



Rhode Island Airport Corporation

March 1, 2016

Invitation for Bid No. 26311 Airport Snow Blowers

The Rhode Island Airport Corporation (RIAC) is soliciting sealed for 2 all-wheel drive airport snow blowers.

Sealed bids will be received at: Rhode Island Airport Corporation, Office of Procurement, 3rd Floor, T. F. Green Airport, 2000 Post Road, Warwick RI 02886-1533. The bidder must submit one (1) original and one (1) copy ("Public Copy") of the Response Form.

Due date for bids is no later than 2:00 p.m., March 15, 2016, at which time they will be publicly opened. Bids must be in a sealed envelope clearly marked "**Airport Snow Blowers – IFB No. 26311**". 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.

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.

As part of the bid package, include a complete description of the product. Some latitude in meeting the precise specifications will be allowed when demonstrated that as equivalent features or specifications are being offered. However, RIAC will be the sole judge in determining the acceptance of as equivalent features or specifications.

Only the latest model, as evidenced by the manufacturer's current published literature, will be considered. Obsolete models not in production will not be acceptable. Any model containing used parts will be rejected. Prior to final acceptance to RIAC, all components shall be verified through their manufacturer for compliance under the specifications.

The manufacturer, contractor, or offeror shall guarantee in writing that for a period of manufacturer's warranty from the time of first use, it will at its own expense and without expense to RIAC, replace all failed parts and make all repairs that may be required by reason of defective workmanship, or material in any part of the assembly of the unit and associated components. Unless otherwise specified, this guarantee extends for a period of not less than one (1) year from the date of first use, except those items of standard commercial design, such as engines, axles, tires, etc. These will carry the manufacturer's standard warranty, and upon notice the manufacturer, contractor or offeror shall promptly repair or replace all defective or damaged items delivered under the contract. The manufacturer, contractor or offeror shall provide assistance to RIAC with any warranty problems which may arise from manufacturing, suppliers, or contractors. The contractor may elect to have any item returned to its plant, with freight charges being borne by the contractor. Unless they fail as a result of improper application by the manufacturer, contractor or offeror, batteries, rubber and

material normally consumed in operation are excluded from this guarantee, but shall in any event, be guaranteed by the contractor to the extent of any guarantee received by the contractor from the supplier.

Delivery of the Airport Snow Blowers will be required within 8 months of notice of award, or as otherwise agreed upon in writing by RIAC. The Airport Snow Blowers will be delivered, as specified, in ready to work condition to T.F. Green Airport, Maintenance Area, 300 Airport Road, Warwick, R. I. Do not include state sales or federal excise tax as part of your bid price, as RIAC is exempt from these taxes.

RIAC reserves the right to waive any irregularities and to reject any and all bids on any basis, without disclosing the reason.

Procedures regarding bids and the selection of contractors shall be in conformity with all federal regulations including 49 CFR, Part 18.36 and Title 37, Chapter 2 of the General Laws of the State of Rhode Island and RIAC procurement rules.



Guy A. De Cristofaro
Manager, Airfield Maintenance



Jeffrey Goulart
AVP Finance Administration

SPECIFICATIONS

GENERAL PURPOSE

These specifications contemplate the furnishing and delivery of 2 new all-wheel drive, all wheel steer two engine design snow removal vehicles and indicate in general the type, size and quality desired.

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

The configuration of this snow removal unit shall be a front mounted attachment, forward mounted cab design with near center steering, auxiliary power unit between operator cab and rear mounted carrier engine.

All parts and components of this unit shall be new and of the size, material, strength and engineered to be classified as HEAVY DUTY so as to sustain the maximum load limits and severe operating conditions imposed upon to result in minimum wear and failure.

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.

In the interest of continued and reliable service, parts, and technical support, the manufacturer(s) of the equipment proposed shall have exhibited a consecutive history of financial stability and manufacture of similar equipment over a minimum of the past five years. The model proposed shall have been in continuous production for a minimum of five years. Documentation shall be provided in the bid package to verify such continuous business activity, such as location and contact lists, financial statements, and annual reports. Because of the critical nature of the product and its application, the burden of proof for this requirement lays with the bidder and/or suppliers. The judgment as to a manufacturers and bidder's experience and stability are solely the responsibility of the agency accepting bids.

This unit shall have a fully enclosed, thermally and acoustically insulated, galvanized metal cab mounted center frame, as far forward as good engineering practices will permit and have a cab dimension width of not greater than 60 inches. The operator shall be near center cab positioned for visibility in high-speed snow removal operations. This truck shall have a gross vehicle weight rating of not less than 52,000 pounds at the hub with a wheelbase shall of approximately 164 inches

This unit shall be designed for one-man operation with the cab center of frame and over the front axle.

The front attachment to front axle dimension shall be kept as close as possible. This cab location and the axle to attachment dimension is necessary in order to have the operator as far forward as good engineering practices will permit for greater visibility and maneuverability while clearing debris from runways and taxiways.

CHASSIS

The chassis shall have a heavy-duty channel type rear bumper, minimum 12" depth and 90" width to protect the engine, radiator and engine cowling. A pintle hitch with a minimum rating of 20,000 lbs. and two tows hooks shall be mounted at the rear bumper. A frame-mounted toolbox shall be provided. The chassis shall be designed as to permit easy and safe mounting and dismounting of unit for operator and service personnel. All sheet metal, cowling, steps and fenders shall be free of sharp edges and protrusions. All steps or walkways shall be raised lug or expanded metal type construction. Grab bars shall be installed as required for safe mounting and dismounting by personnel.

All sheet metal for cowling, shrouds and fenders shall include ample supports and bracing to prevent distortion or cracking. The carrier engine access cover shall be a fiberglass tilting type with an air assist system installed on the vehicle, controlled from the rear bumper area. Hoist shall operate on system air pressure by means of push to operate controls. Hood lift shall include a minimum of two (2) air cylinders to avoid deformation of engine cover, one on left and one on right, mounted under the hood for cosmetic reasons. Lowering shall be accomplished by means of an orifice release to provide a slow and safe lowering of the hood. Two guides shall be mounted below the leading edge of the hood one left and one right, to self-align hood as it lowers. Rollers or other appendages on the hood shall lower to the outside of these guides.

For maneuverability, the unit shall have an angle of departure of no less than 20 degrees (exclusive of mud flaps).

FRAME

The frame shall be constructed of single channel carbon manganese steel rails, heat-treated, with a yield strength of 110,000 PSI and Grade 8 bolted construction. Frame liners are not acceptable. It shall have an adequate number of cross-members to resist frame distortion generated from lateral or corner-to-corner stress. The physical specifications of the frame shall be as follows:

BAR SIZE	12-3/8" x 3-7/8" x 3/8" minimum
SECTION MODULUS	23.49 cubic inch minimum
RBM PER BAR	2,580,000 in. lbs. minimum
FRAME WIDTH	34" nominal (industry standard)

CAB

This unit shall have a fully enclosed, thermally and acoustically insulated (85 db as measured 6" from the drivers ear at full engine RPM), all-steel cab mounted center frame and as far forward as good engineering practices will permit and have a cab dimension width of not greater than 60 inches. The operator shall be near center cab positioned. Minimum cab height shall be 132" as measured from the ground to the top of the cab.

The cab of this unit shall be equipped as follows:

1. Telescoping, tilting adjustable steering column.
2. Single piece reverse slant electrically heated windshield, minimum 13.5 sq. ft. area. A windshield that incorporates a center pillar is not acceptable. Side windows shall be power roll down. A fixed rear window shall be supplied.
3. All windows shall be tinted safety glass.
4. Electric variable speed wiper(s), providing operator absolute, clear line of vision. The wipers shall clear minimum 80% of windshield area. In addition, both cab side windows shall be equipped with an electric wiper.

5. High output, fresh air type heater/defroster with Multi-Speed fan. Side glass defogger nozzles shall be supplied. Cab heater with defroster shall be capable of maintaining a 50 degree F inside temperature at sea level when the ambient temperature is -40 degrees F.
6. Two (2) caged defroster fans.
7. Cab door shall be provided with full-length stainless steel piano type hinge. Door handle shall be positioned for use without bending or stooping by an operator standing on the catwalk.
8. Dual, heated, motorized West Coast type mirrors with heated, separately controlled motorized convex sections.
9. Tinted sun visor, front and sides.
10. Speedometer/odometer.
11. Self-canceling turn signals with hazard switch.
12. Tachometer/hour meter.
13. Voltmeter.
14. Transmission temperature light
15. Compressed air gauge with warning light and buzzer.
16. Engine oil pressure gauge with warning light (both engines).
17. Engine coolant temperature gauge.
18. Fuel level gauge.
19. Key type starter switch,
20. Coat hooks (2)
21. Parking brake warning light.
22. The operator seat shall be a Bostrom Sierra 400RX or equal, fully adjustable in the horizontal and vertical positions with low back, air assist, cloth covered, load adjustable and furnished with 3 point mount safety belts.
23. Air Ride passenger seat without arm rests will be provided.
24. Attachment controls conveniently located to allow operator to control all functions of the blower.
25. Adjustable screened vent shall be provided on the left side for ventilation.
26. All electrical circuits shall be protected by manual reset circuit breakers located in the cab.
27. Circuit breakers shall be easily accessible without requiring the removal of any panels or the use of tools.
28. Dual electric/air horns.
29. Cab Deluge system capable of flooding windshield, mirrors and side windows with windshield washer solvent at a rate of approximately 5 gallons per minute. The deluge system shall incorporate a minimum 17 gallon reservoir for windshield washer solvent.
30. Fire extinguisher, cab mounted, minimum 10 lb.
31. A master battery disconnect shall be provided in the cab.

Note: All gauges shall be the illuminated type and clustered about the steering column. All light switches must be of the heavy-duty rocker type and labels, which are lighted, must identify all critical switches. No switches, gauges or controls (with the exception of accessories with integral switches and/or controls) shall be located above eye level. The interior of cab shall be fully insulated, including cab ceiling and walls with one (1) inch thickness perforated vinyl covered foam. The floor of the cab shall be insulated with thermal-acoustical sound barrier floor mat.

CARRIER ENGINE

The engine shall be of the 2013 EPA compliant, on Highway emissions, four stroke diesel type, six (6) cylinders, minimum 11.9 liter nominal displacement, developing a minimum of 350 horsepower at 1800 RPM, with engine governed RPM of 2100, Cummins preferred. The engine shall be equipped with diesel electronic controls (mechanical unit injection not acceptable) for electronic fuel injection

and engine management control system. The air compressor shall be 15.7 CFM minimum. The engine shall have an emergency (power derate) system with light and buzzer, in event of high water temperature and/or low oil pressure. The engine shall be provided with full-flow, replaceable oil filters, heated fuel water separator, engine manufacturer's standard fuel filtration system, Automatic measured shot ether starting aid with thermostatic control, shielded vertical exhaust system with rain-cap, and meeting Federal noise requirements. Engine coolant hoses shall be silicone type with constant torque hose clamps. A heavy duty oval tube and serpentine fin type radiator, an air operated disconnect type cooling fan, anti-freeze protection to minus 35 degrees F., replaceable fuel filters, transmission and engine oil heat exchangers and a 12-volt Delco 39MT starter with over crank protection shall be provided. The air intake system shall include a two-stage air cleaner with provisions for modification of air intake, offering both outside of hood and under hood air intake as required by seasonal and local conditions to assure that engine manufacturer's intake air temperature limitations can be met. Chassis engine air intake filter canister (s) shall be located under the chassis engine hood on stand away brackets. Engine shall have a front engine PTO flange for mounting a front mounted hydraulic pump to be driven directly off the crankshaft. A 2250 watt engine heater with thermal control (Kim Hot start, or equal) shall be installed. A 110-volt receptacle for the engine heater shall be located at the rear of the vehicle. A 110 V-engine oil heater shall be installed in the oil pan with 110-volt receptacle located at the rear of the vehicle.

The engine for this unit and all items listed above shall be new, current production items with the manufacturer of this unit furnishing documentation of this at the time of delivery. The fully equipped vehicle loaded to gross vehicle weight (GVW) and with attachment in working position, shall be capable of maintaining a continuous forward speed of 25 MPH while performing normally.

ENGINE COOLING SYSTEM CERTIFICATION

Certification and proof of chassis and auxiliary engine cooling tests are required in the bid package. Certification shall include a dated, signed letter from the engine manufacturer indicating approval of the installation as bid. Certification shall cite ambient capabilities of the system at engine OEM parameter requirements. Certification shall be for horsepower equal to or greater to the horsepower required within this specification. Lack of proper certification proof in the bid will be considered reason to reject any proposed unit as an untested and unreliable prototype.

TRANSMISSION

The transmission shall be a heavy duty RDS 4000 four-speed automatic, with a low gear ratio of 3.51:1. and shall be supplied with the appropriate torque converter for this application. The shifting of this transmission shall be accomplished by a shift control pad on console located within easy reach of the operator. A low transmission oil level sensor system shall be included in the electronic transmission. LIGHT OR MEDIUM DUTY TRANSMISSIONS ARE NOT ACCEPTABLE.

TRANSFER CASE

The transfer case shall have two speeds with an **automatic** locking differential which automatically locks out differential action between the front and rear axles when wheel slip occurs with no operator interaction. The hi-low range selection shall be electric over air actuated and operated from the cab and equipped with Smart Shift[®] to eliminate range shifting at excessive speeds. For vehicle and equipment protection, if the shift is not completed by the electric/air system within one minute, the system shall cease attempts at range shift and notify the operator of the failure by a flashing light at the control switch. Operating range of the transfer case is to be displayed on the main dash LCD screen. The transfer case shall have a torque transmission capacity exceeding the maximum torque developed by the engine and transmission, and shall be approved for the application and be manufactured by the chassis builder for positive integration with drive system.

AXLES

The front axle shall be drive/steer type, and of the full floating, torsion flow type with a single reduction spiral bevel gear design. The differential shall be of the controlled traction type with a single air actuated switch located in the cab to engage the differential clutch system. The carrier assembly shall have a minimum ground clearance of ten (10) inches. For extended life, the steering-drive wheel ends of the drive/steer axles shall be bolted to and removable from the center section of the axle housing. The cardan drive type joints shall be totally enclosed within a sealed ball and socket to protect the moving parts of the axle and steering joints from dirt and slush. The trunnion pins shall be supported by preloaded tapered roller bearings to insure long life and smooth steering at all cramp angles. The axle shall have a certified minimum hub rating of 29,000 pounds. The rear axle shall be of the drive-steer type and shall have a certified minimum hub rating of 23,000 pounds. Double reduction planetary type axles and hubs will not be acceptable. The chassis shall be designed to achieve 45 MPH top end road speed.

SPRINGS

The unit shall have alloy steel springs of the semi-elliptical type, with minimum 29,000 lb. front and minimum 23,000 lb. rear ratings. The front springs shall be so designed and engineered as to give reserve-carrying support with blower head raised in the transport mode. The spring hangers, pins and supports shall be heavy duty to give long life. The pins shall be of the grease type with substantial bronze bushings.

BRAKES

The service brakes shall be fully air actuated, drum and shoe type with a minimum 15.7 CFM air compressor and documented to conform to FMVSS 121 with S-cam type actuators on front and rear axle. The service brake system shall be equipped with four channel ABS system. Chassis that are not equipped with ABS brakes will not be accepted. The parking brakes shall be spring actuated, air released at the rear service brake air chambers with the air switch mounted within the cab and in easy reach of the operator. The air system for this unit shall be equipped with frame mounted, heated Bendix AD-9, or approved equal, air drier system. Remote cable drains shall be provided for each air tank. Disc brakes will not be acceptable.

FOUR WHEEL STEERING SYSTEM

Front axle steering shall be Sheppard integral hydraulic power assist gear type. The steering gear shall be rated for heavy duty service. Four wheel steering shall be electronically coordinated through the standard steering wheel. A selector switch within easy reach of the operator shall provide the option of front steer only, crab steer, or coordinated front/rear steer. Additionally, a single axis joystick shall be provided for controlling rear steer only.

The system shall include safety provisions for dampening of all wheel steer effects at higher speeds, but it shall also allow full operation while the vehicle is moving at lower speeds. An indicator shall be provided in the cab to display mode selected and rear wheel position. Also for safety, there shall be a mechanical linkage maintained at all times between the steering wheel in the cab and the front axle to assure the ability to control the vehicle in the event of hydraulic or electrical system failure. Safety dampening of all wheel steer effects shall be related to vehicle speed and all wheel steer be available in both transfer case speed ranges.

Due to the conditions under which the vehicle will be operated the ability of this equipment to operate safely at all speeds while maximizing maneuverability, and provide the operator the ability to select the desired mode of operation "on the go" an electronically controlled rear axle steering system which operates in conjunction with the mechanically controlled front wheel steering system is required. This system must consist of the following components and operating features.

The all wheel steering system consists of the following major components:

- The vehicle's original front steering system
- A driving, steerable rear axle
- Various hydraulic control valves, wheel position sensors, speed sensor and a steering cylinder located on the rear axle.
- ECU (electronic control unit) and control panel (located in the cab)

OTHER REQUIRED FEATURES

- All of the all-wheel steering system controls are to be located in the cab easily accessible to the operator.
- The all wheel steering system must be preprogrammed with multiple steering modes for improved maneuverability.
- The driver must have the option to select one of the following modes of operation "on the go" based on the driving conditions at hand.

1. Front Steer. When in the front mode the vehicle behaves like a conventionally steered vehicle. In this mode, the axle lock remains in the locked position and the rear axle does not steer. Use this mode when enhanced maneuverability is not needed or during operation at speeds greater than 30 mph, such as highway travel or straight ahead high speed brooming operations.

2. Coordinated Steer. This mode gives the operator the tightest turning radius of any of the available modes. When the front axle is steered, the rear axle turns in the opposite direction of the front, which reduces the turning radius and enhances maneuverability. This mode also has a deadband feature. Deadband allows the vehicle front axle to be turned a predetermined number of degrees in either direction before the rear axle steers. The deadband varies according to the speed of the vehicle. The rear axle lock remains engaged (locked) when the front axle is within the deadband range.

3. Crab Steer. When the front axle is steered, the rear axle steers in the same direction as the front axle. This makes the vehicle travel in a diagonal motion, sometimes called "crab walking". This mode can be useful for parallel parking or for counteracting side forces applied to a vehicle, such as during low speed snow plowing or brooming operations. This mode also has a speed controlled variable deadband.

4. Joystick or Manual Rear Steer. When in this mode, the rear axle is controlled only by the joystick, independently of the front wheel position. Use this mode only during low speed operation. This mode is particularly useful when backing the vehicle or when the vehicle is brooming large amounts of snow and more broom angle is desired. The hydraulic locks remain operational; however, the mechanical lock is disengaged (unlocked) at all times when in this mode.

5. Switching Between Modes. The mode switch may be moved at any time; however, the ECU will not switch modes unless the front axle crosses center. If the front axle does not cross center the system remains in the previous mode until the front axle crosses center. The rear wheels must be in the straight-ahead position before the mode change occurs.

6. Rear Wheel Position Gauge. The system must include a rear wheel position gauge which performs the following three functions:

- *Calibration Indicator:* The LED bar graph on the display gauge is used for calibrating the wheel position sensors. The LED bar graph display shows the position of the angle sensors for adjustment purposes.
- *Rear Wheel Position Indicator:* The LED (light emitting diode) bar graph display shows the operator the position of the rear wheels. When the rear wheels are in the straight-ahead position, the center green LED will be on. When the rear wheels are turning left, the LED bar graph sweeps from center to the left in proportion to the rear wheel angle. When the rear wheels are turning right, the LED bar graph sweeps from center to the right, in proportion to the rear wheel angle
- *Error Code Display:* The error code display is used in troubleshooting. If an error is detected by the ECU (electronic control unit), it signals the operator. This display is also used during system start-up to display the current CPU (central processing unit) software revision level.

7. Mode Lights. The mode light feature consists of four lights:

- *The FRONT* mode light is lit when the all-wheel steering ECU is operating in the front steer mode and the three position mode switch is in the front steer (center) position .
- *The AXLE LOCKED* mode light is lit when the rear axle is mechanically locked in the straight-ahead position. This light also comes on when the all-wheel steering ECU detects a system problem and an error code is displayed on the rear wheel position gauge .
- *The COORD* mode light is lit when the all-wheel steering mode switch is in the coordinated steer mode position and the ECU is operating in coordinated steer mode.
- *The CRAB/JOYSTICK* mode light is lit when the three position mode switch is in the rear steer position and the ECU is operating in the rear steer mode.

8. Managers Switch. A key switch must be provided which will allow supervisory personnel to “lockout” or “enable” operation of the all-wheel steer system. This switch is included to insure that only those operators who are qualified to operate the vehicle all wheel steering system are permitted to do so.

WHEELS & TIRES

This unit shall be equipped with proper sized wheels and tires for the GVWR rating of unit being bid. Single wheels shall be furnished for the front and rear axles. The wheels shall be of the steel disc type with an 11-1/4" bolt circle. The tires shall be Michelin 395/85R20 XZL or equal. One new extra wheel, with tire mounted thereon, shall be furnished with unit.

ELECTRICAL & LIGHTING

All lighting on this vehicle shall conform to FMVSS, shall be 12 volts, and shall include, but not be limited to, the following:

- a. Two (2) cab mounted H.I.D. work lights
- b. Tail lights, stop lights clearance lights and backup alarm Preco 1040 with auto adjustment for noise level, and backup lights per FMVSS
- c. Amber strobe beacon on or near cab roof with dash-mounted switch
- d. Amber strobe beacon on rear engine cover with dash-mounted switch
- e. Cab dome light

- f. RH & LH spotlights
- g. Variable intensity instrument lighting
- h. Weatherproof wiring shall be SLX nomenclature type, insulated and numbered, circuit breakers located within an easily accessible weatherproof electrical panel
- i. Two (2) headlights with high/low beam and integral turn signals mounted front outside corners of cab at leading edge per FMVSS
- j. One (1) 12-volt, 270-amp minimum alternator with built-in regulator
- k. Four (4) 12-volt, maintenance free batteries with a total 3800 cold cranking amperes. Batteries to be installed in a separate frame mounted compartment with corrosion resistant interior
- l. Two multipurpose type work lights to be mounted under chassis engine hood with individual on/off switches
- m. Master battery disconnect switch mounted in cab
- n. Two (2) front facing High Intensity Discharge lights shall be mounted on the cab light bar-J.W. Speaker or approved equal
- o. A 20 amp auto regulate battery charger shall be provided, to be located at the battery box with a 110 volt receptacle located at the rear of the vehicle

FUEL TANK

Twin fuel tanks shall have a minimum total capacity of 250 gallons. The tanks shall be constructed of heavy gauge steel and be properly fastened to the frame. Under seat fuel tanks are not acceptable. A four-inch diameter filler neck with chain-connected cap and brass tank drain plugs shall be provided. A stainless steel strainer basket shall be provided in the filler neck. Fuel tanks shall be interconnected to allow equalized fuel level in both tanks and the simultaneous fill of both tanks from one side (right or left) of vehicle. Shut-off valves shall be provided at each end of the cross over line. A Racor 490 heated fuel/water separator shall be installed in the supply line to the engine fuel injectors.

AUXILIARY ENGINE

The auxiliary engine shall be a four-stroke cycle Diesel type engine six (6) cylinder with a minimum of 700 horsepower at 2100 RPM. The engine shall have a minimum of 964 cubic inch displacement. The auxiliary engine shall have an electronic control system, and have the same protection (power derate) systems and instrumentation as required for the vehicle engine, plus an intake air warning system for high intake vacuum. The engine installation shall also include 12-volt start (Delco 50MT) automatic shot thermally locked ether-starting aid, muffler(s) approved for the application by the engine manufacturer, an air restriction indicator and an automatic inside/outside air intake system.

Auxiliary engine cooling system shall include a HEAVY DUTY vertical flow radiator with top and bottom tanks and side members bolted together to form a rigid frame surrounding the 1300 sq. in minimum radiator core. The tanks shall be steel and the core shall be constructed of copper and brass. A Thermostatically controlled fan clutch is required. ALUMINUM RADIATORS ARE NOT ACCEPTABLE. A spin-on coolant filter and silicone radiator hoses are required A 1500 watt coolant heater with thermal control is also required. A 110-volt receptacle for the coolant heater shall be located at the rear of the vehicle. A 110-volt engine oil heater shall be provided with 110-volt receptacle located at the rear of the vehicle. Engine is to be enclosed in a fiberglass housing of weatherproof design. Doors for maintenance access to the auxiliary engine shall be removable and held in place by rubber retainers to avoid rattling of the doors. When removed, full access to the sides of the engine shall be provided from the required catwalks on both sides of the engine.

TWO-STAGE ROTARY SNOW BLOWER

The rotary snow blower shall be a two-stage unit including an auger or ribbon and a separate impeller to effectively feed and displace snow and/or ice. The blower unit shall be designed to withstand hard usage, and cold climates. The materials, parts and construction techniques shall conform to the best engineering practices. It shall have a capacity of 5,000 tons per hour with a casting distance as measured from the blower to the point of maximum deposition under a no-wind condition of 100 feet minimum. A second drop box gear ratio shall be provided to cast a longer distance for operational flexibility. The performance specifications are based on snow with a unit weight of 25 pounds per cubic foot.

The blower shall be a helical ribbon auger first stage with a second stage impeller. The first-stage ribbon shall act to cut and feed snow to the second stage impeller buckets, which shall force the snow out of a snow-casting chute.

Rotary-head box shall be fabricated of heavy gauge, high wear, welded alloy steel with 3/8 inch side plates and 3/16 inch moldboard of minimum 50,000 lb tensile strength steel suitable for the type of expected service and formed to the contour of the ribbon reel conveyor. Provisions on the box shall be made for vehicle mounts, skid pad and caster brackets, scraper blades and associated hardware, drives, and controls. A minimum 7.5 inch high, 2 inch thick, 100 inch long scraper blade shall be fitted to the lower leading edge of the rotary head box. The blade shall have a 50-degree attack angle. The blade shall run the entire box width and be a removable design of polyurethane, permathane brand or approved equal. The blade shall have a Durometer hardness of 80 to 83. Blade shall be attached by at least 11 countersunk mounting bolts equally spaced along the blade. Replaceable skid shoes shall be provided at either end of the head to protect the edge and blower housing from excessive wear. They shall be made of abrasion resistant steel, and at least 5-1/2 x 7-1/2 inches.

HELICAL RIBBON

The helical ribbon shall be have a minimum diameter of 52 inches and have a minimum of two bearing supports, one at each end of the reel, and be driven from both ends. Dual motor drive is essential for reliability and performance. Single motor drive is unacceptable. Likewise, open prop shaft drive within the path of snow flow is unacceptable. If the dual motor drive is provided at the center, driving outward, prop shaft and/or drive mechanism must be in an enclosed case. The ribbon flights on each reel shall be two removable halves and mounted on the reel shaft by the necessary number of mounts with flat head fasteners. The ribbons shall be made from ASTM A572 GR 50 steel with a minimum thickness of 1/2 inch. The reel shall be constructed with a curb ring for protection from any exposed parts of the reel. A minimum of clearance shall exist between the rotary head box and the reel to reduce snow plowing and carryover. The cutting width shall be not less than 102 inches.

Reel speed shall be selectable by the seated operator for variable snow and operating conditions without varying the impeller speed and cast distance. The reel shall be driven hydrostatically and protected from damage by hydrostatic relief. It shall also be reversible from the cab to aid in disgorging excessive or clogged snow from the head. A low oil level/high oil temperature warning system shall alert the operator in the cab to abnormal conditions. A manual shut off valve shall be provided at the outlet of the hydraulic oil reservoir.

IMPELLER SYSTEM

The impeller system shall have a minimum diameter of 59 inches with a minimum depth of 21 inches. It shall be designed to be consistent with the capacity of the in-putting reel. The opening, blade diameter and speed ratio shall ensure proper snow flow and discharge to the casting chute. The five impeller blades must be replaceable and the assembly shall be attached with countersunk fasteners. All blades shall be of 1/2 inch steel and constructed and balanced to be resistant to vibration and shock damage caused by high-speed ingestion of foreign objects.

The impeller shall be driven by direct mechanical means. The blower drive shall include a full torque PTO 14 inch clutch, controlled from the cab, for blower drive engagement. A two-speed reduction gear system shall be provided between the blower engine and the impeller to provide proper torque and speed at the impeller while allowing the engine to operate at the RPM providing maximum efficiency. The gearbox shall include helical gears with pressurized lubrication system. Chain type drop boxes are not acceptable. Driveline shall be Spicer 1710 Series or equal. The impeller assembly shall be protected against sudden stoppage or damage from foreign objects by shear bolts. The shear bolts shall be accessible and replaceable from behind the intake face of blower to eliminate removing snow from blower intake to replace bolts. Five (5) spare sets of shear bolts shall be supplied with the unit.

The snow casting assembly shall consist of a controllable chute, impeller or turbine snow collector and a control system. The system shall be designed to accept the maximum output volume of the impeller assembly, with an interior free from sharp bends or obstructions. The impeller housing shall be fabricated of 3/8" steel and snow-casting assembly shall be built of 1/4-inch steel. The casting chute assembly shall rotate in a vertical plane to cast snow to the left or right side of the vehicle thru a minimum arc of 125 degrees for distances to maximum cast. It shall flat cast to the left. Flat cast to the right is not acceptable.

ALTERNATE BID: For one of the two snow blowers to be equipped with a spot casting chute.

The snow blower shall be equipped with a weight transfer system, which automatically transfers 60% of the blower head to the front axle of the carrier chassis. This shall be accomplished hydraulically by regulating system pressure via electronically controlled hydraulic metering valves.

A minimum of two 18" rubber tired caster wheels shall be provided which can swivel 360° for backing. The casters shall have a minimum load rating of 2300 lbs. each at 130 PSI. This load rating shall be acceptable at speeds up to 30 MPH. A complete spare caster/wheel/tire assembly shall be provided.

The rotary head assembly shall have a provision for raising the head from the pavement. The rotary head shall automatically lift when the transmission is shifted into reverse. The hydraulic lift mechanism shall be fully operable from the control cab, with hydraulic pump driven by the chassis engine. Minimum ground clearance shall be 8 inches under the leading edge when rotary head is at maximum height. Rotary head drive system shall not bind, rub or vibrate excessively when head is raised to maximum height and shall be able to travel a minimum of 2" below ground level with positive down pressure to clean out surface depressions. A vertical float position shall be included in the control system.

HYDRAULIC SYSTEMS

The hydraulic system will consist of rams, pumps, piping, fittings, valves, controls, fluid reservoirs, fluid filters, and all other parts essential to efficient operation. The system will be capable of positioning the hydraulic actuated equipment in any chosen position within the design limits of travel, and will be of such capacity that all controls can be operated simultaneously without noticeable

reduction in response. The system shall be designed to operate the snow blower head and alternate attachments such as broom head or snow plow. All hydraulic controls for operating the blower head will be located in the carrier cab. Hydraulic system will be constructed to withstand all loads imposed in snow removing operations without the use of mechanical locks. Filtration of the hydraulic system conforms to SAE J931.

Hydraulic tubes, hoses, and fittings conforming to commercial quality for existing pressures will be used. A minimum number of fittings, joints, and connections will be used to prevent excessive backpressure, vibration, and leakage. Hydraulic lines will be sufficient size to permit free flow of hydraulic fluid at temperatures down to -40 F. All connections to the hydraulic pumps, motors and valves will be made O-ring type fittings.

PAINT

The complete vehicle shall be painted with one (1) coat of metal primer and two (2) coats of acrylic urethane to match FAA required Chrome Yellow. Blower head impeller housing shall be painted flat black to reduce glare. Each unit to have numbers on left side, right side and rear. The numbers shall be 427 and 428. Numbers shall be 16" tall and white reflective.

RADIO TRANSCEIVERS (SHIP LOOSE)

Each vehicle is to be delivered with a Kenwood model TK-7360HVK, an I-Com model ICA-210M with an MB53 mounting kit, a Code 3 model PA-640 siren with a code 3 100W external speaker.

Laptop - One Unit Only

One vehicle is to be delivered with a tough book laptop with Cummins, Caterpillar and Allison diagnostics

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.

TRAINING

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

- a. A minimum of 8 hours of on-site training. Training shall be for maintenance and operation. Training shall be by a qualified manufacturer's representative.

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, the purchaser 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.

PERFORMANCE BOND

A one-year performance bond in the amount of 100% of the contract price shall be provided within 10 days of contract award.

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. 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.

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.

INSURANCE

To protect the purchaser from potential involvement in litigation, the chassis manufacturer for this contract shall be adequately covered with liability insurance. The chassis manufacturer shall carry public liability insurance including product liability insurance in an amount not less than \$5,000,000 per occurrence and in the annual aggregate for all damages arising out of bodily injury to, or death of all persons, and for all damages arising out of injury to or destruction of property.

A Certificate of Insurance indicating this minimum amount of coverage shall be included in the bid package for the bid to be considered.

QUALITY ASSURANCE REQUIREMENTS

Each bid must include the vehicle (chassis) manufacturer's certification that the vehicle (chassis) meets or exceeds the following requirements based on documented test results. Documented test results shall be provided upon request.

FMVSS 571-103	Windshield defrosting and defogging systems, in accordance with JI944, J198
FMVSS 571-121	Air brake systems
FMVSS 571-207	Seating systems
FMVSS 571-210	Seat belt assembly
40 CFR CH.1	Pass by noise levels (in accordance with SAE J366)
FMCSR 393.94	Vehicle interior noise levels
FMVSS 571-101	Controls and displays
FMVSS 571-108	Lamps, reflective devices and associated equipment
FMVSS 571-120	Tire selection and rims for motor vehicles other than passenger cars
FMVSS 571-206	Door locks and door retention components.

FMVSS 271-209	Seat belt assemblies
FMCSR 393-65	Fuel systems and fuel tanks
FMCSR 205	Glazing for windows
FMCSR 302	Flammability of interior materials

Chassis manufacturer must be ISO 9001 certified. A copy of the manufacturers Certificate of Compliance must be submitted with the bid. This Quality Management System shall apply to the design of specialized heavy duty, all-wheel-drive trucks and transport equipment, including front drive steer axles and transfer cases. Bidder must be ISO 9001 certified.

**IFB No. 26311
Airport Snow Blowers
Response Form**

Responses are **due no later than 2:00 p.m., March 15, 2016** at Rhode Island Airport Corporation, T. F. Green Airport, Office of Procurement, 2000 Post Road, 3rd floor, Warwick RI 02886-1533. 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 in Words and Numbers

Two Airport Snow Blowers \$ _____

Two Airport Snow Blowers, one equipped with spot casting chute \$ _____

"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

City, State, Zip

Date

Printed Name

Title

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 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 cannot 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. 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; and (2) be held responsible for bids which are NOT legible (and may choose to reject such responses).
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.