**Technical Specifications**

**CAMEL MAX Series, 900 Dump Model**

**Truck Mounted Combination High Pressure Jet / Vacuum Machine**

**9 CUBIC YARD / 1000 GALLON**

**DUMP TYPE DEBRIS BODY**

**Instructions**

The bidder shall indicate compliance to each section of the specifications by a **yes** or **no.** Any **no** indication must be fully explained in the deviations, exceptions, exclusions space, or it will be assumed that the features and performance are as specified and will be supplied without exception. If additional space is needed, bidder shall attach (on bidder’s letterhead) a statement of deviations, exceptions, and exclusions. Failure to deliver unit as specified will result in rejection of the unit and non-payment.

**General**

The equipment described herein shall be utilized for the purpose of simultaneous high-pressure hydraulic flushing of sanitary and storm drain sewer pipes and removal of liquids and solids from the manhole by use of vacuum generated by a positive displacement dual lobe blower. All operations shall be able to be performed by one operator. All material from the manhole shall be deposited within one cylindrical debris tank. The entire unit is to be of a single engine design. The chassis engine is to power all functions of the combination unit. Units utilizing additional engines and fan type vacuum air movement are unacceptable due to weight, fuel costs, emissions, and maintenance costs.

**A) WATER STORAGE TANKS**

1. 1000-gallon minimum usable capacity.
2. Water storage saddle tanks mounted no lower than chassis frame rails to keep the single piston pump inlet flooded.
3. Water Tanks to be made of a non-corrosive recyclable material with a lifetime warranty against corrosion.
4. Bottom of tank protected by ¼" steel to eliminate potential puncture from road debris.
5. The total tank capacity shall be divided into 250-gallon, separate, self-baffling cells connecting together. Individual tanks shall all be mounted at the same level to provide balanced pressurization and prevent air cavitation problems.
6. Tank to pump suction 3” dia shut-off valve with cast iron, 3” dia “Y” type strainer with stainless steel filter element.
7. Baffled Tanks are connected with 4” dia hump hose. This allows fast and even filling of all of the tanks.
8. Provide Two (2) gravity drains located below water tanks to completely drain the fresh water tanks. One (1) 3” ball valve located on the water tank crossover pipe at the rear of the unit. One “Y” strainer located at the front of the water tanks.
9. Water tanks to raise with debris body to completely drain water and sediment from the tanks.
10. One ½” dia ball valve located on the water tank crossover pipe to provide an operator hand washing station.
11. Minimum 5" air gap on fill tube to prevent siphoning of water from storage tanks back into hydrant.
12. Clear sight level indicator tubes mounted both sides of unit.
13. Ten Year Warranty against defects in materials and workmanship

**Water Storage Tanks - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**B) ECO WATER PUMP**

1. Double acting, single piston hydraulic powered water pump with 1:1 oil to water ratio. It shall be driven by a flow & pressure compensating hydraulic system for reduced fuel consumption.
2. Rated design full capacity of 100 GPM and 3,000 PSI continuous duty
3. Hydraulic pump and water pump shall be sized to produce 80 GPM @ 2000 PSI at an engine rpm of 1650 rpm or less.
4. Manually operated dual hydro-pneumatic nitrogen charged 2-1/2 pound accumulators with on/ off valve shall be provided to handle pressures from 600 to 3000. Hydro-pneumatic accumulator shall be equipped with valve to allow operator to selectively activate jackhammer/blockage busting or the smooth continuous flow characteristic.
5. Smart pressure sensing pump. Water pump matches need determined by flow and pressure requested by front control panel dial.
6. Switch at control panel shall control engagement and disengagement and variable flow zero to maximum GPM, from zero to full pressure.
7. Pump driven hydraulically by two hydraulic pumps. One powered by a transmission-mounted hot shift PTO and the second powered by the transfer case.
8. Pump mounted below water tanks, forward of debris tank to assure flooded inlet at all times to prevent cavitation.
9. Single two-way ball valve for sewer nozzle operation.
10. Multi flow system dial at control panel to allow independent control of the vacuum pump and water pump.
11. Single dial to control water pump on/off and water pressure
12. An in-line water to oil cooler shall be installed between the water tanks and the pump. The oil cooler shall not be installed within another component such as a water or oil tank.
13. A second air to water cooler shall be installed. This second cooler shall be installed to assist in the cooling of hydraulic fluid during low water flow and hydro-ex operations. The hydraulic system shall not overheat under normal operating conditions including hydro-ex.
14. For maintenance and serviceability, the water pump shall not require removal from the unit chassis for maintenance or repair. Pumps that require the draining of hydraulic fluid are not acceptable.
15. The water end can be serviced without disassembling both the water and hydraulic ends.
16. A minimum 40 GPM flow system will be supplied to prevent freeze-up by pumping water through the system, including hose reel while driving to the jobsite. No electric pumps allowed.
17. Self-contained system for purging water from jetting hose, handgun lines and pump to prevent freeze-up. Air to be supplied by unit chassis.
18. A 1/2” valve shall be installed on the water pump to aid in draining, flushing out and the prime/purging operations.
19. A five-gallon antifreeze tank shall be plumbed into water pump for winterization during non-working hours.

**Water Pump - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**C) VACUUM SYSTEM POSITIVE DISPLACEMENT**

1. Vacuum pump rotary lobe positive displacement "roots type" using two impellers rotating in opposite directions to move entrapped air around the case to the outlet port. Pump shall be rated for continuous duty.
2. During normal vacuuming operation the chassis RPM should not exceed 1700 RPM.
3. Unit equipped with a high efficiency exhaust silencer.
4. Vacuum pump direct shaft driven from the transfer case without the use of belts, poly chains or intermediate hydraulic or hydrostatic systems. Power supplied from chassis engine via transfer case. The ECO direct transfer case drive will reduce fuel consumption over hydraulic drive systems.
5. A Hot Shift control is supplied at front control panel to engage and disengage vacuum pump for operator safety. No need to enter truck cab.
6. Three automatic opening vacuum (Kunkle) relief valves shall be provided for vacuum pumps rated less than full vacuum.
7. Single 14" diameter, internal stainless-steel float ball supplied for automatic vacuum system shut off when unit is full. A minimum 113 square inches must be provided at the air exit duct to reduce air velocity and carryover.
8. An externally mounted, vertical cyclone separator with a 16” diameter clean out door shall be incorporated between the positive displacement vacuum pump and the debris tank. The clean out door shall be mounted less than four feet from ground level for operator safety. The cyclone shall have a minimum 41,000 cubic inch internal operating size.
9. Vacuum relief vent switch located at operator’s station to relieve vacuum. Switch shall open a vent door via an air cylinder to relieve the vacuum without disengaging the vacuum pump.
10. The environment shall be protected by a single washable cartridge filter capable of containing particles sized 10 microns or larger. Cartridge filter housing shall be constructed on ¼” steel 28” in diameter and 22” in depth. Washable Filter element shall be 22” x 21” constructed of washable rigid polyester, unitized in a stainless-steel housing, 98% efficient @ 10 microns. Filter element shall have a total filter area of 120 sq. ft.
11. Hydraulically operated vacuum boost valve shall be supplied. The valve shall close off the air flow through the boom, creating full rated vacuum inside the debris tank. When opened, a velocity of air shall rush through the boom and vacuum tubes.
12. Vacuum pump shall produce 4500CFM and 18” Hg.
13. Vacuum Pump to be Howden (roots) Model 824 RCS.

**Vacuum System Positive Displacement - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**D) DEBRIS BODY – DUMP UNLOADING**

1. Minimum volumetric capacity of 9.0 cubic yards.
2. Cylindrical shaped for strength and corrosion resistance. Flat sided debris tanks are specifically prohibited due to flex and weld deterioration
3. Designed to withstand 360" of water vacuum.
4. Debris tank to be constructed of abrasion and corrosion resistant ¼” Exten steel, with a yield strength of 50,000 PSI and tensile strength of 70,000 PSI.
5. Hydraulic powered open and close, full height and width flat rear door with self-compensating, double-lipped neoprene seal located on door. Rear door to be opened and closed by two (power up/down hydraulic cylinders. The door shall hydraulically open 90 degrees to allow easy access to the debris body interior for cleanout.
6. Four mechanical, wedge pin and receiver, hydraulically operated tailgate latches shall be supplied for securing rear debris tank door. Hydraulic latching shall be accomplished by a single hydraulic cylinder with mechanical linkage, separate from the door open close cylinders. The design of the locking system will not allow tailgate to open if hydraulic power is lost. Systems requiring separate manual latches to secure the door in the event of hydraulic system failure are unacceptable.
7. Exterior mechanical liquid level gauge with stainless steel float and rod.
8. Internal tank manifold flushing system with eight jets capable of full working GPM and PSI from the water pump.
9. The debris inlet pipe shall be bolted to the debris tank and not require welding to replace
10. The make/break connection between debris inlet pipe and boom must compensate for uneven road and ground conditions by way of spring-loaded and gasketed mating plates.
11. Body shall be raised with a two-stage double acting telescopic cylinder to enable the debris body to be powered up or down. The cylinder shall be trunnion mounted with greaseable pins. The debris body is to have a minimum dump angle of 50 degrees.
12. Rear body pivot pins to be greaseable to increase pin life.
13. Controls for latching/unlatching, opening/closing, and raising/lowering the debris body shall be located on the passenger side and forward of the debris tank.
14. Rear gravity drain valve shall be a minimum 6" diameter opening for decanting of liquids from debris body and shall include a knife valve and 10’ of fabric drain hose.
15. A combined visual and audible alarm must provide an alert whenever the debris body or tailgate is being raised or lowered.
16. Remote grease package – Tailgate and boom/bearing/motor. Boom bearing and motor grease to be delivered by way of fittings located on the passenger side of the body. Fittings to be no higher than 42” above the ground. Tailgate grease to be delivered by way of a single fitting and grease manifold. The single fitting is to be located on the tailgate and at a no higher than 72” off the ground.

**Debris Body Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, exceptions, exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**E) HOSE REEL, FRONT MOUNT, “ROTATING & EXTENDABLE**

1. The hose reel assembly shall be front mounted at the center of the unit with 270-degree manual rotation to facilitate manhole entry and reduce traffic flow interruption. Manual rotation shall occur between the headlights of the truck chassis keeping the reel at a centered position at all times for operator safety.
2. Hose reel assembly shall rotate on a large diameter ball bearing and include a pneumatically actuated lock, which will positively lock the reel in any position across its operating range. Fork or gear type locks will not be acceptable.
3. The hose reel shall be capable of extending 18” to facilitate manhole entry and to allow tilting of engine hood. Hose reel to be capable of 270-degree rotation extended & 180-degree rotation retracted.
4. The hose reel shall have a minimum capacity of 1000' of 1" I.D. sewer hose. Drum and flanges constructed of ¼” steel, designed to withstand maximum working pressure without distortion. The drum shall have a minimum of 24" diameter to prevent hose damage. The reel shall be supported by two heavy duty self-aligning pillow block bearings, bolted to a ¼" thick support frame.
5. 600 feet of 1" dia. plastic sewer cleaner hose supplied, with 2500 PSI working, 6250 PSI burst pressure ratings minimum. Hose must be constructed per standards established by NSWMA. Rubber type sewer hoses are not acceptable.
6. Reel driven by a double chain, hydraulic drive producing a minimum 14,600 in/lbs. torque and a variable speed from 0 to 40 RPM.
7. Sewer hose footage counter shall be electronic with digital readout and 20 footage memory storage locations. Electronic calculation must automatically account for hose being paid out of the hose reel, not just measure reel rotations.
8. Manually controlled level wind provided, utilizing four rollers. The rollers must be designed to pivot over center to allow for sewer hose removal without having to completely rewind back on the reel. Rollers to provide minimum bend radius of sewer hose for safer operation.
9. A safety containment system enclosing the top half of the hose reel shall be provided, consisting of a guard constructed entirely of Lexan. The transparent containment system permits viewing of hose reel and sewer hose, while protecting the operator from hose burst or coupling failure.
10. A Hot Shift Control is supplied at the front control panel to engage and disengage vacuum pump for operator safety.

**Hose Reel Front Mount “Rotating” - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**F) POWER BOOM**

1. The power boom shall have a minimum of 217-degree hydraulic worm gear rotation and be lockable in any position. Systems using hydraulic cylinders will not be acceptable.
2. A boom rest for transport and safety shall be directly mounted to the sub frame.
3. Boom shall not raise with debris body.
4. The boom shall have an articulated function that provides a vertical range of motion of no less than 16’ (40 degrees) upward and 4’ (9 degrees) downward from its horizontal position.
5. Boom shall be equipped with a heavy-duty channel reinforced elbow for long life.
6. The lift capacity at the boom end shall be 1,000 pounds minimum retracted.
7. A joy stick shall be permanently mounted to the operator control station for boom functions: up, down, left and right, in/out.
8. The boom shall be controlled by two options: (1) Joystick at front control panel, (2): remote controlled wireless pendant that recharges inside chassis cab. Wireless pendant is capable of up to 20 functions.
9. The boom vacuum pipe shall be 8" and reach a minimum of 26’ from centerline of unit. Hydraulic boom extension of 8' shall be true telescoping tube inside of tube design which will extend and retract without affecting the vertical position of the boom. The boom structural support tubes shall be equipped with ultra-high molecular weight poly slides to reduce friction of the sliding portions of the assembly and not require lubrication.
10. The travel storage position shall be at front right corner of truck bumper for driver visibility.
11. The boom hose shall be removable from the steel elbow without tools or ladders to provide unobstructed operator visibility.
12. A boom up message and alarm shall be provided in the chassis cab for operator safety.
13. A centralized lubrication point for the boom shall be located on curbside of the unit accessible from ground level.

**Power Boom - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**G) CONTROL CENTER**

**A. IN-CAB CONTROL CENTER**

1. The in-cab control center shall include a means of selecting Road Mode or Work Mode.
2. The in-cab control center shall include a digital display including:
	* Body Raised message and alarm
	* Boom Raised message and alarm
	* Tailgate unlocked message and alarm
	* E-stop active alarm
	* Control system status menus which indicate working or fault conditions
	* Strobe and LED work lights & safety light controls

**B. FRONT CONTROL CENTER**

1. The operator front control center shall be located at the front of the unit.

2. The front control center shall include a means of selecting vacuum mode (which disables the body movement functions) or Dump Mode (which disables the boom movement functions) .

1. The front control center shall include a digital display including:
	* Engine speed
	* Water pressure
	* Hose reel payout
	* Hose reel speed in feet per minute
	* Sewer hose footage counter with 20 bank memory
	* Plug in Pendant
	* Debris tank Level (Option)
	* Fuel consumption
	* Fuel level
	* Water Flow Rate
	* Fresh Water Level (Option)
	* Water Pump Hour Meter
	* Vacuum level (inches Hg)
	* Blower speed
	* Blower hour meter
	* Blower temperature
	* Engine oil pressure
	* Engine temperature
	* Engine voltage
	* Chassis air pressure
	* Unit hydraulic temperature
	* Control system status menus which indicate working or fault conditions for trouble shooting
	* User option menu to select between English or Spanish language
	* Backup controls menu with a secondary means of engaging the blower, water pump and moving body and boom functions
	* Screen that provides a rolling hour countdown of key maintenance requirements
	* Valve settings menu to adjust maximum and minimum speeds of the boom movements and the hose reel pay-in/pay-out speed
2. Single two-way ball valve for jetter hose on/off.
3. Hose reel joystick control pay in/pay out with speed control.
4. Boom joystick control
5. Emergency stop red knob
6. Vacuum relief control switch
7. Vacuum Boost valve control switch (optional if Vacuum Boost valve is required)
8. Reel pivot brake control button
9. Water pump variable flow control
10. Hot shift vacuum/engine speed control dial with safety speed sensor to prevent damage during engagement.
11. In the event of failure by the chassis to provide power to the hydraulics, a 12-volt power-pack will provide emergency hydraulics to the body, boom and hose reel. All standard body, boom and hose reel control inputs will function when under the backup hydraulics. Operation of this feature does not require the engine to be running.
12. A single button on the control panel to engage and disengage vacuum pump for operator safety.

**C. CURBSIDE CONTROL CENTER**

1. The curbside control center shall include a means of selecting vacuum Mode (which disables the body movement functions) or Dump Mode (which disables the boom movement functions).

2. The Curbside control center shall include:

* + Pendant Plug
	+ Panel Lights
	+ Emergency E-Stop red knob
	+ Push-button controls to open and close the tailgate
	+ Push-button controls to raise and lower the debris body
	+ Push-button controls to increase and decrease water pressure
	+ Ejector Plate hydraulic pressure gauge

**Control Center - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**H) Lighting**

1. LED Boom Flood Lights– two LED floodlights to be mounted on opposite sides of the boom elbow. Light sources other than LED are not acceptable.
2. LED Strobe/Advisor Package No. 2 consists of two LED North American Signal Part# LED400HD-Astrobe lights mounted top rear of body, two LED strobe lights mounted at front section of boom and one LED top rear traffic advisor with in cab controls.
3. LED Strobe/Advisor Package No. 3 consists of two LED strobe lights mounted on lower front of unit, two (2) LED strobe lights mounted lower mid-length of unit two LED strobe lights mounted on lower rear of unit with in cab controls.
4. All electrical connections shall be void of exposed wires or terminals and be free of paint. The unit paint process to be completed prior to installation of wiring in manufacturing.
5. All light bulbs are to be shock mounted or shock resistant to eliminate bulb failure.

**I) VACUUM TUBES AND BRACKETS**

1. 8” O.D. aluminum tubes with male/female fittings supplied for ease of assembly.
2. One 7’ section, two 5’ sections, and one 3’ section supplied. One gasket and over center clamp for each tube supplied. No tools required with clamps.
3. Four tube storage rack, located on rear door with polymer tube holders.
4. Two 3-tube vertical storage racks to be mounted to exhaust silencer on passenger side street level accessible.
5. Tube racks on driver side, potentially placing workers in traffic during accessing, are not acceptable.

**Vacuum Tubes and Brackets - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**J) TOOLBOXES**

1. Two lockable diamond plate aluminum toolboxes, 18"x18"x48" frame mounted, passenger side mid –ship.

**Toolbox - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**K) WIRELESS CONTROL (Optional)**

* 1. The control shall be contained in a water proof/shock proof housing with a carrying case with belt and shoulder strap. The wireless remote is recharged in a recharging station located in the cab. The remote control shall have the following functions:
	2. Boom up/down, in /out, left/right
	3. Engine throttle
	4. Water flow and pressure
	5. Vacuum relief vent door
	6. Emergency button that will automatically open vacuum relief vent door stop all hydraulic functions, kick out water pump and vacuum pump PTO’s and bring engine to an idle
	7. A reset function to return the unit to normal operation after emergency button has been pushed. For safety purposes, this reset function will require constant pressure and will require a minimum of five seconds between activation of the reset and the return of the unit to normal operation.
	8. The wireless remote shall control the sewer hose pay out / retrieve function of the hose reel
	9. Rear Door Unlock, Raise, Dump or Eject, Lower and Lock
	10. 2x16 character backlit LCD panel display
	11. Water pressure in PSI
	12. Payout footage in feet.
	13. Reel Speed in percentage
	14. Fresh water level in percentage
	15. Debris level in percentage
	16. Engine RPM
	17. Operating System Status
	18. Emergency E-Stop button

**L) WATER WASHDOWN SYSTEM**

1. Main water pump shall supply water source with means of regulating pressure from 0 to 2000 PSI available at handgun quick disconnect. No Exceptions.
2. Retractable hose reel with live center complete with 50' x ½" hose provided with quick disconnect. Located behind the cab.
3. 2000 PSI wash down gun with adjustable nozzle.

**Water Washdown System - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**M) LOOSE PART ACCESSORIES**

1. One 1" x 15-degree steel nozzle with hardened orifice supplied.

2. One 1" x 35-degree steel nozzle with hardened orifice supplied.

3. One 1" nozzle extension supplied.

4. 2½" x 25' fill hose with fittings for filling water tanks supplied, including storage bin.

5. 1”dia x 10’ Long Leader Hose.

6. Minimum 3000 psi rated adjustable handgun shall be supplied.

7. One “tiger tail” hose guide supplied complete with rope.

8. Two each operation, maintenance and parts manual supplied on flash drive.

**Accessory - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**N) HYDRO-EXCAVATION ACCESSORY KIT**

 1. One 8” x 6” Reducer.

 2. One 6” x 6’ Dig tube with non-conducting cuff.

 3. One 3000 psi rated Handgun with on/off trigger.

 4. One, ½” x 30” Pipe extension with quick disconnects

 5. Three 1/2” x 6’ Pipe extensions with quick disconnects.

 6. One 12 GPM Ripsaw nozzle.

 7. One each of an 8” diameter and 6” diameter Supertube locking clamps.

 8. One each of an 8” diameter and 6” diameter “O” Ring.

 9. Additional fan cooling for keeping hydraulic system cool during Hydro-Ex operations.

 Systems only using an in-line oil cooler will be considered unacceptable.

**Hydro-Excavation Accessory Kit - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**O) PAINT**

1. Urethane paint: unit to match chassis cab.
2. Color L0006EB White Elite

**Paint - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**P) WARRANTY**

1. Warranty minimum one year on sewer/catch basin cleaner free from defects in material and workmanship per Super Products LLC Warranty Statement.
2. Minimum ten years on debris tank on defects in material and workmanship.
3. Minimum ten years on water tanks on defects in material and workmanship.
4. Lifetime rust-through and corrosion on water tanks. Aluminum tanks are considered unacceptable.
5. Minimum three years on single piston water pump on defects in material and workmanship. Wear items are not included in warranty.

**Warranty - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Q) SAFETY**

1. The entire unit shall be no more than 11’ 11” in overall height to reduce high center of gravity tipping risk.

Bidder to state overall height of unit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. To eliminate obstruction of a driver’s field of vision, the boom hose or tube end must be removable from the boom elbow. For safety of personnel, removal of the boom hose or tube must be able to be completed from ground level without the use of ladders, lifts, steps or any other access assisting device.

**Safety - Comply:** Yes \_\_\_\_\_ No \_\_\_\_\_\_

**Deviations, Exceptions, Exclusions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**R) CHASSIS SPECIFICATIONS - MINIMUM 60,000 Lb. Gross vehicle weight**

1. 370 hp Diesel Engine, 1150 lb-ft Torque
2. Electronic Engine Warning System
3. Remote Mounted Engine Control
4. 160 Amp Alternator
5. Dual Batteries 1850 CCA Total
6. Circuit Breakers
7. 13.2 CFM Air Compressor
8. Dust Shields on Air Brake Chambers, Front and Rear
9. Air Dryer with Heater
10. Allison 3000 RDS P Automatic Transmission with 10 Bolt PTO’s at 4 and 8 o’clock position with Oil Cooler, Push Button Control
11. Transmission Temperature Gauge
12. 20,000 lb. Front Axle and Suspension Set Back
13. 30,000 lb. Rear Axle, 5.57 Ratio
14. Electric Over Air Power Divider Switch with Indicator Light
15. Hendrickson RT-403 Rear Suspension
16. Vertical Exhaust
17. 120,000 PSI Frame with Outer C Channel 120,000 PSI Reinforcement
18. Integral Front Frame Extension, 20”
19. 70 Gallon Fuel Tank
20. Full Gauge Cluster – Speedometer, Tachometer, Oil Pressure, Dual Air Gauges, Coolant, Volts, Fuel, Transmission Temp
21. Overhead Storage Pockets (2)
22. Cruise Control
23. Driver and passenger Air Seats
24. Heated Dual Mirrors with Dual Convex Spot Mirrors
25. AM/FM Radio w/ Weather band
26. Air Conditioning
27. Tinted Glass
28. Air Horn
29. Disc Wheels aluminum front
30. Disc wheels steel rear
31. Front Tires: 425/65R 22.5 G 286A Radial 20 Ply
32. Rear Tires 11R 22.5G 164 Radial 14 Ply Mud & Snow
33. Body Builder Wiring and Interface
34. Wheel base and frame dimensions according to body builder’s requirements
35. Paint: White
36. Hood Insulation to aid in lower engine noise
37. 5lb Fire extinguisher
38. Safety triangle kit

**S) CHASSIS REQUIRED OPTIONS**

 1. Two Front mounted tow hooks.

 2. Two Rear mounted tow hooks.