Memo

To: Adi Developments (Masonry) Inc.

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

Date: November 18, 2021

Subject: Waste Management Planning Review – 1120 Cooke Boulevard, 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 Boulevard Development in Burlington, Ontario. The proposed development consists of:

- Phase 1: 26-storey building with 242 units ("Building B") and building podium with 40 units ("Building B podium")
- Phase 2: 36-storey building with 384 units ("Building C") and building podium with 31 units ("Building C podium")
- Phase 3: 36-storey building with 442 units ("Building A")

The proposed development was assessed to determine if it meets the waste management needs for the proposed design.

Dillon understands that the materials disposed and recycled at the 101 Masonry Court 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 provides:

- **Section 2.0 Waste Management Overview,**
- **Section 3.0 Container and Capacity Requirements,** and
- **Section 4.0 Recommendations,**

ADI incorporated into their designs to meet the Halton Region Guidelines.

This memo also includes the following relevant appendices:

- Appendix A: Container Dimensions
- Appendix B: Equipment Photos and Dimensions

This memo includes the following:

- Container and Capacity Requirements;
- Residential Waste Storage Rooms;
- Waste Staging Area Requirements;
- Collection Vehicle Requirements;
- Transportation from Storage Areas to Staging Areas;

- Commercial Waste Storage;
- Bulk Waste Storage;
- Additional Design Features and Assumptions; and
- Recommendations.

2.0 Waste Management Overview

2.1 Impact of Phased Construction Approach

Dillon understands that the construction of the three buildings will occur in three phases:

- Phase 1 will include the construction of Building B (282 units)
- Phase 2 will include the construction of Building C (415 units)
- Phase 3 will include the construction of Building A (442 units)

Construction of the parkade will occur in two phases:

- The parkade for Phases 1 and 2 will be built during Phase 1.
- The parkade for Phase 3 will be built during Phase 3.

To avoid confusion, this memo will refer only to Phases 1, 2, and 3, and not refer to Buildings A, B, and C. The phased approach to construction influences the waste management approach during each phase. ADI will submit the waste management plans for all three phases to Halton Region for review. Waste and recycling will be collected separately in each building using a tri-sorter chute, then will be transported to the common outdoor staging area for the development serving all three buildings.

Once construction of all phases is complete, the final development will have a central shared location for waste collection pick-up common for all three buildings. This centralized staging location will be an outdoor ground level lot adjacent to the Phase 3 construction (at ground level). Prior to the Phase 3 construction, waste from Phases 1 and 2 constructions will also be staged in the common staging location. As per Dillon's conversations with CORE Architects and ADI on May 20, 2021, the outdoor area (south side of Phase 3 building) has been located for this purpose. Since the Phase 3 construction will not yet be complete, and the Phase 3 elevators (parking level to ground level) will not yet exist, the transportation of materials from the waste rooms in Phase 1 and 2 (which are in the P1 level) to the outdoor staging area will require a temporary adjustment. Transfer of bins to the collection pick-up area will be via the underground parking access ramps to the ground level.

This memo addresses the phased approach and summarizes proposed waste management during the phases of construction.

2.2 Regional Collection Overview

ADI Development Group will be submitting the waste management plan to Halton Region to apply for collection of materials by the Region. The Region requires source separation for multi-residential apartment buildings, and may provide service for the following materials:

- Recyclable Materials (single-stream containers and paper)
- Organics
- Garbage
- Bulk Waste
- Yard Waste
- Metal Items
- Appliances

Not all complexes are eligible for all streams of recycling. When reviewing the waste management application for the Development, the Region will assess the Development's eligibility for the various streams of recycling. This memo assumes that Regional collection may be provided for **Recyclable Materials (single-stream containers and paper), Organics, Garbage,** and **Bulk Waste.**

2.3 Waste Management System Overview

The waste management systems as outlined in the Plans designed by CORE Architects October 7, 2021 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 floor. The tri-sorter and three stream bins are located in the P1 parkade in Phase 1 and 2 construction, and on the ground floor for the Phase 3 construction.
- Each phase of construction has multiple waste rooms for residential use. The waste rooms for Phase 1 and 2 construction are in the **A203** Plan and are on the P1 level. The waste rooms for the Phase 3 construction are in the **A204** Plan and are on the ground floor. Each of the construction phases includes:
    - A waste room which services all residential units through a tri-sorter. The tri-sorter will deliver the garbage into a front-loading bin to be compacted. Because of the presence of the mechanical compactor, this waste room will be secured at all times and have no general access for residents. Recycling and organic materials will be delivered via the tri-sorter into their respective containers and will not be compacted.
    - A bulk waste room is located near the secured waste room. Because the main waste room is secured, the bulk waste room is sufficiently sized so that containers can be placed for residents to deliver 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 demonstrates the location of the allocated **commercial** waste rooms for the Phase 1 construction. The commercial waste room is on the ground floor and will service all the commercial tenants. As per the Guidelines' requirements, commercial waste bins will not be combined with the residential waste and are to remain separate.
- The **A204** Plan includes the **staging areas** for materials to be set out for collection:

- Prior to the completion of Phase 3 construction, materials will be set out for collection in the temporary Type C outdoor loading area just south of the Phase 3 construction (referenced in May 20, 2021 conversation with CORE Architects) and transferred via the underground parkade P1 level and a ramp to ground level exiting at the staging area.

- Upon the completion of Phase 3 construction, materials will be set out for collection in the permanent Type C loading area that is part of the Phase 3 construction and transferred via the underground parkade P1 level and service elevator (as mentioned previously).

3.0 Container and Capacity Requirements

The Region may provide collection for each material type in the containers outlined in **Table 1**. The Region does not provide collection for materials from commercial sources.

Table 1: Container Types for Collected Materials

Material Type	Container Type	Collection Frequency	Notes
Garbage	Front-load container	2x/week	• Container size will vary by building and is outlined in the following discussion.
Recycling	Front-load container	2x/week	• Container size is outlined in the following discussion. • It is outlined in the Guidelines that the Region collects Recycling in carts; however, the Region has confirmed that in a development of this size, front-load containers would be used.
Organics	Wheeled Cart	2x/week	• 360 L cart will be used.
Bulk Waste	Roll-off container	As needed	

Following the Region's Guidelines and service practices, it is recommended that front-load containers are used for the garbage and recycling streams, and 360 L carts are used for the organics stream. These bins and carts are continuously in service and can be switched out when full by property management personnel when required. It is recommended that additional bins and carts are stored within the waste rooms as backups.

3.1 Residential Capacity Requirements

The Region's Guidelines recommend the following:

- One 360L recycling cart for every seven units;

- One 360L organics cart for every twenty-five 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 Halton Guidelines) assume weekly collection. However, through consultation with the Region, Dillon understands that for a development of this size:

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

Using the Region's Guidelines and the modifications noted above, the capacity required for each of the construction phases was analysed. Capacity results are presented in **Table 2**, along with the suggested container sizes (note 6- 8 cubic yard size) to accommodate the quantity of material generated weekly and collected two times per week.

Table 2: Containers Requirements for Residential Materials[1]

Phase	Building	# Units	Garbage		Recycling		Organics	
			# Containers	Container Type	# Containers	Container Type	# Containers	Container Type
1	B	282	2	6 CY front-load container (compacted)	2	8 CY front-load container	6	360L Cart
2	C	415	2	8 CY front-load container (compacted)	2	8 CY front-load container	9	360L Cart
3	A	442	2	8 CY front-load container (compacted)	2	8 CY front-load container	9	360L Cart

3.2 Commercial Capacity Requirements

Commercial garbage and recycling must be kept separate from residential materials. Based on Dillon's experience with similar small commercial areas, Dillon recommends that the commercial waste room have the following containers, at minimum:

- One 3 cubic yard front-load container for non-compacted garbage
- One 3 cubic yard front-load container for cardboard
- One 3 cubic yard front-load container for recycling
- Two 360L cart for organics

[1] Alternate container requirements, using a maximum container size of 4 cubic yards, are presented in Appendix C.

The type and size of containers may change depending on the type of businesses and the waste they are generating.

4.0 Staging Collection Common Area

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 area (labeled Loading Space on **A104**) has been designed to accommodate the stream with the largest required capacity and volume, which is calculated to be recycling.

Additionally, there is space for the organics carts to be placed simultaneously in the staging area depending, along the side, whether they are collected along with recycling or the garbage route. It is assumed that streams will be collected at different times in the day.

Recycling and garbage containers will not all need to be present at the same time on the collection pad. Bins will be transferred in and out of the buildings by the property management. Collection vehicle drivers will not need to exit their vehicles.

For the *largest* capacity scenario need on collection day, and all three phases of construction have been completed, the **staging area** shall accommodate loading space for:

- Six 8 cubic yard front-load containers for recycling (Blue Box program materials only)
- Twenty-four 360 L carts for organics (household food waste only)

By accommodating capacity for the maximum recycling quantity, there will be adequate space for the compacted garbage containers in the staging area, which will be set out at a different time of day (earlier in the day or later, but not collected in the same front end loading vehicle).

See the **Ground Level Site Plan** provided by the ADI team attached called **A104** -**Site Plan** October 7, 2021 and the common collection area labelled "**Loading Space**". It shows the turning radius for collection trucks and layout staging of waste bins for the collection truck for the recycling and organics scenario above.

5.0 Recommendations

Waste management designs for the development by ADI are presented in **Table 3**.

Table 3: Recommendations

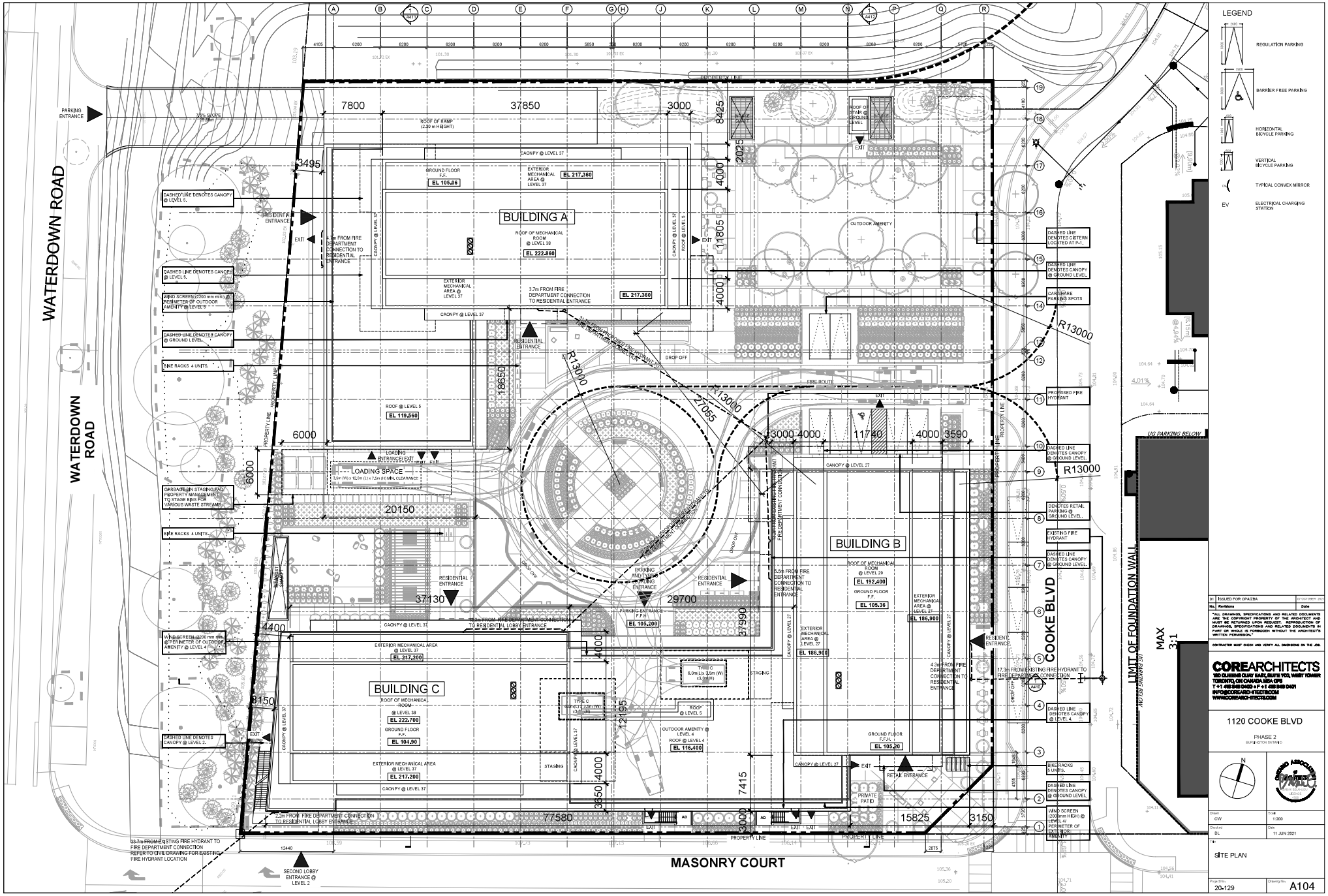
Category	Timeframe (Construction Phase)	#	Recommendation	Outcome
Residential Garbage Rooms	Permanent	**1**	Residential garbage room plans to indicate the **footprints of the containers** indicated in Table 2 (maximum case scenario).	Complete. Residential garbage rooms plans include container footprints.
	Permanent	**2**	It is understood that the **bulk waste rooms** will need to accommodate residents' disposal/recycling of items, such as oversized cardboard and larger garbage bags, electronics waste, paint/solvents, batteries, household hazardous type waste stored separately etc. which will need to be managed on a needs basis by property managers as well as large bulky items such as furniture, mattresses etc. Additionally, bulk waste rooms with double doors would best accommodate the moving of large items in and out of the rooms.	Noted in design discussions.
	Permanent	**4**	Ensure that plans **accommodate for all full containers to be stored in the garbage room until collection day**,	Complete.

Category	Timeframe (Construction Phase)	#	Recommendation	Outcome
			as containers can only be moved outside on collection day.	Space exists for all containers to be stored inside until collection day (in Phase 3 construction).
Commercial Waste Room	Permanent	**5**	Plans should be updated to **indicate the type, capacity, footprint, and location of waste and recycling containers** in the commercial waste room.	Complete. The commercial waste room plans indicate footprints for containers for all waste streams.
Transfer to Staging Area	Interim	**6**	**Include plans** to transfer bins from the garbage rooms in Phase 1 and 2 construction to the staging area for collection pick up.	Alternative solution provided by ADI: the main parking entry ramp in Phase 1 will be used for transfer of containers.
	Permanent and Interim	**7**	**Storage space for container bin transfer equipment should be set aside and highlighted in the plans.** Material will need to be moved from the Phase 1 and 2 construction garbage rooms to the Staging Area (both Interim and Permanent Staging areas) by being hauled across P1. The equipment required for this task is: • A small tractor-like device to haul front-loading containers. This would be used for transfer of garbage and recycling bins. • A cart trailer to move organic carts and bulk items. Any buildings managed by different property managers is not assumed to share equipment, therefore separate storage spaces should be provided for each building.	Complete. Storage space for container bin transfer equipment (tractor, trailer) has been allocated in the plan.

Category	Timeframe (Construction Phase)	#	Recommendation	Outcome
	Permanent and Interim	**8**	**Traffic flow diagrams to be developed** to accompany application and include turning radius per the Guidelines. Illustrate 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) • a roll-off bin for rear end unloading by a roll off vehicle (bulk waste)	Complete. See Ground Level Site Plan provided by ADI team attached. "A104 -Site Plan October 7, 2021" common collection area labelled "Loading Space" shows turning radius for collection trucks.
Waste Staging Area	Permanent and Interim	**9**	**Update the plans to demonstrate the size and orientation of the various containers in the waste staging area**, as outlined in Section 4.0.	Complete – updated staging/loading area outside. No height restrictions. See Plan provided by ADI team attached. "A104 -Site Plan October 7, 2021"

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Lori Andrews P.Eng.
PEO Licence No. 100098710
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WATERDOWN ROAD
WATERDOWN ROAD
PARKING ENTRANCE
7.5% SLOPE
ROOF OF RAMP (2.30 m HEIGHT)
PROPERTY LINE
BUILDING A
BUILDING B
BUILDING C
GROUND FLOOR F.F. EL 105.06
EXTERIOR MECHANICAL AREA @ LEVEL 37 EL 217,360
ROOF OF MECHANICAL ROOM @ LEVEL 38 EL 222,860
EXTERIOR MECHANICAL AREA @ LEVEL 37 EL 217,360
3.7m FROM FIRE DEPARTMENT CONNECTION TO RESIDENTIAL ENTRANCE
CANOPY @ LEVEL 37
RESIDENTIAL ENTRANCE
DROP OFF
FIRE ROUTE
ROOF @ LEVEL 5 EL 119,560
LOADING ENTRANCE/ EXIT
LOADING SPACE
3.5m (W) x 12.2m (L) x 7.3m (H) MIN. CLEARANCE
GARBAGE/BIN STAGING AREA/ PROPERTY MANAGEMENT TO STAGE BINS FOR VARIOUS WASTE STREAMS
BIKE RACKS 4 UNITS
WIND SCREEN (1200 mm min.) @ PERIMETER OF OUTDOOR AMENITY @ LEVEL 5
DASHED LINE DENOTES CANOPY @ LEVEL 5.
DASHED LINE DENOTES CANOPY @ LEVEL 2.
DASHED LINE DENOTES CANOPY @ GROUND LEVEL
PARKING AND LOBBY ENTRANCE
EL 105.20
2.0m FROM FIRE DEPARTMENT CONNECTION TO RESIDENTIAL LOBBY ENTRANCE
EXTERIOR MECHANICAL AREA @ LEVEL 37 EL 217,200
ROOF OF MECHANICAL ROOM @ LEVEL 38 EL 222,700
GROUND FLOOR F.F. EL 104.90
OUTDOOR AMENITY @ LEVEL 4 ROOF @ LEVEL 4 EL 116,400
STAGING
TYP. C 6.0m(L)x 3.5m (W) x3.0m(H)
ROOF @ LEVEL 5
ROOF OF MECHANICAL ROOM @ LEVEL 29 EL 192,400
GROUND FLOOR F.F. EL 105.36
EXTERIOR MECHANICAL AREA @ LEVEL 27 EL 186,900
9.5m FROM FIRE DEPARTMENT CONNECTION TO RESIDENTIAL ENTRANCE
4.3m FROM FIRE DEPARTMENT CONNECTION TO RESIDENTIAL ENTRANCE
17.3m FROM EXISTING FIRE HYDRANT TO FIRE DEPARTMENT CONNECTION
GROUND FLOOR F.F.H. EL 105.20
RETAIL ENTRANCE
RESIDENT ENTRANCE
PRIVATE PATIO
OUTDOOR AMENITY
DASHED LINE DENOTES CISTERN LOCATED AT P-J
DASHED LINE DENOTES CANOPY @ GROUND LEVEL
CARSHARE PARKING SPOTS
PROPOSED FIRE HYDRANT
DENOTES RETAIL PARKING @ GROUND LEVEL.
EXISTING FIRE HYDRANT
BIKE RACKS 6 UNITS
WIND SCREEN (200mm HIGH) @ LEVEL 41 PERIMETER OF EXTERIOR AMENITY
DASHED LINE DENOTES CANOPY @ LEVEL 4.
COOKE BLVD
MASONRY COURT
LIMIT OF FOUNDATION WALL
MAX 3:1
UG PARKING BELOW
SECOND LOBBY ENTRANCE @ LEVEL 2
33.7m FROM EXISTING FIRE HYDRANT TO FIRE DEPARTMENT CONNECTION REFER TO CIVIL DRAWING FOR EXISTING FIRE HYDRANT LOCATION
LEGEND
REGULATION PARKING
BARRIER FREE PARKING
HORIZONTAL BICYCLE PARKING
VERTICAL BICYCLE PARKING
TYPICAL CONVEX MIRROR
EV ELECTRICAL CHARGING STATION
01 ISSUED FOR OPA/ZBA 07 OCTOBER 2021
No. Revisions Date
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CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS ON THE JOB.
COREARCHITECTS
1120 COOKE BLVD
PHASE 2
BURLINGTON ONTARIO
Drawn: CW
Scale: 1:200
Checked: DL
Date: 11 JUN 2021
Title: SITE PLAN
Project No.: 20-129
Drawing No.: A104