



EVENT #4754

TRUCK MOUNTED STREET SWEEPER

SPECIFICATIONS AND SPECIAL CONDITIONS

- 4.0 The purpose of these specifications is to describe requirements for one (1) truck mounted revolving broom type street sweepers for use by the City of Savannah's Street Sweeping Department.

To submit pricing electronically for this event, enter pricing for each line item shown under the lines tab on the event summary. To enter pricing manually, complete the attached bid proposal form. Manually submitted bids must be submitted on the bid proposal forms contained in these specifications in order to be considered.

A pre-bid conference has been scheduled to be conducted at the Purchasing Office, City Hall, third floor, 2 East Bay Street, Savannah, Georgia 31401. This meeting will allow contractors to discuss the specifications and resolve any questions and/or misunderstandings that may arise with City staff. You are invited to attend.

- 4.1 Detailed Specifications

Truck mounted Street sweeper. Acceptable models: Elgin Eagle or an approved equal.

- 4.2 Sweeper Engine

4.2.1 Diesel engine of horsepower and torque capacity recommended by sweeper manufacturer, approximately 74 horsepower. EPA tier four (4) final emissions compliant.

4.2.2 Engine shall be equipped with a full flow oil filter and fuel filter.

4.2.3 Engine shall have dual stage, dry type air intake precleaner with spinner. Reset type restriction indicator on air filter housing.

4.2.4 Engine shall be protected by a 50/50 mixture anti-freeze/water for cold weather storage and/or operation.

4.2.5 Engine, radiator, and all auxiliary engine driven devices shall be resilient mounted through a dedicated engine frame.

4.2.6 Engine shall have a safety shut down system for high coolant temperature and low oil pressure.

4.2.7 Engine and front of the engine radiator shall be accessible without the use of any tools.

- 4.2.8 Engine, radiator, and auxiliary engine driven devices shall be protected from the elements and vandals by twin fiberglass latching clamshell doors, opening 180 degrees, providing 270 degrees of complete accessibility to all engine maintenance components.
- 4.2.9 Engine compartment to include a RH mounted lockable stainless steel toolbox; 24 inches long by 13.5 inches wide by 6-3/8 inches tall for operator designated tools.
- 4.2.10 Hydrostatic drive system compatible with engine provided. Sweeper shall provide constant broom and conveyor speed independent of vehicle speed.
- 4.2.11 Supply two (2) extra keys to the auxiliary engine.

4.3 Controls

- 4.3.1 Controls shall be mounted on a fixed central console located between the left and right operators position.
- 4.3.2 Controls shall include all sweep, hopper, elevator, and lighting functions and shall all be located on the fixed operator control console.
- 4.3.3 The controls for sweep, spray water, and lighting functions shall be conventional rocker switches. Membrane or touch pad switches will not be acceptable.

4.4 Side Brooms

- 4.4.1 A hydraulic motor directly mounted to the broom disc plate shall drive each side broom. Due to curb and obstructions in the roadway, a trailing arm design must be supplied with vertical digger brooms. A forward facing digger type arm assembly will not be acceptable.
- 4.4.2 Side brooms shall be 42-inch diameter minimum, protruding not less than 13 inches beyond the outside of the tire of the chassis while sweeping.
- 4.4.3 The side broom shall have full sweeping path of 120 inches with both brooms in working position.
- 4.4.4 The arm suspension design shall be the parallelogram type in order to hold broom pattern regardless of up and down motion.
- 4.4.5 Broom down pressure shall be adjustable by the operator from the cab while moving or stationary.
- 4.4.6 Broom shall consist of five (5) plastic segments, filled with 26 inch long tempered steel wire to provide flexibility for varying sweeping conditions, broom speed shall be variable, 90 RPM to 160 RPM, by the operator from the cab while moving.
- 4.4.7 Broom rotation, forward or reverse, shall be selectable without leaving the cab.
- 4.4.8 Each broom shall have a work light for night operation.
- 4.4.9 Broom rotation shall stop and raise automatically, when transmission is placed into reverse or when the sweeper is put in transport mode or stationary.

- 4.4.10 In-cab control allows the operator to change the outward position of the right-hand side broom, up to ten inches (10") beyond its standard sweeping position for extended reach applications.
- 4.4.11 The side brooms shall have electrically operated tilting mechanism to allow operator to change inward/outward tip of the right sidebroom. The angle shall be able to be changed from the cab while sweeping.

4.5 Main Broom

- 4.5.1 The main broom shall be not less than 60 inches long and not less than 35 inches in diameter.
- 4.5.2 A hydraulic motor shall be mounted to the broom core in order to drive the broom. Chain and sprocket design will not be acceptable.
- 4.5.3 To provide flexibility for varying sweeping conditions, broom speed shall be variable, 80 RPM to 140 RPM, by operator from cab while moving.
- 4.5.4 Main broom down pressure shall be adjustable by the operator from the cab while moving.
- 4.5.5 Main broom shall be prefab disposable type, filled with polypropylene and shall be double wrapped at both ends.
- 4.5.6 Sweeping path shall be not less than ten feet (10') wide with right and left side broom activated.
- 4.5.7 For safety, main broom shall automatically stop and raise when transmission is placed in reverse.
- 4.5.8 Main broom shall be equipped with a steel main broom hood to prevent material from being over thrown into following traffic and also be capable of channeling over throw back into the dirt chamber. Plastic hood will not be acceptable due to debris exposure and cracking.
- 4.5.9 Main broom shall have two (2) work lights for night operation.
- 4.5.10 Main broom shall be pneumatically raised and lowered.
- 4.5.11 The standard cable wrapped main broom shall be a United Rotary Brush brand brush, paddle type strip broom.
- 4.5.12 For safety and to avoid damage to the main broom, side broom, and elevator, all sweeping components shall automatically raise when transmission is put into reverse.

4.6 Conveyor

- 4.6.1 Conveyor shall be able to load hopper to 100% of rated useable capacity.
- 4.6.2 Conveyor rotation, forward, or reverse, shall be selectable rotation without leaving the cab.

- 4.6.3 To maintain heavy loads of material the conveyor shall be high strength belt type with molded full width chevron style cleats to carry material to the hopper. Squeegee type flight systems that drag material will not be acceptable.
 - 4.6.4 Conveyor speed shall be variable from the cab.
 - 4.6.5 Conveyor shall be reversible in direction without stopping or reversing any broom.
 - 4.6.6 Conveyor shall be capable of effectively sweeping debris of varying sizes without the need to make any adjustments to the conveyor system.
 - 4.6.7 To provide proper clearance, the lower portion of the conveyor shall be capable of raising nine inches (9") while sweeping for any type of material. No exceptions.
 - 4.6.8 To reduce wear on all conveyance components, a conveyor belt having molded cleats must carry, not drag, debris to the hopper.
 - 4.6.9 For safety, conveyor shall automatically stop and raise when transmission is placed in reverse or when the sweeper is put in transport mode.
- 4.7 Hopper
- 4.7.1 For safety, the hopper shall be right side dumping, allowing an operator to observe the dump target and surrounding area at all times from the cab, without the use of mirrors.
 - 4.7.2 Hopper floor shall be constructed of seven (7) gauge steel.
 - 4.7.3 Hopper door, sides, and top must be a minimum of eleven (11) gauge steel.
 - 4.7.4 Hopper volumetric capacity shall be not less than 4.5 cubic yards. Useable capacity not less than 3.3 yards. A hopper inspection door shall be supplied.
 - 4.7.5 Hopper shall dump at varying heights ranging from 38 inches through a height of ten feet (10') as measured at the lowest point under the open hopper chute. Fixed height dump systems will not be acceptable.
 - 4.7.6 Hopper shall be able to tilt (dump) to an angle not less than 50 degrees to ensure complete removal of all debris.
 - 4.7.7 Lift mechanism shall be double stage scissors lift system utilizing two (2) hydraulic cylinders with a bore of not less than 3.5 inches and a stroke of not less than 33.5 inches.
 - 4.7.8 Lift capacity shall be not less than 11,000 pounds.
 - 4.7.9 Hopper dump mechanism shall utilize two hydraulic cylinders with a bore of not less than 3.5 inches and a stroke of not less than 19.8 inches.
 - 4.7.10 Maximum time for full height lift and dump cycle shall not exceed 70 seconds.
 - 4.7.11 Hopper to hydraulically side shift toward hopper receptacle not less than eleven inches (11") for dumping efficiency. When dumping hopper, the minimum clearance required between sweeper and debris receptacle shall not be less than 28 inches.

- 4.7.12 Due to high wind conditions, long dump doors that restrict full dumping angle of 50 degrees into a receptacle at any height will not be allowed.
- 4.7.13 Hopper load shall be visible at all times from the cab through a front facing hopper window and an upward facing skylight.
- 4.7.14 Cab shall have a full load warning indicator light activated by hopper weight to prevent overloading beyond manufacturer's GVW rating.
- 4.7.15 All scissors lift joints shall be self-lubricating bronze bearings to extend wear life.
- 4.7.16 Apparatus shall have an interlock to prevent dumping hopper without engaging the park brake for safety.
- 4.7.17 Cab shall have an unlevelled grade indicator for safety.
- 4.7.18 Sweeper shall not require jack stands and/or outriggers to stabilize chassis during dumping cycle. Units requiring this stabilization will not be acceptable.
- 4.7.19 Sweeper shall include toolbox that can accommodate general supplies as well as long handled tools such as brooms and rakes.

4.8 Spray System

- 4.8.1 Minimal tank capacity shall be not less than 280 U.S. gallons.
- 4.8.2 Tank shall be constructed of non-rusting material.
- 4.8.3 Pump shall be centrifugal type capable of running dry indefinitely without damage.
- 4.8.4 Pump shall be aluminum. Pump shall not contain ferrous parts in contact with water.
- 4.8.5 Water system shall be equipped with three (3) spray nozzles on each side broom, three (3) spray nozzles on a rear spray bar. Rear spray bars shall be constructed of non-ferrous components to prevent contamination.
- 4.8.6 Water to each area, side broom left or right or rear spray bar shall be controlled in the cab by electrical activation switches. Water flow control valves shall be non-ferrous, heavy-duty agricultural type.
- 4.8.7 A low water indicator light shall be located within the cab.
- 4.8.8 Sweeper shall be equipped with an automatic internal hopper/conveyor flush and wash down system. System shall include a manual bypass valve to divert hydrant water into system without necessitating filling of water tank. Bypass valve shall be located on the curbside of the vehicle.
- 4.8.9 A 25 foot wash down hose shall be provided.
- 4.8.10 An in-line water filter shall be provided with the fill hose to prevent contaminants from entering the water tank.

- 4.8.11 To prevent the contamination of the water supply, tank shall be equipped with an anti-siphon device compliant to American national standard air gaps in plumbing systems ASME A112.12-1991.
 - 4.8.12 25 foot (7620 mm) hose to fill the water tank is in lieu of the standard 16 foot 8 inch (5080 mm).
 - 4.8.12 Cab controlled front water spray bar assists with wetting down debris under extremely dusty conditions. Four (4) removable brass nozzles mounted under the front bumper of the truck on copper pipe keep the system corrosion resistant.
 - 4.8.13 Tank must be capable of being filled from a fire hydrant with hose connection.
- 4.9 Hydraulic System
- 4.9.1 Reservoir capacity shall be not less than 21 gallons with outside level indicator.
 - 4.9.2 Pump shall be three (3) sections, directly driven.
 - 4.9.3 To prevent contamination of the reservoir during the dump cycle, the reservoir vent shall be equipped with ten (10) micron, spin on filter.
 - 4.9.4 To prevent the possibility of contamination and the resulting damage to the hydraulic system, return lines for drive shall have a ten (10) micron full flow filter with bypass. Cab mounted restriction indicator shall light before bypass begins.
 - 4.9.5 To prevent contamination when adding hydraulic fluid, all oil added must pass through a ten (10) micron filter located within the fill spout.
 - 4.9.6 For ease and accuracy of testing, all circuits shall have quick-disconnect check ports. To minimize environmental damage caused by leaking fittings, all high-pressure fittings shall be flat-face O-ring type. Other systems will not be acceptable.
- 4.10 Pneumatic System
- 4.10.1 The pneumatic system shall have DOT fittings. There shall be a PR4 type pressure protector for the chassis air system to protect the chassis air system. A separate air tank for all sweeper air components shall be provided.
 - 4.10.2 All pneumatic cylinders shall be interchangeable. All pneumatic cylinders must be rated to 150 PSI and have a separate rod seal and wiper to prevent contamination entering the cylinder.
- 4.11 Electrical System
- 4.11.1 Sweeper electrical system shall be independent from the chassis electrical system. Sweeper shall have an electronic back-up alarm for additional warning and safety when chassis is in reverse.
 - 4.11.2 Sweeper lighting shall include rear identification lights, side broom, and rear clearance lights.

- 4.11.3 Sweeper wiring harnesses shall be color-coded and hot stamped with appropriate word designation labeled every four inches (4"), i.e. "Ignition," "Side Broom" on each wire.
- 4.11.4 For safety, all electrical circuits must be protected by circuit breakers or fuses.
- 4.11.5 Sweeper electrical system shall be independent from the electrical system of the chassis.
- 4.11.6 Sweeper engine shall have one (1) 925 CCA, twelve (12) volt battery. Sweeper engine shall have a 120 amp. alternator.
- 4.11.7 Sweeper shall have an electronic back-up alarm for additional warning and safety when chassis is in reverse.
- 4.12 Cab
 - 4.12.1 Maximum visibility, forward line of sight from chassis front bumper to point on the ground visibility to the operator shall not exceed eight feet (8") for an SAE 98th percentile size operator.
 - 4.12.2 Steering shall be full power with dual operator controls.
 - 4.12.3 Seats shall be adjustable, covered with cloth for air circulation, and include three (3) point seat belts.
 - 4.12.4 Sweeper shall include two (2) outside heated and motorized west coast type mirrors with lower eight inch (8") convex lens for easy viewing of the side broom during sweeping.
 - 4.12.5 To maximize operator visibility of the curb and sweeping gear, an eight inch (8") outside RH fender mirror shall be mounted forward of the front wheel.
 - 4.12.6 Hydraulic functions shall be controlled by rocker switches located in the cab mounted control panel.
 - 4.12.7 For safety during night sweeping, switches shall be illuminated so that they can be readily identified without the use of the cab dome light.
 - 4.12.8 Switches shall be clearly identified by name and symbol.
 - 4.12.9 Cab interior environment shall be fully air-conditioned, including a fresh air heater/ventilator/defroster.
 - 4.12.10 Cab shall have full flow through ventilation for optimal temperature control and operator comfort.
 - 4.12.11 Wipers shall have intermittent feature.
 - 4.12.12 Interior of cab shall have acoustical insulation for low operating noise, automotive type trim, and center sweeper console.
 - 4.12.13 Dash shall be faced with soft molded plastic.
 - 4.12.14 All glass shall be tinted safety glass.

- 4.12.15 Each operator position shall have adjustable sun visor.
- 4.12.16 Doors shall be keyed with alike locks.
- 4.12.17 Door windows shall be roll up type.
- 4.12.18 Side windows shall have defogger.
- 4.12.19 Cab shall include twelve (12) volt power supply.
- 4.12.20 Cab shall include an AM/FM radio, speakers, and antenna.
- 4.12.21 An in-cab mounted ABC fire extinguisher shall be included.
- 4.13 Chassis
 - Provide step and grab rail as required to check/add engine coolant, oil, fuel filters, air filters, and fuel.
- 4.14 Lighting and Warning Devices
 - 4.14.1 Sweeper lighting shall include two (2) rear upper oval amber LED flashers and two (2) rear lower oval amber LED flashers. No lights that mount to top of sweeper and increase the height of the unit will be accepted. Sweeper shall also include rear identification lights, side broom, and main broom spot lights four (4) total and rear clearance lights (all LED).
 - 4.14.2 Adequate lighting to illuminate the curb line from twelve feet (12') ahead, to the leading edge of each gutter broom. High intensity back up lights to illuminate an area from three feet (3') to 20 feet behind the sweeper on both sides shall be provided. Two (2) additional spotlights mounted front facing on roof of cab inside limb guards. Wiring will be protected inside conduit and lights will be controlled by a separate switch than headlights. Front and rear turn signals and rear brake lights shall be included.
 - 4.14.3 Warning devices: Backup horn automatically actuated when vehicle is in reverse gear. Amber strobe lights installed on the front and rear light mounting rail. Strobe lights that increase the height of the vehicle will not be accepted. LED grille flashers two (2) total mounted in front grille: Part # Whelen M7AC with flange, amber flashing LED light with clear lens, 3-3/8" H x 1-3/8" D x 7-5/8" L.
 - 4.14.4 For safety, a Whelen Arrow Head Style Traffic Advisor Part# TA166AL5 shall be mounted on the back of the truck and not obstruct the rear doors from opening or raise the height of the vehicle. The Control Head Whelen Part# TACTL6 will be mounted in the cab and convenient for the driver to operate.
- 4.15 Instruments
 - 4.15.1 Full vision, illuminated gauges, speedometer/odometer tachometer, engine hour meter, engine temp, oil pressure gauge and lamp, low coolant level lamp, voltage, auxiliary engine running lamp, coolant temperature gauge and lamp, air filter restriction indicator for complete information for the operator on the condition of the auxiliary engine. Include a meter to record broom hours and mileage sweeper instruments shall include a hopper full indicator, main broom down pressure, hydraulic filter restriction indicator, sweeper out of

level indicator, spray water indicator, a raised hopper indicator and a full hopper indicator to notify the operator of hopper conditions.

- 4.15.2 Two (2) in-cab sweeper console mounted gauges that indicate the air pressure being used to hold the side brooms in its down position shall be supplied. There shall be one (1) gauge for each side broom.
- 4.15.3 An in-cab dash mounted gauge to indicate when the air cleaner is restricted.
- 4.16 Tires: Steel belted radials.
- 4.17 Steering: Power steering.
- 4.18 Brakes: Power disc brakes.
- 4.19 Color: White. All visible exterior metallic surfaces shall be coated prior to assembly with polyester powder coat. The paint must be a minimum of two (2) mils thick. The uses of acrylic enamels and/or polyurethanes will not be acceptable.
- 4.20 Back-Up Alarm: An electronic back-up alarm shall be supplied and installed by the manufacturer. The back-up alarm shall actuate automatically when the transmission gear is placed in reverse.
- 4.21 Manuals: An operation manual, parts manual, service manual, and chassis operator's manual shall be provided.
- 4.22 Warranty
 - 4.22.1 Manufacturer's warranty shall be not less than one (1) year on entire sweeper, including all parts and labor.
 - 4.22.2 Manufacturer's warranty shall be as stated by the chassis manufacturer on the chassis including all parts and labor.
 - 4.22.3 Bidders submitting literature stating warranties which do not fully comply with warranty requirements of this specification must submit a letter from the manufacturer certifying warranty compliance as an integral part of their proposal. Failure to comply may cause the proposal to be deemed "non-responsive" and rejected without further review.
- 4.23 Service and Training
 - 4.23.1 Vendors shall have a full parts and service facility with mobile service capabilities. Please state location and distance of your parts and service facility.
 - 4.23.2 A qualified technician shall provide complete on-site training to City of Savannah personnel. Training shall include safety, operation, maintenance, and service.
- 4.24 Keys: Four (4) sets of keys and four (4) fobs. All four (4) sets of keys must be able to lock, unlock, and operate the vehicle.
- 4.25 No dealer advertising is to be on any vehicle.
- 4.26 Bids will be accepted from vehicle dealerships only. No bids from vehicle brokers will be considered.

- 4.27 All vehicles and vehicular equipment delivered to the City must be accompanied by two (2) copies of complete parts, shop repair, and operator's manuals. The parts manuals must show all component parts including, but not limited to, component assemblies and their substitute components identified by manufacturer's part number. Any component or sub-assembly not manufactured by the O.E.M. must be identified including the name of the manufacturer of said component and said manufacturer's part numbers and nomenclature. All parts information must be specific to the unit delivered to the City. All shop repair manuals will include, but not be limited to the following. Complete disassembly instructions, adjustment and replacement procedures, wiring diagrams, hydraulic schematics (where applicable), hose routing, location and function of sensors, time standards where available, and troubleshooting guide.
- 4.28 All vehicles must be accompanied by a factory recommended preventive maintenance schedule including procedures, time-hours mileage intervals, pre-placement part numbers, and fluid specifications.
- 4.29 Failure to comply with the above without prior written exemption may result in cancellation of order. In cases, where failure to comply is not discovered until after payment has been made, the City reserves the right to revoke bidding privileges for failure to comply.