

# INVITATION TO BID

## INVITATION TO BID #09-09

**BID DESCRIPTION: Aircraft Rescue and Firefighting (ARFF) Vehicle**

**ISSUE DATE: Monday, September 14, 2009**

**BID OPENING DATE: Monday, September 28, 2009**

**BID OPENING TIME: 10:00 AM CST**

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

### **TO ALL PROSPECTIVE CONTRACTORS/BIDDERS:**

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

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

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

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

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

Direct any and all inquiries about this bid to Amy M. Ott, Deputy Director of Finance & Administration, at 815-969-4445 or [aott@flyrfd.com](mailto:aott@flyrfd.com) .

## Instructions to Bidders

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### 1.1 Bid Preparation

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 Bids may be modified or withdrawn prior to the time specified for the opening of bids.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

### 1.2 Bid Execution

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

### 1.3 Bid Submission

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

### 1.4 Error in Bid

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

### 1.5 Variances and Deviations

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

### 1.6 Reserved Rights

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

### 1.7 Interpretation or Correction of Bidding Documents

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

### 1.8 Incurred Costs

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

1.9 No Bid Response

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

1.10 Basis of Award

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

1.11 Pre-Bid Conference

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

*End of Instructions to Bidders*

## General Terms and Conditions

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### 2.1 Non-Discrimination

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

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

### 2.2 Drug-Free Workplace

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

### 2.3 Tax Exemption

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

### 2.4 Warranties

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

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

### 2.5 Indemnification

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

## General Terms and Conditions

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### 2.6 Termination and Default

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

### 2.7 Royalties and Patents

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

### 2.8 Regulatory Compliance

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

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

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

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

### 2.9 Discounts

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

### 2.10 Inspections

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

### 2.11 References

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

## General Terms and Conditions

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2.12 Law Governing

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

2.13 Prevailing Rate Wages

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

2.14 Prevailing Wage Reporting Burdens

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

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

*End of General Terms and Conditions*

Revised 9/05

## Special Terms and Conditions

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- 3.1 Pricing  
The price quoted for each item is the full purchase price, including delivery to destination, and includes all transportation and handling charges, premiums on bonds, material or service costs, patent royalties and all other overhead charges of every kind and nature. Unless otherwise specified, prices shall remain firm for the contract period.
- 3.2 Contract Period  
The bid amount quoted shall be locked in for six (6) months after the Bid Opening date.
- 3.3 Specifications  
Refer to Attachment A.
- 3.4 Inspection  
The Authority reserves the right to final inspection before acceptance.
- 3.5 Retainer  
The Authority will retain 10% of the total bid package until final inspection is deemed full and complete.
- 3.6 Invoicing and Payment  
The goal of the Authority is to pay properly submitted Contractor invoices within thirty (30) days of receipt, providing goods have been delivered and/or services have been performed, approved and accepted by the Greater Rockford Airport Authority. Original invoices must be presented for payment in accordance with instructions contained on the Purchase Order including reference to Purchase Order number and submitted to the correct address for processing.
- 3.7 Insurance  
The Contractor shall maintain at all times a minimum commercial liability insurance policy in the amount of \$2,000,000.00 and must name the Greater Rockford Airport Authority as additional insured on Contractors policy. Proof of adequate insurance in the form of a Certificate of Insurance must be provided to the Authority upon contract acceptance.

*End of Special Terms and Conditions*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Prompt Payment \_\_\_\_\_

Manufacturer name and model number \_\_\_\_\_

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

Warranty \_\_\_\_\_

Other \_\_\_\_\_

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Variances and Deviations

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

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

References

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SPECIFICATIONS  
FOR ONE MAJOR CLASS 5  
AIRCRAFT RESCUE AND FIREFIGHTING (ARFF) VEHICLE  
FOR  
CHICAGO ROCKFORD INTERNATIONAL AIRPORT  
WITH AGENT CAPACITIES OF  
3000 USABLE GALLONS OF WATER  
420 GALLONS OF AFFF CONCENTRATE  
500 POUNDS OF POTASSIUM BASED (PKW) DRY CHEMICAL

September 14, 2009

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## INTRODUCTION

### 1. GENERAL CHARACTERISTICS

#### 1.1 DEFINITIONS

This specification is intended to outline the technical specification requirements for an aircraft rescue and firefighting (ARFF) vehicle in accordance with Federal Aviation Administration Advisory Circular No. 150/5220-10D (referred to in the balance of this document as “AC”) dated 9/24/2007. For your convenience, the direct link to the AC: [http://www.faa.gov/documentLibrary/media/advisory\\_circular/150-5220-10D/150\\_5220\\_10d.pdf](http://www.faa.gov/documentLibrary/media/advisory_circular/150-5220-10D/150_5220_10d.pdf) The vehicle shall also meet all NFPA 414 (2007) recommendations which are incorporated in the AC. To access the NFPA Standards, visit [www.nfpa.org](http://www.nfpa.org) . Enter NFPA 414 in the Search Box.

This specification is for one new and unused Class 5 (3000 gallon) ARFF vehicle. The vehicle offered shall conform to the requirements set forth in the AC which contains the performance standards, construction, and testing requirements for this type of vehicle.

#### 1.2 EXPECTED USE

This specification covers an all-wheel drive, diesel powered, ARFF vehicle having a mechanical foam/water system designed for extinguishing flammable and combustible liquid fuel fires. The primary function of the vehicle described in this specification is to provide an optimum level of ARFF suppression capability throughout the critical rescue and firefighting access area for the lowest practical cost. The vehicle shall be designed for a degree of off-pavement mobility not normally found in highway vehicles. The vehicle proposed shall meet the ARFF vehicle requirements of Federal Aviation Regulation (FAR) Part 139 and shall be suitable for other fire protection assignments at the Denver Stapleton International Airport.

#### 1.3 FIRE SUPPRESSION CHARACTERISTICS

The vehicle’s fire suppression capabilities shall include the following:

1. A minimum usable (rated capacity) of 3000 gallons of water.
2. A minimum usable (rated capacity) 420 gallons of 3% AFFF concentrate.
3. A 500 pound Purple-K dry chemical agent system.

## Attachment A

### **1.4 PRE-CONSTRUCTION CONFERENCE**

A factory representative shall contact the Chicago Rockford International Airport for the sole purpose of answering any questions to insure compliance with the contract specifications. Please call Wayne Langy at 815.703.5309.

### **1.5 OWNER INSPECTION VISIT TO MANUFACTURER PLANT**

The Authority reserves the right to visit, with proper notification, any location where this vehicle or apparatus is being manufactured, assembled, or otherwise being constructed to meet this specification. Within 15 days of Notification of Award the bidder should receive a build/construction schedule for the entire vehicle. The Authority should be kept current as to any changes or events that may effect the shipping and/or delivery dates. Additionally, the contractor shall furnish two (2) all expense paid inspections tours for two (2) airport representatives to the place of manufacturing; (1) prior to when the apparatus is ready to be painted and all major construction is completed; and (2) prior to shipping to the Chicago Rockford International Airport (RFD). This shall NOT constitute acceptance of the vehicle, which will be completed in Rockford, Illinois.

**FAILURE TO MEET THE BID LISTED DELIVERY DATES MAY RESULT IN CANCELLATION OF THE VEHICLE. CANCELLATION WILL BE WITHOUT ANY COST OR EXPENSE TO THE AIRPORT AUTHORITY.**

**UNACKNOWLEDGED OR UNACCEPTABLE DELAYS OF THE DELIVERY OF ANYTHING LESS THAN A FUNCTIONAL AND OPERATIONAL VEHICLE MAY RESULT IN CANCELLATION, WITHOUT PENTALY OR COST TO THE AIRPORT, OF THE VEHICLE.**

### **1.6 DELIVERY**

Delivery of the completed vehicle will be to the Chicago Rockford International Airport Maintenance Building at 5751 Falcon Road, Rockford, Illinois 61109. Delivery will be coordinated with Management Personnel or designated representative. Vehicle will be transported, not driven, on open highways from the manufacturer to the Maintenance Building. Vehicle will have a clean and new appearance both interior and exterior upon delivery. All optional equipment/items will be delivered with the vehicle.

### **1.7 PRODUCT**

The completed vehicle shall be delivered with enough product to fill all reservoirs to capacity. Upon filling, the vehicle will be "ON-LINE" and fully functional. The vehicle will be delivered with three (3) complete fills of training foam/dry chemical and charging cylinders.

Attachment A

**1.8 ON-SITE TRAINING**

After the vehicle has been delivered, a factory trained technician shall perform the following:

- Pre-delivery inspection of the finished vehicle
- Prepare vehicle for service
- Complete final adjustments to all operating systems
- Conduct operator familiarization training for each shift of operators for a total of three (3) consecutive days
- Conduct basic maintenance familiarization training for the maintenance staff

**1.9 WARRANTIES**

The following limited warranties shall be provided:

- |                           |             |
|---------------------------|-------------|
| Base vehicle:             | Two years   |
| Engine:                   | Five years  |
| Transmission:             | Five years  |
| Water Pump:               | Two years   |
| Agent Tanks:              | Lifetime    |
| Onan Hydraulic Generator: | Seven years |

**2. ERGONOMICS**

**2.1 CREW SPACE**

Per the AC plus the following:

Communication equipment shall be supplied by the local vendor listed below. The following communication equipment items shall be installed, ready to operate:

1. Airfield Vehicle Radio:
  - Model: Bendix King KY-97A
  - Mic: Shure 590T
  - Mic Cord: Shure ALM-6
  - Install Kit: Bendix King KY97A
  - Antenna Kit: Andrew Corp. ASPC201L
  - Vendor: AVIONICS PLACE  
5257 FALCON RD.  
ROCKFORD, ILLINOIS 61109  
815-229-5360  
CONTACT: David Wright
  
2. Fire Department Vehicle Radio:
  - Model: Vertex VX-5500

Attachment A

With extended speaker and antennae coax cable  
Vendor: KWIK KALL COMMUNICATIONS  
1008 ELM STREET  
ROCKFORD, ILLINOIS 61102  
815-964-7871  
CONTACT: Charles Brown

3. (2) Airfield Portable Radios:  
Model: Icom America IC-A14  
200 channel, 5 watts  
With (3) batteries and (1) AC charging base per radio  
Vendor: AVIONICS PLACE  
5257 FALCON RD.  
ROCKFORD, ILLINOIS 61109  
815-229-5360  
CONTACT: David Wright
4. (2) Fire Department Portable Radios:  
Model: Vertex VX-900V  
With (3) batteries and (1) AC charging base per radio  
Vendor: KWIK KALL COMMUNICATIONS  
1008 ELM STREET  
ROCKFORD, ILLINOIS 61102  
815-964-7871  
CONTACT: Charles Brown
5. A Setcom System 1300 headset/intercom three radio system, including all necessary cables, adapters, and interfaces, with headsets for the driver and two (2) additional crewmembers. Each headset shall have a boom microphone and be interfaced with the VHF-AM aviation band and fire department radios with one ear wired for one of the above fire department radios and one ear wired for the VHF-AM radio. The driver's, turret operator, and left inner rear seat headsets shall have transmit, receive in addition to intercom capability. Specifics of radio configuration to be determined after award.
6. One additional headset connection shall be provided at the structural panel allowing a crewmember to take a headset from the cab and plug it in at the structural panel to have intercom and radio capability. An external radio speaker will be located at the structural panel.

## Attachment A

### **2.2 RIDE QUALITY**

The design objective for the vehicle ride quality shall be to permit safe operation over rough roads and adverse terrain found at the airport of intended service at speeds up to 35 MPH without causing injury to the operating personnel (wearing seat belts) or damage to the vehicle.

### **2.3 CONTROLS**

Per the AC and NFPA 414.

### **2.4 SAFETY FEATURES**

Per the AC and NFPA 414 plus the following:

- a. A Whelen 295 HFSA1 siren shall be installed in the floor console between the driver and the turret operator/officer. A Whelen SA314P speaker shall be installed in the front bumper to maximize forward sound projection.
- b. Two Grover Stuttertone Model AL1510 or equal air horns shall be mounted in a protected area under the cab, below the level of the front bumper.
- c. A rear vision camera with an in-cab display on a “multi function display monitor” shall be provided to aid the driver in safely backing the vehicle. A switch shall be provided which will allow the driver to manually activate the rear vision camera from his seat. The reverse vision camera shall also be switched-on automatically and displayed on the monitor whenever the vehicle’s transmission is in reverse gear. Lighting on the rear of the vehicle shall be sufficient to illuminate the camera’s field of view whenever the camera is operational.
- d. An electronic backup audible warning device meeting current safety standards shall be provided. There shall also be a sensor on the rear of the vehicle which will set off a visual and audible warning in the cab whenever the rear of the vehicle comes within 15 feet of an object. Both devices and the backup lights shall be activated automatically when the transmission is shifted into reverse.

## **3. DESIGN CRITERIA**

### **3.1 PERFORMANCE**

Per the AC and NFPA 414.

- a. Automotive performance for the vehicle shall be in accordance with Chapter 2, Section 7 of the A/C for a Class 2 vehicle.

## Attachment A

- b. Fire fighting system performance of the vehicle shall be in accordance with Chapter 3 of the A/C for a Class 2 vehicle.

### **3.2 FLEXIBILITY**

Per the AC and NFPA 414.

### **3.3 MAINTAINABILITY**

Per the AC and NFPA 414 plus the following:

All fluid levels shall be easily checked from a central location without the use of tools.

There shall be a roof hatch to provide access to the engine air filter.

### **3.4 COMPONENT PROTECTION**

Per the AC and NFPA 414 plus the following:

A mud flap shall be provided at each wheel well position to reduce the damage from stones, brush, etc. being thrown off by the tires.

### **3.5 PAINTING, MARKING, AND LIGHTING**

Per the AC and NFPA 414 plus the following:

- a. The vehicle's exterior, including wheel rims, shall be painted yellowish-green in accordance with FAA Advisory Circular 150/5210-10B.
- b. The vehicle frame shall be painted black.
- c. Lettering, numbers and graphics shall be provided in 3M scotchlite black or equivalent on both sides and the roof of the vehicle per FAA Advisory Circular 150/5210-5C.
- d. Lettering and numbering shall be applied per customer specifications as follows:  
Black E/5, one on each side of the unit in an unrestricted, highly visible location and one E/5 on the chassis cab roof. Size and font shall be in accordance with FAA Advisory Circular 150/5220-19.

### **3.6 INSULATION AND WATERPROOFING**

Per the AC and NFPA 414.

### **3.7 MATERIALS**

Per the AC and NFPA 414.

## **AUTOMOTIVE SYSTEM**

### **4. FRAME**

#### **4.1 BALANCE AND CLEARANCES**

Per the AC and NFPA 414.

#### **4.2 DIMENSIONS**

Per the AC and NFPA 414 with the overall length of the vehicle to be less than 39 feet, 8 inches (476 inches) with all turrets stowed.

#### **4.3 LOAD RATING**

Per the AC and NFPA 414 plus four (4) shackles for use with the tow eyes at the front and rear of the frame.

### **5. BODY COMPONENTS**

#### **5.1 COACH WORK**

Per the AC and NFPA 414.

#### **5.2 COMPARTMENTS**

Per the AC and NFPA 414 plus the following:

- a. The bottom of each compartment and/or storage tray intended for storage of equipment items shall be lined with one-piece PVC ribbed matting.
- b. To maximize available storage space, a shelf equipped with a slide out tray for equipment storage shall be provided above the pre-connected handline. The shelf shall be capable of being locked in the extended as well in the stored position.
- c. Two rollout shelves shall be provided in the lower rear compartment on the right side for the storage of rescue equipment. One of the shelves shall be floor mounted with the second shelf to have height adjustment capability, mounted at the compartment's mid-point. Each shelf shall be capable of being locked in the extended as well in the stored position.

## Attachment A

- d. Two lined storage tubes with lockable doors for spare SCBA bottles shall be provided on each side of the vehicle, recessed in the rear body.
- e. A red light shall be provided on the cab to indicate or warn an operator that a compartment door is open.

### **5.3 HANDRAILS**

Per the AC and NFPA 414.

### **5.4 RUNNING BOARDS, STEPS, AND WALKWAYS**

Per the AC and NFPA 414 plus the following:

A ladder to allow access to the roof from the rear of the apparatus shall be attached to the rear on the right side.

## **6. CAB AND ACCESSORIES**

### **6.1 CONTROLS**

The following cab mounted controls shall be provided as applicable for the safe and efficient operation of the vehicle:

1. Accelerator Pedal
2. Agent Flow Control
3. Agent System Pressure Indicator (Analog Gauge)
4. Brake Pedal
5. Bumper Turret Controls
6. Bumper Turret HID Light Switch
7. Differential Lock Control
8. Dome Light Switch,
9. Manual/Door Activated
10. Driving Light Switch
11. Dry Chemical System Activation
12. Dry Chemical System Blow-Down Switch
13. Dry Chemical System Indicator Light
14. Emergency Engine Shut-Down Switch
15. Emergency Light Switches
16. Engine Brake "1,2,3,4,5" Selector
17. Engine Brake "On-Off" switch
18. Engine Shutdown Switch
19. Fire Fighting System Flushing Switch
20. Foam Reservoir Control Valve
21. Foam Level Indicator
22. Fog Light Switch
23. Headlight Switch w/Dimmer Control

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24. Heater/Defroster Controls
25. High Idle Switch
26. Horn Control
27. Ignition Switch
28. Inter-Axle Switch
29. Lower Perimeter Emergency Warning Light Disable Switch
30. Master Electrical Disconnect Switch
31. Panel Lights Switch with Dimmer
32. Parking Brake Control
33. Roof Turret Controls
34. Roof Turret Spotlight Switch
35. Siren Switch with Microphone
36. Starter Switch
37. Steering Wheel, with Self-Canceling Directional Signal
38. Top Deck Light Switches
39. Transmission Range Selector
40. Under Truck Nozzle Switch
41. Water Flow Control Valve
42. Water Level Indicator
43. Windshield Deluge System Control
44. Windshield Wiper and Washer Controls

### **6.2 CREW SPACE and DOORS**

Per the AC and NFPA 414 plus the following:

- a. The vehicle shall be supplied with a fully adjustable seat for the driver and a turret operator seat that is adjustable for-and-aft and also for height. One additional fixed seat shall be provided for an additional crewmember. There shall be a total of three seats. All seats shall be stain resistant, puncture resistant fabric. The driver's seat shall be hard backed with each of the two crewmember seats having provisions for storing an SCBA with 30 minute bottle in the seat back. A removable or retractable insert (cover) shall be installed in each crew seat to cover the breathing apparatus bottle. Each seat shall be equipped with an integral three-point seat belt installation.
- b. An NFPA compliant SCBA bracket shall be mounted on the back of the cab behind the floor console between the driver and turret operator/officer.
- c. The cab shall be equipped with a center console mounted between the driver's seat and the right hand crew position seat allowing access to controls from either side. The following instruments and controls shall be provided at a minimum:
  1. Low attack bumper turret discharge
  2. Low attack bumper turret nozzle auto-level
  3. Low attack / high attack bumper turret selector

## Attachment A

4. Low attack bumper turret joystick
  5. Low attack bumper turret oscillate / park selector
  6. Roof turret joystick
  7. Roof turret oscillate / park selector
  8. Driver communication system controls
  9. Officer communication system controls
  10. LH and RH mirror adjustment controls
  11. Heated mirror controls
  12. LH and RH electric window controls
  13. Generator start / stop switch
  14. Generator indicator gauge
  15. LH wide light switch
  16. RH wide light switch
  17. LH work light switch
  18. RH work light switch
  19. Ground lighting switch
  20. Test switch
  21. Auxiliary fan switch
  22. Step light disable switch
  23. Dome light disable switch
  24. Compartment alarm disable switch
  25. Defroster fan control
  26. Defroster – vent select
  27. Temperature control
  28. Air conditioning control
  29. Re-circulation switch
  30. Two 12-volt cigarette lighter receptacles
- c. The windshield shall be of shatterproof laminated safety type glass and all other windows shall be of approved laminated or tempered tinted safety type glass. The cab doors shall be equipped with electric roll-down windows. Control switches shall be provided at the center console, accessible by the driver and turret operator.
- d. Two outside heated rear view mirrors having an area of not less than 60 square inches each shall be provided as well as a wide-angle convex mirror on each side with a minimum area of 35 square inches. The mirrors (both flat and convex) shall be 4-way power remote controlled from the drivers seated position.
- e. The cab shall be equipped with a tilt/telescoping steering column.
- f. A lateral stability indicator with both audio and visual alarm, Stability Dynamics Ltd. Lateral 'G' Force Device, Model LG Alert shall be provided for rollover prevention and operator safety.

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- g. There shall be an aluminum step assembly located under the roof hatch with provisions for storing a limited amount of firefighters' gear.

### 6.3 EQUIPMENT

Per the AC and NFPA 414 plus the following:

- a. All dash-mounted switches shall be weatherproof, illuminated rocker type switches with the legend for the function of the switch embossed into the illuminated area on the switch.
- b. A check engine light and audible alarm system shall be provided in the cab to indicate any of the following conditions; low engine coolant level, low engine oil pressure and high engine coolant temperature.
- c. Air conditioning shall be supplied. The air conditioning system shall be driven from the vehicle engine, 60,000 Btu minimum. The system shall be integral with the vehicles heater/defroster unit, utilizing the same set of controls and vents. The system shall be charged with 134A refrigerant.
- d. Two Grover Stuttertone Model AL1510 air horns shall be provided. The air horns shall be mounted in a protected area below the level of the front bumper and in such a position so that the trumpets shall be in front of the vehicle's seated occupants.
- e. Two, 2-speed defroster fans shall be mounted on the instrument panel, one on each side. A switch shall be mounted in the instrument panel within the driver's reach to turn the fans "on" and "off". A guard shall be mounted around the rotating blade to prevent injury.
- f. A windshield deluge system shall be provided to cool the windshield and to provide operator visibility during firefighting operations. Clear water shall be discharged at a minimum rate of 3 GPM under sufficient pressure and in a pattern which shall assure the driver/operator's field of vision can be kept clear of foam solution when used in conjunction with the windshield wiper. The windshield wipers shall be automatically energized to the low speed mode of operation whenever the deluge system is operated.
- g. A sensor shall be provided at the rear of the vehicle, including a light and buzzer in the cab to indicate to the driver when the rear of the vehicle is within 15 feet of an object. The sensor shall be activated when the vehicle transmission is in reverse gear.

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- h. Three (3) Brightstar Model 07815 lanterns with individual chargers shall be mounted in the cab, two on the left side of the instrument panel, one on the right, wired to the vehicle's 12-volt electrical system.
- i. A rear vision camera shall be provided to aid the driver in safely backing up the vehicle. A switch shall be provided to allow the driver to manually activate the back-up camera from within the cab. The back-up camera shall also be switched "on" automatically whenever the vehicle is in the reverse mode of operation.
- j. A full color high resolution, shock resistant color camera capable of viewing and recording any incident must be mounted on the same pedestal the FLIR camera is mounted on. A second full color high resolution, shock resistant color camera shall be fixed mounted in the cab to view toward the front of the vehicle and record into the DVR.
- k. A digital video recorder (Safety Vision RoadRecorder 6000) shall be provided. This DVR shall include a minimum 120 GB removable hard drive; compact flash drive for data transfer; day, date and time encoding. One extra removable hard drive shall be provided. The recorder is to be set up so that it will begin recording the video camera image when the vehicle is started. A minimum of 20 hours of recording shall be maintained, with older data wiped off the storage drive if not cleared prior to reaching capacity. Recorder shall be secured by means so that cab occupants cannot shut the recorder off, using a lock box or other option. On this vehicle the three critical items to record are; 1, the FLIR camera 2, the FLIR mounted color camera and 3, the fixed in-cab color camera.
- l. A single "multi purpose monitor" shall be provided capable of displaying all video independently. Switching shall be provided, to easily display the video image from any of the video capture devices at any time. The exception shall be when the vehicle transmission is in reverse, the operator shall not be able to override the monitor displaying the image from the rear vision camera. This multi purpose monitor shall be mounted in a position visible to the driver and the turret operator at a minimum without being obtrusive to either function

### **6.4 INSTRUMENTS AND WARNING LIGHTS**

Per the AC and NFPA 414.

## **7. DRIVELINE AND CONTROLS**

### **7.1 AXLES**

Per the AC and NFPA 414 plus the following:

- a. Double acting hydraulic shock absorbers shall be provided on all axles.

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- b. A heavy-duty anti-sway bar shall be installed on each axle for increased vehicle stability and operator safety during high speed cornering maneuvers.
- c. To include the Off-Road High Mobility suspension described in Section 58 of the AC.

### **7.2 BRAKE SYSTEM**

Per the AC and NFPA 414 plus the following:

- a. The front and rear axle brake assemblies shall be outboard mounted disc type.
- b. An all wheel anti-lock braking system designed to provide safe controllable stops from various speeds while traveling on low friction surfaces shall be provided. The system shall include a self-diagnostic cab mounted panel to indicate system operation.
- c. A Bendix AD-IP air dryer with a thermostatically controlled purge chamber shall be supplied.
- d. A 27 CFM engine driven compressor shall be provided to ensure sufficient capacity to operate all of the vehicle's air system components.
- e. Provisions shall be installed at a single access point on the vehicle to drain all the air reservoirs from the exterior of the vehicle. The provisions shall eliminate the need for an individual to go underneath the vehicle to accomplish the required periodic draining of the air reservoirs. Each of the drain points shall be labeled.
- f. The air system shall be supplied with a connection at the rear of the vehicle to allow vehicle air system pressure to be maintained by a shop air compressor. The connection shall be a Kussmaul auto-ejecting type.
- g. Brakes are to be electronically controlled ABS type with outboard discs on all six (6) wheels.
- i. To supplement the conventional vehicle braking system, the engine shall be equipped with a Jacobs engine braking system with ON/OFF and HI/MED/LOW mode switches on the cab dash.
- j. An air hose reel with 150 feet of 3/8 inch air hose shall be mounted from the ceiling in the upper forward compartment on the left side.

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- k. An auxiliary air compressor shall be mounted in a rear compartment, with a 110 volt Kussmaul Super auto-eject connection at the rear of the vehicle.

### **7.3 STEERING**

Per the AC and NFPA 414 plus the following:

The rearmost axle of the rear tandem axle shall include mechanical steering provisions to provide a minimum 7° degree cramp angle to reduce the vehicle's turning circle while enhancing tire life.

### **7.4 SUSPENSION**

Per the AC and NFPA 414 plus the off-road high mobility suspension as described in Section 58 of the AC.

### **7.5 TRANSFER CASE**

Per the AC and NFPA 414 plus the transfer case shall incorporate a drive to the front and rear axles which shall not allow the vehicle to stall as long as the tire(s) of any axle have traction. The transfer case shall be integral with the transmission.

### **7.6 TRANSMISSION**

The transmission shall be an Allison automatic transmission seven (7) forward speeds. It shall be electronically controlled, fully compatible and certified for use with the electronically controlled engine.

### **7.7 WHEELS AND TIRE ASSEMBLY**

Per the AC and NFPA 414 plus the following:

- a. Tires shall be tubeless radial, Michelin 24R21 XZL or equal.
- b. A spare tire and wheel/rim assembly shall be provided. The spare wheel/rim assembly shall be painted to match the other wheel/rim assemblies on the vehicle.

## **8. ELECTRICAL SYSTEM**

### **8.1 COOLANT HEATER**

Per the AC and NFPA 414 plus the following:

The coolant heater shall have sufficient capacity to maintain the engine at the manufacturer's recommended temperature for rapid starting and immediate high

## Attachment A

initial engine performance. A 110 volt inlet auto-eject connection for the coolant heater shall be provided at the rear of the vehicle.

### **8.2 LIGHTING AND MARKING SYSTEM**

Per the AC and NFPA 414 plus the following:

- a. Two (2) Whelen FN 24" LED Mini-Lightbars, each with 12 LED elements shall be mounted on the vehicle's top surface, at the front center body section of the vehicle to meet visibility requirements. Each lightbar is to have the following configuration for LED element colors [Three (3) forward facing – red, clear and red; one (1) red on each side; one (1) red on each corner; three (3) rear facing red.]
- b. One (1) Whelen FN 24" LED Mini-Lightbar with 12 LED elements shall be mounted on the top rear of the engine cover. The lightbar is to have 12 red LED elements located as follows [Three (3) forward facing; one (1) on each side; one (1) on each corner; three (3) rear facing.]
- c. Two (2) Whelen forward facing, red rectangular LED lights shall be mounted on the front of the vehicle near bumper height.
- d. Two (2) Whelen rear facing, red rectangular LED lights shall be mounted at the rear of the vehicle near bumper height.
- e. Three (3) Whelen red rectangular LED lights shall be mounted on each side of the vehicle.
- f. Two (2) Whelen Model 1200 amber strobes shall be mounted on the top center of the vehicle, one (1) on each side.
- g. Exterior emergency lights shall be controlled by a two-position rocker switch, with one position for the red emergency lighting and the second position for the non-emergency amber lighting. A separate switch shall allow an operator to disable the lower ten (10) red LED perimeter lights if desired.
- h. Two (2) high intensity driving lights shall be mounted below the front bumper with their own dash mounted switch. They shall have rugged protective guards.
- i. Two (2) fog lights shall be mounted below the front bumper with their own dash mounted switch. They shall have rugged protective guards.
- j. Along with the illumination provided in the engine compartment, illumination shall be provided in the compartments intended for storage of rescue equipment. This lighting shall come on automatically when the

## Attachment A

compartment door is opened. An indicator light shall be mounted in the cab to make the vehicle's operator aware that a compartment door is open.

- k. The cab dome lights shall be selectable between red or white illumination.
- l. Two automotive style map/reading lights shall be mounted above the center console.
- m. Illumination shall be provided for all access steps and work areas on the vehicle.
- n. NFPA 1901 ground lighting shall be provided.
- o. One 12-volt, high-intensity-discharge (HID) light shall be mounted on the bumper turret assembly. A dash mounted switch shall be provided.
- p. Two 12-volt spotlights shall be mounted on the roof turret assembly. A dash mounted switch shall be provided.
- q. Two (2) 12-volt scene lights shall be provided on each side.
- r. One (1) light mounted on each side to light the side number with sufficient brightness to allow the number to be read in full darkness from a distance of 300 feet.
- s. Two (2) 12-volt backup lights shall be provided on the rear of the rear body section. A dash mounted switch shall be provided. These lights shall illuminate whenever the transmission is in reverse gear.
- t. Work lighting shall be provided to illuminate areas on the edge of the vehicle designed for personnel to climb onto the vehicle or descend from the vehicle to ground level.
- u. A 10.0 KW 110/240 VAC, 60 Hz hydraulically powered ONAN generator shall be mounted on the vehicle in an enclosed compartment. The generator shall be in-cab remote start/stop controlled and also have a light that shall indicate when it is running. The generator shall be equipped with a system that shall shut down the unit in event of a malfunction within the electrical system. The generator will have the ability to be engaged and be operational when the vehicle is moving at any speed.
  - 1. The following lighting shall be powered by the on-board generator, low voltage switch controlled, for safety purposes, from the cab dash:
    - a. A 9000 watt Wilburt "Night Scan" [Model NS15-9000 (OPT)] telescoping light tower shall be mounted on the

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vehicle's roof. The lighting system shall be controlled from a handheld remote control device with 25 ft. of cable, which can be operated either from the cab or outside the vehicle. Mounting provisions shall be provided to secure the remote control and cable inside the cab in a manner in which the driver can operate the control from a seated position, but can be easily removed for remote operation outside the vehicle

- b. Two 650-watt wide-angle floodlights mounted at the front of the vehicle above the windshield.
2. One (1) 120 VAC duplex receptacle [one (1) straight blade and one (1) twist lock] with weatherproof hinged cover shall be mounted on each side of the cab.
3. One (1) 120-volt electric cord reel with 200 feet of 12/3 – 20 amp cord shall be mounted from the ceiling in the upper forward compartment on the right side. The cord on the electric cord reel shall be provided with a twist lock connection on the end and include an illuminated junction box having four 20 amp receptacles and a mounting bracket. The cord reel shall be equipped with a 12 VDC electric rewind motor with the rewind switch mounted adjacent to the cord reel. A roller system shall be provided to allow for deployment of the cord from the reel without chafing.

### **8.3 POWER SUPPLIES**

Per the AC and NFPA 414 plus the following:

- a. A 12-volt electrical and starting system shall be supplied.
- b. A high capacity dual alternator system shall be provided having a combined output of 320 amps. The 320 amp capacity shall be sufficient to service the full operational load of the equipment and accessories specified with a 20% reserve. The alternator system shall consist of two 160 amp alternators providing a redundant backup if one alternator should fail. A dash mounted warning system shall be provided to indicate an alternator failure.
- c. Due to the continuous charging load required by the radios, lanterns, etc., an on-board battery charger, Kussmaul Model Auto 12DV, with a 12-amp output shall be installed on the vehicle.

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- d. A single electrical connection for the required on-board electrical components shall be supplied in 115 VAC, 20 amp automatic eject configurations (Kusssmaul Super Auto-Eject or equal).
- e. The single electrical inlet connections shall be mounted on the rear of the vehicle and provide power to both the battery charger, auxiliary air compressor, and the engine coolant pre-heater.
- f. A quantity of six SAE, group 31 type batteries, rated at 950 CCA each shall be provided.
- g. A maintenance master switch shall be mounted adjacent to the battery installation that shall prevent the vehicle from being started from the cab during vehicle maintenance. This switch shall not interrupt the major power supply to the vehicle's starter.
- h. A remote voltmeter with a switch shall be installed adjacent to the batteries to provide a visual indication of battery charge. The volt meter shall be visible without removing any covers or guards.

### **8.4 STARTER**

A 12-volt starting device shall be provided.

### **8.5 WIRING**

Per the AC and NFPA 414.

### **8.6 RADIO INTERFERENCE**

Per the AC and NFPA 414.

## **9. ENGINE AND ACCESSORIES**

### **9.1 COOLING SYSTEM**

Per the AC and NFPA 414 plus the following:

- a. The cooling system shall be equipped with a Perry cooling system filter, or equal, with spin-on cartridge.
- b. All the coolant and the heater hoses shall be made of a silicone material, secured with constant torque clamps.

### **9.2 EXHAUST SYSTEM**

Per the AC and NFPA 414 plus the following:

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- a. A muffler shall be provided to decrease the noise levels inside and to the exterior of the vehicle. A straight exhaust stack with rain cap shall extend to the highest point practical on the vehicle.

### **9.3 FUEL SYSTEM**

Per the AC and NFPA 414 plus the following:

- a. To minimize the possibility of losing a fuel prime to the ARFF vehicle's main engine, an electric in-line auxiliary fuel pump for the sole purpose of priming shall be provided. This priming pump shall operate automatically whenever the main engine is started and also have provisions to operate to re-prime the ARFF vehicle's primary engine's fuel system after replacement of the fuel filter(s).
- b. A fuel/water separator with a thermostatically controlled heating element shall be provided.

### **9.4 GOVERNOR**

An electronically controlled engine governor which shall not adversely affect engine or pump performance shall be provided and be set to limit engine speed so that it shall not exceed the maximum rpm recommended by the engine or driveline component manufacturers.

An engine high idle control shall be provided to maintain the engine idle at approximately 1200 RPM when activated. This control shall be safety interlocked to activate only after the transmission has been placed in the neutral position and parking brake has been set.

### **9.5 LUBRICATION**

Per the AC and NFPA 414.

### **9.6 POWER REQUIREMENT**

The vehicle shall be equipped with a turbo charged and after cooled diesel engine, equipped with an electronic fuel management system. The engine shall be a Caterpillar C16 in-line six cylinder, four stroke engine, rated at a minimum of 680 BHP @ 2100 RPM. The engine shall meet EPA emission standards at time of vehicle manufacture.

### **9.7 WINTERIZATION**

Per the AC and NFPA 414 plus the following:

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The winterization system shall be of the hot liquid re-circulating type with the heat being produced from a diesel fuel fired heater. The system shall be capable of protecting the piping system from freezing down to -40 degrees F. Additional heating shall be provided in compartments intended for equipment storage which that are less than 72 inches above the ground. The temperature in these equipment storage compartments shall be maintained at a minimum of +40 degrees F with the winterization system operating.

### **10. AUTOMOTIVE PERFORMANCE**

#### **10.1 ACCELERATION**

The vehicle shall accelerate from 0-50 mph in less than 35 seconds per the AC.

#### **10.2 BRAKE SYSTEM**

Per the AC and NFPA 414.

#### **10.3 DYNAMIC AND STATIC STABILITY**

The vehicle shall meet all stability requirements of the A/C including a 30° static side slope stability.

#### **10.4 ENVIRONMENTAL CONDITIONS**

Per the AC and NFPA 414.

#### **10.5 GRADABILITY**

Per the AC and NFPA 414.

#### **10.6 OPERATIONAL RANGE**

Per the AC and NFPA 414.

#### **10.7 TOP SPEED**

Per the AC and NFPA 414.

#### **10.8 OFF-ROAD HIGH MOBILITY SUSPENSION**

The vehicle shall be equipped with an All-Wheel Independent Suspension to meet the desired ride quality and handling characteristics for an Off-Road High Mobility Vehicle as defined by Section 58 in the A/C.

The independent suspension system shall be designed to provide maximum ride comfort and enhanced roll stability. The design shall allow the vehicle to travel at

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highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment. Each wheel shall have at least one coil spring and heavy-duty dual acting shock absorber. In addition, each wheel end shall also have energy absorbing jounce and rebound bumpers to prevent bottoming and topping of the suspension. The suspension design shall be such that there is at least sixteen (16) inches of total wheel travel and a minimum of 7 inches in either direction before the suspension bottoms on the energy absorbing bumpers. A heavy-duty anti-roll bar, or high performance strut enhancement, shall be installed on each axle for increased vehicle stability and operator safety during high speed cornering maneuvers.

### **10.9 FORWARD LOOKING INFRARED (FLIR) AND MOBIL DATA TERMINAL (MDT)**

- a. The vehicle shall be equipped with a Forward Looking Infrared System. The FLIR system shall incorporate 'microbolometer' technology to provide vision enhancement in low visibility conditions including operation during total darkness, fog, severe weather, and firefighting operations during which thick smoke is emitted. The camera shall have a field of view of 36° x 27°, an image resolution of 320 x 240 pixels and a cold start-up time of less than 45 seconds. The camera shall be mounted in such a position to allow full pan and tilt capabilities while protected from direct impact from water or foam discharge from the roof turret. It shall also provide the ability to detect hot spots and residual heat in all light conditions, to aid in the directing of firefighting efforts. The camera shall have no continuously internal moving parts which could reduce system life.
- b. One (1) OEM Microsolutions MTC3 model terminal with a minimum of 2 gb ram, a minimum of 100gb Hard Drive, integral WiFi and GPS, and a Sprint card shall be provided with client licenses for NetMotion Mobility XE, Motorola Premier MDC, Motorola Advanced Tactical Mapping Mobile and CADZone First Look Pro 4.

## **FIRE EXTINGUISHING SYSTEMS**

### **11. DRY CHEMICAL**

#### **11.1 AGENT CONTAINER(S) AND COMPONENTS, DELIVERY PIPING AND VALVES AND PROPELLANT CONTAINERS AND COMPONENTS**

Per the AC and NFPA 414 plus the following:

The vehicle shall be supplied with a 500 pound PKW dry chemical system as described in Chapter 3, Section 1 of the A/C.

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- a. The handline for dry chemical shall be 100 ft. of one inch type twinned booster hose on a manual swing-out type hose reel. The hose reel shall be equipped with a 12 VDC electric rewind motor with manual rewind provisions. A tension device shall be installed to prevent the unreeling of the hose. This handline shall be installed to provide deployment of the hose from the lower forward compartment on the right side of the vehicle, whether in place or swung out of the compartment. The reel shall have heavy duty lock pins to keep it in place whether stowed or swung out. The pins shall have springs to hold them locked. The nozzle shall be a Williams Hydro-Chem type capable of discharging 5 lbs. per second of dry chemical and 60 GPM of foam solution in accordance with the performance requirements of the A/C. Controls at the handline shall allow charging of the nitrogen into the dry chemical tanks, and charging of the dry chemical into the handline.
- b. One 400 cu. ft. fully charged nitrogen bottle shall be installed to provide a complete discharge of the dry chemical agent powder plus perform a blow-down operation. One spare nitrogen bottle shall be provided for re-servicing. Each nitrogen bottle shall be equipped with an integral pressure gauge on each bottle so crewmembers can easily determine the state of charge when the cylinders are in storage. Each nitrogen bottle shall have its own lift bracket to quicken bottle change.
- c. An integral electric winch or hoist shall be provided to lift and lower the nitrogen cylinder from the ground level to the stored position. The design shall be such that it shall allow one operator to perform the nitrogen cylinder re-servicing without the need for any heavy lifting or the use of additional equipment.
- d. Remote LED bar graph type pressure indicators shall be provided in the cab to indicate system operating pressure and the propellant cylinder pressure.
- e. 1000 pounds of PKW (Vivid Purple-K) with funnel shall be provided.
- f. Provisions shall be provided to refill the nitrogen cylinder in place through a port or other intake located on somewhere on the vehicle conveniently accessible while standing on the ground.

### **12. HALOTRON I or an acceptable substitute**

A Halotron I clean agent system is not required.

### **13. FOAM CONCENTRATE SYSTEM**

#### **13.1 CONCENTRATE PROPORIONER**

Per the AC and NFPA 414 plus the following:

## Attachment A

An electronic foam proportioning system shall be provided.

### **13.2 CONCENTRATE RESERVOIR AND PIPING**

Per the AC and NFPA 414 plus the following:

- a. The foam reservoir shall be constructed of UV protected Polypropylene material, and shall be provided with a lifetime warranty.
- b. A foam fill with a 1.50 inch NSFHT swivel female connection shall be provided on each side of the vehicle. Each fill shall be furnished with a female cam-lock fitting with plug and chain assembly. These connections can also be used as foam tank drains.
- c. A pneumatic diaphragm type foam transfer pump shall be mounted in a lower compartment on the left side of the vehicle. The pump shall be plumbed into the foam system to allow filling or emptying the foam reservoir through a 1.50 inch NSFHT swivel female connection, furnished with a female cam-lock fitting with plug and chain assembly.
- d. A triangular metal foam container piercing blade with guard shall be installed in the top foam fill.

## **14. WATER SYSTEM**

### **14.1 PIPING, COUPLINGS, CONNECTIONS, AND VALVES**

Per the AC plus the following:

- a. A structural system capable of 1000 gpm discharge shall be provided.
- b. A 5.00 inch male pump suction connection equipped with a .25 inch strainer shall be installed on the left side of the vehicle. A mating cap shall be provided that will be capable of withstanding pressures of 500 psi.
- c. A gated 2.50 inch female swivel pump supply connection shall be supplied near the pump operator's panel.
- d. Four (4) gated 2.50 NFHT male threaded connections shall be provided two each side of the vehicle. Each connection shall be equipped with a liquid filled, 2.50 inch gauge mounted on the control panel on the left hand side of the vehicle. Each discharge shall be equipped with a bleeder valve to bleed off air or water in the hose connected to it.
- e. The structural panel shall have a fill from draft capability. This will enable the tank to be filled by the pump.

## Attachment A

- f. A pump operator's panel shall be installed on the left hand side of the vehicle. This panel shall consist of a minimum the following:
- Pump engine tachometer
  - 4.50 inch diameter liquid filled pump discharge pressure gauge
  - 4.50 inch diameter liquid filled pump suction pressure gauge
  - Test connections for the pump pressure and suction gauges
  - Pump engine oil pressure gauge
  - Pump engine coolant temperature gauge
  - A hand throttle to control the pump engine speed
  - A means of selecting water or foam induction for discharge
  - A switch to control the operation of the priming pump and valve
  - Panel illumination
  - Pilot controlled relief valve
  - Engine shut down switch

### **14.2 WATER PUMPS AND PUMP DRIVE**

Per the AC and NFPA 414 plus the following:

- a. The water pump shall be a Waterous Model CRQ with bronze body, bronze impeller and stainless steel shaft, rated at 1950 GPM.
- b. A fire fighting system overheat warning system including an audible and a visual alarm shall be provided.

### **14.3 WATER RESERVOIR AND PIPING**

- a. The water reservoir shall be constructed of UV protected Polypropylene material, and shall be provided with a lifetime warranty.
- b. A 2.50 inch NH female swivel fill connection equipped with a .25 inch strainer and a cap with a chain shall be mounted on each side of the vehicle. Each connection shall be equipped with a bleeder valve to bleed off air or water in the hose connected to it. This connection shall be furnished with chrome connections with rocker lugs including the plug/chain assembly.
- a. A 4.50 inch NH male fill connection equipped with a .25 inch strainer and a cap shall be provided on each side of the vehicle. The fill connections shall have 5.00 inch Storz adaptors provided with caps. Each connection shall be equipped with a bleeder valve to bleed off air or water in the hose connected to it. There shall be a tray located adjacent to these intakes appropriate for housing a 25' section of 5" large diameter supply hose in a flat lay.
- b. Remote mounted LED bar graph type water level and foam level indicators shall be provided in a compartment on each side of the vehicle.

## Attachment A

- c. Remote mounted LED bar graph type water level and foam level indicators shall be provided above the center body to provide information to firefighters from a distance.

### **15. HANDLINES, REELS, AND COMPARTMENTS**

#### **15.1 HANDLINES**

The vehicle shall be supplied with one handline for the discharge of foam/water as described below:

- a. One pre-connected soft jacket handline for the discharge of foam/water shall be provided, mounted in the lower forward compartment on the left side on a high-sided slide-out tray. The handline shall include a quarter turn ball valve, and shall be set-up to be used with 250 ft. of 1-3/4 inch soft double jacket type hose and a 125 GPM pistol grip nozzle. The hose ends and nozzle fittings shall be 1.50 inch NPSH type thread connections.
- b. The flow to the handline shall be controlled in the compartment and on the cab dash. A safety interlock system shall be included which will only allow the handline to be charged after all of the hose has been deployed. The cab dash shall have an indicator light to indicate when the hose is fully deployed from the compartment. Automatic throttle activation for the pumping RPM shall be accomplished when the handline discharge nozzle is opened. An override control shall be provided for the handline for the initial charging of the preconnected hose.

#### **15.2 HOSE AND REEL COMPARTMENTS**

Per the AC and NFPA 414 as applicable to the handline configurations listed in item 81.

### **16. TURRETS AND UNDERTRUCK NOZZLES**

#### **16.1 PRIMARY (BUMPER) TURRET**

The primary turret shall be a multi-position, high volume, low attack type with a Hydro-Chem non-aspirating direct injection nozzle, mounted on the front of the vehicle. The turret shall include the following design features:

The nozzle shall have a variable pattern control and have an automatic flow mechanism to maintain consistent pressure. The nozzle shall maintain a constant flow at either discharge rate whether in the straight stream or fully dispersed (fog)

## Attachment A

pattern. The nozzle shall be a non-aspirating type with 12-volt powered electric pattern actuation for straight stream or fog pattern selection. The nozzle shall meet or exceed all performance requirements for a primary turret as defined in the A/C. The horizontal and vertical drive motors shall be electric with a clutch mechanism and/or limit switches to prevent damage to the motors at rotation limits.

The nozzle shall be a Hydro-Chem non-aspirating direct injection type, capable of water/foam flow discharge rates of either 600 or 1200 GPM with a dry chemical discharge rate of 16 pounds per second. The turret assembly shall be equipped with an automatic leveling device to keep the nozzle parallel to the ground regardless of the position of the lowering mechanism.

An electronic joystick control shall be provided with integrated controls for discharge activation, selection of agent type, and discharge rates and patterns [from straight stream to fully dispersed (fog pattern)].

The turret's mounting assembly shall be adequately reinforced to sustain all anticipated loads and reaction forces when the nozzle is discharging.

The turret shall be capable of being lowered from its stored position near bumper height to a point where the centerline of the nozzle shall be approximately 24" above the ground. The turret and its lowering mechanism shall be stored in a position providing minimum protrusion from the front of the vehicle while maintaining a 30° angle of approach.

### **16.2 SECONDARY (ROOF) TURRET**

The roof turret shall be an electric cab controlled type with electric joystick control. The turret shall be of a single barrel configuration designed to discharge foam or water at a dual rate of 375 or 750 GPM. The roof turret shall be the non-aspirating type, configured with a variable pattern control to adjust agent discharge from a straight stream to a wide dispersed pattern. The turret shall also be provided with the necessary controls shall be provided to permit the selection of the foam solution or water from inside the cab. The turret shall be aimed by a single, remote mounted electric joystick control having integrated controls for discharge activation, rates and patterns. The roof turret discharge valve shall be pneumatically assisted. The horizontal and vertical drive motors shall be electric with a clutch mechanism and/or limit switches to prevent damage to the motors at rotation limits. Controls shall be located to allow vehicle and turret operation by a single operator. The turret shall have a discharge pattern, which is infinitely variable from a flat pattern to a solid stream of foam. The turret shall be optimized for AFFF with the resultant foam conforming to the properties specified in the A/C. All foam patterns listed shall be at an operating pressure of 240 PSI.

## Attachment A

The two turret joysticks (primary and secondary) shall be placed within the cab center console in a manner that they do not interfere with each other. A firefighter shall be able to access either joystick from either the driver's seat position or the right side turret operator's position without a forearm interfering with the other joystick.

### **16.3 HIGH-REACH EXTENDABLE TURRET**

A High Reach Extendable turret is not required.

### **16.4 UNDERTRUCK NOZZLES**

Four under-truck nozzles shall be supplied to provide a sufficient foam\water combined spray pattern covering the total under-truck area as well as the inner sides of the wheels and tires.

### **16.5 DUAL AGENT TURRET**

As described in Section 16.1.

## **17 AGENT SYSTEM PERFORMANCE**

### **17.1 COMPLEMENTARY AGENT SYSTEM**

Per the AC and NFPA 414.

### **17.2 WATER/FOAM AGENT APPLICATORS**

Per the AC and NFPA 414.

## **QUALITY ASSURANCE**

## **18. GENERAL CONSIDERATIONS**

The contractor shall comply with all items regarding quality assurance, test and technical service and training as defined in items 100 through 132 of the AC.

## **AUXILIARY EQUIPMENT**

## **19. TOOLS AND EQUIPMENT**

The following auxiliary equipment shall be supplied with the vehicle, (provisions shall be made to have these items installed into the vehicle compartments during the initial in-service period of the truck):

## Attachment A

### 19.1 Hand Tools

- (2) Chock set, Aluminum, 6 inch high minimum, with mounting brackets on outside of vehicle adjacent to front wheels
- (2) Brass hydrant wrenches w/brackets
- (4) 2-1/2 in. spanner wrenches w/brackets
- (4) 5 in. spanner wrenches w/brackets
- (1) Axe, rescue, large six pound serrated large non-wedge type head and fiberglass handle mounted on the vehicle
- (1) 30 pound MET-L-X fire extinguisher with bracket
- (1) 15.5 pound Halotron I fire extinguisher with bracket
- (1) Bar, 36" wrecking, w/gooseneck
- (1) Piercing applicator, manual, 6 foot, Akron Style 1088
- (1) Ladder, 2-section extension, ALCO-LITE Model PEL-24 mounted on the top of the vehicle on a gantry so as to be accessible from the ground
- (1) Ladder, Little Giant Model 26, mounted on the top of the vehicle on a fixed bracket
- (2) 25' sections 5" Large Diameter supply hose fitted with Stortz style fittings
- (2) Portable 500-watt floodlights with mounting brackets.

### 19.2 POWER TOOLS

- (1) STIHL TS 800 16" Cutquick Cut-Off Machine with Diamond Wheels
- (1) Ajax Rescue Tools model 911-RKM Chisel and Impact wrench kit
- (1) DeWALT DC305K 36V Cordless Li-ion Reciprocating Saw Kit with AC/DC converter attachment.
- (1) DeWALT DCD940KX 18V 1/2" Cordless XRP Drill/Driver Kit
- (1) Set of Hex bit sockets

Attachment A

**19.3 HYDRAULIC TOOLS**

- (1) Hurst S 530 High Pressure “Parrot Blade” Cutter
- (1) Hurst SP 510 High Pressure Spreader
- (1) Hurst R 430 High Pressure Rescue Ram
- (1) Hurst P 620 High Pressure Mini Mate Simo Power Unit
- (1) Hurst CEN HR Hose Reel with 66’ Hose Color: red/blue
- (1) Hurst CEN HR Hose Reel with 66’ Hose Color: yellow/blue
- (1) Hurst connection hose for reel to power-unit connectivity
- (1) Hurst Ram Attachment Set

**19.4 SELF CONTAINED BREATHING APPARATUS**

- (3) MSA Firehawk M7 4500 SCBA with HUD, Face piece, Voice amplifier, and 812973 Kit rescue hose 40 inch.
- (4) MSA 4500 cylinders

*End of Attachment A*