



Rhode Island Airport Corporation

August 27, 2012

**INVITATION FOR BID NO. 24631
PURCHASE OF TWO
AIRPORT SNOWSWEEPERS
T. F. GREEN AIRPORT**

INTRODUCTION

The Rhode Island Airport Corporation (RIAC) is seeking bids for the purchase of two Airport Snowsweepers in accordance with Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5220-20 CHG 1.

RIAC reserves the right to waive any irregularities and to reject any and all bids on any basis without disclosing the reason. RIAC will be the sole judge in determining as equivalent products.

Sealed bids will be received at: Rhode Island Airport Corporation, Office of Administration, Attention: Laurie A. Sirois, Grants & Contracts Administrator, 3rd Floor, T. F. Green Airport, 2000 Post Road, Warwick RI 02886-1533.

Due date for bids is no later than 2:00 p.m., September 25, 2012, at which time they will be publicly opened. Bids must be in a sealed envelope clearly marked "**Snowsweepers – Contract No. 24631**". RIAC will not accept late bids under any circumstances. All costs incurred in connection with responding to this Invitation for Bids (IFB) shall be borne by the bidder.

The successful bidder must hold the bid price for 120 days from bid opening date, and may not withdraw their bid for at least 60 days after the time and date set for the receipt of bids. Please note, award of this bid is contingent upon FAA approval.

Delivery is required as specified with attachments, in ready to work condition, together with a title, within ten (10) months to T. F. Green Airport, 300 Airport Road, Warwick, RI. Title shall read: Rhode Island Airport Corporation; 2000 Post Road; Warwick, RI 02886-1533. All prices quoted are to be FOB delivery location. RIAC is tax exempt and a certificate will be supplied as required.

Procedures respecting bids and the selection of Contractors shall be in conformity with Title 37, Chapter 2 of the General Laws of the State of Rhode Island and RIAC procurement rules.

Alan Andrade
Vice President
Operations and Maintenance

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Purchasing Agent/
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GENERAL DESCRIPTION

This equipment specification covers requirements of a pushed type large swath airport snowsweeper with integrated air blast and carrier vehicle. The unit is an integrated broom and air blast, primarily intended for use in high-speed sweeping and cleaning of ice, snow and slush from Priority 1 areas such as runways, taxiways and ramp aprons. The term carrier vehicle represents the various self-propelled prime movers that provide the power necessary to move snow and ice control equipment during winter operations.

The sweeper and air blast shall operate simultaneously. The complete unit (broom and air blast) shall be controlled by a single operator employing a minimum of joysticks (or equal type controllers) conveniently placed near the operator control station.

Specifications of products by name, if any, are intended to be descriptive of quality, workmanship, finish, function, and approximate characteristics desired and are not necessarily intended to be restrictive. Substitution of products for those named may be considered, provided the substitute offered is in the opinion of RIAC, equal or superior in quality, workmanship, finish, function, and approximate characteristics to that specified in RIAC's specification listed herein and meet the requirements of FAA AC 150/5220-20 CHG 1.

These specifications contemplate the furnishing and delivery of up to two new all-wheel drive heavy duty large swath airport snowsweepers and generally will consist of: 1) Carrier Vehicle; 2) Broom (minimum 22-feet in length with a 46-inch diameter); and 3) Air Blast mounted on the front of the vehicle behind the brush frame or in the middle or rear of the vehicle. Indicate in your submission the type, size, and quality. The airport snowsweeper and carrier vehicle must be new, designed to remove snow from an airport runway and of the current production year.

As part of your bid include a description of the snowsweeper being offered (make, model, weight, size, features, capabilities, etc.). Some latitude in meeting the precise specifications will be allowed when demonstrated where "as equivalent" features, or specifications are being offered the quality and performance are equal or better. RIAC will be the sole judge in determining the acceptance of "as equivalent" features or specifications.

This vehicle shall be all-wheel drive and must be designed for the specific purpose of runway and taxiway snow removal. Snow and ice control equipment is classified by category based on the specific task that the equipment was designed to perform, and as such, no conversion of a non airport highway use vehicle will be considered responsive to the intent of this bid and the AC. The configuration of the airport snowsweeper shall be of a large swath push type sweeper, mounted on the front of a dedicated carrier vehicle and allow for the operator to directly observe the area being swept without the use of mirrors and designed to clear snow before the passing wheels of the unit have a chance to compact it.

This vehicle shall comply with all applicable Federal Motor Carrier Safety Regulations (FMCSR) and Federal Motor Vehicle Safety Standards (FMVSS) quality/safety standards, and requirements of the FAA AC 150/5220-20 CHG 1.

These specifications require the doing of all things necessary or proper for, or incidental to the furnishing of said unit. All items of design and equipment not listed in these specifications, but involved in carrying out their intent, are required to be furnished by the bidder, the same as if these items were specifically mentioned and described in these specifications.

REQUIREMENTS

In accordance with FAA AC 150/5220-20 Change 1, Appendix 6. The following requirements shall be included in the bid:

1. Anticipated uses and/or features of sweeper: Priority 1 runway, taxiway and apron high speed sweeping. To keep these areas in a no worse than wet condition.
2. Primary surface area to be swept: 3,657,809 Sq. Ft.
3. Critical time required to sweep primary surface areas: 30 Minutes
4. Sweeper speed needed to meet critical time: 8-30 MPH nominal speed
5. Type of sweeper desired (Pushed / Pulled): Pushed
6. Airblast system: Yes
7. Size of broom: 22' length, 46" diameter
8. Type of brush: Poly/wire
9. Brush Geometry: Cassette

SPECIFICATIONS

CARRIER VEHICLE

1. MATERIALS

Materials used on a carrier vehicle shall conform to the specifications listed in the FAA AC 150/5220-20 CHG 1, and the appropriate sections of Title 49, Chapter III, Subchapter B - FMCSR (Title 49). When not specifically listed, materials shall be of the best quality available for their intended commercial use. Component parts shall be new and free of all defects and imperfections that could affect the serviceability of the finished product.

2. DESIGN

Equipment shall be developed in accordance with the best engineering practices available. This includes the incorporation of ergonomic designs specifically directed at the vehicle's cab environment. Vehicle design shall include current state-of-the-art procedures that consider improved cab visibility, communications systems, interior lighting and the mitigation of noise and vibration. Design and installation of equipment shall permit easy accessibility for maintenance and service. All vehicle stress points shall be designed to distribute and dissipate shock forces.

3. CONSTRUCTION

Vehicle construction shall provide maximum protection against structural member failures. Equipment shall withstand the cold, moisture, strains, jars, vibration, and other conditions that are likely to be encountered during operation. All components and assemblies shall be free of

hazardous protrusions, sharp edges, cracks, or other elements that might cause injury to personnel or damage to equipment. Location of all air, oil, and hydraulic lines as well as electrical wiring shall be in protected positions properly attached to the frame or body structure. Wherever these lines pass through structural members they shall be protected with looms or grommets except where a through-frame connector is necessary.

4. CHASSIS

a. General

The design of the vehicle chassis shall be based on an all-wheel drive concept for optimized performance and safety. It shall have power assisted steering and a transmission with suitable load ranges to accommodate normal operating conditions. A pintle hook shall be permanently attached to the rear frame structure capable of towing a vehicle. All installed parts and accessories necessary for the safe operation of the vehicle shall conform to applicable provisions of Title 49.

b. Structural Members

The frame shall be made of either pressed or structural steel channel and reinforced as required to prevent distortion under maximum load conditions. All frames and stiffeners shall be treated with a corrosion inhibitor and shall be primed and painted before assembly.

c. Dimensions and Clearances

Carrier vehicles shall have the following overall dimensions:

- i. The minimum ground clearance of a vehicle chassis shall be 8 inches (20 cm).
- ii. The overall height of a vehicle excluding discharge chutes, lights, and exhaust stacks shall not exceed 13 feet (4.0 m).
- iii. The overall width of a vehicle including displacement plows at their maximum angle and wings folded shall be no more than 22 feet (6.7 m).
- iv. Maximum vehicular length should not exceed 35 feet (10.7 m).
- v. Using two wheel steering only, the vehicle must be capable of turning within a circle whose diameter is 100 feet (30 m). This diameter is measured from center to center of the outside front tire tread ground imprint.
- vi. The gross vehicle weight of the vehicle shall essentially be distributed equally over its axles. Under normal operating conditions, there shall not be more than a 20 percent variation in weight on any

5. ENGINE

The engine shall develop sufficient torque and horsepower to meet its normal operational requirements without exceeding the no-load speed at the peak of its certified gross brake horsepower curve. Dual engined vehicles shall use a common fuel. Engine noise and vibration can be reduced in the vehicle cab by minimizing the number of engines for the various power requirements and by placing them behind or below the cab. The Carrier Engine and Auxiliary Engine (if included) shall meet all current federal emission standards for off-road diesel engines.

6. COOLING SYSTEM

a. General

The engine cooling system shall be based on either a liquid or forced air design. Internal temperatures shall be controlled by a by-pass thermostat that regulates the flow of engine coolant. Even upon failure of the thermostat, the design of the system shall allow the engine to continue temporary operation without overheating. Drain cocks shall be installed at the lowest point of the cooling system and at other points necessary to completely drain the system.

b. Coolant Temperatures.

Coolant temperatures shall not exceed 212°F (100°C) nor be less than 140°F (60°C) when operated in ambient temperatures during snow removal operations.

7. FUEL SYSTEM

a. General

The fuel system shall comply with Title 49 and be designed to eliminate the possibility of vapor lock. It shall include a carburetor or fuel injector, choke system (manual or automatic), fuel pump, fuel strainers, dry filter type air cleaners, fuel lines, valves, drains, and other accessories required to provide a complete operational system.

b. Fuel Tank(s) and Lines

Fuel tank(s) shall have the capacity to supply fuel continuously to the engine for a period of not less than 8 hours while it is operating at its rated horsepower under normal conditions. If dual tanks are used, the supply system shall be designed to ensure an uninterrupted flow of fuel to the engine. Fuel lines shall be securely fastened in place, installed to prevent chafing or strain, and protected by grommets where lines project through metal apertures. Each fuel tank is to be equipped with an accessible bronze or brass drain plug or a quick drain.

c. Fuel Filler Pipe

The fuel filler pipe shall be located in an accessible location outside of the vehicle cab. A light chain shall be attached near its opening and to the filler cap to prevent loss of the cap.

d. Air Cleaner

The air cleaner shall be of a two stage design. The first stage incorporates a centrifuging pre-cleaner while the second consists of a dry type replaceable paper filter. It shall display an indicator that shows when the dry type paper filter needs servicing. The connection between the air cleaner outlet(s) and the engine intake(s) shall be waterproof and dust tight. The air cleaner intake shall be positioned in a manner to discourage the ingestion of snow and other contaminants, e.g. within the hood cavity.

8. EXHAUST SYSTEM AND MUFFLER

The engine shall be equipped with an efficient and safe exhaust system including mufflers. Its location shall minimize noise and exhaust gases entering the vehicle cab under all operating conditions. Further noise reductions by noise suppression materials, such as muffler insulation, is encouraged. Horizontal portions of exhaust systems shall be protected, whenever possible, from corrosive agents and fuel spills. Exhaust systems shall be positioned under the vehicle in a manner to minimize contact with slush and snow. Muffler(s) are to be made of aluminum, stainless steel, or materials coated with ceramics. Devices shall be installed to prevent snow and slush from entering vertical exhaust stacks.

9. GOVERNOR

Engine speed shall be regulated by a governor set to provide the maximum operating speed recommended by the engine, driveline, and power train manufacturers.

10. LUBRICATION

An engine's lubricating system shall be equipped with standard production fittings and accessories. Engine oil filter(s) shall be of either full-flow or by-pass design with either able to accept commercial replacement elements. All engine(s) shall receive lubrication prior to delivery with lubricants designated for use under ambient temperature conditions at the point of delivery. The unit(s) shall be tagged to identify the proper lubricants and their temperature ranges.

11. ACCESSIBILITY

a. Component Location

Engine and chassis components shall be positioned to allow easy access for inspection and maintenance purposes. Components that historically present maintenance problems or those that have the potential to cause operational problems should particularly be located in unobstructed areas. Locks, controls, and fasteners shall be designed to prevent over-torquing.

b. Cover Plates

Cover plates shall be equipped with either quick-disconnect fastenings or hinges.

12. TRANSMISSION

Transmission and vehicle manufacturers shall provide an application approval, at the time of vehicle delivery, that states the transmission is suitable for use in the vehicle as configured. The transmission shall operate smoothly and efficiently and be capable of transmitting the maximum gross torque generated by the engine to the drive wheels through all gear reductions. Drivetrains shall be in conformance with SAE requirements and shall be designed to minimize the number of joints. Transmissions shall be automatic and shall be either hydrostatic (with or without transfer case) automatic powershift, standard powershift, or fully automatic. Designs utilizing torque converters shall have a suitable torque ratio for the expected load ranges. The torque converter shall not operate at less than 70% efficiency. The gear or range selector shall have forward, neutral, and reverse positions clearly identified.

13. TRANSFER CASE

The vehicle and transfer case manufacturers shall provide an application approval at the time of vehicle delivery that states the transfer case is suitable for use in the vehicle, as configured. Transfer case assemblies shall provide positive drive to the front and rear axles and be of optional single or multi-speed design.

Three proven alternatives are the manual front axle disconnect type, the center differential with manual or automatic lockout type, or an overriding clutch type, any of which may be selected by a purchaser as an option. The transfer case may be a separate unit mounted independently or integrated with the transmission.

14. AXLES

The axle and vehicle manufacturers shall provide an application approval at the time of vehicle delivery that states the front and rear axles are suitable for use in the vehicle, as configured. The axle manufacturer's published rating shall at the least be equal to the load imposed at ground level when the vehicle is at its rated gross vehicle weight (GVW). Each non-steering axle shall be equipped with a retarding type device to ensure a torque transfer to each wheel having traction. When appropriate, manual lockout controls shall be located in the vehicle cab. The torque capacity of each axle and differential shall be at least 10 percent in excess of the maximum torque that the axle may experience under any GVW operating condition. The power transmitting shaft on the front steering axles shall incorporate steering joints that do not produce objectionable steering characteristics while the vehicle is operating on uneven surfaces.

15. BRAKE SYSTEM

A vehicle service and emergency braking systems shall meet Title 49 requirements for vehicles of similar design. These systems, whether air, hydraulic, or of another design, shall be complete with all necessary equipment to safely control, stop, and hold a fully equipped vehicle under all normal operating conditions. Both systems shall be readily accessible for external adjustment.

16. STEERING MECHANISM

The vehicle shall have a hydraulic or power assist steering mechanism which is operated from the driver's seat. During normal operations, the mechanism shall be capable of controlling the vehicle with all equipment operating. The design of the steering mechanism should, in the event of a power assist failure, be capable of safely bringing the vehicle to a park position from the maximum design speed allowed on the airport.

17. SUSPENSION SYSTEM

Vehicles shall be equipped with a current production model suspension system having a minimum rated capacity equal to the GVW of the carrier vehicle. System capacity may be determined by taking measurements from ground level with the vehicle loaded to its rated GVW and the attached equipment in its storage position. When required, front and rear axles shall have auxiliary suspension springs. Manufacturer's capacity ratings may not be raised to conform to the requirements of this specification. The suspension system shall exhibit no permanent set after the load is removed.

18. WHEELS, RIMS, TIRES, AND TUBES

a. Wheels

Rim and tire ratings shall conform to The Tire and Rim Association's published recommendations.

b. Tires

Each tire shall have a rated carrying capacity at least equal to the loads imposed on them by a fully loaded vehicle measured at each wheel. Tires on each axle shall be of the same size, except where dual tires require different sizes, and they shall have an aggressive tire tread. Tires (and tubes when applicable) shall meet the first line commercial grade requirements for the speed and type of service required. The front and rear tread widths shall not vary by more than four percent.

c. Spare Rim/Tire

Each rubber tired vehicle shall be equipped with a spare rim and tire set. If the vehicle possesses two or more separate and distinct tire and wheel sizes, the vehicle manufacturer shall provide one rim and tire set for each size.

19. HYDRAULIC SYSTEM

a. General

The hydraulic system shall consist of appropriate rams, pumps, piping, fittings, valves, controls, fluid reservoirs and filters, coolers, and other parts essential to its full operation. The system shall be capable of hydraulically positioning equipment through the entire range of its design limits. It shall be capable of operating all controls simultaneously without a noticeable reduction in power response. All hydraulic controls shall be located in the vehicle cab. The system shall be ruggedly constructed and able to withstand all loads imposed on it without relying on the use of mechanical locks. Filters within the hydraulic system shall conform to the Society of Automotive Engineers (SAE) Information Report, SAE J 931- Hydraulic Power Circuit Filtration.

b. Pump and Power Takeoff

The pump shall be ruggedly constructed and powered by the engine through a crankshaft power takeoff. It shall have sufficient capacity to operate the hydraulic equipment specified herein under all operating conditions and speeds.

c. Lines and Fittings

Only commercial quality hydraulic lines, hoses, and fittings that are capable of withstanding system working pressures under load are acceptable. Hydraulic hoses shall have a bursting pressure of three times their rated working pressure. The use of fittings, joints, and connections shall be kept to a minimum.

d. Fluid Tank

The hydraulic fluid tank shall have a filler neck consisting of a strainer, drain plug, shutoff valve, air vent, and baffles. Its capacity shall exceed the volume of oil required for the operation of any combination of attachments by 50 percent, and it shall have a hydraulic fluid quantity level measurement.

e. System Winterization

The hydraulic system shall meet the same low temperature requirements as the engine coolant system.

20. ELECTRICAL SYSTEM

a. General

The electrical system shall be negatively grounded and installed in accordance with current state-of-the-art practices and appropriate Federal requirements. All parts of the electrical system shall be waterproof, easily accessible, securely mounted, and protected against extreme temperatures, physical damage, snow, oil, and corrosion. All electrical circuit wiring shall be made of stranded conductors with a capacity exceeding the anticipated maximum circuit loading. Insulation of electrical wiring shall be equal to the recommended standards established for insulation materials by the Society of Automotive Engineers (SAE).

b. Power Supply

The carrier vehicle shall be equipped with a self regulating electric alternator having an output capacity that exceeds the anticipated electrical load.

c. Batteries

Batteries shall be securely mounted and adequately protected against physical injury, water, chemicals, and exhaust heat. They shall be properly sized based on vehicle manufacturer recommendations and be readily accessible for changeout and for other purposes. Enclosed battery compartments shall have adequate ventilation. Battery capacity (cranking amps, voltage, reserve power, continuous/deep cycle demand) shall be compatible with the size of the engine and the anticipated electrical load expected under normal operating conditions. Minimum battery size to start the engine shall be rated at 120 ampere-hours over a 20-hour discharge rate.

d. Starting Device

The vehicle shall have an electrical starter that shall not introduce a voltage drop sufficient to affect adversely the ignition system. It shall be equipped with an overload protection device. One of the following electrical/starting systems shall be provided:

- i. 12 volt electrical and starting.
- ii. 12 volt electrical/24 volt starting.
- iii. 24 volt electrical and starting.

e. Ignition System

Ignition systems for gasoline engines shall be of either electronic or distributor and coil design. Diesel engines may be equipped with or without glowplugs, depending on make, model, and manufacturer. Under extreme weather conditions, a block heater should be considered for improved ignition.

f. Sounding Device

Excluding pick-up trucks, each vehicle shall be equipped with an audible sounding device that is activated when the vehicle is shifted into reverse gear.

21. LIGHTING SYSTEM

The lighting system, including reflectors and clearance lights, shall be standard equipment currently used by the manufacturer. Task-oriented lights should be capable of lighting those areas to be cleared. The system shall include:

a. Headlights

The carrier vehicle shall be equipped with two or more sealed-beam quartz-halogen or equivalent headlights with upper and lower driving beams and a foot or hand controlled switch for beam selection. Snow removal attachments and other accessories should not be positioned so as to obstruct the illumination of these lights.

b. Dual Tail Lights and Dual Stop Lights

Each vehicle operating on airport property shall be equipped with dual tail lights and dual stop lights. The stop lights shall be activated whenever service brakes are applied.

c. Turn Signals

The carrier vehicle shall be equipped with two front and two rear turn signals that conform to SAE Turn Signal Units, Type I Class A, with self-cancelling controls and a visual/audible indicator. In addition to signaling turning movements, the system shall also be capable of signaling a hazardous condition by flashing simultaneously with the ignition of the vehicle turned on or off.

d. Spotlight

There shall be a corrosion resistant spotlight securely mounted on the cab roof. It shall be operable by hand from within the cab.

e. Reflectors, Markers, and Clearance Lights

This equipment shall conform to the requirements of Title 49. The clearance lights shall have commercial truck lenses.

f. Engine Compartment Lights

These lights shall adequately illuminate both sides of the engine(s). Location of the switches shall be in the engine compartment(s) with proper clearances so that they can be activated by operators wearing heavy winter gloves and outer garments.

g. Backup Lights

There shall be at least two backup lights installed at the rear of and at either side of the vehicle that will automatically be activated when the vehicle is shifted into reverse gear.

h. Vehicle Safety Identification Lights

The vehicle shall have a minimum of one yellow LED light bar mounted on its uppermost part (see AC 150/5210-5B, Painting, Marking, and Lighting of Vehicles on an Airport). The light emitted from the beacon should not reflect off rearview mirrors and into the operator's eyes. The beacon shall be steady burning with the following characteristics:

- i. Low-intensity lighting with an upper limit of 400 candelas (effective) to avoid damage to night vision. The minimum effective intensity range in the horizontal plane should be at least 40 candelas but not more than 400 candelas.
- ii. 360° azimuth (horizontal) coverage.
- iii. Peak intensity from 0° to 10° above the horizontal and reduced intensity to 1/10 of peak intensity from 10° to 15° above the horizontal.

22. OPERATOR'S CAB

a. General

Carrier vehicle cabs shall be made of either metal or fiberglass construction and be of conventional, cab forward or cab-over design. They shall be fully enclosed accommodating a single operator only (half cab) or single operator plus assistant/trainee (full cab). A definite separation shall exist between the engine and operator's compartment. All non-glass surfaces, such as the floor, sides, and roof of the cab, shall have insulation to reduce exterior noise. The maximum interior cab noise measured at the operator's seat shall not exceed 85 dBA under the following conditions: windows closed, heater and defrost systems at maximum operation, and carrier vehicle and equipment engines operating at maximum rated capacity. To the extent possible, the interior of the cab shall be ergonomically designed providing the operator with a pleasant working atmosphere that is devoid of the stark conditions normally associated with older equipment.

b. Communications Equipment Space

Transceivers shall be installed in carrier vehicles to establish voice communication with other vehicles, the air traffic control tower, snow control center and maintenance facilities. The vehicle cab shall be designed to provide convenient space near the operator for the installation of a pair of transceivers.

c. Fire Extinguisher

The vehicle cab shall have at least one 2A-10BC interior mounted fire extinguisher that is readily accessible to the operator.

d. Operator Seat

The vehicle cab shall provide an operator seat that can easily be adjusted up and down, fore and aft, a minimum of three inches (7.6 cm) in each direction. The seat should also be capable of reducing the effect of vehicle vibration by featuring air-cushion shock absorbing seat systems or systems of comparable design. All vehicle seats shall have approved seat belts. Seats shall be fully upholstered with a good quality fabric or plastic material.

e. Windows

The vehicle cab shall maximize the use of glass, including the placement of panels if possible in the lower sections of door panels, to increase the operator's view of operational areas and ground surfaces. All installed glass shall be laminated and safety rated. The location and size of the windshield shall minimize visual obstructions to the operator. The windshield shall be designed to avoid snow buildup and be equipped with at least one two speed automatically operating wiper (standard or wet) that is capable of sweeping a clear view for all occupants. The windshield washer reservoir shall have a capacity of at least one-half gallon (2 liter). Fluid applicators shall be located to provide at least 75 percent coverage to the windshield. The cab shall be equipped with sun visors.

f. Exterior Rearview Mirrors

Two electrically heated exterior rear view mirrors of the extension arm type shall be mounted on each side of the vehicle cab. Each mirror shall have an area of not less than 100 in².

g. Heater-Defroster

i. Heating System

The carrier vehicle cab shall have a heating system that is capable of maintaining a minimum interior temperature of 65° F (18° C) at an ambient outside temperature of -20° F (-29° C). Heat output shall be controllable from within the cab by a selector switch that is conveniently located to the operator. Under all conditions of heating and ventilation, the temperatures measured in the operator's immediate environment should be uniform within 9° F (5° C) (see SAE J 1503, Performance Test for Air-conditioned, Heated and Ventilated off Road Self Propelled Work Machines).

ii. Windshield

Windshields and other glass surfaces in the vehicle cab used in the operation of the vehicle and or to view pavement surfaces, including rear windows if installed, shall be defrosted through a heat energy transfer system.

iii. Ventilation

Each vehicle cab occupant should receive a minimum of 25 ft³/m (.71 m³/m) of filtered fresh air under all heating and ventilating conditions (see SAE J 1503). Cab ventilator intakes should be screened and positioned in such a manner to minimize the entry of snow.

iv. Hourmeters

Every engine permanently attached to a carrier vehicle shall be equipped with an hourmeter that registers engine operation time from zero to 9999 hours. Hourmeters shall be prominently displayed so that they can be easily read by an operator or service personnel. The hourmeters shall be of direct read design and shall only register when the engine is running.

v. Instrumentation

The cab shall display an instrument panel equipped with rocker and/or toggle switches and controls (instruments) that are user friendly to operators wearing bulky winter clothing. Toggle switches, where used, shall have a minimum length of 1 1/2 inches (4 cm). Frequently used instruments shall be located in direct line-of-sight and within forearm reach of a medium-sized person sitting in the operator's position. All instruments shall be clearly identified with labels that indicate their function. Instruments should display urgency of-action lights, i.e., green for normal operation, amber for warning, and red for emergency. Instruments shall be illuminated by background lighting regulated by dimmer switches capable of providing infinitely variable lighting intensities. Circuit breakers shall be grouped for easy access and convenience. Typical instruments that report and track major functions of a carrier vehicle are as follows:

1. Engine
2. Voltmeter
3. Lubricating Oil Pressure Gauges
4. Coolant Temperature Gauge(s)
5. Tachometer(s) including hourmeter(s)
6. Starting Controls (including auxiliary cold start controls)
7. Hydraulic Oil Pressure and Temperature Gauge if applicable
8. Vehicle Chassis
9. Brake-air Pressure Gauges if required
10. Low-air Pressure Warning, visual and audible type if required
11. Light Switches and Headlight Beam Indicator
12. Speedometer with Recording Odometer
13. Fuel Quantity Gauge(s)
14. Equipment Controls

23. SHEET METAL COMPONENTS

a. General

The carrier vehicle engine, as well as its mechanical components, shall be protected wherever possible from snow, rain and other winter elements. Body and engine enclosures shall be fabricated from aluminum, fiberglass, and steel. Self tapping bolts are unacceptable in the construction of these enclosures.

b. Body Accessories

The following parts and accessories are necessary for operational safety:

i. Steps.

Four-way safety tread design steps are required to ascend and descend certain high profile carrier vehicles. These steps, together with assist handles, shall be of ample size to ensure safe and easy access for persons wearing bulky winter clothing.

ii. Walkway

A four-way safety tread design walkway shall be provided, as necessary, for access.

iii. Handrails

Handrails shall be provided as required at all steps, walkways, and work stations. They shall be made of corrosion-resistant materials or otherwise treated to prevent corrosion.

iv. Fenders

All carrier vehicles shall be equipped with fenders and when determined by the operator, non-sail mudflaps to prevent wheels from throwing snow and other debris.

v. Drains

Plugged or free flowing drains shall be provided at all body and compartment locations where standing water can collect. Free flowing drains shall not drain onto sensitive mechanical or electrical components or on areas anticipated to be occupied by personnel during normal operations.

vi. Doors

Doors shall be equipped with a positive closing mechanism and, where appropriate, a locking mechanism. Top hinged compartment doors shall be held in the open position by support arms.

vii. Gutters

The vehicle cab shall be equipped with gutters, located above the entrance doors, of sufficient length to span the door width and provide runoff protection to occupants either entering or exiting the cab.

24. PAINTING, MARKING, AND LIGHTING OF VEHICLES

a. Painting and Lighting

The vehicle shall be painted Chrome-Yellow in accordance with color tolerance charts as defined in FAA Advisory Circular 150/5210-5B. Units are to be equipped with a yellow flashing LED light bar that is mounted on the uppermost part of the vehicle structure as per the most recent edition of FAA Advisory Circular FAA Advisory Circular 150/5210, "PAINTING, MARKING, AND LIGHTING OF VEHICLES USED ON AN AIRPORT".

b. Markings

The following markings shall be blue retro-reflective material, meeting ASTM-D 4956-09, Standard Specification for Retro Reflective Sheeting for Traffic Control Type III:

- i. An identification number (in consultation with RIAC) on each side and on the roof (the hood should be used if the vehicle has no roof).
 1. Side numbers will be a minimum of 16 inches (410 mm) in height and conspicuously located.
 2. Roof numbers will be a minimum of 24 inches (610 mm) in height and affixed with their bases toward the front of the vehicle. The identification numbers should provide sharp color contrast to the vehicle color.
- ii. In addition to the identification numbers, vehicle must display the name of the airport and the airport insignia/logo.
- iii. To further improve night-time recognition of vehicles, a minimum 8 inch (200 mm) wide horizontal band of blue reflective tape must be used around the vehicle's surface.

c. Preparation and Finish

The carrier vehicle and all mounted and towed equipment shall be cleaned first, then treated with a corrosion inhibitor, primed, puttied, sanded, and finally painted. The paint shall consist of not less than two coats of Chrome-Yellow polyurethane enamel having a combined minimum thickness of 7 mils.

d. Quality

The finished paint shall be free of "fisheye", "orange peel", chips, runs, or other imperfections that detract from the equipment's corrosion resistance and appearance.

25. MISCELLANEOUS

a. Name, Service, and Instruction Plates

All information plates shall be made of either noncorrosive metal or plastic with the information engraved, stamped, or etched thereon. Plates shall be mounted in a conspicuous place with screws, bolts, rivets, or exterior type pressure sensitive tape.

i. Plastic plates

Plastic plates are acceptable only in locations that are not exposed to the elements and subject to weathering or excessive heat.

ii. Information

Plates shall identify make, model, serial number, and any other relevant data.

iii. Technical Publications

The manufacturer shall furnish two sets of the following publications:

1. Operator's Manual

The operator's manual includes lubrication charts and instructions.

2. Parts Manual

The parts manual identifies and lists all parts, components, and sub-assemblies used in the fabrication of the carrier vehicle.

3. Maintenance and Service Manual

A maintenance and service manual provides guidance to nonspecialists performing routine services. The manual should also describe in detail with appropriate schematics the overhaul and major maintenance procedures required to maintain the vehicle.

4. Accessories and Tools

The carrier vehicle shall be equipped with the following tools and accessories. They shall be kept in a secure and readily accessible enclosure that is permanently affixed to the vehicle.

- a. Tire tools
- b. A jack specifically adapted to the carrier vehicle that is capable of raising it to a position where a flat tire can be changed.
- c. A minimum of six pins shall be provided in support of each shear pin located on the carrier vehicle and its auxiliary equipment.
- d. Specialized tools required for routine servicing of the carrier vehicle and its auxiliary equipment.

26. DELIVERY

a. Preparation for Delivery

i. Shipment.

The vendor "seller" is responsible for the safe and timely delivery of the vehicle and its accessories, spare parts, and tools to the agreed place of delivery.

ii. Marking

Carrier vehicles shall be marked for shipment in accordance with instructions agreed to by the purchaser.

iii. Instruction and Training

The manufacturer shall, at no additional cost, furnish the services of trained personnel to the purchaser at a time and place agreed to by all parties. These

individuals shall provide instructions to airport personnel sufficient for the personnel to familiarize themselves with the operational and maintenance characteristics of the vehicle and its auxiliary equipment. The period of instruction shall not be less than 24 hours.

27. RADIOS

Two-way radios shall be shipped loose (one radio per vehicle). RIAC uses the following models. Bidder shall provide either equipment noted below or compatible items.

- a. ICOM # IC-A200
- b. Kenwood # TK-7160
- c. V-CON Code 3 Model 3692 with 100AMP External Speaker (equivalent or greater model)

AIRPORT SNOWSWEEPER

1. MATERIALS

Materials used on the snowsweeper shall conform to the specifications listed in this AC. When not specifically listed, materials shall be of the best quality available for their intended commercial use. Component parts shall be new and free of all defects and imperfections that could affect the serviceability of the finished product.

2. PUSHED TYPE SWEEPERS

a. Brush Frame

The brush frame, which supports the brush assembly (see section 4a), shall be connected to a push mount, located in front of the carrier vehicle.

b. Caster Location

Sweepers shall be equipped with either two or four equally spaced heavy duty swivel type casters mounted on the rear of the brush frame.

c. Engine Skid Assembly

When the engine is located on a carrier vehicle chassis, it may be mounted directly to the frame or on a metal skid which fits on the bed area of the chassis. The skid assembly shall be designed for easy installation by overhead crane or forklift. It shall be equipped with two channel members, one on each side of the skid, to enhance safe movement and adjustment. A fuel tank, sufficient for 8 hours of continuous engine operation, shall be included with the skid assembly.

3. COMMON EQUIPMENT

a. Brush Assembly

The brush assembly shall consist of a vehicular attachment mechanism, cylindrically shaped core, brush frame, hood and deflector, angling system, drive system, and casters.

i. Vehicular Attachment

The brush assembly shall be designed for quick attachment to and removal from its carrier vehicle or trailer. Once attached, it shall be capable of sustaining all loads, including side loads. The assembly shall not transmit bounce or oscillatory motion to the carrier vehicle and shall permit normal operational turning without binding or damage.

ii. Core

The brush core is the rotating horizontal cylinder that secures the bristle sections of the brush in place for sweeping operations. The core shall be bearing supported and may be driven from either end, center, or from both ends. It shall be designed to allow bristle sections to be easily removed in the field and replaced. The brushes used on the snowsweepers shall be of the cassette style. The core shall be manufactured to reduce weight, yet have the strength necessary to perform as needed under normal conditions. The core shall have plastic wear inserts inside each track to eliminate any wear to the body (structure) of the core itself. These plastic wear inserts shall be easily replaceable in design.

iii. Brush Frame

The brush frame shall be fabricated from heavy gauge tubular, channel or wide flange sections reinforced as required to prevent loading distortion. It should be designed to allow brushes to be easily replaced once worn or damaged. The frame shall be self leveling, both perpendicular and parallel to the line of travel to assure a clean sweep and longer brush life. When mounted on a carrier vehicle, no components of the brush frame shall interfere with the servicing and maintenance of the vehicle.

iv. Hood

The brush hood shall be fabricated from heavy gauge sheet alloy steel or other durable material and be securely bolted to the brush frame. It shall shield the top half of the brush completely and shall include provisions for mounting a snow deflector on the front of the hood. The hood shall be of nonclog design to prevent ice buildup during freezing slush removal operations. It shall provide for necessary quick access to the brush for inspections and replacement of worn brush sections.

v. Snow Deflector System

A snow deflector shall be mounted on the front of the brush hood. The deflector shall have the ability to influence the angle that snow leaves the broom. The deflector shall be remotely adjustable from the operators cab in the carrier vehicle.

vi. Angularity System

The broom shall be self-leveling to assure a clean sweep and longer brush wear and life. Its angling mechanism shall be hydraulically actuated and controlled from the operator's seat. The broom shall be able to swing at least 30 degrees left and 30 degrees right from the transverse position and have the necessary degree of freedom to follow the pavement while sweeping at the rated speed.

vii. Drive

The brush core may be driven by a drive system of geared, hydrostatic or chain and sprocket design. When a chain type drive is used, adjustable idlers shall be installed to compensate for wear slack. Provisions shall be made for the operator to vary broom speed by remote control from the operators cab. Broom rotational speed shall be variable throughout a minimum range of 0 to 500 RPM. Drive shafts, universal joints, and mechanical units shall not depart from driveline rotational planes at excessive angles (greater than 15 degrees) during normal lifting or tilting operations of the broom.

viii. Casters

Casters shall be capable of revolving a full 360 degrees and be equipped with hydraulic or friction shimmy dampeners. All tires shall have a minimum lo-ply rating and may be filled with a foam type product to dissipate heat and prevent flats. Casters will be mounted on the rear of the brush frame and shall track within the path swept by the brush. When adjusted according to manufacturer's instructions, the casters shall be able to operate on bare pavement without damage to the tire. In addition, they shall not bind or come into contact with the brush assembly or rub against any other surface on the sweeper throughout their full rotational arc.

b. Elevation Mechanism

The broom shall be equipped with a remotely actuated hydraulic elevation mechanism that is capable of raising and lowering it for transport.

c. Wear and Leveling

An automatic or easily accessible height adjustment that "fine tunes" the degree of brush pattern should be provided. The adjustment, when preset, shall act as a stop for the remote elevation mechanism.

d. Controls

The carrier vehicle shall be equipped with secure and conveniently mounted in-cab controls that are user friendly and easily accessed by operators wearing heavy winter clothing. The controls shall allow the operator to start and stop the broom and airblast systems, turn on system lights, reposition snow deflector (if applicable), regulate broom speed, angle and lift, engine speed, and air blast speed and direction. Gauges showing

fluid pressure, temperature, and warning readings shall also be furnished. The control display area shall be lighted for night operations.

e. Airblast System

The airblast system you include in your bid must be of sufficient capacity & force to do what it is used for, as per the AC, which is sweep the pavement clean of snow, slush, sand and other debris, help dry the pavement surface, and clear snow from around runway lights. The system shall feature either a single or double outlet centrifugal blower having a minimum capacity of 6,000 CFM (2800 L/sec) and producing an air velocity of at least 270 MPH (435 KPH) at each outlet. The blower shall be driven by a variable displacement closed loop hydrostatic pump through a hydrostatic motor mounted directly to the fan blade shaft. It shall be capable of varying its speed throughout a range of 0 to 2200 RPM. When the broom is angled, the airblast shall automatically change, directing air perpendicular to the direction of travel and toward the direction of broom discharge. The air chutes shall be capable of moving in a vertical direction, raising and lowering as needed for travel or to clean runway lights. If required, each nozzle shall be capable of being completely turned off. Nozzles and broom shall be designed for independent use.

f. Hydraulic System

The hydraulic system shall supply fluid under pressure to the broom and blower drive circuits and to all hydraulically actuated components of the sweeper. All high pressure hydraulic hoses shall meet the requirements of 19(c) or have a safe operating pressure rating of not less than 5000 psi (350 kg/cm²). Low pressure hoses shall have a pressure rating of not less than 500 psi (35 kg/cm²). High and low pressure hoses shall be sized to ensure a proper flow of oil to working parts. In quick hitch applications, hoses should be equipped with male and female quick couplers to facilitate rapid removal and attachment. A hydraulic oil cooling system, which is capable of cooling the oil under all temperature conditions and is equipped with oil sight and temperature gauges, shall be supplied.

g. Cowling

The total power plant, including hydraulic and electrical components, and accessories shall be housed in a sturdy enclosure constructed of sheet metal, fiberglass or other durable material and equipped with louvered access doors to prevent overheating and to facilitate equipment servicing.

h. Engine(s)

Based on the sweeper configuration the engine(s) must be capable of producing sufficient power to meet the maximum continuous operational requirements of the carrier vehicle, broom, and blower either working separately or in combination.

i. Lighting

In addition to the lighting described in Appendix 1, paragraph 21, clearance lights should be mounted on each edge of the brush assembly for safety and to assist the operator in controlling the brush line of travel. These lights shall not come in contact with the vehicle frame nor interfere with the operation of the assembly. These lights shall be controlled

from within the carrier vehicle cab and be clearly visible when approaching the rear of the trailer.

j. Electrical

The carrier vehicles and towed trailers shall conform as appropriate with requirements of the carrier vehicle.

k. Communications Equipment

Transceivers shall be installed in carrier vehicles in accordance with carrier vehicle specification.

4. BRUSHES

Airport sweeper brush lengths shall be 22 feet. Brush diameter shall be 46". All brushes shall meet the requirements of military specification number MIL-F-83828. The brush configuration shall be the cassette style brushes and shall be a 50/50 poly/wire mix.

Additional required equipment for Carrier Vehicle and Snowsweeper

a. Vehicle Cab

- i. Additional Door Handles. Handles shall be installed on lower part of vehicle cab door.
- ii. Auxiliary Cab Heater and Circulating Fans.
- iii. Remote Control for Exterior Mirrors.
- iv. Electrically Heated Mirrors.

b. Windows

- i. Extra Window in Lower Part of Cab Doors.

c. Seats

- i. Bostrom "T" Seat. (or equivalent for driver and passenger sides)
- ii. Heated Driver Seat.
- iii. Arm Rests for Operator Seat.
- iv. Air Suspension Seat.

d. Cab Insulation Upgrade. (to reduce exterior noise below 85dBa)

e. Air Horn

f. Clock

g. Additional Lighting

- i. Auxiliary Cab Dome Light.
- ii. Roof Mounted Lights.
- iii. Door Lights.
- iv. High Intensity LED Strobe Beacon.

- h. Mechanical
 - i. Special Starting Systems
 - 1. Dual Battery System.
 - 2. Ether Cold Starting System.
 - ii. Permanently Installed Battery Charger
 - 1. Maintenance Charging. (0-10 amp capacity)
 - 2. Automatic cutoff.
 - 3. Connection.
 - a. Weather resistant and chassis mounted.
 - b. Adaptable to 110 volt electrical outlet.
 - c. Heavy duty.
 - d. 20 amp capacity.
 - iii. Engine Cooling
 - 1. Oversize Radiator.
 - 2. Radiator Shutters. (if compatible with engine design)
 - iv. Automatic Engine Shutdown, equipped with an override switch to prevent engine damage due to low engine oil pressure, high coolant temperature, or low coolant level.
 - v. All Wheel Steering, the rear drive-steer axle shall be controlled in the cab.
 - vi. Silicone Hoses
- i. Extra 50 Gallon Fuel Capacity
- j. Quick Disconnect Hitches
 - i. Automatic/Remote Hitch. Controls to activate the hitching and unhitching mechanisms shall be located in the vehicle cab. The hitch shall be capable of mating the plow equipment to the carrier vehicle attachment points even when minor angular differences exist between the attachment points and the hitching assembly. An additional hydraulic, pneumatic, or mechanical locking/unlocking device may be installed to ensure safe and positive final coupling. Locking devices shall be activated through the use of existing vehicle power systems.
- k. Broom hood must incorporate a remote operator selected automated design to remove (melt, dump, etc) snow from the broom head.
- l. Air Blast System.
- m. Quick Disconnects, for all applicable controls, hydraulic hoses/lines, electrical cables, drivelines, and instrumentation.
- n. Fire Extinguisher

***ALL ITEMS ABOVE MUST BE INCLUDED IN YOUR BID AND ARE REQUIRED ITEMS. ***

OPERATIONAL STANDARDS AND TESTING

CARRIER VEHICLE

1. GENERAL

The manufacturer shall be responsible for conducting tests to ensure that its snow and ice control equipment meets the operational and performance requirements it advertises. Certified records of these compliance tests shall be submitted by the manufacturer with each response to an invitation to bid. Equipment tests shall be conducted on standard production models and not on specially constructed prototypes.

The manufacturer shall certify that its equipment meets the advertized operational and performance specifications. At RIAC's option, tests to verify the manufacturer's claims shall be required upon delivery. The information contained in this section will assist the purchaser in conducting verification tests.

2. ADDITIONAL TESTS

The purchaser will be conducting its own operational, performance, and capacity tests on equipment prior to acceptance. The manufacturer should have the opportunity to witness the performance of these tests, but interpretation of results is the sole responsibility of the purchaser.

3. PRE-TESTING

Each test vehicle shall be examined to ensure that it is a standard production model and not a specially constructed unit made specifically for the test. Prior to testing, all controls, adjusting mechanisms, hydraulic systems and other assemblies shall be operated to ensure against leaks, restrictions and malfunctions. Once assured that the unit is fit, actual testing may begin.

4. CARRIER VEHICLE TESTS

The following temperature, performance, and compliance tests shall be conducted by a purchaser when acquiring a carrier vehicle.

a. Cold Weather Operations

A fully equipped carrier vehicle should be able to perform normal operations at an ambient temperature of 10°F (-12°C) below the lowest temperature in which the vehicle is expected to operate.

b. Hot Weather Operations

The vehicle should be capable of operating at an ambient temperature of 70°F (21°C) at the maximum speed recommended by the manufacturer without any of the vehicle components exceeding their normal operating temperature.

c. Power

Carrier vehicles shall have sufficient power to perform all operational and attached functions simultaneously.

d. Performance

The following tests shall be conducted on a vehicle loaded to its GVW (Gross Vehicle Weight) and shall include the following systems: hydraulic, power train, brake, lighting, controls, and instruments.

e. 10 Mile Test

This test requires that the vehicle be driven over hard surfaced roads at normal airport speeds for a distance of 10 miles (16 km) with no perceptible problems. Special attention shall be focused on vibration, steering, vehicle drift, rattles, leaks, and interior controls.

f. One Hour Test

This is a time test that will be performed at a speed of 5 mph (8kph) over all types of terrain that would normally be encountered at the airport.

g. Service Brake Test

This test shall be conducted at speeds of 20 mph and 40 mph (32 kph and 64 kph) respectively. Using the service brakes only, the fully loaded vehicle shall be brought to a complete stop within a distance of 35 and 131 feet (11 and 40 m) measured from the point of brake application. The test shall be conducted for two complete cycles in either direction on a hard pavement surface that is dry, reasonably level and free of loose material. During this maneuver, no steering corrections shall be made for vehicle drift during the stop.

h. Emergency Brake Test

This test shall be conducted at a speed of 40 mph (64 kph). Using the emergency brake only, the fully loaded vehicle shall be brought to a complete stop on the most critical airfield pavement grade within a distance of 288 feet (88 m) measured from the point of brake application. The test shall be conducted on a hard surface that is dry and free of loose material. Once stopped, the brake will continue to hold the vehicle without fade for five minutes. During this maneuver no steering corrections shall be made for vehicle drift during the stop.

5. AIRPORT SNOWSWEEPER TESTS

a. Testing should be conducted on a runway or taxiway having a length of at least 1000 feet (305m). Snow depth can vary, but the Large Swath Sweeper shall be capable of removing snow at the following depths:

- i. Three inches (7.6cm) of light snow having density of 8 to 15 lb ft (128 to 240 kg/m) or;
- ii. One inch (2.5cm) of slush at density of 40 lb ft (641 kg/m).

b. Testing speed should be as high as practical but no less than 25 MPH (40 KPH).

c. The resulting swath width should be reasonably clean without snow deposits resulting from bouncing or skipping of the brush.

- d. Sweepers shall be capable of varying their brush rotational speed, angle of attack, and the degree of brush pressure applied to a surface area.
- e. The unit shall be able to start and perform normal operations at an ambient temperature of 10°F (-12°C) below the lowest temperature in which the sweeper is expected to operate.
- f. The unit must be capable of broadcasting snow to either side of the vehicle.
- g. The sweeper shall be designed to allow all performance and monitoring functions to be controlled or observed by a single operator from the carrier vehicle cab.
- h. The brush should show no performance degradation when sweeping thin deposits of sand, ash, water or other light debris.

6. AIRBLAST TESTS

The airblast system shall be operated under the same conditions outlined for the sweeper.

WARRANTY

The bidder shall warrant his equipment as to the specified capacities and performance, and to be free from all defects in design, material and workmanship. All labor, transportation cost and defective parts shall be replaced free of cost. **THIS GUARANTEE SHALL CONTINUE FOR ONE (1) YEAR AFTER COMMENCEMENT OF ACTUAL OPERATION OF THE EQUIPMENT.** No exceptions to the guarantee requirement will be accepted. Additionally, the engines shall be warranted for a minimum of two (2) years and the automatic transmission shall be covered for a minimum period of three (3) years after commencement of actual operation of the equipment.

TRAINING

Manufacturer shall furnish, at no additional cost to RIAC, the following training:

1. The manufacturer shall, at no additional cost, furnish the services of trained personnel to the purchaser at a time and place agreed to by all parties. These individuals shall provide instructions to airport personnel sufficient for the personnel to familiarize themselves with the operational and maintenance characteristics of the vehicle and its auxiliary equipment. The period of instruction shall not be less than 24 hours.

COMPONENT SOURCING

Because of the critical nature of this machinery, it is essential that the complete unit and all components be newly manufactured and unused. To this end, RIAC reserves the right to compare serial numbers of engines, transmissions, transfer cases, drop boxes and axles with the current production records of the component manufacturers. Any component found to be used, or not current production will be rejected. The contractor (bidder) will replace the component in question with an appropriate and acceptable new replacement component at his own expense.

COMPONENT CERTIFICATIONS

Installation approvals for the engine, transmission, transfer cases, axles, brakes, and steering gear must be secured in writing from the various component manufacturers for the GVW and GCW ratings of the vehicle. The approvals shall be submitted at truck delivery. RIAC reserves the right to reject or delay acceptance of and payment for the machine in question if inconclusive evidence is presented to substantiate this requirement.

Approvals for engine and transmission installation must be based upon successful completion of installation tests conducted according to the component manufacturer's guidelines. The approvals must indicate that the cooling system and general installation allows the vehicle or subsystem to be operated continuously at full rated capacity in the maximum ambient temperature conditions normally expected without exceeding any of the maximum allowable temperature criteria established for installation approval. Any deviations allowed from standard criteria must be specifically waived in the written approval.

Axles, transfer cases and other gear reduction devices must be able to be operated continuously at maximum rated capacity in the maximum ambient temperature conditions normally expected without exceeding the maximum recommended operating temperatures of their lubricants or components.

Written installation and/or application approval from the manufacturers of hydraulic components must be secured. This shall include hydraulic pumps, motors and valves. Hydraulic pressure, flow and temperature parameters must be within the limits prescribed by the component manufacturer for this installation while the vehicle or subsystem is operated at its normal duty cycle in the maximum ambient temperature conditions normally expected. These approvals shall be delivered with the vehicle. The purchaser reserves the right to reject or delay acceptance of and payment for the machine in question if inconclusive evidence is presented to substantiate this requirement.

PERFORMANCE BOND

A one-year performance bond in the amount of 100% of the contract price shall be provided within ten days of contract award. The OEM providing the chassis and broom units shall execute this bond. In the event of a joint project involving several manufacturers, division of bonding requirements shall be the responsibility of the contracting parties in order to provide the appropriate total bond requirement to the purchaser.

INSURANCE

To protect the purchaser from potential involvement in litigation, the chassis manufacturer for this contract shall be adequately covered with liability insurance. The manufacturer shall carry commercial general liability insurance including coverage for the products-completed operations exposure, with limits of not less than \$1,000,000 Each occurrence (Bodily Injury and Property Damage), \$1,000,000 Products/Completed Operations Aggregate, \$5,000,000 General Aggregate, and \$1,000,000 Personal and Advertising Injury. The insurance shall be issued by an insurance company with a current A.M. Best rating of A- or higher. A Certificate of Insurance showing that this minimum amount of coverage is currently in force shall be included in the bid package for the bid to be considered

LOCAL SUPPORT AND BIDDERS REPRESENTATIONS

Because of the critical nature of this machinery and the specialized design of the equipment, local service and technical support are considered an integral part of its purchase. Therefore, all bidders must have authorized servicing dealers of the vehicle proposed, with service facilities, either proprietary or contracted, within the Northeast Region of the United States. All bidders must be capable of servicing the entire unit including the chassis, and any auxiliary equipment provided thereon in an expeditious manner. To assure that the spirit of this requirement is met, the bidder shall include verification and proof in the bid package that they

and chassis manufacturer have had an established and legally binding agreement for a minimum of three years.

This service facility must make available factory trained mechanics who are completely trained in the delivery in-service, service and maintenance of the unit offered and must be equipped to offer prompt service on the unit at the in-service location. These mechanics must hold current and valid certifications from the manufacturer. All bidders must be capable of servicing the entire unit including the chassis and any auxiliary equipment provided thereon.

The service facility must have fully equipped mobile service vehicles.

The service facility must be equipped to handle, without subletting, the following: body repairs, paint work, welding, frame and spring repairs and power train repairs.

The service facility must provide a technical support telephone contact number. User inquiries shall receive a response to all technical support issues within four hours.

In the airport industry, snow removal equipment falls into the category of emergency equipment. It is imperative that the manufacturer carries a support inventory available to the purchaser 24/7. The manufacturer or its distributor shall supply in the bid package, the emergency service/parts contact person complete with 24/7 telephone numbers to include weekend and holidays.

Further, the airport sponsor reserves the option to travel to and inspect the bidder's sales and service facilities. Clear evidence of experience in servicing the unit offered must be shown or the bidder will be determined to be unqualified and therefore their bid will be determined to be unresponsive.

FEDERAL CONTRACT PROVISIONS:

The following contract conditions apply to this Contract. Submission of a bid shall constitute full acceptance of these conditions.

- Buy American Preference - Title 49 U.S.C., Chapter 501 (Program Guidance Letter 10-02) (PDF) (posted 3/9/2010)
- Equipment Meeting Buy American Requirements (as of 1/31/2011) (MS Excel) (posted 2/1/2011)
- Foreign Object Debris (FOD) Detection Equipment Request for Qualifications (PDF) (posted 8/10/2010)
- Percent Calculation Worksheet (MS Excel) (posted 8/10/2010)
- Notice of Decision to Issue Buy American Waivers for Foreign Object Debris (FOD) Detection Equipment (PDF) (posted 1/4/2011)
- Civil Rights Act of 1964, Title VI (MS Word) - Contractor Contractual Requirements - Title 49 CFR Part 21
- Airport and Airway Improvement Act of 1982, Section 520 (MS Word) - Title 49 U.S.C. 47123
- Disadvantaged Business Enterprise (MS Word) - Title 49 CFR Part 26
- Lobbying and Influencing Federal Employees (MS Word) - Title 49 CFR Part 20
- Access to Records and Reports (MS Word) - Title 49 CFR Part 18.36
- Energy Conservation (MS Word) - Title 49 CFR Part 18.36
- Breach of Contract Terms (MS Word) - Title 49 CFR Part 18.36
- Rights to Inventions (MS Word) - Title 49 CFR Part 18.36
- Trade Restriction Clause (MS Word) - Title 49 CFR Part 30

Additional Provisions for Equipment Contracts Exceeding \$10,000

- Termination of Contract (MS Word) - Title 49 CFR Part 18.36

Additional Provisions for Equipment Contracts Exceeding \$25,000

- Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion (MS Word) - Title 49 CFR Part 29

Additional Provisions for Equipment Contracts Exceeding \$100,000

- Clean Air and Water Pollution Control (MS Word) - Title 49 CFR Part 18.36(i)(12)

- END OF SPECIFICATIONS -

**IFB No. 24124
PURCHASE OF TWO
AIRPORT SNOWSWEEPERS
T. F. GREEN AIRPORT
RESPONSE FORM**

Responses are **due no later than 2:00 p.m., September 25, 2012**, Attention: Laurie A. Sirois, Grants & Contracts Administrator, Rhode Island Airport Corporation, 3rd Floor, 2000 Post Road, Warwick, RI 02886. Vendors may copy/scan these pages to facilitate completing the information, but must return response in this format/order.

The undersigned, on behalf of the bidder, certifies that: This offer is made without previous understanding, agreement or connection with any person, firm, or corporation entering a bid on the same project; is in all respects fair and without collusion or fraud. The person whose signature appears below is legally empowered to bind the company in whose name the bid is entered. They have read the entire document and understand all provisions. If accepted by RIAC this bid is guaranteed as written and amended and will be implemented as stated.

Firm Name _____

Contact _____

Signature _____ Title _____

Address _____ City/State _____ Zip _____

Phone _____ Fax _____ Hours _____

Taxpayer I.D. Number _____

Company Web Site Address _____ E-Mail _____

General Nature Of Business _____

Type or Organization (check one):

Sole Proprietorship _____ Partnership _____ Incorporated _____ Public Corporation _____
Private Corporation _____

Minority Business Enterprise _____ Woman-Owned Business Enterprise _____
Small Business Enterprise _____

Manufacturer _____ Distributor _____ Retail _____ Dealer _____ Service _____

Number Of Locations _____ Number Of Persons Employed _____

We Acknowledge Receipt Of These Addenda: No. _____, Dated _____; No. _____, Dated _____

Has any person, firm, or corporation entering a proposal on the project been disbarred or suspended by the State of Rhode Island. If so indicate dates and explanation for such.

ALL vendors interested in responding **MUST** provide the following requested information in this format. Additional information may be included on accompanying sheets if necessary.

1. Any additional information necessary to assist RIAC in evaluating your bid may be listed here.

2. Provide references from at least (3) companies, which have received the proposed or similar services.

- a. Name of Facility, Group, Organization or Firm _____
 Address _____ Contact Person _____
 Phone Number _____
- b. Name of Facility, Group, Organization or Firm _____
 Address _____ Contact Person _____
 Phone Number _____
- c. Name of Facility, Group, Organization or Firm _____
 Address _____ Contact Person _____
 Phone Number _____

3. List any deviations from the SPECIFICATIONS and MANDATORY REQUIREMENTS section in this document. An explanation must be provided below and documentation provided to verify compliance with the minimum specifications on a similar or equivalent basis.

ITEM NO.	REASON FOR DEVIATION, DESCRIPTION OF REPLACEMENT COMPONENT, AND/OR EXPLANATION

4. Pricing Information (please print clearly)

a. Cost of One Vehicle: \$ _____
(Amount in Numbers)

(Amount in Words)

b. Total Cost for Two Vehicles: \$ _____
(Amount in Numbers)

(Amount in Words)

"NO BID" RESPONSE FORM

To submit a "No Bid" response for this project, this form must be completed for your company to remain on our bidders list for commodities/services referenced. If you do not respond your name may be removed from this bidders list.

Note: Please show the solicitation number on the outside of the envelope.

Please check statement(s) applicable to your "No Bid" response –

- Specifications are restrictive; i.e. geared toward one brand or manufacturer only (explain below).
- Specifications are ambiguous (explain below).
- We are unable to meet specifications.
- Insufficient time to respond to the solicitation.
- Our schedule would not permit us to perform.
- We are unable to meet bond requirements.
- We are unable to meet insurance requirements.
- We do not offer this product or service.
- Remove us from your vendor list for this commodity/service.
- Other (specify below).

Comments:

Company Name (as registered with the IRS)

Authorized Signature

Correspondence Address

Printed Name

City, State, Zip

Title

Date

Telephone/Fax

Terms and Conditions

In submitting a response to this Invitation for Bids, vendors hereby understand the following:

1. All project participants, consultants, engineers, and contractors, must comply with all applicable federal, state laws and RIAC rules and regulations pertaining to contracts entered into by governmental agencies, including non-discriminating employment. Contracts entered into on the basis of submitted bids are revocable if contrary to law.
2. Alternate bids (two or more bids submitted) will be considered for award. RIAC reserves the right to make the final determination of actual equivalency or suitability of such bids with respect to requirements outlined herein.
3. The bids submitted, and any further information acquired through interviews, will become, and are to be considered, a part of the final completed contract. If there is any variance or conflict, the bid specifications, conditions, and requirements shall control.
4. Prices offered may not be withdrawn for a period of ninety days immediately following the opening of this Bid. Prices MUST also be free of federal, state and local taxes unless otherwise imposed by a governmental body, and applicable to the material on the bid.
5. Bidder MUST return the original attached Response Form as noted previously on the bid due date.
6. Envelopes containing responses must be sealed and marked on the lower left-hand corner with the firm name and address bid number, date, and time.
7. RIAC interprets the term "lowest responsible bidder" as requiring RIAC to: (a) choose between the kinds of materials, goods, wares, or services subject to the bid, and (b) determine which bid is most suitable for its intended use or purpose. RIAC can consider, among other factors, such things as labor cost, service and parts availability, availability of materials and supplies, and maintenance costs of items upon which bids are received. RIAC can determine any differences or variations in the quality or character of the material, goods, wares, or services performed or provided by the respective bidders.
8. All requested information must be supplied. If you cannot respond to any part of this request, state the reason you cannot respond. You may provide supplemental information, if necessary, to assist RIAC in analyzing your bid.
9. A purchase order and/or contractual agreement constitutes RIAC's offer to the service provider upon the terms and conditions stated herein, and shall become binding meeting the terms set forth herein when it is accepted by acknowledgment or performance.
10. After award, if the successful bidder/supplier refuses or fails to make deliveries of the materials and or services within the times specified in the Invitation for Bids, purchase order, or contractual agreement, RIAC may, by written notice, terminate the contract OR purchase order.
11. The supplier shall hold and save RIAC, The State of Rhode Island, and its officers, agents, servants/employees harmless from liability of any patented or unpatented invention, process, article, or appliance manufactured, or used in the performance of the contract, including its use by RIAC.

12. Payment of the seller's invoices is subject to adjustment.
13. The Bidder agrees that:
 - a. He/she shall not discriminate against any person in the performance of work under the present contract because of race, religion, color, sex, national origin, ancestry, or physical handicap;
 - b. In all solicitations or advertisements for employees, he/she shall include the phrase, 'Equal Opportunity Employer,' or a similar phrase;
 - c. If he/she fails to comply, he shall be deemed to have breached the present contract, and it may be canceled, terminated, or suspended, in whole or in part, by RIAC;
 - d. If he/she is found guilty of discrimination under a decision, he/she shall be deemed to have breached the present contract, and it may be canceled, terminated, or suspended, in whole or in part, by RIAC; and,
 - e. He/she shall include the provisions of subsections (a) through (d) inclusively of this paragraph in every subcontract or purchase order so that such provision will be binding upon such subcontractor or vendor.
14. RIAC shall retain the right to reject any and/or all bids received, and responses to this and/or related documents, if determined to be non-responsive in any form, or if determined to be in the best interest of RIAC.
15. The firm responding to this bid proposes to furnish all materials, labor, supplies, equipment and incidentals necessary to provide the equipment/materials/ services described herein in accordance with the, Addenda, Contract, Bonds, Insurance, Plans, Specifications, Mandatory Requirements and Conditions.
16. If a response to this Invitation for Bids is accepted, the Bidder agrees to execute and deliver to RIAC a contract in accordance with the Contract Documents (if applicable) within ten days of notice of the award to the Bidder. The Bidder agrees that the surety/deposit given concurrently herewith shall become the property of RIAC in the event the Bidder fails to execute and deliver such contract within the specified time. In the further event of such failure, the Bidder shall be liable for RIAC's actual damages that exceed the amount of the surety.
17. It shall be understood that time is of the essence in the bidder performance. The bidder agrees that RIAC's damages would be difficult or impossible to predict in the event of a default in the performance hereof; and it is therefore agreed that if the bidder defaults in the performance of the Contract Documents, the bidder shall be liable for payment of the sums stipulated in the Contract Documents as liquidated damages, and not as a penalty.
18. The bidder hereby certifies that he/she has carefully examined all of the documents for the project, has carefully and thoroughly reviewed this Invitation for Bids, that he/she has inspected the location of the project (if applicable), and understands the nature and scope of the work to be done; and that this bid is based upon the terms, specifications, requirements, and conditions of the Invitation for Bids and documents. The Bidder further agrees that the performance time specified is a reasonable time, having carefully considered the nature and scope of the project as aforesaid.
19. All products/services and related equipment proposed and/or affected by acquisitions or purchases made as a result of the response to this document shall be compliant with existing

RIAC hardware, software, and applications where applicable. Verification must be provided in the response to this document.

20. The Bidder certifies that this proposal is submitted without collusion, fraud or misrepresentation as to other Bidders, so that all bids for the project will result from free, open and competitive bidding among all vendors.
21. It shall be understood that any bid and any/all referencing information submitted in response to this Invitation for Bids shall become the property of RIAC, and will not be returned. RIAC will use discretion with regards to disclosure of proprietary information contained in any response, but can not guarantee that information will not be made public. As a governmental entity, RIAC is subject to making records available for disclosure after Board approval of the recommendation.
22. RIAC will not be responsible for any expenses incurred by any vendor in the development of a response to this Invitation for Bids. Further, RIAC shall reserve the right to cancel the work described herein prior to issuance and acceptance of any contractual agreement/purchase order by the recommended vendor even if RIAC has formally accepted a recommendation.
23. RIAC will accept responses transmitted via facsimile unless stated to the contrary within this document. Bids must be received prior to the time and dates listed to be considered responsive. RIAC will not "accept" late responses and will return them to the sender. Further, RIAC will NOT: (1) guarantee security of the document received; (2) be held responsible for bids which are NOT legible (and may choose to reject such responses); and, (3) guarantee that the receiving facsimile machine will accept transmission or that phone lines are functioning and available for transmission. Submitting a response via facsimile does NOT relieve the Bidder of: (1) responsibilities stated in the document (such as attendance at a mandatory pre-proposal conference); (2) providing non-paper informational items which must be returned with the response (diskettes, large drawings, photographs, models, etc.); and, (3) providing original copies of bid sureties (bonds, certificates of insurance, etc.)
24. By submission of a response, the Bidder agrees that at the time of submittal, he/she: (1) has no interest (including financial benefit, commission, finder's fee, or any other remuneration) and shall not acquire any interest, either direct or indirect, that would conflict in any manner or degree with the performance of Bidder's services, or (2) benefit from an award resulting in a "Conflict of Interest." A "Conflict of Interest" shall include holding or retaining membership, or employment, on a board, elected office, department or bureau, or committee sanctioned by and/or governed by RIAC. Bidders shall identify any interests, and the individuals involved, on separate paper with the response and shall understand that RIAC, at the discretion of the Purchasing Director in consultation with RIAC Counselor, may reject their bid.
25. Campaign Finance Compliance - Every person or business entity providing goods or services at a cost of \$5,000 cumulated value is required to file an affidavit regarding political campaign contributions with the RI State Board of Elections even if no reportable contributions have been made. (RI General Law 17-27) Forms obtained at Board of Elections, Campaign Finance Division, 50 Branch Avenue, Providence, RI 02904 (401-222-2056).
26. Major State Decision-Maker - Does any Rhode Island "Major State Decision-Maker", as defined below, or the spouse or dependent child of such person, hold (i) a ten percent or greater equity interest, or (ii) a Five Thousand Dollar or greater cash interest in this business?

For purposes of this question, "Major State Decision-Maker" means:

- (i) All general officers; and all executive or administrative head or heads of any state executive agency enumerated in R.I.G.L. § 42-6-1 as well as the executive or administrative head or heads of state quasi-public corporations, whether appointed or serving as an employee. The phrase "executive or administrative head or heads" shall include anyone serving in the positions of president, senior vice president, general counsel, director, executive director, deputy director, assistant director, executive counsel or chief of staff;
- (ii) All members of the general assembly and the executive or administrative head or heads of a state legislative agency, whether appointed or serving as an employee. The phrase "executive or administrative head or heads" shall include anyone serving in the positions of director, executive director, deputy director, assistant director, executive counsel or chief of staff;
- (iii) All members of the state judiciary and all state magistrates and the executive or administrative head or heads of a state judicial agency, whether appointed or serving as an employee. The phrase "executive or administrative head or heads" shall include anyone serving in the positions of director, executive director, deputy director, assistant director, executive counsel, chief of staff or state court administrator,

If your answer is "Yes", please identify the Major State Decision-Maker, specify the nature of their ownership interest, and provide a copy of the annual financial disclosure required to be filed with the Rhode Island Ethics Commission pursuant to R.I.G.L. §36-14-16, 17 and 18.