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SUPERSEDING
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FEDERAL SPECIFICATION

TRUCK, CLEANER, CATCH BASIN, VACUUM-PRESSURE JET, DED

This specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers truck-mounted vacuum catch basin and sewer cleaners which use a high-velocity-pressure jet for removing sludge and debris from drainage lines, and simultaneously vacuum the sludge and debris from the catch basin or manhole.

1.2 Classification. The cleaners furnished shall be of the following types and sizes (see 6.2).

Type I - For 25-foot (7600 millimeter [mm]) depth operation

Size 1 - With a minimum 9 cubic yard (6.9 cubic meter [m3]) payload capacity body and a minimum length of 112 inches (2850 mm)

Size 2 - With a minimum 14 cubic yard (10.7 m3) payload capacity body and a minimum length of 144 inches (3660 mm)

Type II - For up to 100-foot (31 m) depth operation

Size 2 - With a minimum 14 cubic yard (10.7 m3) payload capacity body and a minimum length of 144 inches (3660 mm)

Beneficial comments (recommendations, additions, deletions) and any pertinent
*data which may be of use in improving this document should be addressed to: *
*Commanding Officer (Code 156), Naval Construction Battalion Center, *
*621 Pleasant Valley Road, Port Hueneme, CA 93043-4300, by using the *
*Standardization Document Improvement Proposal (DD Form 1426) appearing at *
*the end of this document or by letter. *

FSC 2320

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Federal Standard

FED-STD-297 - Rustproofing of Commercial (Nontactical) Vehicles

Military Specification

MIL-V-62038 - Vehicles, Wheeled: Preparation for Shipment and Storage of

(Unless otherwise indicated, copies of federal and military specifications and standards are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

Department of Labor (DoL):
Occupational Safety and Health Administration (OSHA):

Title 29, Code of Federal Regulations, Chapter XVII, Part 1910, and Amendments

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

Department of Transportation (DoT):

Federal Motor Vehicle Safety Standards and Regulations
Federal Motor Carrier Safety Regulations

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

Environmental Protection Agency (EPA):

Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines: Certification and Test Procedures
Interstate Motor Carrier Noise Emission Standards
Motor Vehicle Air Pollution Standards

(Application for copies should be addressed to the Public Affairs Office, Environmental Protection Agency, Rockville, MD 20852.)

State of California:

California Vehicle Code

(Application for copies should be addressed to the Department of Motor Vehicles, 2570 24th Street, Sacramento, CA 95809.)

2.2 Other publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation (see 6.2).

ASTM:

A242 - High-Strength Low-Alloy Structural Steel
A588 - High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 In. (100 mm) Thick

(Application for copies should be addressed to ASTM, 1916 Race Street, Philadelphia, PA 19103.)

The European Tyre and Rim Technical Organisation (ETRTO):

Standards Manual

(Application for copies of ETRTO publications should be addressed to the European Tyre and Rim Technical Organisation, 32, Avenue Brugmann, 1060 Brussels, Belgium.)

Society of Automotive Engineers, Inc. (SAE):

SAE J534 - Lubrication Fittings

(Application for copies should be addressed to the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

Tire and Rim Association, Inc. (TRA):

TRA Yearbook

(Application for copies should be addressed to the Tire and Rim Association, Inc., 175 Montrose West Avenue, Suite 150, Copley, OH 44321.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for associated detail specifications, or specification sheets), the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Description. The truck-mounted catch basin cleaner, referenced to hereinafter as "cleaner," shall be a commercial product of the manufacturer's design which has been in production for not less than one year prior to date of solicitation, and shall meet the requirements as specified throughout this document. The cleaner shall consist essentially of a containment body with dust and moisture control features, water-tight rear door and dumping mechanism, hose reel, vacuum pump, high-pressure water pump, and water tank(s), mounted upon a commercial truck chassis with gross vehicle weight (gvw) rating equal to not less than the completed vehicle assembly with capacity rated load on board. The cleaner shall be equipped with a hydraulic powered boom for handling the vacuum hose, and all related equipment as required to meet the performance requirements as specified. The chassis and cleaner shall be diesel-engine-powered, and shall be capable of either independent or simultaneous operation. The cleaner shall include provisions for storage of all operational equipment, and tools specified in the ordering data. The cleaner shall be capable of continuous warranted operation when vacuuming either wet or dry materials.

3.2 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection and tests (see 4.2.1 and 6.5).

3.3 Standard commercial product. The cleaner shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product. Additional or better features which are not specifically prohibited by this specification but which are a part of the manufacturer's standard commercial product, shall be included in the cleaner being furnished. A standard commercial product is a product which has been sold or is being currently offered for sale on the commercial market through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model.

3.4 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification.

3.5 Safety. All rotating or reciprocating parts that are of such nature or so located as to be a hazard to operating or maintenance personnel shall be enclosed or properly guarded in accordance with Code of Federal Regulations, Chapter XVII, Part 1910, paragraph 1910.219, in effect at time of manufacture.

3.6 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to ensure interchangeability of component parts, assemblies, accessories, and spare parts.

3.7 DoT Motor Vehicle Safety Standards. The cleaner shall comply with all applicable Motor Vehicle Safety Standards in effect on date of manufacture.

3.8 Air pollution control. Cleaners shall comply with the EPA Regulations governing Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines in effect on the date of manufacture. In addition, cleaners destined for California shall comply with State of California regulations governing air pollution control in effect on the date of manufacture.

3.9 Noise. If the noise level within 30 feet (9100 mm) of the cleaner, from ground level up to 10 feet (3050 mm) height, exceeds 90 decibels when operating the cleaner in any mode, or combination of vacuuming and pressure jetting operation(s), caution plates/decals shall be permanently posted on the cleaner in conspicuous locations clearly visible to personnel exposed to excessive noise levels. The caution plates/decals shall read: "CAUTION - HEARING PROTECTION REQUIRED." The plates/decals shall be not less than 12 inches (305 mm) in height, and have a black background with red lettering, and be constructed so as to last not less than three years while exposed to direct sunlight.

3.10 Performance.

3.10.1 Pump. A positive displacement type pump, providing a minimum of 60 gallons (227 liters [L]) of water per minute (gal/min) (L/min) at not less than 2,000 pounds per square inch gage (13 788 kilonewtons per square meter [kN/m2]) shall be provided at the pump discharge line for cleaning and flushing sewer and drain lines.

3.10.2 Operation. Type I and type II cleaners shall clean an 8-inch (200 mm) unobstructed sewer line that is 25 feet (7600 mm) deep and 400 feet (122 m) long, in not more than 17 minutes. During the hydraulic-rodding with the high-pressure hose, the hose shall be self-propelling for the full 400-foot (122 m) length distance and shall not require operator’s assistance.

3.10.3 Blower-compressor. With a vacuum nozzle not larger than 8 inches (200 mm) in diameter, the blower-compressor shall be capable of depositing not less than 2 cubic yards (1.5 m3) of sand into the body under the conditions in table I, at any temperature range between -10 to +90 degrees Fahrenheit (oF) (-23 degrees Celsius [oC] to +32oC). Retained volume of dry sand shall not be less than 95 percent weight.

TABLE I. Material deposited in body.

A. TYPE I - REACH			
Depth below ground level	Horizontal distance	Material condition	Maximum time allowed per cubic yard (m3)
25 ft (7600 mm)	12 ft (3600 mm)	Wet [1]	6 minutes
25 ft (7600 mm)	12 ft (3600 mm)	Dry [1]	4 minutes
B. TYPE II - REACH			
Depth below ground level	Horizontal run	Material condition	Maximum time allowed per cubic yard (m3)
100 ft (31 m)	40 ft (13 m)	Wet [1]	8 minutes
100 ft (31 m)	100 ft (31 m)	Dry [1]	7 minutes

[1] Average density pounds per cubic foot (m3).

Dry sand 90 - 150 pounds (41 - 68 kilograms [kg]) per cubic foot (m3).
Wet sand 60 - 126 pounds (27 - 57 kg) per cubic foot (m3).

3.10.4 Loading light material. Each cleaner shall load light dry material such as leaves, sawdust, etc., to the manufacturer's advertised body capacity, but not less than the minimum usable capacity specified in 1.2 with dust emissions not to exceed requirements of 3.12.1.

3.10.5 Cleaner. The cleaner, with full payload and with all operating equipment, shall ascend a minimum grade of 2.0 percent at not less than 50 miles per hour (80 kilometers per hour [km/h]) with the transmission in direct drive.

3.11 Cleaner construction.

3.11.1 Chassis. Chassis shall be 4 by 2 for size 1 and 6 by 4 for size 2.

3.11.2 Gross vehicle weight rating. The gvw rating shall be not less than the following:

Size 1 = 37,000 pounds (16 780 kg)
Size 2 = 55,000 pounds (24 950 kg)

3.11.3 Engine. The cleaner chassis shall be furnished with a liquid-cooled, diesel fuel operated engine, having horsepower and torque characteristics to meet performance requirements specified. When the chassis engine is utilized to drive the cleaner operations, it shall have sufficient power to perform both pumping and vacuum operations simultaneously. When the primary chassis engine is utilized to power the cleaner function through a power takeoff or other recommended method, the design shall include a means for manually disengaging the cleaner from the drive system for stationary operations. The diesel engine shall start in any temperature above -20oF (-29oC). Starting aids may be either electric glow plug, manifold preheater or ether primer. When an ether priming system is required, it shall be of the measured shot type with storage capacity of not less than 12 fluid ounces (355 milliliters [mL]).

3.11.4 Fuel system. Fuel system shall conform to DoT Motor Carrier Safety Regulations, Section 393.65. Fuel tank shall have sufficient capacity for 12 hours of normal operation (6 hours commuting and 6 hours full loading and pumping).

3.11.5 Air cleaner. A dry-type engine intake air cleaner shall be furnished, and provided with a restrictor indicator gage mounted in the cab or visible from the control station.

3.11.6 Electrical system. The electrical system shall be 12 volt direct current. The alternator shall have a minimum rated capacity of 80 amperes. All lights, reflectors, and wiring shall conform to DoT Motor Carrier Safety Regulations.

3.11.7 Storage battery(s). The storage battery(s) shall be chassis manufacturer's standard equipment.

3.11.8 Steering. Cleaner shall be equipped with full hydraulic power-assisted steering.

3.11.9 Transmission. Cleaner shall be equipped with an automatic transmission having not less than four forward and one reverse speeds. The transmission shall be rated for not less than peak engine torque output. When the transmission is utilized in combination with power takeoff drive(s) for powering the cleaner, there shall be remote controls furnished at the cleaner's external control panel for engagement and disengagement.

3.11.10 Brakes. Brakes shall conform to Federal Motor Carrier Safety Regulations 393.40 through 393.43 and 393.45 through 393.52.

3.11.11 Suspension. Cleaner shall be equipped with suspension system having components with a rated capacity at least equal to the loads imposed on each member, measured at the ground, with the cleaner load to rated gvw. When available from chassis manufacturer as standard or optional equipment, shock absorbers of the heavy-duty, double-acting, hydraulic type shall be mounted on the front axle.

3.11.12 Axles. Front and rear axles shall be manufacturer's standard full floating type. Axle ratings shall be at least equal to the load imposed on each axle, measured at the ground, with cleaner loaded to rated gvw.

3.11.13 Wheels and tires. Wheels shall be disk type: single wheels on front axle and dual wheels on the rear axle(s). Wheel and tire rating shall conform to TRA or European Tyre and Rim Technical Organisation recommendations. Tires shall have rated capacity at least equal to the load imposed on each tire, measured at each wheel, at the ground, with cleaner loaded to rated gvw.

3.11.13.1 Spare wheel. A spare wheel shall be furnished with each cleaner. In the event that different size wheels are utilized on the front and rear axles, the spare wheel shall be the same size as used on the front axle.

3.11.14 Windshield washers and wipers. The cab shall be equipped with dual windshield washers and dual windshield wipers. Windshield wipers shall be multispeed type and operated by either air or electric motor(s).

3.11.15 Cab heater and defroster. Heater shall be manufacturer's standard liquid coolant operated type, meeting the requirement of DoT Motor Carrier Safety Regulations, section 393.77, as applicable. Defroster shall keep not less than 75 percent of windshield area clear at an ambient temperature of -20oF (-32oC) and shall be provided with an air regulating control. Heater and defroster controls shall be mounted within easy reach from the seated operator's position.

3.11.16 Warning light(s). One or more amber colored warning lights shall be furnished and mounted to provide 360 degrees visibility at ground level at 100 feet (31 m) distance from the cleaner. The warning lights may be of either rotating or strobe type operation with not less than 80 flashes per minute. The lights shall be controlled from a dash-mounted switch with an indicator light.

3.11.17 Accessories and equipment for cleaners. Chassis equipment shall be complete with all accessories furnished as standard equipment by the manufacturer. The following minimum equipment shall be furnished:

a. Outside rearview mirrors shall have as an minimum, 80 square inches (516 square centimeters [cm2]) of flat reflective surface, and a convex reflective surface of not less than 15 square inches (97 cm2). A mirror shall be mounted on each side of the cleaner. Mirror heads may be separate or combination type designs.
b. Manufacturer's standard instrument panel, including speedometer with odometer, tachometer, oil pressure, coolant temperature, battery ampere meter or voltage gage, and fuel level gage.
c. Key operated ignition switch.
d. Dual sunvisors, one for each side of the cab.
e. Lockable cab doors, with not less than one with external key operation.
f. Seat/shoulder belts conforming to DOT on the date of manufacture.

3.12 Components for sewer and catch basin cleaning.

3.12.1 Body. The body shall be the manufacturer's standard design, of not less than the volume payload capacity specified in 1.2. The body shall be not more than 96 inches (2440 mm) in width. Rectangular designed bodies shall be fabricated of not less than 0.1196-inch (3.038 mm) thick steel (standard U.S. gage No. 11), and cylindrical type bodies of not less than 3/16-inch (4.800 mm) thick steel. The inside of the body shall be smooth and free of crevices or other areas which may trap debris and moisture. The body frame or support shall be designed so as to provide adequate support when the cleaner is operating with maximum rated capacity loads. The body shall have a full width rear door, with a replaceable neoprene-type seal, which hinges open to facilitate dumping and cleaning. The body shall be provided with means of separating and removing 95 percent of all dust particles larger than 50 microns in diameter from the discharge air stream, while loading any type of wet or dry material. A hydraulic-powered dumping device of either hoisting or sliding bulkhead type shall be furnished.

3.12.1.1 Dump mechanism. When a dump body design is furnished, it shall include all features and components required to safely operate and dump the rated capacity loads. The hoist shall raise the loaded body to not less than 50 degrees from horizontal plane.

3.12.1.2 Sliding bulk. When a sliding bulkhead design is furnished, the body shall include an access door at the front to allow removal and cleaning of debris which may become trapped between the body and the sliding bulkhead.

3.12.1.3 Rear door. The rear door shall be full width and of watertight design, with a replaceable neoprene-type seal, and a drain opening of not less than 5 inches (125 mm) in diameter with a flexible drain hose and storage rack. The drain hose shall be not less than 10 feet (3050 mm) in length. The door shall be hydraulically opened and closed and include positive locking devices to assist with keeping the rear door watertight. The locking devices may be hydraulically or manually operated, but shall not require any type of tools to operate the devices.

3.12.2 Water tank. The cleaner shall be furnished with a fresh water tank capacity of not less than 1,000 gallons (3780 L) for Size 1, and 1,300 gallons (4914 L) for Size 2, as integral components. The water tank(s) shall not be connected to a waste water recycling system. The tank(s) shall be constructed of steel, aluminum, or polyethylene as utilized in standard production units by the manufacturer, and shall be warranted by the manufacturer against cracking/splitting or otherwise incurring leakage during normal usage for not less than three years. When steel material is utilized, it shall be a corrosion and abrasion resistant high strength suitable for welding, equal to ASTM A242 or ASTM A588, and shall be internally coated with rust inhibiting material certified to function for not less than three years. When a single tank is provided it shall contain baffles to provide surge protection. The tank shall be furnished with anti-syphon device and be designed to allow filling from a fire hydrant through a 2-1/2-inch (64 mm) fire hose on the curbside of the cleaner. The cleaner shall be provided with not less than 15 feet (4580 mm) of 2-1/2-inch (64 mm) fire hose with couplings, and a storage location shall be provided.

3.12.3 Separator. A separator or strainer that will remove from the water 98 percent by weight of solids, 74 microns or larger, shall be installed in the intake line between the anti-syphon device and the tank. The separator shall be without moving or replaceable parts, shall spin the solid matter through tangential openings in the inner shell, have a pressure drop less than 8 pounds per square inch gage (55 kN/m2), and be equipped at its lowest point with a quick-acting ball valve for discharge of the settled matter.

3.12.4 Method of loading. The method of loading shall allow the pickup hose to encompass an arc of not less than 60 degrees on either side of the cleaner centerline at a horizontal reach of not less than 12 feet (3600 mm) from cleaner’s circumference. Debris shall be deposited directly into the vacuum body without going through the compressor blower. When specified (see 6.2), means shall be provided that shall sound an audible alarm when the main body is full.

3.13 Hydraulic boom. A boom meeting the reach requirements of 3.12.4 shall be provided. When specified for size 2 (see 6.2), an extendable hydraulic boom shall be provided that can be extended not less than 18 feet (5490 mm) from the cleaner centerline and elevate to not less than 18 feet (5490 mm). When retracted, the boom shall not exceed the overall length of the cleaner chassis or chassis-mounted equipment. The boom provided shall have a minimum lift rating at full extended length of not less than 200 percent of weight of

hose(s), lengths of tubing and connections as specified with each cleaner. Hydraulic-powered cylinders and/or electric motors shall be furnished to allow power-assisted movement of the boom both vertically and horizontally using a cable-mounted remote control station locatable near the pickup hose. Means shall be provided for storage of the control station on the cleaner.

3.14 Pickup hose. The pickup hose shall not be less than 6 inches (150 mm) nor more than 8 inches (200 mm) in diameter, made of wire-reinforced rubber hose. The length of the flexible hose shall be sufficient to provide connection between the cleaner body and a location easily accessible, by personnel standing at ground level, where metal extension tubes may be attached. Hose shall be secured to flanged tubes with hose clamps. Extension tubes shall be provided in sufficient length to vacuum from a depth of 25 feet (7600 mm) below ground level. Cleaner mounted racks shall be provided to hold at least 25 feet (7600 mm) of the extension tubes and shall be furnished with mechanical latching devices to retain the tubes. The devices shall be of metallic construction with life expectancy equal to the cleaner. Extension tubes shall be attached to pickup hose by means of quick coupler type over-center clamps. The hose assembly shall be sufficiently tight to prevent a 2 by 2 inch (50 by 50 mm) piece of typing paper from being held by suction at any point. When specified (see 6.2), on type II, size 2 cleaner, additional extension tubes shall be provided in sufficient length to vacuum from a depth of 100 feet (31 m) below ground level. When specified (see 6.2), type II, size 2 cleaners shall be provided with a flanged "Y" connection and two each, 25-foot (7600 mm) removable wire-reinforced rubber or plastic hoses. The "Y" connection inlet sections and hose diameter shall be not less than 4 inches (100 mm) or more than 5 inches (125 mm).

3.15 Auxiliary cleaning water system. An auxiliary cleaning water system shall be provided consisting of a pump, water supply and a hand gun with hose. The auxiliary system shall deliver water to all areas of the catch basin and to the inside of the vacuum box for cleaning debris and sludge. A minimum of 20 gal/min (76 L/min) regulated at 600 pounds per square inch gage (4136 kN/m2) shall be available at the nozzle. The hose for the auxiliary cleaning system shall have a minimum burst pressure of 2,400 pounds per square inch gage (16 545.7 kN/m2) and a proof pressure of 1,200 pounds per square inch gage (8272.9 kN/m2).

3.16 Auxiliary power. An auxiliary diesel powered engine (water cooled), may be provided, when included as manufacturer’s standard design, when required to meet the performance requirements of the cleaner. The engine(s) shall meet the applicable EPA regulations governing control of motor vehicles, and auxiliary engine powered equipment in effect on the date of manufacture. Cleaners designed for states with emission controls exceeding Federal requirements shall meet specific requirements for the state of destination. When an ether starting system is furnished, it shall be controlled from the operator’s station, and become inoperable when the engine is warm.

3.16.1 Oil filter. Full flow oil filter shall be furnished.

3.16.2 Governor. Engine governor shall be furnished, and be set and sealed to limit engine to manufacturer’s maximum recommended operating speed.

3.16.3 Fuel systems. Fuel systems shall conform to DoT Federal Motor Vehicle Safety Standards. Fuel tank shall have sufficient capacity for 8 hours of normal operation.

3.16.4 Air cleaner. A dry-type engine intake air cleaner shall be furnished, and provided with a restrictor indicator gage.

3.16.5 Electrical system. The electrical system shall be 12 volt direct current. Alternator shall have a minimum rated capacity of 80 amperes. The battery shall be charged and ready for use.

3.16.6 Accessories and equipment. The engine shall be complete with all accessories furnished as standard equipment by the manufacturer. The following minimum equipment shall be furnished:

a. Key-operated ignition switch.
b. Ammeter or charging indicator.
c. Fuel gage.
d. Oil pressure gage or indicator.
e. Engine temperature gage or indicator.
f. Hour meter of the sealed repeating type that registers up to at least 9,999.9 hours.
g. Tachometer.

3.17 Blower-compressor. A blower or compressor unit shall be provided. The blower-compressor unit shall be capable of delivering the quantity of air volume and the velocity to meet the performance requirements of paragraph 3.10.3.

3.17.1 Blower-compressor inlet filter. If a positive displacement blower-compressor unit is used, an inlet filtering system shall be provided to prevent ingestion of foreign matter. The size, capacity and filtration performance shall meet the blower-compressor unit manufacturer’s particle size filtration requirements. A water mist spray system only is not acceptable. The filtration system shall operate in both wet and dry vacuuming operations.

3.18 High-pressure pump. The high-pressure pump shall deliver as a minimum the quantity of water as specified in 3.10.1. A system shall be provided to vary the flow from zero to maximum capacity by the operator at the control panel or station. Controls shall be furnished whereby the operator can start and stop the pump. Relief valves shall be furnished which may be set to any desired pressure within the system capability for water delivery. The water side of the pump shall have all surfaces in contact with water manufactured from one of the following materials: hard chrome, stainless steel, polyurethane, teflon, rubber, or high-strength gray iron. The pump shall have adjustable packing glands or renewable seals and be protected by a suction line filter.

3.19 Hose assembly. The cleaner shall be furnished with hose qualified by the manufacturer for intended usage in detrimental environments such as: sewer systems, drainage, and catch basins. A copy of hose manufacturer’s specification verifying application shall be included with each vehicle prior to delivery. The hose size, minimum length and operating pressure rating shall be not less than either "a" or "b" as follows:

a. 1 inch (25 mm) inside diameter hose, 600-foot (183 m) length and 2,500 pounds per square inch gage (17 235 kN/m2) rating.

b. 1-1/4 inch (32 mm) inside diameter hose, 500-foot (152 m) length, and 2,000 pounds per square inch gage (13 788 kN/m2) rating.

A hose reel assembly with hydraulically powered capability for spooling in either direction shall be furnished. The reel shall have a capacity for not less than length of hose as specified. The reel spool radius shall not be less than specified bend radius of hose furnished and allow first layer to spool firmly. The reel speed in either direction shall be at operator's option. The controls for reel operation shall be convenient to all cleaner operation locations. A resettable footage counter device providing visible display of hose deployed from reel shall be furnished and located convenient to operator's position. A shoe or guide device shall be provided with each unit to assist operator with positioning hose for entry into drainage lines.

3.20 Tool box(s). Tool box(s) of sufficient size to stow flanges, collars, quick clamps, gaskets, nozzles, hand pressure gun, portable light, control stations and all other hand tools or devices shall be provided. The tool box(es) shall have dividers to separate the various items, and shall be weatherproof all-steel construction with hinged lid and positive latching devices. The tool box(es) shall be mounted in a protected, accessible location.

3.21 Operating and equipment tools. The following operating and equipment tools shall be furnished:

	Item	Quantity
a.	Bench vise with 4-inch (100 mm) jaws.	1
b.	Hose clamping block for 1-inch (25 mm) hose.	1
c.	Round leaf nozzle.	1
d.	Quick clamps for suction tube, if supplied as separate items.	10
e.	Rubber gaskets for suction tube, if supplied as separate items.	10
f.	Basin retriever.	1
g.	Nozzle for 1-inch (25 mm) hose with spray angle between 30o and 40o hardened to 50 Rockwell C.	1
h.	Nozzle for 1-inch (25 mm) hose with spray angle between 10o and 20o hardened to 50 Rockwell C.	1
i.	Storm sewer nozzle for 1-inch (25 mm) hose equipped with replaceable spray jets for use in 18- through 36-inch (460 through 910 mm) pipe.	1
j.	Nozzle pipe assembly.	1
k.	Hand light 12 volt spot light.	1
l.	Lid lifter hook.	1
m.	Offset manhole roller.	1
n.	Pick.	1
o.	Hydrant wrench.	1
p.	Hydraulic (water) gear-driven root cutter kit, 6- through 12-inch (150 through 300 mm) pipe.	1

q. If supplied as separate item, tools to repair high-pressure water pump, check valves and packings. 1 kit

3.22 Rustproofing. The cleaner shall be rustproofed in accordance with FED-STD-297.

3.23 Lubrication. The lubricating points shall be easily visible and accessible. Hydraulic lubrication fittings shall be in accordance with SAE J534. Where use of high-pressure lubricating equipment, 1,000 pound-force per square inch (6894 kilopascal [kPa]) or higher, will damage grease seals or other parts, a suitable warning shall be affixed to the equipment in a conspicuous location.

3.24 Instruction plates. The cleaner shall be equipped with instruction plates/decals suitably located, describing any special or important procedures to be followed in operating and servicing the equipment. Plates/decals shall be of a material which will last and remain legible for the life of the equipment. Plates shall be securely affixed to the equipment with nonferrous screws or bolts of not less than 1/8-inch (3.2 mm) diameter.

3.25 Identification plate. When required, procuring agency will supply identification plates to contractor as specified in general requirements solicitation document. The contractor will be required to stamp the necessary data in the blank spaces thereon and securely affix said plates in a conspicuous place on each cleaner, assembly or subassembly, and parts as directed by the Government inspector. Nonferrous screws, rivets, or bolts of not less than 1/8-inch (3.2 mm) in diameter shall be used to affix the plates. Nomenclature shall be "TRUCK, CLEANER, CATCH BASIN, VACUUM-PRESSURE JET."

3.26 Cleaning, treatment, and painting. Surfaces normally painted in good commercial practice shall be cleaned, treated, and painted as specified herein. The color of the finish coat shall be as specified (see 6.2).

3.27 Servicing and adjusting. Prior to acceptance of the cleaner by the Government, the contractor shall service and adjust the cleaner for immediate operational use as required in the operator's manual. The servicing and adjusting shall include at least the following:

a. Inflation of all tires.
b. Adjustment of brakes (when required).
c. Proper functioning of all lighting and electrical systems.
d. Wheel alinement (when required).
e. Adjustment of engine to include tune-up (when required).
f. Complete lubrication, with grades of lubricants recommended for ambient temperature at the delivery point.
g. Cooling system filled to capacity with a clean solution of equal parts, by volume of water and antifreeze (ethylene glycol).

The cleaner shall be conspicuously tagged to identify the lubricants and their temperature range.

3.28 Workmanship.

3.28.1 Steel fabrication. The steel used in fabrication shall be free from kinks, sharp bends, and other conditions which would be deleterious to the finished product. Manufacturing processes shall not reduce the strength of the steel to a value less than intended by the design. Manufacturing processes shall be done neatly and accurately. All bends shall be made by controlled means to ensure uniformity of size and shape.

3.28.2 Bolted connections. Bolt holes shall be accurately punched or drilled and shall have the burrs removed. Washers or lockwashers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

3.28.3 Riveted connections. Rivet holes shall be accurately punched or drilled and shall have the burrs removed. Rivets shall be driven with pressure tools and shall completely fill the holes. Rivet heads, when not countersunk or flattened, shall be of approved shape and uniform size for the same diameter of rivet. Rivet heads shall be full, neatly made, concentric with the rivet holes, and in full contact with the surface of the member.

3.28.4 Welding. Welding procedures shall be in accordance with a nationally recognized welding code. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by the welds. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings.

3.28.5 Castings. All castings shall be sound and free from patching, misplaced coring, warping, or any other defect which reduces the casting's ability to perform its intended function.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this document where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspections set forth in this document shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in this document shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an

acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.2.1).
b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. The first article inspection shall be performed on cleaner when a first article is required (see 3.2 and 6.2). This inspection shall include the examination of 4.4 and the tests of 4.5. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.3 and demonstrate the operational function of the cleaner. This inspection shall be performed on the samples selected in accordance with 4.3.

4.3 Examination. Each cleaner shall be examined for compliance with the requirements specified in section 3 of this specification. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.4 Tests. The cleaner shall be tested in accordance with 4.4.1 through 4.4.8. Nonconformance to the requirements as specified in section 3 shall constitute failure and cause for rejection. If a positive displacement blower-compressor is used, prior to testing, the contractor shall show evidence from the blower-compressor manufacturer specifying the recommended maximum size particles allowable for ingestion by the blower-compressor during normal service.

4.4.1 Operational test. The complete cleaner shall be operated a sufficient period of time to demonstrate the design and performance to accomplish the following:

4.4.2 Hydraulic rodder test. Position the cleaner at a predetermined catch basin site, with not less than 25 feet (7600 mm) depth, with an unobstructed sewer line between 8 to 12 inches (200 to 300 mm) in diameter. The cleaner,

with a two person crew, tools and equipment as specified (see 3.21) stowed in the normal transport position, shall perform the following operations:

a. From a starting distance of more than 100 feet (31 m), the cleaner shall approach the manhole cover, park, and set up for operation.
b. Using the tools furnished, remove the manhole cover and proceed to high-pressure clean the sewer line for a distance of not less than 400 feet (122 m), while simultaneously vacuuming water and debris being flushed into the catch basin. The high-pressure hose shall self-propel the full 400-foot (122 m) distance without operator's manual assistance.
c. Upon completion of the cleaning and vacuuming operations, replace the manhole cover, stow and secure the gear, and move the cleaner to a distance of not less than 100 feet (31 m) from the manhole cover.

The operation shall be performed four times consecutively, and shall average not more than 20 minutes for each completed operation. The volume of material and water collected in the body shall be measured to verify efficiency of the vacuum operation.

4.4.3 Loading wet and dry material test. Using manufacturer's operating procedures, the cleaner shall demonstrate the ability to meet the vacuuming requirements of 3.10.3 and table I, by loading not less than 2 cubic yards (in 1 cubic yard increments) (1.5 m3 in m3 increments) each of wet and dry sand material. This shall be demonstrated by vacuuming a premeasured cubic yard (m3) into the body and then dumping and measuring by volume the amount collected in the body.

4.4.4 Loading light material for size 2 only. Using normal operating procedures, the manufacturer shall demonstrate the blower-compressor performance of loading light material, leaves, sawdust, etc., to demonstrate the requirements of 3.10.4. Failure to demonstrate this test shall be cause for rejection.

4.4.5 "Y" connection load test. When the "Y" connection with two flex hoses is specified, the cleaner shall vacuum not less than 2 cubic yards (1.5 m3) of material at a 100-foot (31 m) elevated position (this is not a recorded time test), and shall demonstrate the ability to operate two hoses simultaneously. In addition to the 2 cubic yards (1.5 m3) of material, the cleaner shall demonstrate the ability to vacuum loose rocks, gravel and water for not less than 15 minutes. The load shall then be dumped to verify how much material was gathered during the test. Failure of the cleaner to operate with dual hose pickups installed shall be cause for rejection.

4.4.6 Inlet filter effectiveness test. When a positive displacement type blower-compressor is furnished, the blower-compressor manufacturer shall certify that the unit is warranted for catch basin cleaning operation. The cleaner shall demonstrate intake air filter effectiveness while loading dry materials as specified in 4.4.3, and may be performed concurrently with the loading test. If performed separately, materials shall be as specified in 3.10.4, with samples taken in 1/4-load intervals, with a minimum of three different materials sampled. Upon the completion of the test, the blower-compressor shall be

inspected for scratches or scoring of the bores or rotors/vanes of the blower-compressor. Any physical markings indicating sand, dirt or debris has entered the blower-compressor shall be cause for rejection.

4.4.7 Pump delivery test. The pump shall be tested in accordance with 3.10.1. Certified performance charts from the pump manufacturer shall be acceptable in lieu of test performance. Failure to pass the requirements shall be cause for rejection of the unit.

4.4.8 Road test. The first article cleaner shall be examined and road tested by the contractor to verify the grade and speed requirements of 3.10.5. The cleaner shall be loaded to its rated gvw, and with all catch basin equipment shall be driven at speeds up to 50 miles per hour (80 km/h), for a minimum distance of 50 miles (80 km). The distance traveled shall consist of highway, rough dirt roads, partly surfaced gravel roads, puddles, and sharp turns. For each 25 miles (40 km) of travel at least one sudden brake stop shall be accomplished. Upon completion of the road test, all equipment shall be thoroughly examined for possible transit damage. The equipment shall show no evidence of damage; all compartment(s) and cab doors shall properly open and shut and there shall be no physical evidence of racking of the body.

4.5 Production sample. Upon acceptance of the first article, the first article shall remain at the manufacturing facility as a production sample, and shall be reconditioned, including replacement of abnormally worn parts and paint touch-up or repainting prior to delivery, to enable it to be accepted as a contract item. The contractor shall maintain the first article in a serviceable condition for the duration of the contract.

4.6 Preparation for delivery. The cleaner shall be inspected to verify conformance to the requirements of section 5.

5. PREPARATION FOR DELIVERY

5.1 Vehicle processing. The equipment shall be preserved and packed in accordance with the contractor’s standard practice. When specified (see 6.2), equipment shall be preserved and packed in accordance with the requirements of MIL-V-62038, with the level of preservation and packing as specified.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Type I cleaner is intended to clean drainage lines to lengths of 400 feet (122 m) and diameters from 6 to 36 inches (150 to 910 mm), and remove the sludge and debris by vacuum from the catch-basin to a minimum of 25 feet (7600 mm) below ground level. Type II cleaner is similar to type I, with the added function of removing sludge and debris from dry-dock settling pens and basins to a depth of 100 feet (31 m), through use of the extended vacuum tube and two 25-foot (7600 mm) long wire-reinforced rubber hoses.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification
b. Type and size required (see 1.2)
c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2)
d. When first article is required for inspection and approval (see 3.2 and 6.5)
e. When alarm is required (see 3.12.4)
f. When extendable hydraulic boom is required (see 3.13)
g. When additional extension tubes to provide 100-foot (31 m) length are required (see 3.14)
h. When flanged "Y" connection, and two each, 25-foot (7600 mm) hoses are required (see 3.14)
i. Color of finish color coat (see 3.26)
j. When preservation and packing is in accordance with MIL-V-62038 (see 5.1)

6.3 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (DD Form 1423) incorporated into the contract. When the provisions of DoD Federal Acquisition Regulations (FAR) Supplement, Part 27, Sub-Part 27.475-1 are invoked and the DD Form 1423 is not used, the data should be delivered by the contractor in accordance with the contract or purchase order requirements.

6.4 Subject term (key word) listing.

Pump
Sewer
Water tank

6.5 First article. When a first article inspection is required, the item will be tested and should be a first production item, or it may be a standard production item from the contractor’s current inventory as specified in 4.2.1. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.6 Supersession data. This specification replaces military specification MIL-T-29197A(YD), dated 15 August 1988.

6.7 Classification cross reference. Cross reference of classification changes between this specification (see 1.2) and the superseded military specification, MIL-T-29197A(YD), is as follows:

Type I - For 25-foot (7600 mm) depth operation.

Size 1 - With a minimum 9 cubic yard (6.9 m3) payload capacity body and a minimum length of 112 inches (2840 mm).

Size 2 - With a minimum 14 cubic yard (10.7 m3) payload capacity body and a minimum length of 144 inches (3660 mm).

Type II - For up to 100-foot (31 m) depth operation.

Size 2 - With a minimum 14 cubic yard (10.7 m3) payload capacity body and a minimum length of 144 inches (3600 mm).

MILITARY INTERESTS:
ACTIVITIES:

Custodian

Navy - YD

CIVIL AGENCY COORDINATING

GSA - FSS

PREPARING ACTIVITY:

Navy - YD

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