
**Building Design Standards and Guidelines for
Recycling & Solid Waste**



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RECYCLING & SOLID WASTE

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General Information

This section applies to the general recycling and solid waste requirements for all University-owned buildings located on the main Seattle campus.

Guiding Principles

- This section is intended to assist Architects, Project Managers, and other design team members in complying with The Waste Not Washington Act of 1989, which called for waste reduction and source separation to become the fundamental strategies of solid waste management. The University of Washington's 1990 Comprehensive Solid Waste Management Plan details the waste and recycling program elements for the Seattle campus.
- The City of Seattle has several ordinances prohibiting the disposal of recyclable materials in the City's municipal solid waste stream. The 2005 ordinance includes a ban on recyclable paper in the municipal solid waste. The University is mandated by these ordinances to increase recycling opportunities within its facilities. In addition, the City has called for a 60% recycling rate by 2012 and a 70% recycling rate by 2025 and the University must also meet these requirements.
- The University of Washington is a signatory of American College & University Presidents' Climate Commitment and recycling and waste management is an integral part of this commitment.
- Integrated collection areas that include recycling components assist in the reduction of landfill-bound waste, prolong the life of landfills, and promote environmentally sound practices.

Purchase Requirements

- Containers must meet University of Washington design requirements and be purchased through Recycling & Solid Waste.
- Alternative (custom) containers must meet University of Washington guidelines for appearance, functionality, and custodial service standards. Alternative containers can be purchased only upon prior approval by Recycling & Solid Waste.
- All costs associated with the purchase and placement of required recycling and solid waste containers must be included as part of the project construction or renovation costs.

Material Steams

- **Municipal Solid Waste:** All regular non-infectious waste.

- **Biomedical Waste:** A restricted waste stream that includes blood and blood products, cultures and stocks of etiologic agents and associated biologicals, and laboratory waste that has come into contact with these items.
 - **Treated biomedical waste:** Also called red bag waste. The University has approval from Public Health–Seattle and King County for certain buildings on campus to dispose of treated (autoclaved) biomedical waste in the municipal solid waste stream. This waste must be autoclaved at the source or at the dock, depending on facility volumes and program requirements.
 - **Untreated biomedical waste:** Untreated biomedical waste is overseen by UW Environmental Health & Safety. Type and volume of waste determines the internal collection systems and disposal procedures that are required for each laboratory and/or department.
- **Sharps:** A regulatory waste classification associated with those instruments used to puncture, cut, or scrape body parts and that can cause punctures or cuts to solid waste handlers or the public. Sharps includes hypodermic needles, syringes, IV tubing with needles attached, lancets, scalpel blades, glass Pasteur pipettes, microtome blades, dental scalers, razor blades, other sharp, and metal lab waste. Sharps are a restricted waste according to state and local regulators and must not be disposed of in the regular waste stream.
 - **Treated sharps:** Sharps that are treated (autoclaved) at the source. If the quantity demands, a sharps container will be sighted at the dock. Otherwise, treated sharps will be collected, treated again, and disposed of by a contacted vendor.
 - **Untreated sharps:** Untreated sharps are collected, treated, and disposed of by a contracted vendor.
- **Research Animals:** Carcasses of animals used during research.
 - **Infectious research animals:** Carcasses of animals that have been exposed to infectious agents. Stored within laboratory research space, most commonly within walk-in freezers. Infectious animals are collected and incinerated by a contracted vendor.
 - **Non-infectious research animals:** Carcasses of animals that have not been exposed to infectious agents. Stored within laboratory research space, most commonly within walk-in freezers. Disposed of in the municipal waste stream by a contracted vendor on a segregated collection route.

- **Source Separated Recycling:** Recyclable materials that are collected separately at the source of generation. Containers are available for each material stream.
 - **Mixed Paper:** All clean mixed paper, including white paper, newspaper and newsprint, colored paper, sticky notes, envelopes, magazines, softbound books and journals, file folders, hanging file folders, box board, tablet backs, card stock, and small pieces of flattened cardboard.
 - **Cardboard:** Corrugated cardboard boxes, flattened.
 - **Cans & Bottles:** Plastic bottles, jars, and jugs; plastic dairy tubs (yogurt, sour cream, etc.); glass bottles and jars; steel/tin cans; aluminum cans; milk, soy milk, and juice cartons; and aseptic food packages.
 - **Food Waste:** All food scraps, including meat, fish, and dairy; food-soiled paper, including kitchen paper towels and paper napkins; pizza delivery boxes; waxed cardboard and paper; flowers and plants; paper bags; and approved compostable bags and serviceware.
 - **E.Media (Electronic Media):** Non-confidential electronic media, including CDs, DVDs, videotapes, audiotapes, computer disks, and their cases. Also collected as part of this stream are small personal electronics, including cell phones, pagers, PDAs, smart phones, and small electronics; inkjet and bubble jet printer cartridges; and small quantities of batteries, including alkaline, carbon, zinc, lithium, nickel-cadmium, nickel, metal hydride, and silver oxide.
 - **Plastic Film:** Clean shrink wrap, plastic bags, bubble wrap, and deflated air pillow packaging.
 - **Printer/Copier Cartridges & Components:** Toner cartridges, laser printer cartridges, ink jet printer cartridges, bubble jet printer cartridges, copier cartridges, fuser drums, imaging units, and transfer rollers.
 - **Construction & Demolition (C&D):** Wood waste including lumber, plywood, MDF, sticks, pallets, painted wood; scrap metal including rebar, steel, wire, brass, copper, aluminum; concrete and asphalt, including bricks, asphalt, porcelain, rocks, and sand; models and artwork, including models made of wood, cardboard, metal, and combined materials; and broken furniture, including wood, metal, plastic, fabric, and combined materials.
 - **Scrap Metal:** Steel, iron, rebar, metal hardware, metal pipe, brass, copper, aluminum, chain, and screen.

- **Single Stream Recycling:** Also called all-in-one recycling. Includes all materials accepted as cans & bottles, mixed paper, cardboard, and plastic film.

Note: Only available at a collection site where source separated materials are consolidated into a single loading dock container or collection vehicle. Separate internal collection containers for each material are still required within each building.

- **Combined Fiber:** All mixed paper and all cardboard collected in one container.

Note: Mixed paper and cardboard is combined at the collection site or into a single loading dock container or collection vehicle. Separate internal collection containers for mixed paper are still required within each building.

Recycling & Solid Waste Collection System

The University of Washington provides two types of recycling and solid waste collection services: self haul (in house) and vendor contracted. The type of service selected depends on the amount and types of waste materials generated.

- **UW Self Haul:** University staff collect material in University-owned collection vehicles from most central campus buildings. The recyclables and waste are transferred to designated recycling collection and waste disposal sites within the City of Seattle. The hours of operation are from 5:00am to 1:30pm, Monday through Friday, excluding University holidays.
- **Vendor Contracted:** A contracted hauler collects material from buildings and facilities that generate large volumes of recyclables, waste, and/or biomedical waste. Buildings that require vendor-contracted front-load or roll-off service (including compactors) include Housing and Food Services residence halls and dining facilities, Magnuson Health Sciences Building, Physical Plant, and the campus industrial yards. Vendor-contracted service is also utilized during special cleanout or renovation projects, special events including Husky Football, or when a particular location requires regular weekend service. Normal operating hours are 5:00am-1:00pm, Monday through Friday; however, the vendor also operates night and weekend shifts.

END OF DESIGN GUIDE SECTION

Collection Vehicle Requirements

This section applies to the type and size of external collection vehicles used in the collection of recycling and solid waste materials. Types of collection vehicles vary depending on type of container and kind of service provided.

Types of Collection Vehicles

- **Rear-Load Vehicle:** Used for collection of waste and recycling materials behind buildings and at loading docks; services carts and 2-yard, rear-load collection containers
 - **Required Clearances**
 - Vertical (approach and exit): 15' High
 - Lateral: 16' Wide
 - Turning radius: 38' inside, 58' outside
 - Length of vehicle: 34'

- **Side-Load Vehicle:** Used for collection of recycling materials behind buildings and at loading docks; services cart collection containers
 - **Required Clearances**
 - Vertical (approach and exit): 15' high
 - Lateral: 18' wide
 - Turning radius: 38' inside, 58' outside
 - Length of vehicle: 34'

- **Cargo Box Truck:** Used for collection of metal, wood/wood pallets, and boxed or palletized recyclables at buildings and loading docks
 - **Required Clearances**
 - Vertical (approach and exit): 15' high
 - Lateral: 10' wide
 - Turning radius: 38' inside, 58' outside
 - Length of vehicle: 32'

- **Roll-Off Vehicle:** Used for collection of large roll-off containers and compactors located behind buildings or at loading docks
 - **Required Clearances**
 - Vertical (approach and exit): 14' high



Vertical (rails raised with container): 22' high

Lateral: 10' wide

Service area length: 75' long

Note: Allow 10' lateral access for driver to check the rear of the container before loading onto vehicle. Total length for service is 75'.

- **Front-Load Vehicle:** Used for collection of mid-size (4-, 6-, or 8-yard) containers at buildings that have high volumes of material but do not have space to accommodate larger roll-off or compacting containers

- **Required Clearances**

Vertical (approach and exit): 15' high

Vertical (when dumping container): 25' high

Lateral: 16' wide

Turning Radius: 38' inside, 58' outside

Length of vehicle: 34'

Note: A 25' height clearance is required to pick up and empty a container into a front-load vehicle if there is no open area immediately nearby that the vehicle can move the container to for servicing. If there is an open area nearby, front-load vehicles require a minimum 15' height clearance for the truck to lift and move the container to that space for servicing.



Additional Manufacturer Specifications

- **Rear-Load & Front-Load Vehicles**

Heil DuraPak 5000 High Compaction 20 yard

Heil Retriever Satellite Compact Manual 6 yard

<http://www.heil.com>

- **Cargo Box Truck**

GMC T7500 18'

http://eogld.ecomm.gm.com/NASApp/mediumduty/gmmd_home.jsp

- **Roll-Off Vehicles**

XT Series – Heavy Duty

<http://www.americanrolloff.com/aro-models.html>

END OF DESIGN GUIDE SECTION

Container Requirements (Internal)

This section applies to the type and size of internal collection containers for recycling and solid waste materials. Type and volume of recycling and waste materials determines the type and number of containers needed for effective coverage for a specific building.

Types of Internal Collection Containers

- **Public Area Bins**

- Standard set is three containers (Mixed Paper, Cans & Bottles, Waste) for centralized collection in areas accessible by the public
- One additional bin for e.Media can be added to a standard set (optional); see below for additional information
- Minimum of two sets per floor within public spaces (entrances and/or reception areas and elevator lobbies) is required for basic level of coverage
- Container dimensions: 15" wide, 15" deep, 35" high; 24 gallons
- Set dimensions (without e.Media bin): 48" wide, 15" deep, 35" high
- Set dimensions (with e.Media bin): 64" wide, 15" deep, 35" high
- Wall surfaces around bins should have fiberglass wainscoting to protect the walls and make the walls easily washable
- Serviced by custodians, who transport material to containers located behind buildings or at loading areas



- **E.Media Public Area Bins**

- Collection of four streams of material: electronic media, small personal electronics, ink and bubble jet cartridges, small batteries
- Serviced by Recycling & Solid Waste crew
- Container dimensions
 - Public Area Bin: 15" wide, 15" deep, 35" high; 24 gallon
 - Plastic/economical alternative: 19.5" wide, 19.5" deep, 28" high; 35 gallons



- **Bagit Stations**

- Polypropylene bags for centralized collection of recyclable paper within office suites
- Serviced by custodians into mixed paper recycling carts located behind buildings or at loading areas
- Container dimensions (single Bagit station): 16" wide, 16" deep, 30" high



- Container dimensions (single Bagit station): 16" wide, 20" deep, 30" high
- **Classroom Bins ("Slim Jims")**
 - Collection bins for waste, cans & bottles, and mixed paper
 - Serviced by custodians into custodial slant and/or rolling collection carts
 - Placed within large classrooms, large meeting spaces, lunch rooms/break rooms, and kitchens
 - Full set can be placed or a waste container can be paired with a mixed paper or a cans & bottles container
 - Container dimensions: 12" wide, 22" deep, 32" high; 23 gallons
 - Set dimensions: 38" wide, 22" deep, 32" high



- **Conference Room Bins**
 - Collection bins for waste, cans & bottles, and mixed paper
 - Serviced by custodians into custodial slant and/or rolling collection carts
 - Placed within small and medium sized conference rooms and meeting spaces
 - Full set can be placed or a waste container can be paired with a mixed paper or a cans & bottles container
 - Container dimensions: 11" wide, 16" deep, 20" high; 10 gallons
 - Set dimensions: 33" wide, 16" deep, 20" high



- **Food Waste Bins**
 - Collection bin for internal collection of food waste and approved compostable serveware
 - Commonly used within food preparation areas, kitchens, or break rooms
 - Self-serviced by staff using them; contents are emptied into food collection carts at external collection sites or loading docks
 - Container dimensions: 12" wide, 22" deep, 32" high; 23 gallons



- **Mixed Paper Carts**
 - 4-wheeled, rolling collection carts for mixed paper
 - Staged behind buildings or at loading areas for custodial use
 - Can be placed internally at high-volume sites, including copy centers and mail rooms



- Container dimensions (small): 26" wide, 34" deep, 44" high; 64 gallons
- Container dimensions (large): 32" wide, 36" deep, 46" high; 96 gallons

- **Desk-Side Recycling & Waste (MiniMax)**
 - Personal desk-side recycling container with companion waste container for administrative workstations and/or desks
 - Self-serviced by staff member to closest public waste and recycling collection station
 - Mini waste container hangs on the side of the recycling container
 - Container dimensions (recycling): 14.5" wide, 10" deep, 15" high; 28 quart
 - Container dimensions (waste): 8" wide, 6" deep, 7" high; 3 quart



Other Considerations for Larger Facilities

- Larger facilities with adequate space in loading dock areas may require additional space for specialized collection containers
- Applies to locations that contain mail rooms, shipping and receiving stations, or concession stands, such as libraries or athletic facilities

Additional Manufacturer Specifications

- **Public Area Bins**
Forms + Surfaces
<http://www.forms-surfaces.com>
- **Rolling Carts**
Toter Inc.
<http://www.toter.com>
- **Classroom & Conference Room and Food Composting**
Rubbermaid Commercial Products
<http://www.rcpworksmarter.com/rcp/index-default.jsp>
- **Desk-Side Recycling & Waste**
Busch Systems
<http://www.buschsystems.com/products.html>

END OF DESIGN GUIDE SECTION

Container Requirements (External)

This section applies to the type and size of external collection containers for recycling and solid waste materials. Type and volume of recycling and waste determines the type and size of container provided.

Types of External Collection Containers

- **2-yard rear load:** Dumpsters for garbage, cardboard, and cans & bottles are located exterior to buildings and in loading areas. Serviced by Recycling & Solid Waste self-haul drivers.



Garbage



Cardboard



Cans & Bottles

Container dimensions

Length: top 78", bottom 60"

Width: top 52", bottom 38"

Height: front 55", back 51 ½"

Note: Length is the length of the lift bar; width is the length of outriggers; height includes casters

- **6-yard to 8-yard front load:** Vendor-provided dumpsters for garbage and C&D (construction and demolition) are located at loading docks of buildings where large volumes of aggregated materials are collected and there is not enough room for larger roll-off containers. Serviced by contracted vendor.



Container dimensions (6yd)

Length: 80"

Depth: 66"

Height: front 47", back 71"

Container dimensions (8yd)

Length: 80"

Depth: 71"

Height: front 53", back 86"

- **25-yard to 40-yard compactors:** Compactors for garbage, single-stream recycling, and commingled fiber (paper & cardboard) are located at loading docks of buildings where large volumes of aggregated waste and/or recycling are collected. Serviced by a contracted vendor.



Container dimensions (30yd)

Length: 20' 5"

Width: 8' 6"

Height: 8' 8"

Note: Other sizes available. Contact Manufacturer for details.

- **Cans & bottles:** 96-gallon rolling carts for cans & bottles are located exterior to buildings and in loading dock areas. Serviced by Recycling & Solid Waste self-haul drivers. *(See above 2-yard containers for cans & bottles collection at sites where large volumes of cans & bottles are generated.)*



- **Food waste:** 35-gallon to 48-gallon rolling carts for food waste are located exterior to buildings and in loading dock areas. Serviced by a contracted vendor. *(See above 2-yard containers for food waste collection at sites where large volumes of food waste are generated.)*



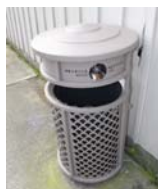
- **Mixed paper:** 96-gallon, four-wheeled rolling carts for mixed paper are used inside buildings as stationary collection bins and as mobile collection carts by custodians. Serviced by Recycling & Solid Waste self-haul drivers at the loading docks.



- **Plastic film:** 96-gallon, two-wheeled rolling carts for plastic film are located in loading areas. Serviced by Recycling & Solid Waste recycling drivers.



- **Litter receptacle:** Dual-purpose stainless steel outdoor unit. The 36-gallon lower portion is for waste and the 20-gallon upper portion is for cans & bottles. Serviced by Recycling & Solid Waste litter collectors.



Additional Manufacturer Specifications

- **Front-Load & Rear-Load Containers**
Capital Industries
<http://capitalind.com/containers/>
- **Compactors**
Wastequip
<http://www.wastequip.com>
Marathon Equipment
<http://www.marathonequipment.com/>

- **Rolling Carts**
Toter, Inc.
<http://www.toter.com>
Cascade Cart Solutions
<http://www.cascadecart.com>
- **Litter Receptacle**
Forms + Surfaces
<http://www.forms-surfaces.com>

END OF DESIGN GUIDE SECTION

Collection Site Requirements (Exterior)

This section applies to external collection sites, including waste and recycling enclosures, located near or adjacent to buildings. The type and volume of waste and recycling materials determine the type, size, and number of containers and, therefore, the size of the exterior collection site.

Small Generator - Minimum Site Requirements

Buildings that generate volumes requiring service levels greater than what is outlined below will require an increase in size or number of containers and additional space requirements.

- MSW (municipal solid waste): 1 x 2-yd rear-load dumpster (max one time/day service)
- Cardboard (corrugated): 1 x 2-yd rear-load dumpster (max one time/day service)
- Cans & Bottles: 1 x 2-yd rear-load dumpster (max two times/week service)
- Food Waste: 1 x 48-gallon cart (max one time/day service)
- Mixed Paper: 2 x 96-gallon carts (max one time/day service)

Site Dimensions

16' wide, 16' deep; approximately 256 square feet



Savery Hall

Medium Generator - Minimum Site Requirements

Buildings that generate volumes requiring service levels greater than what is outlined below would require an increase in container size and additional space requirements.

- MSW (municipal solid waste): 2 x 2-yard rear-load dumpsters (max one time/day service)
- Cardboard (corrugated): 2 x 2-yard rear-load dumpsters (max one time/day service)
- Cans & Bottles: 1 x 2-yard rear-load dumpster (max two times/week service)
- Food Compost: 1 x 48-gallon cart (max one time/day service)
- Mixed Paper: 2 x 96-gallon carts (max one time/day service)

Site Dimensions

16' wide, 20' deep; approximately 320 square feet



Music Building/Clark Hall Shared Enclosure

Large Generator - Minimum Site Requirements

Large complexes and buildings that generate large volumes of solid waste and/or recycling materials require additional infrastructure, including loading docks that will accommodate compactors and/or large solid waste and recycling collection containers.

Note: See "Loading Dock Requirements" for additional information.

Additional Site Considerations

- Containers are to be placed on smooth and flat paved or concrete surfaces, allowing for easy rolling of containers to and from service vehicle.
- Adequate space between containers and side enclosure walls, including exits, is required to allow for safe movement of containers to and from service vehicle.
- Enclosure must be included as an integral part of the building design and meet University design and construction standards for the project.
- Wall or structure protection might be needed to prevent damage caused by containers. Curb stops for roll-away protection might also be needed.

END OF DESIGN GUIDE SECTION

Loading Dock Requirements

This section applies to loading docks located adjacent to or under buildings. The type and volume of waste and recycling materials determine the type, size, and number of containers requiring space and, therefore, the size of dock area needed.

Dock Space Requirements

- MSW (municipal solid waste): Compactor
- Recycling: Compactor
- Food waste: 48-gallon cart (max one time/day service)
- Space for consolidation of packing materials for buildings associated with materials handling or shipping and receiving functions
 - Includes wood crating, pallets, plastic film, and packing peanuts

Dual-Compactor System

- Consists of separate compactors for MSW and recyclable materials (commingled fiber or single-stream recycling)
- Should be considered for all large complexes and buildings
- Reduces the number of containers, vehicle traffic, and number of vehicle service trips to and from collection site
- Most cost-effective means of collection



Dock Requirements for Compactors and Roll-Off Containers

- Vendor-provided compactors and roll-off waste containers require 22' overhead clearance to be rolled off and uploaded
- Power (460 volt, 208, 3 phase) is required for operation of compactors
- 60' in front of container is required for loading; length of container with compactor head (loading chute) can be up to 25'
- Container pad
 - Must withstand 55,000 to 60,000 pounds
 - Must be concrete
- Roll-off containers may be placed directly behind a building if there is space available at loading dock to allow loading from above
- Loading docks should be equipped with bumper pads to avoid dock damage



- If the container is placed on a 6" to 29" raised platform, overhead clearance needs can be reduced; turning radius of this type of truck is 41'
- Container should be on a level surface; if placed on an incline, roll-away protection is required
- Guide rails are required for assisting hauler with container placement; hauler must be contacted before designing any guide rails for container
- Cart lifters for mechanical tipping of custodial carts are required

Cart Lifters

- Consideration for placement of mechanical handling equipment is required
- Cart lifter style and size is determined by type and size of custodial collection cart
- Additional rear, side, and overhead clearances are required for cart lifters
- Placement of cart lifters requires a smooth, flat surface



Ramps

- Pedestrian ramps that allow collection staff to access loading docks and collection sites and are wide enough for custodial carts are required
- Handrails and safety barriers are to be included as appropriate
- Safety chains may be required



Ventilation

- Partially or fully enclosed dock areas must have adequate ventilation, separate from building systems, and include a sprinkler system

Drain

- A floor mount drain should be installed beneath the compactor and connected to a sanitary drain line

Special Considerations

- Dock space may be required for the following:
 - Placement and storage of bottled gases
 - Placement of Gaylords for hardbound book collection
 - Materials streams from labs or design/art studios

- Large number/high volume of deliveries, if they are expected as a normal course of operations

Additional Manufacturer Specifications

- **Compactors**
Wastequip
<http://www.wastequip.com>
Marathon Equipment
<http://www.marathonequipment.com/>
- **Cart Lifters**
Wastequip
<http://www.wastequip.com>
Marathon Equipment
<http://www.marathonequipment.com/>
Bayne
http://www.baynethinline.com/products_industrial.htm

END OF DESIGN GUIDE SECTION

Contact Information

Recycling & Solid Waste

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Email: recycle@u.washington.edu

Web: www.uwrecycling.com

Facilities Services Design Guide

<https://www.washington.edu/facilities/engr/fsdg.php>