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**Place du Portage, Phase III**  
**Core 0A1 / Noyau 0A1**  
**Gatineau, Québec K1A 0S5**  
**Bid Fax: (819) 997-9776**

**SOLICITATION AMENDMENT**  
**MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

**Comments - Commentaires**

**Vendor/Firm Name and Address**  
**Raison sociale et adresse du**  
**fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**  
Industrial Vehicles & Machinery Products Division  
11 Laurier St./11, rue Laurier  
7B1, Place du Portage, Phase III  
Gatineau  
Québec  
K1A 0S5

<b>Title - Sujet</b> Sweeper, Street, Truck Mounted	
<b>Solicitation No. - N° de l'invitation</b> W8476-144816/A	<b>Amendment No. - N° modif.</b> 001
<b>Client Reference No. - N° de référence du client</b> W8476-144816	<b>Date</b> 2013-10-21
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$HS-604-63551	
<b>File No. - N° de dossier</b> hs604.W8476-144816	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2013-11-05</b>	<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Standard Time EST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Bertrand(hs604), Alain	<b>Buyer Id - Id de l'acheteur</b> hs604
<b>Telephone No. - N° de téléphone</b> (819) 956-4025 ( )	<b>FAX No. - N° de FAX</b> (819) 956-5227
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

Solicitation No. - N° de l'invitation

W8476-144816/A

Amd. No. - N° de la modif.

001

Buyer ID - Id de l'acheteur

hs604

Client Ref. No. - N° de réf. du client

W8476-144816

File No. - N° du dossier

hs604W8476-144816

CCC No./N° CCC - FMS No/ N° VME

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This solicitation amendment # 1 is raised to delete the Purchase Description dated 10 July 2013 and substitute it for Purchase Description dated 3 October 2013 attached.



## NOTICE

This documentation has been reviewed by the technical authority and does not contain controlled goods.

## AVIS

Cette documentation a été révisée par l'autorité technique et ne contient pas de marchandises contrôlées.

PURCHASE DESCRIPTION  
FOR  
SWEEPER, STREET, TRUCK MOUNTED  
2.4 METRE SWEEPING PATH, VACUUM PICK-UP

ECC 166330

### 1. SCOPE

**1.1 Scope** - This purchase description covers a diesel engine driven, truck mounted, street sweeper equipped with a minimum 2.4 metre sweeping path, vacuum pick-up system, water system, and a dumping hopper.

**1.2 Instructions** - The following instructions apply to this Purchase Description:

- a) Requirements, which are identified by the word "**shall**", are mandatory. Deviations will not be permitted;
- b) Requirements identified by "**shall**<sup>(B)</sup>" are mandatory. The Technical Authority will consider substitutes/alternatives for acceptance as an equivalent;
- c) Requirements identified with a "will" define actions to be performed by Canada and require no action/obligation on the Contractor's part;
- d) Where "**shall**", "**shall**<sup>(B)</sup>", or "will" are not used, the information provided is for guidance only;
- e) In this document "provided" **shall** mean "provided and installed";
- f) Where technical certification is required, a copy of the certification or an acceptable "proof of compliance" **shall** be provided;

- g) Metric measurements **shall** be used to define the requirement. Other measurements are for reference only and may not be exact conversions; and
- h) Dimensions stated as nominal **shall** be treated as approximate dimensions. Nominal dimensions reflect a method by which materials or products are generally identified for sale commercially, but which differ from the actual dimensions.

**1.3 Definitions** - The following definitions apply to the interpretation of this Purchase Description:

- a) "Technical Authority" - The government official responsible for technical content of this requirement.
- b) "Guidance" - A requirement that may be followed. Guidance is provided to indicate a preferred component make and model or dimension that would be best for the application. However, a bid can still be considered compliant while deviating from "guidance".

**2. APPLICABLE DOCUMENTS** - The following documents form part of this Purchase Description. The dates of issue are those in effect on the date of release of the RFP. Sources are as shown:

**CAN/CGSB 3.517-2007**

Automotive (On-Road) Diesel Fuel  
Canadian General Standards Board  
11 Laurier Street, Place du Portage III, 6B1  
Gatineau, QC, K1A 1G6  
<http://www.tpsgc.gc.ca/cgsb/home/index-f.html>

**Canadian Motor Vehicle Safety Standards (CMVSS)**

Transport Canada,  
Road Vehicle and Motor Vehicle Regulation,  
330 Sparks Street, Tower C,  
Ottawa, Ontario K1A 0N5  
<http://www.tc.gc.ca/acts-regulations/GENERAL/M/mvsa/menu.htm>

**Rule 1186 PM<sub>10</sub> EMISSIONS FROM PAVED AND UNPAVED ROADS**

South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA, 91765  
<http://www.aqmd.gov/tao/FleetRules/1186.1Sweepers/>

**SAE Handbook**

Society of Automotive Engineers Inc.  
400 Commonwealth Dr.,  
Warrendale, PA, 15096  
<http://www.sae.org>

**Yearbook**

Tire and Rim Association Inc.,  
3200 West Market St.,  
Akron, Ohio, 44321  
<http://www.us-tra.org/traHome.htm>

### 3. REQUIREMENTS

#### 3.1 Standard Design - The vehicle design **shall**:

- a) Be the manufacturer's latest model having demonstrated industry acceptability by having been manufactured and sold commercially for at least 1 year, or, **shall** be manufactured by a company that has at least 5 years experience in design and manufacturing of a comparable type of equipment of equivalent or greater complexity;
- b) Have engineering certification available for this application from the original manufacturers of major drive train components, and major equipment systems and assemblies;
- c) Conform to all applicable laws, regulations and industry standards governing manufacture, safety, noise levels, and pollution in effect in Canada at time of manufacture;
- d) Have system and component capacities not greater than their published ratings (i.e. product or component brochures) or accompanied by proof of compliance; and
- e) Include all components, equipment and accessories normally supplied for this application, although they may not be specifically described in this purchase description.

#### 3.2 Operating Conditions

3.2.1 Weather - The vehicle **shall** operate under weather conditions found in Canada in temperatures ranging from 0°C to 38°C. The vehicle **shall** be stored in ambient temperatures of -50°C to 50°C.

3.2.2 Terrain - The vehicle **shall** be operated on uneven asphalt or concrete roads, streets, airport runways, parking lots, parade areas, and other paved surfaces.

#### 3.3 Safety

##### 3.3.1 Vehicle Safety requirements

- a) CMVSS - The vehicle **shall** comply with all applicable Canada Motor Vehicle Safety Standards (CMVSS) in effect and applicable by law in Canada on the date of manufacture.
- b) PM<sub>10</sub> - The Sweeper **shall**<sup>(E)</sup> be certified as meeting the Rule 1186 sweeper certification procedures and requirements for PM<sub>10</sub>-efficient sweepers.

3.3.2 Noise Level - The vehicle/equipment noise level **shall** meet the requirements of legislation relative to Occupational Safety and Health both at the operator's station and exterior to the vehicle.

3.3.3 **Human Engineering and Safety** - The vehicle/equipment, all systems and components **shall**:

- a) Be safe and easy to use by CAF users having anthropometric characteristics ranging from 95th percentile male characteristics to 5th percentile female characteristics;
- b) Have entry and exit points equipped with handles and steps appropriately sized and positioned to accommodate CAF users having anthropometric characteristics ranging from 95<sup>th</sup> percentile male characteristics to 5<sup>th</sup> percentile female characteristics; and
- c) Be equipped, where required for operator safety, with safety features such as warning and instruction plates, non-slip walking surfaces and heat shields.

#### 3.4 **Vehicle Performance**

- a) The vehicle **shall** have a minimum sweeping path of 2.4 metres (94.5").
- b) The vehicle **shall** have a minimum sweeping speed of 5 km/h.
- c) The equipment **shall** sweep and pick-up, in one pass, a minimum of 80 percent of material, IAW Rule 1186 Appendix A.
- d) The equipment **shall** pick-up and retain large objects (examples of large objects: half-bricks, pop bottles, pop cans, nails, nuts, bolts, washers, and flat pieces of cardboard).
- e) The vehicle **shall** travel up a 25 percent grade, without slowing beyond the required minimum sweeping speed.
- f) The vehicle **shall** reach a minimum travel speed of 95 km/h.

##### 3.4.1 **Weights and Dimensions**

- a) Gross Vehicle Weight Rating (GVWR) - The GVWR of the vehicle **shall** be at least equal to the curb weight of the completed vehicle with all equipment installed and tanks full, as published in the manufacturer's literature and engineering data.
- b) Gross Axle Weight Rating (GAWR) - The axles and suspension system **shall** not be loaded greater than their rated capacities when the unit is in operating mode, with all equipment installed and tanks full.

3.4.2 **Vehicle Delivery Condition** - The vehicle **shall** be delivered to destination clean and in a fully operational condition (serviced and adjusted). If the vehicle requires assembly at destination, the Contractor **shall** be responsible for all manpower and equipment to perform assembly. The consignee will provide the area required for assembly. For shipment verification, all items such as wheel wrenches, jacks, and all other tools, equipment and accessories, which are shipped loose with the equipment, **shall** be listed on the shipping certificate or to an attached packing note.

### 3.5 Cab and Chassis

3.5.1 Cab - The vehicle **shall** be equipped with a sealed and pressurized, minimum two person cab that provides a dust free working environment. The cab **shall**<sup>(E)</sup> be equipped with:

- a) Fully adjustable independent suspension seats, with dark heavy-duty upholstery, retractable shoulder/lap belt assemblies and armrests;
- b) External, motorized rear-view mirrors, equipped with lights, defroster elements, and a convex portion on each side;
- c) The manufacturer's standard interior (i.e. dark upholstery, lining, insulation, vinyl mats, molded armrests, cup holders, sun visors);
- d) Interior and exterior grab handles;
- e) An AM/FM stereo radio with CD player and auxiliary port;
- f) At least 2 entry/egress doors equipped with power opening windows in the upper portion of each cab door;
- g) Air and/or electric horns. If air horns are mounted on the roof, then snow shields **shall**<sup>(E)</sup> be provided;
- h) Fog lights mounted in bumper with amber lens and rock guards;
- i) Tinted safety glass to reduce solar heating effects;
- j) Windshield washer system, including intermittent windshield wipers, for clearing the windshield during driving operations. The direction of clearing **shall not** have wiper blades travelling from a vertical centre windshield position to a horizontal position near the roof line;
- k) Factory installed air-conditioning equipped with all components and controls required for regulation of the cab interior temperature. The air conditioning system **shall** not use ozone-depleting refrigerants (chlorofluorocarbons (CFCs)) and **shall**<sup>(E)</sup> use hydrofluorocarbons (HFCs);
- l) A cruise control system; and
- m) At least one LED interior light for the cab, including dome and reading lights with individual switches.

3.5.2 Chassis - The chassis **shall** be the manufacturers standard, suitably sized to meet the vehicle's gross laden weight and ensure satisfactory operation under specified operating conditions.

3.5.3 Vehicle Equipment - The vehicle **shall** be equipped with:

- a) Licence plate holders, front and rear. The rear licence plate **shall** be LED illuminated;
- b) Towing hook or hooks at the rear;
- c) A front bumper; and
- d) Front and rear mud flaps in accordance with SAE Recommended Practice J682.

**3.6 Transport Engine** - The vehicle **shall** be equipped with a liquid cooled engine, which operates on diesel fuel to the CAN/CGSB Standard 3.517-2007. Engine manufacturer's certification for this application **shall** be available upon request. The engine system **shall**<sup>(E)</sup> be equipped with:

- a) The manufacturers recommended safety or emergency shut-down controls in the cab;
- b) Dual element safety dry type air cleaning system, and an air cleaner restriction indicator;
- c) A full flow oil filter with a spin-on or replaceable element;
- d) An automatic engine shut-down or power de-rate system for low engine oil pressure or high engine coolant temperature. A warning indicator visible from the operator's positions **shall** be included. An audible alarm is desirable;
- e) If a diesel particulate filter is used, a manual or parked regeneration feature **shall** be provided to remove excess soot from the filter; and
- f) Any measures other than those already required by this Purchase Description that are necessary to adhere to the engine manufacturer's recommendations for operation in the environmental conditions specified in Paragraph 3.2.

**3.6.2 Fuel Tank(s)** - The vehicle **shall** be equipped with fuel tank(s) with sufficient capacity to enable the vehicle to be operated at 80 per cent power for a minimum of 6 hours without refuelling. The fuel system **shall**<sup>(E)</sup>:

- a) Have a switch/valve that the driver can use to alternate between tanks while maintaining engine operation, if the vehicle is equipped with multiple tanks;
- b) Be equipped with a non-spill type air vent;
- c) Have a drain cock or plug installed at the lowest point of the fuel tank(s);
- d) Have tank(s) equipped with fuel filler cap(s) located in an accessible location for filling;
- e) Have all fuel tanks full and mounted on delivery; and



- f) Be equipped with a fuel/water separator.

3.6.3 **Exhaust** - The engine **shall** be equipped with a muffler or exhaust system suitably located and/or shielded so that personnel will not contact a heated surface. The exhaust system **shall**<sup>(E)</sup> be equipped with weather guards or an effective device to prevent entry of rain into intake and exhaust stacks, if applicable.

3.7 **Transmission** - The vehicle **shall** be equipped with an electronically controlled fully automatic transmission, which is compatible with the provided diesel engine. Automatic transmissions are defined as transmissions that require no driver intervention, to start, to change ratio, or to stop, once the drive ratio has been selected. The transmission **shall**:

- a) Have a minimum of five (5) forward speeds and one reverse speed;
- b) Be equipped with a neutral start safety switch;
- c) Be programmed to allow the fast idle to engage only when the transmission is in park/neutral and the parking brake is applied;
- d) Be programmed to prevent the transmission from engaging when the fast idle is engaged or disengage fast idle when attempting to engage the transmission with fast idle engaged;
- e) Have an illuminated shift control quadrant; and
- f) Have a transmission oil cooler.

3.8 **Braking System** - The vehicle **shall** be equipped with full air actuated service brakes and spring actuated parking brakes, which comply with Canadian Motor Vehicle Safety Standards. The brake system **shall**<sup>(E)</sup> include:

- a) A low air pressure indicator controlling a buzzer audible to the driver and a red warning light on the instrument panel. The warning devices **shall**<sup>(E)</sup> operate only when the ignition switch is in the "ON" position;
- b) An air pressure governor;
- c) A wet tank equipped with automatically operated, electrically heated, moisture-expelling valve(s). The wet tank **shall**<sup>(E)</sup> be recharged from an external source using a glad hand air coupler;
- d) Glad hands air couplers, with integral cover. A blue cover for service connection and a red cover for emergency connection **shall** be provided;
- e) A spring applied, air released, parking brake with arrangements for automatic service brake application on the rear axles in the event of loss of air pressure;
- f) A 4-channel anti-lock brake system (ABS);

- g) Automatic slack adjusters;
- h) An automatic air dryer;
- i) Brake housing dust shields and visual brake stroke indicators on all wheels; and
- j) Air brake hoses conforming to SAE Standard J1402. Brake lines passing through metal **shall**<sup>(E)</sup> be protected to prevent damage or failure due to chafing or vibration.

### 3.9 Steering

- a) The vehicle steering system **shall** drive from both the right and left side of the vehicle.
- b) The steering system **shall**<sup>(E)</sup> be full power steering.
- c) The steering system **shall** provide emergency steering, with the engine stopped.

### 3.10 Wheels, Rims and Tires

- a) The provided wheels, tires, and rims **shall** have the manufacturer's certification that they are suitable and adequately sized for this application. Tire size and ply ratings **shall**<sup>(E)</sup> be in accordance with Tire and Rim Association Standards.
- b) Tires **shall** be steel belted, tubeless, and tires of radial ply construction.
- c) All wheels **shall**<sup>(E)</sup> be steel or aluminum disc type.
- d) Each tire **shall** balance within practicable limits. Wheels, hubs and brakes **shall** be effectively in balance. Balancing **shall** be adequate to preclude wheel shimmy at all vehicle speeds.
- e) A full-sized, assembled, spare wheel and tire **shall** be delivered with each vehicle.

### 3.11 Vehicle Controls

- a) Controls **shall** be permanently marked to identify and show the function of each control lever or switch.
- b) Control markings/instructions **shall**<sup>(E)</sup> be in English and French or international symbols as defined by SAE J1362.
- c) Controls **shall**<sup>(E)</sup> be grouped in the cab for quick and convenient operation, unless otherwise stated.
- d) Controls **shall** not restrict the operator's field of view.
- e) The vehicle **shall** be equipped with equipment controls mounted on a central terminal for use from either the right or left operator

positions. The controls **shall**<sup>(E)</sup> include controls for all sweep, spray water, lighting functions, and auxiliary engine ignition and throttle.

**3.12 Chassis Instruments** - The vehicle **shall** be equipped with chassis OEM (Original Equipment Manufacturers) instrument panels for both the left side operator position, and the right side operator position. The instruments **shall** be readily visible while seated at each operator's station and **shall**<sup>(E)</sup> be illuminated for visible in dim light. Instruments visible to each location **shall**<sup>(E)</sup> include:

- a) Ammeter, or voltmeter;
- b) Engine oil pressure indicator;
- c) Fuel gauge or fuel gauges, as required;
- d) Water temperature indicator;
- e) Coolant temperature indicator;
- f) Transmission temperature gauge with high temperature indicator;
- g) Air pressure gauge, with low pressure warning light and audible alarm;
- h) Hour-meter with numeric display, which accurately records accumulated engine running time up to at least 9,999 hours; The meter **shall** register only when the engine is running;
- i) Engine tachometer;
- j) A speedometer (indicating kilometres),
- k) Odometer (indicating kilometres);
- l) Outside air temperature sensor; and
- m) A filter restriction indicator.

**3.13 Chassis Electrical System** - The vehicle **shall** be equipped with a 12-volt electrical system. The system **shall** include:

- a) Wire identification (colour coded/function), weatherproof connectors, protective loom and secure fastening;
- b) Heavy-duty maintenance free batteries, in an accessible well protected location, mounting **shall**<sup>(E)</sup> include heat shielding if necessary, proper hold-downs, and sealed/vented if the location is near the occupants;
- c) An alternator, with voltage output compatible with the specific battery type, IAW the manufacturer's specifications;
- d) A master battery cut-off switch accessible from ground level on the driver's side;

- e) Wiring protected by insulating grommets where passing through metal;
- f) SAE approved fuses or circuit breakers with trip indicators protecting all circuits; and
- g) An engine compartment light with conveniently located switch.

#### 3.13.1 Lighting

- a) CMVSS - Lighting **shall** be installed on the vehicle in accordance with CMVSS, including all required clearance lights, turn signals, stoplights, headlights, and marker lights. Retroreflective sheeting (Conspicuity Tape) **shall** be installed on the completed vehicle in accordance with CMVSS. Lighting **shall**<sup>(E)</sup> incorporate LEDs wherever possible. Lighting **shall**<sup>(E)</sup> be positioned to prevent glare in the rear-view mirrors.
- b) Signals - Vehicle turn signals **shall**<sup>(E)</sup> be self-cancelling.
- c) Reverse Lights - The vehicle **shall** be equipped with lighting to indicate reversing in low-light conditions.
- d) Beacon Light - The vehicle **shall** be equipped with minimum of one roof mounted amber LED stroboscopic beacon light, mounted at the highest point, to allow for 360 degree visibility.
- e) Lights and reflectors at the rear **shall** be recessed or otherwise protected from damage.
- f) The vehicle **shall** be equipped with an adjustable LED type spotlight to illuminate the gutter broom; and
- g) The vehicle **shall** be equipped with a minimum of two protected rear facing LED work lights.

#### 3.15 Application Equipment

3.15.1 Auxiliary Engine - The sweeper **shall** be equipped with an auxiliary engine which operates on diesel fuel to the CAN/CGSB Standard 3.517-2007. The engine **shall** be an appropriate size to fill its sole purpose to provide full power to the sweeping and air conveyance systems. Engine manufacturer's certification for this application **shall** be available upon request. The engine system **shall**<sup>(E)</sup>:

- a) Have a dual element safety dry-type air cleaning system for combustion air to protect the engine and its components, with change indicators installed for the filter elements;
- b) Be mounted to the vehicle in a protected location, and accessible for ease of maintenance activities;
- c) Be equipped with a device which allows for smooth starting and stopping of the engine and prevents the momentum of the fan system from driving the engine when it is turned off;

- d) Be equipped with illuminated engine instruments, to provide complete information to the operator on the condition of the auxiliary engine. The auxiliary engine instruments **shall**<sup>(E)</sup> include:
- i. Ammeter, or voltmeter;
  - ii. Engine oil pressure indicator;
  - iii. Fuel gauge;
  - iv. Coolant temperature indicator;
  - v. air intake restriction indicator;
  - vi. Hour-meter with numeric display, which accurately records accumulated engine running time up to at least 9,999 hours; The meter **shall** register only when the engine is running; and
  - vii. Engine tachometer.

3.15.2 **Air Conveyance System** - The sweeper **shall** be equipped with an air conveyance system designed to move air at high velocity to pull debris through the system for one pass pickup and elimination of plugging. The following are system components:

- a) **Blower** - The sweeper **shall** be equipped with a blower fan rated to produce a minimum of 560 m<sup>3</sup>/min (20,000 cfm), which creates pressure in the suction nozzle and vacuum in the hopper. The blower **shall**<sup>(E)</sup>:
- i. Be fully balanced, for longevity of the fan and bearing life;
  - ii. Be a high velocity, closed face design;
  - iii. Be turbine type, constructed of abrasion resistant material;
  - iv. Be rated by an independent test facility;
  - v. Be powered by a V groove power belt, with tension adjustment not requiring repositioning of the engine; and
  - vi. Be mounted on heavy duty bearings.
- b) **Blower Housing** - The sweeper **shall** be equipped with a blower housing. The blower housing **shall**<sup>(E)</sup>:
- i. Be constructed of material and lined with material to provide abrasion resistance for maximum extended wear in abrasive environments;
  - ii. Be mounted to provide access for inspection; and

- iii. Not be directly attached to the hopper.
- c) Suction Nozzle - The sweeper **shall** be equipped with a suction nozzle with a minimum pick-up area of 174 sq/inches, and a minimum nozzle width of 762 mm (30 inches). The suction nozzle **shall**<sup>(E)</sup>:
- i. Be positioned just above the sweeping surface;
  - ii. Be attached to the suction hose to allow easy access to the nozzle and suction hose for inspection and cleaning when obstructions occur, not requiring any tools;
  - iii. Be constructed of abrasion resistant steel for longer life in an abrasive environment;
  - iv. Have a replaceable wear edge for running against the curb;
  - v. Be positioned beyond the wheel track for increased performance closer to the curb and improved visibility from the cab;
  - vi. Ride on a minimum of two heavy duty wheels, allowing the nozzle to move sideways, improving the ability to stay in the debris path, and follow road contours; and
  - vii. Be equipped with a front mounted independently replaceable shutter, to allow easy entry of large objects or large volumes of debris.
- d) Suction Hose - The sweeper **shall** be equipped with a suction hose attached to the suction nozzle, with a minimum inside diameter of 254 mm (10 inches), to allow the passage of large objects and volumes of debris. The suction hose **shall**<sup>(E)</sup> be equipped with an automatically activated self clearing jackknife style gate valve at the top of the hose, at the entry of the hopper, to prevent debris from falling back down to the nozzle when the vacuum is stopped, or when the sweeper is travelling.
- e) Wandering Hose - The sweeper **shall** be equipped with a wandering hose with a minimum diameter of 203mm (8 inches). The hose movement **shall**<sup>(E)</sup> be hydraulic boom assisted with power up/down controls. A minimum of two extension tubes **shall** be supplied and stored in an on-board storage.
- 3.15.3 Trailing Arm Side Broom - The sweeper **shall** be equipped with a trailing arm type side broom on the right side. The side broom **shall**:
- a) Have a sweeping path which sweeps toward the suction nozzle;
  - b) Have a minimum diameter of 711 mm (28 inches);
  - c) Be equipped with side broom controls, readily accessible to the operator in the cab, for:
    - i. Raising

- ii. Lowering
  - iii. Tilting
  - iv. Positioning (inward/outward, forward/backward); and
  - v. Rotational speed control;
- d) Have a mechanism to prevent impact damage;
  - e) Be supported in the storage position;
  - f) Retract with the bristle tips unexposed, for safety; and
  - g) Have replaceable sections of tempered steel wire bristles.

3.15.4 **Extension Broom** - The sweeper **shall** be equipped with a pivoting extension broom. The extension broom **shall**:

- a) Have a minimum diameter of 406mm (16 inches);
- b) Have a minimum length of 1.3 meters (54 inches);
- c) Be hydraulically driven, operating at an angle which directs material toward the suction nozzle;
- d) Have down pressure adjustment controls located outside of the cab, allowing the operator to see the broom while operating the control;
- e) Have lift controls mounted on the control panel in the cab;
- f) Stop rotation and automatically lift when the sweeper is in reverse or transport mode;
- g) Have polypropylene bristles; and
- h) Be disposable and reversible.

3.15.5 **Hopper** - The sweeper **shall** be equipped with a self-elevating dumping hopper. The hopper **shall**:

- a) Have a capacity of at least 6 cubic metres (8 cu yd);
- b) Be loaded evenly and efficiently to maximize the available capacity;
- c) Have a weight actuated full load indicator in the cab within full view of the seated operator;
- d) Have a raised hopper indicator in the cab within full view of the seated operator;
- e) Be equipped with a dust separator, and accessible, easy clean dust screens;
- f) Have a hydraulic dumping system elevating the hopper on a minimum 50 degree angle, and performing a complete removal of the collected debris;

- g) Be equipped with a top hinged rear door, which opens a minimum of 90 degrees for optimal dumping. The rear door **shall**<sup>(B)</sup>:
  - i. Have an external door prop for safety;
  - ii. Be equipped with an automatic lock mechanism for tight sealing between the hopper and rear door; and
  - iii. Have a heavy duty reinforced D style rubber seal.
- h) Have dumping controls located both in the cab and on the curb-side of the cab, allowing the operator to see the debris while dumping, for safety; and
- i) Be designed to protect against wear and corrosion, without interfering with dumping and clean-up (a smooth polyurethane liner like "Lifeliner" or equivalent is provided as guidance).

3.15.6 **Water System** - The sweeper **shall** be equipped with a water spray system. The water system **shall**<sup>(B)</sup>:

- a) Direct water spray at the side broom through a minimum of 2 nozzles, to reduce dust stirred up;
- b) Direct water spray at the extension broom through a minimum of 4 rubber mounted quick disconnect nozzles, to reduce dust stirred up;
- c) Direct water spray through a minimum of 4 nozzles inside of the suction nozzle, to prevent wear and clogging;
- d) Direct water spray through inside of the wandering hose nozzle, to prevent wear and clogging;
- e) Direct water spray through a minimum of 4 corrosion resistant nozzles mounted under the vehicle front bumper, to assist in wetting down debris under extremely dusty conditions;
- f) Have polyethylene water tank(s) with a minimum combined capacity of 1200 litres;
- g) Have a hydrant fill kit equipped with quick connect couplings, a filler hose and a dedicated onboard storage location;
- h) Have a deluge system which directs pressured water from a hydrant into nozzles on the rear door for easy cleaning of the entire hopper. The hydrant connection **shall** be through the standard water filler hose and quick connect coupling;
- i) Have an on/off controls readily accessible to the operator in the cab;
- j) Be equipped with an anti-siphon device to prevent water supply contamination;



- k) Have sufficient water drain devices to permit the complete draining of the water spray system components;
- l) Be complete with all components required to operate and maintain the system, including water filter, pumps, and ball valve; and
- m) Have a level gauge visible from the operator's position.

3.15.7 **Hydraulic System** - The hydraulic system **shall** be complete with all components required for the operation of the hydraulic equipment specified, including pump, reservoir, filters and control valves. The system **shall**<sup>(E)</sup>:

- a) If required, have an oil cooler to maintain oil temperature within operating limits under specified conditions;
- b) Have filter elements that are sized in accordance with the pump manufactures recommendations and are readily accessible for removal and replacement;
- c) Change indicators installed for the filter elements;
- d) Have a minimum hose burst pressure of not less than two times the maximum operating pressure;
- e) Have hoses supported and secured in an orderly arrangement, and properly marked for identification;
- f) Have a readily visible oil level gauge;
- g) Include clearly marked test ports, at locations in the hydraulic system required for diagnostics or adjustment procedures. A hydraulic pressure test gauge and applicable fittings/hoses **shall** be provided with each vehicle;
- h) Have hydraulic cylinders with nitrated or chrome plated piston rods; and
- i) Include a maintenance free direct gear pump directly driven from the auxiliary engine.

3.15.8 **Pneumatic System** - The pneumatic system **shall** be complete with all components required for the operation of the pneumatic equipment specified, including air tank, filter, cylinders, and control valves. The air lines **shall** be colour coded and marked with function for ease of maintenance.

3.15.9 **Sweeper Electrical System** - The sweeper system **shall** be equipped with a 12-volt electrical system. The system **shall**<sup>(E)</sup> include:

- a) Wire identification (colour coded/function), weatherproof connectors, protective loom and secure fastening;
- b) Maintenance free batteries, in an accessible well protected location, mounting **shall**<sup>(E)</sup> include heat shielding if necessary,

proper hold-downs, and sealed/vented if the location is near the occupants;

- c) An alternator, with voltage output compatible with the specific battery type, IAW the manufacturer's specifications;
- d) An audible back-up alarm to alert personnel that the vehicle transmission is in reverse;
- e) Wiring protected by insulating grommets where passing through metal; and
- f) SAE approved fuses or circuit breakers with trip indicators protecting all circuits.

#### 3.15.10 General Equipment

- a) A spare complete side broom **shall** be delivered with each vehicle.
- b) A spare extension broom **shall** be delivered with each vehicle.
- c) A standard tool box or compartment fitted with a hasp and/or lock for securing any tools required for servicing the sweeper **shall** be delivered with each vehicle.

**3.16 Lubricants** - The vehicle **shall**<sup>(E)</sup> be delivered with the manufacturer's standard lubricants and hydraulic fluids. The vehicle **shall**<sup>(E)</sup> be equipped with an auto-lubrication system servicing the maximum number of grease points on the sweeper. The grease reservoir **shall** be full when vehicle is delivered.

**3.17 Lubrication Fittings** - Lubrication fittings **shall**<sup>(E)</sup> conform to requirements of SAE Standard J534.

#### 3.18 Paint

- a) All paint **shall** be applied in accordance with the technical data provided by the product manufacturer. As a minimum, the coating process must yield a durable finish with a smooth appearance free of runs, sags, and orange peel.
- b) The Vehicle **shall** be painted with the manufacturer's standard colour(s).

**3.19 Identification** - The manufacturer's name, model number, model year, and manufacturer's serial number **shall**<sup>(E)</sup> be permanently marked on the vehicle in a conspicuous and protected location.

**3.20 Warning and Instruction Plates** - International symbols and/or bilingual markings **shall** be provided for all identification, instructional, and warning labels. The following items **shall**<sup>(E)</sup> be provided:

- a) Instructions detailing operation of the engine, transmission and attachments, permanently attached in appropriate location(s).

#### 4. INTEGRATED LOGISTIC SUPPORT

##### 4.1 Documentation and Support Items

4.1.1 Items with Each Vehicle - The Contractor **shall** provide the following items with each vehicle:

- a) Warranty Letter - A paper copy of the completed bilingual Warranty Letter with each vehicle shipped in DND format, the template will be provided by the Technical Authority. Designated warranty providers **shall** honour the warranty letter.
- b) Vehicle Manuals - The vehicle **shall** be provided with all manuals required for the safe operation, maintenance and repair of the vehicles and all sub-systems, attachments, components and accessories included in the vehicle supplied. The following manuals **shall** be provided:
  - i Operator's Manuals - Operator's Manuals **shall** be provided in a bilingual format or as 2 manuals in a single binder (one English, one French). Operators' Manual(s) **shall** be supplied in paper format. The Operator's Manual **shall** include:
    - 1. Instructions for the safe operation of the vehicle;
    - 2. Daily operator maintenance instructions/checks (including lubrication);
    - 3. Safety warnings: and
    - 4. Hand signals (as necessary).
  - ii Parts Manuals - The Parts Manuals **shall** be in English. The Parts Manuals **shall** include:
    - 1. Illustrations showing all components of the vehicle including equipment and accessories from other manufacturers that is supplied for the requirements of the contract. The illustrations **shall** have numbers for the itemization of the parts;
    - 2. A listing for all itemized manufacturer's parts showing the manufacturer's part number of the illustration, the part name and a brief description of the item; and
    - 3. Cross reference relating the manufacturer part number to the correct figure and item number.
  - iii Maintenance (Shop Repair) Manuals - The Maintenance (Shop Repair) Manual **shall** be in English (French translation is desirable). The Maintenance (Shop Repair) Manuals **shall** include:

1. A trouble shooting guide, showing the steps and tests required to determine the exact cause of a problem and an explanation of what steps would be required to correct a problem;
  2. A listing of the necessary tolerances, torque levels, fluid volumes required and a section listing any special tools (including item part numbers); and
  3. Information on the order of disassembly and assembly of the systems and components of the vehicle.
- iv **Manuals on CD/DVD-ROM** - A copy of the manuals on CD/DVD-ROM **shall** be provided. This **shall** include all the manuals provided in clauses i, ii, and iii above. For usability, CD/DVD-ROM **shall not** require password and/or internet connection to be accessed. Operator's manuals **shall** also be supplied in paper format.

4.1.2 **Documents Provided to Technical Authority** - The Contractor **shall** provide the following documents to the Technical Authority:

- a) **Sample Manuals** - The Contractor **shall** deliver a set of sample manuals to the Technical Authority including all documents in items i through iv above. Sample manuals will not be returned. In the event that manuals are dependent on the first vehicle completion, sample manuals **shall** be submitted within 30 days following the pre-production vehicle approval or first production vehicle inspection. The Crown will provide approval or comments on the manuals within 30 days.
- b) **Data Summary** - A bilingual Data Summary for each make/model/ configuration by completing Technical Authority's template with data and a vehicle picture. The Contractor **shall** provide a Data Summary, if possible, before shipment of vehicles;
- c) **Photographs** - Two (2) digital pictures, one left-front three-quarter view, and one right-rear three-quarter view of each make/model/ configuration. It is preferred that pictures have an uncluttered background. Pictures **shall** have a size of at least 4 Mega pixels;
- d) **Special Tools List** - The Contractor **shall** provide a list detailing the special tools required for the vehicle that would not be included in a mechanics toolbox. This would include items such as special wrenches, or extraction devices and special diagnostic tools;
- e) **Preventive Maintenance Replacement Parts Kit List (PMRPKL)** - A list detailing the parts that are required to perform preventive maintenance to the system for a period of 12 months. Components such as filters, belts, hoses, and fuses **shall** be included. The Preventive Maintenance Replacement Parts Kit List **shall**:
  - i Include the following information:

1. Item name;
  2. Contractor's part number
  3. Manufacturer's part number;
  4. Manufacturer's NATO Supply code (NCAGE) or name and address;
  5. NSN (NATO Stock Number) (if known);
  6. Quantity per equipment;
  7. Quantity recommended;
  8. Unit price; and
  9. Unit of issue.
- ii Be delivered to the Technical Authority. The list **shall** be supplied in an editable electronic format, preferably as a spreadsheet.
- f) **Warranty Letter** - The Contractor ***shall*** send an electronic copy of the Warranty Letter, to the Technical Authority for each vehicle, at shipment.
- g) **Safety Recalls and Servicing Data** - Safety recalls, and manufacturer's technical service bulletins, or equivalent ***shall*** be provided to the technical authority and the final delivery locations on a continuing basis, throughout the life expectancy of the vehicle or for no less than 10 years.

**NOTE:** This service can be made available as an Internet Service.

## 4.2 **Training**

4.2.1 **Operator** - The Contractor ***shall*** provide an operator training course. The course ***shall*** be given at the delivery destination for a minimum duration of one (1) days to provide training for up to six (6) DND operators. The final dates ***shall*** be arranged with the Technical Authority (TA). After completion of the course the Contractor ***shall*** have a "PROOF OF OPERATOR TRAINING" certificate signed by a Crown Representative for the destination. The Technical Authority will supply this document in an electronic format. The course curriculum ***shall*** include:

- a) Safety precautions to be observed while operating and servicing the vehicle;
- b) Vehicle/equipment operating characteristics;
- c) Vehicle/equipment operating procedures;
- d) Pre-operating and pre-shutdown procedures;

- e) Daily/weekly operator servicing procedures; and
- f) A minimum of one (1) hours practical operating experience per operator.

4.2.2 **Maintenance** - The Contractor **shall** provide at least a one (1) day maintenance/repair training course for up to eight (8) DND maintenance personnel at each delivery location. After completion of the training session the Contractor **shall** have a "PROOF OF MAINTENANCE TRAINING" certificate signed by the consignee. The Technical Authority will supply this document in electronic format. The following **shall** be included in the course curriculum:

- a) Operation and maintenance safety precautions;
- b) Preventive maintenance including servicing schedules (10 % of classroom time);
- c) Trouble shooting, testing and adjustments (70 % of classroom time); and
- d) Special tools and test equipment.

Note: Training **shall** be available in both official languages for bases located in the province of Quebec and when requested by DND.