

SPECIFICATIONS:

R.D.I. Multi-unit Residential Automated Recycling System

Reaction Distributing Inc. (RDI) - Automated Waste Disposal and Recycling System

Every R.D.I multi-unit residential waste handling and recycling system is a turnkey system that is site specific and is fully integrated into the building envelope to ensure many years of trouble free service. Optimization of the equipment is achieved through the collection of critical site dimensions and the creation of an all encompassing set of 3-D based shop drawings.

Tri-Sorter Waste and Recycling System

The system is designed to address all components of the typical multi-unit residential waste stream including recyclables, trash and organics. It enables building residents to dispose of their waste items quickly and efficiently down a single trash chute system.

Although the equipment is available in three basic configurations our experience has shown that these designs themselves often have to be revised to accommodate existing site conditions.

1. In-Line Unit (T-20X-HAS-IU)
2. Corner Unit (T-20X-HAS-CU)
3. End-feed Unit (T-20X-HAS-EFL and T-20X-HAS-EFR)

The In-line unit is designed with the containers arranged parallel to each other and typically requires less space in the trash room. The corner unit is designed with the containers in a compact, perpendicular arrangement. The end-feed unit (both left hand and right hand versions) is best suited to trash rooms where chutes exit through the upper slab in a corner. All three designs permit the use of either front load containers or 95 gallon totes; but the final determination of container type is often determined by local by-laws and/or other government regulations.

Each floor of the building that has chute access is equipped with a tenant interface panel. This panel allows each tenant to choose the specific equipment orientation in the trash room that they need based on the product or products that they intend to dispose of. The HMI based touch screen is simple to operate and the equipment in the trash room will automatically align itself into the correct configuration once the tenant has selected the stream that he/she requires. Once the equipment is correctly aligned (a process that takes approximately 5 to 6 seconds) the tenant is free to place the articles in the buildings chute system.

Every R.D.I tri-sorter system includes the following components.

- a) Tri-sorter head assembly (in-line, centre or end-feed) c/w control panel
- b) T-20X trash compactor c/w control panel
- c) Front-load or rear-load compaction containers (2 or 3 cubic yard capacity)
- d) Front-load, rear load or 95 gallon tote recycling and organics containers
- e) Tenant interface panels (1 per chute access door)
- f) Odor control system (ozone based, charcoal filter based or mister based)
- g) Container movers ("walkie" style bin dolly or ride-on tractor)

Benefits of the R.D.I. tri-sorter system

- a) From a building design perspective it minimizes the size of the tenant trash room located on each floor of the building.
- b) Ensures compliance with local, provincial or state laws.
- c) Provides a convenient way for tenants to dispose of their wastes while at the same time enabling them to participate in a "reduce and recycle" program with the least effort.
- d) Eliminates any need for costly floor by floor pick-up of tenant recyclables by the building owner.

WASTE/RECYCLING SYSTEM

The R.D.I. waste/recycling system is designed, manufactured and installed by R.D.I. technicians or R.D.I. third party trained technicians. It meets and/or exceeds current ANSI, OSHA and NFPA requirements and is CSA/UL approved for use anywhere in North America. The typical system includes a sorter head assembly, stationary compactor, compaction containers, non-compaction containers for recyclables and organics; as well as the tenant interface panels that are installed on each chute access door.

Part 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The general provisions of the contract, including General and Division 1, General Requirements, apply to the work specified in this section.

1.2 SYSTEM OPERATION

- A. A three stream sorter is typically installed at the bottom of a standard 24" diameter gravity chute system that delivers the waste stream directly to the sorter head assembly. The tenant chooses which configuration he/she needs the sorter to be in from the tenant interface panel and once the system has achieved that configuration (5 to 6 seconds) then the tenant simply places the waste material into the chute and the sorter ensures the material is deposited into the correct container/compactor.

1.3 DESCRIPTION OF WORK

- A. Work Included: Furnish and install a Waste Recycling System where shown on drawings.

1.4 SUBMITTALS

- A. Shop drawings: Before the waste recycling system is delivered to the job site, submit site specific shop drawings for review in accordance with these specifications, showing all details of the equipment components and the installation as well as any/all requirements for related work by other trades.
- B. Product data/specification sheets: Submit for review a copy of the manufacturer's product specifications for all major waste handling

system components including electrical requirements and any/all recommendations based on project conditions. Indicate/confirm model numbers, selected sizes and installation details specific to the project.

c. Shop Drawings:

- 1: Plan views, elevation views and 3-D perspectives that clearly indicate all component/equipment locations within the building envelope. Include all dimensions, and a description of any/all required associated construction activities.
- 2: Elevations/Sections: Indicate/confirm locations, dimensions, and required associated required construction activities.
- 3: Details:
 - a. Shop drawings specific to project conditions
 - b. Interface with adjacent construction
 - c. Dimensions and tolerances
 - d. Products required for installation of the waste recycling system, but not supplied by waste recycling system manufacturer.

D. Quality Assurance/Control

Submittals: 1: Contractor's

Certification that:

- a. Products of this section are manufactured by **Reaction Distributing Inc. (NO SUBSTITUTIONS)**
- b. Manufacturer's certification that the installer of manufacturer's product is fully trained and approved.

D. Close-out Submittals:

1. Operation and Maintenance Data:
 - a. Manufacturer's printed Operation and Safety Manual
 - b. Manufacturer's Building Recycling Education Package
2. Warranty Documents: Issued and executed by the manufacturer and installer of the system.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer: Minimum five (5) years-documented experience producing products specified in this section.
 - 2. Installer: Approved by the waste recycling system manufacturer, and having a minimum of five (5) year's experience.
- B. Pre-Installation Meetings:
 - 1. Convene at job-site a minimum of seven (7) calendar days prior to scheduled beginning of construction activities of this section to review requirements of this section.
 - 2. Require attendance by representatives of the following:
 - a. Waste recycling system manufacturer or designated representative.
 - b. Equipment installer representative.
 - c. Other entities directly affecting, or affected by, construction activities of this section.
- C. Workmanship shall be of highest quality, in accordance with the best standards practice for installation of this equipment including ANSI, OSHA, NFPA and local regulatory authorities. Execute all work in accordance with the reviewed drawings, equipment specifications, and manufacturer's printed directions.
- D. Requirements of Regulatory Agencies:
 - a. Comply with the requirements of NFPA, the Canadian Standards Association and all local Code inspection requirements of the Electrical Safety Authority.
 - b. Design equipment to comply with Provincial and local Municipal Health Department requirements.

1.6 RELATED WORK BY OTHERS SPECIFIED ELSEWHERE

- A. The following work is excluded from the scope of work in this section 11175 and is included in other divisions of the specifications for inclusion in the scope of work of others.

1. Electrical Standards: The following electrical circuits, with disconnects are required and are to be installed by others as shown on the plans.
 - a) Local load center, consisting of:
 - I. Dedicated 110VAC, 20 amp, 1-phase, 60Hz (standard wall duplex) for the tri-sorter head assembly Main Control Panel (MCP) located in the trash room.
 - II. 110VAC, 15 amp, 1-phase wall duplex for the odor control system located in the main trash room.
 - III. Dedicated 220VAC, 20 amp, 1-phase (wall duplex) for a single phase based stationary compactor Main Control Panel (MCP) located in the main trash room.
 - IV. Alternative 208/575VAC, 20 amp, 3-Phase, 4-wire, compactor circuit with neutral for a three phase based stationary compactor Main Control Panel (MCP) located in the main trash room. Note: final connection is by others.
 - V. Wiring conduit: EMT conduit, 1" diameter, for vertical installation, located in accordance with shop drawings for connecting the tenant interface panels to the tri-sorter MCP located in the main trash room as indicated on the shop drawings.
 - VI. Connection of the electrical services to the tri-sorter MCP and the compactor MCP to be completed by others.
 - VII. Provision of internet jack in the vicinity of the master control panel for remote access (building automation system) - optional
2. a) For any/all sites that are not equipped with R.D.I. chute systems or do not have standard recycling doors already installed it will be necessary for the G.C. to provide the following items. Standard 6" x 6" x 4" electrical junction boxes either flush-mounted or surface

mounted in each tenant floor trash room next to the chute access door. Boxes must have four (4) screw holes for mounting (one hole on the outside of each corner) and should be flush-mounted to finished wall. Location of installation of boxes to be provided and confirmed by R.D.I. For conduit requirements refer to section 1.6.1.V.

b) The use of non-R.D.I. chute doors. Subsection (a) may be eliminated if another chute supplier is providing this door as part of their scope of work, and all housing of electrical components will be incorporated into this chute door. All tenant interface cover plates supplied must accept the standard R.D.I. interface panels or they can be purchased directly from R.D.I.

3. Garbage chute and related equipment appropriate to the installation.
4. Slab openings for chute, conduit, mechanical risers, etc.

1.7 WARRANTY

- A. Manufacturer's warranty: Furnish waste recycling system manufacturer's standard one (1) year warranty from date of temporary certificate of occupancy or similar, locally mandated permission to use the project common areas for their intended use. Warranty shall apply to defects in product workmanship and materials.

Part 2 - PRODUCTS

2.1 MATERIALS

- A. Acceptable manufacturers: **Reaction Distributing Inc., 19 Brock Street, Ajax, Ontario, L1S 1S9**
Telephone: (905) 426-6442
Email: service@balers.ca
- B. Substitutions: **NOT PERMITTED.**

c. Components:

1. Tri-sorter head assembly: The main weldment shall be made from reinforced 12 gauge fully welded steel plate. It will include two double walled, reinforced 10 gauge diverter plates c/w 1.25" solid round bar axle fitted with two heavy duty pillow block bearings (one on each side). The purpose of the diverter plates is to deflect waste materials from the chute to the appropriate containers. The movement of each diverter plate will be controlled via a 24V based linear actuator with a rating of 1,000 lbs. and a travel speed of 1.5" per second. The actuators internal sensors determine when the diverter plate is in the correct position without the use of limit switches or proximity sensors. Each stream of the tri-sorter will be equipped with an inspection/cleaning port that will be covered by a bolt-on safety cover.
2. Sound deadening (anti-vibration): the sorter head assembly will be isolated from the slab using engineered anti-vibration mounts that are rated to carry the weight of the sorter itself plus any energy released by the waste stream when it impacts the diverter plates.
3. Main Control Panel (MCP): Will be 100% CSA/UL approved and will be mounted on a wall in the vicinity (recommended no further away than 5' to 10') of the tri-sorter head in the main trash room and approximately 55" above the finished floor. If the panel requires three phase power than it must be located within 10' and in line of site of the G.C. supplied disconnect. The MCP controls and monitors all mechanical and electronic functions of the tri-sorter up to and including the tenant interfaces located on the tenant floors.
4. Maintenance and service dashboard: The MCP is equipped with an HMI user interface. Although it is password protected authorized technicians will be able to access the maintenance function of the program to make changes to the internal settings and lockout certain doors (or all chute doors) should the equipment need to be serviced.
 - a. Tenant interface panels: These panels can be either part of the chute door or located in a separate electrical box (refer to item #1.6.2 on page #7) mounted next to the chute access door. These panels enable the user to select the type of material disposal, orient the sorter head to the correct configuration and lock out all other chute doors (if so equipped) until he/she has completed the loading of the trash into the chute system.

5. T-20X stationary compactor: Has been specifically designed to fit under a standard 24" diameter trash chute and its cross cylinder design enable it to be used in very restricted spaces. It is equipped with a PLC based Main Control Panel (MPC) and is fully automatic. The start and stop function is controlled via internal timers and it does not require photo eyes or sonic sensors; which typically can become blocked causing the unit to "run-on". The compactor shell is constructed from reinforced 10 gauge thick 44W steel side walls with 3" @ 4.1 channel support frame and a 1/4" thick reinforced 44W steel floor. The packing ram is constructed from 1/4" thick 44W steel and both the ram and the compactor shell are fully welded for strength. The unit is equipped with dual 2.5" diameter cylinders that deliver a normal compaction force of 19,625 pounds at system pressure of 2,000 psi. There are two power pack configurations available; 110V, 1 phase 1 hp and 208/460/575V, 2 hp, 3 phase. The container latching system does not use any ratchets or load binders but instead a very simple and effective lever system that can be activated manually from either side of the compactor shell.
6. Hydraulic power packs: There are two power pack options available and both include a high efficiency 3600 rpm motor. The 1 hp version is available in 115V, 1 phase only and the 2 hp model is available in 208/230/460/575V, 3 phase. The single phase model simply requires a standard 15 amp dedicated wall duplex while the 3 phase unit will need to be connected to a standard electrical disconnect.
7. Sound deadening (anti-vibration): the compactor shell will be isolated from the slab using engineered anti-vibration mounts that eliminate the transmission of noise to the slab. Non-engineered/non-rated isolation mounts are not permitted.
8. Main control panel (MCP): will be remote mounted on an adjacent wall in close proximity to the compactor shell. It is either CSA or ULC approved for use in Canada or it is UL approved for use in the United States. It will be equipped with the following controls.
 - a. On/off power switch
 - b. Power on light
 - c. Full light
 - d. Manual start/reset cycle switch
 - e. Automatic cycling via internal timers
 - f. Automatic shut off when container is full
 - g. CSA/ULC approved controls

9. Recycling Containers: Industry standard 95 gallon totes or RDI front load containers (model FEL-2 and FEL-3) with plastic lids, 6" diameter "poly" casters (2 x swivel with locks, 2 x rigid), 2" drain hole with threaded plastic plug and a standard tow hitch. Sides: 12 gauge 44W steel, floor 10 gauge 44W steel. Quantity is based on site conditions.
10. Organics Containers: Industry standard 95 gallon totes or RDI front load containers (model FEL-2) with plastic lids, 6" diameter "poly" casters (2 x swivel with locks, 2 x rigid), 2" drain hole with threaded plastic plug and a standard tow hitch. Quantity is based on site conditions.
11. Garbage compaction containers: RDI front load containers (model FEL-2 and FEL-3) with steel lids, 6" diameter "poly" casters (2 x swivel with locks, 2 x rigid), 2" drain hole with threaded plastic plug and a standard tow hitch. Sides: 12 gauge 44W steel, floor 10 gauge 44W steel. One only lid lock for each installation. Note: any of the FEL containers listed above can be upgraded to include 8" diameter "poly" casters with sealed bearings, and rated for 2,200 pounds. Quantity is based on site conditions.

12. Odour Control System: One only model 105A Ozone based system for the trash compactor/lower chute section (110V, 1 phase standard wall duplex) and one only HEPA and charcoal based filtration system (110V, 1 phase standard wall duplex).
13. Bin dolly: Dual-speed, dual directional walking speed device for garbage, recycling and organics container movement. Equipped with belly stop, E-stop, horn, voltage & battery indicator, and soft-take off features.

2.2 FABRICATION

- A. The waste recycling system shall be fully factory assembled, welded and tested. If/when required the system will be disassembled into its major sub-components for shipping purposed or due to existing site restrictions. Once on site the components will be reassembled (bolt together no welding required) after which the final SAP (Site Authorized Testing) will take place.

Part 3 EXECUTION

3.1 EXAMINATION

- A. Verification of all site conditions:
 1. The area in which the equipment will be located will be inspected and all room dimensions will be obtained. Any/all pipes and other encumbrances will also be noted and photos of the room will be taken so that the final set of as built shop drawings can be completed.
 2. The location of the electrical service(s) will be confirmed and located on the wall. The overall electrical requirements will also be confirmed so they can be included in the final shop drawings.
 3. The low voltage conduit will be inspected to confirm it is in the correct location within the chute shaft and that it is of the correct size.
 4. The route taken by the containers from the trash room to the staging area will be walked/inspected to ensure that there are no encumbrances.

- B. Installer's examination:
 - 1. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if conditions under which construction activities of this section are to be performed are unacceptable.
 - 2. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.
 - 3. General Contractor shall verify and record chute alignment with installer immediately following installation.

3.2 INSTALLATION

- A. Install waste recycling system components in accordance with shop drawings and manufacturer's printed installation instructions.

3.3 DEMONSTRATION, TESTING, AND INSTRUCTION

- A. Arrange demonstration of system operation, conducted by manufacturer's representative, to Owner's maintenance personnel.
- B. Provide maintenance manual. Instruct owner's maintenance personnel in proper use and maintenance of equipment.

*** END OF SECTION ***