

DETAILED SPECIFICATIONS
Single Engine Combination Sewer and Catch Basin Cleaner

		COMPLY	
		YES	NO
1.0	INTENT		
1.01	The intent of this specification is to provide for the purchase one (1) new and latest Model single-engine combination sewer and catch basin cleaner used for removing all debris commonly found in catch basins/storm structures and sanitary sewer lines/manhole structures using a front mounted operating station. The unit shall consist of a Positive Displacement (PD) Blower vacuum system, a hydraulically driven high pressure water pump, an enclosed sealed body for storage of collected debris and equipped with a self-contained water supply as the source for the water pump system. The unit shall have the capability of operating both vacuum and water system simultaneously at full operating speeds continuously. (Submit horsepower requirements of all systems on unit)		
2.0	EQUIVALENT PRODUCT		
2.01	Bids will be accepted for consideration on any make or model that is equal or superior to the equipment specified. Decisions of equivalency will be at the discretion of the City of Barre.		
2.02	Bidder shall demonstrate a reasonable likeness of the equipment being offered within a reasonable time of request. Equipment demonstrated shall be equipped with all accessories and components required in this specification to ascertain equivalence.		
2.03	A blanket statement that equipment proposed will meet all requirements will not be sufficient to establish equivalence. Original manufacturer's brochures of the proposed unit are to be submitted with the proposal.		
3.0	BIDDER REFERENCES		
3.01	To ensure adequate local availability of parts and competent service from experienced suppliers, bids are preferred from local vendors who have sold and serviced at least 30 units of same manufacturer within service area of is preferred and should include contacts with phone numbers.		
4.0	SERVICE AND SUPPORT		
4.01	Location of warranty service center and amount of inventory shall be noted which may be verified and inspected.		
4.02	Amount of OEM parts at this facility: \$		
4.03	Years of servicing equipment being bid: Years		
4.04	Number of factory qualified service technician:		
5.0	GENERAL		
5.01	The specification herein states the minimum requirements. All bids must be regular in every respect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. Any bid not prepared and submitted in accordance with the bid document and specification, or any bid lacking sufficient technical literature to enable us to make a reasonable determination of compliance to the specification will be considered "non-responsive" and grounds for rejection.		
6.0	SUBFRAME		
6.01	The equipment shall be of modular design consisting of vacuum system, water tanks system, debris body and drive system.		

6.02	A sub frame shall be fabricated to the exact dimensions of the truck chassis for mounting of modular components.		
6.03	All components of the module shall attach to the sub frame and not directly to the chassis.		
6.04	Sub frame shall be designed to ASME standards for maximum applied loads; chassis frame movement and even distribution of weights to the chassis and suspension.		
6.05	Sub frame shall be continuous and uninterrupted from back of cab to end of frame		
7.0	DEBRIS BODY		
7.01	Efficiency of air movement through debris body will be measured for minimal restriction as measured by vacuum pressure gauge while operating blower at full speed. Pressure drop throughout entire system (from 8" hose inlet to blower inlet) including specified filtration and blower protection devices shall be no greater than 3" hg as measured at blower.		
7.02	The body shall be cylindrical having a usable capacity of 10 cubic yards.		
7.03	The body shall be capable of a 48" dump height.		
7.04	The debris storage body shall be constructed with a minimum 3/16" corrosion and abrasion resistant Ex-Ten steel.		
7.05	The debris storage body shall have a minimum yield point of 50,000 PSI and a minimum tensile strength of 70,000 PSI.		
7.06	Body shall have a rear door that is hinged at the top and is equipped with a replaceable neoprene type seal. Adjustable for periodic compensation of door seal wear.		
7.07	Dual outward mounted rear door props shall include as standard to prevent operator from entering door swing path when engaging rear door prop.		
7.08	For optimal particulate separation, vacuum shall be drawn from separate ports in the top of the debris body.		
7.09	Body shall be dumped by raising the body to a 50 degree angle utilizing a forward mounted, double acting hydraulic dump cylinder.		
7.10	Dump controls, accessory controls, e-stop control shall be provided at a central curb side location directly behind the cab of the truck.		
7.11	For stability and safety, dumping must be accomplished while the pivot point of the body remains fixed to the sub frame.		
7.12	Industrial style rear debris body door shall be flat, and shall open and close hydraulically by cylinders mounted at the top of the body. Door shall open 50 degrees from the fully closed position. Door shall be unlocked, opened, closed, and locked by a failsafe hydraulically activated sequential positive locking system, cam operated by single hydraulic cylinder, with all controls located behind truck cab, forward of the debris body, so operator is not subject to sewage when dumping.		
7.13	Debris body shall have a body flush out system with a fan-type spray nozzle located in the front wall of the debris body to aid in the flushing of heavy debris. The nozzle shall also utilize (2) spray nozzles to flush the front area of the debris body. System must produce a flow of 80 GPM. Control valve shall be on the curb side of the unit.		
7.16	Body shall have a float type automatic shut-off system protecting Displacement Blower with (2) 10" stainless steel shut-off balls located in the debris body. Each float ball housing shall be within a non-corrosive slide-out screen assembly and be accessed without the use of tools.		
7.18	The debris body shall be equipped with a rear drain to drain off excess liquids while retaining solids and shall include a manually operated 6" knife valve with cam-lock		

	coupler and 25" of lay flat hose having cam-lock quick connects.		
7.19	The debris body shall be equipped with a rear door drain at bottom dead center to drain off excess liquids with an internal screen to prevent large solids from passing manually operated 6" knife valve with cam-lock coupler and 25" of lay flat hose having cam-lock quick connects shall be included at this location.		
7.25	The debris body shall be equipped with a curb side forward mounted body drain to drain off excess liquids while retaining solids and shall include an air-activated 6" knife valve and screen with cam-lock coupler and 10' of lay flat hose.		
7.27	(4) Dual vertical (cyclone) centrifugal separators shall be installed in-line between the debris body and the air mover, (2) per side for each debris body discharge port. Each dual separator shall include large fallout chamber cleanout door.		
7.28	For safety, minimum of (5) vacuum tubes shall be stored on curbside storage racks to minimize operator exposure to traffic side of unit. Shall include quick release retainer handles (no bungees or clamps).		
7.29	A curb-side, folding 3-pipe rack shall be provided, constructed of steel tubing, spring assisted. Shall include quick release retainer handles (no bungees or clamps).		
7.30	A street-side, folding 3-pipe rack shall be provided constructed of steel tubing, spring assisted. Shall include quick release retainer handles (no bungees or clamps).		
7.32	(2) Pipe Storage Racks Curbside waist level and (2) on rear door with quick releases.		
7.33	A stainless steel micro-strainer (to 30 microns) shall be provided prior to the blower inlet, with (3) removable cartridge style screens and bottom drain port.		
7.34	A splash shield shall be mounted around the lower 60% of door opening to direct liquid and debris away from the chassis. Shield shall be minimum 10' deep bolted assembly with no openings.		
7.35	A lubrication manifold system shall be provided to allow ground level greasing of boom lift and swing cylinders, float level indicator, top rear door hinges and debris body hoist cylinder pins.		
7.37	A 6" valve with 3" vent to atmosphere, electrically activated, air operated valve debris body vacuum relief system shall be located in the inlet of the vacuum system to allow the venting of the tank and relieve at the debris intake hose. (3) Kunkel relief valves shall be included.		
7.38	A debris inlet deflector distributing load evenly in debris body shall be included.		
8.0	WATER TANKS		
8.01	The water tanks shall be manufactured from a non-corrosive material to prevent rust yet still provide for maximum strength.		
8.02	The water tank material shall require no internal coating and shall be repairable if patching is required.		
8.03	The water tank shall be easily removed from the sub frame to provide complete access to the truck chassis for maintenance purposes.		
8.04	The water tanks shall be adequately vented and connected to provide complete filling.		
8.05	The water tanks shall be totally separate from the debris tanks and provide no structural support.		
8.06	The water tanks shall share no common walls with the debris to prevent corrosion.		
8.07	The water tanks shall come equipped with an anti-siphon device and 25' of hydrant fill hose and fittings.		
8.08	The water tanks shall carry a 10 year warranty against corrosion or cracking.		
8.09	All water tanks shall be fully baffled to form maximum compartment storage of 150		

	gallons for each compartment. This has determined that for the stability of the vehicle when turning and stopping and for safety of personnel that systems baffled at 150 maximum gallons compartments are preferred. Exceptions of requirement shall be explained in detail accompanied with detailed engineering drawings.		
8.10	The water tank shall be located for the lowest possible center of gravity while providing 100% gravity flooded intakes to water pump.		
8.11	Fresh water shall enter the tanks through an in line 6" air gap, all aluminum covered anti-siphon device.		
8.12	Water level sight tubes of non-yellowing plastic shall be installed on both tanks.		
8.13	The sides if these water tanks shall not extend more than 48" out from centerline of the truck chassis.		
8.14	A fresh water drain system shall be provided to completely drain the fresh water system from on location utilizing a 3 drain port and plug.		
8.15	A minimum 6" connection between tanks shall be provided.		
8.16	For stability safety, the water tanks shall not elevate with debris body during dump cycle.		
8.17	A low water alarm with light at the operator station shall alert operator when storage has 150 gallons remaining.		
8.21	An air purge system utilizing the chassis air system shall be provided to assist displacing of residual water out of the high-pressure system. System shall utilize the truck chassis air compressor to fill a 30-gallon auxiliary air storage chamber with pressure gauge and pressure protection valves to isolate the holding tank from the chassis compressor. System shall be equipped with ball valve and all necessary high pressure piping hoses, couplings and controls.		
8.23	A 3 in-line "Y" trap strainer shall be located at inlet of water tank fill air-gap.		
8.24	A 3 un-line "Y" trap Monel stainless steel strainer shall be located between the water cells and water pump.		
8.25	AA 3" Gate Valve shall be provided at water pump.		
8.26	Water tank must be a certified metered capacity of 1000 gallons. Certification shall be necessary upon delivery.		
8.27	Water tanks shall be constructed of 1/8" aluminum with baffled compartments maximum 150 gallons each.		
8.30	An additional water tank sight gauge shall be provided.		
8.31	Liquid Float Level Indicator shall be provided.		
9.0	VACUUM/VACUUM DRIVE SYSTEM		
9.01	Vacuum shall be provided by a positive displacement rotary lobe type blower driven via chassis engine and heavy duty split transfer case direct to the blower.		
9.02	Interlock safety system shall prevent drive axle from engaging.		
9.03	A horizontal silencer with rain cap shall exhaust above the cab.		
9.04	A blower tachometer/hour meter shall be provided.		
9.05	For most efficient use of horsepower and fuel consumption, full vacuum and/or combination operation shall be approximately 1750 RPM of chassis drive engine.		
9.06	Blower shall be driven by the chassis engine and shall produce inlet volume of 4500 cfm @ 0" hg @ 2250 rpm, and 3650 cfm @ 16"hg @ 2250 rpm vacuum (Roots 824RCS 16 or equal).		
9.07	For added protection, the vacuum system shall have three (3) relief valves set at 16" hg. Heavy duty horizontal mounted noise muffler, removable and cleanable stainless steel filter screen, and shall be enclosed with a steel cage guard for safety.		
9.08	Transfer case shall be activated via air shaft controls in the truck cab to engage		

	work/road mode.		
9.10	Blower shall be driven from chassis engine via the transmission drive shafts and heavy duty split shaft transfer case direct to blower, engagement via air-shift clutch control at operator panel.		
9.12	Blower shall be provided with a horizontal silencer with exhaust above the cab and rain cap protecting the silencer from rain water.		
9.13	Blower shall draw air from two (2) separate ports in the debris body.		
9.14	Hydraulic shut off valves shall be provided at the suction, return and filter lines to permit servicing of the hydraulic system.		
10.0	VACUUM BOOM SYSTEM		
10.01	Vacuum hose shall be designed for front operation with hose mounted and stored at front mounted work station. Front mounted location is required for ease of positioning vacuum hose as well as minimizing need for operator to swing hose into traffic.		
10.02	All connections between debris body and vacuum system will be of the self-adjusting pressure fitting type.		
10.03	Vacuum hose will remain stationary and not rise with debris body.		
10.04	Upper debris tube shall consist of an anchored steel tube and elbow.		
10.05	A sub-frame cab guard shall be mounted behind cab with boom rest cradle.		
10.06	All vacuum pipes shall be connected to vacuum pick up tube and extension pipe by adjustable over-center quick clamps to join the aluminum flanges on pipes.		
10.07	One (2) quick clamp for each pipe supplied shall be provided.		
10.08	Boom pedestal shall be directly mounted to module sub frame.		
10.09	Boom support used for travel mode shall not interfere with access or require removal to tilt hood forward.		
10.10	A control station shall be equipped with control switched for all direction as well as a safety emergency shut-down button, which shall automatically eliminate power to boom.		
10.11	The vacuum boom shall have a heavy-duty flexible hose assembly joining the transition pipe to the debris body, and a 70-degree elbow and 5-1/2 heavy duty hose at the suction end of the boom.		
10.12	Boom shall rotate 180 degrees and shall be operated by an electric over hydraulic system. Lift and swing movements shall be actuated by hydraulic cylinders.		
10.13	The horizontal inner steel vacuum tube and inner box beam boom section shall telescope (tube within tube, box beam within box beam) and retract a minimum of 10' without affecting the vertical position of the pick-up tubes, and shall be located at the front work station in its retracted position, providing 324" maximum reach off the longitudinal axis of unit.		
10.14	Boom shall be fully controlled by a remote push button pendant control station with 25 ft. cable. Controls to include up/down, left/right, in/out boom functions, vacuum relief, e-stop and main power switch.		
10.15	A joystick for hydraulic control of the boom shall be installed on hose reel front panel.		
10.18	Removable 4" diameter storage "Post" to stabilize the lower boom hose during transport. Storage device shall not interfere with raising hood.		
10.21	A detailed engineering drawing must be supplied showing the relationship of the hose reel in relation with the vacuum boom range of motion. Drawing shall show module mounted on chassis, full arc of vacuum hose both retracted and extended, full rotation of arc for hose reel in the extended position and dimension all arc		

	lengths of vacuum boom retracted and extended. Drawing shall highlight intersection areas whereby combination cleaning is possible (within full arc on telescoping boom system).		
11.0	WARER PUMP AND DRIVE		
11.01	For most efficient use of horsepower and reduce fuel consumption, high pressure rodder pump shall be hydraulically driven via (1) load sensing utility pump, (1) variable displacement pump and (1) fixed displacement pump.		
11.02	Hydraulic powered rodder pump via twin variable displacement hydraulic pumps and (1) fixed displacement utilizing (2) 10-bolt PTO's.		
11.03	High pressure water pump shall be rated capable of continuous delivery of 100 GPM @ 2500 PSI (submit manufactures support documentation).		
11.04	High-pressure water (rodder) pump system shall allow front-mounted controls for operation of three modes: (1) Low flow range 0-22 GPM; (2) medium-flow range, 22-60 GPM/2500 psi, and (3) High-flow range, 60 up to 100 GPM/2500 psi.		
11.05	Digital flow meter shall be displayed in front LCD display. Flow meter shall be capable of displaying system flow in all pump operating modes. In addition, a low water alarm shall be provided.		
11.06	This hydraulic drive system shall allow variation of water pump speed independent of required vacuum drive speed within maximum drive engine speed pf 1760 RPM.		
11.07	Variable flow systems routing water-to-tank are not considered equal due to an additional wear, horsepower and fuel consumption. Any deviation from this drive requirement should have full explanation of horsepower consumption.		
11.08	Water (rodder) pump shall include smooth and pulsation operation mode feature.		
11.09	When required to assist nozzle breaking through obstructions, water pump "pulsation mode" shall provide a forward-acting nozzle surge. Pulsation surge wave shall allow nozzle to punch forward 2" to 18" depending on flow dynamics and length of hose in sewer pipe.		
11.10	Explanation of forward-acting pulsation method shall be submitted with bid or explained.		
11.11	Water pump location shall provide a flooded gravity suction inlet to eliminate potential cavitation's damage.		
11.12	An oil to water heat exchanger will be provided in the water system to cool all hydraulic fluids on the unit. State horsepower requirement to operate hydraulics at full speed.		
11.13	The water pump shall provide precise 9-80 GPM controlled flow at variable pressure up to 2000 PSI.		
11.14	An extreme cold weather recirculation system-minimum 25 GPM via transmission PTO at chassis engine idle speed.		
11.15	Hydro-pneumatic nitrogen charged accumulator system shall be provided with all control valves, piping hoses for either continuous flow or jackhammer rodding. Accumulator shall be a 2.5 gallon capacity and 1400 50 2500 PSI pressure rating.		
11.16	Two (2) 1/1" high pressure ball valves shall be provided for draining the water pump and flushing sediment from the bottom of the pump.		
11.17	A nozzle rack accommodating (3) nozzles shall be provided in curbside toolbox. The nozzles shall be labeled on storage rack for pipe size/flow and application.		
11.18	System shall be relieved to protect operator.		
11.19	Handgun shall be supplied that allows for changing of flow pattern from a fine mist to a steady stream.		
11.20	Handgun shall come equipped with quick connect couplers.		

11.21	An additional 1" water relief valve shall be provided.		
11.22	A mid-ship quick disconnect handgun coupler shall be provided.		
11.23	Front and rear quick disconnect handgun couplers shall be provided.		
11.25	A water pump hour meter shall be provided.		
12.0	HOSE REEL		
12.01	Hose reel assembly shall be direct frame mounted.		
12.02	Hose reel assembly shall be mounted on an independent frame that can be removed from brackets attached permanently to front of main truck frame members.		
12.03	Reel will be manufactured out of ¼" spun steel for added structural strength and shall require no internal or external reinforcements that could damage rodder hose.		
12.04	Hose reel shall be driven by adjustable gear reduction chain and sprocket assembly.		
12.05	Hose reel shall operate at full rotational speed while chassis engine is at idle.		
12.06	Hydraulic Telescoping Rotating Hose Reel- 800' capacity of 1" hose shall be provided.		
12.07	The front mounted hose reel shall telescope 15" forward down centerline of truck.		
12.08	Entire reel assembly shall rotate 270 degrees on a large diameter ball bearing.		
12.09	Hose reel shall include a dual locking device to positively lock in reel in any position across operating range.		
12.10	The hose reel shall rotate about the reel assembly centerline so the reel shall never extend beyond the truck width. Reel coverage diagram shall be submitted with bid.		
12.11	Controls shall accessible on both sides of the hose reel, allowing operator to work either side of unit for safety purposes.		
12.14	600" x 1" Piranha Sewer Hose/2500 PSI shall be provided.		
12.15	An automatic hose level wind scroll device shall be supplied. An air-cylinder actuated pinch-roller shall exert downward pressure across full width of reel to retain hose on reel when encountering nozzle blockages.		
12.16	An air-cylinder actuated pinch-roller shall exert downward pressure across full width of reel to retain on reel when encountering nozzle blockages.		
12.18	A hose footage counter shall be supplies to indicate the amount of hose travel within pipe.		
	Digital footage counter displaying absolute and relative footage values shall be provided. System must be capable of resetting relative value to ensure operator safety. Accuracy To Within One Percent Of Actual Distance, Large Easy To Read LCD Screen, Large Keypad with Sealed Membrane Switches that are easily Activated, Nema-4 Moisture Sealed Enclosure, Solid State Circuitry, Dimensions: 5 5/8 X 3 3/8 X 3/16. LCD Display Area: 3.0 X 2.2		
13.0	WASHDOWN EQUIPMENT		
13.01	A spring retractable storage reel for handgun hose shall be provided to allow the operator to deliver water to area served by pick up hose and to the inside of the debris body for clean out. Reel shall be mounted midship on curbside, equipped with 1/2 X 50 2000 PSI hose. An additional 35' of ½" hose with quick disconnect couplers shall be supplied loose.		
13.03	Hand sprayer with adjustable spray-pattern to be provided with trigger-style gun.		
14.0	FRONT OPERATING STATION AND CONTROLS		
14.01	Primary operator station will be located at front of truck on right curb of hose reel.		
14.02	All front operator controls shall be accessible while operating either front or rear side of reel assembly. All operations to either side of unit shall position operator in front of vehicle affording protection from oncoming traffic.		

14.03	Station shall include truck engine throttle, water pump (on/off), water pump mode, water pump flow meter, hose reel control valve (forward/reverse), adjustable hose reel speed control, and oil dampened water pressure gauge, boom controls, digital water pump flow meter, and low water warning light.		
14.04	Tachometer and hour meter chassis engine provided at control station shall be provided.		
14.05	Tachometer and hour meter for blower provided at control station shall be provided.		
14.06	All hydraulic Functions – Color Coded, Sealed Electric/Hydraulic NEMA 4 switches shall be provided.		
14.07	Blower Engagement/Vacuum Relief – Sealed Electric/Air NEMA 4 Switch shall be provided.		
14.08	Water pump hour meter shall be provided.		
14.09	PTO hour meter shall be provided.		
15.0	ELECTRIC & SAFETY LIGHTING		
15.01	The entire system shall be vapor sealed to eliminate moisture damage, “Nema-4” type or equal.		
15.02	Vansco Electronic Package: Chassis Tachometer, Blower Tachometer, Operating Mode, PTO Mode, Hydraulic Oil Temperature shutdown, and E-Stop shall be included. E-Stop activation must turn off rodder pump, shutdown PTO A & B, set chassis throttle to idle. & open vacuum, relief. E-stop must be located at each operator interface; including front/rear hose reel controls, pendant control, & pump control location. Basic machine functions and both chassis and module diagnostics shall be provided.		
15.03	All electrical connections shall be void of exposed wires or terminals nor should they be painted. Paint process shall be completed prior to installation or wiring.		
15.04	All wiring shall be color-coded and encased in conduit to scaled terminal boxes with circuit breakers.		
15.05	All light bulbs shall be shock mounted to eliminate bulb failure.		
15.06	All other lights required by State and Federal Laws.		
15.07	Two-piece directional LED 10-strobe-light arrow board shall be mounted on rear door of debris body, with controls mounted in cab.		
15.09	A pistol grip hand light with bumper plug and 25’ coiled cord shall be provided.		
15.12	Operator station work lights shall be provided.		
15.13	Hose reel manhole work lights shall be provided.		
15.14	(2) LED Boom work lights shall be provided.		
15.15	Additional hand light plug shall be provided.		
15.18	LED Work light at midship curbside shall be provided.		
15.20	(2) LED Rear door work lights shall be provided.		
15.21	FS DOR 3 – 6 Light System – Federal Signal Mirror Strobes, 2 Mid-Ship, and 2 Rear Water Mounted Oval LED Quad Flash Strobes shall be provided.		
15.24	LED Lights, Clearance, Back-Up, Stop, Tail & Turn shall be provided.		
15.25	Mid-ship LED Bubble Type Turn Signals shall be provided.		
16.0	SAFETY EQUIPMENT		
16.01	E-stop shall be located at each operator interface location. Standard locations to include: front hose reel, mid-ship curbside dump controls, & wireless controller (if equipped).		
16.02	Electrical system controls shall be configured to allow for single point operation only. Upon engagement of controls at specified locations, additional controls shall be		

	disabled.		
16.03	Electrical system must enable self-check to ensure all switches are in home position prior to critical function enablement. System must “lock out” controls when switch is not in home position.		
16.04	Rear work lights shall be activated upon engagement of reverse gear.		
16.05	(1) Emergency Flare Kit		
16.06	(1) 5# Fire Extinguisher.		
16.07	7” dash monitor, 2-camera system shall be provided. A Front Hose Reel Color Camera with 130 deg Viewing Angle shall be provided to provide a front visual of the manhole cover to aid in equipment set-up. A rear back-up color camera with 130 deg viewing angle shall be provided. Camera to have automatic activation when the unit is switched to reverse.		
17.0	SEWER TOOLS AND ACCESSORIES		
17.02	(1) 30 Sand Nozzle		
17.03	(1) 30 deg. Sanitary Nozzle		
17.04	(1) 15 deg. Penetrator Nozzle		
17.05	(1) 1” Small finned nozzle pipe skid.		
18.0	VACUUM TOOLS AND ACCESSORIES		
18.01	The basic vacuum tube package shall include the following:		
18.02	(1) 8” X 3’ aluminum pipe		
18.03	(2) 8” X 5’ aluminum pipe		
18.04	(1) 8” X 6’6” catch basin tube		
18.05	(4) 8” quick clamps		
19.0	CHASSIS EQUIPMENT AND STORAGE		
19.01	Two (2) front tow hooks shall be provided.		
19.02	Two (2) rear tow hooks shall be provided.		
19.05	A safety cone storage racks shall be provided to contain safety cones in the upright position.		
19.07	Aluminum Toolbox – Behind Cab		
19.09	(1) 18” X 24” X 24” Aluminum Toolbox Mounted street side shall be provided.		
19.10	(1) 48” X 22” X 24” Aluminum Toolbox Mounted curb side shall be provided.		
19.11	(2) 18” X 16” X 12” Aluminum Toolbox – Front Bumper shall be provided.		
19.12	(2) Long Handle Tool Storage Locations behind Cab shall be provided.		
20.0	MODULE FINISH		
20.01	Painting of the module shall be with a DuPont Imron Polyurethane Enamel Top Coat. Application is to be a wet top coat applied to a wet unhanded primer base.		
21.0	CHASSIS SPECIFICATION		
21.01	The unit shall be a latest model. No discontinued models will be accepted.		
21.02	Freightliner 114SD Conventional Cab Chassis		
21.03	The unit shall be equipped with diesel engine, turbo charged and after cooled, with a Cummins ISL-370; 370HP @ 1900RPM, 1250 LB/FT @ 1400 RPM		
21.04	Sep Forward Axle		
21.05	The unit shall be equipped with an Allison 3000 RDS Automatic Transmission with PTO Provisions		
21.06	The unit shall be equipped with a Meritor MFS-20-133A 20,000 # Wide Track, I-Beam Type Single Front Axle		
21.07	The unit shall be equipped with 20,000# Flat Leaf Front Suspension		

20.08	The unit shall be equipped with Meritor RS-26-185 26,000# T-Series Single Rear Axle		
20.09	The unit shall be equipped with 30,000# Flat Leaf Spring Rear Suspension with Helper and Radius Rod		
20.10	The unit shall be equipped with a 114 inch BBC flat room aluminum conventional cab		
21.11	The unit shall have a wheelbase of 255 inches		
21.12	The unit shall have a 7/16 X 3-9/16 X 11-1/8 inch steel frame with 120 KSI rating		
21.13	The unit shall have a ¼ inch C-Channel inner frame reinforcement		
21.14	The unit shall have a 38 inch rear frame overhang		
22.0	ADDITIONAL PARTS		
22.01	(2) 8" X 3' Aluminum Vacuum Tubes		
22.02	(3) 8" X 5' Aluminum Vacuum Tubes		
22.14	(6) 8" Quick Clamp Assembly		
22.22	(1) 1" = 80 GPM @ 2000 PSI – 30 DEG Penetrator Nozzle		
22.29	(1) 1" – 60 GPM @ 2000 psi – 15 DEG Sanitary Nozzle		
22.36	(1) 1" – 80 GPM @ 2000 PSI – 3' General Purpose Nozzle		