



Cini-Little International, Inc.

Waste Management Master Report

**2163-2169 Sixth Line Road,
Oakville, Ontario**

Prepared For

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EXECUTIVE SUMMARY

Cini-Little International Inc. has been retained by Bara Group (River Oak) Inc., to investigate waste handling alternatives for the 2163-2169, Oakville, Ontario, located near the intersection of Sixth Line Road and River Oaks Boulevard East in Oakville.

The apartment complex is a one (1) building consisting of 247 residential units in a 9-storey building. This development is a mixed used building with Retail and Dental component on Level 1. The building will have a single-chute system with a tri-sorter type materials diverter and a compactor for garbage only attached to the chute for the residential occupants. The residents in the building will bring their garbage, organics and recycling materials to the chute room located on their individual floors in building. After making the appropriate selection for the garbage, recyclables, and organics materials to be deposited using the chute control panel, they will place the materials in the chute. The materials will drop down to the Residential Garbage and Recycling room located in the building on the P-1 floor level where the materials will be sorted with the help of tri-sorter into the appropriate container bins. On the designated Collection Day, the Property Management staff will bring up the required garbage container bins, recycling container bins and organic waste carts and take the bins over to the Designated Collection Point located in the northwest quadrant of the development to be emptied by bulk-lift front-load waste collection vehicles belonging to the Halton Region. Similarly, on the designated Collection Day, the Property Management staff will bring out the required organic Toter bins to the Designated Collection Point located in the northeast quadrant of the development to be emptied by either a bulk-lift rear-loading or side-loading waste collection vehicles belonging to the Halton Region.

The site will utilize the services of the Halton Region for the pick-up of all garbage, recycling, and organic materials for the whole development. Halton Region will provide 95-US Gallon (360 L) Toters for organic collection with rear-loading or side-loading waste collection vehicles. The Developer will procure its own 3 CY containers for compacted garbage and 3 CY containers for uncompacted recycling material collection with bulk-lift front-loading waste collection vehicles. The Property Management Company may choose to opt to utilize and pay for the services of a Private Waste Contractor in future. No refund or credit against region taxes will be applied to the property and should this decision be reversed in the future the site must meet all present criteria and all criteria at the time of application for the re-instatement of Halton Region Waste Collection services. It is the intent that the development will be designed to satisfy the waste handling guidelines of the Halton Region.

Based on our calculations, it is estimated that the building will generate 80.55 Cubic Meters of waste per week of which 43.80 Cubic Meters can be easily removed for recycling. Thus, a total of 36.75 Cubic Meters of uncompacted waste will be generated and will need to be collected per week with a bulk-lift waste collection vehicle and taken to the landfill site. Using a typical compaction ratio of 3:1, this means that 12.25 Cubic Meters of compacted waste could be collected and taken to the landfill site per week.

This development has Retail and Dental space located on the Ground floor. The garbage and recycling materials from the Retail and Dental will be stored in the Retail and Dental Garbage and Recycling Room located at the Ground floor level near to Dental and Retail unit. The Retail and Dental staff will bring their garbage, organics and recycling materials to the Dental and Retail Garbage room. The garbage and recycling materials from the Dental and Retail will be handled by Private Waste Contractor.

Retail will generate 3.62 Cubic meters of waste per week of which 2.1 Cubic Meters can be easily removed for recycling. Thus, a total of 1.5 Cubic Meters of uncompacted waste will be generated and will need to be collected per week. The waste generated by Retail will be picked up by the Private Waste Contractor and taken to the landfill site. Dental office will generate 1.46 Cubic meters of waste per week of which 1 Cubic Meter can be easily removed for recycling. Thus, a total of 0.5 Cubic Meters of uncompacted waste will be generated and will need to be collected per week. The waste generated by Dental will be picked up by the Private Waste Contractor and taken to the landfill site.

INTRODUCTION

The volumes and types of waste presented in this report are estimates based on our own experience and empirical data, as it pertains to residential buildings. The goals of the preferred waste-handling programme are to follow waste handling regulations and to minimize the cost of handling the materials while addressing the problems of storing both recyclable and non-recyclable waste material on site for pick-up. This report will act as a general guideline, with the understanding that a specific detailed program may be refined by the Property Management Company of this complex.

This proposed new development will consist of one Type “G” loading space which will provide delivery and pick-up access for all areas in the development as well as for the pickup of solid waste and recyclable materials. The Type “G” loading space will be located on the northwest side of the Building.

This proposed new development will receive bulk-lift collection of all waste and recycling materials provided by the Halton Region from the Designated Collection Point in the new development.

We welcome comment on the findings herein and will work closely with Bara Group (River Oak) Inc., RAW Design, the Halton Region and the Town of Oakville Public Works Division to ensure that appropriate waste handling facilities are incorporated. Our goal is to develop a functional project that meets the needs of its owners, tenants, users, and surrounding community, while following waste handling regulations.

COMPONENTS

- Residential development with one building with a total of 247 residential units:
- The building will have one Residential Garbage and Recycling Room which is located on the P-1 floor level in the parking garage. The building will have a single-chute system with a tri-sorter type materials diverter and a compactor for garbage only attached to the chute.
- The building has Retail and Dental office located on the Ground floor level. The waste generated from these spaces will be handled by Private Waste Contractor.
- There are total of 245 parking spaces on two levels of underground parking.
- The development will receive bulk-lift waste and recycling collection of all materials using 3 CY (2.3 CM) container bins for garbage and comingled recycling and 95-US Gallon (360 L) Toter Carts for organics.
- One Type “G” loading space will be provided and is located on the northwest side of the building
- The site will satisfy the Town of Oakville and the Halton Region requirements for waste pick up of garbage and recycling materials for residential complex.
- Bara Group (River Oak) Inc. is required to submit a Waste Management Plan for Site Plan Approval.
- Cini•Little International, Inc will prepare documents according to all regulatory requirements.

CONSTRUCTION WASTE

During the construction period appropriate measures will be put in place through contract documentation to ensure that recycling of applicable materials is incorporated. Separate bins should be designated to hold wood, drywall, corrugated cardboard, and any other Recyclable materials generated during construction. The responsibility of recycling co-ordination will be included in the construction manager’s responsibilities to ensure that all local regulations are adhered to and that any other practical means of recycling will be incorporated. Construction practices, which will provide control and possibly reduce the amount of waste generated, should also be included.

Suggested policies to be incorporated into waste management procedures during construction are:

- The removal of any soil/clean fill to an area where it can be used effectively to minimize impact on landfill sites in accordance with environmental strategies and regulations.
- The General Contractor will make provisions to separate the soil/fill removed from the site during excavation to ensure that any contaminated materials are properly remediated in accordance with the above statement.
- The provision of designated bins on-site should be available for the recovery of the following construction materials
 - Asphalt
 - Concrete
 - Clean Fill

- Drywall
- Glass
- Metal
- Wood
- The purchase of recycled construction materials, such as drywall, where available on the market should be purchased whenever possible at competitive pricing, quality, and security of supply.
- All available systems and methods of construction should be environmentally safe to ensure minimal disruption and damage to the surrounding areas.

GENERATION ESTIMATE

Table 1 illustrates the Residential waste and Recyclable material generation estimates for this complex. The estimates are calculated in volumes shown as Cubic Meters per week. All calculations are shown uncompacted with the exception of the last column, which shows the waste to landfill as compacted. These volumes, in conjunction with the architectural plans, are used to determine the equipment, spaces and frequency of collection required to service the building.

WASTE GENERATION ESTIMATE(m ³)			A	B	C	D	E	F	G	H	I	J
DESCRIPTION	TOTAL	TOTAL	WASTE GENERATION ESTIMATE IN m ³	ORGANIC WASTE	CORRUGATED CARDBOARD	GLASS CANS PLASTIC	NEWSPRINT PAPER	E-WASTE	HAZARDOUS MATERIALS	REMOVABLE RECYCLABLE MATERIALS	TOTAL WASTE TO LANDFILL	COMPACTED AT 3:1 RATIO
	UNITS	AREA IN m ²										
RESIDENTIAL UNITS	247	-	75.54	15.11	7.55	15.11	3.78	0.76	0.38	41.55	33.99	11.33
PARKING	245		0.37	0.04	0.04	0.07	0.02	0.00	0.00	0.17	0.21	0.07
AMENITIES		1,408	4.63	0.46	0.46	0.93	0.23	0.05	0.02	2.09	2.55	0.85
Total Residential	247	-	80.55	15.61	8.06	16.11	4.03	0.81	0.40	43.80	36.75	12.25

Based on the calculations above, it is estimated that the whole development will generate 80.55 Cubic Meters of waste per week of which 43.80 Cubic Meters can be easily removed for recycling. Using a typical compaction ratio of 3:1, a total of 12.25 Cubic Meters of compacted waste will be collected weekly by bulk-lift vehicles and taken to the landfill site.

There are 247 units in the building. According to Halton Region guidelines the building will require five 3 CY (2.3 CM) container bins for this estimated volume. The garbage container bins will require 25 SM of space for their storage. On collection days, these garbage container bins will be towed up by the Property Management Company staff using a small tractor type vehicle and taken over to the Designated Collection Point located in the northwest quadrant of the development where they will be emptied by a front-loading bulk-lift waste collection vehicle belonging to the Halton Region.

The Halton Region has now acquired technology in their sorting system so that the cardboard and paper fiber streams can be commingled with the metal, glass, and plastic waste streams. The Halton Region no longer requires the residents to sort their recycling materials before they deposit them in the recycling chutes or bins.

The Halton Region guidelines requires one 3 CY (2.3 CM) recycling container bins for each 42 residential units. According to these Halton Region guidelines the building will require six 3 CY (2.3 CM) recycling container bins for this estimated volume. The recycling container bins space allocation will be added to that of the garbage spatial requirements for the building. This will create a total space requirement for the combination Residential Garbage and Recycling Room in the building of a minimum of 75 Square Meters. On collection days, these recycling container bins will be towed up by the Property Management Company staff using a small tractor type vehicle and taken over to the Designated Collection Point located in the northeast quadrant of the development where they will be collected by front-loading bulk-lift waste collection vehicle belonging to the Halton Region.

The Halton Region requires one organic 95 US Gallon (360 L) Toter cart for each 25 residential units. According to these Halton Region guidelines the building will require ten 95 US Gallon (360 L) Toter carts for this estimated volume. The organic Toter cart space allocation will be added to that of the garbage spatial requirements for the building. This will create a total space requirement for the combination Residential Garbage and Recycling Room of 75 Square Meters in the Building. The organic Toter carts will be towed up by the Property Management Company staff using a small tractor type vehicle to the Designated Collection Point located in the northwest quadrant of the development where the bins will be emptied by the appropriate bulk-lift waste collection vehicle belonging to the Halton Region.

Commercial:

Table 2 illustrates the waste and Recyclable material generation estimates from the Retail and Dental office. The estimates are calculated in volumes shown as Cubic Meters per week. All calculations are shown uncompacted with the exception of the last column, which shows the waste to landfill as compacted. These volumes, in conjunction with the architectural plans, are used to determine the equipment, spaces and frequency of collection required to service the building

Table 2:

163-2169 SIXTH LINE ROAD, OAKVILL		Total Waste Generation Estimate Cubic Yards (CM) per WEEK	(1)	(2)	(3)	(4)	(5)	(6)	Total Diversion from Landfill	Total Diversion %	General Trash (CY/Wk)	Compacted 3:1 Ratio (cy/Wk)	
			Organics / Compostable (CM/Wk)	Corrugated Cardboard & Mixed Paper (CM/Wk)	Commingled Recyclable (CM/Wk)	Biohazardous (CM/Wk)	Universal & Recyclable Hazardous (CM/Wk)	Non-Recyclable Hazardous (CM/Wk)					
PODIUM - RETAIL & NON-RESIDENTIAL		No. Units											
Ground Floor	Retail		3.62	0.54	0.91	0.54	0.00	0.07	0.04	2.1	0%	1.5	0.5
	Dental		1.46	0.07	0.37	0.22	0.29	0.03	0.01	1.0	0%	0.5	0.2

Retail:

Based on the calculations three 95 Gallon (360 L) toter carts will be required for this estimated volume of uncompacted garbage, three 95 Gallon (360 L) toter carts will be required for commingled recyclable, two 65 Gallon (295 L) toter carts will required for organic waste and one 65 Gallon (295 L) toter cart for Universal/E-waste for twice a week pick-up by the Private waste Contractor.

Dental:

Based on the calculations one 95 Gallon (360 L) toter carts will be required for this estimated volume of uncompacted garbage, one 95 Gallon (360 L) toter carts will be required for commingled recyclable, one 65 Gallon (295 L) toter carts will required for organic waste and one 65 Gallon (295 L) toter cart for Universal/E-waste for twice a week pick-up by the Private waste Contractor.

This will create a total space requirement for the combination Retail and Dental Garbage and Recycling Room of 40 Square Meters in the Building.

WASTE HANDLING SYSTEM

A. General Waste

Residential Waste Materials:

All garbage waste will be deposited by the building residents into the waste chute located in of the building, accessible from each floor via a small vestibule. The waste chute will be connected to a tri sorter material diverter connected to a compactor in the Residential Garbage and Recycling Room located on the P-1 floor level in the building. The garbage waste drops into a compactor and will be compacted into 3 Cubic Yard (2.3 Cubic Meter) containers. The chute selection capability of the materials diverter will be used in conjunction with the Halton Region's collection program of organic materials for multiple unit dwellings. Recycling materials will also be deposited into the same single chute with tri-sorter material diverter. The recyclable materials will not be compacted and will be collected in the recycling container bins located in the Residential Garbage and Recycling room in the building.

Approximately every other day or so the garbage container bins in the Residential Garbage and Recycling Room may be full. Property Management staff personnel will detach the full garbage container bin, move it aside, and replace it with an empty garbage container bin. Four garbage container bins for the building will be made available for the collection of residential building waste for the estimated volume as per Halton Region Guidelines. Once a week the garbage container bins from the building will be towed up by the Property Management Company staff using a small tractor type vehicle to the Designated Collection Point located in the northwest quadrant of the development. The bins will be emptied by front-loading bulk-lift vehicle belonging to Region of Halton. Once the garbage container bins have been emptied, they will be returned to the Residential Garbage and Recycling Rooms in the building by Property Management staff personnel. The format of the Designated Collection Point located in the northwest quadrant of the development must satisfy the requirements of the Halton Region and be able to hold all of the garbage container bins on Collection Day until they have been emptied by the Halton Region bulk-lift vehicle.

The waste chute and materials diverter sorting system should have the capability of being locked out while the container bin or Toter bin replacement or maintenance is taking place.

B. Recyclable Materials

Residential Recycling Materials:

All residents will take their recyclable materials and deposit them into the second chute selection capability of the

tri-sorter diverter system that is accessible from their floor via a small vestibule. The materials will drop into 3 CY (2.3 Cubic Meter) recycling containers located in the Residential Garbage and Recycling Rooms in the building.

Approximately every other day or so the recycling container bins in the Residential Garbage and Recycling Room in the building may be full. Building Maintenance staff personnel will remove the full recycling container bin, move it aside, and replace it with an empty recycling container bin. Five recycling container bins for the building will be made available for the collection of residential building recyclables for the estimated volume as per Halton Region Guidelines. Once a week the recycling container bins from the Residential Garbage and Recycling Room in the building will be towed up by the Property Management Company staff using a small tractor type vehicle to the Designated Collection Point located in the northwest quadrant of the development where the bins will be emptied by the front-loading bulk-lift waste collection vehicle belonging to the Halton Region.

The third chute selection capability of the tri-sorter diverter system will be used for the collection of organic materials. Organic materials will be deposited in the same waste chute in the same manner as the garbage and recycling waste. The Halton Region has developed a program for the collection of organic materials for multiple unit dwellings using 95-US Gallon (360 L) Toter bins. Once a week the organic Toter bins will be towed up by Property Management Staff personnel from the Residential Garbage and Recycling Rooms in the building by small tractor type vehicle and taken to the Designated Collection Point located in the northwest quadrant of the development. The materials will be collected in 95-US Gallon (360 L) organic Toter bins that will be emptied by a rear-loading or side-loading Halton Region bulk-lift vehicle.

Retail tenant will separate a total of 0.54 Cubic Meters and Dental office will separate a total of 0.07 Cubic Meters of organics. The organics will be stored in the Retail and Dental garbage and recycling room located on the Ground floor of the building.

I. Corrugated Cardboard

It is estimated that the residents will be able to separate 8.06 Cubic Meters of cardboard in the building for recycling each week. Cardboard will be deposited by the residents into the single chute with tri-sorter diverter system located on each of the floors in the building. The materials will drop into 3 CY (2.3 cubic meters) recycling container bins located in the Residential Garbage and Recycling Room on the P-1 floor level in the building. Large pieces of cardboard may need to be handled separately at the discretion of the Property Management Company. Once a week the recycling container bins from the Residential Garbage and Recycling Rooms will be towed up by Property Management staff personnel using a small tractor type vehicle and taken out to the Designated Collection Point located in the northwest quadrant of the development to be emptied by vehicles belonging to the Halton Region.

II. Newsprint

It is estimated that the residents will be able to separate 4.03 Cubic Meters of paper in the building for recycling

each week. The papers will be deposited by the residents into the single chute with tri-sorter diverter system located on each of the floors in the building. The materials will drop into 3 CY (2.3 cubic meters) recycling container bins located in the Residential Garbage and Recycling Room on the P-1 floor level in the building. Once a week the recycling container bins from the Residential Garbage and Recycling Rooms will be towed up by Property Management staff personnel using a small tractor type vehicle and taken out to the Designated Collection Point located in the northwest quadrant of the development to be emptied by vehicles belonging to the Halton Region.

Retail tenant will separate a total of 0.9 Cubic Meters and Dental office will separate a total of 0.37 Cubic Meters of the cardboard and mixed paper. The cardboard will be stored in the Retail and Dental garbage and recycling room located on the Ground floor of the building. Large pieces of the cardboard may need to be handled separately at the discretion of Property Management Staff.

III. Glass, Plastics and Metals

The waste glass, plastic and metals will be deposited by the residents into the single chute with tri-sorter diverter system located on each of the floors in the building where the materials will drop into 3 CY (2.3 cubic meters) recycling container bins located in the Residential Garbage and Recycling Room on the P-1 floor level of the building. It is estimated that the residents will be able to separate 16.11 Cubic Meters of waste glass, plastic, and metals in the building for recycling each week. Once a week the recycling container bins from the Residential Garbage and Recycling Rooms will be towed up by Property Management staff personnel using a small tractor type vehicle and taken out to the Designated Collection Point located in the northwest quadrant of the development to be emptied by vehicles belonging to the Halton Region.

Retail tenant will separate a total of 0.54 Cubic Meters and Dental office will separate a total of 0.22 Cubic Meters of the glass, plastics and metals. The commingled recyclables will be stored in the Retail and Dental garbage and recycling room located on the Ground floor of the building.

IV. Food Waste

Any food waste generated will be collected as part of the organics collection program for the residential building.

V. Other Recyclable Materials

Other materials that may be readily separated from residential building waste include, white goods, bulk items and, in the case of renovations and/or owner improvements, metal and wood studs, other metals and drywall. Removal of these items may require special arrangements with both the Property Management Company and the Halton Region for the pick-up and removal from the building. 10 SM of space has been provided on P-1 floor level for the storage of bulky items.

Wood and construction drywall have both been banned from landfill sites and must be handled separately from the

regular waste stream. Large volumes of these materials are not expected to be generated in this complex. However, in the case of any major renovations, the construction drywall should be handled separately and collected by a recycler or by the construction contractor.

C. Hazardous Materials

Based on the nature of the new development, very few hazardous materials are likely to be discarded once the building is complete and operational.

Recommended is the provision of a fireproof, lockable cabinet in the Residential Garbage and Recycling Room in the building or in the office of the Property Management Company for the safe holding of waste painting supplies, household chemicals, pest and weed control containers and other materials that may be hazardous under some conditions. A cabinet of approximately 1.2 x 0.6 m would be sufficient to hold these materials.

D. Landscape Waste

There is no landscape waste associated with this development project as it is expected the Landscape Contractor will be responsible for removing their own materials from the site.

VEHICLE REQUIREMENTS

The following are the general requirements for Municipal Waste Collection vehicles and are worth noting.

RESIDENTIAL CITY VEHICLE COLLECTION REQUIREMENTS
<ul style="list-style-type: none">• City trucks will perform no more than a three-point turn with a minimum turning radius of 13.0 m.• Municipal trucks must enter and exit the street in a forward motion.• Garbage and Recycling Toter cart must be in an open area ready for collection and easily removed after dumping with a direct straight-in access of 18 m.• A paved or level Designated Waste Collection Point Loading Space loading area with minimal dimensions of 13 m x 3.5 m (Minimum 4 m if enclosed) with a vertical clearance of 7.5 m over the whole area is required.• Waste collection route and loading area shall be levelled to +/- 2% and designed to support weight up to 35 tonnes. Certification Letter shall be submitted along with SPA drawings.• Minimum lane/aisle widths of 6 meters for two-way traffic and 4.5 meters for one-way traffic.

DESIGNATED WASTE COLLECTION POINT LOADING SPACE REQUIREMENTS:

It is expected that this facility will use Front -end, rear-end or side loading bulk-lift waste collection vehicles belonging to the Halton Region and/or the Town of Oakville. The length of truck varies but the overall length would be in the range of 9.1 m to 12.0 m. No large self-contained compactor container with cart dumper is planned for at this site. There is one Designated Waste Collection Point in this development, and it is located in the northwest quadrant of the development. A Traffic Consultant has verified that all anticipated vehicular movement into/on/out of the development is sufficient and compliant with applicable standards and requirements.

We welcome comment on the information contained above and will work closely with Bara Group (River Oak) Inc., RAW Design, the Halton Region, and the Town of Oakville Public Works Division and other retained professionals, to ensure that appropriate waste handling facilities are incorporated.

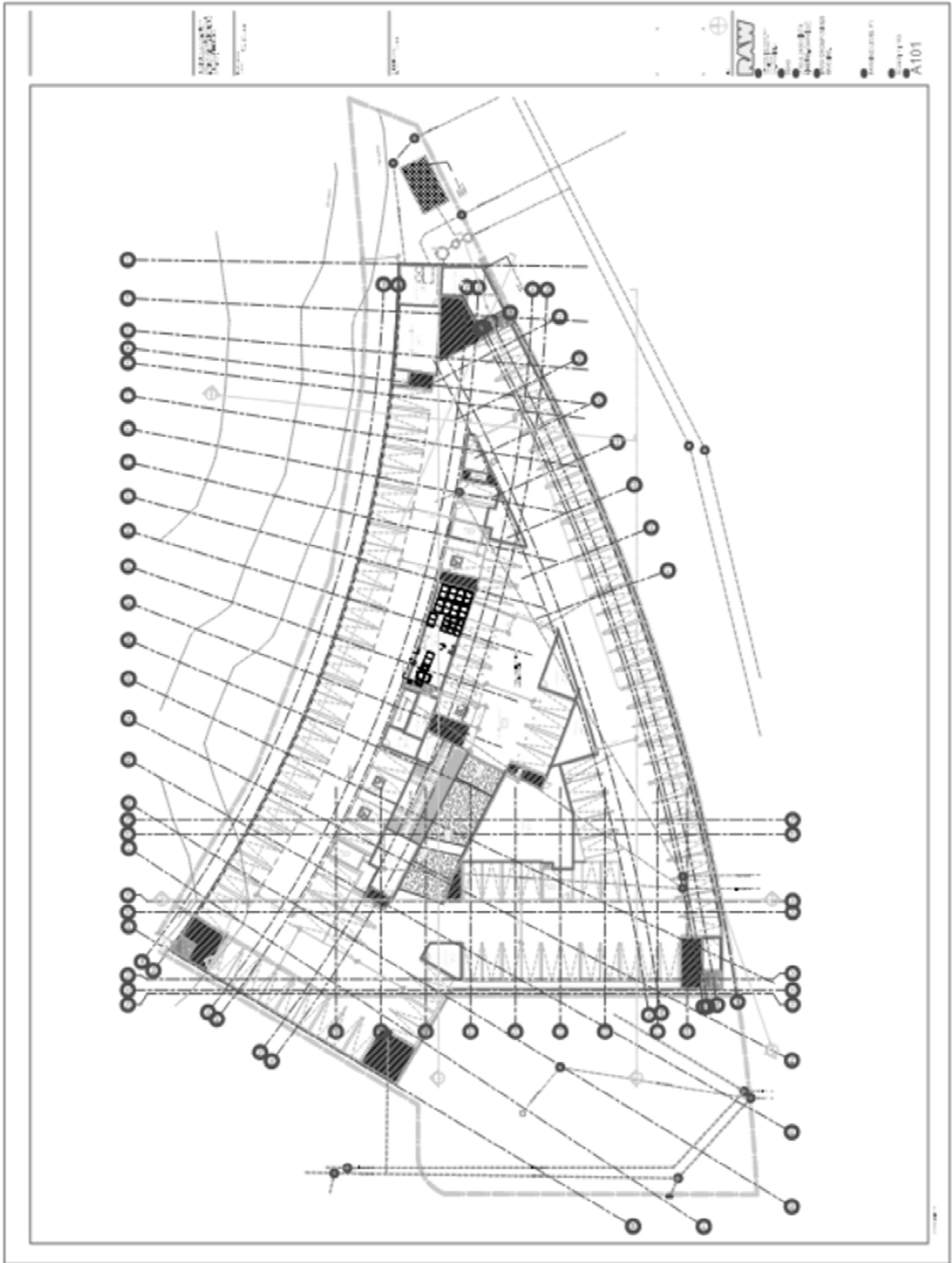
Amruta Kiran

Amruta Kiran
(Associate)

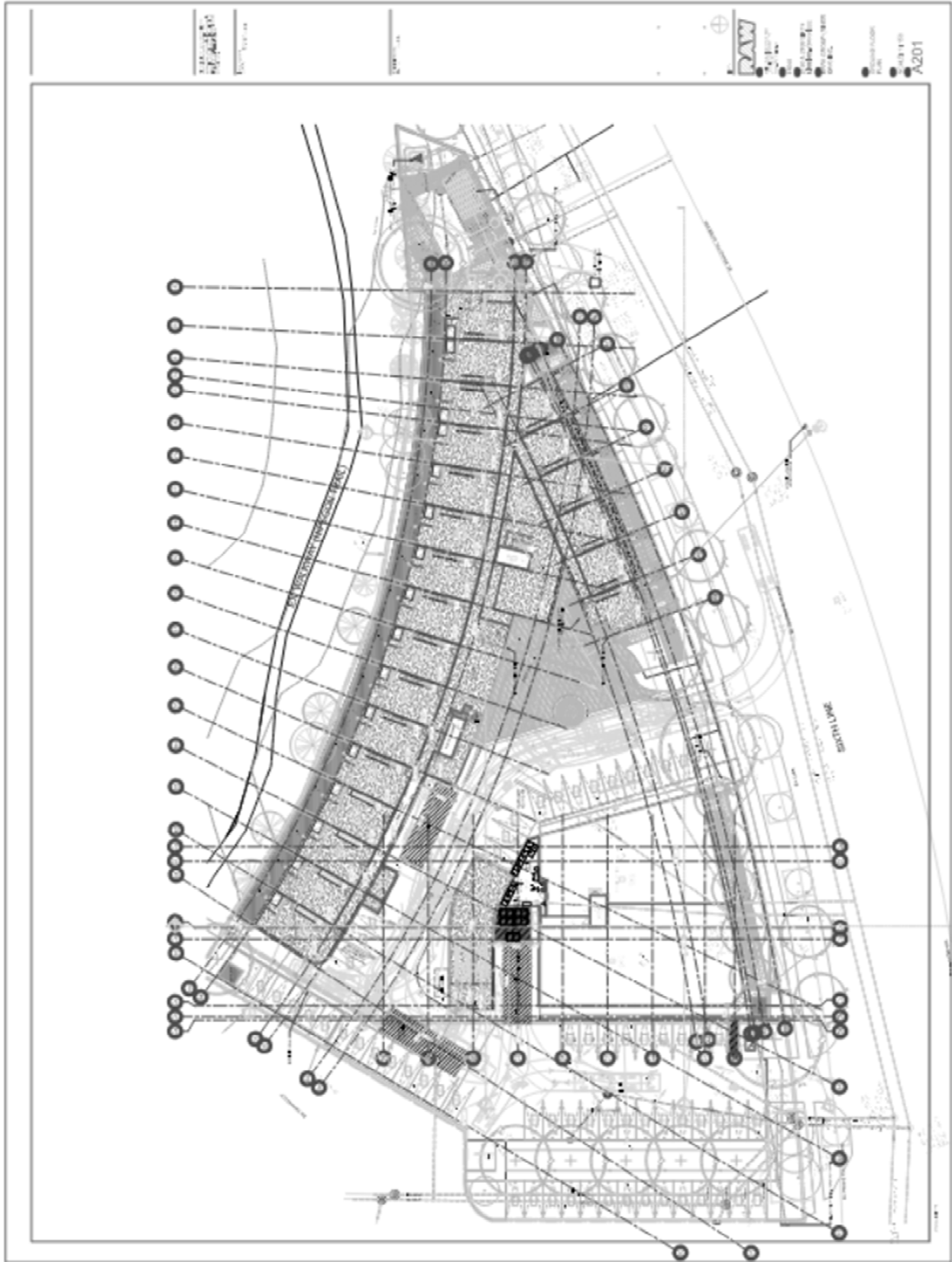
APPENDIX ONE: Site Plan



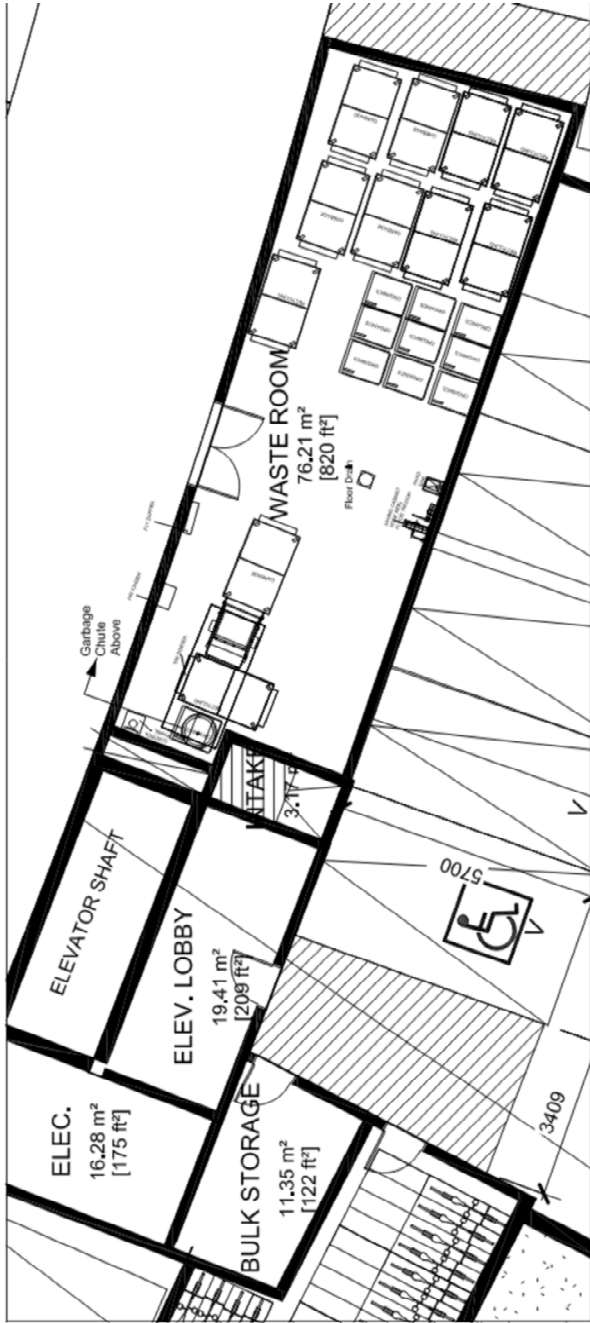
APPENDIX TWO: Ground Floor Level Floor Plan



APPENDIX THREE: Parking Level P1 Floor Plan



APPENDIX FOUR: Residential Garbage and Recycling Room Layout



APPENDIX FIVE: Retail and Dental Garbage Room Layout

