**NFPA 2016 STANDARDS**

This apparatus specification includes a commercial chassis that has not been certified to meet the requirements of NFPA 1901 by the chassis manufacturer. The body as built by the manufacturer must comply with the NFPA standards effective January of 2016.

Certification of slip resistance of all stepping, standing and walking surfaces must be supplied with delivery of the apparatus.

All horizontal surfaces designated as a standing or walking surface that are greater than 48.00" above the ground must be defined by a 1.00" wide line along its outside perimeter. Perimeter markings and designated access paths to destination points will be identified on the customer approval print and are shown as approximate. Actual location(s) will be determined based on materials used and actual conditions at final build. Access paths may pass through hose storage areas and opening or removal of covers or restraints may be required. Access paths may require the operation of devices and equipment such as the aerial device or ladder rack.

A plate that is highly visible to the driver while seated will be provided. This plate will show the overall height, length, and gross vehicle weight rating.

The manufacturer will have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company will designate, in writing, who is qualified to witness and certify test results.

**NFPA COMPLIANCY**

Apparatus proposed by the bidder will meet the applicable requirements of the National Fire Protection Association (NFPA) *1901, Standard for Automotive Fire Apparatus* as stated in the current edition at time of contract execution. The Ohio Fire Academy specifications that differ from NFPA specifications will be indicated in the proposal as "non- NFPA."

**PUMP TEST**

The rated water pump will be tested, approved, and certified by an ISO certified independent third-party testing agency at the manufacturer's expense. The test results, along with the pump manufacturer's certification of hydrostatic test, the engine manufacturer's certified brake horsepower curve, and the manufacturer's record of pump construction details will be forwarded to the Ohio Fire Academy.

**REFERENCE DRAWING**

A drawing depicting the basic configuration of the model of the proposed apparatus will be provided.

This drawing will indicate the major components such as the chassis make and model, body configuration and door style, location of the standard lights, etc.

**ELECTRICAL WIRING DIAGRAMS**

Two (2) electrical wiring diagrams, prepared for the body as it interfaces with the commercial chassis, will be provided.

**CHASSIS**

A Kenworth commercial, Model T380 conventional chassis, supplied with the following equipment:

**WHEELBASE**

The wheelbase of the vehicle will be approximately 235 inches.

**GVW RATING**

The gross vehicle weight rating will be 33,000#.

**FRAME**

The frame rails will be formed from 120,000 psi yield, heat treated alloy steel. The frame rails will be E- coated prior to painting.

**FRAME LINER**

An 0.25" inner frame reinforcement will be provided. The frame section properties will be:

- Section Modulus: 26.50 cubic inch, per rail

- RBM: 3,200,000 in-lb, per rail

- Yield Strength: 120,000 psi, per rail

**FRONT AXLE**

Front axle will be an I beam type, made of forged steel with a ground rating capacity of 12,000 lb.

**FRONT SUSPENSION**

Spring mounted: Taper-leaf

Capacity at Ground: 12,000 lb

Shock absorbers will be provided on the front axle.

**FRONT BRAKES**

The front brakes will be 16.5” vented disc.

**TIRES, FRONT**

Front tires will be 11R22.50, radial tires with a tread pattern suitable for the steering axle position. The capacity of the tires will meet or exceed the rating of the axle and/or suspension.

**WHEELS, FRONT**

Wheels for the front axle will be 22.50" x 8.25" steel painted to match body (red) with polished stainless steel center hub caps.

**REAR AXLE**

The single reduction rear axle will be provided with a ground rating capacity of 27,000 lb.

**PARKING BRAKE**

The parking brake will be spring set and located on the rear axle service brake.

Rear axle brakes will be 16.50" x 7.00", S-Cam drum type brakes. Automatic slack adjusters will be provided.

**REAR AXLE RATIO**

A rear axle ratio will be furnished to allow the vehicle to reach a top speed of 68 MPH.

**REAR SUSPENSION**

The rear suspension will be spring mounted multi-leaf with a capacity at ground level of 27,000 lbs.

**REAR BRAKES**

The rear brakes will be S-Cam, 16.50" x 5.00" and be equipped with slack adjusters.

**TIRES, REAR**

Rear tires will be 12R22.50 radial tires with a traction tread pattern suitable for the drive axle position. The tires will meet or exceed the weight rating of the axle and/or suspension.

**WHEELS, REAR**

The rear wheels will be 22.50" x 8.25" disc. The wheels will be steel painted to match the body (red) with polished stainless steel center hub caps.

**TIRE PRESSURE MANAGEMENT**

There will be a visual tire pressure management system provided, that will monitor each tire's pressure. A sensor will be provided on the valve stem of each tire for a total of six (6) tires.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi.

**CHROME LUG NUT COVERS**

Chrome lug nut covers will be supplied on front and rear wheels.

**WHEEL CHOCKS**

NFPA 1901, 2016 edition, section 5.9.4 requires two (2) or more wheel chocks mounted in readily accessible locations, that together will hold the apparatus, when loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released.

The wheel chocks will be Ziamatic SAC-44-E folding wheel chocks.

**WHEEL CHOCK BRACKETS**

The wheel chock brackets will be Ziamatic SQCH-44-H folding chock holders mounted under the L1 compartment.

**ANTI-LOCK BRAKE SYSTEM**

The vehicle will be equipped with an anti-lock braking system. The ABS will provide anti-lock braking control on both the front and rear wheels. It will be a digitally controlled system that utilizes microprocessor technology to control the anti-lock braking system. Each wheel will be monitored by the system. When any wheel begins to lockup, a signal will be sent to the control unit. This control unit

then will reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system will eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

**AIR COMPRESSOR, BRAKE SYSTEM**

The air compressor will have a minimum output of 18.7 cubic feet per minute.

**AIR DRYER**

An air dryer with a heater will be provided. Other features of this air dryer include:

- Desiccant style filter

- In-line filtration system

- Automatic purge valve

**AIR INLET**

A single air inlet with male coupling will be provided. It will allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet will be located near the pump operator's position. A check valve will be provided to prevent reverse flow of air. The inlet will discharge into the "wet" tank of the brake system. A mating female coupling will also be provided with the loose equipment.

**ENGINE**

• Model: Electronic Cummins L9N DOC-DPF-DEF-SCR OBD

• Number of Cylinders: Six (6)

• Rated Brake Horsepower: 380 HP at 2200 rpm

• Governed rpm: 2200

• Turbocharger

• Charge Air Cooled

• Fuel System: Hydraulically Actuated, Electronically Controlled Unit Injectors (HEUI)

**ENGINE ACCESSORIES**

• Air Cleaner: Dry type, with restriction indicator in cab

• Fuel Filters: Dual, with check valve

• Governor: Limiting speed type

• Lube Oil Cooler

• Lube Oil Filter: Full flow

• Starting Motor: 12-volt

• Oil Fill and Level Gauge

**RADIATOR**

• Pressurized System, Tube and Fin

• Deaeration Tank and Sight Glass

• Anti-Freeze Protection -30 Degrees Fahrenheit

**HIGH IDLE**

A high idle switch will be provided on the instrument panel inside the cab. Activating the switch will cause the vehicle to automatically maintain a preset engine rpm.

The high idle switch will be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light will be provided adjacent to the switch. The light will be labeled "OK To Engage High Idle."

**ENGINE BRAKE**

A Jacobs ® engine brake for Cummins L engines will be provided. The control will be located on the instrument panel within easy reach of the driver.

**FUEL/WATER SEPARATOR**

A fuel/water separator will be provided on the chassis. It will include a "water in fuel" sensor, hand primer and a 12-volt pre-heater.

**AIR INTAKE, W/EMBER SEPARATOR**

The air inlet will be equipped with a stainless-steel mesh to separate water and burning embers from the air intake system such that particulate matter larger than 0.039" (1.0 mm) in diameter cannot reach the air filter element.

This will comply with NFPA 1901 and 1906 standards.

**EXHAUST SYSTEM**

The exhaust system will include a diesel particulate filter (DPF) and a selective catalytic reduction (SCR) device to meet current EPA standards. The DPF and SCR will be mounted horizontally outside of the frame rails in the right side front step area.

**EXHAUST MODIFICATIONS**

The exhaust will terminate with a horizontal tailpipe and diffuser ahead of the right-side rear wheels.

A heat deflector shield will be provided where the tail pipe is routed under any side compartmentation. All modifications will be approved by the chassis engine manufacturer and/or the chassis OEM.

Exhaust treatment devices will not be altered.

**COOLANT LINES**

Gates Blue Stripe rubber hose will be used for all engine coolant lines installed by the chassis manufacturer.

Hose clamps will be the constant torque type to prevent coolant leakage. They will expand and

contract according to coolant system temperature thereby keeping a constant clamping pressure on the hose.

**FUEL TANK**

A 65 gallon fuel tank will be provided and mounted at the left-hand cab step.

**DIESEL EXHAUST FLUID TANK**

A diesel exhaust fluid (DEF) tank will be provided and mounted on the left side, below the cab.

The tank will be sized by the chassis manufacturer based on the engine provided. It will include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

**FUEL PRIMER PUMP**

A fuel primer pump will be included with the heated fuel water separator.

**AUXILIARY FUEL COOLING SYSTEM**

A supplementary fuel cooling system will be provided to allow the use of water from the discharge side of the pump for cooling the chassis engine fuel. The heat exchanger will be a cylindrical type and will be a separate unit. The cooler will operate any time the pump is discharging water and will be plumbed to the master drain valve.

**TRANSMISSION**

An Allison Emergency Vehicle rated 3000 Series transmission will be provided. Transmission will be sized appropriately for vehicle GVWR for a fire pumper with split shaft PTO. To qualify for the EVS rating, the transmission will be filled with synthetic transmission fluid.

A transmission temperature gauge or warning light will be installed on cab instrument panel.

**TRANSMISSION SHIFT CONTROL**

A push button shift module will be mounted to right of driver. Shift position indicator will be indirectly lit for after dark operation.

The transmission will be a five (5)-speed.

**TRANSMISSION COOLER**

A transmission oil cooler will be provided in a tank in front of the radiator.

**DRIVELINE**

Drivelines will be a heavy-duty metal tube equipped with universal joints properly sized for the application. A splined slip joint will be provided in each driveshaft.

**STEERING**

The steering system will be hydraulically driven. The steering column will have an adjustable tilt and telescope feature.

**BUMPER**

The standard full width, 3-piece, chrome plated, steel bumper furnished with the chassis will be used

**TOW HOOKS**

Two (2) painted, forged steel tow hooks will be provided.

**CAB**

A 4-door, high-roof cab will be provided.

The cab and doors will be of an aluminum construction.

The rear of the crew cab will be a solid panel with no windows.

**CAB INTEGRITY**

The cab must be tested to and pass the following standards:

- DOT crash standards

- ECE Regulation No.29

- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.

- NFPA 1901 Standard for Automotive Fire Apparatus

**Interior**

Forward roof mounted console

Multi-spec black speckle paint w/ gray-black

Dual Sun visors

Fresh Air Heater and Defroster

**CAB GRILLE, INTERIOR CONVENIENCE AND EXTERIOR APPEARANCE PACKAGE**

The cab exterior will have a high impact plastic chromed grille and matching headlight bezels. The grille will tilt with the hood.

Additionally, the headlight bezels and the engine air intake housing will have a chrome finish.

The cab interior will include black dash panels, molded door panels and brushed aluminum door kick plates.

**MIRRORS**

West Coast style heated, remote operated mirrors constructed from a molded composite material with a bright finish will be provided. A heated 8.00" convex mirror shall be included below the primary mirrors.

**AIR HORNS**

Air horns, dual, GROVER #2040, will be provided as part of the emergency warning package. Air horns will be mounted behind front bumper. Bumper will have cutouts to allow uninhibited sound projection.

Air horns will be wired to steering wheel button, a momentary button on the officer’s side dash, and a momentary button on the pump panel. There will be no foot controlled switches on the floor on either side of the truck.

**CAB ACCESS STEPS**

The cab steps will be provided by the chassis manufacturer. The stepping surface will be constructed from polished stainless steel and have a punch formed slip resistant surface and be no higher than 12” from ground.

No modifications of any type will be provided by the apparatus manufacturer.

**STEP LIGHTS**

There will white LED step lights provided to meet NFPA step lighting requirements. Lights will be installed at each cab and crew cab doorstep.

The lights will be activated when the adjacent door is opened.

**POWER WINDOWS AND LOCKS**

The cab doors will have electrically powered windows and locks.

**DAYTIME RUNNING LIGHTS**

The chassis will be provided with daytime running lights.

**AIR CONDITIONING**

An air conditioner will be provided that is integral with heater and defroster system.

**ENGINE COMPARTMENT LIGHTS**

Two (2) engine compartment lights will be installed under the engine hood, of which the switches are an integral part.

**SEATING CAPACITY**

The seating capacity in the cab will be five (5).

**SEATING**

Seating inside the cab will consist of H.O. Bostrom Sierra air-ride driver seat and Bostrom Tanker 550

Air-50 RX / ABTS SLS air-ride officer seat with SCBA holder

**SEATING (CREW CAB)**

Three (3) individual Bostrom Tanker 550 ABTS SLS SCBA style seats will be provided inside the crew cab. Each seat will be mounted to an individual storage box with drop down hinged door and latch.

**SEAT BELT WEB LENGTH**

NFPA 14.1.3.2 and 14.1.3.3 requires effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60 in., and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110 in.

Per Ohio Fire Academy specification of a commercial chassis, this apparatus will have seat belts of the required length. These belts will provide sufficient length for large firefighters in bunker gear. This apparatus will be compliant to NFPA standards effective at time of contract execution.

**SEAT BELTS**

All seating positions in the cab and crew cab will have highly visible (orange) seat belts.

**HELMET STORAGE PROVIDED BY fire apparatus manufacturer**

NFPA 1901, 2016 edition, section 14.1.7.4.1 requires a location for helmet storage be provided.

The fire apparatus manufacturer will provide helmet storage.

**CAB INSTRUMENTS**

- Engine Temperature Gauge and Warning Buzzer

- Engine Oil Pressure Gauge and Warning Buzzer

- Speedometer with Odometer

- Engine Tachometer

- Engine Hour meter

- Fuel Level Gauge

- DEF Level Gauge and Warning Lamp

- Voltmeter: Low voltage red warning light and audible alarm

- Air Brake Pressure Gauge

- Air Restriction Indicator

- Circuit Breakers: For overload protection of electric circuits

- Ignition Switch: Keyless type

**EMERGENCY SWITCH PANEL**

An emergency switch panel will be provided in the cab. The switch panel will be located within reach of the driver. All NFPA required emergency lights will be controlled from the master emergency switch. References within this proposal to a "switch in the cab" for zone specific options will mean the emergency master switch.

**"DO NOT MOVE APPARATUS" INDICATOR**

A flashing red indicator light (located in the driving compartment) will be illuminated automatically per the current edition of NFPA. The light will be labeled "Do Not Move Apparatus If Light Is On".

The same circuit that activates the Do Not Move Apparatus indicator will not activate any alarm when the parking brake is set.

**DO NOT MOVE TRUCK MESSAGES**

A message will be displayed in view of the driver whenever any of the following conditions exist:

• CAB DOOR OPEN (Any Cab Door Open with ignition on)

• LH COMPARTMENT OPEN (Any Left-Hand Compartment Door Open)

• RH COMPARTMENT OPEN (Any Right-Hand Compartment Door Open)

• REAR DOOR OPEN (Any Rear Compartment Door Open)

A warning message will also be displayed for any other device that is opened, extended or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved.

**WIPER CONTROL**

Wiper control will include an intermittent feature and windshield washer controls.

**CAMERA SYSTEM**,

A FRC, INVIEW TRUEVIEW, single rear view camera will be provided. Monitor screen will be mounted so as to not inhibit driver’s view. Camera mounted center/rear of body. System will be hardwired.

**POWER RECEPTACLES**

There will be two (2) power receptacles located in the dash provided by the chassis manufacturer. The circuit(s) may be load managed when the parking brake is set.

**VEHICLE DATA RECORDER**

There will be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR will be available to download on-line.

The vehicle data recorder will be capable of recording the following data via hardwired and/or CAN

inputs:

• Vehicle Speed - MPH

• Acceleration - MPH/sec

• Deceleration - MPH/sec

• Engine Speed - RPM

• Engine Throttle Position - % of Full Throttle

• ABS Event - On/Off

• Seat Occupied Status - Yes/No by Position

• Seat Belt Buckled Status - Yes/No by Position

• Master Optical Warning Device Switch - On/Off

• Time - 24 Hour Time

• Date - Year/Month/Day

**Seat Belt Monitoring System**

A seat belt monitoring system (SBMS) will be provided. The SBMS will be capable of monitoring up to six (6) seating positions indicating the status of each seat position per the following:

• Seat Occupied & Buckled = Green LED indicator illuminated

• Seat Occupied & Unbuckled = Red LED indicator with audible alarm

• No Occupant & Buckled = Red LED indicator with audible alarm

• No Occupant & Unbuckled = No indicator and no alarm

The SBMS will include an audible alarm that will warn that an unbuckled occupant condition exists and the parking brake is released, or the transmission is not in park.

**TWO-WAY RADIO ACCOMMODATION PACKAGE**

One set of 12 volt wire leads will be provided for the future installation of a two-way radio. These leads will consist of one (1) 30-amp battery direct circuit, one (1) 10-amp battery switched circuit and one (1) ground circuit. These leads will be 6' long and terminate behind the cab dash with heat shrink caps.

Two (2) NMO mobile radio antenna mount with RG-58A/U stranded coaxial cable will be provided. The antenna mount will be installed through the cab roof, and the coaxial cable will be routed behind the

cab dash. All wiring will be neatly coiled and clearly marked.

A weatherproof cap for the antenna mount will also be installed.

**ELECTRICAL**

All 12-volt electrical equipment installed by the apparatus manufacturer will conform to modern automotive practices. All wiring will be high temperature crosslink type. Wiring will be run in loom or conduit where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers will be provided which conform to SAE Standards. Wiring will be color, function and number coded. Function and number codes will be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors will be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment will be installed utilizing the following guidelines:

(1) All holes made in the roof will be caulked with silicon. Rope caulk is not acceptable. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.

(2) Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.

(3) Electrical components designed to be removed for maintenance will not be fastened with nuts and bolts. Metal screws will be used in mounting these devices. Also, a coil of wire will be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.

(4) Corrosion preventative compound will be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation (of the plug).

(5) All lights that have their sockets in a weather exposed area will have corrosion preventative compound added to the socket terminal area.

(6) All electrical terminals in exposed areas will have silicon (1890) applied completely over the metal portion of the terminal. All emergency light switches will be mounted on a separate panel installed in the cab. A master warning light switch and individual switches to be provided to allow pre-selection of emergency lights. The light switches will be "rocker" type with an internal indicator light to show when switch is energized. All switches will be properly identified and mounted in a removable panel for ease in servicing. Identification of the switches will be done by either printing or etching on the switch panel. The switches and identification will be illuminated.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, will be furnished. Rear identification lights will be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads will be protected from damage by installing a false bulkhead inside the rear compartments.

An operational test will be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the tests will be recorded and provided to the purchaser at time of delivery.

**BATTERY SYSTEM**

A single starting battery system will be provided consisting of two (2) INTERSTATE TYPE 31 MHD,12-volt, maintenance-free batteries. The battery system will have a minimum of 2000 CCA

**Jump Start Connections**

Positive and negative posts for jump starting will be provided by the chassis manufacturer. They will be frame mounted and located under the hood.

**MASTER BATTERY SWITCH**

A master battery switch, to activate the battery system, will be provided inside the cab within easy reach of the driver.

The master battery disconnect switch will be wired between the starter solenoid and the remainder of the electrical loads on the apparatus.

A green "battery on" indicator light, visible from the driver's position, will be provided.

**BATTERY CHARGER**

A Single System, Kussmaul, 1200, will be provided.

The battery charger will be wired to the AC shoreline inlet as defined elsewhere in this proposal.

**BATTERY CHARGER LOCATION**

The battery charger will be located in the left side forward body compartment. It will be mounted as high and forward as practical to keep it protected and away from other equipment in the compartment.

**SHORELINE**

There will be one (1) shoreline inlet provided to operate the 120-volt circuits on the truck without the use of the generator.

The shoreline receptacle (s) will be provided with a KUSSMAUL SUPER 20 AUTO EJECT, NEMA 5-20, 120 volt, 20 amp, straight blade plug and yellow cover.

The shoreline will be connected to the battery charger.

A mating connector body will also be supplied with the loose equipment. The shoreline receptacle will be located on the driver side of pump panel.

**ALTERNATOR**

The alternator will be a LEECE NEVILLE 420 AMP BLP4003, with remote battery voltage senser.

**ELECTRONIC LOAD MANAGEMENT**

Included with the apparatus manufacturer's electrical system will be a programmable load management system.

This system will monitor the vehicle's 12-volt electrical system, and automatically reduce the electrical load in the event of a low voltage condition and by doing so, ensures the integrity of the electrical system.

**EXTERIOR LIGHTING**

Exterior lighting will meet or exceed Federal Department of Transportation, Federal Motor Vehicle

Safety Standards and National Fire Protection Association requirements in effect at this time. Front headlights will be LED type and comply to all FMVSS requirements.

Five (5) LED clearance/marker lights will be installed across the leading edge of the cab.

**REAR CLEARANCE/MARKER/ID LIGHTING**

There will be three (3) LED identification lights located at the rear installed per the following:

• As close as practical to the vertical centerline

• Centers spaced not less than 6.00" or more than 12.00" apart

• Red in color

• All at the same height

There will be two (2) LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

• To indicate the overall width of the vehicle

• One (1) each side of the vertical centerline

• As near the top as practical

• Red in color

• To be visible from the rear

• All at the same height

There will be two (2) LED lights installed on the side of the apparatus used as marker lights as close to the rear as practical per the following:

• To indicate the overall length of the vehicle

• One (1) each side of the vertical centerline

• As near the top as practical

• Red in color

• To be visible from the side

• All at the same height

The lights will be mounted with no guard.

There will be two (2) red reflectors located on the rear of the truck facing to the rear. One (1) each side, as far to the outside as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

There will be two (2) red reflectors located on the side of the truck facing to the side. One (1) each

side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground. Per FMVSS 108 and CMVSS 108 requirements.

**REAR FMVSS LIGHTING**

There will be two (2) wrap around tri-cluster LED modules provided on the face of the rear body compartments.

Each tri-cluster will include the following:

• One (1) LED stop/tail light

• One (1) LED directional light

• One (1) LED backup light

**LICENSE PLATE BRACKET**

There will be one (1) license plate bracket mounted on the rear of the body.

A white LED light will illuminate the license plate. A stainless-steel light shield will be provided over the light that will direct illumination downward, preventing white light to the rear.

**BACK-UP ALARM**

A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse will be provided. The device will sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

**CAB PERIMETER SCENE LIGHTS**

There will be four (4) Truck-Lite, Model 6060C, white LED lights with grommets provided, one (1) for each cab and crew cab door.

These lights will be activated automatically when the battery switch is on, and the exit doors are opened or by the same means as the body perimeter scene lights.

**CAB MOUNTED WATER TANK LEVEL LIGHTS**

There will be four (4) WHELEN, Model M7, LED lights with grommets provided, mounted on each side of the crew cab between the crew cab door and the rear corner of the crew cab.

These lights will be activated automatically when the pump is engaged and synced to the water tank level indicator lights on the pump panel.

The color coding of the lights will be as follows: white = full tank, blue = ¾ tank, amber = ½ tank, red (flashing) = ¼ tank.

**PUMP HOUSE PERIMETER LIGHTS**

There will be two (2) Truck-Lite, Model 6060C, white LED lights with grommets provided under the pump panel running boards, one (1) each side.

The lights will be controlled by the same means as the body perimeter lights.

**BODY PERIMETER SCENE LIGHTS**

There will be one (1) Truck-Lite, Model 6060C, white LED light with grommets provided under each storage compartment; one in front of the rear wheels and one behind the rear wheels on each side of the truck.

There will be two (2) Truck-Lite, Model 6060C, white LED lights with grommets provided under at the rear step area of the body, one (1) each side shining to the rear.

The perimeter scene lights will be activated when the parking brake is applied.

**STEP LIGHTS**

White LED, step lights will be provided to meet the NFPA step lighting requirement. Lights will be provided on each side, on the front compartment face and at the rear to illuminate the tailboard.

These step lights will be actuated with the parking brake.

All other steps on the apparatus will be illuminated per the current edition of NFPA 1901.

**SCENE LIGHTS**

There will be eight (8) WHELEN PIONEER PCPSM1C, LED scene lights provided. These lights will direct light downward via internal optics.

There will be one (1) light each side on the rear of the apparatus.

There will be two (2) lights mounted on each side of the bed body above the compartments. These WHELEN PIONEER PCPSM1C lights will be dual panel, flood.

There will be two (2) lights mounted as brow lights above the windshield on the front of the cab.

A control for the lights selected above will be the following:

• a switch at the driver's side switch panel

• no additional switch location

**WALKING SURFACE LIGHT**

There will be Model FRP, 4" round black 12-volt DC LED floodlight(s) with bolt mount provided to illuminate the entire designated walking surface on top of the body.

The light(s) will be activated when the body step lights are on.

**WATER TANK**

Booster tank will have a capacity of 750 gallons and be constructed of polypropylene plastic. Tank joints and seams will be nitrogen welded inside and out.

Tank will be baffled in accordance with NFPA Bulletin 1901 requirements.

Baffles will have vent openings at both the top and bottom to permit movement of air and water between compartments.

Tank top will be sufficiently supported to keep it rigid during fast filling conditions.

A sump will be provided at the bottom of the water tank and include a drain plug and the tank outlet. Tank will be installed in a fabricated cradle assembly constructed of structural steel.

Sufficient crossmembers will be provided to properly support bottom of tank. Crossmembers will be constructed of steel bar channel or rectangular tubing.

Tank will "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions,

.50" thick x 3.00" wide, will be placed on all horizontal surfaces that the tank rests on.

Stops or other provision will be provided to prevent an empty tank from bouncing excessively while moving vehicle.

Mounting system will be approved by the tank manufacturer.

Fill tower will be constructed of .50" polypropylene and will be a minimum of 8.00" wide x 14.00" long. Fill tower will be furnished with a .25" thick polypropylene screen and a hinged cover.

An overflow pipe, constructed of 4.00" schedule 40 polypropylene, will be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

**HOSE BED**

The floor of the hose bed will be considered a “low hose bed” and constructed as close to the ground as possible.

The hose bed will be fabricated of .125"-5052 aluminum with a nominal 38,000 psi tensile strength. Upper and rear edges of side panels will have a double break for rigidity.

Flooring of the hose bed will be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats will be a minimum of 0.50" x 4.50" with spacing between slats for hose ventilation.

**HOSEBED ILLUMINATION**

The hose bed will be illuminated with LED lighting. The lights will have control from a switch at the rear of the truck.

**HOSE BED DIVIDER**

Five (5) adjustable hose bed dividers will be furnished for separating hose.

Each divider will be constructed of a .25" brushed aluminum sheet. Flat surfaces will be sanded for uniform appearance and constructed of brushed aluminum.

Divider will be fully adjustable by sliding in tracks, located at the front and rear of the hose bed. Divider will be held in place by tightening bolts, at each end.

Acorn nuts will be installed on all bolts in the hose bed which have exposed threads.

**HOSE BED CAPACITY**

The hose bed will have the capacity to carry following hose requirements:

• 1 ¾” hose – 300’

• 1 ¾” hose – 300’

• 5” LDH – 800’

• 3” – 800’

• 2 ½” – 300’

• 2 ½” – 300’

**HOSE BED HOSE RESTRAINT**

The hose in the hose bed will be restrained by a red vinyl tarp that covers the entire hose bed. The hose bed cover will be secured with bungie cords with red tabs on all sides. Fasteners protruding into hose bed shall be flush so as to not impede hose deployment.

**RUNNING BOARDS**

Running boards will be fabricated of .125" bright aluminum treadplate.

Each running board will be supported by a welded 2.00" square tubing and channel assembly, which will be bolted to the pump compartment substructure.

Running boards will be 12.75" deep and spaced .50" away from the pump panel. A splash guard will be provided above the running board treadplate.

**TAILBOARD**

The tailboard will also be constructed of .125" bright aluminum treadplate and spaced .50" from the

body, as well as supported by a structural steel assembly.

The tailboard area will be 12.00" deep and full width of the body.

The exterior side will be flanged down and in for increased rigidity of tailboard structure.

**REAR WALL, SMOOTH ALUMINUM/BODY MATERIAL**

The rear facing surfaces of the center rear wall will be smooth aluminum.

The bulkheads, the surface to the rear of the side body compartments, will be smooth and the same material as the body.

The rear wall will be flush.

**TOW BAR**

A tow bar will be installed under the tailboard at center of truck.

Tow bar will be fabricated of 1.00" CRS bar rolled into a 3.00" radius.

Tow bar assembly will be constructed of .38" structural angle. When force is applied to the bar, it will be transmitted to the frame rail.

Tow bar assembly will be designed and positioned to allow up to a 30-degree upward angled pull of

17,000 lb, or a 20,000 lb straight horizontal pull in line with the centerline of the vehicle.

Tow bar design will have been fully tested and evaluated using strain gauge testing and finite element analysis techniques.

**COMPARTMENTATION**

Body and compartments will be fabricated of .125", 5052-H32 aluminum. Side compartments will be an integral assembly with the rear fenders.

Circular fender liners will be provided for prevention of rust pockets and ease of maintenance.

Drip protection will be provided above the doors.

All screws and bolts protruding into a compartment will terminate with acorn nuts to prevent injury.

**UNDERBODY SUPPORT SYSTEM**

Due to the severe loading requirements of this pumper a method of body and compartment support suitable for the intended load will be provided.

The backbone of the support system will be the chassis frame rails which is the strongest component of the chassis and is designed for sustaining maximum loads.

**AGGRESSIVE WALKING SURFACE**

All exterior surfaces designated as stepping, standing, and walking areas will comply with the required average slip resistance of the current NFPA standards.

**TESTING OF BODY DESIGN**

Body structural analysis will be fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging will be performed with special attention given to fatigue, life and structural integrity of the cab, body and substructure.

Body will be tested while loaded to its greatest in-service weight. The criteria used during the testing procedure will include:

- Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.

- Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions.

- Driving the vehicle at 35 mph on a washboard road.

- Driving the vehicle at 55 mph on a smooth road.

- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement. Evidence of actual testing techniques will be made available upon request.

**LEFT SIDE COMPARTMENTATION**

All storage compartments shall be constructed to the dimensions identified below. Manufacturer standard compartment sizes that vary nominally from the dimensions listed below will be accepted.

All compartment interiors will be coated with gray rubberized protective coating, Line-X®, Rhino® or equivalent.

A full height, roll-up door compartment ahead of the rear wheels will be provided. The interior dimensions of this compartment will be 29" wide x 60" high x 26" deep in the lower section of the compartment and 13" deep in the remaining upper portion. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be at least 26" wide x 60" high.

The compartment will be outfitted with up to 10 Sensible Products® fitting holders for securing hose fittings, adapters, and connectors and an SCBA mounting bracket and collision securing device for the driver’s SCBA.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

A roll-up door compartment over the rear wheels will be provided. The interior dimensions of this compartment will be 59" wide x 35" high x 13" deep. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The clear door opening of this compartment will be 56" wide x 35" high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

A full height, roll-up door compartment behind the rear wheels will be provided. The interior dimensions of this compartment will be 48" wide x 60" high x 26" deep in the lower section and 13" deep in the remaining upper section of the compartment. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 45" wide x 63" high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

**RIGHT SIDE COMPARTMENTATION**

All storage compartments shall be constructed to the dimensions identified below. Manufacturer standard compartment sizes that vary nominally from the dimensions listed below will be accepted.

All compartment interiors will be coated with gray rubberized protective coating, Line-X®, Rhino® or equivalent.

A full height, roll-up door compartment ahead of the rear wheels will be provided. The interior dimensions of this compartment will be 29" wide x 60" high x 26" deep in the lower section of the compartment and 13" deep in the remaining upper portion. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 26" wide x 63" high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

A roll-up door compartment over the rear wheels will be provided. The interior dimensions of this compartment will be 59" wide x 34" high x 13" deep. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The clear door opening of this compartment will be 59" wide x 35" high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

A full height, roll-up door compartment behind the rear wheels will be provided. The interior dimensions of this compartment will be 48" wide x 60" high x 26" deep in the lower 30" of height and 13" deep in the remaining upper section of the compartment. The height of the compartment will be measured from the compartment floor to the bottom edge of the door roll. The depth of the compartment will be calculated with the compartment door closed. The compartment interior will be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment will be 45" wide x 60" high.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

**ROLLUP DOORS**

There will be six (6) compartment doors installed on the side compartments. The doors will be double faced aluminum construction, powder coated (paint not accepted) red to match the body color.

Lath sections will be an interlocking rib design and will be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint will be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals will allow door to operate in extreme temperatures ranging from 180 to -40 degrees Fahrenheit. Side, top and bottom seals will be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces will be nylon 66. All nylon components will withstand temperatures from 300 to -40 degrees Fahrenheit.

A polished stainless steel lift bar to be provided for each roll-up door. Lift bar will be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge will be supplied over lift bar for additional area to aid in closing the door.

Doors will be constructed from an aluminum box section. The exterior surface of each slat will be flat. The interior surfaces will be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartments, the spring roller assembly will not exceed 3.00" in diameter. The header for the rollup door assembly will not exceed 4.00".

A heavy-duty magnetic switch will be used for control of open compartment door warning lights.

**REAR COMPARTMENTATION**

The rear compartment will be open into the rear side compartments A roll-up door compartment above the rear tailboard will be provided. All compartment interiors will be coated with gray rubberized protective coating, Line-X®, Rhino® or equivalent.

Interior dimensions of this compartment will be 42" wide x 56" high x 27" deep in the lower

section of the compartment and 19" deep in the remaining upper portion. Depth of the compartment will be calculated with the compartment door closed.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism and will easily be accomplished with one hand.

**ROLLUP REAR COMPARTMENT DOOR**

There will be a rear rollup door. The door will be double faced aluminum construction, powder coated (paint not accepted) red to match the body color.

Lath sections will be an interlocking rib design and will be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint will be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals will allow door to operate in extreme temperatures ranging from 180 to -40 degrees Fahrenheit. Side, top and bottom seals will be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces will be nylon 66. All nylon components will withstand temperatures from 300 to -40 degrees Fahrenheit.

A polished stainless steel lift bar to be provided for each roll-up door. Lift bar will be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge will be supplied over lift bar for additional area to aid in closing the door.

Door will be constructed from an aluminum box section. The exterior surface of each slat will be flat. The interior surface will be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartments, the spring roller assembly will not exceed 3.00" in diameter. The header for the rollup door assembly will not exceed 4.00".

A heavy-duty magnetic switch will be used for control of open compartment door warning lights.

**COMPARTMENT LIGHTING**

All compartments will be illuminated with two (2), TECNIQ LED E41 compartment light strips. All body compartments with roll-up doors will have these strip lights mounted vertically along the door framing on both sides.

Opening the compartment door will automatically turn the compartment lighting on.

**MOUNTING TRACKS**

The full height compartments (LS1, LS3, RS1,and RS3) will have full height mounting tracks installed vertically to support the adjustable shelf(s) and will be full height of the compartment. The tracks will be unpainted with a natural finish.

**ADJUSTABLE SHELVES**

There will be five (5) shelves with a capacity of 215 lb provided. The shelf construction will consist of

.18" aluminum with 2.00" sides. Each shelf will be painted to match the compartment interior. Each shelf will be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves will be held in place by .12" thick stamped plated brackets and bolts.

The location of the shelf in LS1, LS3, RS1, and RS3 will be at the transition point between the compartment depth. In compartment RS2 the shelf will be centered between the floor and the ceiling, Compartment LS2 will be outfitted with a Sensible Products® Chanl Panl Mounting System mounted on the rear wall with a second unit hinged on the front edge that swinges away to allow access to tools mounted on the rear wall. System will also include up to 12 pairs of mounting brackets for hand tools.

**RUB RAIL**

Bottom edge of the side compartments will be trimmed with a bright aluminum extruded rub rail. Trim will be 2.12" high with 1.38" flanges turned outward for rigidity.

The rub rails will not be an integral part of the body construction, which allows replacement in the event of damage.

**BODY FENDER CROWNS**

Stainless steel fender crowns will be provided around the rear wheel openings.

A rubber welting will be installed between the body and the crown to seal the seam and restrict moisture from entering.

A dielectric barrier will be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

**HARD SUCTION HOSE**

Two (2) 10’ sections Kocheck (2P601-10) 6" NH Long Handle Female and Rocker Lug Male X 10' PVC

suction hose will be provided.

**HARD SUCTION HOSE MOUNTING**

Two (2) suction hose mounting trays will be provided on top of the left (drivers) high side

compartments. These trays shall be constructed of aluminum diamond plate, and each will have two (2) straps made of 2” webbing and Velcro to secure hard suction hose. If the handles of the hard suction sections can come in contact with a painted surface, a stainless-steel scuff plate will be provided.

**DRAFTING EQUIPMENT**

The following drafting equipment will be provided:

- Task Force Tips Model # A03HNX-JET-F low-level suction strainer w/ float, 6” female NH threaded swivel connection

- Kochek low profile, w/ 1.5” jet siphon, 6” female NH threaded swivel connection

- Fol-Da-Tank self-leveling float doc strainer w/ 4” riser, 1.5” jet siphon, 6” female NH threaded swivel connection

**ACCESS STEPS**

A total of (4) folding steps will be provided for the purpose of accessing the hard suction hose. Two (2)

will be mounted at each end of the left side body compartments.

**HANDRAILS**

The handrails will be 1.25" diameter knurled aluminum to provide a positive gripping surface.

Chrome plated end stanchions will support the handrail. Plastic gaskets will be used between end stanchions and any painted surfaces.

Drain holes will be provided in the bottom of all vertically mounted handrails.

Handrails will be provided to meet NFPA 1901 section 15.8 requirements. The handrails will be installed as noted on the sales drawing.

• One (1) vertical handrail, with offset stanchions will be located on each rear bulkhead.

• Additionally, a handrail to aid in accessing the hose bed will be installed on the left side rear vertical and top horizontal rearward edge of the hose bed side sheet.

**AIR BOTTLE STORAGE**

A total of four (4) air bottle compartments will be provided, two (2) each side of the body. The air bottle compartment should accommodate different size air bottles. Drain holes will be provided to prevent water collection.

**LADDERS**

- 24' two-section aluminum Duo-Safety Series 900-A extension ladder

- 14' aluminum Duo-Safety Series 775-A roof ladder

- Folding ladder, 10' aluminum, Series 585-A, Duo-Safety folding ladder

**LADDER STORAGE**

The ladders will be stored inside the upper section of the right-side compartments.

The ladder rack will reduce the depth of the upper section, in the side compartments, by approximately

12.00".

A partition will be installed inside the compartments to conceal the ladder rack and allow for equipment storage. The ladders will extend through the forward wall of the compartmentation, into the pump area. The ladders will be stored in separate storage troughs lined with Dura-Surf slides to aid in loading and unloading of the ladders. Rear of ladder storage area will be a vertically hinged door with D-ring latch

to contain the ladders.

**FOLDING LADDER**

One (1) 10.00' aluminum, Series 585-A, Duo-Safety folding ladder will be installed in a U-shaped trough inside the ladder storage compartment.

**8’ PIKE POLE PROVIDED BY OHIO FIRE ACADEMY**

NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) 8 ft or longer pike pole mounted in a bracket fastened to the apparatus.

**6' PIKE POLE PROVIDED BY OHIO FIRE ACADEMY**

NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) 6' pike pole or plaster hook mounted in a bracket fastened to the apparatus.

**PIKE POLE STORAGE**

Tubing will be used for the storage of two (2) pike poles and will be located in the ladder storage compartment. If the head of a pike pole can come in contact with a painted surface, a stainless-steel scuff plate will be provided.

**HOSE BED ACCESS**

Hose bed access constructed of folding steps and extruded aluminum handrails, will be provided on both sides of the apparatus at the hose bed area.

**PUMP COMPARTMENT**

The pump compartment will be separate from the hose body and compartments so that each may flex independently of the other. It will be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment will be mounted on the chassis frame rails with rubber biscuits in a four-point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels will be removable from the chassis in a single assembly.

**PUMP CONTROL PANELS (SIDE CONTROL)**

All pump controls and gauges will be located at the left side of the apparatus and properly marked.

The pump panels on both sides will be removable with lift and turn type fasteners.

Polished stainless steel trim collars will be installed around all inlets and outlets.

All push/pull valve controls will have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods will be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls will be capable of locking in any position. The control rods will pull straight out of the panel and will be equipped with universal joints to eliminate binding.

All discharge outlets will have color coded identification tags, with each discharge having its own unique color. Color coding will include the labeling of the outlet and the drain for each corresponding

discharge.

All line pressure gauges will be mounted in individual chrome plated castings with the identification tag recessed in the casting below the gauge. All remaining identification tags will be mounted on the pump panel in chrome plated bezels. Mounting of the castings and identification bezels will be done with a threaded peg cast on the back side of the bezel or screws.

**PUMP**

Pump will be a Hale Qmax-XS class “A” 1500 GPM, single (1) stage,

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis and have the capacity of 1500 gallons per minute (U.S. GPM), NFPA-1901 rated performance.

The entire pump shall be assembled and tested at the pump manufacturer's factory.

The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of

600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.

The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength

of 30,000 PSI (2069 bar). All metal moving parts in contact with water shall be of high-quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

Pump body shall be horizontally split on a single plane in two sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.

The pump body shall extend as one piece across the truck chassis from side to side and incorporate

discharge manifolding with a minimum of (12) 4” ports and (7) 3” port.

The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance. (No exceptions)

Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing to be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

Packing - The pump shaft shall have only one packing gland located on the inlet side of the pump. It shall be of split design for ease of repacking. The packing gland must be a full-circle threaded design to exert uniform pressure on packing and to prevent "cocking" and uneven packing load when it is tightened. (No exceptions.) It shall be easily adjusted by hand with rod or screwdriver without special tools or wrenches required. The packing rings shall be of a unique, permanently lubricated, long-life graphic composition and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion. (No exceptions.)

Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency. (No exceptions.)

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super- finished under for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of drive through torque of the engine system. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.

All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust. (No exceptions.)

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.

For automatic transmissions, three green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift from Road to Pump position. Two green lights to be located in the truck driving compartment and one green light on pump operators panel adjacent to the throttle control. For manual transmissions, one green warning light will be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

**PUMP SHIFT**

A pump shift will be provided within easy reach of the driver for engagement of the pump. The shift will include the indicator lights as mandated by NFPA. The pump shift control will be illuminated to meet NFPA requirements.

**AUXILIARY COOLING SYSTEM**

A supplementary heat exchange cooling system will be provided to allow the use of water from the discharge side of the pump for cooling the engine water. The heat exchanger will be a separate unit. The heat exchanger will be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger will be plumbed to the master drain valve.

**INTAKE RELIEF VALVE**

An intake relief valve shall be installed on the suction side of the pump preset at 125 psig. Relief valve shall have a working range of 50 psig to 350 psig.

Outlet shall terminate below the frame rails with a 2.50" National Standard hose thread adapter and shall have a "do not cap" warning tag.

**PRESSURE CONTROLLER**

A Fire Research Pump Boss Model PBA200 pressure governor will be provided.

A pressure transducer will be installed in the water discharge manifold on the pump. The display panel will be located at the pump operator's panel.

**PRIMING PUMP**

The priming pump will be a Trident Emergency Products compressed air powered, high efficiency, multistage venturi based AirPrime System, conforming to standards outlined in the current edition of NFPA 1901.

All wetted metallic parts of the priming system are to be of brass and stainless-steel construction. One (1) priming control will open the priming valve and start the pump primer.

**PUMP MANUALS**

There will be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals will be provided by the pump manufacturer in the form of two (2) electronic copies. Each manual will cover pump operation, maintenance, and parts.

**PLUMBING, STAINLESS STEEL AND HOSE**

All inlet and outlet lines will be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's will be equipped with brass or stainless-steel couplings. All stainless-steel hard plumbing will be a minimum of a schedule 10 wall thickness.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping will be equipped with Victaulic or rubber couplings.

Plumbing manifold bodies will be ductile cast iron or stainless steel.

All piping lines are to be drained through a master drain valve or will be equipped with individual drain valves. All drain lines will be extended with a hose to drain below the chassis frame.

All water carrying gauge lines will be of flexible polypropylene tubing.

All piping, hose and fittings will have a minimum of a 500 PSI hydrodynamic pressure rating.

**MAIN PUMP INLETS**

A 6.00" pump manifold inlet will be provided on each side of the vehicle. The suction inlets will include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

**VALVES**

All ball valves will be Akron® Brass. The Akron valves will be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.

Valves will have a **ten (10) year** warranty.

The location of the valve for the one (1) inlet will be recessed behind the pump panel.

**INLET CONTROL**

The side auxiliary inlet(s) will incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism will indicate the position of the valve.

**LEFT SIDE INLET**

There will be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a

2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

**INLET BLEEDER VALVE**

A 0.75" bleeder valve will be provided for each side gated inlet. The valves will be located behind the panel with a swing style handle control extended to the outside of the panel. The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders will be routed below the chassis frame rails.

**TANK TO PUMP**

The booster tank will be connected to the intake side of the pump with heavy duty 4" piping and a quarter turn 3" valve with the control remotely located at the operator's panel. A rubber coupling will be included in this line to prevent damage from vibration or chassis flexing.

A check valve will be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

The pump water recirculating line to the tank will be 1/2” I.D.

**TANK REFILL**

A 1.50" combination tank refill and pump re-circulation line will be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

**DISCHARGE OUTLET CONTROLS**

The discharge outlets will incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism will indicate the position of the valve.

If a handwheel control valve is used, the control will be a minimum of a 3.9" diameter stainless steel handwheel with a dial position indicator built into the center of the handwheel.

Any 3” or larger discharge valve will be a slow-operating valve in accordance with NFPA

16.7.5.3.

**LEFT SIDE DISCHARGE OUTLETS**

There will be Two (2) discharge outlets with a 2.5" valve on the left side of the apparatus, terminating with a 2.5" (M) National Standard hose thread adapter.

**LEFT SIDE OUTLET ELBOWS**

The 2.5" discharge outlets located on the left side pump panel will be furnished with a 2.5" (F) National Standard hose thread x 2.5" (M) National Standard hose thread, chrome plated, 45-degree elbow. The 2.5” elbows will terminate with a 1.5” reducer and blank cap affixed with a stainless steel chain.

The elbow will a thread design to automatically relieve stored pressure in the line when disconnected.

**RIGHT SIDE DISCHARGE OUTLETS**

There will be One (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a (M) 2.50" National Standard hose thread adapter.

**RIGHT SIDE OUTLET ELBOWS**

The 2.50" discharge outlets located on the right-side pump panel will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow. The 2.5” elbow will terminate with a 1.5” reducer and blank cap affixed with a stainless steel chain.

The elbow will be a thread design to automatically relieve stored pressure in the line when disconnected.

There will be One (1) discharge outlet with a 3.00" valve on the right side of the apparatus, terminating with a 45 degree elbow, male 3.00" and 3.0” to 2.5” reducer National Standard hose thread adapter.

**ADDITIONAL RIGHT SIDE OUTLET ELBOWS**

The 3.00" discharge outlets, located on the right-side pump panel, will be furnished with a 3.00" (F) National Standard hose thread x 5", 45-degree elbow locking Storz fitting.

The elbow will be a thread design to automatically relieve stored pressure in the line when disconnected.

**HOSE BED DISCHARGE OUTLETS**

There will be four (4) discharge outlets piped to the end of the hose bed (tailboard). Two discharges will be located on the far left side of the tailboard and two discharges will be located on the far right side. Plumbing will consist of 2.50" piping with a 2.50" full-flow ball valve controlled at the pump operator's panel.

The discharge(s) on the left side will each terminate with a 2.5", 45-degree elbow (M) National Standard hose thread adapter capped with a 1.5” male reducer and cap affixed with stainless steel chain.

The discharge(s) on the right side will each terminate with a 2.5", 45-degree elbow (M) National Standard hose thread adapter and cap affixed with stainless steel chain.

**DISCHARGE CAPS/ INLET PLUGS**

Chrome plated, rocker lug, caps with chain will be furnished for all discharge outlets 1.00" thru 3.00" in size, besides the pre-connected hose outlets.

Chrome plated, rocker lug, plugs with chain will be furnished for all auxiliary inlets 1.00" thru 3.00" in size.

The caps and plugs will incorporate a thread design to automatically relieve stored pressure in the line when disconnected.

**OUTLET BLEEDER VALVE**

A 0.75" bleeder valve will be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves will be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders will be located at the bottom of the pump panel. They will be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders will be routed below the chassis frame rails.

**SAFE-TAK PORTABLE MONITOR AND EXTEND-A-GUN PACKAGE**

Task Force Tips Crossfire model # XFC-62-01 portable lightweight monitor package consisting of monitor top, Safe-Tak portable ground base, stacked tips, stream straightener, Master Stream 1250 series nozzle, and base storage bracket, Extend-A-Gun and installation bracket set shall be supplied.

Task Force Tips Crossfire, model portable monitor top shall be provided. This top only portion with quick release swivel joint shall be designed for use on truck mounted risers and TFT Safe-Tak 1250 series portable bases. The monitor shall include safety devices that include a locking button which locks the quick release lever when monitor is pressurized, and a 1/4 turn rotational lever lock that secures the horizontal rotation and provides a visual indication that the monitor rotation is locked. For corrosion resistance the monitor shall be constructed from hard coat anodized aluminum with a red powder coat interior and exterior finish.

The monitor shall have a 3-1/4" waterway for delivery of up to 1250 GPM with low friction loss. Vertical elevation shall be controlled through use of a handwheel controlled stainless steel worm gear which allows full travel to the safety stop point of 35 degrees above horizontal with seven rotations of the wheel. When positioned on a truck mounted riser the monitor shall be able to be used below the 35 degree stop point through release of the spring loaded safety pin. An automatic drain to remove remaining water and avoid freezing shall be included. Integral stream straightener and pressure gauge shall be included.

Task Force Tips Safe-Tak 1250, portable monitor base shall be provided. The monitor base shall include a Safe-Tak, spring loaded butterfly valve designed to rapidly reduce the water flow by 90 percent in the event that contact with the ground is lost. The device shall include an integral carrying handle, four folding stainless-steel legs with replaceable tungsten carbide spikes and an anchoring strap attached to a protective cap designed to be stored inside the waterway. The butterfly valve shall have a reset handle located near the inlet to allow the water flow to be reestablished once the base is properly stabilized.

The base shall be constructed from hard coat anodized aluminum and have a red powder coat interior and exterior finish. The base shall have a single inlet 5” Storz fitting.

Task Force Tips Master Stream 1250 series nozzle shall be provided. For corrosion resistance the nozzle shall be constructed for lightweight hard coat anodized aluminum. The nozzle shall have a UV resistant rubber bumper with integral teeth designed to produce a finger free fog pattern. A halo ring shall be included to assist with stream shape control. The nozzle shall be suitable for foam solution application. The nozzle shall be configured with a female swivel rocker lug coupling. The nozzle flow range shall be

300-1250 gpm at a user selectable 70-120 psi operating pressure.

Task Force Tips smooth bore stacked tip set shall be provided. For corrosion resistance the tip set shall be constructed from hard coat anodized aluminum alloy. The set shall consist of four (4) tips with the base tip having a 2-1/2" female NH swivel inlet and 2" outlet. The other tip sizes shall be 1-3/4", 1-1/2" and 1-3/8". Each tip shall be laser engraved with a flow/pressure chart, orifice size, and thread size.

Task Force Tips model # XF-SS10 stream straightener shall be supplied. The straightener shall be constructed from extruded aluminum with internal vanes designed to reduce turbulence and increase the reach of smooth bore water streams. The device shall have 2-1/2" female NH rigid inlet and 2-1/2" male NH rigid outlet.

Task Force Tips manually telescoping waterway model # XG18VL-PL shall be installed. The waterway shall be capable of being lowered to deck level (or into a monitor well) for storage and transportation and shall be capable of being raised to an extended height by lifting a quick release latch located at the base of the extension tube. This latching device shall be capable of locking the waterway in either the raised or lowered position while maintaining the ability to horizontally rotate the monitor device 360 degrees.

A sensor shall be located on the waterway that signals a 12-volt indicator light installed in the cab to illuminate to indicate that the monitor is raised. The aluminum riser shall have a 3" waterway; hard coat anodized finish and be furnished with a 3" inlet and a Task Force Tips Crossfire coupling outlet.

Task Force Tips model # XF-B storage bracket set shall be installed. The set shall be designed to securely mount the Extend-A-Gun telescoping waterway. The primary components shall have unique serial numbers and all components shall be covered by a five-year warranty.

**PUMP AND GAUGE PANEL**

The pump and gauge panels will be constructed of brushed stainless steel. A polished aluminum trim molding will be provided around each panel.

**PUMP COMPARTMENT LIGHT**

A pump compartment light will be provided inside the right-side pump enclosure and accessible through a door on the pump panel.

A .125" weep hole will be provided in each light lens, preventing moisture retention.

**PUMP PANEL GAUGES AND CONTROLS**

The following will be provided on the pump panels in the FRC IN Control Pressure Governor system

- Engine Oil Pressure Gauge: LED bar graph display

- Engine Water Temperature Gauge: LED bar graph display

- Tachometer: over 1/2" high LED digits

- Voltmeter: LED bar graph display

**THROTTLE READY GREEN INDICATOR LIGHT**

There will be a green indicator light integrated with the pressure governor and/or engine throttle installed on the pump operators panel that is activated when the pump is in throttle ready mode.

**OK TO PUMP INDICATOR LIGHT**

There will be a green indicator light installed on the pump operators panel that is activated when the pump is in “Ok To Pump” mode.

**VACUUM AND PRESSURE GAUGES**

The pump vacuum and pressure gauges will be liquid filled and manufactured by Class 1 Incorporated.

The gauges will be a minimum of 4.00" in diameter and will have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges will be installed adjacent to each other at the pump operator's control panel.

Test port connections will be provided at the pump operator's panel. One will be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They will have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They will be marked with a label.

This gauge will include a 10-year warranty against leakage, pointer defect, and defective bourdon tube.

**PRESSURE GAUGES**

The individual "line" pressure gauges for the discharges will be Class 1 interlube filled. They will be a minimum of 2.00" in diameter and have white faces with black lettering.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges will have a pressure range of 30"-0-400#.

The individual pressure gauge will be installed as close to the outlet control as practical.

This gauge will include a 10-year warranty against leakage, pointer defect, and defective bourdon tube.

**WATER LEVEL GAUGE**

There will be an electronic water level gauge provided on the operator's panel that registers water level by means of five (5) colored LED lights. The lights will be durable, ultra-bright five (5) LED design viewable through 180 degrees. The water level indicators will be as follows:

• 100 percent = white

• 75 percent = blue

• 50 percent = amber

• 25 percent = red

• Refill = red (flashing)

The light will flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights will flash sequentially when the water tank is empty.

The level measurement will be based on the sensing of head pressure of the fluid in the tank.

The display will be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design will provide complete protection from water and environmental elements. An industrial pressure transducer will be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.

**LIGHT SHIELD**

There will be a light shield installed over the pump operator's panel on both sides of the truck. The light shield will be constructed of aluminum tread plate and configured to function as a step for access to the deck gun and top of truck.

• There will be 12-volt DC white LED lights installed under the stainless-steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights will be activated by the pump panel light switch. Additional lights will be included every 18.00" depending on the size of the pump house.

• One (1) pump panel light will come on when the pump is in ok to pump mode.

There will be a light activated above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel.

**ELECTRONIC SIREN**

A Whelen®, Model 295SLSA1, electronic siren with noise canceling microphone will be provided. This siren to be active when the battery switch is on and that emergency master switch is on. Siren head will be located in the cab within reach of the driver.

The electronic siren will be controlled on the siren head only. No horn button or foot switches will be provided.

**SPEAKER**

There will be two (2) speakers provided. Each speaker will be a Whelen model SA315P black nylon composite, 100-watt, with mounting brackets. Each speaker will be connected to the siren amplifier.

The speaker(s) will be recessed in the center of the front bumper.

**LIGHTBAR, CAB ROOF**

One (1) 72" Whelen, Freedom IV LED lightbar (F4N7QLED, 8 modules) will be mounted on the cab roof. This lightbar will include the following:

* Six (6) red flashing LED modules facing forward.
* Two (2) white flashing LED modules facing forward.
* Two (2) red flashing LIN6 LED modules one (1) in each front corner.
* Two (2) red flashing LIN6 LED modules, one (1) in each rear corner.

All lenses will be clear.

To meet NFPA requirements, all white warning lights will be off when the parking brake is applied.

**WARNING LIGHTS**

A pair of flush mounted Whelen model 50\*02Z\*R, Super 500 flashing LED lights will be provided on the grille. The color of these lights will be red Super LED/clear lens.

A switch will be provided inside the cab on the switch panel for actuation. These lights will be installed with a chrome plated ABS plastic flange. **SIDE ZONE LOWER LIGHTING**

There will be four (4) Whelen, Model 5V1\*\*, Super LED flashing lights located at the following positions:

• Two (2) lights located, one (1) each side on the engine hood under 62.00"

o The color of these lights will be red Super LED/clear lens

• Two (2) lights located, one (1) each side on the body fender panels.

o The color of these lights will be red Super LED/clear lens A switch located in the cab on the switch panel will control these lights. These lights will be provided with a chrome plated ABS plastic flange.

**REAR ZONE LOWER LIGHTING**

Two (2) Whelen, SUPER-LED™ Model 5V1\*\* flashing LED lights will be located at the rear of the

apparatus required to meet the lower level optical warning and optical power requirements of NFPA. The color of the lights will be red Super LED/clear lens.

There will be a switch located in the cab on the switch panel to control the lights. Each light will be installed with a chrome plated ABS plastic flange.

**WARNING LIGHTS (REAR AND SIDE UPPER ZONE)**

There will be two (2) Whelen, Model 60\*02F\*R, LED lights with Whelen, Model 6EFLANGE, chrome flanges provided - one light each side facing the rear.

The LEDs and lens color of these lights will be red Super LED/clear lens.

Two (2) Whelen, SUPER-LED model 50\*03Z\*R flashing Super LED lights will be provided at the rear of the truck in the upper zone, one light facing each side. These lights will also be installed with chrome plated flanges.

The LEDs and lens color of these lights will be red Super LED/clear lens. There will be a switch located in the cab to control these lights.

**REAR LIGHT MOUNTING**

The rear warning lights will be mounted on the rear side sheet flange and rear bulkhead of the body as high as possible with all wiring totally enclosed.

**GENERATOR,**

There will be SMART POWER, 10KW, PTO-powered hydraulic generator mounted above the pump module.

**LOOSE EQUIPMENT**

The following equipment will be furnished with the completed unit:

• One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit.

**PAINT**

The chassis cab will be painted white (Imron #10) by the chassis manufacturer and will remain the commercial grade finish as provided. The bottom of chassis cab will be painted red (Imron #90) by the apparatus/body manufacturer. The break in color will be located at the bottom of the windows so that the entire hood, doors, and cab below the windows are red.

To ensure a good color match between the body and chassis, the manufacturer will have a mutually pre-approved paint color program with the chassis manufacturer.

**PAINT CHASSIS FRAME ASSEMBLY**

The chassis frame assembly shall be painted red by the chassis manufacturer. It shall remain the commercial grade finish as provided.

**COMPARTMENT INTERIOR PAINT**

The interior of all compartments will be painted with gray bedliner (Rhinolining ® or equivalent)

**GRAPHICS; (customer to provide photos)**

Reflective Striping, ¾ belt line, Color; gold/white/gold, 1"-6"-1", with each stripe outlined in ¼” black and spaced to provide ½” of red between each stripe

- Striping on cab to run along bottom of doors and top of rear cabinet doors

- “Engine 2” in 6” red vinyl letters, located in white stripe on crew cab door, both sides

- “Ohio Fire Academy located in white stripe on compartment doors

- Driver and Officer’s door: Above the reflective band will be the Ohio State Fire Marshal Maltese cross.

- Front: “Vinyl, 4” white lettering will be located on bumper: “State Fire Marshal”.

**REAR CHEVRON STRIPING**

There will be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The rear surface, including the rear compartment door, will be covered.

The colors will be red and L2 fluorescent yellow green. Each stripe will be 6.00" in width.

This will meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface will be covered with chevron striping.

**CAB DOORS REFLECTIVE STRIPE**

A white reflective stripe will be provided on the interior of each cab door.

This stripe will be a minimum of 96.00 square inches and will meet the NFPA 1901 requirement.

**MANUAL, BODY PARTS ONLY**

A custom parts manual for the manufacturer installed parts only will be provided in USB flash drive format with the completed unit.

The manual will contain the following:

- Job number

- Part numbers with full descriptions

- Table of contents

- Parts section sorted in functional groups reflecting a major system, component, or assembly

- Parts section sorted in Alphabetical order

- Instructions on how to locate parts

The manual will be specifically written for the body model being purchased. It will not be a generic manual for a multitude of different bodies.

**MANUALS, SERVICE**

A USB flash drive format service manual supplement containing parts and service information on the manufacturer installed components will be provided with the completed unit.

The manual will be specifically written for the unit being purchased. It will not be a generic manual for a multitude of different units.

**MANUAL, CHASSIS OPERATION**

One (1) chassis operation manual will be provided with the completed unit.

**ONE (1) YEAR MATERIAL AND WORKMANSHIP**

A minimum one (1) year basic apparatus material and workmanship limited warranty will be provided. The warranty will cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate will be submitted with the bid package.

**CHASSIS WARRANTY**

The chassis manufacturer will provide a **five (5) year or 100,000 mile warranty.**

**PAINT WARRANTY**

The commercial chassis manufacturer's paint warranty will apply to the paint on the chassis only.

**COMPARTMENT LIGHT WARRANTY**

The 12 volt DC LED strip lights limited warranty certificate will be included with this proposal.

**TRANSMISSION WARRANTY**

The transmission will have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty is to be provided by Allison Transmission and not apparatus builder.

**WATER TANK WARRANTY**

A poly water tank limited warranty certificate will be included with this proposal.

**TEN (10) YEAR STRUCTURAL INTEGRITY**

The apparatus body limited warranty certificate will be included with this proposal.

**ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY**

A roll-up door limited warranty will be provided. The mechanical components of the roll-up door will be warranted against defects in material and workmanship for the lifetime of the vehicle. A **six (6) year** limited warranty will be provided on painted and powder coated roll up doors.

A limited warranty certificate will be included with this proposal.

**PUMP WARRANTY**

The pump will be provided with a Seven (7) year material and workmanship limited warranty. A copy of the warranty certificate will be submitted with the bid package (no exception).

**PUMP PLUMBING WARRANTY**

A ten (10) year pump plumbing limited warranty certificate will be included with this proposal.

**TEN (10) YEAR PRO-RATED PAINT AND CORROSION**

A ten (10) year body limited pro-rated paint warranty certificate will be included with this proposal.

**VEHICLE STABILITY CERTIFICATION**

The fire apparatus manufacturer will provide a certification stating the apparatus complies with NFPA

1901, current edition, section 4.13, Vehicle Stability. The certification will be provided at the time of bid.

**AMP DRAW REPORT**

The bidder will provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus will provide the following:

• Documentation of the electrical system performance tests.

• A written load analysis, which will include the following:

o The nameplate rating of the alternator.

o The alternator rating under the conditions specified per:

▪ Applicable NFPA 1901 or 1906 (Current Edition).

o The minimum continuous load of each component that is specified per:

▪ Applicable NFPA 1901 or 1906 (Current Edition).

o Additional loads that, when added to the minimum continuous load, determine the total connected load.

o Each individual intermittent load.

All of the above listed items will be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition)