GENIVAR

WASTE DIVERSION ONTARIO

Continuous Improvement Fund

BEST PRACTICES FOR THE STORAGE AND COLLECTION OF RECYCLABLES IN MULTI-RESIDENTIAL BUILDINGS

DEVELOPMENT OF BUILDING AND SITE PLAN DESIGN REQUIREMENTS TO SUPPORT RECYCLING IN MULTI-RESIDENTIAL BUILDINGS

February 28, 2011

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Project No. 101-14995-00

CIF Project 219

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This Project has been delivered with the assistance of Waste Diversion Ontario's Continuous Improvement Fund, a fund financed by Ontario municipalities and stewards of blue box waste in Ontario. Notwithstanding this support, the views expressed are the views of the author(s), and Waste Diversion Ontario and Stewardship Ontario accept no responsibility for these views.

1. Introduction

Waste Diversion Ontario under the Continuous Improvement Fund (CIF) Project #219 retained GENIVAR Inc. to review current municipal multi-residential building design requirements for waste diversion. The purpose of this review is to change and improve the current standards in order to assist municipalities and property owners to achieve provincial and municipal diversion targets of recyclable materials by December 2011. Although most regions of Ontario encourage recycling and organic waste diversion, to-date the majority of multi-residential buildings do not appear to reach optimum diversion rates.

GENIVAR's Waste Diversion study with the Mayor's Tower Renewal Pilot Feasibility project dated March 2010, identified several challenges with multi-family buildings. The challenges included language barriers, transience, lack of ownership, inconvenience, material contamination, lack of financial incentives, lack of support from management and *existing building infrastructure* that conspired to undermine the success of recycling in multi-residential buildings. The focus of this investigation is on improvements to the *building's infrastructure.*

Currently, multi-residential buildings are being constructed without optimum facilities to maximize waste diversion. One of the main difficulties in multi-family buildings is the lack of space on every floor and/or in a centralized location within the building.

The objective of this review is to present a "Best Practices" guide for the storage and collection of recyclables in multi-residential buildings. The guide will outline our recommended changes to the current design standards for new buildings. Standards that could be implemented for existing multi-residential buildings will be highlighted.

2. Scope of Work

The scope of work for this investigation included the following:

- Develop standards for the storage and collection of recyclables in multi-residential buildings for the purpose of review, in Ontario.
- Compile the existing standards of Ontario municipalities.
- Review the requirements for access routes, loading facilities, size and number of storage containers and internal collection systems.
- Carry out site visits at existing multi-unit residential buildings and review the effectiveness of current municipal standards. A total of 22 buildings were inspected.
- Review our current project work on waste diversion for the Mayor's Tower Renewal project.
- Attend three meetings with client to review the progress and status of our work on this project.
- Prepare and submit a report recommending "Best Practices" for the storage and collection of recyclables in multi-residential buildings. The guide will outline standards for new buildings. Standards that could be implemented for existing buildings will be highlighted. The report will also include guidelines for implementing incremental policy changes towards achieving the recommended best practices.
- In addition to the above we completed interviews with Mr. Doug King from Metro Group and Mr. Jason Tower from Waste Solutions Group Inc. Both provided insight and information from the point of view of a manufacturer of systems (e.g. chutes, bins) to manage waste in multi-residential buildings.

3. Project Team

The following individuals comprise the investigation team for this study:

Table 3-1 Project Team

Peter Leong, P. Eng.	GENIVAR Inc.
Patricia Paz-Soldan, P. Eng., LEED AP.	GENIVAR Inc.
Afarin Maleki, B. Arch.Sc, M. A. Sc.	GENIVAR Inc.
Asantha Fonseka, B. A.Sc, LEED AP.	GENIVAR Inc.

The team performed the site visits for this investigation during the months of May 2010 to July 2010. Patricia Paz-Soldan prepared the report. Peter Leong reviewed the report.

4. Reference Material

The following reference materials were provided for use or have been utilized in the preparation of this investigation:

Table 4-1 Reference Materials

Mayor's Tower Renewal - Pilot Feasibility Study – GENIVAR Inc. – March 30, 2010.

5. Limitations

The information contained in this report represents the professional opinion of GENIVAR Inc. and their best judgement under the natural limitations imposed by the Scope of Work.

This report is intended solely for the Client named as an indication of the physical condition of the building components addressed in the report. The material in this report reflects the Consultant's best judgement in light of the information available to it at the time of preparation.

Any use a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The Consultant accepts no responsibility for damages, if any suffered by any third party as a result of decisions made or actions based on this report.

Do not use any part of this report as a separate entity. The report has been written to be read in its entirety and for the exclusive use of the Client named.

All files, notes, source data, test results and master files are retained in the offices of GENIVAR Inc. and remain the property of the Consultant.

6. Best Practice Standards

6.1 General

Waste management and diversion are important issues affecting multi-residential building residents across the country. In Canada, the federal government does not play a role in municipal waste management, however provincial governments set broad targets for waste reduction and/or diversion and municipalities operate and maintain waste management systems for the residential sector.

In Ontario, multi-unit residential buildings (residential buildings with six or more units), are subject to Ontario Regulation 103/94. This regulation specifies that owners of multi-residential buildings must provide adequate facilities for collection, handling and storage of waste and make a reasonable effort to ensure that the materials are recycled or re-used. Even if waste collection services are not provided by the municipality, multi-unit buildings are still required to recycle as required by Regulation 103/94. Despite Regulation 103/94, multi-residential buildings have low capture rates. This sector represents an important opportunity to increase waste diversion.

It is the responsibility of municipalities to enact by-laws and develop their own design standards for the collection and storage of waste materials in multi-residential buildings. Developing a set of uniform waste collection design requirements that could be used across the Province of Ontario will ensure that proper space and facilities are provided for residents to have an equally convenient and "easy to use" waste diversion system.

Overall the current Municipal Design standards appear to be working in several areas such as garbage room sizing, bin sizing, compactor requirements, loading and access routes. Please refer to Appendix C for a detailed review of the Municipal Design Standards.

6.2 Site Plan Approval

Some municipalities (e.g. City of Toronto, City of Vaughan, Region of Peel, City of Hamilton, and Region of Durham) require a "Site Plan Approval" process. Developers and owners must meet these requirements in order to qualify for municipal waste collection services. This requirement allows the municipality's Waste Management Division to review the proposed building and site facilities provided for waste collection. If requirements are not met, developments will have to maintain private collection services.

The review of waste collection requirements should be a mandatory part of the site plan approval process across Ontario. This approval process provides an excellent opportunity to review the facilities provided for waste diversion. Municipalities should use this process to ensure that the waste collection requirements are met. This information should be requested even if the waste pick up is to be completed by private haulers.

The waste collection requirements should include:

a) A site plan showing the access in and out and a traffic flow plan to the area, showing movement of containers and collection vehicles.

b) Plan of loading facilities including materials and thickness of the slab.

c) Plan/schematics of garbage room, recycling room, and floor-to-floor refuse rooms.

d) Number of bins for garbage, recycling and source separated organics, and placement of containers for storage and collection points.

e) Type of compactor, specifications and safety requirements.

6.3 Garbage Room Area - Internal

The following are the minimum requirements:

a) An internal storage area should be mandatory for all new multi-residential buildings that do not qualify for curbside collection.

b) The internal storage room built in accordance with all applicable regulations (i.e. Ontario Building Code). Garbage and other waste materials must be stored in the internal storage area (i.e. designated waste storage room) on private property between collection days. The internal storage area shall be attached to the main use of the building.

c) Minimum 10 m^2 allocated for the placement of un-compacted garbage such as bulky items.

d) Minimum floor space of 15 m^2 for the first 40 units (to accommodate bins and/or compactor) plus an additional 5 m^2 for each additional 60 units, or the following Table can be included

Building Size	Minimum Size of Garbage Room	Number of Bins
up to 40 units	25 sq m	1
41-100 units	30 sq m	2
101-160 units	35 sq m	3
161-220 units	40 sq m	4
221-280 units	45 sq m	5
281-340 units	50 sq m	6

e) Each front-end bin requires approximately 5 m^2 of floor area.

f) Provide double door 2.2 m wide or an overhead door leading to the storage facility from each storage room.

g) Room must be large enough to permit movement of the containers.

h) Room to include a wash-bay area including connections and floor drains for washing of the entire area and containers.

i) Garbage room must be ventilated, rodent proof and large enough to store all garbage, recycling and other acceptable waste materials between designated collection days

j) Requirement to air condition and/or provide odour control in the garbage at location of organic waste storage.

6.4 Garbage Area - External

a) External garbage storage can be provided in addition to the internal garbage room.

b) The requirement of external bin storage should be consistent across all municipalities.

c) External storage areas should only be permitted for new developments that contain interior roads.

d) External enclosures should match the aesthetics of the main building.

e) For externally stored garbage, enclosures must follow the dimension requirements:

- single bin - clearance at the opening of 3 m

- double-bin with 2 gates - opening of 6 m
- double-bin with 4 gates - opening of 8 m.
- outside gates on enclosure to swing open 135 degrees.

6.5 Garbage Bin Sizes & Quantities

Regulation containers of 3, 4 or 6 yd^3. Garbage does not need to be compacted. Sizes may vary.

- Bin Size 3 yd^3 - 2.29 m^3 (2.03 m W x 1.07 m H x 1.07 m D)
- Bin Size 4 yd^3 - 3.06 m^3 (2.03 m W x 1.07 m H x 2.01 m D)
- Bin Size 6 yd^3 - 4.50 m^3 (2.03 m W x 1.36 m H x 2.03 m D)

a) For large (100+ units) multi-unit residential developments, garbage should be mechanically compacted into regulation sized steel garbage containers.

b) Organic bin container sizes should be included in the standards similar as the garbage and recycling containers. Size of organic bins should be limited to 3 yd^3.

c) The number of bins can be calculated using the guideline of 0.06 yd^3 per person for compacted garbage and 0.18 yd^3 for un-compacted garbage.

Building Size	**Minimum Number of Bins required Compacted**	**Minimum Number of Bins required Un-Compacted**
up to 40 units	1	3
41-100 units	2	6
101-160 units	3	9
161-220 units	4	
221-280 units	5	
281-340 units	6	

6.6 Compactor Units

The specifications of the compactor should be submitted at the time of site plan approval including safety features that prevent injury to operators. Tri-sorter mechanism should have mandatory "Out of Service" warning lights and a remote lock-out system mechanism, to lock all chute doors while staff completes operational duties.

6.7 Recycling Room Requirements

A separate recycling room accessible by the residents should be provided. If both the garbage and recycling rooms are combined these should be separated by a closure. Residents should not be allowed to enter into the garbage room if compactor or other mechanisms are contained. Storage area of recyclable materials must be large enough to contain all required front-end bins and/or carts.

a) Carts - One semi-automated 360L cart for each 7 units (approximately 50 litres per unit). Level hard-surfaced location that can fit all carts adjacent to the lane for the waste collection area is required. Each cart will require approximately 0.7m2 of space

- Cart Size 1: 240L (0.67 m W x 1.04 m H x 0.610 m D)
- Cart Size 2: 340L (0.67 m W x 1.10 m H x 0.854 m D)
- Cart Size 3: 360L (0.889 m W x 1.07 m H x 0.762 m D)

Building Size	Minimum Number of Carts-240L	Minimum Number of Carts-360L
up to 40 units	9	6
41-100 units	9-21	6-14
101-160 units	21-34	14-23

b) Front-end Bins - Recycling room must provide a minimum floor space for bins of 10m² for the first 40 units plus an additional 5m² for each additional 60 units.

Building Size	Minimum Size of Recycling Room Front-end Bins	Minimum Size of Recycling Room Carts
up to 40 units	10 sq m	4.2-6.3 sq m
41-100 units	15 sq m	4.2- 14.7 sq m
101-160 units	20 sq m	14.7-24 sq m
161-220 units	25 sq m	
221-280 units	30 sq m	
281-340 units	40 sq m	

- Bin Size 3 yd³: 2.29 m³ (2.03 m W x 1.07 m H x 1.07 m D)
- Bin Size 4 yd³: 3.06 m³ (2.03 m W x 1.07 m H x 2.01 m D)
- Bin Size 6 yd³: 4.50 m³ (2.03 m W x 1.36 m H x 2.03 m D)

c) If front-end service is available, within the municipality, it is recommended for single-stream programs for multi-residential buildings over 100 units. The use of carts for large residential buildings over 100 units should be discouraged; storage problems and less efficient diversion are common problems. For single-stream programs, front-load bins appear more cost efficient than carts for complexes with large number of units. In two-stream programs, front-end bins for old-corrugated cardboard, and potentially for the fibre stream, are recommended.

d) Recycling room doors must be a minimum of 1.83 m wide to allow for the movement of bins.

e) Requirement to air condition and/or provide odour control in the recycling room, at location of organic waste storage.

f) The requirement to properly size the recycling room should be enforced. Separate recycling rooms should be provided. Generally the size of the recycling rooms should be increased, the recycling room can also be used for future expansion, e.g. collection of other waste materials such as used clothing, furniture, bulbs, electronics, batteries and any other material in addition to large cardboard.

    I. Recycling of used clothing is increasing with the assistance of clothing banks (e.g. Oasis Clothing Bank). Donation bins can be delivered and pick-ups arranged to multi-residential buildings without any cost to the building. This donation bin can be placed in the recycling room. At the present this service appears limited to large city centers.

II. E-waste collection services with the assistance of the Ontario Electronic Stewardship (OES). Companies can deliver bins and or carts and pick-ups arranged to multi residential buildings. As well this container can be placed in the recycling room.

g) Recycling containers (multi-stream) should also be placed in key building collection points such as main entrance, laundry room and underground parking garage lobbies.

6.8 Internal Collection Systems

During our building review and data analysis (please refer to Appendix B) we have identified the systems that appear to provide a higher rate of diversion as follows:

a) Dual and potentially triple chute systems,

b) Single chute and floor-to-floor collection. The chute intake room should be sufficiently large to accommodate the collection bins. The chute intake room door can swing outwards provided it is fire rated and equipped with a self-closing device and positive latching hardware, this option could be adapted for existing buildings.

c) Single chute system with a tri-sorter and lockable doors; the lockable doors appear to decrease the level of contamination,

d) No chute collection system, or closing the chute for existing buildings, no compactor and a combined garbage and recycling room.

e) Measures a) to c) must include a separate recycling room that accommodates larger bins for collection of cardboard and other materials as noted above in Item 6.7.

We have included in Appendix A, our suggested configurations to Optimize Waste Diversion. Each option includes some benefits and trade-offs, and the best option will depend on the building, and the municipal waste collection service requirements. Each of the options provides for recycling access to be as convenient as garbage disposal. A diagram showing the chute/intake room layout has also been provided.

The Options are as follows:

Option 1 Triple or Higher Disposal Chute Systems – Stream Sorted - Three different layouts suggested.

Option 2 Dual Chute System – Three different layouts, one allowing some floor-to-floor storage.

Option 3 Single Chute System with tri-sorter and lock-out system, to prevent contamination, small refuse room.

Option 4 Single chute with large chute intake room for floor to floor recycling. This option was one of the Waste Diversion Strategies recommended in the GENIVAR's Waste Diversion study with the Mayor's Tower Renewal Pilot project.

Option 5 No chute system and combined garbage/recycling room in the main floor.

Chute intake rooms are generally very small not providing any possibility of floor-to-floor recycling. If the doors are designed to swing outwards, there is the potential to have additional space to store some material and/or have additional doors. In addition chute intake rooms should be designed to accommodate container storage for two or more streams, and sufficient room to empty into the chute systems. The Ontario Building Code Clause 3.6.3.3 (5)(c) requires intake rooms not be used for any other purpose. This could be interpreted to mean the storage of refuse (e.g. blue box, green). What we are proposing is a "separate area" protected by a fire-rated door. The enclosure will be fire rated and the refuse materials will be within a separate room. Please refer to Options 2A and 4 in Appendix A. Internal collection and storage system must be meet Ontario accessibility requirements (i.e. wheelchair/walker).

6.9 Loading and Access Facilities

The following are the general requirements:

a) The loading area must be level (+/- 2%).

b) The loading area must be no higher than 0.6 m above driveway levels (for front-end bins). Vertical loading clearance 6.1 m width 4.0 m length 13.0 m (varies with # of bins, add 2.5 m for each additional bin>1).

c) The loading area for carts should be at grade level.

d) Loading pad shall be constructed of 200mm of reinforced concrete with a minimum base of 150mm compacted depth of 20mm diameter crusher run-limestone and 300mm compacted depth of 50mm diameter crusher-run limestone (as per Engineering Standards E1 and 3.4.2(2))

e) Where the loading area is not flat, a mechanism to prevent the containers from rolling off the loading area is required

f) Required to build a collection area on private property with direct and safe access to a municipal roadway that does not require the collection vehicle to back onto a municipal road allowance following collection

g) A turnaround area allowing for a three point turn of not more than one truck length or a drive through access route are acceptable options for accommodating this requirement

h) Turning radius of 9.5 m inside and 14 m outside should be available throughout

i) Access driveways must be a minimum of 6 m wide at the point of ingress or egress to the site and a minimum of 4.5 m throughout the site.

j) Minimum of 18 m straight head-on approach to collection area. Approach grade has to be within +/- 2% of collection area grade.

k) Slope of the access route shall not exceed +/- 8%

l) If the collection vehicle is required to drive onto or over a supported structure (such as an underground parking garage) the City must be provided with a letter certified by a professional engineer that the structure can safely support a fully loaded collection vehicle (35,000 kilograms) and confirms the following:

m) The access route must be constructed of 50 mm compacted depth of HL-8 asphalt (base course) and 40mm compacted depth of HL-3 asphalt for the top course (as per the City's Engineering Standards on Industrial, Collector, and Arterial Roads).

n) Access driveway to have a vertical clearance of 4.4 m. Responsibility of the Developer and subsequent Property Owner to ensure that the access route is free of obstructions and protrusions, including, but not limited to, sightline obstructions, overhanging structures and speed bumps at all times. The City is not responsible for collecting garbage in the event that the access route is obstructed.

APPENDIX A

Optimized Waste Diversion Layouts

OPTION 1 A – FOUR-CHUTE LAYOUT – STREAM SORTED

This option presents the best scenario to achieve optimal waste diversion with minimal contamination between streams and the lowest possibility of operational issues. A triple chute system eliminates the confusion and frequent technical glitches reported by tri-sorter users and superintendents, while a fourth roughed-in chute allows for future expansion initiatives. Equal chutes sizes (at the largest size requirement) are recommended to avoid creating restrictions during future expansion/combination of streams.

SPECIFICATIONS

ENTRY DOOR:

- Outward swinging
- Self-closing
- Fire-rated for 45 minutes
- Positive latching hardware
- Enclosure must be fire-rated up to 2hr.

CHUTE INTAKE ROOM:

- Room dimensions: 40" x 80"

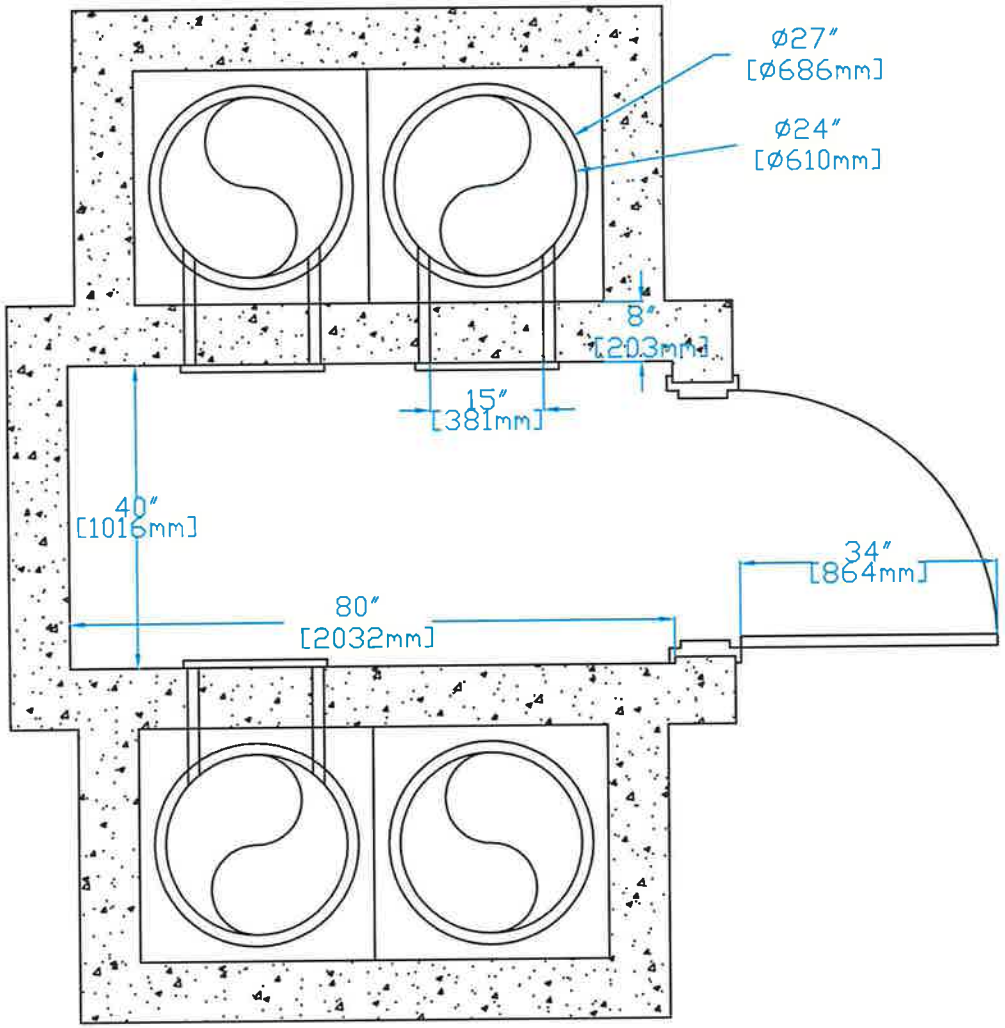
CHUTE INTAKE DOORS:

- Standard 24" fire rated chute doors with baffles

BENEFITS / TRADEOFFS

This layout is presented to facilitate the introduction of more streams in the future, as preferred by many municipalities. Space can be optimized by placing the chutes across from each other with the fire-rated, self-closing entrance door opening outwards into the hallway allowing more space within the room. One of the chutes will be dedicated to garbage only and will be attached to a compactor. As an example the streams could be garbage, fibres, containers and organics. In the future this could be garbage, single stream blue box, organics and others (e.g. electronics).

Positive tradeoffs include better diversion (highly anticipated) hence reduced collection costs to the owners, equal convenience for residents to access al streams, possibility of future expansion, lack of technological and human barriers, and minimum possibility for technical glitches, as posed by trisorters. Negative tradeoffs include added cost of construction and less space on each floor to be allocated for residential living space.



OPTION 1A

FOUR CHUTE LAYOUT
STREAM SORTED

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DR. RY	CH. PPS	SC. NTS	DATE 2010-07-15

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OPTION 1 B – THREE-CHUTE LAYOUT 1

This option is the first of two triple-chute layouts that are presented for versatility. Option 1B or 1C can be chosen depending on which one best optimizes the available floor space on each level. This option presents an opportunity to achieve optimal waste diversion with minimal contamination between streams and the lowest possibility of operational issues, but is limited to the 3 prominent streams of waste recognized today (garbage, single-stream recycling, and organics). A triple chute system eliminates the confusion and frequent technical glitches reported by tri-sorter users and superintendents. The single benefit lacking in a triple-chute system is the ability for future expansion. Equal chutes sizes (at the largest size requirement) are recommended to avoid creating restrictions if combining streams.

SPECIFICATIONS

ENTRY DOOR:

- Outward swinging
- Self-closing
- Fire-rated for 45 minutes
- Positive latching hardware
- Enclosure must be fire-rated up to 2hr.

CHUTE INTAKE ROOM:

- Room dimensions: 40" x 80"

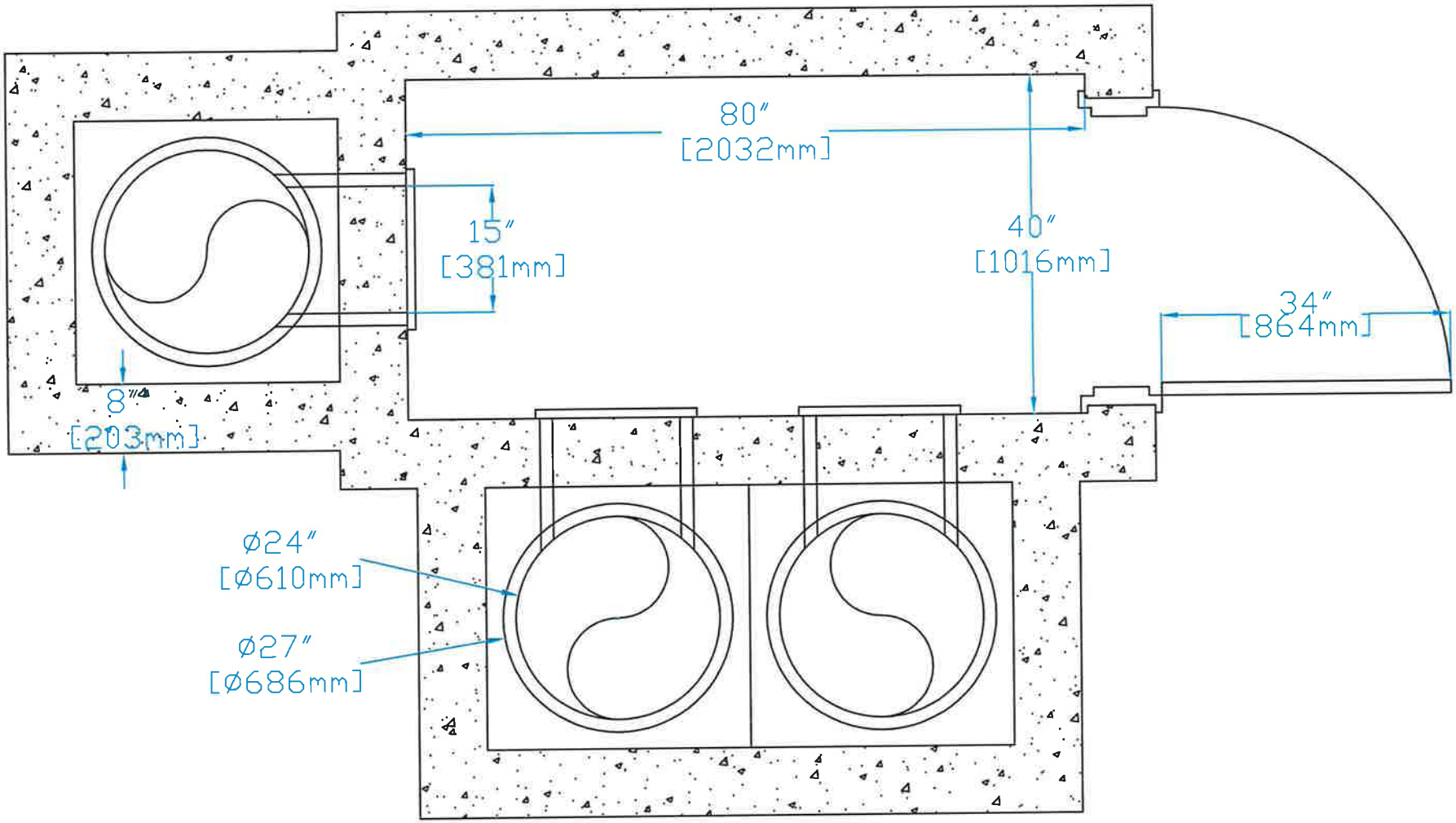
CHUTE INTAKE DOORS:

- Standard 24" fire rated chute doors with baffles

BENEFITS / TRADEOFFS

This layout is presented to achieve optimal diversion of the 3 most prominent streams of waste today. Space can be optimized by placing the chutes in a 2-1 split as shown on the drawing, with the fire-rated, self-closing entrance door opening outwards into the hallway allowing more space within the room. The extent of additional space utilization in comparison to a dual-chute system facing each other is minimal since an entire far side of the chute rooms is unoccupied by chutes.

Positive tradeoffs include better diversion (highly anticipated) hence reduced collection costs to the owners, equal convenience for residents to access all streams, lack of technological and human barriers, and minimum possibility for technical glitches, as posed by trisorters. Negative tradeoffs include added cost of construction and less space on each floor to be allocated for residential living space.



OPTION 1B

THREE–CHUTE LAYOUT 1

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OPTION 1 C – THREE-CHUTE LAYOUT 2 (SIDE-BY-SIDE)

This option is the second of two triple-chute layouts that are presented for versatility. Option 1B or 1C can be chosen depending on which one best optimizes the available floor space on each level. This option presents an opportunity to achieve optimal waste diversion with minimal contamination between streams and the lowest possibility of technical issues, but is limited to the 3 prominent streams of waste recognized today (garbage, single-stream recycling, and organics). A triple chute system eliminates the confusion and frequent technical glitches reported by tri-sorter users and superintendents. The single benefit lacking in a triple-chute system is the ability for future expansion. Equal chutes sizes (at the largest size requirement) are recommended to avoid creating restrictions if combining streams.

SPECIFICATIONS

ENTRY DOOR:

- Outward swinging
- Self-closing
- Fire-rated for 45 minutes
- Positive latching hardware
- Enclosure must be fire-rated up to 2hr.

CHUTE INTAKE ROOM:

- Room dimensions: 3m x 0.75m (118" x 30")

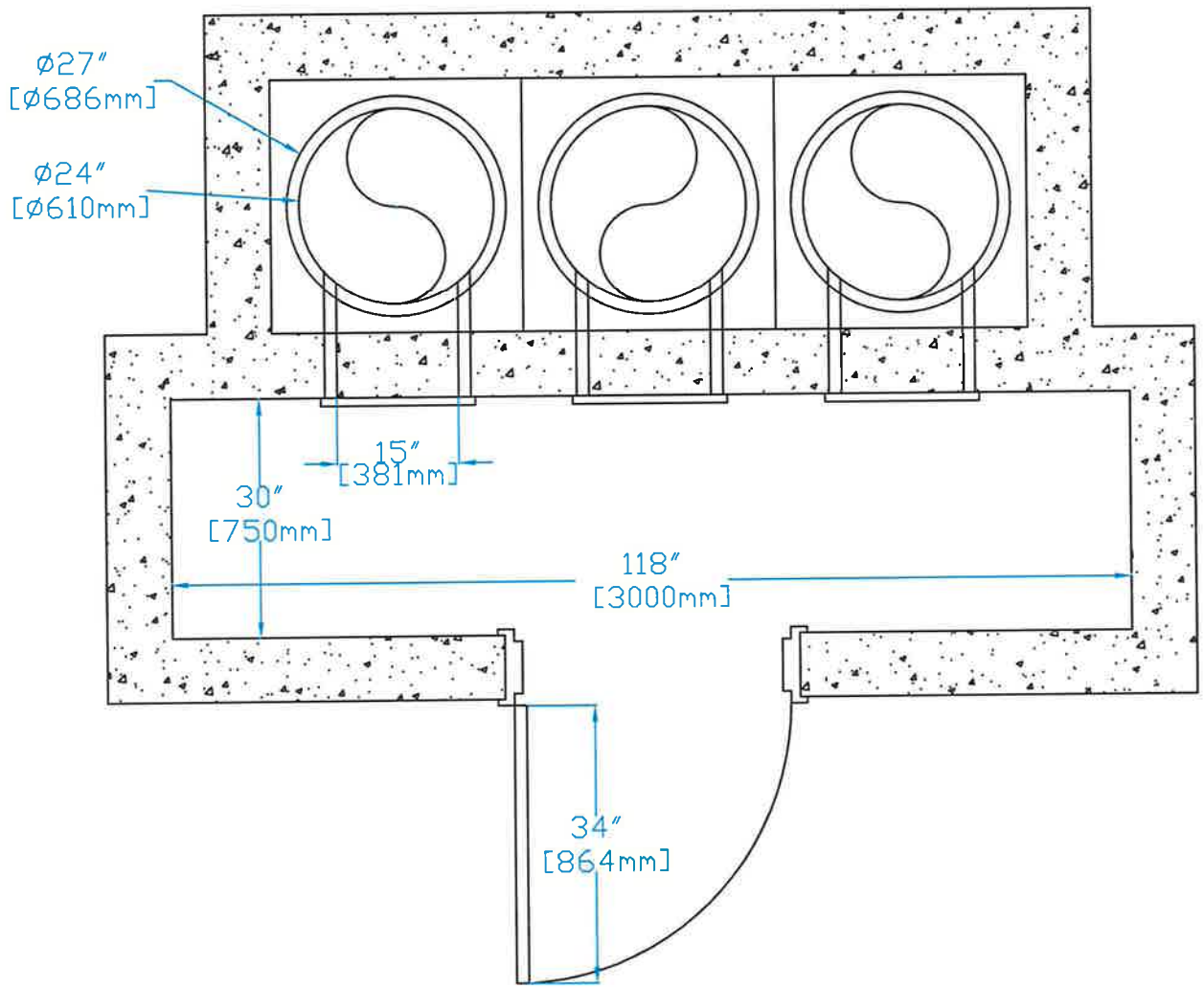
CHUTE INTAKE DOORS:

- Standard 24" fire rated chute doors with baffles

BENEFITS / TRADEOFFS

This layout is presented to achieve optimal diversion of the 3 most prominent streams of waste today. Space can be optimized by placing the chutes adjacent to each other with the fire-rated, self-closing entrance door opening outwards into the hallway allowing more space within the room. The extent of additional space utilization in comparison to a dual-chute system facing each other is minimal since an entire far side of the chute rooms is unoccupied by chutes.

Positive tradeoffs include better diversion (highly anticipated) hence reduced collection costs to the owners, equal convenience for residents to access all streams, lack of technological and human barriers, and minimum possibility for technical glitches, as posed by trisorters. Negative tradeoffs include added cost of construction and less space on each floor to be allocated for residential living space.



OPTION 1C

THREE-CHUTE LAYOUT 2 (SIDE BY SIDE)

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OPTION 2A – DUAL CHUTE SYSTEM 1

This option includes two separate chutes adjacent to each other and a separate refuse area for organics or other materials.

A double chute system eliminates the contamination between the recycle and the garbage streams reported by tri-sorter users and superintendents. This option presents a scenario to achieve improved (from current) waste diversion with slightly less space requirement in comparison to the recommended triple chute system (Option 1).

SPECIFICATIONS

ENTRY DOOR:

- Outward swinging
- Self-closing
- Fire-rated for 45 minutes
- Positive latching hardware
- Enclosure must be fire-rated up to 2hr.

CHUTE INTAKE ROOM:

- Room dimensions: 50" x 62" plus 25" x 50"

CHUTE INTAKE DOORS:

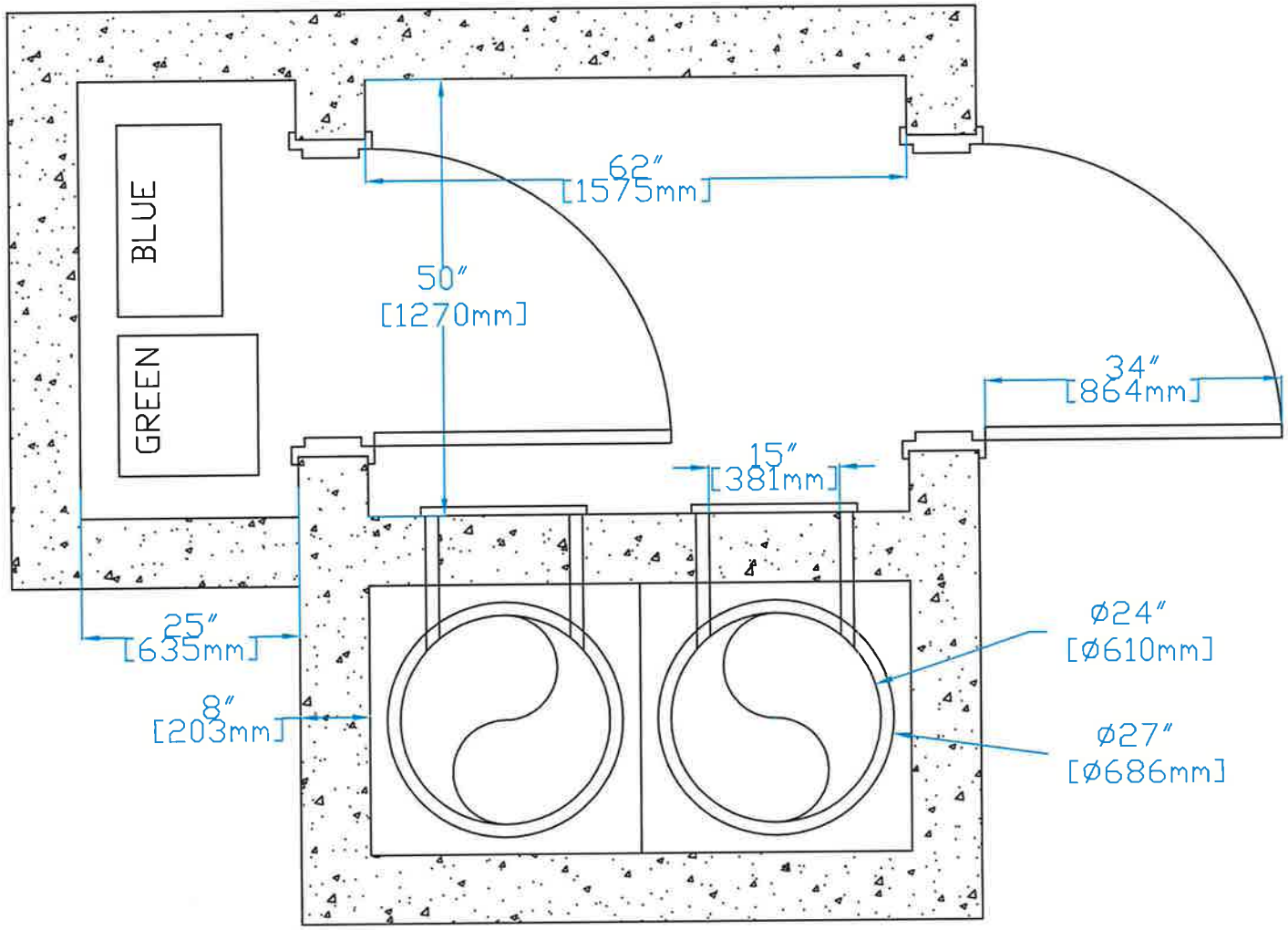
- Standard 24" fire rated chute doors with baffles
- Optional - Lockable chute door for the chute with the bi-sorter system (garbage /organic)

BENEFITS / TRADEOFFS

This assembly will provide equally convenient garbage, recycling, and organic disposal to residents. It will optimize floor space since both chute doors are located on the same side of the room, allowing for a separate space for an organics or other materials to be placed on the room. This system will eliminate contamination of recyclables by providing a separate chute for the recyclables.

Equal chute sizes (at the largest size requirement) are once again recommended to avoid creating restrictions during future expansion/ combination of streams.

Positive tradeoffs include better diversion (from existing) hence reduced costs and convenience to the user, and less floor space utilized, hence lowered construction costs. Negative tradeoffs include the lack of automation of the system since it requires dedicated personnel and the cost associated with their involvement.



OPTION 2A

DUAL CHUTE SYSTEM 1

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10029	2A	

OPTION 2B – DUAL CHUTE SYSTEM 2

This option is the first of two bi-sorters installed double chute layouts with NO organic bin in the room, and are presented for versatility. Option 2B or 2C can be chosen depending on which one best optimizes the available floor space on each level. This option includes two separate chutes with a bi-sorter compactor system incorporated with one chute for garbage and organic collection and the second chute for recyclables. A double chute system eliminates the contamination between the recycle and the garbage/organic streams reported by tri-sorter users and superintendents, to a better extent. This option presents a scenario to achieve improved (from current) waste diversion with less space requirement in comparison to the recommended triple chute system (Option 1).

SPECIFICATIONS

ENTRY DOOR:

- Outward swinging
- Self-closing
- Fire-rated for 45 minutes
- Positive latching hardware
- Enclosure must be fire-rated up to 2hr.

CHUTE INTAKE ROOM:

- Room dimensions: 34" x 37"

CHUTE INTAKE DOORS:

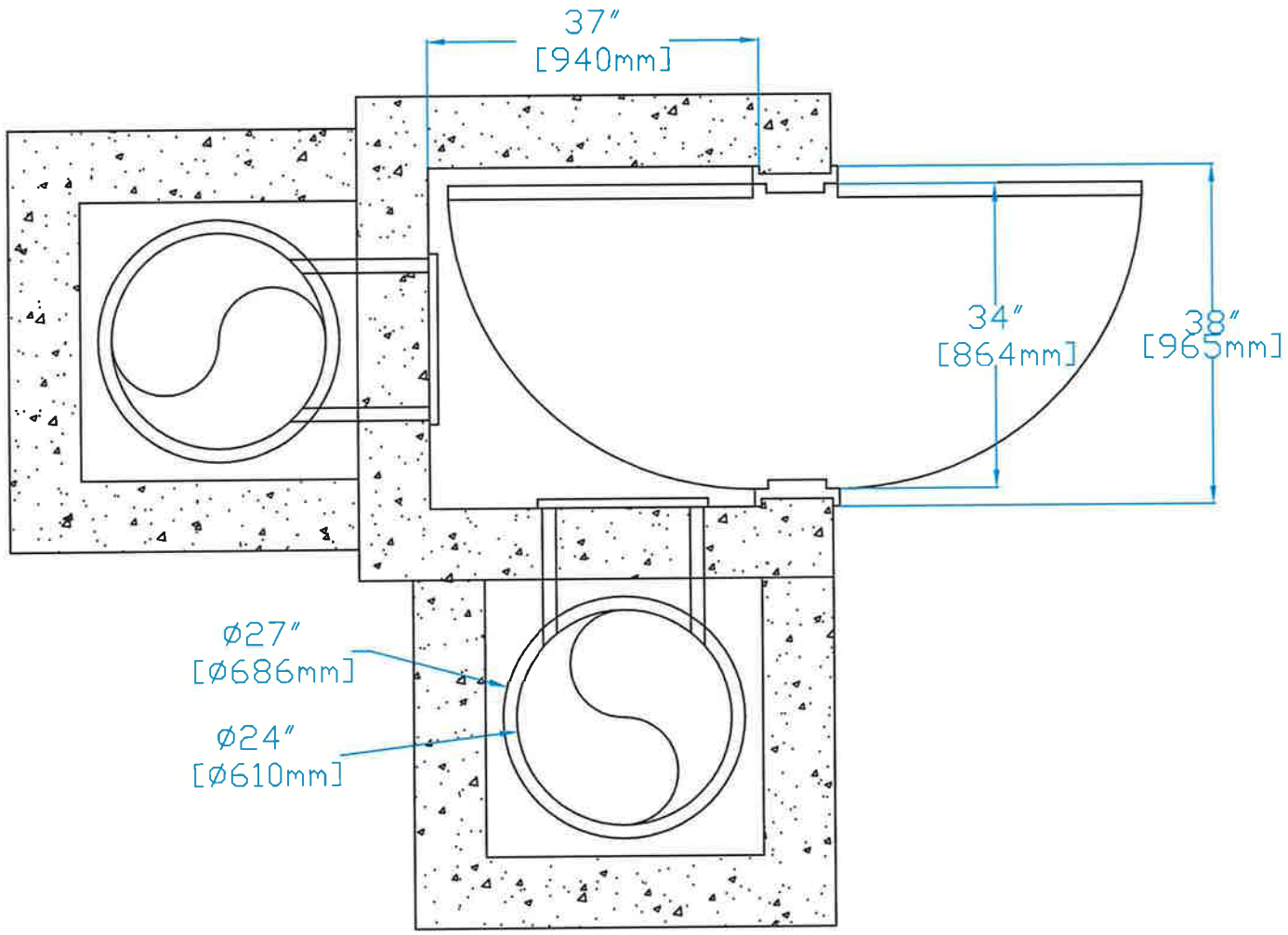
- Standard 24" fire rated chute doors with baffles
- Optional - Lockable chute door for the chute with the bi-sorter system (garbage /organic)

BENEFITS / TRADEOFFS

This assembly will provide equally convenient garbage, recycling, and organic disposal to residents. It will optimize floor space when compared to the triple chute system. This system will eliminate contamination of recyclables by providing a separate chute for the recyclables.

Equal chute sizes (at the largest size requirement) are once again recommended to avoid creating restrictions during future expansion/ combination of streams.

Positive tradeoffs include better diversion (from existing) hence reduced costs and convenience to the user, and less floor space utilized, hence lowered construction costs. Negative tradeoffs include the possibility of cross-contamination between bi-sorted streams due to an added dimension of confusion to the user (technology involved, as opposed to completely avoiding the use of sorters as in Option 1-A), possible technical glitches and the need to service bi-sorters, and the lack of potential for future expansion of the number of streams.



OPTION 2B

DUAL CHUTE SYSTEM 2

GENIVAR
600 COCHRANE DRIVE, SUITE 500
MARKHAM, ON
L3R 5K3
TEL: (416) 504-2991
FAX: (416) 504-9755

DR. RY	CH. PPS	SC. NTS	DATE 2010-07-15

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OPTION 2C – DUAL CHUTE SYSTEM 3

This option is the second of two bi-sorters installed double chute layouts with NO organic bin in the room, and are presented for versatility to the builder. Option 2B or 2C can be chosen depending on which one best optimizes the available floor space on each level. This option includes two separate chutes with a bi-sorter compactor system incorporated with one chute for garbage and organic collection and the second chute for recyclables. A double chute system eliminates the contamination between the recycle and the garbage/organic streams reported by tri-sorter users and superintendents, to a better extent. This option presents a scenario to achieve improved (from current) waste diversion with less space requirement in comparison to the recommended triple chute system (Option 1).

SPECIFICATIONS

ENTRY DOOR:

- Outward swinging
- Self-closing
- Fire-rated for 45 minutes
- Positive latching hardware
- Enclosure must be fire-rated up to 2hr.

CHUTE INTAKE ROOM:

- Room dimensions: 34" x 37"

CHUTE INTAKE DOORS:

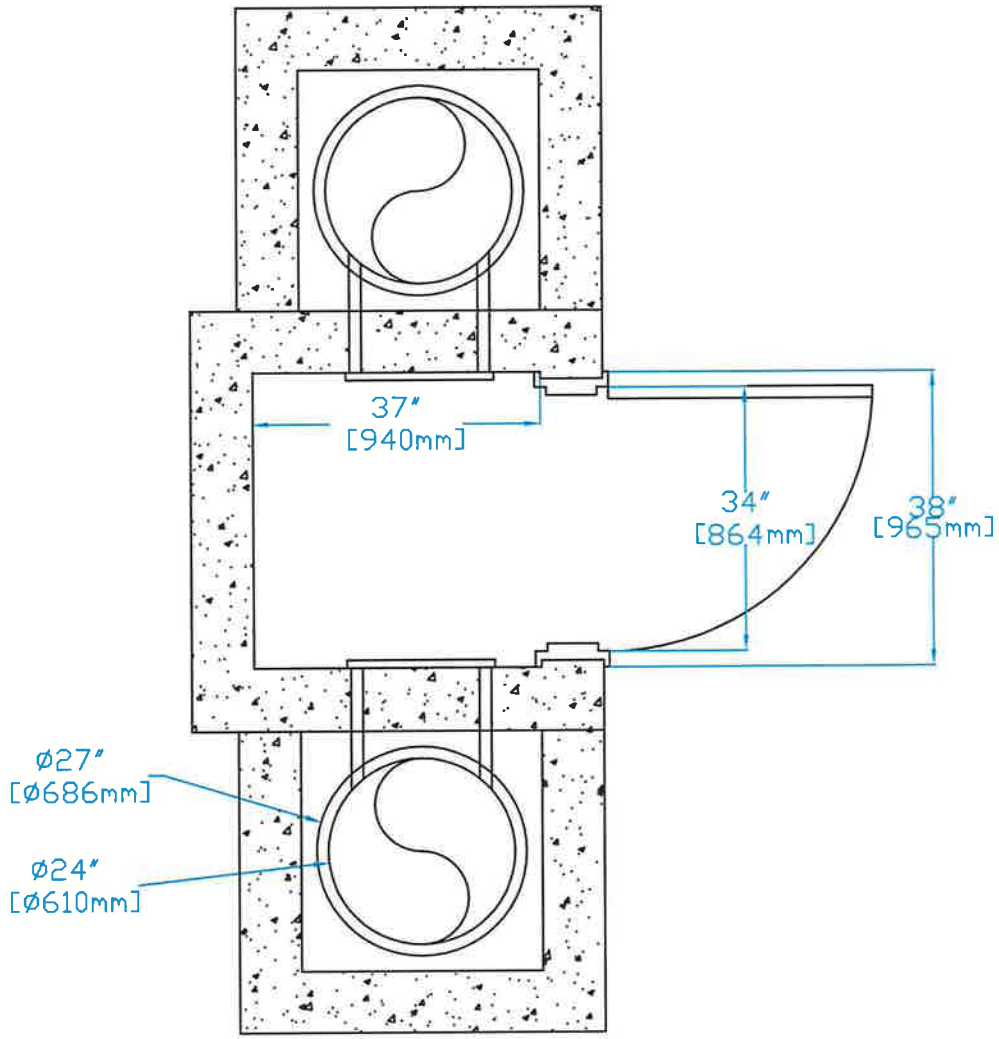
- Standard 24" fire rated chute doors with baffles
- Optional - Lockable chute door for the chute with the bi-sorter system (garbage /organic)

BENEFITS / TRADEOFFS

This assembly will provide equally convenient garbage, recycling, and organic disposal to residents. It will optimize floor space when compared to the triple chute system. This system will eliminate contamination of recyclables by providing a separate chute for the recyclables.

Equal chute sizes (at the largest size requirement) are once again recommended to avoid creating restrictions during future expansion/ combination of streams.

Positive tradeoffs include better diversion (from existing) hence reduced costs and convenience to the user, and less floor space utilized, hence lowered construction costs. Negative tradeoffs include the possibility of cross-contamination between bi-sorted streams due to an added dimension of confusion to the user (technology involved, as opposed to completely avoiding the use of sorters as in Option 1-A), possible technical glitches and the need to service bi-sorters, and the lack of potential for future expansion of the number of streams.



OPTION 2C

DUAL CHUTE SYSTEM 3

GENIVAR
600 COCHRANE DRIVE, SUITE 500
MARKHAM, ON
L3R 5K3
TEL: (416) 504-2991
FAX: (416) 504-9755

DR. RY	CH. PPS	SC. NTS	DATE 2010-07-15

PROJECT ADDRESS

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10029	2C	

OPTION 3 – SINGLE CHUTE WITH TRI-SORTER/LOCKABLE DOORS

This option includes a single chute installed with a tri-sorter and lockable chute doors. The lockable doors decrease the option of contamination. This option presents a scenario to achieve improved diversion with less space requirements.

SPECIFICATIONS

ENTRY DOORS:

- Outward swinging
- Self-closing
- Fire-rated for 45 minutes
- Positive latching hardware
- Enclosure must be fire-rated up to 2hr.

CHUTE INTAKE ROOM:

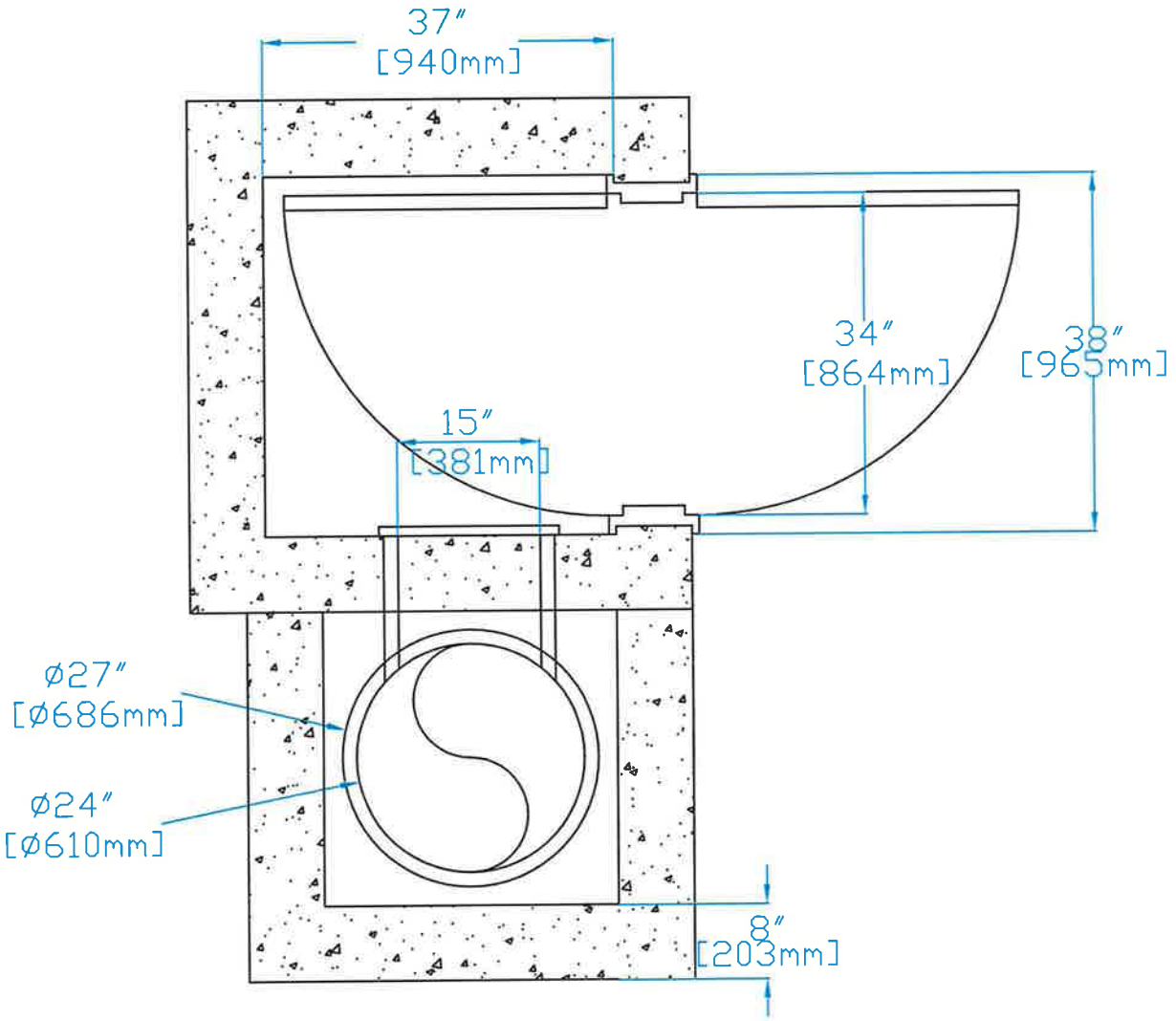
- Room dimensions: 15" x 34"

CHUTE INTAKE DOORS:

- Lockable 24" fire rated chute door system

BENEFITS / TRADEOFFS

Positive tradeoffs include improved convenience to the user, versus having to manually transport organics and recyclables downstairs, diminished cross-contamination and lower construction cost due to a single chute and small chute intake room. This system has improved safety for the maintenance staff. Negative tradeoffs include the well-voiced concern of operational issues and associated cost of frequent servicing and user confusion associated with the lack of 3-physically separated chutes.



OPTION 3

SINGLE CHUTE
WITH TRI-SORTER/
LOCKABLE DOORS

GENIVAR
600 COCHRANE DRIVE, SUITE 500
MARKHAM, ON
L3R 5K3
TEL: (416) 504-2991
FAX: (416) 504-9755

DR. RY	CH. PPS	SC. NTS	DATE 2010-07-15

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10029	3	

OPTION 4 – SINGLE CHUTE WITH FLOOR STORAGE

This option includes a single conventional chute with an organics bin and a recycling bin placed in a separate refuse room on each floor.

SPECIFICATIONS

ENTRY DOORS:

- Outward swinging
- Self-closing
- Fire-rated for 45 minutes
- Positive latching hardware
- Enclosure must be fire-rated up to 2hr.

CHUTE INTAKE ROOM:

- Room dimensions: 50" x 50" plus 25" x 50"

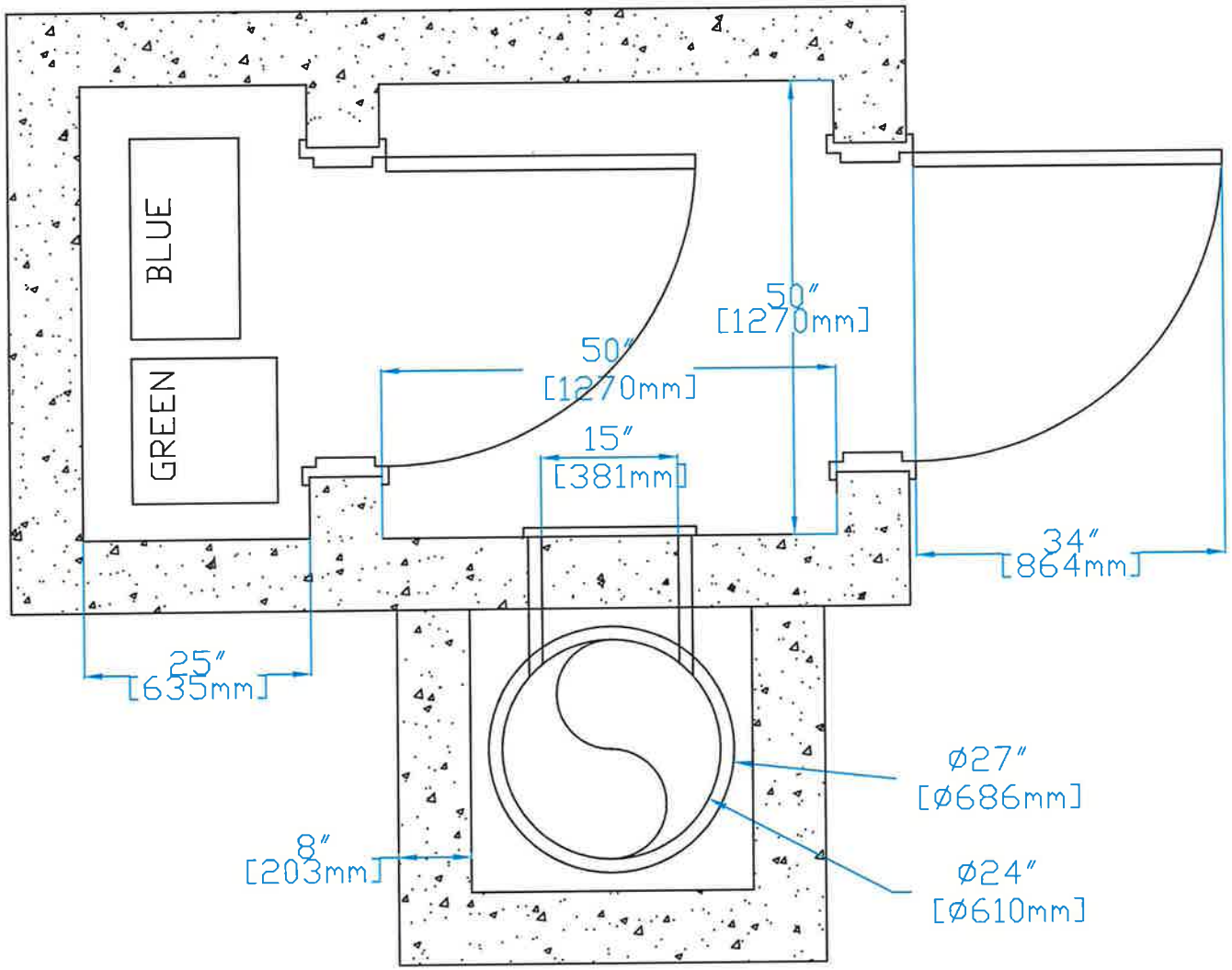
CHUTE INTAKE DOORS:

- Standard 24" fire rated chute doors with baffles

BENEFITS / TRADEOFFS

This assembly will provide equally convenient garbage, recycling, and organic disposal to residents. This system will eliminate cross-contamination associated with mechanically sorted systems.

Positive tradeoffs include better diversion (from existing) hence reduced costs, simplicity of understanding the system, convenience to the user (versus manually transporting organics, etc downstairs), lower construction cost due to a lower number of chutes, minimal chance of cross-contamination, and less confusion for users due to the lack of technology involved. Negative tradeoffs include the lack of automation of the system since it requires dedicated personnel and the cost associated with their involvement, a rather low possibility for future expansion, and a reduction of saleable floor space.



OPTION 4

SINGLE CHUTE WITH FLOOR STORAGE

GENIVAR
600 COCHRANE DRIVE, SUITE 500
MARKHAM, ON
L3R 5K3
TEL: (416) 504-2991
FAX: (416) 504-9755

DR. RY	CH. PPS	SC. NTS	DATE 2010-07-15

PROJECT ADDRESS
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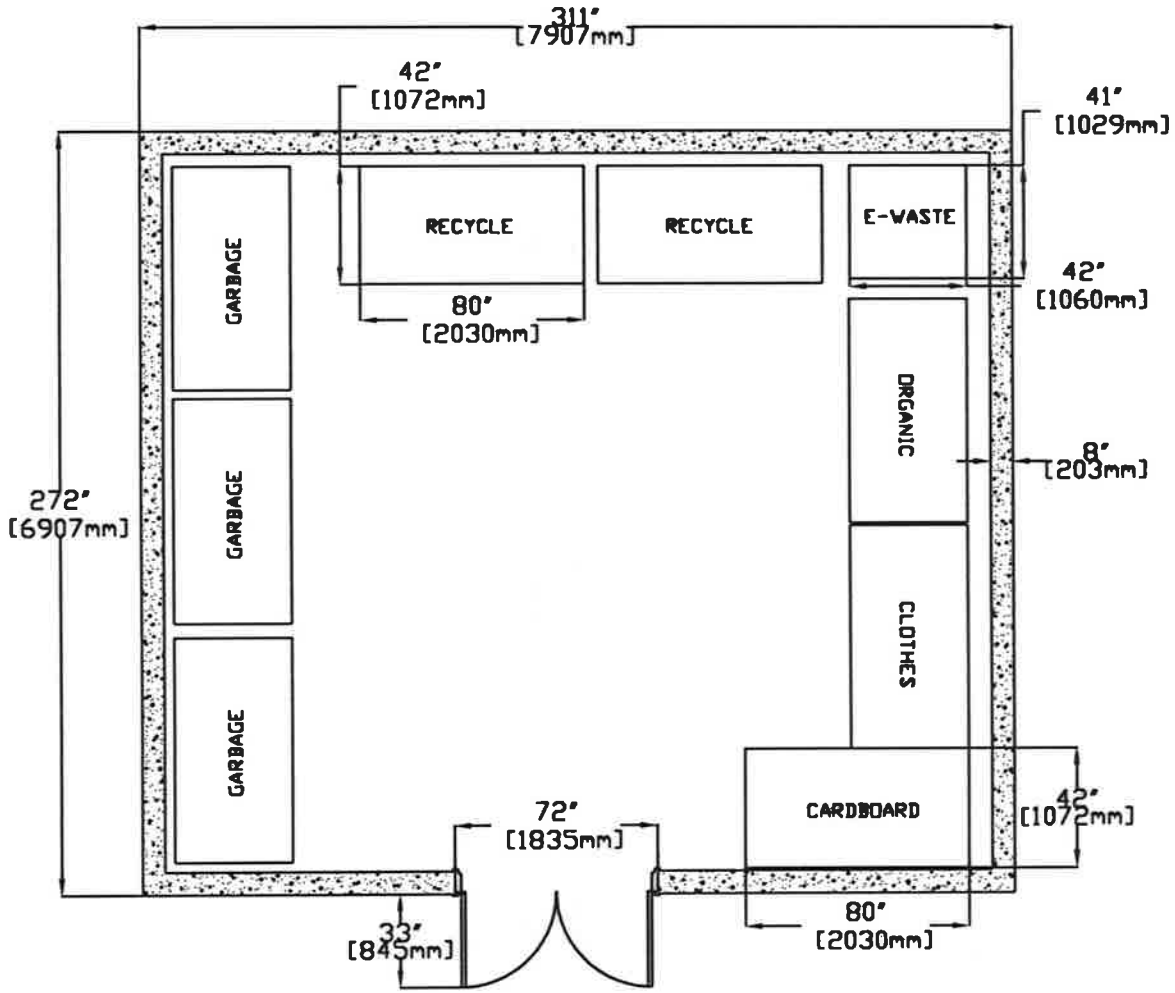
PROJECT NO.	DRAWING NO.	REV.
10029	4	



NOTE:
1. WASTE COLLECTED 2 X WEEK
2. 100 UNITS

OPTION 5

COMBINED GARBAGE AND RECYCLING ROOM

GENIVAR
400 COCHRANE DRIVE, SUITE 500
MARKHAM, ON
L3R 9R3
TEL: (416) 364-2991
FAX: (416) 364-9755

DR. ES	CH. PPS	SC. NTS	DATE 2011-03-01

PROJECT ADDRESS
CIF-219 – BEST PRACTICES GUIDE

PROJECT NO.	DRAWING NO.	REV.
10029	5	

APPENDIX B

Review of Existing Buildings and Comparison of Efficiency

Review of Existing Buildings

General

A total of 23 buildings were included in our review. The buildings range in size from 100 to over 450 apartment units per building, with a total of approximately 6,466 residential units. The buildings are situated in Toronto, Etobicoke, Thornhill, Richmond Hill and Hamilton. The majority of buildings are relatively new, built from 2003 to 2009; two are older buildings, one building was built in 1987 and is approximately 23 years old, the other is from the 1970's and is approximately 40 years old.

The focus of this investigation was on newer buildings, given the interest of the project is to make recommendations on new building design to maximize waste diversion.

GENIVAR implemented the following protocol for the building review:

- A standard form was prepared including information such as:
    - number of residential units,
    - number of bins of waste, recycling and organics collected,
    - areas of garbage and recycling rooms,
    - loading area and general driveway access information.
- The building manager and/or building superintendent were interviewed to obtain information of the successes and problems experienced with their present waste collection system.

The findings from our visual review have been summarized in Table B-4 included at the end of this Appendix B. A copy of the completed site inspection forms has been included in Appendix E.

Summary of Buildings Reviewed

The following Table B-1 summarizes the quantity of waste collected per building:

Table B- 1 Summary of Building Waste Collection - Cubic Yards per weeks

Bldg #	Number of units	Year Built	Collection System	Garb. yd^3 per wk	Recycling yd^3 per wk	Org. yd^3 per wk
1	207	2009	Single+Tri-sorter	8	12	3
2	216	2009	Dual chute	4	9	0
3	258	2007	Single	32	2.7(c)	0
4	231	2008	Single+Tri-sorter	32	4(c)	0
5	348	2007	Single+Tri-sorter	12	21	0
6(L)	334	2008	Single+Tri-sorter	12	18	0
7	234	2004	Single	12	11(c)	1
8	314	2005	Single+Tri-sorter	25	6	0
9(L)	357+87	2008	Single+Tri-sorter	24	39	6
10	230	2005	Single+Tri-sorter, lockable door	10.5	16	6
11	341	2008	Single+Tri-sorter	18	24	3
12(L)	244	2009	Single+Tri-sorter	12	15	2
13	143	2008	Single+Tri-sorter	8	12	0
14	329	2005	Single+Tri-sorter	12	15	0
15	321	2003	Single	12	8	0
16	260	2009	Single+Tri-sorter	15	13.5	3
17	106	2006	Single+Tri-sorter	6	6	1.5
18	243+217	1987	Single	18	24(f-f)	6
19	334	2008	Single+Tri-sorter	18	15	3
20(L)	376	2004	Triple Chute	9	27	0
21	171	2006	Single	16	12	0
22	116	1970's	No chute-closed	6	11(c)	2
23(L)	449	2007	Single –No compaction	12	7.5(c)(f-f)	2
Totals	**6466**			333.5	330	39
			YD^3 Per unit per week	0.052	0.051	0.006

LEGEND
(c) Recycling using carts
(f-f) Floor to floor collection
(L) LEED Designation

From the data collected above the following can be summarized:

- 12 out of 23 buildings (52%) have implemented organics collection. The quantity of collection is relatively small, approximately 39 cubic yards per week for our sample group. This represents only a 11% volume diversion from the total of compacted garbage collected weekly.
- All 23 buildings have implemented a recycling program. A total of 330 un-compacted cubic yards per week for our sample group.
- 5 of 23 buildings (22%) including large buildings with over 200 units have employed the cart system for collection of recyclables in lieu of the larger front-end bins.
- Nine buildings (39%) have air conditioning installed in the garbage room that appears beneficial to control odours for the organics stream.
- Only one building is equipped with a dual chute and one building has a triple chute system. The triple chute system was not yet active, currently operates as dual chute system, this represents 9% of the sample group.
- 5 out of 23 buildings (24%) have a single chute and compactor system.
- Five of the buildings reviewed, Buildings #6, #9, #12, #20 and #23 have received a LEED designation.
- Only one building has a tri-sorter system with lockable doors (4%).
- One of the buildings has an exterior area for large items such as cardboard and furniture.
- The majority of the buildings reviewed, 14 out of 23 (61%) are equipped with a single chute with a tri-sorter system of waste collection. During our review we confirmed that there are several problems associated with the tri-sorter mechanism:

  1. **Contamination** – A large number of building managers reported that this system has a high degree of contamination. Some building managers require daily manual sorting in order to ensure their recyclables are collected. Others report that recycling is disposed as garbage due to the contamination problems.

  2. **Safety** – Staff reported being hurt by garbage bags when completing operations beneath the chute e.g. exchanging containers, freeing up blockage. The installation of lockable doors appears to eliminate this problem.

  3. **Mechanical problems** – Re-occurring mechanical problems has forced some managers to use the tri-sorter as a single chute system.

- Two of the buildings, Building # 18 and Building #23 have a floor-to-floor recycling collection. In one building the collected recyclables are disposed through the single chute by the building maintenance staff. One hour per day is allocated to this task and the chute is not available to the residents during the allocated time. At the second building the recyclable carts are brought via the elevators to the ground level loading area.
- All but one building incorporated the three stream waste collection with comingled recycling. One building separated the paper stream from the container stream.
- In building #22 the existing chute was closed off, residents bring all garbage and recycling to the recycling/garbage room.

Comparison of Efficiency of Different Waste Collection Systems

Based on visual reviews and information provided by the building manager and/or superintendent, we have estimated the amount of garbage, recycling and organics collected on a weekly-per unit basis. Additionally the ratio of recycling vs. garbage per building in our sample group was calculated. Please refer to Table B- 2. This summary compares the efficiency of waste diversion based on the type of internal collection system.

Table B-2 groups the data with the three types of collection methods:

- Single Chute with a tri-sorter – data from 14 buildings in cubic yards per week
- Single Chute with a tri-sorter & lockable door – data from 1 building in cubic yards per week
- Single chute and compactor – data from 4 buildings in cubic yards per week
- Double chute – data from 2 buildings in cubic yards per week.
- Floor to floor collection – data from 2 buildings in cubic yards per week
- No chute option – All collection on ground floor- data from 1 building in cubic yards per week

We have summarized the data as follows:

Table B- 3 Summary of Garbage (Compacted) & Recyclable Collection – Cubic Yards

Type of Collection	Garbage/unit Average yd^3	Recyclable/unit Average yd^3	Ratio Recyclables vs. Garbage
Single Chute/tri-sorter	0.055	0.056	1.02
Single chute	0.073	0.034	0.47
Single chute and floor to floor collection	0.026	0.035	1.31
Dual Chute	0.022	0.061	2.77
Single chute, tri-sorter & lockable door	0.046	0.070	1.52
No chute-closed	0.026	0.092	3.57

The summary of garbage and recyclable collection revealed that the ratio of diversion between garbage/recyclables with the tri-sorter is slightly better than the single chute system. The ratio of diversion does not appear to be related to the size of the building or number of units.

The highest ratio of diversion is obtained with the dual chute system. Providing separate chutes allows for adequate sorting and eliminates contamination.

The building without a chute appears to perform well. The height of the building sampled was 15th stories. We were informed residents bring the waste down at the same time as leaving the building. It would appear building height is not a variable.

The single chute with a tri-sorter and lockable doors is also comparably effective. The lockable doors decrease the contamination problem significantly.

The single chute and floor to floor collection has a ratio of diversion better than average.

Large buildings with a cart recycling system have a lower ratio of diversion, overall. The cart system appears to be efficient on smaller buildings only.

Most LEED buildings have a slightly better than average diversion rate.

Table B-2 - Diversion Rates per unit per year by type of Collection System

Bldg #	# of Units	Total Units	Collection Type	Garbage x week	Recycling x week	Green bin x week	Garbage-CY x week	Garbage/unit-CY	Recycling CY x week	Recycling/unit-CY	Ratio Recycling vs Garbage	Organics cy x week	Organics/unit-CY
1	207	207	Single+Tri-sorter	2	3	1	8	0.039	12	0.058	1.50	3	0.014
4	231	231	Single+Tri-sorter	8	9 carts	0	32	0.139	4	0.017	0.13	0	0.000
5	348	348	Single+Tri-sorter	4	7	0	12	0.034	21	0.060	1.75	0	0.000
6	334	334	Single+Tri-sorter	4	6	0	12	0.036	18	0.054	1.50	0	0.000
8	314	314	Single+Tri-sorter	4+30 carts	2	0	25	0.080	6	0.019	0.24	0	0.000
9	357+87	444	Single+Tri-sorter	6	13	2	24	0.054	39	0.088	1.63	6	0.014
10	230	230	Single+Tri-sorter+lockable doors	3.5	4	2	10.5	0.046	16	0.070	1.52	6	0.026
11	341	341	Single+Tri-sorter	6	8	1	18	0.053	24	0.070	1.33	3	0.009
12	244	244	Single+Tri-sorter	4	6	1	12	0.049	15	0.061	1.25	2	0.008
13	143	143	Single+Tri-sorter	2	4	0	8	0.056	12	0.084	1.50	0	0.000
14	329	329	Single+Tri-sorter	3	6	0	12	0.036	15	0.046	1.25	0	0.000
16	260	260	Single+Tri-sorter	5	4.5	1	15	0.058	13.5	0.052	0.90	3	0.012
17	106	106	Single+Tri-sorter	2	2	0.5	6	0.057	6	0.057	1.00	1.5	0.014
19	334	334	Single+Tri-sorter	6	5	1	18	0.054	15	0.045	0.83	3	0.009
	Sub -Total	**3865**		59.5+30 carts	73.5 + 9 carts	9.5	**212.5**	0.055	**217**	0.056	**1.02**	**28**	0.007
21	171	171	Single	4	4	0	16	0.094	12	0.070	0.75	0	0.000
3	258	258	Single	8	6 carts	0	32	0.124	2.7	0.010	0.08	0	0.000
7	234	234	Single	4	3 + 12 carts	6 carts	12	0.051	10.88	0.046	0.91	1	0.004
15	321	321	Single	3	2	0	12	0.037	8	0.025	0.67	0	0.000
	Sub -Total	**984**		19	9 + 18 carts	6 carts	**72**	0.073	**34**	0.034	**0.47**	**1**	0.001
18	243+217	460	Single(f-f)	6	8	2	18	0.039	7.5	0.016	0.42	1.9	0.004
23	449	449	Single(f-f)**	4	24 carts	12 carts	6	0.013	24	0.053	4.00	6	0.013
	Sub-Total	**909**		10	8 +24 carts	2+12 carts	**24**	0.026	**32**	0.035	**1.31**	**7.9**	0.009
2	216	216	Dual chute	1	3	0	4	0.019	9	0.042	2.25	0	0.000
20	376	376	Triple Chute(2 active)	3	9	0	9	0.024	27	0.072	3.00	0	0.000
	Sub-Total	**592**		4	12	**Sub-Total**	**13**	0.022	**36**	0.061	**2.77**	**0**	0.000
22	116	116	No chute -closed**	2	34 carts	12 carts	3	0.026	10.7	0.092	3.57	1.9	0.016
	Total	**6466**				Total	**324.5**	0.050	**328.28**	0.051	1.01	**38.3**	

Notes

** No compaction - Assummed a compaction ratio of 2:1

Red Above/below average

TABLE B-4
CIF-219 Summary of Site Data

Building Information						Chute and Bins		Garbage/Recycling Room							Refuse Room				Access						Effectiveness				
No.	Name	Year Built	Address	Number of Units	Municipality	Chute Type	Number of Bins	Location	Room Length	Room Width	Area m2	Bin Type	cubic yards	Air Conditioned?	Width-feet	Length feet	Area m2	Lockable Chute Door?	Transport from Room to Access Area	Minimum Turning Radius	Incoming roadway width	Loading area length	Loading area width	Loading area paving	Garbage bins per week	Recycling bins per week	Organic bins per week	Superintendent/ Property Manager Comments	Additional Comments
1	Port Royal Place 6	2009	5 Michael Power Place	207	City of Toronto	Tri-sorter	3	P1 level	43' max	42' max	Combined 168	Garbage	4	Yes	3.91	3.91	1.42	No	GARBAGE - mini tractor used to drive bins up the ramp and into loading area, due to weight. RECYCLING - special service lift from P1 level to ground floor, leading to collection area	42'	20'	72'	26'	Concrete	2	3	<1	Generally ineffective. People lack patience, and don't take their time. Organics frequently in Garbage stream. Lots of contamination	City pick-up, but considering going private due to cost
												Recycling	4																
												Organic	2.5																
2	Royal York Grand	2009	1403 Royal York Road	216	City of Toronto	Dual chute	Garbage: 1 Recycling: 3	Ground Floor	30' max	26' max	Combined 87	Garbage	4	No	3.33	3.67	1.14	No	Direct access via large overhead sliding door leading out of compactor room into loading area	25'	17'	100'	17'	Concrete	1	3	n/a	Good. Reflected by the number of bins diverted per week (1:3). Residents are able to follow the system fairly easily. Looking to implement Organics with a similar degree of effectiveness and ease, but not sure how since the infrastructure is not in place.	Private collection
												Recycling	3																
3	The Beverly	2007	15 North Park Road	258	Thornhill	Single - conventional	Garbage: 1 operational, 3 spare Recycling: 6	Garbage-Ground Floor	44'	21'	86	Garbage	4	No	4.00	5.67	2.11	No	Brought down by hand (adjacent vestibule)	<40'	approx 25'	approx 25'	25'	Concrete	8	6 carts	n/a	Moderate, people won't care much. Some contamination. Triple chute (NOT tri-sorter) is the only thing that works. Organics go in garbage, no pick up in this area.	
								Recycling-Ground Floor	15'	8'	11	Recycling	cart																
4	Vista	208	7 North Park Road	231	Thornhill	Tri-sorter (dysfunctional) operates as a single chute	Garbage: 1 operational, 4 spare Recycling: 3	Garbage-Ground Floor	50'	21'	97	Garbage	4	No	3.00	3.41	0.95	No	Brought down by hand (adjacent vestibule)	~25'	25'	80'	25'	Concrete (upper) Asphalt (lower)	8	9 carts	n/a	Same as Beverly	a) Railing Required: not to code b) *requires backing up, no through*
								Recycling-Ground Floor	14'	10'	13	Recycling	cart																
5	NUVO I	2007	35 Viking Lane	348	City of Toronto	Tri- sorter	Garbage: 8 Recycling: 7	Garbage-Ground Floor	25'	20'	46	Garbage	3	No	3.00	3.00	0.84	No	Loading area: Large area, easy access					Concrete	4	7	n/a	Manually cleans bins everyday due to contamination. Does not mind sorting duties. Would prefer 2 chute system: 1)garbage+green bin 2)recycles.	outdoor bins: paper material flies out- compactor for recyclables
								Recycling-Ground Floor	15'	15'	21	Recycling	3																
6	NUVO II-LEED	2008	25 Viking Lane	334	City of Toronto	Tri- sorter	Garbage: 7 Recycling: 6	Garbage-Ground Floor	30'	15'	42	Garbage	3	No	3.00	3.00	0.84	No	Direct Access route (3 small sections)					Concrete	4	6	n/a		Not a separate recycling room, an area within garbage room caged for recycling cardboard, also in the stairway, a separate container for batteries/bulbs however this is located in a different part of the building, not effective.
								Recycling-Ground Floor	10'	3'	2.8	Recycling	3																
7	Essex I	2004	5229 Dundas Street West	234	City of Toronto	Single Chute	Garbage: 3 Recycling: 3 carts, 2 large bins Organics: 2 small Bulbs: separate container	Garbage-Ground Floor	24'	14'	31	Garbage	3	No	2.91	3.25	0.88	No	Direct access			64'	20'	Asphalt paved + concrete	4	3+ 12 carts	6 small	More recycling is accomplished with the single chute system than with the tri-sorter system	Private pick-up. 10 of the carts and 3 bins are stored outside.
								Recycling-Ground Floor	22'	11'	22	Recycling	3 + carts																
8	Essex II	2005	5233 Dundas Street West	314	City of Toronto	Tri- sorter	Garbage: 1 + 3 outside Recycling: 2 large + 3 carts+26 carts in UPG Separate container for bulbs and batteries	Garbage-Ground Floor	66'	11'	67	Garbage	3	No	3.41	3.50	1.11	No	Direct access			20'	18'	Interlocking Paving	4+ 30 carts	2	n/a	Tri-sorter is not effective, contamination rates are very high, most times recycling is treated as regular garbage	Private pick up
								Recycling-Ground Floor	22'	11'	22	Recycling	3																
9	Verve + Loft-LEED	2008	20 Homewood Ave	357	City of Toronto	Tri- sorter	Garbage: 3 Recycling: 8 Organics: 2	Garbage Room - Verve	60'	45'	250	Garbage	4	Yes	3.00	3.00	0.84	No				50'	40'	Interlocking Paving	6	13	2		City of Toronto pick up
								Recycling Room	11'	14'	14	Recycling	3																
	Loft	2008	20 Homewood Ave	87	City of Toronto		Garbage: 3 Recycling: 8 Organics: 2	Garbage Room - Loft	35'	23'	75	Garbage	4	No	3.00	3.00	0.84	No											
												Green bin	3																
10	Harold Green	2006	121 Parkway Forest Drive	230	City of Toronto	Tri- sorter w/lockable doors	Garbage: 3 to 4 Recycling: 4 small + 2 Large Organics: 1	Garbage Room	28	21	55	Garbage	3	No	5.00	3.83	1.78	Yes	Recycling			22'	7'4"	Concrete	3 to 4	4 large	2	System uses lockable doors, 90% of the time there is no contamination, system is very safe. If items get blocked the entire systems gets turned-off	Outdoor recycling area bin for cardboard and for clothes. Miller Waste pick up
								Recycling Room - Exterior				Recycling (small)	3																
												Recycling (large)	4						Garbage			28'	21'	Concrete					
												Green bin	1.2																

TABLE B-4

Building Information						Chute and Bins		Garbage/Recycling Room							Refuse Room				Access						Effectiveness				
No.	Name	Year Built	Address	Number of Units	Municipality	Chute Type	Number of Bins	Location	Room Length	Room Width	Area m2	Bin Type	cubic yards	Air Conditioned?	Width-feet	Length feet	Area m2	Lockable Chute Door?	Transport from Room to Access Area	Minimum Turning Radius	Incoming roadway width	Loading area length	Loading area width	Loading area paving	Garbage bins per week	Recycling bins per week	Organic bins per week	Superintendent/ Property Manager Comments	Additional Comments
11	TSCC 1974	2008	18 Spring Garden	341	City of Toronto	Tri- sorter	Garbage: 6 Recycling: 3 + 3 Organics: 1	Garbage	14.5m	7m	101	Garbage	3	Yes	3.25	4.25	1.28	No				22m	6m	Concrete Pad	6	8	1		Large ground floor refuse room allows storage of 3 blue boxes of standard residential size
								Recycling	7.5m	3.5m	26	Recycling	3																
12	7th storey high rise- LEED	2009	Toronto	244	City of Toronto	Tri- sorter	Garbage: 6 Recycling: 11 Organics: 2 Large items: 2	Garbage	9.5m	6m	57	Garbage	3	Yes	4.00	5.00	1.86	No				15m	3.5m	Concrete Pad	4	6	n/a		Large ground floor refuse room with 3 chute doors for organics, recyclables and garbage
								Recycling	9.5m	6.5m	62	Recycling	2.5																
13	Kingswood	2008	3391 Bloor St. W	143	City of Toronto	Tri-sorter	Garbage: 4 Recycling: 4 Large (residents deposit cardboard in moving room)	Garbage	45'	20'	84	Garbage	4	Yes	3.25	3.58	1.08	No				24'	7'	Asphalt paved with concrete ramp	2	4	n/a	planned for future green bin program, bins have been received	Building does not have a recycling room. Miller Waste picks up the garbage.
								Recycling	No Recycling room			Recycling	3																
14	Mondeo Springs 18	2005	18 Mondeo Drive	329	City of Toronto	Tri-sorter	Garbage: 5 Recycling: 10 Organics: 0 Large items: 1 (rollable cart brough down to first floor)	Garbage	35' (max)	30' (max)	97	Garbage	4	No	3.41	3.75	1.08	No	Directly outside large doors leading out of compactor and recycling room. No distance transport needed	>25'		40'	18'	Concrete	3	4 (cardboard/paper) 2 (bootles/cans)	n/a	- ~70% effective - language barrier- many people dont understand the literature - often find the recycling types mixed, sometimes even in garbage - Tri-sorter needs servicing due to some issues every 2-3 months	
								Recycling	35'	18'	59	Recycling 1	2.5																
												Recycling 2	2.5																
15	Mondeo Springs 8	2003	8 Mondeo Drive	321	City of Toronto	Conventional Single Chute and Bin/Compactor	Garbage: 1 + 6 spare Recycling: 3 Organics: 0 Large items: 1 (rollable cart brough down to first floor)	Garbage	35'	25'2"	82	Garbage	4	Yes	3.41	3.75	1.19	No	Brought downstairs		~20'	80'	13'	Concrete	3	2	n/a	- 18 Mondeo is more effective for recycling because of the tri-sorter - therefore, tri-sorter > conventional single chute for higher rate of recycling	
								Recycling	30'	13'	36	Recycling	4																
16	Pulse	2009	5500 Yonge St	260	City of Toronto	Tri- sorter	Garbage: 6 Recycling: 4+1 Organics: 2 Large items: 1	Garbage	10m	9m	90	Garbage	3	No	3.50	3.83	1.25	No				19m	7.5m	Concrete	5	4.5	1	- tri-sorter is not effective: - delay (20-30 seconds) residents are not patient and do not wait - resident throw waste while light is blinking (when they are supposed to wait). This results in waste being stuck at the half opened flap - contamination of recyclables - most of the waste disposed including green and recyclables will end up in garbage - a large number of residents do not recycle and separate from garbage in the first place	
								Recycling	10m	9m	90	Recycling	3																
17	St. Andrew on the Green	2006	9 Burnhamthorpe Cres	106	City of Toronto	Tri- sorter	Garbage: 4 Recycling: 2 standard Organics: 3 small Large items: None	Garbage	(15m x 4.5m) + (10m x 4m)		107	Garbage	3	No	3.17	4.83	1.42	No	Access is through the UPG. Bins are transferred from the UPG to the garbage/waste collection area on the G. Floor weekly.			14m	6.5m	Concrete Pad	2	1 1/2 - 2	1/2 - 1 small	- some mix of garbage and green with recycables	- A waste storage area is located on the ground floor (waste bin cage) - garbage / green and recycle bins are transferred from the garbage/ recycle rooms into the cage for collection weekly
								Recycling	6m	3.5m	21	Recycling	3																
18	Barclay Terrace (2 buildings, South and North)	1987	1300 Islington Ave.	243+217	City of Toronto	Single Chute	Garbage: 4 standard Recycling: 4 Organics: 4 (house size) in each building Large items: 1 for cardboard only	Recycling	3.5m	2.5m	8.75	Recycling	3	No	7.83	3.83	2.79	No				15m	6.5m	Concrete Pad	3/building	4/building	1/building	- seen a good response and an increase of recycle/green collection and a reduction in garbage collection through educating the residents (by meetings and literature)	- green waste is brought to the recycle rooms on the ground floor by residents - recyclables are placed in blue boxes located at refuse rooms on each floor. One hour every day (10-11pm), the chute is closed for residents' use and the building maintenance staff will use the chute to dispose recyclables only - 2 waste bins in the laundry room, 1 for batteries and 1 for ink cartridges

TABLE B-4

Building Information						Chute and Bins		Garbage/Recycling Room							Refuse Room				Access						Effectiveness				
No.	Name	Year Built	Address	Number of Units	Municipality	Chute Type	Number of Bins	Location	Room Length	Room Width	Area m2	Bin Type	cubic yards	Air Conditioned?	Width-feet	Length feet	Area m2	Lockable Chute Door?	Transport from Room to Access Area:	Minimum Turning Radius	Incoming roadway width:	Loading area length	Loading area width	Loading area paving	Garbage bins per week	Recycling bins per week	Organic bins per week	Superintendent/ Property Manager Comments	Additional Comments
19	Encore	2008	25 Carlton St	334	City of Toronto	Tri- sorter	Garbage: 3 Recycling: 4 Organics: 2 (half size) Large items: 1	Garbage	9.5m	4.5m	43	Garbage	3	Yes - WSG/ DNA Destroyer odor control system	3.25	3.83	1.16	Yes				15m	5m	Asphalt + Concrete	6	5	1 (twin)	- 3 chute system will be ideal	- Garbage + Recycle room (compactor room) not accessable by residents. LCBO bottles are collected in this room by staff. - Residents place recyclables which do not go down the chute in the recycle room. Green bins are not in recycle room, they are located in the Garbage + Recycle Room - one blue box with an LCBO sticker and a note with directions to the residents are placed in each refuse room - also collection of: Clothing, oversized furniture and appliaces (residents need to pay)
								Recycling	3.5m	3m	11	Recycling	3																
20	Radiance by Minto-LEED	2004	33 Sheppard Ave. E	376	City of Toronto	Triple Chute (2 chutes active, 1 roughed in)	Garbage: 5 Recycling: 9 Organics: 0	Combined = Garbage + Recycle	32'	25'	74	Garbage	3	Yes	3.41	4.50	1.43	No	Small tractor/machine used to haul full bins to loading area		~16'	60'	35'	Access route: Asphalt Loading area: Concrete	3	9	0	- about 80% effective..., some mixing, all depends on clientele - trisorter would not work in this building- waste of money	- collection by Miller Waste for City of Toronto - truck usually backs in - refuse room has good literature and instructions posted
												Recycling	3																
21	YRSCC 1063	2006	23 Oneida Crescent	171	Richmond Hill	Single - conventional	Garbage: 4 Recycling: 10 Organics: 0	Garbage	48	44	98	Garbage	4	Yes	3.83	2.83	1.01	No	Small tractor/machine used to haul full bins to loading area		~6m	19'	75'	Access route: Asphalt Loading area: Concrete	4	4	0	- superintendent manually empties recycling carts into the bins. - trisorter would not work in this building- waste of money	- residents access the recycling room directly from elevartor - recycling room has sufficient space for other streams. Separate bin for used clothes
								Recycling	24	22	49	Recycling	cart/3cy bins																
22	Forest Glenn	1970's	1966 Main Street W	116	Hamilton	Chute=closed	Garbage: 1 Recycling: 17 carts Organics: 6 carts	Garbage	n/a	n/a	n/a	Garbage	3	No	n/a	n/a	n/a	No	Carts are brought to main floor via eelevators		n/a	n/a	n/a	Parking lot used for collection	2	34 carts	12 carts	- garbage room converted to recycling room.	- residents access the recycling room directly from elevartor - recycling room has sufficient space for other streams. Separate bin for used clothes
								Recycling	4.8	4.8	23	Recycling	carts																
23	West Village Suites -LEED	2007	1686 main Street West	449	Hamilton	Single - conventional	Garbage: 2 Recycling: 12 carts Organics: 6 carts	Garbage	4.8	7.3	35	Garbage	6	No	6.00	20.00	11.15	No	Bins rolled directly to outside loading area		n/a	30'	15'	Access route: Asphalt Loading area: Concrete	6	24 carts	12 carts	- Large refuse room in each floor for recycling and organics	- residents access the recycling room directly from elevartor - recycling room has sufficient space for other streams. Separate bin for used clothes
								Recycling	n/a	n/a	n/a	Recycling	carts																

APPENDIX C

Review of Municipal Standards

Review of Municipal Design Standards

As part of our scope of work, we reviewed the current requirements of the following municipalities:

- City of Toronto – Requirements for Garbage and recycling Collection from New Developments and Redevelopments – Revised November 2006.
- Town of Markham – By-Law 32-95 – Established to Maintain a System for the Collection and Disposal of Refuse in the Town of Markham – June 16, 2005 & Memorandum for residential High-rise Apartment Buildings.
- City of Vaughan – Recycling in New Residential Apartment/Condominium Buildings – Approved by the Council – May 7, 2007 and Waste Collection Design Standards Policy – dated March 27, 2007.
- Region of Peel – Waste Collection Design Standards Manual – Revised June 2007.
- City of Hamilton - Waste Collection Design Standards for New Developments and Redevelopments – May 10, 2010.
- Durham Region – Technical and Risk Management Guidelines for Waste Collection Services on Private Property, dated February 2010.
- City of Guelph – By-law Number (2003)-17070 – Collection, removal and disposal of waste and other refuse.
- City of London – Municipal Waste & resource Materials Collection By-law – June 28, 2010 – Part 6.
- City of Ottawa – Solid Waste management –By-Law No. 2009-396-Schedule B.

Please refer to our summary spreadsheet included in Appendix A. Although some of the requirements vary between municipalities, there is a general similarity between municipalities such as City of Toronto, City of Vaughan, City of Hamilton and Region of Durham documents. The City of London, City of Ottawa and City of Guelph, do not include detailed requirements for multi-residential buildings and were not included in the summary. Information presented in Section 6 of this report is based on the review of the site plan approval process of the following six municipalities: Toronto, Markham, Vaughan, Peel, Hamilton and Durham,

In general, design standards for multi-residential buildings have been categorized in the following areas:

- Garbage room area;
- Garbage bins sizes and quantities;
- Requirement of compactor units;
- Recycling room requirements;
- Internal collection systems;
- Loading facilities;
- Access routes.

Below we have provided a discussion of the differences and similarities within each category:

a) Garbage Room Area

Generally the requirements are similar and call for a room that is sized "adequately" in order to accommodate all compacted/uncompacted containers, allow for their washing and have an additional minimum area of 10 sq.m. for the storage of un-compacted bulk items and/or white goods (e.g. appliances).

The City of Toronto provides a requirement for sizing the room according to the number of apartment units in the building: 15 sq m for the first 40 units and 5 sq m for each additional 40 units. The Region of Peel requires a 10 sq.m, area for the first bin and 6 sq m for each additional bin. The number of bins is to be calculated from the number of units. As an example:

Building Size	Minimum Size of Garbage Room City of Toronto	Minimum Size of Garbage Room Region of Peel
100 units	35 sq m	26 sq m
200 units	45 sq m	38 sq m
300 units	60 sq m	50 sq m

Garbage rooms also must have a double door (2.2 m wide) or an overhead door (4.0 m x 4.0 m) leading to the loading facility, be ventilated, well lit and rodent proof. There are no requirements to air condition the garbage room.

The design requirements also allow for externally stored waste, the containers must be stored in an enclosed structure. The City of Toronto has different sizing requirements than the Region of Peel and the City of Hamilton. The Town of Markham and Region of Durham do not permit external storage of any type of waste.

b) Garbage Bin Sizes & Quantities

Garbage bin sizes are standardized as 3, 4 and 6 cubic yards; this corresponds to the availability in the market place. Bins refer to containers used for garbage, recyclables or organics and are collected by front-end fork-lift style trucks. Throughout this document the term 'bin' means 'front-end bin' or 'bulk-bin.' The terminology varies by municipality.

No specific size requirement for organic bin containers has been included in the standards reviewed.

Municipalities have different requirements on the number of bins according to the number of units in a building and whether it is compacted or un-compacted, City of Vaughan requirements are as follows:

- 3 yd^3– Compacted – 36 units/bin, uncompacted – 12 units/bin
- 4 yd^3– Compacted – 48 units/bin, uncompacted – 16 units/bin
- 6 yd^3– Compacted – 72 units/bin, uncompacted – 24 units/bin

For example::

Building Size	Minimum Number of Comp-un-comp Bins-3yd³	Minimum Number of Comp-un-comp Bins-4yd³	Minimum Number of Comp-un-comp Bins-6yd³
100 units	2-8	2-6	1-4
200 units	5-16	4-12	2-8
300 units	8-25	8-25	4-12

c) Compactor Units

Of the six municipalities reviewed most require that a mechanical compactor unit be mandatory for buildings with more than 30 units.

The City of Toronto also requires a minimum pressure for the compactor units of 5,500 KPa and compatible with the City of Toronto containers.

No other requirements are specified in any of the standards reviewed.

d) Recycling Room Requirements

Municipalities require a separate recycling room large enough to store recycling bins and carts. Sizes of the recycling carts and bins are also standardized. As noted above front-end bins come in standard sizes of 3, 4 and 6 cubic yards. Carts sizes for recycling are typically 360 litres (95 gallons). Some municipalities may also use 240 litre (65 gallon) size carts. Carts are collected with side loading trucks with semi or fully automatic lifters. Recycling room doors must be a minimum of 1.83 m wide if using bins. There are no requirements to air condition the recycling room.

Bin containers appear to be recommended for buildings over 120 units and carts for smaller buildings.

Regarding the size of the recycling rooms, there are several differences; the City of Toronto specifies the minimum area of the recycling room to accommodate bins of 10 sq m per 40 units plus an additional 5 sq m for each additional 40 units. The Region of Peel has a different formula for the sizing of the room based on 0.5 yd³ of bin space per 10 units and 10 sq m for the first bin and 6 sq m for each thereafter.

The guideline from the City of Vaughan is 1 cart per 10 units.

Using the above requirement we calculated the size of the recycling room as follows:

Building Size	Minimum Size of Recycling Room-City of Toronto	Minimum Size of Recycling Room-Region of Peel
100 units	20 sq m	16 sq m
200 units	30 sq m	22 sq m
300 units	40 sq m	28 sq m

e) Internal Collection Systems

Most municipalities already provide in the standards the following options:

- Single chute with a tri-sorter mechanism
- Two separate chutes with the capability of one chute and a dual sorter
- Three separate chutes
- Collection capabilities on each floor

In addition Town of Markham requires that the tri-sorter or the bi-sorter be equipped with a lockable door system.

Although most of the municipalities specify a 3-stream collection (garbage, recycling & organics), the City of Hamilton requires that all recycling must be separated into 2 streams, fibre and containers.

There are no requirements for the size of the refuse room other than what is required by the Ontario Building Code. The OBC requires chute to be located in rooms that have no dimension less than 750mm.

f) Loading Facilities

There are currently several requirements shared by most municipalities for the loading facilities of multi-residential buildings as follows:

- The area must be levelled, +/- 2% and not more than 0.6 m above driveway levels.
- The material should be reinforced concrete 200 mm thick, with a 150 mm base of 20 mm crusher run limestone and 300 mm of 50 mm crusher-run limestone. Other municipalities accept asphalt and lock stone.
- Vertical clearance varies from 6.1 m to 7.5 m, and clear of obstructions.
- Width of loading area varies from 4.0 to 6.0 m.
- A length of the loading area of 13 m.
- A mechanism to prevent the containers from rolling off the pad.

g) Access Routes

There are currently several requirements for the access routes shared by most of the municipalities as follows:

- Must be designed to allow entering the site, collect the garbage and exit without the need to back-up onto a public road.
- The collection vehicle shall not be required to back out in order to turn around.
- A turnaround area should allow for a three point turn of not more than one truck length
- Turning radius of 9.5 m inside or 13 m from the centre line.
- Internal road width of 6.0 m at point of ingress/egress and 4.5 m throughout the site.
- Minimum of 18 m of straight head-on approach.
- Maximum grade of 8%.
- If collection vehicle travels over a suspended slab, a professional engineer needs to confirm the structural capability of the slab.
- Overhead clearance varies from 4.4 m to 7.0 m.

APPENDIX D

Comparison of Standards vs Existing Facilities

Comparison of Standards vs. Existing Facilities

a) Garbage Room Area

From the survey information, most buildings have a garbage room with areas varying from 31 sq m to 250 sq m and most exceed the minimum area specified in the standards. Only one building (Building #7) does not meet the minimum required size. However no garbage front-end bins were stored outside. Most buildings had also sufficient extra space in the garbage room for the storage of large items and appliances.

Other requirements such as a double door (2.2 m wide) or an overhead door (4.0 m x 4.0 m) leading to the loading facility, be ventilated, well lit and rodent proof were generally provided. Although there are no requirements to air condition the garbage room, 9 buildings were air conditioned and/or have odour control. This appears beneficial for organic waste disposal.

b) Garbage Bin Sizes & Quantities

At all buildings in our sample group, standard size bins and carts are used. The most common ones are the 3 and 4 cubic yard containers.

Bins for the collection of organics are smaller and about 2.5 yd^3. There are no requirements for sizes of organic bins in the municipal standards.

According to our survey, on average each unit disposes of 0.052 yd^3 of compacted garbage and 0.051 yd^3 of uncompacted recyclables, independent of the type of collection system except the dual chutes where the amount of garbage appears to be reduced by 50%.

A good guideline to calculate the number of bins would be as follows:

Building Size	garbage bins capacity	recycling bins capacity
100 units	5 yd^3	5 yd^3
200 units	10 yd^3	10 yd^3
300 units	15 yd^3	15 yd^3

c) Compactor Units

All buildings in our sample group are over 30 units and are equipped with a compactor installed in the garbage room. The standards do not specify requirements for the compactors. With the tri-sorter systems there is a safety problem for staff that should be addressed. Currently manufacturers offer an "Out of Service" light at each refuse room to alert residents. This requirement should be made mandatory.

d) Recycling Room Requirements

Recycling room areas varied from as little as 2.8 sq m to as large as 90 sq m. The standards require a room with an area of 20 sq m to 40 sq m according to the total number of units. This requirement was not met in 50% of the buildings surveyed. This was confirmed on site, especially in buildings using the cart system for recycling. Most of the carts were stored outside and/or in the underground parking garage. The use of small carts on large buildings results in a large number of carts required and problems associated with storage.

Some buildings have combined the garbage and recycling areas. One building was not provided with a recycling room, and residents had to leave cardboard materials in the moving room.

Most other residents had direct access to the recycling room from the building's corridor and/or elevator.

Recycling room doors provided in the majority of buildings were double doors. However single doors were also installed. The disadvantage of single doors is that metal bins cannot be stored in the recycling room. It appears necessary that recycling rooms should be provided with double doors if front-end bins are used.

There are no requirements to air condition the recycling room. However for buildings using the organic collection, this room should be air conditioned.

Many buildings surveyed use the recycling room for collection of large cardboard and for other waste streams, including bulbs, batteries and used clothing. The minimum area of the recycling room should be increased to accommodate these additional waste streams.

e) Internal Collection Systems

The buildings surveyed incorporate the options currently required in the standards:

- Single chute with a tri-sorter mechanism, one with a lockable door,
- Two separate chutes,
- Collection capabilities on each floor.

There are no requirements for the size of the chute intake room other than the prescriptive information provided by the Ontario Building Code, clause 3.6.3.3 (5). Linen and Refuse Chutes "shall be located in rooms or compartments that have no dimension less than 750 mm." In 20 of 21 buildings surveyed the chute intake rooms are very small approximately 1sq.m. The refuse rooms are too small to allow for any floor to floor collection. One of the buildings with an area of 2.79 sq m is allowing floor to floor collection for recyclables. This building has a higher rate of diversion.

All the chute intake room doors swing inside the refuse room; however changing the swing to the outside will permit the collection of some waste, e.g. organics or recycling. The outward swing is permitted by the Fire Code as long as the door is Fire Rated, has a self-closing device and positive latching hardware and does not open directly to an exit.

f) Loading and Access Facilities

The standards are very detailed and require minimum dimensions, type of materials, radius, width of access routes, obstructions etc. All buildings reviewed appeared to comply with these requirements and no problems were reported.

APPENDIX E

Site Inspection Forms

GENIVAR

CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May 26, 2010
Inspector(s): AF

Project: CIF 219

Address: 5 Michael Power Place, Toronto

Units: ~207 # Floors: 25 (13 not incl)

Name of Building: TSCC 2013 – Port Royal Place #6

Chute System: Tri-Sorter

Garbage Room:		
Measurements	Width : 42'(max dimensions varies) Length : 43' (max dimensions varies)	Comments:
Bin Size	Garbage : 3'6" W x 5'11" L x 4'4" H Recycle: 3'9" W x 6'2" L x 3'0" H Green: 3'8" W x 6' L x 3'0" H	
Number of Bins	3 (garbage, recycling, green)	
A / C	☒ / N	Air conditioning was on

Recycle Room:	(No separate recycle room), Tri-sorter and all 3 bins in the same room.	
Measurements	Width : Length :	Comments:
Door Size	Width : Height :	
Number of Bins	Recycling Bins: Green Bins: Large Items:	
A / C	Y / N	

Access Route(s):		
Measurements	Turning radius: 40'-45' Loading pad: 26'x72' (concrete paved) Width of incoming lane: 19'9"	Comments:
Paving	Concrete	

Refuse Room:		
Measurements	Width : 3'11" Length : 3'11"	Comments:

Chute Door Lockable	Y / N	

Additional Comments:

- Garbage room in UPG level 1
- Reaction Distributing Inc. is the manufacturer of the system
- Garbage compactor controls/control panel:
  Model#: T20X
  Serial#: 08002516
  Volts: 208
  3-Phase Horsepower: 1
  Cycle: 60
  Amps: 4.5
- Recycling and organic compactor controls/control panel:
  Model#: T20X HAS
  Serial#: 08002516
  Volts: 115
  3-Phase Horsepower: 0.5
  Cycle: 60
  Amps: 13
  Superintendent Responsible:
- Garbage- when bins are full, tractor is used to drive them upstairs. (Garbage- very heavy)
- Recycling- a special service lift is used to take it up
- Super comments: 'everything is mixed. People don't take their time'. He doesn't separate- so essentially the effectiveness of this system is low. Esp. for organics.
- Garbage – full 2 times per week= 2 bins
- Recycling – full 1 time per week= 3 bins
- Organic – 1 time per week, but never full.

GENIVAR

CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May 26, 2010
Inspector(s): AF

Project: CIF 219

Address: Eglington and Royal York

Units: 216 # Floors: 15

Name of Building: TSCC 2020 – Royal York Grand

Chute System: Dual Chute

Garbage Room:		
Measurements	Width : 26' Length : 30'	Comments:
Bin Size	Garbage : 3'6" W x 5'11" L x 4'2" H Recycle: 3'9" W x 6'0" L x 3'10" H	Bins are wheeled out to loading area (tractor to aid-small), which is directly adjacent to garbage room. Through a sliding door. Ie. Sliding door leads directly out of garbage room to loading access area.
Number of Bins	2 – Garbage, Recycling	
A / C	Y / N	

Recycle Room:	Both recycling and garbage are in the same room	
Measurements	Width : Length :	Comments:
Door Size	Width : Height :	
Number of Bins	Recycling Bins: Green Bins: Large Items:	
A / C	Y / N	

Access Route(s):	5 bins (recycling) are outside in loading area)	
Measurements	Turning radius > 25' Access road width ~ 17'	Comments: Concrete loading area ~16' x 100'
Paving	Concrete	Width of incoming asphalt roadway is approx 17'

Refuse Room:		
Measurements	Width : 3' 4" Length : 3' 8"	Comments:
Chute Door Lockable	Y / N	

Additional Comments:

- Garbage room is on ground floor
- Both chutes come down into the same room
- 2 bins – garbage → Metro Compactor Services
  recycling → RamJet Marathon Equipment Company
- Garbage compactor details:
  Model#: RJ1835M3A
  Serial#: 2117766
  Date of Manufacture: 1-11-08
  Force Rating (Max lbs): 19800
- Recycling- no compaction (as per code)
- PM Comments: (416) 245-7207 / (416) 894-5249
- Collection is still private
- 1 Garbage and 3 recycling bins per week.
- PM – "city wants us to implement a green program… don't know how"
- "recycling is doing fine"

GENIVAR

CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May 28, 2010
Inspector(s): AF

Project: CIF 219

Address: 15 North Park Rd. Thornhill, ON

Units: 259 # Floors: 18

Name of Building: The Beverly

Chute System: Single - conventional

Regional Municipality: City of Vaughan

Garbage Room:		
Measurements	Width : 21' Length : 44'	Comments: 1 bin operational 3 spare bins against wall
Bin Size	Width : 3' 10" Length : 5' 11" Height : 4' 1"	Dark blue bins – Reaction Distribution Inc.
Number of Bins	1 operational (attached to compactor) and 3 spares	
A / C	Y / N	

Recycle Room:	bring down by hand – adjacent vestibule	
Measurements	Width : 8' Length : 15'	Comments: # blue bins = 6
Door Size	Width : 3' 0" Height : 7' 2"	Regular Door
Number of Bins	Recycling Bins: 6 Green Bins: - Large Items: -	Bin dimensions: 2'4" L x 2'4" W x 3'8" H
A / C	Y / N	

Access Route(s):		
Measurements	Approx 25' x 25'	Comments: Access road width: 25'
Paving	Concrete	Turning radius: Huge → <40'

Refuse Room:	No sign on door	
Measurements	Width : 4'0" Length : 5'8"	Comments:

Chute Door Lockable	Y / N	

Additional Comments:

- location of garbage room : ground floor
- compactor specifications:
  Reaction Distribution Inc.
  Model: T20X
  Cycle: 60
  Serial: 06002030
  Volts: 208
  Cycle: 60
  3-phase HP: 2
  Amps: 6
  'equipment suitable for use on a circuit capable of delivering no more than 6.0 RMS symmetrical Amps 208 volts maximum'
- Mode of movement of bins from compactor room to loading area: bring down by hand – adjacent vestibule
- Superintendent comments (effectiveness):
  "Moderate... people won't care much... some mixing"
  "triple chute → NOT Tri-sorter, is the only thing that works"
- Frequency of bins/week:
  -garbage: varies from 8 to13 bins/week
  -recycling: 10 totes/week
  -organic: n/a
  + bulk pickup (oversized items)- twice a month
- What do you do for organics in this building? – 'nothing- goes in garbage. No pick up in this area for condos'

GENIVAR

CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May 28, 2010
Inspector(s): AF

Project: CIF 219

Address: 7 North Park Road

Units: 231 # Floors: 20

Name of Building: Vista

Chute System: Tri-Sorter (dysfunctional-technical error)
Operates as a single chute system

Garbage Room:		
Measurements	Width : 2' Length : 50'	Comments:
Bin Size	Width : 3' 10" Length : 5' 11" Height : 4' 1"	Same as North Park 15 (The Beverley)
Number of Bins	1 functional, 4 spare	
A / C	Y / N	

Recycle Room:		
Measurements	Width : 14' Length : 10'	Comments: Similar to Beverley but smaller
Door Size	Width : 3' 0" Height : 7' 2"	Same as North Park 15 (The Beverley)
Number of Bins	Recycling Bins: 3 Green Bins: - Large Items: -	Bin size similar to Beverley
A / C	Y / N	

Access Route(s): **Requires backing up- not through**		
Measurements	80' x 25'	Comments: -Turn radius ~25' -located right outside compactor room, through overhead sliding doors
Paving	Concrete (Upper), Asphalt (Lower)	-See photos -Railings required, not to code.

Refuse Room: Tiny		
Measurements	Width : 3'0" Length : 3'5"	Comments: Tiny room

Chute Door Lockable	Y / N	Tri-sorter dysfunctional

Additional Comments:

- Technical details of compaction: Not visible and not accessible but looks similar to Beverley
- Effectiveness: same as Beverley "People don't care much"
- Frequency: 8 garbage bins/week, 9 Recycling totes/week

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May 27, 2010

Inspector(s): PPS

Project: CIF – 219

Address: 35 Viking Lane

Units: 348 # Floors: 29

Name of Building: NUVO I

Chute System: Tri-Sorter

Garbage Room:		
Measurements	Width : 20' Length : 25'	Comments: Enough room for all bins
Bin Size	Width : Length : Depth :	Large blue bins
Number of Bins	8	Overhead door
A / C	Y / N	Has an air deodorizing system

Recycle Room:		
Measurements	Width : 15' Length : 15'	Comments:
Door Size	Width : All large Height :	Overhead door + Double Doors
Number of Bins	Recycling Bins: 6 Green Bins: - Large Items:	Once x week pick-up
A / C	Y / N	Heated only

Access Route(s):		
Measurements	Large area	Comments: Easy access
Paving	Concrete paved	

Refuse Room:		
Measurements	Width : 3' Length : 3'	Comments: Small Room
Chute Door Lockable	Y / N	

Additional Comments:
Manually cleans rooms everyday. Does not mind sorting duties. Would prefer 2 chute system: 1) garbage + green bin 2) recycles Compactor for recyclables Outdoor bins, paper material flies off Average of 4 bins x week and 7 recycle bins

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May 27, 2010

Inspector(s): PPS

Project: CIF – 219

Address: 25 Viking Lane

Units: 334 # Floors: 29

Name of Building: NUVO II (LEED Building)

Chute System: Tri-Sorter

Garbage Room:		
Measurements	Width : 15 Length : 30	Comments:
Bin Size	Width : Length : Large Size Depth :	Overhead door
Number of Bins	7	
A / C	Y / N	

Recycle Room:		
Measurements	Width : 3' Length : 10'	Comments: Small caged area of compactor rooms for cardboard
Door Size	Width : 3' x2 Height : 7'	Not separate room for recycles
Number of Bins	Recycling Bins: 6 Green Bins: - Large Items:	Large bins in compactor room
A / C	Y / N	

Access Route(s):		
Measurements	3 small sections	Comments: Overheaddoor/ Difficult x super
Paving	Concrete	

Refuse Room:		
Measurements	Width : 3 Length : 3	Comments: Small Room
Chute Door Lockable	Y / N	

Additional Comments:
Future green bin program using smaller bins. In stairway, a separate container for batteries/bulbs different part of building. Average of 4 bins x week and 6 recycling bins

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May, 19, 2010
Inspector(s): PPS

Project: CIF - 219

Address: 5299 Dundas Street West

Units: 234 # Floors: 21

Name of Building: Essex 1

Chute System: Single Chute

Garbage Room:		
Measurements	Width : 14 Length : 24	Comments: - large, compactor @ corner
Bin Size	Width : 48 Length : 71 Height : 42	- large blue bins
Number of Bins	1 + 2	
A / C	Y / N	- fan only, smells

Recycle Room:		
Measurements	Width : 11' Length : 22'	Comments: - good size
Door Size	Width : 3' x 2 Height : 7'	- double door
Number of Bins	Recycling Bins: 3 small with wheels + 2 large (71" x 48" x 42") Green Bins: 2 Large Items: No	- separate bin + light bulbs
A / C	Y / N	

Access Route(s):		
Measurements	64' x 20	Comments: -large area
Paving	Asphalt paved + concrete	- 10 smaller bins outside + 3 large outside recycle

Refuse Room:		
Measurements	Width : 39" Length : 35"	Comments: - small no room for storage

Chute Door Lockable	Y / N	
Additional Comments:		
- Private pick-up Average of 8 green bins, 4 garbage and 12 totes each week		

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May, 19, 2010
Inspector(s): PPS

Project: CIF - 219

Address: 5233 Dundas Street West

Units: 314 # Floors: 25

Name of Building: Essex 2

Chute System: Tri-sorter

Garbage Room:		
Measurements	Width : 11' Length : 66'	Comments: - large room / large article storage
Bin Size	Width : 48" Length : 71" Height : 42"	- overhead door 8' x 8'
Number of Bins	1 + 3 outside	- a large number of small wheeled bins stored in UPG (~ 26) - compactor has wheeled bins under chute
A / C	Y / N	

Recycle Room:		
Measurements	Width : 12' Length : 19'	Comments: - good size, large bin for cardboard
Door Size	Width : 3' x 2 Height : 7'	- double doors
Number of Bins	Recycling Bins: 2 large + 3 Green Bins: 3 small w/ wheels Large Items: Yes	- 2 doors - bin for light bulbs + batteries
A / C	Y / N	- some room for large articles

Access Route(s):		
Measurements	20' x 18'	Comments: - 3 more bins outside
Paving	Interlocking paving	

Refuse Room:		
Measurements	Width : 41" Length : 42"	Comments: - some area for storage / small

Chute Door Lockable	Y / N	

Additional Comments:

- tri-sorter does not work contamination or recycling, all goes to garbage
- private pick-up
- Average of 4 garbage, 30 totes (most of it contaminated and goes to garbage, and 2 cardboard

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 10, 2010
Inspector(s): AF

Project: CIF 219

Address: 20 Homewood Ave (Wellesley + Palat)

Units: 444 (~357 in tower, ~87 in loft) # Floors: ___

Name of Building: The Verve (TRIDEL)

Chute System: Tri-sorter

LEED Rated: LEED Gold

TOWER - Garbage Room: 2 garbage rooms (1 for tower, 1 for loft)		
Measurements	Width : 15 yards (45') Length : 20 yards (60')	Comments:
Bin Size	Garbage : 3'10" W x 6' L x 4'3" H Recycle: 3'3" W x 6' L x 4'3" H Green: 2' W x 6' L x 4'3" H	
Number of Bins	1 of each	
A / C	[Y] / N	Turned on mildly

LOFT - Garbage Room: 2 garbage rooms (1 for tower, 1 for loft)		
Measurements	Width : 23' Length : 35'	Comments:
Bin Size	Garbage : 3'10" W x 6' L x 4'3" H Recycle: 3'3" W x 6' L x 4'3" H Green: 2' W x 6' L x 4'3" H	Exactly the same as bins in TOWER
Number of Bins	1 of each	
A / C	Y / [N?]	

TOWER / LOFT - Recycle Room: (For large items that don't go in the tri-sorter) – this room shared between loft and tower		
Measurements	Width : 11' Length : 14'	Comments:
Door Size	Width : 11' Height : 6'2"	Fits room (see photo).
Number of Bins	Recycling Bins: 1 Green Bins: Large Items:	1 extra for clothing dontations
A / C	Y / N	

Access Route(s):	2 separate loading areas – 1 for garbage and 1 for recycling and organic, pick up by City of Toronto	
Measurements	40' W x 50' L x 15' clearance	Comments: -Directly off street onto loading area (no driveway) -Both loading areas have the same dimensions
Paving	Interlock Paving	

Refuse Room:		
Measurements	Width : 3' Length : 3'	Comments:
Chute Door Lockable	Y / N	

Additional Comments:

- got up to 32 bins in total (all types total) as backup - 4 organic, 6 garbage, 16 recycling, 6 back up garbage.

- Tri-sorter / compactor details: (TOWER)
  Manufacturer: WSG (Waste Solution Group)
  Serial #: TRI 0111
  Model #: TRI-SORTER
  Line Volts: 120 V
  Sec Volts: 24V
  Phase: 1
  Hertz: 60 hz
  Amps: 6 Amps

- Tractor used to take bins up the ramp and outside to loading area

- Effectivity: ~85%- some mixing
  ~6 garbage / week
  ~13 recycling / week
  ~2 organic / week

- Super opinion:
  Orientation of bins, don't have it.
  Garbage, recycle and green.
  Have garbage in the middle to avoid.

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 19/2010
Inspector(s): PPS

Project: CIF 219

Address: 121 Parkway Forest Drive

Units: 230 # Floors: 15

Name of Building: Harold Green

Chute System: Tri- sorter

Garbage Room:		
Measurements	Width : 28' Length : 21'	Comments: Very large room
Bin Size	Garbage : 40" W x 70" L x 50" H Recycle: 49"W x 73"L x 42"H (small) Recycle: 54"W x 69"L x 50"H (large) Green: 33" W x 72" L x 24" H	
Number of Bins	3 to 4	
A / C	Y / N	

Recycle Room:	2 – one outside for residents	
Measurements	Width : Length :	Comments:
Door Size	Width : Height :	Double doors – bells
Number of Bins	Recycling Bins: 4 small + 2 Large Green Bins: 1 Large Items: Outside	
A / C	Y / N	Not in room, but A/C from building helps

Access Route(s):	2 – one for recycling	
Measurements	7'4" x 22' – Recycling 14' x 22' – Garbage	Comments:
Paving	Concrete	

Refuse Room:		
Measurements	Width : 60" Length : 46"	Comments: Door is ULC fire rated

Chute Door Lockable	[Y] / N	No flap

Additional Comments:

- 5 years using the lockable doors:
  Negative – if large items get locked whole system turns off – manually clean
  Positive – Safer, good diversion
- Contamination issue not solved with lockable doors – 90% of time no contamination
- Organics works with larger bin
- Odor control: 6 months ago
- Odor master pellets + spray all the time
- Efficiency:
  Green- 2 / week, 1 bin
  Garbage- 1/ week, 3 to 4 bins
  Recycling- 1/week, 4 small + 2 large = 4 large
- Outdoor Recycling – Fenced
  1 large bin for cardboard
  1 yellow for shoes/clothes
- 6 units @ Ground floor do not have access to tri-sorter. There is one door for all 3
  room 5' x 7'

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May 19. 2010
Inspector(s): PPS

Project: CIF 219

Address: 23 Oneida, Richmond Hill

Units: 171 # Floors: 14

Name of Building: YRSCC 1063

Chute System: Single Chute System

Garbage Room:		
Measurements	Width : Length :	Comments: Compactor + Bin is caged in UPG
Bin Size	Width : 3'9" Length : 4'1" Height : 6'1"	
Number of Bins	4	
A / C	[Y] / N	2 split units

Recycle Room:		
Measurements	Width : 24' Length : 22'	Comments: Access to residents from elevator in garage level
Door Size	Width : Height :	Single Door
Number of Bins	Recycling Bins: 10 small Green Bins: 0 Large Items: In same room	Room has a floor drain No green bin collection as of yet. Separate for cardboard + clothes
A / C	Y / [N]	

Access Route(s):		
Measurements	19' long	Comments: Area is concrete paved
Paving	Concrete	

Refuse Room:		
Measurements	Width : 3' 10" Length : 2' 11"	Comments: Small room
Chute Door Lockable	Y / N	

Additional Comments:

- Super uses tractor to move bins to access pick up area

- Small bins in recycling room. Door does not allow larger bins inside the recycling room.

- Super empties recycling into larger bins

- Size of larger bins is 5'11" x 4'0" x 4'6"

- Separate bin for clothes

On average 4 garbage bins and 4 recycling bins per week

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 28, 2010
Inspector(s): AM

Project: CIF 219 - TSCC 1645

Address: 33 Sheppard Ave. E

Units: 376 # Floors: 34

Name of Building: Radiance by Minto
LEED Silver Building

Chute System: Triple Chute (2 chutes active, 1 roughed in; currently operates as a double chute)

Garbage Room: + Recycle Room		
Measurements	Width : 25' Length : 32' max	Comments:
Bin Size	Garbage : 3'6" W x 5'11" L x 4'1" H Recycle: 3'6" W x 5'11" L x 4'1" H	Same bins used for both
Number of Bins	5 garbage 9 recycle 0 organics (for now)	
A / C	☒ / N	

Recycle Room: ** No separate recycle room, Large items brought directly to loading area		
Measurements	Width : Length :	Comments:
Door Size	Width : Height :	
Number of Bins	Recycling Bins: Green Bins: Large Items:	
A / C	Y / N	

Access Route(s): - Collection by Miller Waste for City of Toronto.		
Measurements	Min width ~16' Loading area approx 35' x 90'	Comments: Access Area / Loading is right outside the compactor room
Paving	Access area : asphalt Loading area: Concrete	Truck usually backs in Small tractor / machine used to haul full bins to loading area

Refuse Room:		
Measurements	Width : 3.5' Length : 4.5'	Comments: Good literature; instructions posted

Chute Door Lockable	Y / N	

Additional Comments:

- Compactor
  - Metro Compactor
  - Specs not visible
- Effectiveness
  - 3 garbage bins / week
  - 9 recycling bins / week
- Super Comments
  - 'About 80% effective.... Some mixing all depends on clientele'
  - 'Trisorter would not work in this building' – waste of money

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 28, 2010
Inspector(s): AM

Project: CIF 219 - TSCC 1979

Address: 1300 Islington Ave

Units: 334 # Floors: 33

Name of Building: Encore (built in 2008)

Chute System: Tri- Sorter

Garbage Room: + Recycle Room		
Measurements	Width : 4.5m Length : 9.5m	Comments: This room is the compactor room and not accessible by residents. LCBO bottles are collected in this room by staff.
Bin Size	Width : Length : Standard Height :	
Number of Bins	3	
A / C	[Y] / N	Odor control system installed

Recycle Room:		
Measurements	Width : 3m Length : 3.5m	Comments: Residents place recyclables which do not go down the chute in this room
Door Size	Width : 3.5m Height : 11m	Overhead door
Number of Bins	Recycling Bins: 4 Green Bins: 2 (1/2 size) Large Items: 1	Green bins are not in this room, They are located in the Garbage + Recycle Room
A / C	Y / [N]	

Access Route(s):		
Measurements	5m x 15m	Comments:
Paving	Asphalt + Concrete	

Refuse Room:		
Measurements	Width : 1.2m Length : 1m	Comments: 1 blue bin is placed in each refuse room for LCBO collection

Chute Door Lockable	[Y] / N	

Additional Comments:

- Garbage / Waste collection includes:
  - garbage – brown bin: 3 bins x 2 / week (twice weekly collection)
  - recycle – blue bins: 5 bins / week
  - organic – green bins: 1 twin bin / week
- Also collection of:
  - LCBO – bottles for reuse
  - clothing
  - oversized furniture and appliances (residence need to pay)
- Main Garbage / Recycle room is heated + Air conditioned
- Odor control system installed: WSG/DNA Destroyer System
- One blue box with an LCBO sticker + a note with directions to the residents placed in each refuse room
- Chute door lock system installed in compactor room
- Property manager comments that : "3 chute system will be ideal"

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 15, 2010
Inspector(s): AM

Project: CIF 219

Address: 9 Burnhamthorpe Cres

Units: 106 # Floors: 9

Name of Building: St. Andrew on the Green

Chute System: Tri- Sorter

Garbage Room:		
Measurements	Width : Length :	Comments: (15m x 4.5m) + (10m x 4m)
Bin Size	Width : Length : Standard Height :	(42" x 48" x 70")
Number of Bins	4	
A / C	Y / N	

Recycle Room:		
Measurements	Width : 3.5m Length : 6m	Comments:
Door Size	Width : 2.2m Height : 2.4m	Double door into the UPG
Number of Bins	Recycling Bins: 2 standard Green Bins: 3 small Large Items: None	
A / C	Y / N	

Access Route(s):		
Measurements	6.5m x 14m	Comments: Access is through the UPG
Paving	Concrete Pad	Bins are transferred from the UPG to the garbage/waste collection area on the ground floor weekly

Refuse Room:		
Measurements	Width : 1m Length : 1.5m	Comments:
Chute Door Lockable	Y / N	

Additional Comments:

Weekly collection includes:
- ½ to 1 small green bin / week
- 1½ to 2 blue bins (recycles) / week
- 2 garbage bins / week

Site/ Building superintendent reported some mix of garbage + green with recyclables

A waste storage area is located on the ground floor (waste bin cage)

Garbage / Green + Recycle bins are transferred from the garbage / recycle rooms into the cage for collection weekly.

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 22, 2010
Inspector(s): AM

Project: CIF 219 - TSCC 2029

Address: 5500 Yonge Street

Units: 260 # Floors: 27

Name of Building: Pulse

Chute System: Tri- Sorter

Garbage Room:		
Measurements	Width : 10m Length : 9m	Comments:
Bin Size	Width : Length : Standard Height :	(42" x 48" x 70")
Number of Bins	6	
A / C	Y / N	Very smelly

Recycle Room:		
Measurements	Width : 10m Length : 9m	Comments:
Door Size	Width : 2m Height : 2.5m	Double door into the UPG
Number of Bins	Recycling Bins: 4+1 Green Bins: 2 Large Items: 1	
A / C	Y / N	

Access Route(s):		
Measurements	7.5m x 19m	Comments:
Paving	Concrete	

Refuse Room:		
Measurements	Width : 1.2m Length : 1.1m	Comments:
Chute Door Lockable	Y / N	

Additional Comments:

- Building maintenance staff reported that tri-sorter system is not effective
- Problems include:
  - delay (20-30 seconds) residents are not patient to wait
  - residents throw waste while light is blinking (when they are supposed to wait). This results in waste being stuck at the ½ opened flap
  - contamination of recyclables
- Most of the waste disposed including (green and recyclables) will end up in the garbage
- A large number of residents do not recycle and separate from garbage in the first place
- On average 5 bins of garbage, 4.5 of recycling and 1 green bin per week

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 15, 2010
Inspector(s): AF

Project: CIF 219

Address: 18 Mondeo Drive

Units: 329 # Floors: 16

Name of Building: Mondeo Springs 18 – By Tridel

Chute System: Tri-Sorter (but no organics) : Garbage (incl. Organics), Recycling 1 (paper and cardboard), Recycling 2 (Bottles)

Garbage Room:		
Measurements	Width : 35' max Length : 30' max	Comments:
Bin Size	Garbage : 3'8" W x 6' L x 4'4" H Recycle 1: 2'10" W x 6' L x 3'8" H Recycle 2: 2'10" W x 6' L x 3'8" H	
Number of Bins	-3 in use, 10 spare (7 recycling, 3 garbage) in this garbage room -Totals, 10 recycling, 5 garbage (including recycling room)	
A / C	Y / N	Just ventilated with constantly running fan

Recycle Room:		
Measurements	Width : 18' Length :35'	Comments: Smaller than compactor room
Door Size	Width : 6.5' Height : 7.5'	*elevator access directly into this room (convenience)
Number of Bins	Recycling Bins: 1 Green Bins: Large Items:1	- recycle bin for cardboard boxes - roll able cart (grey) for large items (Large item recycling brought down to 1st floor)
A / C	Y / N	

Access Route(s):	Directly outside large doors leading out of compactor and recycling rooms. No distance transport required	
Measurements	40' x 18'	Comments: Minimum turning radius > 25' *double level – see photos -platform higher than truck level
Paving	Concrete	Trucks back right in.

Refuse Room:	Locked after 10 pm**	
Measurements	Width : 3' 5" Length : 3' 9"	Comments:
Chute Door Lockable	Y / N	

Additional Comments:
Tri-sorter technicians: - Wilkinson Chutes/Metro Compactor - 208 Volts - Other tech. details and power ratings not visible Effectiveness: - 3 garbage bins/week - 4 cardboard and paper bins/week (recycling 1) - 2 bottles and cans bins/week (recycling 2) Super comments: - ~70% effective - language barrier, many people don't understand the literature - often find the recycling types mixed, sometimes even in garbage - tri-sorter needs servicing due to some issues every 2-3 months

GENIVAR

CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: May 26/ 2010
Inspector(s): AM

Project: CIF 219

Address: 18 Spring Garden, Toronto

Units: 341 # Floors: 36 storey

Name of Building: TSCC 1974

Chute System: Tri-Sorter

Garbage Room:		
Measurements	Width : 7m Length : 14.5m	Comments:
Bin Size	Width : Length : standard Height :	Standard (48" x 72" x 42")
Number of Bins	6	
A / C	[Y] / N	

Recycle Room:		
Measurements	Width : 3.5m Length : 7.5m	Comments:
Door Size	Width : 2.2m Height : 2.5m	Double door
Number of Bins	Recycling Bins: 3+3 Green Bins: 1 Large Items:	
A / C	[Y] / N	

Access Route(s):		
Measurements	6m x 22m	Comments:
Paving	Concrete pad	

Refuse Room:		
Measurements	Width : 1m Length : 1.3m	Comments:
Chute Door Lockable	Y / [N]	

Additional Comments:

- Ground floor refuse room is 2.8m x 1m and contains blue bins (3 blue boxes – standard residential size).
On average 6 garbage and 8 recycling bins every week

GENIVAR

CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 15, 2010
Inspector(s): AF

Project: CIF 219

Address: 8 Mondeo Drive

Units: 321 # Floors: 16

Name of Building: Mondeo Springs 8 – By Tridel

Chute System: Conventional single chute and bin/compactor

Garbage Room:		
Measurements	Width : 25'2" max Length : 35' max	Comments: (1 garbage)
Bin Size	Garbage : 3'8" W x 6' L x 4'4" H Recycle 1: 2'10" W x 6' L x 3'8" H Recycle 2: 2'10" W x 6' L x 3'8" H	Same as 18 mondeo
Number of Bins	-3 in use, 10 spare (7 recycling, 3 garbage) in this garbage room -Totals, 10 recycling, 5 garbage (including recycling room)	
A / C	Y / N	Just ventilated with constantly running fan

Recycle Room:		
Measurements	Width : 18' Length :35'	Comments: Smaller than compactor room
Door Size	Width : 6.5' Height : 7.5'	*elevator access directly into this room (convenience)
Number of Bins	Recycling Bins: 1 Green Bins: Large Items:1	- recycle bin for cardboard boxes - roll able cart (grey) for large items (Large item recycling brought down to 1st floor)
A / C	Y / N	

Access Route(s):	Similar to 18 Mondeo – split level, right outside the 2 rooms	
Measurements	80' x 13'	Comments:
Paving	Concrete	(Same type of access as Mondeo 18)

Refuse Room:	Open 24/7**	
Measurements	Width : 3' 5" Length : 3' 9"	Comments: (same size as Mondeo 18) -no electronics, conventional
Chute Door Lockable	Y / N	

Additional Comments:

Tri-sorter technicians:
- Wilkinson Chutes/Metro Compactor
- 208 Volts
- Other tech. details and power ratings not visible

Effectiveness:
- 3 garbage bins/week (same as Mondeo 18)
- 2 recycling bins/week (same as Mondeo 18, but bins are larger)

- recycling is brought downstairs

Super comments:
- 18 Mondeo is more effective for recycling because of tri-sorter
- Therefore, tri-sorter > conventional single chute for higher rate of recycling

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 2/2010
Inspector(s): PPS

Project: CIF 219

Address: 3391 Bloor St. W

Units: 143 # Floors: 11

Name of Building: Kingswood

Chute System: Tri- Sorter

Garbage Room:		
Measurements	Width : 20' Length : 45'	Comments:
Bin Size	Width : 44 Length : 58 Height : 69	
Number of Bins	4	
A / C	[Y] / N	Double door to exit

Recycle Room:		
Measurements	Width : N/A Length : N/A	Comments: No recycle room
Door Size	Width : Height :	
Number of Bins	Recycling Bins: 4- large Green Bins: Large Items:	Recycle bin size: 48" x 73" x 34" Residents deposit cardboard in moving room
A / C	Y / N	

Access Route(s):		
Measurements	24' x 7'	Comments:
Paving	Asphalt paved	w/ concrete ramp

Refuse Room:		
Measurements	Width : 43" Length : 39"	Comments:
Chute Door Lockable	Y / [N]	Small no expansion

Additional Comments:

Planned for future green bin program.

Bins for in-suite organic collection have been received.

On average 4 bins of recycling and 2 bins for garbage /week

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 9/ 2010
Inspector(s): AM

Project: CIF 219

Address: Toronto

Units: 244 # Floors: 7

Name of Building: Highrise Building-LEED

Chute System: Tri-Sorter

Garbage Room:		
Measurements	Width : 6m Length : 9.5m	Comments:
Bin Size	Width : Length : Height :	Standard blue + black bins
Number of Bins	6 black	Garbage bins
A / C	[Y] / N	

Recycle Room:		
Measurements	Width : 6.5m Length : 9.5m	Comments:
Door Size	Width : 5.1m Height : 5.6m	Overhead door
Number of Bins	Recycling Bins: 11 Green Bins: 2 Large Items: 2	
A / C	[Y] / N	

Access Route(s):		
Measurements	7.5m x 14m	Comments: Garbage pickup road/access
Paving	Concrete pad	To pick up/ loading area (15m x 35m)

Refuse Room:		
Measurements	Width : 4' x 5' Length :	Comments:
Chute Door Lockable	Y / [N]	

Additional Comments:

- At the ground level @ building D the refuse room is 6.5' x 4.5'. 3 chute doors installed on wall across from door. 3 chutes are labeled organic, recyclables + garbage with 3 bins at the back side of wall and chute doors. (see photos)
- The existing system is TRI-SORTER with the 2 streams currently in use. (garbage and recyclables)

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: June 25, 2010
Inspector(s): AM

Project: CIF 219 - MTCC 748 + 759

Address: 1300 Islington Ave

Units: 243 + 217 # Floors: 25 + 23

Name of Building: Barclay Terrace (built in 1987)

Chute System: Single Chute

Garbage Room:		
Measurements	Width : 5 Length : 10.5	Comments:
Bin Size	Width : Length : Standard Height :	
Number of Bins	4 standard size	(42" x 48" x 70")
A / C	Y / N	

Recycle Room:		
Measurements	Width : 2.5m Length : 3.5m	Comments:
Door Size	Width : 1.8m Height : 2.2m	Overhead door
Number of Bins	Recycling Bins: 4 Green Bins: 4 (house size) in each building Large Items: 1 for cardboard only	
A / C	Y / N	

Access Route(s):		
Measurements	15m x 6.5m	Comments:
Paving	Concrete Pad	

Refuse Room:		
Measurements	Width : 2.4m Length : 1.2m	Comments: Blue boxes are located on each floor. Recyclables are thrown into the chute by building maintenance staff everyday at 10-11 only

Chute Door Lockable	Y / N	

Additional Comments:

Weekly collection includes:
- 4 blue bins / building / week
- 3 brown/garbage bins / building / week
- 1 green bin / building / week

Green waste is brought to the recycle rooms on the ground floor by residents

Recyclables are placed in blue boxes located at refuse rooms on each floor. One hour everyday (1—11) the chute is closed for residents' use and the building maintenance staff will use the chute to dispose recyclables only.

The property manager has seen good response and an increase of recycle/green collection and a reduce in garbage collection through educating the residents (by meetings and literature)

2 waste bins in the laundry room, 1 for batteries, 1 for ink cartridges

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CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: Dec 14 2010
Inspector(s): P Jensen

Project: _____

Address: 1966 Main St W, Hamilton, ON

Units: 116 # Floors: 15 - Three identical buildings

Name of Building: Forest Glem Condominiums

Chute System: Single chutes closed, no access

Garbage Room:		
Measurements	Width : Length :	Comments: **Converted into a recycling room,** compactor removed, 1 garbage bin only
Bin Size	Width : approx 42 in Length : approx 69 in Height : approx 51 in	3 yard bin No compaction
Number of Bins	1	Collected 2 time weekly
A / C	N	

Recycle Room:		
Measurements	Width : 16 ft Length : 16 ft	Comments: as above, garbage room converted to recycling room, with room for 1 garbage bin otherwise room dedicated to carts
Door Size	Width : 6 ft Height : 7 ft	Carts are brought up to main floor for collection via elevators, otherwise would have to be pushed up the parking ramp to parking lot
Number of Bins	Recycling Bins: 17 Green Bins: 6 Large Items:	Blue bin and green bin collections occur twice weekly. Large items collected once annually during a "clean up" day with notice, and some gets "picked", otherwise arrangement for removal is made for stuff that is left behind.
A / C	N	

Access Route(s):		
Measurements		Elevators used to bring bins up to ground floor, wheeled outside for collection adjacent to visitors parking area, basically side tipped on the access road that passes by the building front door.
Paving	Parking lot area used for collection	

Refuse Room:		
Measurements	Width : Length :	
Chute Door Lockable	Y/N	Chute rooms are locked therefore no access to chute door

GENIVAR

CIF-219 – Site Inspection Report

GENIVAR Consultants Limited Partnership
600 Cochrane Drive, Suite 500
Tel: 905-475-7270 • Fax: 905-475-5994

Date: Dec 14 2010
Inspector(s): P Jensen

Project: _____

Address: 1686 Main St W, Hamilton, ON

Units: 449 # Floors: 6

Name of Building: West Village Suites

Chute System: Single chute

Garbage Room:		
Measurements	Width : 4.8m (16 ft) Length : 5 – 7.3m (17 – 24 ft)	Comments: Room shape results in two dimensions for length (deeper on one side of room)
Bin Size	Width : Length : Height :	3 yard bin No compaction
Number of Bins	2	Collected Mondays and Fridays
A / C	N, but room is vented	

Recycle Room:		
Measurements	Width : Length :	Comments: **no recycling room needed – chute rooms make recycling available on every floor, bins rolled directly to outside loading area**
Door Size	Width : Height :	
Number of Bins	Recycling Bins: Green Bins: Large Items:	
A / C	Y / N	

Access Route(s):		
Measurements	About 30 feet deep and 15 ft wide	Comments: Layout can be seen at http://www.westvillagesuites.ca/finding-a-suite/1st-floor.html for access to loading area and garbage room location
Paving	Concrete curb (raised)	

Refuse Room:		
Measurements	Width : 6 ft Length : 20 ft	Comments: Large room, 2-240 litre blue bins and 1 120 litre green bin, room has sprinklers, washing station for bins built in. 2 blue bins per floor = 12, 1 green bin per floor = 6, with some spares in garbage room, collected twice weekly each.