

STAFF REPORT

SAUSALITO CITY COUNCIL

AGENDA TITLE:

Purchase of Sewer/Storm Drain Cleaning Vehicle.

RECOMMENDED MOTION:

Motion approving purchase and authorizing the City Manager to execute purchase documents with Ricker Machinery, Inc.

SUMMARY

The 2008 City Operating Budget, Sewer Fund, includes a line item for a replacement sewer truck. The existing sewer truck, used for flushing sanitary sewers and storm drains, has reached the end of its service life. It needs to be replaced. Staff evaluated new sewer trucks and determined that additional capability is needed and can be provided by a combination vehicle. A combination vehicle adds mobile vacuuming capability to a high velocity flusher. This equipment will improve service to the community.

Chapter 3.30 of the Sausalito Municipal Code (Purchasing), includes a procedure for cooperative purchasing with other public, local, state, or federal governmental agencies. Staff has evaluated the cost of acquiring the combination vehicle and believes that purchasing it through the Federal General Services Administration (GSA) cooperative agreement to be in the best interest of the City by providing the desired equipment at the lowest cost. Staff recommends the City Council adopt a motion approving the purchase of a Vactor Combination Vehicle and authorizing the City Manager (defined in 3.30.100 as the purchasing officer) to execute necessary documents to get the Federal GSA prices.

BACKGROUND

The 2007-2008 Annual Budget planned for the replacement of a Sewer Cleaning Vehicle. This vehicle assists the Department of Public Works Staff in cleaning the public sanitary sewer by flushing water at high pressure to loosen roots and other debris.

Current methods of cleaning the sewer system are limited to hydro-flushing (also known as jetting) and rodding. These methods do not adequately remove the debris that obstructs the sanitary sewer. The existing equipment cannot help in actively managing overflows which need to be contained.

The current method of cleaning the public storm drain system is limited to cleaning out catch basins and inflow regions of stormwater systems by hand with shovels, laborers, garbage cans and pick-up trucks. This manual method is supplemented by street sweeping operations provided by Bay Cities Refuse Service.

Sanitary sewer system and storm drainage system cleaning technologies have advanced in response to stricter water quality regulations and market forces. Said advances in technology have led to all-in-one mobile combination vehicles that have the ability to flush and simultaneously remove any debris in either sewer system or storm water system settings. The mobile combination vehicle machine is expected to enable staff to flush and vacuum out, sewer and storm manholes, catch basins, pipelines and pump station wet wells. This system gives the City of Sausalito the ability to actively manage overflows by collecting and diverting flows from one location to another. Small municipalities also use a combination vehicle for fast-response, emergency situations. This emergency capability is a versatile supplement to regular maintenance and sewer/storm line cleaning and maintenance efforts. Please see Attachment 2 of Mobile Combination Vehicle Attachments for more information.

The purpose of this report is to seek authorization to purchase a new sewer combination vehicle.

ISSUES

The City sought proposal quotes for sewer cleaning vehicles from several vendors. A staff committee was formed consisting of the City of Sausalito Engineer, DPW management, DPW staff and Sewer System Coordinator to evaluate the proposals and view demonstrations of the equipment. Five vendors (Vac Con, Vactor, Camel Vac, GapVax and Sewer Cleaning Equipment Company of America) were selected to provide demonstrations.

During the demonstrations staff evaluated the following issues:

- Size of Mobile Combination Vehicle
- Utility of Mobile Combination Vehicle
- Warranty and service needs
- Ease of use of the controls
- Gross Vehicle Weight (GVW) and California Drivers License (CDL) requirements

Staff ranked the Vactor as having the best performance in these areas. The Vaccon line was the only other to be considered for the selection process. Both Vactor and Vaccon provide similar Mobile Combination Vehicles in the 3 yard range; therefore both fit the criteria of the specifications distributed. See Attachments 3, 4 and 6 of Mobile Combination Vehicle Attachments.

Quotes were provided as acquisitions stand alone and are shown in Figure 1, Column 3. After evaluating proposals staff sought quotes from Cooperative Purchasing

arrangements for the top ranked vehicles (Vaccon and Vactor). Those results are shown in Figure 1, Column 4.

Figure 1

Vendor	Equipment Make	Base quote price (before co-op agreement)	GSA¹ or HGAC² price (after co-op agreement)
MME	Vaccon	\$232,314.66	\$203,803.45
WECO Industries, LLC	GapVax	\$249,143.00 Too large	NA
WECO Industries, LLC	Sewer Cleaning Equipment of America	\$168,919.99 Limited Utility	NA
3T Equipment	Camel Vac	\$187,000 Too large. Priced with no options	NA
Ricker Machinery	Vactor	\$225,477	\$196,923

1. U.S.General Service Administration
2. Houston Galveston Area Counsel

After price, reliability, service needs, replacement parts availability and utility were taken into consideration, Vactor ranked as having the best performance. The brands evaluated have long standing presence in the field with Vactor being the longest established Mobile Combination Vehicle in the industry. Staff believes the reliability will be acceptable. Please see Attachment 7 and 9 of Mobile Combination Vehicle Attachments.

Vendors' Cooperative Purchasing Agreements:

Vactor as represented by Ricker Machinery of Oakland, California uses the cooperative purchasing agreement provided by the U.S. General Services Administration (GSA). GSA Federal Supply Service (FSS) provides federal customers with the products, services, and programs to meet their supply, service, procurement, vehicle purchasing and leasing, travel and transportation, and personal property management requirements.

Vaccon products as represented by Municipal Maintenance Equipment, Incorporated of Sacramento, California (MME) uses the cooperative purchasing agreement provided by Houston Galveston Area Counsel (HGAC). HGACBuy is a "Government-to-Government" procurement service available nationwide.

FISCAL IMPACT

The City of Sausalito funds all sewer/storm related maintenance through the Sewer Fund. The budgeted funds for a new sewer cleaning vehicle can be found on page 127 of the Budget and are summarized below in Figure 2. The recommended vehicle is significantly below budget amounts.

Figure 2

Budget Account Number	Description	Budgeted Amount	Bid Amount
110-220-7000-750 Sewer Fund	Mobile Combination Sewer Cleaning Vehicle	\$234,285	\$196,923

STAFF RECOMMENDATION

Staff recommends:

1. The City Council adopt a motion authorizing the City Manager to purchase a Vactor Combination Vehicle from Ricker Machinery, Inc using the GSA schedule.

Alternatively:

2. If additional discussion required continue item until March 4, 2008 City Council Meeting.

ATTACHMENTS

Attachment 1: Characteristics Indicative of Sewer Systems and Storm Water Systems

Attachment 2: Manufacturers Offerings of Air Conveyor & Drive Methods

Attachment 3: Manufacturers Offerings in Water Pump & Drives

Attachment 4: Manufacturers Offerings in Water Tanks

Attachment 5: Hose Reel Design Configurations

Attachment 6: Vendor Support

Attachment 7: Vehicle Definitions and Integral Components of Both Systems—A Comparison

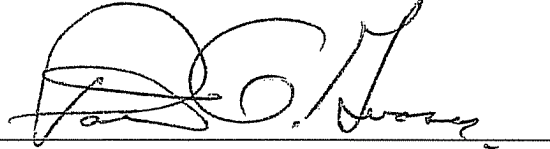
Attachment 8: Excel Spread Sheet—Vessel Dimensions, Base Cost and Costs as reflected by Cooperative Purchase Agreement

Attachment 9: Requisition

Attachment 10: Draft Purchase Agreement

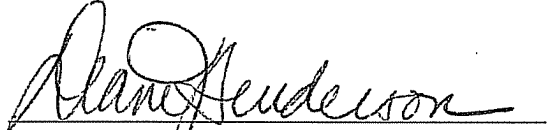
Attachment 11: The City of Sausalito Equipment Specifications

PREPARED BY:



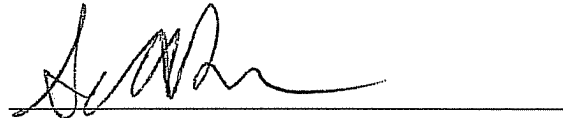
Patrick A. Guasco
City Sewer System Coordinator

REVIEWED BY (Department Head):



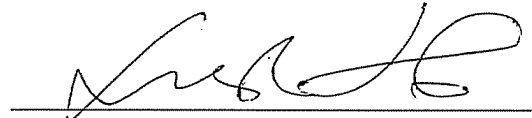
Diane Henderson,
Interim Community Development
Director

SUBMITTED BY:



Adam Politzer
City Manager

REVIEWED BY:



Louise Ho
Finance Director



Mobile Combination Vehicle Attachments Document

City waste water collection system crews generally clean both storm water drains, catch basins, sewer manholes and collection lines, as well s a variety of other underground confined space facilities prior to repair and/or entry. The cleaning of these structures is most often done without actually entering the system, but by truck mounted vacuum/air conveyance machines, from above ground. The high pressure jetting system is for the washing of the transmission collection lines and to bring the material to an access location such as a manhole, for removal.

With the new storm drain storm water pollution reduction study and EPA restraints, the City will be required to monitor, clean and maintain, on a more frequent basis, all storm drain catch basins. This additional task, done only on an as-needed basis, will require the crew to increase production efforts because of this additional task.

The mobile combination cleaning units are generally categorized into two (2) types:
1) Submerged Cleaning, and 2) liquid cleaning and bulk non-flowing debris cleaning.

Submerged debris is normally debris that accumulates in a waste water sewer, where a continuous flow of waste water and debris is present.

Examples in a sewer:

1. Gravel in a sewer submerged under a continuous flow.
2. Coffee ground, egg shells.
3. Grease accumulations.
4. Soap/detergent solids that adhere to a side wall of a sewer pipe.

Examples in a storm water system:

1. During emergency flooded condition, when solids are in basins under storm water runoff. (Note: This condition does not generally occur when the drains and lines are maintained.)
2. Pump station (s). This structure does not exist in storm drains or storm systems in the City.

Item #: 484
Meeting Date: 02/26/08
Page #: 87

Examples of bulk/non-liquid debris:

Examples in a sewer:

1. Unless vandalism causes this condition, bulk materials do not enter the waste water system.

Examples in a storm drain:

1. Bottles, cans and cups. Accumulations of newspaper and fast food wrapper papers.
2. Leaves, branches, lawn trimmings and other organic matter.
3. Discarded automotive components and containers. Oil filters, air filters, tires, bicycle components and discarded household items. (Some items require manual removal.)
4. Sand, gravel and aggregates deposited by irrigation or runoff, generally deposited over a period of time.

Air Conveyor/Blowers

A review of the industry with manufacturers and municipal users revealed the units are best suited for the multiple tasks of the city. Many of the units on the market use belt driven blowers. (Belts have been a source of frequent replacement with other city owned equipment). We would prefer to have a unit that would eliminate this deficiency and go to a direct drive system.

Manufacturer Offerings of Air Conveyor & Drive Methods

<u>Manufacturer</u>	<u>Type of Air Conveyor</u>	<u>Drive Methods</u>
Vactor	Positive Displacement Blower	Direct Transfer Case Drive from Chassis Engine
Vaccon	Fan	Belt or Hydrostatic from Chassis with Separate Engine Driven Water Pump
Camel	Positive Displacement	Direct Drive from Aux. Engine or Positive Displacement form Chassis

The most advantageous unit from drive and air conveyor standpoint is the Vaccon with Hydraulic drive or the Vactor. The Vaccon product is a fan and hydrostatic design unit with a separate engine for water pump. We are concerned about parts availability and the ability of this unit to survive in our high temperature environment. We are also concerned that the Vaccon system can not be used to suck out debris in a submerged condition for an extended period of time (an issue that City crews frequently run in to as a normal course of cleaning), without overheating the fans and damaging the internal bearings and seals.

Water Pumps

The other integral system on the combination high pressure vacuum equipment is the jetting device. The various manufacturers employ a variety of water pump designs:

1. Hydraulic Drive, Single Piston with Variable flow characteristics.
2. Hydraulic Drive, Triplex Pump, (3) Piston auxiliary engine driven.
3. Belt Drive, Triplex pump, (3) Piston auxiliary engine driven.

The existing equipment owned by the city uses the hydraulic Triplex pump driven via the chassis engine without a blower and without the ability to vacuum out (from access points) debris and sewage. Our requirements for our new unit will include:

1. Hydraulic drive and single chassis engine driven equipment
2. Ability to vary flow (by means other than cracking the ball valve. Variable water flow independent from vacuum.)
3. Pump located below the tank for gravity feed of pump.
4. The ability to operate the pump at full rpm for up to 30 minutes without causing damage to the pump.

The single piston pump design has also captured the market due to its simple, slow movement, reducing noise and friction as well as increasing useful life by ten-fold over triplex designs.

Manufacturer Offerings in Water Pump & Drives

	<u>Pump Type</u>	<u>Location</u>	<u>Drive</u>	<u>Components</u>
Camel	Triplex	Below Water Source	Belt Single engine hydrostatic single engine	Belt drive is unacceptable.
Vaccon	Triplex	Above tank (s)	Belt aux. engine. Belt drive from chassis engine.	Pump location can cause Cavitation. Hard to prime pump When water tanks are empty. Pump located above water tank.
Vactor	Single Piston	Below tank	Hydraulic from Chassis	Performance matched system; only pump manufactured strictly for waste water field.

Item #: 484
 Meeting Date: 02/26/08
 Page #: 10

Attachment 3:

The water pump configuration of the Vactor is most advantageous from a repair, performance and durability standpoint. There are only 7 moving parts in pump. The single piston pump and hydraulic drive allow for variable water pressure independent from the vacuum system. The Vactor water pump can be run in a dry condition at full rpm for 30-minutes without causing a failure to the pump.

Water Tanks

The water tank configuration of the cleaning units vary greatly and is a source of extensive corrosion and, in many cases, is the one factor that determines the life of the unit. Some manufacturers have gone away from steel tanks to reduce weight and reduce or eliminate corrosion. The manufacturers also locate the tanks in different configurations. It is deemed appropriate to purchase a unit with a water tank that is not steel, has a low center of gravity for stability and allows for gravity feed of water to the water pump.

Manufacturers Offerings in Water Tanks

The water tank configuration of the cleaning units vary greatly and is a source of extensive corrosion and, in many cases, is the one factor that determines the life of the unit. Some manufactures have gone away from steel tanks to reduce weight and reduce or eliminate corrosion. It is deemed appropriate to purchase a unit with a water tank that is not steel, has a low center of gravity for stability and allows for gravity feed of water to the water pump.

	<u>Tank Material</u>	<u>Location in Relation to Truck Frames</u>	<u>Components</u>
Camel	Plastic	Above frame	Tank raises with debris body, must be empty prior to dumping at dump site; plastic is stationary when dumping
Vaccon	Plastic	Below frame. Note: Tank bottom is below fuel tank, somewhat low and vulnerable.	(4) separate tanks that fill slowly from hydrant. Pump is above tank (s).
Vactor	Aluminum (Cylindrical)	At and below truck frame.	Cylindrical tanks and aluminum design. Satisfactory Center of gravity; tank (s) fill at acceptable speed. Tanks come with a 10-Year warranty at no additional Cost.

The plastic tank units are adequate and will expect a longer, less corrosive life compared to steel. However, the aluminum provides the balance of non-corrosive, acceptable center of gravity and adequate ground clearance. Although not important, the aluminum tanks are aesthetically appealing compared to the black square plastic tanks.

An objective manner to determine function, operator acceptance and productivity is to contact the adjacent users of a specific product. Staff has examined all of the products

Item #: 4B4
 Meeting Date: 02/26/08
 Page #: 12

Attachment 4:

and manufacturers listed. We have also had personal experiences with on of the products and have developed several criteria for our next purchase.

: Hose Reel Design Configurations

The hose reel pay out and vacuum support boom are the keys to providing simple and safe access to a variety of structures that are within the City. The existing equipment is designed for accessing street openings or structures that can allow for positioning of the truck and cleaning apparatus directly over and adjacent to the structure to be cleaned. This is not always the case and sometimes cannot be accomplished. The advent of the longer booms and rotating hose reel systems can reduce operator fatigue by allowing for direct positioning of the hose into the structure with little or no manual effort. Although optional and at additional cost, our staff believes that these features can provide better access to previously inaccessible area and can also reduce setup time in normal street-accessible applications.

The high pressure hose on these machines is stored on a hydraulically powered hose reel ranging in capacity from 400-800 feet of ¾" jet rodding hose. The reels have evolved into being most frequently mounted on the front of then truck chassis. The interface between the hose reel pay out and the vacuum boom rotation is critical in operations that are away from the center or in traffic lanes. It is imperative that the rotation of the hose reel allow for payout of the high pressure hose perpendicular to the axis of the reel, much like a level wind fishing reel; in order to do this the pay out toward the midship point of the chassis to a point accessible to the vacuum tube.

For crew safety reasons, the hose reel in many cleaning operations is operated in front of the vehicle. The hose reel in these instances should be designed to keep the operator in front of the vehicle. The hose reel that is designed with the greatest degree of rotation allows for the best boom/hose reel interface and safest position for the operator. At no time is the operator subjected to standing in a traffic lane with on coming traffic. In addition, the rotating hose reel has controls on both sides of the hose reel. This allows for the operator to be forward of the reel and the chassis. These conveniences allow for the safest most productive usage of the combination high pressure water and vacuum system.

There is also a need to comply with DOT regulations that calls for the hose reel to be within 3 feet of the bumper of the vehicle. The need to make sure that this regulation is complied with is evident. Over the last few years the lower profile of the chassis hoods has also made the hose reel more visible over the hood. This although in compliance with all DOT regulations the design that incorporates a low-profile reel that increases forward visibility is seen as a valued enhancement to the vehicle. This is a desired design characteristic.

There has been units tested that require a hydraulic foot support to maintain the hose reel when in the extended or rotated position. In that there are many off road applications for this equipment this design may prove to be problematic. In that the area around the manholes when off-road can be uneven and rough the hydraulic foot may not be able to be deployed. This limits your access to manhole cleaning in these off-road sites. This configuration coupled with the need for the reel to extend into oncoming traffic for its

Attachment 5:

deployment and that it cannot access the vacuum tube except in the front quadrant of the machine makes this design less than satisfactory for use.

Manufacturer designs vary greatly, however the Vactor Unit front hose reel system is configured adequately, where maximum boom reach is essential, and convenience in high pressure hose reel positioning is advantageous.

Important Design Features of Hose Reel

	<u>Vactor</u>	<u>Vaccon</u>	<u>Camel</u>
Can unit allow payout of high pressure hose to the farthest reach of the vacuum hose?	Yes	No	No
Does hose reel utilize dual controls?	Yes	No	No
Does system require a hydraulic foot for deployment of reel?	No	Yes	No
Does the unit incorporate low profile reel configuration?	Yes	No	No
Is the reel direct driven with the low profile?	Yes	Not Available	No

Vendor Support

Staff has examined the vendors of the products listed and have determined several criteria for comparison:

1. How long has the vendor represented the product? This will result in determining the vendor personnel's knowledge, experiences and commitment to the industry and its customers.
2. Quantity of units in the territory. We can determine the field experiences the vendor has, the customer acceptance and a feel for the parts inventory on hand locally, i.e., if a vendor has (2) units in his territory, he is less likely to stock a quantity of parts in local stock, as opposed to a vendor with (500) units in his territory.
3. Field service availability. The cleaning equipment is an emergency vehicle that staff may not want to be without and we would benefit from field service for warranty in our facility.

Vendor Offerings

<u>Vendor & Product</u>	<u>Years with Product</u>	<u># of Combo Units in Cal.</u>	<u>Parts Inventory</u>	<u>Field Service</u>
VACCON	15 Years	200-300 Units (est)	Some	One person
*CAMEL	8 Years	20-25 (est)	None	None

*(NOTE): This Vendor suggests that they do not need stock because local sources can be located. City staff does not have time to source all of our parts and feels this will interfere with warranty and our ability to meet our production schedules.)

<u>Vendor & Product</u>	<u>Years with Product</u>	<u># of Combo Units in Cal.</u>	<u>Parts Inventory</u>	<u>Field Service</u>
VECTOR	35 Years	500	\$750,000	7 Units

(Full support dealer with adequate support services.)

Results of our study reveal that the Vector is the product of choice. It is by far and away the most universally used piece of equipment in the field and has set the standard for many local municipal and contractor users.

Definitions:

Mobile Combination Unit - it uses the water system to break through and clear a blockage and then uses the high pressure water to bring the debris back to a manhole where it can be removed by the vacuum system for disposal.

High Velocity Flusher/Jetter System- it used the water system to break though and clear a blockage then uses the high pressure water to bring the debris back to the manhole and flushed downstream to the local publicly owned treatment plant. *Note: Current method used by the City of Sausalito Department of Public Works staff.*

(Integral Components of Both Systems—A Comparison)

A. WATER PUMP

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- A Triplex or other plunger style water pump that provides steady flow of pressure.
- Normally operates between 400-550 rpm and cannot safely operate dry due to excessive operating speeds.
- Water pump is belt driven. The belt drive is inefficient and maintenance intensive.
- When the water tanks are depleted of water the pump will cavitate and vibrate. This vibration can cause severe pump damage to occur.
- The pump cannot create a true "Jack- Hammer" action without damaging the pump or ball valves.

Mobile Combination Vehicle

- A dual acting single piston water pump that provides "jack-hammer" action to break through obstructions. Note: Accumulators are available if a customer prefers a steady flow of pressure.
- Capable of 0-100 gpm and pressures of 0-2500 psi. The pump operates at approximately 13 rpm and can be run dry, without water, for up to 30 minutes.
- The water pump is hydraulically driven through a hydraulic pump that is driven by the chassis engine. Operator can control pressure and flow from the front work-station.
- Pump can run independently from the vacuum system.
- The pump is gravity fed and located 100% below the water supply. Due to this configuration the pump is constantly filled with water with no need for priming.

B. HOSE REEL

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- Offers a rear mounted hose reel.
- Reel is mounted in the most dangerous spot for an operator if mounted to the rear. Since most of the sewer cleaning is done on the street the most dangerous spot to be standing is behind the vehicle. This location leaves no protection from oncoming traffic and no room forward to escape. This leaves an operator pinned between the machine and oncoming traffic. Additionally the boom must be changed and will be top mounted with a 90 degree turn into the body.

Mobile Combination Vehicle

- Offers only front mounted hose reel for operator safety.
- Hose reel, which rotates 270 degrees. A control panel is located on both sides of the hose reel.
- The reel is mounted directly to the chassis frame and requires no additional supports to provide stability.
- The reel provides 270 degrees of mobility while the operator is constantly protected by the confines of the truck chassis.
- The water system requires a minimal amount of the chassis total horsepower to operate.

C. WATER TANKS

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- Tanks are side mounted along the debris body. Tanks are above the center of gravity, which results in poor weight distribution. Liquid payload, no matter how it is baffled, will adversely affect the handling of the unit-more so than a solid payload.
- Attachment is via large straps. Due to the high center of gravity and weight, unusual stress is put on the supports.

Mobile Combination Vehicle

- Aluminum water tanks are mounted at or below the frame level of the unit to provide a lower center of gravity and better weight distribution. Tanks are guaranteed for ten years against corrosion and rust through.
- The aluminum water tank design is very durable, flexible, and very easy to repair.
- When higher water capacities are required the Aluminum tanks can be stretched or made wider to accommodate more water while still meeting weight requirements.
- The water tanks are mounted to the sub-frame for added stability and a low center of gravity.

Item #: 4B4
Meeting Date: 02/26/08
Page #: 10

D. DEBRIS BODY

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- Unit has no debris body as it is designed to dispense water only and not debris.

Mobile Combination Vehicle

- Debris body is constructed of 3/16" (4.763 mm) Ex-Ten steel and is guaranteed against corrosion and abrasion for 5 years.
- Formula used results in increased corrosion and abrasion resistant characteristics.
- Body is raised via double acting hydraulic cylinder to a 50 degree angle for dumping.

E. BOOM

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- No boom is installed as unit is incapable of removing debris from sewer line.

Mobile Combination Vehicle

- The standard boom rotates 180 degrees and provides up to 276" of reach from the centerline of the unit; 4' and 8' Telescoping or extendable booms available as an option.

F. VACUUM SYSTEM

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- not designed to vacuum material out of sewer.

Mobile Combination Vehicle

- A positive displacement blower vacuum system.
- The standard PD blower is capable of 3600 CFM inlet volume and 15" Hg vacuum at an operating speed of 2080 RPM. The blower is protected by two vacuum relief valves and a stainless steel ball float shutoff. All blowers are powered by the chassis engine and driven direct through a heavy-duty split shaft transfer case. There are no belts to wear or reduce horsepower.

G. ADDITIONAL IMPORTANT INFORMATION

The Mobile Combination Vehicle specified has a hydro-excavation unit on it. This gives you and your staff the ability to excavate areas to assist in repairs of broken or

Item #: 484
Meeting Date: 02/26/08
Page #: 18

damaged lines, removal of debris - (i.e. mud, due to a mudslide), suck up a water/wastewater spill and return it to the sewer.

2. The Federal, State and Regional Water Quality Control Boards are requiring municipalities owning and operating more than 1 mile of trunk line sewers to have a plan and equipment necessary to mitigate spills.

ATTACHMENT 9

peunscoc

Requisitions Proof List

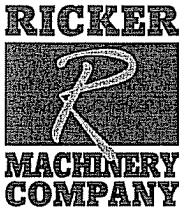
Date: 02/07/2008
Time: 12:47:29

Reg No	Reg Date	Item Name	Vendor No	Appr Status	Account No	PM Task and Type	Quantity	Price	Amount
Dept: 550 Employee No: GUASP 0000384 02/07/2008			RICKERMA	Approved	110-550-7000-750		1.00	196,923.00	196,923.00
							Employee Total:		196,923.00
							Dept Total:		196,923.00
							Grand Total:		196,923.00

SAUSALITO
APPROVED BY

SPT HEAD _____
SITE _____
CCT # _____

484
21



909-7th Street, Oakland, CA 94607-3197 (510) 893-3690 (510) 893-9654 fax

February 6, 2008

City of Sausalito
420 Litho Street
Sausalito, CA 94965

Attn: Mr. Pat Guasco

Subject: Vactor 2103 GSA Proposal and Contract

Thank you for considering Ricker Machinery for your acquisition of a combination sewer cleaning truck for the City of Sausalito. I am enclosing the GSA pricing on a new 2008 Vactor model 2103 combination sewer cleaner for your guidance from Maryland Industrial Trucks (MIT) and a cover letter on Ricker Machinery Company. The specification on this unit is included in the attached file from Maryland Industrial Trucks (MIT).

Maryland Industrial Trucks (GSA contract GS-30F-1012H) is the GSA authorized dealer for Vactor Manufacturing and will be the selling dealer for this unit. Ricker Machinery will be your local dealer to support delivery, training and future needs on this machine.

Regarding the contract for this purchase, there is not a contract, per se. The contractual relationship is merely a purchase order from the City of Sausalito to MIT. Once MIT has your purchase order, they will order the chassis from International. Working with Ricker Machinery Company, MIT will put together an order with Vactor Manufacturing and will send a confirming order to Ricker Machinery Company for my comment and review. Once this document has been approved by Vactor, MIT and Ricker Machinery Co., and once the chassis arrives at Vactor Manufacturing in Streator, Ill. (approximately 90-120 days after receipt of the PO from Sausalito), the unit will be built and subsequently delivered to Ricker Machinery Company. We in turn will perform our pre-delivery of the unit and arrange to deliver it to the City. We will also schedule to train your operator(s) on the use of the machine.

Once the unit has been delivered to the City, MIT will issue an invoice to the City of Sausalito, referencing the City's PO. The City will arrange for payment of the invoice to MIT and the purchase will be completed. Ricker Machinery Company will receive compensation from MIT and from that point forward, will be responsible to the City of Sausalito to handle all parts, service and warranty needs.

In the last few months, the City's of St. Helena, Cloverdale and Sebastopol have all used the GSA process to purchase a similar truck to yours. To further illustrate my point above, attached for your guidance and review is a copy of the purchase order from the City of Sebastopol. The City of St. Helena and Cloverdale have decided to finance all or a portion of the purchase price with Federal Signal Leasing and their process is slightly different to the one listed above, because they needed to execute a lease/purchase agreement with Federal Signal Leasing. Otherwise, the process was similar.

If you have any questions or if you require additional information, please do not hesitate to give me a call at (510) 719-1469.

Best regards,

Ed Hodges
Sales Representative

434
23

www.mdindustrialtrucks.com

1330 West Nursery Road • Linthicum, Maryland 21090
 Washington D.C. 301.474-0022 • Baltimore 410.636-1255 • Fax 410.63-5734 • Toll Free 800.481-5439



Date: February 06, 2008

City of Sausalito
 420 Litho Street
 Sausalito, CA 94965

Attention: Mr. Pat Guasco

Per your request sent November 2007, attached you will find a quote for a Vactor 2103 Machine.

DATE:	11/27/07		
PO #:			
MODEL:	2103 Combo Unit with pd blower		
YOUR EXPECTED DELIVERY:			
VACTOR MODULE TOTAL \$			
VACTOR OPTIONS TOTAL \$			
DISCOUNT AMOUNT \$			
TOTAL P.O. LIST PRICE \$			
> > > > M.S.O. INFORMATION < < < <			
ASSIGN TO:			
ADDRESS			
CITY / ST			
FED EX TO:			ATTN:
ADDRESS:			
CITY / ST			
FINANCED BY DEALER ??		YES OR NO	
ALL NON-EXEMPT CUSTOMERS MUST PAY F.E.T. ANY VEHICLE UNDER 33,000 LB GVW IS NOT SUBJECT TO F.E.T.			
	2103 LIST PRICE		Date: 02/06/08
Dealer	Ricker Machinery Company		
Address	909 7th Street		Terms:
City	Oakland		

4B4
24

State	Ca			
Zip	94607			
Customer	City of Sausalito			
Address	420 Litho Stret			
City	Sausalito		Delivery Instructions:	
State	CA		You Must Choose One	
Zip	94965		Customer Pick-Up	
Contact	Pat Guasco		Vactor	Delivery
Phone Number	415-289-4112			
Fax Number	415-339-2256			
ENTER DATA IN YELLOW CELLS ONLY				
2103 Combination Sewer Cleaner				
Code	Description	QTY	LIST	EXT LIST
Model	2103 - Roots 616 RCS Blower 2400 CFM @ 0" HG (Combo. Sewer Cleaning Machine)	1		
	MANDATORY MOUNTING CHARGE PER UNIT	1		
	Total Module and Mounting Chg.	1		\$
M000STD	Roots Blower 616 RCS			STD
M001STD	3 Cubic Yard Debris Tank Capacity			STD
M002STD	Mud Flaps			STD
M003STD	Color Coded Sealed Electrical System			STD
	Air Shift controls for Transfer Case			STD
M004STD	Remote Pendant Control With 35' Cord			STD
M005STD	Double Acting Dump Hoist Cylinder			STD
M006STD	2" Y-Strainer With 25' Fill Hose			STD
M007STD	Ex-Ten Steel Debris Tank			STD
M009STD	Water level sight gauge			STD
M010STD	Manual Over Center Rear Door Locks			STD
M011STD	Multi-Flow Water System			STD
M012STD	Accumulator For Vactor Water Pump			STD
M013STD	4' Hydraulic Extendable Boom 120 Deg. Rotation			STD
M014STD	Vacuum Relief (Kunkel Valves)			STD
M015STD	3" Y-Strainer at Water Pump Inlet			STD
M016STD	40 GPM @ 2500 PSI Water System			STD
M017STD	500 Gals. Water Tank Capacity			STD
M018STD	One Aluminum Tool Box			STD
M019STD	Stainless Steel Float Ball Shut-Off			STD
M020STD	Rotating Hose Reel 500' x 3/4" Capacity 120 Deg. Rotation			STD
M021STD	3/4" x 500' Rodder Hose			STD
M022STD	Hose Reel Hydraulic Tilt Function			STD
M023STD	Electronic Back-Up Alarm			STD
M024STD	Hose Footage Counter			STD
S390BSTD	Vacuum Pipe Package 6"			STD
MS560STD	Emergency Flare Kit			STD
MS590STD	Fire Extinguisher - 5#			STD

484
25

M4601STD	Dual Roller Hose Level Wind Guide			STD
M7601	Vactor Manual + 1 Dealer Manual			STD
MP110STD	Module-Paint Dupont (Wet-On-Wet)			STD
Code	Debris Body	QTY	LIST	EXT LIST
M001STD	3 Yd3 Debris Body	0	STD	STD
M013STD	4' Hydraulic Extendable Boom - 120 Degree Rotation	0	STD	STD
M019STD	Stainless Ball Float Shut-Off	0	STD	STD
M1015	* FOLDING PIPE RACK/CURBSIDE	1		
M1603	4" Butterfly Decant Valve Rear Door Mounted	1		
M1605	Rear Door Splash Shield	1		
M1606	Hydraulic Rear Door Locks	1		
Code	Water Tank Accessories	QTY	LIST	EXT LIST
M2602	Low Water Warning Light	1		
Code	High Pressure Water Pump Accessories	QTY	LIST	EXT LIST
M3605	Lube Manifold	1		
M3607	Retractable Handgun Hose Reel W/50' Hose Assy.	1		
M5021	* HYDRO EXCAVATION KIT/ RETRACTABLE REEL W/50' X 3/8" HOSE, HANDGUN & PLUMBING - THIS SYSTEM MUST HAVE OPTION #5012 MULTIFLOW AND OPTION#5010 ACCUMULATOR ON THE MACHINE (THIS IS NOT AVAILABLE ON C-B UNITS)	1		
Code	Hose Reel Accessories	QTY	LIST	EXT LIST
M4604	Joystick Boom Control - Front	1		
Code	Light Accessories	QTY	LIST	EXT LIST
M5601	Signal-Master Directional Arrow-One Piece - Rear	1		
M5602	Hand Light With Bumper Plug	1		
M5605A	Strobe Light Amber - Rear Mounted	1		
M5608	Work Lights on Boom	1		
M5609	Limb Guard For Revolving / Strobe Light	1		
M8025	*LED LIGHTS, CLEARANCE, STOP, TAIL & TURN	1		
Code	Chassis Accessories	QTY	LIST	EXT LIST
M6602	Tow Hooks - Front Mounted	1		
M9019	Delivery to dealer	1		
Code	Paint	QTY	LIST	EXT LIST
***	MATCH CAB COLOR - Yes or No	0		
MP110STD	Module - Standard Application	1	STD	STD
MP116	Rear Door Stripe - Reflective Tape (Chevron Style)	1		
***	ENTER COLOR	0		
Code	Special Options/Insert Descriptions	Insert Qty	Insert List Price	Ext List
	Curbside Dump Controls	1		
	5yr warranty	1		
Spare Parts / Accessories		QTY	LIST	EXT LIST
	Total Options list			\$
	PRICING SUMMARY		LIST	EXT LIST
	Base Module and Mounting Chg			\$

4B4
26

ATTACHMENT 10

				-
	Options			\$
	Module, Mounting Chg , Options, Spare Parts			\$
	Discount/Enter dollar amount		\$	\$
	Consult Factory For Stock Chassis			
VMS#	Enter Chassis And Price In The Column Below		LIST	EXT LIST
MAIS225A	IH 4300 4x2 with Air Brakes 25,999 GVWR 07 EMISSIONS	1		\$

List Price.....\$ 225,477.00
 GSA Discount\$ 46,881.00
 GSA Price w/freight.....\$ 178,596.00
 GSA Fee.....\$ 1,786.00
 Pre-Delivery Inspection.....\$ 2,700.00
 California Tax (7.75%).....\$ 13,841.00

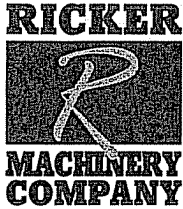
Total for 1 Unit \$ 196,923.00

We appreciate the opportunity to quote you on your equipment requirements. If you have any questions regarding this quote or its contents, please do not hesitate to call or write.

Sincerely,

Tom Rockstroh
 GSA Contract Administrator
 GS-30F-1012H

4B4
27



909-7th Street, Oakland, CA 94607-3197 (510) 893-3690 (510) 893-9654 fax

February 6, 2008

City of Sausalito
420 Litho Street
Sausalito, CA 94965

Attn: Mr. Pat Guasco

Subject: Vactor 2103 GSA Proposal

Thank you for considering Ricker Machinery for your acquisition of a sewer cleaning truck for the City of Sausalito. I am enclosing the GSA pricing on a new Vactor 2103 combination sewer cleaner for your guidance and review along with the most recent rate sheet from Federal Signal Leasing. The specifications on this unit are attached.

Maryland Industrial Trucks (GSA contract GS-30F-1012H) is the GSA authorized dealer for Vactor Manufacturing and will be the selling dealer for this unit. Ricker Machinery will be your local dealer to support delivery, training and future needs on this machine.

The GSA pricing is as follows:

List price per attached specifications	\$ 225,477.00
GSA Discount	<u>- 46,881.00</u>
GSA Price	\$ 178,596.00
 Ricker Machinery Pre-delivery, Delivery, Training	 2,700.00
GSA Fee	1,786.00
CA Tax 7.75%	<u>13,841.00</u>
 Total Price for one unit	 \$ 196,923.00

Estimated delivery time upon receipt of order is 270 days.

Please note that any County Sales tax is extra. License fee is extra. California tire tax of \$1.75 per tire is extra.

If you have any questions or if you require additional information, please do not hesitate to give me a call at (510) 719-1469.

Best regards,

Ed Hodges
Sales Representative

4/84
28

Dec 19 07 05:23p

707 823 4721

City of Sebastopol Plan

12:51:08 12-12-2007

p.2

2/2



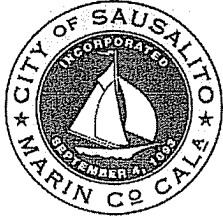
City of Sebastopol

Planning Department
 714 Johnson Street
 Sebastopol, CA 95472
 707-823-6167 (Planning)
 707-823-4721 (Fax)
 www.ci.sebastopol.ca.us

PURCHASE ORDER

Ship To: Sebastopol Public Works Department 714 Johnson Street, Sebastopol, CA 95472		Date: December 11, 2007				
Via:		Terms:		F.O.B.		When Wanted:
To:		Conditions				
Maryland Industrial Trucks, Inc. 1330 West Nursery Road Linthicum, MD 21090 Phone: 410-636-1255 Fax: 410-636-5734		1. Send all invoices to Director of Finance, City Hall, Sebastopol, CA. 2. Prepay all transportation charges, if F.O.B. shipping point, attached receipted freight bill to invoice. 3. Indicated cash discounts will be taken on all purchases if paid by City on first Monday in month following receipt of invoice.				
Item No.	Description	Quantity Received	Quantity Ordered	Unit	Unit Price	Amount
1	Vector 2103 Combination Machine on an 2008 International 4300 Chassis with 2007 Emissions and Hydraulic Brakes.					
	The GSA pricing is as follows:					
	List price per attached specifications				\$207,356.00	\$207,356.00
	GSA Discount				-\$43,544.00	-\$43,544.00
	GSA Price				\$163,812.00	\$163,812.00
	Ricker Machinery Pre-delivery, Delivery, Training				\$2,700.00	\$2,700.00
	GSA Fee				\$1,249.00	\$1,249.00
	CA Tax 8.00%				\$13,104.96	\$13,104.96
	TOTAL PRICE FOR ONE UNIT:				\$180,865.96	\$180,865.96
Distribution 50%: 420-6420-6921 25%: 510-6510-6921 25%: 000-6330-6921		Requisitioned by Richard Emig Superintendent Public Works		City Manager Dave Breuninger		

4/84
29



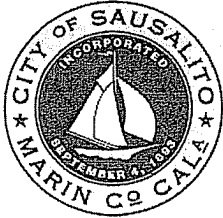
CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

**EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner**

1. **1 - GENERAL EQUIPMENT SPECIFICATIONS:**
2. **SPECIFICATION OUTLINE:**
3. The following specifications for a 6 wheel, 25,999 lbs. GVWR combination sewer cleaner divided into three complete sections. The first section outlines the overall specification requirement. The second details the chassis portion of the truck. The third section refers mostly to the sewer cleaner that is to be mounted onto the truck chassis. The truck shall be delivered complete with all equipment and accessories necessary for safe and efficient operation, ready for immediate job site operation within the City of Sausalito. The machine shall comply with the manufacturer's current model truck and sewer cleaner, with additions and deletions as contained herein. The unit provided shall be new, of current manufacture and the model shall have been in production a minimum of five (5) years.
4. **MANUFACTURING, MATERIAL AND DESIGN PRACTICES:**
5. It is intended that the manufacturer, in the selection of components will use material and design practices that are the best available in the industry for the type of operating conditions to which the unit will be subjected. Engine, suspension, wheels, tires and other component parts shall be selected to address the performance requirements of this specification. All parts, equipment and accessories shall conform in strength, quality of material and workmanship to recognized industry standards.
6. **HEAVY DUTY TERMINOLOGY DEFINED:**
7. The term "heavy duty" as used in these specifications shall mean that the item to which the term is applied shall exceed the usual quantity, quality or capacity supplied with standard production unit(s) and it shall be able to withstand unusual strain, exposure, temperature, wear and use.
8. **EQUIVALENT FEATURES, MODIFICATIONS & COMPLIANCE TO GENERALITIES:**
9. **EQUIVALENT FEATURES:**
10. Bidders may propose equivalent features for any specific manufacturer's brand and model numbers listed throughout these specifications, unless otherwise stated within these specifications on a per item basis.
11. **CONDITIONAL MODIFICATIONS:**
12. Potential variances of a specific truck manufacturer's chassis may require variances in the mounting and design to some degree. Therefore, bidders shall clearly and completely outline all areas needing such modifications.
13. **GENERALITIES:**
14. To allow for manufacture's specific designs, and ensure a level of competitiveness, we have left certain areas of our specifications general by design. In such cases, the items being referred to may be general, but adherence to the requested end product and/or result must be met. This is especially important in areas where critical dimensions, capacities, grades of steel, etc. are specified.
19. **MANUFACTURER'S SPECIFICATION:**
20. Complete manufacturer's specification, published literature and photos or illustrations of unit proposed, should be furnished with bid. Only new models in current production which are catalogued by the manufacturer and for which printed literature and specifications are available will be accepted. Bidders should prepare and submit their own proposals addressing each section, item or component of these specifications if they differ from these specifications. These shall



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

**EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner**

21. indicate full compliance without exception, or explaining in detail any exception, deviation or non-compliance. Bidders should not simply submit a copy of these specifications if they differ from these specifications. Nor should they submit copies of manufacturer or third party quotations as a response to the City's bid solicitation. An MSDS (Material Safety Data Sheet) shall be supplied for all fluids used.
- 22. MANUFACTURER'S STANDARD EQUIPMENT:**
23. All equipment and components listed as standard by the manufacturer for model quoted
24. shall be furnished whether or not such items are detailed herein, e.g., special wrenches, tool kits, etc. Optional equipment as necessary to meet the following requirements of this specification shall also be supplied. Should the requirements as specified not comply, the manufacturer is required to re-figure and revise the specifications to meet all laws, rules and regulations where it applies to items such as the ratings of axles, tires, rims, brakes, batteries, cooling capacity, etc. and the City of Sausalito is to be notified there of.
- 25. APPLICABLE DOCUMENTS AND CERTIFICATIONS:**
26. Specifications on the following pages are written with the intent to comply with all applicable documents and certifications, but the final responsibility to comply shall rest with the vendor and not the City of Sausalito. The successful bidder shall adhere to the standards set forth by the following agencies:
27. Federal Motor Vehicle Safety Standard, Department of Transportation.
28. State of California Motor Vehicle Code.
29. State of California General Industrial Safety Orders.
30. State of California Health and Safety Code, Motor Vehicle Pollution Control.
31. California Occupational Safety and Health Act (OSHA) and the EPA
32. Society of Automotive Engineering Standards.
33. American Society of Mechanical Engineers (ASME).
34. American National Safety Institute (ANSI).
- 35. OPERATIONAL NOISE STANDARD:**
Noise levels shall be in conformance with standards established by Local, State and Federal Agencies. City personnel for noise requirements may test each unit delivered before the unit is accepted.
- 36. HOSE AND WIRING ROUTING, HARDWARE REQUIREMENTS:**
37. All hoses and wiring shall have adequate protective covers wherever there is a possibility of contact with any other components. Separators shall be used where applicable. No tape or adhesive fasteners will be accepted. All hoses, wiring and pipes shall be routed to be clear of all heat sources and shall be protected from any present or potential source of snags, abrasions or sharp edges. If any wiring for any lamps are routed through any tool compartment, these wires shall be enclosed in steel. All fasteners (nut, bolts, rivets & etc.) shall be grade 5 or better with a rust inhibiting coating. Severe application must have grade 8.
- 38. SWITCHES, LABELS:**
All toggle and push button switches shall be marine type with additional rubber boots. All controls, warning gauges and valves shall be marked as to function with stamped or engraved laminated plastic, stainless steel or aluminum labels. These labels shall be attached by aluminum



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

**EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner**

39. and/or stainless steel rivets.

40. DELIVERY REQUIREMENTS:

41. Due to the fabrication design required on the body of this truck, we understand the potential for build schedule delays. For this combination unit, we are setting the delivery schedule at not more than 350 days, or 11 1/2 months. This unit should be delivered and be ready for service within the stated time range. If a combination unit being bid meets all other requirements of the specification, but cannot meet the specified time allotted for delivery, this discrepancy shall be stated upon the bid return.

42. WELDING:

43. All welding shall be continuous where applicable. All welding shall be performed in accordance with the applicable requirements of the latest codes, rules or specifications of the American Welding Society, (AWS), and the requirements of these specifications and special provisions, and shall be subject to the test and examinations therein specified.

44. PRE-CONSTRUCTION REQUIREMENT:

The successful bidder shall be required to attend a pre-construction meeting with the initiators of these specifications and /or designated City representative(s) prior to the start of any body construction. The purpose is to ensure the proper interpretation of the City's written specifications. If necessary, the vendor may also be required to coordinate any additional meetings prior to the installation of equipment, painting, etc. The location shall be at 420 Litho Street, Sausalito, California 94965. Vendor may contact Pat Guasco at 415-289-4192 for information and instructions.

45. NOTE: If Bidder is offering specified item, please state with a "Y" for yes on each technical line item. If Bidder is taking any exceptions, please state with an "E" on each technical line item. Bidder shall reference each exception line item number and explain the exception taken on the Bid Exception Sheets, Attachment D.

46. **Bids which do not include confirmation of each technical specification will be deemed to take exception to such bid requirements, which may result in the bid being deemed non-responsive.

Attachment D must be returned with the submitted bids.

47. SECTION 2 – CHASSIS:

48. STANDARD SPECIFICATIONS:

49. GENERAL:

50. 2008 4X2



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

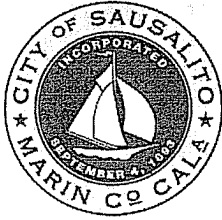
ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

51. _____ **MISSION:** Requested GVWR: 25,999. Calc. GVWR: 25,999
52. _____ **DIMENSION:** Wheelbase: 187.00, CA: 119.90, Axle to Frame: 75.00
53. _____ **PAINT:** Cab Schematic 100GA Location 1: 9219, Winter White (Std) Chassis Schematic N/A MA02500 Base Chassis, Model 4300 SBA 4X2 with 187.00 Wheelbase, 119.90 CA, and 75.00 Axle to Frame.
54. _____ **TOW HOOK, FRONT (2)** Inside Rail, Frame Mounted.
55. _____ **FRAME RAILS** High Strength Low Alloy Steel (80,000 PSI Yield); 10.250" x 3.092" x 0.375" (260.4mm x 78.5mm x 9.5mm); 427.0" (10846mm) Maximum OAL
56. _____ **WHEELBASE RANGE** 134" (340cm) Through and Including 197" (500cm)
57. _____ **AXLE, FRONT NON-DRIVING** I-Beam Type, 10,000-lb Capacity
58. _____ **SUSPENSION, FRONT, SPRING** Parabolic, Taper Leaf; 10,000-lb Capacity; With Shock Absorbers
Includes:
: SPRING PINS Rubber Bushings, Maintenance-Free
59. _____ **BRAKE SYSTEM, AIR** Dual System for Straight Truck Applications
Includes:
i. : AIR COMPRESSOR AIR SUPPLY LINE International Engines, Naturally-Aspirated
ii. : BRAKE CHAMBERS, SPRING (2) Rear Parking
iii. : BRAKE LINES Color Coded Nylon
iv. : DRAIN VALVE Twist-Type
v. : DUST SHIELDS, FRONT BRAKE
vi. : DUST SHIELDS, REAR BRAKE
vii. : GAUGE, AIR PRESSURE (2) Air 1 and Air 2 Gauges; Located in Instrument Cluster
viii. : PARKING BRAKE VALVE Color-Coded Yellow Knob, Located on Instrument Panel
ix. : SLACK ADJUSTERS, FRONT Automatic
x. : SLACK ADJUSTERS, REAR Automatic
xi. : SPRING BRAKE MODULATOR VALVE
60. _____ **DRAIN VALVE** Manual; With Pull Chain, for Air Tank
61. _____ **AIR BRAKE ABS** { Antilock Brake System } Full Vehicle Wheel Control System (4-Channel)
62. _____ **AIR DRYER** With Heater

484
34



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

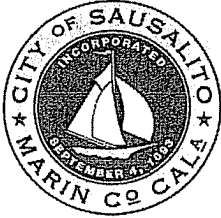
ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

63. _____ BRAKES, FRONT, AIR CAM S-Cam; 16.5" x 5.0"; Includes 20 Sq. In. MGM Long Stroke Brake Chambers
64. _____ BRAKES, REAR, AIR CAM 16.5" x 7.0"; Includes MGM TR3030 Long Stroke Brake Chamber and Heavy Duty Spring Actuated Parking Brake
65. _____ AIR COMPRESSOR 13.2 CFM Capacity
65. _____ DUST SHIELDS, FRONT BRAKE
66. _____ DUST SHIELDS, REAR BRAKE
67. _____ STEERING COLUMN Tilting
68. _____ STEERING WHEEL 2-Spoke, 18" Diam., Black
69. _____ STEERING GEAR Power
70. _____ DRIVESHAFT SPL140 in lieu of SPL90 Series
71. _____ EXHAUST SYSTEM Single, Horizontal, After treatment Device Frame Mounted Right Side; Includes Vertical Tail Pipe & Guard
Includes
 - i. : MUFFLER/TAIL PIPE GUARD Non-Bright Finish for single exhaust
72. _____ SWITCH, FOR EXHAUST 2 Position, Lighted & Latching, ON/OFF Type, Mounted in IP, Inhibits Diesel Particulate Filter Regeneration as Long as Switch is in ON Position
73. _____ ELECTRICAL SYSTEM 12-Volt, Standard Equipment
Includes:
 - i. : BATTERY BOX Steel; Mounted Left Side, Under Cab
 - ii. : DATA LINK CONNECTOR For Vehicle Programming and Diagnostics In Cab
 - iii. : FUSES, ELECTRICAL SAE Blade-Type
 - iv. : HAZARD SWITCH Push On/Push Off, Located on Top of Steering Column Cover
 - v. : HEADLIGHT DIMMER SWITCH Integral with Turn Signal Lever
 - vi. : HORN, ELECTRIC Single
 - vii. : JUMP START STUD Located on Positive Terminal of Outermost Battery
 - viii. : PARKING LIGHT Integral with Front Turn Signal and Rear Tail Light
 - ix. : RUNNING LIGHT (2) Daytime, Included With Headlights
 - x. : STARTER SWITCH Electric, Key Operated
 - xi. : STOP, TURN, TAIL & B/U LIGHTS Dual, Rear, Combination with Reflector
 - xii. : TURN SIGNAL SWITCH Self-Canceling for Trucks, Manual Canceling for Tractors, with Lane Change Feature

484
35



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

- xiii. : TURN SIGNALS, FRONT Includes Reflectors and Auxiliary Side Turn Signals, Solid State Flashers; Flush Mounted
 - xiv. : WINDSHIELD WIPER SWITCH 2-Speed with Wash and Intermittent Feature (5 Pre-Set Delays), Integral with Turn Signal Lever
 - xv. : WINDSHIELD WIPERS Single Motor, Electric, Cowl Mounted
 - xvi. : WIRING, CHASSIS Color Coded and Continuously Numbered
74. _____ **ACCESSORY POWER OUTLET (12V)**
75. _____ **POWER SOURCE** Cigar Type Receptacle without Plug and Cord
76. _____ **ALTERNATOR** Brush Type; 12 Volt 110 Amp. Capacity, Pad Mounted
77. _____ **BODY BUILDER WIRING** Back of Standard Cab at Left Frame or Under Extended or Crew Cab at Left Frame; Includes Sealed Connectors for Tail/Amber Turn/Marker/ Backup/ Accessory Power/Ground and Sealed Connector for Stop/Turn
78. _____ **BATTERY SYSTEM** Maintenance-Free, (2) 12-Volt 1300CCA Total
79. _____ **RADIO** AM/FM Stereo, With CD Player, Weatherband, Clock, Satellite Radio Compatible, With Multiple Coaxial Speakers
Includes:
 - i. : SPEAKERS IN CAB (2) Coaxial with Deluxe Interior
 - ii. : SPEAKERS IN CAB (4) Coaxial with Premium Interior
80. _____ **HORN, AIR** Black, Single Trumpet, Air Solenoid Operated, Mounted Behind Bumper on Right Rail
81. _____ **WINDSHIELD WIPER SPD CONTROL** Force Wipers to Slowest Intermittent Speed When Park Brake Set and Wipers Left on for a Predetermined Time
82. _____ **HEADLIGHTS** Halogen; Composite Aero Design for Two Light System; Includes Daytime Running Lights
83. _____ **TEST EXTERIOR LIGHTS** Pre-Trip Inspection will Cycle all Exterior Lamps Except Back-up Lights
84. _____ **HEADLIGHTS ON W/WIPERS** Headlights Will Automatically Turn on if Windshield Wipers are turned on
85. _____ **STARTING MOTOR** 12-Volt; less Thermal Over-Crank Protection
86. _____ **CIRCUIT BREAKERS** Manual-Reset (Main Panel) SAE Type III With Trip Indicators, Replaces All Fuses Except For 5-Amp Fuses
87. _____ **GRILLE** Stationary, Chrome

484
30



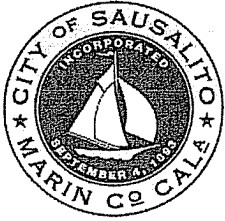
CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

88. _____ **INSULATION, UNDER HOOD** for Sound Abatement
89. _____ **INSULATION, SPLASH PANELS** for Sound Abatement
90. _____ **FRONT END** Tilting, Fiberglass, With Three Piece Construction
91. _____ **PAINT SCHEMATIC**, PT-1 Single Color, Design 100
92. _____ **PAINT TYPE** Base Coat/Clear Coat, 1-2 Tone
93. _____ **ENGINE, DIESEL** 50 State, 225 HP, 560 lb-ft Torque @ 1400 RPM, 2600 RPM Governed Speed, # 2 Bell Housing
Includes:
 - i. : **COLD STARTING EQUIPMENT** Intake Manifold Electric Grid Heater with Engine ECM Control
 - ii. : **CRUISE CONTROL** Electronic; Controls Integral to Steering Wheel
 - iii. : **ENGINE OIL DRAIN PLUG** Magnetic
 - iv. : **ENGINE SHUTDOWN** Electric, Key Operated
 - v. : **FAN** Optimized Position
 - vi. : **FUEL/WATER SEPARATOR** and **FUEL FILTER** in a Single Assembly; With Water-in- Fuel Sensor; Mounted on Engine
 - vii. : **GOVERNOR** Road Speed, Electronic
 - viii. : **OIL FILTER**, ENGINE Spin-On Type
94. _____ **FAN DRIVE** Viscous Screw on Type
95. _____ **RADIATOR** Aluminum; 2-Row, Cross Flow, Over Under System, 717 Sq In Louvered, With 313 Sq In Charge Air Cooler. With In-Tank Transmission Cooler
96. _____ **AIR CLEANER** Dual Element
97. _____ **THROTTLE, HAND CONTROL** Engine Speed Control for PTO; Electronic, Mobile, Variable Speed (Range 2 to 20 MPH) Mounted on Steering Wheel
98. _____ **FEDERAL EMISSIONS** 2007
99. _____ **ENGINE CONTROL, REMOTE MOUNTED** Provision for; Includes Wiring for Body Builder Installation of PTO Controls; With Ignition Switch Control for International post 2007 Emissions Electronic Engines
100. _____ **EXPANDED ENGINE TEMP EFFECTS** to Allow Higher Engine Operating Temperature Range; Includes Nylon Surge Tank and 15 psi Pressure Cap



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

101. _____ **TRANSMISSION, AUTOMATIC** 4th Generation Controls; Wide Ratio, 5-Speed, With Overdrive; On/Off Hwy; Includes Oil Level Sensor, With PTO Provision, Less Retarder, With 80,000-lb GVW & GCW Max.
102. _____ **TRANSMISSION SHIFT CONTROL** Push-Button Type; for Allison 3000 & 4000 Series Transmission
103. _____ **SPARE INPUT/OUTPUT** for Rugged Duty Series (RDS); Airport Refueler, Sewer Evac
104. _____ **AXLE, REAR, SINGLE REDUCTION**, 17,500-lb Capacity, With 190 Wheel Ends
105. _____ **SUSPENSION, RR, SPRING, SINGLE VARI-RATE**; 23,500-lb Capacity, With 4500 lb Auxiliary Rubber Spring
106. _____ **FUEL TANK** Top Draw; D Style, Steel, 70 U.S. Gal., 265 L Capacity, 19" Deep, With Quick Connect Outlet, Mounted Right Side, Under Cab
107. _____ **CAB Conventional**
108. _____ **GAUGE CLUSTER** English With English Electronic Speedometer
109. _____ **GAUGE, OIL TEMP, ALLISON TRAN**
110. _____ **GAUGE, AIR CLEANER RESTRICTION** With Black Bezel Mounted in Instrument Panel
111. _____ **IP CLUSTER DISPLAY** On Board Diagnostics Display of Fault Codes in Gauge Cluster
112. _____ **SEAT, DRIVER** Air Suspension with Dual Shocks, High Back With Integral Headrest, Vinyl, Isolated, With 2 Position Front Cushion Adjustment, -3 to +14 Degree Seat Back Adjustment, Single Chamber Air Lumbar Support
113. _____ **SEAT, PASSENGER** Non-Suspension , High Back With Integral Headrest, Vinyl, Isolated, With Fixed Back
114. _____ **MIRRORS (2)** Styled; Rectangular, 7.44" x 14.84", Brackets Breakaway Type, With 102" Wide Spacing, With 7.44" sq. Convex Both Sides, With All Heated Heads, Thermostatically Controlled
115. _____ **ARM REST, RIGHT, DRIVER SEAT**
116. _____ **CAB SOUND INSULATION** Includes Dash Insulator and Engine Cover Insulator
117. _____ **INSTRUMENT PANEL** Center Section, Flat Panel



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

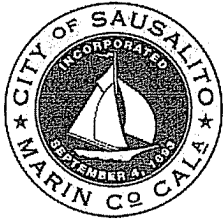
THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

118. _____ AIR CONDITIONER With Integral Heater & Defroster
119. _____ FRESH AIR FILTER for HVAC
120. _____ CAB INTERIOR TRIM Deluxe
121. _____ WHEELS, FRONT DISC; 22.5" Painted Steel, 2 Hand Hole, 10-Stud (285.75MM BC) Hub Piloted, Flanged Nut, Metric Mount, 8.25 DC Rims; With Steel Hubs.
122. _____ WHEELS, REAR DUAL DISC; 22.5" Painted Steel, 2 Hand Hole, 10-Stud (285.75MM BC) Hub Piloted, Flanged Nut, Metric Mount, 8.25 DC Rims; With Steel Hubs.
123. _____ (2) TIRE, FRONT 11R22.5 AH12 503 rev/mile, load range G, 14 ply
124. _____ (4) TIRE, REAR 11R22.5 Z35A 503 rev/mile, load range G, 14 ply
125. _____ PRE-DELIVERY MEETING – Within 5 business days after unit arrives at vendors store vendor shall schedule a pre-delivery meeting with the City. At this meeting, the City will inspect the unit prior to deliver of unit.
126. PAINT & UNDERCOATING:
127. _____ Before painting, all surfaces must be cleaned of rust, oil, grease, dirt, mill-scale, and other foreign material. Truck chassis shall be primed with a rust inhibitor and painted the most brilliant white available. Wheels shall be painted OEM stock color.
128. _____ Entire UNDERCARRIAGE shall be undercoated with heavy-duty under-sealer.
129. WARRANTY & MANUALS:
130. _____ Chassis shall be warranted for a period of one (5) years parts and labor unlimited miles. Axles to be warranted for a period of two (5) years, unlimited miles. Frame rails and cab for three (5) years unlimited miles.
131. _____ Allison transmission shall be warranted for a period of two (2) years, parts and labor, unlimited miles.
132. _____ Warranties shall commence when the City of Sausalito accepts delivery of vehicle.
133. _____ One (1) complete set of parts, service, and repair manuals. One complete set of operator manuals for the truck.

134. SECTION 2 – COMBINATION UNIT:

135. GENERAL SPECIFICATION:



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

136. It is the intent of this specification to provide for the purchase of a new and unused combination unit. The combination sewer cleaner shall be designed to perform cleaning and removal of sand, stone, bottles, cans, grease, sludge and other debris from both sanitary sewer or storm drain lines. All installation shall be made in a neat and workman like manner and all equipment furnished shall be of a standard manufacture. All work and material furnished shall be subject to the approval of the Purchasing Agent, Shops and Using Division.
137. The design of the combination sewer cleaner shall incorporate a single engine as the power source. The chassis engine shall power the hydraulically driven water pump, and the direct driven positive displacement vacuum system.
138. The body, finish, and fittings shall be the latest model, shall not have been used in demonstrator or other service, and shall be factory standard in all respects not in conflict with the following specific requirements.
139. Manufacturer's standard equipment and all devices necessary to comply with the State of California Vehicle Code, the California Administrative Code and the Federal Motor Vehicle Safety Standards will be included. Vehicle must comply with all California Motor Vehicle Pollution Control Board requirements.
140. All vehicle (s) will be serviced, cleaned, and ready for immediate operation when delivered.
141. Unit shall be capable of variable water pressure while maintaining full vacuum and air flow.
142. Due to high ambient temperatures and to assure long life, the unit must be designed to operate at maximum performance levels with a minimum of 20% reserve horsepower.
143. **DEBRIS BODY:**
144. _____ The debris storage body shall be constructed of a minimum 3/16" corrosion and abrasion resistant steel with yield strength of 50,000 PSI and a minimum tensile strength of 70,000 PSI.
145. _____ The body shall be round for maximum strength and have a minimum usable liquid capacity of 3 cubic yards or 606 gallons.
146. _____ The body shall have a full size rear door that is hinged at the top and is equipped with a replaceable neoprene seal to prevent leakage.
147. _____ The debris body shall be equipped with a Splash Shield mounted on the outside of the debris body that will enable the operator to drain off retained liquids and solids when dumping.
148. _____ The body shall be supplied with a load level indicator to show when the body is loaded to capacity. The rear door shall be equipped with a body drain hose, which allows the operator to drain off excess liquids while retaining solids.
149. _____ Debris body shall be dumped by raising the debris body to 50° by means of a forward mounted, double acting hydraulic cylinder.

424
40



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

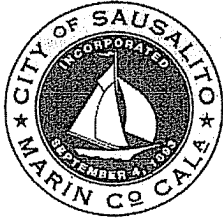
150. _____ The debris body shall be fixtured on an independent frame that is separate from the chassis frame. It shall be mounted via a 3-point mounting system to allow flexing to occur without causing damage.
151. _____ Dump controls and accessory controls shall be provided at a central curbside location, directly behind the cab of the truck.
152. _____ The debris body shall be equipped with a float ball system to stop the debris body from filling when the body is full and to prevent debris body carryover into the vacuum inlet during transportation. The float ball shall be a minimum of 10" in diameter and enclosed in an expanded metal screen to prevent large material from wedging between the ball and the seat.
153. _____ A final filter shall be supplied to limit ingestion of solid or liquid abrasive material into the positive displacement blower. It shall be positioned between the outlet of the debris body and the inlet of the vacuum blower and contain a removable and cleanable stainless steel micro-screen. The screen shall be no larger than 20 mesh, a minimum of 14" in diameter and 20" long to allow maximum protection and air flow.
154. _____ 4" I.D. butterfly valve shall be located on rear door for water decanting. Valve shall be located on right side of rear door at approximately 2 to 3 o'clock position. A single filtration screen shall be provided to prevent large debris from entering the drain pipe. Shall include 10' lay flat drain hose with storage supplied.
155. _____ A flush out nozzle with eight (8) tungsten curbside tipped nozzles shall be mounted at the front interior of debris body, shall be sized to utilize the units water pump system at full capacity to scour the debris body. The control valve shall be located at the rear curbside of the machine

156. _____ A four (4) individual rod and receiver block type sequential door locking system, cam operated by single hydraulic cylinder with separate hydraulic cylinder to activated door grabber at bottom of rear door shall be supplied. Shall include door prop and curbside controls.

157. _____ A lube manifold shall be located at curbside of unit. The manifold shall allow ground level greasing of boom lift and swing cylinders, float level indicator, top rear door hinges and debris body hoist cylinder pins. Manifold location may vary due to chassis, unit configurations and optional content.
158. _____ To increase pipe storage capacity and to minimize the operator climbing onto the unit, a fold down pipe rack shall be supplied on curb side of the debris tank. Rack to have dual spring assists to aid the operator in raising racks to stored position.

159. **WATER TANKS:**
160. _____ Water tanks must have certified metered capacity **500 gallons**.
161. _____ The 500 gallon capacity shall be achieved via multiple cylindrical cells.
162. _____ The aluminum water cells shall not require internal coatings and shall be easily repaired or patched if required.

404
41



THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

163. _____ The water cells shall be located directly behind the cab of the truck and ending at the very rear of the unit, thus providing the best possible weight distribution.
164. _____ The water tanks shall be adequately vented and connected to provide complete filling. A minimum 6" and 4" connection between tanks is provided.
165. _____ The water tanks shall be totally separate from the debris tanks and provide no structural support. **No Exceptions.**
166. _____ All water cells shall be positioned at or below the frame of the unit, thus providing the best possible and lowest available center of gravity.
167. _____ The water tanks shall share no common walls with debris tanks in order to prevent corrosion.
168. _____ The water tank shall come equipped with an anti-siphon device and 25' of hydrant fill hose and fittings. A water level sight gauge shall also be provided.
169. _____ The water tanks shall carry a 10 year warranty against corrosion or cracking.
170. _____ A 2" Y-pattern strainer shall be supplied. The Y-filter shall have a 2", 80 mesh stainless steel water strainer included.
171. _____ An electrical activated float device shall be located in the water tank. When low water level condition exists, the float shall signal a warning light and an audible alarm located at operator station. A manual by-pass switch, located at the hose reel, shall be supplied to deactivate the system.

172. VACUUM SYSTEM:

173. _____ The vacuum system shall be provided with a positive displacement rotary lobe blower capable of a minimum 2400 cfm inlet volume and a minimum 15" Hg. For added protection to vacuum system a relief valve shall be incorporated.
174. _____ The blower shall incorporate a filtration system consisting of a stainless steel ball float system and a stainless steel final filter screen.
175. _____ The blower shall be provided with an exhaust above the rain cap to protect the silencer from rainwater.

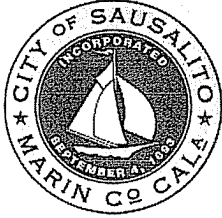
186. VACUUM SYSTEM DRIVE:

187. _____ Blower shall be driven from the chassis engine via the transmission drive shaft and heavy duty split shaft transfer case direct to the blower with no sheaves or v-belts to maintain or adjust. The transfer case will allow for complete control of the blower engage and disengage from the front hose reel. A vacuum relief will not be acceptable. **No Exceptions**

188. BOOM:

189. _____ Shall be designed for front end operation with hose mounted and stored at front work station. Front mounted location is desired for ease of positioning vacuum hose as well as minimizing the need for the operator to swing hose into traffic.
190. _____ Shall be a 4' extendable boom.
191. _____ All connections between debris body and vacuum system shall be of the self-adjusting, pressure fitting type

4/24
42



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

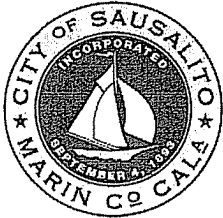
EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

192. _____ The lift and swing movements shall be accomplished by cylinder actuated means. Gear and chain type rotations are not preferred due to maintenance considerations
193. _____ The boom shall be hydraulically driven up/down/right/left. Boom shall be controlled by a remote push button control station.
194. _____ The boom pendant control shall come equipped with control switches for all directions as well as a safety emergency shutdown button that automatically eliminates power to the boom.
195. _____ All hose and tubes shall be 6" I.D. and shall remain stationary and not raise with the debris body in order to minimize the possibility of running vacuum hose into power lines and low hanging branches. The upper debris tube shall consist of an anchored steel tube for additional life.
196. _____ Pipe extensions shall be included to allow operator to clean to depths of 20'. This shall include a 6'6" catch basin nozzle with a steel reinforced tip. Pipe should include sufficient adjustable, over center, quick clamps to join the aluminum flanged suction pipe.
197. _____ The vacuum hose shall be mounted on a boom that will rotate a minimum of 120° rotation and provide 198" of reach off the centerline of the unit.
198. _____ A 4' hydraulic extendable boom shall be provided. The 4' extension shall provide a minimum of 212 square feet of additional coverage. The boom shall rotate a minimum of 180 degrees and provide 227" of reach off the centerline of the unit. The boom shall extend and retract a minimum of 4' and shall be located at the front work station in its retracted position.
199. _____ The joystick shall be mounted in the electrical box on the hose reel. It shall be operated by a simple up/down/left/right control. Joystick shall control left/right/up/down boom functions.

200. **HIGH PRESSURE WATER PUMP:**

201. _____ The positive displacement, high pressure water pump shall be a double acting, single piston pump hydraulically operated direct from a hydraulic pump. Belt drive systems are not acceptable.
202. _____ The water pump shall cycle approximately every 4 1/2 seconds. This pump cycle shall provide an automatic "jack-hammer" action in the hose to assist the nozzle in breaking through obstacles.
203. _____ The water pump location shall provide a flooded suction inlet to eliminate cavitation damage. **No Exception.**
204. _____ The water pump shall have steel protection plate. The cover shall protect the water pump and the inlet/outlet lines from the pump.
205. _____ The high pressure water pump shall be designed so no damage shall occur if run at normal operating pressure and rpm without water for 30 minutes. A certification by the original water pump manufacturer to operate in such a manner shall be provided.
206. _____ The positive displacement water pump shall have the capability to purge residual water out of the water system by pumping air through the entire water system. If this system is not available an air purge system will be required. Drain plugs shall be provided in the bottom section of the water pump for complete cold weather draining.
207. _____ The water pump shall be capable of maximum water pressure and flow while achieving maximum vacuum capability. The water pump shall operate independent of the vacuum system.

484
43



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

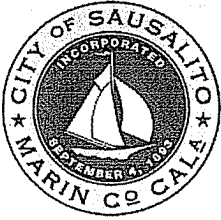
208. _____ An oil-to-water heat exchanger shall be provided in the water system to cool all hydraulic fluids on the unit.
209. _____ Water pump shall have capability of being engaged/disengaged from driving mechanism at the front control panel by using an on/off switch, thus providing added control and safety.
210. _____ A 3" Y-pattern strainer shall be supplied at the inlet of the pump. The Y-filter shall have a 3", 80 mesh stainless steel water strainer included.
211. _____ The rated design capacity of the high pressure water pump shall be **100 gpm and 2000 psi**. This capacity shall insure long pump life. A certification by the pump manufacturer for continuous duty shall be provided.
212. _____ The hydraulic pump and water pump shall be sized to deliver 40 gpm/2500 psi continuous duty operation.
213. _____ The jet water pump shall be equipped with a hydraulic driven system that utilizes a variable displacement type hydraulic pump to supply power to the water pump. This system allows the operator to vary the flow and pressure of the water pump independently by using a dial control at the front station and changing nozzles. **This is not a by-pass system.** The variable piston hydraulic pump permits the operator to select the appropriate oil flow required to change the water pump output and maintain a full vacuum without having to adjust engine throttle.
214. _____ **An ASME coded and safety stamped 2 1/2 gallon hydro-pneumatic, nitrogen charged bladder type accumulator shall be supplied.** It has a pre-set operating range of 1400 to 2500 psi to give continuous smooth pressure at the nozzle.

215. FRONT MOUNTED HOSE REEL:

216. _____ A hose reel shall be mounted on an independent frame that can be removed from brackets attached permanently to main truck frame members.
217. _____ Hose reel shall be manufactured out of 1/4" spun steel for added structural strength. This spun steel shall require no internal or external reinforcements that could damage rodder hose.
218. _____ Hose reel shall be driven via direct drive hydraulic motor.
219. _____ Hose reel shall have a 1" rotating swivel joint that is adjustable and has replaceable seals on the inlet line to provide free rotation of hose reel.
220. _____ All operating controls shall be located on the hose reel.
221. _____ The hose reel shall be mounted on a ball bearing to allow 120-degree rotation, 60 degree rotating to either side of the centerline of the chassis to provide a range of working motions.
222. _____ Hose reel shall have a minimum capacity of 500' of 3/4" I.D. rodder hose. No Exceptions.
223. _____ Hose reel shall come complete with hydraulic Tilt Function.
224. _____ Hose reel shall include a hose footage counter.
225. _____ Hose reel shall include a dual-roller, Hose Level Wind Guide.

225. HANDGUN SYSTEM:

226. _____ The high pressure water pump shall be utilized to supply 20 GPM at 600PSI to a handgun system
227. _____ A handgun will be supplied that come equipped with 50 feet of 1/2" wire reinforced hose. The handgun shall have a quick coupler to the 1/2" hose. The system shall come equipped with a mid ship mounted, spring retract handgun hose reel to facilitate areas served by the



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

**EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner**

228. pickup hose and inside the debris tank for clean out. The handgun will allow for patterns from fine mist to steady stream.

228. HYDRO EXCAVATION:

229. _____ A Hydro excavation kit shall be provided, kit shall include: Retractable hose reel with 50' of 3/8" hose, handgun and all necessary plumbing.

230. HYDRAULIC SYSTEM:

230. _____ The hydraulic reservoir shall have a 35 gallon capacity.
231. _____ The tank shall be totally modular component and easily removed from its storage area.

232. ELECTRICAL:

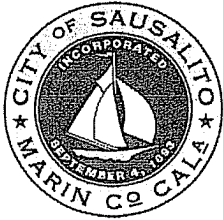
233. _____ The entire electrical system shall be vapor sealed to eliminate moisture damage to NEMA 4 (National Electrical Mfg. Assoc.) standards.
234. _____ All electrical connections shall require no exposed wires or terminals.
235. _____ All light bulbs shall be shock mounted to eliminate bulb failure.
236. _____ All wiring shall be color coded and run in sealed terminal boxes.

237. HIGH PRESSURE SEWER HOSE:

238. _____ Two jet nozzles shall be furnished with the unit. A 15° nozzle and a 30° nozzle shall be furnished. These nozzles should both be equipped with tungsten carbide orifices for added life.
239. _____ A flexible hose guide will be provided with a restraining rope for protection of rodder hose and to provide help in locating nozzles in sewer lines.
240. _____ Jet hose shall be supplied that is 3/4" I.D. and has operating pressure of 2500 psi and burst pressure of 7250 psi. 500' of hose shall be supplied with the unit. No Exceptions.

FRONT OPERATING STATIONS AND CONTROLS:

241. Controls and gauges include:
242. _____ Operation station shall be located at the front of the truck
243. _____ High pressure water pump on/off
244. _____ Hose reel forward/reverse valve
245. _____ Adjustable hose reel speed control
246. _____ Hose reel tilt control
247. _____ Oil dampened water pressure gauge
248. _____ Boom pendant control plug in
249. _____ Truck engine throttle
250. _____ Engine tachometer
251. _____ Vacuum engage and disengage. (Vacuum relief not acceptable)
252. _____ Vacuum gauge



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

253. MOUNTING:

254. _____ Unit shall be mounted on approved truck chassis at the factory of the body manufacturer. GVW not to exceed 24,999 lbs

255. PAINT:

256. _____ All metal surfaces shall be shot or sand blasted prior to painting.
257. _____ All metal surfaces shall be primed prior to painting.
258. _____ All hose and fittings, as well as electrical wires and connections, shall not be painted.
259. _____ Paint shall be of the version with most industry standard colors available. Shall be a wet-on-wet application. This paint shall be designed for application over wet non-sanding primer base. The process shall allow the unit to be primed and after tacking up, the final coats of finish paint may be applied. The process still maintains all its paint properties. It shall be Low Voc-High Solids OSHA compliant paint with excellent gloss retention. It shall be durable, tough finish and easy to maintain. The process prior to painting shall be that all metal is grit blasted to near white finish, phosphorus washed, dried, cleaned of all dust, primer coated, and then finish paint is applied to a minimum 3 mil thickness. All finish painting shall be done prior to the assembly of the machine.
260. _____ Rear Door Stripes: 3-M brand reflective type, adhesive tape shall be applied in 3" wide inverted "V" style. Standard color shall be black.

261. LIGHT ACCESSORIES:

262. _____ Two 12 VDC, adjustable shock mounted work lights shall be located on the 70° elbow. They shall be turned on/off with a toggle switch mounted on the operator control panel.
263. _____ One (1) amber strobe light mounted at rear of debris body with limb guard. 12 VDC- 8 joules double flash-helical flash tube with a flash rate of 80+ or -10 fpm and have a power consumption of 18 amps. It has a polycarbonate amber lens. This light meets shock test for MIL-S9-10C, SAE J1318 requirements for class 2, AAMVA certified.
264. _____ Directional Amber Arrow Stick shall be mounted at rear with controls in cab.
265. _____ Hand Light with front bumper connection shall be supplied

266. CHASSIS ACCESSORIES:

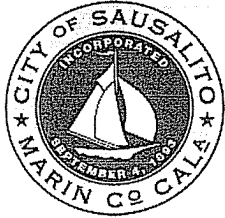
267. _____ An electronic back-up alarm shall be supplied.
268. _____ Chassis Clearance Lights, Stop, Tail and Turn signals shall be LED
269. _____ A set of tow hooks (2) shall be mounted at the front of the chassis to enable towing or pulling of the machine from dump sites. They shall be rated for the GVWR of the vehicle.
270. _____ A 36 X 18 X 18 aluminum tool box shall be provided.
271. _____ Emergency flare kit
272. _____ 5# Fire Extinguisher

273. DELIVERY:

274. _____ Indicate best delivery _____

275. MANUALS:

4/24/16



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

**EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner**

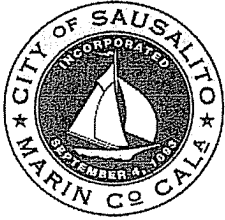
276. _____ One (1) complete set of operation manuals shall be provided.
277. _____ One (1) complete set of parts manuals shall be provided.

278. WARRANTY:

279. _____ New Equipment to be free from defects in material and workmanship for 1 year or 2000 operating hours, whichever occurs first, following date of delivery to the City of Sausalito.
280. _____ In addition to standard warranty, the water tank shall be warranted for an additional 9 years against corrosion, cracking, electrolysis or rust through, making a total of 10 years warranty on water tanks.
281. _____ The debris tank is warranted for an additional 4 years against corrosion or rust through for a total of 5 years warranty.

282. SERVICE AND TRAINING:

283. _____ Vendor shall have a full parts and service facility within a reasonable distance from the City of Sausalito's Corporate Yard.
284. _____ Manufacturer shall provide two (2) 4 hour days of certifiable training (day or night at the City's option) for the operation and safety procedures on the combination unit.
285. _____ Manufacturer shall have available certifiable training course for complete maintenance and operation of combination unit. Manufacturer must have scheduled a minimum of 25 training courses per year for convenience of customers scheduling. The successful bidder shall provide meals, ground transportation to and from Airport to the factory, and lodging for one (1) City representative, selected by the Department of Public Works to attend factory training. *** All air expenses will be borne by the City of Sausalito. Bidder to include costs in the bid price. City employees should be certified in a minimum of a two (2) days hands on established course at the factory.



CITY OF SAUSALITO
 COMMUNITY DEVELOPMENT DEPARTMENT
 ENGINEERING DIVISION
 420 LITHO STREET
 SAUSALITO, CA. 94965
 415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
 3 cubic yard combination sewer cleaner

- 286. ATTACHMENT D
- 287. BID EXCEPTION SHEETS
- 288. Return with Bid if any exceptions are taken

289. *Please Note: All exceptions to the City's bid requirements must be listed on the sheets provided. Only those exceptions that are listed on the sheets provided will be evaluated. Any material exceptions may result in the rejection of the bid and the bidder will not receive further consideration.*

290. *Section Title, Line Number, & Page Number: _____

291. Description: _____

292. Alternative: _____

293. *Section Title, Line Number, & Page Number: _____

294. Description: _____

295. Alternative: _____

296. *Section Title, Line Number, & Page Number: _____

297. Description: _____

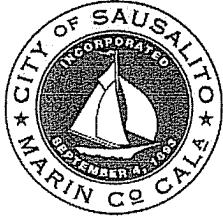
298. Alternative: _____

299. *Section Title, Line Number, & Page Number: _____

300. Description: _____

301. Alternative: _____

424
48



CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
420 LITHO STREET
SAUSALITO, CA. 94965
415-289-4112 (fax) 415-339-2256
www.ci.sausalito.ca.us

ATTACHMENT 11

THE City OF SAUSALITO, CALIFORNIA

EQUIPMENT SPECIFICATIONS FOR
3 cubic yard combination sewer cleaner

302.*Section Title, Line Number, & Page Number: _____

303.Description: _____

304.Alternative: _____

305.*Section Title, Line Number, & Page Number: _____

306.Description: _____

307.Alternative: _____

308.*Section Title, Line Number, & Page Number: _____

309.Description: _____

310.Alternative: _____

311.*Section Title, Line Number, & Page Number: _____

312.Description: _____

313.Alternative: _____

314.*Section Title, Line Number, & Page Number: _____

315.Description: _____

316.Alternative: _____

4B4
49



Mobile Combination Vehicle Attachments Document

Attachment 1:

City waste water collection system crews generally clean both storm water drains, catch basins, sewer manholes and collection lines, as well s a variety of other underground confined space facilities prior to repair and/or entry. The cleaning of these structures is most often done without actually entering the system, but by truck mounted vacuum/air conveyance machines, from above ground. The high pressure jetting system is for the washing of the transmission collection lines and to bring the material to an access location such as a manhole, for removal.

With the new storm drain storm water pollution reduction study and EPA restraints, the City will be required to monitor, clean and maintain, on a more frequent basis, all storm drain catch basins. This additional task, done only on an as-needed basis, will require the crew to increase production efforts because of this additional task.

The mobile combination cleaning units are generally categorized into two (2) types:
1) Submerged Cleaning, and 2) liquid cleaning and bulk non-flowing debris cleaning.

Submerged debris is normally debris that accumulates in a waste water sewer, where a continuous flow of waste water and debris is present.

Examples in a sewer:

1. Gravel in a sewer submerged under a continuous flow.
2. Coffee ground, egg shells.
3. Grease accumulations.
4. Soap/detergent solids that adhere to a side wall of a sewer pipe.

Examples in a storm water system:

1. During emergency flooded condition, when solids are in basins under storm water runoff. (Note: This condition does not generally occur when the drains and lines are maintained.)
2. Pump station (s). This structure does not exist in storm drains or storm systems in the City.

Examples of bulk/non-liquid debris:

Examples in a sewer:

Item #: 484
Meeting Date: 02/26/08
Page #: 51

1. Unless vandalism causes this condition, bulk materials do not enter the waste water system.

Examples in a storm drain:

1. Bottles, cans and cups. Accumulations of newspaper and fast food wrapper papers.
2. Leaves, branches, lawn trimmings and other organic matter.
3. Discarded automotive components and containers. Oil filters, air filters, tires, bicycle components and discarded household items. (Some items require manual removal.)
4. Sand, gravel and aggregates deposited by irrigation or runoff, generally deposited over a period of time.

Attachment 2:

A review of the industry with manufacturers and municipal users revealed the units are best suited for the multiple tasks of the city. Many of the units on the market use belt driven blowers. (Belts have been a source of frequent replacement with other city owned equipment). We would prefer to have a unit that would eliminate this deficiency and go to a direct drive system.

Manufacturer Offerings of Air Conveyor & Drive Methods

<u>Manufacturer</u>	<u>Type of Air Conveyor</u>	<u>Drive Methods</u>
Vactor	Positive Displacement Blower	Direct Transfer Case Drive from Chassis Engine
Vaccon	Fan	Belt or Hydrostatic from Chassis with Separate Engine Driven Water Pump
Camel	Positive Displacement	Direct Drive from Aux. Engine or Positive Displacement form Chassis

The most advantageous unit from drive and air conveyor standpoint is the Vaccon with Hydraulic drive or the Vactor. The Vaccon product is a fan and hydrostatic design unit with a separate engine for water pump. We are concerned about parts availability and the ability of this unit to survive in our high temperature environment. We are also concerned that the Vaccon system can not be used to suck out debris in a submerged condition for an extended period of time (an issue that City crews frequently run in to as a normal course of cleaning), without overheating the fans and damaging the internal bearings and seals.

Item #: 484
 Meeting Date: 02/26/08
 Page #: 52

Attachment 3:

The other integral system on the combination high pressure vacuum equipment is the jetting device. The various manufacturers employ a variety of water pump designs:

1. Hydraulic Drive, Single Piston with Variable flow characteristics.
2. Hydraulic Drive, Triplex Pump, (3) Piston auxiliary engine driven.
3. Belt Drive, Triplex pump, (3) Piston auxiliary engine driven.

The existing equipment owned by the city uses the hydraulic Triplex pump driven via the chassis engine without a blower and without the ability to vacuum out (from access points) debris and sewage. Our requirements for our new unit will include:

1. Hydraulic drive and single chassis engine driven equipment
2. Ability to vary flow (by means other than cracking the ball valve. Variable water flow independent from vacuum.)
3. Pump located below the tank for gravity feed of pump.
4. The ability to operate the pump at full rpm for up to 30 minutes without causing damage to the pump.

The single piston pump design has also captured the market due to its simple, slow movement, reducing noise and friction as well as increasing useful life by ten-fold over triplex designs.

Manufacturer Offerings in Water Pump & Drives

	<u>Pump Type</u>	<u>Location</u>	<u>Drive</u>	<u>Components</u>
Camel	Triplex	Below Water source	Belt Single engine hydrostatic single engine	Belt drive is unacceptable.
Vaccon	Triplex	Above tank (s)	Belt aux. engine. Belt drive from chassis engine.	Pump location can cause cavitation. Hard to prime pump When water tanks are empty. Pump located above water tank.
Vactor	Single Piston	Below tank	Hydraulic from Chassis	Performance matched system; only pump manufactured strictly for waste water field.

The water pump configuration of the Vactor is most advantageous from a repair, performance and durability standpoint. There are only 7 moving parts in pump. The single piston pump and hydraulic drive allow for variable water pressure independent

Item #: 484
Meeting Date: 02/26/08
Page #: 53

from the vacuum system. The Vactor water pump can be run in a dry condition at full rpm for 30-minutes without causing a failure to the pump.

Attachment 4:

The water tank configuration of the cleaning units vary greatly and is a source of extensive corrosion and, in many cases, is the one factor that determines the life of the unit. Some manufacturers have gone away from steel tanks to reduce weight and reduce or eliminate corrosion. The manufacturers also locate the tanks in different configurations. It is deemed appropriate to purchase a unit with a water tank that is not steel, has a low center of gravity for stability and allows for gravity feed of water to the water pump.

Manufacturers Offerings in Water Tanks

The water tank configuration of the cleaning units vary greatly and is a source of extensive corrosion and, in many cases, is the one factor that determines the life of the unit. Some manufactures have gone away from steel tanks to reduce weight and reduce or eliminate corrosion. It is deemed appropriate to purchase a unit with a water tank that is not steel, has a low center of gravity for stability and allows for gravity feed of water to the water pump.

	<u>Tank Material</u>	<u>Location in Relation to Truck Frames</u>	<u>Components</u>
Camel	Plastic	Above frame	Tank raises with debris body, must be empty prior to dumping at dump site; plastic is stationary when dumping
Vaccon	Plastic	Below frame. Note: Tank bottom is below fuel tank, somewhat low and vulnerable.	(4) separate tanks that fill slowly from hydrant. Pump is above tank (s).
Vactor	Aluminum (Cylindrical)	At and below truck frame.	Cylindrical tanks and aluminum design. Satisfactory Center of gravity; tank (s) fill at acceptable speed. Tanks come with a 10-Year warranty at no additional Cost.

The plastic tank units are adequate and will expect a longer, less corrosive life compared to steel. However, the aluminum provides the balance of non-corrosive, acceptable center of gravity and adequate ground clearance. Although not important, the aluminum tanks are aesthetically appealing compared to the black square plastic tanks.

An objective manner to determine function, operator acceptance and productivity is to contact the adjacent users of a specific product. Staff has examined all of the products

Item #: 484
 Meeting Date: 02/26/08
 Page #: 54

and manufacturers listed. We have also had personal experiences with on of the products and have developed several criteria for our next purchase.

Attachment 5: Hose Reel Design Configurations

The hose reel pay out and vacuum support boom are the keys to providing simple and safe access to a variety of structures that are within the City. The existing equipment is designed for accessing street openings or structures that can allow for positioning of the truck and cleaning apparatus directly over and adjacent to the structure to be cleaned. This is not always the case and sometimes cannot be accomplished. The advent of the longer booms and rotating hose reel systems can reduce operator fatigue by allowing for direct positioning of the hose into the structure with little or no manual effort. Although optional and at additional cost, our staff believes that these features can provide better access to previously inaccessible area and can also reduce setup time in normal street-accessible applications.

The high pressure hose on these machines is stored on a hydraulically powered hose reel ranging in capacity from 400-800 feet of ¾" jet rodding hose. The reels have evolved into being most frequently mounted on the front of then truck chassis. The interface between the hose reel pay out and the vacuum boom rotation is critical in operations that are away from the center or in traffic lanes. It is imperative that the rotation of the hose reel allow for payout of the high pressure hose perpendicular to the axis of the reel, much like a level wind fishing reel; in order to do this the pay out toward the midship point of the chassis to a point accessible to the vacuum tube.

For crew safety reasons, the hose reel in many cleaning operations is operated in front of the vehicle. The hose reel in these instances should be designed to keep the operator in front of the vehicle. The hose reel that is designed with the greatest degree of rotation allows for the best boom/hose reel interface and safest position for the operator. At no time is the operator subjected to standing in a traffic lane with on coming traffic. In addition, the rotating hose reel has controls on both sides of the hose reel. This allows for the operator to be forward of the reel and the chassis. These conveniences allow for the safest most productive usage of the combination high pressure water and vacuum system.

There is also a need to comply with DOT regulations that calls for the hose reel to be within 3 feet of the bumper of the vehicle. The need to make sure that this regulation is complied with is evident. Over the last few years the lower profile of the chassis hoods has also made the hose reel more visible over the hood. This although in compliance with all DOT regulations the design that incorporates a low-profile reel that increases forward visibility is seen as a valued enhancement to the vehicle. This is a desired design characteristic.

There has been units tested that require a hydraulic foot support to maintain the hose reel when in the extended or rotated position. In that there are many off road applications for this equipment this design may prove to be problematic. In that the area around the manholes when off-road can be uneven and rough the hydraulic foot may not be able to be deployed. This limits your access to manhole cleaning in these off-road sites. This

Item #: 4B4
Meeting Date: 02/26/08
Page #: 55

configuration coupled with the need for the reel to extend into oncoming traffic for its deployment and that it cannot access the vacuum tube except in the front quadrant of the machine makes this design less than satisfactory for use.

Manufacturer designs vary greatly, however the Vactor Unit front hose reel system is configured adequately, where maximum boom reach is essential, and convenience in high pressure hose reel positioning is advantageous.

Important Design Features of Hose Reel

	<u>Vactor</u>	<u>Vaccon</u>	<u>Camel</u>
Can unit allow payout of high pressure hose to the farthest reach of the vacuum hose?	Yes	No	No
Does hose reel utilize dual controls?	Yes	No	No
Does system require a hydraulic foot for deployment of reel?	No	Yes	No
Does the unit incorporate low profile reel configuration?	Yes	No	No
Is the reel direct driven with the low profile?	Yes	Not Available	No

Attachment 6: Vendor Support

Staff has examined the vendors of the products listed and have determined several criteria for comparison:

1. How long has the vendor represented the product? This will result in determining the vendor personnel's knowledge, experiences and commitment to the industry and its customers.
2. Quantity of units in the territory. We can determine the field experiences the vendor has, the customer acceptance and a feel for the parts inventory on hand locally, i.e., if a vendor has (2) units in his territory, he is less likely to stock a quantity of parts in local stock, as opposed to a vendor with (500) units in his territory.
3. Field service availability. The cleaning equipment is an emergency vehicle that staff may not want to be without and we would benefit from field service for warranty in our facility.

Vendor Offerings

<u>Vendor & Product</u>	<u>Years with Product</u>	<u># of Combo Units in Cal.</u>	<u>Parts Inventory</u>	<u>Field Service</u>
VACCON	15 Years	200-300 Units (est)	Some	One person
*CAMEL	8 Years	20-25 (est)	None	None

*(NOTE): This Vendor suggests that they do not need stock because local sources can be located. City staff does not have time to source all of our parts and feels this will interfere with warranty and our ability to meet our production schedules.)

<u>Vendor & Product</u>	<u>Years with Product</u>	<u># of Combo Units in Cal.</u>	<u>Parts Inventory</u>	<u>Field Service</u>
VACTOR	35 Years	500	\$750,000	7 Units

(Full support dealer with adequate support services.)

Results of our study reveal that the Vactor is the product of choice. It is by far and away the most universally used piece of equipment in the field and has set the standard for many local municipal and contractor users.

Attachment 7:

Definitions:

Mobile Combination Unit - it uses the water system to break through and clear a blockage and then uses the high pressure water to bring the debris back to a manhole where it can be removed by the vacuum system for disposal.

High Velocity Flusher/Jetter System- it used the water system to break though and clear a blockage then uses the high pressure water to bring the debris back to the manhole and flushed downstream to the local publicly owned treatment plant. *Note: Current method used by the City of Sausalito Department of Public Works staff.*

(Integral Components of Both Systems—A Comparison)

A. WATER PUMP

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- A Triplex or other plunger style water pump that provides steady flow of pressure.
- Normally operates between 400-550 rpm and cannot safely operate dry due to excessive operating speeds.

Item #: 484
 Meeting Date: 02/26/08
 Page #: 57

- Water pump is belt driven. The belt drive is inefficient and maintenance intensive.
- When the water tanks are depleted of water the pump will cavitate and vibrate. This vibration can cause severe pump damage to occur.
- The pump cannot create a true "Jack- Hammer" action without damaging the pump or ball valves.

Mobile Combination Vehicle

- A dual acting single piston water pump that provides "jack-hammer" action to break through obstructions. Note: Accumulators are available if a customer prefers a steady flow of pressure.
- Capable of 0-100 gpm and pressures of 0-2500 psi. The pump operates at approximately 13 rpm and can be run dry, without water, for up to 30 minutes.
- The water pump is hydraulically driven through a hydraulic pump that is driven by the chassis engine. Operator can control pressure and flow from the front work-station.
- Pump can run independently from the vacuum system.
- The pump is gravity fed and located 100% below the water supply. Due to this configuration the pump is constantly filled with water with no need for priming.

B. HOSE REEL

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- Offers a rear mounted hose reel.
- Reel is mounted in the most dangerous spot for an operator if mounted to the rear. Since most of the sewer cleaning is done on the street the most dangerous spot to be standing is behind the vehicle. This location leaves no protection from oncoming traffic and no room forward to escape. This leaves an operator pinned between the machine and oncoming traffic. Additionally the boom must be changed and will be top mounted with a 90 degree turn into the body.

Mobile Combination Vehicle

- Offers only front mounted hose reel for operator safety.
- Hose reel, which rotates 270 degrees. A control panel is located on both sides of the hose reel.
- The reel is mounted directly to the chassis frame and requires no additional supports to provide stability.
- The reel provides 270 degrees of mobility while the operator is constantly protected by the confines of the truck chassis.
- The water system requires a minimal amount of the chassis total horsepower to operate.

Item #: 4B4
 Meeting Date: 02/26/08
 Page #: 58

C. WATER TANKS

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- Tanks are side mounted along the debris body. Tanks are above the center of gravity, which results in poor weight distribution. Liquid payload, no matter how it is baffled, will adversely affect the handling of the unit—more so than a solid payload.
- Attachment is via large straps. Due to the high center of gravity and weight, unusual stress is put on the supports.

Mobile Combination Vehicle

- Aluminum water tanks are mounted at or below the frame level of the unit to provide a lower center of gravity and better weight distribution. Tanks are guaranteed for ten years against corrosion and rust through.
- The aluminum water tank design is very durable, flexible, and very easy to repair.
- When higher water capacities are required the Aluminum tanks can be stretched or made wider to accommodate more water while still meeting weight requirements.
- The water tanks are mounted to the sub-frame for added stability and a low center of gravity.

D. DEBRIS BODY

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- Unit has no debris body as it is designed to dispense water only and not debris.

Mobile Combination Vehicle

- Debris body is constructed of 3/16" (4.763 mm) Ex-Ten steel and is guaranteed against corrosion and abrasion for 5 years.
- Formula used results in increased corrosion and abrasion resistant characteristics.
- Body is raised via double acting hydraulic cylinder to a 50 degree angle for dumping.

E. BOOM

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- No boom is installed as unit is incapable of removing debris from sewer line.

Mobile Combination Vehicle

- The standard boom rotates 180 degrees and provides up to 276" of reach from the centerline of the unit; 4' and 8' Telescoping or extendable are booms available as an option.

Item #: 484
Meeting Date: 02/26/08
Page #: 59

F. VACUUM SYSTEM

Current High Velocity Flusher or Jetter System—Sreco Triplex System

- not designed to vacuum material out of sewer.

Mobile Combination Vehicle

- A positive displacement blower vacuum system.
- The standard PD blower is capable of 3600 CFM inlet volume and 15" Hg vacuum at an operating speed of 2080 RPM. The blower is protected by two vacuum relief valves and a stainless steel ball float shutoff. All blowers are powered by the chassis engine and driven direct through a heavy-duty split shaft transfer case. There are no belts to wear or reduce horsepower.

G. ADDITIONAL IMPORTANT INFORMATION

The Mobile Combination Vehicle specified has a hydro-excavation unit on it. This gives you and your staff the ability to excavate areas to assist in repairs of broken or damaged lines, removal of debris - (i.e. mud, due to a mudslide), suck up a water/wastewater spill and return it to the sewer.

2. The Federal, State and Regional Water Quality Control Boards are requiring municipalities owning and operating more than 1 mile of trunk line sewers to have a plan and equipment necessary to mitigate spills.

Attachment 8:

Combination Vehicle Purchase 2007-2008									
Manufacturer	Sales Person	Representation Co	City/State	5 yard System: Too Large	5 yard System: Too Large	3 yard System: Just Right	3 yard System: Just Right	*GSA or *HGAC Price	*GSA or *HGAC Price
				Height	Length	Height	Length	\$	\$
Vac Con	Mark Profine	MME	Sacramento, CA	11' 2" - 11' 6"	30' - 32'	10' 2" - 10' 6"	25'	232,414.66	203,803.45
Vactor	Ed Hodges	Ricker Machinery	Oakland, CA	12'	31-21'	10.83'	28'	225,477.00	196,923.00
Camel Vac	Tom Sutiliff	3T Equipment	Rohnert Park, CA	12'	32'	N/A	N/A	187,000.00	N/A
GapVax	Frank Sanchez	WECO Industries	Vacaville, CA	12	34	***	***	249,143.68	***
Sewer Equipment Supply	Frank Sanchez	WECO Industries	Vacaville, CA					689,396	

*Houston Galveston Area Counsel (HGAC):HGACBuy is a "Government-to-Government" procurement service available nationwide. Governmental entities have been procuring products and services through HGACBuy for over 30 years. As a unit of local government assisting other local governments, HGACBuy strives to make the governmental procurement process more efficient by establishing competitively priced contracts for goods and services, and providing the customer service necessary to help its members achieve their procurement goals. All contracts available to members of HGACBuy have been awarded by virtue of a public competitive procurement process compliant with state statutes.

*U.S. General Service Administration (GSA):GSA Federal Supply Service (FSS) provides federal customers with the products, services, and programs to meet their supply, service, procurement, vehicle purchasing and leasing, travel and transportation, and personal property management requirements. FSS is one of GSA's three Services. With five primary business lines, FSS serves the federal community as a trusted source for business, administrative, and mission solutions. It provides a source for virtually every commercial product or service an agency might need. Along with GSA's Public Buildings Service and Federal Technology Service, FSS helps federal agencies better serve the public by offering, at best value, superior workplaces, expert solutions, acquisition services, and management policies. FSS is located throughout the United States and is strategically aligned with U.S. military customers at many locations around the globe.

484
61

