

CITY OF HOUSTON
FINANCE DEPARTMENT
Strategic Procurement Division

Annise D. Parker

Mayor

Lourdes Coss
Chief Procurement Officer
P.O. Box 1562
Houston, Texas 77251-1562

F. 832.393.8755
<https://purchasing.houstontx.gov>

Date: March 23, 2015

Subject: Letter of Clarification No. 2 to Invitation to Bid No. S40-N25233 for Medium & Heavy Duty Cabs, Chassis, & Bodies for Various Departments

To: All Prospective Bidders:

This Letter of Clarification is issued for the following reasons:

- **To revise Section “B” Technical Specifications, the Electronic Bid Form and answer questions posed by prospective bidders:**
 - 1) Remove Page Nos. 15, 17, 18 and 21 through 26 of 35 and replace with the revised Page Nos. 15, 17, 18, and 21 through 26 of 35 marked REVISED 3/23/2015.
 - 2) See the Revised Electronic Bid Form at the E-Bid site.
 - 3) The following questions and City of Houston responses are hereby incorporated and made a part of the Invitation to Bid:

Question No. 1: *“On Page 15, Provision 2.0, does the department want a spare tire and jack with the cab & chassis?”*

Answer: *“Yes.” See revised page 15 marked REVISED 3/23/2015.*

Question No. 2: *“Referencing Page 24, the last sentence of Provision 4.1.38, will the department accept specifications of 23,900-lbs. at maximum elevation and 11,600-lbs. at 10 ft. radius?”*

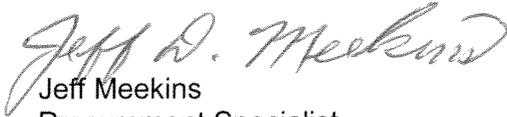
Answer: *“Yes.” See revised page 24 marked REVISED 3/23/2015.*

Subject: Letter of Clarification No. 2
Light, Medium & Heavy Duty Cabs, Chassis, & Bodies for Various Departments

- Due to the aforementioned change(s) to the e-bidding items you may need to edit your bid. To do so, please select the "Bid Number" and proceed accordingly.

This Letter of Clarification will be considered part of the solicitation referenced on the first page of this document. All revisions, responses, and answers incorporated into the Letter(s) of Clarification are collaboratively from both the Strategic Purchasing Division and the applicable City Department(s).

Furthermore, it is the responsibility of each BIDDER to obtain any previous Letter(s) of Clarification associated with this solicitation.



Jeff Meekins
Procurement Specialist
Strategic Purchasing Division
(832) 393-8743

Buyer JM:SRD:jm

Attachments: Page Nos. 15, 17, 18, and 21 through 26 of 35 marked REVISED 3/23/2015

SECTION B

SPECIFICATIONS

PART II

TECHNICAL SPECIFICATIONS

**ITEM NO. 1: CAB & CHASSIS MOUNTED WITH 36-FOOT AERIAL MANLIFT AND SERVICE BODY
PR No. 10192088 & 10192089**

1.0 GENERAL:

1.1 Equipment Description:

1.1.1 This specification is intended to describe a vehicle that will be used as an aerial bucket truck by the Department of Public Works & Engineering, Traffic and Transportation Division. The vehicle consists of a cab & chassis mounted with an aerial man-lift and service body.

1.2 Prime Contractor/Supplier:

1.1.2 These specifications require the contractor/supplier to furnish and deliver the complete unit(s). i.e. cab & chassis, mounted with the aerial man-lift and body.

1.3 Quantity:

1.3.1 Identical units shall be furnished when more than one unit is ordered.

2.0 CAB AND CHASSIS:

2.1 General:

2.1.1 Ford F-450 4x2 Cab & Chassis with Regular Cab or City-approved equal. GVWR shall be not less than 16,000 lbs. with an 60" Cab-to-Axle and 141" Wheelbase.

2.1.2 Rear Axle Ratio of 4.88.

2.1.3 Heavy duty front springs.

2.1.4 Cab height must allow for aerial device mounting being at 10 feet 6 inches maximum.

2.1.5 Minimum of 2 key pod type controls for keyless entry.

2.1.6 Minimum 40 gallon fuel tank.

2.1.7 5,000-lb Front Axle.

2.1.8 Spare tire and jack.

2.2 Engine:

2.2.1 A 6.8 L V10 GASOLINE engine that will meet the current EPA engine emission levels shall be provided.

2.3 Transmission:

2.3.1 A 5-speed automatic transmission with integral PTO provision shall be provided.

2.4 Cab:

2.4.1 OEM air conditioning, heating and defroster shall be provided.

2.4.2 AM/FM radio shall be provided.

2.4.3 Electric windows and door locks shall be provided.

2.4.4 Vinyl bench type seat.

2.4.5 Manufacturer's standard ABS brakes.

2.4.6 White exterior color.

2.4.7 Darkest interior color available.

2.4.8 Electric Adjustable side mirrors.

2.4.9 Rubber Floor Mats.

SECTION B PART II TECHNICAL SPECIFICATIONS: (Continued)

ITEM NO. 1: CAB & CHASSIS MOUNTED WITH 36-FOOT AERIAL MANLIFT AND SERVICE BODY **(Continued):**

- 3.4 Turret/Rotation:
 - 3.4.1 The turret wings are ½ inch thick steel plate. A steel tube is welded between the turret wings to support the boom cylinder and provide rigidity. The turret wings are designed for strength and rigidity. The bearing cover is continuously welded to seal out moisture and prevent foreign material from obstructing the turret rotation.
 - 3.4.2 The turret plate is machined flat to support the rotation bearing. A bearing cover is provided to prevent foreign material from interfering with lift rotation.
 - 3.4.3 Rotation is non-continuous.
 - 3.4.4 The critical bolts holding the lift to rotation bearing are SAE grade 8. These bolts are torque seal marked to provide a quick means to inspect for loosening.

- 3.5 Pedestal:
 - 3.5.1 The pedestal is a square shape with an access opening on both sides. These include easily removable doors to protect the internal components from damage and the elements. A 7-gallon hydraulic reservoir is built integral to the pedestal. The reservoir includes anti-slash baffles.
 - 3.5.2 The top plate of the pedestal 1 inch steel plate machined flat to support the rotation bearing.
 - 3.5.3 Dual sight gauges are furnished on the pedestal for monitoring the hydraulic oil level.
 - 3.5.4 A 100 mesh suction strainer and 10 micron return filter with shut off valves are located inside the pedestal.

- 3.6 Platform:
 - 3.6.1 24-inch X 30-inch X 42-inch deep platform completely closed with on access step.
 - 3.6.2 Platform to be supported in the stowed position by a tubular rubber support mounted on the floor of the service body.
 - 3.6.3 Platform must be end mounted with hydraulically leveled platform. The leveling system includes a master/slave cylinder arrangement that can be actuated from both the upper and lower controls for rescue or cleanout.
 - 3.6.4 An extra-large full body harness with deceleration lanyard will be provided.
 - 3.6.5 The anchor point for the lanyard is incorporated to the inner boom at the basket end.
 - 3.6.6 A platform liner of 24-inches X 30-inches X 42-inches deep and rated for 50 kV will be supplied.
 - 3.6.7 A bright orange or yellow soft stretch cover will be supplied to fit the 24X30x42 basket.

- 3.7 Hydraulic System:
 - 3.7.1 The open-center hydraulic system operates at 2000 psi and 36 GPM. A 10-micron return-line filter. Mounted above the hydraulic oil level and inside the pedestal, can easily be changed without draining the reservoir. A gate valve, located below the reservoir, prevents oil loss when the pump is serviced. A magnetic drain plug attracts metal particles from the oil and can easily be cleaned by removal when changing the system oil.
 - 3.7.2 Hydraulic power is provided by a PTO and Pump configuration.
 - 3.7.3 PTO/PUMP to be engaged by a toggle type switch on the dash of the chassis. There will be a red PTO indicator light dash mounted as well. There will be a PTO safety interlock installed and wired through the emergency brake of the chassis.

- 3.8 Miscellaneous:
 - 3.8.1 Non-lube bushings will be used at most points of motion. Rotation gearbox and rotation bearing require periodic lubrication.
 - 3.8.2 The complete unit is primed and painted standard white urethane prior to assembly.
 - 3.8.3 The high-pressure hoses routed through the booms are non-conductive hoses with swaged hose end fittings. Reusable hose fittings may be installed if a hose is damaged.
 - 3.8.4 Three sets of operation and service manuals will be provided with the aerial lift.
 - 3.8.5 All cylinders are equipped with AQ type seals, nylon back up rings, non-metallic bearings on the pistons and end glands, rod wipers, threaded end glands and chrome plated rods.

SECTION B PART II TECHNICAL SPECIFICATIONS: (Continued)

ITEM NO. 1: CAB & CHASSIS MOUNTED WITH 36-FOOT AERIAL MANLIFT AND SERVICE BODY (Continued):

- 3.8.6 All lift and load holding type cylinders will be both threaded on the cylinder rod and then welded for dual retention and safety.
- 3.8.7 The extension cylinder has wear rings on the piston and end gland for extended seal life. Dual holding valves are mounted at the extension cylinder base to prevent boom creep during road travel or uncontrolled movement in case of hydraulic hose failure. A hydraulic regeneration feature on the extension cylinder provides extension and retraction at approximately the same speed.
- 3.8.8 Pins are high strength alloy steel and chrome plated for a hard finish and corrosion resistance. Cylinder pins are held in place with torque sealed bolts on one end and a pin cap washer and bolt that is torque sealed on the other.

3.9 Stabilization:

- 3.9.1 Rear Mounted Frame Torsion Bar.

4.0 HEAVY-DUTY SERVICE BODY:

4.1 General:

- 4.1.1 Dakota Body or City-approved equal.
- 4.1.2 Body to be installed in relation to the aerial device and chassis specified above.
- 4.1.3 The body shall be a 108 inch body with tail-self and entry steps on the curbside.
- 4.1.4 Street side Compartment
 - 4.1.4.1 All compartment doors will be of a T-Handle lock design.
 - 4.1.4.2 Front vertical to have standard Dakota 108 shelving.
 - 4.1.4.3 Horizontal will have one material tray and 10 dividers.
 - 4.1.4.4 Rear vertical will have 4 pullout drawers. The top two drawers will have 3 sections with 3 cross sections to form 9 individual compartments for the storage of small materials. The bottom two drawers will have 3 equal sections for tool storage. The drawers will all have a safety latch to prevent the drawer from sliding out if parked on an incline.
- 4.1.5 Curbside Compartments:
 - 4.1.5.1 All compartment doors will be of a T-Handle lock design.
 - 4.1.5.2 Front Vertical to have standard Dakota 180 shelving.
 - 4.1.5.3 Second compartment will be 28 inch wide access steps for body entry.
 - 4.1.5.4 Horizontal will have one adjustable material tray with 10 dividers.
 - 4.1.5.5 Rear vertical will have 5 fixed material hooks 1-3-1.

4.2 Body Dimensions:

- 4.2.1 Floor width shall be 52 inches minimum.
- 4.2.2 Body height shall be 40 inches minimum.
- 4.2.3 Body length shall be 132 inches.
- 4.2.4 Body width shall be 92 to 96 inches.
- 4.2.5 Compartment depth shall be 18 inches minimum.

4.3 Tailshelf:

- 4.3.1 Maximum width shall match outside width of body.
- 4.3.2 The tailshelf shall be of sufficient size to encompass the aerial device basket completely when in the stowed position.
- 4.3.3 Tailshelf shall have an area to insert an arrow stick at the rear.
- 4.3.4 There shall be one cable step at curbside rear for entry.
- 4.3.5 The tailshelf and all lights on the service body shall be of an LED design.

4.4 Tailgate:

- 4.4.1 A 2-inch X 6-inch steel tube type tailgate shall be installed.
- 4.4.2 It shall slide into horizontal slots on the body and to be configured where it will not interfere with the aerial device basket storage.
- 4.4.3 There shall be one quick pin to hold tailgate in position and for ease of removal.

SECTION B PART II TECHNICAL SPECIFICATIONS: (Continued)

ITEM NO. 2: CAB & CHASSIS WITH HYDRAULIC ROTATING DIGGER DERRICK WITH A TURNTABLE WINCH
PR No. 10192133

1.0 GENERAL:

1.1 Equipment Description:

1.1.1 These specifications are intended to describe a 29,000-lb to 35,000-lb GVWR cab & chassis mounted with hydraulic rotating digger derrick with a turntable winch for the Houston Parks and Recreation Department. The unit must be capable to set 65' wooden poles by digging the hole and setting the pole with the boom.

1.2 Prime Contractor/Supplier:

1.2.1 These technical specifications require the contractor/supplier to furnish and deliver the complete unit(s). i.e. cab & chassis, mounted with hydraulic rotating digger derrick with turntable winch

2.0 CAB & CHASSIS:

2.1 Referenced Manufacturer: Freightliner M2 106 4X2

- 2.1.1 29,000-lbs. to 35,000-lbs GVWR
- 2.1.2 Wheelbase 189 inches, CA 120 to 126 inches, axle to frame 100 inches
- 2.1.3 12,000-lbs. to 13,220-lbs. capacity front axle
- 2.1.4 19,000-lbs to 21,000-lbs capacity locking rear axle
- 2.1.5 Cummins ISB (6.7 Liter) 250 HP @ 2,300 rpm, torque 660 lb-ft @ 1,600 rpm
- 2.1.6 Allison 3500 RDS wide ratio, 6-speed automatic transmission
- 2.1.7 Air Brakes
- 2.1.8 Factory PTO provisions
- 2.1.9 Electric brake engine
- 2.1.10 Maintenance free electrostatic breather system
- 2.1.11 Battery shut off switch
- 2.1.12 Rear axle(s) capacity minimum 19,000-lbs. to 21,000-lbs.
- 2.1.13 Taper-leaf and flat leaf front suspension capacity 12,000-lbs. to 13,200-lbs.
- 2.1.14 Suspension rated up to 29,000-lbs to 35,000-lbs.
- 2.1.15 Drivers controlled differential lock for traction control
- 2.1.16 Heater, defroster and air conditioning
- 2.1.17 AM/FM radio with CD and auxiliary input
- 2.1.18 Fuel and water separators
- 2.1.19 Backup alarm
- 2.1.20 Manufacture OEM standard tires and rims to match specified cab & chassis
- 2.1.21 Daytime running lights
- 2.1.22 LED marker lights
- 2.1.23 Firewall and hood liner insulation
- 2.1.24 Integral headlight/marker lights mounted on in hood
- 2.1.25 Door mounted down view mirror
- 2.1.26 Door mounted mirrors with remote control
- 2.1.27 **DELETE**
- 2.1.28 AM/FM/WB antennas
- 2.1.29 **DELETE**
- 2.1.30 **DELETE**
- 2.1.31 Exterior assist handles
- 2.1.32 Electric powered door windows and electric door locks
- 2.1.33 Overhead console with additional storage
- 2.1.34 Two cupholders molded in dash
- 2.1.35 Multi between-seat storage options, including writing surface and 12 volt supply
- 2.1.36 Step lighting
- 2.1.37 Dual reading lights mounted in overhead console
- 2.1.38 Adjustable tilt and telescoping steering column

SECTION B PART II TECHNICAL SPECIFICATIONS: (Continued)

2.0 CAB & CHASSIS: (Continued)

- 2.1.39 Trip odometer, tachometer, transmission temperature and air pressure gauges
- 2.1.40 **DELETE**
- 2.1.41 **DELETE**

3.0 BODY AND DERRICK INSTALLATION:

- 3.1. Referenced Manufacturer: Dakota Bodies Inc. 168 (L)" x 46(H)" x 94(W)"
 - 3.1.1 Install derrick over rear axle and install all associated components:
 - 3.1.1.1 Final test and inspect completed unit including stability and dielectric testing per manufacture requirements and ANSI/ASSE A10.31-2006.
 - 3.1.2 Hoses and fittings to connect the hydraulic system from the oil reservoir to the pump and unit.
 - 3.1.3 (1) Peterson (LED required) 7-Lamp DOT Lighting Package: Complies with FMVSS 108. Includes required lights, junction box, wiring harness and mounting light bar
 - 3.1.4 (4) Preco 4242A (LED required) amber strobe light with 4" tall and 6" diameter lens and mounting bracket. Install (2) two on the front of body, off of the boom rest, and (2) Two at rear corners of body.
 - 3.1.5 (4) Preco BG4240 branch guard for 4" strobe.
 - 3.1.6 (1) PSE AS850-H (LED required) arrow directional light stick, 47" long, 8-lamp installed at rear of tail shelf.
 - 3.1.7 Power take off with indicator light for automatic transportation
 - 3.1.8 DOT inspection
 - 3.1.9 **DELETE**
 - 3.1.10 Back-up alarm to sound when the vehicle is shifted into reverse
 - 3.1.11 (4) Laminated wood outrigger pad 24" x 24" x 2" with rope handle, including outrigger pad storage near outrigger
 - 3.1.12 (4) Rubber chocks with eye bolt
 - 3.1.13 Grab handles as necessary for 3-point contact
 - 3.1.14 (2) Cable type grip-strut stirrup steps
 - 3.1.15 Rigid stirrup step mounted on side access for ground to body access
 - 3.1.16 Fixed access step mounted on command post
 - 3.1.17 (1) Access step mounted on floor of the body to access the top of body compartment
 - 3.1.18 **DELETE**
 - 3.1.19 One pair of mud flaps to DOT specification.
 - 3.1.20 **DELETE**
 - 3.1.21 2/0 Black electrical cable used from grounding per ASTM F855-04:
 - 3.1.21.1 50 feet of multi-strand flexible copper cable, three grounding lugs, two ferrules and grounding clamp
 - 3.1.21.2 Three point grounding system for grounding vehicle during operations
 - 3.1.22 Cable must be fully removed from bracket before use.
 - 3.1.23 Grounding Loop Kit:
 - 3.1.23.1 Consists of (2) grounding copper rings located one at front and one at rear
 - 3.1.24 **DELETE**
 - 3.1.25 Boom rest for digger derrick, H-frame style weldment used on a A-frame, radials or out/down outriggers, 36 inch wide
 - 3.1.26 Digger derrick single position boom rest saddle
 - 3.1.27 **DELETE**
 - 3.1.27.1 **DELETE**
 - 3.1.28 Lighted license plate bracket kit with incandescent light
 - 3.1.29 **DELETE**
 - 3.1.30 **DELETE**
 - 3.1.31 Glad Hand Kit - Traction protection valve and air lines to the rear
 - 3.1.32 Hour meter for engine hours
 - 3.1.33 Remote engine stop/start control from rear of vehicle
 - 3.1.34 15 Ton pintle hook; safety chain eyes

SECTION B PART II TECHNICAL SPECIFICATIONS: (Continued);

3.0 BODY AND DERRICK INSTALLATION (Continued):

- 3.1.35 ICC rear bumper
- 3.1.36 7 prong trailer socket
- 3.1.37 Oil tank mounting for external reservoirs
- 3.1.38 (60) Fill with hydraulic oil for general purpose use; refer to the product maintenance manual for specific type to be used
- 3.1.39 1 1/8 inch x 100 feet, 2 in 1 stable braid uncoated rope
- 3.1.40 Miller swivel hook 6 ton
- 3.1.41 Hannay spring loaded hydraulic hose reel with 4-way roller assembly with 35 feet of ½ inch hose set. Locate at the rear of the vehicle, where protected with under-wind hose reel.
 - 3.1.41.1 Quick disconnected HTMA male and female flush faced couplers and dust covers
 - 3.1.41.2 Installed on hose reel with ball stop
- 3.1.42 Safety kit consists of the following:
 - 3.1.42.1 5-lb ABC fire extinguisher with bracket
 - 3.1.42.2 James King triangle reflector kit
- 3.1.43 Truck to be painted white, paint under carriage black
- 3.1.44 Derrick painted white
- 3.1.45 Paint body floor with non-skid paint
- 3.1.46 Paint compartment top with non-skid paint

4.0 DERRICK DIGGER:

- 4.1 Derrick Digger Manufacturer Reference: Terex – Commander 4000 Series No. 4050 or equal.
 - 4.1.1 **Hydraulic rotating digger derrick with a turret mounted winch/turntable winch.**
 - 4.1.2 **Design Criteria: In accordance with current industry and engineering standard and accepted for structural and hydraulic design (Meets ANSI/ASSE A10.331-2006)**
 - 4.1.3 Elevation from +80 degrees above horizontal to -20 degrees below horizontal
 - 4.1.4 **DELETE**
 - 4.1.5 Four (4) digger/augers in 8 Foot lengths – (1) 12 inch, (1) 18 inch, (1) 24 inch, (1) 30 inch.
 - 4.1.6 Auger storage left side
 - 4.1.7 Personnel platform for operator to sit in while operating the boom.(Fiberglass or steel)
 - 4.1.8 Liner with steps
 - 4.1.9 Command post operator controls
 - 4.1.10 Single stick “T” controls
 - 4.1.11 Engine stop/start and throttle – in cab
 - 4.1.12 Engine stop/start at lower controls – at chassis
 - 4.1.13 **DELETE**
 - 4.1.14 Hydraulic overload protection
 - 4.1.15 **TURRET MOUNTED WINCH**
 - 4.1.16 Material handling jib 8 ft.
 - 4.1.17 Transferrable pole flanges
 - 4.1.18 Pole guides, both standard and large
 - 4.1.19 Pole guide interlock
 - 4.1.20 Planetary slip brake rotation
 - 4.1.21 Hydraulic tool outlet(s) with stop/start mounted on chassis and operated from the ground near the rear of the vehicle.
 - 4.1.22 Pole tamp included
 - 4.1.23 Pole pullers both 8 X 12 and 8 X 24 with storage bin
 - 4.1.24 Multi-part line components
 - 4.1.25 Rear mounted derrick
 - 4.1.26 Boom storage warning light
 - 4.1.27 Outrigger sag light
 - 4.1.28 Dual A-Frame outriggers
 - 4.1.29 **DELETE**

SECTION B PART II TECHNICAL SPECIFICATIONS: (Continued)

4.0 DERRICK DIGGER (Continued):

- 4.1.30 Steel lower boom – fabricated by utilizing high-strength steel plates
- 4.1.31 Steel intermediate boom – fabricated box constructed of high strength steel. Powered by a double action hydraulic cylinder equipped with integral holding valves on both extend and retract ports
- 4.1.32 Fiberglass hydraulic upper boom – capable of lifting the hydraulic capacity of the derrick in all positions. Tested and rated for line voltage up to and including 46 KV AC.
- 4.1.33 Continuous and unrestricted rotation – oil distribution system
- 4.1.34 Relief valve to protect the derrick circuits and dipping winch circuits
- 4.1.35 Hydraulic hose shall be equipped with permanent type hose fittings
- 4.1.36 A custom load chart stating actual lifting capacity considering all final options, chassis, body outriggers, truck, and other fixed equipment with capacity based on completed unit stability included.
- 4.1.37 Warning decals placed appropriately on vehicle.
- 4.1.38 Turntable winch including transferable pole buddy assembly: 15,000 lb. bare drum capacity worm gear winch equipped with hydraulic counterbalance valve mounted on the derrick turntable. Equipped with flanged pole buddy transferrable from intermediate boom to upper boom, bare boom lift capabilities: Boom angel all booms retracted, maximum elevation 23,900 lbs. to 24750 lbs.(approximate), 10ft radius 11,000 lbs. – 11,600 lbs.(approximate)
- 4.1.39 Median digging radius 20.5ft**
- 4.1.40 Digging capacity at median radius 2,542- lbs
- 4.1.41 Lift capacity at median radius 4,524- lbs
- 4.1.42 Sheave height with intermediate boom extended 38.6 ft/ at maximum elevation, with upper boom extended 47.4 ft at maximum elevation. Bases on a 40 inch chassis frame height
- 4.1.43 Load radius 28.5 ft. from C/L rotation, at 0 degree, intermediate boom extended. 37.5 ft. from C/L of rotation, at 0 degree, upper boom extension
- 4.1.44 RH command post:
 - 4.1.44.1 Glycerin filled pressure gauge is provided to monitor system pressure
 - 4.1.44.2 Permanent type control decals
 - 4.1.44.3 Adjustable cushioned operator seat including side rails
 - 4.1.44.4 Hydraulic foot throttle
 - 4.1.44.5 Stop/Start control station with horn
- 4.1.45 Pole guide for Transferable pole buddy with interlock:
 - 4.1.45.1 Hydraulic cylinders equipped with holding valves operate the tilt and open/close on pole guide arms.
 - 4.1.45.2 Pole guide hoses are contained in a chain type carrier, installed on the side of the boom
 - 4.1.45.3 Transfers from the end of the intermediate boom to the end of the upper boom and vice versa
 - 4.1.45.4 The pole guide is installed on the transferable pole buddy flange assembly
 - 4.1.45.5 Protecting from the pole guide and the boom from accidental damages caused by extending the upper boom while the pole guide is on the intermediate boom and tilt downward. Includes actuating plunger and two poppet valves.
- 4.1.46 Single stick “T” control: that allows one hand to operate three functions: rotation, boom elevation, and intermediate boom extension.
 - 4.1.46.1 Upper boom extension and other functions have individual controls
- 4.1.47 Pole claw arms – circular design of arms that handle poles up to 23 inch diameter
- 4.1.48 Hydraulic overload protection for boom and rotation systems:
 - 4.1.48.1 An operator aid to prevent damage to the derrick by stopping selected; disable boom extend, winch up, and digger dig when boom lift or rotation senses an overloaded condition; fully automatic relative to the operations and re-set functions
- 4.1.49 Worm Gear Rotation – gear drive through reversible hydraulic motor with design for long life hardened “shear ball” ball bearing rotation gear
- 4.1.50 12,000 ft-lb. two speed digger with hydraulic shift; planetary gear drive powered by reversible hydraulic motor, telescopic trombone tube to shift the two-speed digger hydraulically

SECTION B PART II TECHNICAL SPECIFICATIONS: (Continued)

4.0 DERRICK DIGGER (Continued):

- 4.1.51 LH Auger storage and digger hanger:
 - 4.1.51.1 Digger hanger bracket box section equipped with a transfer protection system, auger stowage bracket with self-latching auger catch and hydraulic auger release
 - 4.1.51.2 Auger stowage bracket stores up to a 24 inch diameter auger, in the standard position
 - 4.1.51.3 The digger storage protection system to protect the auger storage cable from damage caused by over-winding. Oil from the digger system is returned to tank before cable is over-stressed
- 4.1.52 Wire rope cable for auger roll-up
- 4.1.53 Solid hex auger shaft with coupler; 60 inch long x 2 5/8 inch hex auger shaft with auger adjustment holes
- 4.1.54 Operator light at controls at command post/console
- 4.1.55 Pedestal: Square constructed pedestal has access holes for maintenance of hydraulic plumbing
- 4.1.56 Pump minimum 120% PTO
 - 4.1.56.1 Tandem vane high efficiency 3000 psi rated hydraulic pump providing 40 gallons per minute flow
 - 4.1.56.2 16 gallons per minute to boom functions and 24 gallons per minute to digger/winch functions and combines flow when boom is not operation, providing 40 gallons per minute to digger/winch at 160 rpm engine speed, boom extension is faster than which
 - 4.1.56.3 Provides up to 6 gallon per minute for tools at 700 rpm engine speed; with pump kit
- 4.1.57 Hydraulic Reservoir:
 - 4.1.57.1 50 gallon hydraulic oil reservoir includes 10 micron replaceable cartridge type return line filter mounted in reservoir with bypass valve incorporated in filter to prevent restricted flow
 - 4.1.57.2 Relief valve to protect the derrick circuits and digger-winch circuits
 - 4.1.57.3 100 mesh in screen in filter cap. A 40 mesh screen included in tank outlet and a 2 1/2 inch full flow gate type shut off valve
- 4.1.58 Extra heavy duty A-frame outriggers with swivel type stabilizer pads
- 4.1.59 Heavy duty A-frame outriggers with swivel type stabilizer pads
- 4.1.60 Controls for 2-sets of outriggers and auxiliary tool outlets below rotation (diggers)
 - 4.1.60.1 Recessed at rear truck each side for ease of view for outriggers placement
 - 4.1.60.2 Including switches and alarm for outrigger in motion alarm
- 4.1.61 Adjustable flow divider for auxiliary tool outlets below rotation
- 4.1.62 Boom interlock: to operate the boom the outriggers must be extended
- 4.1.63 Sub frame construction with an open center
- 4.1.64 Tie down kit
- 4.1.65 Remote Sensor Bracket: Bracket to be used with the Williams remote sensor. Installed to supply sensor to work truck engine
- 4.1.66 Chassis Controller 12 Volt:
 - 4.1.66.1 Display screen – Provides inputs and outputs indication for trouble shooting
 - 4.1.66.2 Warning screens
 - 4.1.66.3 Switch buttons have LED indicators to show when active
 - 4.1.66.4 Controller programmable for communication with different chassis manufacture
- 4.1.67 Clevis for two part line attachment

5.0 SAFETY AND AIR POLLUTION REQUIREMENTS AND REGULATIONS:

- 5.1 The unit(s) bid shall be in full and complete compliance with applicable safety and pollution requirements and regulations in effect at the time of the bid submittal. This includes but is not limited to standards established by the United States Department of Transportation, including the Federal Motor Vehicle Safety Standards (FMVSS), the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), the Texas Department of Transportation and the Texas Natural Resource Conservation Commission (TNRCC).

SECTION B PART II TECHNICAL SPECIFICATIONS: (Continued)

5.0 SAFETY AND AIR POLLUTION REQUIREMENTS AND REGULATIONS: (Continued)

- 5.2 The City of Houston requires that unit(s) bid be the lowest emission unit(s) available on the market for the specified requirement. The emission standard established by the EPA shall be considered only as minimum standards. In the absence of the EPA standard or if California Air Resources Board (CARB) standards provided lower emissions, CARB standards will be considered as the minimum if the specified unit and any required fuel are available to the City of Houston.
- 5.3 Federally regulated low emission vehicles and engines must be covered by an EPA-issued Certificate of Conformity certifying the engine to be in compliance with federal emission standards and bidder shall provide the Certificate of Conformity with their bid within three (3) working days from the written request of the City. EPA emission label must be affixed to the vehicle and/or engine and be readily visible.

6.0 LITERATURE:

- 6.1 Maintenance and Operator's Manuals:
Manuals are to be furnished upon delivery of equipment:
- 6.1.1 Two (2) complete sets of factory service shop repair manuals (Technical Service Manuals)
 - 6.1.2 Two (2) complete sets of factory parts manuals
 - 6.1.3 Two (2) complete sets of operators' manuals

7.0 DELIVERY:

- 7.1 The unit(s) specified above, with delivery tickets and/or other required documents shall be delivered Prepaid F.O.B. Destination to the Parks and Recreation Department, Houston, Texas within one-hundred eighty (180) calendar days after receipt of the City of Houston Purchase Order.
- 7.2 Unit(s) shall have $\frac{3}{4}$ tank of fuel, clean and shall be complete with all equipment operable at time of delivery/ inspection.

8.0 WARRANTY:

- 8.1 A minimum of five year/50,000 mile warranty that covers the extended derrick and aerial device, and all components. See bid item number three (3) on the e-bid.

9.0 TRAINING:

- 9.1 Supplier will provide two (2) two-hour operators training classes and two (2) two-hour technical training classes at the designated City facility.