



**FORT WAYNE-ALLEN COUNTY
AIRPORT AUTHORITY**

FORT WAYNE INTERNATIONAL AIRPORT
SMITH FIELD AIRPORT

**FORT WAYNE-ALLEN COUNTY AIRPORT AUTHORITY
NOTICE TO PUBLIC AND BIDDERS**

Notice is hereby given that the Fort Wayne-Allen County Airport Authority acting by and through its Board will receive sealed bids until the hour of 11:00 a.m. local time, September 25, 2019, and bids will be opened publicly at 11:15 a.m. on the last day of receiving bids in the Office of the Airport Director, Suite 209, 3801 W. Ferguson Road, Fort Wayne, Indiana 46809 for the following:

One New 3000 gallon Aircraft Rescue and Fire Fighting (ARFF) Vehicle in accordance with the procurement specifications.

Bid requirements 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-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 proposers 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 proposals 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 Fort Wayne-Allen County Airport Authority reserves the right to reject any and all proposals received.

FORT WAYNE-ALLEN COUNTY AIRPORT AUTHORITY

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

NOTE TO PUBLISHER: Please publish two (2) times in the *Journal Gazette* once on August 14, 2019 and once August 21, 2019. An invoice and proof of publication may be sent to the address below.

NOTICE TO PUBLISHER OF THE NORTHWEST NEWS: Please run this legal notice twice: once on August 14, 2019 and once on August 21, 2019. An invoice and proof of publication may be sent to the address below.

A Whole New Altitude

GENERAL REQUIREMENTS

This unit shall be manufactured in the United States in accordance with IC 5-22-15-21.

This ARFF vehicle is intended to carry rescue and firefighting equipment for rescuing aircraft passengers, preventing aircraft fire loss, and combating fires in and around an aircraft.

All bids received for this unit will include all items listed in these specifications whether supplied by the chassis manufacturer or not. All items included in Appendix A will be included in the base bid. Items in Appendix B will be additive alternates.

The Airport Authority reserves the right to reject any and all bids. Should the Authority elect to award the bid, it will be awarded to the lowest responsive and responsible bidder on the basis of the total base bid.

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.

All items listed in these specifications are to be considered minimum requirements. All exceptions are to be noted. As stated in Section 5.5 of the technical specifications, the offeror will provide an itemized technical proposal that describes how the proposed model complies with each characteristic of this procurement specification. **A paragraph by paragraph response to the characteristics section of this PS will be provided.**

Questions should be directed to Stan Klepper at 260.446.3415 or klepper@fwairport.com. Any and all questions must be received in writing by September 6, 2019. Any changes to the bid documents will be made via formal addendum. Addendums will be posted on the Authority's website at www.fwairport.com, Airport Business, Solicitations & Bidding. It will be the responsibility of the bidder to check for issued addendums and take them into consideration in submission of their bid.

Delivery of this unit and all components in a turn-key condition must occur within 365 days of notification of award of the bid.

This bid document consists of the following: Notice to Bidders, Non-Collusion Affidavit, General Terms and Conditions, General Requirements, Technical Specifications (25 Pages), and the price sheet.

End of General Requirements

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.

NON-COLLUSION AFFIDAVIT

STATE OF _____)

) SS:

COUNTY OF _____)

The undersigned bidder or agent, being duly sworn on oath, says that he has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to induce anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding.

He further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee, gift, commission, or thing of value on account of such sale.

Signature of Bidder or Agent

Firm

Subscribed and sworn to before me on this _____ day of _____, _____.

My commission expires: _____

Notary Public

County of Residence: _____

**VEHICLE PROCUREMENT SPECIFICATION,
AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF) VEHICLE**

1. **SCOPE.** This Procurement Specification (PS) covers a commercially produced diesel engine driven ARFF vehicle for a land-based airport. It includes one 3000-gallon water/Aqueous Film Forming Foam (AFFF) fire suppression system: 500 lb. sodium-based dry chemical only complementary system. The ARFF vehicle is intended to carry rescue and firefighting equipment for rescuing aircraft passengers, preventing aircraft fire loss, and combating fires in or around an aircraft.

This vehicle is being purchased with “local funds” and is not “Federally Funded”. Therefore, specifications outlined in: National Fire Protection Association (NFPA) 414, Standard for Aircraft Rescue and Fire Fighting Vehicles (2017 Edition), and AC 150/5220-10, Guide Specification for Aircraft Rescue and Fire Fighting (ARFF) Vehicles, are considered our minimum requirements for this vehicle. This PS will exceed those specifications outlined in the above-mentioned materials.

2. **CLASSIFICATION.** The ARFF vehicle covered by this PS are classified in accordance with Part 139, Certification and Operations: Land Airports Serving Certain Air Carriers, Section 317, Aircraft Rescue and Firefighting: Equipment and Agents; and Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5220-10, Guide Specification for Aircraft Rescue and Fire Fighting (ARFF) Vehicles, and must meet all capabilities of:

Vehicle Class	Minimum Rated Capacities (gallons/liters)
5	3000 gallons/11,356-liter water/AFFF solution

3. **VEHICLE CONFORMANCE/PERFORMANCE CHARACTERISTICS.** The ARFF vehicle will be in accordance with the applicable requirements of National Fire Protection Association (NFPA) 414, Standard for Aircraft Rescue and Fire Fighting Vehicles (2017 Edition), and AC 150/5220-10, Guide Specification for Aircraft Rescue and Fire Fighting (ARFF) Vehicles.

3.1. General Administration Requirements.

3.1.1. Manuals. Technical manuals will consist of operator, service, and parts manuals. All manuals are required to be provided in hardcopy and in digital format on CDs when requested.

- a) Technical manuals. The overall format for the manuals will be commercial. Each technical manual will have a title page. Line art will be used to the maximum extent possible for illustrations and parts lists. Two complete set of engine and transmission parts, service and operator's manuals will be packed with each vehicle. The contractor will also provide two digitized manuals in CD format when requested in addition to or in place of printed paper copies
- b) Operator's manual. The operator's manual will include all information required for the safe and efficient operation of the vehicle, including fire extinguishing systems, equipment, and any special attachments or auxiliary support equipment. As a minimum, the operator's manual will include the following:

3.1.1.b.1. The location and function of all controls and instruments will be illustrated and functionally described.

- 3.1.1.b.2. Safety information that is consistent with the safety standards established by the Occupational Safety and Health Administration (OSHA) and NFPA.
 - 3.1.1.b.3. All operational and inspection checks and adjustments in preparation for placing the vehicle into service upon receipt from the manufacturer.
 - 3.1.1.b.4. Tie down procedures for transport on a low-boy trailer.
 - 3.1.1.b.5. Warranty information and the period of the warranty coverage for the complete vehicle and for any component warranty that exceeds the warranty of the complete vehicle. Addresses and telephone numbers will be provided for all warranty providers.
 - 3.1.1.b.6. General description and necessary step-by-step instructions for the operation of the vehicle and its fire extinguishing system(s) and auxiliary equipment.
 - 3.1.1.b.7. A description of the post-operational procedures (draining, flushing, re-servicing, et cetera).
 - 3.1.1.b.8. Daily maintenance inspection checklists that the operator is expected to perform, including basic troubleshooting procedures.
 - 3.1.1.b.9. Disabled vehicle towing procedures.
 - 3.1.1.b.10. Procedures and equipment required for changing a tire.
 - 3.1.1.b.11. Schedules (hours, miles, time periods) for required preventative maintenance and required periodic maintenance.
 - 3.1.1.b.12. Line art drawing of the vehicle, including panoramic views (front, rear, left, and right sides) showing basic dimensions and weights (total vehicle and individual axle weight for the unloaded and fully loaded vehicle). For the purposes of this AC, "unloaded" is defined as a lack of agent, occupants and compartment load, and "loaded" is defined as including agent, occupants and compartment load.
- c) Service manual. The service manual will identify all special tools and test equipment required to perform servicing, inspection, and testing. The manual will cover troubleshooting and maintenance as well as minor and major repair procedures. The text will contain performance specifications, tolerances, and fluid capacities; current, voltage, and resistance data; test procedures; and illustrations and exploded views as may be required to permit proper maintenance by qualified vehicle mechanics. The manual will contain an alphabetical subject index as well as a table of contents. The service manual will contain at least the following, where applicable:
- 3.1.1.c.1. Firefighting system schematic(s).
 - 3.1.1.c.2. Hydraulic schematic.
 - 3.1.1.c.3. Pneumatic schematic.
 - 3.1.1.c.4. Electrical schematic.
 - 3.1.1.c.5. Winterization schematic.
 - 3.1.1.c.6. Fuel schematic.
 - 3.1.1.c.7. Schedules for required preventative maintenance and required periodic maintenance.

3.1.1.c.8. Lubrication locations, procedures, and intervals for parts of the vehicle and equipment that require lubrication.

- d) Parts identification manual. The parts manual will include illustrations or exploded views (as needed) to identify properly all parts, assemblies, subassemblies, and special equipment. All components of assemblies shown in illustrations or exploded views will be identified by reference numbers that correspond to the reference numbers in the parts lists. All purchased parts will be cross-referenced with the original equipment manufacturers (OEM) name and part number. The parts identification manual will provide the description and quantity of each item used for each vehicle. The size, thread dimensions, torque specifications, and special characteristics will be provided for all nonstandard nuts, bolts, screws, washers, grease fittings, and similar items. The manual will contain a numerical index. The parts manual will contain a list of all the component vendor names, addresses, and telephone numbers referenced in the parts list.

3.1.2. Painting, plating, and corrosion control.

- a) Finish. Exterior surfaces will be prepared, primed, and painted in accordance with all the paint manufacturer's instructions and recommendations. Vehicles will be painted and marked in accordance with AC 150/5210-5, Painting, Marking, and Lighting of Vehicles Used on an Airport. The interior finish of all compartments will be based on the manufacturer's standard production practice. This may include painting, texturing, coating or machine swirling as determined by the manufacturer. All bright metal and anodized parts, such as mirrors, horns, light bezels, tread plates, and roll-up compartment doors, will not be painted. All other surfaces capable of being painted must be in the appropriate yellow-green color.
- b) Dissimilar metals. Dissimilar metals, as defined in MIL-STD-889, Dissimilar Metals, will not be in contact with each other. Metal plating or metal spraying of dissimilar base metals to provide electromotively compatible abutting surfaces is acceptable. The use of dissimilar metals separated by suitable insulating material is permitted, except in systems where bridging of insulation materials by an electrically conductive fluid can occur.
- c) Protection against deterioration. Materials that deteriorate when exposed to sunlight, weather, or operational conditions normally encountered during service will not be used or will have a means of protection against such deterioration that does not prevent compliance with performance requirements. Protective coatings that chip, crack, or scale with age or extremes of climatic conditions or when exposed to heat will not be used.
- d) Reflective stripes. A minimum eight (8) inch horizontal band of high gloss white paint or white reflective tape (Retroreflective, ASTM-D 4956-09, *Standard Specification for Retroreflective Sheeting for Traffic Control*, TYPE III & above) must be applied around the vehicle's surface.
- e) Lettering. The manufacturer will apply the airport's 'Name' and 'Insignia' in a contrasting color or by decal on both sides of the vehicle in long radius elliptical arches above and below the lettering center line. The size of the lettering will be a minimum of 2¹/₂-inches to a maximum of 6-inches. Reflective lettering is allowed if

the material is the same as that which is used for the reflective stripe (as specified in AC 150/5210-5).

3.1.3. Vehicle identification plate(s). A permanently marked identification plate will be securely mounted at the driver's compartment. The identification plate will contain the following information:

- a) NOMENCLATURE
- b) MANUFACTURER'S MAKE AND MODEL
- c) MANUFACTURER'S SERIAL NUMBER
- d) VEHICLE CURB WEIGHT: kg (pounds)
- e) PAYLOAD, MAXIMUM: kg (pounds)
- f) GROSS VEHICLE WEIGHT (GVW): kg (pounds)
- g) FUEL CAPACITY AND TYPE: gals (gallons)
- h) DATE OF DELIVERY (month and year)
- i) WARRANTY (months and km (miles))
- j) CONTRACT NUMBER
- k) PAINT COLOR AND NUMBER
- l) A second permanently marked information data plate will be securely mounted on the interior of the driver's compartment. The plate will contain the information required by:

NFPA 414, Standard for Aircraft Rescue and Fire Fighting Vehicles (2017 Edition), Section 1.3.5 Vehicle Information Data Plate. A single plate that combines or contains the information required for both plates is acceptable.

3.1.4. Environmental conditions.

- a) Vehicle operation and storage temperature conditions will vary with geographical location. Thus, the locality temperature range can go from -40° to 110°F. Refer to NFPA 414 for vehicle winterization criteria.
- b) Extreme temperature range. The vehicle will be capable of satisfactory storage and operation in temperatures ranging from -40° to 110°F. The vehicle will be equipped with a cab, chassis, and agent winterization system, permitting operation at -40°F. The winterization system will not detract from the performance of the vehicle or the firefighting system in ambient temperatures up to 110°F. The vehicle chassis winterization system will maintain the engine coolant, lubricants, fuel, and electrical systems operational at ambient temperatures of -40°F. The vehicle agent winterization system will provide enough insulation and heating capacity, by means of hot circulating liquids and/or forced air heat exchangers, to permit satisfactory operation of the vehicle and firefighting systems for a 2-hour period at ambient temperatures as low as -40° F with the vehicle fully operational and the engine running. At the end of this 2-hour period, the vehicle will be capable of successfully discharging its agents. All compartments not winterized will be marked as such on the interior of the compartment. The marking will state that the compartment is not winterized and cannot be used for the storage of items capable of freezing.

3.1.5. Reduction of potential foreign object damage. All loose metal parts, such as pins, will be securely attached to the vehicle with wire ropes or chains. Removable exterior access panels, if provided, will be attached with captive fasteners.

3.1.6. Vehicle Mobility.

- a) Operating terrain. The vehicle will be capable of operating safely on paved roads, graded gravel roads, cross country terrain, and sandy soil environments. Cross country terrain consists of open fields, broken ground, and uneven terrain. An off-road, high-mobility suspension system resulting in no more than 0.5 Grms acceleration at the driver's seat of the vehicle when traversing an 8-inch (20 cm) diameter half round at 35 mph (56 kph) must be provided. The suspension design by which the manufacturer meets the suspension performance requirements is at the manufacturer's discretion.
- b) Gradeability. The fully loaded vehicle will be able to ascend any paved slope up to and including 50-percent.
- c) Side slope stability. The fully loaded vehicle will be stable on a 30° side slope when tested in accordance with NFPA 414.Cornering stability. The fully loaded vehicle will be stable in accordance with NFPA 414 when tested in accordance with NFPA 414.

3.2. Weights and dimensions

3.2.1. Overall dimensions. The maximum dimensions for a 3000-gallon unit is listed below are desirable to ensure vehicles can be accommodated in existing fire stations. Likewise, the overall dimensions should be held to a minimum that is consistent with the best operational performance of the vehicle and the design concepts needed to achieve this performance and to provide maximum maneuverability in accordance with NFPA 414.

Vehicle Capacity / Dimensions	3000 Gallon
Length (inches/cm)	480/1219
Width (inches/cm, excluding mirrors)	124/315
Height (inches/cm)	154/391

- 3.2.2. Angles of approach and departure. The fully loaded vehicle will have angles of approach and departure of not less than 30°.
- 3.2.3. Field of vision. The vehicle will have a field of vision in accordance with NFPA 414.
- 3.2.4. Mirrors. Combination flat and convex outside rearview mirrors will be installed on each side of the cab. The flat mirrors will be of the motorized remote-control type, providing not less than 60° horizontal rotational viewing range. The flat mirrors will also have electrically heated heads. Mirror remote and heating controls will be located on the instrument panel within reach of the seated driver. To provide the driver a clear view of the area ahead of the vehicle and to eliminate potential blind spots, a rectangular mirror will be installed on the lower corner of each side of the windshield, having a minimum area of 35 square inches.
- 3.2.5. Cameras: The vehicle will have a back-up (rear-view) camera and display monitor mounted above the driver in the cab, that will automatically activate when the transmission is put into reverse gear.

3.3. Chassis and vehicle components.

- 3.3.1. Engine. The vehicle will have a turbocharged diesel engine that is certified to comply with the Environmental Protection Agency (EPA) and state laws for off-highway emission requirements at the time of manufacture. The engine and transmission must operate efficiently and without detrimental effect to any drive train components when lubricated with standard, commercially available lubricants according to the recommendations of the engine and transmission manufacturers.
- a) Acceleration. The fully loaded vehicle will accelerate from 0 to 50 miles per hour (mph) on a level paved road within 35 seconds.
 - b) Maximum speed. The fully loaded vehicle will attain a minimum top speed of 70 mph on a level, paved road.
 - c) Pump and roll on a 40-percent grade. The fully loaded vehicle will be capable of pump and roll operations on a paved, dry, 40-percent grade in accordance with NFPA 414.
 - d) Altitude. Where justified, the vehicle, including the pumping system, will be designed for operation at 2,000 feet above sea level.
- 3.3.2. Engine cooling system. The engine cooling system will be in accordance with NFPA 414. A label will be installed near the engine coolant reservoir reading "Engine Coolant Fill."
- 3.3.3. Fuel system. The fuel system will be in accordance with NFPA 414.
- a) Fuel priming pump. The vehicle will be equipped with an electric or pneumatic fuel pump in addition to the mechanical fuel pump. The electric/pneumatic pump will be used as a priming pump capable of re-priming the engines fuel system
 - b) Fuel tank. The vehicle will have one or two fuel tanks with a minimum usable capacity in accordance with NFPA 414, as amended by NFPA 414. Each tank will have a fill opening of 3 inches minimum, readily accessible to personnel standing on the ground and designed to prevent fuel splash while refueling. Each tank will be located and mounted so as to provide maximum protection from damage, exhaust heat, and ground fires. If more than one tank is furnished, means will be provided to assure equalized fuel level in both tanks. An overturn fuel valve will be provided for each tank to prevent spillage in the event of a rollover. Each fuel tank must be prominently labeled "Diesel Fuel Only".
- 3.3.4. Exhaust system. The exhaust system will be in accordance with NFPA 414. The exhaust system will be constructed of high-grade rust resistant materials and protected from damage resulting from travel over rough terrain. The muffler(s) will be constructed of aluminized steel or stainless steel. Exhaust system outlet(s) will be directed upward or to the rear, away from personnel accessing equipment compartments and the engine air intake and will not be directed toward the ground.
- 3.3.5. Transmission. A fully automatic transmission will be provided. The transmission will be in accordance with NFPA 414.
- 3.3.6. Driveline. The vehicle driveline will be in accordance with NFPA 414. If the driveline is equipped with a differential locking control, a warning/caution label will be placed in view of the driver indicating the proper differential locking/un-locking procedures. The operator's manual will also include a similar warning/caution. All moving parts requiring routine lubrication must have a means of providing for such lubrication. There must be no

pressure lubrication fittings where their normal use would damage grease seals or other parts.

- 3.3.7. Lubrication system. Wherever appropriate vehicle I is to have centralized lubrication points for easier maintenance.
- 3.3.8. Axle capacity. Each axle will have a rated capacity, as established by the axle manufacturer, in accordance with NFPA 414.
- 3.3.9. Suspension. The suspension system will be that of a fully independent “A”- arm type design. The vehicle will also have a rear steer assist system.
- 3.3.10. Tires and wheels. Tires and wheels will be in accordance with NFPA 414. The vehicle will be equipped with single tires and wheels at all wheel positions. The vehicle will be equipped with tubeless steel belted radial tires with non-directional on/off-road type tread mounted on disc wheel assemblies. Tire and wheel assemblies will be identical at all positions. Tires and wheels will be certified by the manufacturer for not less than 25 miles of continuous operation at 60 mph at the normal operational inflation pressure. A spare tire and wheel assembly will be provided; however, the spare tire and wheel assembly are not required to be mounted on the vehicle. Tires will be new. Retreads, recaps, or re-grooved tires will not be permitted.
- 3.3.11. Towing connections. The vehicle will be equipped with towing connections in accordance with NFPA 414. The vehicle will be designed for flat towing; the capability to lift and tow the vehicle is not required. The tow connections may intrude into the 30-degree approach angle.
- 3.3.12. Brake system. The vehicle will be equipped with a multi-channel all-wheel antilock 4-wheel disk brake system with at least one channel for each axle. The brakes will be automatic, self-adjusting and fully air-actuated. Brakes will be in accordance with CFR 49 CFR 393.40 through 393.42(b)), 393.43, and 393.43 through 393.52. The braking system, complete with all necessary components will include:
 - a) Air compressor having a capacity of not less than 16 standard cubic feet per minute (scfm).
 - b) Air storage reservoir(s), each tank equipped with drain (bleed) valves, and with safety and check valves between the compressor and the reservoir tank.
 - c) Automatic moisture ejector on each air storage reservoir. Manual air tank drains are acceptable if they are labeled, are centrally located in one compartment and are accessible by an individual standing at the side of the vehicle.
 - d) Automatic slack adjusters on cam brakes or internal self-adjusting brakes on wedge brakes on all axles.
 - e) Spring set parking brakes.
 - f) All components of the braking system will be installed in such a manner as to provide adequate road clearance when traveling over uneven or rough terrain, including objects liable to strike and cause damage to the brake system components. No part of the braking system will extend below the bottom of wheel rims, to ensure, in case of a flat tire, that the weight of the vehicle will be supported by the rim and the flat tire and not be imposed on any component of the braking system. Slack adjusters and air chambers will be located above the bottom edge of the axle carrier.

- g) Air dryer. A replaceable cartridge desiccant air dryer will be installed in the air brake system. The dryer will have the capability of removing not less than 95 percent of the moisture in the air being dried. The dryer will have a filter to screen out oil and solid contaminants. The dryer will have an automatic self-cleaning cycle and a thermostatically controlled heater to prevent icing of the purge valve.
- h) Compressed air shoreline or vehicle-mounted auxiliary air compressor. A flush mounted, check valve, auto-eject compressed air shoreline connection will be provided to maintain brake system pressure while the vehicle is not running. The shoreline will be flush mounted (not to extend outside the body line), located on the exterior of the vehicle, either on the left side rear corner of the cab, or at the rear of the vehicle.

3.3.13. Steering. The vehicle will be equipped with power steering with rear steer assist.

3.3.14. Steering effort. The steering system performance will be in accordance with NFPA 414.

3.3.15. Turning diameter. The fully loaded vehicle will have a wall to wall turning diameter of less than three times the overall length of the vehicle in both directions in accordance with NFPA 414.

3.3.16. License plate bracket. A lighted license plate bracket will be provided at the left rear and left front of the vehicle. The location of the left front bracket will be placed so as not to interfere with the operation of firefighting systems.

3.4. Cab. The vehicle will have a fully enclosed two door cab of materials which are corrosion resistant, such as aluminum, stainless steel, or glass reinforced polyester construction. Steps and handrails will be provided for all crew doors, and at least one grab handle will be provided for each crew member, located inside the cab for use while the vehicle is in motion. The lowermost step(s) will be no more than 22 inches above level ground when the vehicle is fully loaded. A tilt and telescoping steering column will be provided.

3.4.1. Windshield and windows. The windshield and windows will be of tinted safety glass. Each door window will be capable of being opened far enough to facilitate emergency occupant escape in the event of a vehicle accident. The vehicle windows will have an electric control system.

3.4.2. Cab interior sound level. The maximum cab interior sound level will be in accordance with NFPA 414.

3.4.3. Instruments and controls. All instruments and controls will be illuminated and designed to prevent or produce windshield glare. Gauges will be provided for oil pressure, coolant temperature, and automatic transmission temperature. In addition to the instruments and controls required by NFPA 414, the following will be provided within convenient reach of the seated driver:

- a) Master warning light control switch,
- b) Work light switch(es), and
- c) Compartment "Door Open" warning light and intermittent alarm that sounds when a compartment door is open, and the parking brakes are released, or the transmission is in any position other than neutral.

- 3.4.4. Windshield deluge system. The vehicle will be equipped with a powered windshield deluge system. The deluge system will be supplied from the agent water tank and will have an independent pumping system. The deluge system activation switch will be located within reach of the seated driver and turret operator.
- 3.4.5. Forward Looking Infrared (FLIR). A forward looking infrared (FLIR) color camera and in-cab monitor, meeting the requirements of NFPA 414, will be provided. In addition, the FLIR monitor described in NFPA 414 will have a minimum dimension of 10 in (25 cm) (measured diagonally) and be in a position where it is visible to both the seated driver and turret operator.
- 3.4.6. Climate control system. The offeror/contractor's standard heater/defroster and air conditioning system will be provided. The climate control system will induct at least 60 cubic feet per minute of fresh air into the cab. Cab mounted components will be protected from inadvertent damage by personnel.
- 3.4.7. Seats. The driver and turret operator seats will be adjustable fore and aft and for height of an air suspension type. The turret operator's seat located to the right front of the driver's seat. Third position seat shall be fixed. Each seat will be provided with a Type 3 seat belt assembly (i.e., 3-point retractable restraint) in accordance with CFR 49 CFR 571.209. Seat belts must be of sufficient length to accommodate crew members in full Personal Protective Equipment (PPE).
- a) Seat Options. There will be three SCBA seats will be included in the vehicle, seats that contains an opening which can accommodate someone wearing an SCBA.
- 3.4.7.a.1. Driver
- 3.4.7.a.2. Turret Operator
- 3.4.7.a.3. #3 Position Left of Driver
- b) Fully adjustable Bostrom or 911 SCBA seats with quick release will be provided for driver and operator.
- 3.4.8. Windshield wipers and washer. The vehicle will be equipped with electrically powered windshield wipers. The wiper arms and blades will be of sufficient length to clear the windshield area described by SAE J198, Windshield Wiper Systems - Trucks. Individual wiper controls will include a minimum of two speed settings and an intermittent setting. The wiper blades will automatically return to a park position, out of the line of vision. The vehicle will be equipped with a powered windshield washer system, including an electric fluid pump, a minimum one-gallon fluid container, washer nozzles mounted to the wiper arms (wet arms), and a momentary switch.
- 3.4.9. Warning signs. Signs that state "Occupants must be seated and wearing a seat belt when apparatus is in motion" will be provided in locations that are visible from each seated position in accordance with NFPA 414."
- 3.4.10. Lateral accelerometer and/or stability control system. The vehicle will be equipped with a lateral accelerometer and/or an electronic stability control system in accordance with NFPA 414.
- 3.4.11. Monitoring and Data Acquisition System (MADAS). The vehicle will be equipped with a MADAS as prescribed by NFPA 414.
- 3.4.12. Video Recording system: A video and voice recording system shall be installed in the cab that automatically activates when the vehicle is started. The system shall record forward

of the truck in such a way, so the footage will show any application of ARFF solution forward of the truck. This system will also record any audio from inside the cab. Storage will have a minimum of 40 hours recording time before reweighting. Retrieval of this footage should be password protected.

3.4.13. Storage compartment: A storage compartment or shelving will be installed inside the cab that will accommodate books, manuals, med-kit, and small equipment. Compartment must be able to secure the contents inside so as; its contents will not fall/bounce out while operating the vehicle.

3.5. Body, compartments, and equipment mounting.

3.5.1. Body. The vehicle will have a corrosion-resistant body.

3.5.2. Compartments. The vehicle body will have lighted compartments in accordance with NFPA 414 with a minimum of 10 cubic feet of enclosed storage space.

- a) Compartment doors. Storage compartments will have clear anodized aluminum, counterbalanced, non-locking, roll-up doors. Door latch handles on roll-up doors will be full-width bar type. Door straps will be provided to assist in closing the compartment doors when the rolled-up height exceeds six feet above the ground.
- b) Scuff plates. Replaceable scuff plates will be provided at each compartment threshold to prevent body damage from sliding equipment in and out of the compartments. scuff plates will be securely attached to the compartment threshold but will be easily replaceable in the event of damage.
- c) Drip rails. Drip rails will be provided over each compartment door.
- d) Shelves. An adjustable and removable compartment shelf will be provided for every 18 inches of each vertical storage compartment door opening. Shelving adjustments will require no more than common hand tools and will not require disassembly of fasteners. Shelves will support a minimum of 200 pounds without permanent deformation. Each shelf will be accessible to crew members standing on the ground or using a pull out and tip-down configuration. Each shelf will have drain holes located so as to allow for drainage of any water from the stowed equipment. Hurst tool brackets, axe brackets, and other equipment's bracketry will be installed as defined by the purchaser.
- e) Drainage mats. Each compartment floor and shelf will be covered with a removable black mat designed to allow for drainage of any water from the stowed equipment.

3.5.3. SCBA storage tubes. A single compartment or tubes for storage of four SCBA bottles will be provided. If tubes are provided, two will be installed on each side of the vehicle. The tubes will be of sufficient size to accommodate the procuring agencies SCBA cylinders.

3.5.4. Ladder, handrails, and walkways. Ladder, stepping, standing, and walking surfaces will be in accordance with NFPA 414. Handrails will be provided in accordance with NFPA 414. The lowermost step(s) or ladder rungs will be no more than 22 inches (56 cm) above level ground when the vehicle is fully loaded. The lowermost steps may extend below the angle of approach or departure or ground clearance limits if they are designed to swing clear. The tread of the bottom steps must be at least 8 inches (20 cm) in width and succeeding steps at least 16 inches (40 cm) in width. The full width of all steps must have at least 6 inches (15 cm) of unobstructed toe room or depth when measured from, and perpendicular to, the front edge of the weight-bearing surface of the step.

3.5.5. Overhead ladder gantry: Vehicle will also have an electronic assist ladder gantry. This gantry will come equipped with a 16' aluminum fire service rated ladder that lowers from a high stored position down to a level in which a one firefighter standing on the ground may retrieve it.

3.5.6. Ancillary equipment. Ancillary equipment list is attached as addendum (A).

3.6. Agent system.

3.6.1. Agent (fire) pump. The vehicle will be equipped with a bronze housing centrifugal pump capable of providing the performance specified herein as prescribed by NFPA 414.

- a) Agent system piping. All piping, couplings, and valves and associated components that come into contact with the agent will be in accordance with NFPA 414.
- b) Tank to pump connection. A check valve and shutoff valve will be provided in each tank to pump line.
- c) Piping, couplings, and valves. All agent system piping will conform to 414 criteria.
- d) Overheat protection. The agent system will be equipped with an overheat protection system in accordance with NFPA 414. Overheat protection is not required on vehicles utilizing a pre-mixed pressurized foam system.
- e) Pressure relief valves. The agent system will be equipped with pressure relief valves in accordance with NFPA 414.
- f) Drains. The agent system will be equipped with a drainage system in accordance with NFPA 414.

3.6.2. Water tank. The vehicle will have a water tank with a manufacturer certified minimum capacity of at least 3000 gallons.

- a) Water tank construction. The water tank will be constructed of passivated stainless steel, polypropylene, or Glass Reinforced Polyester (GRP) construction. All materials used will be capable of storing water, foam concentrate, and water/AFFF solutions.
- b) Water tank overhead fill cover and drain. The water tank will be equipped with a 20-inch fill tower. The tower will be designed to allow for video inspection of the water tank interior. The water tank will incorporate a drainage system in accordance with NFPA 414.
- c) Water tank overflow system and venting. The water tank will incorporate a venting system to relieve pressure on the tank during fill and discharge operations at maximum flow rates. It will have an overflow system to relieve excess fluid in the event of tank overflow. Drainage from the vent and overflow system will not flow over body panels or other vehicle components and will not be in the track of any of the tires. Tank vent hoses will be of the non-collapsible type.
- d) Water tank top fill opening. A top fill opening of not less than 8 inches internal diameter with a readily removable 1/4-inch mesh strainer will be provided. The fill opening may be incorporated as part of the manhole cover and will be sized to accommodate a 2 1/2-inch fill hose.
- e) Water tank fill connections. The water tank will incorporate National Hose thread connections and will be in accordance with NFPA 414. If the vehicle is fitted with the "structural firefighting capability option," the additional requirements listed in paragraph 3.6.8 must be incorporated.

3.6.3. Foam system. (**NOTE:** *The requirements of section 3.6.3 do not apply to pre-mixed pressurized foam systems.*)

- a) Foam concentrate tank. The foam concentrate tank(s) will have a manufacturer certified working capacity sufficient for two tanks of water at the maximum tolerance specified in NFPA 412, Standard for Evaluating Aircraft Rescue and Fire-Fighting Foam Equipment for 3 to 6 percent foam concentrate (i.e., 7.0-percent).
- b) Foam tank construction. The foam tank will be constructed of passivated stainless steel, polypropylene, or GRP construction. All materials used will be capable of storing foam concentrate.
- c) Foam tank drain. The foam tank will incorporate a drain and drain valve. The valve will be on the left side of the vehicle and controlled by a crew member standing on the ground. The drain line will have a minimum 1¹/₂-inch I.D. The foam tank drain outlet will be located so that the contents of the tank can be drained into 5-gallon cans and 55-gallon drums.
- d) Foam tank top fill trough. The foam tank will incorporate a top fill trough mounted in the top of the tank readily accessible to at least two crew members on top of the vehicle. The top fill trough will incorporate a cover, latch, and sealed so as to prevent spillage under any operating condition. The top fill trough will be designed to allow two standard 5-gallon foam concentrate containers to be emptied simultaneously. The top fill trough neck will extend sufficiently close to the bottom of the tank to reduce foaming to a minimum during the fill operation. The top fill trough will incorporate readily removable, rigidly constructed 10 mesh stainless steel, brass or polyethylene strainers. All components in and around the top fill trough will be constructed of materials that resist all forms of deterioration that could be caused by the foam concentrate or water.
- e) Foam tank fill connections. The foam tank will incorporate a 1.5-inch National Hose thread female hose connection on the left side of the vehicle to permit filling by an external transfer hose at flow rates up to 25-gpm. The connections will be provided with chained-on long handled plugs or rocker lug plugs. The top of the connections will be no higher than 48 inches above the ground and readily accessible. The fill lines will incorporate check valves and readily removable, rigidly constructed 1/4-inch mesh strainers. All components in the foam tank fill system will be constructed of materials that resist all forms of deterioration that could be caused by the foam concentrate or water.
- f) Foam tank vent and overflow system. The foam tank will incorporate a vent system to relieve pressure on the tank during fill and discharge operations at maximum flow rates and an overflow system to relieve excess liquid in the event of tank overflow. Drainage from the vent and overflow system will not flow over body panels or other vehicle components and will not be in front of or behind any of the tires. Tank vent hoses will be of the non-collapsible type.
- g) Foam transfer pump. A foam transfer pump will be provided and mounted in a compartment on the vehicle. The pump will be capable of transferring and drawing foam liquid concentrate at adjustable flow rates up to 25-gpm directly through the

pump and loading connections (see 3.6.3.2). All materials and components that meet the foam will be compatible with the foam concentrate. The pump and its plumbing will have provisions for flushing with water from the water tank. A suitable length of hose with appropriate connections will be provided for filling the foam tank from an external foam storage container.

- h) Foam flushing system. The foam concentrate system will be designed in accordance with NFPA 414 so that the system can be readily flushed with clear water.
- i) Foam concentrate piping. All metallic surfaces of the piping and associated components that come into contact with the foam concentrate will be of brass, bronze, or passivated stainless steel. The foam concentrate piping will be in accordance with NFPA 414.

3.6.4. Foam proportioning system. The vehicle will have a foam proportioning system for Aqueous Film-Forming Foam (AFFF) (whether 3- or 6-percent foam concentrate) in accordance with NFPA 414. An Electronic foam proportioning system is preferred. Supplier must also provide an approved solution for testing the rate of water/foam mix without dispensing foam on the ground.

3.6.5. Primary vehicle turret. The vehicle will be equipped with a high reach extendable turret, to serve as the primary source of agent delivery, as specified below:

- a) The vehicle will be equipped with a high reach extendable turret (capable of penetrating the second level of the New Large Aircraft (NLA) class of aircraft, in accordance with paragraph 3.6.5.b. The NLA class aircraft are equivalent to the 'Airplane Design Group VI' category, as specified in AC 150/5300-13, Airport Design. The High Reach Extendable Turret (capable of penetrating the second level of NLA). The high reach extendable turret (HRET) must be in accordance with NFPA 414 and will have the vertical and horizontal reach necessary to service the highest placed engine of the aircraft being serviced. It will have a non-air-aspirating, constant flow, variable stream nozzle with dual flow rates for foam or water rated as specified in NFPA 414. The discharge pattern will be infinitely variable from straight stream to fully dispersed. The type of nozzle or turret drain will be per the manufacturer's recommendation. The HRET will be controlled by one or two joysticks, each with a pistol grip handle, positioned for use by the driver and the crew member seated to the right of the driver (the turret operator). The cab design will provide clear visibility of the turret to both the driver and the turret operator with the turret in any position.
- b) Video camera and monitor. The HRET will be equipped with a remote video camera and a cab mounted monitor. The system will be a complete video system consisting of a color camera equipped with auto-focus and a cab-controlled zoom. The camera/lens assembly will be protected from the heat of the fire and from the same climatic extremes as the truck. A color video monitor with a minimum dimension of 10 inches (measured diagonally) will be positioned in the cab within view of both the driver's and the turret operator's seated positions. One monitor may be provided for both the FLIR (see 3.4.5) and the camera with a switch to change between the FLIR and the camera.

- c) Aircraft skin penetrator. The HRET will be equipped with an aircraft skin penetrator and agent application tool. The skin penetrator will be a minimum of 20 inches long, installed at the tip of the HRET, and connected to the water/AFFF agent discharge line. Tip extensions up to 36" penetration will be provided. Agent application through the skin penetrator will be controlled from the cab. The penetrating nozzle must be movable to allow for proper alignment of the penetrator to the aircraft fuselage for piercing operations. It must be capable of the minimum water/flow rate and pattern requirements of NFPA 414, Tables 4.1.1(c) and 4.
- 3.6.6. Bumper turret. The vehicle will be equipped with a joystick controlled, constant flow, non-air-aspirating, variable stream type: low angle high volume dual rate (minimum 600/1200 GPM) bumper turret. The bumper turret will be capable of discharging at a minimum flow rate of foam or water as specified by the user, with a pattern infinitely variable from straight stream to fully dispersed. The bumper turret will be capable of automatic oscillation, with the range of oscillation adjustable up to 90° each side of center (left and right) with vertical travel capabilities of +45°/20° meeting section 4.20.2 in NFPA 414.
- 3.6.7. Preconnected handline(s). Two 200 foot, 1³/₄-inch pre-connected woven jacket handline(s), with a 1¹/₂-inch control valve and a pistol grip nozzle, will be located on (or accessible from) each side of the vehicle. A safety system will be provided to prevent charging of the hose until the hose has been fully deployed. The handline(s) and nozzle(s) will be in accordance with NFPA 414 and will allow for a minimum of 95gpm at 100 psi nozzle pressure. A control for charging each handline will be provided for operation by both the driver and the turret operator.
- a) In addition. The vehicle will be equipped with a 100-foot twinned 1-inch dry chemical / foam-water hose on a reel.
- 3.6.8. Under truck nozzles. Nozzles shall be mounted under the truck and controlled from the cab to protect the bottom of the vehicle and inner sides of the wheels and tires with foam solution discharged in a spray pattern.
- 3.6.9. Structural firefighting capability. The vehicle will be equipped with an agent system structural control panel, on the left side of the vehicle, operable while standing on the ground. Structural panel activation will be interlocked to operate only with the vehicle parking brakes set and the transmission in neutral position. Controls and instruments will be grouped by function. The control panel will be hinged or accessible from the rear for maintenance. Instruments will be lighted for night operation.
- a) The structural panel will include, as a minimum, the following:
- 3.6.9.a.1. Panel activation switch, including the panel lights.
 - 3.6.9.a.2. Engine tachometer.
 - 3.6.9.a.3. Engine oil pressure gauge with low pressure warning light.
 - 3.6.9.a.4. Engine coolant temperature gauge with high temperature warning light.
 - 3.6.9.a.5. A liquid filled gauge, or digital indicator for pump suction, -30 inches Hg vacuum to 600 psi.
 - 3.6.9.a.6. A liquid filled gauge, or digital indicator for pump pressure, 0 to 600 psi.
 - 3.6.9.a.7. An adjustable pump pressure using either an electronic pressure governor or manual control with a relief valve will be provided.
 - 3.6.9.a.8. Foam or water selection.

- 3.6.9.a.9. Water and foam tank liquid level indicators located adjacent to the water and foam tank fills.
 - 3.6.9.a.10. Water tank isolation valve.
 - 3.6.9.a.11. Discharge connections. Two 2¹/₂-inch discharge connections with male National Hose threads will be provided. One 2¹/₂-inch discharge will be provided on each side of the vehicle. Each connection will be equipped with a cap, a quarter-turn control valve, a bleeder valve, and a pressure gauge. Each connection will be rated at 250-gpm minimum.
 - 3.6.9.a.12. Intake connections. The vehicle will be equipped with one valve 4¹/₂-inch intake connection on the both sides. The vehicle will be equipped with one valve 2¹/₂-inch intake connection on the both sides adjacent to the 4¹/₂-inch intake connection with both having either a 30° or 45° turn-down fitting. The 4¹/₂-inch intake connection will have male National Hose threads, a quarter-turn control valve, a bleeder valve, a strainer, and a cap. The 2¹/₂-inch intake connection will have rocker lug female National Hose threads, a quarter-turn control valve, a bleeder valve, a strainer, and a plug. The vehicle will be capable of filling its water tank by a hydrant, or a nurse truck through either of the intake connections without the use of a hose from a discharge connection to a tank fill connection.
- 3.6.10. Primary turret discharge nozzle. The vehicle will be equipped with a complementary agent discharge mounted parallel to the AFFF solution discharge on the primary turret mounted on the cab roof.
- 3.7. Dry chemical agent system. The vehicle will be equipped with a 500 lb. minimum capacity sodium based dry chemical agent system. The propellant gas cylinder will be replaceable within fifteen minutes by two crew members standing on the ground and be equipped with a cylinder replacement hoisting system. The propellant gas cylinder will be secured to withstand off-road operations. A pressure indicator will be visible to any person opening the tank fill cap. Blow-down piping will be directed beneath the vehicle.
- 3.7.1. The dry chemical agent tank will include lifting rings and will have a nameplate indicating, as a minimum, the following:
 - a) Extinguishing agent.
 - b) Capacity.
 - c) Weight full.
 - d) Weight empty
 - e) Operating pressure.
 - f) Hydrostatic test date.
 - g) Type of agent required for re-servicing.
 - 3.7.2. Dry chemical hose reel. A hose reel, equipped with at least 100 feet of dry chemical hose, will be mounted in a compartment. Handline agent and purge controls will be mounted in or adjacent to the compartment. All electrical components will be sealed against entry of water. The hose reel will have both electric and manual rewind provisions.

The manual rewind handle will be bracket mounted and stored in the compartment. A quick acting control will be provided to activate the handline from the cab of the vehicle.

3.8. Left Blank Intentionally

3.9. Electrical systems and warning devices. The vehicle will have a 12-volt or 24-volt electrical and starting system in accordance with NFPA 414. Wherever appropriate use LED lighting.

3.9.1. An appropriate charging system, in accordance with NFPA 414, will be provided. The minimum continuous electrical load will include operation of the air conditioning system.

3.9.2. Batteries. Batteries will be of the maintenance-free type; addition of water will not be required during normal service life. The battery cover and vent system will be designed to prevent electrolyte loss during service and to keep the top of the battery free from electrolyte.

a) Battery compartment. The batteries will be enclosed in a weatherproof enclosure, cover, or compartment and be readily accessible.

3.9.3. Battery charger or conditioner. The vehicle will have a DC taper type battery charger or an automatic battery conditioner, or voltage monitoring system, providing a minimum 12-amp output. The charger/conditioner will be permanently mounted on the vehicle in a properly ventilated, accessible location. The charger/conditioner will be powered from the electrical shoreline receptacle (see 3.10.1). A charging indicator will be installed next to the receptacle. When a battery conditioner is provided, the conditioner will monitor the battery state of charge and, as necessary, automatically charge or maintain the batteries without gassing, depleting fluid level, overheating, or overcharging. A slave receptacle will be provided at the rear or on either side of the vehicle cab. Battery jump studs may be installed on the exterior of the battery box in lieu of a slave receptacle.

3.9.4. Electromagnetic interference. The vehicle electrical system will be in accordance with SAE J551-2 for electromagnetic interference.

3.9.5. Work lighting.

a) Cab interior lights. Cab interior light levels will be sufficient for reading maps or manuals. At least one red and one white cab interior dome light will be provided.

b) Compartment lights. White lighting sufficient to provide an average minimum illumination of 1.0-foot candle will be provided in each compartment greater than 4.0 cubic feet and having an opening greater than 144 square inches. Where a shelf is provided, this illumination will be provided both above and below the shelf. All compartments will be provided with weatherproof lights that are switched to automatically illuminate when compartment doors are opened, and the vehicle master switch is in the 'on' position. Light switches will be of the magnetic (non-mechanical) type.

c) Ladder, step, walkway, and area lights. Non-glare white or amber lighting will be provided at ladders and access steps where personnel work or climb during night operations. In addition, ground lighting will be provided. Ground lights will be activated when the parking brake is set in accordance with AC 150/5220-10, Guide Specification for Aircraft Rescue and Fire Fighting (ARFF) Vehicles. These area lights will be controlled with three-way switches on the cab instrument panel and near the

light sources. The switch located in the cab will be a master switch and must be turned on before auxiliary switches near the light sources are operational.

- d) Spot/Floodlights. Two spot/floodlights will be attached at the end of the primary turret or at the end of the HRET assembly. The lights will illuminate the area covered by the turret. Both lights will be powered from switches in the cab and raised or lowered mechanically. LED lights will be used.
- e) Flood Lights. Four telescoping floodlights will be provided. Two lights will be mounted on the left and right sides of the vehicle. Forward and aft. 250W LED lights will be used. Both lights will be mounted on extension tubes and controlled from switches in the cab to be raised and lowered. To prevent these lights from accidental damage, the cab will be equipped with a visual warning signal to alert the driver if the lights are inadvertently left in the "up" position.
- f) Scene Lights. A total of eight high mounted floodlights will be provided to illuminate the work areas around the vehicle. Two lights will be mounted on the front, two will be mounted on each side, and two will be mounted to the rear of the vehicle. The lights will be powered by the vehicle alternator driven system or auxiliary generator, and the lights in the front will be controlled from switches in the cab. LED lights will be used.

3.9.6. Audible warning devices.

- a) Siren. The vehicle will be equipped with an electronic siren system. The amplifier unit will include volume control and selection of "Radio," "PA," "Manual," "Yelp," "Wail," and "Hi-Lo" (European) modes, and a magnetic noise canceling microphone. The amplifier, microphone, and controls will be within reach of the driver and the turret operator. Siren activating foot switches will be located in front of the driver and the turret operator. The siren speaker will be rated at 200 watts minimum and will be located in a guarded position as low and as far forward on the vehicle as practical.
- b) Horn. Dual forward-facing air horns will be installed in protected locations near the front of the vehicle. Air horn activating foot switches will be located in front of the driver and the turret operator.

3.9.7. Emergency warning lights. All emergency warning lights must minimally meet the requirements of AC 150/5210-5. Where applicable, LED lights will be used as the primary light type. Lighting units will be installed on the top front, sides, and rear of the vehicle to provide 360° visibility. A switch will be provided on the instrument panel to control all of the top, side, front and rear emergency warning lights. A switch will also be provided on the instrument panel to disable all lower emergency warning lights when desired. All lighting systems will meet NFPA 414 emergency lighting criteria.

- a) Emergency warning light color. All emergency warning lights will meet the requirements of AC 150/5210-5.
- b) Headlight flashing system. A high beam, alternating/flashing, headlight system will be provided. The headlight flasher will be separately switched from the warning light panel.

3.9.8. Radio circuit. The vehicle will have four separate 30-amp circuits with breakers and connections provided in a space adjacent to the driver and turret operator for installation

of radios and other communications equipment after the vehicle has been delivered. To facilitate the installation of the communications equipment the manufacturer will provide three antennas pre-installed on top of the cab. **Radios are an airport responsibility and not part of this specification.**

- a) Vehicle will have a headset communication system between driver and operator. This system must also have the ability to interface with the two-way radio systems.

3.9.9. Power receptacles.

- a) Primary power receptacles. The vehicle will have two duplex 15-amp 110-volt power receptacles, one installed adjacent to the cab door on each side of the vehicle. Each duplex receptacle will include one straight blade and one twist-lock connection. These outlets will be powered by the generator. The vehicle will also have two duplex 15-amp 110-volt power receptacles mounted inside the cab and Two in the side compartments. One on each side. These will be powered by shoreline while plugged in. When they are not connected to the shoreline these plugs will be powered by the generator
- b) Auxiliary power receptacles. The vehicle will have 4-12-volt auxiliary power receptacles mounted adjacent to the driver and crew member positions, preferably in the instrument panel.
- c) Cable reel. The vehicle will be equipped with an electrical cable reel, located within a compartment. The reel will be equipped with 200 feet of 20-amp, 600 volts, insulated electrical cable. The electrical cable will be equipped with a rubber ball stop to prevent cable pull through during rewinding operations. A four-way roller guide will be provided on the cable reel to prevent chafing of cable insulation. The cable reel will have an electric rewind motor with provisions for manual rewind in the event of motor failure; the manual rewind handle will be securely stored near the cable reel. A portable weatherproof duplex outlet box, with built-in circuit breakers and twist-lock receptacles, will be provided for on the cable end. The cable reel will be powered by the auxiliary generator.

3.9.10. Auxiliary generator. A minimum 15 kilowatt (kW) (continuous rating), 120/240-volt, 60 hertz, diesel, hydraulic, or split shaft Power Takeoff (PTO)-driven generator will be provided.

3.10. Line voltage electrical system.

3.10.1. Electrical shoreline connection. The battery charger/conditioner will be powered from a covered, polarized, insulated, labeled, recessed (flush mounted), male, 110-volt AC auto-eject receptacle. The connection will be located on the exterior of the vehicle at the rear. A weatherproof charge meter will be installed next to the receptacle. A 15-amp rated, 110-120-volt, AC straight blade (non-twistlock) connector will be provided.

3.11. Air systems.

3.11.1. Air hose reel. An air hose reel will be provided in an enclosed compartment on the vehicle. The hose reel will be equipped with 200 feet of 3/8-inch I.D. hoseline. A 3/8-inch National Pipe Taper (NPT) fitting and female style quick disconnect will be connected to the end of the hoseline. A four-way roller guide will be provided for the hose reel to

prevent hose chafing and kinking. The hoseline will be equipped with a rubber ball stop to prevent hose pull through on roller guides during rewinding operations. The hose reel will have an electric rewind motor and provisions for manual rewind in the event of motor failure; the manual rewind handle will be securely stored near the hose reel. A pressure protected air supply from the chassis air system will be connected to the hose reel. The air supply lines will be routed with minimum bends and located or guarded from damage from the carried equipment.

3.12. Quality of Workmanship. The vehicle, including all parts and accessories, will be fabricated in a thoroughly workmanlike manner. Particular attention will be given to freedom from blemishes, burrs, defects, and sharp edges; accuracy of dimensions, radii of fillets, and marking of parts and assemblies; thoroughness of welding, brazing, soldering, riveting, and painting; alignment of parts; tightness of fasteners; et cetera. The vehicle will be thoroughly cleaned of all foreign matter.

4. REGULATORY REQUIREMENTS.

4.1. Recoverable Materials. The contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with Title 48: Federal Acquisition Regulations System, Part 2823-Environment, Conservation, Occupational Safety, and Drug-free Workplace, Subpart 2823.4 Use of Recovered Material, 403 Policy and 404 Procedures.

4.2. Green Procurement Program. Green Procurement Program (GPP) is a mandatory federal acquisition program that focuses on the purchase and use of environmentally preferable products and services. GPP requirements apply to all acquisitions using appropriated funds, including services and new requirements. FAR 23.404(b) applies and states the GPP requires 100% of EPA designated product purchase that are included in the Comprehensive Procurement Guidelines list that contains recovered materials, unless the item cannot be acquired:

- 4.2.1. competitively within a reasonable timeframe;
- 4.2.2. meet appropriate performance standards, or
- 4.2.3. at a reasonable price.

The prime contractor is responsible for ensuring that all subcontractors comply with this requirement. Information on the GPP can be found at: http://www.dot.gov/ost/m60/DOT_a_policy_letters/apl8_a04.pdf or FAR 23.404(b): http://www.acquisition.gov/far/current/html/Subpart%2023_a4.html.

5. PRODUCT CONFORMANCE PROVISIONS.

5.1. Classification of inspections. The inspection requirements specified herein are classified as follows:

- 5.1.1. performance inspection (see 5.2).
- 5.1.2. Conformance inspection (see 5.3).

5.2. Performance inspection. The vehicle will be subjected to the examinations and tests described in 5.6.3.1 through 5.6.3.5 (if applicable). The contractor will provide or arrange for all test equipment, personnel, schedule, and facilities.

- 5.3. Conformance inspection. The vehicle will be subjected to the examinations and tests described in 5.6.3.1 through 5.6.3.5 (if applicable). The contractor will provide or arrange for all test equipment, personnel, and facilities.
- 5.4. Product conformance. The products provided will meet the performance characteristics of this PS, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The purchaser reserves the right to require proof of such conformance.
- 5.5. Technical proposal. The offeror/contractor will provide an itemized technical proposal that describes how the proposed model complies with each characteristic of this PS; a paragraph by paragraph response to the characteristics section of this PS will be provided. The offeror/contractor will provide two copies of their commercial descriptive catalogs with their offer as supporting reference to the itemized technical proposal. The offeror/contractor will identify all modifications made to their commercial model in order to comply with the requirements herein. The vehicle furnished will comply with the "commercial item" definition of FAR 2.101 as of the date of award. The purchaser reserves the right to require the offeror/contractor to prove that their product complies with the referenced commerciality requirements and each conformance/performance characteristics of this PS.
- 5.6. Inspection requirements.
- 5.6.1. General inspection requirements. Apparatus used in conjunction with the inspections specified herein will be laboratory precision type, calibrated at proper intervals to ensure laboratory accuracy.
- 5.6.2. Test rejection criteria. Throughout all tests specified herein, the vehicle will be closely observed for the following conditions, which will be cause for rejection:
- a) Failure to conform to design or performance requirements specified herein or in the contractor's technical proposal.
 - b) Any spillage or leakage of any liquid, including fuel, coolant, lubricant, or hydraulic fluid, under any condition, except as allowed herein.
 - c) Structural failure of any component, including permanent deformation, or evidence of impending failure.
 - d) Evidence of excessive wear.
 - e) Interference between the vehicle components or between the vehicle, the ground, and all required obstacles, with the exception of normal contact by the tires.
 - f) Misalignment of components.6/01/2011 AC 150/5220-10E
 - g) Evidence of undesirable road ability characteristics, including instability in handling during cornering, braking, and while traversing all required terrain.
 - h) Conditions that present a safety hazard to personnel during operation, servicing, or maintenance.
 - i) Overheating of the engine, transmission, or any other vehicle component.
 - j) Evidence of corrosion.
 - k) Failure of the firefighting system and sub-systems.
- 5.6.3. Detailed inspection requirements.
- a) Examination of product. All component manufacturers' certifications, as well as
 - b) the prototype and production/operational vehicle testing outlined in Table 1, will be examined to verify compliance with the requirements herein. Attention will be

given to materials, workmanship, dimensions, surface finishes, protective coatings and sealants and their application, welding, fastening, and markings. Proper operation of vehicle functions will be verified as defined by NFPA 414, Acceptance Criteria chapter. A copy of the vehicle manufacturer's certifications will be provided with each vehicle in accordance with NFPA 414. The airport may accept a manufacturer or third-party certification for any/all prototype and production/operational vehicle testing performed prior to delivery which proves that the vehicle meets the performance parameters of NFPA 414.

Table 1. Vehicle Test Data

NFPA 414 paragraph	Test
Production Vehicle Operational Tests (NFPA 414 - Section 6.4)	
(6.4.1)	Vehicle Testing, Side Slope
(6.4.2)	Weight / Weight Distribution
(6.4.3)	Acceleration. NOTE: <i>With the modification that the instrumentation must be a GPS-based electronic data collection system.</i>
(6.4.4)	Top Speed
(6.4.5)	Brake Operational Test
(6.4.6)	Air System / Air Compressor Test
(6.4.7)	Agent Discharge Pumping Test
(6.4.8)	Dual Pumping System Test (As Applicable)
(6.4.9)	Pump and Maneuver Test
(6.4.10)	Hydrostatic Pressure Test
(6.4.11)	Foam Concentration Test
(6.4.12)	Primary Turret Flow Rate Test
(6.4.13)	Piercing/Penetration Nozzle Testing (As Applicable)
(6.3.1)	Rated Water and Foam Tank Capacity Test
(6.3.2)	Cornering Stability. NOTE: <i>With the modification that the evasive maneuver / double-lane change test must be conducted at 35 mph (56 kph).</i>
(6.3.3)	Vehicle Dimensions
(6.3.4)	Driver Vision Measurement
(6.3.5)	Pump and Roll on a 40 Percent Grade
(6.3.6)	Electrical Charging System
(6.3.7)	Radio Suppression
(6.3.8)	Gradeability Test
(6.3.9)	Body and Chassis Flexibility Test
(6.3.10)	Service/Emergency Brake Test
(6.3.11)	Service/Emergency Brake Grade Holding Test
(6.3.12)	Steering Control Test
(6.3.13)	Vehicle Clearance Circle Test
(6.3.14)	Agent Pump(s)/Tank Vent Discharge Test

NFPA 414 paragraph	Test
(6.3.15)	Water Tank Fill and Overflow Test
(6.3.16)	Flushing System Test
(6.3.17)	Primary Turret Flow Rate Test
(6.3.18)	Primary Turret Pattern Test
(6.3.19)	Primary Turret Control Force Measurement
(6.3.20)	Primary Turret Articulation Test
(6.3.21)	Handline Nozzle Flow Rate Test
(6.3.22)	Handline Nozzle Pattern Test
(6.3.23)	Ground Sweep/Bumper Turret Flow Rate Test
(6.3.24)	Ground Sweep/Bumper Turret Pattern Control Test
(6.3.25)	Under truck Nozzle Test
(6.3.26)	Foam Concentration/Foam Quality Test
(6.3.27)	Warning Siren Test
(6.3.28)	Propellant Gas
(6.3.29)	Pressure Regulation
(6.3.30)	AFFF Premix Piping and Valves
(6.3.31)	Pressurized Agent Purging and Venting
(6.3.32)	Complementary Agent Handline Flow Rate and Range
(6.3.33)	Dry Chemical Turret Flow Rate and Range
(6.3.34)	Cab Interior Noise Test

6. PACKAGING.

- 6.1. Preservation, packing, and marking will be as specified in the Procurement Specification, contract or delivery order.
- 6.2. The vehicle must be delivered with full operational quantities of lubricants, brake and hydraulic fluids, and cooling system fluid all of which must be suitable for use in the temperature range expected at the airport.
- 6.3. The vehicle must be delivered with one complete load of firefighting agents and propellants. One complete load is defined as all of the agents and propellants necessary for the vehicle to be fully operational. One load would include, at a minimum: one fill of a foam tank; one fill of a dry chemical tank (if applicable); one fill of a halogenated tank (if applicable); one spare nitrogen cylinder for a dry chemical system (if applicable); and one spare argon cylinder for a halogenated system (if applicable). Agents and propellants for required testing or training are not included. For the initial training period, water should be used in place of other extinguishing agents. The manufacturer may pre-ship agents and propellants to a receiving airport to reduce overall procurement costs.
- 6.4. The vehicle manufacturer must provide initial adjustments to the vehicle for operational readiness and mount any ancillary appliances purchased through the vehicle manufacturer as part of the vehicle.

7. TRAINING.

- 7.1. Upon delivery of the vehicle to the airport, the manufacturer must, at no additional cost, provide the services of a qualified technician for five consecutive days (or up to eight days for a high reach extendable turret) for training. This is considered sufficient time for the purchaser to adjust shift work schedules to get maximum employee attendance to training sessions at some point during the training period. During this time sufficient repetitive learning opportunities must be provided by the manufacturer to allow various shifts to complete the training requirements.
- 7.2. The technician must provide thorough instruction in the use, operation, maintenance and testing of the vehicle. This setup must include operator training for the primary operators, which will give them sufficient knowledge to train other personnel in the functional use of all firefighting and vehicle operating systems. Prior to leaving the vehicle, the technician should review the maintenance instructions with the purchaser's personnel to acquaint them with maintenance procedures as well as how to obtain support service for the vehicle.
- 7.3. Training must include written operating instructions, electronic training aids (videos/power point), or other graphics that depict the step-by-step operation of the vehicle. Written instructions must include materials that can be used to train subsequent new operators.

8. REFERENCED DOCUMENTS.

8.1. Source of documents.

- 8.1.1. The CFR may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington DC 20402. Title 14, Code of Federal Regulations (CFR), Part 139, Certification of Airports (14 CFR Part 139) Section 139.315 Aircraft Rescue and Firefighting: Index Determination. Section 139.317 Aircraft Rescue and Firefighting: Equipment and Agents. Section 139.319 Aircraft Rescue and Firefighting: Operational Requirements. Title 49; Code of Federal Regulations (CFR), Part 393: Parts and Accessories Necessary for Safe Operation: Subpart C-Brakes. AC 150/5220-10E 6/01/2011 Title 49; Code of Federal Regulations (CFR), Part 571, Motor Carrier Vehicle Safety Standards, Part 209, Standard No. 209; Seat Belt Assemblies.
- 8.1.2. SAE documents may be obtained from SAE, Inc., 400 Commonwealth Drive, Warrendale PA 15096.
- 8.1.3. National Fire Protection Association (NFPA): NFPA documents may be obtained from NFPA, Battery march Park, Quincy MA 02269-9101. NFPA 412, Standard for Evaluating Aircraft Rescue and Fire-Fighting Foam Equipment (2009 Edition) NFPA 414, Standard for Aircraft Rescue and Fire Fighting Vehicles (2007 Edition) NFPA 1901, Standard for Automotive Fire Apparatus (2009 Edition)
- 8.1.4. Federal Aviation Administration (FAA): FAA ACs may be obtained from the FAA website: http://www.faa.gov/regulations_policies/advisory_circulars/ AC 150/5220-10, Guide Specification for Aircraft Rescue and Fire Fighting (ARFF) Vehicles AC 150/5210-5, Painting, Marking, and Lighting of Vehicles Used on an Airport FAA Orders, Specifications, and Drawings may be obtained from: Federal Aviation Administration, ATO-W CM-NAS Documentation, Control Center, 800 Independence Avenue, SW, Washington, DC 20591. Telephone: (202) 548-5256, FAX: (202) 548-5501 and website: http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/atc_facilities/cm/cm_documentation/

Appendix A: Ancillary Equipment Purchase to be provided with truck. (Base Bid)

- Hurst Extraction Equipment: Provide with the vehicle the following eDRAULIC extrication equipment. 1- SP333E2 Spreader, 1- SC 757E2 Combi tool, 1- S 799E2 Cutter, 2- R 421E2 Rams. Two batteries for each tool. One charger for each tool that is powered by the truck's shoreline.
- Firefighting Foam: 3% AFFF mil spec shall be provided to initially load the vehicle and one more load for storage. (900 gallons) Foam will be in 5 gallon pails. Foam is to below- PFAS .
- Dry Chemical: Provide 1000 pounds of siliconized Vivid Purple K dry chemical with funnel for loading in truck. 500 pounds in truck and 500 pounds spare all in 50 pound pails. Also 1 additional nitrogen tank.
- Generator/flood lights: Provide 2 portable hand carried generator with LED flood light units attached, Honda EU2200 w/ 500-watt light or equivalent. Generators will use gasoline as their operating fuel.
- Fire Extinguishers: Provide 1- 30# minimum ABC extinguisher with vehicle mount. 1 - 20# Minimum Halotron extinguisher with vehicle mount.
- Fire Hose: Provide 10 – 50' sections of 1 ¾ high combat fire hose. 4 – additional jumper hoses that connects to the truck's pre-connects auto release valve. 2 pistol grip fire nozzles that are adequate to use as pre-connects on the ARFF vehicle.
- Fire Hose Tester: Rice Hydro FH3 Hose tester.
- Hand tools and other equipment: Provide the following:
 - Large rescue axe 36" fiberglass handle with mounting brackets. – 2 ea.
 - Fire resistant blankets 2 ea.
 - Aluminum Wheel chocks 2 ea.
 - Bolt Cutters 36 inch – 1 ea.
 - Halligan Pry Bar 36-inch – 1 ea.
 - 8 Pound Sledge Hammer- 1 ea.
 - Rechargeable flash light box. Streamlight Vulcan 180 LED, 1200 Lumens with 12-volt charging base. – 4 ea.
 - Medical bag kit with EMT Basic, trauma, and airway supplies. - 1 ea.
 - Pike poles. Fiberglass handle, 3 foot - 1 ea. / 6 foot – 1 ea.
 - Rescue kit hydraulic, 10 ton – 1 ea.
 - Rescue kit, pneumatic air hammer w/ regulator for SCBA bottle. - 1 ea.
 - Electric 110 V Saws-All with extra blades.
 - Forcible entry kit. Standard Rolled Tool bag.
 - Spanner wrenches, Both Small and large diameter hose, with brackets – 2 ea.
 - Fitting, 2 ½ female to 5" Storz – 1 ea.
 - Gated Y-Valve, 2 ½ female to two 2 ½ male, aluminum. – 2 ea.
 - Carbon Fiber Scott Air Pack 30-minute bottles. – 4 ea.
 - Positive pressure, variable speed, 18-inch gasoline driven ventilation fan – 1 ea.
 - FLIR K65 camera with 12-volt charger, extra battery, strap, and mounting bracket – 1 ea.

Appendix B: Add alternate items; These can be purchased as one, both, or none beyond the base bid.

- Add Alternate 1 - Diagnostic equipment Chassis: Provide a solution for the diagnostics of vehicle chassis and components. This can be in the form of reader, scanner, software other diagnostic tooling needed for maintenance/technicians doing first line diagnostics of the truck and/or its primary systems.
- Add Alternate 2 - Computer Training System: A computer-based simulator training program specified to increase and maintain proficiency in the employment of high reach extendable turrets. The training package must include controls that simulate as closely as possible the actual cab environment (e.g. location of joystick, throttle, and steering wheel). The simulation software program must represent the actual maneuvering operation and controller interface of the actual operation of the elevated and high reach extendable turret of the ARFF vehicle.