

File No.: 2026-105

February 4, 2026

s.22(1)

Dear s.22(1)

Re: **Request for Access to Records under the Freedom of Information and Protection of Privacy Act (the "Act")**

I am responding to your request of January 28, 2026 under the *Freedom of Information and Protection of Privacy Act* for:

Record of the City of Vancouver Garbage/Recycling Amenity Supplement effective in 2014. Date range: January 1, 2010 to December 31, 2014.

All responsive records are attached. Please note that the two documents provided as the responsive records were effective at separate times within the requested date range.

Under Part 5 of the Act, you may ask the Information & Privacy Commissioner to review any matter related to the City's response to your FOI request by writing to: Office of the Information & Privacy Commissioner, info@oipc.bc.ca or by phoning 250-387-5629.

If you request a review, please provide the Commissioner's office with: 1) the request number (2026-105); 2) a copy of this letter; 3) a copy of your original request; and 4) detailed reasons why you are seeking the review.

Yours truly,

Kevin Tuerlings, FOI Case Manager, for

[Signed by Kevin Tuerlings]

Siân Madsen, MA, MAS
Acting Director, Access to Information & Privacy

If you have any questions, please email us at foi@vancouver.ca and we will respond to you as soon as possible. You may also contact 3-1-1 (604-873-7000) if you require accommodation or do not have access to email.

Encl. (Response Package)

:lg

CITY OF VANCOUVER

ENGINEERING SERVICES

GARBAGE AND RECYCLING STORAGE FACILITY DESIGN SUPPLEMENT

May 2011



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Preface

Solid waste management has become an integral part of the development planning process where space allocation for waste storage facility can no longer be considered an after thought during the design stages. While waste disposal companies may be responsible for providing collection services when the building is operational, the designer, developer, and operator all have important roles in designing and locating a storage facility that would provide adequate waste storage and collection services in a safe and efficient manner.

As part of the waste management initiative under the City's Green Building Strategy, the "Garbage and Recycling Storage Facility Design Supplement" is a clarification tool to assist planners and developers on proper design of garbage and recycling storage facilities for new and retrofit buildings. Having adequate space allocation for garbage and recycling facilities would increase waste diversion and reduce environmental impacts.

This document includes:

- General requirements of a garbage and recycling storage facility
- Steps to estimate the number of containers required for various buildings
- Tables showing suggested number of containers required for various building types based on estimated waste generation rate
- Dimensions and specifications of various commonly used storage containers and collection vehicles

It is now Council policy that for all re-zonings involving land of 2 acres or more, the City requires additional plans or studies on several categories including Solid Waste Diversion. For more information on this policy, please visit the Planning Bulletin page at: <http://vancouver.ca/commsvcs/BYLAWS/bulletin/admbull.htm>

1.0 General Requirements

Development permit applications are reviewed by the Engineering Department and include the examination of solid waste storage facility and loading area designs on the submitted drawings to ensure City standards are met (to the satisfaction of the Director of Planning in consultation with the General Manager of Engineering Services). Often, omissions or errors on drawings occur because designers may not be aware of specific standards. The following has been compiled to assist in proper design and to avoid confusion and delays. In conjunction with these supplements, good engineering practices are to be followed in all circumstances to ensure public safety.

The following are general requirements for solid waste storage facility:

1.1 Location of Storage Facility

Identifying the best location for communal solid waste storage facility can be difficult and is a balance between conveniences to users, space, access, noise, security, planning requirements, and architectural integration. The following should be considered during the design process:

- Solid waste storage facility should be located at grade (ground level) and adjacent to the area where collection vehicles are allowed access to the facility.
- If at grade facility is not permissible, the facility should be placed no more than one level down from grade.
- Recycling facility should be located with or adjacent to the garbage facility. However, garbage and recycling containers should be kept separated and not intermingled.
- Containers should not block or impede any fire exits, public right of ways, or pedestrian and vehicular access.
- If the building is multi-use, separate solid waste facilities should be provided for different types of occupants (i.e. residential facility vs. retail/commercial facility).
- More than one recycling facility can be considered provided each facility should have at least 1 cart each for Newsprints, Mixed Papers, and Mixed Containers.

1.2 Design of Storage Facility

- Facility should be built according to the Vancouver Building By-law Section 3.6.2.6. for Combustible Refuse Storage where except as required by Sentence 3.6.3.3.(9), a room for the storage of combustible refuse shall be separated from the remainder of the building by a fire separation with a fire-resistance rating not less than 1 hour, and sprinklered.
- Facility should have at least 2.5 meters in height clearance to allow complete opening of container lids.

- Facility must have sufficient container capacity to store all solid waste generated for a minimum of 7 days.
- Proper signage should be placed inside the facility to ensure material goes into the correct container.
- Facility should be secured with locked doors and protected against potential vandalism.

The Vancouver Building By-Law shall govern the development, design, and construction of the facility. All solid waste storage facilities should be equipped with, but are not limited to:

Concrete Pad	<ul style="list-style-type: none"> • minimum 15.25 cm thick reinforced concrete pads • able to withstand 28,000 kg collection vehicle
Drainage	<ul style="list-style-type: none"> • drain to sanitary sewer • oil separator required
Door	<ul style="list-style-type: none"> • double doors with a minimum 2 m opening • can be propped or locked open with a bumper guard on the inside facing the door
Electricity	<ul style="list-style-type: none"> • power shall be provided for equipment inside the facility
Lighting	<ul style="list-style-type: none"> • adequate lighting around and inside the facility as required by the Vancouver Building By-law
Hose Bib	<ul style="list-style-type: none"> • at least one (1) hose connection for cleaning the area
Ventilation	<ul style="list-style-type: none"> • release odour/stale air

1.3 Access for Facility Users

- Facility should be clean, well lit, regularly maintained, and conveniently located for users to get access to.
- Users should be able to access all containers inside the facility without impediment.
- If an auxiliary area is designated for the facility outside the building, the area should be located adjacent to an entry point into the building for easy access by the users.

1.4 Designated Collection Area

- Loading area must be no higher than 0.6 meters above driveway levels and must be relatively flat (+/-2% grade).
- Adequate clearance (height, turning radius, straight approach, etc) should be provided for collection vehicles to manoeuvre and to collect materials

obstruction free (please refer to Appendix C on typical collection vehicle dimensions).

- Loading area should be located where interference with pedestrian traffic and other vehicular access are minimal.
- Loading pad should be constructed at the loading area and should be able to withstand a 28,000 kg collection vehicle. Dimension of the pad should be based on the number of containers used in the building.

NOTE: The City of Vancouver provides recycling services to all multi-family buildings. However, if recycling carts are stored greater than 50 meters from the nearest collection point, additional carryout charges applies for each cart depending on the carryout distance required.

1.5 Access for Collection Vehicle

- Adequate clearance (height, turning radius, straight approach, etc) should be provided for collection vehicles to manoeuvre and to collect materials obstruction free (please refer to Appendix C on typical collection vehicle dimensions).
- In general, the collection vehicle access route should be designed in such a way to allow a collection vehicle to enter, collect, and exit the site in a forward motion. Collection vehicle backing up onto a road is not preferred.
- Vertical clearance of 4.5 meters should be accommodated throughout the entire access route.

2.0 How to Calculate the Number of Containers Required

The following equations should be used to estimate the number of storage containers required. Appendix A shows a summary of the calculated number of containers required for each building use based on the number of total units or total floor area. However, the exact size and location of the waste storage facility must take into consideration the following factors:

- building use
- building occupancy
- quantities of waste generated by occupants
- spare storage capacity
- space allowance for users to access and manoeuvre containers
- potential future changes to waste collection

Total volume generated/week = Number of units (or floor area) x Estimated volume generated/unit (or floor area)/week

Number of containers required = Total volume generated/week ÷ Collection container storage capacity

The following data would be required to estimate the number of containers:

- Estimated waste volume generated per unit or per floor area
- Number of total units or total floor area
- Volume capacity of a storage container

The following tables show the approximate waste volume generation rates for each building use. Please note the generation rates listed are **only general estimates** and may vary from actual rates. Therefore, when designing the waste storage facility, please consult with a private waste disposal company to assist you in estimating the number of containers required. For existing commercial buildings, Metro Vancouver provides a free waste reduction assessment through the SmartSteps program. Visit www.metrovancouver.org/smartsteps or call 604-451-6575 for more information.

Multi Family Residential Building

Waste Categories	Estimated volume generated/unit/week (L/unit/week)
Garbage	95.00 L/unit/week
Newsprints	8.50 L/unit/week
Mixed Containers	9.00 L/unit/week
Mixed Papers (include cardboard)	40.00 L/unit/week
Mixed Papers (exclude cardboard)	15.00 L/unit/week
Cardboard	30.00 L/unit/week
Compostables (i.e. food scraps)	14.00 L/unit/week

Office Building

Waste Categories	Estimated volume generated/area/week (L/m ² /week)
Garbage	1.00 L/m ² /week
Mixed Papers	0.65 L/m ² /week
Mixed Containers	0.375 L/m ² /week

Retail Building

Waste Categories	Estimated volume generated/area/week (L/m ² /week)
Garbage	2.25 L/m ² /week
Mixed Papers	1.50 L/m ² /week
Mixed Containers	0.65 L/m ² /week
Cardboard	2.30 L/m ² /week

Food Service Establishment

Waste Categories	Estimated volume generated/area/week (L/m ² /week)
Garbage	1.65 L/m ² /week
Mixed Containers	2.00 L/m ² /week
Cardboard	3.75 L/m ² /week
Compostables (i.e. food scraps)	2.00 L/m ² /week
Tallow/Grease	0.35 L/m ² /week

Large Venues (greater than 2,000 visitors per day)

Waste Categories	Estimated volume generated/area/week (L/m ² /week)
Garbage	3.10 L/m ² /week
Mixed Papers	1.50 L/m ² /week
Mixed Containers	1.70 L/m ² /week
Cardboard	2.00 L/m ² /week

For information on the volume capacity of different storage containers, please see Appendix B.

The following are examples of how the equations can be applied to different building scenarios:

Example: 30 Units Multi-Family Building

Waste and container choice	Number of units	Generation rate (L/unit/week)	Total volume generated (L/week)	Container capacity (L)	Number of containers required per week
Garbage (3 yard ³ bin)	30 units	95	2,850*	2,294	2 bin
Recycling - Newsprints (360L Cart)	30 units	8.5	255	360	1 cart
Recycling - Mixed Papers with Cardboard (360L Cart)	30 units	40	1,200	360	4 cart
Recycling - Mixed Containers (360L Cart)	30 units	9	270	360	1 cart
Compostables (360L Cart)	30 units	14	420	360	2 cart

**Did not account for compostables volume reduction*

Example: 1,000 m² Restaurant

Waste and container choice	Total Floor Space (m ²)	Generation rate (L/ m ² /week)	Total volume generated (L/week)	Container capacity (L)	Number of containers required per week
Garbage (3 yard ³ bin)	1,000	1.65	1,650	2,294	1 bin
Compostables (3 yard ³ bin)	1,000	2.00	2,000	2,294	1 bin
Tallow/Grease (170L Drum)	1,000	0.35	350	170	2 drum
Recycling - Mixed Containers (360L Cart)	1,000	2.00	2,000	360	6 cart
Recycling - Cardboard Bin (3 yard ³ bin)	1,000	3.75	3,750	2,294	2 bin

Useful Conversion Factors:

Volume:

- 1 gallon = 0.134 cubic feet
- 1 cubic meter = 35.5 cubic feet
- 1 cubic yard = 764.6 L
- 3 cubic yard = six - 360 L cart

Distance:

- 1 meter = 3.28 feet

Area:

- 1 square meter = 10.76 square feet

Weight:

- 1 tonne = 1,000 kg
- 1 pound = 0.454 kg

Appendix A - Solid Waste Container Allocation for Different Building Use

The following tables provide minimum solid waste storage space allocation for various building uses based on the calculation shown in section 2.0. However, the exact size and location of the waste storage facility must take into consideration the following factors:

- building use
- building occupancy
- quantities of waste generated by occupants
- spare storage capacity
- allowance for users access and containers manoeuvre
- future changes to waste collection

Appendix B lists some of the most commonly used waste containers for different applications. However, it is the responsibility of the developer to ensure that the correct dimensions and clearances are used for their design. The information can be obtained by contacting local waste disposal companies for up to date information.

Depending on the building use, the City may require additional space and access for other ancillary services where applicable (such as bulky item, grease, scrap metal, hazardous waste collection, etc) or for future diversion opportunities.

Unless specified, all options in the proposed supplement are based on an assumed once per seven days pickup schedule. Please note that City of Vancouver Solid Waste By-law No.8417 (vancouver.ca/bylaws/8417c.pdf) section 7.7 requires minimum twice monthly collection for non-residential properties.

Multi Family Residential Building

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 100 units, please use the general formula shown in Section 2.0 to estimate the minimum number of containers required.

Garbage:

Number of Units	Front End Bin		Compactor		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 6 yard ³ bins required (compacted to 13.5 yard ³)	# of 8 yard ³ bins required (compacted to 18 yard ³)	# of 360L carts required
5-10	N/A	N/A	N/A	N/A	3
11-20	1	1	N/A	N/A	6
21-30	2	1	N/A	N/A	8
31-40	2	2	N/A	N/A	11
41-50	3	2	N/A	N/A	N/A
51-60	3	2	1	N/A	N/A
61-70	3	3	1	N/A	N/A

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71-80	4	3	1	1	N/A
81-90	4	3	1	1	N/A
91-100	5	4	1	1	N/A

N/A = not applicable

Recycling (Newsprints, Mixed Papers, Mixed Containers, Cardboard):

Number of Units	Newsprints	Mixed Containers	Mixed Papers (include cardboard)	Mixed Papers (exclude cardboard)	Cardboard
	# of 360L carts required	# of 360L carts required	# of 360L carts required	# of 360L carts required	# of 3 yard ³ bin required
5-10	1	1	1	1	N/A
11-20	1	1	1	1	N/A
21-30	1	1	4	2	N/A
31-40	1	1	5	2	N/A
41-50	2	2	6	3	1
51-60	2	2	7	3	1
61-70	2	2	8	3	1
71-80	2	2	9	4	2
81-90	3	3	10	4	2
91-100	3	3	12	5	2

N/A = not applicable

Compostables: (Note: If compostables container(s) is provided, garbage container capacity should decrease accordingly.)

Number of Units	Front End Bin	Cart
	# of 3 yard ³ bin required	# of 360 L carts required
5-10	N/A	1
11-20	N/A	1
21-30	N/A	2
31-40	N/A	2
41-50	N/A	2
51-60	N/A	3
61-70	N/A	3
71-80	N/A	4
81-90	1	4
91-100	1	4

N/A = not applicable

Office Building

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 5,000 m², please use the general formula to calculate the minimum number of containers required.

Garbage:

Office Floor Space (m ²)	Front End Bin		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 360L carts required
0-100	N/A	N/A	1
101-200	N/A	N/A	1
201-300	N/A	N/A	1
301-400	N/A	N/A	1
401-500	N/A	N/A	1
501-600	N/A	N/A	2
601-700	N/A	N/A	2
701-800	N/A	N/A	2
801-900	N/A	N/A	3
901-1,000	N/A	N/A	3
1,001-2,000	1	N/A	6
2,001-3,000	1	1	8
3,001-4,000	2	1	N/A
4,001-5,000	2	2	N/A

N/A = not applicable

Recycling (Mixed Papers, Mixed Containers):

Office Floor Space (m ²)	Mixed Papers	Mixed Containers
	# of 360L carts required	# of 360L carts required
0-100	1	1
101-200	1	1
201-300	1	1
301-400	1	1
401-500	1	1
501-600	1	1
601-700	1	1
701-800	1	1
801-900	2	1
901-1,000	2	1
1,001-2,000	4	2
2,001-3,000	5	3
3,001-4,000	7	4
4,001-5,000	9	5

Retail Building

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 5,000 m², please use the general formula to calculate the minimum number of containers required.

Garbage:

Retail Floor Space (m ²)	Front End Bin		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 360L carts required
0-100	N/A	N/A	1
101-200	N/A	N/A	1
201-300	N/A	N/A	2
301-400	N/A	N/A	3
401-500	N/A	N/A	3
501-600	1	N/A	4
601-700	1	1	4
701-800	1	1	5
801-900	1	1	6
901-1,000	1	1	6
1,001-2,000	2	1	13
2,001-3,000	3	2	N/A
3,001-4,000	4	3	N/A
4,001-5,000	5	4	N/A

N/A = not applicable

Recycling (Mixed Papers, Mixed Containers, Cardboard):

Retail Floor Space (m ²)	Mixed Papers (exclude cardboard)	Mixed Containers	Cardboard
	# of 360L carts required	# of 360L carts required	# of 3 yard ³ bin required
0-100	1	1	N/A
101-200	1	1	N/A
201-300	1	1	N/A
301-400	2	1	N/A
401-500	2	1	N/A
501-600	3	1	1
601-700	3	1	1
701-800	3	1	1
801-900	4	2	1
901-1,000	4	2	1
1,001-2,000	8	4	2
2,001-3,000	13	5	3
3,001-4,000	17	7	4
4,001-5,000	21	9	5

N/A = not applicable

Food Service Establishment

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 5,000 m², please use the general formula to calculate the minimum number of containers required.

Garbage:

Restaurant Floor Space (m ²)	Front End Bin		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 360L carts required
0-100	N/A	N/A	1
101-200	N/A	N/A	1
201-300	N/A	N/A	2
301-400	N/A	N/A	2
401-500	N/A	N/A	3
501-600	N/A	N/A	3
601-700	N/A	N/A	4
701-800	1	N/A	4
801-900	1	1	5
901-1,000	1	1	5
1,001-2,000	2	2	10
2,001-3,000	3	2	N/A
3,001-4,000	3	3	N/A
4,001-5,000	4	3	N/A

N/A = not applicable

Recycling (Mixed Containers, Cardboard):

Restaurant Floor Space (m ²)	Mixed Containers	Cardboard
	# of 360L carts required	# of 3 yard ³ bin required
0-100	1	N/A
101-200	1	N/A
201-300	2	N/A
301-400	3	1
401-500	3	1
501-600	4	1
601-700	4	2
701-800	5	2
801-900	5	2
901-1,000	6	2
1,001-2,000	12	4
2,001-3,000	N/A	5
3,001-4,000	N/A	7
4,001-5,000	N/A	9

N/A = not applicable

Compostables:

Restaurant Floor Space (m ²)	# of 360L carts required	# of 3 yard ³ bin required
0-100	1	N/A
101-200	2	N/A
201-300	2	N/A
301-400	3	N/A
401-500	3	N/A
501-600	4	1
601-700	4	1
701-800	5	1
801-900	5	1
901-1,000	6	1
1,001-2,000	N/A	2
2,001-3,000	N/A	3
3,001-4,000	N/A	4
4,001-5,000	N/A	5

N/A = not applicable

Grease/Tallow:

Restaurant Floor Space (m ²)	Jug-In-Box (JIB)	Drum	Bin
	# of 18.6L JIB required	# of 170L drum required	# of 2.75 yard ³ bin required
0-100	2	1	N/A
101-200	4	1	N/A
201-300	6	1	N/A
301-400	8	1	N/A
401-500	10	2	N/A
501-600	12	2	N/A
601-700	14	2	N/A
701-800	16	2	N/A
801-900	17	2	N/A
901-1,000	19	3	N/A
1,001-2,000	N/A	5	1
2,001-3,000	N/A	7	1
3,001-4,000	N/A	9	1
4,001-5,000	N/A	11	1

N/A = not applicable

Large Venues (greater than 2,000 visitors per day)

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 5,000 m², please use the general formula to calculate the minimum number of containers required.

Garbage:

Venue Floor Space (m ²)	Front End Bin		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 360L carts required
0-100	N/A	N/A	1
101-200	N/A	N/A	2
201-300	N/A	N/A	3
301-400	N/A	N/A	4
401-500	1	N/A	5
501-600	1	1	6
601-700	1	1	7
701-800	2	1	7
801-900	2	1	8
901-1,000	2	2	9
1,001-2,000	3	3	N/A
2,001-3,000	5	4	N/A
3,001-4,000	6	5	N/A
4,001-5,000	7	6	N/A

N/A = not applicable

Recycling (Mixed Containers, Cardboard):

Venue Floor Space (m ²)	Mixed Papers (exclude cardboard)	Mixed Containers	Cardboard
	# of 360L carts required	# of 360L carts required	# of 3 yard ³ bin required
0-100	1	1	N/A
101-200	1	1	N/A
201-300	2	2	N/A
301-400	2	2	N/A
401-500	3	3	N/A
501-600	3	3	N/A
601-700	3	4	1
701-800	4	4	1
801-900	4	5	1
901-1,000	5	5	1
1,001-2,000	9	10	2
2,001-3,000	N/A	N/A	3
3,001-4,000	N/A	N/A	4
4,001-5,000	N/A	N/A	5

N/A = not applicable

Appendix B - General Specification for Different Waste Containers

The following is a general overview of the various waste containers commonly used for solid waste storage and should be used for information purposes only. The City does not guarantee the accuracy of the dimensions listed below because of variations between different manufacturers. It is the sole responsibility of the designer to ensure the design of the storage facility can accommodate dimensions of all waste containers that are proposed to be used. Please consult a private waste disposal company to discuss which container suits your situation.

Compactor

A) Low Profile Compactor

Ideal users	Multi-family sectors
Minimum ceiling height clearance	2.1 m
Minimum truck clearance in front of bin	12.2 m long

B) Ground Level Compactor

Ideal users	Multi-family sectors
Minimum ceiling height clearance	2.5 m
Minimum truck clearance (in front/above)	15.2 m long/ 7 m high
Minimum truck turning radius	15.2 m

C) Ground Level Cardboard Compactor

Ideal users	Commercial and institutional sectors
Minimum ceiling height clearance	6.1 m
Minimum truck clearance in front of bin	15.2 m long
Minimum truck turning radius	15.2 m

D) Commercial Compactor

Ideal users	Commercial and institutional sectors
Minimum ceiling height clearance	6.1 m
Minimum truck clearance in front of bin	15.2 m long

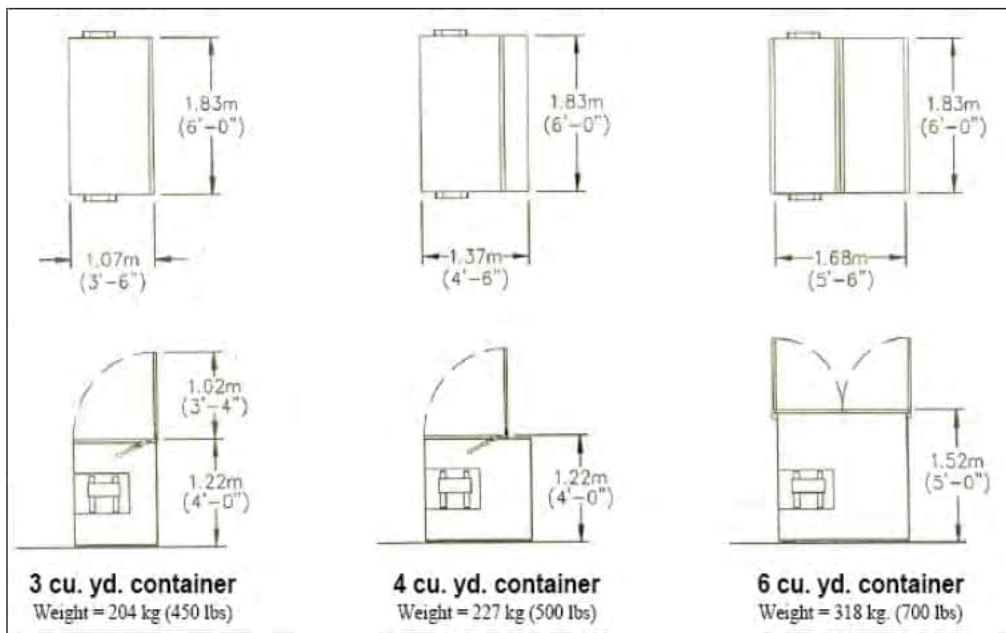
Compactor	
Potential Benefits	Potential Challenges
<ul style="list-style-type: none"> Less servicing frequency required compared to other container use 	<ul style="list-style-type: none"> No cardboard - jams easily unless specific type of compactor is used
<ul style="list-style-type: none"> Can store more volume than the physical dimension of container 	<ul style="list-style-type: none"> Odour a concern if not routinely serviced
<ul style="list-style-type: none"> Less messy; Less overflow 	<ul style="list-style-type: none"> Not suitable for compostables collection
<ul style="list-style-type: none"> Ideal for large volume generation (more than 90 units) 	<ul style="list-style-type: none"> Requires electricity, drainage; extra cost needed
<ul style="list-style-type: none"> Long life span (15-20 years) if properly maintained 	<ul style="list-style-type: none"> Noise/vibration concerns. May need isolator to lessen vibration
<ul style="list-style-type: none"> More secured as only trained technician can operate compactor 	<ul style="list-style-type: none"> Capital cost may be higher than bin

<ul style="list-style-type: none"> • Various types available for different applications 	<ul style="list-style-type: none"> • Underground storage may have limited space for truck to manoeuvre
	<ul style="list-style-type: none"> • Must carry entire compactor container back and forth to dispose waste; limited number of servicing per collection route
	<ul style="list-style-type: none"> • Not everyone can have access to the compactor as only trained technicians should be allowed to operate

Front End Bin

Minimum concrete pad area	1.5 m x 2.4 m
Minimum ceiling height clearance	2.5 m
Minimum truck clearance (in front/overhead)	15.2 m long/6.1 m high

Container Size (cubic yard)	Common Measurements		
	Length (m)	Width (m)	Height (m)
2	1.8	0.9	1.0
3	1.8	1.1	1.2
4	1.8	1.4	1.2
5	1.8	1.4	1.5
6	1.8	1.7	1.5
8	1.8	1.7	2.1



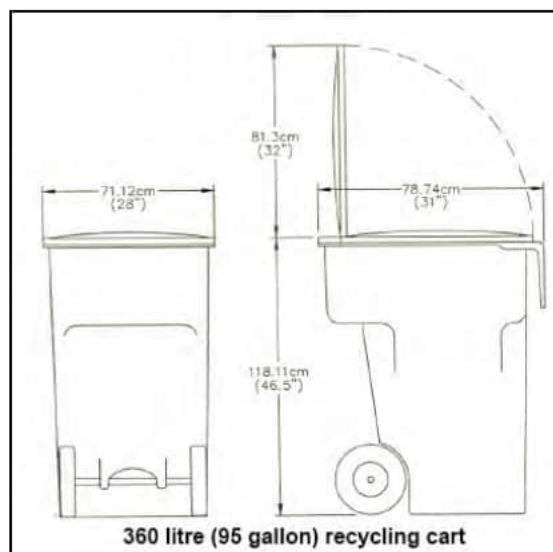
Courtesy: City of Richmond

Front End Bin	
Potential Benefits	Potential Challenges
<ul style="list-style-type: none"> • Applicable for most waste streams including cardboard and compostables 	<ul style="list-style-type: none"> • Require more truck trips to service compared to compactors
<ul style="list-style-type: none"> • Capital cost less than a compactor 	<ul style="list-style-type: none"> • Odour a concern if not routinely serviced
<ul style="list-style-type: none"> • Sealed container such that drainage not a major concern 	<ul style="list-style-type: none"> • No extra capacity for overflowing waste, may require extra pickup which would result in higher cost
<ul style="list-style-type: none"> • Ideal for less than 100 units 	<ul style="list-style-type: none"> • Surface damage to concrete pad due to frequent collection
<ul style="list-style-type: none"> • No electricity required to operate 	<ul style="list-style-type: none"> • May cost more than compactor when extra service costs are included
<ul style="list-style-type: none"> • Quick collection time as waste is transferred to the collection truck onsite 	<ul style="list-style-type: none"> • Unsightly; often end up in lanes because limited space to place them within private properties
<ul style="list-style-type: none"> • Easily accessible for most occupants 	<ul style="list-style-type: none"> • Can easily be vandalized or moved

Cart

Minimum ceiling height clearance	2.5 m
Minimum room size	5 m ² (min. 1.5 m wide)
Minimum truck clearance (in front/overhead)	15.2 m long/6.1 m high

Container Size	Common Measurements		
	Length (m)	Width (m)	Height (m)
135L (35 gallon) cart	0.6	0.5	1.0
250L (65 gallon) cart	0.7	0.6	1.1
360L (95 gallon) cart	0.9	0.7	1.2



Courtesy: City of Richmond

Cart	
Potential Benefits	Potential Challenges
<ul style="list-style-type: none"> Least footprint required compared to a front end bin or a compactor 	<ul style="list-style-type: none"> Require higher service frequency compared to bigger containers
<ul style="list-style-type: none"> Less expensive than a bin or a compactor 	<ul style="list-style-type: none"> Odour maybe a concern if not routinely serviced
<ul style="list-style-type: none"> Sealed container such that drainage is not a major concern 	<ul style="list-style-type: none"> No extra capacity for overflowing waste, may require extra pickup which would result in higher cost
<ul style="list-style-type: none"> Ideal for building with less than 30 dwelling units 	<ul style="list-style-type: none"> Not ideal for high volume situation or high number of dwelling units (over 30 units)
<ul style="list-style-type: none"> No electricity required to operate 	<ul style="list-style-type: none"> Can easily be vandalized or stolen
<ul style="list-style-type: none"> Easy to manoeuvre than large containers 	

Grease Container

A) Drum

- Specially designed trucks to either suck out grease with a pump or melt and dump the more solidified grease from top of vehicle
- Sit stationary on ground



Typical drum size	45 gallon (170 L)
Full drum weight	180 kg

B) Bin

- Specially designed trucks to either suck out grease with a pump or melt and dump the more solidified grease from the top of vehicle
- Requires room for collection
- Bins may have wheels to move around



Typical bin sizes	A) 0.9 m tall, 1.7 m wide, 84 cm deep & taper to 56 cm (2.2 yard ³); or B) 0.9 m tall, 1.7 m wide, 109 cm deep & taper to 81 cm (2.75 yard ³)
Full bin weight	545 kg - 910 kg

C) Jug-In-Box (JIB)

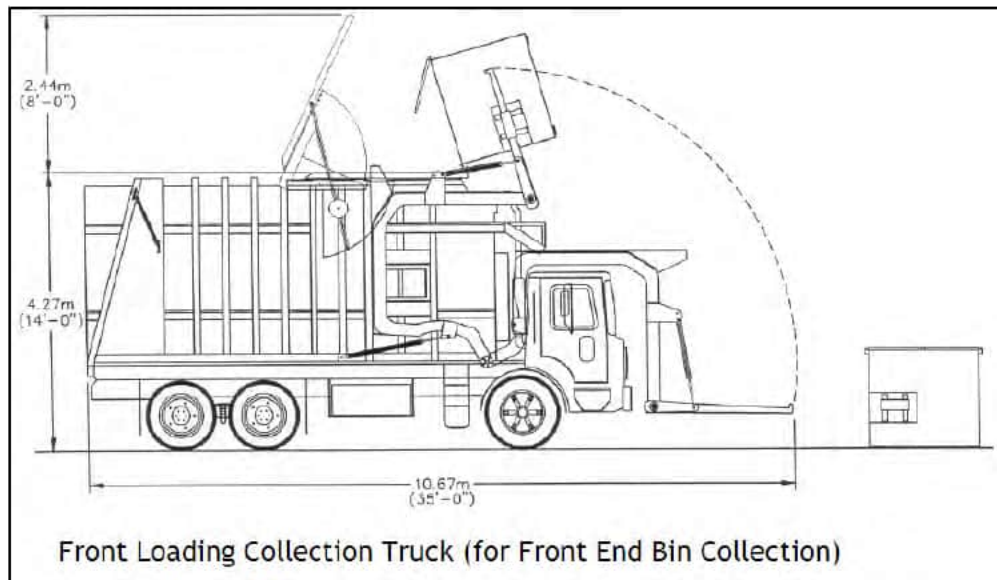
- Haulers collect JIBs from customers by hand into a 1 ton truck
- JIBs are easily transported and requires less space for collection than the other two options
- Sit stationary on ground

Typical JIB size	35 cm x 23 cm x 23 cm (18.6 L)
Full JIB weight	18 kg

Appendix C - Collection Vehicles

The facility and loading area designs should accommodate the dimensions of the collection vehicles. The following table shows approximate dimensions only. Please consult a private waste disposal company to confirm vehicle requirements.

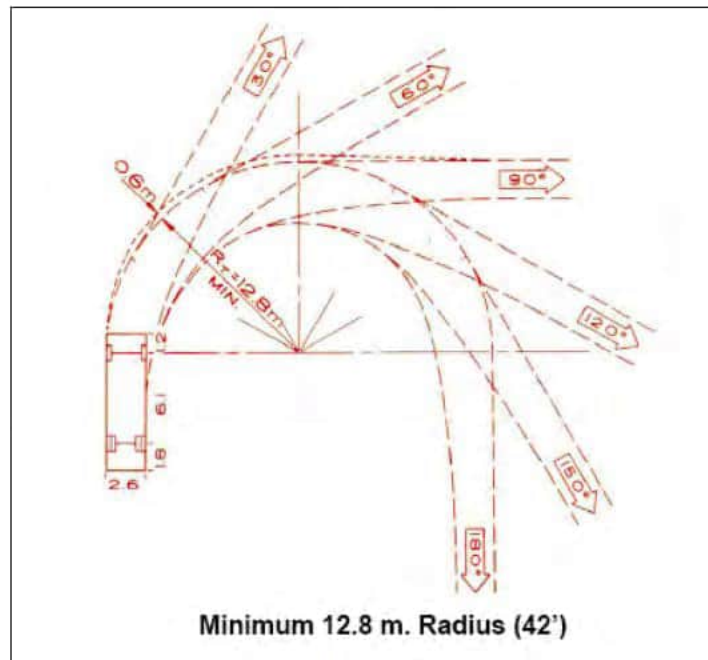
Typical Collection Truck Dimensions (approximate)	
Length	10.0 m - 12.0 m
Width	2.5 m
Minimum inside turning radius	10.0 m
Minimum outside turning radius	12.8 m
Height clearance	6.5 m - 7.5 m
Width clearance	4.0 m
Length clearance	15.2 m



Courtesy: City of Richmond



Courtesy: City of Richmond



Courtesy: City of Richmond

Useful Links:

Recycling Council of British Columbia: (rcbc.bc.ca)

Non-profit recycling council that provides an information and referral service for almost all of the recycling programs in BC.

Encorp: (encorp.ca)

Non-profit product stewardship agency that manages and promotes the Provincial beverage container deposit return system as well as electronics recycling program.

Metro Vancouver SmartSteps: (metrovancover.org/smartsteps)

Regional agency that assists businesses in reducing the amount of materials and energy use through specific, cost-effective initiatives.

City of Vancouver Solid Waste By-law: (vancouver.ca/bylaws/8417c.pdf)

Contact Information:

Development Services

Website: vancouver.ca/commsvcs/planning

Email: csg.enquiry.centre@vancouver.ca

Engineering Services

Website: vancouver.ca/engsvcs

Email: engineering@vancouver.ca

Sustainability Group

Website: vancouver.ca/sustainability

Email: sustainability@vancouver.ca

CITY OF VANCOUVER

ENGINEERING SERVICES

GARBAGE AND RECYCLING STORAGE FACILITY DESIGN SUPPLEMENT

May 2011
(Revision: September 2012)



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Preface

Solid waste management has become an integral part of the development planning process where space allocation for waste storage facility can no longer be considered an after thought during the design stages. While waste disposal companies may be responsible to provide collection services when the building is operational, the designer, developer, and operator all have important roles in designing and locating a storage facility that provides adequate waste storage and allows collection services to occur in a safe and efficient manner.

As part of the waste management initiative under the City's Green Building Strategy, the "Garbage and Recycling Storage Facility Design Supplement" is a clarification tool to assist planners and developers on proper design of garbage and recycling storage facilities for new and retrofit buildings. The purpose of this initiative is to increase waste diversion and to reduce environmental impacts.

This document includes:

- General requirements of an adequate waste storage facility
- Steps to estimate the number of containers and space required for various buildings
- Tables showing the suggested number of containers required for various building types based on estimated waste generation rate
- Dimensions and specifications of various commonly used storage containers and collection vehicles

Related, for any rezoning applications involving properties greater than 2 acres, an additional study will be required focusing on sustainability issues including a Solid Waste Diversion Strategy. For more information regarding this policy, please visit the following website: <http://vancouver.ca/home-property-development/zoning-by-law-administrative-bulletins.aspx>

1.0 General Requirements

Development permit applications are reviewed by the City and include the examination of solid waste storage facility and loading area designs on the submitted drawings to ensure City standards are met (to the satisfaction of the Director of Planning in consultation with the General Manager of Engineering Services). Often, omissions or errors on drawings occur because designers may not be aware of specific standards. The following has been compiled to assist in proper design and to avoid confusion and delays. In conjunction with these supplements, good engineering practices are to be followed in all circumstances to ensure public safety.

The following are general requirements for solid waste storage facility:

1.1 Location of Storage Facility

Identifying the best location for communal solid waste storage facility can be difficult and is a balance between conveniences to users, space, access, noise, security, planning requirements, and architectural integration. The following should be considered during the design process:

- Solid waste storage facility should be located at grade (ground level) and adjacent to the area where collection vehicles are allowed access to the facility.
- If at grade facility is not permissible, the facility should be placed no more than one level down from grade.
- Recycling facility should be located with or adjacent to the garbage facility. However, garbage and recycling containers should be kept separated and not intermingled.
- Containers should not block or impede any fire exits, public right of ways, or pedestrian and vehicular access.
- If the building is multi-use, separate solid waste facilities should be provided for different types of occupants (i.e. residential facility vs. retail/commercial facility). When the exact future commercial use is not known, the facility shall be equal to the space required for the potential commercial use with the highest storage needs.
- More than one recycling facility can be considered provided each facility should have at least 1 cart each for Newsprints, Mixed Papers, and Mixed Containers.

1.2 Design of Storage Facility

- Facility should be built according to the Vancouver Building By-law Section 3.6.2.6. for Combustible Refuse Storage where except as required by Sentence 3.6.3.3.(9), a room for the storage of combustible refuse shall be separated from the remainder of the building by a fire separation with a fire-resistance rating not less than 1 hour, and sprinklered.

- Facility should have at least 2.5 meters in height clearance to allow complete opening of container lids.
- Facility must have sufficient container capacity to store all solid waste generated for a minimum of 7 days.
- Proper signage should be placed inside the facility to ensure material goes into the correct container.
- Facility should be secured with locked doors to protect against potential vandalism or pest and wildlife access.
- The total area of the facility should equate to about 2.0 to 2.5 times the physical footprint of the containers to provide adequate space for manoeuvring.

The Vancouver Building By-Law shall govern the development, design, and construction of the facility. All solid waste storage facilities should be equipped with, but are not limited to:

Concrete Pad	<ul style="list-style-type: none"> • minimum 15.25 cm thick reinforced concrete pads • able to withstand 28,000 kg collection vehicle
Drainage	<ul style="list-style-type: none"> • drain to sanitary sewer • oil separator required
Door	<ul style="list-style-type: none"> • double doors with a minimum 2 m opening • can be propped or locked open with a bumper guard on the inside facing the door
Electricity	<ul style="list-style-type: none"> • power shall be provided for equipment inside the facility
Lighting	<ul style="list-style-type: none"> • adequate lighting around and inside the facility as required by the Vancouver Building By-law
Hose Bib	<ul style="list-style-type: none"> • at least one (1) hose connection for cleaning the area
Ventilation	<ul style="list-style-type: none"> • release odour/stale air

1.3 Access for Facility Users

- Facility should be clean, well lit, regularly maintained, and conveniently located for users to get access to.
- Users should be able to access all containers inside the facility without impediment.
- If an auxiliary area is designated for the facility outside the building, the area should be located adjacent to an entry point into the building for easy access by the users.

1.4 Designated Collection/Loading Area

- Loading area must be no higher than 0.6 meters above driveway levels and must be relatively flat (+/-2% grade).
- Adequate clearance (height, turning radius, straight approach, etc) should be provided for collection vehicles to manoeuvre and to collect materials obstruction free (please refer to Appendix C on typical collection vehicle dimensions).
- Loading area should be located where interference with pedestrian traffic and other vehicular access are minimal.
- Loading pad should be constructed at the loading area and should be able to withstand a 28,000 kg collection vehicle. Dimension of the pad should be based on the number of containers used in the building.

NOTE: The City of Vancouver provides recycling services to all multi-family buildings. If recycling carts are stored greater than 50 meters from the nearest collection point and are required to be carried out by City crews, an additional carryout fee will apply for each cart depending on the carryout distance required. To avoid the carryout fee, locate the storage facility within 50 meters from the nearest collection point or designate the building caretaker to carry out the recycling carts to the collection point during collection day.

1.5 Access for Collection Vehicle

- Adequate clearance (height, turning radius, straight approach, etc) should be provided for collection vehicles to manoeuvre and to collect materials obstruction free (please refer to Appendix C on typical collection vehicle dimensions).
- In general, the collection vehicle access route should be designed in such a way to allow a collection vehicle to enter, collect, and exit the site in a forward motion. Collection vehicle backing up onto a road is not preferred.
- Vertical clearance of 4.5 meters should be accommodated throughout the entire access route.

2.0 Estimating the Number of Containers and the Storage Space Required

Appendix A shows a summary of the calculated number of containers required for each building use based on the number of total units or total floor area. However, the exact size and location of the waste storage facility must take into consideration the following factors:

- building use
- building occupancy
- quantities of waste generated by occupants
- spare storage capacity
- space allowance for users to access and manoeuvre containers
- potential future changes to waste collection

2.1 How to Calculate the Number of Containers Required

The following equations can be used to estimate the number of storage containers required.

$$\text{Total volume generated/week} = \text{Number of units (or floor area)} \times \text{Estimated volume generated/unit (or floor area)/week}$$

$$\text{Number of containers required} = \text{Total volume generated/week} \div \text{Collection container storage capacity}$$

The following data would be required to estimate the number of containers:

- Estimated waste volume generated per unit or per floor area
- Number of total units or total floor area
- Volume capacity of a storage container

The following tables show the approximate waste volume generation rates for each building use. Please note the generation rates listed are **only general estimates** and may vary from actual rates. Therefore, please consult with a private waste disposal company to assist you in estimating the number of containers required. For existing commercial buildings, Metro Vancouver provides a free waste reduction assessment through the SmartSteps program. Visit www.metrovancouver.org/smartsteps or call 604-451-6575 for more information.

Multi-Family Residential Building

Waste Categories	Estimated volume generated/unit/week (L/unit/week)
Garbage	95.00
Newsprints	8.50
Mixed Containers	9.00
Mixed Papers (include cardboard)	40.00
Mixed Papers (exclude cardboard)	15.00
Cardboard	30.00
Compostables (i.e. food scraps)	14.00

Hospitality Building

Waste Categories	Estimated volume generated/room/week (L/room/week)
Garbage	47.50
Mixed Containers	3.50
Mixed Papers	8.30
Cardboard	14.30
Tallow/Grease	0.33
Compostables (i.e. food scraps)	20.00

Commercial Buildings

Waste Categories	Estimated volume generated/area/week (L/m ² /week)			
	Office Building	Retail Building	Food Service Establishment	Large Venues
Garbage	1.00	2.25	1.65	3.10
Mixed Papers	0.65	1.50	-	1.50
Mixed Containers	0.375	0.65	2.00	1.70
Cardboard	-	2.30	3.75	2.00
Compostables (i.e. food scraps)	-	-	2.00	-
Tallow/Grease	-	-	0.35	-

For information on the volume capacity of different storage containers, please see Appendix B.

2.2 How to Calculate the Storage Space Required

The required total storage space to store the containers can be estimated using the following equation:

Space Allocation for Storage Facility = Number of containers x Footprint of each container x Manoeuvre factor

Commonly used container dimensions are shown in the following table. Dimensions for other container sizes can be found in Appendix B.

Container Type	Length (m)	Width (m)	Footprint (m)
360L Cart	0.9	0.7	0.63
3 Yard ³ Bin	1.8	1.1	1.98
4 Yard ³ Bin	1.8	1.4	2.52

The manoeuvre factor allocates space required to move the containers inside the storage facility. A value of 2.00 to 2.25 can be used.

Please note the space allocated through the above equation is based on the number of containers required to provide once per week service.

2.3 Examples of Applying the Equation

The following are examples of how the equations can be applied to different building scenarios:

Example: 30 Units Multi-Family Building

Estimated Number of Containers Required						
Waste	Container choice	A	B	C = (A x B)	D	E = (C ÷ D)
		Number of units	Generation rate (L/unit/week)	Total volume generated (L/week)	Container capacity (L)	Number of containers required per week
Garbage	360L Cart	30 units	95	2,850	360	7 cart*
Recycling - Newsprints	360L Cart	30 units	8.5	255	360	1 cart
Recycling - Mixed Papers with Cardboard	360L Cart	30 units	40	1,200	360	4 cart
Recycling - Mixed Containers	360L Cart	30 units	9	270	360	1 cart
Compostables	360L Cart	30 units	14	420	360	2 cart

*The number of carts shown for garbage was reduced to reflect the volume of compostables diverted. The volume of compostables diverted should equal the same volume reduced from garbage.

Estimated Storage Space Required					
Waste	Container choice	Number of containers required per week	Footprint of container (m2)	Manoeuvre factor	Storage space required (m2)
Garbage	360L Cart	7 cart	0.63	2.25	9.92
Recycling - Newsprints	360L Cart	1 cart	0.63	2.25	1.42
Recycling - Mixed Papers with Cardboard	360L Cart	4 cart	0.63	2.25	5.67
Recycling - Mixed Containers	360L Cart	1 cart	0.63	2.25	1.42
Compostables	360L Cart	2 cart	0.63	2.25	2.84
TOTAL AREA					21.27

Example: 1,000 m² Restaurant

Estimate Number of Containers Required						
Waste	Container choice	A	B	C	D	E
		Total Floor Space (m ²)	Generation rate (L/ m ² /week)	= (A x B) Total volume generated (L/week)	Container capacity (L)	= (C ÷ D) Number of containers required per week
Garbage	3 yard ³ Bin	1,000	1.65	1,650	2,294	1 bin
Compostables	3 yard ³ Bin	1,000	2.00	2,000	2,294	1 bin
Tallow/Grease	170L Drum	1,000	0.35	350	170	2 drum
Recycling - Mixed Containers	360L Cart	1,000	2.00	2,000	360	6 cart
Recycling - Cardboard Bin	3 yard ³ Bin	1,000	3.75	3,750	2,294	2 bin

Estimated Storage Space Required					
Waste	Container choice	Number of containers required per week	Footprint of container (m ²)	Manoeuvre factor	Storage area required (m ²)
Garbage	3 yard ³ Bin	1 bin	1.98	2.25	4.46
Compostables	3 yard ³ Bin	1 bin	1.98	2.25	4.46
Tallow/Grease	170L Drum	2 drum	0.26	2.25	1.17
Recycling - Mixed Containers	360L Cart	6 cart	0.63	2.25	8.51
Recycling - Cardboard Bin	3 yard ³ Bin	2 bin	1.98	2.25	8.91
TOTAL AREA					27.51

Useful Conversion Factors:

Volume:

1 gallon = 0.134 cubic feet

1 cubic meter = 35.5 cubic feet

1 cubic yard = 764.6 L

3 cubic yard = six - 360 L cart

Weight:

1 tonne = 1,000 kg

1 pound = 0.454 kg

Distance:

1 meter = 3.28 feet

Area:

1 square meter = 10.76 square feet

Density:

1 lb/yd³ = 0.00059328 kg/L

Appendix A - Solid Waste Container Allocation for Different Building Use

The following tables provide minimum solid waste storage space allocation for various building uses based on the calculation shown in Section 2.0. However, the exact size and location of the waste storage facility must take into consideration the following factors:

- building use
- building occupancy
- quantities of waste generated by occupants
- spare storage capacity
- allowance for users access and containers manoeuvre
- potential future changes to waste collection

Appendix B lists some of the most commonly used waste containers for different applications. However, it is the responsibility of the developer to ensure that the correct dimensions and clearances are used for their design. The information can be obtained by contacting local waste disposal companies for up to date information.

Depending on the building use, the City may require additional space and access for other ancillary services where applicable (such as bulky item, grease, scrap metal, hazardous waste collection, etc) or for future diversion opportunities.

Unless specified, all options in the proposed supplement are based on an assumed once per seven days pickup schedule. Please note the City of Vancouver Solid Waste By-law No.8417 (www.vancouver.ca/your-government/find-a-bylaw.aspx) Section 7.7 requires minimum twice per month waste disposal for non-residential properties.

Multi Family Residential Building

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 100 units, please use the general formula shown in Section 2.0 to estimate the minimum number of containers required.

Garbage:

Number of Units	Front End Bin		Compactor		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 6 yard ³ bins required (compacted to 13.5 yard ³)	# of 8 yard ³ bins required (compacted to 18 yard ³)	# of 360L carts required
5-10	N/A	N/A	N/A	N/A	3
11-20	1	1	N/A	N/A	6
21-30	2	1	N/A	N/A	8
31-40	2	2	N/A	N/A	11
41-50	3	2	N/A	N/A	N/A
51-60	3	2	1	N/A	N/A
61-70	3	3	1	N/A	N/A

Garbage and Recycling Storage Facility Design Supplement

71-80	4	3	1	1	N/A
81-90	4	3	1	1	N/A
91-100	5	4	1	1	N/A

N/A = not applicable

Recycling (Newsprints, Mixed Papers, Mixed Containers, Cardboard):

Number of Units	Newsprints	Mixed Containers	Mixed Papers (include cardboard)	Mixed Papers (exclude cardboard)	Cardboard
	# of 360L carts required	# of 360L carts required	# of 360L carts required	# of 360L carts required	# of 3 yard ³ bin required
5-10	1	1	1	1	N/A
11-20	1	1	1	1	N/A
21-30	1	1	4	2	N/A
31-40	1	1	5	2	N/A
41-50	2	2	6	3	1
51-60	2	2	7	3	1
61-70	2	2	8	3	1
71-80	2	2	9	4	2
81-90	3	3	10	4	2
91-100	3	3	12	5	2

N/A = not applicable

Compostables: (Note: If compostables container(s) is provided, garbage container capacity should decrease accordingly.)

Number of Units	Front End Bin	Cart
	# of 3 yard ³ bin required	# of 360 L carts required
5-10	N/A	1
11-20	N/A	1
21-30	N/A	2
31-40	N/A	2
41-50	N/A	2
51-60	N/A	3
61-70	N/A	3
71-80	N/A	4
81-90	1	4
91-100	1	4

N/A = not applicable

Hospitality Building

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 100 units, please use the general formula shown in Section 2.0 to estimate the minimum number of containers required.

Garbage:

Number of Rooms	Front End Bin		Compactor		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 6 yard ³ bins required (compacted to 13.5 yard ³)	# of 8 yard ³ bins required (compacted to 18 yard ³)	# of 360L carts required
1-10	N/A	N/A	N/A	N/A	2
11-20	1	1	N/A	N/A	3
21-30	1	1	N/A	N/A	4
31-40	1	1	N/A	N/A	6
41-50	2	1	N/A	N/A	7
51-60	2	1	1	N/A	N/A
61-70	2	2	1	N/A	N/A
71-80	2	2	1	1	N/A
81-90	2	2	1	1	N/A
91-100	3	2	1	1	N/A

N/A = not applicable

Recycling (Mixed Containers, Mixed Papers, Cardboard):

Number of Rooms	Mixed Containers	Mixed Papers	Cardboard
	# of 360L carts required	# of 360L carts required	# of 3 yard ³ bin required
1-10	1	1	1
11-20	1	1	1
21-30	1	1	1
31-40	1	1	1
41-50	1	2	1
51-60	1	2	1
61-70	1	2	1
71-80	1	2	1
81-90	1	3	1
91-100	1	3	1

N/A = not applicable

Compostables: (Note: If compostables container(s) is provided, garbage container capacity should decrease accordingly.)

Number of Rooms	Front End Bin	Cart
	# of 3 yard ³ bin required	# of 360 L carts required
1-10	N/A	1
11-20	N/A	2
21-30	N/A	2
31-40	N/A	3
41-50	N/A	3
51-60	1	4
61-70	1	4
71-80	1	5
81-90	1	5
91-100	1	6

N/A = not applicable

Grease/Tallow:

Number of Rooms	Jug-In-Box (JIB)	Drum
	# of 18.6L JIB required	# of 170L drum required
1-10	1	1
11-20	1	1
21-30	1	1
31-40	1	1
41-50	1	1
51-60	2	1
61-70	2	1
71-80	2	1
81-90	2	1
91-100	2	1

N/A = not applicable

Office Building

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 5,000 m², please use the general formula to calculate the minimum number of containers required.

Garbage:

Office Floor Space (m ²)	Front End Bin		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 360L carts required
0-100	N/A	N/A	1
101-200	N/A	N/A	1
201-300	N/A	N/A	1
301-400	N/A	N/A	1
401-500	N/A	N/A	1
501-600	N/A	N/A	2
601-700	N/A	N/A	2
701-800	N/A	N/A	2
801-900	N/A	N/A	3
901-1,000	N/A	N/A	3
1,001-2,000	1	N/A	6
2,001-3,000	1	1	8
3,001-4,000	2	1	N/A
4,001-5,000	2	2	N/A

N/A = not applicable

Recycling (Mixed Papers, Mixed Containers):

Office Floor Space (m ²)	Mixed Papers	Mixed Containers
	# of 360L carts required	# of 360L carts required
0-100	1	1
101-200	1	1
201-300	1	1
301-400	1	1
401-500	1	1
501-600	1	1
601-700	1	1
701-800	1	1
801-900	2	1
901-1,000	2	1
1,001-2,000	4	2
2,001-3,000	5	3
3,001-4,000	7	4
4,001-5,000	9	5

Retail Building

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 5,000 m², please use the general formula to calculate the minimum number of containers required.

Garbage:

Retail Floor Space (m ²)	Front End Bin		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 360L carts required
0-100	N/A	N/A	1
101-200	N/A	N/A	1
201-300	N/A	N/A	2
301-400	N/A	N/A	3
401-500	N/A	N/A	3
501-600	1	N/A	4
601-700	1	1	4
701-800	1	1	5
801-900	1	1	6
901-1,000	1	1	6
1,001-2,000	2	1	13
2,001-3,000	3	2	N/A
3,001-4,000	4	3	N/A
4,001-5,000	5	4	N/A

N/A = not applicable

Recycling (Mixed Papers, Mixed Containers, Cardboard):

Retail Floor Space (m ²)	Mixed Papers (exclude cardboard)		Mixed Containers	Cardboard
	# of 360L carts required	# of 3 yard ³ bin required	# of 360L carts required	# of 3 yard ³ bin required
0-100	1	N/A	1	N/A
101-200	1	N/A	1	N/A
201-300	1	N/A	1	N/A
301-400	2	N/A	1	N/A
401-500	2	N/A	1	N/A
501-600	3	N/A	1	1
601-700	3	N/A	1	1
701-800	3	N/A	1	1
801-900	4	N/A	2	1
901-1,000	4	N/A	2	1
1,001-2,000	8	N/A	4	2
2,001-3,000	13	N/A	5	3
3,001-4,000	17	3	7	4
4,001-5,000	21	4	9	5

N/A = not applicable

Food Service Establishment

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 5,000 m², please use the general formula to calculate the minimum number of containers required.

Garbage:

Restaurant Floor Space (m ²)	Front End Bin		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 360L carts required
0-100	N/A	N/A	1
101-200	N/A	N/A	1
201-300	N/A	N/A	2
301-400	N/A	N/A	2
401-500	N/A	N/A	3
501-600	N/A	N/A	3
601-700	N/A	N/A	4
701-800	1	N/A	4
801-900	1	1	5
901-1,000	1	1	5
1,001-2,000	2	2	10
2,001-3,000	3	2	N/A
3,001-4,000	3	3	N/A
4,001-5,000	4	3	N/A

N/A = not applicable

Recycling (Mixed Containers, Cardboard):

Restaurant Floor Space (m ²)	Mixed Containers		Cardboard
	# of 360L carts required	# of 3 yard ³ bin required	# of 3 yard ³ bin required
0-100	1	N/A	N/A
101-200	1	N/A	N/A
201-300	2	N/A	N/A
301-400	3	N/A	1
401-500	3	N/A	1
501-600	4	N/A	1
601-700	4	N/A	2
701-800	5	N/A	2
801-900	5	N/A	2
901-1,000	6	N/A	2
1,001-2,000	12	2	4
2,001-3,000	18	3	5
3,001-4,000	24	4	7
4,001-5,000	30	5	9

N/A = not applicable

Compostables:

Restaurant Floor Space (m ²)	# of 360L carts required	# of 3 yard ³ bin required
0-100	1	N/A
101-200	2	N/A
201-300	2	N/A
301-400	3	N/A
401-500	3	N/A
501-600	4	1
601-700	4	1
701-800	5	1
801-900	5	1
901-1,000	6	1
1,001-2,000	N/A	2
2,001-3,000	N/A	3
3,001-4,000	N/A	4
4,001-5,000	N/A	5

N/A = not applicable

Grease/Tallow:

Restaurant Floor Space (m ²)	Jug-In-Box (JIB)	Drum	Bin
	# of 18.6L JIB required	# of 170L drum required	# of 2.75 yard ³ bin required
0-100	2	1	N/A
101-200	4	1	N/A
201-300	6	1	N/A
301-400	8	1	N/A
401-500	10	2	N/A
501-600	12	2	N/A
601-700	14	2	N/A
701-800	16	2	N/A
801-900	17	2	N/A
901-1,000	19	3	N/A
1,001-2,000	N/A	5	1
2,001-3,000	N/A	7	1
3,001-4,000	N/A	9	1
4,001-5,000	N/A	11	1

N/A = not applicable

Large Venues (greater than 2,000 visitors per day)

The following tables list the minimum number of storage containers required for each waste stream based on the estimated generation rate in section 2.0. If there are multiple container options to choose from, please select a single type of container to use. For buildings greater than 5,000 m², please use the general formula to calculate the minimum number of containers required.

Garbage:

Venue Floor Space (m ²)	Front End Bin		Cart
	# of 3 yard ³ bins required	# of 4 yard ³ bins required	# of 360L carts required
0-100	N/A	N/A	1
101-200	N/A	N/A	2
201-300	N/A	N/A	3
301-400	N/A	N/A	4
401-500	1	N/A	5
501-600	1	1	6
601-700	1	1	7
701-800	2	1	7
801-900	2	1	8
901-1,000	2	2	9
1,001-2,000	3	3	N/A
2,001-3,000	5	4	N/A
3,001-4,000	6	5	N/A
4,001-5,000	7	6	N/A

N/A = not applicable

Recycling (Mixed Papers, Mixed Containers, Cardboard):

Venue Floor Space (m ²)	Mixed Papers (exclude cardboard)		Mixed Containers		Cardboard
	# of 360L carts required	# of 3 yard ³ bin required	# of 360L carts required	# of 3 yard ³ bin required	# of 3 yard ³ bin required
0-100	1	N/A	1	N/A	N/A
101-200	1	N/A	1	N/A	N/A
201-300	2	N/A	2	N/A	N/A
301-400	2	N/A	2	N/A	N/A
401-500	3	N/A	3	N/A	N/A
501-600	3	N/A	3	N/A	N/A
601-700	3	N/A	4	N/A	1
701-800	4	N/A	4	N/A	1
801-900	4	N/A	5	N/A	1
901-1,000	5	N/A	5	N/A	1
1,001-2,000	9	N/A	10	N/A	2
2,001-3,000	13	2	15	3	3
3,001-4,000	17	3	19	4	4
4,001-5,000	21	4	24	5	5

N/A = not applicable

Appendix B - General Specification for Different Waste Containers

The following is a general overview of the various waste containers commonly used for solid waste storage. The City does not guarantee the accuracy of the dimensions listed below because of variations between different manufacturers. It is the sole responsibility of the designer to ensure the design of the storage facility can accommodate the waste containers to be used. Please consult with a private waste disposal company to discuss which containers are suitable for different applications.

Compactor

A) Low Profile Compactor

Ideal users	Multi-family buildings
Minimum ceiling height clearance	2.1 m
Minimum truck clearance in front of bin	12.2 m long

B) Ground Level Compactor

Ideal users	Multi-family buildings
Minimum ceiling height clearance	2.5 m
Minimum truck clearance (in front/above)	15.2 m long/ 7 m high
Minimum truck turning radius	15.2 m

C) Ground Level Cardboard Compactor

Ideal users	Commercial and institutional buildings
Minimum ceiling height clearance	6.1 m
Minimum truck clearance in front of bin	15.2 m long
Minimum truck turning radius	15.2 m

D) Commercial Compactor

Ideal users	Commercial and institutional buildings
Minimum ceiling height clearance	6.1 m
Minimum truck clearance in front of bin	15.2 m long

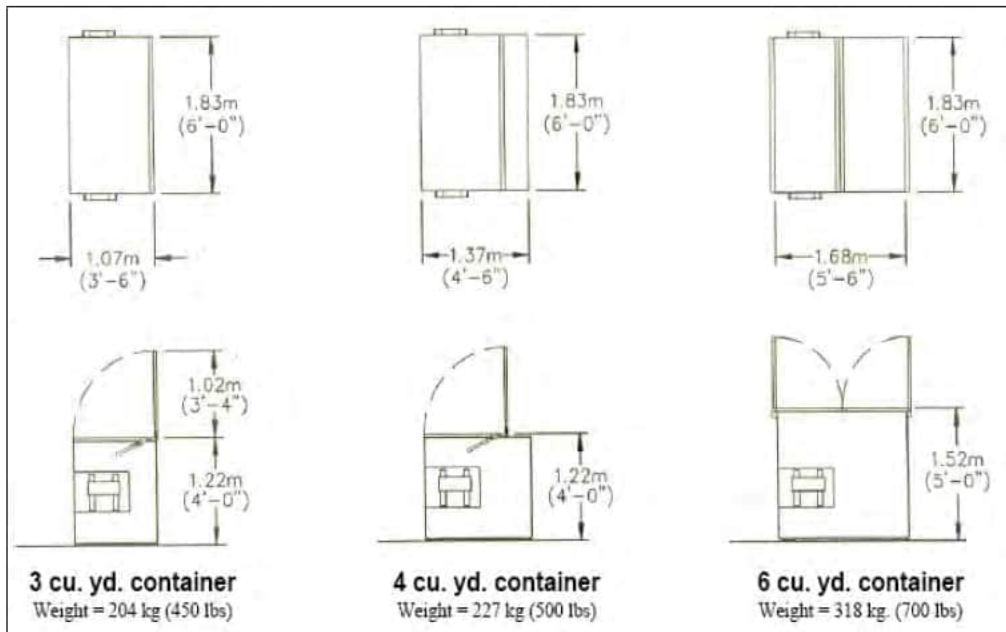
Compactor	
<i>Potential Benefits</i>	<i>Potential Challenges</i>
<ul style="list-style-type: none"> • Less servicing frequency required compared to other container use 	<ul style="list-style-type: none"> • No cardboard - jams easily unless specific type of compactor is used
<ul style="list-style-type: none"> • Can store more volume than the physical dimension of container 	<ul style="list-style-type: none"> • Odour a concern if not routinely serviced
<ul style="list-style-type: none"> • Less messy; Less overflow 	<ul style="list-style-type: none"> • Not suitable for compostables collection
<ul style="list-style-type: none"> • Ideal for large volume generation (more than 90 units) 	<ul style="list-style-type: none"> • Requires electricity, drainage; extra cost needed
<ul style="list-style-type: none"> • Long life span (15-20 years) if properly maintained 	<ul style="list-style-type: none"> • Noise/vibration concerns. May need isolator to lessen vibration
<ul style="list-style-type: none"> • More secured as only trained technician can operate compactor 	<ul style="list-style-type: none"> • Capital cost may be higher than bin
<ul style="list-style-type: none"> • Various types available for different applications 	<ul style="list-style-type: none"> • Underground storage may have limited space for truck to manoeuvre

	<ul style="list-style-type: none"> • Must carry entire compactor container back and forth to dispose waste; limited number of servicing per collection route
	<ul style="list-style-type: none"> • Not everyone can have access to the compactor as only trained technicians should be allowed to operate

Front End Bin

Minimum concrete pad area	1.5 m x 2.4 m
Minimum ceiling height clearance	2.5 m
Minimum truck clearance (in front/overhead)	15.2 m long/6.1 m high

Container Size (cubic yard)	Common Measurements		
	Length (m)	Width (m)	Height (m)
2	1.8	0.9	1.0
3	1.8	1.1	1.2
4	1.8	1.4	1.2
5	1.8	1.4	1.5
6	1.8	1.7	1.5
8	1.8	1.7	2.1



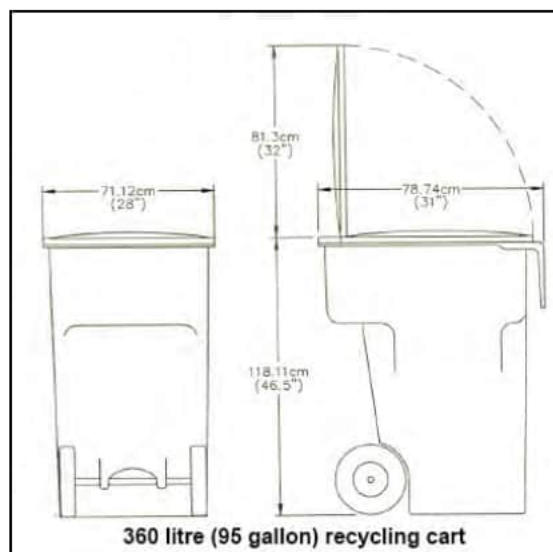
Courtesy: City of Richmond

Front End Bin	
Potential Benefits	Potential Challenges
<ul style="list-style-type: none"> • Applicable for most waste streams including cardboard and compostables 	<ul style="list-style-type: none"> • Require more truck trips to service compared to compactors
<ul style="list-style-type: none"> • Capital cost less than a compactor 	<ul style="list-style-type: none"> • Odour a concern if not routinely serviced
<ul style="list-style-type: none"> • Sealed container such that drainage not a major concern 	<ul style="list-style-type: none"> • No extra capacity for overflowing waste, may require extra pickup which would result in higher cost
<ul style="list-style-type: none"> • Ideal for less than 100 units 	<ul style="list-style-type: none"> • Surface damage to concrete pad due to frequent collection
<ul style="list-style-type: none"> • No electricity required to operate 	<ul style="list-style-type: none"> • May cost more than compactor when extra service costs are included
<ul style="list-style-type: none"> • Quick collection time as waste is transferred to the collection truck onsite 	<ul style="list-style-type: none"> • Unsightly; often end up in lanes because limited space to place them within private properties
<ul style="list-style-type: none"> • Easily accessible for most occupants 	<ul style="list-style-type: none"> • Can easily be vandalized or moved

Cart

Minimum ceiling height clearance	2.5 m
Minimum room size	5 m ² (min. 1.5 m wide)
Minimum truck clearance (in front/overhead)	15.2 m long/6.1 m high

Container Size	Common Measurements		
	Length (m)	Width (m)	Height (m)
135L (35 gallon) cart	0.6	0.5	1.0
250L (65 gallon) cart	0.7	0.6	1.1
360L (95 gallon) cart	0.9	0.7	1.2



Courtesy: City of Richmond

Cart	
Potential Benefits	Potential Challenges
<ul style="list-style-type: none"> Least footprint required compared to a front end bin or a compactor 	<ul style="list-style-type: none"> Require higher service frequency compared to bigger containers
<ul style="list-style-type: none"> Less expensive than a bin or a compactor 	<ul style="list-style-type: none"> Odour maybe a concern if not routinely serviced
<ul style="list-style-type: none"> Sealed container such that drainage is not a major concern 	<ul style="list-style-type: none"> No extra capacity for overflowing waste, may require extra pickup which would result in higher cost
<ul style="list-style-type: none"> Ideal for building with less than 30 dwelling units 	<ul style="list-style-type: none"> Not ideal for high volume situation or high number of dwelling units (over 30 units)
<ul style="list-style-type: none"> No electricity required to operate 	<ul style="list-style-type: none"> Can easily be vandalized or stolen
<ul style="list-style-type: none"> Easy to manoeuvre than large containers 	

Grease Container

A) Drum

- Specially designed trucks to either suck out grease with a pump or melt and dump the more solidified grease from top of vehicle
- Sit stationary on ground



Typical drum size	45 gallon (170 L)
Full drum weight	180 kg

B) Bin

- Specially designed trucks to either suck out grease with a pump or melt and dump the more solidified grease from the top of vehicle
- Requires room for collection
- Bins may have wheels to move around



Typical bin sizes	A) 0.9 m tall, 1.7 m wide, 84 cm deep & taper to 56 cm (2.2 yard ³); or B) 0.9 m tall, 1.7 m wide, 109 cm deep & taper to 81 cm (2.75 yard ³)
Full bin weight	545 kg - 910 kg

C) Jug-In-Box (JIB)

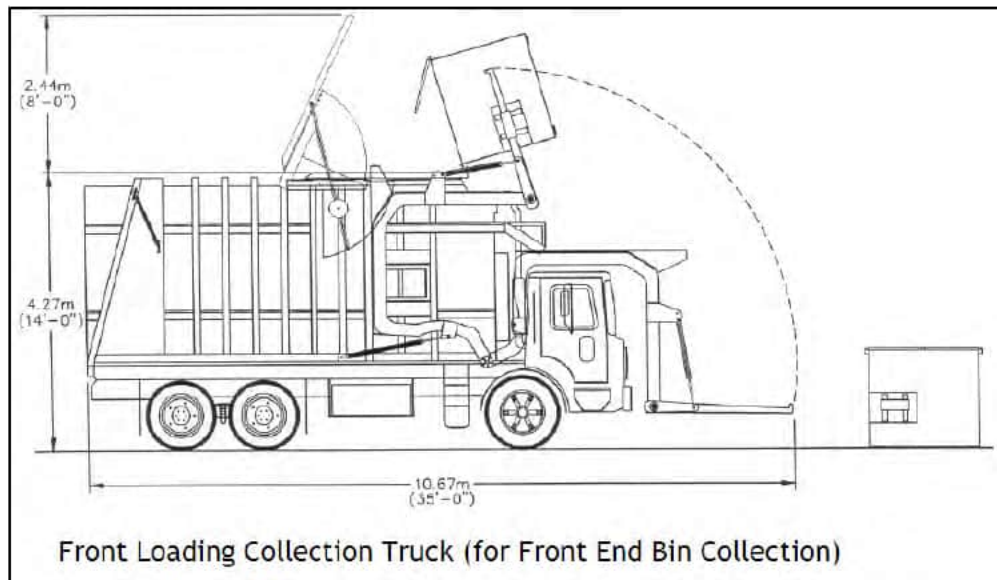
- Haulers collect JIBs from customers by hand into a 1 ton truck
- JIBs are easily transported and requires less space for collection than the other two options
- Sit stationary on ground

Typical JIB size	35 cm x 23 cm x 23 cm (18.6 L)
Full JIB weight	18 kg

Appendix C - Collection Vehicles

The facility and loading area designs should accommodate the dimensions of the collection vehicles. The following table shows approximate dimensions only. Please consult a private waste disposal company to confirm vehicle requirements.

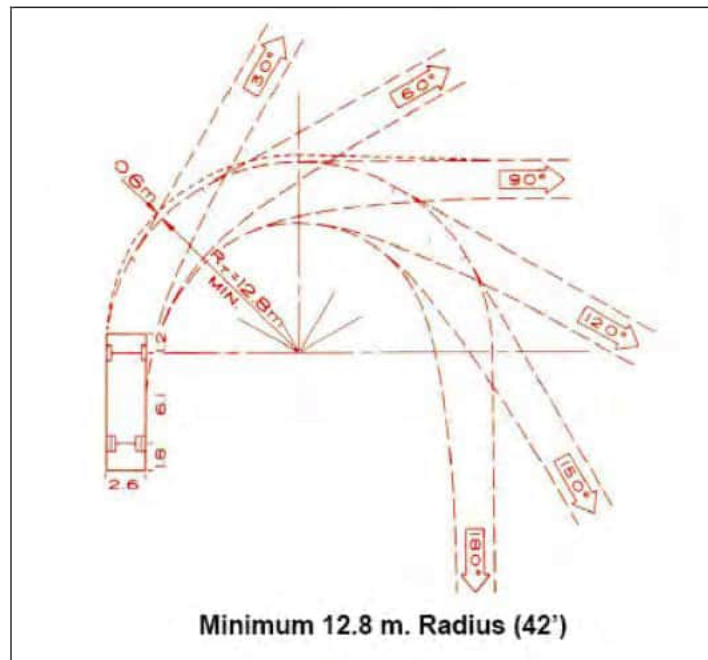
Typical Collection Truck Dimensions (approximate)	
Length	10.0 m - 12.0 m
Width	2.5 m
Minimum inside turning radius	10.0 m
Minimum outside turning radius	12.8 m
Height clearance	6.5 m - 7.5 m
Width clearance	4.0 m
Length clearance	15.2 m



Courtesy: City of Richmond



Courtesy: City of Richmond



Courtesy: City of Richmond

Useful Links:

Recycling Council of British Columbia:

(www.rcbc.bc.ca)

- Non-profit recycling council that provides an information and referral service to almost all recycling programs in BC.

Provincial Product Stewardship Programs:

(www.env.gov.bc.ca/epd/recycling/index.htm)

- Different product stewardship agencies are responsible to take back various products for proper disposal after the end of the products' useful life

Metro Vancouver SmartSteps:

(www.metrovancouver.org/smartsteps)

- Regional agency that assists businesses in reducing the amount of materials and energy use through specific, cost-effective initiatives.

City of Vancouver Solid Waste By-law:

(www.vancouver.ca/your-government/find-a-bylaw.aspx)

City of Vancouver Greenest City Action Plan:

(www.vancouver.ca/greenestcity)

- Zero Waste goal of reducing the amount of garbage from going to the landfill or the incinerator by 50% from the 2008 level

Contact Information:

Development Services

Website: vancouver.ca/commsvcs/planning

Email: csq.enquiry.centre@vancouver.ca

Engineering Services

Website: vancouver.ca/engsvcs

Email: engineering@vancouver.ca

Sustainability Group

Website: vancouver.ca/sustainability

Email: sustainability@vancouver.ca