

Minnesota Air, Water and Waste Environmental Conference



Recycling
Construction and
Demolition Debris

Today's Presentation

- Why reduce, reuse & recycle construction and demolition debris?
- WasteCap Wisconsin
- Real World Examples
- Demolition debris reuse steps

Why Recycle?

- Part of sustainable building (LEED)
- Get ahead of legislation
- Relatively clean, high-value materials
- Interest and activity growing --
Becoming “the way it is”
- Market demand – more & more
owners are starting to require job site
recycling

Environmental Benefits

Recycling a Ton of:

- paper saves 17 trees
- iron saves 1 ton of coal
- plastic saves the equivalent of 1-2,000 gal of gas
- aluminum saves equivalent to electricity used by WI home over 10 years



Common Benefits

- Economics - Disposal costs reduced
- Environment – Saves natural resources
- Ease - Contractors find recycling simple and not time consuming
- Safety – Recycling sites tend to be cleaner, safer work sites
- PR benefit – projects highlighted locally, statewide and nationally



Statewide, nonprofit 501(c)(3) organization

Provide waste reduction and recycling
assistance for businesses

Target three areas – construction and
demolition debris, food waste and electronics



- Construction Waste Mgmt. Services
- Telephone assistance
- Web site: wastecapwi.org
- Confidential site visits and reports (free to members)
- C&D Debris Management training
- WasteCapTRAC

Their Success - WasteCap Projects

- Alliant Energy's Worldwide Corporate Headquarters
- Affiliated Engineers Headquarters
- American Family Children's Hospital
- Badger Army Ammunition Plant
- Bielinski Homes
- The Brico Fund Offices
- Columbia St. Mary's East Campus
- Columbia St. Mary's Ozaukee
- Epic Systems Corporation
- Froedert Cancer Care Center
- Froedert North Tower
- Harley-Davidson Museum
- Harley-Davidson Motor Co. Product Development Center
- Interdisciplinary Research Complex
- Kane Commons
- Kettle Foods, Beloit
- Lawrence University, Appleton
- Madison Area Builders Assn
- Madison Gas & Electric West Campus Co-generation Facility
- Marine Terminal Lofts
- Mayfair Radiology
- Metropolitan Builders Assn of Greater Milwaukee
- Milwaukee Technical High School
- Northwestern Mutual Life Ins. Co.
- Overture Center for the Arts
- Retzer Nature Center
- Schlitz Audubon Nature Center
- St. Marys Hospital, Madison
- Sidney Hih Complex
- University of Wisconsin-Madison
- University of Wisconsin-Superior
- University of Wisconsin-Whitewater
- Urban Ecology Center
- Veridian Homes
- Wal-Mart
- Wisconsin Public Service Weston 4

Some Results to Date

- Over \$2.97 billion of construction & demo.
- Every commercial project reduced disposal costs
- Projects diverted more than *244 million* pounds of materials

*That's approximately 150 miles of
dumpsters laid end-to-end*



Demolition Debris Reuse Logistics



- **Reuse** implies use again in whole (or nearly whole) form
- **Recycling** implies a more radical change in use or form



Reduce, then
Reuse, then
Recycle

Steps – Like C&D Recycling Steps

Step 1 – Commit

- Get buy in from someone with project authority
- Put reuse as priority into specifications
- Determine who will control debris (belong to owner, contractor, other?)
- Select a coordinator

Step 2 – Identify Target Materials

- Site Visit to identify reusable materials (or entire houses)
- Meet with owner, contractor, partners
- Create “possible” list



Reused - Examples

- Carpeting
- Track lights
- Mirrors
- Oak flooring & doors
- Furniture
- Light fixtures
- Phone system
- Wood hangers
- Stone travertine
- Security gate



Step 3 – Identify Markets

- Contact potential reuse markets:
 - Nonprofit organizations, HfH ReStores (tax benefit)
 - Salvage operators
 - Artists, schools, theaters, service corps., OTHER
 - Recycling markets for carpet, ceiling tile, concrete & metal
- Use local contacts
- Conduct testing for hazardous materials (may not reuse materials with lead based paint or asbestos)

Step 4 – Develop Reuse Plan

- What will you target for reuse?
- Describe steps to reuse. May include:
 - Tagging day
 - Reuse/moving structures
 - Wood frame deconstruction
- Set up timeframe and site logistics
 - Who will deconstruct? Proper insurance required.

Step 5 – Implement Plan

Contact potential markets

- Phone/email
- Ad in paper – other ads

“Tagging Day”

- Liability waiver
- Reuse form
- Guided tours
- Masking tape and markers



Step 6 – Site Logistics

Example:

- Contractor disassembled -two people, two days
- Separated materials
- Moved items to safe locations for pickup
- Pickup day scheduled



Step 7 - Document

- Ask those who pick up items or contractor to estimate weight, volume, value
- Moving companies, manufacturers can help estimate weight & volume
- Photos
- What was taken vs. what was requested



Step 8 – Celebrate Success



Celebrating Success

A few awards won by our clients

- Governor's Award for Excellence in Environmental Performance
- Wisconsin Manufacturers and Commerce Business Friend of the Environment
- Environmentalist of the Year
- Excellence in Promotion from WI Energy Star
- Mayor's Climate Protection Award

Small Projects Can Too

City Center East - Appleton, WI

Oscar J. Boldt Construction

Small remodeling project

- WasteCap Site Visit
- Reusable carpet and fixtures donated
- Recycled ceiling tile, metals, block & brick

City Center East - Appleton, WI – Results

- “Work went smoothly with no significant impact to schedule”
- Savings in avoided disposal costs:
\$10,400
- Recovered over 400 tons of materials

Commercial Construction Debris Madison Gas & Electric West Campus Co-generation Facility



\$180 million

Four prime
contractors

MGE WCCF

Specifications &
contracts require
recycling

Recycling:
cardboard, cans &
bottles, concrete,
scrap metal, paper,
wood



MGE WCCF



- Orientation includes recycling
- Site services contractor ensures recycling dumpsters are clean
- Education everywhere – in trailers, in handouts, on dumpsters, in person instruction

MGE WCCF

Consistent monitoring, documenting
(monthly reports), adjusting, celebrating
success



Results

- 76% recycling rate by weight
- Over \$100,000 saved/earned through avoided disposal costs/revenue
- New markets found, resources saved
- Contractors cooperated & many proud
- Recycling made simple for crews
- One contractor rec'd large next job partially due to recycling experience



Commercial Construction Recycling
Schlitz Audubon Nature Center
The Jansen Group
The Kubala Washatko Architects

On Site Drywall Land Application – Schlitz Audubon Nature Center

- DNR Drywall Exemption – soil analysis
- Hauled to on-site location for use with Berm
- Saved tipping fees
- Soil amendment



Schlitz Construction Results

- **78% recycling rate by weight**
- **42% savings in disposal costs**
- **Talk & Tour result: recy. on other sites**
- **3rd Type X drywall recy. exemption in WI**
- **Contractor recycling on other sites**

Demolition for St. Marys Hospital

Removal of 24
houses

Two commercial
properties

Two blocks



WasteCap's Role



- Site Visit
- Demolition Waste Management Plan
- Technical Assistance
- Documentation

Concrete Recycling

- Foundations from 24 homes removed
- Sticks showed LBP
- XRF instrument tests
- Only one wall exceeded LBP levels
- Recycling foundations saved \$76,000



Reuse

- Nine homes moved to another location for reuse
- Habitat for Humanity
- Wood used to make commemorative furniture



Results

- First approved Demolition Waste Management Plan in Madison
- 95% by weight, 84% by volume reused or recycled
- Saved over \$200,000 in avoided disposal costs (includes additional labor)

All Materials Reused/Recycled Except Trash	Weight (tons)	Volume (yd3)
Trash	557.45	2,285.37
Concrete	10,121.35	6,992.00
Asphalt	907.73	448.26
Metal	4.265	32
Moved Houses & Garages	510.59	3,405.64
Wood Reuse	114.2	713.71
Other Reuse	61.8	211.17
Total	11,720.37	11,802.78

Common Features

- Partnerships - owner, contractor, subcontractors, architect “on board”
- Recycling included in project specifications
- Construction waste management plan
- Clear, large signs on dumpsters
- Education, monitoring & documentation

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