.

- List the materials that will be recycled through a commercial hauler and the estimated tons or cubic yards of each on the "Recycling Economics Worksheet — Commercial Hauler."
- Determine what size containers will be needed based on available space on-site. Use the proposed container size and the estimated volume of each waste material to calculate the number of loads of recycling the project will generate, e.g. 100 cu. yds. drywall / 40 cu. yd. container = Approximately 3 loads (2.5 rounded up) (No. of Loads).
- Based on the construction schedule, estimate the number of months recycling containers will be needed for each material (No. of Months). Cardboard, for example, is generated throughout a project, while drywall waste often does not appear until interior finishing begins.
- Collect the following information from local commercial recyclers and garbage companies. Add this information to the worksheet.
  - The tipping fee in tons or cubic yards for each material (Tipping Fee).
  - The hauling fee to the recycling/garbage facility (Hauling Fee).
  - The monthly rental for the selected container (Rental).
- Use the above information to calculate the cost of recycling (Total Cost).
- Calculate what it would cost to dispose of the materials as garbage instead of recycling them (Cost of Not Recycling). Use the total number of tons or cubic yards and current garbage costs.
- Determine the savings or cost of recycling by subtracting the cost of recycling from the cost of not recycling (Savings or Cost of Recycling).
- Consider the additional costs or benefits involved in job-site recycling including labor costs and the potential marketing benefit. Adjust the savings or cost of recycling accordingly.
  - Labor Costs: Some additional labor costs may occur from job-site recycling, especially on the first few projects. Many contractors have found, however, that once the crew adjusts to the new disposal practices, recycling takes little or no additional time.
  - Marketing Value: Many contractors have recognized that instituting environmental building practices, such as waste prevention and recycling, can help attract additional clients and build a positive public image.

This sample worksheet demonstrates the savings that were acheived on construction of a 12-story commercial office building by recycling rather than hauling the waste off as garbage. Create your own spreadsheet to see if you could be saving money by recycling on yout job-site!

Recycling Economics Sample: Commercial Hauler Source Separated

PROJECT: 12-STORY COMMERCIAL OFFICE BUILDING

COST OF RECYCLING

Material	Quantity	Tip Fee	Subtotal 1 (quantity x fee)	Number of Loads	Hauling Fee	Subtotal 2 (loads x haul fee)	No. of Months	Cont'r Rental	Subtotal 3 (months x rental)	Total Cost (subtotal 1 + 2 + 3)
Asphalt	938 cy	$ 15	$ 14,070	94	$ 76	$ 7,144	4	$ 100	$ 400	$ 21,614
Wood	78 tons	$ 40	$ 3,120	14	$ 69	$ 966	8	$ 100	$ 800	$ 4,886
Drywall	65 tons	$ 55	$ 3,575	7	$ 76	$ 532	6	$ 100	$ 600	$ 4,707
Cardboard	1.5 tons	($ 15)	($ 23)	1	$ 69	$ 69	12	$ 100	$ 1,200	$ 1,247
Metals	36 tons	$ 8	$ 288	4	$ 76	$ 304	12	$ 100	$ 1,200	$ 1,792
Land Clearing	8 tons	$ 38	$ 300	1	$ 76	$ 76	4	$ 100	$ 400	$ 776
Aluminum	.2 tons	($ 560)	($ 112)	1	$ 76	$ 76	2	$ 100	$ 200	$ 164
Totals			$ 21,219	122		$ 9,167			$ 4,800	**$ 35,186**

COST OF NOT RECYCLING

Material	Quantity	Tip Fee	Subtotal 1 (quantity x fee)	Number of Loads	Hauling Fee	Subtotal 2 (loads x haul fee)	No. of Months	Cont'r Rental	Subtotal 3 (months x rental)	Total Cost (subtotal 1 + 2 + 3)
Garbage	860 tons	$ 78	$ 67,080	122	$ 92	$ 11,224	16	$ 100	$ 1,600	**$ 79,904**

SAVINGS OR COST OF RECYCLING

(Total Cost of Not Recycling)	–	(Total Cost of Recycling)	=	Total Savings
$ 79,904	–	**$ 35,186**	=	**$ 44,719**

APPENDIX D:

SELF-HAUL RECYCLING ECONOMICS WORKSHEETS

INSTRUCTIONS:

Use this section for calculating the savings or cost of self-hauling materials to the recycling facility. See sample spreadsheet on page 23.

- List the materials that will be self-hauled to the recyclers and the estimated tons or cubic yards of each on the "Self Haul Recycling Economics Worksheet" (Material).
- Divide the estimated quantity of each recyclable by the per load capacity of the vehicle used to haul the recyclables to determine how many trips to the recycling facility will be necessary (No. of Loads).

- Collect the following information from the facilities where the recyclables will be delivered. Add this information to the worksheet.
  - The tipping fee in tons or cubic yards for each material (Tipping Fee).
  - The distance of the drop-off-site from the project in travel time (Hours per Load).
- Fill in the hourly labor rate for hauling recyclables to the drop-sites. If desired, include any estimated costs for the vehicle, such as gasoline (Labor Rate and/or Truck Costs per Hour).
- Use the above information to calculate the cost of recycling on the worksheet (Total Cost).
- Calculate what it would cost to dispose of the materials as garbage instead of recycling them (Cost of Not Recycling). Use the total number of tons or cubic yards and current garbage costs.
- Determine the savings or cost of recycling by subtracting the cost of recycling from the cost of not recycling (Savings or Cost of Recycling).
- Consider the additional costs or benefits involved in job-site recycling including labor costs and the potential marketing benefit. Adjust the savings or cost of recycling accordingly.
  - Labor Costs: When self-hauling, some additional labor costs may be incurred from processing the materials for recycling, such as labor for building containers or loading the truck.
  - Marketing Value: Many residential contractors and remodelers have discovered that their customers are increasingly concerned about the environment. Builders who practice waste prevention and recycling are in the best position to attract those clients.

This sample worksheet demonstrates the savings that were acheived on construction of a 2nd story addition to a single family home by recycling rather than hauling the waste off as garbage. Create your own spreadsheet to see if you could be saving money by recycling on yout job-site!

Recycling Economics Sample: Self-Haul

PROJECT: 2ND STORY ADDITION TO A SINGLE FAMILY HOME

COST OF RECYCLING

Material	Quantity	Tip Fee	Subtotal 1 (quantity x fee)	Number of Loads	Hours per Load	Cost/hour (labor and/or truck)	Subtotal 2 (loads x hours x costs)	Total Cost (subtotal 1 + 2)
Concrete	.4 cy	$ 50	$ 20	1	1	$ 40	$ 40	$ 60
Cardboard*	.2 cy	$ 0	$ 0	0	0	$ 0	$ 0	$ 0
Wood	6.8 tons	$ 40	$ 272	13	1	$ 40	$ 520	$ 792
Drywall	4.2 tons	$ 55	$231	8	1	$ 40	$ 320	$ 551
Asphalt Shingle	4.9 tons	$ 65	$ 319	6	1	$ 40	$ 240	$ 559
Metal Oil Tank†	1 ea	$ 150	$ 150	0	0	$ 0	$ 0	$ 150
Mixed Metals	200 lbs.	($ .10)	($ 20)	1	1	$ 40	$ 40	$ 20
Totals			$ 972	29			$ 1,160	**$ 2,132**

COST OF NOT RECYCLING

Material	Quantity	Tip Fee	Subtotal 1 (quantity x fee)	Number of Loads	Hours per Load	Cost/hour (labor and/or truck)	Subtotal 2	Total Cost (subtotal 1 + 2)
Garbage	15 tons	$ 78	$ 1,170	29	1	$ 40	$ 1,160	**$ 2,330**

SAVINGS OR COST OF RECYCLING

(Total Cost of Not Recycling)	–	(Total Cost of Recycling)	=	Total Savings
$ 2,330	–	**$ 2,132**	=	**$ 199**

* Cardboard recycled through curbside program

† Cost of removal and recycling of oil tank: $150

SAMPLE JOB-SITE SPECIFICATIONS

This job-site recycling specification has been adapted and used on many projects in the local area. Please modify to fit the needs of your project. For an electronic copy visit the King County or Business and Industry Resource Venture websites at: *www.metrokc.gov/greenworks* or *www.resourceventure.org*.

SECTION 015—

SUSTAINABLE JOB-SITE OPERATIONS

WASTE REDUCTION PLAN

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:
   1. Description of a Job-Site Waste Management Plan
   2. Waste Management Requirements

1.2 JOB-SITE WASTE REDUCTION

A. Goals:
   1. Owner has set a waste minimization goal for the project, within the limits of the construction schedule, contract sum, and available materials, equipment, products and services.
      a. These goals are consistent with the 1997 "Statement on Voluntary Measures to Reduce, Recover, and Reuse Building Construction-site Waste" released by the American Institute of Architects and the Associated General Contractors of America, Federal Executive Order 13101, and EPA Comprehensive Procurement Guidelines (CPG). The EPA CPG established preferred product standards and have been adopted by the State of Washington in RCQ 43.19A.020.
   2. Minimize the amount of CDL (construction, demolition and landclearing) waste generated. The project goal is to recycle, salvage or reuse at least 50% [[or 75%]] of the wastes generated.
   3. Divert waste created through CDL processes from disposal through reuse (salvage) and recycling.
   4. Use recycled or salvaged building materials.

1.3 DEFINITIONS

A. Waste: For the purpose of this section, the term applies to all excess materials, including materials that can be recycled, unless otherwise indicated.

B. Construction, Demolition and Landclearing Waste (CDL): Includes all non-hazardous solid wastes resulting from construction, remodeling, alterations, repair, demolition and landclearing.

C. Proper Disposal: As defined by the jurisdiction receiving the waste.

D. Hazardous Waste: As defined by the jurisdiction receiving the waste.

E. Recycling: The process of sorting, cleaning, treating, and reconstituting materials for the purpose of using the material in the manufacture of a new product. Can be conducted on-site (as in the grinding of concrete and reuse on-site).

F. Recycling facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of a new product. Recycling facilities have their own specifications for accepting materials.

G. Reuse: Making use of a material without altering its form.

H. Salvage: Recovery of materials for on-site reuse or donation to a third party.

I. Source-separated materials: Materials that are sorted at the site for the purpose of reuse or recycling.

J. Co-mingled materials: Mixed recyclable CDL material that has not been source-separated. Some facilities will separate co-mingled materials off-site for recycling.

1.4 WASTE REDUCTION PLAN

A. Within fourteen (14) days after receipt of Notice of Award and prior to any waste removal by the Contractor from the Project, the Contractor shall develop and submit to the Owner for review a waste reduction plan. A sample form is attached.

The waste reduction plan shall include:

1. Types and estimated quantities (where reasonably available) of salvageable materials that are expected to be generated during demolition.
2. The method to be used to salvage or reuse these materials on-site. Methods shall include one or more of the following options: contracting with a deconstruction specialist to salvage all or most materials generated, selective salvage as part of demolition contractor's work, and reuse of materials on-site or in new construction
3. Types and estimated quantities (where reasonably available) of recyclable materials expected to be generated during demolition and construction in significant amounts including but not limited to wood, concrete, metals, cardboard, and drywall.
4. The method to be used to recycle these materials. Methods shall include one or more of the following options: requiring subcontractors to take materials back for recycling at a permitted facility, contracting with a full service recycling service to recycle all or most materials at a permitted facility, processing and reusing materials on-site.

1.5 DOCUMENTATION

A. Final Waste Reduction Plan: Once the Owner has determined that the recycling options addressed in the Waste Reduction Plan are acceptable, the Contractor shall submit, within 14 working days, a Final Waste Reduction Plan.

B. To each application for progress payment submitted to the owner or its representative, the Contractor shall attach a record of the amount of material disposed (in tons) and the amount of each material recycled by type (in tons or cubic yards, whichever is available). For co-mingled materials, the Contractor shall include weight tickets from the recycling hauler or drop-off facility and verification of the recycling rate for mixed loads at the facility.

C. The Contractor shall be responsible for providing such information whether directly involved in recycling the materials or not (whether the Contractor performs recycling tasks or hires or requires others, such as subcontractors, to do so).

1.6 REFERENCES

A. *Construction Recycling Directory* lists area haulers and processors available for recycling CDL materials. In King County: call the King County Customer Service Representatives at (206) 296-4466 or the King County Construction Recycling and Green Building program at (206) 263-6037 for a copy. In Seattle, call the Business and Industry Resource Venture at (206) 389-7304. Also available online at *http://www.metrokc.gov/greenworks*

B. *Contractors Guide: How to Save Money and Resources through Job-site Recycling and Waste Prevention* provides information on how-to recycle and prevent waste on the job-site. In King County: call the King County Customer Service Representatives at (206) 296-4466 or the King County Construction Recycling and Green Building program at (206) 263-6037 for a copy. In Seattle, call the Business and Industry Resource Venture at (206) 389-7304. Also available online at *http://www.metrokc.gov/greenworks*

1.7 SUBSTITUTIONS

A. Should the Contractor desire to use procedures, materials, equipment, or products that are not specified but meet the intent of these specifications to reduce materials waste, the Contractor shall propose these substitutions in accordance with Substitutions and "Or Approved Equal" in General Requirements.

1.8 REVENUES

A. Revenues or other savings obtained from recycled, reused, or salvaged materials shall accrue to Contractor unless otherwise noted in the Contract Documents.

PART 2 PRODUCTS

2.1 MATERIALS

A. Recycled-content, salvaged, rapidly renewable or otherwise resource-efficient products are specified in appropriate sections.

PART 3 EXECUTION

3.1 DEMOLITION

A. Recycle the items listed below (on or offsite). For information about disposal and recycling options in [[Insert Municipality]], call [[Insert local contact]].
   1. Acoustical ceiling tiles
   2. Asphalt
   3. Asphalt Shingles
   4. Cardboard Packaging
   5. Carpet and carpet pad
   6. Concrete
   7. Drywall
   8. Fluorescent lights and ballasts
   9. Landclearing debris (vegetation, stumpage, dirt)
   10. Metals
   11. Paint (through hazardous waste outlets)
   12. Wood
   13. Plastic film (sheeting, shrink wrap, packaging)
   14. Window glass
   15. Wood
   16. Job-Shack wastes, including office paper, pop cans and bottles, and office cardboard.

3.2 NEW CONSTRUCTION

A. Recycle the items listed below (on or offsite). For information about disposal and recycling options in [[Insert Municipality]], call [[Insert local contact]].
   1. Acoustical ceiling tiles
   2. Asphalt
   3. Asphalt Shingles
   4. Cardboard Packaging
   5. Carpet and carpet pad
   6. Concrete
   7. Drywall
   8. Fluorescent lights and ballasts
   9. Landclearing debris (vegetation, stumpage, dirt)
   10. Metals
   11. Paint (through hazardous waste outlets)
   12. Wood
   13. Plastic film (sheeting, shrink wrap, packaging)
   14. Window glass
   15. Wood
   16. Job-Shack wastes, including office paper, pop cans and bottles, and office cardboard.

B. Include in supply agreements a waste reduction provision specifying a preference for reduced, returnable, and/or recyclable packaging.

C. Use detailed material estimates to reduce risk of unplanned and potentially wasteful cuts.

D. Store materials properly to avoid moisture damage or other damage to materials as well as outdating. Materials that become wet or damp due to improper storage shall be replaced at contractor's expense.

E. Use safety meetings, signage, and subcontractor agreements to communicate the goals of the waste reduction plan.

F. As part of regular clean up, schedule visual inspections of dumpsters and recycling bins to identify potential contamination of materials.

END OF SECTION

SAMPLE WASTE MANAGEMENT PLAN

This is a sample of a typical Waste Management Plan. You can use it as a guide to developing your own.

Company: Northwest Best Construction

Project: Northwest Bank Building, Kent, WA **Designated Recycling Coordinator:** John Doe

WASTE MANAGEMENT GOALS:

- This project will recycle or salvage for reuse 60% by weight of the waste generated on-site.

COMMUNICATION PLAN:

- Waste prevention and recycling activities will be discussed at the beginning of each safety meeting.
- As each new subcontractor comes on-site, the recycling coordinator will present him/her with a copy of the Waste Management Plan and provide a tour of the recycling areas.
- The subcontractor will be expected to make sure all their crews comply with the Waste Management Plan.
- All recycling containers will be clearly labeled.
- Lists of acceptable/unacceptable materials will be posted throughout the site.

EXPECTED PROJECT WASTE, DISPOSAL, AND HANDLING:

The following charts identify waste materials expected, their disposal method and handling procedures:

Demolition Phase

MATERIAL	QUANTITY	DISPOSAL METHOD	HANDLING PROCEDURE
Asphalt from parking lot	100 tons	Ground on-site, reused as fill	
Wood Framing	6 tons	Recycled: Wood Recycling Northwest	Separate “clean wood” in clean wood bin
Decorative Wood Beams	300 bd. ft.	Salvaged: Timber Frame Salvaging	Remove by hand, store on-site, load on pallets for pickup
Remaining Materials	8 tons	Landfill: Sound Disposal	Dispose in “trash” dumpster

Construction Phase

MATERIAL	QUANTITY	DISPOSAL METHOD	HANDLING PROCEDURE
Concrete	2 tons	Recycle: Puget Sound Concrete	Break up any wastes or mistakes and put in concrete bin. Rebar OK
Forming Boards		Reuse as many times as possible then recycle: Wood Recycling NW	Stack next to supply of new form boards for reuse. Recycle clean un-usable forms in wood recycling bin
Clean Wood Scrap	12 tons	Scraps reused for formwork, fire breaks, etc. Remaining recycled: Wood Recycling NW	Stack reusable pieces next to saw for reuse. Place unusable clean wood in wood recycling dumpster
Scrap Metal	5 tons	Recycle: Seattle Metals	Deposit all metals in metal dumpster
Drywall	10 tons	Subcontractor will recycle & submit reports to recycling coordinator	Either provide container or collect in vehicle for recycling
All other wastes	14 tons	Landfill: Sound Disposal	Dispose of in trash dumpster

SAMPLE "LETTER TO THE VENDOR"

Manufacturing Company X
PO Box ABCD
Townsville, WA

Subject: General Contractor, Inc & our Waste Prevention/Recycling Program

Dear Sir or Madam:

We are pleased that your XXX product will be used on our XXXXXX Project. We wanted to let you know about General Contractor, Inc.'s Waste Prevention/Recycling Program for this project. Our goal is to reduce our waste generated on-site by XX%. In order, to meet this goal, we have asked for assistance from our whole team including vendors, suppliers, and manufacturers. Our team is committed to being leaders in waste reduction and resource efficiency.

Please let me know how your company will help our team reach this waste prevention/recycling goal. The following are a few actions your company might take to help support us in reaching our goals.

- Use minimal packaging, providing materials in bulk packaging, on pallets, in blankets, etc.
- Take back, for reuse or recycling, all packaging for your product.
- At a minimum, provide your product in easy to recycle packaging, such as cardboard, wood, or metal.
- Offer "just-in-time" delivery to minimize damage to materials during on-site storage.
- Provide information and support for accurate estimating.
- Take back all unused product.
- Provide your product in pre-cut sizes or preassembled for our project.
- Identify any recycled-content in your product.
- Offer alternative products with recycled-content.

I will call you next week to find out which waste prevention/recycling actions your company is considering for this project. Feel free to call me with comments or questions at (XXX) XXX-XXXX. Thank you for your time and effort. We look forward to working with you as part of our team of leaders committed to resource efficiency.

Sincerely,

Sally Jones
Waste Prevention/Recycling Program Coordinator
General Contractor, Inc.

APPENDIX F:
WHERE TO GET MORE INFORMATION

FOR TECHNICAL ASSISTANCE

KING COUNTY:

- **King County Customer Service Representatives** at (206) 296-4466
- **King County Construction Recycling and Green Building program** at (206) 263-6037 or *http://www.metrokc.gov/greenworks*

  King County provides a wide range of information on Green Building including developing job-site Waste Management Plans, specifying recycled-content building materials, and sponsoring training and educational opportunities on green building strategies and techniques. King County also promotes the *Construction Works*, BUILT GREEN™, and LEED™ Programs.

CITY OF SEATTLE:

- **Business and Industry Resource Venture** provides free assistance for Seattle design and construction professionals to help improve the environmental performance of their building projects. Call their hotline at (206) 389-7304 or look at their website at *www.resourceventure.org*.

  The Resource Venture can help you with: general sustainable building education, LEED™ and BUILT GREEN™ certification, City of Seattle incentive programs, construction waste management, green building materials, stormwater management, and water conservation.

STATE OF WASHINGTON:

- **Washington State Department of Ecology's Sustainable Building Toolbox** Website at *www.ecy.wa.gov/programs/swfa/cdl* provides easy access to in-state and out-of-state educational information and resources on sustainable design and construction.
- **Washington State Department of Ecology's statewide recycling service information** at *http://1800recycle.wa.gov/index.html* (or toll free at 1-800-RECYCLE) is an online database that lists construction, demolition, and recycling facilities and reusable building material outlets throughout Washington State.

MATERIAL EXCHANGE

- **King County's Reusable Building Materials Exchange (RMBE)** at *http://www.metrokc.gov/rbme* is a convenient new way for contractors and home remodelers to easily exchange small or large quantities of reusable or surplus building materials.
- **King County's Industrial Materials Exchange (IMEX)** at *http://www.metrokc.gov/hazwaste/imex/* is a free service designed to match businesses that produce wastes, industrial by-products, or surplus materials with businesses that need them.

RECYCLED-CONTENT BUILDING MATERIALS

- **King County's Environmental Purchasing Program** at *http://www.metrokc.gov/procure/green/index.htm* has practical and detailed information on recycled-content building materials, as well as office and automotive materials that are environmentally preferable.
- **King County's Recycled-Content Building Materials Product Guide** is available online at *http://www.dnr.metrokc.gov/swd/bizprog/sus_build/how_others.htm*, and lists building products made from recycled materials, is organized by CSI Division, and contains a list of local vendors that sell the products.
- **EPA's Comprehensive Procurement Guidelines (CPG)**, available at *www.epa.gov/cpg/*, lists a variety of product information, including recycled-content building materials.

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