

Technical Specifications

St. Joseph County Airport Authority

SPECIFICATIONS FOR A HEAVY DUTY AIRPORT SNOW REMOVAL VEHICLE with HEAVY DUTY SINGLE FRAME 4X4 CHASSIS, FORWARD MOUNTED CAB, 18-FOOT HIGH PERFORMANCE FRONT MOUNTED BROOM.

These specifications are for the furnishing and delivery of one new snow removal unit to include the carrier vehicle, 18’ rotary broom with high velocity air.

The requirements listed for this unit are outlined and based upon the current Federal Aviation Advisory (FAA) circular (AC) 150/5220-20A , which in turn references SAE ARP 5564. This vehicle and components must be designed and manufactured to facilitate the purchase of equipment that has been found acceptable to the FAA for use on airports.

Carrier Vehicle Specifications

Compliance
Yes/No

Anticipated uses and/or features of vehicle: Designated snow removal Equipment for snow removal operations on the airfield operational area At the South Bend International Airport.

Performance Requirements:

- a. Required Working Speed: 35 to 55 mph _____
- b. Minimum Speed: 25 mph _____
- c. Turning Radius: 75 feet _____

Engine/transmission:

- Automatic Transmission _____
- Diesel Engine _____
- Number of forward speeds-six _____

Transfer Case

- Manual locking differential _____

Axle Capabilities

- 29,000 lbs front axle _____
- 27,000 lbs rear axle _____

Fuel Capacity 150 gallons minimum _____

Snow Removal Equipment (SRE) must be in accordance with SAE ARP 5564, Snow Removal High Speed, Runway Broom with Airblast. Unit to include Carrier Vehicle, Rotary Broom High Velocity Air. _____

Delivery

- The vendor is responsible for the safe and timely delivery of the vehicle and its accessories, spare parts, and tools to the South Bend International Airport
- Carrier vehicles must be marked for shipment in accordance with Instructions agreed to by the purchaser

Instruction and Training

- The manufacturer must, at no additional cost, furnish the services of trained personnel to the purchaser at a time and place agreed to be all parties. These individuals must provide instruction to airport personnel sufficient for the personnel to familiarize themselves with the operation and maintenance of the carrier vehicle and its auxiliary equipment. The period of instruction must not be less than 24 hours or as specified in the referenced SAE ARP equipment specification.

Carrier vehicle dimensions

- Carrier vehicle dimensions should permit the carrier vehicles To pass through the standard door openings of service and storage Buildings. Se AC 150/5220-18, Buildings for Storage and Maintenance of Airport Snow and Ice Control Equipment and Materials, for FAA recommended door openings, parking space and set-asides, and other clearances within these buildings. Additionally, the selected dimensions should permit servicing of equipment by standard lifts and cranes without the need for special equipment or the need for building modifications. Building door dimensions are as follows: Door width- 20 ft by 15 ft height.

	Selected Descriptions Required Item	Required Item	Vendor Compliance Yes/No
	Indicate acceptable design: Front mounted Dedicated.	YES	
	75-foot wall to wall maximum turning test	Yes	
	Install pintle hitch	Yes	
	Standard catalog diesel engines Note: Alternative fuel engines (not available at this time)	Yes	
	Transfer case (standard manufacturer's equipment)	Yes	
	Steering enhancements (standard manufacturer's design)	Yes	

	Standard catalog steering	Yes	
	Enhanced steering	Yes	
	Spare rim / tire	Yes	
	Auto-lubrication system	Yes	
	Managed battery system	Yes	
	Conspicuity markings	Yes	
	Audible back up alarm	Yes	
	Standard equipment horn (manufacturer's standard air or electric – no choice)	Yes	
	Engine coolant heater	Yes	
	Ether start provision	Yes	
	Operator's cab (no choice of cab, manufacturer's standard design)	Yes	
	Cab glass (no choice of cab, manufacturer's standard design)	Yes	
	Heated wipers and fluid system	Yes	
	Rear view mirror (no choice of mirrors, manufacturer's standard design)	Yes	
	Sun visors (no choice of visors, manufacturer's standard design)	Yes	
	Prewired for two-way radio components (power only)	Yes	
	Windshield deluge system	Yes	
	Single or double acting lift cylinder (manufacturer's standard design)	Yes	
	Spray guard	Yes	
	Shock / impact absorbers	Yes	
	Type of caster assembly – no selection (manufacturer's standard design)	Yes	
	Non-stowable broom head	Yes	
	46 inch brush diameter (recommended)	Yes	
	Type: Poly/wire combo: Mix Specified Mix: 50%	Yes	
	Wafer bristles (standard)	Yes	
	Bristle end count:	Yes	

Runway Broom with Airblast Specification

SAE ARP 5564	Selected Descriptions Required Item	Vendor Compliance Yes/NO
A6-1: Anticipated uses and/or features of brooms with airblast (Be specific)	The snow broom with airblast would be used in conjunction with the other pieces of snow removal equipment to assist in expediting the snow removal process at SBN	
A6-2: Size of Priority 1 paved area to be swept	4,967,778 ft ²	
A6-3: Time required to sweep primary surface areas	30 minutes	
A6-4: Sweeper speed needed to meet clearance time	25 mph	
A6-5: Type of sweeper desired	Pushed	
A6-6: Airblast system	Yes	
A6-7: Size of broom length / diameter	18 ft. / 46 in.	
A6-8: Type of brush	Poly / wire	
A6-9: Optional equipment	No	
A6-10: Other	N/A	

Runway brooms with airblast must be in accordance with SAE ARP 5564, Airport Runway Broom _____

The following federal AIP/PFC specification requirements for SAE ARP 5564:

- Airblast is standard equipment _____

Under paragraph 6.22 of SAE ARP 5564, the following additional Equipment if standard:

- Specialized tools-not to include computers and electronic Diagnostic machines _____
- Brush wafers 1- Complete set as specified _____
- LED marker light located per SAE ARP 5564 _____
- An automatic lubrication system for all possible points _____
- 20-pound fire extinguisher _____
- Brush speed control by ground _____

Sweepers are designed to operate under normal winter conditions. To improve equipment effectiveness, provide the following options:

- Maintenance free batteries _____
- Automatic low oil pressure/high water temperature Shut down devices _____
- Fire Extinguisher _____
- Engine temperature and hydrostatic pressure loss warning Devices _____

Operational Standards and Compliance Testing

General

- The manufacturer is responsible for conducting tests, per AC 150/5220-20A and SAE ARP 5564, to ensure that its snow removal and ice control equipment meets the operational and performance requirements it advertises. This equipment shall come with Certification in writing that the components constituting the whole of equipment being supplied to the airport complies with the applicable performance, design and construction requirements of SAE ARP 5564. Equipment tests must be conducted on standard production models and not on specially constructed prototypes. _____

Pre-Testing.

- Examine each test carrier vehicle to ensure that it is a Standard production model and not a specially constructed unit made specifically for the test. Prior to testing, all controls, adjusting mechanisms, hydraulic systems and other assemblies must be operated to ensure against leaks, restrictions, and malfunctions. Once assured that the unit is fit, actual testing may begin. _____

Required carrier vehicle tests.

- Test the carrier vehicle in accordance with (1) this paragraph and (2) any referenced SAE ARP(s) for the specified equipment the carrier vehicle is to

support. Conduct the following temperature, performance, and compliance tests when acquiring a carrier vehicle. Carrier vehicles must be all-wheel drive. _____

➤ Cold weather operations: A fully-equipped Carrier vehicle (all types) with all attached snow removal and ice control equipment should be able to perform normal operations at an ambient temperature: _____

- (1) of 10°F (-12°C) below the lowest temperature in which the vehicle is expected to operate, or _____
- (2) at -40°F (-40°C) at airports located in extremely cold climates. _____

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

➤ Power: Carrier vehicles must have sufficient power to perform all operational and attachment functions simultaneously. _____

➤ Performance: The following tests must be conducted on a carrier vehicle loaded to its gross Vehicle Weight and must include the following systems: hydraulic, power train, brake, lighting, controls, and instruments. Performance testing will be completed on site At the airport. _____

- (1) 10 mile test. Drive the carrier vehicle Over hard surfaced roads at normal airport speeds for a distance of 10 miles (16 km) with no problems experienced. Focus special attention on vibration, steering, vehicle drift, rattles, leaks, and interior controls. _____

- (2) One hour test. Perform this time test at a speed of 5 mph (8 km/h) over all types of terrain that would normally be encountered

at the airport. _____

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

(4) Emergency brake test. Conduct this test at a Speed of 40 mph (64 km/h). km/h and 64 km/h). Using the service brakes only, the fully loaded carrier vehicle must be brought to a complete stop within a distance of 35 and 131 feet (11 and 40 m) respectively measured from the point of brake application. The test must be conducted for two complete cycles in either direction on a hard pavement surface that is dry, reasonably level and free of loose material. Make no steering corrections for vehicle drift during the stop. _____

Runway Brooms with Airblast

Field test in accordance with SAE ARP 5564, Airport Runway Brooms, and the following testing requirements:

- A field test must be conducted to simulate operations on a runway or taxiway having a length of at least 1,000 feet (305 m). Snow depth may vary, but the broom should be capable of removing snow at the following depths and densities:
 - Large swath brooms over 12 feet. Three inches (7.6 cm) of light snow having density of 8 to 15 lbs/ft³ (128 to 240 kg/m³) or one-half inch (1.3 cm) of slush at density of 40 lbs/ft³ (641 kg/m³). _____
- Speed must be as high as practical but not less than 25 mph (40 km/h) for large swath brooms. _____
- The resulting cleared swath must demonstrate the following:

- The resulting swath width is reasonably clean without snow deposits resulting from bouncing or skipping of the brush. _____
- The unit with airblast must be capable of varying its brush rotational speed, angle of attack, and the degree of brush pressure applied to a surface area. _____
- The unit with airblast must be capable of broadcasting Snow to either side of the carrier vehicle. _____
- The broom should show no performance degradation when sweeping thin deposits of sand, ash, water, or light debris. _____
- The unit with airblast must be designed to allow All performance and monitoring functions to be controlled or observed by a single operator from the carrier cab. _____

Vehicle Painting:

Vehicle shall be painted Chrome Yellow, as specified in AC 150/5210-5 *Painting, Marking, and Lighting Used on an Airport*. If the vehicle is equipped with a bumper 8" inches or more in depth, the bars must be painted in alternate stripes 4" inches in width of Chrome Yellow and Black inclines 45 degrees to the vertical.

Vehicle Lighting:

A yellow flashing light that is mounted on the uppermost part of the vehicle cab and an additional yellow flashing light shall be mounted on the uppermost area of the auxiliary engine cover. The lights must be visible from any direction, day and night, including from the air.

Warranty:

Manufacturer shall supply a 12 month, full parts and labor warranty on components or manufacturer's standard warranty, whichever is longer. Warranty shall begin upon date of acceptance.

If dealer is providing the servicing warranty for any components,

Indicate dealer's name and address:

Bidder is to provide documentation explaining the method of reimbursing the St. Joseph County Airport Authority for warranty repairs and labor cost for warranty work provided by Airport Authority personnel at our facility:

Bidder must outline Airport Authority and vendor and vendor Procedures when warranty work is performed by the bidder. (Example: responsibility for transporting the vehicle, location of repair facility, etc.):

Bidder shall provide information relating to its commitment to turn-a-round time on major repairs.

Bidder shall attach a listing of 5 references, US Airports (recent deliveries) in the last 5 years where this equipment has been provided and is being used. To include name of company, a name and phone number, and information about the type and numbers of units in service.
