

# Solid Waste Enclosures Best Design Practices



Lee County

Solid  
Waste

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# Introduction

The Lee County Solid Waste Department developed this document to promote best design practices for solid waste enclosures. Please recognize that this is a voluntary guidance document, not a regulation, nor does it change or substitute for any statutory or regulatory provisions.

**THE GOAL** for this document is to familiarize those working in the planning and construction business of solid waste enclosures by providing an overview of collection containers, trucks and general specifics used in the solid waste industry.

Incorporated herein are certain aspects of Lee County Ordinance No. 11-27 for solid waste enclosures (<https://www.leegov.com/bocc/ordinances>) and Lee County Land Development Code pertaining to construction standards.

Failure to incorporate best practices could lead to costly and time-consuming demolition and rebuilding of an enclosure that does not meet code standards.

For the purpose of this document, any reference to solid waste enclosures also includes those for recycling, unless specifically mentioned.

# Code Requirements

Lee County Ordinance No. 11-27 specifies the solid waste enclosure space prerequisites and was adopted into Section 10-261 of the Lee County Land Development Code.

Prerequisites for a solid waste enclosure are to accommodate varying levels of solid waste generation.

NOTE: Containers, dumpsters and compactors must be on an impervious surface! Minimum overhead height clearance of 22 feet and minimum inside gate opening of 12 feet are required. Please note that the Department recommends an overhead clearance of 25 feet to give grapple trucks additional space as their boom extends past 22 feet.



COMMERCIAL/BUSINESS based on total building square footage			
Total Building Square Footage	Space Requirement for Solid Waste (Garbage)	Space Requirement for Recycling	Total Space Requirement for Enclosure
0-5,000 ft <sup>2</sup>	60 ft <sup>2</sup>	24 ft <sup>2</sup>	84 ft <sup>2</sup>
5,001-10,000 ft <sup>2</sup>	80 ft <sup>2</sup>	48 ft <sup>2</sup>	128 ft <sup>2</sup>
10,001-25,000 ft <sup>2</sup>	120 ft <sup>2</sup>	96 ft <sup>2</sup>	216 ft <sup>2</sup>
25,000+ ft <sup>2</sup>	216 ft <sup>2</sup>	8 ft <sup>2</sup> for each additional 1,000 ft <sup>2</sup> over 25,000 ft <sup>2</sup>	Depends on total building square footage

MULTIFAMILY DEVELOPMENT based on the number of units			
Number of Units	Space Requirement for Solid Waste (Garbage)	Space Requirement for Recycling	Total Space Requirement for Enclosure
5-25 units	120 ft <sup>2</sup>	96 ft <sup>2</sup>	216 ft <sup>2</sup>
25+ units	216 ft <sup>2</sup> for first 25 units plus space 8 ft <sup>2</sup> for each additional dwelling unit		Depends on number of units

# Solid Waste Enclosure Floor Surface

**IMPORTANT - Lee County Solid Waste Ordinance No. 11-27 prohibits the accumulation of trash and refuse in the open and/or on the ground.**

- **An enclosure must have an impervious surface!**
- The container must rest on a flat, level concrete surface. The surface should be slightly sloped to facilitate drainage.
- Prior to construction, ensure compliance with all local building codes!
- Roofed or interior solid waste enclosures may contain floor drains; they must drain to the sanitary sewer.
- A concrete apron measuring the width of the enclosure and extending out 8' from the front will connect the enclosure pad to the surrounding pavement.
- The apron surface must be the same elevation as the enclosure pad threshold and the surrounding surfaces, with a slope of 1/8" per foot away from the enclosure pad.
- To avoid cracking and deterioration of the floor, engineer the surface to withstand up to 20,000 lbs. of direct force from a single truck axle.
- If the concrete apron transitions to asphalt, sufficient subsurface preparation is required to prevent dimpling or breakdown of the asphalt over time.
- Due to the weight, trash compactors require a solid concrete base consisting of a minimum of 6" of concrete.
- Refer to Lee County Land Development Code and State of Florida Department of Environmental Protection for stormwater management in or around a solid waste enclosure.
- To avoid accidents and minimize the risk of an environmental discharge, it is a best practice not to place downspouts in the enclosure or in the driving path of collection vehicles.
- Best practice is to keep grease trap storage containers out of the solid waste enclosure!



# Solid Waste Enclosure Gates

- Hinged doors that swing outward or sliding doors that move side to side are acceptable.
- Gates may not open onto sidewalks, parking spaces or the public right of way.
- When using sliding gates, the guide cannot sit above the floor because the dumpster will not be able to roll over it.
- Gates must lead to the driveway, not to parking spaces or the handicapped safety zone.
- Gates must be of sufficient size and quantity so that it is not necessary to remove one dumpster to service another (trash, recycling).
- Gates should be 2" off the ground and hung on the outside.
- To ensure that the collection vehicle can access the dumpster and the driver has room to get in and out of the vehicle, it is a best practice for gates to open to at least 120°.
- Opening dimensions must be clear of door edges, hinges or other obstructions.
- Lee County Ordinance No. 11-27 and Land Development Code LDC10-261(b) require an inside gate opening width of 12'.
- Install gate stops to prevent accidental gate swinging.



# Solid Waste Enclosure Walls & Interior Curbs

- Build walls of masonry or wood, with finishes and colors compatible with adjacent architecture.
- Chain link fencing does not constitute an acceptable enclosure wall.
- The Solid Waste Department recommends that the enclosure wall for dumpsters be 6' in height. For a compactor, the recommended wall height is 8'. The intent of the enclosure wall is to restrict the view of any part of the container. Please check your local building code.
- Solid waste enclosures for dumpsters may contain bollards (approx. 4' high) or interior curb bumpers (8" high and 6" wide) along the back wall to prevent damage to the wall.
- The recommended roll out area shall have a 2% maximum slope.
- The recommended maximum roll out area should not exceed 25' measured from the enclosure gate to the collection vehicle.

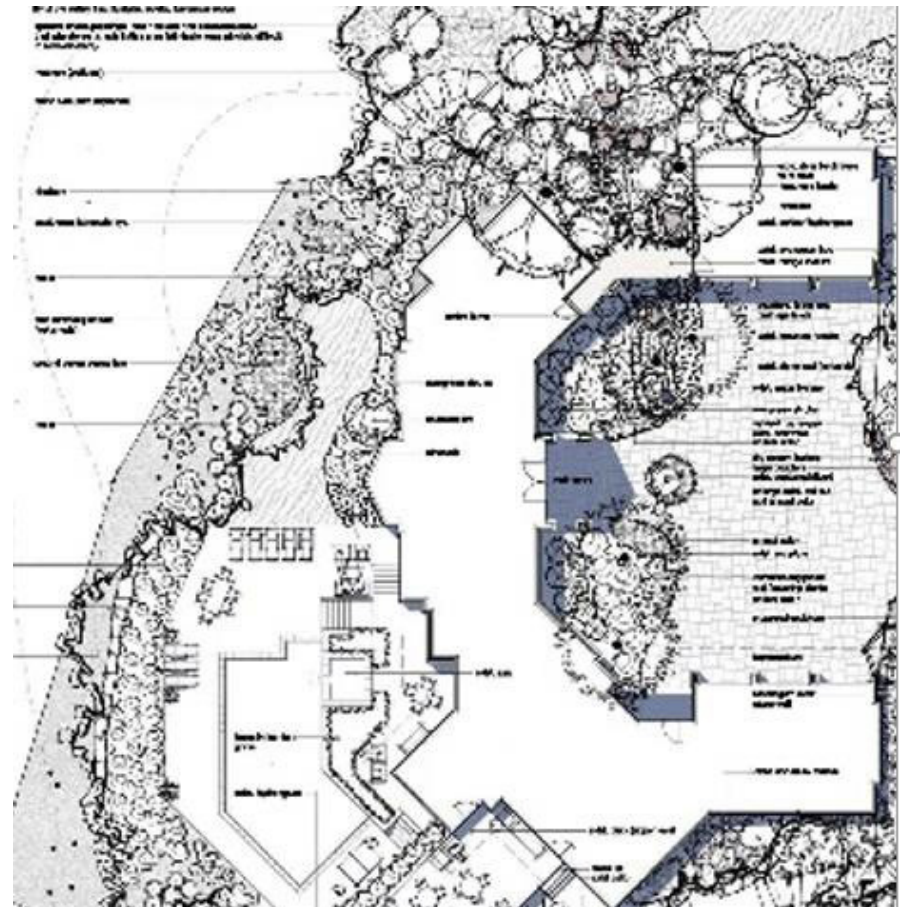


# Best Management Practices

## The Site Plan

To allow for a smooth project review by Lee County, please include the following information in the site plan:

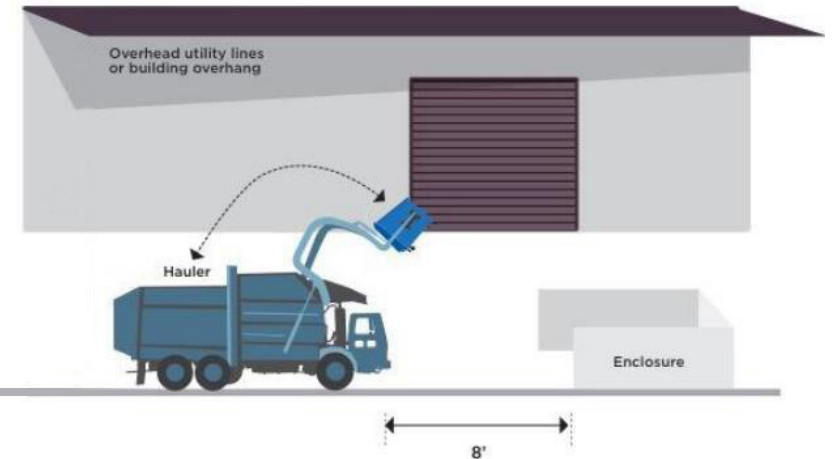
1. Show all enclosure measurements (width, depth and height).
2. Show and label enclosure architectural features.
3. Show compactors inside the enclosure with electrical and receiver location.
4. Indicate the height of the enclosure wall.
5. Show slope measurements.
6. Show curb cuts between enclosure and truck access points.
7. For indoor enclosures, show floor drains and connection to the sanitary sewer. Also show a ventilation system.
8. At multifamily complexes, list the approximate number of units.





# Site Considerations - The Basics

## Enclosure Do's and Don'ts



REQUIRED: Dumpsters and garbage containers must be placed on an impervious surface.

YES	NO
Collection trucks can access the enclosure without the need to cross traffic	Collection vehicles cannot safely access the enclosure or maneuver the dumpster(s)
Enclosure is handicap accessible	Enclosure is located within 25' of a public street or 15' from the pavement edge of a private street
Enclosure site has 22' of unobstructed overhead clearance from hazards (wires, awnings, trees, etc.)	Enclosure infringes on waterways, lakes or ponds – check for setbacks
Enclosure is sited so collection truck can move forward to exit rather than backing up	Enclosure access or floor surface is constructed of pavers (ongoing maintenance due to staining and dislodging)
Enclosure location includes 65' of truck access	Enclosure located within close proximity of utility line creating electrical hazard for collection vehicles
Enclosure access surface engineered to withstand up to 20,000 lbs. of direct force. If the concrete apron transitions to asphalt, sufficient subsurface preparation is required to prevent dimpling or breakdown of the asphalt over time.	To prevent leaching of garbage fluids and their potential adverse impact on the environment and ground water, placement of dumpsters on soil is prohibited by the Department of Environmental Protection and Lee County Ordinance.

# Requirements for Mixed-Use Developments

- Lee County Ordinance No. 11-27 prohibits commingling of residential waste with commercial waste.
- Therefore, separate solid waste enclosure locations are required for multifamily dwellings and businesses (mixed use developments).
- If properties zoned residential abut commercial property, place commercial enclosures at the furthest point possible away from residential properties in order to comply with local noise ordinance requirements.
- Commercial collections start as early as 4:30 a.m. and noise from the backup and dump action may affect resident's quality of life.



# Equipment and Vehicle Information

## Example of Dumpsters:

- A 2-yard dumpster holds about 24, 13-gallon trash bags.
- 2-yard or 4-yard dumpsters also come in heavy-duty polyethylene and with wheels.
- An empty plastic dumpster is approximately 30% lighter than a steel dumpster of the same size.
- Plastic 2-yard or 4-yard dumpsters are much easier for maintenance crews to wheel to the street for collection.
- Collection companies may also provide containers with side doors for easier access for the residents.



### CONTAINER SIZES

*Solid Waste & Recycling Programs Available  
Casters/Wheels • Locking Mechanism*



**2 YARD BIN**

80" width  
40" depth  
36" height



**4 YARD BIN**

80" width  
54" depth  
48" height



**6 YARD BIN**

80" width  
66" depth  
60" height



**8 YARD BIN**

80" width  
64" depth  
80" height

# Examples of Toters:

- Most toters are equipped with wheels.
- Toters of varying sizes are generally used as residential garbage, recycle and yard waste containers.
- Commercial small waste generators use the 96-gallon Toter.



29.75" width  
35.75" depth  
43.25" height

24.25" width  
31.75" depth  
41.75" height

19.75" width  
24.25" depth  
37.50" height

NOTE: Dimensions shown are approximate and reflect width x depth x height.

# Vehicle Types & Sizes:

Collection trucks come in various makes, models and sizes designed for the collection of different waste materials. Generally, on privately maintained and dirt roads, smaller collection vehicles are used. The Florida Department of Environmental Protection issues various permits and registrations for the transport of solid waste and recyclable material. The Federal Motor Carrier Safety Administration falls under the umbrella of the Department of Transportation and it regulates the registration and authority to operate heavy trucks and trailers.


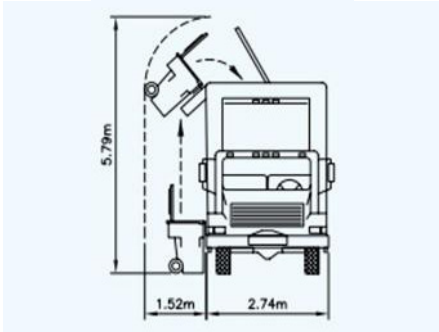
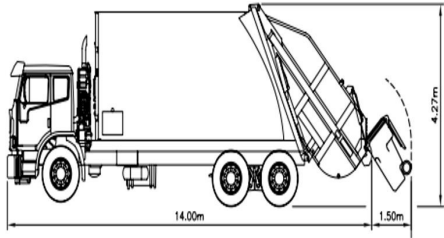

## The most common types of trucks for the collection of waste & recyclable material placed curbside are:

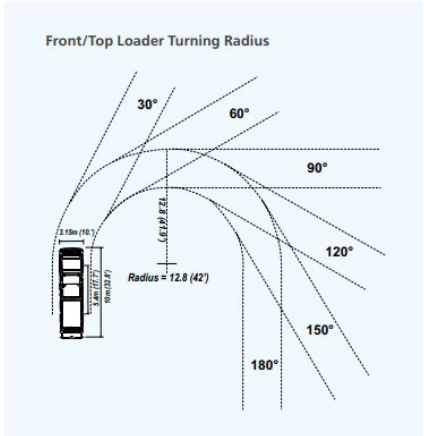
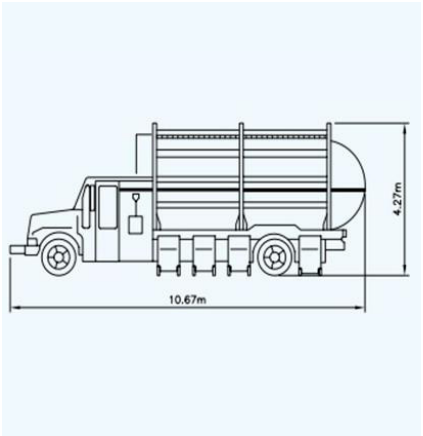
- **Automated trucks with an arm** that reaches for the garbage or recycle toter and lifts the cans to empty the contents into a side loading or overhead/roof loading compartment.
- **Automated trucks with a Curotto hopper** in front of the cab. A Curotto hopper is a dumpster installed in front of the truck cab. It can perform multiple toter collections before being emptied overhead into the body of the collection vehicle.
- **Front Load Trucks equipped with a hydraulic arm lift** that can reach up to 9' and has a reasonably heavy lifting capacity. This type of truck services dumpsters.
- **Rear Load Trucks** are garbage trucks where the driver or helper load the toter into a back hopper by hand. The waste is compacted in the main body of the truck.
- **Semi-automated Rear Load Trucks** are equipped with a hydraulic cart tipping lift to assist the dumping of the toter contents.

Most collection trucks are equipped with a compaction mechanism; a standard-sized collection vehicle can easily hold around 14 tons of household waste.

# Solid Waste and Recycling Vehicle Specifications

(please note these are approximate and vary from truck manufacturer to manufacturer and model to model)

Front Loading Collection Truck	Side Loading Collection Truck	Rear Loading Collection Truck	Roll-Off Truck
<p>Used for the collection of trash or recyclables disposed in dumpsters of varying sizes. Examples of use are:</p> <ul style="list-style-type: none"> <li>▪ restaurants</li> <li>▪ schools</li> <li>▪ multifamily developments</li> <li>▪ car wash</li> <li>▪ pharmacies</li> </ul>	<p>Used in the residential and commercial small waste generator collection of varying size totes. Examples of use are:</p> <ul style="list-style-type: none"> <li>▪ residential communities for curbside recycle and solid waste collections</li> <li>▪ commercial businesses for recycling collections</li> </ul>	<p>Used in the residential and commercial small waste generator collection of varying size totes. Examples of use are:</p> <ul style="list-style-type: none"> <li>▪ doctor's office</li> <li>▪ consulting business</li> <li>▪ web design business</li> <li>▪ residential solid waste and residential yard waste collections</li> </ul>	<p>Generally used for compactors and open-top debris boxes. Examples of use are:</p> <ul style="list-style-type: none"> <li>▪ industrial waste generators</li> <li>▪ construction open-top containers</li> <li>▪ compactors from hotels and hospitals</li> <li>▪ apartments</li> </ul>
			
<p>Height: 12.5'</p>	<p>Height: 14'</p>	<p>Height: 14'</p>	<p>Height: 14' with an exhaust pipe</p>
<p>Wheel Base: 19.5'</p>	<p>Wheel Base: 19.5'</p>	<p>Wheel Base: 19.5'</p>	<p>Wheel Base: 27'</p>
<p>Width: 8' 1"</p>	<p>Width: Width: 9' Width with arm extended: 14'</p>	<p>Width: 9'</p>	<p>Width: 11' with mirrors</p>
<p>Overhead clearance with can in raised position: 21'</p>	<p>Overhead clearance: 19'</p>	<p>Overhead clearance: 19'</p>	<p>Overhead clearance: 25'</p>

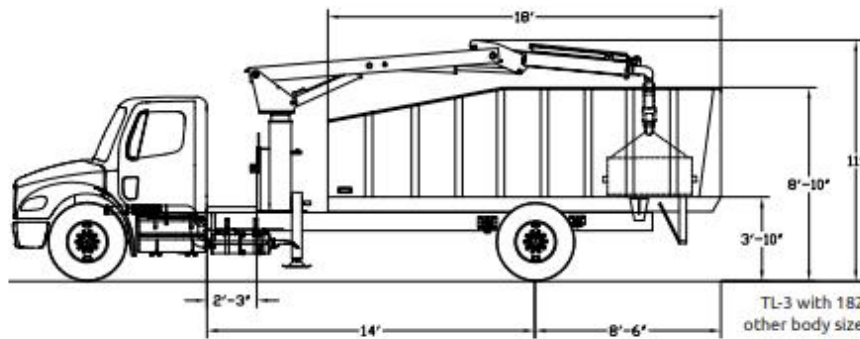
Front Loading Collection Truck cont'd.	Side Loading Collection Truck cont'd.	Rear Loading Collection Truck cont'd.	Roll-Off Truck cont'd.
Turning radius: 46'	Turning radius: 42'	Turning radius: 42'	Turning radius: 65'
Total length with boom overhang and arms extended: 41'	Length: 35'	Length: 46' Length with container on lift-assist hook: 51'	Truck Length: 34'9" The total length needed for pick-up: 75' (includes container length)
A typical 3-axle garbage truck has an axle weight of roughly 20,000 pounds per front axle and 44,000 pounds on the rear pair of axles.	The automated arm can reach out up to 9-feet and can lift several hundred pounds.	The rear loading truck compacts 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.	
<p>Front/Top Loader Turning Radius</p> 			<p>Additional specifications:</p> <ul style="list-style-type: none"> <li>▪ Front overhang: 3'</li> <li>▪ Rear overhang: 5'3"</li> <li>▪ Typical distance from the ground to top of hoist rail: 40-44'</li> <li>▪ Container length: 21-23'</li> </ul>

In addition to the trucks listed on the previous page, the Franchise collection companies and the Solid Waste Department employ the use of grapple trucks to remove heavy and bulky items from the curb and from within solid waste enclosures.

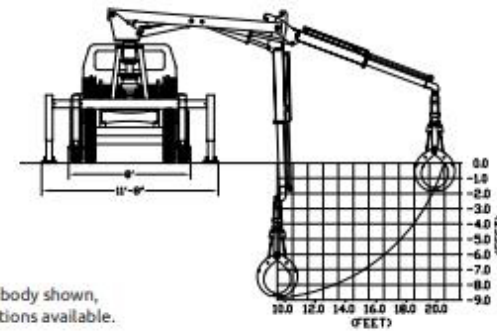
It is important that these trucks can safely operate away from overhead wires in the collection area. This is to avoid a possible arc flash from the power line to the truck or the truck grapple accidentally tearing off communications lines.

When designating a location for a solid waste enclosure at a multi-family and/or apartment project, please be sure to avoid overhead power lines, communications wires, streetlights, and trees.

It is advisable to add additional space to the solid waste enclosure to accommodate for large furniture and electronic items that may not fit into the dumpster or compactor. The best solution is to designate a separate enclosure location strictly for the disposal of large furniture items and electronics.



TL-3 with 1824 TBS body shown, other body sizes & options available.



### SYSTEM DESCRIPTION:

The model TL-3 Lightning Loader® is a grapple loader mounted to a chassis from behind the cab, equipped with Petersen's standard trash bucket at the end of the boom. The loader operates from a fixed platform located behind the chassis cab. CNG Capable.

### LIFT CAPACITY

Radius	Load Capacity
10 ft. radius	7,100 lbs.
16 ft. radius	4,400 lbs.
20 ft. radius	3,200 lbs.

**Note:** Weight of attachment not subtracted from above listed lifting capacities. Trash bucket weighs 1,000 lbs. Capacities shown do not exceed 85% vehicle tipping moment (outriggers engaged, loader on firm, level ground.)

### GENERAL SPECIFICATIONS

Reach	20 ft. 7 inches
⊙ Main Boom & Tip Boom	16 ft. 7 inches
⊙ Tip Extension	4 ft.
Tare Weight (empty)	23,000 lbs.
Outrigger Span	11 ft. 8 in.
Dump Body Hoist Capacity	23 tons



# Compactors & Indoor Trash Rooms

## Space Requirements



Per LDC 10-261(c) commercial businesses or multifamily developments using a compactor for garbage collection shall provide sufficient space for the compactor (including the receiver).

Plan for an overhead clearance between 25' and 30' depending on the compactor selected and the type of collection vehicle that will be required to service it.

*Allow the following space for recyclable material collection in addition to that needed for the compactor area:*

### Commercial Business – based on the building square footage

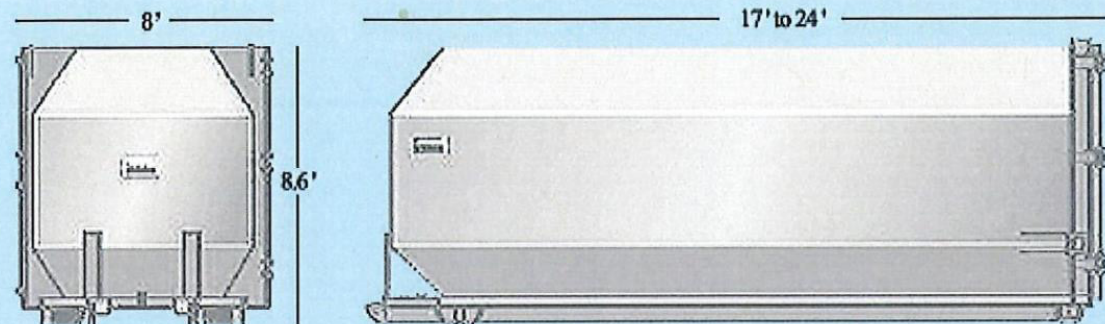
	For Recycling
0-5,000 ft. <sup>2</sup>	24 ft. <sup>2</sup>
5,001-10,000 ft. <sup>2</sup>	48 ft. <sup>2</sup>
10,001-25,000 ft. <sup>2</sup>	96 ft. <sup>2</sup>
25,001 ft. <sup>2</sup> +	96 ft. <sup>2</sup> plus 8 ft. <sup>2</sup> for each additional 1,000 ft. <sup>2</sup>

### Multifamily Development Units:

5-50 units	96 ft. <sup>2</sup>
51+ units	96 ft. <sup>2</sup> plus 8 ft. <sup>2</sup> for each additional dwelling unit

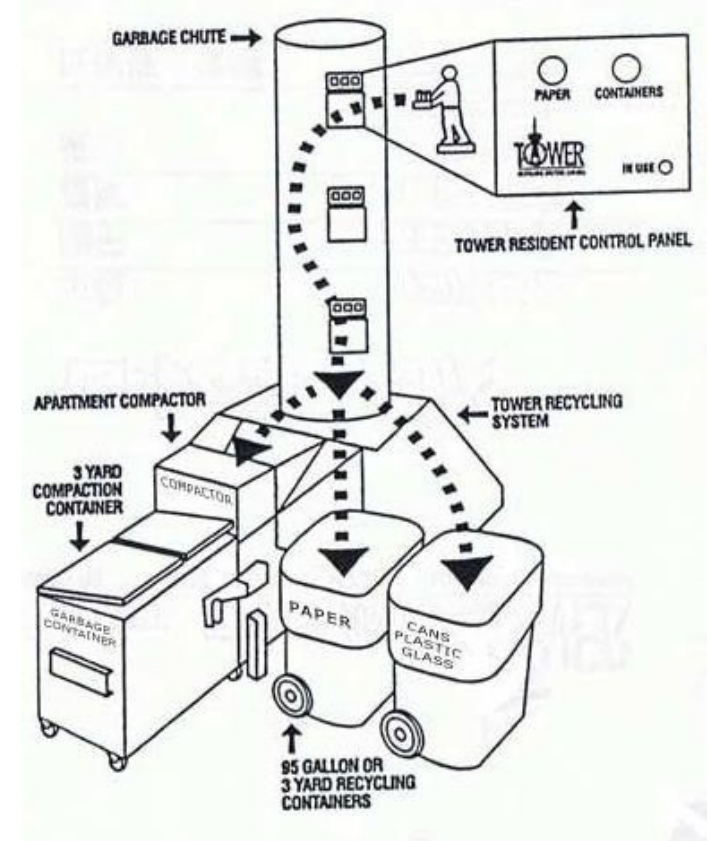
# Compactors - Other Considerations

- Type and volume of material discarded – food waste from commercial businesses needs to be collected twice/week; this may affect the size selection.
- Site selection – easily accessible (must be wheelchair accessible).
  - For businesses – must be compatible with the material flow – the production or the rate of industrial operation if fed by conveyor belt.
  - Must be located away from drainpipes and downspouts.
- Floor Prep – a floor base to withstand the weight and secure the equipment; minimum 6” concrete. An empty 20-cy compactor weighs about 7,500 pounds.
- Electrical - The accessibility of the electrical service influences the cost of installation. Consider utilizing a solar-powered compactor in cases where electrical service is not feasible.
- A quick-disconnect box should be within 10’ of and visible from the compactor.
- Hauler Access – clear of overhead obstructions as previously addressed (but a 30’ overhead clearance should be sufficient for all types).
- Maintenance – compactors require regular maintenance.
- Allow enough room on each side of the compactor to perform required maintenance tasks.
- To assist in the selection of a compactor, ANSI Z245.2 safety standards, OSHA 1910.212 standard and UL/CUL listed control panel standard exists for various types of compactors.



# Indoor Trash Rooms, High-Rise Buildings & Parking Garages

- The type and volume of material discarded may affect the container size selection.
- Determine if “concierge service” is provided to the residents. Concierge service means maintenance crews collect trash and recyclables from the front door and bring it to the disposal container.
- Ensure your trash room meets all building code requirements.
- Access for the collection vehicle to the containers must be unobstructed with a ceiling height of at least 25’.
- Chutes only work when onsite personnel swap out empty dumpsters for full ones at the bottom of the chutes.
- Dumpsters need to be checked routinely and swapped to prevent overflow of garbage or back stacking of the trash inside the chute.



## Sources:

**Vehicle & equipment information** from Heil, LaBrie, McNeilus, Peterbilt, Peterson, Mack, Curotto, Toter, Wastequip

**Regulatory:** Florida Administrative Code, Florida Department of Environmental Protection, Florida Building Code, Lee County Land Development Code, Lee County Ordinances