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FEDERAL SPECIFICATION

SWEEPERS, ROTARY, SELF-PROPELLED, VACUUMIZED; 1.75 CUBIC YARD MINIMUM HOPPER CAPACITY

This specification was approved by the Assistant Administrator, Office of Federal Supply and Services, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers gasoline or diesel-engine powered, self-propelled, rider operated, industrial type sweepers equipped with a vacuum type dust control system and hopper capacity to collect and transport sweepings to a disposal site.

1.2 Classification.

1.2.1 Types. Sweepers shall be of the following types as specified (see 6.2):

Type I - Equipped with right side brushes
Type II - Equipped with both right and left side brushes

1.2.2 Sizes and styles. The size and style of the sweeper shall be adequate to accomplish all requirements as outlined in this specification.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications

A-A-884	- Tape, Pressure-Sensitive Adhesive, Box Closure
A-A-1586	- Tape, Pressure-Sensitive, Adhesive (Waterproof)
A-A-1830	- Tape, Pressure-Sensitive Adhesive, Box Closure
O-E-760	- Ethyl Alcohol, (Ethanol); Denatured Alcohol; and Proprietary Solvent
W-B-131	- Battery, Storage: Vehicular, Ignition, Lighting, and Starting
SS-G-659	- Graphite, Dry Lubricating
TT-P-664	- Primer Coating, Synthetic, Rust-Inhibiting, Lacquer-Resisting

VV-B-680 - Brake Fluid, Automotive
VV-F-800 - Fuel oil, Diesel
VV-G-1690 - Gasoline Automotive, Leaded or Unleaded
PPP-B-601 - Boxes, Wood, Cleated plywood

PPP-B-621 - Boxes, Wood, Nailed and Lock Corner
PPP-B-636 - Boxes, Shipping, Fiberboard
PPP-B-1055 - Barrier Material, Waterproofed, Flexible
PPP-P-40 - Packaging and Packing of Hand Tools

Federal Standards

FED-STD-123 - Marking for Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas city, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(Federal Government activities may obtain copies of Federal standardization documents, and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specifications

MIL-P-116 - Preservation, Methods of
MIL-B-121 - Barrier Material, Greaseproofed, Waterproofed, Flexible
MIL-V-173 - Varnish, Moisture-and-Fungus-Resistant (for the Treatment of Communications, Electronic, and Associated Equipment)
MIL-R-196 - Repair Parts, Accessories, and Kits, Mechanical, Packaging of
MIL-L-2104 - Lubricating Oil, Internal Combustion Engine, Tactical Service
MIL-L-2105 - Lubricating Oil, Gear, Multipurpose
MIL-C-5501 - Cap and Plug, Protective, Dust and Moisture Seal
MIL-H-5606 - Hydraulic Fluid, Petroleum Base; Aircraft, Missile, and Ordnance
MIL-E-10062 - Engines: Preparation for Shipment and Storage of
MIL-C-21567 - Compound, Silicone, Soft Film
MIL-T-22085 - Tape, Adhesive, Preservation and Sealing

MIL-P-46093 - Primer Coating, Synthetic (for Brake Drums)
MIL B-46176 - Brake Fluid, Silicone, Automotive All Weatherproof, Operational and Preservative

Military Standards

MIL STD-129 - Marking for Shipment and Storage
MIL-STD-209 - Slinging and Tiedown Provisions for Lifting and Tying Down Military Equipment
MIL-STD-461 - Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference
MIL-STD-471 - Maintainability Verification Demonstration Evaluation
MIL STD-1186 - Cushioning, Anchoring, Bracing, Blocking, and Water-proofing; with Appropriate Test Methods
MIL STD-1400 - Engines, Gasoline, and Diesel, Methods of Test
MS51317 - Light, Warning, Vehicular, Rotating, DC
MS53063 - Indicator, Air Cleaner, Intake Restrictions, Mechanical Type

(Copies of military specifications and standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.1.1 Federal Regulations

Environmental Protection Agency (EPA)

Code of Federal Regulations, Title 45, Part 1201 - New Motor Vehicles and Engines

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

"(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)"

2.1.2 Other Government documents. The following other Government documents form a part of this specification to the extent specified herein.

Department of Transportation (DoT)

Motor Carrier Safety Regulations

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

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

Society of Automotive Engineers, INC. (SAE)

J534 - Lubrication Fittings, SAE Standard DoD Adopted
J537 - Storage Batteries, SAE Standard
J551 - Performance Levels and Methods of Measurement of Electro-magnetic Radiation from Vehicles and Devices (20-1000 MHz), SAE Standard
J555 - Truck, Truck-Tractor, Trailer, and Motor Coach Wiring
J588 - Turn Signal Lamps
J589 - Turn Signal Switch
J590 - Turn Signal Flashers
J594 - Reflex Reflectors

(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., 3200 West Market Street, Akron, OH 44313.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Standard commercial product. The street 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 street sweeper 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.

3.2 First article. When specified (see 6.2), the contractor shall furnish a complete sweeper for first article inspection and approval (see 4.2.1 and 6.3).

3.3 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. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

3.4 Reliability. Sweepers shall be designed and constructed as specified herein and shall successfully complete the test in 4.4.12 with no failures preventing satisfactory performance.

3.5 Construction. The equipment shall be designed and constructed to facilitate field maintenance. All adjustments and replaceable accessories shall be readily accessible. Conditions which can be hazardous to personnel or deleterious to equipment shall not be permitted.

3.6 Standard sweeper, components, and accessories. Except as specified in 3.6.1 through 3.6.7, the sweeper, components, and accessories shall be standard or optional items which meet or exceed the requirements of this specification.

3.6.1 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). Surfaces to be painted shall be cleaned and dried to insure 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 insure the adhesion of the coating system. The painting shall consist of at least one coat of primer and one finish coat. 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 pro- cesses and the total dry film thickness shall be not less than 2.5 mils over the entire surface. The paint shall be free from runs, sags, orange peel, or other defects.

3.6.2 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 manufacturer. Identification shall include the manufacturer’s model and serial number, name and trademark to be readily identifiable to the manufacturer.

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

3.6.4 Fungus resistance. When specified (see 6.2), electrical components and circuit elements, including terminal and circuit connections, shall be coated with varnish conforming to MIL-V-173, except that:

a. Components and elements inherently inert to fungi or in hermetically sealed enclosures need not be coated.
b. Current-carrying contact surfaces, such as relay contact points, shall not be coated.

3.6.5 Electromagnetic interference characteristics. When specified (see 6.2), the sweepers shall conform to the electromagnetic interference control requirements and test limits of SAE J551, or MIL-STD-461 and tests of section 4, for class IIIC equipment.

3.6.6 Warning light. When specified (see 6.2), a warning light conforming to MS51317, of the same voltage rating as the engine electrical system, shall be provided. When a cab is furnished, the light shall be mounted on the roof of the cab. When no cab is furnished, the light shall be mounted so as to be visible from all directions. The light assembly shall be mounted for easy removal. Color of the light shall be as specified (see 6.2).

3.6.7 Lifting and tiedown attachments. When specified (see 6.2), the sweepers shall be equipped with lifting and tiedown attachments. Lifting and tiedown attachments shall conform to MIL-STD-209, type III. A nonferrous transportation plate shall be provided and mechanically attached to the equipment. Tiedown markings shall be identified by stenciling or other suitable marking to clearly indicate that the attachments are intended for tying down of the sweeper on a carrier when shipped (see 4.4.14).

3.7 Maintainability. Sweepers shall be so designed and constructed that normal adjustments, repairs, and overhaul can be readily accomplished by means of general purpose tools, with a minimum removal of equipment components. Covers or plates that must be removed for component adjustment or parts removal shall be equipped with substantial, quick-disconnect fasteners. Sweeper shall successfully complete the test specified in 4.4.13.

3.8 Capacities and operational characteristics. Sweepers shall conform to the requirements of table I.

TABLE I. Dimensions and capacities.

Length of main brush, not less than (inches)	48
Diameter of main brush, not less than (inches)	28
Diameter of side brush, not less than (inches)	30
Sweeping width (swath) style 1, not less than (inches)	68
Sweeping width, style 2, not less than (inches)	88
Rated hopper capacity, not less than (cubic yard)	1.75

3.9 Performance. Sweepers shall be capable of operating in temperatures ranging from -20 degrees Fahrenheit (deg F) to +125 deg F. Sweepers shall be capable of wet weather operation. Sweepers shall effectively sweep and retain dust, dirt, and debris while operated at speeds up to 12 miles per hour (mph) along runways, roads, and other hard surface areas. Sweeper shall pick up particles

ranging from powder dust to objects of 2-inch dimension and shall clean wet and dry debris from curbs, gutters, and ramps. Sweeper shall show no evidence of deficient operation, deformation, fracture, or other failure of any part during testing. Sweeper shall be capable of passing over metal obstructions, extending not less than 2 inches above the pavement, while sweeping at not less than the maximum sweeping speed specified herein without damage to any part of the sweeper. Sweeper shall be capable of ascending and sweeping a 20 percent grade, and pass the tests of 4.4.

3.9.1 Sweeping speed. Sweeper shall have a maximum forward sweeping speed of not less than 12 mph and a minimum forward sweeping speed of not more than 2-1/2 mph.

3.9.2 Travel speed. Sweeper shall have a safe traveling speed of not less than 15 mph.

3.9.3 Turning radius. Sweeper shall have a minimum outside turning radius of not more than 150 inches.

3.9.4 Sand pickup. When tested as specified in 4.4.2, the sweeper shall, in a one-way pass, pick up and retain not less than 95 percent of the sand while traveling at the manufacturer's recommended sweeping speed, but not less than 2-1/2 mph.

3.9.5 Miscellaneous pickup. When tested as specified in 4.4.3, the sweeper shall, in a one-way pass, pick up and retain not less than 90 percent of the specified items while traveling at not less than 5 mph. There shall be not more than two items of the same kind in any group of items not picked up. When specified (see 6.2), the pickup capability shall be 98 percent.

3.10 Safety.

3.10.1 Safety design. All rotating or reciprocating parts and all parts subject to high operational temperature, hazardous to the safety of operating personnel, shall be insulated, enclosed, or guarded. Access steps and operator's station shall be provided with nonskid surfaces. Handholds shall be provided as needed for normal operation.

3.10.2 Safe operating conditions. The design and controls of the sweeper shall provide safe operating conditions for protection of the operator, the sweeper, and materials or equipment near the path of the sweeper travel during the forward or reverse motion, turning, dumping, or any other function performed by the operator. All hand-operated controls, except steering, which may require attention during sweeper travel, shall be conveniently located for operation by one hand or the other, but not by both, in order to provide uninterrupted control of the steering by one hand. The operator's compartment shall be so situated as to provide the operator with clear and unobstructed forward, rear, and side vision.

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

3.12 Components.

3.12.1 Frame. The frame shall be a structural unit of adequate strength and rigidity to support the sweeper assembly and to resist distortion, sagging, flexing, or permanent deflection under the maximum imposed loads and stresses when the sweeper is operated under severe sweeping conditions or normal impacts encountered when sweeping in confined areas.

3.12.2 Engine. The sweeper engine shall be a gasoline or when specified a diesel-engine (see 6.2), having horsepower, torque, and speed characteristics to satisfactorily meet all sweeper performance requirements specified herein. The engine manufacturer shall furnish a certificate stating that the engine furnished is approved for this application. The engine shall be complete with the accessories normally furnished with the sweeper including these minimum requirements:

a. A 12-volt negative ground electrical system, including a starting system, battery charging alternator of not less than 30-ampere rating, regulator, and ammeter.
b. A 12-volt lead acid storage battery, rated for not less than 80-ampere hours at the 20-hour rate. When specified (see 6.2) the storage battery shall be dry charged (without electrolyte) and be in accordance with requirements of W-B-131, SAE group number 17M3A. Each battery shall be of 12 volt potential. The total reserve capacity ratings and the total cold cranking ratings at 0 deg F, both measured in accordance with SAE J537, shall be not less than specified in table II.
c. An engine housing.
d. A fuel tank of sufficient capacity for 8 hours of normal operation.
e. Fuel filter located between fuel tank and carburetor.
f. Speed governing system with provision for adjusting the speed setting.
g. An engine hour meter.
h. Fuel level gage.
i. Speedometer with odometer.
j. Lubricating oil pressure gage.
k. Cooling liquid temperature indicator.

TABLE II. Batteries.

Engine Type	Reserve Capacity (Minutes)	Cold Cranking (Amperes)
Diesel	320	1200
Gasoline	100	450

The engine shall be a heavy duty commercial industrial type, capable of operating on fuel conforming to VV-G-1690 or VV-F-800 for diesel and lube oil conforming to MIL-L-2104. The temperature of the oil in the engine oil gallery

shall not exceed 230 deg F when tested as specified herein. When an oil cooler is provided, the temperature of the oil in the engine sump, or entering the cooler, shall not exceed 250 deg F when tested as specified herein. The temperature of the coolant in the top tank of the radiator shall not exceed 210 deg F when tested as specified herein. A dry or wet type air cleaner certified by the engine manufacturer for the application shall be furnished. The sweeper shall be equipped with an ammeter and a tachometer shall be furnished. When a diesel engine is supplied an air cleaner restriction indicator conforming to MS53063 shall be furnished, and shall be mounted on the operation instrument panel.

3.12.2.1 Engine hour meter. An engine hour meter having a totalizing mechanism of not less than 9999 hours shall be furnished. The meter shall accurately record the engine operating time and provide trouble-free performance under the operating conditions indicated in this specification.

3.12.2.2 Lubricating oil filters. The engine lubricating oil system shall include a standard type filter mounted in an accessible location for replacement of the element. The element size shall be that recommended by the filter manufacturer for the particular engine so as to achieve maximum filtration efficiency.

3.12.2.3 Crankcase ventilation system. The engine shall be provided with a positive crankcase ventilation system to purge vapors and relieve pressure. The ventilation system shall comply with the EPA, Code of Federal Regulations, title 45, part 1201. Intake air shall be passed through an air filter prior to entering the crankcase.

3.12.3 Drive train components. The mechanical components, consisting of a transmission clutch, drive chains or shafts, differentials, and axle shafts, shall be matched to and be compatible with the engine. The components shall have a torque capacity exceeding the maximum delivered engine torque developed through the intervening gear reductions and torque multipliers. The clutch shall be of the heavy-duty type, capable of transmitting not less than 130 percent of maximum engine torque.

3.12.3.1 Transmission. The transmission shall provide not less than four forward speeds and one reverse speed. The transmission shall provide synchronized shift for at least the two highest forward speeds. The transmission design and location of controls shall provide for the maximum practicable ease in range selection.

3.12.3.2 Gears, sprockets, and chains. Gears and sprockets shall be machine cut. Drive chains shall be standard steel roller type of high tensile strength.

3.12.3.3 Traction drive. The traction drive of the sweeper shall permit either wheel at the propelling end of the sweeper to pass over a 2-inch obstacle or depression without voiding sweeper travel.

3.12.4 Steering. The manufacturer’s current standard type of hydraulic-assisted power steering shall be furnished. The steering wheel shall be of

the automotive type and so located that the operator in the driver's position has adequate visibility of the curb being cleaned. The steering mechanism shall be provided with adjustment to limit free play in steering and with sufficient reduction in ratio to allow adequate directional control. Steering mechanism shall permit manual steering in the event of failure of the hydraulic system.

3.12.5 Wheels and tires.

3.12.5.1 Wheels. The sweeper shall have not less than three wheels. Wheels shall be provided with ball or roller bearings and be demountable at the hub or rim. The weight of the sweeper shall be distributed over the wheels in proportions that will assure proper traction for propulsion and steering under all operating conditions.

3.12.5.2 Tires. The tires shall have a rated capacity conforming to the recommendations of the TRA, equal to the wheel load imposed upon it by the complete sweeper with hopper load of not less than 3000 pounds, full fuel tank, and a 175-pound operator. Tires shall be not less than 100 level quality. Tubes, when used, shall be of heavy-duty type and rubber flap inserts shall be provided.

3.12.6 Braking system. The braking system components shall be readily accessible for adjustment, protected from damage, and shielded against entry of dirt, grease, or water. Unless otherwise specified in 5.1.1.10.2 (when level A preservation is required in 6.2) or in 6.2, brake fluid shall conform to VV-B-680.

3.12.6.1 Service brakes. The service brakes shall hold and control the empty sweeper on a 30 percent grade, and shall stop the sweeper on dry, level concrete in 17 feet from 15 mph, when loaded with 3000 pounds of sand in the hopper (see 4.4.7.1). When specified (see 6.2), power brakes shall be provided.

3.12.6.2 Parking brake. The parking brake shall be hand lever operated, provided with a positive lock, and shall be either independent of the service brakes or connected to the service brakeshoes through a separate mechanical means. The parking brake shall hold the empty sweeper on a 30 percent grade, while heading either direction without slipping (see 4.4.7.2).

3.12.7 Electrical system. All electrical components shall be of the same voltage rating as the engine electrical system. Components shall be of the automotive type and conform to the SAE J555.

3.12.7.1 Lights. Each sweeper shall be equipped with no less than two headlights, two combination tail and stoplights, one adjustable floodlight for each side brush, one rear floodlight, two red clearance lights on the rear, two amber clearance lights on the front located as far as practicable to indicate the extreme width, and at least one instrument panel light.

3.12.7.2 Turn signals. The sweeper shall be equipped with a turn signal system (lamps shall conform to SAE J588), comprised of front and rear turn

signal operating unit conforming to SAE J589, class A, mounted on the steering column and provided with a self-canceling mechanism; and an automotive flasher conforming to SAE J590. Both visible and audible indicators shall be incorporated to advise the operator of turn signal operation.

3.12.8 Horn. An electric horn, pushbutton operated from the steering wheel, shall be provided.

3.12.9 Dust control system. The dust control system shall be of the vacuum or air-sweep type and shall include a housing with rubberized skirting, filtering system, shaker mechanism, and a suction fan or blower for creating sufficient vacuum to provide adequate control of duSt caused by the main and side brushes. The system shall include means for filtering the dust-laden air and exhausting clean air to the outside of the sweeper. The system shall meet the test requirements specified in 4.4.4. When required (see 6.2), the sweeper shall be able to operate in the rain and have water pickup capability.

3.12.9.1 Housing. The brushes shall be enclosed in a sturdy sheet metal housing. Top portion of the side brush enclosure shall be heavy gage steel, sufficiently supported to withstand the weight of a man. Housing shall be provided with durable skirts of wear-resisting material, flexible enough to allow leaves and other light debris to enter the system. The skirting shall be designed to permit sweeping to the curb line without damage to the skirts.

3.12.9.2 Suction fan or blower. The suction fan or blower shall be the centrifugal, power-driven type, capable of moving air from the brush enclosure through filters in sufficient volume, during sweeping operations, to prevent escape of visible dust from brush enclosure directly to the atmosphere.

3.12.9.3 Filters. The filters shall be of the dry type and shall have a capacity in balance with the output of the suction fan or blower. Filters shall effectively remove dust of 50 microns and larger from the air before the air is exhausted to the outside. All filters shall be replaceable; made of durable, tear resistant material; and protected from damage during operation. Means shall be provided to inactivate the filters when sweeping in wet weather. Positive cleaning of the filters shall be provided by a power actuated shaker mechanism.

3.12.10 Sweeping system. The sweeping system shall consist of a main brush, side brush or brushes, and a hopper. Main and side brushes shall be powered by the sweeper engine. The brush drive power takeoff shall be arranged to provide effective sweeping at various forward travel speeds. Brushes shall be mounted on sealed ball or roller bearings. The swath overlap between main brush and side brush shall be such that the machine sweeps cleanly without leaving an unswept area between brush swaths during all sweeping operations. The outer edge of the side brush enclosure shall be visible to the driver to allow safe operation while sweeping close to obstructions. Main and side brushes shall have a life expectancy of not less than 200 hours efficient operation (see 4.4.12).

3.12.10.1 Main brush. Unless otherwise specified (see 6.2), bristles shall be natural fiber, synthetic fiber, steel wire, or a combination thereof. The

main brush shall be driven by reliable mechanical components and shall be supported in a carrier having provision for adjusting the brush to any desired amount of surface contact during sweeping operations. The brush shall be composed of individually disposable sections or shall be of the refillable and reversible type. In order that the sweeper will sweep with the contour of the pavement, the main brush assembly carrier shall be designed to follow normal pavement irregularities. Sufficient pressure shall be maintained on the brush during operation, regardless of hopper loading, to produce maximum sweeping efficiency and to eliminate the possibility of skipping, resulting in rippled dirt trails.

3.12.10.2 Side brush. Unless otherwise specified (see 6.2), the brush shall have synthetic bristles, the flexing strength of which shall be retained after sweeping an accumulation of wet dirt and sand from gutters or other areas. The flexing characteristics of the bristles and overall design of the brush shall be such as to preclude clogging. The side brush shall sweep all types of normally accumulated dirt and debris from gutters or along curbing into the path of the main brush. The contact angle of the side brush with the surface shall be adjustable or set to preclude the side brush from returning dirt or debris to the curb line. The mounting of the side brush shall be provided with an operating control for raising and locking the brush from surface contact and also for its return to contact with proper pressure for effective sweeping without adjustment by the operator. Controls to raise and lower each side brush shall be independent of other controls. The mounting shall provide for flexibility of the brush to avoid impact damage to the brush, mounting, or drive mechanism and to allow the brush to follow irregularities in the sweeping surface.

3.12.10.3 Hopper. The hopper shall be of sheet steel construction, designed to receive, hold, transport, and dump sweepings. Hopper shall be sealed against dust leakage and shall be capable of retaining sweepings up to 80 percent of the rated capacity specified in table I. Hydraulic means, operable from the operator’s position, shall provide for dumping the hopper to remove debris.

3.12.11 Hydraulic system. The hydraulic system shall be complete and shall include all pumps, valves, piping, cylinders, and pressure controls. To prevent damage to the hydraulic flow controls, an overload protection shall be provided on the high pressure line from the hydraulic pump. The hydraulic fluid supply shall have a filter system to insure delivery of clean fluid to the hydraulic circuit. A sight-gage or dipstick shall be fitted to the hydraulic reservoir to indicate the fluid level.

3.12.11.1 Pistons and lines. Under maximum pressure conditions, the duty cycle hydraulic pressures at any point in the system shall not exceed the manufacturer’s recommended working pressure. All seals, rings, gaskets, and other components shall be designed for easy removal and replacement. Piston rods shall be covered to provide for operation throughout the climatic environment. Rigid hydraulic lines shall be used where flexing is not encountered during operation. Armored or otherwise protected rubber or synthetic hose shall be used where flexing is encountered. Provision shall be made for bleeding the system at all necessary points.

3.12.11.2 Supply tank. The tank shall have sufficient capacity to hold not less than 120 percent of the maximum volume of fluid required to operate the system. Tank shall be provided with an easily accessible filler opening of not less than 1-1/2 inch in diameter. A vented splashproof filler cap, oil strainer, and shutoff valve shall be furnished. The drain shall be located to preclude oil from draining on other components and allow recovery of the oil in a container. Unless otherwise specified (see 6.2), hydraulic fluid conforming to MIL-H-5606 shall be used.

3.12.12 Lubrication. Unless otherwise specified (see 6.2), means for lubrication shall be in accordance with the manufacturer's standard practice. Type of lubricant and heat range shall be identified on the instruction plate. The lubricating points shall be easily visible and accessible. All parts requiring lubrication shall be lubricated as specified in section 5. Hydraulic lubrication fittings shall be in accordance with SAE J534. Where use of high pressure lubrication equipment, 1,000 pounds-force per square inch or higher, will damage grease seals or other parts, a suitable warning shall be affixed to the equipment in a conspicuous location.

3.12.13 Drainplugs. All drainplugs installed throughout the sweeper for the purpose of draining lubricants shall be of the permanent magnet type.

3.13 Cab. Unless otherwise specified herein, a full cab with full doors and roll down or slide type windows shall be provided. Where controls or other design features of the sweeper allow entry and exit from only one side of the unit, it is necessary to furnish only one cab door. When specified (see 6.2), a cab with open sides covered with removable curtains shall be furnished. Curtains shall be of durable rubber impregnated fabric, and shall have clear plastic windows that provide unobstructed visibility for the operator. Two rearview mirrors mounted outside the cab, one on each side, shall be provided. Electrically operated or air operated windshield wipers shall be provided. The cab shall afford maximum clear and unobstructed vision in front, on the sides, and in the rear. The windshield shall be of laminated safety glass. All glass used in the cab shall be in accordance with DoT Motor Carrier Safety Regulations, section 393.60. Means shall be provided for adequate ventilation. Sun visor, windshield washer, and cab light shall be furnished. When specified (see 6.2), a cab heater and windshield defroster shall be furnished.

3.13.1 Access doors. Access doors of adequate size and number shall be provided to permit easy access to the fan, filter elements, brushes, wheels, engine, and other frequently serviced components. The doors shall be equipped with quick-opening latches.

3.13.2 Seat. A comfortable, adjustable, upholstered seat with an upholstered backrest shall be provided for the operator. Durable, water resistant, cover material shall be used.

3.14 Instruments and controls. The instruments and controls shall be readily accessible to the operator. In addition to the instruments and controls specified in 3.12.2, at least the following shall be furnished:

a. Switches for all lights
b. Ignition switch
c. Windshield wiper control
d. Hopper dumping controls
e. Vacuum system controls
f. Brush operating controls
g. Shaker mechanism control

3.15 Reflectors. Sweeper shall have one reflector at each side on the rear, one on each side near the front, and one on each side near the rear. Reflectors shall be mounted not more than 60 inches and not less than 24 inches above the ground. Reflectors shall conform to SAE J594, class A.

3.16 Fire extinguisher. When specified (see 6.2), a fire extinguisher shall be provided and installed with a mounting carrying bracket, that is easily operated. Type of extinguisher shall be as specified.

3.17 Technical publications. When specified (see 6.2), commercial technical publications shall be furnished.

3.18 Workmanship. Defective components shall not be furnished. Parts and assemblies which have been repaired or modified to overcome deficiencies shall not be used. Welded, bolted, and riveted construction utilized shall be in accordance with the highest standards of the industry.

3.18.1 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 insure uniformity of size and shape.

3.18.2 Bolted connections. Boltholes 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.

3.18.3 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 of 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.

3.18.4 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.

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 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 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, 6.2, and 6.3). 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.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.3, the tests of 4.4.1, and the preparation for delivery inspection of 4.5.

4.3 Examination. Each sweeper 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.

4.4.1 Operational test. The operational test for the sweeper shall cover all controls, electrical system, brushes, hopper dumping mechanism, vacuum system, brakes, and hydraulic system, when furnished. Sweeper shall be driven at all speeds, turned, making a minimum radii, brakes tested for dependability, and all controls, mechanisms, and movements tested. Nonconformance to applicable requirements of this specification shall constitute failure of this test.

4.4.2 Sweeping test. A paved test area shall be thoroughly swept before distributing the sand. A rectangular area, 50 feet long with a width 6 inches less than the maximum sweeping swath, shall be evenly covered with 0.5 pound of fine sand per square foot of area. Sweeper, with brush to ground contact set as recommended by the supplier, shall be operated in a one-way pass over the area. The sand remaining on the ground after the test shall be swept up, weighed, and compared with the total weight of sand used in the test. Nonconformance to 3.9.4 shall constitute failure of this test.

4.4.3 Miscellaneous pickup test. Ten each of the following items shall be distributed over the area described in 4.4.2:

a. Aluminum plates, 2-inch-square by 1/8-inch thick
b. Nails, 2-1/2-inch-long (common)
c. Bolts, 1/4 inch in diameter by 2-inches long
d. Stones, 2 inches in diameter (minimum)
e. Wood, 1 by 2 by 12 inch long
f. Wire, number 16 gage by 24 inches long (bent but not crumpled into a small ball)
g. Wood chips, 1/4 by 1/2 by 1 inch (maximum)
h. Beverage bottles, 8-ounce (minimum)
i. Beverage cans 6-ounce (minimum)
j. Steel washers, 1-1/2 inch in diameter by 3/32 inch thick

The sweeper, with brush to ground contact set as recommended by supplier, shall be operated over the area. The quantity of items collected in the hopper shall be compared with the quantity distributed over the test area. Nonconformance to 3.9.5 shall constitute failure of the test.

4.4.4 Dust control test. A clean, paved, rectangular area 50 feet long, with a width approximately equal to the sweeping swath, shall be evenly covered with one bag of cement. The hopper shall be empty, filters clean, and the brush to ground contact set, as recommended by supplier. The area shall be swept clean in not more than two passes at not less than 5 mph without visible dust. No cleaning of the filter element shall be permitted during these tests. After picking up the cement, the sweeper shall be held stationary with brushes and vacuum fan operating at the manufacturer’s recommended speed. A smoke source, such as titanium tetrachloride on a cotton swab, shall be held near the bottom of the main brush housing at the front and each side, approximately 3 inches from the housing. The smoke shall enter the brush enclosure and pass through the system without visible leaks in any part or connection between parts. Without emptying the machine or cleaning the filter, the complete test shall be repeated twice. Nonconformance to 3.12.9 shall constitute failure of the test.

4.4.5 Grade sweeping test. Sweeper shall be operated in all directions on an inclined surface, covered with normally accumulated dirt and debris. Nonconformance to 3.9 shall constitute failure of this test.

4.4.6 Engine tests. Prior to examination and test of the engine, which will be installed in the first article or IPT units, the engine shall be tested in accordance with test method 2000 of MIL-STD-1400, except test method 2400 shall not apply. One engine out of each lot of 50 (or less) shall be

tested in accordance with test method series 3000 of MIL-STD-1400. Each engine furnished, except the engine selected for the preproduction model, IPT tests and production control tests (test method series 3000), shall be tested in accordance with test method series 4000 of MIL-STD-1400, except that the engine manufacturer's standard commercial run-in may be used in lieu of test method series 4000, provided it equals the requirements of test method series 4000 of MIL-STD-1400. Failure to meet any requirements in the above test shall constitute failure of this test.

4.4.6.1 Engine power. During the performance tests specified in 4.4.1 and 4.4.2, the engine revolutions per minute (rpm) and intake manifold vacuum shall be recorded not less than 30 times at 5-minute intervals. These readings shall be compared with the engine speed (rpm), brake horsepower, and intake manifold vacuum curve for the continuous brake horsepower condition as established during conduct of test method series 2000 of MIL-STD-1400. Any intake manifold vacuum reading recorded during the sweeper performance tests that is lower than the reading listed on the continuous horsepower curve established during conduct of test method 2300 of MIL-STD-1400, at the corresponding speed (rpm), shall constitute failure of this test.

4.4.7 Brake tests.

4.4.7.1 Service brakes. Sweeper shall be loaded with 3000 pounds of sand and be driven on dry, level concrete at 15 mph. The service brakes shall be actuated and the distance from the point of brake application to the point sweeper has stopped shall be measured. This test shall be repeated five times. Service brakes shall be tested for the gradable requirements. Nonconformance to 3.12.6.1 shall constitute failure of the test.

4.4.7.2 Parking brake. The empty sweeper shall be driven down a 30 degree dry ramp and stopped in the middle of ramp. Parking brake shall be set and locked and the sweeper left parked for 30 minutes. This test shall be repeated with sweeper facing opposite direction. Nonconformance to 3.12.6.2 shall constitute failure of the test.

4.4.8 Obstruction test. Sweeper shall be operated over a fixed obstruction not less than 2 inches high, at least three times at maximum sweeping speed. Nonconformance to 3.9 shall constitute failure of the test.

4.4.9 Test for electromagnetic interference characteristics. When electromagnetic interference characteristics are required, the sweeper shall be tested to determine conformance to 3.6.5. In lieu of tests to determine conformance to SAE J551, the manufacturer may furnish a certification that the sweeper meets the requirements, together with a list of the suppression devices installed. The list shall be sufficiently detailed to allow visual determination that the devices are installed. Nonconformance to 3.6.5 shall constitute failure of the test.

4.4.10 Low temperature test. The sweeper shall be submitted to the following low temperature test: Sweeper shall be exposed to an ambient temperature of -20 deg F for a period of 36 hours or until stabilization is reached, whichever

occurs first. While at this temperature, the engine of the sweeper shall be operated for 2 hours with the brush clutches engaged. Then the sweeper shall be examined for possible defects of the clutches and components. Nonconformance to 3.9 shall constitute failure of the test.

4.4.11 High temperature test. The sweeper shall be exposed to an ambient temperature of 125 deg F for 12 hours. While at this temperature, the engine of the sweeper shall be operated for 2 hours with the brush clutches engaged. Then the sweeper shall be examined for possible defects of the clutches and components. Nonconformance to 3.9 shall constitute failure of the test.

4.4.12 Reliability test. The unit shall be operated as a street sweeper, with the vacuum dust control system operating at sweeping speeds varying from 2-1/2 to 12 mph for not less than 100 hours. At least 50 percent of the total time shall be for periods of not less than 4 hours continuous operation. Periods of operation of less than 30 minutes duration shall not be credited to the reliability test. At the conclusion of this test, the sweeper shall be subjected to and pass the sweeping tests specified in 4.4.2, 4.4.3, 4.4.4. After the tests, the sweeper shall be thoroughly examined. Brush wear shall be checked with respect to life expectancy requirement of 3.12.10. Failure of major components, excessive vibration and wear, or eratic operation shall be cause for rejection (see 3.4).

4.4.13 Maintainability test. The sweeper shall demonstrate a mean-maintenance-downtime not greater than 2.5 man-hours. This demonstration shall be conducted in accordance with MIL-STD-471, method 2, or any other Government-approved method. The data gathered as a result of 4.4.12 may be used as a portion of the maintainability test data. Nonconformance to 3.7 shall constitute failure of the test.

4.4.14 Lifting and tiedown attachment tests. When required, the lifting and tiedown attachments shall be tested in accordance with MIL-STD-209 type III. Weld failure or permanent deformation of the lifting attachments or structural members or nonconformance to 3.6.7 shall constitute failure of this test.

4.5 Preparation for delivery inspection. The preservation, packaging, packing, and marking of the item shall be inspected to verify conformance to the requirements of section 5.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or commercial as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Methods of preservation. Cleaning processes, drying procedures, preservatives, and methods of preservation specified in the following paragraphs are listed in MIL-P-116 and shall conform to the requirements of MIL-P-116 and any applicable specifications.

5.1.1.2 Disassembly. Disassembly shall be the minimum necessary to protect parts subject to damage or loss, and to accomplish reduction in cube. Removed bolts, nuts, pins, screws, and washers shall be reinstalled in mating parts and secured to prevent their loss.

5.1.1.3 Matchmarking. Parts removed and mating parts on the equipment and attachments shall be matchmarked to facilitate reassembly. Parts and accessories removed, and mating parts on the equipment, shall be identified with weatherproof tags attached to mating parts and locations. Markings shall be applied to the tags with a waterproof material.

5.1.1.4 Cleaning and drying. Prior to the application of preservative compounds or paint, surfaces shall be cleaned by process C-1 and dried by any applicable procedure of MIL-P-116.

5.1.1.5 Unprotected surfaces. Unprotected exterior metal surfaces requiring the application of a contact preservative in accordance with MIL-P-116 and not specifically provided for herein shall be preserved as follows:

5.1.1.5.1 Unfinished (not machined) surfaces. Unfinished exterior metal surfaces shall be coated with type P-1 preservative.

5.1.1.5.2 Machined surfaces. Exposed machined surfaces shall be coated with type P-6 or P-11 preservative and wrapped or covered, as applicable, with barrier material conforming to MIL-B-121, type I, grade A, class 2. The material shall be secured in place with waterproof tape.

5.1.1.6 Engines. Engines, engine components, and accessories shall be preserved in accordance with the level A requirements of MIL-E-10062, type I, method I.

5.1.1.7 Disk-type clutches. With cover plates removed and with the clutch engaged, interior components of the clutches shall be sprayed or fogged with a thin film of primer conforming to TT-P-664 or MIL-P-46093. Coating of composition facings shall be held to a minimum. Unpainted surfaces of control mechanisms not enclosed shall be coated with type P-1 preservative. After spraying, the clutch pedal shall be blocked in a partly disengaged position to eliminate contact between the lining and pressure plate.

5.1.1.8 Enclosed gears. Gears operating on lubricating oil (SAE 10, 30, or 50) shall have the housing filled to the operating level with type P-10 preservative, grade as applicable. Gears operating on gear lubricant (SAE 80 or 90) shall be filled to the operating level with lubricant conforming to MIL-L-2105, grade as applicable. Gears not operating on lubricating oil (SAE 10, 30, or 50) or lubricant (SAE 80 or 90) shall be filled to the operating level with the approved lubricant required for operation. Gear housings containing any of the above shall be identified with a weatherproof tag to indicate: "The housing is filled to the operating level with lubricant. Do not drain until first required lubrication change." Markings shall be applied to the tags with a waterproof material. The tags shall be attached in a conspicuous location.

5.1.1.9 Exposed drive chains. Exposed drive chains shall be coated with enough type P-9 preservative to assure penetration of the preservative to the inner surfaces of the rollers, pins, and bushings. After the excess preservative has drained, the chains and sprockets shall be coated with type P-1 preservative.

5.1.1.10 Brakes.

5.1.1.10.1 General. Clean all surfaces as required to remove contaminants. Coat unpainted exterior surfaces of rods, levers, cables, clevises, linkage, and associated parts with type P-1 preservative. Remove brakedrum covers and spray enclosed metallic components with primer TT-P-664 or MIL-P-46093. Spray coat brakedrum friction surfaces with a very thin coat (0.5-0.6 mil thick) of primer. Coat friction surfaces of cams, adjusting screws, and anchor pins with type P-6 or P-7 preservative. Backoff all brakeshoe adjusters for maximum clearance between brakedrum and brakeshoes. Do not apply coating of any type to contact surfaces of electric brakes. Adjust brakeshoes to provide maximum clearance to drum surfaces and lined surfaces. In a conspicuous location in the operator’s compartment, attach a weatherproof warning tag marked, "Brakes preserved. Do not apply brakes when vehicle is being moved. Use tow bar or similar arrangement for moving vehicle. Adjust brakes before placing equipment into operation." Markings shall be applied with waterproof material.

5.1.1.10.2 Hydraulic brakes and steering systems. Remove and disassemble the brake cylinder. Clean the cylinders, pistons, springs, and other metallic surfaces normally in contact with hydraulic brake fluid with alcohol conforming to 0-E-760. Flush hydraulic lines with alcohol. Follow this by cleaning process C-8. Dry by procedure D-1. Coat the cylinders, pistons, springs, rubber cups, rubber dust boots, and other internal metallic and rubber parts with silicone protector, MIL-C-21567. Fill the hydraulic system and the hydraulic fluid supply reservoirs with brake fluid, MIL-B-46176. Bleed as necessary to assure the system is completely filled with fluid. After filling pressure bleeder reservoir, allow fluid to stand 3-5 minutes for air bubbles to escape, before replacing cap. In order to prevent air entrapment, if vehicle is manually bled, do not depress brake pedal over one half of travel.

5.1.1.11 Air-actuated brake system. The air-actuated brake systems shall be drained. Interior surfaces of the air-supply tanks shall be fogged with type P-9 or P-10 preservative. Excess preservative oil shall be drained. Threaded openings and the threads of drainplugs shall be coated with p-10. The drainplugs shall be reinstalled. Air line filters shall be drained and closed. The exhaust ports of relay emergency, quick-release, and relay valves not equipped with exhaust check valves shall be closed by inserting caps or plugs as applicable conforming to MIL-C-5501 or by sealing the ports with waterproof tape. Attach a waterproof tag to the valves and service lines indicating, "Remove (plugs, caps, or tape) from exhaust ports and valves before operating." Markings shall be applied with a waterproof material.

5.1.1.12 Hydraulic systems (except hydraulic brakes or steering systems). The hydraulic fluid supply tanks shall be filled to the operating level with hydraulic fluid required for operation. The pistons shall be retracted as far

as practicable into the cylinders and secured. When the pistons cannot be fully retracted, the exposed portions of the piston rods (ramshafts) shall be coated with type P-6 or P-11 preservative and the coated surfaces wrapped or covered with barrier-material conforming to MIL-B-121, type I, grade A, class 2, extending the wraps approximately 2 inches onto the ram cylinders. The wraps shall be secured in place with waterproof tape. When the pistons can be fully retracted, any remaining uncoated surfaces of the piston rods shall be coated with type P-1 preservative, with no wrapping required. The hydraulic control valves shall be secured in the neutral position and preserved as specified herein for piston rods. Hoses shall not be disconnected. A weather-proof tag shall be attached to the control lever indicating: "The hydraulic supply tank is filled to the operating level with fluid required for operation. Do not drain." Markings shall be applied to the tag with a waterproof material.

5.1.1.13 Drivebelts and pulleys. Drivebelts shall be removed or released from tension. Removed belts shall be preserved method IC-1 or IC-3. Unpainted surfaces shall be coated with primer conforming to TT-P-664 or MIL-P-46093. A weatherproof tag shall be attached in a conspicuous location indicating: "Belts have been (removed or released from tension.) (Install or tension) prior to operation." Markings shall be applied to the tags with a waterproof material.

5.1.1.14 Instruments. The dial glass of instruments not protected by a metal housing or cab shall be covered individually, or in groups, with fitted piece of plywood secured with tape conforming to MIL-T-22085, type II or A-A-1586.

5.1.1.15 Lamps, reflectors, and rear vision mirrors. Lamps, reflectors, and rear vision mirrors vulnerble to damage, or that would increase overall cubage, shall be removed and placed in boxes conforming to PPP-B-636, class weather-resistant. All seams and joints shall be waterproof sealed with tape in accordance with the appendix of the box specification. Lamps, reflectors, and rear vision mirrors not removed shall be wrapped or covered with barrier material conforming to MIL-B-121, grade C. The barrier shall be secured with tape conforming to A-A-884 or A-A-1830.

5.1.1.16 Rubber tires. Tires shall be inflated to 10 pounds above the specified operating pressure.

5.1.1.17 Seat and back cushions. Easily removable seat and back cushions of sweepers not equipped with a closed cab shall be placed individually in boxes conforming to PPP-B-636, class weather-resistant. All seams, corners, and joints shall be waterproof sealed with tape in accordance with the appendix of the box specification. Seat and back cushions that cannot be easily removed shall be covered or draped with barrier material conforming to MIL-B-121, class I, grade A. All laps, seams, and folds shall be sealed with tape conforming to MIL-T-22085, type II or A-A-1586. The barrier shall only cover the top, sides, and ends of the seat and back cushions. The cover or drape shall be secured at various points with tape specified herein.

5.1.1.18 Radiator fronts and engine hoods. When specified (see 6.2), radiator fronts shall be covered with barrier material conforming to

PPP-B-1055, class E-2. The barrier shall be secured with tape conforming to MIL-T-22085, type II or A-A-1586. All vents, louvers, and other openings of engine hoods shall be sealed with tape specified herein.

5.1.1.19 Locks, keys, and key openings. Interiors of locks shall be coated with powdered graphite conforming to SS-G-659. The locks shall be operated to insure penetration of the graphite. Openings into locks (except padlocks) shall be sealed with waterproof tape. Switch keys, cab door keys, and padlocks with keys shall be packaged method IC-1 or IC-3; and then placed in the dash compartment or toolbox.

5.1.1.20 Control levers. Removable composition or rubber handgrips shall be removed and preserved in accordance with MIL-P-116, method IC-1.

5.1.1.21 Horn buttons. Horn buttons of sweepers not equipped with a closed cab shall be sealed with tape conforming to MIL-T-22085, type II or A-A-1586.

5.1.1.22 Fire extinguishers. Unpainted exterior metal surfaces of fire extinguishers requiring the application of a contact preservative in accordance with MIL-P-116 shall be coated with type P-1 preservative. Fire extinguishers enclosed with full cabs shall be secured in their mounting brackets. Fire extinguishers not enclosed within a full cab shall be individually packaged method III in a box conforming to PPP-B-636, class weather-resistant.

5.1.1.23 Repair parts. The preservative application criteria and applicable methods of preservation of MIL-P-116 shall be used to preserve repair parts. When specified (see 6.2), the repair parts shall be preserved in accordance with level A requirements of MIL-R-196, or when parts are not specifically covered in MIL-R-196, an applicable submethod of preservation of MIL-P-116 shall be used.

5.1.1.24 Maintenance tools. Maintenance tools shall be preserved in accordance with level A preservation and packaging requirements of PPP-P-40.

5.1.1.25 Technical publications. Technical publications for each sweeper shall be preserved in accordance with MIL-P-116, method IC-1.

5.1.1.26 Consolidation. Loose components, tools, and publications that will not fit in the dash compartment or toolboxes shall be consolidated, along with disassembled components, in boxes conforming to PPP-B-601, overseas type or PPP-B-621, class 2. The contents shall be cushioned, blocked, and braced to prevent movement in accordance with MIL-STD-1186.

5.1.2 Commercial. The equipment shall be preserved in accordance with the contractor’s standard practice in a manner to prevent deterioration and damage.

5.2 Packing. The packing shall be level A or Commercial as specified, (see 6.2).

5.2.1 Level A. The sweepers shall be shipped uncrated.

5.2.1.1 Cabs. Consolidated containers shall be placed in the cab or secured to the equipment with appropriate strapping. Arrangement and location on the equipment shall be such so as not to increase cubage or interfere with

lifting or mobility of the equipment. Cab doors, windows, and windshields shall be closed and securely fastened. When specified (see 6.2), the glass shall be protected from breaking with fitted plywood or sheet metal panels held in place with bolts, or flat steel strapping. A minimum clearance of 1 inch shall be provided between glass and protecting panels.

5.2.3 Commercial. The equipment shall be prepared for shipment in a manner which will insure arrival at destination in satisfactory condition. Preparation for delivery shall comply with applicable carrier rules and regulations.

5.3 Marking.

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

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

6. NOTES

6.1 Intended use. Sweepers covered by this specification are intended for sweeping and cleaning large areas of reasonably smooth surfaces, parking areas, streets, and roads having curbs.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

a. Title, number, and date of this specification.
b. Types of sweeper required (see 1.2.1).
c. When first article is required (see 3.2, 4.2.1, and 6.3).
d. When cleaning, treatment, and painting are required (see 3.6.1).
e. Color of finish coat required (see 3.6.1).
f. When treatment for fungus resistance is required (see 3.6.4).
g. When conformance to electromagnetic interference characteristic requirements is required (see 3.6.5).
h. When warning light is required and color required (see 3.6.6).
i. When lifting and tiedown attachments are required (see 3.6.7).
j. When miscellaneous pickup capability is required to be 98 percent (see 3.9.5).
k. When a diesel engine is required (see 3.12.2).
l. When other than a dry charged battery is required (see 3.12.2).
m. When other than VV-B-680 brake fluid is required (see 3.12.6).
n. When power brakes are required (see 3.12.6.1).
o. When rain operation is required (see 3.12.9).
p. Main brush material if other than specified (see 3.12.10.1).
q. Side brush material if other than specified (see 3.12.10.2).
r. When hydraulic fluid other than specified is required (see 3.12.11.2).
s. Lubrication (see 3.12.12).
t. When cab with open sides covered with removable curtains is required (see 3.13).

u. When cab heater and windshield defroster are required (see 3.13).
v. When fire extinguisher is required and type required (see 3.16).
w. When technical publications are required (see 3.17).
x. Level of preservation and packaging and level of packing required (see 5.1 and 5.2).
y. When radiator fronts are to be covered and hood openings sealed (see 5.1.1.18).
z. When repair parts preservation is other than specified (see 5.1.1.23).
aa. When cab windows and windshields are to be covered with panels (see 5.2.1.1).

6.2.1 Contract data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423 Contract Data Requirements List (CDRL) and invokes the provisions of paragraph 7-104.9(n) of the Defense Acquisition Regulations (DAR), the data requirements will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL (DD Form 1423) incorporated into the contract. When the provisions of DAR 7-104.9(n) are not invoked, the data shall be delivered in accordance with the contract requirements.

6.3 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 sweeper. The contracting officer should include specific instructions in procurement documents regarding arrangements for examination, test, and approval of the first article.

6.4 Designation. For Air Force use, style 2 sweeper is identified as A/S32U-13.

MILITARY INTERESTS:

Custodians

Navy - YD
Air Force - 99

Review Activities

Army - ME
Air Force - 84
DAS - CS

User Activities

Army - CE
Navy - MC

CIVIL AGENCY COORDINATING ACTIVITIES:

DLA
AEC
COMMERCE-NBS
GSA-FSS
HEW
POSTAL-POS
VA-DMS

PREPARING ACTIVITY:

Navy - YD

Project No. 3825-0105

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.