DESIGN GUIDELINE 3.4
RECYCLING MATERIALS

Introduction

This section addresses recycling and other diversion methods for materials that may be encountered in construction or demolition projects. This document provides guidance for identifying materials which are recyclable or otherwise able to be diverted and available methods for proper disposal.

Related Sections

U-M Design Guidelines:
3.1 Sustainable Design and LEED® Requirements

U-M Master Specifications:
7.0 MS028110 – Regulated Construction Waste Remediation
7.0 MS028213 – Asbestos Remediation
7.0 MS028214 – Asbestos Remediation – Floor Tile and Mastic
7.0 MS028215 – Asbestos Remediation – Roofing Material
7.0 MS028300 – Lead Remediation
7.0 MS028333 – Lead Remediation – Renovation, Repair and Painting in Child-Occupied Facilities and Target Housing
7.0 MS028400 – PCB Remediation

Demolition Requirements

All Projects

Efficient construction and demolition waste management is encouraged on all construction, renovation and demolition projects. Coordinate and review materals with the U-M Design Manager and the U-M Project Manager to identify adequate on-site facilities for separating and storing materials to be recycled and salvaged.

Definitions

Construction and Demolition Debris: Building and site improvement materials resulting from construction or demolition operations.

Disposal: Removal off-site of demolition and construction debris and subsequent sale, recycling, reuse, or deposit in a permitted solid waste landfill.

Hazardous Waste: Waste which contains asbestos, lead-based paint or oil and other corrosive or toxic materials.

Recycle: Diversion of demolition or construction debris from the landfill for reuse.

Salvage: Recovery of demolition or construction debris and subsequent sale or reuse in another facility.

Onsite Reuse: Recovery of demolition or construction debris and subsequent incorporation into the Work.

Potentially Hazardous: Materials which are painted, stained, glazed, treated, odorous or contaminated from a chemical spill.

Primary Constituents of Construction and Demolition Debris with Potential for Recycling

Asphalt Pavement:

Asphalt can be recycled and can be transported to an asphalt-recycling facility.

Asphalt Shingles:

Asphalt shingles can be recycled in Michigan so long as they do not contain asbestos. Contractor and the project client shall determine if recycling is cost effective. Currently the nearest receiving facilities are in Lansing, Flint and Southfield.

Carpet:

Carpet and carpet padding may be recycled without restriction. Adhesives and tack strips need to be removed upon removal.

Ceiling Tile:

Major ceiling tile manufacturers offer no-cost pickup and recycling of many types of clean, unpainted, uncontaminated tile. Foil backed tile cannot currently be recycled in this area. To be recycled, tile must be tested for asbestos and must be located in an area where there is no above-ceiling asbestos. On-site requirements include a location for storing palletized and shrink-wrapped tile for pickup by the manufacturer. Specific requirements can be obtained by contacting the two manufactures that offer the service in this area; Armstrong and USG.

Concrete:

Clean (i.e. unpainted, uncoated, uncontaminated) concrete may be recycled or reused. Reuse options to be reviewed and coordinated with U-M Design Manager. Concrete that is painted, glazed, stained, treated, odorous or otherwise contaminated from a chemical spill must be tested by OSEH to determine disposal and recycling options.

Flooring:

Flooring may be recycled provided it is not painted, stained or contaminated from a chemical spill. Tile which is glazed/fired must be tested by OSEH.

Gypsum Board:

Clean gypsum can be diverted to recycling and reuse outlets by performing the following actions:

- Deposit clean gypsum scrap into source separated containers and protect from weather.
- Remove edge trim and sort with other materials.
- Remove and dispose of fasteners or other contaminants.

Materials which may be contaminated (i.e. painted, stained, or otherwise treated) shall be tested by OSEH. If paint has been treated and found to contain lead, the material must be further tested using Toxicity Characteristic Leaching Procedure (TCLP) to determine if it is a hazardous waste. Any attempt to clean or separate contaminated from uncontaminated material must be done with OSEH approval.

Masonry:

Masonry including, brick, block, and stone are recyclable provided they are not contaminated (i.e. painted, sealed, glazed). Materials which may be contaminated shall be tested by OSEH to determine appropriate disposal or recycling options.

Metals:

Metals including rebar, pipe, copper, aluminum, steel, lead and other metals may be recycled provided they are not hazardous. Materials which are painted, coated, or contaminated must be tested by OSEH prior to attempts to clean or separate contaminated from uncontaminated material. Clean materials may be reused on-site or taken off-site to recycle or to a donation center. Review and coordinate the reuse of materials with U-M Design Manger and verify whether MDEQ permits are required for proposed material reuse.

Packaging Material:

Boxboard, corrugated cardboard, and mixed paper may be recycled without restriction. When possible, require suppliers to remove pallets from Project site.

Plaster:

Plaster is recyclable when free of asbestos or lead paint. Old plaster is essentially concrete material and can be recycled as such. Lime plaster is also recyclable in most communities.

Wood:

Unpainted, untreated, and unstained wood, including scrap wood and untreated wood sawdust can be recycled, or can be used on site with OSEH approval. Materials which may be contaminated (i.e. painted, stained, or otherwise treated) shall be tested by OSEH. Any attempt to clean or separate contaminated from uncontaminated material must be done with OSEH approval.

Yard Waste:

Site-clearing wastes such as brush, branches and trees may be chipped on site. Contact Grounds Services to determine if resulting mulch is able to be composted on U-M property.

Vinyl Siding:

Clean vinyl siding may be recycled without restriction. If siding has been painted or otherwise treated, it must be tested by OSEH. Any attempt to clean or separate contaminated from uncontaminated material must be done with OSEH approval.

Other:

Other potentially recyclable materials commonly resulting from construction and demolition projects include glass, plastic, paper, rubber, textiles and appliances. Assuming asbestos and PCB's have been removed or are otherwise not present, these materials are recyclable if not potentially hazardous due to any chemical treatment or spills. If there is reason to believe these materials may be contaminated, OSEH should be contacted.

Flowchart for Recycling and Disposal of Building Construction & Demolition Debris

The attached Flowchart for Recycling and Disposal of Building Construction & Demolition Debris distinguishes what demolition and construction waste materials can be recycled offsite, reused onsite or sent to a type I landfill.

Flowchart for Recycling and Disposal of Building Construction & Demolition Debris
METALS (Rebar, pipe, aluminum, steel, lead, and sheet metal, etc.)
Will material be recycled?
Yes
To Offsite Recycle
No
Vinyl Siding
WOOD (Pallets, Scraps, Tree stumps/ limbs)
GYPSUM BOARD (Drywall)
OTHER (Glass, Plastic, Paper, Ceiling tiles, Rubber, Textiles, Appliances,etc.)
Is the material potentially hazardous? (Painted, glazed, stained, treated, odorous, or contaminated from chemical spills, etc.) Assumes asbestos & PCB's have been removed.
YES (Recycling is not an option if the material is potentially hazardous.)
NO
Any attempt to clean or separate contaminated from uncontaminated material (i.e painted from unpainted material) must be done with OSEH approval.
OSEH will test the material. (TCLP or other waste characterization, as needed)
Is the material hazardous?
YES
Dispose of Material in a Type I (Hazardous Waste) landfill
NO
Material is considered nonhazardous, contaminated
To Type II (Solid Waste) or Type III (Construction Debris) landfill
Onsite reuse (OSEH approval is required)
To Offsite Recycle or Donation Center
Concrete
MASONRY (Brick, Block, Stone, Tile, Porcelain, etc.)
ASPHALT SHINGLES
To Offsite Recycle
ASPHALT PAVEMENT
To Offsite Recycle
Packaging
To Offsite Recycle
Is the material potentially hazardous? (Painted, glazed, stained, treated, odorous, or contaminated from chemical spills, etc.) Assumes asbestos & PCB's have been removed.
YES
OSEH will test the material to determine disposal/ recycle options.
Hazardous -To Type I landfill
Non Hazardous Contaminated- To Type II (solid waste) or Type III (construction debris) landfill
Inert- To Offsite Recycle
NO
To Offsite Recycle