

Solid Waste Plan 3085 Hurontario Street Mississauga, ON



PRESENTED TO

Equity Three Holdings Inc.

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LIMITATIONS OF REPORT

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1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Equity Three Holdings Inc. (Equity) to prepare a Solid Waste Plan (Plan) to support the development of 3085 Hurontario Street, Mississauga, ON. Equity intends to submit applications to amend the City of Mississauga's (the City) Official Plan (OPA) and Zoning By-Law (ZBA) to permit a high-density, mixed-use development located at the above-noted address.

Equity and its agents have met with City of Mississauga and Region of Peel (Peel) staff and have received initial input from both jurisdictions on the development plans. This input included comments from the Region of Peel Solid Waste Management Division which was based on Peel's Waste Collection Design Standards Manual (2020). The comments were based on the following elements of the Manual:

- On-site waste collection from the retail units will be undertaken by a private waste hauler.
- For residential units, the Region will provide front-end collection of recyclables and garbage subject to the following conditions:
 - Identified vehicle access and egress routes.
 - Minimum turning radius of 13 metres (m) from the centre line of turns in the internal laneways.
 - Minimum internal roadway width of 6 m.
 - Minimum straight head-on approach to the collection point of 18 m.
 - Minimum clear height of 7.5 m from the concrete pad comprising the floor of the collection point which must be clear of sprinkler systems and ducts and should be large enough to accommodate the set out of the required number of bins without jockeying being required for collection.
 - An area of 10 m² for both the storage and set out of bulky items.
 - Enough space for the storage of both Blue Box (BB) recyclables and garbage bins.
 - The number, size, and allocation of receptacles for BB recyclables and garbage.

This input from Peel staff will require the preparation of a Solid Waste Plan, for submission to the Region of Peel and the City of Mississauga, that will provide a clear outline of how BB recyclables and garbage will be stored, transferred and collected from the proposed community. The Plan, outlined herein, presents the calculated waste material quantity and characteristics that are anticipated to be generated from the development and presents a preliminary plan for the storage and collection of the generated waste materials in compliance with the Region's Waste Collection Design Standards.

1.1 Summary Description of Proposed Development

The development is comprised of a complex consisting of three building components. Building 1 consists of a 6-story podium with one 24-level residential tower and a mechanical penthouse. Building 2 will be comprised of a 10-story podium with two 25-story towers and mechanical penthouses and Building 3 will consist of a 10-story podium. Building 1 will also contain 1,079 m² of commercial space on the ground level, facing Hurontario Street.

We understand that the commercial space along Hurontario Street would be provided solid waste collection services via a private contract and not by the Region. The residential suites in the balance of the development will be provided collection services directly by the Region.

1.2 Objectives of the Solid Waste Plan

The objectives of the Plan are as follows:

- To calculate the volume of BB recyclables, organics and garbage that will be collected from residences in the complex once developed.
- To determine the number of bins required to provide for the storage and collection of wastes from each of the 3 building complexes.
- To develop a plan, with accompanying drawings in CAD format, for the receipt, transfer, set out and collection of wastes that provides for the efficient and effective storage, transfer and transport of these materials on each collection day. The drawings, in Appendix A to this report, illustrate the storage, set out, and collection of BB recyclables and garbage at the ground floor facility located in the from the stacked townhomes and the three towers and the travel route for the collection vehicles including direction and turning radii which comply with the Region's Waste Collection Design Standards Manual (WCDSM) requirements.

Material generation and composition data for comparable residential developments were obtained from the documents titled "Roadmap to a Circular Economy in the Region of Peel, Region of Peel Waste Management Division", and Continuous Improvement Fund (CIF) Project No.872: "Multi-Residential Audits & Superintendent Training, City of Toronto, 2016". These data were used to calculate anticipated volumetric requirements for the storage of generated materials, as well as the requirements for set out prior to collection.

2.0 MATERIAL QUANTITIES, COMPOSITION, AND VOLUME

As a first step in the design of the Plan for the proposed complex, the quantity of waste materials generated from the residential suites was calculated for BB recyclables and mixed waste. The Region does not require the collection of source separated organics (SSO) from multi-residential developments. Our volumetric calculations, therefore, have been completed for just the BB recyclables and mixed waste (garbage) streams. The garbage stream can be compacted in the first level of the parking garage "garbage room" in each of the towers. This will significantly reduce the volume of these materials and, therefore, the number of bins needed for storage, transfer and collection.

2.1 Material Quantities and Composition

The proposed development will create a high-density, mixed-use community comprised of a mix of condominium, apartment residences and townhomes with some space for commercial uses. The quantity of waste generated by each household in a high-density multi-residential community was identified by the Region to average 620 kg per year¹.

The composition of waste materials was determined based on the results of audits, undertaken in 2015, at multi-residential developments in the City of Toronto². For the purposes of this Plan, the breakdown of the composition of waste materials was determined to be: 30% for BB recyclables; and, 70% for the mixed waste or garbage stream. The quantity of BB recyclables, therefore, would equal 186 kg per household and the quantity of mixed waste would equal 434 kg per household.

² City of Toronto, CIF Project No. 872: Multi-Residential Audits & Superintendent Training, January 2016, Figure 2, Total Waste Stream Composition (kg/hh/year) pg. 5.volume



¹ Region of Peel, Waste Management Division, Roadmap to a Circular Economy in the Region of Peel, 2018-2041.

According to subsection 3.5 (c) of Peel's By-Law to regulate the collection of waste (By-Law 35-2015) the Region collects mixed waste twice per week from multi-residential complexes on the scheduled collection days and according to subsection 3.6 (a) BB recyclables are collected on a weekly basis. The amount of each material type that would be generated on a weekly basis from each apartment suite (household, or hh) in the development was determined by multiplying the annual total (in kg) by the projected % composition and dividing that by 52 weeks.

The calculations are as follows:

- BB recyclables, (620 x 0.30/52) = 3.6 kg/hh/ weekly collection.
- Mixed waste, (620 x 0.70/52) = 8.3 kg/hh/ week or 4.2 kg / hh per collection.

The quantity of recyclables and mixed waste generated per collection day from the residential suites in each of the buildings is as follows:

Building 1

BB recyclables: (3.6 kg/hh/week x 317 hh) = 1,142 kg/weekly collection.

Mixed waste: (4.2 kg/hh/collection x 317 hh) = 1,331 kg/collection.

Building 2

BB recyclables:(3.6 kg/hh/week x 625 hh) = 2,250 kg/weekly collection.

Mixed waste: (4.2 kg/hh/collection x 625 hh) = 2,625 kg/collection.

Building 3

BB recyclables: (3.6 kg/hh/week x 143 hh) = 519 kg/weekly collection.

Mixed waste: (4.2 kg/hh/collection x 143 hh) = 601 kg/collection.

The development proposes to establish 1,079 m² of commercial space provided in Building 1. The amount of waste generated from these commercial spaces has been calculated based on a referenced number = 0.05 kg/m² of space = 54 kg per day from Building 1. Assuming a 6-day work week, the total weekly waste generation would be 324 kg. Assuming that these materials would be comprised of 60% recyclables (mainly fibres), 10% source separated organics or SSO (lunches, etc.) and 30% garbage, the quantities of commercial waste from Building 1 are as follows:

BB recyclables: 324 x 0.6 = 194 kg per week

SSO: 324 x 0.1 = 32 kg per week

Garbage: 324 x 0.3 = 97 kg per week

These calculations have been included in the volumetric analyses provided in the following section of this plan.

2.2 Material Volume Calculations

The volume requirements for storage/collection containers for BB recyclables and mixed waste were calculated by dividing the weekly amount for recyclables by a density factor for these materials of 70 kg/m³ and the twice weekly amount for mixed waste by the compacted density factor, then multiplying by 1,000 to generate a required volume in litres (L). In Buildings 1 and 2 we have assumed that the mixed waste stream would be compacted to reduce the volume of materials and, therefore, the number of bins required to accommodate the storage and collection of this



stream. Compacted mixed waste typically averages 1000 kg/m³. For Building 3, we have assumed that compaction of the mixed waste stream would not be required because of the smaller residential unit count in this part of the complex.

The calculations are as follows:

Building 1

BB recyclables: (1,142/70) x 1,000 = 16,314 L/weekly collection.

Compacted mixed waste: (1,331/1000) x 1000 = 1,331 L/ twice weekly collection.

Waste generated by commercial spaces:

BB recyclables – (19470) x 1000 = 2,771 L/week.

SSO (lunches, etc.) – (32/500) x 1000 = 64 L/week.

Mixed waste (uncompacted) – (97/130) x 1000 = 746 L/week.

Building 2

BB recyclables: (2,250/70) x 1,000 = 32,153 L/weekly collection.

Compacted mixed waste: (2,625/1000) x 1000 = 2,625 L/collection.

Building 3

BB recyclables: (519/70) x 1000 = 7,414 L/weekly collection.

Uncompacted mixed waste: (601/130) x 1000 = 4,623 L/collection.

Since recyclables and garbage collection will be provided by way of front-end loaders, bins are the container of choice for the development. The size of front-end loaded containers is typically expressed as "cubic yards" or "yd³". Please note that we have included the storage requirements for the waste generated from the commercial areas. The Region expects that these materials would be collected by way of a private contract. The storage capacity required to accommodate the BB recyclables and mixed waste generated from the suites in each building has been calculated by dividing the volume in L by 765 to convert the value to cubic yards (yd³). The volume of materials generated from the commercial areas was divided by a volume for a particular storage cart. These values would be used as the basis for the terms of a future contract with a private service provider to manage the materials from the commercial areas.

Building 1

- BB recyclables: 16,314/765 = 21 yd³ per weekly collection which will require four 6-yd³ bins.
- Compacted mixed waste: 1,331/765 = 2 yd³ per twice weekly collection which will require one 3-yd³ bin.
- Waste generated by commercial areas:
 - BB recyclables 2,771/765 = 6 yd³ which will require two 3-yd³ bins or 8 large (360 L) carts.
 - Source separated organics (SSO) 64 L which would require 1 small (100 L) green cart.
 - Mixed waste (uncompacted) 746 L which would require 2 large (360 L) carts.



Building 2

- BB recyclables: 32,153/765 = 42 yd³ per weekly collection which will require seven 6- yd³ bins.
- Compacted mixed waste: 2,625/765 = 3.4 yd³ per twice weekly collection which will require one 4-yd³ bin,

Building 3

- BB recyclables: 7,414/765 = 10 yd³ per weekly collection which will require three 4-yd³ bins.
- Uncompacted mixed waste: 4,623/765 = 6 yd³ which will require one 6-yd³ bin.

3.0 MATERIAL HANDLING DESIGN CONSIDERATIONS

The waste material handling for the proposed development was evaluated based on the material volume calculations outlined in Section 2.2 of this report as well as the associated requirements set forth in the Region's WCDSM.

3.1 Applicable Waste Collection Standards

The design standards applicable to the subject development have been outlined in the Region's input to the initial meeting with the Equity and as summarized in Section 1 of this report. In addition, **Section 4** of the WCDSM, which applies to multi-residential complexes, states that:

- Solid waste from the apartments will be collected in dedicated room(s) and transferred to a designated garbage staging loading and pickup area.
- BB recyclables will not be compacted after received via the materials chutes.
- Separate chutes will be provided for BB recyclables and garbage unless a single chute can be equipped with an automated mechanical separation system to direct materials into respective front-end bins. These materials will be received in front-end bins in the dedicated "garbage" room located on Level 1 in each tower of the development.
- A concealed collection area will be provided on the development property which will be designed and constructed in compliance with the following requirements:
 - A minimum width of 3 m for each front-end bin is required and a minimum depth of 3 m is required for 4 and 6 cubic yard bins.
 - A minimum of 10 m² is required for the set out of bulky items.

3.2 Material Staging and Collection

3.2.1 Staging

Each of the apartment suites will dispose of their BB recyclables and garbage via a chute-based system. As the materials are received in a garbage room, located on Level 1, they will be directed to either the recycling or garbage front-end bins. In Buildings 2 and 3, mixed waste will be fed into a single cylinder compactor prior to being directed to the bin. The bins will be moved to the storage/staging area in the garbage room as required between collection days. On each collection day, the bins will be transported, by building management staff, from the staging area to the collection area (refer to Appendix A "Recyclables and Garbage Collection Plan").



The waste materials from the residences will be placed at the designated waste collection concrete pads as identified on the Waste Collection Plan (Appendix A) before 7:30 a.m. on the designated waste collection day. Waste materials will be set out in the collection area where front-end bins will have to be jockeyed for collection. The set-out area identified on the attached Collection Plan provides enough space for the bins as well as room for jockeying the bins into position for collection. There is also enough space to accommodate the 10 m² area needed to set out bulky items as required by the Region for collection on a Thursday as required.

For the wastes generated from the commercial areas, it has been assumed that the material would be collected by a third-party maintenance provider and transferred by this third-party to one of the storage rooms in parking Level 1. Following are the number of bins that would be required to manage these materials:

3.2.2 Collection

The routing of the collection vehicle has been depicted on the Collection Plan in Appendix A. On each collection day, the vehicle would access the complex from an entrance on the north side of property. A similar pattern would be followed for the collection of bulky items.

4.0 CONCLUSIONS

The subject Solid Waste Plan supports the conclusion that the development at 3420 and 3440 Hurontario Street, as proposed, will provide enough space for the storage, staging and collection of BB recyclables and garbage from the residential suites. This Plan has not dealt with the solid waste that will be generated by the occupants of the commercial space since the eventual tenants will be serviced via direct contracts with private waste management collection providers.

The Plan has not accommodated for the management of source separated organics (SSO) from the residential suites since the Region does not require this for multi-unit residential developments. The developer may consider designing a three-stream, chute-based waste system for the two towers which would provide for the management of SSO in addition to recyclables and garbage. This system should be accommodated by the current space provided in the garbage rooms and collection areas for each tower. This would have to be confirmed by way of analysis of the volumetric requirements of the organics stream. Please note that with the introduction of an organics stream, the quantity of garbage and the associated demand on storage capacity would decrease.

The province is considering a future ban on the landfilling of organics which will place greater emphasis on separating organics from the mixed waste stream.

5.0 CLOSURE

We trust this Solid Waste Plan meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted, Tetra Tech Canada Inc.

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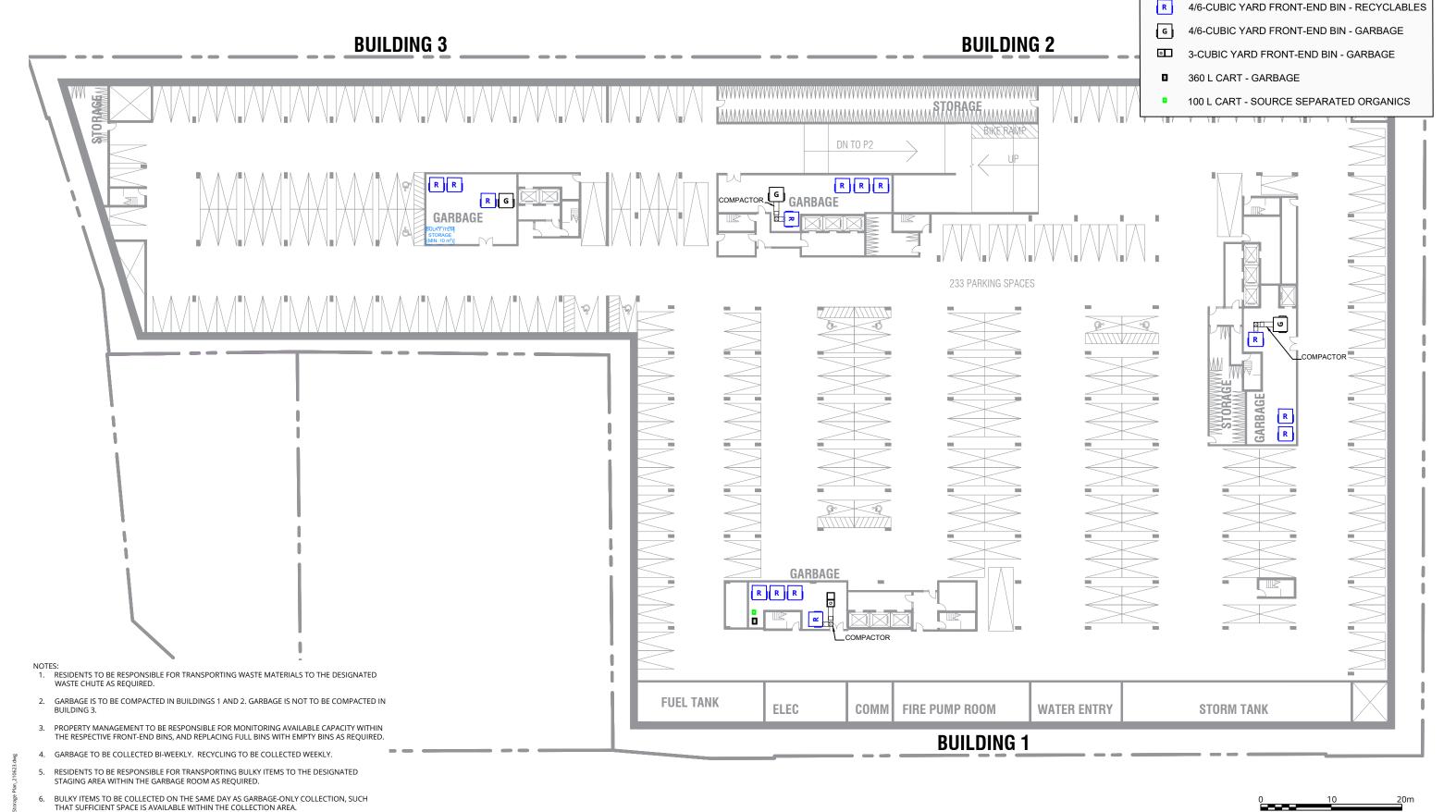
Direct Line: 519.803.1783 David.Walmsley@tetratech.com

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APPENDIX A

RECYCLABLES AND GARBAGE STORAGE & COLLECTION PLANS





Recyclables and Garbage Storage Plan

Solid Waste Management Plan, 3085 Hurontario Street, Mississauga, Ontario

1. Base map provided by Diamond Schmitt Architects, 2021.

True North

LEGEND:

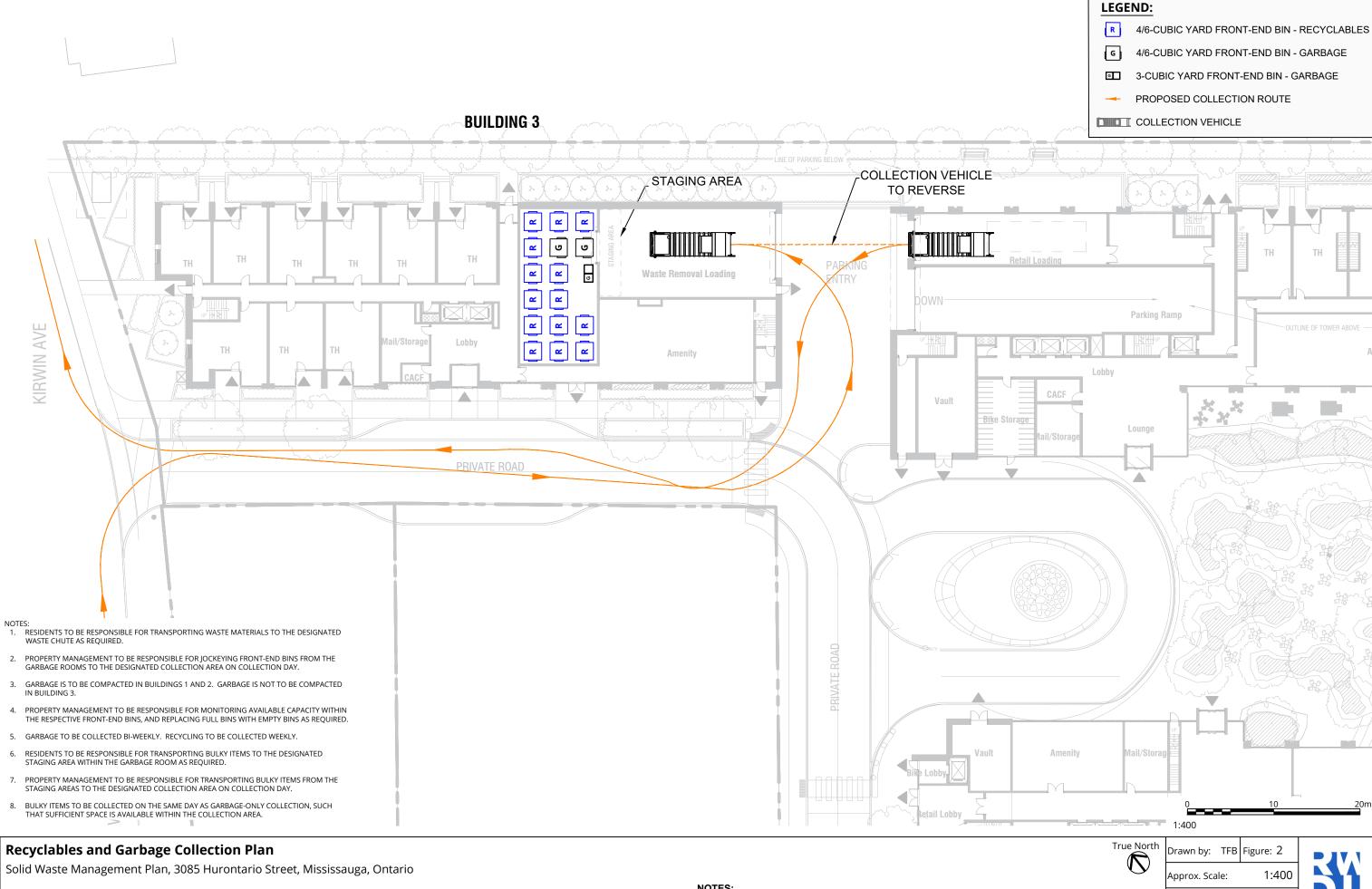
Drawn by: TFB Figure: 1

1:500

Project #2102180 Date Revised: June 23, 202

1:500 Approx. Scale:





1. Base map provided by Diamond Schmitt Architects, 2021.

Project #2102180 Date Revised: June 25, 202

APPENDIX B

EXAMPLE OF A CHUTE-FED GARBAGE COMPACTOR





CHUTE FED COMPACTORS

MODEL CA-.5 WITH SINGLE CYLINDER

This compactor is designed to pack into a 2 or 3 yard front load or rear load container where overall space utilization is critical.

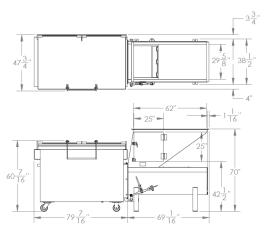
These powerful units are the perfect solution for high-rise apartments, hotels, hospitals and office buildings or anywhere space is very limited.

FEATURES

- · UL/CUL listed control panel
- Single side latching for easy and quick container removal
- ANSI Z245.21 compliant
- Quiet operating vane pump
- Key operated controls
- Can be equipped with high-rise chute hoppers, ground feed hoppers and any other special installation solution requirement
- · Space saver design
- · Special modifications quoted upon request
- Rugged construction provides long life
- · Compactions ratios average 4 to 1, depending on material
- · Excellent compaction of dry and/or wet material
- Ideal for apartment buildings, hotels, retail shops or anywhere space is limited







SPECIFICATIONS

Dimensions WxDxH (inches): 40 x 72 x 42

Clear Top Opening (inches): 27 W x 20 D

Load Height (inches): 37.5

Power Supply: 208-230/460 VAC 60 Hz Three Phase

Motor (HP): 3

Ram Force (lbs): 13,800-17,500

Ram Penetration (inches): 5.5

Ram Face Dimensions (inches): 29.75 W x 18 H

Operating Pressure (psi): 1,100-1,400

Weight (lbs): 1,840 with hopper

Cycle Time Average (seconds): 38

Due to continual product improvement Compactors Inc. reserves the right to change specifications without notice.

The information and pictures used in the document are for illustrative purposes only.



APPENDIX C

LIMITATIONS ON THE USE OF THIS DOCUMENT



LIMITATIONS ON USE OF THIS DOCUMENT

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