

SPECIFICATIONS	Comply	
	Yes	No
1. The machine shall be capable of removing stones, grit, grease, sludge and other debris from sanitary sewer and/or storm drain lines by the flushing action of high-pressure water.	_____	_____
2. The high-pressure sewer cleaner shall operate independent of the vacuum system.	_____	_____
3. The machine shall include an air conveying vacuum system to provide for the simultaneous removal of the debris flushed to the manhole by the high pressure water system or for the removal of debris from sewers, sumps, catch basins, digesters, wet wells, bar screens, etc.	_____	_____
4. The machine shall be capable of being operated by one man, with all operating controls for high pressure water pump, hose reel, and vacuum, located at the front of the machine for safety. This is an essential safety feature, no exceptions will be allowed.	_____	_____
<b>DEBRIS BODY</b>		
5. Debris storage body shall have a minimum usable liquid capacity of 12 cubic yards.	_____	_____
6. The body shall be round for maximum strength and constructed of 3/16" Corten "A" steel for corrosion resistance. Bidder shall submit a letter specifying the type of steel used for construction.	_____	_____
7. The rear door shall be full opening, hinged at the top (hinges shall be adjustable) with a minimum 6" diameter liquid drain for removing excess liquids. The drain to have a knifevalve installed at the opening. Drain will have 10' of 6" layflat hose.	_____	_____
8. The rear door will be supplied with a debris deflector shield located inside the debris tank that encompasses 75% of the rear door. The debris deflector shield shall deflect material from rear door and aid in draining off excess liquids. A rear door safety prop shall be provided.	_____	_____
9. There shall be no hydraulic components located <i>inside</i> of the debris body.	_____	_____
10. The debris body shall have five (5) externally mounted door locks that lock hydraulically. One manual "T" bolt will be installed for operator safety. The hydraulic locks shall be controlled by one hydraulic cylinder externally mounted for ease of service. Each lock shall be fully adjustable.	_____	_____
11. A hydraulic grabber shall be installed and controlled by one hydraulic cylinder externally mounted for ease of service. The hydraulic locks and grabber shall be operated by one (1) sequential control.	_____	_____

SPECIFICATIONS	Comply	
	Yes	No
12. In order to allow the operator to control the discharging of liquids from the debris tank. By <i>cracking</i> open the door prior to the dumping procedure, the hydraulic grabber shall engage the door at the bottom of the door from 0" - 6". Beyond the 6" stroke, the grabber shall automatically disengage the door, allowing for the dumping of the debris tank.	_____	_____
13. A double acting power up/power down hydraulic scissors lift mechanism will be provided to raise body to a 50° angle.	_____	_____
14. The scissors lift mechanism shall be designed to support a minimum of 24 inches of the debris tank width to provide stability and when dumping on uneven ground.	_____	_____
15. The lift capacity of hydraulic scissors lift cylinder is 56,000 lbs.	_____	_____
16. Dump controls shall be located on the curbside mid-ship of the unit, well forward of the dumping area for operator safety. A manual override system shall be provided in case of system failure.	_____	_____
17. The debris body shall have a five-year warranty. If pro-rated so state:_____	_____	_____
18. Copy of warranty statement is enclosed with the bid.	_____	_____
19. An internal polyethylene float device with internal indicator shall be supplied to show when body is loaded to capacity.	_____	_____
<b>AUTOMATIC VACUUM BREAKER</b>		
20. The automatic vacuum breaker assembly shall be located inside the body.	_____	_____
21. A full indication will activate an automatic vacuum breaker shut down system that completely shuts down 100% of the airflow to the vacuum system to prevent body overfilling and wastewater discharge into the atmosphere.	_____	_____
22. The vacuum breaker system shall be automatically activated (closed) when the parking brake system is released to eliminate carryover during transit.	_____	_____
23. The system shall also be controlled, activated, at the front hose reel control station and pendant control. This feature will enable the operator to pick up large debris with boom and place debris on the road surface. This system will be used for safety in the event suction must be shut off in case of an emergency.	_____	_____
<b>CENTRIFUGAL COMPRESSOR (FAN DESIGN)</b>		
24. The centrifugal vacuum compressor shall be a maximum of 27" diameter and of 3-stage construction (i.e. 3-27" minimum diameter fans in tandem).	_____	_____

SPECIFICATIONS	Comply	
	Yes	No
25. The centrifugal compressor (fans) shall be constructed of Corten steel.	_____	_____
26. The compressor shall operate independent of the high-pressure water system and be powered by the truck engine via hydrostatics. The compressor drive shall be a closed loop hydrostatic system using a variable piston pump and motor.	_____	_____
27. This system shall include a heat exchanger for extreme ambient conditions and to maintain the pump suction oil temp at 160° F. max. The heat exchanger shall be protected by a 30-micron filter and cold weather bypass valve. Hydrostatic loop filtration shall be accomplished by a 10 Beta micron return filter and a 10-micron Absolute (no bypass) charge filter.	_____	_____
28. To maximize long term durability by reducing the load on one side of the compressor, the compressor shaft shall extend through the compressor and shall be additionally stabilized by using two high speed bearings, one at each end of the shaft. No exceptions will be allowed to this requirement.	_____	_____
29. A means of starting, stopping, and varying the vacuum suction from operator station at the front of the machine must be provided.	_____	_____
30. The fans outer housing shall be spun from one piece of 3/16" steel for strength and provide proper airflow in operation. The housing shall have a coal tar epoxy coating to prevent corrosion.	_____	_____
31. A centrifugal separator located in the inlet chamber to the fans with clean out box shall be provided. The separator shall remove particles from the air stream, thus enabling unit to vacuum wet or dry material. The separator shall be separate from the debris body.	_____	_____
32. Bidder to supply with bid proposal a drawing showing airflow through the system and separator.	_____	_____
33. Bidder to supply with bid proposal a <b>certified</b> performance graph showing CFM, inches of negative water pressure, and horsepower.	_____	_____
34. The centrifugal compressor (fan) system must be capable of producing 90% vacuum with no airflow. This is an essential feature in the application where material needs to be vacuumed under the water surface, i.e. lift stations, plugged manholes, etc.	_____	_____
35. System must be capable of vacuuming under water 16.5' (200") without special attachments.	_____	_____
36. A manometer test may be required to demonstrate the centrifugal compressor system performance.	_____	_____

SPECIFICATIONS	Comply	
	Yes	No
37. Centrifugal compressor fans shall have a five-year replacement warranty. If pro-rated so state:_____	_____	_____
<b>WATER SUPPLY</b>		
38. The water tank shall have a minimum usable capacity of 1300 U.S. gallons.	_____	_____
39. The water tanks shall be constructed of non-corrosive, non-metallic, durable, cross-linked polyethylene to eliminate rust, corrosion, and stress cracking.	_____	_____
40. The water tank shall be mounted at and below the truck frame level to provide a low center of gravity for truck stability.	_____	_____
41. A 2-1/2" diameter x 25' long hydrant hose with hydrant wrench shall be supplied on the unit.	_____	_____
42. An anti-syphon fill device shall be installed on the unit.	_____	_____
43. Quick removal hatches shall be provided on all water tanks for access for flush out, to fill tanks, or to add chemicals to the water tank.	_____	_____
44. A sight gauge to indicate water level shall be located within sight of the operator station.	_____	_____
45. The water tanks shall be protected by a minimum of 11 gauge steel plating mounted below the water tanks for protection against road hazards when unit travels over the road, off the road or to land fills.	_____	_____
46. The water tanks shall have a five-year <i>replacement warranty</i> .	_____	_____
47. Bidder to supply copy of warranty for water tanks with their bid proposal.	_____	_____
<b>AUXILIARY ENGINE (WATER PUMP DRIVE ENGINE)</b>		
48. The shrouded auxiliary engine used to drive the water pump shall be liquid cooled, turbo charged, diesel powered, 4 cylinder heavy-duty industrial engine. The engine shall have a minimum displacement of 239CID and a rated gross horsepower of 110 bhp at 2500 rpm.	_____	_____
49. The engine shall come equipped with a counter balanced crankshaft, rubber-isolating mounts, automatic safety shut downs for low oil pressure and high water temperature, as well as an exhaust silencer.	_____	_____
50. All gauges, auxiliary engine tachometer, oil pressure, water temperature, hour meter, and shut down system shall be located on the drivers side of the unit in a lockable control panel.	_____	_____

SPECIFICATIONS	Comply	
	Yes	No
51. The auxiliary engine start and stop controls will be at the front hose reel operator station for safety and convenience.	_____	_____
52. The shrouded auxiliary engine will have a hinged driver's side door for access to the engine. Oil checking shall be accomplished from ground level on driver's side of the unit.	_____	_____
<b>VACUUM PICK UP HOSE</b>		
53. Shall be front loading, attached at the front of the machine in order to provide ease of positioning the machine over the manhole, as well as afford maximum safety for the operator.	_____	_____
54. The 8" diameter hose will be mounted on a boom that will provide a minimum of 18' vertical lift utilizing <i>dual</i> hydraulic cylinders and 230° of boom rotation powered hydraulically for non-interrupted smooth movement. Boom to have a lift capacity of 500 lbs. at the front bumper.	_____	_____
55. The boom will be powered by an electric over hydraulic system: up/down by dual lift cylinders. The right/left movements shall be hydraulics.	_____	_____
56. Control of the boom shall be by means of a " <u>joy-stick</u> " control at the operator's station, requiring no cables at operator's feet for boom operation. A 6 way remote pendant station will also be supplied.	_____	_____
57. A manual override system shall be provided in/out, right/left, and up/down functions in case of system failure.	_____	_____
58. The boom shall hydraulically telescope a minimum of 10' forward from the front operator's station. The height of the pick up hose shall not change while the boom is being telescoped.	_____	_____
59. A boom coverage chart shall be provided showing the reach capability in front of the vehicle and the total coverage of the telescopic function.	_____	_____
60. Pipe extensions to clean to 20.5' will be carried on the truck as follows: <ol style="list-style-type: none"> <li>1. 1-6.5' nozzle.</li> <li>2. 1-6' aluminum pipe extension.</li> <li>3. 1-5' aluminum pipe extension.</li> <li>4. 1-3' aluminum pipe extension.</li> </ol>	_____	_____
<b>HIGH PRESSURE WATER PUMP</b>		
61. The high-pressure water pump shall be rated to deliver smooth continuous pressure and flow through the entire flow range of the pump.	_____	_____
62. Does high-pressure system have smooth continuous flow for both high-pressure system and handgun system.	_____	_____

SPECIFICATIONS	Comply	
	Yes	No
63. A continuous duty flow of 50 g.p.m. and 3000 p.s.i. shall be provided.	_____	_____
64. High-pressure relief valves shall be provided for both the high-pressure system and handgun system.	_____	_____
65. The water pump shall operate independently of the vacuum system and be powered by the auxiliary engine via a clutchless, direct dual powerband drive system	_____	_____
66. The high-pressure water pump <i>drive</i> system shall carry a five-year replacement warranty. Warranty excludes the drive engine; i.e. auxiliary engine.	_____	_____
67. The water pump shall be capable of running dry.	_____	_____
68. Controls for starting and stopping the water pump, and to vary the flow and pressure shall be at the front hose reel operator's station.	_____	_____
69. The high-pressure water pump will be equipped with cold weather drain valves. The valves will allow operator to completely drain the high-pressure pump.	_____	_____
<b>HOSE REEL ASSEMBLY</b>		
70. The hose reel assembly shall be on the front of the vehicle.	_____	_____
71. The hose reel shall have a minimum of 30" inside diameter with a <i>capacity</i> of 800' x 3/4" hose.	_____	_____
72. The hose reel will be hydraulically powered in both directions by means of a double chain and sprocket drive. The controls for operating the motor shall have a flow control device to regulate the rotational speed of the reel in both directions. All hydraulic hoses shall be behind a steel housing to protect operator from hydraulic oil if a hose fails.	_____	_____
73. The hydraulic motor, chain, and sprockets will have a protective cover or be mounted on the radiator side of the hose reel for operator safety.	_____	_____
74. The hose reel will <i>articulate</i> 180° allowing operator to work in any position through this arc. This allows greater flexibility in truck placement for manholes located in tough areas and provides greater safety to the operator.	_____	_____
75. Reel will extend beyond the width of unit for greater flexibility for positioning reel over offset manholes, catch basins, etc.	_____	_____
76. Does reel extend beyond the trucks width for greater flexibility in cleaning?	_____	_____

SPECIFICATIONS	Comply	
	Yes	No
77. A hydraulic outrigger leg that is controlled hydraulically shall be supplied that comes in contact with the ground at any one position.	_____	_____
78. A warning light is located in the cab to warn the operator that the outrigger leg is not in its transported position prior to moving the unit	_____	_____
79. A manual bypass system for the hose reel assembly shall be provided to manually pull the reel assembly away from its transported position. This feature allows operator to check fluids without starting engines.	_____	_____
<b>MANHOLE CLEANING WATER SYSTEM (HAND GUN)</b>		
80. The high-pressure pump and independent water tank assembly supplied shall be used for manhole cleaning.	_____	_____
81. A smooth continuous flow of 20 g.p.m. and pressure of 600 psi shall be provided for ease of operation.	_____	_____
82. A handgun pressure relief valve set at 600 psi shall be provided.	_____	_____
83. One full functioning hand gun with on/off hand control, replaceable nozzle tip, 12" extension, adjustable spray 50' x 1/2" hand gun hose with quick disconnects and retractable reel will be provided.	_____	_____
84. The handgun will attach to the system via a quick couple connection at the curbside of the unit. To avoid being coiled at the operators station a hand gun holder will be provided at the front bumper.	_____	_____
<b>JET HOSE</b>		
85. 600' X 3/4" high pressure jet hose, rated for 3000 psi working pressure and 7500 psi burst pressure will be provided on the unit.	_____	_____
86. A heavy-duty hose guide with 25' of nylon rope will be provided.	_____	_____
87. Nozzles will be provided as follows: 1. 1-Chisel head "penetrating" nozzle with tungsten carbide inserts 2. 1-30°sanitary nozzle with tungsten carbide inserts	_____	_____
<b>HYDRAULIC SYSTEM AND LUBRICATION</b>		
88. The hydraulic system shall have a 45-gallon capacity.	_____	_____
89. The hydraulic system shall incorporate a main shut off valve in case of hydraulic failure.	_____	_____

SPECIFICATIONS	Comply	
	Yes	No
90. The hydraulic system shall incorporate hydraulic pressure relief valves and pressure gauges for ease of trouble shooting and maintenance.	_____	_____
91. The unit shall be equipped on the passenger side, mid-section of the module, a permanent weatherproof white vinyl lubrication chart.	_____	_____
92. The chart will point out lubrication points on the module and specify what type of lubrication and hydraulic fluids are required. The chart will also specify the frequency of each lubrication point.	_____	_____
93. Remote plumbed grease fittings shall be provided for the vacuum compressor, boom rotation, and water pump drive areas.	_____	_____
<b>ACCESSORIES</b>		
94. A minimum twelve (12) month manufacturers guarantee on the unit will be provided.	_____	_____
95. A 16" x 42" x 96" storage box behind the cab will be provided with adjustable shelf.	_____	_____
96. Bidder to supply dimensions for the tool boxes being supplied: Dimensions:_____	_____	_____
97. Hose footage counter	_____	_____
98. Electronic back up alarm	_____	_____
99. Debris body flush out system	_____	_____
100. Winter recirculating system shall be capable of operating throughout the <i>full flow</i> range of the high-pressure pump system in transport or stopped position.	_____	_____
101. Bidder to state flow capacities of winter recirculating system: Flow capacities:_____	_____	_____
102. Air purge system	_____	_____
103. 2 ½" water drain gate valve	_____	_____
104. Variable flow valve	_____	_____
105. Rear mounted tow hooks	_____	_____
106. Auxiliary engine remote oil drain	_____	_____
107. 5 lb fire extinguisher	_____	_____
108. Triangle kit	_____	_____
109. Remote grease zerks for telescoping boom	_____	_____
110. Remote grease zerks for debris body	_____	_____
111. 10' leader hose	_____	_____

**SPECIFICATIONS**

**Comply**  
**Yes          No**

**PAINT**

- 112. Chassis to be painted white. \_\_\_\_\_
- 113. Unit paint surface shall be shot blasted, primed and sanded prior to paint. \_\_\_\_\_
- 114. Unit shall be painted \_\_\_\_\_ with DuPont Imron 5000 polyurethane paint, and shall have reflective \_\_\_\_\_ boom, and side stripes and rear chevrons \_\_\_\_\_

**LIGHTING**

- 115. The entire module electrical system shall be vapor sealed to eliminate moisture damage. \_\_\_\_\_
- 116. All wiring shall be color-coded, labeled and run in sealed terminal enclosures. \_\_\_\_\_
- 117. All module circuits shall be protected by circuit breakers. \_\_\_\_\_
- 118. Clearance lights and reflectors shall be furnished in accordance with D.O.T. requirements. \_\_\_\_\_
- 119. Front and rear mounted strobe lights \_\_\_\_\_
- 120. Arrowboard \_\_\_\_\_
- 121. Hand held spot light \_\_\_\_\_
- 122. Front and rear mounted flood lights \_\_\_\_\_

**AWARDING OF BID**

- 123. The owner will award the bid on the basis of price, quality of equipment with this set of specifications and the delivery. The owner reserves the right to reject any or all bids and to waive all informalities. \_\_\_\_\_

**OPERATOR TRAINING**

- 124. Operator training is to be conducted by a factory-trained representative for a minimum of one day at the time of delivery. \_\_\_\_\_
- 125. One copy of the operating and maintenance manual for the sewer cleaner module shall be provided upon unit delivery. \_\_\_\_\_
- 126. An operational video will be provided with the unit. \_\_\_\_\_

**MOUNTING AND DELIVERY**

- 127. The unit described shall be mounted on the truck chassis at the factory of the body manufacturer. \_\_\_\_\_
- 128. Transportation charges shall be included in proposal pricing. \_\_\_\_\_

**SPECIFICATIONS**

**Comply**  
**Yes          No**

129. Bidder shall state delivery time after receipt of order:  
\_\_\_\_\_ days.

**ATTENTION TO BIDDERS**

130. It will be the bidder's responsibility to carefully examine each item of the specification. Failure to respond to each section of the technical specifications comply section: yes/no will cause the proposal to be rejected without review as "non-responsive". *All* variances, *no* responses, exceptions, and/or deviations will be fully described in the appropriate section provided.

\_\_\_\_\_

**Insert Chassis Specifications Here**

