SECTION 11 82 28
BULK CRUSHER

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ANSI Z245.2 - American National Standard for Equipment Technology and Operations for Wastes and Recyclable Materials — Stationary Compactors - Safety Requirements for Installation, Maintenance, Operation, Modification and Repair; 2013.

1.02 SECTION INCLUDES

A. All General Requirements, materials and products for Bulk Crushers.

1.03 REFERENCE STANDARDS

A. ANSI Z245.2 - American National Standard for Stationary Compactors -- Safety Requirements for Installation, Maintenance, and Operation; most current edition.

1.04 SUBMITTALS

A. See Section 01 33 00 – Submittal Procedures, for submittal procedures.

B. Product Data: Provide manufacturer's specifications and descriptive literature, installation instructions, and maintenance information.

C. Shop Drawings: Indicate plans for each unit or groups of units, elevations with model number, overall dimensions; construction, and anchorage details.

D. All Crushers supplied must also be provided with the following SUBMISSIONS: Shop drawings; Demonstration class; and Instructions:

1. Shop drawing of control panel assembly and wiring diagram
2. Shop drawing of power pack assembly and hydraulic system
3. Comprehensive electrical wiring diagram, including internal panel and all field wiring from the source of supply to external equipment
4. Shop drawing of hydraulic system, showing the flow path for each phase of each complete cycle
5. Laminated instructions showing operation of the Crusher, bilingual, in both English and Spanish.
6. A minimum 1 hour demonstration class for employees, including complete instructions for proper operation and maintenance.
7. Periodic maintenance and lubrication chart
8. Complete set of all mechanical electrical and hydraulic drawings and schematics in accordance with JIC standards.
9. Troubleshooting guide containing a list of symptoms, probable cause, and remedy for each malfunction
10. Complete parts list, with manufacturer's item number, part number, manufacturer's description, and quantity required for each system.
11. Shop drawing of Container with the lift pocket dimension conforming to New York City Department of Sanitation and NYCHA standard dimensions, with the loading fork centered in the pocket dimensions.
12. All instructions and maintenance schedules shall be delivered to the Development Superintendent.

1.05 GENERAL

A. Bulk Crusher shall be installed as per the manufacturer's recommendations and specifications.

B. All equipment provided shall be standard models having been reviewed and rated by National Solid Waste Management Institute/WASTEC and proven to perform in a superior manner. Equipment must conform to the ANSI Z245.2 Compactor Safety Standard and to all other applicable ANSI and OSHA safety standards.

C. All electrical work performed under this Section shall be under the supervision of an individual who has a Master Electrician's License issued by the City of New York pursuant to title B of Chapter 30 of the Administrative Code. The contractor shall prepare, file and submit all electrical work with the Electrical Inspection Unit of the NYC Department of Buildings. The contractor shall obtain the necessary permits, approvals and certificates of compliance issued by the Agency and deliver such to the Authority prior to submitting any request for payment for such work. An inspection of all electrical work shall be properly filed by the Contractor with the DoB Electrical Inspection Unit and Certificates of Inspection shall be supplied to the Authority when the work is completed.

D. All material and labor required to install the electrical system as indicated on the Drawings and as specified herein, complete and ready for operation, shall be in complete accordance with and approved by the New York City DoB Electrical Inspection Unit.

E. All equipment and all wiring shall be installed in strict accordance with all laws and with the rules, regulations and requirements of the municipal and other public agencies having jurisdiction and with those of the National Board of Fire Underwriters. Any items or requirements herein, which conflict with such rules, regulations and requirements, shall be referred to the Authority for decision.

F. Any discrepancies between the specifications and Contract Drawings shall be discussed with the Authority before bidding.

G. The Contractor shall notify the Project Superintendent at least 72 hours prior to the intended commencement of work.

H. Drawings are generally diagrammatic and indicate the work to be installed. The Contractor shall harmonize the work of the several trades so that all work may be installed in the most direct and workmanlike manner and so that interference between piping; ducts, plumbing system, architectural, landscape and structural features will be avoided. In case of interference, the Landscape Architect will decide which work is to be relocated regardless of which was first installed.

I. Where Drawings and Specifications conflict with the Law or Codes, the Law shall be followed, but where Drawings and Specifications are over and above the requirements of the Law, the Drawings and Specifications shall be followed.

J. Unless otherwise specified, all equipment and materials furnished and installed under this Contract shall be new and of the latest model or design.

K. All equipment requiring insulation in order to obviate danger to life or property shall be thoroughly insulated by the Contractor at his expense. Wires, conductors and other movable equipment shall be placed in such locations and in such a manner as will prevent unauthorized persons from handling or tampering with them. Ladders, guards, etc. shall not be left unattended in the work area.

L. The Contractor shall carefully investigate the structural and finish conditions affecting all his work and arrange all his work accordingly to furnish such fittings, panel boards, etc. as may be required to meet such conditions.

M. All items shall include everything necessary for a complete and functioning installation.

N. Contractors are to sign the contractor's log upon arrival at the project, notify the project supervisors of the scope and location of work planned for the day, and before leaving, advise them of any condition which might adversely affect the tenants.

1.06 DELIVERABLES

A. The items listed below shall be supplied, packaged labeled and delivered by the contractor to Recycling Coordinator, NYCHA Technical Services Department, 23-02 49th Avenue, LIC, NY 11101 (718) 707-5729.
   1. One additional Directional Valve and Manufacturer’s literature for each unit supplied.
   2. One additional Filter and Manufacturer’s literature for each unit supplied.
   3. One extra logic card for each unit supplied.

4. Six (6) Synthetic fabric tarps to cover the rear opening of the container.

1.07 WARRANTY

A. A warranty for the Crusher, covering parts and labor, shall be provided for one year, from the date of acceptance.

PART 2 PRODUCTS

2.01 CRUSHER AND DUMPER CART

A. The Roll-Off container shall have a minimum capacity of 30 cubic yards, a maximum capacity of 40 cubic yards. Painting and overall size of container shall conform to all New York City Department of Sanitation (NYCDOS) specifications, latest revision January 11, 2005, and any New York City Housing Authority requirements listed in these specifications.

B. General
   1. All units shall meet or exceed ANSI Z245.2 safety standards
   2. All units must utilize readily available, nationally distributed components.

C. Charging Box Capacity
   1. Manufacturer's Rating 6.00 CY
   2. WASTEC Rating 3.1 to 4.42 CY
   3. Hopper Width 57 to 60 inches
   4. Hopper Length 93 to 97.5 inches
   5. Ram Height 26 to 34.5 inches
   6. Ram Penetration 15 to 20 inches

D. Ram (Presshead) Details
   1. Face plate: ¾" plate or ½" steel plate with ¾" thick stiffener plates or 1" A36 Structural plate, reinforced with 1" structural plate uprights.
   2. Base: ½" AR steel plate or 3/8" AR steel plate with 3" channels @24" Spacing or 1" A36 Structural Plate
   3. Top: 3/8" steel plate or ¼" steel plate with 3" Channels at 12" spacing or 3/8" A36 structural plate fully reinforced with 8.2lb. structural channels in checkerboard pattern.
   4. Sides: 3/8" steel plate or ¼" formed plate
   5. Guides: UHMW guides or replaceable steel guides

E. Packer Fabrication Details
   1. Floor Plate: 3/4" steel plate or ½" Thick AR steel plate with reinforcing channels.
   2. Side Plates: 3/8" thick with vertical and horizontal stiffeners or ½" thick AR steel plate with horizontal and vertical reinforcing channels.
   3. Breaker bar: 8" x 6" x 1" or 8 x 8 x 1 angle or 2" A36 structural plate with 5" square upright supports.
   4. Blade (gate) assembly: ¾" plate or ½" ply & 4" x 8" x ½" tube or 5" thick machined A36 structural plate.
   5. Blade (gate) cylinder: (2) 3" or 3.5 inch bore x 42 or 41.5 inch stroke or (2) 3.5" bore x 36" stroke with 2" rod diameter.

F. Electrical Details
   1. Motor HP 30
   2. Service factor 1.15
   3. Motor RPM 1800
   4. Voltage: 208 v, 3-Phase, 60HZ
   5. Pump GPM 20 to 63 GPM or tandem pump 20/45 GPM
   6. Control circuit 110V-fused

G. Hydraulic Details
   1. Cylinders (1) 7" or (2) 6"
   2. Alignment Straight or parallel fixtured
   3. Bore 6-7 inches

4. Rod 4 to 4.5 inches
5. Stroke 92-120 inches
6. PSI Reg 1,500 to 2,100
7. PSI Max 2,000 to 2,400
8. Ram force 77,000 to 84,800 lbs
9. Max Ram force 80,500 to 113,100 lbs
10. Ram force PSI 44.15 to 55.4
11. Ram Max PSI 48.36 to 73.9

H. Included Features
1. UL Listed panel-3 phase, 4 wire 225 amp, main lugs, copper busses,1-3P-60 amp circuit breakers, 6-1P-15 amp circuit breakers, 1-3P-110 amp circuit breakers
2. Remote control with lockable turn/key switch-Ram retracts and stops automatically with stop switch and safety retract.
3. Cylinder Mid-support
4. Full container indicator light included
5. Low oil high temp gauge light and shut off
6. Final pack-out pressure override
7. Oil sight gauge and thermometer
8. Full PLC Operation
9. Multi Cycle timer

I. Container Specifications
1. XHD Roll off containers 40 to 60 CY
2. Rated @ 90,000 #
3. 1 ¾ ratchet binders with 2 inch hooks standard.

J. Supplier of Crusher unit shall be one of the following three model numbers and manufacturers:
1. 645XHD-7-PC/NY Compactor/Crusher with H.D. Side Dumper as manufactured by Wastequip Accurate, 1031 Hickstown Road, Erial, NJ 08081. Local representative is Enviro-Equipment sales, (516) 354-1212, attn: Harvey Podolsky, extension 201.
2. Cram-A-Lot PC-05-NY, as manufactured by JV Manufacturing,
3. P.O. Box 229, 701 Butterfield Coach Road, Springdale, Arkansas 72765-0229. attn: Stephanie Martin or Chris Weiser, phone (800) 678-7320.
4. Model 9860-2PC-NYCHA, as manufactured by Seabright Products, Inc., 127 N. Water Street, Hopkins, MI 49328. Local Representative is Integrated Waste Solutions, West Chester, PA, phone (866) 229-0900 or (610) 738-9088.

K. Items included in the above named models shall include:
1. Weather cover on the deck-mounted power unit
2. A lockable box on the remote control pendent-with a hasp to accept a NYCHA-provided lock
3. Container shall be painted as per NYC DOS Specifications and must have the Development name stenciled on both upper, vertical sides of the Container in eight (8) inch letters. Development name and numbers shall be field painted with White Paint.
4. Low oil level indicator with auto shut off safety switch
5. Hydraulic Oil Heater: A thermostatically controlled hydraulic oil heater will be provided with the compactor as per manufacturer's instructions and specifications. Oil Viscosity: 22 viscosity oil, for cold weather climates, shall be used.

L. New York City Housing Authority Requirements
1. HYDRAULIC CONTAINER DUMPER: An integral hydraulically-operated, electrically-powered, dumping mechanism shall be provided to facilitate the mechanical loading of refuse into the charging hopper of the Crusher. A hopper extension (3-sided) shall be provided integral with the Crusher to prevent spillage of the refuse during the loading operation. The lifting arms and dumping mechanism shall be integral with the Crusher. A dumper cart shall be provided.

2. Remote Control Station: Provide a remote control station and adequate cable wiring and piping required to permit operator to energize bulk Crusher from within sight of loading point.
3. Control Panel: Components shall be housed in a NEMA 3R electrical enclosure measuring approximately 9" x 5" mounted together with a motor starter and control power transformer. The control panel shall perform all the necessary control functions of the bulk Crusher hydraulic cylinder according to factory programmed operation logic. The control panel shall be configured to include a UL-listed, FCC Class/A approved, solid-state microprocessor based programmable logic control card (PLC). The following functions shall be performed by the PLC controller: Limit and pressure settings; select ram forward or ram returned machine shut-off; selection of up to 9 multiple cycles; one (1) second time delay from ram forward to ram reverse; integral system error diagnostic lights; ¾ and Full advisory lights; automatic motor shutdown if motor idles for more than 15 minutes in manual mode; and shall require no machine calibration. Controls shall be capable of allowing bulk Crusher operation in the event that the logic control fails and has to be removed for repairs; the bulk Crusher will continue to be operational in MANUAL mode. NOTE: Contractor shall clearly label the location of the power source, with regard to building address, so the circuit can be identified and shut off before any service is performed.
4. A key operated switch shall be provided to prevent unauthorized use of the bulk Crusher. The key switch shall be designed so that the key can only be removed in the OFF position.
5. Dumper Cart: A dumper cart shall be included with the bulk Crusher unit, of the size as shown on the detail drawing and have a capacity of 2 cubic yards. It shall be fabricated with one side measuring 6 inches for easy loading of garbage. It shall not have any container lids. Metal component specifications are as follows; Cart side-10 gauge steel; Pocket-7gauge steel; Cart floor-7 gauge steel; Crossmember-C3 channel, 3.5#; Gusset-7 gauge steel.
6. Power unit shall be mounted on top of the Crusher unit and shall be provided with a steel “Weather Guard” to protect it from the weather.
7. Manufacturer shall comply with all requirements. Acceptance of Crusher is subject to inspection by NYC Department of Sanitation official and NYCHA Compliance Officer upon delivery to jobsite. Contractor shall provide 7-day advance notification regarding delivery date. If the supplied unit does not conform to all requirements, as determined solely by the NYCHA Compliance Officer, the Crusher shall be removed by the manufacturer and replaced with a conforming unit at no extra cost to NYCHA.
8. Container shall be painted as per NEW YORK CITY DEPARTMENT OF SANITATION SPECIFICATION FOR THE PURCHASE OF ROLL-ON ROLL-OFF SELF-COMPACTING CONTAINER, D.S. 224, REVISED JANUARY 11, 2005 and must have the Development name stenciled on both upper, vertical sides of the detachable container in eight (8) inch letters. Development name shall be painted with White Paint.

2.02 POWER UNIT

A. The power unit shall be a 30 horse power unit common with Crusher with a manually operated hand valve for dumper cart only. The Power Unit shall have a full load amperage rating of 95 amps, protected by a 110-amp switch and fused at 100 amps (FRN-100). The power unit shall also be equipped with a hydraulic fluid level safety switch, which is capable of disabling the power unit when the oil level drops below the level at which it is safe for operation of the equipment.

2.03 DISCONNECT SWITCH AND POWER OUTLET

A. A licensed Electrical Contractor shall provide a disconnect switch for the 208v, 3-phase power as well as the duplex outlet (115v, 3 prong, grounded female). Contractor shall position and install conduit for electrical connections before the concrete pavement is poured. The electrical “stub-up” shall be directly below the disconnect switch and 6” outboard of the bulk Crusher unit.

B. Three-phase electrical supply power (208v, 3 phase, 60Hz, 100 amps) shall be run to the unit via suitable electrical conduit and wiring to provide adequate power for the electro/hydraulic power unit. All wiring to be in accordance with all applicable codes. Electrical power shall be routed via fused disconnect (110 amp) switch terminated at the motor starter panel of the electro/hydraulic power unit.

C. Single-phase electrical supply power 115 volt, 60 Hz, 15 AMP terminating in a 3-prong, grounded female outlet suitable for outdoor use shall be provided to the unit.

2.04 FORMED STEEL PLATE WEAR STRIP

A. The formed steel plate wear strips and guides shall be of sizes and materials as shown on the Contract Drawings. The steel plate wear strips (7/16” formed steel plate) with 4" x 2" x 10”, 7.5 lb. channel (cleats to ensure purchase when concrete pad is poured) shall be embedded in the concrete pad. Welded angles and guides are not acceptable. All four wheels of the Bulk Crusher shall rest firmly on the wear strips. Flat steel wear strips with cleats shall also be provided 8’ in front of the formed wear strips, and center guides shall be provided to assist with docking the container to the power unit.

2.05 ELECTRICAL CONNECTIONS

A. WIRE AND CABLES
   1. Furnish and install all wire and cable to conform to the latest requirements of the "Electrical Code of the City of New York", "Insulated Power Cable Engineer Association" and "Underwriters Laboratories". All wire and cable shall be copper and conform to the following:
      a. All branch circuits and feeders shall be THWN copper.
      b. The minimum wire size for all new branch circuits shall be as per the National Electric Codes.
      c. Underground wire shall be type THWN, approved for use in conduits, designed for a wet corrosive atmosphere, and sized as indicated on Contract Drawings or in the Specifications.
      d. Wherever new conductors or extensions to existing conductors are required (whether inside or outside the building), they shall be furnished and installed by the Contractor.
      e. Splices in conductors shall be soldered and taped, or approved solderless connectors shall be used.
      f. The work shall include the cleaning out of conduits and pull boxes, removal of all dirt, water, etc., making all splices or connections at which new conductors terminate.
      g. Where wire insulation types, as specified, are not available, the Contractor shall furnish other approved types, provided the NYC Electrical Code allowances for conduit fill are not exceeded. There shall be no additional cost to the Authority for this substitution.
      h. Unless otherwise specified, all wire shall be solid.

B. CONDUIT
   1. The Contractor shall furnish and install conduits as required. If sizes are not indicated or mentioned, conduits shall be sized to accommodate the required quantity and gauge wire for the specific application and as per New York City Electrical Code.

C. Underground Conduit
   1. All conduits installed underground shall be no less than 1 1/2" nominal size. Conduits shall be adequately sized to accept the required wire size and quantity. The work shall include all necessary excavation, foundations, drilling, back filling and restoration of disturbed areas to their original condition.
   2. Conduit shall be laid in a uniform manner, properly spaced and graded without traps so that all condensation will drain into the nearest box.
   3. All conduits for underground installation shall be installed in trenches not less than 24" below final grade.

4. During construction, proper support and protection shall be provided to prevent injury to conduit and all ends shall be closed to prevent water and foreign matter from entering the conduit system.
5. Conduit end shall extend above concrete foundation at least 2" but not more than 8" and be grouted.
6. All conduits for installation underground or in concrete shall be standard weight, butt-welded, rigid steel, heavy wall. The entire interior surfaces of conduit and fittings shall be epoxy coated. Conduit and fittings shall be hot- dipped galvanized with hot-dipped threads.
7. All conduits for installations underground or in concrete shall be 40 MIL (0.404) PVC coated rigid galvanized. The conduit shall be joined with screw couplings. The joints shall be made up so that ends butt together. Conduit shall be free from blisters, cracks, or injurious defects and shall be reamed at each end. All bends are to be free from kinks and be of such curvature as to permit the drawing in of cable without injury. Conduit shall have standard pipe taper threads, clean-cut, straight and true. The threads shall be protected during transit and installation and shall be of sufficient length to permit the proper coupling connection. Long running threads will not be permitted on any part of the work. When necessary, the Contractor shall use three piece (Erickson) coupling or approved equal. PVC coated conduit system is manufactured by Robroy Industries - Plastic Bond, Perma-Cote rigid steel conduit, and Ocal 2 rigid steel conduit by Occidental Coating Co. is considered acceptable. Conduit shall comply with Federal Specification WW-C581, latest revision.
8. Three-piece couplings, when used, shall be covered with four layers of lapped plastic electrical tape which shall extend over the coupling for a distance of one pipe diameter or 2", whichever is less, and each layer including the final one, shall be completely coated with an air dry vinyl chloride touch-up compound.

D. Conduit for Installation on Building Exterior (as required)
1. The Conduit and fittings shall be as specified in the paragraph for "PVC coated rigid galvanized conduit"
2. Conduit shall be installed on the surface of the masonry ceilings or walls and fastened thereto with one hole, steel straps, expansion shield anchors 10-24 round head machine screws or 3/16" toggle bolts or other means approved by the Authority.
3. Conduit shall be installed parallel or perpendicular to adjacent walls. Vertical runs shall be plumbed. All bends are to be of equal radius throughout and be free of kinks and flattening. Offsets and saddles shall not exceed 7". Conduit shall be bent to conform to the surface upon which it is fastened. Fastening supports shall not be used to spring conduit to contour of surfaces.
4. Ninety-degree bends around external corners are not to be used. They shall be made with the use of malleable iron threaded type conduit bodies, type LB or approved equal.

E. Conduit Installation within Building Structure
1. Conduit shall be installed on the surface of the masonry ceilings or walls and fastened thereto with one hole, steel straps, expansion shield anchors 10-24 round head machine screws or 3/16" toggle bolts or other means approved by the Authority.
2. Conduit shall be installed parallel or perpendicular to adjacent walls. Vertical runs shall be plumbed. All bends are to be of equal radius throughout and be free of kinks and flattening. Offsets and saddles shall not exceed 7". Conduit shall be bent to conform to the surface upon which it is fastened. Fastening supports shall not be used to spring conduit to contour of surfaces.
3. Offsets shall be used where conduit enters outlet, junction boxes, or distribution panels and shall be fastened thereto with malleable iron lock nuts and bushings.
4. Ninety-degree bends around external corners are not to be used. They shall be made with the use of malleable iron threaded type conduit bodies, type LB or approved equal.
5. Adjustable extension boxes or collars shall be used to extend existing flush mounted junction or outlet boxes.

6. All conduit and accessories installed inside buildings, unless otherwise noted, shall be galvanized heavy wall rigid steel or IMC in the tank rooms, pump rooms, boiler rooms, public spaces and corridors, and EMT in the remaining spaces.

F. FUSES AND GROUNDING
   1. All fuses and grounding shall be in accordance with the New York City DoB Electrical Inspection Unit.
   2. A decal shall be affixed to the power unit enclosure that states the location of fuses and the building from which power source is obtained.

2.06 MATERIALS

A. All materials supplied under this contract shall be new, of the latest model and design. In addition, all electrical components shall be UL listed and approved for use in New York City by the DoB Electrical Inspection Unit. The Contractor shall supply the Crusher unit as shown on the Drawings. Each Crusher Unit shall include the following:
   1. Crusher unit, including detachable Roll-Off Container
   2. Dumper Cart
   3. Side Dumper unit
   4. Power Unit, mounted on top of the Crusher, with Low Oil Level Safety Switch
   5. Formed Steel Plate Wear Strips (sets)
   6. Warranty
   7. Electrical Connections
   8. Six (6) tarps to cover rear opening

PART 3 EXECUTION

3.01 INSTALLATION

A. The Contractor shall furnish and install all components necessary for the Crusher to be fully operational.

B. Prior to the delivery of the Crusher, all walls, fences, curbs, gates, and locks called for in the area shall be installed and operational. This is to ensure the safety and security of the Crusher and its area.

C. The Contractor shall furnish and install all necessary wiring, conduit, etc. to ensure that the new Crusher unit is operational. The Contractor shall be responsible to assure that the installations are in compliance with the City of New York Building Department Codes.

D. The supplier shall be responsible for conducting a demonstration that will educate project staff of the proper use of the Crusher. The demonstration shall be a minimum of one hour in duration, and shall enable all development staff to practice the operation of the system. This demonstration shall be performed after the unit is installed and fully operational.

E. Contractor shall ascertain the location of all electrical cables, all conduits, all utility lines, oil tanks and supply lines, so that proper precaution may be taken not to disturb or damage any subsurface improvements. In the event any are uncovered, the Contractor shall promptly notify the Authority who shall arrange to relocate the equipment. Failure to follow this procedure places upon the Contractor the responsibility of making, at his own expense, all the requisite repairs to damaged utility lines resulting from work hereunder.

F. All plantings in the way of excavations shall be removed and replaced by development personnel. The Contractor shall notify the development superintendent one (1) week in advance of excavation work.

G. The Contractor shall provide all necessary labor and equipment to excavate trenches for underground conduits. Excavation below required depth shall be refilled with sand or gravel and firmly compacted. Electrical conduit shall be installed two (2) feet below grade.

H. Width of all trenches shall be sufficient to properly install the conduits. Trenches dug near trees shall be no closer to tree than six (6') feet away plus one (1') foot for every one (1") inch of tree caliper. Caliper measurement shall be made twelve (12") above grade.

I. Where conduits are laid under the locations of walkways, driveways, hard surface areas or street improvements, backfill shall be thoroughly compacted - tamping in layers not more than 4" in thickness.

J. Sidewalks, walls, and pavement shall be restored with material equal to that of the adjacent sidewalks, walls, or pavement. This work shall be restored as soon as practicable. Should the walkway to be restored be of cement, concrete composition, or other type, made up in flag or slab fashion, the Contractor shall be required to restore said flag or slab in whole.

K. Openings in foundation walls shall be grouted and/or filled with concrete to the full depth of the wall. All openings shall be made watertight by parging on the outside with mastic.

END OF SECTION 11 82 28