



OWRR Design Guidelines

INTRODUCTION

Designers are to work with the University Office of Waste Reduction and Recycling to develop spaces for waste handling containers and service access, construction and demolition waste management plans and practices, and to ensure that access is maintained to active buildings during the construction process.

The University is mandated by the “North Carolina Solid Waste Management Act of 1989” and North Carolina Executive Order 156 on State Government Environmental Sustainability, Reduction of Solid Waste, and Procurement of Environmentally Preferable Products, Section 4.b. (signed July 20, 2000) to establish recycling programs and meet waste reduction goals.

“As set forth in North Carolina General Statute 130A-309.14, all state agencies shall ensure that employees have access to containers for recycling (at a minimum) aluminum cans, high-grade office paper, and corrugated cardboard. All state employees are required to separate identified recyclables materials generated in the course of agency operations and place them in the appropriate recycling containers.

State agency facilities that routinely house the general public, such as highway rest areas, state parks and recreation areas, employment security offices, state historic sites, etc., shall implement programs for the collection of recyclable materials discarded by the public at all such locations (e.g., aluminum cans, glass, and plastic beverage containers) when feasible and practicable.

State agencies that operate or contract for the operation of food service establishments, such as snack bars, cafeterias, dining halls, etc., are encouraged to implement programs to recover and recycle leftover food when practicable and feasible.”

Executive Order 156 also calls on all state agencies to:

“seek opportunities to reduce environmental impacts associated with capital improvements throughout project planning, site and building design, and construction. Agencies shall, to the extent feasible and practicable, implement project initiatives or modifications that result in energy efficiency, water conservation, pollution prevention, solid waste reduction, and land preservation during the construction and operation of agency facilities.”



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I. SITE AND SPACE PLANNING

Design considerations for waste and recycling containers must be based on the building's usage and occupancy. In addition to indoor recycling, a building must, at a minimum, have access to a dumpster for trash, one for cardboard and outdoor recycling carts.

When the building contains food service operations, containers and exterior space must be allocated for grease collection and food waste recycling. Animal labs and quarters require exterior space for the collection of animal bedding for composting. Theatres, art studios, and maintenance shops often produce bulky waste that cannot be collected in front load dumpsters. Any building containing offices will generate some quantity of high grade waste paper (all purpose printer paper from computer labs, copiers, printers, and routine administrative business) and must have loading dock or service area access for paper collection. Residence Halls require extra refuse and recycling containers.

UNC-Chapel Hill collects the following materials for recycling:

- Animal Bedding—Collected on the interior by the animal lab staff, and then stored outside for pickup
- Bottles & Cans—Collected throughout the building on a space usage basis and in outdoor carts (especially in high volume areas like residence halls, catering areas, dining halls, etc.)
- Cardboard—Housekeeping brings flattened boxes out of the building to dumpsters outside
- Food Waste—Collected at kitchen areas inside and then stored outside for pick up
- Grease—Collected at dining facilities and picked up by outside contractors
- Newspaper & Magazines—Collected throughout the building on a space usage basis and in outdoor carts (especially in high volume areas such as residence halls, libraries, etc.)
- Office Paper—Collected throughout the building on a space usage basis
- Scrap Metal—Collected at shops and taken to county or in-house facilities
- Clean Wood Waste—Collected at shops and taken to county or in-house facilities

A. OUTDOOR SERVICES AREAS

Each building is to have an outdoor recycling collection site (cardboard dumpsters and recycling carts). The designer must, for projects in which this requirement cannot be met, specify what cannot be sited at the building and the recommended location that will serve as an alternate site for these services. This is to be submitted to the Office of Waste Reduction and Recycling and to Housekeeping Services for approval.

Design considerations for waste and recycling containers must be based on the [building's usage](#) and occupancy. All containers shall be located on an accessible path of travel per the ADA and State Building Code.

Ideally, the recycling carts and dumpsters will be on the same pad and enclosure. However, in some cases it is necessary for the dumpsters (or compactors) to be located on separate pads from the carts. This page gives a variety of configurations and basic requirements. The standard design for an [outdoor service area](#) is for a recycling and trash site that can accommodate:

- 3-6 recycling carts (residence halls require more)
- cardboard dumpster
- at least one trash dumpster (residence halls and high volume areas may require more than one)

A variety of programs can utilize the outdoor service areas. Along with this a variety of containers and vehicles are used to service the program. A brief list is given below.

- [Dumpsters \(Trash and Cardboard\)](#)
- [Outdoor Recycling Carts](#) (Bottles/Cans, Newspapers/Magazines)
- [Compactors](#) (Trash and Cardboard)



- [Rolloff Containers](#)
- [Animal Bedding](#)
- [Food Waste Carts](#)
- [Grease Collection](#)

Dumpsters are serviced by front load trucks. The standard size for a [cardboard dumpster](#) is 8 cubic yards. As of April 2006, the standard [trash dumpster](#) 8 cubic yards with access via closable sliding side doors. The concrete pad for the dumpsters can be designed in a variety of configurations as long as the pad and site meet the University's service requirements. Pads should be sloped away from rear wall and towards planned drainage routes to avoid pooling around dumpsters and carts.

The quantity, size, and type of dumpsters needed is dependent on the building use and size. When volume or special needs dictate a larger dumpster, horizontal compactors are recommended. Contact the [Office of Waste Reduction and Recycling](#) for assistance determining the size and type of container needed.

More information about the specific containers and their dimensions is listed on the [Waste Handling Containers & Equipment](#)

Also see: [Needs Based on Building Use](#)

B. INDOOR RECYCLING SITES

Interior space for recycling collection must be allocated based on where and how much material is generated. There must always be a trash can adjacent to or as part of the indoor recycling site. Office paper, newspaper/magazine, and bottle/can recycling locations should be located on each floor.

In non-public areas, [standard](#) OWRR-provided bins are sufficient. In public areas, [recycling cabinets](#) may be used instead of OWRR's standard bins.

All containers shall be located on an accessible path of travel per the ADA and State Building Code. Care should be given to locate containers away from exit doors, elevators, or in areas that may impede movement in the event of an emergency. In accordance with applicable codes, recycling containers should be placed away from fire alarms, extinguishers and automatic door openers. Recycling containers shall not be placed in stairwells.

Whenever possible, departments should share recycling areas. When this is not possible, each department should have its own recycling areas. If there is only one department for the whole building, there should be a recycling center for office paper, newspaper/magazine, and bottle/can collection on each floor.

Click here for [photos of recycling cabinets](#) installed in various campus buildings.

Also see: [Needs Based on Building Use](#)

1. General:

Indoor recycling must be provided in the following areas:

- work rooms*
- copy rooms*
- break rooms**
- computer labs*
- lounges**



- outside classrooms and auditoriums**
- other areas where people will congregate or generate recyclables**

* Copier, mail and work rooms must have a trash can and two recycling bins (one for office fiber and one for newspapers/magazines).

** Public areas must have a trash can, bottle/can bin, and newspaper/magazine bin. In some situations, office fiber bins are also needed in public areas.

Buildings such as residence halls, dining halls, athletic facilities, theatres, conference centers, shipping and receiving areas, animal quarters, etc. may have special needs. Consult the Office of Waste Reduction and Recycling (apreble@fac.unc.edu) for assistance with planning space for indoor recycling in these areas.

OWRR will work with designers and building occupants to determine location, the number and type of bins needed.

2. *Footprint:*

While there are several different styles of indoor recycling bins, planning for a footprint of 24" W x 24" D per container is adequate.

3. *Service Vehicles:*

The Waste Handling Vehicles (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=Vehicle>) page gives complete dimensions for all of the vehicles used to service indoor recycling.

4. *Abbreviations: (update 6/18/07)*

- BC = Bottles/Cans
- OF = Office Fiber
- NM = Newspapers/Magazines
- MP = Mixed Paper

C. WALKWAY SITES

1. *General: (updated 4/6/05)*

Place receptacles at the intersections of major pedestrian corridors, plaza areas, and entries to major student areas such as the Student Union and snack bars. Coordinate placement of “walkway” recycling receptacles with the Office of Waste Reduction and Recycling and the Grounds Department to ensure that the site can be serviced adequately. All containers shall be located on an accessible path of travel per the ADA and State Building Code.

Recycling sites must have three containers. One for trash, one for bottles/cans, and one for newspapers. They must be located adjacent to one another as pictured. They should be placed with the trash container closest to the area highest in traffic. The bottle/can bin should be the middle bin and the newspaper bin should be next.

The containers should be level, firmly secured to the ground contiguous to walks, and on a brick-surfaced area extending outward from the walk.

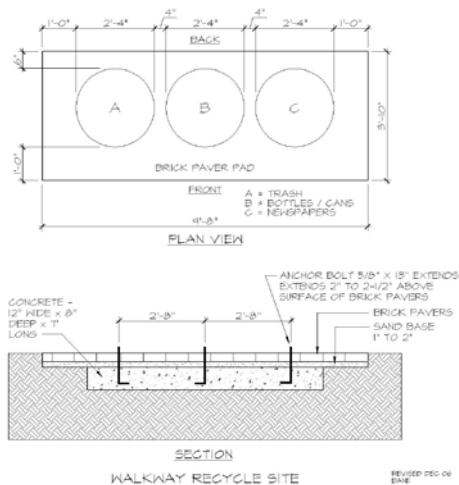
Also see: Needs Based on Building Use

(<http://www.fac.unc.edu/OWRRGuidelines/?Topic=BuildingUseTable>)

2. Pad Requirements: (6/15/07)

Walkway sites are to be placed on brick pads.

Dimensions: The pad area for three containers side-by-side is approximately 9'8" in length and 3'10" in width. Containers are centered on the pad, 2'8" apart on center. The containers should be installed in this order from left to right: Trash, Bottles/Cans, Newspapers.



[http://www.fac.unc.edu/owrrguidelines/images/revised_drawings/Walkway Recycle Site_image.jpg](http://www.fac.unc.edu/owrrguidelines/images/revised_drawings/Walkway_Recycle_Site_image.jpg)

Locations of walkway sites and detailed drawings must be shown on the plans.

3. Containers and Equipment:

See the Waste Handling Containers & Equipment (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=Walkway>) page

- make sure that **funds** are reserved for equipment
- make sure equipment is **ordered** in time for occupancy
- **coordinate** with OWRR to make arrangements for any special needs or assistance with ordering equipment

4. Installation: (moved and highlighted 3/2/05 and 4/6/05)

Containers ordered as part of a capital project are to be installed by the project. Note that containers placed above membranes for rooftop gardens and other stormwater retention projects may require special installation.

Containers purchased outside of a capital project, contact OWRR to coordinate installation. Installation requires coordination with the following shops: Grounds, Mason, Carpentry, OWRR.

5. Services Vehicle:

The Waste Handling Vehicles (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=Vehicle>) page gives complete dimensions for all of the vehicles used to service outdoor (and indoor) sites. The Gator is used to transport materials from these sites to outdoor recycling cart sites.



D. NEEDS BASED ON BUILDING USE

1. Academic

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster	
Cardboard	dumpster	
Outdoor sites	carts	With OWRR approval carts may be optional in this setting if indoor recycling is adequate.
Walkway sites	Victor Stanley Receptacles	Recommended in high traffic pedestrian areas or other outside gathering places.
Indoor Recycling	bin enclosures and standard bins	Recycling Areas: Hallways outside classrooms, lecture halls and auditoriums; vending areas and lounges; break rooms; computer labs; and office work/copy areas.

2. Administrative

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster	
Cardboard	dumpster	
Outdoor sites	carts	With OWRR approval carts may be optional in this setting if indoor recycling is adequate.
Walkway sites	Victor Stanley Receptacles	Recommended in high traffic pedestrian areas or other outside gathering places.
Indoor Recycling	bin enclosures and standard bins	Recycling Areas: Hallways outside classrooms, lecture halls and auditoriums; vending areas and lounges; break rooms; computer labs; and office work/copy areas.

3. Athletics

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster or compactor	May change based on seasonal needs.
Cardboard	dumpster or compactor	May change based on seasonal needs.
Outdoor sites	carts or other container	May need large container for collection of high volumes of recyclables. This could be permanent or seasonal.
Walkway sites	Victor Stanley Receptacles	With OWRR and Grounds approval only
Indoor Recycling	bin enclosures and standard bins	Recycling Areas: Paper recycling needed for office areas. Bottle/Can and Newspaper/Magazine bins are needed in public areas. However, recycling at athletic venues is outside the normal scope of the indoor recycling program. Placement and serving of public area recycling, while required, must be coordinated between the owner (Athletics) and OWRR. Extra signage is required.



4. *Clinical*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster	
Cardboard	dumpster	
Outdoor sites	carts	With OWRR approval carts may be optional in this setting if indoor recycling is adequate.
Walkway sites	Victor Stanley Receptacles	Recommended in high traffic pedestrian areas or other outside gathering places.
Indoor Recycling	bin enclosures and standard bins	Recycling Areas: Hallways outside classrooms, lecture halls and auditoriums; vending areas and lounges; break rooms; computer labs; and office work/copy areas.
Confidential Paper Shredding	Shredders, locked containers, etc.	Patient information must be handled confidentially and destroyed. Contact the Medical School Planning Office for more information on the space and design requirements. (919) 966-2441

5. *Food Service Areas*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster or compactor	Horizontal compactors may be required by the health department or due to volume.
Cardboard	dumpster or compactor	High volumes of cardboard may dictate use of a horizontal compactor.
Outdoor sites	carts or other container	Food prep areas generate #10 steel cans, glass and plastic bottles. Also, carts are used to store recyclables collected from indoor and outdoor seating areas.
Grease	Carts or other container	Cooking grease must be collected separately.
Food Waste	Carts	Consult with OWRR and owner.
Walkway sites	Victor Stanley Receptacles	Used beverage containers and newspapers from outdoor seating areas.
Indoor Recycling	bin enclosures and standard bins	Hallways near large conference rooms, vending areas and lounges; and at each department's copy area. Any facilities that will host large events or have catering kitchens should plan to have recycling bins inside for use during functions. In addition, outdoor recycling carts must be available for service and catering personnel to use during or after the event. ¹



6. *Historic Campus*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash Cardboard and Carts	dumpster carts	If the service area and dumpster pad are not located at the building, as is sometimes necessary for main campus buildings, the project must state which existing dumpster/service area will be used once the building is complete.
Walkway sites	Victor Stanley Receptacles	Recommended in high traffic pedestrian areas or other outside gathering places.

7. *Institutes, Conference Centers, Student Union*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster or compactor	Horizontal compactors may be required by the health department or due to volume.
Cardboard	dumpster or compactor	High volumes of cardboard may dictate use of an horizontal compactor.
Outdoor sites	carts	Food prep areas generate #10 steel cans, glass and plastic bottles. Also, carts are used to store recyclables collected from high volume events or seating areas.
Walkway sites	Victor Stanley Receptacles	Recommended in high traffic pedestrian areas or other outside gathering places.
Indoor Recycling	bin enclosures and standard bins	Hallways outside conference rooms, classrooms, lecture halls and auditoriums; vending areas, break rooms and lounges; computer labs; and each department's copy area. Any facilities that will host large events or have catering kitchens should plan to have recycling bins inside for use during functions. In addition, outdoor recycling carts must be available for service and catering personnel to use during or after the event. ¹

8. *Maintenance Shops, Art Studios, Performing Arts*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster or roll-off	In addition to dumpsters, roll-off containers may be needed for large volumes of bulky trash, wood, or scrap metal.
Cardboard	dumpster	
Outdoor sites	carts	Carts may be needed to store recyclables collected from high volume events and seating areas.
Compostable Plant	Carts or other container	Considerations should be made for greenhouses, athletic venues, and other grounds maintenance facilities generating compostable plant material.
Walkway sites	Victor Stanley Receptacles	Recommended in high traffic pedestrian areas or other outside gathering places.
Indoor Recycling	bin enclosures and standard bins	Classrooms, lecture halls and auditoriums; vending areas, break rooms and lounges; computer labs; and each department's copy area.



9. *Parking Decks and High Volume Parking Lots*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster	High volume parking lots and decks may need a 4-6 cubic yard slant front dumpster into which the street sweeping equipment can be emptied.
Walkway sites	Victor Stanley Receptacles	Recommended at park and ride lots next to the bus stop.

10. *Printing Operations*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster	
Cardboard	dumpster or compactor	High volumes of cardboard may dictate use of an horizontal compactor.
Outdoor sites	carts	Carts may be optional in this setting if indoor recycling is adequate.
Walkway sites	Victor Stanley Receptacles	Recommended in high traffic pedestrian areas or other outside gathering places.
Indoor Recycling	bin enclosures and standard bins	Hallways outside conference rooms, vending areas, break rooms and lounges, and each department's copy area. In addition to the routine areas for paper recycling, print operations will generate large volumes of office paper for recycling. This is usually stored in large, palletized boxes at the loading dock area.

11. *Retail, Bookstores, Etc.*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster	The number of dumpsters needed is dependent upon number of residents, layout of building(s), etc.
Cardboard	dumpster	
Outdoor sites	carts	The number of containers needed may vary and depends on the number of residents.
Indoor Recycling	bin enclosures and standard bins	Indoor recycling must be evaluated on a case-by-case basis. Bins for office paper are always included in the Housing staff office areas. Bins in public areas, computer labs and lounges should be coordinated with OWRR.



12. *Research Labs*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster	
Cardboard	dumpster	
Outdoor sites	carts	Carts are usually necessary in these settings for the collection of plastic bottles (non-hazardous from labs).
Animal Bedding	carts or other container	Any research facility with animals must have the capability to recycle animal bedding.
Compostable Plant	Carts or other container	Considerations should be made for greenhouses, athletic venues, and other grounds maintenance facilities generating compostable plant material.
Walkway sites	Victor Stanley Receptacles	Recommended in high traffic pedestrian areas or other outside gathering places.
Indoor Recycling	bin enclosures and standard bins	Classrooms, lecture halls and auditoriums; vending areas, break rooms and lounges; computer labs; and each department's copy area.
Confidential Paper Shredding	Shredders, locked containers, etc.	Patient information must be handled confidentially and destroyed. Contact the Medical School Planning Office for more information on HIPAA and space and design requirements. (919) 966-2441

13. *Retail, Bookstores, Etc.*

	<i>Equipment</i>	<i>Special Considerations</i>
Trash	dumpster or compactor	Horizontal compactors may be required for high trash volumes.
Cardboard	dumpster or compactor	High volumes of cardboard may dictate use of a horizontal compactor.
Outdoor sites	carts	Also, carts are used to store recyclables collected from indoor and outdoor seating areas.
Food Waste or Compostable Plant Material	carts or other container	Considerations should be made for greenhouses, athletic venues, and other grounds maintenance facilities generating compostable plant material.
Walkway sites	Victor Stanley Receptacles	Used beverage containers and newspapers from outdoor seating areas.
Indoor Recycling	bin enclosures and standard bins	Recycling Areas: Hallways near large conference rooms, vending areas, break rooms and lounges; and at each department's copy area.



E. CONTAINERS & EQUIPMENT OVERVIEW

It is the responsibility of the project to budget or reserve funds for the equipment and work with OWRR to ensure that the equipment is ordered, shipped and installed prior to occupancy. Trash and cardboard dumpsters, rolloff containers, and walkway containers (Section 02870 Site Furnishings) are examples of the type of equipment for which this needs to happen.

Horizontal compactors are considered part of the building systems. Compactors are to be included in the project budget, planning, design and requirements (Section 11170 Waste Handling Equipment).

Indoor cabinets may be built by the project or ordered by the project (Section 12300 Custom Millwork and Cabinets). Funding for the cabinets must either be part of the project budget or reserves. It is the project's responsibility to design, order, receive and install the cabinets.

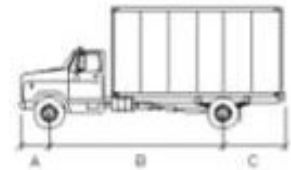
Some equipment such as standard indoor recycling bins and outdoor carts will be provided by OWRR at no charge.

F. WASTE HANDLING SERVICE VEHICLES

This page gives dimensions for all of the vehicles used OWRR and its contractors. Please contact OWRR to verify which vehicles will need access to the service area being designed.

Items which need extra attention include:

- vehicle width (with mirrors) and length;
- turning radius;
- approach*; and
- overhead clearance.



* Dumpster and rolloff trucks must be able to make direct contact with the containers; thus please take into consideration the truck's angle of approach when designing pads.

Due to the high amount of pedestrian traffic, care should be taken to minimize the distance that drivers of waste handling vehicles (and others delivery and service vehicles) have to drive in reverse. Care should also be taken to avoid having service vehicles back across walkways or into traffic. A reference is the Town of Chapel Hill Design Manual (<http://townhall.townofchapelhill.org/agendas/ca040126/5b-design%20manual.pdf>):

8.2.4 Dumpster Placement and Access

“The essential element in locating a dumpster is the ability of the refuse collection vehicle to safely and efficiently service the container... A turning radii template should be used to assure that access can be provided without unnecessary backing maneuvers... Where refuse collection vehicles will need to turn around to exit a development site, the site plan should be designed so that backing movements do not exceed 100’ in length. In these cases the turn around area should be dimensioned using a turning radii template of the appropriate scale. In all cases, the proposed site plan should be designed so that refuse collection vehicles do not need to back onto or off of any public street or over any public sidewalk.”

The location of air intakes should be remote from sources of pollutants and the building air intake and exhaust outlets shall be remotely located from each other to prevent supply air contamination. Take special care to ensure that exhaust from hoods, emergency generators, loading docks, idling trucks, etc., is not pulled into the building through make-up or fresh air intakes.



1. Vehicles: Outdoor Service Areas

- a) Equipment: Front-end Loader: (updated 11/19/04 and 8/9/05)

Special Considerations:

Used for trash and cardboard dumpsters

Height: 12.5'
Wheel Base: 237" (19.5')
Width: 97" (8' 1")
Overhead clearance with can in raised position: 18.5'
Turning radius: 46'
Turning diameter: 97'
Track: 78.6" (approx. 6'6")
Total length with boom overhang and arms extended: 41'
Total overall length of truck (with boom overhang): 37'
Truck length without boom: 35'
Front overhang: 50" (4'2")
Fork length: 4'
Boom arms front of bumper overhang: 24"



Empty scale weight: 40,400 pounds
Total gross vehicle weight: 75,020 pounds (the maximum without being over weight limits)
Front axle weight: 18,000 pounds
Empty trash dumpster estimated weight : 700 pounds
Full trash dumpster estimated weight: 1,600 pounds

See the [Site and Space Planning](http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace) (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace>) or [Containers and Equipment](http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment) (<http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment>) pages for more information.

- b) Equipment: Roll-off Truck: (update 5/15/09)

Special Considerations:

Used for rolloff containers and horizontal compactors

Truck length: 34'9"
Truck wheelbase: 27'
Turning radius: 65'

Front overhang: 3'
Rear overhang: 5'3"
Typical distance from ground to top of hoist rail = 40-44"
Width: 11' with mirrors
Height: 12' with exhaust pipe
Overhead clearance needed = 18-24'

Container length: 21-23'
Total length when being picked up: ~52'





See the [Site and Space Planning](http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace) (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace>) or [Containers and Equipment](http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment) (<http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment>) pages for more information.

For more information, contact truck manufacturer or service provider. [Marathon Equipment](#) has detailed information on rolloff hoist trucks.

- c) Equipment: Outdoor Recycling Truck: (update 6/18/07)

Special Considerations:

Used for collection of carts from outdoor service areas

Length: 35'
Width: 10'
Height: 10'2"

Turning radius: 38-40°

Overhead Clearance: 15' with bucket and container

See the [Site and Space Planning](http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace) (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace>) or [Containers and Equipment](http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment) (<http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment>) pages for more information.



- d) Equipment: Food Waste and Animal Bedding Collection: (updated 6/18/07)

Special Considerations:

Used for collection of food waste and animal bedding carts

Tri-Axle Width: 8', 10' including mirrors; 12' minimum clearance, ideal is 16' for straight back-in approach

Length: 28'
Height: 12'
Overhead Clearance: 22.5' with dump extended

See the [Site and Space Planning](http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace) (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace>) or [Containers and Equipment](http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment) (<http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment>) pages for more information.



- e) Equipment: Grease Collection:

Special Considerations:

Used for collection of cooking grease

Truck used to collect drums:
General: Similar to a small dump truck
Weight: 30,000 lbs. (empty)
Height: 13'





Truck used to collect from small dumpster type containers:

General: Tractor trailer
Height: 12'
Turning radius:
Overhead clearance: 25' (12-13' boom)

See the [Site and Space Planning](http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace) (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace>) or [Containers and Equipment](http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment) (<http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment>) pages for more information.

- f) Equipment: OWRR collection vehicle: (updated)

Special Considerations:

20 cubic yard (was used by OWRR for animal bedding and is now used for collection of other materials as needed)

Length: 26'
Width: 11' with mirrors
Height: 12.5'
Empty Weight: 27,000 pounds
Gross Vehicle Weight: 40,000 pounds



See the [Site and Space Planning](http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace) (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace>) or [Containers and Equipment](http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment) (<http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment>) pages for more information.

2. Vehicles: Indoor Recycling

- a) Equipment: Indoor Recycling Truck:

Special Considerations:

Used for indoor recycling collection

Length: 26' (28.5' with lift gate extended)
Width: 11' with mirrors (8' wheel base)
Height: 13.5'
Turning radius: 75' (cab over truck: 35-40')



See the [Site and Space Planning](http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace) (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace>) or [Containers and Equipment](http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment) (<http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment>) pages for more information.

- b) Equipment: Box Van:

Special Considerations:

Used for confidential paper collection

Length: 14' body
Width: 11' with mirrors





3. Vehicles: Walkway Recycling

- a) Equipment: John Deere Gator:

Special Considerations:

Used by OWRR for collection of materials from walkway sites

Length: 102" (8.83')
Width: 60" (5')
Height: 43.6' (3.63')
Turning clearance: 24.8'



See the [Site and Space Planning](http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace) (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=OutdoorSpace>) or [Containers and Equipment](http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment) (<http://www.fac.unc.edu/OWRRGuidelines/?topic=Equipment>) pages for more information.



II. CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

The University, State, Orange County and Chapel Hill are committed to reducing waste and the use of landfills. Waste reduction and recycling practices aren't limited to routine day-to-day functions and events on campus; they also apply to construction and renovation activities. Construction waste management practices include deconstruction, reuse, salvage, recycling and disposal.

Executive Order 156 calls on all state agencies to: "seek opportunities to reduce environmental impacts associated with capital improvements throughout project planning, site and building design, and construction. Agencies shall, to the extent feasible and practicable, implement project initiatives or modifications that result in energy efficiency, water conservation, pollution prevention, solid waste reduction, and land preservation during the construction and operation of agency facilities."

Proper waste management and waste avoidance are to be considered in decisions made during all stages of the capital project planning and construction process. Those involved with the design and construction of buildings on campus are to have the knowledge and resources needed to avoid waste and manage the resulting waste in a manner that allows for the least environmental impact.

A construction and demolition waste plan is required for all projects. Contractors are required to develop their waste management plan jointly with the University Office of Waste Reduction and Recycling. OWRR can direct contractors to local markets for recyclable materials. The Orange County Regulated Recyclable Materials Ordinance bans cardboard, metals, clean wood waste, and pallets from county landfills. Waste haulers must obtain a license from the Orange County Solid Waste Office.

A. CONSTRUCTION WASTE MANAGEMENT HIERARCHY

Building Materials and Components	Fixtures, Furniture and Equipment
Reuse in project	Reuse by department
Reuse on campus	Reuse on campus
Recycle (grinding wood for mulch, metal shelves recycled)	Sell through Surplus (on-site if appropriate)
Disposal (in accordance with state regulations)	Disposal in accordance with state regulations
Marble bathroom partitions, slate roofing, mechanical equipment, stone, carpet, fixed furniture, auditorium seats, wall cabinets	Bulletin boards, clocks, pencil sharpeners, desks, chairs, lab equipment, a/v equipment, capital assets

B. REQUIREMENTS

This information must be included in the spec book for each project. Any changes must be approved by OWRR.

1. 01060 Regulatory Requirements

The Contractor shall be responsible for knowing and complying with regulatory requirements - Federal, State and Local - pertaining to legal disposal of all construction and demolition waste materials, including but not limited to the following:

- a) [N.C. General Statute 130A](http://www.ncga.state.nc.us/enactedlegislation/statutes/html/bychapter/chapter_130a.html)
(http://www.ncga.state.nc.us/enactedlegislation/statutes/html/bychapter/chapter_130a.html)
 - i. *Whole Tires as of March 1, 1990 banned in landfills.*
 - ii. *Used Oil as of October 1, 1990, banned in landfills.*



- iii. *Yard Waste as of January 1, 1993, banned in landfills.*
 - iv. *Aluminum Cans as of July 1, 1994, banned in landfills or incinerators.*
 - v. *White Goods as of January 1, 1991, banned in landfills. Incineration banned as of July 1, 1994.*
- b) Orange County Regulated Recyclable Materials Ordinance requires cardboard, clean wood, scrap metal and pallets to be either source separated or taken in mixed loads to a permitted facility (contact OWRR or Orange County Solid Waste (<http://www.co.orange.nc.us/recycling/candd.asp>) at 919/968-2788 for a list of facilities). It also requires that anyone hauling these wastes in a vehicle that is 9,000 lb. or greater within Orange County must have a license. Contact Orange County Solid Waste to obtain a license. All containers (dumpsters, rolloffs, compactors) for regulated materials must display a unique identifying number at least 3" high, along with the name of the owner or hauler.
 - c) Town of Chapel Hill Noise Ordinance (Ordinance Number 2001-09-24/O-8) (<http://townhall.townofchapelhill.org/records/minutes/2001/010924.htm>): Once on the Town's Code of Ordinance site, click on Code of Ordinances of the Town of Chapel Hill hyperlink. Then search by "noise" and go to Noise Ordinance Article III. See Section 11-40 Exemptions items (b) Construction and (o) Sanitation.
 - d) University policy regarding hazardous materials, UNC-Chapel Hill Design Guidelines, Chapter IV (Supplemental Guidelines): Hazardous and Universal Waste Issues. Contact: UNC-Chapel Hill Office of Environment, Health and Safety.

2. 01505 Construction Waste Management

a) WASTE MANAGEMENT DEFINITIONS

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

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

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

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

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

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

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

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.

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).

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



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

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

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

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.

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

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

Volatile Organic Compounds (VOCs): Chemical compounds common in and emitted by many building products over time through offgassing: 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.

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.

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.

b) WASTE MANAGEMENT GOALS

Within the limits of the construction schedule, contract sum, and available materials, equipment, products and services, the Owner has established that this Project shall generate the least amount of waste possible and employ processes that ensure the generation of as little waste as possible. This expectation is consistent with:

- i. 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
- ii. Federal Executive Order 13101
- iii. EPA Comprehensive Procurement Guidelines (CPG)
- iv. North Carolina Executive Order 156—State Government Environmental Sustainability, Reduction of Solid Waste, and Procurement of Environmentally Preferable Products.

The Contractor shall develop, for the Architect's and owner's review, a Waste Management Plan (<http://www.fac.unc.edu/OWRRGuidelines/?Topic=cdSpec01505#DRAFT%20WASTE%20MANAGEMENT%20PLAN>) for this Project consistent with these goals.

- i. Minimize the amount of C/D (construction and demolition) waste initially generated by such methods as efficient use of materials, appropriate planning, proper storage, prevention of breakage and damage to materials, avoidance of excess packaging and source separation of waste.
- ii. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized. Consistent



- with LEED criteria, the project goal is to reuse, salvage, or recycle a minimum of 50% of the wastes generated by weight on demolition/renovation projects and 75% on new construction.
- iii. Use recycled, salvaged, renewable and recyclable building materials.

c) DRAFT WASTE MANAGEMENT PLAN

The Contractor shall provide, to the Owner and Architect, a Draft Waste Management Plan within 5 business days after receipt of Notice to Proceed or prior to any waste removal, whichever occurs sooner. Consistent with Orange County ordinances and in order to achieve the waste diversion goals listed above, the Contractor may choose to separate waste and recyclables on-site or use a combination of source separation and a C/D sorting facility permitted by Orange County. The Contractor will submit the draft and final plans electronically on forms provided by OWRR. See www.fac.unc.edu/OWRRGuidelines (C/D Forms and Printed Materials).

The Draft Waste Management Plan shall contain the following:

i. Waste assessment:

An analysis of the proposed jobsite wastes to be generated, including types and estimated quantities. This includes salvageable materials as well as recyclables and trash.

1. Materials for reuse in project: (Designer modifies list as appropriate.)
 - a. Slate roof
 - b. Wood flooring
 - c. Brick pavers
 - d. Stone walls
 - e. Architectural details
 - f. Building equipment
 - g. Program equipment
2. Materials for reuse on campus:
Contractor delivers to Owner. (Designer lists materials here)
3. Materials which must be recycled by law (also see Section 01060 Regulatory Requirements):
 - a. Beverage containers
 - b. Cardboard
 - c. Clean dimensional wood and pallets
 - d. Scrap metal, including but not limited to metals from banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze
 - e. White goods
4. Materials to be recycled (project specific):
Designer lists materials here.
5. Suggested salvageable materials: Designer lists materials here.
 - a. Slate roof
 - b. Wood flooring
 - c. Brick pavers
 - d. Stone walls
 - e. Architectural details
 - f. Building equipment
 - g. Program equipment
6. Other recyclable materials to be considered include (but are not limited to):
 - a. Asphalt



- b. Bricks
- c. Ceiling tile
- d. Concrete
- e. Concrete Masonry Units (CMU)
- f. Drywall
- g. Paint
- h. Plastic buckets

ii. Landfill options:

The name of the landfill(s) where trash will be disposed of, the applicable landfill tipping fee(s), and the estimated cost of disposing of all Project waste in the landfill(s). This estimate will be used as a baseline for recycling/salvage cost comparison.

iii. Waste Diversion Economic Analysis:

A list of each material proposed to be salvaged, reused, or recycled during the course of the Project, the proposed local market for each material, and the estimated net cost savings or additional costs resulting from separating and recycling (versus landfilling) each material. "Net" means that the following have been subtracted from the cost of separating and recycling:

- 1. revenue from the sale of recycled or salvaged materials
- 2. landfill tipping fees saved due to diversion of materials from the landfill
- 3. replacement value of materials reused in the project

For a list of markets and resources, see www.fac.unc.edu/OWRRGuidelines (C/D Resources and Links).

Also see Specification 02070 Selective Demolition for information regarding items to be salvaged.

d) FINAL WASTE MANAGEMENT PLAN

Once the Owner has determined which of the recycling options addressed in the Draft Waste Management Plan are acceptable, the Contractor shall provide a Final Waste Management Plan within 5 business days.

The Final Waste Management Plan shall contain the following:

i. Contact information:

The name and contact information of who will be responsible for implementing the Solid Waste Management Plan.

ii. Meetings/instruction:

A description of the regular meetings to be held to address waste management.

iii. Waste assessment:

An analysis of the proposed jobsite wastes to be generated, including types and estimated quantities.

iv. Alternatives to landfilling:

A list of each material proposed to be salvaged, reused, or recycled during the course of the Project.

v. Landfilling information:

The name of the landfill(s) where trash will be disposed of, the applicable landfill tipping fee(s), and the estimated quantity of waste to be landfilled.

vi. Materials Handling Procedures:



A description of the means by which any waste materials identified in items 4 and 5 above will be protected from contamination, and a description of the means to be employed in handling the above materials consistent with requirements for acceptance by designated facilities.

vii. Transportation:

A description of the means of transportation of recyclable materials and waste (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site) and destination of materials.

viii. Cost estimate summary:

The estimated cost of implementing the final solid waste management plan, broken down by material.

ix. Copy of Orange County RRMO hauling license:

This license is required for any vehicle over 9000 lbs GVW hauling RRMO materials (see 01060). It must be renewed annually. Contact Orange County Solid Waste Management at 968-2800 ext. 163 for more info.

e) IMPLEMENTATION AND DOCUMENTATION OF WASTE MANAGEMENT PLAN

i. Manager:

The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the Waste Management Plan for the Project. This contact will notify OWRR immediately should any deviance from the Final Waste Management plan be necessary.

ii. Distribution:

The Contractor shall distribute copies of the Waste Management Plan to the Job Site Foremen, Subcontractors, the Owner, and the Architect.

iii. Instruction:

The Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the Project.

iv. Separation facilities:

The Contractor shall designate and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

v. Hazardous wastes:

Hazardous wastes shall be separated, stored, and disposed of according to local regulations.

vi. Documentation:

The Contractor shall submit with each Application for Progress Payment a Summary of Waste Generated by the Project. Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payment. The Summary shall be submitted on a form acceptable to the Owner and shall contain the following information. For electronic forms see <http://www.fac.unc.edu/OWRRGuidelines/> (C/D Forms and Printed Materials).

1. Disposal information:

- a. amount (in tons or cubic yards) of material landfilled from the Project
- b. identity of the landfill
- c. total amount of tipping fees paid at the landfill
- d. total disposal cost (including transportation and container rental)
- e. weight tickets, manifests, receipts, and invoices (attach copies)

2. Recycling information:

- a. amount (in tons or cubic yards)
- b. date removed from the jobsite



- c. receiving party
- d. transportation cost
- e. amount of any money paid or received for the recycled or salvaged material
- f. net total cost or savings of salvage or recycling each material
- g. manifests, weight tickets, receipts, and invoices (attach copies)
- 3. Reuse and salvage information:
 - a. list of items salvaged for reuse on project or campus
 - b. amount (in tons or cubic yards)
 - c. receiving party or storage location
 - d. net savings (avoided tip fee and cost difference of item purchased new)
- vii. Revenues:

Revenues or other savings obtained from recycled, reused, or salvaged materials shall accrue to contractor unless otherwise noted in the contract documents

3. 02070 Selective Demolition

a) Demolition

Proper coordination for the shut-off of utility services and control measures for dust and noise must occur prior to commencement of any demolition work. Considerations must be given to on-going University activities in adjacent areas. In confined areas of selective demolition, install and maintain dust and noise control barriers to keep dirt, dust, and noise from being transmitted to adjacent areas. Remove these protection measures after demolition operations are completed.

Maintain and protect existing building services which transit the area affected by selective demolition.

Completely remove all equipment noted for removal including all associated devices, controls, conduit, wiring, etc. Remove all exposed conduit and wiring back to the panel from which it is served. Mark all disassociated breakers "spare". Unless otherwise noted, the Contractor shall fill and patch all wall, floor, and ceiling openings resulting from this demolition work with materials and finishes identical to adjacent materials and finished.

Unless otherwise noted, remove all wiring devices, fixtures, controls, circuitry (conduit and wiring), etc., made obsolete by the demolition within or around the building.

The Contractor shall relocate all existing piping, circuitry (conduit and wiring), ductwork, etc., which impedes the installation of new materials and equipment, unless otherwise noted.

Demolish, remove, demount, and disconnect the following:

- i. Inactive and obsolete piping, fitting and specialties, equipment, ductwork, controls, fixtures, and insulation.
- ii. Piping and ducts embedded in floors, wall, and ceiling may remain if such materials do not interfere with new installation. Remove materials above accessible ceilings. Drain and cap piping and ducts allowed to remain.

All demolition which involves the removal or disturbance of Asbestos Containing fire proofing, finish material, insulation or other asbestos containing material shall be performed in strict accordance with the Division of State Construction "Specifications for Asbestos Abatement" and must be approved by the University's Department of Environment, Health and Safety.

Notify the Department of Environment, Health and Safety (919) 962-5507 if any underground tanks are removed from the ground on the construction site.

Demolition activities that affect parking, vehicle or pedestrian traffic must be approved by UNC Department of Public Safety at (919) 962-8100 prior to work commencing.

Notify the Department of Environment, Health and Safety at (919) 962-9752 for information on proper disposal of ballasts and fluorescent light bulbs.



Prior to building demolition, the Department of Environment, Health and Safety should be contacted at (919) 962-5507 to review the project for potential mercury containing equipment such as piping in dental and scientific buildings, thermostats, and switches.

b) Disposal of Equipment and Materials

The Contractor shall remove all generated trash, recyclables 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 and materials (such as metals, cardboard, plastics, paper, glass, and blueprints).

The Contractor will comply with all requirements as outlined in 01505 (Construction Waste Management) and 01060 (Regulatory Requirements). After selective demolition is complete, submit a list of items that have been removed and salvaged.

The University, as a State institution, is accountable for controlled property and equipment including electrical, mechanical, and plumbing equipment. No equipment is given to the Contractor unless specifically listed in the job specifications prior to contract award. The Contractor shall deliver any surplus equipment to the Surplus Property Warehouse and return a receipt for the equipment to the Facilities Services Data Control Office.

For equipment retained by the Contractor under the contract, the Contractor shall remove the equipment control decals and return them to the Facilities Services preventive maintenance shop or the University's Asset Manager. Do not disturb equipment or fixtures bearing a hazardous, biological or radiological warning sign in any way until authorized by the University Department of Environment, Health and Safety Office who will remove or obliterate the warning sign.

c) Definitions

Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

d) Execution

i. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to storage area designated by Owner, Contractor or other authorized party.
5. Protect items from damage during transport and storage.

ii. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.



iii. Existing Items to Remain:

Protect construction indicated to remain against damage and soiling during selective demolition.

When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

C. DESIGN REQUIREMENTS

1. Building Material Salvage

a) General:

This section refers to the building components such as slate roofing, brick pavers, stone, marble bathroom partitions, doors, windows, architectural elements.

b) Hierarchy:

- i. Reuse in project
- ii. Reuse on campus
- iii. Recycle (grinding wood for mulch, metal shelves sent to scrap yard)
- iv. Disposal (in accordance with state regulations)

c) Building Material Walkthrough and Inventory of Valuable & Reusable Materials:

To identify existing materials that can be reused in the project, the designer (with UNC Design Manager, OWRR and customer) perform an initial walkthrough of the building in the schematic design phase.

The project creates an initial inventory of valuable and reusable materials.

They evaluate the reuse of these materials back into the project.

The inventory of materials to be reused in the project, salvaged for use in other projects, or to be recycled is to be included in Section 01505.

d) Reuse in Project:

For materials to be reused in the project, the Designer will create a detailed plan for removal, refurbishment, storage, and reinstallation of said materials to be included in Section 02070.

e) Reuse in Other Projects:

Information about any valuable materials not being reused (i.e. slate roofing) should be shared with other UNC Planning Managers and Building Services Supervisors. For materials to be reused in other projects on campus, the UNC Planning Managers or Building Services Supervisors will work together to create a salvage plan.

f) Recycle and Off-Campus Salvage:

The designers should use the inventory of remaining materials in coordination with OWRR to create a list of project specific materials required and suggested to be recycled to assist the Contractor in the creation of a Solid Waste Management Plan. This list should be developed in coordination with OWRR and included in Section 01505, Section C, Draft Solid Waste Management Plan.



g) Disposal:

Disposal is in accordance with state and local regulations. See Section 01060 for more information.

2. *Fixtures, Furniture and Equipment Salvage*

a) General:

This refers to bulletin boards, clocks, pencil sharpeners, desks, chairs, lab equipment, kitchen equipment, audio visual equipment, capital assets, etc.

Making sure that everything in the building is removed from the building and relocated or properly disposed of is very important. For this to happen smoothly and efficiently, communication and coordination between the Designer, the owning department, the move coordinator, the UNC design and construction managers, Surplus Property, the movers, and OWRR is required.

b) Hierarchy:

- i. Reuse by department
- ii. Reuse on campus
- iii. Sell through Surplus (on-site if appropriate)
- iv. Disposal in accordance with state regulations

c) Fixtures, Furniture and Equipment Walkthrough and Inventory

The Designer (with the help of UNC Design Manager) organizes a walkthrough of building with maintenance shops, Surplus, and OWRR during the Design Development phase to provide adequate time for prioritizing and planning salvage.

The purpose of this walkthrough is to evaluate a list of fixtures, furniture and equipment to be managed in accordance with the FF&E salvage hierarchy: reuse by the department, reuse on campus, sell through surplus (on-site, if appropriate) and disposal in accordance with state regulations.

d) Salvage List:

A list is generated detailing items to be salvaged and who will be responsible for removing, transporting, and storing said items. This list is to be distributed to the UNC Planning Manager, shops, Surplus, OWRR, and department representatives.

e) Surplus Property:

An inventory of any moveable furniture and equipment not being reused needs to be provided to Surplus. Options for handling excess furniture may include:

- i. transfer to other departments (Business Managers may be contacted and notified of available equipment)
- ii. sell onsite using a Surplus framework, or
- iii. transport to the UNC Surplus Warehouse to be sold

f) Departmental Responsibilities:



It is the owning department's responsible to make sure that the proper asset management and surplus property forms have been completed. The owning department must also arrange for the transportation of any surplus moveable furniture and equipment to the surplus warehouse. For more guidance, please refer to the UNC-Chapel Hill Design Guidelines Chapter IV: Moving Procedures for Bond Projects.

g) Shop Follow Up:

The shops will report back to the UNC Planning Manager and OWRR when they have completed their salvage. This work will take place before the Contractor takes possession of the building, if possible. Any other arrangement must be detailed on the plans.

h) Cost Estimate:

The Designer will also, as part of their cost estimate, break out the cost and any benefit of any salvage and reuse compared to purchasing new building materials or fixtures, furniture and equipment. This will be used to prioritize salvage and recycling options, and should be completed during the Design Development phase.

i) Scheduling:

Time for salvage and moving furniture must be considered when creating the project schedule. It is important to think about the appropriate condition of a building at the time of transfer to the Contractor. Asbestos abatement often requires that all furniture and trash be removed prior to beginning work.

j) Construction Documents:

Any salvage involving the Contractor is to be clearly designated on the Construction Document set of plans.

As appropriate, any equipment or fixtures of interest that will be left as part of the project should be included in Section 01505 to assist the contractor with the preparation of a solid waste management plan. They may be included in the project specific salvage and recycling requirements or in the list optional materials for which salvage and recycling options are to be evaluated by the contractor.

All moveable furniture and equipment should be removed prior to the contractor taking possession of the building.

D. CONSTRUCTION REQUIREMENTS

1. Meetings

a) Pre-Bid:

OWRR must be placed on the pre-bid meeting agenda to discuss regulatory requirements, the required solid waste management plan, and distribute resource lists to the bidders.

b) Pre-Construction:

OWRR must be placed on the pre-construction meeting agenda to review the above topics, meet or get the contact info for the project contact, and discuss monthly reporting requirements.

c) Solid Waste Management Planning Meeting:



Prior to the creation of the Final Solid Waste Management Plan, a meeting is needed to review the Draft Plan and discuss monthly reporting requirements. This meeting is to include the Contractor, the UNC Construction Manager, and OWRR's Construction and Demolition Waste Specialist. Subcontractors may also be included in this meeting or subsequent follow up meetings, as necessary.

d) Progress and Follow Up:

Throughout the construction process and prior to project completion, OWRR, the Construction Manager, or the Contractor may request periodic meetings to discuss progress or difficulties encountered with the development, implementation or reporting of plan requirements.

2. *Planning and Implementation*

a) Draft Plan:

The Contractor is required to submit a Draft Solid Waste Management Plan (Section 01505) five days from Notice to Proceed OR prior to removal of ANY waste from job site, whichever occurs first. The draft should be completed and submitted electronically. To expedite the plan review, it is to be submitted simultaneously to the Designer and OWRR in order to expedite plan review.

b) Final Plan:

Once OWRR has communicated requested changes, the Contractor has five business days to submit a Final Solid Waste Management Plan (Section 01505). Any deviance from the final SWMP must be approved by OWRR.

3. *Documentation*

c) Monthly Solid Waste Management Plan Reporting:

In accordance with Section 01505, each month the Contractor must submit documentation (weight tickets, manifests, etc.) of the disposal, recycling, reuse, and salvage of all materials and a summary with each Payment Application. Failure to do so may delay payment. This submittal must be in an OWRR approved format and the summary must be filled out electronically.

d) Selective Demolition Reporting:

In accordance with Section 02070, items or materials identified during the design process for salvage or reuse must be identified on the plans and in construction documents.

Also, the University, as a State institution, is accountable for controlled property and equipment including electrical, mechanical, and plumbing equipment. The Contractor shall deliver any surplus equipment to the Surplus Property Warehouse and return a receipt for the equipment to the Facilities Services Data Control Office.

e) Project Close-Out Reporting:

At the completion of the project, the design team is to provide OWRR and the UNC Construction Manager with a summary of recycling, reuse and salvage activities for the project. This is to include, but is not limited to:

- i. quantities landfilled, recycled, reused, and salvaged;
- ii. a break down of the types of materials recycled, reused and
- iii. salvaged; the percent of total waste of each of the categories listed;



- iv. the destinations of these materials;
- v. the economic impact of these activities on the project; and
- vi. any success stories or challenges incurred.

E. FORMS AND PRINTED MATERIALS

If the project is outside the University's Development Plan a solid waste management plan may be required by Chapel Hill before the SUP and ZCP will be issued. Contact the Facilities Planning Office for more information on this requirement.

1. Solid Waste Management Plan Forms

	Blank Forms:	Requirements:
Worksheet and Solid Waste Management Plan (SWMP) Forms: updated 6/18/07	Excel form this excel spreadsheet contains multiple tabs updated 6/18/07	The Draft SWMP is due 5 business days from notice to proceed and before any waste is removed from the job site. The Final SWMP is due 5 business days from receipt of comments from OWRR review of the DRAFT SWMP and before any waste is removed from the job site.
Monthly Reporting:	Excel form updated 6/18/07	Weight tickets and monthly reports are due with payout materials at the end of each month.

2. Inventory and Salvage Forms

	Blank Forms:	Requirements:
Building materials and equipment Furniture and fixtures Who to contact for salvage	Excel form this excel spreadsheet contains multiple tabs updated 6/18/07	

3. Regulated Recyclable Material Ordinance (RRMO) Form Info

	Forms:	Requirements:
RRMO Summary:	Printable PDF (Prepared by Orange County)	
RRMO Flyer:	Printable PDF (Prepared by OWRR.)	This handout provides a brief summary of the RRMO for contractors and their employees.
RRMO Hauling Application:	License Application PDF License Application Word Document	Any truck hauling regulated materials in Orange County with a gross vehicle weight of 9,000 pounds or more must have a hauling license.
RRMO Recyclable Material Permit:	Recyclable Material Permit Application Recyclable Material Permit Application Guide	If the project needs an <i>Orange County zoning or building permit</i> , a Recyclable Material Permit is required.



F. REPORTS, PRESENTATIONS, AND ARTICLES

1. Visit the link below for more information:

<http://www.fac.unc.edu/OWRRGuidelines/?Topic=CDReportsPresentations>

G. RESOURCES AND LINKS

1. Recycling and Salvage Resources [Updated on 9/27/05, 6/18/07]

Company	Material	Contact	Phone Number	Notes
Armstrong	ceiling tile	Janine Onufrak Rydin	(888) 234-5464 x8083	will visit building to assess tile www.armstrong.com/commceilingsna/environmental.html
B&B Topsoil	clean (unpainted) drywall scrap	George Andrews	919-477-6328	no minimum quantity - call before coming
Cabins, Cottages, and Bungalows and the Building Supply Recycling Center	deconstruction services; used building materials	Chris Wachholz	(919) 304-2966	windows, architectural features, whole buildings http://www.cabinscottagesandbungalows.com/aboutus.html http://www.recyclebuildings.com/
Habitat for Humanity (Wake)	strips out, deconstruction	Joel Lubell	(919) 833-1999 x231	http://www.habitatwake.org/Reusedonate.htm
Interface	carpet	Michel Belland	(800) 336-0225 x1334	will visit building to assess carpet (wants vinyl-backed)
International Aggregate	plumbing fixtures, bricks, concrete blocks (no plastic tile), asphalt	Derwin Charles	(336) 364-1436 (updated 2/9/07)	dump yard is located at Hwy 70 and I85 in Durham
Mellott Contractors & Supply Company, Inc	top soil, concrete w/ metal (if thick enough), rock, and trees for mulch	Calvin Mellott	(919) 967-2441	
OK Sales	big electrical switches, scrap metal	Tim Griggs	(336) 227-1938	will visit building to bid
Orange County Landfill	scrap metal, clean wood waste, white goods (refrigerants removed)	Rob Taylor	(919) 932-2989	must be separated, no or reduced tip fee
Peters Design Works	Sales, restoration and re-creation of antique and architectural materials.	Steve Peters	(919)599-0124	interested in architectural features
Strategic Materials	They accept plate glass and will spot a rolloff. They also accept borosilicate glass.	Dan Grassi, Plant Manager	(919) 596-9883	The fee depends on the quality and quantity. They will come and evaluate glass. strategicmaterials.com
Sustainable Living	whole buildings	Brad Lessler	(919) 260-6647	moves houses www.sustainableliving.com



2. *Approved Mixed Load Facilities— Permitted by Orange County (RRMO)*
[Updated on: 9/27/05, 7/23/08]

Coble Sandrock
5833 Foster Store Road
Liberty, NC 27298
(336) 565-4750

WCA
421 Raleigh View Rd.
Raleigh, NC 27610
(919) 866-1211
This facility's recycling rate for 2008 was 34.2%.

3. *Results: [Under construction!]*

a) Project Summaries:

Under construction.

b) News/Articles:

To be added: examples include Gazette articles, the one for Orange County, sustainability report--all press releases

c) Presentations:

[OWRR Guidelines: Summary, Changes Highlighted, and Requirements by Phase](http://www.fac.unc.edu/OWRRGuidelines/Presentations/owrrguidelines_fp_edits.pdf)
(http://www.fac.unc.edu/OWRRGuidelines/Presentations/owrrguidelines_fp_edits.pdf)

This presentation is a review of the OWRR webpage features and highlights recent changes to the requirements. (added 6/13/06)

[UNC-CH Construction and Demolition Waste Management and Site & Space Planning](http://www.fac.unc.edu/OWRRGuidelines/Presentations/UNC_CDWaste.pdf)
(http://www.fac.unc.edu/OWRRGuidelines/Presentations/UNC_CDWaste.pdf)

This presentation highlights construction and demolition waste planning issues and various project results. It also gives a brief overview of the site and space planning section of this webpage (i.e. indoor, outdoor and walkway recycling in completed projects).

[CD2004.pdf](http://www.fac.unc.edu/OWRRGuidelines/Presentations/CD2004.pdf) (<http://www.fac.unc.edu/OWRRGuidelines/Presentations/CD2004.pdf>)

Note: The Murphey project used a combination of source separation and a mixed load processor.

4. *Deconstruction, Reuse, Salvage, Recycling and Demolition Links*
[Updated on: 9/27/05]

a) North Carolina

- Deconstruction Institute - www.deconstructioninstitute.com
This site provides "educational materials, tools and techniques, networking, case studies, articles, facts about the environmental impacts of deconstructing, and many other downloadable and interactive modules."
- Durham Deconstruction Links - www.ci.durham.nc.us/departments/solid/deconstruction.cfm
- Durham A-Z Recyclery - www.ci.durham.nc.us/departments/solid/recycle_index.cfm



- North Carolina Recyclable Markets Directory - www.p2pays.org/DMRM/start.aspx
Search by Construction and Demolition Materials. Sponsored by the North Carolina Division of Pollution Prevention and Environmental Assistance (DPPEA).
 - North Carolina Waste Trader - www.ncwastetrader.org/home.aspx
Post or find surplus materials or items.
 - Orange Community Recycling - www.co.orange.nc.us/recycling/
 - Orange County Regulated Recyclable Material Ordinance - www.co.orange.nc.us/recycling/ordinance.asp
 - Orange County Solid Waste Management - www.co.orange.nc.us/recycling/
 - Triangle-J Council of Governments Waste Spec - www.tjcog.dst.nc.us/cdwaste.htm
This is a comprehensive guide to requirements and information regarding C&D recycling.
 - US Green Building Council's local chapter - <http://chapters.usgbc.org/nctriangle/>
- b) National
- Building Materials Reuse Association- www.ubma.org/
The members of this non-profit are involved in the deconstruction of buildings and reuse of salvaged materials.
 - Institution Recycling Network - www.wastemiser.com
"We provide a single point of contact to handle everything related to recycling: planning, training, on-site management, hauling, and marketing the recycled materials. We assure that waste management fits seamlessly into the project. Recycling does not need to get in the way, slow the job down, or take up extra space. On the contrary, recycling makes for a safer and more productive work site."
 - Green Goat - www.greengoat.org (moved from NC to nat'l)
"Green Goat, a non-profit, works with architects, contractors, and manufacturers to put used building materials back into other structures and even other industries. We save companies disposal costs through salvage and recycling, help them stay in compliance with regulations, and help them win new clients!"
 - California Integrated Waste Management Board (CIWMB) C&D Home Page - www.ciwmb.ca.gov/ConDemo/
 - National Association of Home Builders (NAHB): C&D Toolbase Technote - www.nahbrc.org/g/
This is a good overview of C&D issues and resources.
 - New York City's Department of Design and Construction - www.nyc.gov/html/ddc/html/ddcgreen
Information about C&D debris recycling NYC Dept. of Design and Construction
 - Oakland Recycles C&D Waste Management Forms - www.oaklandpw.com/oakrecycles/construction/forms.htm
 - WasteCap Wisconsin C&D Recycling Facts and Worksheet - <http://www.wastecapwi.org/candd.htm>
This site provides specifications, case studies an easy to read fact sheet and sample forms for calculating the percent of recyclable material from a project. (link updated 3/31/06)
- c) University Programs
- University of Oregon, Eugene - <http://www.uoregon.edu/~recycle/cd.htm>
 - Washington State University Construction Recycling - www.wsu.edu/recycle/construction.html
- d) International
- BRE SmartWaste - www.bre.co.uk/services/smartwaste.html
"The BRE SMARTWaste System is a set of computer-based tools to help your company apply the concept of sustainable waste management. The system monitors construction and demolition wastes, monitors segregation targets, and calculates Environmental Performance Indicators (EPIs). Through close links with SalvoMIE and BREMAP, the system also identifies opportunities for reuse and recycling and the location of suitable facilities for this."



- CIRIA (Formerly known as The Construction Industry Research and Information Association - www.ciria.org/cwr/index.html
"The intention of this web-site is to encourage waste reduction and improved resource productivity in the building and civil engineering sectors."
- e) Recycled Content Building Materials and Products:
 - Architectural Salvage News - www.architecturalsalvagenews.com
"Architectural Salvage News provides readers with valuable sourcing information to help locate suppliers of specialty products, both salvaged and reproduction, and introduces readers in the industry to new tools that help them run their business. "
 - Products with Recycled Content - www.epa.gov/cpg/products.htm
 - Recycled Content Tile - www.terragreenceramics.com/index.html
 - Recycled Content Tile - www.crossvilleinc.com/2002/product_info/environmental.htm
 - Used Building Material Exchange - www.build.recycle.net/index.html

III. ACCESS TO BUILDINGS DURING CONSTRUCTION

In order to maintain services to buildings under construction and adjacent buildings, OWRR and its contractors must be able to access dumpsters and loading docks during all phases of construction and renovation.¹ Contact Ray Lanier (919) 962-7175.

The questions and considerations given in this section are designed to ensure continued and efficient solid waste services to campus buildings.

These issues must be addressed and discussed with OWRR throughout the design process.

A. Maintaining Services to Buildings In or Near Construction Areas

1. *Will the building be occupied during construction?*

Yes:

The phasing and staging plans must take into consideration the continuation of services throughout the project.

(See Staging Plans and Container Removal information pages.)

No:

Multiple buildings may share a service area. Therefore, it is vital that this be taken in to consideration before assuming that dumpsters or carts can be removed or blocked during construction. (See the section below.)

All non-essential containers (dumpster, indoor bins, and carts) must be removed prior to any site work or construction fencing being installed.

2. *Will staging, phasing, or fencing impede services to any buildings?*

(See the Site and Space Planning page for a list of services.)

Yes:



Site drawings must reflect current conditions and plans must reflect temporary changes (See Staging Plans.)

OWRR, Housekeeping, and Parking & Transportation must be consulted and problems resolved satisfactorily for all involved. Vehicular and pedestrian access via walks and ramps must be maintained to dumpsters and buildings.

No:

Great! If, at any time, unexpected conditions cause access to be temporarily blocked, OWRR must be notified immediately.

B. Staging Plans

1. Existing Conditions:

The existing condition drawings must show the current location of all dumpsters and carts that will be impacted by construction, fencing or traffic pattern shifts.

2. During Construction:

Phasing, staging, and site limit plans must show the temporary location and traffic patterns (vehicular and pedestrian) for all dumpsters and carts temporarily relocated as a result of the project.

All non-essential containers or those to be moved (and the new location), must be denoted on the plans as such. See Container Removal below.

C. Container Removal

1. Outdoor Containers:

The contractor or construction manager must contact OWRR to remove all non-essential containers (dumpster, indoor bins, and carts) prior to beginning any site work or installing any construction fencing. The site, staging and demolition plans are to read: "Notify the Office of Waste Reduction and Recycling at 962-1442 to remove these containers prior to beginning any construction activities." Ray Lanier, 962-7175, is the current contact for issues related to outdoor containers and building access.

2. Indoor Containers:

Offices and departments are to clean out files and recyclables prior to evacuating spaces to be renovated.

All indoor recycling bins must be removed prior to construction. If any remaining recycling bins remain in the building, the contractor is to contact OWRR (962-5169) for their removal.

Amy Preble (962-5169) is the current contact for issues related to indoor recycling and file purges.

D. Campus Dumpster Use

1. Construction Waste:

Campus dumpsters and recycling bins are not to be used by contractors and their employees. A Solid Waste Management Plan is required for all campus projects. In the plan, the contractor provides his or her plans for construction and demolition waste management throughout the project.



2. *Blocking Dumpsters:*

Dumpsters and service areas are to remain accessible throughout the project and are not to be blocked by construction activity, gates or vehicles at any time. If, at any time, unexpected conditions cause access to be temporarily blocked, OWRR must be notified immediately.

IV. REQUIREMENTS BY PHASE

These pages outline OWRR's expectations and requirements at each phase of the design and construction process. For more information about the designer's relationship to the University, the project development sequence, design review process, and submittal requirements, see Chapter II of the UNC-Chapel Hill Design Guidelines.

A. Schematic Design (SD)

3. *Outdoor Service Area*

List existing recycling and dumpster locations on the existing condition site plans.

4. *Indoor*

Amy Preble provides feedback about where recycling locations need to be and gives an overview of indoor recycling requirements.

5. *Walkway*

Ray Lanier and Sarah Myers provide feedback about locations.

6. *Building Material Assessment and Salvage*

Building Material Walkthrough

Initial walkthrough by the design team TO DETERMINE what valuable and reusable materials are available for:

- Reuse in this project,
- Reuse in other campus projects,
- Reuse by the general public,
- Recycled (required and suggested).
- SD submittal requirement: Valuable & Reusable Building Material Inventory [Initial list at this time]

7. *Fixtures, Furniture and Equipment Assessment and Salvage*

Designers and customers begin thinking about what will and will not be reused in the finished project and during temporary housing.

B. Design Development (DD)

1. *Outdoor Service Area*

Before DD documents are prepared, the design team and the Office of Waste Reduction and Recycling meet to discuss outdoor service area requirements and equipment to be used.



Include section 02475 with any relevant site or space planning requirements for this project.

Include section 11170 listing requirements, installation information, and suppliers for solid waste handling equipment to be purchased BY the project—at a minimum, this will include compactors.

Detailed plan sheets showing outdoor service area enclosures, including:

- screen wall details
- electrical requirements
- lighting
- drainage
- a list of buildings that the site(s) are intended to serve

An initial summary sheet listing all the outdoor service area equipment to be used. This will include:

- the type of equipment (example: 8 yd. cardboard dumpster),
- the estimated cost,
- whether the project, FP&C or the customer is purchasing them, and
- the locations (if there's more than one building in the project).

2. *Indoor*

Before DD documents are prepared, the design team and the Office of Waste Reduction and Recycling meet to discuss indoor recycling locations and any special situations.

Include section 02475 with any relevant site or space planning requirements for this project.

Include Section 12300 Manufactured Casework listing requirements for recycling cabinets.

Clearly marked locations of all indoor recycling locations -AND- detail sheets showing the plans for any recycling cabinets to be built by the project

An initial summary sheet listing all the indoor recycling sites. This will include the:

- indoor recycling locations,
- which locations will use cabinets,
- whether the project, FP&C or the customer is purchasing them, and
- the amount reserved for cabinets that are not being built by the project.

3. *Walkway*

Before DD documents are prepared, the design team and the Office of Waste Reduction and Recycling meet to discuss walkway recycling locations and any special situations.

Include Section 02870 listing the walkway recycling containers to be used and their placement.

Clearly marked plans showing the locations of all walkway recycling locations.

An initial summary sheet listing all the walkway recycling sites. This will include the:

- walkway recycling locations,
- whether the project or FP&C is purchasing them, and



- the amount reserved for walkway bins (assuming that FP&C will be purchasing them).

4. Access

DD Staging plans and site drawings should include plans for access to the building (if occupied) and adjacent buildings such that deliveries and recycling/waste collection services can be maintained.

DD Demo plans shall note the requirement of contacting the Office of Waste Reduction and Recycling to remove indoor and outdoor containers (including dumpsters) as the project phasing affects different areas.

5. Building Material Assessment and Salvage

Based on Valuable & Reusable Building Material Inventory

Reuse in project based on inventory:

- Discussion and initial decisions by design team and construction manager at risk
- DD Submittal requirement: Decisions are to be integrated into specs and drawings: 01505, 02070, and appropriate information and drawings.

Reuse in other projects:

- Design team and construction manager at risk circulate list to Facilities Planning and other design teams.
- DD Submittal requirement: Salvage to be listed in 01505, 02070 and appropriate information and drawings.

Outside salvage/recycle:

- Market research by design team and construction manager at risk, with assistance from Office of Waste Reduction and Recycling
- DD Submittal requirement: Any potential recyclables are to be listed in 01505 as a rough list of required and suggested materials. Any salvage is to be listed in 02070 and appropriate information and drawings.

6. Fixtures, Furniture and Equipment Assessment and Salvage

Fixture, Furniture & Equipment Walkthrough

DD Submittal requirement: Fixture, Furniture & Equipment Inventory

Initial walkthrough by the design team TO DETERMINE what valuable and reusable materials are available.

- initial list at this time
- detailed information and quantities on FF&E (Brand, year, etc.).
- movable items
- fixed items (list in 01505, 02070, add language to appropriate information and show details on plans (demo and others as needed)

Reuse in project:



- Based on inventory--discussion and initial decisions
- UNC Design Manager, Design Team, consultants (move coordination, interior design, etc.), UNC Interior Design Services, Office of Waste Reduction and Recycling

Reuse elsewhere on campus:

- UNC Design Manager, Design Team, Facilities Services Shops, Office of Waste Reduction and Recycling (assists)
- Circulate inventory to departmental business managers

Surplus:

- UNC Design Manager, Design Team, Construction Manager at Risk, Surplus, Office of Waste Reduction and Recycling (assists)
- Discuss presale or warehouse.
- Research markets.

7. *01060*

Standard wording at DD phase

8. *01505*

At DD phase, INITIAL lists for building materials and non-moveable FFE of:

- Reuse in this project,
- Reuse in other campus projects,
- Reuse by the general public,
- Recycled (required and suggested).

9. *02070*

At DD phase, INITIAL plan for building materials and non-moveable FFE:

- Storage for reuse in Project
- Transfer for reuse on campus
- Delivery to Owner (Surplus and Shops)

C. **Construction Documents (CD)**

1. *Outdoor Service Area*

Before CDs are prepared, the design team and the Office of Waste Reduction and Recycling meet to confirm outdoor service area requirements and equipment to be used.

Include section 02475 with any relevant site or space planning requirements for this project.

Include section 11170 listing requirements, installation information, and suppliers for solid waste handling equipment to be purchased BY the project—at a minimum, this will include compactors.

Detailed plan sheets showing outdoor service area enclosures, including:



- screen wall details
- electrical requirements
- lighting
- drainage
- a list of buildings that the site(s) are intended to serve

An FINAL summary sheet listing all the outdoor service area equipment to be used. This will include:

- the type of equipment (example: 8 yd. cardboard dumpster),
- the estimated cost,
- whether the project, FP&C or the customer is purchasing them, and
- the locations (if there's more than one building in the project).

2. *Indoor*

Before CDs are prepared, the design team and the Office of Waste Reduction and Recycling meet to confirm indoor recycling locations and any special situations.

Include section 02475 with any relevant site or space planning requirements for this project.

Include Section 12300 Manufactured Casework listing requirements for recycling cabinets

Clearly marked locations of all indoor recycling locations -AND- detail sheets showing the plans for any recycling cabinets to be built by the project

An FINAL summary sheet listing all the indoor recycling sites. This will include the:

- indoor recycling locations,
- which locations will use cabinets,
- whether the project, FP&C or the customer is purchasing them, and
- the amount reserved for cabinets that are not being built by the project.

3. *Walkway*

Before CDs are prepared, the design team and the Office of Waste Reduction and Recycling meet to confirm walkway recycling locations and any special situations.

Include Section 02870 listing the walkway recycling containers to be used and their placement.

Clearly marked plans showing the locations of all walkway recycling locations.

An FINAL summary sheet listing all the walkway recycling sites. This will include the:

- walkway recycling locations,
- whether the project or FP&C is purchasing them, and
- the amount reserved for walkway bins (assuming that FP&C will be purchasing them).

4. *Access*

CD staging plans and site drawings should include plans for access to the building (if occupied) and adjacent buildings such that deliveries and recycling/waste collection services can be maintained.



CD demo plans shall note the requirement of contacting the Office of Waste Reduction and Recycling to remove indoor and outdoor containers (including dumpsters) as the project phasing affects different areas.

5. *Building Material Assessment and Salvage*

Based on Valuable & Reusable Building Material Inventory

Reuse in project based on inventory:

- Discussion and FINAL decisions by design team and construction manager at risk.
- Create a plan for storage of materials.
- CD submittal requirement: Decisions are to be integrated into specs and drawings: 01505, 02070, and appropriate information and drawings.

Reuse in other projects:

- Design team and construction manager at risk circulate FINAL list to Facilities Planning and other design teams.
- Create a plan for transfer and storage of items.
- CD submittal requirement: Salvage to be listed in 01505, 02070 and appropriate section and drawings.

Outside salvage/recycle:

- FINAL list
- Market research by design team and construction manager at risk, with assistance from Office of Waste Reduction and Recycling
- CD submittal requirement: Any potential recyclables are to be listed in 01505 as a FINAL list of required and suggested materials. Any salvage is to be listed in 02070 and appropriate section and drawings.

6. *Fixtures, Furniture and Equipment Assessment and Salvage*

Fixture, Furniture & Equipment Walkthrough

CD submittal requirement: Fixture, Furniture & Equipment Inventory

Walkthrough by the design team TO DETERMINE what valuable and reusable materials are available.

- FINAL list at this time
- detailed information and quantities on FF&E (Brand, year, etc.).
- movable items
- fixed items
- list in 01505 and 02070 with construction language to appropriate section and show details on plans (demo and others as needed)

Reuse in project:

- Based on inventory--discussion and FINAL decisions
- Create a plan for transfer and storage
- UNC Design Manager, Design Team, consultants (move coordination, interior design, etc.), UNC Interior Design Services, Office of Waste Reduction and Recycling

Reuse elsewhere on campus:



- UNC Design Manager, Design Team, Facilities Services Shops, Office of Waste Reduction and Recycling (assists)
- FINAL list of who's getting what (re-circulate inventory to departmental business managers, if necessary)
- Create a plan for transfer and storage.

Surplus:

- UNC Design Manager, Design Team, Construction Manager at Risk, Surplus, Office of Waste Reduction and Recycling (assists)
- Decision on presale or warehouse.
- Research markets.
- Create a plan for transfer and storage.

7. *01060*

Standard wording at CD phase

8. *01505*

At CD phase, FINAL lists for building materials and non-moveable FFE of:

- Reuse in this project,
- Reuse in other campus projects,
- Reuse by the general public,
- Recycled (required and suggested).

9. *02070*

At CD phase, FINAL plan for building materials and non-moveable FFE:

- Storage for reuse in Project
- Transfer for reuse on campus
- Delivery to Owner (Surplus and Shops)

D. Pre Bid

1. *Outdoor Service Area*

Not applicable

2. *Indoor*

Not applicable

3. *Walkway*

Not applicable

4. *Access*

Not applicable



5. *Building Material Assessment and Salvage*

Invite the Office of Waste Reduction and Recycling to Pre-bid meeting.

Review requirements and list of required and supplemental recycling with bidders.

Design team, Construction Manager at Risk, Office of Waste Reduction and Recycling

6. *Fixtures, Furniture and Equipment Assessment and Salvage*

Department fills out surplus forms and arranges for moving (move consultant and contractor).

Shops salvage and report back to design team and the Office of Waste Reduction and Recycling.

Move is well underway and departments are sending goods to surplus.

Surplus receives goods and or provides special pick ups if prearranged.

7. *01060*

Explain process and requirements (include meeting requirement before project starts).

8. *01505*

Explain process and requirements (include meeting requirement before project starts).

9. *02070*

Explain process and requirements (include meeting requirement before project starts).

E. **Pre Construction**

1. *Outdoor Service Area*

Notify the Office of Waste Reduction and Recycling Contact to remove the following from areas affected by construction:

- dumpsters and carts
- indoor containers
- walkway bins

This is to happen at the start of each segment of phased construction.

2. *Indoor*

Notify the Office of Waste Reduction and Recycling Contact to remove the following from areas affected by construction:

- dumpsters and carts
- indoor containers
- walkway bins



This is to happen at the start of each segment of phased construction.

3. *Walkway*

Notify the Office of Waste Reduction and Recycling Contact to remove the following from areas affected by construction:

- dumpsters and carts
- indoor containers
- walkway bins

This is to happen at the start of each segment of phased construction.

4. *Access*

Work with the Office of Waste Reduction and Recycling to ensure that traffic plans do not impede access to dumpsters or other waste removal services for occupied buildings.

5. *Building Material Assessment and Salvage*

Invite the Office of Waste Reduction and Recycling to Pre-bid meeting.

Review requirements and list of required and supplemental recycling with bidders.

Design team, Construction Manager at Risk, Office of Waste Reduction and Recycling

6. *Fixtures, Furniture and Equipment Assessment and Salvage*

Department fills out surplus forms and arranges for moving (move consultant and contractor).

Shops salvage and report back to design team and the Office of Waste Reduction and Recycling.

Surplus receives goods and or provides special pick ups if prearranged.

Departments are moved and building is left clean and empty of all furnishings, recyclables and trash.

7. *01060*

Hold separate meeting to review these sections and discuss the draft solid waste management plan.

8. *01505*

Hold separate meeting to review these sections and discuss the draft solid waste management plan.

9. *02070*

Hold separate meeting to review these sections and discuss the draft solid waste management plan.



F. Construction

1. *Outdoor Service Area*

Immediately notify the Office of Waste Reduction and Recycling of any deviations from plans or requirements and provide a copy of the appropriate change order.

2. *Indoor*

Immediately notify the Office of Waste Reduction and Recycling of any deviations from plans or requirements and provide a copy of the appropriate change order.

3. *Walkway*

Immediately notify the Office of Waste Reduction and Recycling of any deviations from plans or requirements and provide a copy of the appropriate change order.

4. *Access*

Immediately notify the Office of Waste Reduction and Recycling of any changes that will affect service to occupied buildings or dumpsters.

5. *Building Material Assessment and Salvage*

Implementation and documentation

- Draft and Final Solid Waste Management Plan
- Monthly reports and weight tickets (receipts)
- Meetings as necessary to discuss reports or practices

6. *Fixtures, Furniture and Equipment Assessment and Salvage*

Implementation and documentation

- Draft and Final Solid Waste Management Plan
- Monthly reports and weight tickets (receipts)
- Meetings as necessary to discuss reports or practices

G. Project Completion

1. *Outdoor Service Area*

Order all recycling/solid waste equipment for the project. The final list should have been part of the CD phase.

Arrange for installation of the recycling/solid waste equipment per drawings and requirements in the Construction Documents.

Coordinate installations with the Office of Waste Reduction and Recycling.



Office of Waste Reduction and Recycling provides any equipment not purchased as part of the project, labels equipment, coordinates a collection schedule with staff and contractors, and provides billing information to the accounting department.

2. *Indoor*

Order all recycling/solid waste equipment for the project. The final list should have been part of the CD phase.

Arrange for installation of the recycling/solid waste equipment per drawings and requirements in the Construction Documents.

Coordinate installations with the Office of Waste Reduction and Recycling.

Office of Waste Reduction and Recycling provides any equipment not purchased as part of the project, labels equipment, coordinates a collection schedule with staff and contractors, and provides billing information to the accounting department.

3. *Walkway*

Order all recycling/solid waste equipment for the project. The final list should have been part of the CD phase.

Arrange for installation of the recycling/solid waste equipment per drawings and requirements in the Construction Documents.

Coordinate installations with the Office of Waste Reduction and Recycling.

Office of Waste Reduction and Recycling provides any equipment not purchased as part of the project, labels equipment, coordinates a collection schedule with staff and contractors, and provides billing information to the accounting department.

4. *Access*

Resume normal access to buildings.

5. *Building Material Assessment and Salvage*

Provide the Office of Waste Reduction and Recycling with a summary of ACTUAL recycling, reuse and salvage activities for the project. This is to include, but is not limited to:

- quantities landfilled, recycled, reused, and salvaged;
- a break down of the types of materials recycled, reused and salvaged; the percent of total waste of each of the categories listed;
- the destinations of these materials;
- the economic impact of these activities on the project; and any success stories or challenges incurred.

6. *Fixtures, Furniture and Equipment Assessment and Salvage*

Provide the Office of Waste Reduction and Recycling with a summary of ACTUAL recycling, reuse and salvage activities for the project. This is to include, but is not limited to:

- quantities landfilled, recycled, reused, and salvaged;



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- a break down of the types of materials recycled, reused and salvaged; the percent of total waste of each of the categories listed;
 - the destinations of these materials;
 - the economic impact of these activities on the project; and any success stories or challenges incurred.

(END OF SECTION)