

SECTION 11175

WASTE / RECYCLING SYSTEM

This section is based on a system produced by:

Tower Recycling Systems, Inc.
3043 Ridge Avenue
Egg Harbor Township, New Jersey 08234
Telephone: 1-800-535-6339

The three sort waste recycling system, manufactured by Tower Recycling Systems, Inc. is comprised of a waste recycling system chute with door control panels at interlocked chute doors, a TRC-2 (right and left side containers) or TRC-2S (side by side model), as appropriate to the installation, a waste compactor: Model Tower-Pak 2000, compacted waste containers, recycling containers, a Tower odor control system, a disinfecting and sanitation unit, and other components.

Part 1 **GENERAL**

1.1 RELATED DOCUMENTS

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

1.2 SYSTEM OPERATION

- A. The TRC2 is a three component sorter shall use a single waste recycling chute (hereinafter "chute") in a multi-story building to distribute materials pre-separated by tenants into three separate containers, as determined by the building management. For example, one container will be designated for garbage; a second for newspaper and a third for commingled recyclables. A tenant-activated, membrane keypad switch on a control panel incorporated above each chute intake door shall initiate appropriate container selection. As the correct container is accessed by the chute, the chute intake door is signaled available to the tenant who then disposes of the material. Remaining chute intake doors on other floors shall be disabled during the foregoing operation.

1.3 DESCRIPTION OF WORK

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

1.4 SUBMITTALS

- A. Catalog Cuts: Before the waste recycling system is delivered to the job site, submit catalog cuts to the Architect in accordance with these specifications, showing all details of installation and assembly and all requirements for work by other trades.
- B. Product Data: Manufacturer's product specifications, standard details and recommendations for project conditions; indicate selected sizes and installation details specific to the project.
- C. Shop Drawings:
 - 1. Plans: Scale 1/4 inch to 1 foot; indicate locations, dimensions, and required associated construction activities.
 - 2. Elevations/Sections: Scale 1/4 inch to 1 foot; indicate locations, dimensions, and required associated required construction activities.
 - 3. Details: Scale 1/4 inch to 1 foot; indicate:
 - 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 Tower Recycling Systems, Inc.
 - b. Manufacturer's certification that installer of manufacturer's product is approved.
- E. 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 jobsite 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. Installer of this section
 - c. Other entities directly affecting, or affected by, construction activities of this section.
 - d. Notify Architect four (4) calendar days in advance of scheduled meeting date.

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:
 - 1 each: 110V AC, 20 amp, I-Phase, 60Hz TRC circuits (including 1 local 110V AC circuits and outlets for service and the odor control system). Local disconnect box to be NEMA 13.
 - 1 each: 208V AC, 30 amp, -3-Phase, 60Hz Compactor circuit with neutral
 - 1 each: Telephone jack
 - 1 each: Cold water or earth ground.
 2. Telephone wiring conduit: EMT or IMT, 3/4" diameter, located in accordance with shop drawings for connecting master control panel to building maintenance and/or service provider. R-22 jack required.
 3. Flashing at the roof
 4. Water supply and valves to flushing and fire sprinkler heads
 5. Switch assembly, conduit and/or wiring to solenoid valve for the disinfecting and sanitation unit located behind a plumbing access door directly above the highest intake door.
 6. Installation of the plumbing access door provided under this section is to be by the forces erecting the shaft enclosure walls.

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.

1.8 MAINTENANCE

- A. Maintenance service: Waste-recycling system includes maintenance during the one (1) year, warranty period.

Part 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable manufacturers:
 - Tower Recycling Systems, Inc.
 - 3043 Ridge Avenue
 - Egg Harbor Township, New Jersey 08234
- B. Substitutions: Not permitted.

2.2 COMPONENTS

- A. Components – **Chutes**
 1. The chute shall be 24" diameter, of U.S. #16 gauge aluminized steel as manufactured by: Tower - Century Chutes.
 2. Intake Door: TRC Model RD-2000: Stainless steel door and trim, 15 inches wide x 18 inches, bottom hinged, hand-operated, self-closing, positive latching doors bearing 1 1/2 hour, Underwriters Laboratories "B" Label designation and rated for a 250° F maximum door temperature rise over 30 minutes. The intake door is integrated with a door control panel which includes the waste recycling system low voltage electronics and interlocks. Membrane keypad maximum high forward reach limit 45" A.D.A. 4.2.4.
 3. Discharge: U.S. #16 gauge aluminized steel type "A" open end chute discharge rolling steel door with 165°F. fusible link hold open on an inclined steel track at the bottom of the chute just above the appropriate TRC model to close automatically when the ambient temperature reaches 165°F. as required by city or state building and/or fire codes.
 4. Vent: Chute shall extend full diameter through roof to metal top vent cap 4'-0" above roof level with counter flashing and insect screen. Roof curb (44" x 44" x minimum of 8" high) is required for the flat roof conditions and is provided by others. Specify stainless steel for aggressive environments.
 5. Accessories: 3/4 inch IPS flushing spray head and 1/2 inch sprinkler head above highest intake. Additional 1/2 inch sprinkler heads at every second intake (counting from the top) or as required by local code.
 6. Provide Disinfecting & Sanitizing unit for installation in line to the flushing spray head. Connection to flushing spray head, back flow prevention valve and electric control switch by others.
 7. Provide 15 inches wide x 15 inches high right side hinged, hand operated, self closing, positive latching, UL 1 1/2-hour "B" labeled, stainless steel plumbing access door having stainless steel door trim for installation by forces erecting enclosing shaft wall. Door to have master keyed lock. Cylinder provided by others. Door for access to disinfecting & sanitizing unit above the highest intake door of the chute.
 8. Offsets (bends) in the chute, if required, shall be made the same diameter as the chute of # 16 US gauge aluminized steel and have an additional layer of # 13 US gauge aluminized steel reinforcing the impact area. Offsets are not to deviate more than 300 off the vertical axis of the chute.

9. Provide Daubert 934 sound coat (or equal) vibration dampening compound to the exterior of the chute only. Include Korfund sound isolator pads at each floor support frame.

B. Components – **Recycling System**

1. TRC Construction: The TRC shall be of 3/16" welded steel plate construction. It shall utilize 1/4" steel diverter blade to deflect materials from the chute to appropriate containers with sensors to monitor position of diverters. High torque 110V AC motors driving ball screw actuated jacks shall drive the deflector mechanisms appropriately. The TRC shall be shock mounted to the floor and be decoupled from the chute to decrease noise transmission.
2. Low-voltage wiring conduit: EMT or flexible conduit, 1" diameter, for vertical installation and 1" or 1/2" conduit for horizontal connection installation, located in accordance with shop drawings for connecting master control panel, chute intake door control panel and devices, and other elements indicated on the shop drawings.
3. Master Control Panel: A Master Control shall be housed in a UL@ approved, NEMA 13 enclosure mounted on a wall in the vicinity or on the TRC in the trash/garbage room a minimum of 55" above the floor to the bottom of the panel. The Master Control Panel shall control and monitor all mechanical and electronic operating functions of the Recycling System. Inherent in the design of the control will be suitable repair and serviceability standards including use of plug-in connectors where possible. Supply power will be 110V AC with a 12V DC output to the individual control panels and either 12 or 24V DC output to the chute intake doors interlocks on each floor. The component of the system shall meet applicable UL@ specifications and/or standards.
4. Manual Emergency Lockout Switch: As part of the Master Control, manually actuated Lockout Switch shall be provided to permit over-riding lock of all chute doors as required for purposes of Systems shut-down for service and other needs.
5. Floor Control Membrane-Type Key Pads: Stations permit user selection of material types for disposal, shows "Red Light" when in use and "Green Light" for availability to all other floor control panel units, and perform the following additional functions:
 - a. Activate diverter baffles to deflect material into compactor or recycling containers as appropriate to materials selection made at a Floor Control Panel.
 - b. Respond to signal from compactor when garbage container is full, transmitting notification to maintenance personnel on location via monitoring service and transmit "needed container change".
 - c. Respond to signal from recycling container when the container is full, notifying maintenance personnel on location via monitoring service.
 - d. Responds to signal when recycling pails are full and automatically diverts recyclables to trash compactor.
 - e. Responds to signal from recycling containers when "Out of Place" and then diverts recyclables to compactor without shutting floor control panels or system down.
 - f. Self-diagnostic program detects system component failure, then transmits notification to maintenance personnel.

- g. Responds to signal from door left open more than 1 minute so as to not shut down system.
6. Recycling Containers: Four industry standard 96 gallon recycling containers with bar-lock lifters.

C. Components - **Compactor**

1. Stationary Container Compactor: Tower-Pak 2000 fully automatic, electric eye controlled, hydraulically operated, stationary, vertical type compactor with continuous feed.
 - a. Compactor 88" long by 48" wide by 74" high with 2 yard container
 - b. Container (2 cubic yards) sits under compactor with 48" high liquid retention level
 - c. Top opening throat 33" x 30"
 - d. Body tubing 2" x 6" 3/16" thick
 - e. Sides 10 gauge with 3/16" impact plate
 - f. Rotating Blade 30" x 20" 1/2" thick
 - g. Blade to float 1/8" between compactor sides to eliminate abrasive wear
 - h. Blade penetration 15"
 - i. Steel anchor deck
2. Hydraulic Power Packs integrated into compactor frame 20 gallons:
 - a. Flood level 60"
 - b. Components rated at 3000 psi recommended working pressure 1700 psi
 - c. Cylinder 4" bore 2" rod
 - d. Motor 5hp 3 ph
 - e. Pump 3.7gpm
 - f. Sight gauge
 - g. Pressure gauge
 - h. Temperature gauge
 - i. Hydraulic hoses 16" long
 - j. Oil low switch - shuts machine off automatically if oil is low
3. Electrical System: The electrical system shall include a programmable controller with monitoring lights, convertible 208/230/460V transformer, motor starter with overload protection and NEMA 12 weatherproof enclosure. All components are to be U.L. labeled.
 - a. Magnetic Door Safety Switch
 - b. Multiple Cycle Shut Down - automatically shuts down after running more than 30 minutes - Light comes on.
4. Control Panel: The control panel shall be mounted to the compactor frame:
 - a. Flood level 60"
 - b. Key activated on/off switch
 - c. Start button
 - d. Manual forward/reverse switch
 - e. Emergency stop/reset button

- f. 100% full light
 - g. Mid-point switch to remove dumpster, shut off chute
 - h. Container inter-lock switch
 - i. Photo sensor with delayed start up
5. Tower Odor Control system will be mounted to compactor frame.. System to be 110V programmable spray system to spray Tower air solution at intervals required to control odor. System to include one (1) year supply of air solution.

2.3 FABRICATION – RECYCLING SYSTEM

- A. The waste recycling system shall be fully factory assembled and all joints, except those required to separate the sections for shipment and installation shall be welded or lock-seamed tight. The floor intake doors shall be bolted in place on throats formed into the chute. All chute sections shall flash inside the sections below and there shall be no bolts, clips, or other projections inside the chute to snag the flow of material. Pre-positioned support frames shall assure proper intake levels and there shall be an expansion joint in the chute between all support joints. Discharge hoppers and offsets, where required, shall be reinforced and separately supported in the impact area.

Part 3 EXECUTION

3.1 EXAMINATION

- A. Verification of conditions:
- 1. Area in which system is to be located is correct size and location, and is prepared for installation of waste recycling system components.
 - 2. Electrical power source is in correct location, and is correct voltage, amperage capacity, and phase for recycling system electrical components.
 - 3. Low voltage conduit, is in correct location, and is correct size and capacity for waste recycling system low-voltage electrical components.
 - 4. Telephone wiring, with conduit, is in correct location, and is correct size and capacity for waste recycling system communication components.
- 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

- A. Arrange demonstration of system operation, conducted by manufacturer's representative, to Owner's maintenance personnel.

** END OF SECTION **