

GENERAL BIDDING GUIDELINES:

If bid specification is met than place a check in the column marked "YES". If it is necessary to bid alternate equipment or to take exceptions to the specifications as set forth, this must be checked as "NO".

The Basis of Award shall be dependent on the most responsible bid submitted. Consideration will be given to cash flow, purchase price, delivery dates, equipment service guarantees, parts and service availability, parts and service location, analyses and comparison of equipment specification details, and any other items of concern to the City of Laurel.

The purchaser reserves the right to reject any or all bids, to waive any informality in bids, or to accept in whole or part such a bid as may be in the best interest of the City of Laurel.

The purchaser also reserves the right to reject the vehicle at the time of final inspection if the vehicle does not meet any and/or all requirements of the final contract according to the personnel acting on behalf of the department at the time of final inspection. These requirements include, but are not limited to: performance, workmanship, service, quality and operation of the vehicle.

Please state the estimated delivery time after receipt of order in days: _____

CHASSIS SPECIFICATION

MARK YES OR NO IF
COMPLIANT OR NOT

<u>ITEM DESCRIPTION</u>	YES	NO
SINGLE RIGHT HAND DRIVE STEEL CAB	_____	_____
CUMMINS 350HP ISX12 1450 FT-LB TORQUE	_____	_____
2 POSITION C BRAKE BY JACOBS	_____	_____
AUDIBLE & VISUAL ALARM/LOP, HT, LWL	_____	_____
RACOR 412R10 FILTER W/H2O PROBE & 12V ELEC HEAT	_____	_____
PHILLIPS 120V 1500W BLOCK HEATER	_____	_____
HEATER RECEPTACLE LOCATED IN RH CAB STEPS	_____	_____
1300 SQ. IN. SOLID ALUMINUM RADIATOR (NO PLASTIC TANK ENDS)	_____	_____
2-SPEED ENGINE FAN	_____	_____
EXTENDED LIFT COOLANT	_____	_____
STEEL COOLANT SUGE TANK W/SIGHT GLASS	_____	_____
16" TWO STAGE AIR CLEANER	_____	_____
BLACK, HOOD TYPE ENGINE AIR INTAKE	_____	_____
HORZ DPF W/LH VERTICLE SCR	_____	_____
PF & SCR SHIELDS	_____	_____
VERTICLE SINGLE EXHAUST DIFFUSER STAINLESS STEEL	_____	_____
OVER-FENDER MTD., RH SIDE, 10-GAL CAPACITY UREA TANK	_____	_____
ALUM TURBO/EXHAUST PIPE DEBRIS SHIELD	_____	_____

CUMMINS WABCO 18.7 CFM AIR COMPRESSOR	_____	_____
DELCO REMY 12V 39MT STARTER MOTOR W/OCP	_____	_____
DELCO REMY 180 AMP, 28SI PAD MTD. ALTERNATOR	_____	_____
10 MINUTE ENGINE IDLE SHUTDOWN ENABLED	_____	_____
CRUISE CONTROL ENABLED	_____	_____
PTO REGEN INHIBIT THRESHOLD = 0 MPH	_____	_____
1200 RPM MAX IN PTO	_____	_____
PTO SET SWITCH = 1200 RPM	_____	_____
PTO RESUME SWITCH = 1000 RPM	_____	_____
PTO RAMP RATE INCREMENT = 500 RPM	_____	_____
ALLISON 4500 SERIES, 6-SPEED TRANSMISSION	_____	_____
ALLISON PUSHBUTTON CONTROLS	_____	_____
OIL TO WATER TYPE	_____	_____
TRANSMISSION OIL FILTER TUBE/DIPSTICK W/ LEVEL SENSOR	_____	_____
TRANSYND SYNTHETIC AUTO TRANSMISSION FLUID	_____	_____
SPICER 1810HD HALD ROUND DRIVESHAFT	_____	_____
PREP FOR CHELSEA 890/897 PTO CLEARANCE	_____	_____
MERITOR MFS-16 STEER AXLE, 16000# RATING	_____	_____
7500LB FLATLEAF 16,500 ROUND CAPACITY FRONT SUSPENSION	_____	_____
DOUBLE ACTING SINGLE – HEAVY DUTY FRONT SHOCK ABSORBERS	_____	_____
SCOTSEAL PLUS XL FRONT WHEEL SEALS	_____	_____
CR ZYTEL FRONT HUBCAPS	_____	_____
SYNTHETIC FRONT AXLE LUBRICANT	_____	_____
MERITOR 16.5 X 6 FRONT BRAKES	_____	_____
MERITOR AUTOMATIC FRONTAXLE SLACK ADJUSTERS	_____	_____
DUST SHIELD – FRONT BRAKES	_____	_____
INTEGRAL POWER STEERING W/ LEFT HAND RAM	_____	_____
STEEL FOUR QUART POWER STEERING RESERVOIR	_____	_____
MERITOR RT46-160 46,000LB REAR AXLE ASSEMBLY	_____	_____
5.63 REAR AXLE RATION	_____	_____
FFOUR WHEEL REAR AXEL LOCK	_____	_____
HENDRICKSON HMX-460 REAR SUSPENSION	_____	_____
4 SHOCK ABSORBERS ON REAR SUSPENSION	_____	_____
SCOTSEAL PLUS XL REAR AXLE SEALS	_____	_____
SYNTHETIC REAR AXLE LUBRICANT	_____	_____
MERITOR 16.5 X 7 Q PLUS REAR AXLE BRAKES	_____	_____
MERITOR AUTOMATIC REAR AXLE SLACK ADJUSTERS	_____	_____
DUST SHILD – REAR BRAKES	_____	_____
HENDRICKSON COMPOSILITE STEERABLE TAG, 13,500 LBS CAPACITY	_____	_____
SCOTSEAL PLUS XL TAGE AXLE SEALS	_____	_____
HENDRICKSON INTEGRAL TAG AXLE BRAKES	_____	_____
MERITOR AUTOMATIC TAG AXLE SLACK ADJUSTERS	_____	_____
BENDIXABS 4S/4M	_____	_____
SINGLE 3/8" VARIABLE STEEL FRAME RAIL	_____	_____
3,529,000 FRAME RBM RATING ON MAIN FRANE SECTION	_____	_____
7-PIECE STEEL W/ALUM BOC X-MEMBER	_____	_____
CHASIS WIRING TO BE SUPPORTED ON WIRING STUDS W/ STEEL P-CLAMPS	_____	_____
HUCKSPIN RR SUSP & CROSSMEMBER	_____	_____

STEEL PAINTED FRONT BUMPER	_____	_____
TWO REMOVABLE TOW PINS IN FRONT BUMPER	_____	_____
RO 170 COMPLAINT BODY INTERFACE WIRING	_____	_____
75 GAL 26" DIA UNPAINTED ALUMINUM LH MOUNTED FUEL TANK	_____	_____
FUEL TANK BRACKET TO EXTEND UNDER FUEL TANK WITH 3" WIDE STRAPS	_____	_____
STEEL BATTERY BOX AND LID	_____	_____
3 GROUP 31 ECL 12V 2250CCA BATTERIES	_____	_____
BATTERY SHUTOFF SWITCH W/LOCKOUT	_____	_____
BENDIX DV-2 AUTOMATIC WET TANK DRAIN WITH HEATER	_____	_____
CENTRAL MANIFOLD W/PERCOCKS	_____	_____
BENDIX ADIP AIR DRYER W/HEAT	_____	_____
SINGLE SELF-CLEANING CAB ENTRANCE STEP	_____	_____
STEEL CAB WITH REAR CORNER CURVED WINDOWS FOR VISIBILITY	_____	_____
RUGGED STEEL CAB DOORS	_____	_____
LH & RH DOOR CHECK STRAPS FOR WIND	_____	_____
DUAL INTERNAL REGULATOR POWER WINDOWS	_____	_____
SINGLE PANE REMOTE CONTROL MIRRORS W/HEAT	_____	_____
RETRACTABLE MIRROR ARMS	_____	_____
SINGLE DOWN VIEW MIRROR, LH SIDE	_____	_____
BRUSHED SS EXTERIOR GRAB HANDLE	_____	_____
TWIN AIR HORNS MOUNTED UNDER CAB	_____	_____
SINGLE ELECTRONIC HORN	_____	_____
HYDRAULIC TILT CAB WITH AIR ASSIST	_____	_____
BUG SCREEN MOUNTED BEHIND GRILLE	_____	_____
IMPACT RESISTANT FRONT POLYFENDERS	_____	_____
16" DIA. STEERING WHEEL, 2 SPOKE	_____	_____
TILT AND TELESCOPIC STEERING COLUMN	_____	_____
SEARS C2 AIR RIDE DRIVERS SEAT	_____	_____
SEARS C2 FIXED PASSENGER SEAT	_____	_____
MODURA SEAT COVERS, ASHPALT IN COLOR	_____	_____
ALUMINUM DIAMOND PLATE FLOOR ON DRIVERS SIDE	_____	_____
ASHTRAY MTD IN CONSOLE W/12V CIGAR LIGHTER	_____	_____
INTEGRAL HVAC WITH ROOF MOUNTED A/C CONDENSER	_____	_____
VOLTAGE & OIL PRESSURE INCLUDED IN VEHICLE DISPLAY	_____	_____
ELECTRONIC TACHOMETER	_____	_____
HOUR METER INCLUDED IN ON BOARD DISPLAY	_____	_____
GRAUADUATED, AIR CLEANER MOUNTED AIR INTAKE RESTRICTION INDICATOR	_____	_____
OEM MOUNTED ELECTRONIC PTO CONTROL SWITCH	_____	_____
ELECTRONIC FUEL LEVEL	_____	_____
LED HEAD LAMPS	_____	_____
LED FRONT TURN SIGNALS	_____	_____
SELF-CANCELING TURN SIGNALS	_____	_____
AMBER LED ROOF MARKERS	_____	_____
DAYTIME RUNNING LAMPS	_____	_____
AM/FM RADIO MOUNTED IN OVERHEAD COMPARTMENT	_____	_____
ANTENNA – ROOF MOUNTED	_____	_____
2 DUAL CONE SPEAKERS	_____	_____

RADIO SHUT-OFF IN REVERSE	_____	_____
DRY TYPE ABC 5LB CAP MTD. IN CAB UNDER SEAT	_____	_____
22.5 X 9" STEEL HP, 5.25" INSET, 5HH FRONT WHEELS	_____	_____
MICHELIN 315/80R22 XZY – 3 FRONT TIRES	_____	_____
22.5 X 8.25" STEEL HP, 5HH REAR WHEELS	_____	_____
MICHELIN 11R22.5H X DE M/S REAR TIRES	_____	_____
22.5 X 8.25" STEEL, HP, 6.18" INSET, 5HH TAG AXLE WHEELS	_____	_____
MICHELIN 11R22.5H XZY-3 TAG AXLE TIRES	_____	_____
STANDARD WHITE DPSS-N0007EX CAB PAINT	_____	_____
1 YEAR CHASSIS WARRANTY	_____	_____
5 YEAR EXTENDED ALLISON TRANSMISSION WARRANTY	_____	_____
5YRS/300K MILE EXTENDED CUMMINS WARRANTY PP2	_____	_____
5YR/300K MILE EXTENDED CUMMINS AFTERTREATMENT WARRANTY	_____	_____
DATALINK ADAPTOR TO HOOK TO CHASIS	_____	_____
CUMMINS SOFTWARE FOR READING CODES	_____	_____
BEMDIX SOFTWARE FOR READING CODES	_____	_____
OEM TECHNICAL CALL CENTER FOR CUNTOMER AVAILABLE 24/7	_____	_____
MADE IN THE USA	_____	_____

Automated Side Loader Refuse Compactor

INTENT:

These specifications describe a refuse collection body equipment with a mechanical device designed to handle a variety of plastic refuse containers (or specify sizes and types of containers to be handled). The body shall be capable of compacting and transporting refuse to a landfill or transfer station and unloading the load by means of hydraulically raising the tailgate and then ejecting the refuse without raising the body.

GENERAL TERMS:

All equipment furnished under this contact shall be new, unused and the same as the manufacture's current production model. Accessories not specifically mentioned herein, but necessary to furnish a complete unit ready for use, shall also be included. Unit shall conform to the best practice known to the body trade in design, quality of material and workmanship. Assemblies and component parts shall be standard and interchangeable throughout the entire quantity of the units as specified in this invitation to bid. The equipment furnished shall conform to current ANSI Safety Standard Z 245.1.

The bidder shall complete every space in the Bidders Proposal column with checjk mark to indicate if the item being bid is exactly as specified. If any check marks are placed in the "NO" column, a detailed and complete description of the deviation from specification must be supplied on a separate sheet labeled "Deviations from Specification".

A. BODY CAPACITY AND DIMENSIONS:

Exactly as Specified
YES NO Offered

- | | | | |
|---|-------|-------|-------|
| 1. The body shall be brake-formed radiused “Chiseled” rounded to permit maximum capacity. | _____ | _____ | _____ |
| 2. The maximum capacity of the body including tailgate shall be, excluding hopper area: [Specify: 20, 24, 27, or 31 cu.yd] | _____ | _____ | _____ |
| 3. The hopper shall be 4 cu yd. | _____ | _____ | _____ |
| 4. The inside hopper width at front shall be 70”. | _____ | _____ | _____ |
| 5. The inside body width rear shall be 90”. | _____ | _____ | _____ |
| 6. The outside body width shall be 96” (across rear post). | _____ | _____ | _____ |
| 7. The outside body width shall be 98” (fenders) | _____ | _____ | _____ |
| 8. The outside body width shall be 101” (hose guards). | _____ | _____ | _____ |
| 9. The outside body height above chassis frame shall be 98”. | _____ | _____ | _____ |
| 10. The inside body height shall be 89.81”. | _____ | _____ | _____ |
| 11. The overall body length including hopper shall be: | | | |
| 20 cu yd Capacity Body – 210” | _____ | _____ | _____ |
| 24 cu yd Capacity Body – 234” | _____ | _____ | _____ |
| 27 cu yd Capacity Body – 258” | _____ | _____ | _____ |
| 31 cu yd Capacity Body – 282” | _____ | _____ | _____ |
| 12. The overall body length including hopper and lift arm shall be: | | | |
| 20 cu yd Capacity Body – 230” | _____ | _____ | _____ |
| 24 cu yd Capacity Body – 254” | _____ | _____ | _____ |
| 27 cu yd Capacity Body – 278” | _____ | _____ | _____ |
| 31 cu yd Capacity Body – 302” | _____ | _____ | _____ |

B. BODY CONSTRUCTION:

- | | | | |
|--|-------|-------|-------|
| 1. The body shall have a brake-formed radius design. | _____ | _____ | _____ |
| 2. The body floor shall be flat. | _____ | _____ | _____ |

	Exactly as Specified		
	YES	NO	Offered
3. The body floor thickness shall be 3/16" Hardox 450.	_____	_____	_____
4. The body long sills shall be 6" @ 10.5 lb/ft structural channel.	_____	_____	_____
5. The body floor reinforcements shall be ¼" ASTM A-715 GR 50 formed steel members.	_____	_____	_____
6. The body sides and roof shall have a brake-formed radius design providing superior structural strength to weight ratio.	_____	_____	_____
7. The body sides shall be formed from a one-piece panel with no vertical weld seams.	_____	_____	_____
8. The body sides and roof steel grade shall be 10ga ASTM A1011 grade 80.	_____	_____	_____
9. Front perimeter of the body will incorporate a external angle 4 7/8" x 3-7/8" x 10ga ASTM A-715 GR 50 internal bolster.	_____	_____	_____
10. Rear perimeter of the body will incorporate an external 4" x 3 ½" 7ga ASTM A715 GR 50 formed bolster.	_____	_____	_____
11. A 10ga ASTM A715 GR 50 6" x 2-7/8" external crown rail shall form the transition from the single piece side sheet to the roof of the body.	_____	_____	_____
12. Roof reinforcement shall incorporate a full length 4" x 2" x ¼" ASTM A500 GR b rectangle tube.	_____	_____	_____
13. The body fenders shall be light weight material to reduce overall weight.	_____	_____	_____
14. Steel inner fender rub rail thickness shall be 3/16" Hardox 450.	_____	_____	_____
15. The body shall include a bolt-on rear under ride guard as standard equipment to meet Federal Motor Carrier Safety Regulation (49CFR393.86) Safety Reg., 49CFR393.86, TTMA RP No 41-02, and SAE J682, Oct84.	_____	_____	_____

C. HOPPER CONSTRUCTION:

1. The hopper shall have a minimum static capacity of 4 cu yd.	_____	_____	_____
2.			

	Exactly as Specified		
	YES	NO	Offered
3. The hopper shall have a minimum dynamic capacity (displacement rate) of 10.5 cu yd per minute.	_____	_____	_____
4. The hopper floor must include a 1/8" Hardox 450 liner that Extends into the body an additional 38".	_____	_____	_____
5. The hopper floor steel grade shall be: AR450 Hardox, and be 3/16" thick.	_____	_____	_____
6. The hopper sides walls steel grade shall be AR450 Hardox and be 3/16" thick.	_____	_____	_____
7. A hopper access door shall be provided above the packing panel on the street side of the body to permit access into the hopper area.	_____	_____	_____
8. The hopper access door shall be equipped with a safety interlock switch to disable all functions if the access door is opened.	_____	_____	_____
9. The hopper access door dimensions shall be: 28" x 32", thickness shall be 11ga ASTM A715 GR 50.	_____	_____	_____
10. A hopper ladder with grab handles shall be located on the street side of the hopper.	_____	_____	_____
11. The hopper ladder shall be bolted on to the hopper.	_____	_____	_____
12. The ladder must have and OSHA Standard 7" toe spacing between the ladder rung and the side of the hopper.	_____	_____	_____
13. A transverse sump shall extend the full width of the front hopper.	_____	_____	_____
14. Two (2) 14" x 20" sealed sump access doors equipped with handles and quick acting over center toggle latches shall facilitate clean out of the sump.	_____	_____	_____
15. A clean out tool option shall be provided to facilitate easy removal of any accumulated debris from the hopper sump area.	_____	_____	_____
16. A holder shall be provided on the body side to secure the clean out tool in a stored position.	_____	_____	_____

	Exactly as Specified		
	YES	NO	Offered
17. The hopper shall have optional plastic gull wing hopper covers to enclose the hopper during transport.	_____	_____	_____
18. The hopper cover shall be opened/closed by a single manual control lever located on the right-hand side of the hopper wall. an optional in cab controlled, air operated version is also available.	_____	_____	_____
19. The hopper cover must have an interlock eliminating the ability to dump a container if the hopper cover is closed.	_____	_____	_____
20. Interior hopper side sheet shall extend into the body with no welds at the hopper to body transition.	_____	_____	_____

D. PACKING MECHANISM:

1. Must have a manual super pack operation that allows the panel to extend into the body to clear debris from the hopper area.	_____	_____	_____
2. Packer hydraulic control must utilize a regeneration circuit and include manual overrides for maintenance and repair functions.	_____	_____	_____
3. The packing panel shall be 33" high x wide.	_____	_____	_____
4. A single, centrally mounted, pack cylinder shall generate 83,000 lbs. of packing force. Two cylinder and/or continuous packing mechanisms are not acceptable.	_____	_____	_____
5. The packer shall be a platen type design, integral with body.	_____	_____	_____
6. The packing panel shall complete an auto pack cycle in a maximum of 13 seconds @ 800RPM.	_____	_____	_____
7. Packing panel top thickness shall be ¼" ASTM A715 GR 50.	_____	_____	_____
8. Packing panel face plate shall be 3/8" ASTM A715 GR 50	_____	_____	_____
9. Packing panel shall be reinforced with a combination of structural members for maximum rigidity.	_____	_____	_____
10. The packing panel shall be guided by a single self-cleaning "T" rail located in the center of the body.	_____	_____	_____
11. "T" rail and thickness shall be: ½", AR450 Hardox ultra high-strength, high abrasion resistant steel plate.	_____	_____	_____

	Exactly as Specified		
	YES	NO	Offered
12. Packing panel wear shoes thickness shall be ¼" AR450 Hardox.	_____	_____	_____
13. The packing mechanism shall use a single, double-acting telescopic cylinder will be supported by self-aligning bearings on each end. these will be 3-stage for 16-, 20-, 24- and 27-yard units.	_____	_____	_____
14. Cylinder shall be centrally mounted above the hopper box.	_____	_____	_____
15. Cylinder bore diameter shall be 6 ½".	_____	_____	_____
16. The main cylinder sleeve shall be induction hardness and chrome plated.	_____	_____	_____
17. All stages of the sleeves must have metallic scrapers to protect from internal contamination and damage.	_____	_____	_____
18. The first stage of the cylinder shall be a 64" stroke.	_____	_____	_____
19. The cylinder full eject stroke shall be:			
20 cu yd Capacity Body – 3 stage with a stroke of 133.5"	_____	_____	_____
24 cu yd Capacity Body – 3 stage with a stroke of 157.5"	_____	_____	_____
27 cu yd Capacity Body – 3 stage with a stroke of 181.5"	_____	_____	_____
31 cu yd Capacity Body – 3 stage with a strike of 205.5"	_____	_____	_____
20. Maximum operation pressure shall be 3000 psi.	_____	_____	_____
21. Inside width of packing panel shall be 70".	_____	_____	_____
22. Inside height of packing panel shall be 33".	_____	_____	_____
23. The automatic packing cycle stroke shall be 52".	_____	_____	_____
24. Packing panel swept volume shall be 4 cu yd.	_____	_____	_____

E. FULL EJECT – PUSH OUT:

1. The pack/eject panel shall be capable of a complete extend/retract cycle in less than 30 seconds.	_____	_____	_____
2. All eject controls shall be operated from inside the cab.	_____	_____	_____

Exactly as Specified
 YES NO Offered

- 3. The pack/eject shall not be capable of extending into the body during an auto pack cycle with the tailgate closed. _____
- 4. A lockout system shall be supplied to allow the ejector panel to the ejection mode only with the tailgate is in the open position. _____
- 5. A lockout system shall be supplied to require the ejector panel is in the home position before the tailgate can be lowered. _____

F. TAILGATE:

- 1. The tailgate shall be hydraulically operated, top hinge bustle type. _____
- 2. The tailgate shall automatically lock and unlock without the use of additional locking cylinders, cables or manual turnbuckles. _____
- 3. The tailgate must use the operating system to remain closed and pressurized in the locked position without the use of any external control blocks or devices. _____
- 4. The tailgate locking mechanism shall utilize a progressive inverter cam roller design. _____
- 5. Tailgate thickness shall be 10ga ASTM A715 GR 50. _____
- 6. The tailgate latch roller shall be fully supported by a horizontal bolster around the lower perimeter of the tailgate. _____
- 7. The tailgate shall be operated by 2 cylinders. _____
- 8. Tailgate cylinders shall be chrome plated rod with 1 1/2" diameter and 3" bore diameter. _____
- 9. Tailgate cylinder stroke shall be 36 1/2". _____
- 10. Tailgate cylinder time at idle shall be 30 seconds. _____
- 11. The tailgate side sheets will have an integral rolled flange that overlaps the perimeter of the rear tailgate sheet. _____
- 12. A rubber seal shall be installed on the tailgate and extend across the entire bottom and vertically up each side a minimum of 60". _____

Exactly as Specified
 YES NO Offered

- 13. A cab mounted light and audible alarm shall be provided to indicate that the tailgate is unlocked. _____
- 14. The tailgate noise control shall include a delayed action to guard against accidental activation. _____
- 15. Self-contained horizontal tailgate maintenance safety props shall be provided. _____
- 16. The tailgate shall have a wire harness with Deutsch IP 69K connections between the body and the tailgate to isolate the tailgate wiring from the body. _____

G. AUTOMATED LIFTING MECHANISM:

- 1. The lifting arm mechanism shall be capable of operating simultaneously during any phase of packing operations with full force and flow. _____
- 2. Lift arm shall be mounted directly to the chassis frame rail. Tip to Dump units with the lift arm mounted to the body are not acceptable. _____
- 3. The lift arm lower base weldment shall straddle both chassis frame rails and be secured to its mounting brackets with four 1" grade eight bolts. _____
- 4. The lowest base weld mount shall be fully constructed of ¼" ASTM A715 GR50 steel. _____
- 5. Arm must utilize hardened spherical self-aligning bushings at dump pivot, tapered roller bearings at gripper pivots. _____
- 6. Arm must have an automatic container shake feature that allows the inner boom to short stroke to be effective and easy on the arm assembly. _____
- 7. The Lifting Arm mechanism must have a lifting capacity of 1,750 lbs. at full extension and 2,000 lbs. retracted. _____
- 8. The Lifting Arm mechanism must have no more than a 15" kick out through the entire arc of the container lift. _____

Exactly as Specified
YES NO Offered

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|--|-------|-------|-------|
| 9. The Lifting Arm mechanism must be within the 96" road limit in the travel position with the grippers in the full lowered position and opened/home position. | _____ | _____ | _____ |
| 10. No portion of the lift mechanism shall have less than 13" of ground clearance in the stowed position. | _____ | _____ | _____ |
| 11. Lift Arm extension from the side of the body must be horizontal in a linear fashion. No swinging or arching of the lift arm is permitted. | _____ | _____ | _____ |
| 12. Lift Arm mechanism shall have a reach of 84" from the side of the body to the centerline of a 90-gallon container. | _____ | _____ | _____ |
| 13. Lift Arm mechanism shall be capable of grasping a container located 6" from the side of the body. | _____ | _____ | _____ |
| 14. Vertical dump height shall not exceed 120" above the truck frame while dumping a 90-gallon container. | _____ | _____ | _____ |
| 15. Container dump angle shall be a minimum of 45 degrees to insure complete dumping of container contents. | _____ | _____ | _____ |
| 16. Lifting mechanism shall be capable of a complete cycle, which includes Grip-Lift-Dump-Un-Dump-Lower and Un-grip in a maximum of 8 seconds including proportional cushioning. | _____ | _____ | _____ |
| 17. The Lifting Arm must be constructed utilizing an Inner and Outer Arm assembly. | _____ | _____ | _____ |
| 18. The inner Arm must be 8" x 6" x 3/16" fabricated rectangular box constructed of ASTM A500 Grade B. | _____ | _____ | _____ |
| 19. The outer Arm assembly shall be 10" x 8" x 3/8" fabricated rectangular box constructed of ASTM A500 grade B. | _____ | _____ | _____ |
| 20. The inner arm assembly shall include upper and lower 3/8" AR450 Hardox roller bearing tracks. | _____ | _____ | _____ |
| 21. The inner arm assembly shall glide in and out on six (6) 4" roller bearings and four (4) plastic slide blocks to guide inner arm. | _____ | _____ | _____ |
| 22. Roller bearings shall rotate on a eccentric pin roller adjustment to allow compensation for wear and maintain the grippers parallel with the ground. The trunnion will allow the rollers to have full contact with the inner arm tracks. | _____ | _____ | _____ |

Exactly as Specified
YES NO Offered

- | | | | |
|--|-------|-------|-------|
| 23. Inner and Outer Arm pivot pins shall be 2" C1045 turn ground, heat-treated and polished pins held with 2" self-aligning spherical bearings. | _____ | _____ | _____ |
| 24. Lift Arm must have a safety interlock to restrict dumping unless the container is positioned over the hopper opening. | _____ | _____ | _____ |
| 25. Lift Arm hydraulics shall be controlled by a 4-spool sectional valve equipped with hydraulic pilot actuators for proportional spool positioning. | _____ | _____ | _____ |
| 26. Standard joystick lift function controls shall be proportional electric over pilot operated hydraulic spools. | _____ | _____ | _____ |
| 27. Solid state linear prox bar for boom angle and ultrasonic sensor for boom in/out. | _____ | _____ | _____ |
| 28. Dump and grip cylinders shall include internal linear position sensors to provide position feedback to the control system. | _____ | _____ | _____ |
| 29. Use of standard proximity switches for arm sensing shall not be acceptable. | _____ | _____ | _____ |
| 30. Arm must be equipped with an air actuated boom safety latch that keeps the inner boom locked in the home position when not in use. | _____ | _____ | _____ |
| 31. No air operation or controls may be used in the operation of the arm except for arm safety latch operation. | _____ | _____ | _____ |
| 32. Joystick shall be conveniently located to the left of the operator. | _____ | _____ | _____ |
| 33. Joystick must be can-bus multi-functional operation for all standard arm functions; including auto-grip-un-grip, packer function, work lights, container shake feature. Selectable dead man function. | _____ | _____ | _____ |
| 34. An ergonomically designed padded armrest shall be provided to support the operator's arm during joystick operation. | _____ | _____ | _____ |
| 35. Two (2) additional control options shall be provided for the operator; additional controls shall consist of a three (3) rocker switch console located on the right hand window sill to allow activation by the operator and a three (3) rocker switch console with dead-man control located at the side of the operator's seat to be activated if the operator is standing outside of the cab. | _____ | _____ | _____ |

Exactly as Specified
 YES NO Offered

- | | | | |
|--|-------|-------|-------|
| 36. An Automated Dump Cycle "Coordinator" option shall be provided. | _____ | _____ | _____ |
| 37. "Coordinator" shall allow the operator to manually reach and grip a container, continued contact on arm lift switch shall cause the container to be raised, dumped and lowered to the side of the vehicle, un-gripped and the arm returns to the stowed/home position. | _____ | _____ | _____ |
| 38. The Lifting Arm must utilize for (4) hydraulic cylinders. Cylinders shall include: | | | |
| Reach (In-Out) 1 3/4" bore x 66" stroke | _____ | _____ | _____ |
| Lift (Arm Up-Down) 2 1/4" bore x 26" stroke | _____ | _____ | _____ |
| Dump (Cart Dump/Un-Dump) 2 1/2" bore x 10" stroke | _____ | _____ | _____ |
| Grab (Grip/Release) 2 1/2" bore x 8 1/2" stroke | _____ | _____ | _____ |

H. GRIPPERS:

For Steel Grippers 30-110 Gallon Container

- | | | | |
|--|-------|-------|-------|
| 1. Grip/Release shall be actuated by a single, double-acting 2 1/2" x 8 1/2" stroke hydraulic cylinder with internal positioning sensor. | _____ | _____ | _____ |
| 2. Gripper pivots shall incorporate receiver pockets to allow gripper assemblies to be easily interchangeable. | _____ | _____ | _____ |
| 3. Gripper pivot shafts shall be machined from SAE41L42 quenched and tempered cold drawn steel shafting. | _____ | _____ | _____ |
| 4. gripper pivots shall pivot on tapered roller bearings. | _____ | _____ | _____ |
| 5. Gripper gears shall be constructed from 1" thick AR500 material. | _____ | _____ | _____ |
| 6. An infinitely adjustable pressure valve shall control the grip pressure/radial force: Switch will be located on the control console. | _____ | _____ | _____ |
| 7. Gripper shall be capable of handling 30 – 110-gallon containers designed for automated collections. | _____ | _____ | _____ |
| 8. Grippers shall have UHMW polyethylene rollers at the tip to protect and assist in grasping the container. | _____ | _____ | _____ |

Exactly as Specified
YES NO Offered

For Belt Grippers 30-110 Gallon Containers

- 9. Gripper shall be capable of handling 30–110-gallon container designed for automated collection. _____
- 10. Gripper shall have a stationary inner arm and a pivoting outer arm. _____
- 11. The pivoting outer arm shall provide tension using tensional springs. _____
- 12. Gripper shall have a belt 4” wide and connected on each end with three bolts. _____
- 13. grippers shall pivot on adjustable tapered roller bearings. _____
- 14. Grippers shall have UHMW poly thylene roller bearings. _____

Universal Grippers

- 15. The gripper shall be capable of grasping and dumping containers with capacities from 40-450 gallons with out the need to change grippers. _____
- 16. The grippers shall exert on appropriate radial force on each size container to firmly grip the container without dropping, damaging, or contorting. This force shall be controlled by a switch on the control panel. _____

I. Electronic Proportional Control System (EPC):

- 1. An electronic proportional control system shall be provided that will give the operator the ability to “feather” the automated lifting mechanism with gripping/un-gripping, extending/retracting, raising/lowering, dumping/un-dumping the containers. (No Exceptions) _____
- 2. The automated lifting mechanism shall be controlled by an electronic operated hydraulic directional control valve. The valve shall respond to proportional outputs (PWM signals) from the controller. _____
- 3. Positive linear sensors shall be incorporated into the system to provide feedback of the position of the lift arm while raising, dumping and gripping the containers. _____

Exactly as Specified
YES NO Offered

- | | | | |
|---|-------|-------|-------|
| 4. The system shall consist of multiple electrical components multiplexed together using SAE J1939 Canbus to provide a complete and expandable system. | _____ | _____ | _____ |
| 5. Must have a separate Canbus to communicate with the engine and transmission. | _____ | _____ | _____ |
| 6. Must have an engine monitoring system to protect from over torquing or stalling the engine in high load operations. | _____ | _____ | _____ |
| 7. A controller designed for mobile equipment with multiple digital and analog inputs and outputs shall be mounted near the main automated lifting mechanism hydraulic control valve. | _____ | _____ | _____ |
| 8. Remote I/O shall communicate through the Canbus to provide for the inputs and outputs not directly connected to the main controller. | _____ | _____ | _____ |
| 9. A color display will be provided in the cab convenient to the operator. The display will feature a function key driven menu system to access system functions. | _____ | _____ | _____ |
| 10. The joystick will also include four momentary switches for frequently used functions including pack start, container shake, work lights and auto grip/un-grip. | _____ | _____ | _____ |
| 11. A multi-functional joystick shall be provided. It will include two proportional "axis" for extending and retracting the lift mechanism, raising and lowering the loft mechanism and a proportional rocker for closing and releasing the grippers. | _____ | _____ | _____ |
| 12. The joystick will include a selectable hold-to-run switch to prevent unintentional operation of the control. | _____ | _____ | _____ |
| 13. An optional bank of four rocker switches shall be available to allow lift mechanism operation from the curbside. | _____ | _____ | _____ |
| 14. The menu system will include screens for the following: | | | |
| • Factory setup (password protected) so the system can be configured for the user's needs. | _____ | _____ | _____ |
| • User setup to allow the user to change how specific features operate. | _____ | _____ | _____ |
| • Input and output diagnostics for trouble shooting the system. | _____ | _____ | _____ |

Exactly as Specified
 YES NO Offered

- Lights, for turning on and off work and warning lights. _____
- Collection mode grouping the controls needed when picking up containers. _____
- Unloading mode grouping the controls needed when unloading the unit. _____
- Joystick operation showing the function of the joystick. _____
- Data collection showing counts of arm cycles, pack cycles, eject cycles, pump run times and warnings. _____
- System warning messages will display over the operation system. _____

J. HYDRAULIC SYSTEM

1. Hydraulic pump design must allow all hydraulic flow to be stopped during emergency situations (ex: hose burst) using the E-Stop button. NO EXCEPTIONS. _____
2. Hydraulic pump design must allow truck to be able to drive back to its home base without any harm to the pump and without spilling any fluid after engaging e-stop with no further modifications to the system, (ex: removing PTO shaft). NO EXCEPTIONS _____
3. An Eaton load sensing, power on demand (POD) hydraulic system featuring a variable displacement tandem piston pump driven by a long-life drive shaft must be used. NO EXCEPTIONS _____
4. The hydraulic pump shall be driven by chassis transmission PTO, direct mounted off engine crankshaft or a combination of both depending on the chassis limitations. _____
5. Piston pump system must be expected to last the life of the body (5-7 years) when properly maintained. NO EXCEPTION. _____
6. For maximum efficiency, the tandem load sense pump shall provide only the flow required for proper operation. _____
7. No over-speed control shall be required. NO EXCEPTIONS. _____
8. The arm hydraulic control valve must be true pilot operated, proportional post compensated style with manual over-rides for each junction. NO EXCEPTIONS. _____

Exactly as Specified
YES NO Offered

- | | | | |
|---|-------|-------|-------|
| 9. Hydraulic reservoir shall be a maximum capacity of 40 gallons to reduce overall weight. The reservoir shall include internal baffling to direct the oil flow for maximum heat. | _____ | _____ | _____ |
| 10. A highly efficient light weight non-micro nucleation reservoir must be used, specifically designed to incorporate a suction screen without concerns of micro nucleation. | _____ | _____ | _____ |
| 11. Hydraulic reservoir shall be equipped with a fluid level sight glass and an in cab low lever indicator. | _____ | _____ | _____ |
| 12. hydraulic reservoir shall be equipped with a temperature sender so oil temperature can be monitored in the cab. | _____ | _____ | _____ |
| 13. Hydraulic reservoir shall be located on street side and frame mounted. System must be plumbed and sized sufficiently to the pump inlet to assure optimum inlet conditions without the need for augmented tank pressurization. | _____ | _____ | _____ |
| 14. The hydraulic system shall incorporate a full flow 10-micron absolute in-tank return line filter with replaceable element. | _____ | _____ | _____ |
| 15. The hydraulic system shall incorporate a fill flow 10-microm tank breather with replaceable element. | _____ | _____ | _____ |
| 16. All hydraulic fittings shall be O-ring Face Seal (OFS) or O-ring Boss (ORB). | _____ | _____ | _____ |
| 17. All hydraulic components shall be adequately sized and resigned to maintain appropriate hydraulic oil temperature. | _____ | _____ | _____ |
| 18. Maximum hydraulic system pressure for the lift arm and pack circuits shall be 3000 psi. | _____ | _____ | _____ |
| 19. Hydraulic system must provide arm operational gear at engine idle speed, RPM not to exceed 800. NO EXCEPTIONS. | _____ | _____ | _____ |
| 20. An optional self-contained forced air to oil cooler shall be available to ensure hydraulic oil temperature is regulated in high ambient temperature as needed for running in extreme environments. | _____ | _____ | _____ |

Exactly as Specified
YES NO Offered

K. LIGHTS:

- 1. LED stop, tail, clearance and reverse lights shall be provided in accordance with FMVSS#108. _____
- 2. An upper bolt on light bar shall be provided. _____
- 3. Upper light bar shall contain two (2) if each 4" diameter stop/tail/turn lights and 2" diameter clearance and side marker lights. _____
- 4. Lower light bar shall contain two (2) of each 4" diameter stop/tail/turn and reverse lights. _____
- 5. All lights shall be sealed, Lexan covers and have flexible gasket mounting. _____
- 6. Mid-body turn signals shall be provided. _____
- 7. Two optional LED work lights shall be available, operated by a single push button switches on the in-cab joystick, one (1) light shall illuminate the hopper and one (1) shall illuminate the lift arm area. _____

L. ELECTRICAL:

- 1. All electrical wiring shall be in protective looms. _____
- 2. All wiring harness shall be Deutsch automotive type connections meeting IP67 specification connections. _____
- 3. The electrical system shall not have junction boxes or terminations that do not use th IP67 specification connections. _____
- 4. All circuits shall be properly fused, and wiring shall be color coded and numbered. _____

M. PAINTING:

- 1. The entire unit shall be properly cleaned of all dirt, grease, and weld slag prior to painting. _____
- 2. The complete unit shall be painted with DuPont Imron Elite high solids to a minimum of 3.5 mils. _____
- 3. The body shall be painted on color (**specify**)_____

N. MANUALS:

One complete set of operators, parts and service manuals to be supplied for each refuse picker.

O. WARRANTY:

1. The bidder shall offer a one (1) year body warranty against defective material or workmanship.
2. The bidder shall offer a two (2) year warranty on all hydraulic cylinders against defective material or workmanship.
3. The bidder shall offer a three (3) year warranty on the following products supplied by Eaton Corporation, tandem piston pump, hydraulic valves and OFS fittings and hoses against defective material or workmanship.
4. The bidder shall offer a five (5) year structural warranty on the automatic arm with no additional cost to the customer.