



NOTICE TO PUBLIC AND PROPOSERS

Notice is hereby given that the Fort Wayne-Alten County Airport Authority acting by and through its Board will receive sealed proposals until the hour of 5:00. p.m., August 29, 2017., in the Office of the Airport Director, Suite 209, 3801 W. Ferguson Road, Fort Wayne, Indiana 46809 for the following:

Airport Rotary Snow Plow with Carrier Vehicle

Sealed proposals should be directed to the Fort Wayne-Alten County Airport Authority, 3801 W. Ferguson Road, Ste. 209, Fort Wayne, IN prior to the receipt deadline. Proposal requirements and evaluation criteria are more particularly described in specifications on file and available at the Authority's website at www.fwairport.com, Airport Business, Solicitations & Bidding. Any issued addendums to this bid will be posted at this site. It will be the responsibility of interested firms to obtain any and all posted addendums.

The Fort Wayne-Alten County Airport Authority, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award

The Board reserves the right to reject any and all proposals, or to waive any informalities in proposals, to award the proposal which, in its judgement, will be to the best interests of the Fort Wayne-Alten County Airport Authority.

FORT WAYNE-ALLEN COUNTY
AIRPORT AUTHORITY

Joe Marana, A.A.E.
Director of Operations & Facilities

NOTE TO PUBLISHER: Please publish in the Journal Gazette on July 25, 2017, and August 1, 2017. Please send proof of publication and invoice to the address above.

A Whole New Altitude

FORT WAYNE-ALLEN COUNTY AIRPORT AUTHORITY
REQUEST FOR PROPOSALS
Airport Rotary Plow with Carrier Vehicle
Fort Wayne International Airport
Fort Wayne-Allen County Airport Authority

I. Introduction

A. General Information

The Fort Wayne-Allen County Airport Authority (the Authority) is soliciting proposals for the purchase and delivery of a newly manufactured airport rotary plow with carrier vehicle to be used to move snow during large and small events at the Fort Wayne International Airport (FWA), 3801 W. Ferguson Road, Fort Wayne, IN. The price submitted in your proposal shall include delivery to the Fort Wayne International Airport.

The rotary plow shall meet, at a minimum, the requirements of FAA AC 150/5220-20A. General supply requirements and work elements summarized in the Scope of Work (outlined in Section B below) and detailed in the general and technical specifications which are included as Exhibits A to B of this proposal.

To be considered, an original and three (3) copies of a proposal must be received at the offices of the Fort Wayne-Allen County Airport Authority, Suite 209, 3801 W. Ferguson Road, Fort Wayne, IN 46809, by 5 p.m. local time on August 29, 2017. Proposals must be sealed and clearly marked "RFP for Airport Rotary Plow with Carrier Vehicle." The Authority reserves the right to reject any and all proposals submitted.

Sealed proposals should be accompanied by a certified check or proposal bond in the amount of no less than 5% of the amount of the proposal. The guarantee shall be made out to the Fort Wayne-Allen County Airport Authority.

Questions regarding the proposal should be directed to Dave Falk (260) 446-3405 via e-mail at falk@fwairport.com. The deadline for receipt of questions is August 9, 2017. Any and all modifications to this RFP will be made for formal addendum issued and posted on the Authority's website, fwairport.com, airport business, solicitations & bidding. It will be the responsibility of interested contractors to monitor the site for any posted addendums and submit their proposals taking into consideration the information contained in such addendums.

The Fort Wayne-Allen County Airport Authority, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

B. Scope of Work—Detailed general requirements and specifications are outlined in Exhibit A-

B. Manufacture and delivery of a Airport Rotary Plow with Carrier Vehicle meeting the general requirements of Exhibit A and detailed technical specifications contained in Exhibit B. This specification, in accordance with the Federal Aviation Administration (FAA) Advisory Circular AC 150/5220-20A and Society for Automotive Engineers (SAE) Aerospace Recommended Practice (ARP) as noted, covers requirements for a highspeed rotary plow, also called a snow blower with carrier vehicle primarily used to cast heavy concentrations of snow away from airport operational areas such as runways and taxiways. The term 'carrier vehicle' represents the various self-propelled prime movers that provide the power necessary to move snow and ice control equipment during winter operations.

1. Warranty. A minimum 1 year parts and labor warranty will be provided for all equipment, installation, and workmanship associated with this project. Warranty shall begin upon the date of acceptance of the unit by the Authority and placement of the unit in operation on the airfield. Additionally, the engines shall be warranted for a minimum of two years and the automatic transmission shall be covered for a minimum period of three years upon the Authority's acceptance and operation.
2. Training. The contractor will meet the minimum training requirements of the technical specifications.
4. Anticipated key milestone dates for this RFP are:

RFP Release	July 25, 2017
Question Deadline	August 9, 2017
Proposal Due Date	August 29, 2017 @ 5:00 p.m.
Proposal Evaluation Period	August 30, 2017-September 8, 2017
Award Notification	September 19, 2017

C. Deliverables

1. At the project onset, a schedule for manufacture and delivery of the unit.
2. A newly manufactured airport rotary plow with carrier vehicle meeting the requirements of the technical specifications.
3. Operational manuals as required in the technical specifications.
4. Training as required in the technical specifications.
5. A Certificate of Origin.

II. Proposal Evaluation Process

A. Proposal Format

The proposal that the vendor will submit shall contain, at a minimum, the following critical information:

1. Detail your firm's ability to provide and install the equipment and perform the services outlined in the Scope of Work (Section I.B. above) and the general and technical specifications, Exhibits A, B. This description must include, at a minimum, the following information:
 - a. Detail contracts where your firm (or equipment manufacturer) has provided similar equipment outlined in this RFP. Include examples of previous manufacture that have similar equipment features contained in the Scope of Work. Your

proposal must include the contact name, title, and telephone number for at least 3 references for similar equipment.

- b. Outline your firm's ability and willingness to respond to service needs after completion of manufacture and delivery. Include information on the party responsible for providing the warranty service. If this is a dealer, include their name and address. Explain the method for reimbursement of warranty repairs and labor to the Authority if the Authority performs warranty repairs at our facility. Outline procedures for warranty repair when the work is performed by the proposer. Include your commitment to turn-around time on major repairs. How many years does the manufacturer commit to the production of replacement parts?
- c. The mandatory general requirement (Exhibit A) and specification matrix (Exhibit B) will be submitted to confirm compliance with the technical specifications. If your system fully complies with an item in the technical specifications, indicate "yes" under the compliance section. If your system fails to comply, indicate "no" and attach a summary listing detailing the reason for your system's inability to comply. A narrative describing the full functionality of the equipment that you propose to install may also be included to more fully describe equipment capabilities.
- d. Sealed proposals should be accompanied by a certified check or proposal bond in the amount of no less than 5% of the amount of the proposal. The guarantee shall be made out to the Fort Wayne-Allen County Airport Authority.
- e. Include the following information regarding your firm's background:
 - The location of your firm and the location of servicing personnel.
 - The structure of your firm and the number of years that it has been in business. If it previously existed under another name, indicate applicable information here.
 - A response to indicate whether your firm has ever been sued for issues pertaining to contract performance, whether it has ever been declared bankrupt, or defaulted or cancelled on an agreement during the last five years.
 - Other pertinent information which the proposer believes should be considered by the selection committee.
2. Pricing. The provider will list all costs for this project in the format shown in Exhibit C. The price provided shall include all and costs to provide the equipment delivered to the Fort Wayne International Airport and services as described in this proposal.

C. Evaluation Process

The proposals will be evaluated and ranked on the basis of the written material submitted. Evaluation criteria will be related to the following and weighted as shown:

Weight	Criteria
Pass/Fail	Compliance with Mandatory Equipment Specifications
Pass/Fail	Provided 5% Proposal Guarantee
20%	Experience of the equipment manufacturer
20%	Ability and willingness to service the equipment
50%	Pricing
10%	Background of the proposing firm

III. Terms and Conditions

Exhibit D contains General Terms and Conditions which are a condition of this product supply.

Exhibit A

General Requirements	Compliance	
	Yes	No
Unit shall be manufactured in the United States in accordance with IC 5-22-15-21		
All repair and/or replacement parts comprising components of this unit must be available from the manufacturer for a minimum of ten (10) years after purchase.		
Delivery of this unit and all components in a turn-key condition must occur within 210 days of notification of award of the bid.		
The manufacturer shall be responsible for conducting tests to ensure that its airport snow removal vehicle meets the operational and performance requirements it advertises. Certified records of these compliance tests shall be submitted by the manufacturer with each proposal. These tests shall be in accordance with FAA Advisory Circular 150/5220-20 Chapter 8 Operational Standards and Compliance Testing.		
The Proposer agrees to the General Terms and Conditions contained in Exhibit D		

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I-1 APPENDIX 1. SPECIFICATION FOR CARRIER VEHICLE, PART A – AIRPORT OPERATOR CHECKLIST

AIRPORT ROTARY PLOW WITH CARRIER VEHICLE

In accordance with FAA AC 150/5220-20A, Appendix 1, Part A, the equipment must meet or exceed these specifications. Part A tailors the carrier vehicle to the specific requirements of this purchaser and Part B defines the specification to meet these requirements.

AI-1. The snow blower shall be used to move snow during large and small snow events at the airport. The dual stage, high capacity, high speed snow blower shall be heavy duty to withstand the extreme winter conditions found in the airport environment.

AI-2. Performance requirements:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
a. Required working speed must operate from 0 to 35 miles		
b. Minimum speed: 5 miles per hour		
c. Turning radius maximum: 62 ft. wall to wall		

AI-3. Engine/transmission:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
a. The transmission shall be an automatic shifting type		
b. The carrier vehicle drive, engine and the snow blower engine shall be diesel		
c. The transmission shall have four (4) forward speeds minimum		

AI-4. Transfer case:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
a. Automatic locking-type differential or constant proportioning unit.-		

AI-5. Axle capacities:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
a. Front: 27,000 lbs. GVW (min, at hubs)		
b. Rear: 23,000 lbs. GVW (min, at hubs)		

AI-6. Fuel capacity:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
1. 250 gallons (min), dual tanks – interconnected with shutoffs		

AI-7. Auxiliary equipment: Refer to Appendix 2

I-2 APPENDIX 1. SPECIFICATION FOR CARRIER VEHICLE, PART B – SPECIFICATION FOR CARRIER VEHICLE

AI-8. Materials and components: Refer to referenced SAE ARP equipment specification.

AI-9. Delivery:

a. Preparation for delivery:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
1. Shipment. The vendor is responsible for the safe and timely delivery of the vehicle and its accessories, spare parts, and tools to the agreed place of delivery.		
2. Marking. The carrier vehicle must be marked for shipment in accordance with instructions agreed to by the vendor and the purchaser.		

b. Instruction and training:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
1. The manufacturer must, at no additional cost, furnish the services of trained personnel to the purchaser at a time and place agreed to by all parties. These individuals 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 required by crew size. This training shall supplement all other dedicated training requested by the purchaser.		

I-3 APPENDIX 2. OPTIONAL/ALTERNATE EQUIPMENT SPECIFICATION – PART A

A2-1. General:

Most snow and ice control equipment is designed to operate under normal winter conditions. At various times, working tolerances and/or severe weather or operating conditions require specialized support equipment to assist the primary unit prior to or during operation. Several of these options are discussed below:

A2-2. Carrier Vehicle:

Equipment to be considered when operating a carrier vehicle at or below -40°F (-40°C) or when the vehicle must be stored outside or in an unheated building is as follows:

a. Engine/Transmission:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
1. Engine-jacket water heater: Recirculating type with thermostatic control and weatherproof receptacle plug (minimum: 1500 watts). This option is not required by the user.	N/A	N/A

b. Vehicle Cab:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
1. If required by manufacturer's design, handles must be installed on lower part of vehicle cab door		
2. Auxiliary cab heater and circulating fans		
3. Mirrors a. Remote control for exterior mirrors b. Electrically heated exterior mirrors		
4. Windows a. Heated windshield b. Extra window in lower part of cab doors c. Reverse slope windshield: This option is <u>not</u> required by the user. d. Side door windshield wipers required e. HID forward work lights required	NA	NA
5. Seats – Heated driver seat		
6. Cab insulation upgrade: <i>This option is not required by the user.</i>	NA	NA
7. Air horn		

c. Mechanical

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
1. Special starting system a. Dual battery system b. Ether cold starting system option: This option is <u>not</u> required by the user.	NA	NA
2. Permanently installed battery charger: This option is <u>not</u> required by the user.	NA	NA
3. Engine cooling a. Oversize radiator b. Radiator shutter: This option is <u>not</u> required by the user.	NA	NA
4. Automatic engine shutdown: An automatic engine shutdown system is equipped with an override switch to prevent engine damage due to low engine oil pressure, high coolant temperature, or low coolant level.		
5. Special alternator: Specify drive type, amperage, and voltage. - the user has determined the alternator amperage capacity requirement to be 240 amps (drive type is belt driven and the voltage is electrical).		
6. All-wheel or articulated steering: All-wheel steering is required. For all-wheel steering systems, the rear drive-steer axle must be controlled in the cab.		
7. Silicone hoses		

d. Quick disconnect hitches:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
1. Automatic/remote hitch: Controls to activate the hitching and unhitching mechanisms must be located in the vehicle cab. The hitch must be capable of mating the plow equipment to the carrier vehicle attachment points even when minor angular differences exist between the attachment points and the hitching assembly. An additional hydraulic, pneumatic, or mechanical locking/unlocking device may be installed to ensure safe and positive final coupling. Locking devices must be activated through the use of existing vehicle power systems.		
2. Semi-automatic hitch: The initial hook-up between carrier vehicle and hitching device must be controlled from the vehicle cab with final lock-on accomplished manually at the vehicle/ hitch interface. The hitch must be capable of initial hook-up even when minor angular differences exist between the plow attachment points and the hitching assembly. All manual locking devices must ensure a safe and positive final coupling.		

A2-3. High-Speed Rotary Plow

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
a. Low temperature options:		
1. Engine-jacket water heater – (1,000watt unit). This option is <u>not</u> required by the user.	NA	NA
2. Engine oil pan heater (300watt unit): This option is <u>not</u> required by the user.	NA	NA
	NA	NA

3. Battery warmer pad (500 watt unit): This option is <u>not</u> required by the user.		
b. Spot casting and loading chute: This option is <u>not</u> required by the user.	NA	NA
c. Pneumatic caster wheels required. Steel not acceptable.		

I-4 APPENDIX 3. HIGH-SPEED ROTARY PLOW SPECIFICATION – PART A – AIRPORT CHECKLIST

A3-1. Anticipated uses and or features of high-speed rotary plow: this high speed dual stage rotary snow plow and carrier chassis will be used to cast snow from the aircraft movement area in both large and small storms. The unit shall be classified as an Extra Large Class V high speed rotary snow plow per the AC 150/5220-20A Table 2.3.

A3-2. Size of priority

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	Yes	No
1 paved area: 4,967,778 sq. ft.		

A3-3. Capacity:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	Yes	No
Minimum 5,000 tons per hour		

A3-4. Casting distance:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	Yes	No
Minimum 100 feet		

A3-5. Anticipated speed of operation:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
0-35 miles per hour		

A3-6. Unusual conditions/problems/obstructions:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The airport has normal obstructions expected to be found at any commercial airport.		

A3-7. Other/optional equipment: **N/A**

I-5 APPENDIX 3. HIGH-SPEED ROTARY PLOW SPECIFICATION, PART B – HIGH-SPEED ROTARY PLOW SPECIFICATION

A3-8. See paragraph 3.3 of AC 150/5220-20A

A3-9. High-speed rotary plows and carrier vehicles must be in accordance with SAE ARP 5539, Rotary Plow with Carrier Vehicle. Additional Federal AIP/PFC specification requirement for SAE ARP 5539 is that for carrier vehicle controllability and safety, all-wheel drive must be provided.

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
High-speed rotary plows and carrier vehicles must be in accordance with SAE ARP 5539, Rotary Plow with Carrier Vehicle. Additional Federal AIP/PFC specification requirement for SAE ARP 5539 is that for carrier vehicle controllability and safety, all-wheel drive must be provided.		

II-1 SAE ARP 5539: ROTARY PLOW WITH CARRIER VEHICLE TECHNICAL REQUIREMENTS

4.0 TECHNICAL REQUIREMENTS:

4.3 Two-Stage Rotary:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Two-Stage Rotary:		

4.3.1 Rotary-Head Box:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Fabrication shall be of heavy gauge welded alloy steel designed for the type of expected service using best engineering practices. The rotary-head box shall have provisions for vehicle mounts, caster brackets, scraper blades, drive lines, controls, augers, and impeller bearing mounts and other mechanical hardware. A scraper blade shall be fitted to the lower leading edge of the box which shall be removable and made of polyurethane. The blade shall run the entire width of the box.		

4.3.2 Input Auger:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The auger shall have a minimum of two bearing supports. The ribbon shall be driven hydraulically or mechanically. The ribbon blades shall be easily replaceable and made of high tensile steel. They shall be bolted or otherwise attached to the auger shaft and balanced to reduce vibration using best engineering practices.		

4.3.3 Input Auger (Solid):

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The auger shall have multiple cutter blades mounted on the auger drive shaft. Input auger shall be designed to feed snow to the discharge impeller to be cast away from the vehicle. The solid auger drive shaft shall be balanced and supported by bearings, one at each end of the auger shaft.		

4.3.4 Discharge Impeller System:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The impeller capacity shall be at least equal to the capacity of the input auger. The impeller blades shall be made of high tensile steel using best engineering practices and be balanced to reduce vibration and shock damage.		

4.3.5 Operation of the Rotary System:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The operation of turbines shall be by hydraulic means with the speed controlled by a single operator in the vehicle cab. Power shall be transmitted to these systems via mechanisms located on either side of the rotary head box.		

4.3.6 Snow Casting Assembly:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The snow casting assembly shall consist of a casting chute that can be directionally controlled, an impeller, and a control system. The casting chute shall be able to rotate in a vertical plane. Casting distances shall range from zero to the maximum cast distance of 100 feet. The snow casting chute shall be designed and positioned on the carrier vehicle so as to provide maximum operator visibility. Chute shall be controllable by a single operator from within the vehicle cab.		

4.3.7 Rotary Head Assembly:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The rotary head assembly shall be equipped with a device that is capable of raising it a minimum of 8 inches from the pavement. The drive system shall not bind, rub, or vibrate excessively when the assembly is being moved. When the vehicle is		

traveling, the assembly shall have a means to be locked in the raised position.		
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4.3.8 Drive Protection System:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	Yes	No
All auger and impeller assemblies shall be protected against sudden stops or damage that may be caused from foreign objects. Protection for the impeller shall in the form of shear fasteners while the ribbon shall be in the form of hydrostatic relief valve.		

4.3.9 Blower Head Drive Train:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	Yes	No
Drive shafts, universal joints and other mechanical components of the drive train shall continue to provide power to the head assembly under normal operating conditions through the operating range of the blower head without physical damage.		

4.4 Minimum Performance Requirements:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	Yes	No
a. Anticipated Uses and/or Features of Rotary Plow (Be Specific) - This high speed dual stage rotary snow plow and carrier chassis will be used to cast snow		

from the aircraft movement area in both large and small storms. The unit shall be classified as an Extra Large Class V high speed rotary snow plow per the AC 150/5220-20A Table 2.3.		
b. Capacity (tons/hours): 5,000		
c. Casting distance: 100 ft. @ 25 pcf		
d. Required speed of operation: 0-35 mph		
e. Turning Radius 1. Wall to wall: 62 ft. with blower head 2. Curb to curb: 45 ft.		
f. Unique Problems (if any) - the airport has normal obstructions expected to be found at any commercial airport		

4.5 Optional Equipment: See Appendix B.

4.6 Carrier Vehicle Description:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The term carrier vehicle represents the self-propelled prime mover that provides the power necessary to move snow and ice control equipment during winter operations. The design of the vehicle chassis shall be based on an all-wheel drive concept for optimized performance and safety. Vehicle selection is determined by the purchaser for the mission to be performed and the capacity of the selected equipment. Although this unit may not normally be driven over-the road, it shall be designed as such, and the following Federal Motor Vehicle Safety Standards shall apply as though they were an on-highway vehicle:		
<ul style="list-style-type: none"> • FMVSS 101 Controls & Displays 		

<ul style="list-style-type: none"> • FMVSS 102 Transmission Shift Lever Sequence, Starter Interlock & Transmission Braking Effect 		
<ul style="list-style-type: none"> • FMVSS 103 Windshield Defrosting & Defogging Systems 		
<ul style="list-style-type: none"> • FMVSS 104 Windshield Wiping & Washing Systems 		
<ul style="list-style-type: none"> • FMVSS 105 Hydraulic & Electric Brake Systems 		
<ul style="list-style-type: none"> • FMVSS 106 Brake Hoses 		
<ul style="list-style-type: none"> • FMVSS 108 Lamps, Reflective Devices, & Associated Equipment 		
<ul style="list-style-type: none"> • FMVSS 111 Rearview Mirrors 		
<ul style="list-style-type: none"> • FMVSS 113 Hood Latch Systems 		
<ul style="list-style-type: none"> • FMVSS 116 Motor Vehicle Brake Fluids 		
<ul style="list-style-type: none"> • FMVSS 119 New Pneumatic Tires 		
<ul style="list-style-type: none"> • FMVSS 120 Tire Selection & Rims for Vehicles Other Than Passenger cars 		
<ul style="list-style-type: none"> • FMVSS 121 Air Brake Systems 		
<ul style="list-style-type: none"> • FMVSS 124 Accelerator Control Systems 		
<ul style="list-style-type: none"> • FMVSS 201 Occupant Protection in Interior Impacts 		
<ul style="list-style-type: none"> • FMVSS 205 Glazing Materials 		
<ul style="list-style-type: none"> • FMVSS 206 Door Locks & Door Retention Components 		
<ul style="list-style-type: none"> • FMVSS 207 Seating Systems 		
<ul style="list-style-type: none"> • FMVSS 208 Occupant Crash Protection 		
<ul style="list-style-type: none"> • FMVSS 209 Seat Belt Assemblies 		
<ul style="list-style-type: none"> • FMVSS 210 Seat Belt Assembly Anchorages 		
<ul style="list-style-type: none"> • FMVSS 302 Flammability of Interior Materials 		
<p>In accordance with SAE ARPSS39, the carrier vehicle shall be type "a.", Truck Type Vehicle. Truck type vehicles are standard production models designed primarily to meet an airport's snow and ice control needs. The vehicle shall be self-contained, designed specifically for a singular purpose. They should conform to the manufacturer's recommendations and be suitable for mounting all specified accessories.</p>		

4.6.1 Materials:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Materials used on a carrier vehicle shall conform to the specifications listed in the appropriate sections of Title 49, Chapter III Federal Motor Carrier Safety Regulations. When not specifically listed, materials shall be of the best quality available for their intended commercial use. Component parts shall be new, unused, of current production to the satisfaction of the purchaser. They shall be free of all defects and imperfections that could affect the serviceability of the finished product.		

4.6.2 Design:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Equipment shall be developed in accordance with the best engineering practices available. This includes the incorporation of ergonomic designs specifically directed at the vehicle's cab environment. Vehicle design shall include current state-of- the-art procedures that consider improved cab visibility, communications systems, interior lighting and the mitigation of noise and vibration. Design and installation of equipment shall permit easy accessibility for maintenance and service. All vehicle stress points shall be designed to distribute and dissipate shock forces.		

4.6.3 Construction:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Vehicle construction shall provide maximum protection against structural member failures. Equipment shall withstand the cold, moisture, strains, jars, vibration, and other conditions that are likely to be encountered during operation. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks, or other elements that might cause injury to personnel or damage to equipment. Location of all oil, hydraulic, and air lines and electrical wiring shall be in protected positions properly attached to the frame or body structure. Wherever these lines pass through apertures they shall be protected with looms or grommets except where a through-frame connector is necessary.		

4.7 Chassis:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The design of the vehicle chassis shall be based on an all-wheel drive concept for optimized performance and safety. It shall have power assisted steering and a transmission with suitable load and speed ranges to accommodate normal operating conditions. Vehicles shall have heavy duty tow hooks, tow eyes, or other suitable tow connections attached to the rear of the vehicle. The tow hooks, eyes, or other suitable toe connections shall be attached to the frame or structure of the vehicle, and provide adequate strength to allow		

<p>lifting and/or pulling the vehicle for emergency recovery situations. A pintle hook, rated at not less than the GVWR shall be permanently attached to the rear frame structure capable of towing a vehicle. All installed parts and accessories necessary for the safe operation of the vehicle shall conform to applicable provisions of Title 49.</p>		
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4.7.1 Structural Members:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>The frame shall be made of either pressed or structural steel shape and reinforced as required to prevent distortion under maximum load conditions. All frames and stiffeners shall be treated with a corrosion inhibitor and shall be primed and painted before assembly.</p>		

4.7.2 Dimensions and Clearances: *Carrier vehicles with snow removal attachments shall have the following overall dimensions:*

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>a. Minimum Ground Clearance: The minimum ground clearance of a vehicle chassis shall be 8 inches.</p>		
<p>b. Maximum Overall Height: The maximum overall height of a vehicle including discharge chutes, lights, and exhaust stacks shall not exceed 12 feet.</p>		
<p>c. Maximum Overall Width: The overall width of a vehicle including rotary plow head shall be maximum 102" to take into consideration gates and doors to equipment shops at the airport.</p>		
<p>d. Maximum Overall Length: Maximum vehicular length 415 inches taking into consideration shop</p>		

areas and maneuverability expected of the vehicle during operation		
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4.7.3 Weight Distribution:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The gross vehicle weight of the vehicle shall be distributed over its axles in accordance with best engineering practices. The center of gravity shall be kept as low as possible under maximum load conditions. While it is loaded the vehicle shall be capable of resting on a 20% transverse grade without danger of overturning. A copy of the calculated weight distribution shall be provided to the customer prior to construction, and the produced vehicle shall not deviate from the calculated weight distribution by more than 5% on any axle, or for the gross weight as determined by weighing the unit at a public certified scale.		

4.8 Engine:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Engine and vehicle manufacturers shall provide an application approval, at the time of vehicle delivery that states the engine is suitable for use in the vehicle as configured and that the installation is approved by the engine manufacturer or their authorized representative. A written letter of approval must be submitted with the bid. The vehicle engine shall be of diesel internal combustion type. The diesel engine shall be designed and tuned for operation using ASTM D 2 diesel fuel. Anti-freeze,		

<p>crankcase and gear oils, greases, automatic transmission fluid, and hydraulic oils shall be as per current SAE, API, or ASTM specifications and not proprietary products. It shall be able to meet the performance characteristics specified herein on commercial grade fuel. Dual engine vehicles shall use a common fuel. The engine shall develop sufficient torque and horsepower to meet its normal operational requirements without exceeding the no-load speed at the peak of its certified gross brake horsepower curve. Engine noise and vibration shall be reduced in the vehicle cab by use of best engineering practices and machine layout. Idle time limiters or other automatic shutdown devices designed to limit emissions, conserve fuel, or enhance operating costs must be permanently disabled if such devices could leave a unit disabled on a taxiway or runway. Permanently disabled means the disabling must be done in such a manner so as not to be easily or accidentally re-activated.</p>		
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4.8.1 Cooling System:

<p style="text-align: center;"><i>REQUIREMENT</i></p>	<p style="text-align: center;"><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p style="text-align: center;">Yes</p>	<p style="text-align: center;">No</p>
<p>The engine cooling system shall be based on either a liquid air design. Internal temperature shall be controlled by a by-pass thermostat that regulates the flow of engine coolant. Drain cocks shall be installed at the lowest point of the cooling system and at other points necessary to completely drain the system. A sight glass or other device is required in all liquid cooling systems to allow the operator to determine that there is sufficient fluid for normal and safe operation without the need to open the system.</p>		

4.8.2 Coolant Temperatures:

<p style="text-align: center;"><i>REQUIREMENT</i></p>	<p style="text-align: center;"><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p style="text-align: center;">Yes</p>	<p style="text-align: center;">No</p>

<p>The design and installation of the system shall assure that coolant temperatures shall remain within the engine manufacturer's operational specification (both high and low) when properly maintained and operated in ambient temperatures during snow removal operations. In areas which frequently experience temperatures below 20', cooling system heaters, oil pan heaters, lubricating oil heaters, battery and block heaters, and cold start aides required unless otherwise specified.</p>		
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4.8.3 Fuel System:

<p style="text-align: center;"><i>REQUIREMENT</i></p>	<p style="text-align: center;"><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p style="text-align: center;">Yes</p>	<p style="text-align: center;">No</p>
<p>The fuel system shall comply with Title 49 and include all components necessary for a complete operational system.</p>		

4.8.4 Fuel Tanks and Lines:

<p style="text-align: center;"><i>REQUIREMENT</i></p>	<p style="text-align: center;"><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p style="text-align: center;">Yes</p>	<p style="text-align: center;">No</p>
<p>Useable fuel capacity should be not less than 250 gallons. If dual tanks are used, the supply system shall be designed to ensure an uninterrupted flow of fuel to the engines without input by the operator, and to allow shutoff of each tank should the crossover lines of either tank be damaged. Dual tanks shall also have adequately sized crossover lines to allow refilling both tanks from one location. Fuel lines shall be securely fastened in place, installed to prevent chafing or strain and protected by grommets where lines project through metal apertures. Each fuel tank is to be equipped with an accessible bronze or brass drain plug or a quick drain. A properly rated fuel water separator with integral heater shall be installed in an accessible location near the tank.</p>		

4.8.5 Fuel Filler Pipe:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The fuel filler pipes shall be located outside of the vehicle cab in an area accessible for refueling from the ground. A light chain shall be attached near its opening and to the filler cap to prevent loss of the cap. The filler neck shall include a screen to prevent the entry of foreign objects into the tank. The fuel filler cap shall be painted a color appropriate for the type of fuel, and a permanent label shall be affixed as close as practical to the fill necks, in an area visible to the person refueling the vehicle, stating the appropriate fuel and capacity of the tanks. A label shall also be installed in the cab near the fuel gauge indicating which side of the vehicle must be positioned towards the fuel pumps (e.g., Fuel Fill->).		

4.8.6 Air Cleaner:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The air cleaner shall be of a two-stage design. The first stage incorporates a pre- cleaner while the second consists of a dry type replaceable paper filter. A restriction indicator is required in the cab for each engine air intake system. The connection between the air cleaner outlet(s) and the engine intake(s) shall be waterproof and dust tight. The air cleaner intake shall be positioned in a manner to discourage the ingestion of snow and other contaminants, e.g. within the hood cavity		

4.8.7 Exhaust System and Muffler:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The engine shall be equipped with an efficient and safe exhaust system including mufflers. Its location		

<p>shall minimize noise and exhaust gases entering the vehicle cab under all operating conditions. Further noise reduction by noise suppression materials, such as muffler insulation, is encouraged. Horizontal portions of exhaust systems shall be protected, whenever possible, from corrosive agents and fuel spills. Mufflers and exhaust components positioned in or near normal operator work areas shall include appropriate guards to minimize the burn risk to airport personnel. Exhaust systems shall be positioned on the vehicle in a manner to minimize contact with slush and snow. Mufflers are to be made of stainless steel or aluminized steel. Devices shall be installed to prevent snow and slush from entering vertical exhaust stacks. In accordance with the SAE ARP5539, customers may specify the location and direction of exhaust system discharge when appropriate for storage building ventilation systems or other operational needs.</p>		
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4.8.8 Governor:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>Engine speed shall be regulated by a governor set to provide the maximum operating speed recommended by the engine, driveline, and power train manufacturers.</p>		

4.8.9 Lubrication:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>An engine's lubricating system shall be equipped with standard production fittings and accessories. Engine oil filters shall be engine manufacturers approved design and able to accept commercial replacement elements. All engines shall receive lubrication prior to delivery with lubricants designated for use under ambient temperature conditions at the</p>		

<p>point of delivery. The unit shall have a comprehensive lubrication placard affixed on the exterior to identify the proper lubricants and their temperature ranges.</p>		
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4.8.10 Automatic Engine Protection System:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>An automatic engine protection system to prevent engine damage due to low engine pressure, high coolant temperature, or low coolant level is required. A provision for the emergency movement of the unit from a runway or taxiway must be provided.</p>		

4.8.11 Accessibility:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>a. Component Location: Engine and chassis components shall be positioned to allow easy access for inspection and maintenance purposes. Components that historically present maintenance problems or those that have the potential to cause operational problems should particularly be located in unobstructed areas. Locks, controls and fasteners shall be designed to prevent over-torqueing. Fluid capacities that must be checked during a pre-trip inspection, such as hydraulic oil level(s), windshield washer fluid level, and diesel fuel level shall be visually observable or otherwise capable of being checked without the need for tools, and without requiring work stands, portable ladders, or other equipment to check the service levels. To the extent practical lighting in these areas shall be adequate to perform the checks without the need for flashlights or other portable lighting</p>		

b. Cover Plates: Cover plates shall be equipped with either quick-disconnect fastenings or hinges.		
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4.9 Drive Train:

4.9.1 Transmission:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>Transmission and vehicle manufacturers shall provide an application approval with their proposal that states the transmission is suitable for use in the vehicle as configured and that the installation is approved by the transmission manufacturer. The transmission shall operate smoothly and efficiently and be capable of transmitting the maximum gross torque generated by the engine to the drive wheels through all gear reductions. Safety interlocks to prevent starting the engine unless the transmission is in neutral, or, the clutch is disengaged, shall be installed. Drive trains shall be in conformance with SAE requirements and shall be designed to minimize the number of joints. The purchaser shall specify the type of transmission that is acceptable. They may be either manual or automatic as follows:</p>		
<p>a. Manual: This type is <u>not</u> acceptable to the user.</p>	NA	NA
<p>b. Automatic: This type is chosen by the airport sponsor and is acceptable. The automatic transmission shall be fully automatic with a transfer case. The design shall utilize a torque converter that shall have a suitable torque ratio for the expected load ranges. The torque converter shall not operate at less than 70% efficiency. The gear or range selector shall have forward, neutral and reverse positions clearly identified.</p>		

4.9.2 Transfer Case:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The vehicle and transfer case manufacturers shall provide an application approval with the proposal that states the transfer case is suitable for use in the vehicle, as configured. Transfer case assemblies shall provide positive drive to the front and rear axle and in accordance with SAE ARP 5539, must be single or multi-speed design. Three proven alternatives are, the manual front axle disconnect type, the center differential with manual or automatic lockout type, or an overriding clutch type. The purchaser shall specify the type of transfer case that is acceptable which shall be the automatic lockout type or the constant proportioning unit.		

4.9.3 Axles:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The axle and vehicle manufacturers shall provide an application approval with the proposal that states the front and rear axles are suitable for use in the vehicle, as configured. The axle manufacturer's published rating shall at the least be equal to the load imposed at ground level when the vehicle and/or each component is in its maximum load configuration (i.e., rotary plow up and rotary plow down). Manual lockout controls shall be located in the vehicle cab. The torque capacity of each axle and differential shall be at least 10% in excess of the maximum torque that the axle may experience under any GVW operating condition. The power transmitting shaft on each steering axle shall incorporate steering joints that do not produce objectionable steering characteristics while the vehicle is operating on uneven surfaces. In accordance with the SAE ARP5539. Of the two		

proven designs available, either a single reduction or planetary axle may be provided.		
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4.10 Brake System:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Vehicle service and emergency braking systems shall meet Title 49 requirements for vehicles of similar design. The brake system shall be air design and shall be complete with all necessary equipment to safely control, stop and hold a fully equipped vehicle under all normal operating conditions. In accordance with SAE ARP5539, antilock brakes are specified for improved safety on the airport operational areas		

4.11 Steering Mechanism:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The vehicle shall have a steering mechanism that is operated from the driver's seat. During normal operations, the mechanism shall be capable of controlling the vehicle with all equipment operating. Steering equipped with power assistance shall revert to manual operation in the event of power assist system failure, or be equipped with a dual power steering system that operates in a fail-safe manner so that the failure of one system will not lead to a loss of steering. The design of the steering mechanism should, in the event of a power assist failure, be capable of safely maneuvering the		

<p>vehicle off the primary operational areas of the airport and to a park position from the maximum design speed allowed on the airport. All wheel steering may substantially increase the handling ability of the vehicle and, therefore, its productivity. The purchaser requires and specifies all wheel steer with front wheel steer, rear steer, crab steer, coordinated steer.</p>		
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4.12 Suspension System:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>Vehicles shall be equipped with a current production model suspension system having a minimum rated capacity equal to the GVW of the carrier vehicle. Front and rear axles shall have auxiliary suspension springs. Manufacturer's capacity ratings may not be arbitrarily raised to conform to the requirements of this specification. The suspension system shall exhibit no permanent set after the load is removed</p>		

4.13 Wheels, Rims, Tires, and Tubes:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>a. Wheels, rim and tire ratings shall conform to The Tire and Rim Association's published recommendations.</p>		
<p>b. Tires. Each tire shall have a rated carrying capacity at least equal to the loads imposed on them in the maximum load configuration (i.e., rotary plow up and rotary plow down). Tires on each individual axle shall be of the same size. Tires between axles may vary due to loads, configurations, and engineered gearing sets. In such cases, care must be taken and all components must be viewed as a system that</p>		

provides an acceptable speed match between driven axles. Tires shall have an aggressive tire tread. Tires shall meet the first line commercial grade requirements for the speed and type of service required. The front and rear tread widths shall not vary by more than 4%.		
c. Spare Rim/Tire. The airport sponsor requires one spare tire and rim assembly.		

4.14 Hydraulic System:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The hydraulic system shall consist of appropriate rams, pumps, piping, fittings, valves, controls, fluid reservoirs, filters, coolers, and other parts essential to its full operation. The system shall be capable of hydraulically positioning equipment through the entire range of its design limits. It shall be capable of operating all controls simultaneously without a noticeable reduction in power response. All controls shall be located in the vehicle cab. The system shall be ruggedly constructed and able to withstand all loads imposed on it without relying on the use of mechanical locks. Adequate cooling must be included to maintain acceptable hydraulic oil temperatures throughout expected vehicle operational ranges. Filters within the hydraulic system shall conform to SAE J931		

4.14.1 Pumps and Power Takeoff:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The pumps shall be ruggedly constructed and powered by the engine through a power takeoff. It shall have sufficient capacity to operate the		

hydraulic equipment specified herein under all operating conditions and speeds		
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4.14.2 Lines and Fittings:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>Only commercial quality hydraulic lines, hoses, and fittings that are capable of withstanding system working pressures under load are acceptable. Hydraulic hoses shall have a bursting pressure of three times their rated working pressure. The use of fittings, joints, and connections shall be kept to a minimum. Where local climatic conditions require, the purchaser should consider requiring arctic type hoses with temperature ratings appropriate for the location. Test gauge connection fittings shall be provided at all suitable points throughout system for maintenance and trouble-shooting. All hydraulic system components are to be shielded from engine exhaust heat, and heat shields shall be installed on the engine exhaust system to divert any possible leakage from the hydraulic system. Hoses shall be installed inside steel tubing wherever necessary to deflect the flow of fluid from exhaust and electrical system components in the event of hose rupture or leakage.</p>		

4.14.3 Fluid Tank:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>The hydraulic fluid tank shall have a filler neck consisting of a strainer, drain plug, shutoff valve, air vent and baffles. Its capacity shall exceed the volume of oil required for the operation of any combination of attachments by 50%. A sight glass or other device shall be provided to allow the operator to verify that fluid level is sufficient for safe operation without the necessity of opening the system. An oil level warning</p>		

<p>device shall be provided in the cab for all hydraulic systems. A label shall be installed as close as practical to the filler neck indicating the proper fluid for servicing the hydraulic system.</p>		
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4.14.4 System Winterization:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>Hydraulic systems shall be designed and operated in accordance with the requirements specified in ARP1247. The hydraulic system shall meet the same low temperature requirements as the engine coolant system. If filters are installed in compartments or other areas where fluid collection is possible, drain holes will be installed to allow fluid drainage during servicing.</p>		

4.15 Electrical System:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>The electrical system shall be negatively grounded and installed in accordance with current state-of-the-art practices and appropriate Federal requirements. All vehicle wiring shall be in accordance with SAE J 1292. All vehicle body electrical equipment, components, and wiring shall meet the requirements set forth in ARP1247. All parts of the electrical system shall be waterproof, easily accessible, securely mounted, and protected against extreme temperatures, physical damage, snow, oil, and corrosion. All electrical circuit wiring shall be made of stranded conductors with a capacity exceeding the anticipated maximum circuit loading. Insulation of electrical wiring shall be equal to the recommended standards established for insulation materials by the Society of Automotive Engineers (SAE). All electrical circuit wires shall be identified</p>		

<p>by color or number along their entire length. The wiring codes shall match information to be provided in the supporting service manuals.</p>		
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4.15.1 Operate without being affected by interference damage or disruption:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>All vehicle components and systems shall operate without being affected by interference damage or disruption including detrimental effects or interference to on-board computer modules from either vehicle generated noise, or stray EMF or RMF fields encountered from any airport operations. EMF and RMF noise sources that may be generated by the vehicle, especially if such noise is detrimental to aircraft, Air Traffic Control, or air navigation equipment, shall be shielded.</p>		

4.15.2 Power Supply:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>The carrier vehicle shall be equipped with self-regulating electric alternators having an output capacity that exceeds the anticipated electrical load. The minimum idle output of the alternator shall be</p>		

<p>20% greater than that required by the vehicle with the engine operating at idle, heater and defroster set at low fan setting, parking and/or marker lights on, communication radio(s) on, windshield wipers operating, and either hazard flashers or Vehicle Safety Identification Lights on. The minimum output of the alternator when operating at governed engine speed shall be 20% greater than that required by the vehicle in its operating mode with the heater and defroster set to maximum settings, headlights and marker/tail lights on, communication radio(s) on, windshield wipers at maximum setting, and the Vehicle Safety Identification Lights operating. An electrical load analysis worksheet shall be provided to the customer prior to construction showing the electrical loads during the above described conditions.</p>		
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4.15.3 Batteries:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>Batteries shall be securely mounted and adequately protected against physical injury, water, chemicals and exhaust heat. They shall be properly sized based on vehicle manufacturer recommendations and be readily accessible for change out and for other purposes. Enclosed battery compartments shall have adequate ventilation. Battery capacity (cranking amps, voltage, reserve power, continuous/deep cycle demand) shall be compatible with the size of the engine and the anticipated electrical load expected under normal operating conditions. An on-board self-regulating battery charger is not required.</p>		

4.15.4 Starting Device:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>

<p>The vehicle shall have an electrical starter that shall not introduce a voltage drop sufficient to adversely affect the ignition system. It shall be equipped with an overload protection device if such device is available from the manufacturer of the starter. In accordance with SAE ARP5539, the airport sponsor shall specify the type of electrical system that is acceptable, and so specifies type a., 12 volt electrical and starting.</p>		
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4.15.5 Ignition System:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>Due to extreme weather conditions, a block heater is required for improved ignition. A high idle control for efficient engine warm up and stand by operations shall be provided. High idle switches or throttle controls shall be designed to operate only when the transmission is in neutral.</p>		

4.15.6 Backup Alarm:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>The vehicle shall be equipped with a backup alarm installed at the rear. The backup alarm shall be activated whenever the transmission is placed in reverse. The backup alarm shall be a SAE J994, Type B vehicle backup alarm.</p>		

4.15.7 Horn:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>

<p>The vehicle shall be equipped with an electric to allow the operator to provide an audible warning in an emergency.</p>		
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4.16 Lighting System:

<p style="text-align: center;"><i>REQUIREMENT</i></p>	<p style="text-align: center;"><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p style="text-align: center;"><i>Yes</i></p>	<p style="text-align: center;"><i>No</i></p>
<p>The lighting system, including reflectors, markers identification and clearance lights, shall conform to FMVSS 108 as though the vehicle were an on-highway vehicle. Task-oriented lights shall be furnished to help the operator identify the overall width and to project a light pattern on the ground in front of the blower to assist the operator in determining those areas to be cleared and to provide adequate illumination for the operator and service personal when the unit is on darkened aeronautical areas. All lighting must be LED sealed wiring lighting system for reduced maintenance costs and improved lighting system reliability.</p>		
<p>a. Headlights: The carrier vehicle shall be equipped with two or more sealed-beam quartz-halogen headlights with upper and lower driving beams and switch for beam selection. If snow removal attachments obstruct forward illumination of these lights an auxiliary set of comparable lights shall be provided to overcome the obstruction. A control to select the secondary lights shall be provided in the operator cab.</p>		
<p>b. Backup Lights: There shall be at least two backup lights installed at the rear of and at either side of the vehicle that will automatically be activated when the vehicle is shifted into reverse gear.</p>		
<p>c. Vehicle Safety Identification Lights: The vehicle shall have a minimum of one revolving yellow beacon or flashing strobe mounted on its uppermost part (see FAA AC 150/5210-SD, Painting, Marking and Lighting of Vehicles on an Airport). The light emitted from the beacon should not reflect off rearview mirrors and into the operator's eyes.</p>		

4.17 Operator's Cab:

4.17.1 General:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Carrier vehicle cabs shall be made of metal and fiberglass construction and be a cab forward design. They shall be fully enclosed accommodating a single operator plus assistant trainee. A definite separation shall exist between the engine and operator's compartment. Non-glass surfaces, such as the floor, sides, and roof of the cab, shall have insulation to reduce exterior noise. The maximum interior cab noise measured at the operator's seat shall not exceed 85 dBa under the following conditions: windows closed, heater and defrost systems at maximum operation, and carrier vehicle and equipment engines operating at maximum rated capacity. To the extent possible, the interior of the cab shall be ergonomically designed providing the operator with a pleasant working atmosphere that is devoid of the stark conditions normally associated with older equipment. All cabs shall provide at least two different routes of egress to allow the operator to exit the cab in the event of rollover or over-turn.		

4.17.2 Communications Equipment Space:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Transceivers shall be installed in carrier vehicles to establish voice communication with other vehicles, the air traffic control tower, and snow control center and maintenance facilities. The vehicle cab shall be designed to provide convenient space near the operator for the installation of a pair of transceivers. The airport operator shall specify required two way		

radio equipment and frequencies. The transceivers shall be ICOM IC-A120.		
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4.17.3 Fire Extinguisher(s):

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The vehicle cab shall have one 10 lb B:C: Purple K type fire extinguisher installed within the cab.		

4.17.4 Operator Seat:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The vehicle cab shall provide an operator seat that can easily be adjusted up and down, fore and aft, a minimum of 3 inches {7.6 cm) in each direction. The seat should also be capable of reducing the effect of vehicle vibration by featuring air-cushion shock absorbing seat systems. All vehicle seats shall have three-point (minimum) seat belts, certified by the vehicle manufacturer to have been tested and in conformance with FMVSS requirements. Seats shall be fully upholstered with a good quality fabric material.		

4.17.5 Windows and Windshield:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
An electrically heated windshield shall be provided. The vehicle cab shall maximize the use of glass, including the placement of panels if possible in the lower sections of door panels, to increase the operator's view of operational areas and ground		

<p>surfaces. All installed glass shall be laminated and safety rated and shall conform to all FMVSS requirements. The location and size of the windshield shall minimize visual obstructions to the operator. The windshield wiper system shall be capable of sweeping a clear view for all occupants. The windshield washer deluge reservoir shall have a capacity of at least 20 gallons. Fluid applicators shall be located to provide at least 75% coverage of the windshield. The cab shall be equipped with sun visors inside the cab or an exterior visor above the windshield. Windshields and other glass surfaces in the vehicle cab used in the operation of the vehicle and/or to view pavement surfaces shall be cleared by means of a defroster system that is part of the cab's heating system. The standard circulating air type defroster shall be complimented by two electrical auxiliary fans.</p>		
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4.17.6 Exterior Rearview Mirrors:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>Two electrically heated exterior rear view mirrors of the extension arm type shall be mounted one on each side of the vehicle cab. Rear view mirrors are to be powered and remotely controlled. Each mirror shall have an area of not less than 100 square inches.</p>		

4.17.7 Heater:

<p><i>REQUIREMENT</i></p>	<p><i>MEETS SPECIFICATION (check if specification is met)</i></p>	
	<p>Yes</p>	<p>No</p>
<p>The carrier vehicle cab shall have a heating system that is capable of maintaining a minimum interior temperature of 65 °F (18°C at an ambient outside temperature of -20 °F (-29 °C. Heat output shall be controllable from within the cab by a selector switch</p>		

<p>that is conveniently located to the operator. Under all conditions of heating and ventilation, the temperatures measured in the operator's immediate environment should be uniform within 9 °F (see SAE J1503).</p>		
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4.17.8 Ventilation:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>Ventilator/heater fan shall have blower capacity equal to one cab volume per minute. Cab ventilator intakes should be screened and positioned in such a manner to minimize the entry of snow.</p>		

4.17.9 Hour Meters:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>The carrier vehicle shall be equipped with an hour meter that registers engine operation time from 0 to 9999 hours. Hour meters shall be prominently displayed so that they can be easily read by an operator or service personnel.</p>		

4.17.10 Instrumentation:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
<p>The cab shall display an instrument panel equipped with rocker switches or rugged push button and controls and instruments that are friendly to operators wearing bulky winter clothing. Frequently used instruments shall be located in direct line-of-sight and within forearm reach of a medium sized person sitting in the operator's position. All instruments shall be clearly identified with labels that indicate their function. Instruments should</p>		

display urgency-of-action lights, i.e. , green for normal operation, amber for warning, and red for emergency. Instruments shall be illuminated by background lighting regulated by dimmer switches capable of providing infinitely variable lighting intensities. Circuit breakers shall be grouped for easy access and convenience. Typical instruments that report and track major functions of a carrier vehicle and mounted equipment are as follows.		
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<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
a. Engine:		
1. Voltmeter		
2. Lubricating Oil Pressure Gauge		
3. Coolant Temperature Gauge		
4. Tachometers		
5. Hour Meters		
6. Starting Controls (including auxiliary cold start controls)		
7. Hydraulic Oil Pressure and Temperature Gauge if applicable		
8. Transmission		

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
b. Vehicle Chassis:		
1. Brake – Air Pressure Gauges		
2. Low Air Pressure Warning, Visual and Audible Type		
3. Light Switches and Headlight Beam Indicator		
4. Speedometer with Recording Odometer		
5. Fuel Quantity Gauge		
6. Equipment Controls		

4.18 Sheet Metal Components:

4.18.1 General:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The carrier vehicle engine, as well as its mechanical components, shall be protected wherever possible from snow, rain and other winter elements. Body and engine enclosures shall be fabricated fiberglass or steel. Self tapping bolts are unacceptable in the construction of these enclosures.		
a. Steps: Four-way safety tread, open design steps are required to ascend and descend high profile carrier vehicles. These steps, together with assist handles, shall provide for constant three-point contact, and shall be of ample size to ensure safe and easy access for persons wearing bulky winter clothing.		
b. Walkway: A four-way safety tread, open design walkway shall be provided, as necessary, for access. Walkways shall be external so a technician may to walk on them standing full height		
c. Handrails. Handrails shall be provided as required at all steps, walkways, and work stations. They shall be made of corrosion resistant materials or otherwise treated to prevent corrosion.		
d. Fenders: All carrier vehicles shall be equipped with steel fenders mud flaps to prevent wheels from throwing snow and other debris.		
e. Drains: Plugged or free flowing drains shall be provided at all body and compartment locations where standing water can collect. Free flowing drains shall not drain onto sensitive mechanical or electrical components or on areas anticipated to be occupied by personnel during normal operations.		
f. Doors: Doors shall be equipped with a positive closing mechanism and a locking mechanism. Doors shall have straps so as to not fly past limits in wind.		
g. Gutters: The vehicle cab shall be equipped with gutters, located above the entrance doors, of sufficient length to span the door width and provide		

runoff protection to occupants either entering or exiting the cab.		
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4.19 Painting, Marking, and Lighting of Vehicles:

4.19.1 Painting and Marking:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The vehicle shall be painted Chrome Yellow in accordance with color tolerance charts that have been made available for FAA regional airport inspectors and key potential users in the aviation safety equipment industry (see AC 150/5210-5D). All paint and markings must comply this this AC.		

4.19.2 Preparation and Finish:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The carrier vehicle and all mounted and towed equipment shall be cleaned first, then treated with a corrosion inhibitor, primed, puttied, sanded, and finally painted. The paint shall consist of not less than two coats of Chrome Yellow polyurethane enamel, acrylic enamel, acrylic urethane, or similar high durability, long life paint as required by the purchaser, applied to produce full hiding.		

4.19.3 Quality:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>

The finished paint shall be free of "fisheye," "orange peel," chips, runs, or other imperfections that detract from the equipment's corrosion resistance and appearance		
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4.20 Miscellaneous:**4.20.1 Plastic Plates:**

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Plastic plates are acceptable only in locations that are not exposed to the elements and subject to weathering or excessive heat.		

4.20.2 Information:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Plates shall identify make, model, serial number, and any other relevant data.		

4.20.3 Technical Publications:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The manufacturer shall furnish two complete sets of manuals. One set of manuals shall consist of an Operator's manual, Parts Manual, and Maintenance and Service Manual. One electronic format acceptable on a USB flash drive.		

4.20.4 Operator's Manual:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The operator's manual includes lubrication charts and instructions.		

4.20.5 Parts Manual:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The parts manual identifies and lists all parts, components, and sub- assemblies used in the fabrication of the carrier vehicle and mounted equipment.		

4.20.6 Maintenance and Service Manual:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
A maintenance and service manual provides guidance to non-- specialists performing routine services. The manual should also describe in detail with appropriate schematics the overhaul and major maintenance procedures required to maintain and repair the vehicle. The maintenance manuals shall include complete schematics of the electrical, air, and hydraulic systems as applicable. Number codes on wires and hoses as found on the vehicle shall match those provided in the maintenance manual schematics.		

4.20.7 Accessories and Tools: The carrier vehicle shall be equipped specialized items as follows.

4.20.8 Lug Wrench and any Other Special Tire Tools:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Lug wrench and any other special tire tools required to change a flat tire.		

4.20.9 Jack:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
A jack specifically adapted to the carrier vehicle and of adequate capacity to be capable of raising it to a position where a flat tire can be changed.		

4.20.10 Shear Pins:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
A minimum of six sets of shear pins shall be provided.		

4.21 Delivery:**4.21.1 Shipment:**

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The vendor (seller) is responsible for the safe and timely delivery of the vehicle and its accessories, spare parts, and tools to the agreed place of delivery.		

4.21.2 Marking:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Carrier vehicles shall be marked for shipment in accordance with instructions agreed to by the purchaser.		

4.21.3 Instruction and Training:

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The manufacturer shall, at no additional cost, furnish the services of trained personnel to the purchaser at a time and place agreed to by art parties. These individuals shall provide instructions to airport personnel sufficient to familiarize themselves with the operational and maintenance characteristics of the vehicle and its auxiliary equipment. The period of instruction shall be 24 hours or as required depending upon crew size. This training shall supplement all other dedicated training requested by the purchaser.		

II-2 SAE ARP5539 APPENDIX B OPTIONS

In accordance with SAE ARP5539, the following APPENDIX B OPTIONS are required.

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
a. Engine-Jacket Water Heater: Recirculating type with thermostatic control and weatherproof receptacle plug (minimum - 1500 watts).		
b. Engine Oil Pan Heater: This option is <u>not</u> selected by the user.	NA	NA
c. Battery Warmer Pads: This option is <u>not</u> selected by the user.	NA	NA
d. Transmission Oil Pan Heater: This option is <u>not</u> required by the user.	NA	NA
e. Two dual speed circulating fans		
f. Windows:		
1. Extra Window in Lower Part of Cab Doors		
2. Fixed Rear Window		
3. Reverse Slope Windshield: This option is <u>not</u> required by the user.	NA	NA
g. Liquid deluge system for side windows, windshield, and rear view mirror with 20 gallon minimum capacity and easy accessible fill		
h. Side Window Wipers: Heated		

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Seats: Heated Driver's seat		
a. Bostrom "T" Seat or equivalent for driver.		
b. Jump seat passenger side.		
c. Arm Rests for Operator Seat		
d. Air Suspension Driver Seat		

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Additional Lighting:		
a. Auxiliary Cab Dome Light (LED)		
b. Cab Roof or Side Mounted Lights		
c. Door Lights		
d. High Intensity Amber Strobe Beacon		
e. One set of HID Lights facing forward		

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Special Starting Systems:		
a. Multi Battery System		
b. Ether Cold Starting System: This option is <u>not</u> required by the user.	NA	NA

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Permanently Installed Battery Charger: This option is <u>not</u> required by the user.	NA	NA
a. Maintenance charging (0 to 10 amp capacity)		
b. Automatic cutoff		
c. Connection		
1. Weather resistant and chassis mounted		
2. Adaptable to 110 volt electrical outlet		
3. Heavy duty		
4. 20 amp capacity		

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
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	Yes	No
Engine Cooling:		
a. Oversized radiator		
b. Radiator shutters: This option is <u>not</u> required by the user.	NA	NA

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	Yes	No
Automatic Engine Shutdown: An automatic engine de-rate system to prevent engine damage due to low engine oil pressure, high coolant temperature or low coolant level.		
Special Alternator: The user has determined the alternator amperage capacity requirement to be 240 amps.		
All Wheel or Articulated Steering: For all-wheel steering systems, the rear drive-steer axle shall be controlled in the cab. All wheel steering shall provide for infinite discreet point positioning of the steered wheel throughout the designed steering limits of the components.		

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	Yes	No
Silicon Hoses:		
Extra Fuel Capacity: Extra fuel capacity should be specified by quantity (gallons/liters) and not by tank size and location. The vehicle shall have 250 gallon capacity.		

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	Yes	No

Radio Transceivers:		
Each transceiver shall be equipped with its own microphone, antenna and remote speaker. VHF radios used to communicate with air traffic control facilities shall satisfy the criteria set forth in section 3 of Radio Technical Commission for Aeronautics document D0-186, "Minimum Performance Standards for Airborne Radio Communications Equipment Operating Within the Radio Frequency Range 117.975 to 137.000 MHz.," dated January 20, 1984. This document may be examined at any Federal Aviation Administration Regional Office or purchased from: RTCA Secretariat, One McPherson Square, 1425 K Street, NW, Suite 500, Washington, DC 20005. Transceivers using other frequencies shall meet applicable standards of the Federal Communications Commission.		

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Rotary Plow Optional Equipment:		
• Engine-jacket water heater (1000 watt unit)		
• Engine oil pan heater (300 watt unit): This option is <u>not</u> selected by the user.	NA	NA
• Battery warmer pad (500 watt unit): This option is <u>not</u> selected by the user.	NA	NA

II-3 SAE ARP 5539 – APPENDIX C – ROTARY PLOW WITH CARRIER VEHICLE – OPERATIONAL NEEDS DETAIL SHEET

The following site and operational information is critical to assure that the rotary snow plow manufacturer understands the exact nature of the machine that the customer needs to meet operational needs.

Part I Operating Conditions

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
The unit must be capable of operating at temperatures as low as -40°F to as high as 100°F.		
The unit will be used to remove snow and ice from:		
• Runways		
• Taxiways		
• Ramp & Gate Areas		
• Parking Lots		
The unit will transit (transit is defined as self-powered movement with the rotary plow installed and the unit fully operational):		
• Aeronautical areas only		
If the unit must be moved off- site for repair or maintenance, these methods will be used:		
• Unit will be driven with rotary plow installed to repair facility		
• Unit will be driven with rotary plow removed to repair facility		
• Unit will be towed or flatbed trucked to repair facility		
Axle and Vehicle weight limits must comply with:		
• Airport runway taxiway and ramp limits only		
Restrictive conditions relative to length width or height:		

<ul style="list-style-type: none"> • Max overall length with rotary plow installed must not exceed 440 inches 		
<ul style="list-style-type: none"> • Max overall length with rotary plow removed must not exceed 320 inches 		
<ul style="list-style-type: none"> • Max overall width with rotary plow installed must not exceed 108 inches excluding mirrors 		
<ul style="list-style-type: none"> • Max overall width with rotary plow removed must not exceed 108 inches excluding mirrors 		
<ul style="list-style-type: none"> • Minimum clearing width must be not less than 100 inches 		
<ul style="list-style-type: none"> • Max overall height with rotary plow & chute installed must not exceed 150 inches 		
<ul style="list-style-type: none"> • Max overall width with rotary plow & chute removed must not exceed 150 inches 		

Part II Operational Requirements

<i>REQUIREMENT</i>	<i>MEETS SPECIFICATION (check if specification is met)</i>	
	<i>Yes</i>	<i>No</i>
Rotary Plow Certified Performance Requirements		
<ul style="list-style-type: none"> • Minimum snow blowing capacity: 5,000 tons/hour 		
<ul style="list-style-type: none"> • Minimum cast distance: 100 ft. 		
<ul style="list-style-type: none"> • Minimum transport speed: 5 mph 		
<ul style="list-style-type: none"> • Operating speed: <ul style="list-style-type: none"> ◦ Low speed: less than 25 mph ◦ High speed: 35 mph 		
<ul style="list-style-type: none"> • Snow density: 20-40 lb./cu. ft. (standard) 		
<ul style="list-style-type: none"> • Maximum turning radius: 62 ft. (wall to wall) 		

Price Matrix—Exhibit C
Airport Rotary Plow with Carrier Vehicle
Fort Wayne International Airport
Fort Wayne-Allen County Airport Authority

Description	Total Price
One newly manufactured airport rotary plow with carrier vehicle per proposal specifications.	

The pricing listed above shall include all equipment, and services as outlined in the proposal.

Signature Authorized Company Representative

Company Name

Address

E-Mail

Phone

GENERAL TERMS AND CONDITIONS

These terms and conditions apply to all contracts awarded under the attached solicitation. The Bidder agrees to these terms by signing and submitting their bid.

1. **INDEPENDENT CONTRACTOR**
It is hereby agreed that the Vendor's relationship to the Fort Wayne-Allen County Airport Authority (FWACAA) shall be that of an independent contractor, and not as an agent, employee, partner, or joint venturer, and that the employee or agents of the Vendor shall not be deemed or construed to be employees of the FWACAA for any purpose whatsoever.
2. **INDEMNIFICATION**
The Vendor hereby agrees to protect, indemnify and save harmless the FWACAA and its members, officers, agents, and employees from every liability, claim, demand, right of action, loss, cost, damage or expense (including attorney's fees) on account of every injury, death, or damage arising out of or in any way connected with the services of the Vendor.
3. **NON-ASSIGNMENT**
The Vendor shall not assign, transfer, or subcontract the whole or any part of this contract without the prior written consent of the FWACAA.
 - a. The Vendor will not sell, assign, or pledge this contract as collateral for a loan or take any action which may tend to encumber the direct contractual relationship between the FWACAA and the Vendor without express written consent of the FWACAA.
4. **PAYMENTS**
All payments are subject to the encumbrance of monies and shall be made in arrears in accordance with Indiana law and FWACAA fiscal policies and procedures. Payment terms are Net 30.
5. **TAXES**
The FWACAA is exempt from State, Federal, and local taxes. The FWACAA will not be responsible for any taxes levied on the Vendor as a result of this contract.
6. **NON-EXCLUSIVE CONTRACT**
The Vendor understands that this Contract is a non-exclusive contract and that other vendors may be selected or retained by the FWACAA to provide the same or similar products and/or services during the course of this contract. The vendor understands that the FWACAA may elect to perform, using FWACAA personnel, the same or similar services as covered by this contract.
7. **TERMINATION**
This contract may be terminated, in whole or in part, without penalty by the FWACAA in the event of one or more of the following:
 - a. Vendor fails to meet the requirements of the specification for products, performance or delivery as outlined herein
 - b. Significant product failures, or poor/inferior quality of products as judged by the FWACAA
 - c. Vendor substitutes products without the written approval of the FWACAA
 - d. Vendor fails to negotiate in good faith to resolve issues and concerns of the FWACAA
 - e. Vendor invoices for products or services not provided, or invoices for more than the contracted price.
 - f. Vendor is adjudged bankrupt, or makes a general assignment for the benefit of creditors, or a receiver is appointed due to Vendor's insolvency.
 - g. A court of competent jurisdiction finds that Vendor persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction.The FWACAA reserves the right to pursue all remedies against the performance surety and under the law in the event of any non-performance by Vendor.
8. **PRODUCTS AND SUBSTITUTIONS**
All products shall be newly manufactured with all available manufacturer's warranties and any extended warranties required by the specifications. Remanufactured, rebuilt, or previously owned or used products will not be compliant under this contract, unless expressly permitted in the specifications. Substitutions of product under this contract will be considered only under the following conditions:
 - a. The FWACAA must approve all product substitutions in advance and in writing
 - b. Upon request, Vendor will provide at no charge to FWACAA, a sample of the proposed substitute product for testing and evaluation.
 - c. The substituted product meets or exceeds the original specifications in all material respects.
 - d. The price of the substituted product is equal to or less than the original bid price for the item.
9. **ALL INCLUSIVE PRICING/FIRM PRICING**
All bid pricing by item shall be fully inclusive of all specifications and services as required herein, and must remain firm throughout the contract, unless price changes are expressly permitted in the specifications.
10. **CONFLICTING TERMS AND CONDITIONS**
Should there be any conflict in terms and conditions between the General Terms and Conditions and the attached specifications, the specifications shall prevail.
11. **APPLICABLE LAWS**
The laws of the State of Indiana shall govern if any disputes arise hereunder.
12. **FORCE MAJEURE**
No liability shall result to either party from delays in performance or nonperformance caused by circumstances beyond the control of the party affected, including but not limited to: act of God, fire, flood, explosion, war, governmental action or inaction or request of governmental authority, strike, lockout, labor trouble or shortage; but the Party shall be diligent in attempting to remove such cause or causes and shall promptly notify the other Party of its extent and probable duration.