Solid Waste Storage Technical Design Guidelines

Resort Municipality of Whistler
whistler.ca

WHISTLER

Contents

Introduction

Recycling, organics and waste management are an integral part of the development and planning process for commercial, institutional and multi-unit buildings. The Resort Municipality of Whistler (RMOW) **Solid Waste Bylaw** requires all multi-family residences and industrial, commercial or institutional buildings to separate organics, recyclables and waste to landfill.

These Solid Waste Storage Technical Design Guidelines (the Guidelines) will assist developers of multi-family, commercial and institutional buildings in meeting these service requirements.

The Resort Municipality of Whistler (RMOW) has developed solid waste management goals, which are detailed in the Solid Waste Management Strategy (2013), the Zero Waste Action Plan (2021-2026) and the Official Community Plan (2020). These goals include:

- Substantially reducing GHG emissions associated with solid waste management;
- Maintaining Bear Smart status and,
- Moving progressively towards zero waste.

To determine what permits are required for the proposed waste collection area, please consult the following webpage on the RMOW website: https://www.whistler.ca/business/land-use-and-development/planning/application-types-and-forms/waste-collection-areas-and-dp-requirements

These Guidelines:

- **HELP** with the design of suitable solid waste management spaces that meet RMOW regulations and diversion targets;
- **CREATE** waste management spaces that are safe, easy to use, and help prevent human-wildlife conflicts;
- **STREAMLINE** the development process by ensuring key requirements are considered and met as part of the initial Building Permit or Development Permit application;
- **DETAIL** the key assessment criteria as part of design planning;
- **PROVIDE** tips and formulas for calculating the space required based on use, to ensure that sufficient collection services can be accommodated; and,
- **OUTLINE** property owner and developer responsibilities for the development of waste management facilities that properly manage wildlife attractants and meet these Guidelines.

Please note that this document should be used with, not in place of, all applicable building codes, municipal standards and other relevant legislation.

Goals & Objectives

These Guidelines were developed with the goal to make waste management spaces safe, properly sized, and accessible, which will help achieve targeted waste diversion, minimize contamination in recycling, and reduce human-wildlife conflicts.

Objectives:

- Support building design that provides tenants convenient access to a full range of waste storage services;
- Support building design that provides sufficient space for the access to- and removal of- of solid waste by collection vehicles, including the necessary turn radius, height, length, and width clearance;
- Create efficient centralized waste management spaces with sufficient area for solid waste storage containers, minimizing contamination
- Support easy to read and updated instructional materials (e.g. signage); and,
- Reduce human-wildlife conflicts.

WHY IS DIVERSION IMPORTANT?

Whistler has a goal to reach zero-waste which means all discarded materials are designed to become resources for others to use. By composting and recycling, Whistler residents can keep waste out of the landfill, conserve resources and minimize pollution.

Definitions

ANIMAL ATTRACTANT means any substance that could reasonably be expected to attract wildlife.

DANGEROUS WILDLIFE means wildlife that is prescribed as dangerous under the BC Wildlife Act.

PRODUCT STEWARDSHIP means products whose end-of-life disposal is managed by the producers or manufacturers. The list of materials is outlined in the BC Recycling Regulation, including, but not limited to: beverage containers, electronics, batteries, paints, solvents, pesticides and gasoline, pharmaceuticals, tires, light bulbs and used oil and antifreeze.

RECYCLABLE MATERIAL (OR RECYCLING) means a product or substance that has been diverted from disposal, and usually includes the following:

- Organics (including food waste, wood and yard waste);
- Mixed containers (plastic and metal);
- Glass;
- Mixed papers (cardboard, office, newspapers);
- Soft plastics;
- Styrofoam; and,
- Recyclable items listed in the Solid Waste Bylaw.

REFUSE (GARBAGE OR WASTE) means any discarded or abandoned substance, material, or object, whether from domestic, commercial, industrial, institutional or other use that cannot be recycled or composted.

WILDLIFE PROOF ENCLOSURE means a structure which has enclosed sides, a roof, doors and a self-latching mechanism of sufficient design and strength to prevent access by Dangerous Wildlife that is designed and constructed with specifications for a RMOW standard Solid Waste Wildlife Proof Enclosure.

WILDLIFE PROOF CONTAINER means a fully enclosed container, of sufficient design and strength to prevent access by Dangerous Wildlife that is securely affixed to the ground or to an immovable object or fixture.

General Responsibilities

A DEVELOPER HAS FOUR PRIMARY RESPONSIBILITIES CONCERNING WASTE MANAGEMENT:

DESIGN ADEQUATE SPACE FOR STORAGE AND COLLECTION

An owner or designate is responsible for meeting the property's needs by:

- Providing adequate storage for solid waste collection and diversion (recycling, garbage and organic containers) based on regular service;
- Ensuring any refuse that is an animal attractant is stored in such a manner that it is not accessible to wildlife;
- Ensuring there are collection services in place; and,
- Ensuring there is sufficient space for collection vehicles to access the collection and loading areas.

The RMOW does not provide garbage and recycling services to commercial properties or multi-unit residential homes greater than 11 dwelling units in size. Cost is a private arrangement between the property's management and a waste service provider. Work with your waste service provider to establish if your regular service is twice per week, weekly, biweekly or another arrangement.

DID YOU KNOW?

Recycle BC offers a rebate for Multi-Family Buildings with an active recycling program. Contact your local hauler for more details.

COMPLY WITH DISPOSAL REQUIREMENTS IN SOLID WASTE BYLAW

Developers must design the waste management space so occupants can comply with the RMOW's Solid Waste Bylaw. The following materials must be recycled instead of put in the garbage:

- Corrugated cardboard
- Beverage containers
- Recyclable paper
- Clean wood
- Food scraps and yard trimmings
- Containers made of glass, metal, or recyclable plastic
- All product stewardship items

*This is a representative list only. Please refer to the Solid Waste Bylaw for more information.

COMPLY WITH STORAGE REQUIREMENTS IN THE SOLID WASTE BYLAW

The Solid Waste Bylaw outlines expectations for a waste storage facility that is resistant to tampering by wildlife, including bears.

See Attachment 4 - Solid Waste Wildlife-Proof Enclosure diagram.

MEET GOVERNMENT REGULATIONS RELATED TO WASTE MANAGEMENT AND ACCESSORY STRUCTURES

Barriers & Common Solutions

Since every development is different, it's important for developers to identify specific challenges for their building and develop solutions that will make it easier for occupants to maximize recycling and reduce landfill waste.

Some common barriers that a developer (or occupant) may face include:

Barrier	Solution & Resources
STORAGE AREA SIZE AND LOCATIONS	
Containers for recycling, food scraps and/or garbage are stored in different locations within the building complex.	It's more convenient for occupants when all containers are in one location. Design and designate a centralized location within the complex so that there is a one-stop disposal for all waste. Consider accessibility for wheelchair users.
AMBIANCE OF WASTE STORAGE LOCATIONS	
Poorly lit, odorous and inconvenient to access locations can deter occupants from properly sorting their materials.	Ensure waste management areas are: • well-lit internally and externally; • conveniently located; • kept clean; and, • accessible. Emptying and cleaning containers frequently will help reduce odours.
DIVERSION CONFUSION	
Figuring out what goes where can be confusing and may be complicated by language barriers.	Signs that use images and graphics along with clear colour coding can help explain what can and cannot go into each container. Visit slrd.bc.ca/signage for free signage and communication materials that can be downloaded and used to reduce confusion.
CLEARANCE REQUIREMENTS	
If clearance is too low the cost of waste collection will be more expensive if collection vehicles cannot drive into the space to empty the containers	Design the waste management spaces to ensure that the access dimensions are large enough for collection vehicles to enter and maneuver. Take into consideration any roof furniture that will be added to the building such as water pipes.

Barrier	Solution & Resources
WILDLIFE ACCESSIBILITY	
Wildlife, especially bears, can be attracted to the odours from waste, creating an unsafe situation for both waste room users and bears.	To reduce the potential for human-bear conflicts, ensure the waste room is: constructed in such a way that a bear cannot gain access; is well lit externally and internally; kept clean and odours are minimized; and of sufficient capacity to prevent refuse overflowing. See attachment 4 for guidance.
SNOW REMOVAL	
Whistler gets a lot of snow! Snowclearing is often an issue for waste collection as the snow gets piled in front of the waste room.	Ensure there is a spot on the property to pile snow that keeps waste room and fire lane access clear.
VISITOR FLUCTUATIONS	
If the development will be used for commercial use or short term accommodation, the fluctuations in visitor use throughout the year needs to be taken into account. As a resort community, there may be a large swing in the amount of waste generated that needs to be stored for disposal.	Plan for the busy times and remember that bigger is always better when it comes to waste rooms. It is much more effective to add extra totes or bins to a room to accommodate the busy season as opposed to scheduling more pickups.
MULTI-USE BUILDINGS	
Multi-use buildings often lead to frustrations between residential and commercial users on the cost and type of waste room services required.	In multi-use buildings, it is best practice to have residential and commercial waste kept in separate waste rooms or enclosures. This ensures that the residential stratas and commercial stratas can easily track costs of the services required. Separate waste rooms will also reduce cross contamination from commercial recycling services and residential recycling services.

Design Guidelines & Criteria

The following eight steps are intended to assist developers with planning for waste management space in new commercial and multi-unit residential buildings. Following these steps will help to accelerate permit processing time by ensuring the development design meets all regulations and developer responsibilities.

1. Determine the Type of Materials that will be Generated On Site

The first step involves assessing the types of garbage, organic and recyclable materials that are most likely to be generated by the occupants of the building.

In addition to the common items listed here, specialized recyclable items may include: grease, clean wood, metal, hazardous materials or other items banned from disposal in the garbage.

OCCUPANTS MUST HAVE ACCESS TO DISPOSE OF:

IT IS RECOMMENDED THAT OCCUPANTS HAVE ACCESS TO DISPOSE Of:

2. Determine Recycling and Garbage Collection Service Provider

Garbage and recycling services must be contracted through private waste haulers for all ICI properties and multi-family properties with greater than 11 units. A site does not have to have the same hauler for every single material (ex. garbage vs. organic material).

3. Calculate the Number and Type of Containers Required

It's important for developers to ensure that there is enough space for the appropriate amount and type of bins required for a development before making an application for a permit or zoning amendment.

Attachment 1 and 2 provide an overview of the types and quantity of containers required, which also assists with designing centralized collection areas with sufficient space. Remember, you can combine different types of containers depending on what type and the number of occupants or users

- For a detailed guide to estimate the **number of containers** required for your building, please see Attachment 1.
- For information about **general container measurements, types, size, weight and footprint**, see Attachment 2.

COMMERCIAL GREASE COLLECTION

Fats, oil and grease should never be disposed of down sinks, drains or garburators as the material hardens and builds up on the inside of sewage lines, causing blockages. This can lead to breaks, sewage spills or overflows.

Ideally, grease collection containers are stored in a separate area from regular waste and recycling materials, to increase safety and reduce potential spillage. If stored outside, grease must be stored in a wildlife resistant container and be secured to prevent tipping.

Businesses that produce grease by-products must have proper containers and systems in place to collect and safely dispose of oils, grease and other liquids.

4. Calculate the Storage Space Required

Use the formula below to estimate the total waste management space required to house the required number of containers

5. Design the Storage/Collection Area

A waste management space should be designed to allow containers to be easily accessed and moved.

Ideally, there is a separate waste management room or structure designated; if a separate room is not feasible, a wildlife-resistant shed or enclosure is a viable option. In all cases, the area must be large enough to store all recycling, garbage and organics generated between designated collection days while permitting movement of people accessing the containers and the movement of the containers on collection day. Designated areas must also meet requirements around fire safety, the management of wildlife attractants, and form and character requirements of the applicable Development Permit Areas. All waste-management structures must be built in a wildlife resistant manner (as outlined in the Solid Waste Bylaw). The waste management space should include the following considerations as a minimum standard:

ELEMENT	DESIGN CONSIDERATION
Floor	• A hard surface (concrete is required if installing a compactor) that will bear the weight of a 28-tonne collection truck
Drainage	• Drain to sanitary sewer. • Oil separator required for food services and restaurants.
Door	• Each waste room should have 2 doors – a service door for equipment and a personnel door for user access. • Service door must be constructed of heavy duty commercial grade steel and be a garage style door with no latched or opening mechanisms located on the exterior. The bottom of the service door must have slide bolts on each side. • Personnel entrance doors must be constructed of 18-gauge steel, open outwards, have a reinforced window, a self-closing device, and a lever opening on the interior. The exterior doorknob must be of such design that is accessible to persons with disabilities. • Installed with a minimum gap on tracks and latches on both sides and must close tightly to prevent access by wildlife. • Service door must have a 2.5 m minimum opening to allow garbage containers to be removed for service.
Size	• Should be able to accommodate an appropriate number of containers that will not overflow between collection days. • Total area of the facility should be 2.25 times the physical footprint of the containers to allow for adequate space for maneuvering.
Configuration	• Configure to allow each garbage and recycling container to be individually accessed, removed and replaced without having to take out other containers. • No horizontal dimension (width or depth) is less than 2 m to allow for access to waste containers. • Have at least 2.5 m in height clearance to allow complete opening of container lids. • Containers should be able to be stored in a way so as not to block access to either the service or personnel door.

ELEMENT	DESIGN CONSIDERATION
Location	• Located in a well-lit area that easily accessed by tenants. • Co-located with community services such as a postal boxes or events board is recommended. • Containers should be grouped separately by material type to reduce confusion and contamination. • Recycling facilities are located within close proximity to garbage facilities allowing occupants to conveniently recycle and dispose of garbage. • Location of storage facility should NOT be: • On publicly owned rights-of-way where it may disrupt traffic circulation patterns. • In any required driveways, parking aisles, or parking spaces. • In any location that may block or impede fire exits, public rights-of-ways, or pedestrian and vehicular access. • Likely to be blocked by snow storage, loading vehicles or other temporary blockages. • Beside a play area or dog park without adequate fencing.
Ventilation	• Have adequate ventilation to the exterior of the building, in compliance with the BC Building Code requirements for ventilation.
Configuration	• Configure to allow each garbage and recycling container to be individually accessed, removed and replaced without having to take out other containers. • No horizontal dimension (width or depth) is less than 2 m to allow for access to waste containers. • Have at least 2.5 m in height clearance to allow complete opening of container lids. • Containers should be able to be stored in a way so as not to block access to either the service or personnel door.
Security	• Sufficiently secure to minimize pest and wildlife access through the use of roofs, fencing, and wheels under gate doors. • Be protected from unlawful entry. • Be equipped with locked doors or the containers should also be locked if they are accessible from outside the building to avoid illegal dumping. • Lock should be by code and key/FOB. Avoid key/FOB only locks.
Wildsafe	• The type of material used for doors and windows as well as the structure itself must be inaccessible by wildlife. • Must be wildlife proof in keeping with the Solid Waste Bylaw.
Lighting	• Be well lit, both as a security measure and for ease of access. • Adequate lighting also discourages improper use of the containers and surrounding area.
Access for Occupants	• Accessible to all occupants of the development, including those with restricted mobility. • If an auxiliary area is designated for the facility outside the building, the area should be located adjacent for an entry point into the building for easy access by users.

ELEMENT	DESIGN CONSIDERATION
Signage	• Must have clear signage in garbage and recycling facilities and on containers to ensure that materials go in the appropriate container to help prevent contamination. • Consider painting walls behind bins the colour of the recycling stream to help keep the room organized.
Electricity	• Provide power for equipment inside the solid waste storage space.
Hose Bib	• Provide at least one (1) hose connection for cleaning the area.

IS YOUR WASTE MANAGEMENT SPACE IN A SEPARATE STRUCTURE?

If your waste management space is located in an accessory structure, rather than within the principal building, please also consider the following items:

- Must be designed to reduce potential wildlife conflicts, please see Solid Waste Bylaw.
- The auxiliary structure must comply with the applicable zoning requirements and Part 5, Section 3 (Auxiliary Buildings) of the RMOW Zoning and Parking Bylaw No. 303, 2015.
- A covered roof with adequate drainage is required.
- The structure must meet the wildlife resistant enclosure guidelines in the Solid Waste Bylaw.

IS YOUR WASTE MANAGEMENT SPACE IN A PLACE WHERE BINS CANNOT BE DIRECTLY SERVICED BY THE COLLECTION VEHICLE?

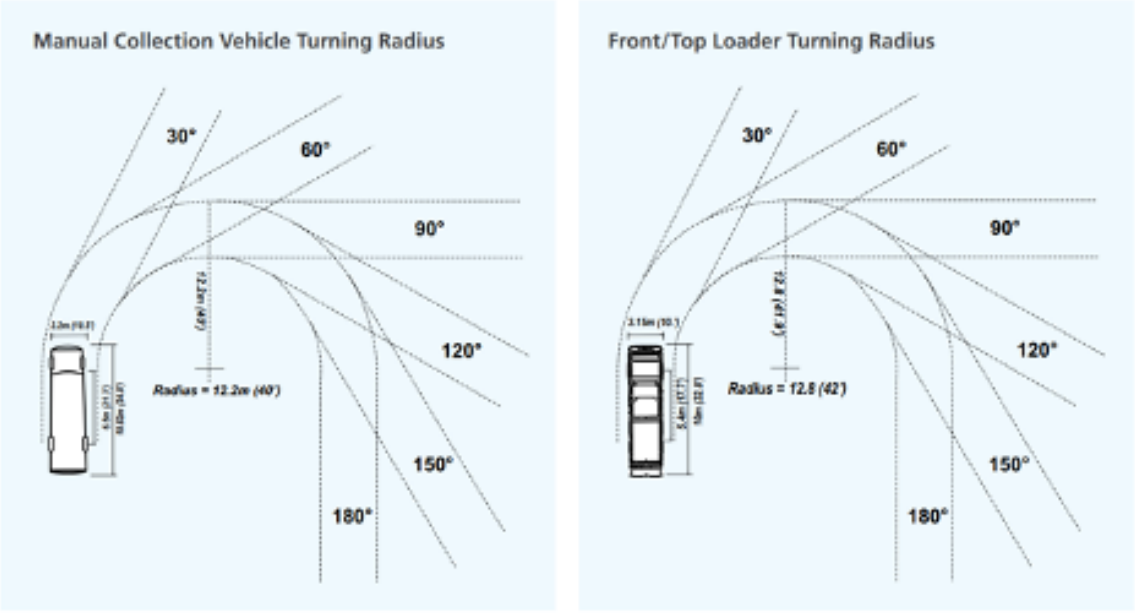
If your waste management space is located underground, or otherwise in an area where the bins cannot be directly serviced, please also consider the following items:

- The waste equipment will need to either be removed by hand or by a secondary vehicle and brought to a staging area for service
- Slope of servicing area may not exceed 2%
- Staging area must be available for waste equipment during service hours
- Staging area cannot be in a public right of way, laneway, or blocking access to the building
- Staging area should be bin footprint X 1.25
- Area should have a drain and hose bib nearby for cleaning if required

6. Determine Access Route for Collection Vehicles and Turning Radius

The following design elements address the need to allow a collection vehicle to enter the site, collect the materials and exit safely (ideally without having to back-up). Parking areas and driveways must comply with the standards outlined in Part 6 of the Zoning and Parking Bylaw No. 303, 2015.

ELEMENT	DESIGN CONSIDERATION
Entry and Exit	• Allow collection vehicles to enter the site, collect garbage and recycling, and leave the site in a forward motion or via the use of a turnabout area allowing for a three point turn of no less than one truck length. • If backing up is the only option, it must not compromise building structure, traffic operations and pedestrian safety.
Driveway Access	• Minimum width of 6 m at the points of entrance and exit for the site.
Slope	• Ensure slope of access does not exceed 6%.
Vehicle Access Route	• Minimum width of 4.5 m throughout vehicle access route.
Vehicle Clearance	• Maintain a minimum vehicle clearance of 4.5 m throughout the entire access route.
Turning Radius	• Provide the collection vehicle a minimum turning radius of 12.5 m throughout the entire access route. • Building structure, such as an overhang, cannot extend pass the turning radius to prevent damage to the building.



Courtesy: City of Edmonton

7. Designing Collection/Loading Area

With automated collection and the mix of containers used for garbage and recycling services, loading and collection areas must be able to accommodate a mix of truck sizes and design. Trucks must have plenty of height clearance and room to turn.

The chart below outlines the minimum dimensions for collection/loading trucks. For specific details on collection trucks, contact private service providers. Note that these loading heights must include clearance from all roof accessories, such as pipes, lights, ventilation or other utilities. If the slab to slab height is 6.9m exactly, a bin will not be able to be serviced in that area.

See Attachment 3 for examples of the trucks.

TYPICAL TRUCK DIMENSIONS (APPROXIMATE)					
Collection Type	**Truck Size**	**Loading**	**Length**	**Width**	**Height**
Cardboard and garbage container	Varies	Front/Top loading	10 m (collection 12.36 m)	3.15 m	4.2 m (collection 6.9 m)
Low profile garbage compactor	Varies	Hauling to offsite location	7.62 m	2.4 m	2.4 m (haul offsite to lift to 6.7 m)
Garbage and organics carts	Varies	Back loading	14 m (collection 15.5 m)	2.74 m	4.2-6 m

The following are general guidelines for designing the collection/loading area:

ELEMENT	DESIGN CONSIDERATION
Clearance	• Maintain a minimum dimension: Height: 7.5 m Width: 6 m Length: 15 m • All dimensions are unencumbered (e.g. unrestricted by fixtures such as sprinkler systems, meters, surveillance cameras, mirrors, landscaping, etc.)
Floor	• Accommodate a 28-tonne collection vehicle
Size	• Dimension of pad should accommodate the number of containers used in the building
Location	• Away from fresh air intakes for the building to discourage odour going into the building • Avoid location that interferes with pedestrian traffic and other vehicular access • Connected to the garbage and recycling storage space or temporary storage area via a level grade or continuous slope of no more than 6%
Slope	• Maximum slope is 2%. Wheel blocks may be required at 2% grade.

8. Develop a Solid Waste Management Plan

Steps 1 through 7 will help you develop a Solid Waste Management Plan. This document should be submitted with development permit applications for multi-family residential, mixed use, and industrial/commercial developments.

A Solid Waste Management Plan will show the location and dimension of waste management spaces, including the dimensions and locations of collection/ loading areas, including collection truck access and egress and will include specifications related to wildlife resistance.

This plan should show the functional design of garbage and recycling services (organic waste, mixed paper, mixed containers, and others) including the following:

1. User access to the solid waste room;
2. Access and egress to the solid waste room for collection services (garbage/ recycling trucks);
3. Size, capacity and function of the waste management space(s);
4. Layout of the waste management space, including an overlay specifying the quantity, type, dimensions, and locations of collection containers;
5. Based on the proposed building uses and the frequency of collection, provide a rationale for the number and size of containers to be used for each stream; and,
6. Describe how it meets the design standard for Wildlife Proof Enclosures as per the Solid Waste Bylaw requirements.

A Solid Waste Management Plan template can be found in Attachment 5 or here: Waste Collection Areas and Permit Requirements | Resort Municipality of Whistler.

The Plan should demonstrate that the applicant has considered and addressed all regulations and design requirements covered in these guidelines. The Plan should provide a clear overview of how the design provides for effective garbage and recycling services and addresses the RMOW's goals and objectives for waste diversion.

Attachments

1. Guide to Estimating the Recycling and Garbage Bins Your Complex Needs for Weekly Collection
2. Container Measurements and Storage Space Required & General Specifications for Different Waste Containers
3. Collection Truck Measurements (Approximate)
4. Wildlife-proof Enclosure Guidelines
5. Solid Waste Management Plan Template

Attachment #1: Guide to Estimating the Recycling and Garbage Containers Your Complex Needs for Weekly Collection

Residential Buildings

2/3 BEDROOM UNITS	MIXED CONTAINERS	PAPER (without Cardboard)	PAPER (with Cardboard)	ORGANICS	GLASS	GARBAGE (yrds per week) (moderate Recycling)	GARBAGE (yrds per week) (extensive Recycling)	CARDBOARD (yrds per week)
	360L Carts (#)	360L Carts (#)	360L Carts (#)	240L Carts (#)	240L Carts (#)			
5-10	1	2	1	1	1	4	2	2
11-20	1	3	2	1	1	7	4	2
21-30	2	5	3	2	1	10	5	2
31-40	2	6	3	2	1	13	7	2
41-50	3	8	4	3	1	17	9	2
51-60	3	9	5	3	1	20	10	2
61-70	4	11	6	4	2	23	12	3
71-80	4	12	6	4	2	26	13	3
81-90	5	14	7	5	2	29	15	3
91-100	5	15	8	5	2	33	17	4

4 BEDROOM UNITS	MIXED CONTAINERS	PAPER (without Cardboard)	PAPER (with Cardboard)	ORGANICS	GLASS	GARBAGE (yrds per week)	GARBAGE (yrds per week) (extensive Recycling)	CARDBOARD (yrds per week)
	360L Carts (#)	360L Carts (#)	360L Carts (#)	240L Carts (#)	240L Carts (#)			
5-10	1	2	1	1	1	5	3	2
11-20	2	4	2	2	1	9	5	2
21-30	2	6	3	2	1	13	7	2
31-40	3	8	4	3	1	18	9	2
41-50	4	10	5	4	1	22	11	3
51-60	4	12	6	4	2	26	13	3
61-70	5	14	7	5	2	30	15	3
71-80	6	16	8	6	2	35	18	4
81-90	6	18	9	6	2	39	20	4
91-100	7	20	10	7	2	43	22	5

Residential Building

Assumptions:

1. Once per week collection pick-up schedule.
2. There are no on-site compactors (e.g. garbage, cardboard, recycling).
3. Residents flatten their cardboard boxes and some plastic containers before putting them in the bin.
4. Sufficient height clearance is available for garbage collectors to tip the container.

Notes:

- Complexes with very active recycling communities will require more recycling bins and garbage volumes will decrease accordingly.
- For efficient use of space, a garbage compactor and a cardboard compactor are suggested for large complexes greater than 240 units.
- Consult with a recycling and waste hauler to assist with estimating the number and size of containers required.

ACCOMMODATION PROVIDER

NUMBER OF GUEST ROOMS	360 LITRE CARTS (#)		240 LITRE CARTS (#)		FRONT END BINS (# X SIZE)		18.6 LITRE JUG-IN-BOX (JIB)
	MIXED CONTAINERS	MIXED PAPER (including newspapers)	FOOD SCRAPS & YARD TRIMMINGS	GLASS	CARDBOARD	GARBAGE	GREASE/ TALLOW
5-10	1	1	1	1	0	1 x 2 yd^3	1
11-20	1	1	2	1	0	1 x 3 yd^3	1
21-30	1	1	3	1	1 x 3 yd^3 *	1 x 4 yd^3	1
31-40	1	1	4	1	1 x 3 yd^3 *	1 x 6 yd^3	1
41-50	1	1	4	1	1 x 3 yd^3 *	1 x 8 yd^3	1
51-60	2	2	5*	1	1 x 3 yd^3 *	1 x 8 yd^3	1
61-70	2	2	6*	2	1 x 3 yd^3 *	2 x 6 yd^3	1
71-80	2	2	7*	2	1 x 3 yd^3 *	2 x 6 yd^3	1
81-90	2	2	8*	2	1 x 3 yd^3 *	2 x 8 yd^3	1
91-100	2	3	9*	2	1 x 3 yd^3 *	2 x 8 yd^3	2

*It may be more space efficient to use an alternative type of container. Consult with a waste services provider to discuss which containers are most suitable

OFFICE

FLOOR AREA (M^2)	360 LITRE CARTS (#)		240 LITRE CARTS (#)	CUBIC YARD BINS (# X SIZE)	
	MIXED CONTAINERS	MIXED PAPER (including newspapers)	FOOD SCRAPS & YARD TRIMMINGS	CARDBOARD	GARBAGE
1-500	1	1	1	1 x 3 yd^3	1 x 3 yd^3
501-600	1	1	2	1 x 3 yd^3	1 x 3 yd^3
601-900	1	2	2	1 x 3 yd^3	1 x 3 yd^3
901-1,000	1	2	3	1 x 3 yd^3	1 x 3 yd^3
1,001-2,000	2	4	5*	1 x 3 yd^3	1 x 3 yd^3
2,001-3,000	3	6*	7*	1 x 3 yd^3	1 x 4 yd^3
3,001-4,000	4	7*	10*	1 x 3 yd^3	2 x 3 yd^3
4,001-5,000	5*	9*	12*	1 x 4 yd^3	2 x 3 yd^3

*It may be more space efficient to use an alternative type of container. Consult with a waste services provider to discuss which containers are most suitable.

RETAIL

FLOOR AREA (M^2)	360 LITRE CARTS (#)		240 LITRE CARTS (#)		FRONT END BINS (# X SIZE)	
	MIXED CONTAINERS	MIXED PAPER (including newspapers))	FOOD SCRAPS & YARD TRIMMINGS	SOFT PLASTICS	CARDBOARD	GARBAGE
1-200	1	1	1	1	1 x 3 yd^3	1 x 3 yd^3
201-500	1	2	2	1	1 x 3 yd^3	1 x 3 yd^3
501-600	1	3	2	1	1 x 3 yd^3	1 x 3 yd^3
601-700	1	3	2	1	1 x 3 yd^3	1 x 3 yd^3
701-1,000	1	4	3	1	1 x 3 yd^3	1 x 3 yd^3
1,001-2,000	4	9*	5*	1	1 x 3 yd^3	1 x 3 yd^3
2,001-3,000	6*	13*	7*	1	1 x 3 yd^3	1 x 4 yd^3
3,001-4,000	7*	17*	10*	1	1 x 3 yd^3	2 x 3 yd^3
4,001-5,000	9*	21*	12*	1	1 x 4 yd^3	2 x 3 yd^3

*It may be more space efficient to use an alternative type of container. Consult with a waste services provider to discuss which containers are most suitable

RESTAURANT

FLOOR AREA (M^2)	360 LITRE CARTS (#)		240 LITRE CARTS (#)		FRONT END BINS (# X SIZE)		18.6 LITRE JUG-IN-BOX (JIB)
	MIXED CONTAINERS	MIXED PAPER (including newspapers)	FOOD SCRAPS & YARD TRIMMINGS (high participation)	GLASS	CARDBOARD	GARBAGE	GREASE/ TALLOW
1-100	1	1	1	1	1 x 3 yd^3	1 x 3 yd^3	1
101-200	1	1	2	1	1 x 3 yd^3	1 x 3 yd^3	1
201-300	2	2	3	1	1 x 3 yd^3	1 x 3 yd^3	1
301-400	2	3	4	1	1 x 3 yd^3	1 x 3 yd^3	1
401-500	3	3	4	1	1 x 3 yd^3	1 x 3 yd^3	1
501-600	4	4	4	1	1 x 3 yd^3	1 x 3 yd^3	1
601-700	5	5	6*	1	1 x 3 yd^3	1 x 3 yd^3	2
701-800	5	5	7*	1	1 x 4 yd^3	1 x 3 yd^3	2
801-900	5	5	8*	1	1 x 4 yd^3	1 x 3 yd^3	2
901-1,000	6*	6*	9*	1	1 x 4 yd^3	1 x 3 yd^3	2
1,001-2,000	11*	12*	17*	2	3 x 4 yd^3	1 x 4 yd^3	4
2,001-3,000	17*	17*	17*	2	3 x 4 yd^3	2 x 4 yd^3	6
3,001-4,000	22*	23*	34*	2	4 x-5 yd^3	2 x 4 yd^3	8
4,001-5,000	28*	29*	42*	2	4 x 6 yd^3	3 x 4 yd^3	11

*It may be more space efficient to use an alternative type of container. Consult with a waste services provider to discuss which containers are most suitable.

Attachment #2: Container Measurements and Storage Space Required & General Specifications for Different Containers

	HEIGHT (when closed)	**LENGTH**	**WIDTH**	**FOOTPRINT** (Length x Width)	**MANOEUVRE FACTOR**	**STORAGE AREA REQUIRED FOR 1 CONTAINER** (Footprint x Maneuver Factor)
3 yd^3 Front-end top loading	1.22 m (4')	1.07 m (3.5')	1.83 m (6.0')	1.96 m^2	2.25	4.41 m^2
4 yd^3 Front-end top loading	1.22 m (4')	1.37 m (4.5')	1.83 m (6.0')	2.51 m^2	2.25	5.64 m^2
6 yd^3 Front-end top loading	1.52 m (5')	1.68 m (5.5')	1.83 m (6.0')	3.07 m^2	2.25	6.91 m^2
46.5 L Cart*	0.69 m (2.25')	0.30 m (1')	0.28 m (0.92')	0.084 m^2	N/A	N/A
80 L Cart*	0.88 m (2.88')	0.51 m (1.67')	0.41 m (1.33')	0.21 m^2	2.25	0.47 m^2
120 L Cart*	0.95 m (3.13')	0.55 m (1.79')	0.48 m (1.58')	0.26 m^2	2.25	0.59 m^2
240 L Cart*	1.09 m (3.58')	0.70 m (2.29')	0.62 m (2.04')	0.43 m^2	2.25	0.97 m^2
360 L Cart*	1.13 m (3.71')	0.88 m (2.88')	0.64 m (2.08')	0.56 m^2	2.25	1.26 m^2

FRONT-END TOP LOADING CONTAINERS - ADDITIONAL DIMENSIONS

The dimensions noted above reflect the internal measurement of the container. Please allow for an additional 20.32 cm (8") in width for the side brackets on the container.

Consider the users of the bin if selecting larger or taller equipment. Users must be able to easily lift waste over the edge of the bin.

COMPACTORS

Waste compactors range in size from 4 yd^3 to 25 yd^3 cubic yard and connect to various sizes of front-end containers. Models have different space and location requirements. Consult a private service provider for details.

The following is a general overview of the various waste containers commonly used for solid waste and recyclable storage. The RMOW does not guarantee the accuracy of the dimensions listed below due to the variation between different manufacturers. Every manufacturer has slightly different measurements for their containers and may or may not include in their measurements the width of metal side brackets or additional heights if container has wheels.

It is the sole responsibility of the developer to ensure the design of the waste management space can accommodate the containers to be used. Please consult with a private hauler to discuss which containers are suitable for different applications.

Some examples of collection containers that are often offered by waste haulers:

Carts or Totes

	RECYCLING CART Containers & mixed paper	GARBAGE Non-recyclable and non-organic materials	GLASS	ORGANICS Food scraps and yard trimmings
				
Standard Container	360 Litres/95 gallons	360 Litres/95 gallons	240 Litres/63 gallons	240 Litres/63 gallons

Large Containers

	FRONT END CONTAINER	COMPACTOR Non-recyclable and non-compostable materials, or cardboard only
		
Container Size	2, 3, 4, 6, and 8-yard options 2 – 4 yards recommended for residential applications.	

1. Compactor

Compacting systems may be appropriate to deal with materials such as cardboard or garbage in some buildings. Compactors range in size from 4yd3 to 25yd3 and connect to various sizes of front-end bins. Models have differing space and location requirements. A service provider can assist with choosing the best containers and collection system for different commercial buildings. Before ordering or installing a compactor, confirm the size and ability to service the compactor with your waste hauler.

TYPE	IDEAL USER	MINIMUM CEILING HEIGHT CLEARANCE	MINIMUM CLEARANCE IN FRONT OF BIN	MINIMUM CLEARANCE OVERHEAD OF BIN
Low Profile Compactor	Multi-unit Residential Building	2.1 m	12.2 m long	
Ground Level Compactor	Multi-unit Residential Building	2.5 m	15.2 m long	7 m high
Commercial Compactor	Commercial and institutional buildings	6.1 m	15.2 m long	

Potential Benefits

- Less servicing frequency required compared to other container use
- Can store more when compacted
- Less messy; less overflow
- Ideal for large volume generation (more than 100 units)
- Long life span (15-20 years) if properly maintained
- Can be more cost effective for larger volumes

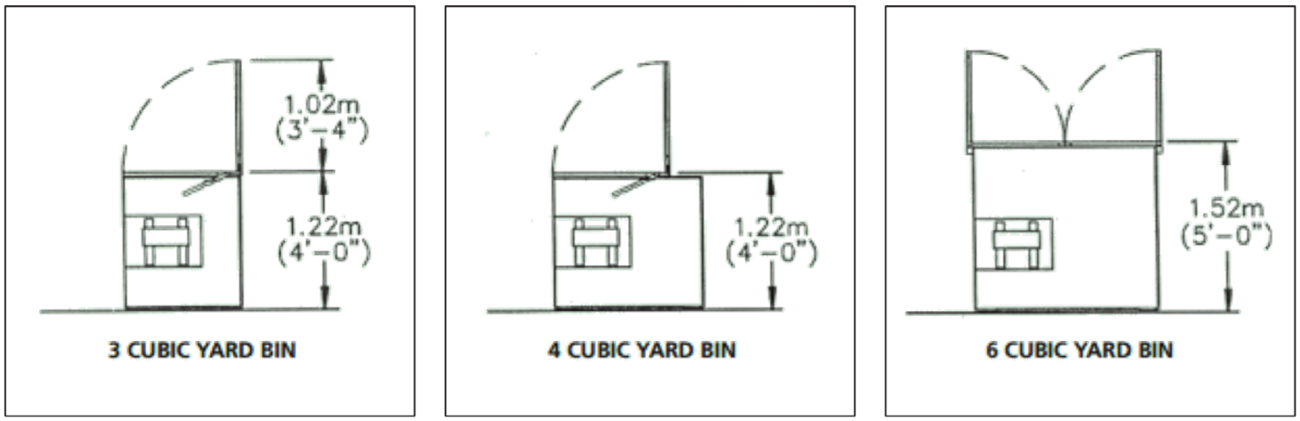
Potential Challenges

- Most compactors require a 3 phase power.
- Cardboard jams easily if not placed in compactor correctly.
- Odour concern if not serviced frequently.
- Not suitable for food scraps collection.
- Noise/vibration concerns - may need isolator to lessen.
- Capital cost may be higher than containers.
- Underground storage may have limited space for truck maneuver.
- Must carry entire compactor back and forth to dispose waste; limited number of servicing per collection route.
- Everyone must be trained to operate the compactor.

2. Front End Bins

Front end bins, also commonly called dumpsters, are the most common type of container for garbage or cardboard. They range in size from 2 cubic yards to 8 cubic yards, although the larger sizes are not suitable for most purposes. The containers can includes wheels and castors, and be either made of either metal or plastic. Note that front end bins larger than 4 yards may not be appropriate for residential services as they are too tall for all users to safely put material in. 6 or 8 yard bins may require steps, a loading bay, or other assistance to load material.

Examples of clearance required for opening the lids of front-end bins:



Courtesy: City of Richmond

Potential Benefits

- Applicable for most waste streams including cardboard and food scraps
- Capital cost is less than a compactor
- No electricity required to operate
- Easily accessible for most occupants

Potential Challenges

- Require more collection frequency compared to compactors
- Odour concern if not serviced frequently
- Surface damage to concrete pad due to frequent collection
- May cost more than compactor when extra service costs are included

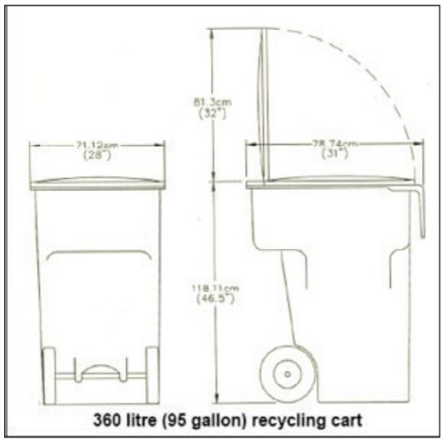
3. Carts or Totes

Totes vary in size and clearance requirements.

MINIMUM CONCRETE PAD AREA	MINIMUM CEILING HEIGHT CLEARANCE	MINIMUM CLEARANCE IN FRONT OF BIN	MINIMUM CLEARANCE OVERHEAD OF BIN
0.88 m x 0.64 m	2.5 m	N/A	5.29 m high

Example of clearance required for opening the lids of front-end bins

Courtesy: City of Richmond



360 litre (95 gallon) recycling cart

Potential Benefits

- Smallest footprint compared to a front- end bin or a compactor.
- Less expensive than a front-end bin or a compactor.
- Sealed container such that drainage is not a major concern.
- No electricity required to operate.
- Easier to maneuver than large containers.

Potential Challenges

- Requires high service frequency compared to larger containers.
- Odour may be a concern if not routinely serviced.
- No extra capacity for overflowing waste, may require extra pickup which would result in higher cost.
- Can easily be vandalized or stolen.
- Totes must be secured against wildlife and require storage inside a wildlife proof area.

4. Cooking Oil and Grease Containers

As noted in municipal bylaws, food sector establishments must properly manage used cooking oils and grease to ensure no grease or oil is poured in any sink or floor drain. Proper management includes installing and maintaining grease interceptors and recycling quantities of used oil and grease.

Establishments may require space to store a grease container internal or external to their operation. This storage space should be separated from the recycling and garbage storage areas and must be built or managed in a wildlife-proof manner. To learn more, including companies that recycle used cooking oil and grease, contact the Recycling Council of B.C. Hotline at 604-732- 9253.

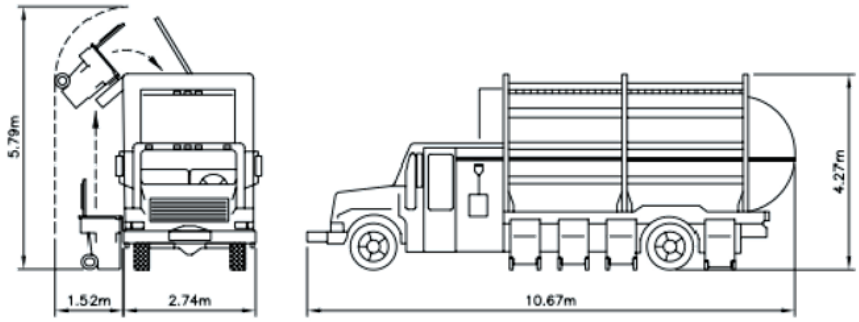
	DRUM	CONTAINER
		
DESCRIPTION	Specially-designed trucks to collect Sits stationary on the ground and require a drip-tray below the drums. Drum must be anchored and/or be kept in a wildlife proof enclosure to prevent bears from tipping it over.	Specially-designed trucks to collect •Requires room for collection. •Containers may have wheels to move around.
TYPE/SIZE	45 gallon (170 L)	90cm tall, 107cm wide, 84cm deep and taper to 56cm (2.2 yard^3) 90cm tall, 107cm wide, 109 cm deep and taper to 81cm (2.75 yard^3)
FULL WEIGHT	180 kg	545 kg - 910 kg

Attachment #3: Collection Truck General Measurements

Blue Cart Recycling

SU9/medium size trucks
Side loading

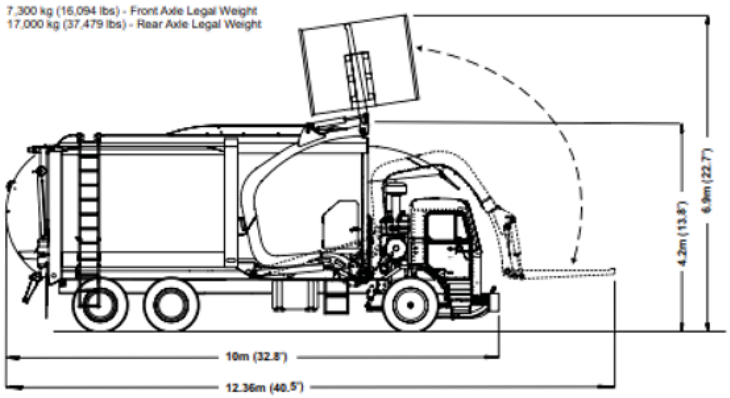
Dimensions:
Length: 10.67 m
Width: 2.74 m
Height: 4.27 m
(collection 5.79 m)



Garbage and Cardboard Containers

SU9/medium size trucks
Front/Top loading

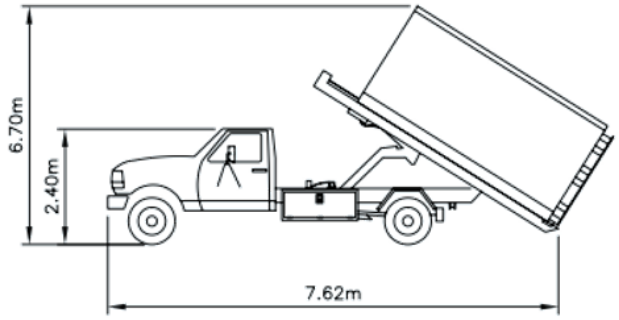
Dimensions:
Length: 10 m (collection 12.36 m)
Width: 3.15 m
Height: 4.2 m (collection 6.9 m)



Garbage and Cardboard Low Profile Compactor

SU9/medium size trucks
Hauling to offsite location

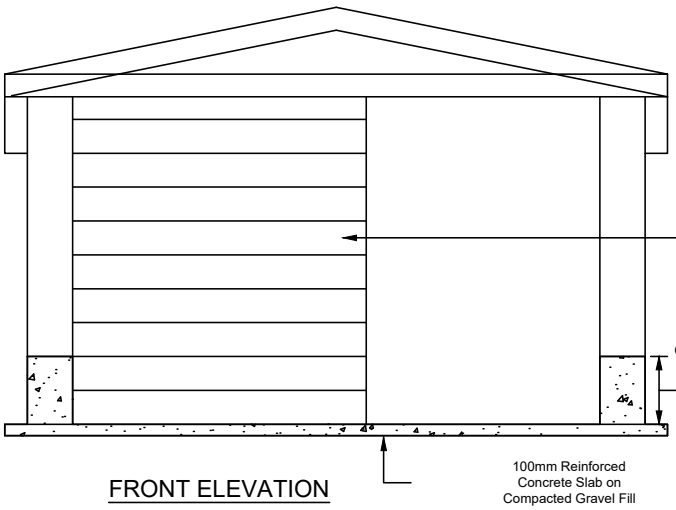
Dimensions:
Length: 7.62 m
Width: 2.4 m
Height: 2.4 m truck height
(Haul off site to lift – 6.7m to lift bin)



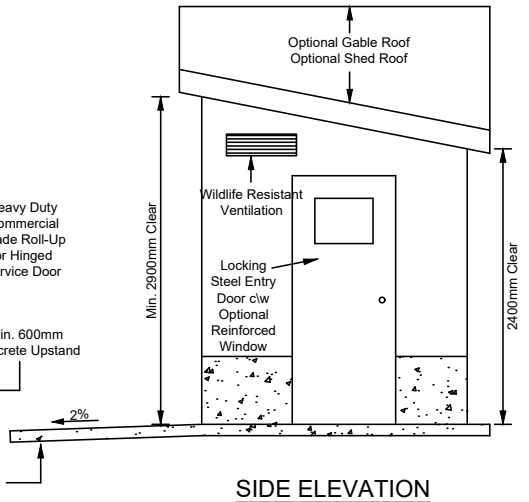
Collection of garbage and/or cardboard using low profile compactor trucks involves a multi-step process. A compactor room is required on site and the smaller “pick-up” like truck is required to load bins from the compactor on site and then haul off site for disposal. The containers then have to be returned to the development. This limits the amount of sites that can be serviced in one day by the hauler compared to traditional larger garbage trucks that service multiple locations on one route. As well, the low profile trucks add additional trips to the road system to complete the collections service as disposal occurs off site, which typically involves higher collection costs.

As electric trucks become more common, be aware that their size may be different from standard diesel or CNG collection vehicles. In particular, electric trucks generally have a longer chassis to accommodate the vehicle's battery. Consult with your service provider to determine if they have an electric truck that is likely to do your service, and how that truck may differ in size from the standard collection vehicle.

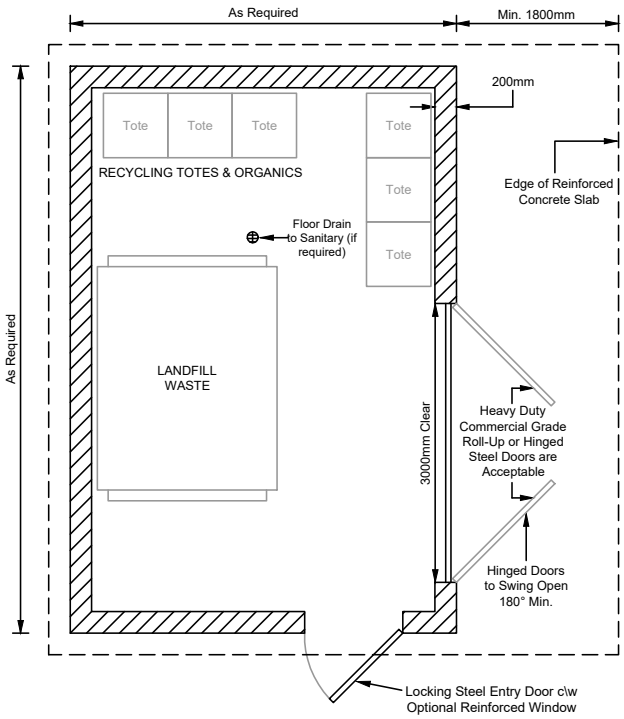
Attachment #4: Wildlife-proof Enclosure Guidelines



FRONT ELEVATION



SIDE ELEVATION



PLAN VIEW

NOTES:

1. Enclosure architecture (materials, etc) is to conform to Municipal Building and Development Permit requirements (as required).

2. Design concept only. Alternative designs meeting the intent of these requirements are invited.

3. Structures are to be constructed in accordance with the BC Building Code. Enclosures are to be designed to withstand snow loading, vehicular damage, operational damage, and bears.

4. Roofs should be designed to avoid snow shed in front of service and entry doors.

5. Service door(s) are to have dual locking mechanisms. Hinged doors require a heavy-duty cane bolt at the bottom and a slide bolt at the top of the stationary door. Roll-up doors require slide bolt locking mechanisms on the bottom of the door, each side. All locking mechanisms to be located on the interior; no hardware should be located on the service door(s) exterior.

6. Steel entry door is to be 36" wide (915mm) and be equipped with a self-closing mechanism. Door may have a round turning knob complete with a covered keyed knob guard on the exterior for access and panic hardware on interior for egress. Alternatively a push button lock with a turning knob is acceptable.

7. Adequate motion activated interior and exterior lighting is to be provided (if required).

8. Bear proof vent and steel entry door window openings should be sized such that a bear could not gain access in the case of breakage.

9. Units in mm unless otherwise noted.

10. Roll-up doors are preferable in areas that may have ice and snow build up but hinged doors are acceptable.

11. Separate enclosures for Commercial & Residential uses on the same property are strongly recommended.

Dimensions shown serve as a guideline only, the ultimate size and configuration of the garbage enclosure will be dependant on the owners preference and services being provided.

WHISTLER

RESORT MUNICIPALITY of WHISTLER	
SOLID WASTE WILDLIFE-PROOF ENCLOSURE	
DRAWN BY: BL	DATE: APRIL 2022
SCALE: N.T.S.	DWG. NO.: G11

Attachment #5: Solid Waste Management Plan Template

Solid Waste Management Plan – Template

Using the headings below as a guide, describe the details of the proposed development, and how the solid waste will be separated into organics, recyclables, and landfill waste streams, as per RMOW Solid Waste Bylaw No. 2139, 2017 and in particular Sections 9 and 10 and Schedules A and B.

Use additional pages as necessary, and include any additional graphics, plans, photos, etc. as necessary to illustrate the project and indicate how the measures proposed will lead to compliance with the Solid Waste Bylaw.

Legal Address:	
Civic Address:	
Owner Name:	
Agent/Developer:	
SWMP Submitted in support of… Eg. DP, Business Licence, etc.	

Description of proposed or existing use:

- number of units / square footage
- type of use ie hotel, restaurant, multi-family complex, retail

Based on the building use noted above, and the frequency of collection, provide a rationale for the proposed number and size of container to be used for each of the types of solid waste.

- Explain how this number and size was derived, ie using information from an existing waste haulage provider, using an estimate based on current use, using a calculator tool or table prepared by a third party, etc.)

Proposed Waste Collection Area layout:

- Show how the size and number of containers described above are laid out in the space (on a plan layout, labelled for each material)
- Show access path for collection vehicles
- Show access path for users
- Describe how it meets the design standard for Wildlife Proof Enclosures as per the Solid Waste Bylaw requirements. See attached building design guidelines for Waste Collection Areas.

In addition to the above, please note that you may wish to also consider other aspects of solid waste collection and management, such as how waste is stored and handled and how it gets from the source point to the storage point to the collection point. There are number of tools that are available to assist with developing a complete strategy for managing solid waste and maximizing diversion from the landfill.

WHISTLER