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OO-S-2796  
February 22, 1993  
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SUPERSEDING  
MIL-C-29195A(YD)  
23 October 1987

FEDERAL SPECIFICATION

SWEEPER, VACUUM OR REGENERATIVE, AIRFIELD RUNWAY, SELF-PROPELLED, DED

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

1. SCOPE

1.1 Scope. This specification covers multi-purpose self propelled, vacuum or regenerative (recirculating) air, high speed airfield runway sweepers utilizing a dust/refuse separator, with a debris hopper's effective capacity of not less than 4.6 cubic meters mounted on a diesel engine driven (DED) truck with not less than 12,245 kilograms gross vehicle weight rating (GVWR).

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 Standards

- FED-STD-123 - Marking for Shipment (Civil Agencies)
- FED-STD-297 - Rustproofing of Commercial (Nontactical) Vehicles
- FED-STD-595 - Colors Used in Government Procurement

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\*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. \*  
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#### Military Specifications

MIL-V-62038 - Vehicle, Wheeled, Preparation for Shipment and Storage

#### Military Standards

MIL-STD-129 - Marking for Shipment and Storage  
MIL-STD-209 - Slings and Tiedown Provisions for Lifting and Tying  
Down Military Equipment  
MIL-STD-1223 - Nontactical Wheeled Vehicles Treatment, Painting,  
Identification Marking, and Data Plate Standards

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

Code of Federal Regulations (CFR):

Department of Transportation (DoT):

49 CFR 325 - Compliance with Interstate Motor Carrier Noise Emission Standards  
49 CFR 393 - Parts and Accessories Necessary for Safe Operation  
49 CFR 570 - Vehicle in Use Inspection Standards  
49 CFR 571 - Federal Motor Vehicle Safety Standards

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

Code of Federal Regulations (CFR):

Environmental Protection Agency (EPA):

40 CFR 86 - Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines: Certification and Test Procedure  
40 CFR 202 - Motor Carriers Engaged in Interstate Commerce  
40 CFR 205 - Transportation Equipment Noise Emission Controls

(Application for copies should be addressed to the Public Affairs Office, Environmental Protection Agency, Rockville, MD 20852; or CFR, Title 40 should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

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

ASTM:

ASTM E380 - Practice for Use of the International System of Units (SI).

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(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

Society of Automotive Engineers, Inc. (SAE):

SAE J534 - Lubrication Fittings  
SAE J551 - Performance Levels and Methods of Measurement of  
Electromagnetic Radiation from Vehicles and Devices  
(20-1000 MHz)

(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, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Description. The sweeper shall consist essentially of a diesel fuel powered truck, complete with chassis mounted equipment such as hopper body, water spray system, debris pick-up assembly, and when applicable, includes an auxiliary diesel engine, gutter broom(s), side blast nozzle(s), and truck mounted permanent magnet assembly.

3.2 First article. When specified in the contract or purchase order (see 6.2), a sample shall be subjected to first article inspection (see 4.2.1 and 6.4).

3.3 Standard commercial product. The sweeper 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 equipment 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

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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.

3.4.1 Abrasion resistant material. Surfaces that are subject to a high abrasion factor shall be constructed of abrasion resistant material or lined with replaceable abrasion resistant material. These shall include, but not limited to, blower housing, blower fans, ducts, hoses, pick-up hood, deflector plates, dust/refuse separator, and hopper.

3.5 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.

3.6 Design and construction.

3.6.1 Ambient temperatures. The sweeper, including all components, accessories, and auxiliaries, shall be capable of being stored, start and operate satisfactorily at ambient temperature from as low as -29 degrees Centigrade (oC) to as high as +49oC.

3.6.2 Vehicle and components. The vehicle, including all required vehicle components and accessories, shall comply to the provisions of EPA 40 CFR 86, EPA 40 CFR 202, EPA 40 CFR 205, DoT 49 CFR 325, DoT 49 CFR 393, DoT 49 CFR 570, and DoT 49 CFR 571, as applicable, in effect on date of vehicle manufacture.

3.6.2.1 Cab. The cab shall be of the manufacturer's standard cab, metal construction, fully enclosed, and insulated. When specified (see 6.2), only a cab-over type cab shall be furnished. Seat(s) shall be upholstered and furnished with seat belt(s). Operator's seat shall be adjustable for height, forward, and rearward position. The window controls shall be manual operated. Windshield and windows shall be tinted safety glass. The cab shall be designed to provide easy access to the cab compartment. All exterior step surfaces shall be non-skid or grated type. The cab defrosting and heating shall be thermostat controlled with multispeed fan, capable of maintaining the cab temperature to not less than +12oC and the defroster shall keep at least 75 percent of the windshield surface clear at -29oC ambient temperature. When specified (see 6.2), a manufacturer's standard cab air-conditioning unit with driver comfort controls shall be furnished.

3.6.2.2 Engine(s). The propulsion (truck) engine shall be a diesel fuel powered engine. When the unit furnished is of the two-engine type, the auxiliary engine shall also be diesel fuel powered. The auxiliary engine and associated components shall be mounted in the truck chassis. The auxiliary engine shall be protected from severe weather with removable metal housing. The housing doors and latches shall be designed to allow easy access to the engine.

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3.6.2.3 Transmission. The chassis power train shall include a hydrostatic drive system or an automatic transmission with not less than four forward speeds.

3.6.2.4 Axles. Axles shall be designed for four wheel, single rear tire or dual rear tire mounting.

3.6.2.5 Steering. The vehicle shall have hydraulic assisted power steering. When a full cab is furnished, a dual steering wheel and controls for left hand or right hand operation of the sweeper shall be furnished. Failure of the hydraulic system shall not prevent manual steering of the vehicle.

3.6.2.6 Brakes. The service brakes shall be of the full air or air over hydraulic brake system.

3.6.2.7 Hydraulic system. The hydraulic system shall be furnished complete with all necessary safety devices, alarms, and controls for a safe operation of the driven hydraulic equipment. No high pressure hydraulic flexible hoses shall be used inside the truck cab. Threaded pipe fittings shall not be used in the hydraulic lines.

3.6.2.8 Operating controls. All controls required to operate the vehicle and sweeping components shall be located inside the cab and within reach from the driver's normal driving position, except those that are specified herein. Controls shall be properly identified by a securely attached nameplate, using universal symbols or English language, or both. All controls, including the applicable instruments, shall be illuminated with non-glare lighting to be really visible for night operation.

3.6.2.9 Electrical system. The electrical system shall operate on a 12-volt negative ground. The charging alternator shall have no less than 80 ampere rating. Wiring harness shall be heavy duty, weather-proof, and identifiable by means of color codes, numbers, or letters.

3.6.2.10 Starting system. The truck engine and auxiliary engine (when furnished) starting system shall operate from 12-volt negative ground battery(s). Battery(s) shall be of the maintenance free type with sufficient cold cranking amperes for the designed ambient temperature conditions. Heat sensing ether injection system or glow plugs shall be provided for cold weather starting.

3.6.2.11 Wheels and tires. Wheels shall be disc type. All tires shall be of the same size and rating. Tires shall be wide-base tubeless steel belted radial with traction treads. Wheels and tires shall conform to TRA recommendation. When specified (see 6.2), a fully inflated spare tire and spare tire carrier shall be furnished.

3.6.2.12 Outside rear view mirrors. Outside rear view mirrors shall be conveniently located from each side of the driver's location. The mirrors shall be of the combination type having flat and convex areas enclosed in a common housing. The flat portion shall have not less than 322 square centimeters and the convex portion shall have not less than 161 square centimeters of reflective surface.

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3.6.2.13 Panel instruments. Panel instruments shall be visible from the driver's location, and as a minimum, shall include the following:

- a. Voltmeter or ammeter.
- b. Lube oil pressure gauge.
- c. Engine coolant temperature gauge.
- d. Tachometer.
- e. Hour meter (9999 reading).
- f. Keyed ignition/starting switch.
- g. Fuel tank(s) level indicator.
- h. Speedometer with odometer.
- i. Low air pressure warning light and audible alarm.
- j. Low dust spray water reservoir level warning light.
- k. Hopper full load indicator.
- l. Hydraulic oil filter restriction indicator.

When an auxiliary engine is furnished, it shall include the instruments listed in items (b) through (f) above. When a separate fuel tank is provided, include a fuel tank fuel gauge.

3.6.2.14 Accessories. Accessories shall include, but not limited to, the following:

- a. Splash guards and stone throw protection.
- b. Tow hooks for the purpose of towing the vehicle.
- c. Two spot lights located on each side of cab and controlled at the driver side.
- d. One amber rotating warning light, located on top of the hopper body to be easily visible to traffic coming from all directions.
- e. Fuel tank(s) capacity adequate for over 8 hours operation.
- f. Fill hose (38 millimeters nominal diameter and approximate 7.6 meters long) with 63.5 millimeters female brass fitting to match with standard 63.5 millimeters male fire hydrant connection, complete with truck mounted rack and standard hydrant wrench.

### 3.6.3 Sweeper assembly.

3.6.3.1 Hopper body. Hopper body shall be of steel construction. The rear dump door shall lock/unlock and close/open mechanically or hydraulically. When specified (see 6.2), an external dump control lever shall be furnished at the rear of the hopper to allow the operator to observe the unloading operation. Debris shall be emptied through the rear door and onto the ground. An inspection door shall be furnished in the hopper body. A single flood light shall be installed at the rear of the dump door.

3.6.3.2 Pick-up hood assembly. The pick-up hood assembly shall provide no less than 2.13 meters of sweeping width. When the pick-up hood assembly requires an external support(s) from the pavement, the support(s) shall be either a rubber tired caster or wheels.

3.6.3.3 Gutter broom(s). The sweeper shall be furnished with a single right hand, single left hand, or dual gutter brooms (one located on each side of the vehicle) as specified (see 6.2). Broom(s) shall be of the vertical digger type, with diameter adequate to provide no less than 20 percent increase in sweeping

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width (each). Broom(s) shall be with polypropylene bristles, independent hydraulic drive and controls, and self adjusting to meet varying pressures when in contact with uneven paved surfaces or street curbs. Broom(s) shall be furnished with adjustable flood light. The gutter broom(s) and the debris pick-up system shall be capable of operating independently or simultaneously.

3.6.3.4 Dirt agitator. The sweeper shall be provided with air or broom dirt agitator to loosen any dirt or debris adhered to the pavement. When dirt agitation incorporates the use of a roller broom, the broom shall be approximately of the same length as the pick-up hood length, and with polypropylene filament.

3.6.3.5 Dust suppression system. A constant pressure dust suppression system shall be of such design that dust is prevented from becoming airborne during the sweeping operation. The water reservoir shall be manufactured from corrosion resistant materials with capacity not less than 760 liters and shall include a low level switch to shut down the pump at a preset reservoir water level.

3.6.3.6 Hand-held suction hose. When specified (see 6.2), a hand-held suction hose assembly shall be furnished. The hose shall be not less than 150 millimeters in diameter and of sufficient length to allow pickup of refuse that is located not less than 3.5 meters from the rear of the vehicle and shall be hydraulically or mechanically assisted for ease of operation. The extension nozzle shall be of aluminum construction furnished with a handle. The vehicle shall be provided with means to conveniently store the hose.

3.6.3.7 Dust and refuse separator. The separation of dust and refuse from the air stream shall be accomplished through a separator and screen(s). Cleanout door(s) shall be provided to allow internal inspection of the separator.

3.6.3.8 Air side blast. The sweeper shall be furnished with a single left hand, single right hand, or dual (one located on each side of the vehicle) adjustable side blast nozzle(s) as specified (see 6.2). Either side of dual blast nozzle shall be capable of being operated independently, or both nozzles operating at the same time.

3.6.3.9 Permanent magnet. When specified (see 6.2), a permanent magnet assembly, capable of picking (magnetize) and discharging (demagnetize) ferrous metal objects shall be furnished. The attracted objects shall then be capable of being discharged to a collection pan. The magnet shall be not less than 2.13 meters sweeping length and of manufacturer's standard width. The magnet's effective operating height shall be not less than 50 millimeters above ground. The ground clearance, while in fully raised position, shall be not less than 130 millimeters.

### 3.7 Performance.

3.7.1. Mobility. With the sweeper loaded to the required GVW and with the sweeper components in the retracted or transport position, the vehicle shall be capable of performing the following:

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- a. Speed. When driven on a paved concrete or asphalt public highway, the vehicle shall be able to maintain speed of not less than 88 kilometers per hour (kph) and not less than 55 kph on roads with 6 percent grade.
- b. Turning radius. The sweeper's turning radius shall be not more than 8.5 meters (inside wall to turning center distance) to the left or right of the vehicle.

3.7.2 Sweeping. When tested in accordance with 4.4.6, the sweeper, traveling at 25 kph, shall in one pass, accomplish the following:

- a. Pick up and retain not less than 94 percent by weight, a mixture of 16 kilograms of commercial sand and 16 kilograms of 9 millimeters aggregate pea gravel, spread evenly at 2.67 kilograms per square meter on a 2 meters by 6 meters test area.
- b. Pick up and retain not less than 95 pieces of debris in table I, placed on a grid pattern 450 millimeters by 300 millimeters apart.

TABLE I. Miscellaneous debris.

* ITEM *	DESCRIPTION	* QTY *
* 1 *	* Cans, aluminum, soft drinks, 0.355 liter capacity (empty)	* 10 *
* 2 *	* Cans, aluminum, soft drinks, 0.355 liter capacity compressed * longitudinally to 15 millimeters thick	* 10 *
* 3 *	* Cups, plastic, 0.236 liter capacity	* 10 *
* 4 *	* Cups, styrofoam, 0.236 liter capacity	* 10 *
* 5 *	* Cylinder, solid steel, 25 millimeters by 75 millimeters long	* 10 *
* 6 *	* Nails, steel, box 8-D by 63 millimeters long	* 10 *
* 7 *	* Bolts, steel, 12.7 millimeter by 50 millimeters long	* 10 *
* 8 *	* Washers, flat, steel, standard 12.7 millimeters inside diameter	* 10 *
* 9 *	* Bearings, ball, steel, 12.7 millimeters diameter	* 10 *
* 10 *	* Stones, 50 millimeters nominal size	* 10 *
		TOTAL = 100

3.7.3 Side blast sweeping. When tested in accordance with 4.4.7, the side blast shall be capable of blowing away all the materials in 3.7.2 above, with the exception of items 1 through 4 which shall be excluded from test, to a distance of not less than 18 meters away from the nozzle.

3.7.4 Interior noise level. With the engine(s) and sweeper components in running or operating condition, the noise level inside the cab shall not exceed 84 dB(A).

3.8 Safety. With the exception of rotating brooms, all rotating or moving parts and parts subject to high operating temperature, shall be insulated, enclosed or guarded. Each sweeper unit shall be furnished with backup lights and audible alarm, both activated when transmission is shifted into reverse



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gear. When shifted into reverse gear, all sweeping components shall automatically retract from operating position to not less than 125 millimeters clear above ground.

3.9 Air pollution control. When specified (see 6.2), the sweeper shall comply to the State of California's air pollution control regulation.

3.10 Rustproofing. The vehicle shall be rustproofed in accordance with FED-STD-297.

3.11 Tools. Each vehicle shall be furnished with tools required for exchanging mounted tire assembly with the spare assembly and shall include at least a hydraulic jack, jack handle, and wheel nut wrench. The jack shall be of such closed height to permit its location under the axle, or other satisfactory lift point at any wheel with a flat tire. The jack, without blocking, shall be capable of raising any wheel of the fully loaded vehicle to a height adequate to permit removal and replacement of wheel and tire assembly.

3.12 Lubrication. Unless otherwise specified (see 6.2), means for lubrication shall be in accordance with the manufacturer's standard practice. The lubricating points shall be easily visible and accessible. Hydraulic lubrication fittings shall be in accordance with SAE J534. Where use of a high-pressure lubricating gun with 70-kilogram per square centimeter or higher, will damage grease seals or other parts, a suitable warning shall be affixed to the equipment in a conspicuous location.

3.13 Servicing and adjusting. Prior to acceptance of the sweeper by the Government, the contractor shall service and adjust the equipment 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.
- c. Proper functioning of all lighting and electrical systems.
- d. Wheel alignment.
- e. Adjustment of engine.
- f. Complete lubrication with grades of lubricants recommended for ambient temperature at the delivery point.
- g. Cooling system filled to capacity with recommended solution of water and antifreeze (ethylene glycol).

3.14 Lifting and tiedown attachments. When specified (see 6.2), the sweeper shall be equipped with lifting and tiedown attachments. Lifting and tiedown attachments shall conform to type II or type III of MIL-STD-209. A nonferrous transportation plate shall be provided and mechanically attached to the sweeper. Transportation plates shall be inscribed with a diagram showing the lifting attachments and lifting slings, the capacity of each attachment, and the required length and size of each sling cable. A silhouette of the item furnished showing the center of gravity shall be provided on the transportation plate. Tiedown attachments may be identified by stenciling or other suitable marking. Tiedown marking shall clearly indicate that the attachments are intended for the tiedown of the sweeper on the carrier when shipped.

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3.15 Identification marking. Identification shall be permanently and legibly marked directly on the sweeper or on a corrosion-resisting metal plate securely attached to the sweeper at the source of manufacture. Identification shall include the manufacturer's model and serial number, name and trademark to be readily identifiable to the manufacturer.

3.16 Identification plate. An identification plate will be furnished by the contracting officer for each sweeper. The contractor shall stamp all necessary data in the blank spaces of the plate provided for that purpose, and securely affix a plate to each sweeper in a conspicuous place with nonferrous screws, rivets, or bolts not less than 1/8 inch in diameter. The applicable nomenclature contained in the contract item description shall be placed in the top blank.

3.17 Vehicle marking. Vehicle marking shall conform to MIL-STD-1223, applicable to the departmental service or agency as specified (see 6.2).

3.18 Instruction plates. The sweeper shall be equipped with instruction plates or decals suitably located, describing any special or important procedures to be followed in operating and servicing the equipment. Plates or decals shall be of a material which will last and remain legible for the life of the equipment.

3.19 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, conforming to FED-STD-595, shall be as specified (see 6.2). Surfaces to be painted shall be cleaned and dried to ensure that they are free from contaminants such as oil, grease, welding slag and spatter, loose mill scale, water, dirt, corrosion product, or any other contaminating substances. As soon as practicable after cleaning, and before any corrosion product or other contamination can result, the surfaces shall be prepared or treated to ensure the adhesion of the coating system. The painting shall consist of at least one coat of primer and one finish coat of acrylic-based enamel. The primer shall be applied to a clean, dry surface as soon as practicable after cleaning and treating. Painting shall be with manufacturer's current materials according to manufacturer's current processes, and the total dry film thickness shall be not less than 0.0635 millimeter over the entire surface. The paint shall be free from runs, sags, orange peel, or other defects. The end item, allied equipment, and attachments shall be the same color.

3.20 Tool box. When specified (see 6.2), the vehicle shall be provided with a lockable, metallic tool box. The tool box shall be weather tight. Tool box size shall be adequate to store all the necessary tools as required herein.

3.21 Workmanship.

3.21.1 Metal fabrication. The metal 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 metal 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.

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3.21.2 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.

3.21.3 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.

3.21.4 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.

3.21.5 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.

3.22 Measurement systems. Unless otherwise specified, (see 6.2), the manufacturer's standard commercial practice of measurement system shall be used in the design and construction of the equipment. In this specification, all measurements, dimensions, sizes, and capacities are given in the International System of Units (metric). These measurements may be converted to U.S. Customary Systems of Units (inch-pound) through the use of the conversion factors and methods specified in ASTM E380.

#### 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 specification 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 inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification 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.

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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 one sweeper when a first article is required (see 3.2 and 6.4). This inspection shall include the examination of 4.3 and the tests of 4.4. 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.

4.2.1.1 Certificate of compliance. The contractor shall submit for the approval of the contracting officer or his authorized representative a certificate of compliance to the first article test requirements cited in 4.4.1 through 4.4.4. The Government reserves the right to examine and require a retest to determine the validity of the certification.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.3, the test of 4.4.10, and the preparation for delivery inspection of 4.5.

4.3 Examination. Each sweeper shall be examined for compliance with the requirements in section 3 of this specification. 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. Failure to pass any of the following tests shall constitute cause for rejection.

4.4.1 Brake test. The service, emergency, or parking brakes shall be tested in accordance with the applicable sections of DoT 49 CFR 570 and DoT 49 CFR 571 (see 4.2.1.1).

4.4.2 Air pollution control test. The vehicle shall be tested in accordance with the applicable sections of EPA 40 CFR 86, and when applicable, to California's air pollution control regulations (see 4.2.1.1).

4.4.3 Exterior noise emission test. The sweeper shall be tested in accordance with applicable sections of EPA 40 CFR 202, EPA 40 CFR 205, and DoT 49 CFR 325 (see 4.2.1.1).

4.4.4 Cab interior noise emission test. The vehicle shall be tested in accordance with the applicable sections of DoT 49 CFR 393, with all sweeping equipment operating at maximum rated speed. The noise level shall not exceed 84 dB(A).

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4.4.5 Mobility test. Fill the hopper to full capacity with sand or gravel. The loaded sweeper shall then be driven on a public highway for 80 kilometers at 80 kph and 55 kph on roads with no less than 6 percent grade. After completing the road test, continue with the turning radius test. Turning radius shall be not more than 8.5 meters.

4.4.6 Sweeping test. On a 2 meters by 6 meters paved asphalt or concrete test site, spread evenly the mixture of 16 kilograms sand and 16 kilograms pea gravel at a density of 2.67 kilograms per square meter. Using the width centerline as the reference point, create a grid pattern of 5 rows (450 millimeters apart) along the width and 20 rows (300 millimeters apart) along the length of the course. Then place each debris listed in table I on top of the sand and gravel mix by placing 5 pieces of item 1 in row No. 1, the other 5 pieces of item 1 in row No. 11; 5 pieces of item 2 in row No. 2, the other 5 pieces in row No. 12; all other items to follow the same sequence. Drive through the middle of the course with the vehicle traveling at 25 kph. The sweeper shall pick up 30 kilograms (94 percent by weight) of sand and gravel mix and 95 pieces of miscellaneous debris.

4.4.7 Side blast sweeping test. Using the same test material and same grid pattern as in 4.4.6, except the miscellaneous debris identified as items 1 through 4 in table I which are to be excluded from this test, drive the sweeper in such manner that the side blast nozzle is positioned not more than 300 millimeters away from the edge of the test grid. The vehicle speed shall be at 25 kph. All test material shall be blown away at a distance not less than 18 meters from the nozzle.

4.4.8 Hand-held suction hose pick-up test. Place all the debris listed in table I, in the same grid pattern as above. With the suction hose nozzle positioned 150 millimeters from the ground, move the nozzle at 50 centimeters per second directly on top of the debris. All debris shall be picked up instantaneously as the nozzle passes on top of each item.

4.4.9 Magnet pick-up test. Place 28 pieces of 12.7 millimeters diameter by 75 millimeters long carbon steel bolts in the same test area and grid pattern as above, except the spacing shall be in such manner that no two objects are closer than 760 millimeters from each other. (Example: 3 bolts in row No. 1, then 2 bolts in row No. 3, then 3 bolts in row No. 5, and so on.) With the magnet positioned at 50 millimeters above the pavement, drive through the middle of the course at 25 kph. The magnet shall pick up all objects. Repeat test with the magnet positioned at 100 millimeters above the pavement. All objects shall be picked up in one pass.

4.4.10 Operational test. This test shall be conducted for not less than one hour. Drive the sweeper and operate each component repeatedly to demonstrate satisfactory operation of the equipment, but not limited to, ignition, brakes, electrical lighting, debris pick-up system, auxiliary engine, and associated hydraulic, pneumatic, and electrical control system.

4.5 Preparation for delivery inspection. The sweeper shall be inspected to verify conformance to the requirements of section 5.

## 5. PREPARATION FOR DELIVERY

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5.1 Preservation, packaging, and packing. Preservation, packaging, and packing shall be in accordance with the requirements of MIL-V-62038 with the level of preservation, packaging and the level of packing as specified (see 6.2).

## 5.2 Marking.

5.2.1 Military agencies. Shipments to military agencies shall be marked in accordance with MIL-STD-129.

5.2.2 Civil agencies. Shipments to civil agencies shall be marked in accordance with FED-STD-123.

## 6. NOTES

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

6.1 Intended use. The runway sweepers are intended for cleaning runways, taxiways, ramps, parking areas, and other paved areas inside an airport. When a side blast nozzle is furnished, it will be used to clear the runway of any accumulation of sand, gravel, debris, snow, and water (puddles), and to clear the landing lights of snow and debris. When a hand-held suction hose is furnished, it will be used to clear catch basins, leaf pick-up, and clean other inaccessible areas.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, specific issue of individual documents referenced (see 2.1.1 and 2.2).
- c. When first article is required for inspection and approval (see 3.2).
- d. When only a cab-over type cab shall be furnished (3.6.2.1).
- e. When a cab air-conditioning unit is to be furnished (see 3.6.2.1).
- f. When a spare wheel and tire is required (see 3.6.2.11).
- g. When an external dump control is required (see 3.6.3.1).
- h. When a right hand, left hand or dual gutter broom is required (see 3.6.3.3).
- i. When a hand-held suction hose is required (see 3.6.3.6).
- j. When a single left hand, single right hand, or dual side blast nozzle(s) shall be furnished (see 3.6.3.8).
- k. When a permanent magnet shall be furnished (3.6.3.9).
- l. When conformance to California's air pollution control regulation is required (see 3.9).
- m. When lubrication is other than as specified (see 3.12).
- n. When lifting and tiedown attachment is required (see 3.14).
- o. Departmental service or agency to which vehicle marking is applicable (see 3.17)
- p. Color of finish coat required (see 3.19).
- q. When tool box is required (see 3.20).

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- r. When the measurement system of units shall be manufacturers' standard practice, metric only, or inch-pound only (see 3.22).
- s. Level of preservation and level of packing required (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 (CDRL), incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27.475-1 (DD Form 1423) 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 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, approval of the first article, and the approval of the certificate of compliance.

#### 6.5 Definitions.

- a. GVWR. GVWR means the total weight of the vehicle, including the weight of driver (approximately 80 kilograms), auxiliary engine, accessories, fuel and hydraulic tank full, weight of required attachments, and the hopper body filled to capacity with sand or gravel.
- b. Effective capacity. Effective capacity refers to the hopper volume that will hold all the collected dust and debris, not the total volume of the hopper.

6.6 Supersession data. This specification replaces Military Specification MIL-C-29195A(YD) dated 23 October 1987.

#### 6.7 Subject term (keyword) listing.

Broom  
Diesel engine driven  
Gutter broom  
Hopper  
Magnet  
Side blast

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CIVIL AGENCY COORDINATING ACTIVITY:

GSA-FSS

PREPARING ACTIVITY:

Navy - YD

(Project 3825-0217)

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Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.