

# INVITATION TO BID

**INVITATION TO BID #08-04**

**BID DESCRIPTION: Airport Runway Broom/Blower**

**ISSUE DATE: Monday, April 7, 2008**

**BID OPENING DATE: Wednesday, April 23, 2008**

**BID OPENING TIME: 10:30 AM CDT**

BID RESPONSES MUST BE RECEIVED NO LATER THAN THE PUBLIC BID OPENING DATE AND TIME (LOCAL TIME) SPECIFIED ABOVE. BIDS WILL BE OPENED AND READ ALOUD AT THAT TIME. LATE BIDS WILL NOT BE CONSIDERED.

**TO ALL PROSPECTIVE CONTRACTORS/BIDDERS:**

You are hereby invited to submit your bid for the item(s) to be furnished and delivered, shipped f.o.b. to the address specified herein.

All bids must be received in **DUPLICATE** in sealed envelopes.

All bids are subject to staff analysis and Board approval. The Greater Rockford Airport Authority (Authority) reserves the right to accept or reject any and all bids received and waive any and all technicalities.

Bids must be delivered prior to the public bid opening date and time to:

**Greater Rockford Airport Authority  
60 Airport Drive  
Rockford, IL 61109-2902**

Direct any and all inquiries about this bid to Wayne Langy, Operations & Facilities Manager, at 815-703-5309 or [wlangy@flyrfd.com](mailto:wlangy@flyrfd.com) .

## Instructions to Bidders

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### 1.1 Bid Preparation

Bids must be submitted, in duplicate, on the blank Bid Form furnished with these contract documents and shall conform to the terms and conditions set forth in the “Instructions to Bidders,” “General Terms and Conditions” and “Special Terms and Conditions” of the contract. Bids submitted in any other manner, or which fail to furnish all information or certificates required, may be summarily rejected. Bids may be modified or withdrawn prior to the time specified for the opening of bids. Bids shall be filled out legibly in ink or typewritten with all erasures, strikeouts and corrections initialed in ink by the person signing the bid.

### 1.2 Bid Execution

If the Bidder is a corporation, the President shall execute the bid. In the event that the bid is executed by other than the President, a certified copy of that section of the corporate by-laws or other authorization by the corporation, which permits the person to execute the bid for the corporation, shall be submitted. If the Bidder is a partnership, all partners shall execute the bid, unless one partner has been authorized to sign for the partnership, in which case, evidence of such authority satisfactory to the Deputy Director/Finance & Administration shall be submitted. If the Bidder is a sole proprietor, the owner shall execute the bid. A “Partnership” or “Sole Proprietor” operating under an Assumed Name shall be registered with the Illinois County in which located, as provided in the Illinois Compiled Statutes, 805/ILCS 405/1.

### 1.3 Bid Submission

The Greater Rockford Airport Authority must receive all bids by the specified opening time of the bid. Bids arriving after the specified time will not be accepted and will be returned unopened. All bids shall be submitted in sealed envelopes with the following information explicitly shown (centered both vertically and horizontally on the envelope): name and address of bidder and bid number. Further, the sealed envelope must be clearly marked “SEALED BID.” The Bidder shall be responsible for the delivery of the bid before the date and hour set forth for the opening of bids.

### 1.4 Error in Bid

Bidders are cautioned to verify their bids before submission. Negligence on the part of the Bidder in preparing the bid confers no right for withdrawal or modifications of the bid after it has been opened. In case of error in the extension of prices in the bid, the unit price will prevail.

### 1.5 Variances and Deviations

Variances and deviations shall be described fully on the Bid Form. In the absence of such statement, the bid shall be considered as if submitted in strict compliance with all terms, conditions, and specifications; the Contractor shall be held liable. Contractors are cautioned to avoid making variances and deviations to the specifications, which may result in rejection of their bid.

### 1.6 Reserved Rights

Greater Rockford Airport Authority reserves the right at any time and for any reason to cancel this Invitation to Bid, accept or reject any or all bids or any portion thereof, or to accept an alternate bid. The Authority reserves the right to waive any immaterial defects or irregularities in any bid. The Authority may seek clarification from any Bidder at any time and failure to respond promptly is cause for rejection. The Authority has sixty (60) days to accept the bid.

### 1.7 Interpretation or Correction of Bidding Documents

Bidders shall promptly notify the Authority no later than one (1) week before bid opening of any ambiguity, inconsistency or error, which they may discover upon examination of the bidding documents. Interpretations, corrections and changes will be made by written addendum. Each bidder shall ascertain prior to submitting a bid that all addenda have been received and acknowledged in the bid. Oral explanations will not be binding.

### 1.8 Incurred Costs

The Authority will not be liable for any costs incurred by Bidders in replying to this Invitation to Bid.

1.9 No Bid Response

If your firm declines to bid on this invitation, but desires to remain on the Authority's Bidders' List for future invitations, please submit in a letter stating why you are declining to bid.

1.10 Basis of Award

It is the intent of the Authority to award a contract to the lowest responsible bidder meeting specifications. Further, the Authority reserves the right to determine the lowest responsible bidder in any way determined to be in the best interests of the Authority. Award will be based on the following factors (where applicable): (a) adherence to all conditions and requirements of the bid specifications; (b) price; (c) qualifications of the bidder, including past performance, financial responsibility, general reputation, experience, service capabilities, and facilities; (d) delivery or completion date; (e) product appearance, workmanship, finish, taste, feel, overall quality, and results of product testing; (f) maintenance costs and warranty provisions; and (g) repurchase or residual value.

1.11 Pre-Bid Conference

If a Pre-Bid Conference is a requirement of this contract, it will be shown on the Title Page.

*End of Instructions to Bidders*

## General Terms and Conditions

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### 2.1 Non-Discrimination

Contractor shall comply with the Illinois Human Rights Act, 775, ILCS 5/1-101 et seq., as amended and any rules and regulations promulgated in accordance therewith, including, but not limited to the Equal Opportunity Clause, Illinois Administrative Code, Title 44, Part 750 (Appendix A), which is incorporated herein by reference. Furthermore, the Contractor shall comply with the Public Works Employment Discrimination Act, 775 ILCS 10/0.01 et seq., as amended.

During the performance of this Contract, the Contractor agrees that it shall not discriminate against any worker, employee or applicant, or any member of the public, on the basis of race, color, religion, sex, national origin, ancestry, age, marital status, physical or mental handicap, or sexual orientation. Upon request of the Authority, the Contractor also agrees to submit in writing an affirmative action plan demonstrating compliance with equal employment opportunity laws and policies. Contractor further agrees that this clause will be incorporated by the Contractor in all contracts entered into with suppliers or materials or services, sub-contractors and all labor organizations furnishing skilled, unskilled and craft union skilled labor, or any other person or organization performing services in connection with this Contract.

### 2.2 Drug-Free Workplace

The Contractor agrees to provide a drug free workplace as provided for in the Drug Free Workplace Act, 30 ILCS 580/1, et seq.

### 2.3 Tax Exemption

The Greater Rockford Airport Authority is not subject to Federal Excise Tax. Per Illinois Compiled Statutes, 35 ILCS 120/2-5, the Greater Rockford Airport Authority is exempt from state and local taxes. Our exempt number is E9992-3521-05.

### 2.4 Warranties

Contractor warrants that all goods and services furnished hereunder will conform in all respects to the terms of this solicitation, including any drawings, specifications or standards incorporated herein, and that they will be free from latent and patent defects in materials, workmanship and title, and will be free from such defects in design. In addition, Contractor warrants that said goods and services are suitable for, and will perform in accordance with, the purposes for which they are purchased, fabricated, manufactured and designed or for such other purposes as are expressly specified in this solicitation. The Authority may return any nonconforming or defective items to the Contractor or require correction or replacement of the item at the time the defect is discovered, all at the Contractor's risk and expense. Acceptance shall not relieve the Contractor of its responsibility.

The Contractor further agrees, upon written notice from the Authority, to promptly and without charge, make changes, corrections and/or replacement, to the satisfaction of the Authority, which may be required to make good all defects in design and material under its intended use, for a period of one (1) year, with the one (1) year period commencing on the date of acceptance by the Authority. The Contractor shall receive no compensation for cost in replacement of goods or workmanship.

### 2.5 Indemnification

Contractor agrees to indemnify, save harmless and defend the Greater Rockford Airport Authority, its agents, servants, Commissioners, and employees, and each of them against and hold it and them harmless from any and all lawsuits, claims, demands, liabilities, losses or expenses, including court costs and attorneys' fees, for or on account of any injury to any person, or any death at any time resulting from such injury, or any damage to any property, which may arise or which may be alleged to have arisen, in whole or in part, out of or in connection with the work covered by this contract. The foregoing indemnity shall apply except if such injury, death or damage is caused directly and solely by the negligence or other fault of the Greater Rockford Airport Authority, its agents, servants, Commissioners, or employees or any other person indemnified hereunder. This indemnification obligation is not limited by, but is in addition to the insurance obligations, which may be contained in this contract. The provision of this paragraph shall not be waived.

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### 2.6 Termination and Default

Time is of the essence of this contract and if delivery of acceptable items or rendering of services is not completed by the time promised, the Authority reserves the right, without liability, in addition to its other rights and remedies, to terminate the contract by notice effective when received by Contractor, as to stated items not yet shipped or services not yet rendered and to purchase substitute items or services elsewhere and charge the Contractor with any or all losses incurred. The Authority shall be entitled to recover its attorney's fees and expenses in any successful action by the Authority to enforce this contract.

### 2.7 Royalties and Patents

Contractor shall pay all royalties and license fees. Contractor shall defend all suits or claims for infringement of any patent, copyright or trademark rights and shall hold the Authority harmless from loss on account thereof.

### 2.8 Regulatory Compliance

Contractor represents and warrants that the goods or services furnished hereunder (including all labels, packages and containers for said goods) comply with all applicable standards, rules and regulations in effect under the requirements of all Federal, State and local laws, rules and regulations as applicable, including the Occupational Safety and Health Act as amended, with respect to design, construction, manufacture or use for their intended purpose of said goods or services. Contractor shall furnish "Material Safety Data Sheets" in compliance with the Illinois Toxic Substances Disclosure to Employees Act.

Pursuant to Illinois Municipal Code 65 ILCS 5/11-42.1-1, by signing this bid the Contractor certifies that it is not delinquent in the payment of any tax administered by the Department of Revenue.

All federal contractors and subcontractors, by signing this bid, agree to comply with the provisions of 29 CFR Part 470; the Beck notice requirement.

The Contractor certifies that they are not barred from bidding on this contract as a result of engaging in or being convicted of: (a) bid-rigging in violation of Section 3; or (b) bid-rotating in violation of Section 4, of the Illinois Criminal Code of 1961, as amended [720 ILCS 5/33E-3 and 4].

### 2.9 Discounts

Prices quoted must be net after deducting all trade and quantity discounts. Where cash discounts for prompt payment are offered, the discount period shall begin with the date of receipt of a correct invoice or receipt or final acceptance of goods, whichever is later.

### 2.10 Inspections

The Authority shall have the right to inspect any materials, components, equipment, supplies, services, or completed work specified herein. Any of said items not complying with these specifications are subject to rejection at the option of the Authority. Any items rejected shall be removed from the premises of the Authority and/or replaced at the entire expense of the Contractor.

### 2.11 References

To allow the Authority to evaluate the experience of the Contractor, as it relates to this purchase, the Contractor must submit a minimum of three (3) references of organizations that have purchased similar items. Failure to include references may result in bid disqualification. References must be submitted on the Bid Form.

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2.12 Law Governing

This contract shall be governed by and construed according to the laws of the State of Illinois.

2.13 Prevailing Rate Wages

The awarded Contractor is required to pay all applicable wage rates as required and stipulated by Federal, State and Local laws. The Authority requires Prevailing Rate Wages to be paid as stipulated by Authority Ordinance No. 06-03, and **Contractor agrees to pay prevailing rate wages for all work completed under this contract.**

2.14 Prevailing Wage Reporting Burdens

HB 188 became PA 94-515 and requires a contractor and subcontractor working on a prevailing wage project to submit on a monthly basis a certified payroll to the public body in charge of the project. Any contractor or subcontractor who fails to submit a certified payroll or knowingly files a false certified payroll is guilty of a Class B misdemeanor. Such payroll records are public records subject to disclosure under the Freedom of Information Act. The new administrative burdens became effective August 10, 2005.

<http://www.ilga.gov/legislation/publicacts/fulltext.asp?Name=094-0515>

*End of General Terms and Conditions*

Revised 9/05

## Special Terms and Conditions

### 3.1 Pricing

The price quoted for each item is the full purchase price, including delivery to destination, and includes all transportation and handling charges, premiums on bonds, material or service costs, patent royalties and all other overhead charges of every kind and nature. Unless otherwise specified, prices shall remain firm for the contract period.

### 3.2 Description

The Authority is seeking bids for one (1) Dedicated Airport Runway Broom/Blower with the following specifications:

### 3.3 Specifications

The Airport Runway broom shall be specifically manufactured for use as a high-speed runway sweeper/blower with a national dealership availability of parts and service. **Prototype units will not be accepted.**

#### CHASSIS:

Air Cleaner:	Two-stage with underhood/outside air intake as required by seasonal and local conditions to assure that engine manufacturer's intake air temperature limitations can be met.
Axle, Front:	Make and Type – Oshkosh Model 27K, or its equivalent, single reduction with special heat treated alloy steel shafts, driver controlled traction differential and Oshkosh, or its equivalent, cage ring type steering ends. Ratio – 6:17:1 Rating @ Hub – 27,000 lbs. [12,247 kg] Ground clearance – 10”
Axle, Rear:	Make and Type – Eaton 17427, full floating, single reduction with special heat-treated alloy steel shafts and driver controlled traction differential; equipped with ALL STEER electronic all-wheel steering system (18K), or its equivalent. Ratio – 6:14:1 Rating @ Hub – 18,000 lbs. [8,165 kg] Ground clearance – 10”
Brakes, Parking:	Type – spring brakes mounted on rear axle. Secondary Emergency System – Modulated split type, auxiliary air inlet, left, with quick drain lanyards on all tanks.
Brakes, Service:	Type – Dual system, air operated mechanical, electronic antilock brake system (4S4M), or its equivalent. Front – 16.15 in. x 7 in. [419 x 179 mm], S-cam rotary with dust covers. Rear – 16.5 in. x 5 in., S-cam rotary with dust covers. Compressor – 15.7 CFM. Steel disc type wheels with an 11-1/4” bolt circle.
Cab	Construction – Oshkosh extra heavy duty, or its equivalent; aluminum body with fiberglass roof and fascia corrosion resistant; fully rust proofed; 70 in. cab width; 3-point rubber mounted; full length stainless steel piano type door hinges; tinted safety glass throughout; one-piece reverse slope electrically heated windshield; power type left and right side windows; stationary rear windows (3); dome lights (2); courtesy entry lights (2) Cab deluge system with 20 qt. washer reservoir.

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Accessories:	Electric horn; national standard plus air ride driver's seat; fold up cloth passengers jump seat; 55,000 BTU heater/defroster; digital climate control; cigar lighter (1) and ash tray; 12 volt power outlet (1); cup holders (2); electronic engine controls with on-board diagnostics integral with Oshkosh Command Zone, or its equivalent; electric remote control heated west coast type mirrors with separate remote adjustable heated spotter mirrors; ether starting aid, thermally protected, ignition switch activated; keyed chassis engine; floor mats; fresh air type heater and defroster; grab handles, LCD dash display; light bars; quad electric windshield wipers mounted above windshield with intermittent speed control; self-canceling turn signals; side window defrosters, sun visor, full width exterior front; tilt/telescoping steering wheel; windshield washer, 6 qts.; three point seat belts; high idle cruise control; digital clock/outside air temperature, heated RH and LH electric window wipers on side windows; air conditioning; grab handles; cab mounted 10 lb fire extinguisher.
Instrumentation:	Oshkosh Command Zone LCD dash pod, or its equivalent on steering column; speedometer; odometer; tachometer; hour meter (registering engine run hours); air system pressure (dual system); fuel level with low fuel level warning; coolant temperature; oil pressure gauge; warning icons for: low air pressure, ABS fail, ABS communication lost, engine stop, engine fail mode, low voltage, engine overheat, engine low oil pressure, transmission overheat-transmission fail, transmission communication lost, hydraulic temperature, hydraulic fuel level, parking brake applied, low transmission oil sensor, transfer case range, traction enhancement locked/unlocked, transmission gear selection, coolant temperature, oil pressure gauge.
Chassis Equipment:	ADIP Air dryer, backup alarm; crankshaft PTO adapter; dual 125 gallon fuel tanks with single side fill; flat top steel fenders; full catwalks; heated fuel/water separator; one-piece molded fiberglass tilting engine cover; carrier engine; mud flaps front and rear of rear tires; vertical exhaust with stainless steel shield; rear tow hooks.
Cooling System:	Radiator Core –fin and tube type with built-in de-aeration system. Frontal Area – 1080 in. <sup>2</sup> [6,967 cm <sup>2</sup> ] Radiator Construction – bolted, with built-in de-aeration system. Charge air cooler – cooling flow parallel to radiator. Transmission/Converter Oil Cooler – oil-to-water type, located in bottom tank of radiator. Engine Air Intake Cooler – mounted in front of radiator. Fan Hub – temperature controlled clutch, two speed.
Cooling System Certification:	Certification and proof of chassis 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 prove suitable cooling capacity in ambient temperatures up to 115 degrees when operated at a maximum horsepower, and up to 95 degrees when operated at 80% torque converter efficiency.
Electrical System:	Alternator – 145-amp, chassis engine driven. Lighting – 12 volt. Starting – 12 volt. Batteries – four (4) 12 volt, 950 CCA each @ 0° F [-18°] (3800 CCA total) Cab mounted master battery disconnect switch. On board battery charger – 2 amp

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Engine Data:	<p>Make and Model – Caterpillar, C-11 ACERT, in-line 6 cylinder, 4-cycle. Cylinders – In-line 6.</p> <p>Displacement – 677 in<sup>3</sup>. Brake H.P. – 335 @ 2100 RPM, 350 @ 1800 RPM. Max. Torque – 1250 lb. ft. @ 1200 RPM. Governed RPM – 2100. Ether starting aid. Automatic engine shutdown system for low oil pressure/high temperature/low coolant level.</p>
Filters:	<p>Both engines require full flow filters, replaceable oil filters and fuel filters.</p>
Frame:	<p>Material – Carbon manganese steel, heat-treated. Type – single formed channel. Size – 12.38 x 3.88 in. x .38 in. [314 x 98 x 9.5mm] Yield Strength – 120,000 PSI [827 Mpa] minimum. Tapered Section Modulus – 19.67 to 23.49 in.<sup>3</sup> [322.34 to 384.94 cm<sup>3</sup>] per rail. RBM – 2,818,000 in. –lb. per rail. Frame Construction – Grade 8 flanged bolts &amp; flanged locknuts. Front framed extension – 24 inches. Rear tow hooks – two (2). Bumper- straight rear bumper, full width.</p>
Fuel system:	<p>Dual 125 U.S. gallon [473 l.] fuel tanks with “<b>DIESEL FUEL ONLY</b>” prominently displayed on tank. Tanks shall be constructed of heavy gauge steel, four inch diameter filler neck with chain connected cap, tamper free screen. Fuel tanks shall be interconnected with one (1 in.) lines and isolation valves for fast equal fueling from either tank. A Racor model 490 heated fuel/water separator shall be installed in the engine fuel injector supply line.</p>
Hydraulic & hydrostatic tank (s):	<p>Shall be equipped with a filler neck with strainer, drain plug, oil level sight gauge and shut-off valve mounted above the pump level to eliminate the possibility of pump cavitations.</p>
Lighting:	<p>Cab mounted headlights with turn signals; clearance and marker lights comply with federal regulations; engine component lights; fender mounted headlights and turn signals; roof mounted strobe beacon; engine compartment lights; back-up lights; dual stop, tail, turn signal lights (LED) at rear, 2 MP style work lights.</p>
Painting:	<p>Acrylic urethane; one color.</p> <p>Paint shall be chrome yellow conforming with AC 150/5210-5C. Paint shall be <i>Dupont Imron Yellow #54701-U</i>, or its equivalent.</p>
Propeller Shafts:	<p>Make and Model – Dana 1710 Series. Dynamically balance splines – “Glidecoat” treated.</p>
Steering System:	<p>Make and Type – Sheppard 592S integral hydraulic power gear. Electronic all wheel steering system, Oshkosh ALL STEER, or its equivalent. Chassis Hydraulics Warning System – low level/high temperature. Steering –drive wheel ends shall be totally enclosed and sealed from dirt and slush.</p>

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Suspension:	Front: Type – Hotchkiss, semi-elliptic spring. Main – 7 leaf, 48 x 3 inches. [1,219 x 76 mm] Auxiliary – 5 leaf, 39.63 x 3 inches. [1,219 x 76 mm] Rating – 27,000 lbs. [12,247 kg]  Rear: Type – Hotchkiss, semi-elliptic spring. Main – 7 leaf, 48 x 3 inches. Rating – 18,000 lbs. [8,165 kg]
Tires:	Size – 395/85R20 – 20 ply. Make – Michelin XZL. Spare – one (1) complete tire/wheel assembly.
Transfer Case:	Make and Model – Oshkosh 55000 Series or its equivalent, rear axle declutch. Type – Helical gear, two-speed with Dorr-Miller automatic differential. Ratios – 2.66:1 and 0.98:1.
Transmission:	Allison 4 <sup>th</sup> generation 4-speed automatic transmission with appropriate torque converter. Transmission shifting shall be accomplished via a push button shift control within easy reach of the operator’s left hand. A dedicated back up connection shall be provided between touch pad shifter and vehicle electronic system (EXTERNAL TO THE J1939 DATA BUS CONNECTION) to allow operator to shift into gear during fault mode if j1939 data bus fails. A low transmission oil level sensor system shall be included. Speeds – 4 Forward – 1 Reverse. Ratios: 4 <sup>th</sup> 1.00:1 3 <sup>rd</sup> 1.43:1 2 <sup>nd</sup> 1.91:1 1st 3.51:1 Rev 4.80:1
Warranty:	Standard two-year chassis warranty.
Wheelbase:	164 in. [4,166 mm]
Wheels:	Size – 20.0 x 10.0 in. Type – Steel disc.
Vehicle Ratings:	Ratings at Axle Hubs: Fronts – 27,000 lb [12,247 kg] Rear – 18,000 lb [8,165 kg] Total – 45,000 lb [20,412 kg]

### **BROOM AND BLOWER SPECIFICATIONS:**

Certification:	Air blower velocity must be certified by an independent test facility and be submitted with the bid.
Configuration:	New heavy duty, high performance front mounted dedicated runway broom with a forward mounted center steering cab design.

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General Design:	The broom head is 18 feet in length and 46” in diameter and capable of producing 4820 ft-lbs of torque. The air blower has a capacity exceeding 22,800 CFM at 450 MPH velocity of air at each nozzle. The broom head and air blower shall be hydrostatic with infinitely variable speed hydraulic pumps and motors. The broom shall have the ability to remove snow, ice, slush, sand and other debris at rated speeds up to 40 MPH depending on conditions.
Power Data:	Caterpillar C13 Model HP3 with 475 hp @ 2100 RPM, and a 12.5 liter displacement minimum.
Engine Assembly:	The engine shall be liquid-cooled, tier III EPA emission certified, and equipped with electronic controls for fuel injection and engine management including an automatic shutdown system with manual override and an electrical connector for CAT diagnostic system.
Engine Cooling System:	Shall be furnished with the proper size heavy-duty cooling radiator and heavy-duty charge air cooler mounted on top of the engine enclosure for space consideration. The cooling fan for the radiator and charged air cooler shall be hydraulically driven with automatic thermostat (high/low) control. Antifreeze shall have a protection to minus (-) 35 degrees Fahrenheit with distilled water for anti-corrosion purposes and supplemental coolant additive for cavitations and corrosion protection.
Exhaust System:	An exhaust system with rain cap shall be mounted on top of engine enclosure.
Engine Fuel:	The fuel supply shall be supplied by the chassis engine fuel supply. A Racor heated fuel water separator shall be dedicated to the auxiliary engine.
Engine Housing:	Engine is enclosed in a fabricated sheet metal housing of weatherproof design, covering the entire auxiliary engine and air blower system. Housing shall have four large doors on each side for access to engine for servicing and repairs. The enclosure doors shall be equipped with two flexible draw latches to hold them in place during operation, handles on the outside for easy removal by the operator, and an “L” shaped bracket on the inside, for easy temporary storage on the outboard handrail when removed for maintenance. The compartments are provided with three lights, two on the right and one on the left.
Platform:	The platforms are constructed of open grating and reinforcements for walkways and work areas. Platforms shall extend the full length of the chassis on both sides with safety rails and steps on both sides.
Broom Hitch:	The broom hitch shall provide the following for the broom head: low friction, free flotation, shock absorbing, and weight transfer. Broom hitch shall be constructed with a parallel arm system with four horizontal pins. The two arms shall be box construction for torsion stiffness with 2 inch diameter pins on grease able low friction bushings, DX pre lubricated type (no metal on metal), parallel arms shall be supported by two hydraulic cylinders. Pressure in the hydraulic cylinders provides the lift necessary to transfer approximately 65% of the broom weight to the chassis. A control valve adjusts the oil in and out of the cylinders to provide the same weight transfer no matter what the surface irregularities. The vertical stroke of the cylinders and thus the hitch shall be 12” minimum. The broom hitch shall carry approximately 65% of the broom weight by utilizing the weight transfer system.

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- Broom Angle:** The broom head shall be capable of swinging 36 degrees maximum left of right, selectable from the operators joystick. The swing shall be accomplished by means of dual swing arms with four (4) pivot points, which ensures the weight of the broom head remains approximately on the chassis centerline regardless of the position of the broom head. The bearing mechanism shall allow frictionless motion through the swing shall be accomplished by utilizing four vertical parallel shafts at least 2.5 inches in diameter at each end of both swing arms. The swing arms themselves shall be made from formed steel plate and machined steel tubing with greaseable low friction bushings, DX pre lubricated type (no metal on metal).
- Broom Oscillation:** The broom oscillation shall provide true flotation left to right for the broom head so that it is independent of broom chassis to accommodate surface irregularities. It shall have at least 8 degrees (+4, -4) of free floating oscillation from left to right. The ability of the broom head to oscillate shall be provided by means of spherical bearing assembly. The broom head shall have approximately 10 in of vertical motion at the casters independent of the chassis position.
- Broom Head Assembly:** The brush itself shall be 46 in diameter and 18 feet long comprised of the 9 foot sections. The broom head frame must sustain the loads imposed by the snow removal capacity of the unit. It shall be fabricated from 6.5 in diameter steel tube in tube design with 0.44 inch walls and include provisions for grease between the mating surfaces. The hydrostatic broom drive shall be dual end drive. Power shall be supplied from two variable displacement hydrostatic pumps (Sauer-Danfoss 90 series type) mounted on the engine's gearbox. The gearbox shall be a parallel shaft pump drive with precision gears, AGMA 10 rating and dipstick for oil level measurement. Two high-speed hydrostatic motors (Sauer-Danfoss 90 series type) each connected to a planetary reduction gearbox shall be mounted inner diameter of the broom cores out ends to minimize overall width. The motor gearbox connections shall utilize a static o-ring seal, wet spline type. No dynamic seal shall be used for reliability purposes. The motors shall not support the broom core loads. The planetary gearbox shall be hydraulic oil bath lubricated (case flushing type). The entire broom head shall be vibration analyzed as a final inspection with report on vibration spectra (FFT plot), a sample of QA report with FFT plot shall be included in bid. Speed of the broom shall be infinitely variable from 0 to 515 RPM. Available torque at the broom shaft shall be 4820 ft-lbs at maximum hydraulic pressure of 5075 psi for maximum snow moving capabilities. Engineering hydraulic power calculations confirming these values must be provided with the bid. Power shall be transmitted to the broom core from the gearboxes utilizing keyed tapered hubs to prevent any looseness in the connection for vibration concerns and high strength molded urethane drive cogs into replaceable hardened steel core drive sprockets of the core. Hardened steel pilot plates shall support the radial lads. A maximum 2 inch gap between broom core sections shall be obtained by using a center dual idler with the same components as the drive ends. The idler bearings shall have a remote grease block located for easy service access. The broom end plates shall be steel fabricated using 0.38 in thick welded steel plate constructions with 14 in diameter, 0.38 in thick steel tub for mounting the broom drive gearboxes. The end plates shall be reinforced horizontally and vertically using, 2" x 6" structural rectangular tubing on the inside and 3"x 6.5" formed channel on the outside. The broom end plates shall be secured to broom frame with four 1 inch grade 5 bolts. The unbolted end plates shall slide outward to allow easy access for core and bristle replacement. The slide mechanism shall be 4.5 inch round telescoping tube in tube design. A second 2 in square tube shall slide on a plastic slide providing additional support and allowing repeatable location of brush centerline alignment during broom core removal and replace operations.

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- Broom Cores:** The two core sections must be split core design for easy handling and efficient (tight) water stacking and sustain the loads imposed by the snow removal capacity of the unit. They shall be tubular steel construction with four drive bats, equally spaced around a tube to center each brush wafer. The drive sprockets shall be replaceable hardened steel. Each core shall be individually dynamically balanced to acceptable values at rated RPM. The brush of the cores shall be full width and designed for runway operation and shall be field replaceable with maximum ease without the use of special tools. The bristles shall be fastened in a radial wafer fashion to steel ring with wire. The wafers shall be a 50/50 combination of polypropylene and wire, conforming to Mil Spec F-83002. The polypropylene bristles shall be 0.075" x 0.105 oval shaped with an 8 pounds total wafer weight minimum. The wire bristles shall have a mean diameter of 0.018 in, galvanized, with a carbon content of 0.81 to 0.86 percent and a 10 pounds total wafer weight minimum. All wafers shall be in a 50 oz-in static balance and marked at the heavy location.
- Broom Casters:** There shall be two single tire caster assemblies for an 18 foot broom. Since a weight transfer broom hitch shall be utilized, the chassis carries approximately 65% of the broom weight. The broom casters shall carry the remaining weight of the broom head. With the reduction in weight and tires, fewer tires shall be required and tire maintenance reduced. Each caster assembly shall be free to rotate 360 degrees. The radial pneumatic tires shall be 180/70R8 16 ply. Spring-loaded adjustable automotive type disk brake shall be supplied per caster to prevent caster shimmy at all sweeping speeds. The caster assembly shall be non suspension type allowing the brush to follow the ground contours as close as possible. The broom head caster support shall be mounted to the main broom frame by means of welded brackets constructed of 0.5 in steel plate, minimum. The steel caster assembly shall be attached to the broom head by means of four bolts for serviceability. The caster axle shall be supported by the caster mounting body constructed of 0.63 in plate.
- Brush Hood:** The brush hood is fabricated from 14 gauge sheet alloy steel and securely bolted to the brush frame. It shields the top half of the brush completely and includes provisions for mounting a snow deflector on the front of the hood. The hood is of a non-clog design to prevent ice buildup during freezing slush removal operations at rated speeds. Brush hood provides the necessary quick access to brush for replacement of segments and inspection. The hood incorporates in its design a rigid snow stripper to prevent carry-over and clogging in difficult snow conditions. The rigid snow deflector is adjusted with crank type adjusters on each side of the hood to adjust the entire hood assembly until the snow deflector is in a position ¼ inch above the bristles. The stripper itself is independently adjustable to allow for wear.

## Special Terms and Conditions

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**Deflector System:** The broom hood shall shield the top half of the brush completely and fabricated from heavy-duty 10 gauge sheet steel securely bolted to the broom frame. It shall be non-clog design to prevent ice buildup during freezing slush removal operations at rated speeds. It shall provide the necessary quick access to the brush for replacement of bristles and for inspection. There shall be an adjustable and replaceable stripper bar across the front of the broom to prevent snow carryover. The stripper bar shall be near tangential to the broom outside diameter. A smooth curved scoop hood shall be incorporated across the full length of the broom. The stripper bar shall be attached to this scoop hood. It shall be connected to but moved independent of the stationary hood. A snow deflector shall be mounted on the front of the scoop. Two hydraulic cylinders spaced appropriately along the length of the deflector shall adjust the angle of the deflector with respect to the scoop. The deflector angle shall be controlled and adjusted from the operator's cab. The result is a smooth, efficient, and controlled flow of the snow leaving the bristle. The stripper bar, the scoop hood, and the deflector structure shall have no abruption to a smooth flow at any broom/bristle diameter of at any deflection angle. The adjustment to bristle diameter wear shall be performed using two mechanical acme thread jacks, one each of the scoop and broom frame. The adjustment shall position the stripper bar to the bristle diameter. The scoop design is required for efficient stripping of the snow off the bristles to prevent carryover, especially with the high performance snow moving capacity specifications of the bid. No substitutes are allowed.

**Brush Elevation Mechanism:** The broom head lift shall be achieved utilizing two 4 inch diameter hydraulic lift cylinders, one on each end of the broom frame, controlled by the operator's joystick. The lift cylinders shall be equipped with a counterbalance valve, which prevents the broom head from creeping down. The pivoting action shall have adequate stroke to achieve ground clearance during transport when not in use. A linkage attached to the broom lift cylinders shall also provide the brush pattern adjustment mechanism. The linkage shall activate a limit switch, which controls the cylinders' valve limiting the down travel of the two lift cylinders. A thumbscrew shall adjust the linkage/limit switch relationship, thus allowing brush pattern adjustment. A toggle switch for remote broom lift control pattern confirmation shall also be provided. A rubber latched, weatherproof control box housing the micro switch, linkage, thumbscrew and toggle switch shall be located behind the broom head allowing easy, repeatable pattern adjustment from a standing position. Returning to operator's cab to confirm pattern adjustment is unacceptable. For safety reasons the operator cannot be positioned under or near the broom head to make the pattern adjustment. The brush pattern adjustment process shall be accomplished without the use of tools.

## Special Terms and Conditions

**Blower and Drive Specifications:** The forced air blower shall be centrifugal impeller type with dual inlets and dual outlets. It shall be mounted between the chassis engine and the broom engine. It shall produce 22,800 CFM total at 450 MPH velocity air out both sides at the same time. Both nozzles shall blow in the same direction at any given time, accomplished by deflectors at the nozzle ends. The nozzle deflector's control shall be hydraulic and interlocked with the broom head angle to blow in the direction of broom casting thus controlled by the operator's joystick. The nozzle deflectors change direction as the broom swings. A separate control shall allow the nozzle deflector's direction opposite of the broom angle by choice. An additional control shall permit blowing without broom operation. The velocity and CFM at each nozzle shall be certified by an independent test facility and supplied with the bid. The air ducts shall rise within the width of the tires of the chassis for transport and storage. There shall be a minimum of 12 in ground clearance when raised. For safety reasons and clean design, the ductwork shall be routed underneath the platforms on each side of the vehicle. The centrifugal impellers shall be independently driven via hydrostatic motors (Sauer-Danfoss 40 series type). The two motors, one for each impeller, shall be mounted directly to the impeller shaft utilizing an oil immersed spline drive coupling. Each impeller shall have two oil bath lubricated bearings such that the motors do not support the impeller weight. Power to the motors shall be supplied from a variable displacement hydrostatic pump (Sauer-Danfoss 90 series type) mounted on the engine's gearbox allowing infinite control of blower speed from 0 to 100%. Both impeller / shaft assemblies shall be dynamically balanced at the rated RPM. All controls for the air blower shall be remotely operated from within the cab.

**Hydraulic System:** All hoses for all systems shall be properly sized and strength to work with the pressure and volume of oil required. All hydraulic positioning functions (broom head lift, broom head swing, deflector, and air nozzle lift) shall be equipped with a hydraulic position locking system. A counterbalance valve shall be used for the broom lift and a pilot operated check valve for the other functions. All hydraulic functions of the broom shall be electric over hydraulic. Connectors to the solenoids shall be interlocking type to provide a secure connection, which can withstand normal pressure washing procedures. Piloted operated check valves shall be installed for the broom swing left and right, deflector up and down, air ducts up and down, and air nozzles left and right. Fluid and components shall be design for temperature to -20 degrees F ambient cold start. The hydraulic fluid reservoir shall be 50-gallon minimum. Shut off valves for all filters below tank fluid level shall be installed to allow filter changes without loss of oil. Proper filtering shall be done on both the high pressure and low pressure circuits and shall conform to SAE J931. There shall be a 5-micron absolute rating on the hydrostatic pumps' filters and placed in the charge pressure lines. One spare spin on canister provided for each of these charge pressure filters. There shall be a clogged filter indicator light on the cab control panel indicating filter replacement. The hydraulic oil cooler shall be mounted on top of the engine enclosure for space considerations in the engine enclosure and shall be separate from the engine radiator to ensure adequate airflow. The dedicated fan for the hydraulic oil cooler shall be hydraulically driven with automatic thermostat (high/low) control for correct temperature under all conditions, winter and summer. It shall be controlled by a thermostatic switch to avoid excessively cold oil operation and designed such that thermostatic failure results in the cooling fan being engaged. A hydrostatic oil temp gauge and warning light for low hydrostatic oil level shall also be supplied.

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Control System: All controls shall be electric over hydraulic type. All instruments and controls shall be labeled in a manner to remain legible for the life of the unit and shall be illuminated. All wiring shall be either harness, cable, split loomed, or shrink-wrapped. All wiring shall be color-coded, wire numbered matching drawing schematics and terminal strip, and labeled every 3 inches as to what it is used for. The gauge wire and processes shall be in accordance with common wiring practices, SXL insulation type. The broom swing, lift and blower nozzle shall be microprocessor controlled (no relays) and have automatic one touch for cycle complete control. This allows the operator to have hands free operation during cycle movement. Moving the joystick in the opposite direction can reverse the cycle. An additional switch allows the operator to use the automatic control or disengage the system. The operator's control in the chassis cab shall be a Monitor, Diagnostic and Control (MDC) station for the broom and air blower. It shall use a 7 inch minimum color liquid crystal screen and use multiplex technology. All functions and displays must be in easy reach of the operator and integrated into the chassis instrumentation. They shall have all the necessary functions to operate the broom and air blower and shall have the following:

### System On/Off (keyed)

- ◆ Broom engine main operating screen
  - Oil pressure with visual and audible warning alarms
  - Coolant temperature with visual and audible warning alarms
  - Hydraulic oil temperature with visual and audible warning alarms
  - Low fuel visual and audible warning alarms
  - Engine tachometer
  - Voltmeter and warning indicators
  - Alarms for engine diagnostics and visual warning indicators and displayed faults.
  
- ◆ Controller buttons
  - Select Item
  - Select Down
  - Select Up
  - Engine Start / Stop
  - Menu
  
- ◆ Menu Selections
  - Lights
    - Beacon On / Off
    - Front Flood On / Off
    - Rear Flood on / Off
  - Joystick Touch Pad
    - Joystick lift Up / Down
    - Joystick Swing Left / Right
    - Deflector Up / Down
    - Snowshed Hood Up / Down
    - Vibrator On
    - Mode Auto / Manual
    - Broom On / Off
    - Blower On / Off

## Special Terms and Conditions

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- Engine Hydraulics
- Engine Diagnostics
  - Number active Faults
  - Active Fault Codes
- Settings
- Joystick control: Broom only, blower duct only, or both
- Air blower nozzle direction: Coordinate/Opposite broom swing
- Weight Transfer with audible alarm when in the off position
- Automatic broom pattern control
- Pattern Increase / decrease
- Broom cylinder position
- Core life hours
- Maintenance Hours
- Output Diagnostics: this screen is for display only and shows the controller output diagnostics.
- Setup: this screen allows authorized personnel to change the vital settings and is password protected.

Separate back light touch switches for:

- Broom on/off
- Air Blower on/off
- Deflector up
- Deflector down
- Auto or manual function control
- Snowshed hood lift
- Snowshed hood stow
- Vibrator

Single circuit breaker with Master Battery disconnect.

**Paint:** The sweeper is cleaned, treated, and painted in accordance with the best commercial practice. The unit is painted with one coat of metal primer and two coats of paint to conform to customer requirements.

The finished paint is free of “fisheye,” “orange peel,” chips or runs and other imperfections that detract from the vehicles appearance.

**Technical Assistance:** The successful bidder will provide factory-trained personnel at time of delivery to place the unit into operation and provide training to airport personnel in the operation and maintenance of the unit.

**Miscellaneous:** One (1) Spare broom brush core set.  
Two (2) spare caster wheels/tires.  
One (1) set of replacement brush segments.

## Special Terms and Conditions

### 3.4 Service Equipment

All bids shall include the following:

- Pro-Link 9000 analyzer Model #J38575-H
- Bendix ABS/ATC Cartridge Model #J38500-1100
- WT Cartridge (version 4.0) Model #J38500-302A

### 3.5 Standards/FAA Advisory Circular Compliance

All bids shall meet or exceed the following Standards/FAA Advisory Circular Compliance:

- 150/5220-121 Airport Snow Sweeper
- 150/5210-5B Painting, marking and lighting of vehicles used on an airport

### 3.6 Test Result Certifications

All bids shall submit actual test results of the following Federal Standards and Regulations:

- FMVSS 571.103 Windshield defrost systems
- FMVSS 571.104 Windshield wiping systems
- FMVSS 571.207 Seating systems
- FMVSS 571.210 Seat belt anchorage
- FMVSS 571.121 Air brake systems
- 40 CFR Ch.1 Bypass noise levels
- FMCSR 393.94 Vehicle interior noise

All bids shall submit certifications stating compliance to the following Federal Standards and Regulations:

- FMVSS 571.101 Controls and displays
- FMVSS 571.808 Lamps, reflective devices
- FMVSS 571.120 Tire selection
- FMVSS 571.206 Door locks/retention components
- FMVSS 571.209 Seat belt assemblies
- FMCSR 393.65 Fuel systems and tanks
- FMCSR 205 Glazing of windows
- FMCSR 302 Flammability/interior materials

### 3.7 Inspection

The vehicle is subject to Authority inspection and approval prior to acceptance.

### 3.8 Delivery Requirements

The vehicle shall be delivered F.O.B. to 5751 Falcon Road, Rockford, Illinois.

### 3.9 Retainer

The Authority will retain 10% of the total bid package until final inspection is deemed full and complete.

### 3.10 Invoicing and Payment

The goal of the Authority is to pay properly submitted Contractor invoices within thirty (30) days of receipt, providing goods have been delivered and/or services have been performed, approved and accepted by the Greater Rockford Airport Authority. Original invoices must be presented for payment in accordance with instructions contained on the Purchase Order including reference to Purchase Order number and submitted to the correct address for processing.

### 3.11 Insurance

The Contractor shall maintain at all times a minimum commercial liability insurance policy in the amount of \$2,000,000.00 and must name the Greater Rockford Airport Authority as additional insured on Contractors policy. Proof of adequate insurance in the form of a Certificate of Insurance must be provided to the Authority upon contract acceptance.

## Special Terms and Conditions

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3.12 Training

The successful bidder shall provide factory-trained personnel at time of delivery to place the unit into operation and provide training to airport personnel in the operation and maintenance of the unit.

3.13 Miscellaneous

The successful bidder shall provide two (2) sets of Operators, Parts and Service Manuals.

3.14 Warranty

The chassis shall have a standard two (2) year warranty and all other equipment shall have minimum twenty-four (24) months warranty coverage.

*End of Special Terms and Conditions*

Full Name of Bidder: \_\_\_\_\_

Business Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Telephone Number: \_\_\_\_\_ FAX: \_\_\_\_\_

Email: \_\_\_\_\_

Contract Person: \_\_\_\_\_

FEIN: \_\_\_\_\_

The undersigned, being duly sworn, certifies that he/she is:

- The Owner/  
Sole Proprietor       a Member of the  
Partnership       an Officer of the  
Corporation       a Member of the  
Joint Venture

Further, the Contractor declares that the only person or parties interested in this bid as principals are those named herein.

Further, the undersigned hereby certifies that they have read and understand the contents of this bid and agree to furnish at the prices shown any or all of the items above, subject to all instructions, conditions, specifications, warranties and attachments, including Addenda No. \_\_\_\_\_ and \_\_\_\_\_ issued thereto, except only to the extent that the Contractor has taken express written exception in this bid, hereto. Failure to have read all the provisions of this bid shall not be cause to alter any resulting contract or request additional compensations.

Further, by signing this bid document, the bidder hereby certifies that they are not barred from bidding on this contract as a result of a violation of either Section 33E-3 or 33E-4 of the Illinois Criminal Code of 1961, as amended.

Further, by signing this bid document, the Contractor hereby certifies that pursuant to Illinois Compiled Statutes, 65 ILCS 5/11-42-1, the Contractor is not delinquent in the payment of any tax administered by the Department of Revenue.

Our State of Illinois Certification Number under the Fair Employment Practices Law is \_\_\_\_\_.

- (check if applicable) We do not have a State Pre-Qualification Statement. In lieu thereof, we will make an application at 312.814.2432 within thirty (30) days from the date of this bid opening.

Further, the Contractor agrees to provide a drug free workplace as provided for in the Drug Free Workplace Act, 30 ILCS 580.1 et seq.

**Authorized Signature:** \_\_\_\_\_

**Typed/Printed Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Bidder Name: \_\_\_\_\_

Price \$ \_\_\_\_\_

Payment Terms: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Delivery or Completion Time \_\_\_\_\_

Warranty \_\_\_\_\_

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Variances and Deviations

Variance 1: \_\_\_\_\_

\_\_\_\_\_

Variance 2: \_\_\_\_\_

\_\_\_\_\_

Variance 3: \_\_\_\_\_

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Variance 4: \_\_\_\_\_

\_\_\_\_\_

References

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Contact Person: \_\_\_\_\_

Telephone #: \_\_\_\_\_

E-mail \_\_\_\_\_

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Contact Person: \_\_\_\_\_

Telephone #: \_\_\_\_\_

E-mail \_\_\_\_\_

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Contact Person: \_\_\_\_\_

Telephone #: \_\_\_\_\_

E-mail \_\_\_\_\_

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Contact Person: \_\_\_\_\_

Telephone #: \_\_\_\_\_

E-mail \_\_\_\_\_