TECHNICAL SPECIFICATION

LAREDO INTERNATIONAL AIRPORT

OSHKOSH STRIKER 6 X 6

AIRCRAFT RESCUE AND FIRE FIGHTING VEHICLE

WITH AGENT CAPACITIES OF
3,000 GALLONS (11,356 L) OF WATER
420 GALLONS (1,589 L) OF AFFF CONCENTRATE
500 POUND (249 K) DRY CHEMICAL SYSTEM

11/23~~/17~~/2023

GENERAL CHARACTERISTICS

Definitions:
This document is intended to outline the technical specification requirements for an airport rescue firefighting (ARFF) vehicle in accordance with Federal Aviation Administration Advisory Circulars (AC) 150/5110-10E and the National Fire Protection Association (NFPA) 414, 2020 edition. This specification is for one new Class 4 (3,000 gallon, 11,356 L) ARFF vehicle.

Expected Use:
This specification covers an all-wheel drive, diesel powered ARFF vehicle having a mechanical foam/water system designed for extinguishing flammable and combustible liquid fuel fires. The specified dry chemical complimentary agent system is an acceptable, optional addition to the basic vehicle as dictated by local operational needs. The primary function of the vehicle described in this specification is to provide an optimum level of ARFF suppression capability throughout the critical rescue and firefighting access area. Vehicles complying with this specification meet the ARFF vehicle requirements of FAR Part 139. However, it is also intended that this vehicle be suitable for other fire protection assignments.

Scope:
This specification covers an Aircraft Fire Fighting Rescue 6x6 vehicle with a maximum capacity of 3,000 gallons (11,356 L) of water, 420 gallons (1,589 L) of AFFF (Aqueous Film Forming Foam), 550 pound (249 kg.) dry chemical system, a water pump, a high reach extendible roof turret and a high volume, low attack bumper turret. Water/foam handlines with variable pattern nozzles shall also be provided as specified.

- Roof Turret: A high volume roof turret shall be provided with water and foam capabilities
- Bumper Turret: A high volume low attack bumper turret shall be provided with water and foam and entrained dry chemical powder direct injection capabilities (AkroChem or equivalent).
- Handlines: Two water/foam pre connected handlines are to be provided in a crosslay configuration. Each soft jacketed handline shall be designed for automatic energizing by a rotary valve located at the cross lay area.
- Hose Reel: One electric rewinding, swing out type hose reel shall be provided and shall have water, foam capabilities
- Secondary Agent: A secondary agent system is also required as later defined in this document.

General:
Record of Past Performance: To demonstrate a record of past performance, the contractor may submit upon request list of users that have purchased similar ARFF vehicles from their company in the past five years of all types.

Technical Resources: To evaluate the contractor's technical resources, the following

representative sample manuals shall be available upon request:

- Operator's Manual
- Service Manual
- Parts Manual
- Service and parts website with information for specific vehicles “as built”

NOTE: A collection of subcontractor or supplier parts or service manuals is not acceptable for functional component installations that are an integral part of the vehicle. It is also preferred that all manuals and component parts be illustrated in electronic format for ease of identification and supply.

Warranty: The contractor shall provide a Five-year warranty as a minimum.

- Base vehicle – One years
- Engine – four year
- Transmission – Five years
- Suspension system – One yea
- Water Pump – Five years
- Water/Foam Tank – Lifetime

The warranty statement shall include the following:

- Manufacturer's obligations
- Duration of warranty period
- Warranty procedure
- Disclaimers

Safety Features:

Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- A warning siren with speaker shall be provided, Whelen model 295 SL. The siren shall produce a minimum sound of 95 dB (A) at 100 feet (30 m) directly in front of the vehicle and 90 dB (A) at 100 feet (30 m) and 45 degrees left and right of front center.
- Two (2) air horns shall be provided, mounted in a protected area below the level of the front bumper and activated by control button on the steering wheel. A switch to activate these horns shall be provided in a location readily accessible to the driver.
- A “vehicle backing” alarm audible up to 25 feet (7.6 m) behind the vehicle shall be provided.
- An illuminated inclinometer with Stability Dynamics LG Alert device shall be provided on the instrument panel.
- The cab roof shall include a hatch with hinged cover, a weather-tight seal and easy opening hardware to allow access from the inside of the cab to the top of the cab roof. The dimensions should be at least 32.5 inches (82.5 cm) wide and 34.5 inches (87.6 cm) tall.
- A non-skid covering with non-directional projection covering shall be installed on

the top of the vehicle's center body
- A backup proximity warning system shall be installed on the truck.

Maintainability:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
The vehicle design shall be such that:
- Maintenance is achieved with general-purpose mechanic tools and equipment.
- Air tank drains will be located below the compartment openings on the left side of the vehicle.
- The engine enclosure shall be designed to access to the engine, cooling, and electrical systems via hinged doors at rear on the left and right side of the truck with swing out steps.

Component Protection:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
- All oil, hydraulic, air, water, foam concentrate, and electrical system conduits, tubing, and hoses shall be located in protected positions.
- Damage to the radiator, charge air and hydraulic oil coolers that could occur from brush, stones or other foreign objects shall be minimized by mounting these components in protected locations.
- All air reservoirs shall also be mounted within the chassis frame to minimize the potential of damage by foreign objects.
- A mud flap shall be provided at each wheel well position to reduce the damage from stones, brush, etc. being thrown off by the tires.

Painting:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
- All aluminum components shall be pre-treated prior to paint using an aluminum conversion coating process.
- All parts of the vehicle shall be cleaned, treated and primed prior to assembly and final painting with acrylic urethane to include wheels.
- The interior of all compartments and cab shall be painted with a grey/white splatter finish.
- The vehicle shall be painted "safety lime yellow" and lettered in accordance with the marking and lighting standards of Advisory Circular No. 150/5210-5D. The wheel rims and chassis shall be painted body Color. Lettering shall be provided on both sides of the vehicle, centered as best as possible and sized to fit the available space. Actual details for lettering will be determined prior to vehicle completion. Actual details for lettering will be determined prior to vehicle completion.
    - Front Skid Plates: Safety Lime Yellow
    - Wheel Rims: Black
    - Chassis Frame: Black

- Wheel wells to be painted black and mud flaps shall be provided at each wheel well.

Insulation, Air Conditioning and Heating:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- Acoustic and Thermal insulation shall be fire and water resistant.
- A 85,500 BTU/hr heating system shall be provided. A 48,300 BTU/hr heating system is available in conjunction with the optional 22,300 BTU/hr air conditioning system.

Materials:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

Dissimilar metals shall not be used. Protective coatings that chip, crack, or scale with age or extremes of climatic conditions or on exposure to heat shall not be used. The use of proven, non-metallic materials in lieu of metal is permitted to reduce weight, lower cost or lessen maintenance.

Winterization:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

A -40° F winterization system is NOT required.

Balances and Clearances:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
The weight shall be distributed as equally as practical over the axles and tires. The difference in tire load between tires on any axle shall not exceed 5 percent of the average tire load for that axle. The difference in load between axles shall not exceed 10 percent of the load on the heaviest axle.

- Approach & Departure Angles: 30 degrees
- Inter-axle Clearance Angle: 12 degrees
- Underbody Clearance: 22 inches (558 mm)
- Under-axle Clearance at Differential Housing Bowl: 16.5 inches (419 mm)
- Wall-to-Wall Turning Diameter w/ rear steering axle: 84.2 feet (25.66 m) with required TAK-4 independent suspension system and rear steer system.

Dimensions
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following;

- Length: 475 inches (1,206 cm) not including bumper nozzle overhang
- Width: 120 inches (304 cm) not including mirrors
- Height : 150 inches

Load Rating:

Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- The functional load rating of the frame shall equal or exceed the actual gross vehicle weight (GVW)
- Front Axle Rating: 31,000 lbs. (14,061 kg)
- Rear Tandem Axle Rating: 62,000 lbs. (28,122 kg)
- GVWR: 93,000 lbs. (42,184 kg)

BODY COMPONENTS

Compartments:

Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- The compartments shall be weather-tight, vented, drained to allow collected water to run out under the vehicle and equipped with roller shutter type doors.
- Each compartment shall be provided with weather proof LED “rope” lighting that are switched to automatically light when compartment doors are open with vehicle master switch “On”.
- Each compartment shall be equipped with an indicator light in the cab and audible signal to advise when the door is open.
- All compartment floors and shelves shall include extruded rubber matting.
- ~~Two~~ One (~~2~~1) compact roll-out adjustable shelves RH lower front compartment.
    - (1) Fixed shelf RH Lower front compartment
    - Peg board mounted on the back wall
- One (1) Slide-out tilt-down trays shall be provided in an upper compartment.
- One (1) Slide tray in the RH lower rear compartment.
- (1) Slide-out extinguisher tray RH rear compartment
- RH Rear compartment wall will have a wall mounted peg board
- Crash bar added to all slide out trays
- Provide storage for a total of four (4) SCBA bottles in the lower front compartments; (2) bottles per side.
- A swing-out step shall be provided to enhance access to the left and right upper compartments shall be provided.

Formatted

Handrails:

Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
Extruded aluminum slip resistant handrails or a guardrail shall be provided at all steps, walkways, and elevated workstations.

Running Boards, Steps, Walkways and Towing Devices:

Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- Running boards, step surfaces, ladder rungs, walkways, and catwalks shall have antiskid treads.
- The height between steps shall be less than 20 inches (500 mm). The lower steps shall be less than 24 inches (600 mm) from the ground. If the lower most

step extends below the approach or departure angle it must be designed to swing clear.
- A ladder with grab rails shall be provided on the rear of the vehicle providing access to the top.
- Two (2) towing hooks / eyes with shackles shall be attached directly to the frame rails at the front and rear of the vehicle.
- Aluminum scuff plates shall be installed on bottom lip of all compartments and in heavy use areas of cab door frames.

CAB AND ACCESSORIES

Crew Space:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following: All crew space shall be restricted to the interior of a fully enclosed 275 cubic foot (7.8 cubic meters) cab with approved 3-point integral restraints as minimum seat belts. The cab can accommodate seating for up to 3 (three) fire fighters.

The chassis cab shall be designed for a center driver position. The cab shall be fabricated of aluminum components and shall have aluminum and fiberglass exterior panels. The cab shall have a minimum internal volume of 275 cubic feet. The cab shall have these features;
- Center driver position
- Right center control console – Sloped
  - Single Operator set up (roof turret moved)
  - (2) Dual USB-C and USB-A mounted on either side of the cab
- Dash console in front of driver position
- Integrated electronic control and diagnostic systems
- Grab handles at each door for safe three point entry and exit
- Interior coating shall be a durable spackle finish, primary color gray
- Sun visors located above the windshield
- Cup holders integrated into the dash, two total one left one right
- Roof hatch with two latches, gas strut assist

Formatted

The cab shall have a rubber floor mat covering the interior floor. The floor mat shall have a padding to provide cushioning effect and dampen noise. Portions of the cab shall be covered with a vinyl material to dampen noise. The cab shall have five sun visors.

Cab Features;
- 3-point mounted, constructed of welded aluminum extrusions and plates to provide the best strength to weight ratio and prevent cab collapse in the event of a vehicle rollover.
- Shall have gutters of sufficient size to prevent foam and water from dripping on the windshield and side windows during turret operations.

- Shall have a windshield deluge system.
- Shall have a single door located on each side that opens at least to a 90 degree angle with electrically operated door windows. Each door shall open a minimum of 90º and be provided with (heavy duty door stops/checks).
- Shall have a single-piece laminated or tempered and tinted safety glass windshield.
- Shall have minimum of 91 sq. ft. of glass area.
- Have a center steering position with a lateral field of vision of at least 280 degrees (140 degrees left and right of center), with 90 degrees upward and 25 degrees downward visibility and ground visibility to the driver at a point as least 9 feet (4.5 m) and beyond from the vehicle.
- Shall be equipped with a center console to house the turret controls, radio equipment and siren and mounted to allow the driver or turret operator access to the controls from either side.
- Shall be weather-tight, acoustically and thermally insulated to provide noise level not to exceed 85 dB (A) at the driver's ear position.
- Three (3) seats shall be provided, each with an integral, red 3-point seat belt.
    - The driver's seat shall be Seats, Inc. capable of 3-way adjustment with air ride suspension. Height, forward/aft and seatback angle shall be adjustable. This seat does not require an integral SCBA holder.
    - The turret operator's seat to the right of the driver shall be SCBA type with SmartDock brand SCBA holder. Height, forward/aft shall be adjustable.
    - A fixed seat mounted to the far left of the driver shall be a SCBA type with SmartDock SCBA holder.
    - Roof Access Steps shall be provided in the fourth seat position for access to the roof via the roof hatch.
    - SCBA Bracket provided for the driver.
- Have heated and power adjustable rearview mirrors with flat glass area of at least 60 sq. in. (385 sq. cm) and wide angle convex area of 7 sq. in. (45 sq. cm) mounted on each side of the vehicle.
- All dash mounted switches shall be weatherproof illuminated rocker type switches with the legend for the function of the switch embossed into the illuminated area on the switch.
    - English Labeling
- A 360 camera system shall be provided to aid the driver in safely backing up the vehicle. The camera image shall be viewable in an in-dash monitor. A switch shall be provided to allow the driver to manually activate the camera when needed. The camera shall also be switched "on" automatically whenever the vehicle is in the reverse mode of operation.
- Be equipped with two (2) Streamlight ~~SL-90~~Vulcan 180 rechargeable LED type with individual chargers. These shall be wired to the vehicle's 24-volt electrical system, and mounted in the cab interior, one on each side of the cab

Formatted

Controls:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following; All instruments, warning lights and controls relative to truck operation shall be displayed to the left of the driver so that they shall be useful, convenient, and visible to the driver. All instruments, warning lights and controls relative to the firefighting system shall be displayed to the right of the driver so that they shall be useful, convenient, and visible to both the driver and the officer (turret operator). Agent activation to be clearly identified with color coded switches providing the operator immediate identification of the agents. Blue will identify water, Yellow will identify water/foam, and Purple will identify dry chemical.

The following cab mounted controls shall be provided as a minimum:

- Accelerator Pedal
- Air Conditioner Controls
- Brake Pedal
- Bumper Turret Control Joysticks
- Color Coded Water Pump
- Color coded Foam System Activation
- Color Coded Dry Chemical Agent / System Activation
- Rotary Differential Lock Control
- Dome Light Switch Manual / Door Activated
- Foam Concentrate Reservoir Control Valve
- Headlight Switch w/ Dimmer Control
- Heater / Defroster Controls
- Horn Control
- Master Electrical Disconnect Switch (located in engine compartment)
- Panel Lights Switch with Dimmer
- Parking Brake Control
- Power Adjustable Mirror Control
- Roof Turret Controls Joysticks
- Rotary Ignition Start/Stop Switch
- Siren Switch with Microphone
- Switches for Emergency Beacon(s) / Strobe(s)
- Switches for Exterior Lights
- Switches for Non-Emergency Amber Beacon(s) / Strobe(s)
- Tilt / Telescoping Steering Wheel Column
- Transmission Range Selector
- Windshield deluge
- Windshield Wiper and Washer, column mounted
- Cup Holders

Instruments and Warning Lights:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following

The following instruments and warning lights shall be provided in the cab:

- Air Pressure (brake and other air-driven accessories)
- Complementary Agent Tank-Charged Indicator
- Beacon / Strobe Indicator (s)
- Foam Agent Tank Level Indicator
- Water Tank Level Indicator
- Water Pump Pressure
- Low Air Pressure Warning
- Compartment Door Indicator
- Differential Lock Indicator
- Engine Coolant Temperature
- Engine Tachometer
- Fuel Level
- Headlight High Beam Indicator
- Speedometer / Odometer
- Voltmeter
- Low Engine Coolant Audible / Visual Alarm
- Digital clock
- Low Oil Pressure / High Water Temperature Audible / Visual Alarm
- Complementary Agent System Pressure and agent level Indicator
- Urea Level Indicator

Drivers Enhanced Vision System (DEVS):
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following: The vehicle shall be equipped with a "Forward Looking Infrared (FLIR) System". The FLIR system shall provide vision enhancement in low visibility conditions to include operation during total darkness, fog, severe weather, and firefighting operations during which thick smoke is emitted. It shall also provide the ability to detect hot spots and residual heat in all light conditions, to aid in the directing of firefighting efforts. The FLIR camera shall be installed on the cab with the image viewable on LCD display. The camera shall have pan/tilt capabilities with a control mounted on the center console.

Digital Video Recorder (DVR)

Not Required

Monitoring and Data Acquisition System (MADAS):
Shall be provided per the NFPA 414 (2020 Edition) Standard for Aircraft Rescue Firefighting Vehicles, as adopted by Federal Aviation Administration (FAA) Advisory Circular 150/5220-10E;

- A monitoring and data acquisition system (MADAS) shall be installed for the collection of various performance measurements to monitor, as a minimum, the

following;

- Vehicle speed
- Vehicle heading
- Lateral acceleration
- Vertical acceleration
- Longitudinal acceleration and deceleration
- Engine RPM
- Throttle position
- Steering input
- Vehicle braking input (pedal position and brake pressure)
- Data, time and location for all data collected

In addition, the following requirements shall be provided;

- The data acquisition system shall be capable of storing the measurements and the time intervals, starting at least 120 seconds before and ending at least 15 seconds after any serious incident.
- The data acquisition system shall be designed so that the data being recorded will not be lost or overwritten immediately after the incident due to the use of an emergency shutoff or a master electrical disconnect switch.

ENGINE, DRIVELINE AND CONTROLS

Engine:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

The vehicle shall be equipped a single engine and shall be a Scania DC16, 16.4 liter displacement, turbo charged, 4-stroke diesel type with 90-degree V8 cylinder configuration. The engine shall be US EPA Tier 4 final emissions compliant and rated at 670 BHP (492 kW) with a peak torque of 1950 lb-ft (2644 N-m). The engine shall be equipped with a electronic fuel management system. The US EPA Tier 4 final engine shall be equipped with selective catalyst reduction and exhaust gas recirculation but shall not have diesel particulate filtration to meet emission standards.

An engine high idle control shall be provided to maintain the engine idle at approximately 1450 rpm when activated. The control for this system shall be safety interlocked to activate only after the transmission has been placed in the neutral position and the parking brake has been set.

An electronically controlled engine governor will be provided and set to limit engine speed so that it will not exceed the maximum rpm recommended by the engine manufacturer.

An Engine Brake Shall be Provided

Cooling System:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following: The cooling system shall be of the circulating liquid type with a thermostatic control to maintain coolant temperature consistent with the engine manufacturer's recommendations.

The cooling system shall include:

- Belt driven sucker type cooling fan installed adjacent to the radiator.
- Fan operation shall be automatically controlled by a system which monitors engine coolant, engine oil and intake manifold pressures.
- Silicone material coolant and heater hoses
- A Hot Start immersion type electrical engine coolant preheating device (minimum 1500 W) shall be provided as an aid to rapid starting and high initial engine performance.
- Low coolant level indicator light and buzzer mounted in the cab.
- High engine coolant temperature indicator light and buzzer mounted in the cab.
- Bar and plate type radiator core with side tanks and top and bottom structure plates.

Exhaust System:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

The exhaust system shall be routed through the top of the engine enclosure and have a Rain cap installed.

Possibly moving to the right side of the truck

Fuel System:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

The fuel tank shall have a minimum capacity of 90 gallons (340 L) with bottom drain plug and filler pipe located no higher than 60 inches (152 cm) from ground level. A fuel water separator with auxiliary fuel pump for the engine shall be provided. The auxiliary pump will be manually operated to re-prime the fuel system after replacement of fuel filter(s). Capacity label in gallons shall be installed at fuel tank. The fuel tank shall be fabricated from aluminum.

Transmission:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following: The vehicle shall have a single engine, power divider and transmission configuration. A remote transmission is not acceptable. The transmission shall be Allison Gen 5 Model 4800 EVS, automatic, multi-speed, electronically controlled transmissions, fully compatible and certified for use with the electronically controlled engine. The transmission shall have a minimum of seven (7) forward and one (1) reverse speeds.

Axles:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- The front and rear axles shall have adequate capacity to carry the fully loaded vehicle under all intended operating conditions. For vehicle handling, stability and off-runway performance, the axles shall have identical track width of 96 inches (244 cm).
- Front Axle – 31,000 lb. (14,061 kg) rating, double reduction (axle housing and wheel end), enclosed steering drive ends, bevel gear differential with driver operated differential lock.
- Rear Tandem Axle Set – 62,000 lb. (28,123 kg) rating, double reduction (axle housing and wheel end), and bevel gear differential with driver operated differential lock.

Brake System:
Per the NFPA Standard 414 (2020 Edition) as amended by FAA 150/5220-10E Advisory Circular plus the following:

- The vehicle shall be equipped with dual braking system including tandem front and rear brakes with an overall vehicle tread width of 120".
- The brakes shall be Drum type.
- The brakes shall be equipped with automatic brake adjustors, to be clutch and worm drive type.
- The system shall feature a dual type brake treadle valve with separate supply and delivery circuits.
- There shall be an electronic antilock brake system with a sensor and modulator at each wheel controlled by an electronic control unit (ECU). The ECU shall monitor wheel speed during braking and modulate the brakes when excessive wheel slip or lockup is detected. The ECU shall blend the feedback from steering wheel ends to reduce steering wheel pull during an ABS event.
- There shall be provision for ABS diagnostics provided.
- A manual parking brake valve shall be installed in the cab within easy reach of the driver.
- An automatic air drying system (Bendix AD-IS desiccant type) downstream of the compressor.
- Drain on all reservoirs controlled from one common location on the exterior of the vehicle.
- Visual and audible low air pressure warning device.
- The air system shall be supplied with an on board auxiliary air compressor, electric motor driven, to maintain the vehicle's air system at a working pressure between 80 to 100 psi.
- No Air hose reel is required
  - Air Outlet on the driver side of the truck
- All chassis air connections shall be compression style Brass Fittings

Formatted

Steering:

Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

The chassis shall be equipped with power assisted front axle steering that shall permit manual steering to bring the fully loaded vehicle to a safe stop in the event of power assist failure. For this TAK-4 independent suspension system configured vehicle, the rear tandem axle set shall have a steering option, wherein the rear most axle shall steer a percentage of the front axle. Rear steer serves to reduce the turning circle of the vehicle and decrease tire scrub, thereby greatly increasing the life of the tires. The rear steer system shall be mechanical type with a physical driveline and auxiliary power steering pump. A tilt / telescoping steering wheel shall be provided.

Suspension:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- An off road high mobility all-wheel independent suspension (TAK-4 or equivalent) shall be provided for enhanced ride comfort, cornering and roll stability. The design shall allow the vehicle to travel safely at minimum off-road speeds of 35 mph (56 kph). The suspension design shall allow for a minimum of 16 inches (406 mm) of total wheel travel.
- Upper and lower control arms shall be used on each side of each axle.
- Each axle shall be equipped with an anti-roll bar for increased cornering stability.
- Steering and non-steering axles shall have a tie rod that is adjustable for alignment of the wheel to the center of the chassis.
- Each wheel shall have at least one coil spring and heavy-duty dual acting shock absorber.

Chassis Frame:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- The vehicle frame shall be designed to provide the required strength and torsional rigidity. The chassis frame rail shall be high strength alloy steel with minimum yield strength of 80,000 psi and section modulus of 49.4 in^3.
- The main frame rails shall be rectangular tube type with minimum dimensions of 12 inches by 4 inches with minimum .47 inch wall thickness.
- Frames must use bolted-in cross members with class 10.9 metric fasteners.
- Minimum width to the outside of the main frame rails in an assembled chassis shall be 36 inches.
- The vehicle frame, suspension, and mounting of major components shall provide for diagonally opposite wheel motion up to 14 inches above the ground without raising the remaining wheels from the ground or causing interference.
- Integrity and longevity of the main frame rails shall not be compromised by any welding of bracketry, suspension parts, or reinforcements.

Ride Quality:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- All wheel independent suspension to provide superior ride quality for safe operation and improved off road capability over rough roads and adverse terrain at speeds of at least 35 mph (56 KPH) without causing injury to the operating personnel, loss of vehicle control, or damage to the vehicle.

Wheel and Tire Assembly:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- The wheels shall be single disc type with all to be of identical offset, bolt patterns, and size, and must be completely interchangeable for permanent use between front and rear axles.
- The tires shall be Michelin 24R21 XZL steel belted radials. One (1) spare tire and wheel/rim assembly, mounted, shall be provided.
- The wheel/rim assembly shall be painted to match the other wheel/rim assemblies on the vehicle.

Lubrication:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

Vehicle shall be equipped with a central lubrication system.

ELECTRICAL SYSTEM

Lighting and Marking System:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

The system shall include the following:

- Two (2) LED headlights for upper and lower driving beam
- Wig wag feature for head lights to supplement the emergency lighting
- Two~~One~~ (~~1~~2) LED light mounted on the roof turret and one (1) LED light mounted on the bumper turret
- Turn signals, front and rear, with self-canceling control; a visual as well as audible indicator; and four-way flasher switch
- Reflectors, markers, and clearance lights meeting all applicable FMVSS
- Non-glare type engine compartment LED lights to illuminate both sides of the engine and with switches(s) located in the engine compartment
- Non-glare type compartment LED lights to illuminate the inside of all storage, maintenance access, engine and piping compartments
- Illumination shall be provided for all access steps and work areas on the vehicle. In addition, lighting shall be provided to illuminate the ground beside the vehicle in accordance with NFPA 1901. .
- Emergency Lighting;
    - Two (2) red mini-light bars shall be mounted on the vehicle's top surface,

at the front center body section of the vehicle to meet visibility requirements (Whelen Freedom IV). The LED's shall be red with clear lens. Risers shall be all metal.
    - two (2) red mini-light bar shall be mounted on the vehicle's top surface, at the rear center body section of the vehicle to meet visibility requirements (Whelen Freedom IV). The LED's shall be red with clear lens. Riser shall be all metal.
    - ~~Ten~~ twelve (1~~0~~2) rectangular emergency lights shall be provided. These shall all be color red/clear. Four~~Two~~ (~~2~~4) shall be on the front, two (2) at three (3) on each side. Lights are to be Whelen. Front Upper two lights Blue/Lower red. Side middle lights blue.
- Non-Emergency Lighting - Two (2) amber LED lights shall be mounted on top of the vehicle
- Two (2) FRC Spectra LED lights (Black Housing) at the rear of the vehicle – 24 volt DC
- Four (4) FRC Spectra LED Lights (Black Housing) on the sides of the truck; 2 per side – 24volt DC
- Two (2) FRC Spectra LED cab wide lights (Black Housing) with glareshields – 24 volt DC

Power Supplies:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following: A 24-volt electrical system shall be provided. The vehicle power shall be supplied by dual alternator systems with two (2) 110-amp alternators, engine providing backup if one should fail. Each alternator shall be driven by its own independent drive belt. A warning system shall be provided to indicate an alternator failure.

The electrical system shall have the following:
- Four (4) Group 31, 12 Volt Maintenance Free Batteries with 950 CCA @ 0 degree F (each)
- On board battery charger with provisions for shore power (see below)
- A remote voltmeter shall be installed adjacent to the batteries to read the battery charge.
- A switch shall be mounted in the engine compartment that shall prevent the vehicle from being started from the cab during routine maintenance.
- An on-board 24V battery charger male polarized auto-eject type receptacle suitable for receiving 120-volt outside electrical supply will be mounted on the left side of apparatus behind crew door.
- Lockable total vehicle master disconnect switch rated for full vehicle current
- There shall be two (2) Kussmaul Super Auto eject shore power plugs at the ~~left side of the vehicle~~right rear of the truck. One shall provide 110 VAC power for the engine pre heater, the second shall provide 110 VAC power to the battery charger and auxiliary air compressor.

Starter:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
A Scania 24 Volt 6.5 KW or equivalent electric starting system shall be provided.

DELETED~~An external vehicle start button shall be provided.~~

Wiring:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
All wiring shall be number coded to match a number coded electrical schematic. Standard quick disconnect plugs shall be provided throughout for ease of maintenance in removing components in the event of system damage. Wires shall be insulated in accordance with SAE standards.

Radio Equipment:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
Dedicated 12-volt radio leads shall be provided to the dash instrument panel and marked and tagged with permanent tags.

- A Setcom 1310 wireless system shall be provided by the manufacturer. three headsets shall be provided: (1) for each seat in the truck.

Generator System:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- A Generator system is NOT Required.

AUTOMOTIVE PERFORMANCE

Acceleration:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
The vehicle shall be capable of 0-50 mph (0-80 km/hr) acceleration time of 35 seconds depending on configured options.

Brake System:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E.

Dynamic and Static Stability:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C. plus the following

The vehicle shall meet the following stability requirements:

- Side Slope Stability (Tilt Table Meeting SAE J2180): 30 degrees (58 percent grade)

- Dynamic Balance (Min. Speed on 100-ft. (30m) Radius Circle): 22 mph (35 kph)

Environmental Conditions:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C.

Grade Ability:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C.

Top Speed:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
The vehicle shall be capable of a top speed of 78 mph (125 km/hr) depending on the configured options.

Off-Road High Mobility Suspensions:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
An off-road, high mobility All-Wheel Independent Suspension System (Oshkosh TAK-4 or equivalent) shall be provided resulting in no more than 0.5 g rms acceleration at the seat of the vehicle when traversing an 8 inch (24 cm) half round at 35 mph (56 kph).

FIRE EXTINGUISHING SYSTEMS

DRY CHEMICAL SYSTEM:
Agent Container and Components:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- A 500 pound (250 kg) dry chemical system (Ansul or equivalent) shall be provided capable of holding a potassium-based dry chemical fire-extinguishing agent. The container shall be constructed and stamped in accordance with ASME Code for Unfired Pressure Vessels.
- A quick acting agent system activation control shall be accessible to the seated driver and at least one other crew position. A similar control shall be located near the agent handline.
- Cab mounted pressure gauges shall be installed that, when the system is activated, shall allow the vehicle operator to determine the propellant reservoir status as well as the system operating pressure.
- There shall be provisions for purging agent from all piping and hose after use without discharging the remaining chemical.
- One (1) dry chemical fill funnel shall be supplied.
- One (1) spare nitrogen cylinder with mounting bracket shall be provided.
- Each nitrogen bottle shall be equipped with an integral pressure gauge on each bottle so crew members can easily determine the state of charge when the bottle(s) are in storage.
- 1000 pounds of PKW dry chemical shall be provided.
- A remote nitrogen fill shall be supplied to be Parker part number SM-252-4FP and check valve Parker part number CS400S. A label shall be affixed adjacent to

say “DRY BREATHING AIR FILL”.

Agent Delivery Piping and Valves:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:
The installed discharge piping shall be tested at a pressure equal to 150 percent of the system working pressure.

Propellant, Propellant Containers and Components:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- The propellant gas shall be compressed air. All propellant gas cylinders and valves shall comply with United States Department of Transportation (DOT) requirements.
- The handline for dry chemical shall be on a hose reel equipped with 150 ft. of one inch booster hose.
    - This handline shall be provided and mounted in the ~~right~~ left upper compartment to provide deployment of the hose to the left side and/or front of the vehicle.
    - The hose reel shall be equipped with a 24 VDC electric rewind motor with manual rewind provisions and a tension device to prevent the unreeling of the hose.
    - The nozzle shall be capable of discharging 5 lbs. per second of dry chemical in accordance with the performance requirements of the A/C.
    - Controls at the handline shall allow charging of the nitrogen into the dry chemical tanks, and charging of the dry chemical into the handline

FOAM CONCENTRATE SYSTEM:
Concentrate Proportioning
Per the NFPA Standard 414 (2020 Edition) as amended by FAA 150/5220-10E Advisory Circular plus the following:

An electronic foam proportioning system shall be provided. The system shall provide settings for 1, 3, 6 or 8% foam proportion. Selection shall be available on the dash with a single switch.

Foam Proportion Testing System
The vehicle shall have an onboard system to monitor foam proportion and maintain digital history for reporting purposes. ONLY SYSTEM APPROVED BY THE FAA AS DEFINED IN FAA PART 139 CERTALERT 21-01 ARE ALLOWED.

Concentrate Reservoir and Piping:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- The foam liquid concentrate tank shall have a minimum usable capacity of 420

gallons (1,589 Liters) and be constructed of UV stabilized polypropylene.

- If separate from the water tank, the foam reservoir shall be mounted in a manner that limits the transfer of the torsional strains from the chassis to the reservoir.
- The reservoir shall be separate and distinct from the crew compartment, engine compartment, and chassis. It shall be removable as a unit, without cutting, destroying structural members, vehicle catwalks, decking, or skin.
- Provisions shall be made for access for internal and external inspection and service as may be recommended or required by the vehicle or tank manufacturer. Reservoirs, large enough to require baffles, shall be provided with access to each baffled compartment.
- The reservoir shall be fitted with a sump, complete with anti-swirl baffles, and a 1-1/2 inch minimum diameter drain with a valve and an accessible control. The drain shall be fitted with 1-1/2 inch NSFHT connection with a chrome cap and chain. The drain shall not terminate under the vehicle.
- Any repairs necessary during the life of the tank will be performed at the site within seven days after the failure has been reported to the vehicle manufacturer.
- The reservoir outlet shall be located above the bottom of the sump and shall permit a continuous flow of foam concentrate to the proportioning system with the system designed to support all discharge requirements.
- The reservoir shall be vented to permit the required fill rate without exceeding the design working pressure and to permit emptying at the maximum design flow rate without danger of collapse. The vent outlet shall be directed so as to prevent spillage of foam concentrate on vehicle components.
- A foam tank sump drain shall be installed separate from the foam tank drain if a sump is included in the bidder's standard tank design.
- The fill system shall be capable of delivering foam concentrate to the reservoir at a rate at least equal to the maximum use rate of the foam proportioning system.
- One (1) 1-1/2 inch NSFHT foam tank fill connection shall be provided on ~~each~~ Left side of vehicle. The inlets shall be fitted with stainless steel strainers of 1/4 inch mesh, and shall have check valves or be so constructed that no more than 1/4 gal of foam is lost from the reservoir during connection or disconnection of the foam re-supply line.
- An audible alarm shall activate in the cab when the foam level in the foam tank drops below 25%. A dash switch shall silence the low level alarm.
- A top fill opening shall be provided which shall be equipped with a No. 10 gauge mesh, corrosion resistant stainless steel or equal screen. The fill line from the trough shall introduce foam concentrate into the reservoir so as to minimize foaming.
- The foam concentrate piping shall be sized to permit the flow rates needed to meet the agent discharge requirements of all discharges and shall be arranged to prevent water from entering the foam reservoir.
- The foam concentrate piping shall be so arranged that the entire system, including any foam concentrate pumps, can be flushed with water from the water tank without contaminating the foam reservoir.

- Two (2) external foam tank level indicators shall be provided one on each side of the vehicle integrated into the tank side of the vehicle. Each indicator shall have four (4) lights (from bottom to top – red, amber, amber, amber), visible in bright sunlight and at night from a distance of at least 500 feet. The lights shall turn off at ¼ intervals as the foam tank level falls.
- An electric foam transfer pump shall be provided. The pump shall be located in the lower left compartment.
- AFFF will NOT be provided.

Water Piping, Couplings, Connections and Valves:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- The installed discharge piping shall be tested at a pressure equal to 150 percent of the system working pressure.
- A drainage system, with collector tubing from the low points on the pump and piping shall be provided.
- The water system piping shall be constructed of stainless steel or corrosion resistant materials.

Water Pump and Pump Drive
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- The vehicle shall be equipped with a water pump. The water pump shall be a single stage design that meets all requirements of NFPA 414 and FAA Advisory Circular 150/5220/10E. The pump shall have a rated capacity of at least 1950 U.S. gallons per minute at an operating pressure of 250 PSI with suction vacuum at the manifold inlet of 9 IN-Hg. The pump shall have an integrated chain drive ratio box with a ratio of 1:1.06. The pump gearbox shall be driven by a driveline from the truck power divider. The pump and pump transmission shall have the ability to run continuously without overheat issues in ambient temperatures up 110 degrees Fahrenheit. The pump body shall be vertically split on a single plane for easy removal of the entire impellor assembly including the bronze wear rings. The pump shall be constructed of the following materials;
    - Impeller: silicon brass UNS C87500
    - Pump body: cast bronze
    - Transmission: aluminum alloy
    - Transmission seals: nitrile lip seals
    - Transmission input shaft: stainless steel
    - The pump body and gearbox shall be painted in a durable red primer. The entire pump shall be bench tested at the original manufacturer to include 400 PSI pressure test and capacity test. A test certificate shall be provided with the vehicle.
    - A means shall be provided to automatically prevent the agent pump from overheating while engaged and operating at zero discharge through the installation of an automatic churn valve or thermal dump line
- The vehicle shall be equipped with a power divider component whose purpose is

to provide power from the engine output to both the vehicle driveline and the water pump when the pump is engaged. The power divider shall be located between the diesel engine and the automatic transmission, but shall be a distinctly separate component in the drive system. The power divider shall function fully automatically when the water pump is engaged or disengaged.

Water Reservoir and Piping:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

The water reservoir requirements and features shall include:

- A minimum usable capacity of 3,000 gallons (11,356L)
- Constructed of UV stabilized polypropylene.
- Sufficient longitudinal and transverse baffles shall be included to assure stability.
- Removable manhole covers, plates, or removable tops to permit access to the sump.
- Fitted with a sump, complete with antiswirl baffles, and a quarter-turn valve which has a handle accessible with a gloved hand.
- A top-fill opening diameter of at least 10 inches, a screen with maximum 1/4 inch mesh and a gasketed, latchable cap. Where practical all metal, hinges, covers, and handles shall be of stainless steel.
- Be vented to permit filling and overfilling and discharging in accordance with the A/C and 414 without exceeding the design operating pressure or causing the reservoir to collapse. Overflow shall be directed to the ground and away from the fill piping connections and vehicle components. Any restrictions in filling pressures shall be submitted in proposal and if approved, labels shall be installed at each fill station to indicate maximum fill pressure.
- If drilling of the water tank is necessary during the production of the vehicle, the tank and associated piping shall be thoroughly cleaned and inspected to insure that scraps from drilling have been completely removed.
- The discharge piping shall be sized to allow sufficient water to the pump for the simultaneous operation of all turrets, ground sweeps, Handlines and under truck nozzles, at the applicable discharge rates specified.
- The fill piping and connections shall be sized to permit filling in no more than two (2) minutes when the supply source provides sufficient volume at 80 psi (5.5 bar) at the reservoir fill connection, in addition to:
- Two (2) 5 inch Storz fill connections shall be provided, one for each side of the truck. The connection shall be provided with a protective strainer and fitted with a blind cap and chain.
- Two (2) 2-1/2 inch NSFHT fill connection shall be provided, one on each side of the truck. The connections shall be provided with a protective strainer and fitted with a cap and chain.
- Quarter turn valves shall have a label affixed to the valve or nearby showing the “OPEN” and “CLOSED” position of the valve.
- Any standing water in the fill connection manifold shall be drained by bleeder

valves.

- All connections, discharges, inlets, drains, gauges etc. must be labeled.
- All inlets and outlets shall be equipped with screens to protect from foreign objects and to provide cathodic protection.
- An audible alarm shall activate in the cab when the water level in the water tank drops below 25%. A dash switch shall silence the low level alarm.
- Two (2) external water tank level indicators shall be provided, with one (1) mounted on each side of the vehicle integrated into the tank side body panel. Each indicator shall have four (4) lights (from bottom to top - red, ~~blue, blue and~~yamber, blue, ~~blue~~green), visible in bright sunlight and at night from a distance of at least 500 feet. The lights shall turn off at ¼ intervals as the water tank level falls.

Structural Fire Fighting Control Panel:
The vehicle shall be provided with a 1000 gpm (3785 lpm) Class "A" structural firefighting system with fill from draft feature and a priming pump. All pump controls shall be located in a lower left side compartment with roll up shutter style doors for easy access. The system shall be provided with the following:

- A 5" Storz pump suction connection equipped with chrome cap and a .25 inch strainer shall be installed on the left side of the vehicle. A mating cap shall be provided that will be capable of withstanding pressures of 500 psi. The suction connection shall be connected to the pump with a minimum 3.00 inch waterway.
- A gated 2.50 inch female swivel pump supply connection shall be supplied near the pump operator's panel.
- Total Two (2) gated 2.50 NFHT male threaded connection shall be provided, One (1) on each side of the vehicle. Each connection shall be equipped with a 2.50 inch gauge mounted on the left hand side of the vehicle. Each discharge shall be equipped with a bleeder valve to bleed off air or water in the hose connected to it.
- A pump operator's panel shall be installed on the left hand side of the vehicle. This panel shall be an LCD display and consist of a minimum the following:
  - Pump engine tachometer
  - pump discharge pressure gauge
  - pump suction pressure gauge
  - Pump engine oil pressure gauge
  - Pump engine coolant temperature gauge
  - A hand throttle to control the pump engine speed
  - A means of selecting water or foam induction for discharge
  - A switch to control the operation of the priming pump and valve
  - Panel illumination
  - An indicator light that warns the operator not to open throttle unless the vehicle is safely engaged in the pump mode

Handlines:

Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- Two (2) pre-connected hand lines for the discharge of foam/water shall be provided, with both hand lines installed in crosslay configuration at the front of the lower compartment space. Each hand line shall have 200 feet of 1-3/4 hose in 50 foot lengths. The hand lines shall be capable of producing foam or water at a ~~95~~ 125 gpm rate at 100 psi.
- NPSH Adaptors shall be provided
- A toggle switch shall be provided to control the flow to each hand line.
- Rotary valves for the automatic charging of the handlines shall be placed adjacent to the crosslay area.
- Agent override switches shall be provided at all hand lines to allow an operator to manually by-pass the flow switches to trigger the vehicle to go to operating pressures for the hand lines.
- Two brackets for 6' pike pole with all-purpose hook.

- One (1) hose reel for the discharge of water and foam shall be provided in the left front compartment. The hose reel shall have 100 feet of 1.25" booster hose. The hose reel shall be ~~the swing out~~Fixed type and shall be equipped with rollers to assist the hose as it moves on and off of the reel. The reel shall have electric rewind and shall have provisions for manual rewind. A nozzle shall be provided that flows minimum 125 gallons per minute

TURRETS AND UNDERTRUCK NOZZLES

Bumper Turret (Primary):

Per the NFPA Standard 414 (2020 Edition) as amended by FAA 150/5220-10E Advisory Circular plus the following:

- A high volume bumper turret with low attack feature and a non-aspirating Akro-Chem or approved equal direct injection nozzle shall be provided.
- The nozzle sweep assembly shall consist of a double swivel joint allowing the nozzle to sweep in both horizontal and vertical planes. The horizontal axis rotation shall allow the nozzle to be directed at least 90º to either side of center for a minimum of 180 degree horizontal sweep. The elevation axis shall allow the nozzle to be elevated at least 45º above the horizontal and be depressed to discharge agent within 30 ft. of the front of the vehicle. Both horizontal and vertical drive motors shall be electric with a clutch mechanism and/or limit switches to prevent damage to the motors at rotation limits.
- The nozzle shall have a variable pattern control and have an automatic flow mechanism to maintain consistent pressure and flow at either discharge rate whether in the straight stream or fully dispersed (fog) pattern. The nozzle will be a non air aspirating type with 24 volt powered electric pattern actuation for straight stream or fog pattern selection. The nozzle shall meet or exceed all performance requirements defined in the A/C.
- The nozzle shall be equipped with a Akrochem, Hydro-Chem or approved equal non-aspirating direct injection nozzle capable of water/foam flow discharge rates

of 625/1250 gpm for a 3000 gallon vehicle and a dry chemical discharge rate of 16 pounds per second. The turret assembly shall be equipped with an automatic leveling device.

- An electronic joystick control shall be provided with integrated controls for discharge activation, selection of agent type, and discharge rates and patterns [from straight stream to fully dispersed (fog pattern)].
- The nozzle assembly shall be attached to a boom mechanism made of aluminum alloy for long life and corrosion resistance. The nozzle's mounting assembly shall be adequately reinforced to sustain all anticipated loads and reaction forces when the nozzle is discharging. The boom and nozzle assembly shall be designed to become an integral part of the front bumper and fascia.
- The device shall be capable of being lowered from the stored position, near bumper height, so that the centerline of the nozzle will be approximately 24" above the ground. The design shall allow the boom and nozzle to be stored in a position providing minimum protrusion from the front of the vehicle, while maintaining a 30 degree angle of approach. The movement of the boom and nozzle assembly shall be actuated by two hydraulic cylinders.
- The turret shall have a single LED spot light affixed to it.

Roof Turret:
Per the NFPA Standard 414 (2020 Edition) as amended by -10E A/C plus the following:

- A high volume roof turret and nozzle shall be provided. Water/foam flow discharge rates of 625/1250 gpm – Akron Nozzle
- The nozzle shall have a variable pattern control and have an automatic flow mechanism to maintain consistent pressure and flow at either discharge rate whether in the straight stream or fully dispersed (fog) pattern. The nozzle will be a non-air aspirating type with 24 volt powered electric pattern actuation for straight stream or fog pattern selection. The nozzle shall meet or exceed all performance requirements defined in the A/C.
- An electronic joystick control shall be provided with integrated controls for discharge activation, selection of agent type, and discharge rates and patterns [from straight stream to fully dispersed (fog pattern)].
- The nozzle's mounting assembly shall be adequately reinforced to sustain all anticipated loads and reaction forces when the nozzle is discharging.

Under truck Nozzles:
Per the NFPA Standard 414 (2020 Edition) as amended by FAA 150/5220-10E Advisory Circular plus the following;

- A minimum of (4) four under truck nozzles shall be provided, capable of providing a sufficient foam/water combined spray pattern to cover the total undertruck area as well as the inner sides of the wheels and tires.

Ladder Storage
A Rear Ladder bracket with a Little Giant Model 26 shall be provided and attached to the rear of the truck. Left side mounted

On-site Training (SMEG Provided)
At time of delivery the successful bidder shall provide a factory-trained technician, from the manufacturers' headquarters, to perform the following:

- Post-delivery inspection of the finished vehicle
- Prepare vehicle for service
- Complete final adjustments to all operating systems
- Conduct operator familiarization training for each shift of operators
- Conduct basic maintenance familiarization training for the maintenance staff

Pre-Construction Conference (SMEG Provided)

Mid-Inspection (SMEG Provided)

Factory Inspection Visit (SMEG Provided)

Chassis Manufacturer Certification
Chassis manufacturer shall be ISO 9001 certified for the production of heavy trucks. Claims of self-certification programs are self serving and are not acceptable for this procurement activity. Third party verification is required given the import and scope of the equipment and the purchaser's equipment procurement program. Certification documentation of chassis manufacturer compliance with 9001 FROM AN ACCREDITED THIRD PARTY is required in the bid package. Bids not including this documentation will be deemed not acceptable.