Memo

To: Development Manager, ADI Development

From: Lori Andrews, P. Eng., Senior Waste Management Engineer, Dillon Consulting Limited

Date: February 15, 2023

Subject: Waste Management Planning Review – 1120 Cooke Blvd, Burlington, Ontario

Our File: 21-1620

1.0 Introduction

Dillon Consulting Limited (Dillon) was retained by ADI Development Group (ADI) in March 2021 to complete a waste management planning review for the three phases of the 1120 Cooke Blvd. Development in Burlington, Ontario. The proposed development consists of:

- **Phase 1**: Building A with 436 units
- **Phase 2:** Building B with 358 units
- **Phase 3**: Building C with 371 units

The proposed development was assessed to determine if it meets the solid waste management needs for the proposed design. The developer understands that the materials disposed and recycled at the development may be collected by Halton Region should the site design comply with Halton Region's Development Design Guidelines for Source Separation of Solid Waste (Guidelines).

This memo includes:

- **Section 2.0**: Waste Management Overview;
- **Section 3.0**: Container and Capacity Needs;
- **Section 4.0:** Collection Staging Areas; and
- **Section 5.0:** Requirements Summary.

Appendix A: Architectural Site Plan, Drawing **A204** Ground Level, dated February 10, 2023 (Core Architects), and waste management system details of each building A, B and C.

This waste memo provides descriptions of the following:

- Residential Waste Storage Rooms;
- Bulk Waste Storage;
- Commercial Waste Storage;
- Truck Staging Areas; and
- Collection Vehicle Access.

2.0 Waste Management Overview

2.1 Phased Construction Approach

The construction of the three proposed buildings will occur in three phases:

- **Phase 1** will include the construction of Building A;
- **Phase 2** will include the construction of Building B; and
- **Phase 3** will include the construction of Building C

This waste management plan includes all three completed phases for Halton Region's review, noting that Phase 1 will be constructed first followed in later years with Phase 2 and 3. Waste, recycling, and organics will be collected separately in each building using a tri-sorter chute system and an indoor ground floor waste room. Waste stream bins will be transported to the outdoor staging areas for the development.

Once construction of all three phases is complete, the final development will have two locations for waste collection pick-up. Building A will have its own collection and outdoor staging area. Buildings B and C will have a shared collection staging outdoor area.

Refer to the Architectural Site Plan, Ground Level Drawing **A204** in **Appendix A,** followed by **Figure 1** for Building A waste management system detail, **Figure 2** for Building B detail and **Figure 3** for Building C detail.

2.2 System Overview

The waste management systems as outlined in the Site Plan (Drawing A204), designed by CORE Architects, are outlined below:

- Tri-sorter chute systems are located in each building and will be used to collect residential garbage, recycling, and organics from each residential floor. The tri-sorter and three stream bins are located in the waste storage rooms on ground floors. Each building has their own tri-sorter chute system and waste storage room;
- The tri-sorters will direct the garbage waste stream into a front-loading bin to be compacted by an attached mechanical compactor. Because of the presence of the mechanical compactor, the waste room area with the tri-sorter and compactor will be secured at all times and have no general access for residents. Only building staff will have access to the tri-sorter and compactor areas;
- Recycling and organic materials will be directed via the tri-sorter into their respective containers and will not be compacted. The recycling stream will use front end bins. The organics streams will use wheeled carts, per the Region's current collection services system;
- A bulk waste designated area will be on the ground floor in each building, located in a waste storage rooms, labelled on the Site Plan as "Bulk Storage". The bulk waste room is sufficiently sized and delegated an area of 10 m^2 minimum. Bulk space may be used by residents to store

oversized and larger garbage and recycling items that cannot be inserted into the garbage chute (e.g. collapsed cardboard boxes, furniture, oversized garbage, special waste);

- The **A204** Plan shows the two locations of the allocated **commercial** indoor waste storage rooms for Building B and Building C, labeled as "Retail Loading Garbage". Building A does not have commercial tenants. The commercial waste rooms are on the ground floor and will service the commercial tenants only. As per the Guideline requirements, commercial waste bins will not be combined with the residential waste and are to remain separate and serviced separately; and
- The **A204** Plan illustrates the collection staging areas for materials to be set out for collection. Upon the completion of Phase 3 construction, materials will be set out for collection in the staging areas. The two staging areas are located on the Site Plan. They are adjacent to Building A and adjacent to Building B at ground level. The staging area at Building B is sized to accommodate bins from both Building B and Building C at the same time. Transfer of waste bins to the collection staging areas will be via the ground level waste room access double doors.

3.0 Container and Capacity Needs

The Region can provide collection services for the material types and containers outlined in **Table 1**. Front-load containers are used for the garbage and recycling streams, and 360 L carts are used for the organics stream. The Region will not provide collection for materials from commercial (retail, restaurant) sources on site.

Table 1: Container Types for Collected Materials

Material Type	Container Type
Garbage	Front-load container
Recycling	Front-load container
Organics	Wheeled Cart
Bulk Waste	Roll-off container

3.1 Residential Capacity Requirements

The Region's Guidelines recommend the following:

- One 360 L recycling cart for every seven units;
- One 360 L organics cart for every 25 units; and
- The total number of garbage bins is dependent on the type of volume generation, compaction, and collection frequency.

The container specifications above (from the Guidelines) assume weekly collection. However, through consultation with the Region, Dillon understands that for a development of this size:

- Garbage, organics, and recycling may be collected twice per week; and
- Recycling would be collected in front loading containers, and not in carts due to the large generated volume on site.

Using the Region's Guidelines and the modifications noted above, the capacity required for each of the construction phases was analysed and estimated. Capacity results are presented in **Table 2**, along with the suggested container sizes (note 3 to 4 cubic yard sizes due to weight) to accommodate the quantity of material estimated to be generated weekly and collected at least once per week.

Table 2: Weekly Container Requirements for Residential Waste Streams by Building

Building	# Units	Garbage		Recycling		Organics	
		# Containers	Container Type	# Containers	Container Type	# Containers	Container Type
A	436	7	3 CY front-load container (compacted)	8	4 CY front-load container	18	360 L Cart
B	358	6	3 CY front-load container (compacted)	7	4 CY front-load container	15	360 L Cart
C	371	6	3 CY front-load container (compacted)	7	4 CY front-load container	15	360 L Cart
Site Total	**1,165**	**19**	3 CY front-load container (compacted)	**22**	4 CY front-load container	**48**	360 L Cart

3.2 Commercial Capacity Requirements

Commercial garbage and recycling shall be kept separate from residential materials. Based on Dillon's experience with similar small commercial areas, it is recommended that the commercial waste room have the following containers, at minimum, for weekly collection:

- One 3 cubic yard front-load container for non-compacted garbage;
- One 3 cubic yard front-load container for OCC cardboard;
- Two to three 3 cubic yard front-load containers for recycling; and
- One 360 L cart for organics.

The type and size of containers may change depending on the type of businesses and the waste they are generating. Commercial tenants shall obtain their own waste collection services. The Region does not collect commercial waste such as waste generated from retail stores on site.

The "Retail Loading Garbage" rooms for both commercial spaces are illustrated on the Site Plan and all bins are illustrated and drawn to size to demonstrate applicable spacing.

Commercial collection would be arranged on different days from residential collections, but use the same waste collection staging areas outdoors. Bins would be staged by property management staff.

4.0 Collection Staging Areas

The bins required for the site, indicated in **Table 2**, have been added to the site plan, drawn to scale in the three indoor garbage storage rooms (one per building) and illustrated to scale for collection in the two designated outdoor waste collection staging areas. Carts are staged along the side for potential side loading waste collection vehicles. Garbage and recycling bins are staged for front end loading by waste collection vehicles.

In consultation with the Region, it is understood that all waste streams (garbage, recycling, and organics) may be collected by Halton Region on the same day. However, the outdoor staging areas have been sized to accommodate all three streams for one week of generated volumes. A minimum of 0.5 metre buffer space has been added between the bins and the buildings' walls.

Additionally, there is space for the organics carts to be placed in the staging area should they be simultaneously collected along with recycling and/or garbage. However, it is assumed that streams will be collected at different times, by different vehicles, throughout the day.

Bins will be transferred in and out of the buildings by the property management staff. The doors exiting into the staging areas are intended for building staff only. These doors are not intended for pedestrians nor residents. Collection vehicle drivers will not need to exit their vehicles to tip front end bins. The exception is for carts, if they are not tipped with automated arm lifts.

For collection days, the outdoor staging areas illustrate bin staging spacing and layout for the following operations – refer to the Site Plan, A204.

Building A accommodates outdoor loading space, at a minimum, for:

- Seven 4 cubic yard front-load containers for recycling;
- Six 3 cubic yard front-load containers for compacted garbage; and
- Seventeen 360 L carts for organics.

Building B accommodates outdoor loading space, at a minimum, (for Buildings B and C bins) including:

- Twelve 4 cubic yard front-load containers for recycling;
- Ten 3 cubic yard front-load containers for compacted garbage; and
- Twenty-eight 360 L carts for organics.

Note that one or more bins, for each stream, remains in each waste storage room for the days use with the tri-sorter, else material will empty onto the floors from the tri-sorter.

4.1 Vehicle Access

Refer to the Ground Level Site Plan A204. The site has entry and exit from Cooke Blvd only. The roadway on site is a large circular roundabout layout. Waste vehicles therefore do not have to reverse or back-up to exit the site. Underground parking garages are accessed from the site's circular roadway.

The collection areas labelled "Truck Space" indicate delegated space for waste collection vehicles in the two bin collection staging areas. The truck space is a minimum 3.5 m wide and 18 m long to accommodate a head on approach and excludes the space for the staged bins. There are no overhead structures in these areas. There is ample room for the opening of truck doors, maneuvering around the truck and relocation of bins if needed. Collection areas are away from residents' entries, doors and parking spaces.

4.1.1 AutoTurn Sweeps

The Site Plan shows the turning radius for collection trucks and layout of the staging and truck areas for the collection trucks. AutoTurn sweeps have been added to show the routing of a collection vehicle's:

- entry into the site;
- staging at Building A;
- staging at Building B; and
- exit from the site.

No backup or reversing is required. The AutoTurn was programmed to accommodate a vehicle with a 13 m, from the centreline, turning radius as a minimum.

The outside of the turning space has approximately a 16 m radius. The island, in the middle of the roundabout, has a 12 m radius.

AutoTurn diagrams were produced by the transport consultant (BA Group). A separate Traffic report also accommodates the application's OPA/ZBA submission for further reference.

4.1.2 35 Tonnes Structure

Per the Region's Guidelines, confirmation will be provided during the detailed design stage with respect to any structures that will be driven over (i.e. an underground parking garage, drainage grates) by the collection vehicle routing for the site. This will be certified by a Professional Engineer that applicable structures are rated for 35 tonnes minimum; the weight of a full waste vehicle.

4.1.3 Collection Agreement

Per the Region's Guidelines, a completed drive through agreement will be submitted before collection by the Region is to commence. This agreement would be completed at a later stage, closer to construction completion and site inspections.

5.0 Requirements Summary

Waste management design summaries for the Guidelines requirements for the proposed development are presented in **Table 3**.

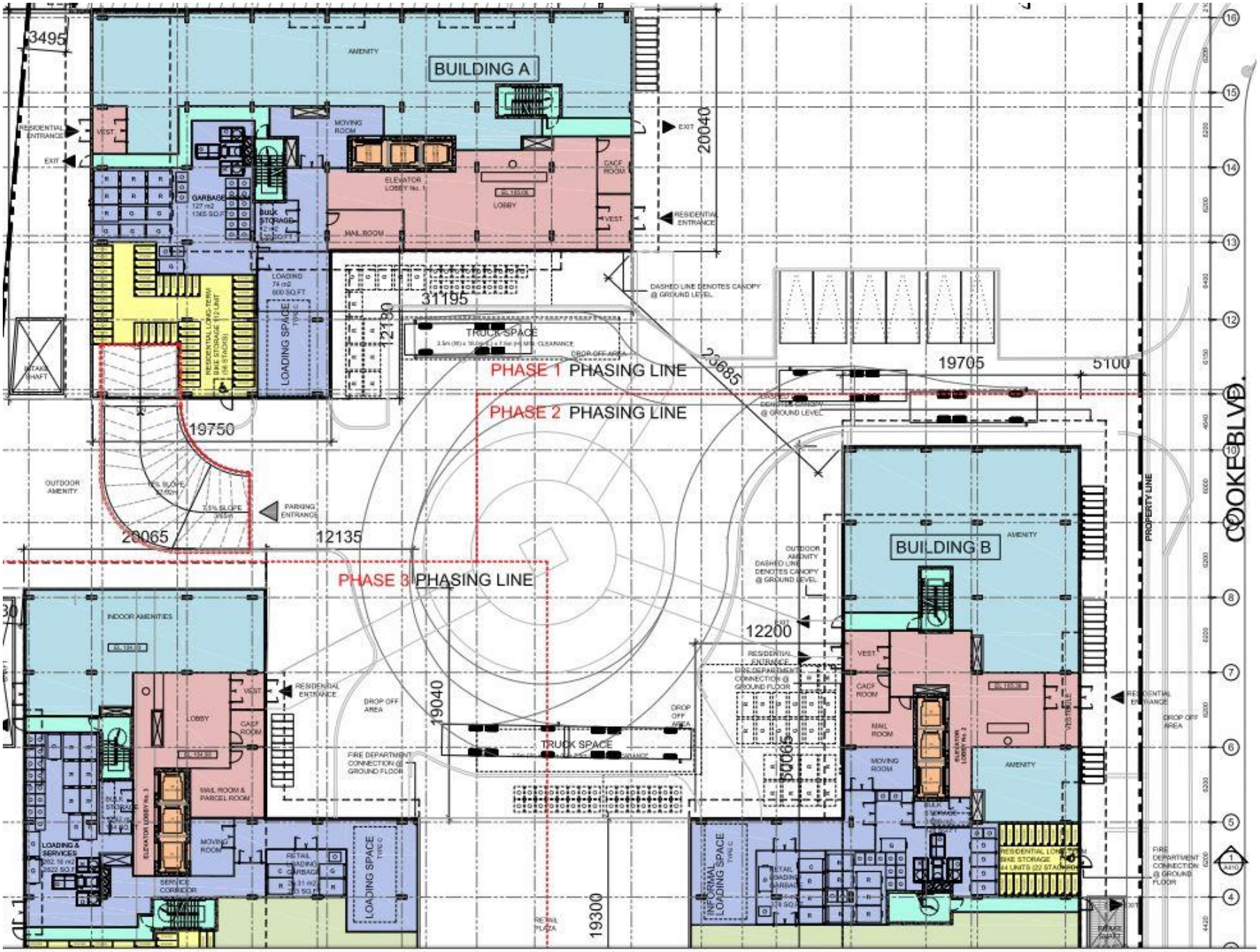
Table 3: Requirements Summary

Category	Requirement Met
Residential Garbage Rooms	Residential garbage room plans indicate the footprints (drawn to scale) of the containers indicated in **Table 2**.
	Plans accommodate all full containers to be stored in the garbage room until collection day, as containers would only be moved outside on collection days.
Commercial Waste Rooms	Plans indicate the type, capacity, footprint, and location of waste and recycling containers in the commercial waste room.
Vehicle Access	Traffic flow diagrams were developed to accompany the application and include turning radius per the waste collection Guidelines. AutoTurn sweeps are provided for minimum of 13 m radius for waste vehicles. Sweeps avoid contact with curbs. The Site Plan illustrates staging and collection for movement of waste collection vehicles for the various waste streams: • for a front end overhead collection vehicle (garbage, recyclables); • an automated or semi- automated cart collection vehicle (rear or side loading); and • a roll-off bin for rear end unloading by a roll off vehicle (bulk waste).
Waste Staging Areas	The site plan demonstrates the size and orientation of the various containers in the waste collection staging areas, as outlined in **Section 4.0**. No height restrictions are in collection areas. No overhead structures are in this design.

Appendix A

Site Plan (A204) Ground Level

and Building Waste Management System Details


BUILDING A
BUILDING B
PHASE 1 PHASING LINE
PHASE 2 PHASING LINE
PHASE 3 PHASING LINE
TRUCK SPACE
LOADING SPACE
COOKE BLVD.
PROPERTY LINE
31195
20040
19750
20065
12135
19040
19300
12200
19705
5100
23685
12190

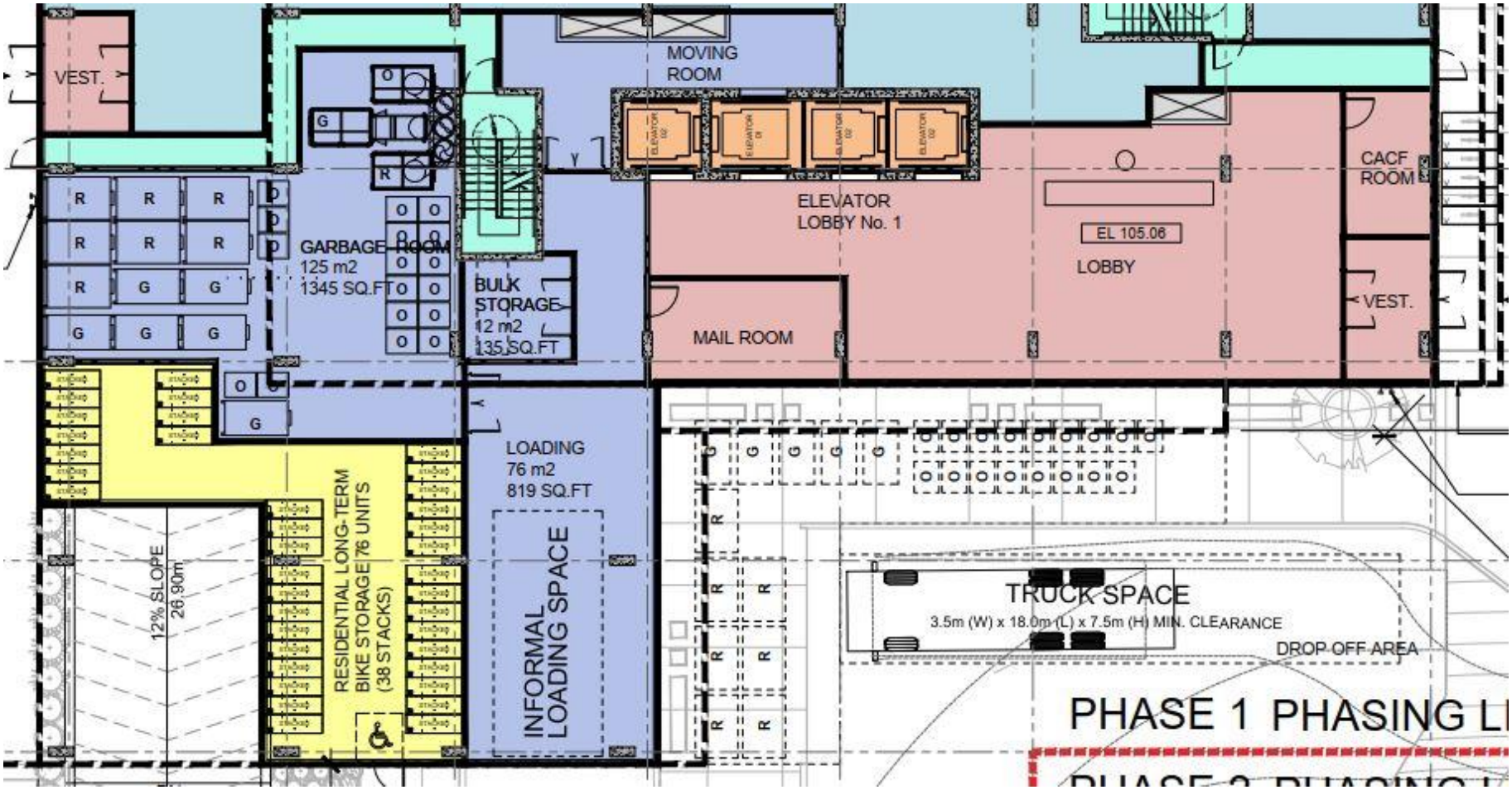


Figure 1: Building A Waste System Detail

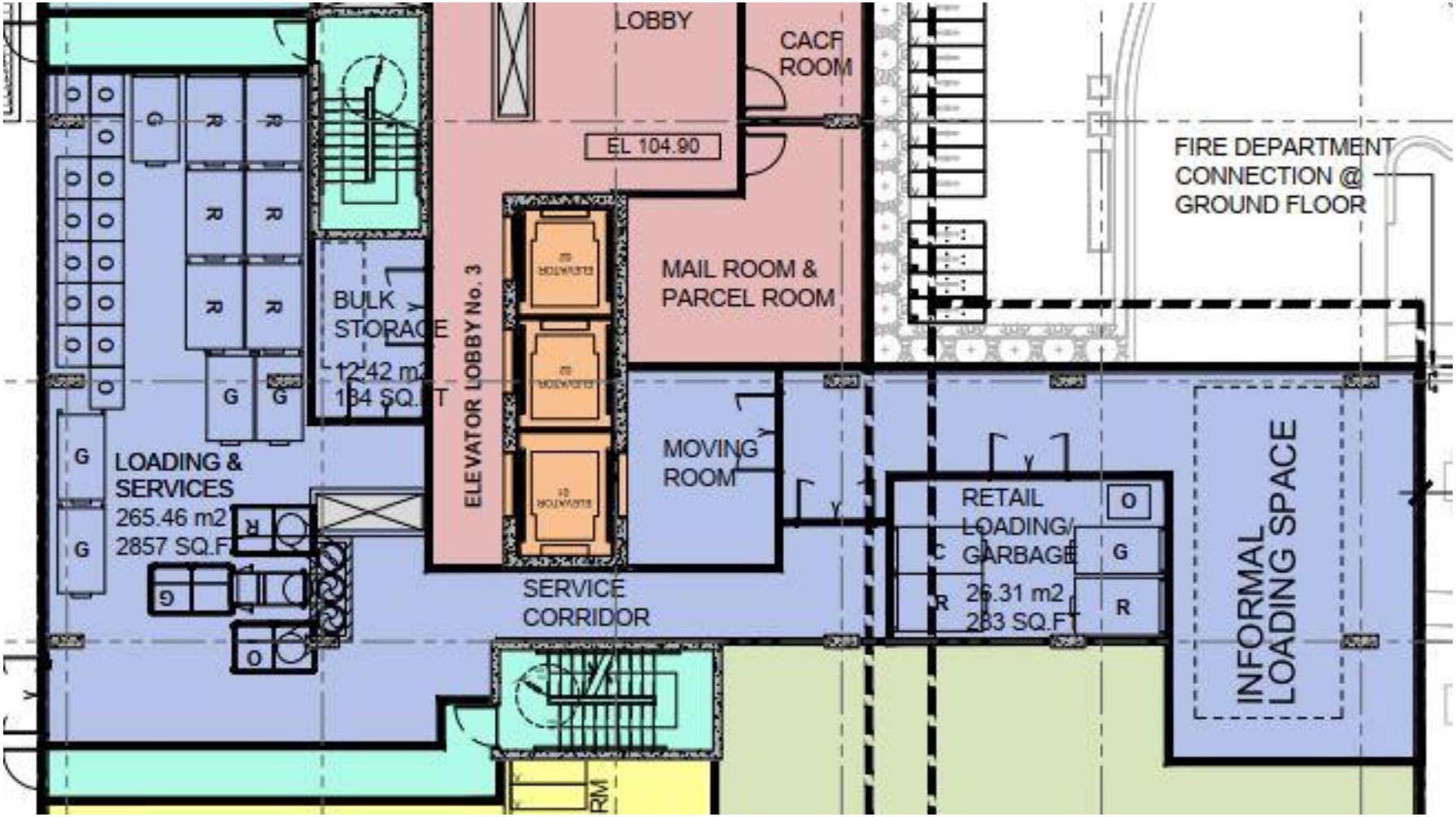


Figure 2: Building B Waste System Detail

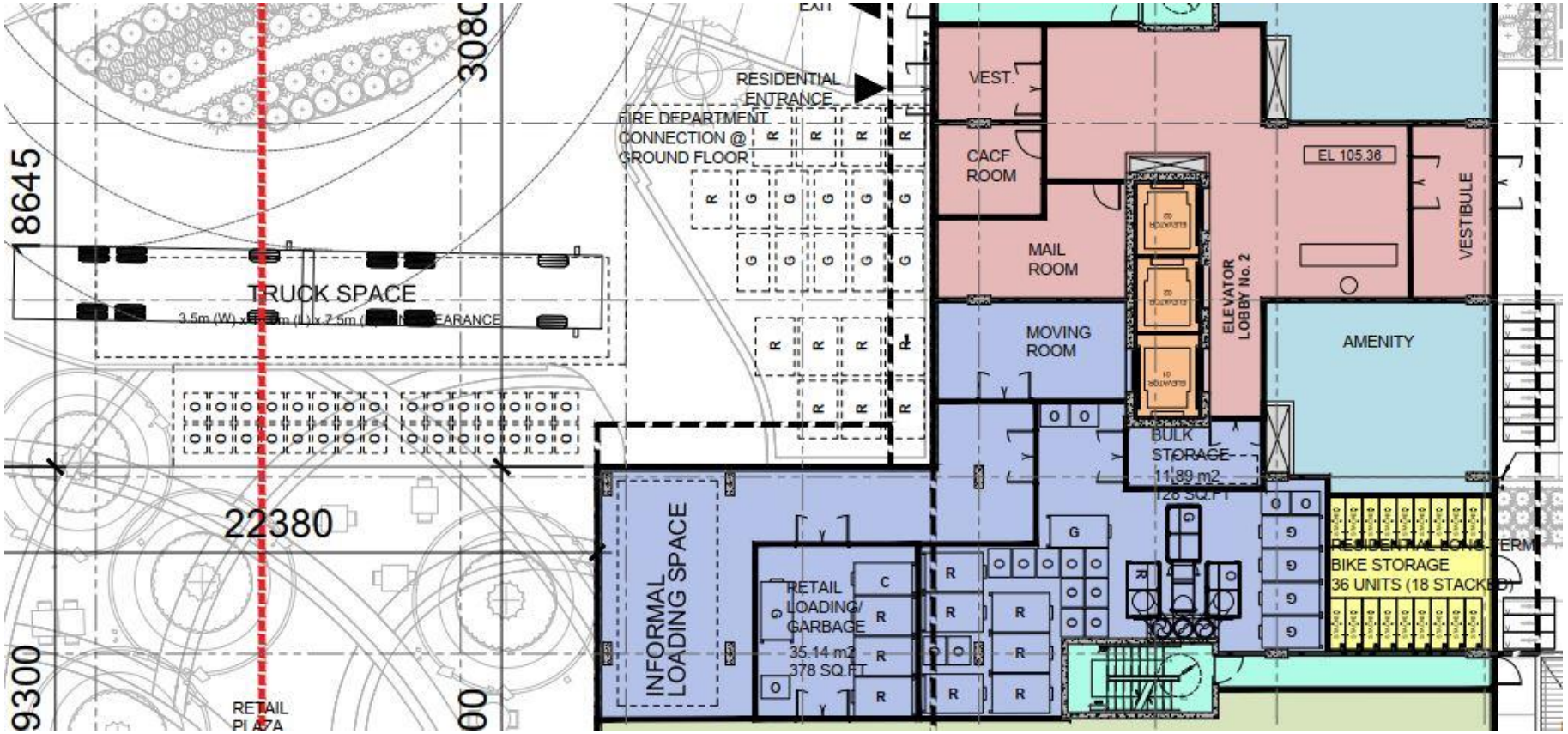


Figure 3: Building C Waste System Detail