ANNEX B

WASTE REDUCTION & RECYCLING GUIDELINES
WASTE REDUCTION & RECYCLING GUIDELINES

This section represents the supporting documentation for general Requirements Section 2 Point D. Site Construction & Demolition Waste Management

WASTE MANAGEMENT

1.1 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Commingling: Mixing recyclable C/D material in one waste container. Materials Recovery Facilities (MRF) exists to sort and recycle commingled materials off-site.

C. Construction and Demolition Waste: Includes all non-hazardous solid wastes resulting from construction, renovations, alterations, repair, and demolition.

D. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitability, corrosiveness, toxicity or reactivity.

E. Material Recovery Facility (MRF): A processing facility designed to sort and separate recyclables based on market needs and material components.

F. Non-hazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitability, corrosiveness, toxicity, or reactivity.

G. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

H. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

I. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste. Can be conducted on-site (as in the grinding of concrete and reuse on-site).

J. Return: To give back reusable items or unused products to vendors for credit.

K. Reuse: To reuse a construction waste material without altering its form on the project site or elsewhere.

L. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

M. Sediment: Soil and other debris that has been eroded and transported by storm or well production runoff water.

N. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste in order to reuse or recycle them.

O. Toxic: Poisonous to humans either immediately or after a period of exposure.

P. Trash: Any product or material unable to be reused returned, recycled, or salvaged.

Q. Volatile Organic Compounds (VOCs): Chemical compounds common in and emitted by many building products over time through off gassing: solvents in paints and other coatings; wood preservatives; strippers and household cleaners; adhesives in particleboard, fiberboard, and some plywood; and foam insulation. When released, VOCs can contribute to the formation of
smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to
the liver, kidneys, and central nervous system, and possibly cancer.

R. Waste: Extra material or material that has reached the end of its useful life in its intended use.
Waste includes salvageable, returnable, recyclable, and reusable material.

S. Waste Management Plan: A project-related plan for the collection, transportation, and disposal
of the waste generated at the construction site. The purpose of the plan is to ultimately prolong
the useable life of waste materials and reduce the amount of material being landfilled.

T. Waste Management Report: A monthly report completed by the contractor describing actual
waste disposal of materials, including methods, types of waste, destination and quantities. All
weight tickets must be attached to waste management report.

1.2 RESOURCE EFFICIENCY

A. The Contractor shall use resources as efficiently as possible, in completion of the project.
Namely Owner shall require the Contractor to:
1. Use techniques that minimize waste generation
2. Reuse and renovation of existing structures in lieu of demolition
3. Salvage of existing materials and items for reuse/resale
4. Reuse materials on site where possible
5. Recycling of waste generated during the demolition and construction process

1.3 ADDITIONAL INFORMATION/RESOURCES

A. Build America Beautiful Program
   National Association of Home Builders
   1201 15th Street, NW, Washington DC 20005, (800) 368-5242

B. Designing With Vision: Public Building Guidelines for the 21st Century
   Chris Stafford, AIA, Stafford-Harris, Inc., 1992
   1916 Pike Pl., Seattle WA 98101, (206) 682-4042

C. Environmental Building News
   A bimonthly newsletter on environmentally sustainable design and construction.
   Yearly subscription
   RR 1, Box 161, Brattleboro, Vermont 05301, (802) 257-7300

D. The Environmental Resource Guide
   A collection of detailed material assessments, articles, and case studies connecting
   environmental awareness with building construction
   Quarterly: $200/year

E. The American Institute of Architects
   1735 New York Ave, NW, Washington DC 20006
   (202) 626-7331 (800) 365-ARCH

F. “Green Building” Performance Standard Guide
   American Society for Testing Materials (ASTM), 1992

G. The Healthy House
   An in-depth look at the construction of a “healthy house” especially with respect to
   chemical sensitivity. Chapters are broken down into stages of building (i.e., planning,
   location, etc.) and building components (i.e., foundation systems, steel framing, windows
   and doors, etc.) Good lists of organizations and suppliers.
   John Bower
   Carol Communications 1989.
Covers a wide range of topics. Over 800 pages.  
University of Florida College of Architecture,  
Center for Construction and Environment, 1994, (904)392-7502  
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E-1 APPENDIX E - GREEN BUILDING RESOURCES  
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APPENDIX E - GREEN BUILDING RESOURCES E-2

I. Sustainable Building Guidebook for the New State Office Building: A Preliminary Overview  
Center for Maximum Potential Building Systems, Inc  
February 1993

J. Architectural/Engineering Guidelines  
Comprehensive specifications covering energy efficiency and other life cycle and sustainable provisions  
About 110 pages  
State of Texas General Services Commission, Office of Facility Planning, 1993 Austin, Texas

K. Demolition for Salvage and Reuse: Prototypical Demolition Specifications  
A summary of background and specifications used on a demolition project in Portland  
About 25 pages  
Metro Solid Waste Department, 1993  
600 NE Grand Avenue, Portland, Oregon, (503) 797-1650

L. Waste Reduction Specifications 1993  
A collection of examples of waste reduction specifications  
About 50 pages  
Metro Solid Waste Department  
600 NE Grand Avenue, Portland, Oregon, (503) 797-1650

M. URBAN PLANNING/LAND USE/COMMUNITIES  
A Pattern Language: Towns-Buildings-Construction  
A design classic, illustrating patterns that work on all scales, from the reading nook to the whole city  
Christopher Alexander, Sara Ishikawa, and Murray Silverstein  
Oxford University Press  
Design with Nature  
Ian L. McHarg  
John Wiley & Sons, Inc., 1991  
605 3rd Avenue, New York NY 10158 (212) 850-6000 or from the AIA Bookstore (800) 365-2724

N. Land Use Strategies for More Livable Places: A Guidebook for Local Governments  
Clear and concise guidelines for land use planning to reduce automobile use. California emphasis, but nationwide applicability  
Have sample drafts of a resolution and other documents for use by local governments or community groups  
Steve Weissman and Judy Corbett, Local Government Commission, 1992  
909 12th Street, Suite 205, Sacramento CA 95814, (916)448-1198 (916) 448-8246 (fax).  
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O. Sustainable Communities: A New Design Synthesis for Cities, Suburbs, and Towns  
Essays by these two leading planners and several others provide a good overview to the theory of ecologically appropriate land use.  
Sim Van der Ryn and Peter Calthorpe
## 1.4 INDUSTRY EXAMPLES SUCCESS STORIES

<table>
<thead>
<tr>
<th>Record-Setting Program</th>
<th>Project Type</th>
<th>Project Highlights</th>
<th>Recovery Strategy</th>
<th>% Debris recovered (by weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bagley Downs Apartments Eugene, OR</td>
<td>Demolition and construction</td>
<td>This project created 30 affordable housing units, saved the University of Oregon demolition costs, and preserved a community landmark.</td>
<td>Entire buildings saved by moving them to a new location.</td>
<td>73%</td>
</tr>
<tr>
<td>Erickson’s Diversified</td>
<td>New construction</td>
<td>Erickson’s planned to incorporate materials recovery efforts during the construction of</td>
<td>Source separation of materials during</td>
<td>69%</td>
</tr>
<tr>
<td>Corporate Headquarters Hudson, WI</td>
<td>Its new corporate headquarters even though it expected to pay more than if it disposed all materials generated. In fact, the company diverted 69% of the project debris and saved money.</td>
<td>Construction by all subcontractors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four Times Square New York, NY</td>
<td>Demolition and construction</td>
<td>Materials recovery was included in plans from the beginning. The contract included requirements that subcontractors reduce disposal and, as an incentive, they were allowed to retain savings earned through avoided disposal costs and materials revenues</td>
<td>Pre-demolition salvage, construction materials sorted off-site because of space limitations.</td>
<td>58%</td>
</tr>
<tr>
<td>Marion County Senator Block Salem, OR</td>
<td>Demolition</td>
<td>Marion County and Salem Area Transit saved over $160,000 by diverting demolition materials from disposal while using the project as a tool to educate the public on recycling. The county placed ads on TV and radio and placed banners illustrating the project recycling rate around the project site.</td>
<td>Salvage of usable items before demolition. Hand and mechanical sorting of materials after demolition to recover metals, concrete, and asphalt.</td>
<td>82%</td>
</tr>
<tr>
<td>Ridgehaven Green Office Building San Diego, CA</td>
<td>Renovation</td>
<td>The city of San Diego wanted to reduce, recycle, and reuse renovation materials from this project in order to comply with California’s50%</td>
<td>Many existing materials refurbished and reused. Materials sorted into labeled dumpsters for recycling</td>
<td>51%</td>
</tr>
</tbody>
</table>
recycling goal and reduce materials going to the city-owned landfill. In addition to recycling, diverting 51% of the renovation materials from disposal, the city also saved $92,000.

<table>
<thead>
<tr>
<th>Project Location</th>
<th>Deconstruction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stowe Village Hartford, CT</td>
<td>Deconstruction</td>
<td>This demonstration project not only recovered 50% of the materials from six public housing units, it also trained nine public housing residents in deconstruction techniques.</td>
</tr>
<tr>
<td>Whole Foods Market Corporate Headquarters Austin, TX</td>
<td>Renovation</td>
<td>Recovery of renovation materials saved Whole Foods over $32,000. Reuse of materials, such as ceiling tiles, light fixtures, and doors, helped the company avoid the purchase of nearly $25,000 worth of supplies. The company was also able to take an $8,000 tax deduction for donating salvaged goods to non-profit organizations.</td>
</tr>
</tbody>
</table>

1.5 REQUIRED RECYCLING INCLUDES: (NOT AN EXHAUSTIVE LIST)

A. Used beverage containers—banned from all North Carolina landfills (NC SB111. p. 1345)
B. Cardboard—banned from Mecklenburg County Landfills
C. Clean wood wastes
D. Scrap metal
E. Asphalt
F. Gypsum
G. Ballasts
H. Fluorescent bulbs containing mercury— banned from North Carolina landfills
I. White goods—banned from North Carolina landfills (major household appliances such as stoves and refrigerators that are typically finished in white enamel)
J. Yard waste – Banned from North Carolina Landfills
K. In addition to required recyclables/recycling, encourage:
L. Log and sell timber from land-clearing operations any ground timber will be used on campus as mulch
M. Excess clean earth may be used/needed by UNC Charlotte
N. Inert materials such as stumps, brick, concrete, block and rock cannot be disposed of in sanitary landfills and must go to a permitted Construction/Demolition landfill.
O. Bricks and blocks
P. Doors and windows
Q. Plumbing fixtures and pipes (provided they don't contain lead)
R. Electrical fixtures and wiring
S. Metals
T. Cardboard
U. Aluminum
V. Concrete

1.6 SAMPLE WASTE MANAGEMENT PLAN (DRAFT & FINAL)

1.7 SAMPLE MONTHLY WASTE MANAGEMENT REPORT

1.8 STIPULATIONS

A. The Contractor shall remove all generated trash, recycling, and debris (including, for example, old carpeting) at his or her expense. **The Contractor may not place this trash and debris in University dumpsters.** The Owner, acting through the Designer, shall retain the right to direct the disposal of salvageable equipment (such as metals, cardboard, plastics, paper, glass, and blueprints).

B. For all demolition or renovation work which removes serviceable, repairable, or otherwise recoverable equipment or materials (such as metals, cardboard, plastics, paper, glass, and blueprints), the Contractor shall certify that he or she has exercised every practical means of recovery or salvage. (Note: this would be in addition to the required recyclables).