

# **WASTE MANAGEMENT**

## **DESK GUIDE**

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## SOLID WASTE MANAGEMENT

### PART 1. GENERAL:

#### 1. An Essential Program:

The collection and disposal of non-hazardous solid waste from Government buildings is one of the most essential of the Building Services Program areas. The success or failure of waste management activities directly affects the productivity, health and well being of Government employees.

The cost of solid waste disposal services has risen dramatically in recent years due to the closing of municipal landfills and the proliferation of legislation governing solid waste disposal practices. These events have dramatically strained our ability to fund these programs.

2. Integrated Solid Waste Management: In an effort to address this nation's "Solid Waste Dilemma", the Environmental Protection Administration (EPA) suggests implementing an Integrated Waste Management plan of action. The first level of this plan is "Source Reduction" which is reducing the amount and/or toxicity of waste generated. All Government employees can participate in Source Reduction. These efforts can be as simple as photo copying on both sides of a page or as complex as modifying procurement specifications to include specific amounts of recycled materials in the makeup of products purchased by the Government.

Recycling is the second level of this plan. Recycling is collecting, reprocessing, marketing, and using materials that were once considered trash. Many of the components of our waste stream can be recycled, from metals and plastics to used oil and paper. Source Reduction and Recycling are addressed in the GSA publication, "Federal Recycling Program Desk Guide".

Waste Combustion and landfilling are the last components of EPA's Integrated Waste Management Plan. Combustion can be used to reduce the volume of the waste stream and to recover energy. Landfilling is the only true disposal option. It is a necessary component of waste management, since all management options produce some residue that must be disposed of through landfilling. EPA, State and local Governments are working hard to improve the safety of both combustion and landfilling, through new regulatory control, design and operational practices, training and careful monitoring.

#### 3. Responsibility for Solid Waste Management:

Disposal of solid waste is normally the responsibility of the agency operating a Federal Building. The responsibility for disposal of solid wastes in leased buildings depends upon the lease agreement. In connection with the operation of concession facilities in buildings, waste disposal is the responsibility of the concessionaire. However, GSA will be responsible for removing solid wastes generated by vending stands operated under the provisions of the Randolph Sheppard Act.

4. **Objectives of Solid Waste Management:**

The objectives of solid waste management in GSA operated buildings are as follows:

- a. The reduction of the amount of solid wastes produced in Government Buildings.
- b. The salvage and recycling of as much waste material as possible.
- c. The disposal of non-recyclable solid waste in ways which will not pollute the environment.
- d. The disposal of solid wastes in the most economical manner in terms of building operation taking the above factors into consideration.

5. **Regional Waste Management Program:**

Each region must develop the expertise to address Solid Waste Management issues. Regional goals must include a commitment to identify and remove all non-hazardous waste matter from Government property while complying with existing regulations to insure employee safety and environmental integrity.

A Regional Waste Management Program should include the following objectives:

- a. Maintain a data base for all disposal services including the identification of the type, volume, and location of all wastes and reclaimable matter.
- b. Coordinate all contracting activities over \$25,000 for all waste removal services.
- c. Establish a workable materials reclamation program: Recycling will be performed in all Government-owned or operated buildings when required by local or state laws. In the absence of laws, recycling will be performed when there are 100 or more employees in a building and there is a market for the recyclable material. Recycling will be undertaken whenever it is deemed to be in the best interest of the Government, taking into account environmental and economic factors.

- d. Analyze all wastes and waste streams to determine the most efficient, cost effective and safe method of removal.
- e. Provide training to field personnel on the available waste removal services.
- f. Work closely with the Safety and Environmental Management Division to identify and safely remove hazardous wastes or waste related conditions which may result in an accident or health threat.
- g. Assist the Regional Integrated Pest Management (IPM) Program in its efforts to correct any waste related conditions conducive to pest infestation.
- h. Maintain a technical reference library of waste removal related literature and equipment specifications.
- I. Maintain an awareness of all local, state and Federal waste disposal laws and regulations.
- j. Serve as the Region's Waste Management focal point to offer any technical services required to establish the most efficient and cost effective trash and debris removal service possible.
- k. Serve as the Region's liaison with local, state and Federal agencies dealing with waste management problems including the preparation of all nonhazardous waste management related correspondence.
- l. Serve as the Region's liaison with waste management professional organizations and contractors.
- m. Prepare and monitor the Regional Yearly Budget for Waste Removal Services and Recycling activities.

## 6. **Definitions**

The following definitions of solid waste and its components apply throughout this text and represent the most widespread meaning of the terms.

### A. **Solid Waste:**

Solid Waste refers to the useless, unwanted or discarded materials resulting from an agency's normal activities. Wastes may be solids, liquids, or gases. Only solid wastes are classed as refuse. Liquid wastes are mainly sewage and industrial waste waters, including both dissolved and suspended matter. Atmospheric wastes consist of particulate matter such as dust, smoke, fumes and gases. The physical state of wastes may change in conveyance or treatment. Dewatered sludge from waste water treatment plants may become solid wastes; garbage may be ground and discharged into sewers, becoming water-borne wastes; and fly ash may be removed from stack discharges and disposed of as solid or as water-borne wastes.

B. **Refuse:**

Refuse comprises all of the solid wastes of the community which may include some semisolids such as pastes, slurries, and sludges which cannot be treated in a conventional waste water treatment plant.

C. **Rubbish:**

Rubbish consists of combustible and noncombustible solid waste materials (excluding garbage) from households, stores, offices and institutions. Combustible rubbish is composed of miscellaneous burnable materials. The organic components of rubbish are paper, rags, cartons, boxes, wood, bedding, rubber, leather, grass, leaves and yard trimmings, plus certain inorganic materials such as plastics. Noncombustible rubbish consists of miscellaneous solid waste materials that will not burn at ordinary incinerator operating temperatures (1300 F to 2000 F). It consists mostly of the inorganic component of rubbish such as tin cans, metals, dirt, ceramics, and glass. Although noncombustible rubbish is chemically and physically stable, it is esthetically objectionable and may collect mosquito breeding water or harbor vermin if carelessly stored.

D. **Ash:**

Ash is the residue from burning wood, coal, coke, and other combustible material. Ash usually consists of a mixture of fine powdery residue, cinders (except those produced in large quantities at steam generating plants), clinkers, and small portions of unburned or partially burned fuel. Metal, glass, and other combustible materials are sometimes found in ash. The residue from central or municipal incinerators should be classified as industrial refuse rather than ash.

E. **White Goods:**

White goods is a class of bulky wastes which includes major appliances such as washers, dryers and refrigerator units. Special care must be taken with these items due to the presence of contaminating materials including freon gas, asbestos and PCB's.

F. **Special Wastes:**

Special wastes are hazardous by reason of their pathological, explosive, radioactive, caustic, or toxic nature. They require careful specialized handling to render them safe for an adequate decay period. These wastes will be responsibly disposed of by the institution generating them.

G. **Garbage:**

Garbage is the animal and vegetable waste resulting from handling, preparing, cooking, and serving foods. In Federal Buildings, it originates primarily in cafeterias, snack bars and employee lunches. Garbage is composed largely of

decomposable organic matter and its natural moisture content. Garbage normally includes only a small amount of free liquids. Collection vehicles must be water tight, however, to prevent these liquids from leaking into the storage area or street. Garbage decomposes rapidly, particularly in warm weather, and may produce disagreeable odors. When carelessly stored, it often becomes a source of food for rats and other vermin and a breeding place for flies.

#### H. **Loose Trash:**

Loose trash consists of office rubbish bagged in plastic bags, gathered in mobile carts, or stored in trash rooms. Office refuse is predominantly paper materials 55-85%, on average 71%. Lunch and food wrappings, cans and glass, metal fasteners, plastic and some fabric materials make up the remainder of the office trash waste stream. The terms trash and rubbish are used interchangeably in this manual.

#### I. **Debris**

Debris includes but is not limited to plaster, wall board, stone, ceramic tile, old fluorescent tubes and contaminated wood, etc. Contaminated wood includes scrap lumber, crates, wooden boxes, skids, etc.

**7 thru 35. RESERVED**

### **PART 2. WASTE MANAGEMENT SERVICES:**

Waste Management Services begin with the removal of trash from the work area by the custodial crew. The trash is then transported to a holding area which may include a trash room, container, or a compactor.

#### 36. **Storage of Office Trash:**

- a. Trash should be picked up on a regular basis. Cleanliness is key to eliminating odors and not attracting vermin.
- b. Each custodial contract should include provisions for routine trash can cleaning, including the removal of all encrustation caused by spillage, liquid, solid food and other materials.
- c. Each trash can should be lined with a plastic bag and the plastic bag should be replaced on an as required basis. As a minimum, plastic bag liners must be 1.00 mils in thickness.
- d. Trash cans should be emptied in the evening or at least after the employees eat lunch. This will prevent lunch discards, including food and beverage containers, from being stored in the waste receptacles over night, the most

active time for pest infestation.

- e. Trash containers, with plastic liners and tight fitting lids, dedicated to the storage of garbage, should be provided in each office area. These containers must be washable and should be distributed at the rate of one per every 10 to 15 employees. These garbage containers must be emptied daily and washed on a regular basis.

### **37. Collection Equipment - Custodial**

#### **a. Drums and Carts:**

The types and construction of custodial trash collection equipment varies with individual requirements and preferences. The most common types of collection equipment include the mobile 55 gallon drum used to collect trash at each work station and the mobile 3/4 cubic yard to 2 cubic yard utility cart used as a collection consolidation container for an entire sector of a building.

All containers must be constructed of non-porous, leakproof materials such as rubber, metal or plastic, including fiberglass. These materials will allow for thorough sanitizing and will prevent spillage. Tight fitting lids should be mandatory when storing garbage. Provisions for the routine cleaning and sanitizing of custodial trash collection equipment must be part of any custodial contract.

#### **b. Trash Chutes:**

Trash chutes are not common in Government buildings but are an expedient method of trash consolidation if properly constructed and used. Chutes must be made of noncombustible materials with a fire suppression system installed.

They must be designed with an access to their interior to allow for periodic cleaning. This cleaning must be accomplished by a contractor with specialized equipment designed to service trash chutes. Special tenant training must be available to educate people as to what may be disposed of in the trash chutes and how it should be packaged.

#### **c. Storage and Removal of Refuse from the Building:**

Containers used for the removal of office trash should be constructed of non-porous materials such as plastic, fiberglass, or metal to allow for thorough sanitizing and to prevent spillage. Tight fitting lids should be mandatory when storing garbage. Provisions for the routine cleaning and sanitizing of custodial trash collection equipment must be part of any custodial contract.

38. **Trash and Debris Removal Service:**

There are basically 4 types of trash and debris removal services typically used in Federal buildings. They are:

- a. Loose Trash Service
- b. Closed Container Service
- c. Compactor Service
- d. Debris Service

39. **Loose Trash Service:**

**Loose trash service uses a rear end loader packer truck with a driver and one or more helpers.**

- a. **Least Cost Effective Method:** This is the most labor intensive and least cost effective method of the trash removal services because trash is manually picked up and loaded into the rear hopper of the truck. The rear end loader truck will then compact the trash at a compaction ratio of up to 6 to 1. These trucks typically range in size from 25 to 31 cubic yards so their potential volume may be as much as 180 cubic yards of trash depending upon the size and condition of the truck and what is being loaded. (See Figure 1).

- b. **Choosing Loose Trash/Rear Packer Service:**

Rear Packer Service is used when access to a building is restricted by clearance, traffic congestion problems or there is no room for a container or compactor. Typically, a rear end loader or packer truck requires 11.5 to 13 feet clearance.

- c. **Characteristics of Rear End Packer Service:**

The packer truck servicing a building is most likely following a scheduled route. The driver will stop at several locations to load trash and will dump its load after the truck is full. The customer is either charged by the cubic yard or a monthly flat rate based on historical data and experience. Fees include the use of the truck, the driver's and helpers time, all hauling or transfer fees and the dumping or tipping fee.

- d. **Loose Trash Storage:**

Loose trash is usually stored in a trash holding room located on the ground or sub-level of a building. The storage area should preferably be located near a loading dock or ground level exit, convenient to the freight elevators. Where space is not available, trash may be stored loose in custodial carts on the loading dock, or other designated areas. Daily removal is recommended with no overnight storage.

40. **Closed Container Service:**

Detachable closed container service includes the furnishing of closed type containers, their removal and replacement, their dumping into trucks by the use of vehicles equipped with hoisting equipment, and the disposal of trash. Trucks are scheduled on a route and the charge is by the "pull". Each time a closed container is emptied, a fee is charged based on the volume of the container(s) and the frequency of service.

a. **Closed Container:**

Closed containers are of a type to facilitate loading by personnel from the side or top from a normal standing position. They are of a type affording mechanical handling and hoisting for emptying into a front end loader truck for transport to the place of disposal. The closed containers must be constructed to prevent the spillage of liquids or scattering of trash.

Closed containers come in sizes ranging from 2 cubic yards up to 10 cubic yards. The size of the closed container is dictated by the volume of trash being generated. (See Figure 2)

b. **Front End Loader Trucks**

These trucks are equipped with a mechanical front end loading device which lifts the closed container and empties it into the top of the truck's body. These trucks range in size from 30 to 44 cubic yards and compact the trash up to a 6 to 1 ratio. With their mechanical arms extended, the height requirement to unload a container is approximately 23 feet. Normal height clearance is 14 feet. The average truck requires approximately 45 feet to safely approach and load a closed container. (See Figure 1)

c. **Closed Container Service Fees**

Each time a closed container is emptied or "pulled", a fee is charged based on the volume of the closed container and the frequency of service. Charges include:

- (1) equipment rental
- (2) truck usage
- (3) hauling or transfer fee
- (4) dumping or tipping fee

41. **Compactor Service:**

This efficient trash collection service uses a roll off type truck. Trash is compacted in a compactor and removed to a materials recovery facility, transfer station, landfill or incinerator, emptied, and returned to its original location.

a. **Stationary Compactor:**

A stationary compactor has its charge unit separate from its container. The two are held together by mechanical means. This equipment can compact materials up to a 3 to 1 ratio depending on the condition of the equipment and the types of materials being processed. Sizes generally range from 10 to 50 cubic yards. Because the charge unit is separate from the container, gaps of from 1 to 6 inches are not uncommon. Leaks and spillage may also occur during the removal operation. The container may come in either a rectangular or octagon configuration. The octagon shape is preferred because studies indicate that it compacts material up to 15% more efficiently. (See Figure 3)

b. Self Contained Compactor:

The self-contained compactor has its charge unit as an integral part of the container. This equipment has the ability to compact material up to a 4 to 1 ratio. Capacity ranges from 10 cubic yards to 35 cubic yards. Again, the octagon configuration is preferred due to its greater compacting efficiency. Because the charge mechanism and container are one unit, rodent infiltration, leakage and spillage of trash during the removal operation is minimized. (See Figure 4)

c. Compactor Service Fees:

Compactor service may be paid by the removal. Charges included:

- (1) equipment rental fee
- (2) use of roll off truck and driver
- (3) hauling or transfer fee
- (4) dumping or tipping fee

It is recommended that the actual dumping fee be paid separate from the transfer fee using the disposal facility's certified weight tickets as documentation. This policy will insure fairness to both the Government and the contractor. Also, it's recommended that the equipment rental fee be paid separate from the hauling or transfer fee to insure contractors are reimbursed for their equipment costs. This will facilitate changes to scheduled pulls to take advantage of source reduction and recycling efforts.

d. Building Requirements:

(1) Access:

The minimum clearance required by a roll-off trash truck servicing a self contained compactor is 17'- 6". The minimum clearance required by rectangular containers including the truck is 23' 10", while an octagon container including the truck requires 23' - 3". With special equipment, this height restriction may be reduced to 11 feet. The raised standard truck lift hoist is 22' - 0" in height. (See Figure 5)

(2) Pad Requirements:

The concrete pad supporting the compactor must be 10' - 0" wide and the length 5' - 0" greater than the combined length of the compactor and container. It should be made of a minimum 3000 PSI concrete, steel reinforced and 6" thick.

(3) Electrical Service Requirements:

All compactors require some type of electrical service. The electrical requirements will depend on the size and capacity of the equipment being installed. A typical 20-30 cubic yard compactor will require service for an electric motor 3/60/230-460, 10 hp, with electrical control voltage of 120 VAC.

e. Compactor Location:

The compactor is normally placed on a paved area with unrestricted access to the street. Its location is usually beside a loading dock which has access to freight elevators. Roll-off trucks servicing compactors require approximately 65 feet unrestricted operating room to properly load and unload the compactor.

f. Determining if a Compactor is Full:

A compactor does not start compacting until it is full. Banging the side of the compactor's container does not tell very much to the untrained ear. The charge unit ram only enters the lower half of the container, 10' - 15" inches. The compactor repeatedly builds up a column of trash which eventually breaks up, then continues the loading process until the container is full. Now the real compaction process begins. Compaction should continue until a pressure of about 1800 to 1850 PSI is built up in the ram head hydraulic lines. Designed maximum pressure is about 2000 PSI. At an unimpeded pressure (no spikes) of 1850, the compactor is considered full or "packed out". Compactors failing to accept material at less pressure should be checked for mechanical or hydraulic problems or governor readjustment.

Weight may also be used to determine if a compactor is full. However, the weights of the materials being compacted vary making this method less accurate. Loose office trash weighs approximately 100 pounds per cubic yard. If a self-contained compactor compacts at a 4 to 1 ratio, each cubic yard of trash compact would weigh about 400 pounds. Therefore, knowing the designed capacity of your compactor will give an approximate weight to check against the landfill's computerized weight slips.

Compactor Volume in Cubic Yards in Tons	Approximate Weight
10	2.00
15	3.00
20	4.00
25	5.00
30	6.00
35	7.00

g. Special Features to Protect Against Trash Spillage and Pest Infiltration:

- (1) The multicycle timer with ram stop forward, positions the charge ram in the extended positions to seal the opening to the charge box. This will help protect against rodent infestation and spillage of trash due to the wind. Unfortunately, there will be a 5 or 6 inch opening near the breaker bar designed for pressure release during the compaction cycle.
- (2) Doghouse - This is an enclosure built on top the charge unit which is used to restrict the use of the compactor, protect against trash spillage and further hinder the infiltration of pests. This is the best all around protection against spillage and unauthorized infiltration.
- (3) Ozone Generator - Ozone gas (O<sub>3</sub>) generating equipment charges the compactor container with ozone which inhibits the growth of bacteria and decreases organic decomposition odors. This system also displaces oxygen in the container so that foraging rodents cannot use the interior of the compactor as a shelter. Proper ventilation is required.

h. Compactor Size Requirements:

Data developed by the National Capital Region Waste Management Unit indicates that a Government building will generate approximately 2 1/2 - 3 lbs. of trash per employee per day with about 3/4-1 lbs. of this waste stream being removed as recyclables.

The commercial hauling industry offers the following formula to determine trash volume generation in commercial office buildings.

**1 cubic yd. per 10,000 gross sq. ft. per day.**

These formulas are for estimating purposes only. A survey should be conducted to determine the type and actual volume of waste generated.

The goal is to place the largest possible piece of trash holding equipment taking into account location, clearance and access, to achieve the fewest possible pulls (See Figure 6).

42. Debris Service:

Debris service is the storage and removal of construction and demolition wastes. There are basically two types of debris service used in Government buildings. They are loose debris service, using a stake body truck, and open-top container service, using a roll-off type truck.

a. Loose Debris - Stake Body Truck:

This type of service involves debris loosely piled or accumulated in a debris room, loading dock or construction site. On an as required basis a contractor will physically load the debris into a truck bed using a driver and one or two helpers. The customer is charged by the cubic yard. These charges include:

- (1) Truck driver and helper(s) time
- (2) Truck use
- (3) Transfer or hauling fees
- (4) Tipping or dumping fees

The truck may be scheduled on a route or as a dedicated service depending on the volume to be removed. Care must be taken to insure that a reasonable determination of the actual volume being removed is made by a knowledgeable Government Representative and is accurately reflected on the debris pick-up ticket.

It is important that piles or accumulations of debris not be allowed to remain for any extended period of time. This situation is not only a fire and safety hazard but offers shelter to rodents.

b. Open Top Container Service:

This debris service uses an open top container and a roll off truck. Open top debris service is usually required for larger amounts of debris. Pick ups are on an as required basis but may be regularly scheduled as volumes dictate. Basically, an open top container ranging in size from 10 to 60 cubic yards is placed in a specific area to be loaded by the customer. When the container is filled, the contractor is notified and the open top container is loaded onto and transported to the sanitary landfill by roll off truck. Local law requires that the open top container be covered to reduce chances of flying debris damaging property, especially windshields. (See Figure 7).

The user is charged by the removal or pull, each time the container is picked up and emptied. This charge includes:

- (1) Equipment rental fee for the open top container
- (2) Use of truck and driver
- (3) Transfer or hauling fee
- (4) Tipping fee or dumping fee

Building managers are cautioned to insure that only construction debris, white goods or broken furniture are deposited in the open top container or compactor. Debris removal fees are based on a standard of 300 pounds to 600 pounds per cubic yard as compared to the 100 pounds per cubic yard weight used for office trash. Also, there is little protection from the wind and infiltration of pests in an open top container.

#### **43 thru 73 RESERVED**

### **PART 3. PEST INFESTATION AND THE WASTE STREAM IN PUBLIC BUILDINGS:**

The success or failure of a building's Waste Management Program has a direct effect on the success or failure of an Integrated Pest Management Program.

#### **74. Refuse and the Necessities of Life - The Pest's Perspective:**

All the requirements to sustain pest infestation are found in a building's waste stream, trash collection equipment, office and storage areas.

- a. Food - cafeteria and snack bar garbage, employee food discards, and the storage of food in work stations.
- b. Water - Building leaks and spillage, pipe leaks, drains, bathroom fixtures including toilets, urinals, wash basins and shower facilities. Flower pots, coffee stations, condensation from pipes, ducts, and windows also provide moisture to rodents.
- c. Shelter - Walls, crevices, ditches, raceways, trash rooms, piles of debris, stored furniture and carpet are eagerly sought out by rodents for harborage.

#### **75. Office House Keeping:**

Building employees must be trained to remove each of the pest's necessities of life. Tenants should be encouraged to eat their lunches in designated areas such as cafeterias and snack bars or blind stands.

- a. When eating at one's work station, certain basic precautions must be taken by employees. These include cleaning up after eating, removing all spillage and food residue from work station surfaces.
- b. When storing food at one's work station, use covered metal or plastic containers.
- c. Never throw raw food in a trash container. Always wrap it in some sort of protective covering. Deposit all garbage in a container specifically designated as a food discard or garbage container made of nonporous material, having a plastic liner and a tight fitting lid.

- d. Designate specific areas as coffee stations, limiting the number of coffee pots in the building. Assign individuals to insure that areas are properly maintained and supplies are correctly stored. Also, ensure that all spillage is quickly removed and stained areas are cleaned.

76. Collection and Removal from Work Areas:

a. Trash Cans:

Trash should be picked up on a regular basis. Each custodial contract must include provisions for routine trash can cleaning to remove all encrustation caused by the spillage of liquids, solid foods and other substances. All trash cans must be lined with a plastic bag and the plastic bag should be replaced on an as required basis.

Trash cans should be emptied in the evening or at least after the employees eat lunch. This will prevent lunch food discards from being stored in the waste receptacles over night, the most active time for pest infestation.

b. Carts and Drums:

Mobile carts and drums used for the removal of office refuse should be constructed of nonporous materials such as plastic, metal or fiberglass to allow for thorough sanitizing and to prevent spillage. Tight fitting lids should be used when storing refuse. Lids must be mandatory when storing garbage. Provisions for the routine cleaning and sanitizing of custodial trash collection equipment must be part of any custodial contract.

77. Deny Access to Refuse Holding Areas:

- a. To deny rodent access to refuse holding areas, cracks and openings in building foundations must be sealed. All openings where water pipes, electric wires, telephone covers, sewer pipes, drain spouts, and vents entering the building must be tightly sealed. Doors, windows and screens should be tight fitting. Doors should be kept closed and fitted with door sweeps.
- b. Proper materials for permanent rodent proofing must be used. These materials include:
  - (1) Sheet metal - 26 gauge thickness or heavier, galvanized.
  - (2) Expanded metal - 28 gauge or heavier, not larger than 1/4 inch mesh, rust-resistant coating, or preferably galvanized, unless made of non-rusting metal.
  - (3) Iron grills - sufficiently heavy to be equivalent to the above materials; slots in the grill must not exceed 1/4 inch.

(4) Hardware cloth - 19 gauge or heavier, galvanized or other rust - protected coating, with no opening larger than 1/4 inch (4 x 4 meshes per square inch).

(5) Cement mortar - Cement mortar should be 1:3 mixture or richer; concrete should be a 1:2:4 mixture or richer.

78. Design Them Out - Pest Proof Equipment:

- a. Trash containers - Trash containers must have tight fitting doors and lids. There should be no gaps in the seams or body more than 1/2 inch. Trash containers both interior and exterior, should be regularly cleaned and sanitized. The odors caused by decaying organic material attracts vermin.
- b. Compactors - All compactors must have tight fitting doors with the rear and front loading doors, where applicable, fitted with gaskets to protect against leakage. The installation of a multi-cycle timer with ram stop forward and a "Dog House Enclosure" will protect against wind and rodent infiltration. Contractors should insure that the opening at the interface of the container and charge unit of a stationary compactor is no more than 1/2 inch.
- c. Trash rooms must be cleaned and sanitized at least every 4 months, preferably using steam cleaning equipment. This is particularly important if garbage from the cafeteria is stored in the area. Trash rooms must be designed with a fire suppression system or two hour fire rated walls. They should also have proper drainage to facilitate cleaning. Trash rooms should be separate from recyclable material holding rooms and located on or near the loading dock, convenient to freight elevators.

79 thru 108 RESERVED

PART 4. THE WASTE MANAGEMENT CONTRACT:

109. Contract Procurement:

A Trash and Debris Removal Contract is basically a contract to provide the equipment for the storage of trash and debris and its removal and dumping in a legal, environmentally responsible manner. There are several methods to accomplish this. These services may be included in a lease, custodial contract, service contract for a single or multiple buildings or by group forces.

110. Equipment Features and Restrictions:

Equipment type and size, including any special features or requirements, must be specified by location to insure the most efficient cost effective waste management operation. Any access restrictions including clearances to interior loading docks or difficult traffic patterns must be identified. Also, any locations requiring the installation of ramps, hand or foot rails to safely install compactor equipment

should be listed. It should be made mandatory that perspective contractors make an on-site inspection of all buildings under contract in order to submit a responsible bid.

111. Inspection of Equipment:

- a. The compactor system must meet manufacturers specifications, all OSHA safety requirements and any local safety ordinances. Each compactor should be inspected for proper operation and safety once each quarter by the contractor's qualified mechanic.
- b. The Government must retain the right to monitor the operations of all compactor equipment using hydraulic pressure gauges or computerized monitoring equipment. The Government may also require the contractor to demonstrate the proper operation of the compactor unit's hydraulic and electrical systems.

112. Maintenance of Equipment:

The contractor must maintain all equipment in good physical and mechanical condition without rust, damaged seams, tops, rollers or leaking hydraulics. Equipment must be maintained in a sanitary condition avoiding offensive odors and an unsightly appearance. If equipment is damaged or determined to be unacceptable by the Government due to mechanical failure, sanitary, or esthetic reasons, the contractor should correct the deficiencies or replace the equipment in a specified period of time after notice. If a compactor becomes inoperative, the contractor must furnish an alternative means of trash collection such as a packer truck or container service until the necessary repairs have been completed within a specified time frame.

113. Rat Proofing Equipment:

All trash or garbage containers must have tight fitting lids and/or doors. There must be no gaps greater than 1/2 inch. The contractor must take all necessary steps to insure that conditions which may contribute to rodent infestation such as the accumulation of debris around and under trash equipment and unsanitary conditions are corrected as soon as they are observed or reported.

114. Service Requirements Changes:

In order to take advantage of cost avoidance opportunities created by the Government's Sources Reduction and Recycling Programs, a provision to drop or add locations and scheduled pickups including days and times should be included in all contracts. These schedule and service changes should only be made by modification of the contract specifications and signed by the contracting officer.

Further savings in man-hours and dollars may be achieved by altering custodial cleaning contracts. In buildings where the waste stream has been reduced by a minimum of 35 to 40%, office trash pick up schedules may be changed to three

days per week, Monday, Wednesday, and Friday. Friday office trash pick up is mandatory to avoid the storage of trash over the weekend. Tuesday and Thursday would be used for all recycling maintenance activities. These activities include the collection and storage of all recycling materials, removal of contaminants, and the cleaning of recycling collection and storage containers.

115. Disposal Facility:

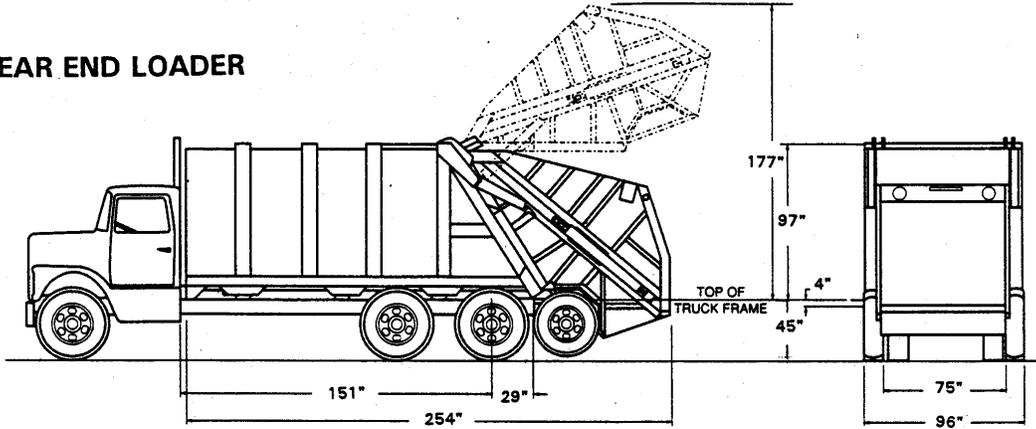
It is the desire of the Government that all trash and debris collected as a requirement of waste hauling contracts be removed from Government premises and transported to a processing facility for the purpose of manufacturing or recycling to the extent available. Trash and debris not transported to a facility for manufacture or recycling must be disposed of only through a waste disposal facility that has been certified by the appropriate state or local agency for waste management, or by the Environmental Protection Agency.

116. Environmental Quality Assurances:

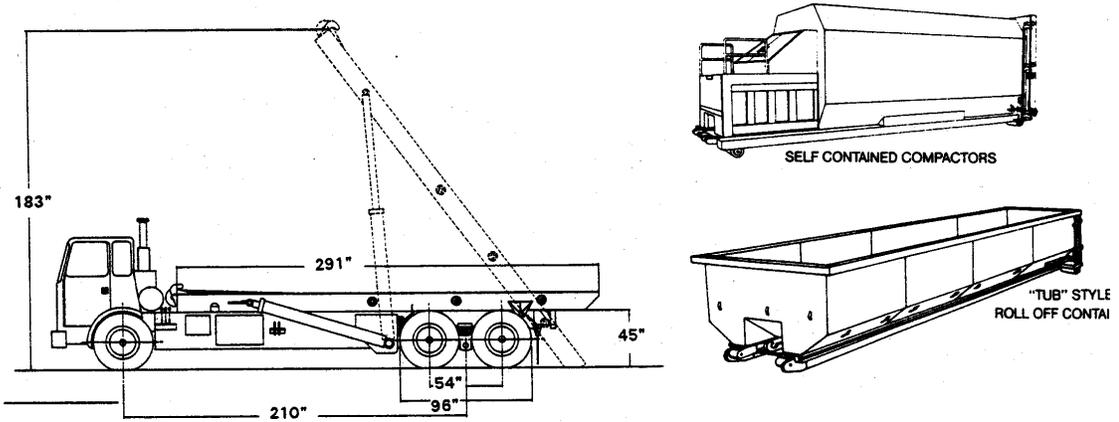
The contractor must comply with all Federal State, County and City laws and regulations regarding sanitation and solid waste disposal. Monoxide eliminators must be furnished on all gasoline powered vehicles used to remove trash and debris from any pick up site located inside of a building. The contractor should instruct his drivers to turn off the motor of all vehicles if it is not required for the loading operation. Also, the contractor must not create any litter at loading locations, while transporting material, or at disposal locations. Finally, the contractor must follow EPA Regulations outlined in the code of Federal Regulation 40, Parts 241, 243, 257.

# WASTE MANAGEMENT TRUCKS

## REAR END LOADER



## ROLL OFF



## FRONT END LOADER

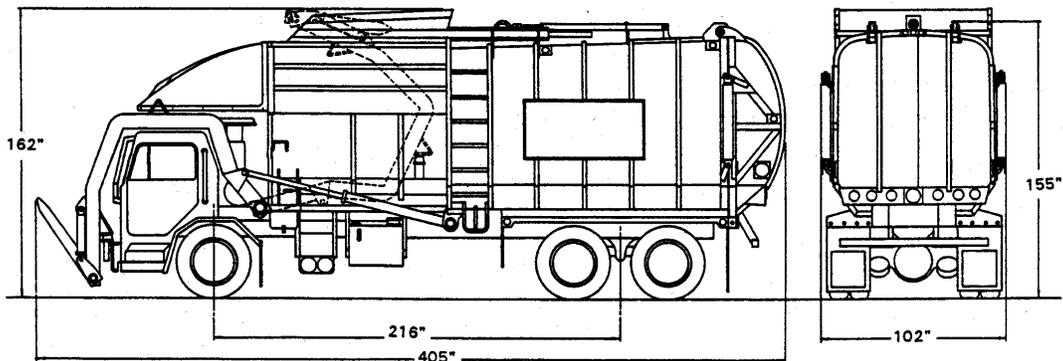
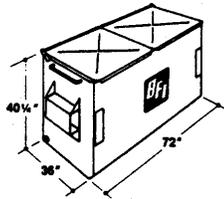
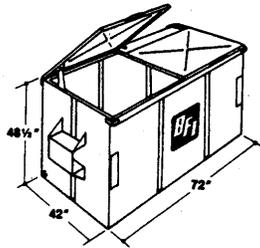


Fig. 1

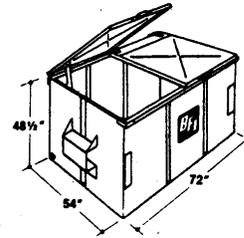
# FRONT END LOAD CONTAINERS



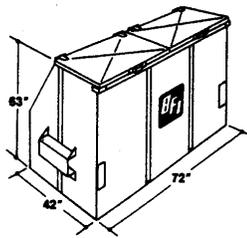
**Two Cubic Yard**



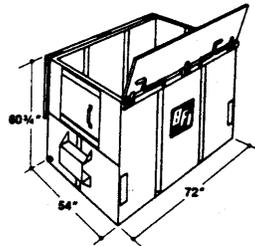
**Three Cubic Yard**



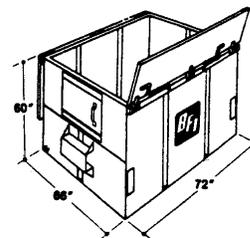
**Top Loading  
Four Cubic Yard**



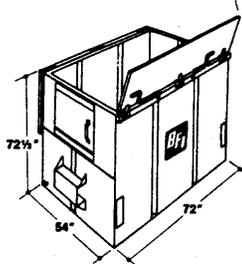
**Apartment  
Four Cubic Yard**



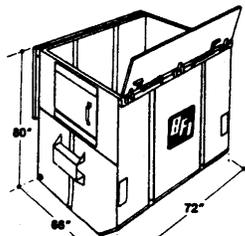
**Top and End Loading  
Five Cubic Yard**



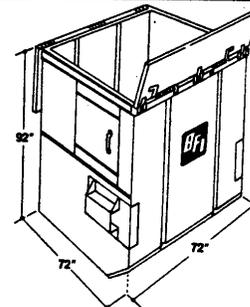
**Low Top and End Loading  
Six Cubic Yard**



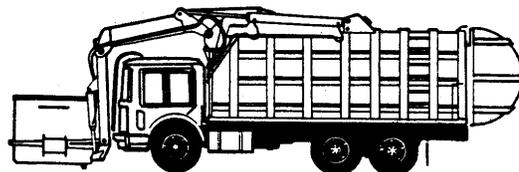
**High Top and End Loading  
Six Cubic Yard**



**Top and End Loading  
Eight Cubic Yard**



**Top and End Loading Ten Cubic Yard**



**Fig. 2**

# STATIONARY COMPACTOR

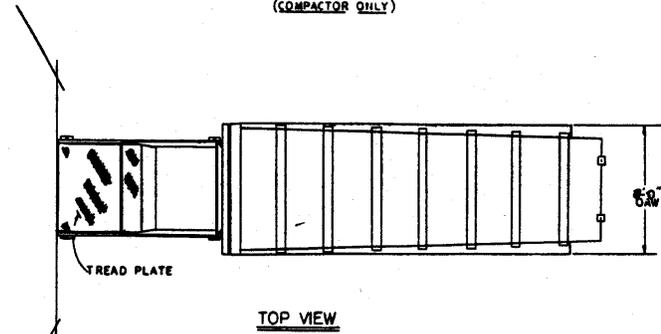
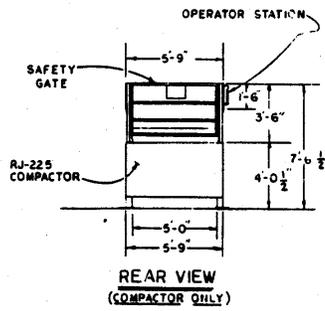
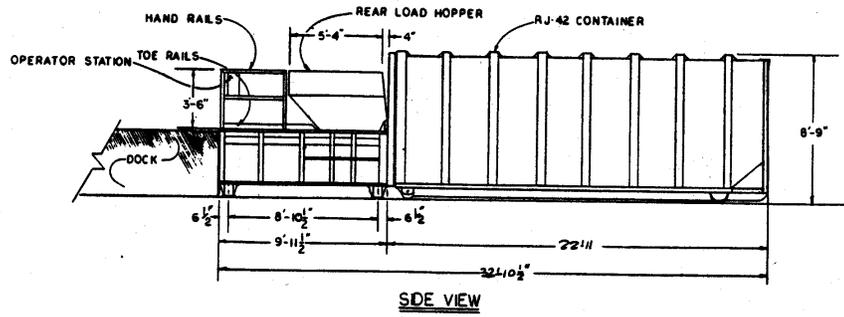


Fig. 3

# SELF-CONTAINED COMPACTOR

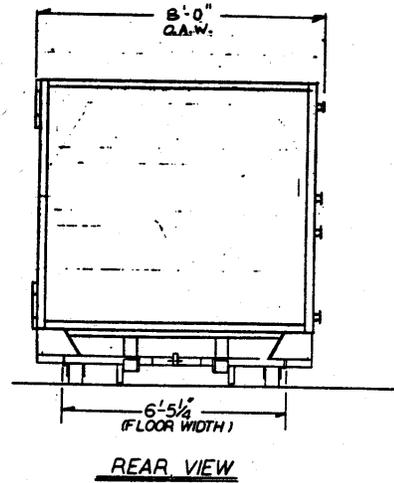
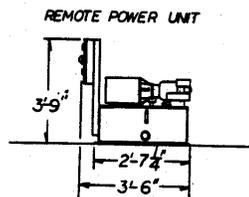
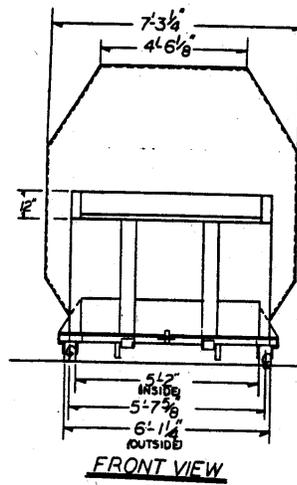
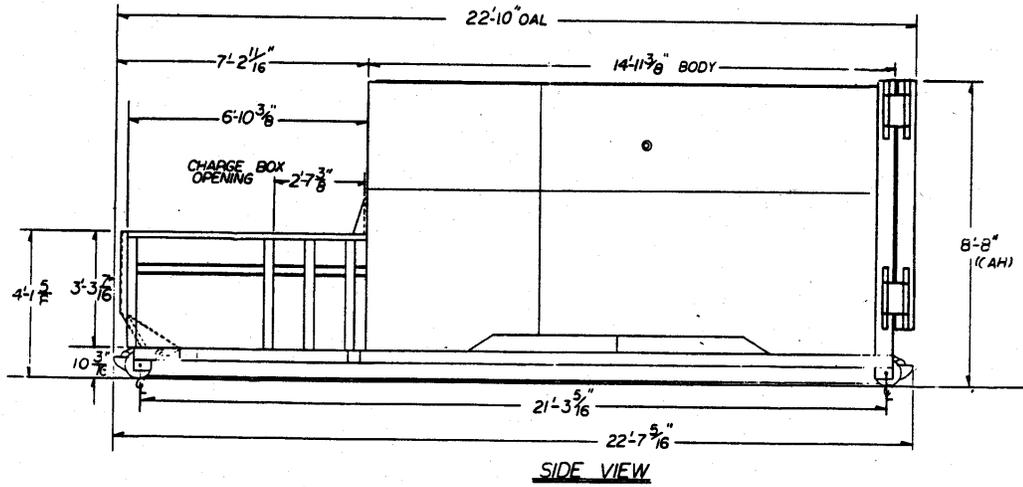
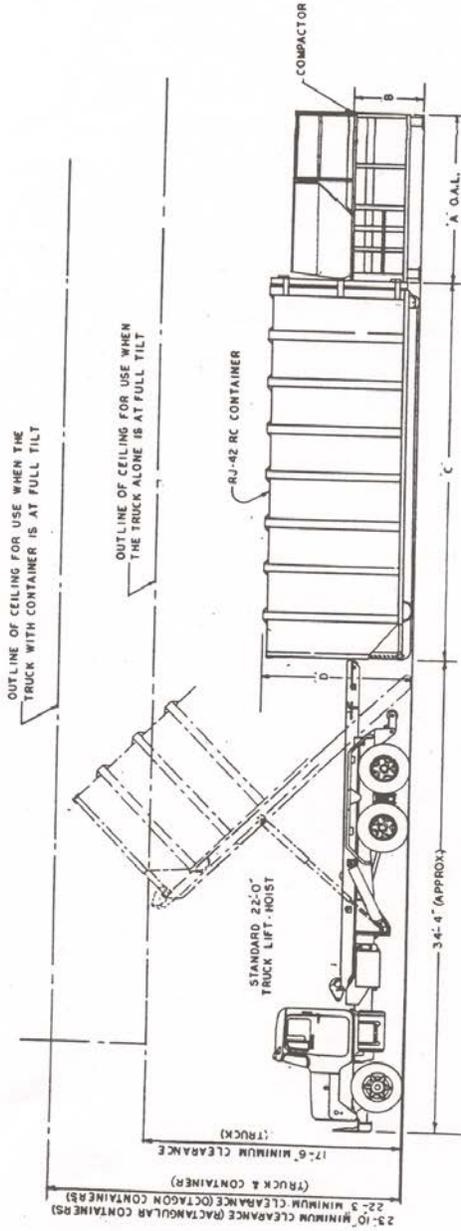


Fig. 4

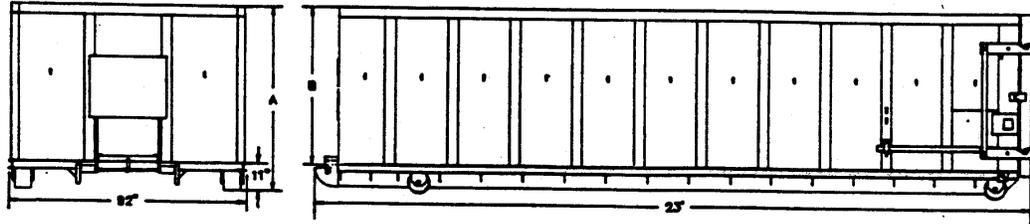
# CLEARANCES FOR COMPLETE ROLL OFF SYSTEM



COMPACTORS	A DIMENSION	B DIMENSION	CONTAINERS	C DIMENSION	D DIMENSION	SELF-CONTAINED UNITS	A&C DIMENSION	D DIMENSION
RJ-130	7'-2 3/8"	4'-0 1/2"	RJ-42 RC	22'-11"	8'-9"			
RJ-160	7'-2 3/8"	4'-0 1/2"	RJ-38 RC	21'-5"	8'-9"	RJ-95 5C	17'-11"	8'-5"
RJ-225 / RJ-225 HD	9'-11 1/2"	4'-0 1/2"				RJ-100 5C	22'-10"	8'-5"
RJ-225-S	10'-0"	4'-0 1/2"				RJ-250 5C	22'-10"	8'-5"
RJ-325	14'-6"	4'-0 1/2"	RJ-40 OC	22'-11"	8'-8"			
RJ-430	14'-6"	4'-6"	RJ-37 OC	21'-5"	8'-8"			
RJ-550 / RJ-575 HD	19'-11"	4'-6"	RJ-30 OC	16'-1"	8'-8"			

Fig. 5

## 20-30-40 YARD RECTANGULAR OPEN TOP

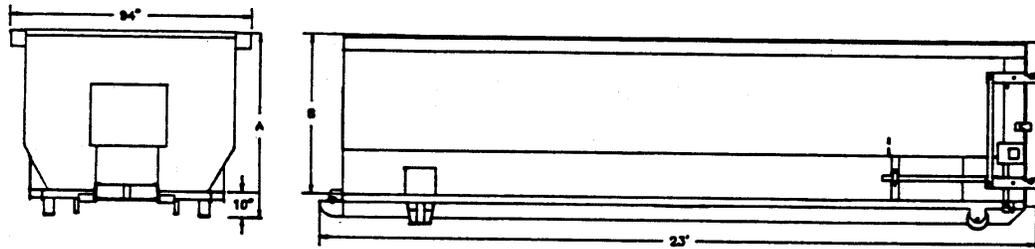


HEIGHT		
	A	B
20 Yard	53	42
30 Yard	71	60
40 Yard	95	84

STANDARD CONTAINER SPECIFICATIONS*	
FLOOR:	3/16" Plate
SIDES:	10 GA. Sheet with 4 x 3 Formed Channel Side Stiffeners on 24" Centers and a 4" x 3" Tubing Top Rail
MAIN RAILS:	6" x 2" x 3/16" Tube
CROSS MEMBERS:	3" Channel on 16" Centers
WHEELS:	8 1/2" Diameter x 7" Wide, Front & Rear
TARP HOOKS STANDARD	

\*Also Available in Heavy Duty

## 20-30-40 YARD OPEN TOP BATHTUB



HEIGHT		
	A	B
20 Yard	54	44
30 Yard	77	67
40 Yard*	96	86

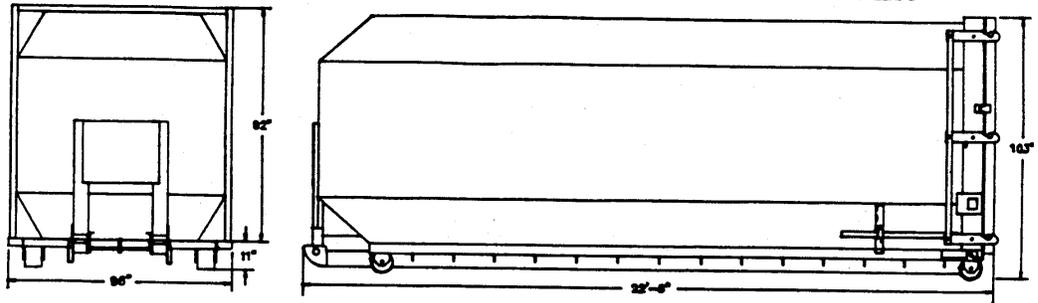
Only Available in Heavy Duty

STANDARD CONTAINER SPECIFICATIONS*	
FLOOR:	3/16" Plate
SIDES:	10 GA. Sheet with 4 x 3 Formed Channel Side 8" x 5 1/2" Formed Channel Top Rail
MAIN RAILS:	6" x 2" x 3/16" Tube
CROSS MEMBERS:	3" Channel on 16" Centers
WHEELS:	8 1/2" Diameter x 7" Wide, Front & Rear
TARP HOOKS STANDARD	

\*Also Available in Heavy Duty

FIGURE 6

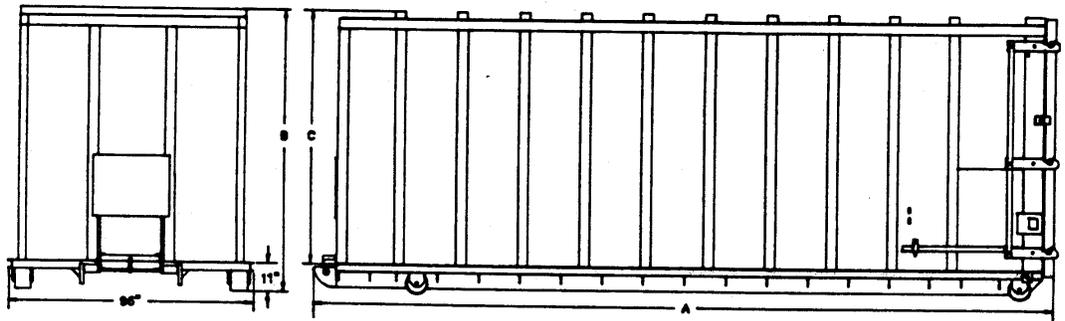
### 40 YARD OCTAGONAL COMPACTOR RECEIVER



STANDARD SPECIFICATIONS*	
FLOOR:	3/16" Plate (1/4" Plate Available for HD Containers)
SIDES:	3/16" Plate
MAIN RAILS:	6" x 2" x 3/16" Tubing (6" x 2" x 3/8" Available for HD Containers)
CROSS MEMBERS:	3" Channel on 16" Centers
WHEELS:	8 1/2" Diameter x 7" Wide, Front & Rear
DOOR:	3 Hinges 1" x 4" Hinge Bar with 15/16" Diameter Hinge Pins 3 Point Latch System with Locking Mechanism

\*Also Available in Heavy Duty

### 42-50 YARD RECTANGULAR COMPACTOR RECEIVER



DIMENSIONS			
	A	B	C
42 Yard	278	98	87
50 Yard	290	110	99

STANDARD CONTAINER SPECIFICATIONS*	
FLOOR:	3/16" Plate (1/4" Plate Available for HD Containers)
SIDES:	10 GA. Sheet with 4 x 3 Formed Channel Side Stiffeners on 24" Centers and a 4" x 3" Tubing Top Rail
MAIN RAILS:	6" x 2" x 3/16" Tubing (6" x 2" x 3/8" Available for HD Containers)
CROSS MEMBERS:	3" Channel on 16" Centers
WHEELS:	8 1/2" Diameter x 7" Wide, Front & Rear

\*Also Available in Heavy Duty

## Approximate Solid Waste Generation Guideline

Classification	Building Types	Quantities of Waste Generated
Apartments	Singles or no children	1-1 1/2 cu. yd. per unit per month
	Family	1 1/2-2 cu. yd. per unit per month
Commercial Buildings	Office	1 cu. yd. per 10,000 sq. ft. per day
	Department Store	1 cu. yd. per 2,500 sq. ft. per day
	Shopping Centers	Varies with type of tenant handled
	Supermarkets	1 cu. yd. per 1,250 sq. ft. per day
	Restaurants	Varies w/no. of meals served & type of food
	Drugstores	1 cu. yd. per 2,000 sq. ft. per day
	Banks	Survey required
Hotels & Motels	High Occupancy	1/2 cu. yd. per room per week + restaurants
	Average Occupancy	1/6 cu. yd. per room per week + restaurants
Warehouses		Varies with type of activity
Factories		Varies with type of activity
Institutions	Hospitals	1 cu. yd. per five occupied beds per day
	Nursing Homes	1 cu. yd. per fifteen persons per day
	Rest and Retirement Homes	1 cu. yd. per twenty persons per day
Schools	Grade Schools	1 cu. yd. per eight rooms per day
	High Schools	1 cu. yd. per ten rooms per day
	Universities	Survey required

This information is to be used as a guideline only. The volume has been derived from nationwide averages, using varying weights per cubic yard.

### Conversion Table For Cubic Foot Volume (Approximate)

Garbage Can 18" diameter x 24" deep . . .	3.6 cu. ft.
Garbage Can 16" diameter x 22" deep . . .	2.0 cu. ft.
Bushel Basket - Standard . . . . .	1.24 cu. ft.
Barrel (U.S. Standard) . . . . .	4.08 cu. ft.
7-1/2 Gallons . . . . .	1.0 cu. ft.
1 Gallon . . . . .	.0134 cu. ft.
55 Gallon Oil Drum . . . . .	7.0 cu. ft.

### One Cubic Yard Equivalent:

27 cu. ft. = one cubic yard  
 One cubic yard is equal to 203 gallons  
 One cubic yard is approximately four 55 gallon drums  
 One cubic yard is approximately eleven 20 gallon cans  
 One cubic yard is approximately seven 30 gallon cans

### Calculation:

To find container capacity in cubic yards:

$$\text{Formula: } \frac{L \times W \times H}{27} = \text{Cubic Yards}$$

where:

L = Length (in feet)  
 W = Width (in feet)  
 H = Side Height (in feet)

### CONVERSION TABLE

1 cubic yard = 27 cubic feet or 46,656 cubic inches  
 1 gallon = 231 cubic inches  
 1 20 gallon can = .1 cubic yards  
 1 30 gallon can = .15 cubic yards  
 1 55 gallon can = .27 cubic yards

Fig.8

# Waste Management Standards

## TRASH AND DEBRIS

Trash: 100 pounds per cubic yard

Debris: 300 pounds per cubic yard

Trash Generated In An Office Building:

1 cu. yd. per 10,000 sq. ft. per day

**Example: 500,000 gross sq. ft. building**

$$\frac{[(500,000 \text{ sq. ft.} \times 10,000 \text{ days/yr}) \times (240 \text{ lbs/cu yd} \times 100 \text{ lbs/tn})]}{2,000} = 600 \text{ tons/yr.}$$

Debris Generated In An Office Building:

1 cu. yd. per 50,000 sq. ft. per day

**Example: 500,000 sq. ft. building**

$$\frac{[(500,000 \text{ sq. ft.} \times 50,000 \text{ days/yr}) \times (240 \text{ lbs/cu yd} \times 300 \text{ lbs/tn})]}{2,000} = 360 \text{ tons/yr.}$$

Below is the capacity of self-contained trash compactors in tons; compaction ratio = 4:1

COMPACTOR VOLUME (CUBIC YARDS) OF TRASH (TONS)	APPROX. WEIGHT
10	2
15	3
20	4
25	5
30	6
35	7

Fig. 9

## Waste Management Standards

### RECYCLABLE MATERIALS

#### **Recyclable Paper Generated In An Office Building:**

25 pounds per 10,000 sq. ft. per day

**Example:**  $[(500,000 \div 10,000) \times (240 \times 25)] \div 2,000 = 150 \text{ tons/yr}$

Recyclable Materials Storage Space Needed:

1 sq. ft. per every 2,000 sq. ft. in building

**Example:**  $500,000 \div 2,000 = 250 \text{ sq. ft.}$

The holding room should be located near the loading dock and a freight elevator.

According to GSA Regulations, recycling holding rooms shall be either:

- (1) Protected by automatic sprinklers designed for an Ordinary Group 2 Hazard per NFPA Standard 13-1989, Sprinkler Systems, or,
- (2) Separated from the rest of the building by two hour fire-rated construction.