CONNECTICUT AIRPORT AUTHORITY

June 13, 2017

INVITATION FOR BID NO. 2017-018
CLASS 5 AIRCRAFT RESCUE AND FIREFIGHTING (ARFF) VEHICLE
BRADLEY INTERNATIONAL AIRPORT

INTRODUCTION

The Connecticut Airport Authority (CAA) is seeking bids for a Class 5 Aircraft Rescue and Firefighting (ARFF) Vehicle.

CAA reserves the right to waive any irregularities and to reject any and all bids on any basis without disclosing the reason. CAA will be the sole judge in determining as equivalent products.

Sealed bids will be received at: Connecticut Airport Authority, Attention: Laurie A. Sirois, Purchasing Agent, Bradley International Airport Administration Office Terminal A, 3rd Floor, Windsor Locks, CT 06096.

Due date for bids is no later than 2:00 p.m., June 27, 2017, at which time they will be publicly opened. Bids must be in a sealed envelope clearly marked **"IFB No. 2017-018 ARFF Vehicle"**. CAA will not accept late bids under any circumstances. All costs incurred in connection with responding to this Invitation for Bids (IFB) shall be borne by the bidder.

The successful bidder must hold the bid price for 120 days from bid opening date, and may not withdraw their bid for at least 60 days after the time and date set for the receipt of bids.

Delivery is required complete, within 365 working days of contract award. The vehicle will be delivered complete, as specified, in ready to work condition together with a title to Bradley Airport Fire Station #1, Building 233, Firehouse Road, Windsor Locks CT 06096. All prices quoted are to be FOB delivery location. CAA is tax exempt and a certificate will be supplied as required.

In submitting a response to this Invitation for Bids, vendors hereby agrees to enter into the attached Contract Agreement if awarded the contract.

Kevin A. Dillon, A.A.E.
Executive Director

Laurie A. Sirois
Purchasing Agent

COMMUNICATIONS:

During the period from advertisement of this Invitation for Bid (IFB) and until a contract is awarded, vendors shall not contact any employee of the Connecticut Airport Authority concerning this procurement except in writing directed to the Manager of Grants, Contracts and Procurement, Laurie Sirois, via e-mail: procurement@ctairports.org. The deadline to submit questions will be **2:00 p.m., June 20, 2017.**

SPECIFICATIONS

3.5. VEHICLE PROCUREMENT SPECIFICATION, CLASS 5 - AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF) VEHICLE

1. SCOPE. This Procurement Specification (PS) covers a commercially produced diesel engine driven ARFF vehicle for an Index D airport. It includes a 3000-4500 gallon. water/Aqueous Film Forming Foam (AFFF) fire suppression system: The ARFF vehicle is intended to carry rescue and firefighting equipment for the purpose of rescuing aircraft passengers, preventing aircraft fire loss, and combating fires in aircraft.

2. CLASSIFICATION. The ARFF vehicle(s) covered by this PS are classified in accordance with Part 139, Certification and Operations: Land Airports Serving Certain Air Carriers, Section 315, Aircraft Rescue and Firefighting: Index Determination; 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, as follows:

Airport Index	Vehicle Class	Minimum Rate Capacities (gallons/liters)
Index D	5	3000 gallon/11,356 liter water/AFFF

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 (2007 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.

3.1.1.1 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. One complete set of engine and transmission parts, service and operator's manuals will be packed with each vehicle.

a. The contractor will provide digitized manuals in CD format when requested in addition to or in place of printed paper copies.

b. The contractor will provide two complete sets of hardcopy manuals and / or CDs when requested.

3.1.1.1.1 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:

a. The location and function of all controls and instruments will be illustrated and functionally described.

b. Safety information that is consistent with the safety standards established by the Occupational Safety and Health Administration (OSHA) and NFPA.

c. All operational and inspection checks and adjustments in preparation for placing the vehicle into service upon receipt from the manufacturer.

d. Tie down procedures for transport on a low-boy trailer.

e. 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.

f. General description and necessary step-by-step instructions for the operation of the vehicle and its fire extinguishing system(s) and auxiliary equipment.

g. A description of the post-operational procedures (draining, flushing, re-servicing, et cetera).

h. Daily maintenance inspection checklists that the operator is expected to perform, including basic troubleshooting procedures.

i. Disabled vehicle towing procedures.

j. Procedures and equipment required for changing a tire.

k. Schedules (hours, miles, time periods) for required preventative maintenance and required periodic maintenance.

l. 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.

3.1.1.1.2 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:

a. Firefighting system schematic(s).

b. Hydraulic schematic.

c. Pneumatic schematic.

d. Electrical schematic.

e. Winterization schematic.

f. Fuel schematic.

g. Schedules for required preventative maintenance and required periodic maintenance.

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

3.1.1.1.3 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 manufacturer's (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 of the component vendor names, addresses, and telephone numbers referenced in the parts list.

3.1.2 Painting, plating, and corrosion control.

3.1.2.1 Finish. Exterior surfaces will be prepared, primed, and painted in accordance with all of 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.

3.1.2.2 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.

3.1.2.3 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.

3.1.2.4 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.

3.1.2.5 Lettering. The manufacturer will apply the airport's 'Name' and 'Insignia' (if available) 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 2 1/2-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. 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

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 (2007 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.

3.1.4.1 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.

3.1.4.2 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 sufficient 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.

3.1.6.1 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.

3.1.6.2 Gradeability. The fully loaded vehicle will be able to ascend any paved slope up to and including 50-percent.

3.1.6.3 Side Slope Stability. The fully loaded vehicle will be stable on a 30° side slope when tested in accordance with NFPA 414.

3.1.6.4 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 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,	124/315
Height (inches/cm)	154/391

NOTE: For Airport Operator Validation: Consult AC 150/5210-15, Aircraft Rescue and Fire Fighting Station Building Design, Appendix A, to ensure vehicles measurements do not exceed existing airport fire station dimensions.

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.

3.2.3.1 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.

3.3 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.

3.3.1.1 Acceleration. The fully loaded vehicle will accelerate from 0 to 50 miles per hour (mph) on a level paved road within 35 seconds.

3.3.1.2 Maximum Speed. The fully loaded vehicle will attain a minimum top speed of 70 mph on a level, paved road.

3.3.1.3 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.

3.3.1.4 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.

3.3.3.1 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.

3.3.3.2 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 Axle capacity. Each axle will have a rated capacity, as established by the axle manufacturer, in accordance with NFPA 414.

3.3.8 Suspension. The suspension system will be in accordance with NFPA 414 and AC 150/5220-10, Guide Specification for Aircraft Rescue and Fire Fighting (ARFF) Vehicles.

3.3.9 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. Tire bead locks, where justified, may be installed on all tires and rims.

3.3.10 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.

3.3.11 Brake system. The vehicle will be equipped with a multi-channel all-wheel antilock 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. 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.

3.3.11.1 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.

3.3.11.2 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. In lieu of a compressed air shoreline connection, the vehicle may be equipped with a 110 volt shoreline connected vehicle-mounted auxiliary air compressor. In lieu of a compressed air shoreline connection, the vehicle may be equipped with an electrical shoreline connected vehicle mounted auxiliary air compressor.

3.3.12 Steering. The vehicle will be equipped with power steering. Rear-wheel steering technology is not an approved vehicle option.

3.3.12.1 Steering Effort. The steering system performance will be in accordance with NFPA 414.

3.3.12.2 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.

3.3.13 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) 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 located 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 seat will be adjustable fore and aft and for height. The turret operator's seat, located to the right front of the driver's seat, will be a fixed (non-suspension) type. 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).

3.4.7.1 Seat Options. Two types of seat options are allowed in the vehicle. A standard cab if necessary. An SCBA seat, on the other hand, contains an opening which can accommodate someone wearing an SCBA. The chart below represents the user's stated preference for the vehicle seating configuration.

Position	Standard	SCBA-Seat
Driver	**X**	
Turret		**X**

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.

3.5 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.

3.5.2.1 Compartment Doors. Storage compartments will have clear anodized aluminum, counterbalanced, non-locking, roll-up or single hinged doors as determined by the manufacturer. 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 or hinged door height exceeds six feet above the ground.

3.5.2.2 Scuffplates. Replaceable scuffplates will be provided at each compartment threshold to prevent body damage from sliding equipment in and out of the compartments. The scuffplates will be securely attached to the compartment threshold but will be easily replaceable in the event of damage.

3.5.2.3 Drip Rails. Drip rails will be provided over each compartment door.

3.5.2.4 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.

3.5.2.5 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 Ancillary Equipment. Ancillary equipment listed in NFPA 414 A.4.2.1 (1)-(17) is not covered by this Procurement Specification in accordance with AC 150/5220-10, Guide Specification for Aircraft Rescue and Fire Fighting (ARFF) Vehicles. Ancillary equipment is funded separately by other sources.

NOTE: Equipment funding will be obtained as a separate contract under the provisions of AC 150/5210-14, Aircraft Rescue and Fire Fighting Equipment, Tools, and Clothing.

3.6 Agent System.

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

3.6.1.1 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.

3.6.1.2 Tank to Pump Connection. A check valve and shutoff valve will be provided in each tank to pump line.

3.6.1.3 Piping, Couplings, and Valves. All agent system piping will conform to NFPA 414 criteria.

3.6.1.4 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.

3.6.1.5 Pressure Relief Valves. The agent system will be equipped with pressure relief valves in accordance with NFPA 414.

3.6.1.6 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.

3.6.2.1 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.

3.6.2.2 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.

3.6.2.3 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 overfill. 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.

3.6.2.4 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.

3.6.2.5 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.*)

3.6.3.1 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).

3.6.3.1.1 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.

3.6.3.1.2 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 $1^1/_2$-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.

3.6.3.1.3 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.

3.6.3.2 Foam tank fill connections. The foam tank will incorporate a 1.5-inch National Hose thread female hose connection on both sides 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.

3.6.3.2.1 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 overfill. 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.

3.6.3.3 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 come in contact with 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.

3.6.3.4 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.

3.6.3.5 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. If a fixed orifice plate system is used, a plate will be provided for each percentage foam concentrate; the additional plate will be securely mounted in a protected location on the vehicle. A fire vehicle mechanic will be able to interchange the plates using common hand tools.3.6.5 Primary vehicle turret. The vehicle will be equipped with a standard roof-mounted turret, high reach extendable turret, and/or high flow bumper mounted turret to serve as the primary source of agent delivery, as specified below:

3.6.5 Primary vehicle turret. The vehicle will be equipped with a standard roof-mounted turret, high reach extendable turret, and/or high flow bumper mounted turret to serve as the primary source of agent delivery, as specified below:

3.6.5.1 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 3.6.5.2. The NLA class aircraft are equivalent to the 'Airplane Design Group VI' category, as specified in AC 150/5300-13, Airport Design.

NOTE: AC 150-5220-10 allows one vehicle equipped with a high reach extendable turret for an Index B-E airport at each airport station.

3.6.5.2 High Reach Extendable Turret (capable of penetrating all aircraft except the second level of an 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 ET 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.

3.6.5.2.1 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 single 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.

3.6.5.2.2 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. Agent application through the skin penetrator will be controlled from the cab. NOTE: If a high reach extendable turret is specified by the purchaser, a skin penetrating nozzle must be provided. 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 4.1.1(d).

3.6.5.2 High Reach Extendable Turret (capable of penetrating all aircraft except the second level of an 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 ET 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.

3.6.5.2.1 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 single 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.

3.6.5.2.2 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. Agent application through the skin penetrator will be controlled from the cab. NOTE: If a high reach extendable turret is specified by the purchaser, a skin penetrating nozzle

must be provided. 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 4.1.1(d).

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, 1 3/4-inch pre-connected woven jacket handline(s), with a 1 1/2-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 95 gpm at 100 psi nozzle pressure. A control for charging each handline will be provided for operation by both the driver and the turret operator.

3.6.7.1 In addition, the vehicle will be equipped with the following handline: 100 feet of twinned 1-inch dry chemical / foam-water hose on a reel.

3.6.8.2 The structural firefighting capability will also require installation of the following items:

a. Discharge connections. Two 2½-inch discharge connections with male National Hose threads will be provided. One 2½-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.

b. Intake connections. The vehicle will be equipped with one valved 4½-inch intake connection on the left side. The vehicle will be equipped with one valved 2½-inch intake connection on the left side adjacent to the 4½-inch intake connection with both having either a 30° or 45° turn-down fitting. The 4½-inch intake connection will have male National Hose threads, a quarter-turn control valve, a bleeder valve, a strainer, and a cap. The 2½-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 pumping from a draft, 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.

3.6.9 Primary turret discharge nozzle. The vehicle will be equipped with a combination dry chemical/ AFFF nozzle of the entrainment type on the primary turret mounted on the cab roof.

3.7 Dry chemical agent system. The vehicle will be equipped with a 450 lb minimum capacity potassium bicarbonate dry chemical auxiliary 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. 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.

3.7.1 Not applicable.

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 Not applicable.

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.

3.9.1 Alternator. 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.

3.9.2.1 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.

3.9.5.1 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.

3.9.5.2 Compartment lights. White lighting sufficient to provide an average minimum illumination of 1.0 footcandle 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.

3.9.5.3 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.

3.9.5.4 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 controlled from switches in the cab. LED lights will be used.

3.9.5.5 Flood Lights. Two fixed floodlights will be provided. One light will be mounted on the left and right sides of the vehicle. 250W LED lights will be used. Both lights will be controlled from switches in the cab and will be powered by the auxiliary generator.

3.9.5.6 Scene Lights. A total of six high mounted floodlights will be provided to illuminate the work areas around the vehicle. Two lights will be mounted on the front and two will be mounted on each side 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.

3.9.6.1 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 100 watts minimum and will be located in a guarded position as low and as far forward on the vehicle as practical.

3.9.6.2 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 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.

3.9.7 Emergency warning lights. All emergency warning lights must 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.

3.9.7.1 Emergency warning light color. All emergency warning lights will meet the requirements of AC 150/5210-5.

3.9.7.2 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 three 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.***

3.9.9 Power receptacles.

3.9.9.1 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.

3.9.9.2 Auxiliary power receptacles. The vehicle will have 2-12-volt auxiliary power receptacles mounted adjacent to the driver and crew member positions, preferably in the instrument panel.

3.9.9.3 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 volt, 90°C 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 _10_ 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 or on either side of the cab. A weatherproof charge meter will be installed next to the receptacle. A 15 amp rated, 110-120-volt, AC straight blade (non twist-lock) 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:

a. competitively within a reasonable timeframe;

b. meet appropriate performance standards, or

c. 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_policy_letters/apl8_04.pdf or FAR 23.404(b): http://www.acquisition.gov/far/current/html/Subpart%2023 4.html.

5. PRODUCT CONFORMANCE PROVISIONS.

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

a. Performance inspection (see 5.2).
b. 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.

g. Evidence of undesirable roadability 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.

5.6.3.1 Examination of product. All component manufacturers' certifications, as well as 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:** *With the modification that the instrumentation must be a GPS-based electronic data collection system.*
(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)
Prototype Vehicle Tests (NFPA 414 – Section 6.3)	
(6.3.1)	Rated Water and Foam Tank Capacity Test
(6.3.2)	Cornering Stability. **NOTE:** *With the modification that the evasive maneuver / double-lane change test must be conducted at 35 mph (56*
(6.3.3)	Vehicle Dimensions

NFPA 414 paragraph	*Test*
(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)	Gradability 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
(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)	Undertruck 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.

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, Batterymarch 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_facilitie_s/cm/cm documentation/

OPTIONAL FEATURES:

In addition to the AC 150/5220-10E Vehicle Procurement Specification for a Class 5 Aircraft Rescue and Firefighting vehicle the Bradley International Airport would like the following to be included in the specification.

1. A high-resolution minimum of 12-inch monitor will be provided in the cab in an area to allow the driver/operator of the vehicle to monitor with little or no disruption. The FLIR camera will be installed on the HRET. The FLIR camera shall be mounted to allow movement of a 180 degrees, Pan/Tilt and will be independent of the boom. A/C 150/5210-19A shall be followed to the specification; some sections may be eliminated at the builder's request.

2. To reduce rear axle tire wear, the rear axle shall be equipped with a mechanical steering system. This steering system shall be automatically coordinated with the front axle steering action. The rear steering shall provide a minimum of 6 degrees of cramp angle.

3. Off road high mobility suspension, the vehicle shall be equipped with an ALL Wheel Independent Suspension or equivalent to meet the desired ride quality and handling characteristics for an OFF Road High Mobility Vehicle. The suspension system shall be designed to provide maximum ride comfort and enhanced roll stability. The design shall allow the vehicle to travel at high way speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicles crew compartment.

4. Vehicle mount distance measuring device in feet for standoff positions, device must be mounted in an area to measure for a Class C index aircraft, display must be visible to the operator.

5. Mounted laser on the working end of the HRET to aid in the piercing application.

6. Two amber strobe lights Whelen Super Strobe or approved equal shall be installed on the center body section of the vehicle just behind the cab area on a raised mount sufficient to provide a combined 360-degree visibility. The height of the amber lights shall not exceed the height of HRET in the bedded position. An off/on switch located in the cab shall control the amber light.

7. One EMS cabinet located on the rear wall behind the drivers seats approximately 18" deep x 22" wide x 34" high. This cabinet shall be equipped with an aluminum shutter door and three adjustable shelves.

8. A cab mounted electric variable speed engine throttle control will be provided to allow fire pump controls. Throttle will be inside the cab within operators reach.

9. The cab roof shall be provided with a hatch located on the left side for access to the roof area. The hatch shall be sufficient size to allow a fire fighter wearing protective equipment (not SCBA) easy access to the roof. The hatch shall be weather tight including weather driven rain as well as water from a hose. A positive latching closure(s) shall be included. Steps shall be provided from the cab floor to assist with exiting through the hatch. The hatch will provide access to the manual controls for the HRET.

10. One compartment shall have a vertical peg style mounting divider.

11. Wiring for two flashlights on the both sides of the interior of the cab, at customers' direction/location.

12. Two (2), two speed defroster fans will be mounted on the instrument panel, one each side, inside the cab. A switch will be mounted in the instrument panel within the drivers reach to turn the fans on and off. A guard will be mounted around the rotating blade to prevent injury.

13. Two (2) Additional Safety Vision SV-CLCD camera or equivalent will be provided. The system will include cameras, on each side attached to the mirror brackets. Each camera will be the same size as the backup camera included in the 10E specifications. The monitor for each camera will be located next to the backup camera located above the driver.

14. One, 2-gallon FEM- 12SC fire extinguisher with mounting bracket.

ADDITIONAL REQUIREMENTS:

1. The technical vehicle specification will be reviewed and agreed upon by Bradley International Airport representatives prior to any work being started.

2. Pre-Construction Meeting - The Supplier is required, prior to the start of manufacture, to hold a Pre-Construction conference at an agreed upon time, day at the Bradley International Airport, with representatives to finalize all details. At this conference, the contractor shall furnish all blue prints, drawings, specification, and details of the unit to be manufactured and delivered.

3. Two representatives from the Connecticut Airport Authority may conduct a final inspection at the factory to ensure the manufacture followed the agreed upon blue prints. The inspection shall be at least two days to allow the manufacture to repair/correct any deficiencies that are noted.

INVITATION FOR BID NO. 2017-018
Class 5 Aircraft Rescue and Firefighting (ARFF) Vehicle
Bradley International Airport
RESPONSE FORM

Responses are **due no later than 2:00 p.m., June 27, 2017,** Attention: Connecticut Airport Authority, Attention: Laurie A. Sirois, Purchasing Agent, Bradley International Airport Administration Office Terminal A, 3rd Floor, Windsor Locks, CT 06096. Vendors may copy/scan these pages to facilitate completing the information, but must return response in this format/order.

The undersigned, on behalf of the bidder, certifies that: This offer is made without previous understanding, agreement or connection with any person, firm, or corporation entering a bid on the same project; is in all respects fair and without collusion or fraud. The person whose signature appears below is legally empowered to bind the company in whose name the bid is entered. They have read the entire document and understand all provisions. If accepted by CAA this bid is guaranteed as written, and as may be amended by addenda, and will be implemented as stated.

Firm Name _____

Contact _____

Signature _____ Title _____

Address _____ City/State _____ Zip _____

Phone _____ Fax _____ Hours _____

Taxpayer I.D. Number _____

Company Web Site Address _____ E-Mail _____

General Nature Of Business _____

Type or Organization (check one):

Sole Proprietorship ____ Partnership____ Incorporated____ Public Corporation____
Private Corporation____

Minority Business Enterprise _____ Woman-Owned Business Enterprise _____
Small Business Enterprise _____

Manufacturer _____ Distributor _____ Retail _____ Dealer _____ Service _____

Number Of Locations _____ Number Of Persons Employed _____

We Acknowledge Receipt Of These Addenda: No.____, Dated ____; No. ____, Dated ____

Has any person, firm, or corporation entering a proposal on the project been disbarred or suspended by the State of Connecticut. If so indicate dates and explanation for such.

ALL vendors interested in responding MUST provide the following requested information in this format. Additional information may be included on accompanying sheets if necessary.

1. **Any additional information necessary to assist CAA in evaluating your bid may be listed here.**

_____

_____

2. **Provide references from at least (3) companies, which have received the proposed or similar services.**

a. Name of Facility, Group, Organization or Firm_____

Address_____ Contact Person_____

Phone Number_____

b. Name of Facility, Group, Organization or Firm_____

Address_____ Contact Person_____

Phone Number_____

c. Name of Facility, Group, Organization or Firm_____

Address_____ Contact Person_____

Phone Number_____

3. **List any deviations from the SPECIFICATIONS and MANDATORY REQUIREMENTS section in this document. An explanation must be provided below and documentation provided to verify compliance with the minimum specifications on a similar or equivalent basis.**

ITEM NO.	REASON FOR DEVIATION, DESCRIPTION OF REPLACEMENT COMPONENT, AND/OR EXPLANATION

INVITATION FOR BID NO. 2017-018
CLASS 5 AIRCRAFT RESCUE AND FIREFIGHTING (ARFF) VEHICLE
PRICING INFORMATION

(Please Print Clearly)

Class 5 Aircraft Rescue and Firefighting (ARFF) Vehicle $_____
(Amount in Numbers)

_____
(Amount in Words)

OPTIONAL FEATURES

High-Resolution Minimum of 12-Inch Monitor $_____
(Amount in Numbers)

_____
(Amount in Words)

Rear Axle Steering $_____
(Amount in Numbers)

_____
(Amount in Words)

Off Road High Mobility Suspension $_____
(Amount in Numbers)

_____
(Amount in Words)

Vehicle Mount Distance Measuring Device $_____
(Amount in Numbers)

_____
(Amount in Words)

Mounted Laser on Working End of HRET $_____
(Amount in Numbers)

_____
(Amount in Words)

Two Amber Strobe Lights $_____
(Amount in Numbers)

_____
(Amount in Words)

One EMS Cabinet $_____
(Amount in Numbers)

_____
(Amount in Words)

Cab Mounted Electric Variable Speed Engine Throttle $_____
(Amount in Numbers)

_____
(Amount in Words)

Roof Hatch $_____
(Amount in Numbers)

_____
(Amount in Words)

Vertical Peg Mounting Divider $_____
(Amount in Numbers)

_____
(Amount in Words)

Wiring for Two flashlights $_____
(Amount in Numbers)

_____
(Amount in Words)

Two (2), Two Speed Defroster Fans $_____
(Amount in Numbers)

_____
(Amount in Words)

Two (2) Additional Safety Vision SV-CLCD Cameras $_____
(Amount in Numbers)

_____
(Amount in Words)

One, 2-gallon FEM-12SC Fire Extinguisher w/Mounting Bracket $_____
(Amount in Numbers)

_____
(Amount in Words)

"NO BID" RESPONSE FORM

To submit a "No Bid" response for this project, this form must be completed for your company to remain on our bidders list for commodities/services referenced. If you do not respond your name may be removed from this bidders list.

Note: Please show the solicitation number on the outside of the envelope.

Please check statement(s) applicable to your "No Bid" response –

- o Specifications are restrictive; i.e. geared toward one brand or manufacturer only (explain below).
- o Specifications are ambiguous (explain below).
- o We are unable to meet specifications.
- o Insufficient time to respond to the solicitation.
- o Our schedule would not permit us to perform.
- o We are unable to meet bond requirements.
- o We are unable to meet insurance requirements.
- o We do not offer this product or service.
- o Remove us from your vendor list for this commodity/service.
- o Other (specify below).

Comments:

_____

_____

_____

_____
Company Name (as registered with the IRS)

_____
Authorized Signature

_____ _____
Correspondence Address Printed Name

_____ _____
City, State, Zip Title

_____ _____ / _____
Date Telephone/Fax

In submitting a response to this Invitation for Bids, vendors hereby understand the following:

1. Alternate bids (two or more bids submitted) will be considered for award. CAA reserves the right to make the final determination of actual equivalency or suitability of such bids with respect to requirements outlined herein.

2. The bids submitted, and any further information acquired through interviews, will become, and are to be considered, a part of the final completed contract. If there is any variance or conflict, the bid specifications, conditions, and requirements shall control.

3. Prices offered may not be withdrawn for a period of sixty days immediately following the opening of this Bid. Prices MUST also be free of federal, state and local taxes unless otherwise imposed by a governmental body, and applicable to the material on the bid.

4. Bidder MUST return the original attached Response Form as noted previously on the bid due date.

5. Envelopes containing responses must be sealed and marked on the lower left-hand corner with the firm name and address bid number, date, and time.

6. CAA interprets the term "lowest responsible bidder" as requiring CAA to: (a) choose between the kinds of materials, goods, wares, or services subject to the bid, and (b) determine which bid is most suitable for its intended use or purpose. CAA can consider, among other factors, such things as labor cost, service and parts availability, availability of materials and supplies, and maintenance costs of items upon which bids are received. CAA can determine any differences or variations in the quality or character of the material, goods, wares, or services performed or provided by the respective bidders.

7. All requested information must be supplied. If you cannot respond to any part of this request, state the reason you cannot respond. You may provide supplemental information, if necessary, to assist CAA in analyzing your bid.

8. A purchase order and/or contractual agreement constitutes CAA's offer to the service provider upon the terms and conditions stated herein, and shall become binding if meeting the terms set forth herein when it is accepted by acknowledgment or performance.

9. After award, if the successful bidder/supplier refuses or fails to make deliveries of the materials and or services within the times specified in the Invitation for Bids, purchase order, or contractual agreement, CAA may, by written notice, terminate the contract or purchase order.

10. The supplier shall hold and save CAA and its officers, agents, servants/employees harmless from liability of any patented or unpatented invention, process, article, or appliance manufactured, or used in the performance of the contract, including its use by CAA.

11. Payment of the seller's invoices is subject to adjustment. CAA shall retain the right to reject any and/or all bids received, and responses to this and/or related documents, if determined to be non-responsive in any form, or if determined to be in the best interest of CAA.

12. The firm responding to this bid proposes to furnish all materials, labor, supplies, equipment and incidentals necessary to provide the equipment/materials/services described herein in accordance with the, Addenda, Contract, Bonds, Insurance, Plans, Specifications, Mandatory Requirements and Conditions.

13. If a response to this Invitation for Bids is accepted, the Bidder agrees to execute and deliver to CAA a contract in accordance with the Contract Documents (if applicable) within ten days of notice of the award to the Bidder. The Bidder agrees that the surety/deposit given concurrently herewith shall become the property of CAA in the event the Bidder fails to execute and deliver such contract within the specified time. In the further event of such failure, the Bidder shall be liable for CAA's actual damages that exceed the amount of the surety.

14. It shall be understood that time is of the essence in the bidder performance. The bidder agrees that CAA's damages would be difficult or impossible to predict in the event of a default in the performance hereof; and it is therefore agreed that if the bidder defaults in the performance of the Contract Documents, the bidder shall be liable for payment of the sums stipulated in the Contract Documents as liquidated damages, and not as a penalty.

15. The bidder hereby certifies that he/she has carefully examined all of the documents for the project, has carefully and thoroughly reviewed this Invitation for Bids, that he/she has inspected the location of the project (if applicable), and understands the nature and scope of the work to be done; and that this bid is based upon the terms, specifications, requirements, and conditions of the Invitation for Bids and documents. The Bidder further agrees that the performance time specified is a reasonable time, having carefully considered the nature and scope of the project as aforesaid.

16. All products/services and related equipment proposed and/or affected by acquisitions or purchases made as a result of the response to this document shall be compliant with existing CAA hardware, software, and applications where applicable. Verification must be provided in the response to this document.

17. The Bidder certifies that this proposal is submitted without collusion, fraud or misrepresentation as to other Bidders, so that all bids for the project will result from free, open and competitive bidding among all vendors.

18. It shall be understood that any bid and any/all referencing information submitted in response to this Invitation for Bids shall become the property of CAA, and will not be returned. CAA will use discretion with regards to disclosure of proprietary information contained in any response, but cannot guarantee that information will not be made public. As a governmental entity, CAA is subject to making records available for disclosure after contract award.

19. CAA will not be responsible for any expenses incurred by any vendor in the development of a response to this Invitation for Bids. Further, CAA shall reserve the right to cancel the work described herein prior to issuance and acceptance of any contractual agreement/purchase order by the recommended vendor even if CAA has formally accepted a recommendation.

20. Bids must be received prior to the time and dates listed to be considered responsive. CAA will not "accept" late responses and will return them to the sender. Further, CAA will

NOT: (1) guarantee security of the document received; and (2) be held responsible for bids which are NOT legible (and may choose to reject such responses).

21. By submission of a response, the Bidder agrees that at the time of submittal, he/she: (1) has no interest (including financial benefit, commission, finder's fee, or any other remuneration) and shall not acquire any interest, either direct or indirect, that would conflict in any manner or degree with the performance of Bidder's services, or (2) benefit from an award resulting in a "Conflict of Interest." A "Conflict of Interest" shall include holding or retaining membership, or employment, on a board, elected office, department or bureau, or committee sanctioned by and/or governed by CAA. Bidders shall identify any interests, and the individuals involved, on separate paper with the response and shall understand that CAA, at the discretion of the Executive Director in consultation with CAA Counselor, may reject their bid.

22. Covenants Against Kickbacks

a. For purposes of this subsection "Money" shall mean any cash, fee, commission, credit, and gift, and gratuity, thing of value or compensation of any kind.
b. For purposes of this subsection a "contract" means a written contract with the CAA or any other political subdivision of the State of Connecticut.
c. For purposes of this subsection a "Kickback" means any money, which is provided or is offered, as herein provided, for the purpose of obtaining or maintaining a contract or for rewarding favorable treatment in connection with any contract.
d. Vendor represents, warrants, covenants and agrees that neither Vendor nor its affiliates or any subcontractors (including any of their officers or employees) has provided or attempted to provide, either directly or indirectly, any Kickback to any employee or representative of the CAA. Vendor further warrants, covenants and agrees that neither Vendor nor its affiliates nor any subcontractors (including any of their officers or employees) will, in the future, provide or attempt to provide, either directly or indirectly, any Kickback to any employee of the CAA.

Please note: Failure to abide by the provisions of this section may, without additional notice, result in the immediate termination of any contract awarded.

23. Connecticut General Statute § 4a-60:

(a) Every contract to which the state or any political subdivision of the state other than a municipality is a party shall contain the following provisions: (1) The Consultant agrees and warrants that in the performance of the contract such Consultant will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such Consultant that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the Consultant further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, mental disability or physical disability, including, but not limited to blindness, unless it is

shown by such Consultant that such disability prevents performance of the work involved; (2) The Consultant agrees, in all solicitations or advertisements for employees placed by or on behalf of the Consultant, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the commission; (3) The Consultant agrees to provide each labor union or representative of workers with which such Consultant has a collective bargaining agreement or other contract or understanding and each vendor with which such Consultant has a contract or understanding, a notice to be provided by the commission advising the labor union or workers' representative of the Consultant's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) The Consultant agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, 46-68e and 46a-68f; and (5) The Consultant agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Consultant as they relate to the provisions of this section and section 46a-56."

Subsection (c) (2) of Connecticut General Statute § 4a-60:

"Prior to entering into a contract valued at fifty thousand dollars or more for any year of the contract, such Consultant shall provide the state or such political subdivision of the state with any one of the following:"

Documentation in the form of an affidavit signed under penalty of false statement by a chief executive officer, president, chairperson or other corporate officer duly authorized to adopt company or corporate policy that certifies that the company or corporate policy of the Consultant complies with the nondiscrimination agreement and warranty under subdivision (1) of subsection (a) of this section and is in effect on the date the affidavit is signed."

Subsection (h) of Connecticut General Statute § 4a-60:

"The Consultant shall include the provisions of subsections (a) and (b) of this section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state and such provisions, shall be binding on a subconsultant, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Consultant shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance, with section 46a-56; provided, if such Consultant becomes involved in, or is threatened with, litigation with a subconsultant or vendor as a result of such direction by the Commission, the Consultant may request the state of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the state and the state may so enter."

24. Connecticut General Statute § 4a-60a:

(a) Every contract to which the state or any political subdivision of the state other than a municipality is a party shall contain the following provisions: (1) The Consultant agrees and Warrants that in the performance of the contract such Consultant will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the state of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) The Consultant agrees to provide each labor union or representative of workers with which such Consultant has a collective bargaining agreement or other contract or understanding and each vendor with which such Consultant has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers representative of the Consultant's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) The Consultant agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and (4) The Consultant agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Consultant which relate to the provisions of this section and section 46a-56."

Nondiscrimination Certification: Consultant represents and warrants that, prior to entering into this Agreement, Consultant has provided CAA with documentation evidencing Consultant's support of the nondiscrimination agreements and warranties of the statutory nondiscrimination sections above. A form of the Nondiscrimination Certification to be signed by the Consultant is attached.

A. The Consultant acknowledges that by doing business with or seeking to do business with the CAA it is subject to certain provisions of the Code of Ethics for Public Officials of the State of Connecticut (the "Code of Ethics") applicable to current or prospective state contractors. The Consultant acknowledges receipt and review of the "Guide to the Code of Ethics for Current or Potential State Contractors" as currently posted on the website of the Office of State Ethics www.ct.gov/ethics and agrees to comply with all provisions of the Code of Ethics applicable to the Consultant as a current or potential CAA contractor.

B. If this Agreement is for goods or services and has a value to the CAA of $50,000 or more in any calendar or fiscal year, the Agreement shall not become effective until the Consultant has completed and furnished the affidavit with respect to consulting agreements required by Section 4-81 of the Connecticut General Statutes which form of affidavit is available on the Web site of the Office of Policy and Management at www.ct.gov/opm.

C. The following provision shall apply if this Agreement has a value of Five Million Dollars ($5,000,000) or more.

"If any officer or employee of the Consultant takes or threatens to take any personnel action against any employee of the Consultant in retaliation for such employee's disclosure of information to the Auditors of Public Accounts or the Attorney General under the provisions of Connecticut General Statutes § 4-61dd, the Consultant shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of this Agreement. Each violation shall be a separate and distinct offense and in the case of a continuing violation each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The Consultant shall post a notice in a conspicuous place which is readily available for viewing by employees of the provisions of Connecticut General Statutes § 4-61dd relating to large state contractors."

D. For all State contracts as defined in Connecticut General Statutes Section 9-612(g) (1) having a value in a calendar year of $50,000 or more or a combination or series of such agreements or contracts having a value of $100,000 or more, the authorized signatory to this Agreement expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," a copy of which is attached hereto and hereby made a part of this Agreement.

E. In accordance with Public Act No. 13-162, effective October 1, 2013, if this Agreement is a Large State Contract, as defined in Conn. Gen. Stat. § 4-250, this Agreement shall not become effective until the Second Party has completed and furnished to the CAA the certification form entitled "OPM Iran Certification Form 7" which is available on the Web site of the Office of Policy and Management at www.ct.gov/opm.

F. Campaign Contribution Restrictions: For all state contracts, as defined in Connecticut General Statute § 9-612(g)(1)(C), having a value in a calendar year of $50,000 or more or a combination or series of such agreements or contracts having a value of $100,000 or more, the authorized signatory to this Agreement expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising State Consultants of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice. See SEEC Form 10 attached.

G. This Agreement is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings, and Executive Order No. Sixteen of Governor John G. Rowland, promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the Agreement as if they had been fully set forth in it. The Agreement

may also be subject to the applicable parts of Executive Order No. 7C of Governor M. Jodi Rell, promulgated July 13, 2006, concerning contracting reforms. If Executive Orders 7C is applicable, it is deemed to be incorporated into and are made a part of the Agreement as if it had been fully set forth in it. At the Second Party's request, the CAA shall provide a copy of these orders to the Second Party.

H. The Second Party hereby acknowledges and agrees to comply with the policies enumerated in the Connecticut Airport Authority Ethical Conduct Policy, dated December 16, 2013, a copy of which is attached hereto and made a part hereof.

I. The Second Party shall comply with the provisions contained in Section 1-86e of the Connecticut General Statutes, which provides as follows (for purposes of this section, "state" shall include the CAA):

(a) No person hired by the state as a consultant or independent contractor shall:

(i) Use the authority provided to the person under the contract, or any confidential information acquired in the performance of the contract, to obtain financial gain for the person, an employee of the person or a member of the immediate family of any such person or employee;

(ii) Accept another state contract which could impair the independent judgment of the person in the performance of the existing contract;

(iii) Accept anything of value based on an understanding that the actions of the person on behalf of the state would be influenced.

(b) No person shall give anything of value to a person hired by the state as a consultant or independent contractor based on an understanding that the actions of the consultant or independent contractor on behalf of the state would be influenced.