

COCHRAN SEWER JETTER MACHINE

The City of Cochran is soliciting sealed bids from qualified equipment suppliers for a jetter trailer machine, with camera, for the purpose of cleaning public sewer and stormsewer lines.

The attached specifications must be met as a minimum. The City is open to considering sealed bids that offer an equivalent approach to meeting the minimum specifications. The City prefers sealed bids that meet the listed specifications. Non-collusion affidavits are required in the bid packet. An affidavit certifying that the bid has been signed by a principal in the firm is required. E-Verify documentation required. A thorough description of the total product warranty is required.

The deadline for submitting sealed bids is **Thursday, August 30, 2018 at 2:00 p.m.** Three (3) copies of the bids must be enclosed, and they all must be signed by a principal of the firm. Sealed bids must be received at the following address by the stated time deadline: 112 West Dykes Street, Cochran, Georgia 31014. Bidders are expected to follow Georgia DOAS procurement requirements, as per Manual, when submitting a sealed bid to the City of Cochran. Questions concerning the specifications can be addressed to Cochran City Hall, City Manager, at (478) 934-6346 during normal business hours, or e-mail at rnewbern@cityofcochran.com.

The City of Cochran reserves the right to reject any and all bids and waive technicalities.”

747-FR2000TV ECO
TRAILER MOUNTED SEWER CLEANER
WITH TELEVISION INSPECTION SYSTEM

YES NO

Please check "YES" or "NO" for each item below. Items checked "YES" must meet specifications exactly. For all items checked "NO", please clearly note differences on a separate sheet of paper. The City reserves the right to review exceptions and judge the possibility of their acceptability. Failure to note exceptions will cause rejection of said bid.

A. GENERAL:

It is the intent of these specifications to describe the minimum requirements for a new High Pressure Water Jet designed for the removal of sand, dirt, grease, detergents, and other materials normally found in storm, drain and sanitary pipes. The machine described will be designed to deliver high performance capabilities and provide maximum safety and convenience. All parts not specifically mentioned which are required for complete unit shall conform in design, strength, quality of material, and workmanship to the highest standards of engineering practice. Unit to also have a water jet propelled camera system.

B-1. CAMERA CONTROL SYSTEM:

- 1. The camera control equipment shall operate on 12 VDC power and be rated for mobile operation with a water proof rating of IP65 and be mounted at the operator's station.
- 2. The camera control unit must include an inline fuse to protect the camera system in case power surge were to happen.
- 3. Camera control equipment shall consist of an SD card recorder, USB port, integrated keypad, monitor and keyboard tray.
- 4. Unit shall have a Removable SD Card compatible with any SD card reader and computer. Videos saved on file, must be able to operate with an video program using H.264 codecs.
- 5. The camera control unit shall have a USB port on the left side of the panel. This USB port will allow the operator to link a laptop to the control unit to access the SD card files without removing the SD card from control unit.
- 6. The camera control equipment shall consist of an integrated keypad at the front of the control panel. The keypad must include the following functions: Record, Stop, Play, Menu, Titler functions, light intensity, and footage controls.
- 7. For operator ease, the camera control equipment must be capable of recording video with a touch of a single button.
- 8. The control panel must also include a camera snap shot option that will allow the user to take direct photos from the live video and save them to the SD card.
- 9. The camera monitor shall be a 7" high brightness display mounted on a swivel display mount, which will allow for direct sun viewing. The monitor must be mounted on the left side of the hose reel assembly.
- 10. The camera control unit must include a detachable keyboard. This keyboard will allow the operator to add titles, notes and arrows directly to the on-screen display that will be viewable on the saved videos and pictures on the SD card.
- 11. The camera control unit must be capable of reviewing videos directly on at the operator's station without the use of external devices.
- 12. The camera control unit must include a quick command list of all function keys to help the operator in the operating of the machine.

Note: The Camera system is expected to be able to be removed from the Jetter Machine if the operator needs to use the Jetter separate from the Camera. The Camera system should be able to be easily disconnected from the Jetter Trailer for this purpose.

B-2. CAMERA:

- 1. The camera shall be self righting/self leveling and of a high resolution (400 lines minimum) color camera. The camera shall also have high sensitivity, 0.2-LUX minimum.
- 2. The camera shall have an Electronic Iris to compensate for light intensity.
- 3. The camera shall have a shatterproof Sapphire Window, stainless steel housing, and be internally potted for shock protection and water resistance.
- 4. The camera shall have an LED light head consisting of 48 Low Power, long life LEDs. The LED light head shall be designed for illumination for up to 24" diameter pipes.

B-3. CAMERA SKID:

- 1. Camera skid shall be propelled through the sewer via a water jet skid complete with replaceable inserts.
- 2. Camera skid shall be constructed of machined aluminum and stainless steel with nylon wheels.
- 3. Camera skid shall not require wrenches to change from one size pipe diameter to the next, a single head cover shall be removable to allow for changing of the skid size. Three removable wheel carriers shall be used for changing skid for pipe sizes from 4" to 15".
- 4. Camera skid shall have a path through the center of the skid for the connection cable to run of sufficient size to allow for a strain relief loop so the possibility of cable abrasion from the sewer line is eliminated.
- 5. Provision shall be made at rear of skid for an anchor tether to be used to anchor the camera skid to the Kevlar reinforce cable contained within the umbilical.

C. UMBILICAL HOSE / CABLE:

- ___ ___ 1. The Camera system propulsion / communication "umbilical" link shall be provided by a dual fused hose incorporating both a water propulsion raceway and a television cable raceway in a common assembly and shall be a minimum of 500' in length.
- ___ ___ 2. The water propulsion raceway shall be constructed of a specially formulated thermoplastic material with a pressure rating of 2500 psi, measuring 3/4" in diameter and will be supplied by the sewer cleaning high pressure water source.
- ___ ___ 3. The television cable shall provide adequate conductors to communicate the required signals to either a Pan & Tilt camera system or a Single Vision camera system. In addition, this cable shall contain a shielded conductor for the video signal and a Kevlar reinforcing jacket for strength
- ___ ___ 4. Said television cable shall not have any type of junction interface between the camera head and the umbilical hose reel as these junctions may allow for water infiltration and/or poor reliability.
- ___ ___ 5. The television cable shall connect to the camera head via military style plug and socket connector complete with water tight sealing system and quarter-turn physical locking device.

D. WATER TANK SYSTEM:

- ___ ___ 1. Total capacity of tanks shall be 700 gallons with each tank having a capacity of 350 gallon. 700 gallon tanks consisting of a single chamber are not acceptable due to excessive water surging while driving.
- ___ ___ 2. Tanks shall be constructed of 3/8" thick High Density Polyethylene. This polyethylene material shall be UV stabilized for protection against damaging ultraviolet rays.
- ___ ___ 3. Tank color shall be black to minimize light penetration that can cause growth of algae. Clear or translucent tanks are not acceptable.
- ___ ___ 4. The tank system shall be vented and have a tank top porthole to permit inspection and cleaning of the tank. The porthole will have a two part lid which provides a smaller opening for filling or with a complete removal of lid allowing for a larger opening for tank cleaning and inspection. The tank will have a 2" drain valve located at the front of the trailer.
- ___ ___ 5. Tanks constructed of steel will not be acceptable due to the potential of water pump damage by rust and corrosion particles.
- ___ ___ 6. Tanks must be secured with a resilient nylon strap that wraps around tank. Bolt on tanks or tanks secured with metal straps will not be accepted.

E. FILL SYSTEM:

- ___ ___ 1. An overhead type tank filling assembly with a 2-1/2" fire hydrant fitting shall be located on the curbside.
- ___ ___ 2. A positive air gap anti-siphon system shall be incorporated to protect the potable water supply. Tank fill system will have an anti-siphon device at the tank top which eliminates entry of foreign objects into the tank.
- ___ ___ 3. A tank top strainer will also be supplied to filter water supply.
- ___ ___ 4. A water level sight gauge shall be provided.

F. WATER PUMP:

- ___ ___ 1. Pump shall be positive displacement, heavy duty, and single acting triplex type having a capacity of at least 40 GPM at 2000 PSI.
- ___ ___ 1a. Upgrade water pump to 40 GPM at 3000 PSI.
- ___ ___ 2. The high-pressure pump and hose will be protected from freezing with an air purge valve.
- ___ ___ 3. As standard equipment, the unit will have a recirculating valve that allows the operator to run water through the entire jetting system during cold weather operation.
- ___ ___ 4. Pump suction to be constructed of corrosion resistant PVC piping with integral "Y" strainer for protecting the pump.
- ___ ___ 5. The water pump shall be equipped with drain valves for protection during freezing conditions
- ___ ___ 6. Pump drive belt must be equipped with a safety guard.
- ___ ___ 7. Engine speed for 40 GPM / 2000 PSI pump shall not exceed 1500 RPM
- ___ ___ 8. Engine speed for 40 GPM / 3000 PSI pump shall not exceed 1800 RPM

G. SAFETY HOSE REEL AND CONTROLS:

- ___ ___ 1. Unit shall be equipped with two (2) hose reels. The hose reels shall be constructed of 1/4" steel, designed to withstand maximum working pressure without distortion.
- ___ ___ 3. The left side reel of the unit shall have a minimum capacity of 500' of Umbilical Hose/Cable and the right side of the reel of the unit shall have a minimum capacity of 800' of 3/4" sewer hose.
- ___ ___ 4. Reel flanges shall be 1-1/2" and shall be designed to prevent hose damage from contact during all normal working conditions.
- ___ ___ 5. The design of the reel shall include a minimum 1/4" deep "shoulder" machined into the shaft that traps the reel between the bearing blocks on the either side of the reel. This shoulder shall minimize side-to-side movement of the reel and prevent the shaft from sliding out from the reel and creating a safety hazard. In addition, the shoulders shall improve the ability of the system to handle any thrust loadings on the reel assembly.
- ___ ___ 6. The reel shall be an enclosed structure with no moving parts and no hoses exposed to the outside of the reel. This will protect the hoses and minimize the chance of injuries due to moving parts. Exposed hoses shall not be acceptable.
- ___ ___ 7. All hoses used to supply the hose reel or its hydraulic system shall be flexible and shall be fully enclosed in a shroud and routed underneath the reel structure below the reel drum. The hoses shall be fully secured and protected against chafing and rubbing.

8. The reels shall be driven with hydraulic power in both directions, either with or without the water pump in operation. The hydraulic drive shall have sufficient power to retract the hose when fully extended into the pipe with the cleaning nozzle in operation.
9. The safety reels will rotate a full 135 degrees providing easy access to manholes. The 135 degree rotation will enable the operator to position the machine out of the traffic pattern and provide protection for himself while operating the machine. The rotating ability of the hose reel allows the operator to manipulate the hose reel into various positions depending on location of manhole. This allows for proper positioning of the hose reel without backing up or repositioning sewer machine. The hose reel is mounted on an industrial swivel bearing that is sealed and eliminates contamination from dirt. The industrial swivel bearing shall have minimum requirements of 7.88 I.D., 14" O.D., and 2" thickness. The industrial swivel bearing shall have a minimum load bearing weight of 5,000 Ft.-lbs. The bearing design shall have no wear points except the greasable ball bearings and the races, which are constructed of hardened steel to minimize wear. The bearing design minimizes any friction for easy pivoting. The rotation of the Camera Umbilical Reel can also be viewed on the monitor of the TV system. T
10. Rotating reels using plastic material and/or sliding contact or other wear surfaces for swivel action will not be accepted.
11. A single, right hand side control panel mounted on the rotating hose reel shall provide access to all necessary operating controls. The control panel shall rotate with the reel. Designs that position controls on the left/traffic side of the jetter are not acceptable.
12. Controls mounted on the rotating hose reel control panel will consist of: Engine throttle control, starter with key lock starting switch, volt meter, oil pressure gauge, water pressure gauge tachometer, hour meter, 12-volt plug for spotlight, light switches and low water warning light.
13. The hydraulic controls for the rotating hose reel will consist of: a variable speed control and a forward, neutral, reverse directional control.
14. The reel design shall be such that either a rotating or fixed position reel will be interchangeable with regards to the method of attaching to the trailer.
- 15a. The Sewer Hose Reel (right reel only) shall be equipped with an Automatic Level Wind, which allows for "hands-free" winding of sewer hose onto the hose reel. This option will incorporate a drive system, which scrolls a pivoting four roller head back and forth across the hose reel for proper winding of sewer hose onto reel. Four roller head shall be easily calibrated left and right without the need for tools. The system is equipped with a hydraulic controlled elevation system, which incorporates dual cylinders and a pivot arm to raise and lower the level wind guide depending on location of manhole. Level Wind raises/lowers minimum of 45 degrees.
- 16c. The unit will be supplied with a Digital Distance Counter that includes a digital screen with LCD display. The Digital Distance Counter measures the rotation of the hose reel and takes into account the diameter of the hose, the length of the hose, and the diameter of the hose reel drum. Based on that information, the Digital Distance Counter calculates the progress of the nozzle to the accuracy of +/- 3% and sends this information to the display screen. The Digital Distance Counter operates on 12 volts. User can store up to 10 distance counts for review at later time. The Digital Distance Counter includes an A/B switch so user can view footage of either Hose Reel A or Reel B of unit from the single display. The Digital Distance Counter should be capable of displaying either English or Spanish language and distances in either feet or meters. The Digital Distance Counter includes an A/B switch so user can view footage of either Sewer Hose Reel or Camera Umbilical Reel on unit from the single display. Distance of the Camera Umbilical Reel can also be viewed on the monitor of the TV system. This distance can be recorded through the DVR in the TV system.
18. Decibel level at operator station to be no greater than 85 dB for 40 GPM / 3000 PSI water pump
19. System will be equipped with 600 feet of 3/4" ID hose rated for 3000 PSI service.

I. SEWER HOSE:

1. Hose will be 3/4" ID by 600' with an operating pressure of 3,000 PSI and a minimum burst pressure of 7500 PSI.

J. HYDRAULIC SYSTEM:

1. The hydraulic power system for driving the units systems shall consist of a pump directly driven by an auxiliary engine.
2. The hydraulic pump shall have a minimum operating capacity of at least 8 GPM and a tank with a strainer that can be cleaned or replaced as well as an inspection port.
3. Shut-off valves will be installed on the suction lines to facilitate servicing of the hydraulic pump without the need of draining.
4. The hydraulic system will include a Hydraulic Tool Circuit (rated at 9.5 GPM @ 2000 PSI). System will incorporate a supply and return quick connect on the curb side of the unit as well as a manual diverter valve for the tool circuit on/off.

K. HAND GUN CLEAN UP:

1. The clean-up systems will include a wash-down gun, 50' of 1/2 ID retractable hose reel and will be equipped with a quick-disconnect fitting near the operator's station.
2. The gun shall be a machine grip with trigger shut-off and guard.
3. The high-pressure hose shall have a rating of 2000 PSI working pressure and an 8000 PSI burst pressure.
4. The cleaning system shall have its own relief set at 500 PSI.

L. PIPING:

1. All piping systems subjected to high pressure shall use zinc chromate plated steel fittings with minimum burst pressure of four times the system pressure. Hoses working pressure ratings shall exceed the maximum system pressure.
2. A "Y" strainer with a minimum of 40-mesh screen shall be installed in the PVC suction line at a location accessible for cleaning.
3. All piping shall be installed to drain by gravity through suitable openings equipped with plugs, drain cocks, or ball valves.
4. Pressure to the cleaning nozzle, shall be regulated by an overload relief valve
5. To control water flow from water pump, a single lever control shall regulate direction of water either to hose reel or back to tank utilizing a high-pressure valve assembly. This single lever control shall control a 3-way valve.
6. The recirculation ability of this system allows for use of unit in sub-freezing temperatures.
7. Water delivery to hose reel shall pass through a single 90-degree swivel rotary coupling.

M. ENGINE:

1. The engine shall be diesel powered, water-cooled, four cylinder type with industrial type governor, air cleaner and muffler. The engine has an 91 horsepower rating. The engine drive assembly must be designed so that it maximizes the horsepower and torque of the engine while reducing the wear on the engine.

- 2. The required engine accessories shall be furnished, including, but not limited to:
 - 12-volt ignition system with alternator and battery
 - Vernier throttle control
 - Starter with key lock starting switch
 - Replaceable cartridge type oil filter
 - Positive crankcase ventilation system
 - Tachometer and hour meter
 - Voltmeter, oil pressure gauge, and water temperature gauge
- 3. The engine shall be equipped with an automotive style clutch equipped with a spring loaded pressure plate and self-sustaining lever operator for positive engagement of water pump. The clutch engage must be located at the operator's station. This clutch shall have a lifetime warranty which excludes wearable parts.
- 5. Power band belt, from engine sheave to pump sheave, is adjustable by movement of water pump.
- 6. The engine fuel tank will have a capacity of 16 gallons and will be mounted below the frame for safety.
- 7. There shall be a Two (2) year warranty on engine.
- 8. Fuel consumption for 40 GPM / 2000 PSI water pump to be no more than 3.25 Gal/Hour
- 9. Fuel consumption for 40 GPM / 3000 PSI water pump to be no more than 3.65 Gal/Hour
- 10. Engine and pump shall be mounted on an independent subframe to assure optimal belt and sheave alignment.
- 11. Engine shall have integral low oil pressure/high water temp shutdown systems. Murphy switches or any other mechanical switches are not acceptable.

N. PUMP & ENGINE SHROUD:

- 1. The water pump and auxiliary engine will be fully enclosed in the same compartment.
- 2. The shroud design of the trailer jet shall be constructed of steel and will allow for ease of maintenance and for protection against pilferage and inclement weather.
- 3. fastener breakage or rust streaking from bolts or their holes. Bolt-together shrouds are not acceptable.
- 4. The shroud shall be flexibly mounted to the trailer frame via elastomeric mounting pads, which will allow the shroud to float as well as eliminate any nuisance rattles.
- 5. The shroud shall include three (3) fully hinged access doors that are locking and keyed alike. These doors shall be fully recessed for optimum aerodynamics as well as allow for the protection of interior components from weather and vandalism. Door hinges shall be constructed of stainless steel and bolted to the shroud. Ventilation in the above doors shall be via louvered openings again to maintain optimum aerodynamics as well as resistance to weather infiltration.
- 6. Units with only top shrouding and without locking doors will not be accepted.

O. TRAILER:

- _____ 1. The trailer manufacturer must be a National Association of Trailer Manufacturers (NATM) member. Trailer must be certified by NATM to have been manufactured in accordance with NATM guidelines. NATM member products are regulated by two sections in the Department of Transportation (DOT); primarily the National Traffic and Safety Administration (NHTSA), and secondarily, the Federal Motor Carrier Safety Administration (FMCSA). Both of these regulatory bodies develop regulations concerning trailer safety. Trailer must display NATM sticker indicating
- _____ 2. The frame shall be heavy gauge steel tubing construction. The outer frame being of a 2" x 6" construction with a 2" x 4" 'spine' running beneath the reel and water tank areas. Steel thickness on frame tubes shall be minimum of 1/4".
- _____ 3. The frame shall utilize a modular design (Vari-Flex or equal) approach such that the unit will accept any alteration of hose reel assembly or pump and engine combination without ANY welding. All future product upgrades for hose reel and/or pump and engine combinations MUST bolt in to the existing unit for purposes of easy upgrade ability.
- _____ 4. Unit will be equipped with complete ICC light group, reflectors, license plate holder and safety chains.
- _____ 5. Unit will be equipped with two (2) 7,000 lb. capacity leaf spring axles. Torsion suspension will not be accepted.
- _____ 6. Unit will be equipped with four (4) radial tires.
- _____ 7. Trailer unit will be equipped with heavy-duty fenders, triple tube tongue, 2-5/16" ball type hitch, and electric brakes with break away switch.
- _____ 8. Trailer shall have bolt on fenders to facilitate easy replacement in the event of damage. Weld on fenders are not acceptable.
- _____ 9. Wheels will be billet aluminum construction.

P. TOOL STORAGE:

- _____ 1. Unit will be equipped with a fender mounted, heavy-duty 16-gauge steel toolbox with keyed lock system for storage of nozzles and valuable hydraulic root cutting tools.
- _____ 2. Toolbox will measure 12-3/4" high x 32-7/16" wide x 11-1/4" deep.
- _____ 3. Weather stripping will protect toolbox from intrusion of water.
- _____ 4. Unit will be equipped with a 3-way storage tray for storage of the BB hose guide, upstream pulley guide and wash-down gun system.

Q. PAINTING:


- _____ 1. Before painting, all metal shall be cleaned and etched with a phosphoric wash to insure permanent bond of primer and paint.
- _____ 2. All components of the unit whether purchased or manufactured shall be BOTH primed and painted prior to assembly in order to assure maximum resistance to corrosion. Painting after the assembly process is NOT acceptable.
- _____ 3. The unit shall have the trailer frame painted black and the hose reel and shroud assemblies shall be painted standard white.

R. ELECTRICAL:

- _____ 1. All switches and/or engine controls shall be housed in a NEMA 4 enclosure to insure maximum protections against the elements.
- _____ 2. NEMA 4 enclosures that need to be opened to access operation switches and levers are not acceptable.
- _____ 3. All electrical connections shall be made via water-tight NEMA 4 equivalent splices. All splices shall be soldered and insulated with shrink tubing.
- _____ 4. Tail lights shall be recessed in the trailer frame for maximum protection from damage as well as resistance to road vibration. Tail lights mounted to fenders or protruding from the face of the trailer frame are NOT acceptable.
- _____ 5. The main power supply shall have circuit protection and come direct from the unit's battery. All functions shall de-energize when the ignition switch is turned off. The ignition switch shall be used to energize various relays but not as a main power source.
- _____ 6. A dedicated ground shall be supplied to the control panel to assure a positive ground for all devices. Local grounding of the devices is not acceptable.
- _____ 7. All electrical wiring shall be protected by suitable loom.
- _____ 8. The lighting system and all other components shall meet all applicable standards.
- _____ 9. Manual shall include "as built" wiring diagram. Generic wiring diagrams are not acceptable. All wiring must be color coded to aid in trouble shooting.
- _____ 10. All trailer lighting shall be LED.

S. STANDARD ACCESSORIES:

- _____ 1. Finned style nozzle extension
- _____ 2. Tri-Point (chisel) Nozzle with Ceramic Inserts
- _____ 3. HW-70 (high-flow) Nozzle with Ceramic Inserts
- _____ 4. Nozzle Rack
- _____ 5. 25' Fill hose
- _____ 6. Leader Hose
- _____ 7. BB hose guide

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- _____ 8. Upstream pulley guide
 - _____ 9. Wash-down gun with 50' x 1/2" extension hose with retractable reel.
 - _____ 10. Paper Operator's manual
 - _____ 11. Lighted control panel

T. ADDITIONAL ACCESSORIES:

- ___ 1. Six 28" D.O.T. safety cones and holder
- ___ 2. Three drain valves for Giant water pump
- ___ 3. Fill Hose storage rack.
- ___ 4. Hose guide/washdown gun/upstream pully guide storage tray
- ___ 5. 6" Jet pod TV skid extension- straight view camera
- ___ 6. 8" Jet pod TV skid extension- straight view camera
- ___ 7. 1/2" Hose cart with 150" sewer hose mounted on trailer w/ 2 nozzles for laterals

U. LIGHTING ACCESSORIES:

- ___ 1. Strobe light mounted on top of engine compartment
- ___ 2. Floodlight at operator's station.
- ___ 3. Engine/ Water Pump compartment light
- ___ 4. LED stop-turn-tail and marker lighing

Note: Non-collusion affidavit required from all bidders. Also, bids must be signed by a principal in the firm with evidence provided that the signator is a principal in the firm. E-Verify documentation required as part of Sealed Bid.