PIERCE MANUFACTURING INC. is pleased to submit a proposal to **CITY OF CHULA VISTA** for a **Pierce® triple combination pumper** per your request for quotation. The following paragraphs will describe in detail the apparatus, construction methods, and equipment proposed. This proposal will indicate size, type, model and make of components parts and equipment, providing proof of compliance with each and every item (except where noted) in the departments advertised specifications.

PIERCE MANUFACTURING was founded in 1913. Since then we have been building bodies with one philosophy, "BUILD THE FINEST". Our skilled craftsmen take pride in their work, which is reflected, in the final product. We have been building fire apparatus since the early "forties" giving Pierce Manufacturing over 60 years of experience in the fire apparatus market. Pierce Manufacturing has built and put into service more than 51,000 apparatus, including more than 27,000 on Pierce custom chassis designed and built specifically for fire and emergency applications. Our Appleton, Wisconsin facility has over 757,000 total square feet of floor space situated on approximately 97 acres of land. Our Bradenton, Florida facility has 300,000 square feet of floor space situated on approximately 38 acres of land.

Our beliefs in high ethical standards are carried through in our commitments to all with whom we do business and our ethical standards do not change. Honesty, Integrity, Accountability and Citizenship are global tenets by which we all live and work. Consequently, we (nor our parent company) engage in or have been convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

Pierce has only one brand of fire apparatus "Pierce", ensuring you are receiving top of the line product that meets your specification.

In accordance with the current addition of NFPA 1901 standards, this proposal will specify whether the fire department, manufacturer, or apparatus dealership will provide required loose equipment.

Images and illustrative material in this proposal are as accurate as known at the time of publication, but are subject to change without notice. Images and illustrative material is for reference only, and may include optional equipment and accessories and may not include all standard equipment.

GENERAL DESIGN AND CONSTRUCTION

To control quality, ensure compatibility, and provide a single source for service and warranty, the custom cab, chassis, pump module and body will be entirely designed, assembled/welded and painted in Pierce owned manufacturing facilities. This includes, but not limited to the cab weldment, the pumphouse module assembly, the chassis assembly, the body and the electrical system.

QUALITY AND WORKMANSHIP

Pierce has set the pace for quality and workmanship in the fire apparatus field. Our tradition of building the highest quality units with craftsmen second to none has been the rule right from the beginning and we demonstrate that ongoing commitment by: Ensuring all steel welding follows American Welding Society D1.1-2004 recommendations for structural steel welding. All aluminum

welding follows American Welding society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding follows American welding Society B2.1-2000 requirements for structural welding of sheet metal. Our flux core arc welding uses alloy rods, type 7000 and is performed to American Welding Society standards A5.20-E70T1. Furthermore, all employees classified as welders are tested and certified to meet the American welding Society codes upon hire and every three (3) years thereafter. Pierce also employs and American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

Pierce Manufacturing operates a Quality Management System under the requirements of ISO 9001. These standards sponsored by the International Organization for Standardization (ISO) specify the quality systems that are established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance is included with this proposal.

In addition to the Quality Management system, we also employ a Quality Achievement Supplier program to insure the vendors and suppliers that we utilize meet the high standards we demand. That is just part of our overall "Quality at the Source" program at Pierce.

To demonstrate the quality of our products and services, a list of at least five (5) fire departments/municipalities that have purchased vehicles for a second time is provided.

DELIVERY

The apparatus will be delivered under its own power to insure proper break-in of all components while the apparatus is still under warranty. A qualified delivery representative shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in proper operation, care and maintenance of the equipment delivered.

MANUAL AND SERVICE INFORMATION

At time of delivery, complete operation and maintenance manuals covering the apparatus will be provided. A permanent plate will be mounted in the driver's compartment specifying the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

SAFETY VIDEO

At the time of delivery Pierce will also provide one (1) 39-minute, professionally produced apparatus safety video, in DVD format. This video will address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus, including the following: vehicle pre-trip inspection, chassis operation, pump operation, aerial operation, and safety during maintenance.

PERFORMANCE TESTS

A road test will be conducted with the apparatus fully loaded and a continuous run of no less than ten (10) miles. During that time the apparatus will show no loss of power nor will it overheat. The transmission drive shaft or shafts and the axles will run quietly and be free of abnormal vibration or noise. The apparatus when fully loaded will not have less than 25 percent nor more than 50 percent

on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle. The apparatus will meet NFPA 1901 acceleration and braking requirements.

SERVICE AND WARRANTY SUPPORT

Pierce dealership support will be provided by SOUTH COAST EMERGENCY VEHICLE SERVICE by operating a Pierce authorized service center. The service center will have factory-trained mechanics on staff versed in Pierce fire apparatus. The service facility will be located within seventy five (75) miles of the fire department.

In addition to the dealership, Pierce has service facilities located in both, Weyauwega, Wisconsin and Bradenton, Florida. Pierce also maintains a dedicated parts facility of over 100,000 square feet in Appleton, Wisconsin. The parts facility stocks in excess of $5,000,000 in parts dedicated to service and replacement parts. The parts facility employs a staff dedicated solely for the distribution and shipment of service and replacement parts.

Service parts for the apparatus being proposed can be found via Pierceparts.com which, is an interactive online tool that delivers information regarding your specific apparatus as well as the opportunity to register for training classes.

As a Pierce customer you have the ability to view the complete bill of materials for your specific apparatus, including assembly drawings, piece part drawings, and beneficial parts notations. You will also have the ability to search the complete Pierce item master through a parts search function which offers all Pierce SKU's and descriptions offered on all Pierce apparatus. Published component catalogs, which include proprietary systems along with an extensive operators manual library is available for easy reference.

Pierce Manufacturing maintains a dedicated service and warranty staff of over 35 personnel, dedicated to customer support, which also maintains a 24 hour 7 day a week toll free hot line, four (4) on staff EVTs, and offers hands-on repair and maintenance training classes multiple times a year.

SINGLE SOURCE MANUFACTURER

Pierce Manufacturing, Inc. provides an integrated approach to the design and manufacture of our products that delivers superior apparatus and a dedicated support team. From our facilities, the chassis, cab weldment, cab, pumphouse (including the sheet metal enclosure, valve controls, piping and operators panel) and body will be entirely designed, tested, and hand assembled to the customer's exact specifications. The electrical system either hardwired or multiplexed, will be both designed and integrated by Pierce Manufacturing. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) will be provided by Pierce as a single source manufacturer. Pierce's single source solution adds value by providing a fully engineered product that offers durability, reliability, maintainability, performance, and a high level of quality.

Your apparatus will be manufactured in Appleton, Wisconsin.

COMPARISON REPORT

A report will be provided to allow the Sales Representative to compare the options to a previous job. The report will be provided for job 27450TR.

SPECIAL INSTRUCTIONS

The apparatus being proposed will be designed and built to match the #27450. However, some variation may be necessary due to changes in our manufacturing processes or our product offering. Revisions in NFPA guidelines and/or other regulations may also affect our ability to match the previous unit.

NFPA 2009 STANDARDS

This unit will comply with the NFPA standards effective January 1, 2009, except for fire department directed exceptions. These exceptions will be set forth in the Statement of Exceptions.

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

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) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications will be indicated in the proposal as "non-NFPA".

VEHICLE INSPECTION PROGRAM CERTIFICATION

To assure the vehicle is built to current NFPA standards, the apparatus, in its entirety, will be third-party, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition of NFPA 1901. The certification will include: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus.

A placard will be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit.

PUMP TEST

Underwriters Laboratory (UL) will test, approved, and certify the pump. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the pump manufacturer's record of pump construction details will be forwarded to the Fire Department.

GENERATOR TEST

If the unit has a generator, Underwriters Laboratory (UL) will test, approved, and certify the generator. The test results will be provided to the Fire Department at the time of delivery.

BREATHING AIR TEST

If the unit has breathing air, Pierce Manufacturing will draw an air sample from the air system and have the sample certified that the air quality meets the requirements of NFPA 1989, *Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection.*

INSPECTION TRIP(S)

The bidder will provide three (3) factory inspection trips for Twelve (12) customer representatives. The inspection trips will be scheduled at times mutually agreed upon between the manufacturer's representative and the customer. All costs such as travel, lodging and meals will be the responsibility of the bidder.

AFTERMARKET SUPPORT WEBSITE

Pierceparts.com will provide Pierce authorized dealer access to comprehensive information pertaining to the maintenance and service of their customer's apparatus. This tool will provide the Pierce authorized dealer the ability to service and support their customers to the best of their ability with factory support at their fingertips.

Pierceparts.com is also accessible to the end user through the guest login. Limited access is available and vehicle specific parts information accessible by entering a specific VIN number. All end users should see their local authorized Pierce dealer for additional support and service.

The website will consist of the following screens at the dealer level:

My Fleet Screen

The My Fleet screen will provide access to truck detail information on the major components of the vehicle, warranty information, available vehicle photographs, vehicle drawings, sales options, applicable vehicle software downloads, etc.

Parts Screens

The Parts screens will provide parts look-up capability of Pierce Manufacturing sourced items, with the aid of digital photographs, part drawings and assembly drawings. The parts search application will permit the searching of parts by item description or function group (major system category). The parts application will provide the ability to submit electronically a parts order, parts quote, or parts return request directly to Pierce Manufacturing for processing.

Warranty Screen

The Warranty screens will provide dealers the ability to submit electronically warranty claims directly to Pierce Manufacturing for reimbursement.

My Reports Screens

The My Reports screens will provide access to multiple dealer reports to allow the dealership to maintain communication with the customer on the status of orders, claims, and phone contacts.

Technical Support Screens

The Technical Support screens will provide access to all currently published Operation and Maintenance and Service Publications. Access to Pierce Manufacturing Service Bulletins and Work Instructions, containing information on current service topics and recommendations will be provided.

Training

The Training screens will provide access to upcoming training classes offered by Pierce Manufacturing along with interactive electronic learning modules (Operators Guides) covering the operation of major vehicle components will be provided. Access to training manuals used in Pierce Manufacturing training classes will be provided.

About Pierce

Access to customer service articles, corporate news, quarterly newsletters, and key contacts within the Customer Service Department will be provided. The current Customer Service Policy and Procedure Manual, detailing the operation of the Customer Service group will also be accessible.

BID BOND

A bid bond as security for the bid in the form of a 10% bid bond will be provided with the proposal. This bid bond will be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond will be issued by an authorized representative of the Surety Company and will be accompanied by a certified power of attorney dated on or before the date of bid. The bid bond will include language which assures that the bidder/principal will give a bond or bonds, as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic One (1) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract.

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle will apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle will not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision will prevail.

PERFORMANCE BOND, 1 YEAR

The successful bidder will furnish a Performance and Payment bond (Bond) equal to 100 percent of the total contract amount within 30 days of the notice of award. Such Bond will be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of

Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category of XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.

Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Basic One (1) Year Limited Warranty period included within this proposal. Owner agrees that the penal amount of this bond will be simultaneously amended to 100% percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type will not exceed one (1) year from the date of such satisfactory acceptance and delivery, or the actual Basic One (1) Year Limited Warranty period, whichever is shorter.

APPROVAL DRAWING

A drawing of the proposed apparatus will be prepared and provided to the purchaser for approval before construction begins. The Pierce sales representative will also be provided with a copy of the same drawing. The finalized and approved drawing will become part of the contract documents. This drawing will indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus will be prepared and submitted by Pierce to the purchaser showing any changes made to the approval drawing.

DRAWING, PRELIMINARY LAYOUT, PUMP OPERATOR'S PANEL

A detailed drawing, to scale, of the pump operator's panel will be provided for the purpose of illustrating the standard location(s) of controls and discharges on the pump operator's panel. The drawing will not be meant as an approval, or final construction drawing, rather it will be used as an illustration drawing of a standard panel layout. This drawing will include all of the gauges and controls located on the pump operator's panel.

FINAL DRAWING

There will be a revised drawing of the truck with all the changes made during production provided at pickup.

ELECTRICAL WIRING DIAGRAMS

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, will be provided.

ARROW-XT™ CHASSIS

The Pierce Arrow-XT is the custom chassis developed exclusively for the fire service. Chassis provided will be a new, tilt-type custom fire apparatus. The chassis will be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis will be designed and manufactured for heavy-duty service, with adequate strength, capacity for the intended load to be sustained, and the type of service required. The chassis will be the manufacturer's heavy-duty line tilt cab.

WHEELBASE

The wheelbase of the vehicle will be 184.50".

GVW RATING

The gross vehicle weight rating will be 43,840 lbs.

FRAME

The chassis frame will be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails will have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail will have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails will be constructed of 120,000 psi yield strength heat-treated .38" thick steel, with 3.50" wide flanges.

FRAME REINFORCEMENT

In addition, a mainframe inverted "L" liner will be provided. It will be heat-treated steel measuring 12.00" x 3.00" x .25". Each liner will have a section modulus of 7.795 cubic inches, yield strength of 110,000 psi, and rbm of 857,462 in-lb. Total rbm at wheelbase center will be 3,976,502 pounds per rail.

The frame liner will be mounted inside of the chassis frame rail, beginning at the front edge of the mainframe rail and extending to the rear cab crossmember.

FRONT NON DRIVE AXLE

The Oshkosh TAK-4® front axle will be of the independent suspension design with a ground rating of 22,800 lb.

Upper and lower control arms will be used on each side of the axle. Upper control arm castings will be made of 100,000-psi yield strength 8630 steel and the lower control arm casting will be made of 55,000-psi yield ductile iron.

The center cross members and side plates will be constructed out of 80,000-psi yield strength steel.

Each control arm will be mounted to the center section using elastomer bushings. These rubber bushings will rotate on low friction plain bearings and be lubricated for life. Each bushing will also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.

There will be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.

The upper control arm will be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load.

Camber at load will be zero degrees for optimum tire life.

The ball joint bearing shall be of low friction design and be maintenance free.

Toe links that are adjustable for alignment of the wheel to the center of the chassis will be provided.

The wheel ends will have little to no bump steer when the chassis encounters a hole or obstacle.

The steering linkage will provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.

The axle will have a third party certified turning angle of 45 degrees. Front discharge, front suction, or aluminum wheels will not infringe on this cramp angle.

FRONT SUSPENSION

Front Oshkosh TAK-4™ independent suspension will be provided with a minimum ground rating of 22,800 lb.

The independent suspension system will be designed to provide maximum ride comfort. The design will allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment.

Each wheel will have torsion bar type spring. In addition, each front wheel end will also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

The suspension design will be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms.

The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.

The independent suspension was put through a durability test that simulated 140,000 miles of inner city driving.

FRONT SHOCK ABSORBERS

Heavy-duty telescoping shock absorbers (KONI) will be provided on the front suspension.

FRONT OIL SEALS

Oil seals with viewing window will be provided on the front axle.

FRONT TIRES

Front tires will be Goodyear 385/65R22.5 radials, 18 ply G296 MSA tread, rated for 20,050 lb maximum axle load and 68 mph maximum speed.

The tires will be mounted on Alcoa© 22.50" x 12.25" Dura-Bright® polished aluminum disc type wheels with a ten (10) stud, 11.25" bolt circle.

REAR AXLE

The rear axle will be a Meritor™, Model RS-23-186, with a capacity of 24,000 lb.

TOP SPEED OF VEHICLE

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

REAR SUSPENSION

The rear springs will be Standens semi-elliptical, 3.00" x 52.00", 12 leaves main with a ground rating of 27,000 lb. Castings will be used for spring hangers with provisions for lubrication. The grease fittings will be 90-degree type and will be accessible without removing the wheels or cutting any sheet metal. The two (2) top leaves will wrap the forward spring hanger pin and the top leaf will wrap the rear spring hanger pin on both the front and rear suspensions.

Kaiser spring pins will be provided, with double figure-eight grease grooves and a layer of electroless nickel plating, 1.0 mil thick, around the entire pin. The bushing that holds the spring pin in place will also have a grease groove.

REAR OIL SEALS

Oil seals will be provided on the rear axle.

REAR TIRES

Rear tires will be four (4) Goodyear 12R22.50 radials, 16 ply all season G622 RSD tread, rated for 27,120 lb maximum axle load and 75 mph maximum speed.

The tires will be mounted on Alcoa©, Dura-Bright® model, 22.50" x 8.25" polished aluminum disc wheels with a ten (10) stud, 11.25" bolt circle.

TIRE BALANCE

All tires will be balanced with Counteract balancing beads. The beads will be inserted into the tire and eliminate the need for wheel weights.

TIRE PRESSURE MANAGEMENT

There will be a VECSAFE LED tire alert pressure management system provided that will monitor each tire's pressure. A chrome plated brass 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 20 and 120 psi. The sensor will activate an integral battery operated LED when the pressure of that tire drops eight (8) psi.

Removing the cap from the sensor will indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED will immediately start blinking.

HUB COVERS (FRONT)
Stainless steel hub covers will be provided on the front axle. An oil level viewing window will be provided.

HUB COVERS (REAR)
Stainless steel baby moon covers will be provided over the rear axle hubs.

MUD FLAPS
Mud flaps with a Pierce logo will be installed behind the front and rear wheels.

WHEEL CHOCKS
There will be one (1) pair of Ziamatic AC-32, aluminum alloy, Quick-Choc wheel blocks provided.

WHEEL CHOCK BRACKETS
There will be one (1) pair of Ziamatic QCH-32-H horizontal mounting wheel chock brackets provided for the Ziamatic AC-32 wheel chocks. The brackets will be mounted One (1) forward and one (1) behind rear axle if both under D3 can't be done..

ANTI-LOCK BRAKE SYSTEM
The vehicle will be equipped with a Wabco 4S4M, anti-lock braking system. The ABS will provide a four (4) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology will control the anti-lock braking system. Each wheel will be monitored by the system. When any particular 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.

BRAKES
The service brake system will be full air type.

The front brakes will be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system will be certified, third party inspected, for improved stopping distance.

The rear brakes will be Meritor™, Disc Plus, Model EX225 disc operated with automatic slack adjusters and a 17.00" ventilated rotor for improved stopping distance.

AIR COMPRESSOR, BRAKE SYSTEM
The air compressor will be a Bendix BA-921 with 15.80 cubic feet per minute output at 1,250 RPM.

BRAKE SYSTEM
The brake system will include:

- Bendix dual brake treadle valve with vinyl covered foot surface

- Heated automatic moisture ejector on air dryer

- Total air system capacity of 4,362 cubic inches

- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi

- Spring set parking brake system

- Parking brake operated by a push-pull style control valve

- A parking "brake on" indicator light on instrument panel

- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, will be provided with an automatic spring brake application at 40 psi

- A pressure protection valve will be provided to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa).

The air tank will be primed and painted to meet a minimum 750 hour salt spray test.

To reduce the effects of corrosion, the air tank will be mounted with stainless steel brackets.

- Wabco System Saver 1200 air dryer with spin-on coalescing filter cartridge

- 100 Watt Heater

BRAKE LINES

Color-coded nylon brake lines will be provided. The lines will be wrapped in a heat protective loom in the chassis areas that are subject to excessive heat.

AIR INLET/OUTLET

One (1) air inlet/outlet will be installed with the female coupling located on the driver side pump panel. This system will tie into the "wet" tank of the brake system and include a check valve in the inlet line and an 85 psi pressure protection valve in the outlet line. The air outlet will be controlled by a needle valve.

A mating male fitting will be provided with the loose equipment.

The air inlet will allow a shoreline air hose to be connected to the vehicle. This will allow station air to be supplied to the brake system of the vehicle to insure constant air pressure.

DIAGNOSTIC SOFTWARE WITH HARDWARE

Meritor Wabco diagnostic software, Model Toolbox, will be provided. The software will be the most current version available.

A universal diagnostic PC-to-vehicle, NEXIQ Technologies, Model 125032, USB Diagnostic Interface Kit will be provided.

The kit will include:

- One (1) USB data module (w/ Bluetooth connection available) 15' USB data cable 6/9-PIN Y data cable USB RP1210A device driver on CD
- Quick start card User manual
- Hard-side carrying case.

ENGINE

The chassis will be powered by an electronically controlled engine as described below:

Make:Detroit Diesel

Model:DD13

Power:500 hp at 1800 rpm

Torque:1650 lb-ft at 1200 rpm

Governed Speed:2080 rpm

Emissions Level:EPA 2013

Fuel:Diesel

Cylinders:Six (6)

Displacement:781 cubic inches (12.8L)

Starter:Delco 39MT

Fuel Filters:Dual cartridge style with check valve, water separator, and water in fuel sensor

Coolant Filter:Cartridge style with shut off valves on the supply and return line.

The engine will include On-board diagnostics (OBD), which provides self diagnostic and reporting. The system will give the owner or repair technician access to state of health information for various vehicle sub systems. The system will monitor vehicle systems, engine and aftertreatment. The system will illuminate a malfunction indicator light on the dash console if a problem is detected.

HIGH IDLE

A high idle switch will be provided, inside the cab, on the instrument panel, that will automatically maintain a preset engine rpm. A switch will be installed, at the cab instrument panel, for activation/deactivation.

The high idle 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 illuminate when the above conditions are met. The light will be labeled "OK to Engage High Idle."

CLUTCH FAN

A Horton fan clutch will be provided. The fan clutch will be automatic when the pump transmission is in "Road" position, and fully engaged in "Pump" position.

ENGINE DIAGNOSTIC SOFTWARE

Detroit Diesel Diagnostic CD software will be provided. The CD software will be the most current version available.

A Nexiq Model 125032 hardware kit will also be provided that will connect the computer to the truck. The hardware kit includes:

1. USB Data Module (w/ Bluetooth connection available) 15' USB data cable 6/9-PIN Y data cable USB RP1210A device driver on CD Quick start card User manual

Hard-side carrying case

ENGINE HEATER

A 1,000 watt, 120 volt, immersion type engine heater with thermostat will be installed with the AC power inlet located to the rear of the driver's door.

ENGINE AIR INTAKE

The air intake with an ember separator will be mounted high on the passenger side of the cab, to the front of the crew cab door. The ember separator is designed to prevent road dirt and recirculating hot air from entering the engine. The ember separator will be easily accessible through a hinged stainless steel grille, with one (1) flush quarter turn latch.

EXHAUST SYSTEM

The exhaust system will be stainless steel from the turbo to the inlet of the selective catalytic reduction (SCR) device, and will be 5.00" in diameter. The exhaust system will include a diesel particulate filter (DPF) and an SCR device to meet current EPA standards. An insulation wrap will be provided on all exhaust pipe between the turbo and SCR to minimize the transfer of heat to the cab.

The tail pipe will be flush with the side of the body, and will discharge the exhaust horizontally. The last 4.00" of the tail pipe will be free of any restriction of hangers or clamps to ensure an easy deployment of an exhaust extraction hose. A tailpipe diffuser will be provided to reduce the temperature of the exhaust as it exits. The diffuser will include a 5.00" diameter tip for connection to an exhaust extraction system.

Heat deflector shields will be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

EXHAUST MODIFICATION

The exhaust pipe will be brought out from under the body at a 90 degree angle from the truck. The tail pipe will extend a minimum of 2.00" past the body, adaptable for the Plymovent system. There will be a clearance of 4.00" completely around the pipe once past the side of the body. A stop will be provided on the tail pipe that will prevent the nozzle from sliding too far on.

EXHAUST MODIFICATION

The tail pipe will terminate as close to the rear axle as possible without creating interference.

RADIATOR

The radiator and the complete cooling system will meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum cooling performance, the radiator core will be made of copper fins having a serpentine design, soldered to brass tubes. The tubes will be welded to brass headers using the patented Beta-Weld process for increased strength, longer road life and solder-bloom corrosion protection. The radiator core will have a minimum frontal area of 1396 square inches. Steel supply and return tanks will be bolted to the core headers and steel side channels to complete the radiator assembly. The radiator will be compatible with commercial antifreeze solutions.

The radiator will be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly will be isolated from the chassis frame rails with rubber isolators.

The radiator will include an integral deaeration tank, with a remote-mounted overflow tank. For visual coolant level inspection, the radiator will have a built-in sight glass. The radiator will be equipped with a 15 psi pressure relief cap.

A drain port will be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

A heavy-duty fan will draw in fresh, cool air through the radiator. Shields or baffles will be provided to prevent recirculation of hot air to the inlet side of the radiator.

COOLANT LINES

Silicone hoses will be used for all engine coolant/heater lines installed by Pierce Manufacturing.

Hose clamps will be the stainless steel 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 rear of the chassis. The tank will be constructed of 12-gauge, hot rolled steel. It will be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank will be mounted with stainless steel straps.

A .75" drain plug will be located in a low point of the tank for drainage.

A fill inlet will be located on the left hand side of the body and is covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."

A .50" diameter vent will be installed from tank top to just below fuel fill inlet.

The fuel tank will meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.

All fuel lines will be provided as recommended by the engine manufacturer.

DIESEL EXHAUST FLUID TANK

A 4.5 gallon diesel exhaust fluid (DEF) tank will be provided and mounted in the driver's side body rearward of the rear axle. The tank will be constructed of 16-gauge type 304- L stainless steel.

A .50" drain plug will be provided in a low point of the tank for drainage.

A fill inlet will be located on the driver's side of the body and be covered with a hinged stainless steel door that is marked "Diesel Exhaust Fluid Only". The door will cover both the diesel fuel inlet as well as the DEF fill inlet.

The tank will meet the engine manufacturers requirement for 10 percent expansion space in the event of tank freezing.

The tank will include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

AUXILIARY FUEL PUMP

An auxiliary electric fuel pump will be added to the fuel line for priming the engine. A switch located on the cab instrument panel will be provided to operate the pump.

FUEL COOLER

An air to fuel cooler will be installed in the engine fuel return line.

TRANSMISSION

An Allison 5th generation, model EVS 4000PR, electronic, torque converting, automatic transmission with retarder will be provided.

The transmission will be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display will indicate when service is due.

Two (2) PTO openings will be located on left side and top of converter housing (positions 8 o'clock and 1 o'clock).

A transmission temperature gauge, with red light and audible alarm, will be installed on the cab instrument panel.

The transmission retarder control will be activated 33 percent by release of the accelerator pedal or 66 percent by slight application of the brake pedal, or 100 percent by heavy application of brake pedal. A second on/off switch is provided to activate and deactivate the auto apply portion.

The transmission will have the 1600 ft. lb. torque (medium) spring setting for retardation force.

The transmission retarder will have a master "on/off" switch on the instrument panel. A red indicator light will be provided to warn that the transmission is being overworked.

The retarder will be wired to the brake lights so they are energized when the retarder is slowing the vehicle down.

The ABS system will automatically disengage the auxiliary braking device when required.

TRANSMISSION SHIFTER

A six (6)-speed T-Handle shift module will be mounted to right of driver on console. Shift position indicator will be indirectly lit for after dark operation.

The transmission ratio will be 1st - 3.51 to 1.00, 2nd - 1.91 to 1.00, 3rd - 1.43 to 1.00, 4th - 1.00 to 1.00, 5th - 0.75 to 1.00, 6th - 0.64 to 1.00, R- 4.80 to 1.00.

TRANSMISSION COOLER

A Champ shell and tube oil cooler will be provided using engine coolant to control the transmission retarder oil temperature. The cooler will have an aluminum shell and copper tubes. The cooler will be assembled using two (2) pressed in rubber tube sheets (one on each end), creating a reliable mechanical seal between the coolant and the oil.

SUMP COOLER

A transmission oil cooler will be provided that is integral to the radiator and located at the bottom of the radiator. The cooler will use engine coolant to control the transmission sump oil temperature.

DIAGNOSTIC SOFTWARE

Diagnostic software, Allison Transmission Diagnostic Tool (DOC) will be furnished for use with a laptop computer.

TRANSMISSION FLUID

The transmission will be provided with TranSynd heavy duty synthetic transmission fluid.

DRIVELINE

Drivelines will be a heavy-duty metal tube and be equipped with Spicer 1810 universal joints.

The shafts will be dynamically balanced before installation.

A splined slip joint will be provided in each driveshaft, slip joint will be coated with Glidecoat or equivalent.

STEERING

Dual Sheppard M110 steering gears, with integral heavy-duty power steering, will be provided. For reduced system temperatures, the power steering will incorporate an air to oil cooler and an Eaton model VN20F hydraulic pump with integral pressure and flow control. All power steering lines will have wire braded lines with crimped fittings.

A tilt and telescopic steering column will be provided to improve fit for a broader range of driver configurations.

STEERING WHEEL

The steering wheel will be 18.00" in diameter, have tilting and telescoping capabilities, and a two (2)-spoke design.

LOGO AND CUSTOMER DESIGNATION ON HORN BUTTON

The steering wheel will have an emblem containing the Pierce logo and customer name. The emblem will have three (3) rows of text for the customer's department name. There will be a maximum of eight (8) characters in the first row, 11 characters in the second row and 11 characters in the third row.

The first row of text will be: E-55

The second row of text will be: Chula Vista

The third row of text will be: Fire Dept

AUTOMATIC CHASSIS LUBRICATION

A Vogel Automatic Lubrication System will be provided. The lubrication will be supplied while the vehicle ignition switch is active to allow a uniform application of grease to the locations listed. The electronic control unit that forms part of the system will activate the pump after an adjustable interval time. The unit will control and monitor pump operation and report any faults via an indicator light on the driver's dashboard of the cab.

The lubrication system reservoir, which requires a 15.00" wide x 14.50" high x 6.25" deep mounting area, will be located pump dunnage area driver's side opposite booster reel against the DS wall of the compartment. on the apparatus.

- TAK- 4 Control Arm Pivot Points

- Rear Axle Slack Adjusters

- Rear Axle Brake Cam Screws

- Rear Suspension Spring Pins

- Rear Suspension Shackle Pins

- Walking Beam Pins Tandem axle, if applicable

BUMPER

A one (1) piece, stainless steel bumper, minimum of 10.00" high, will be attached to the front of the frame.

A 9.00" channel will be mounted directly behind the bumper for additional strength.

The bumper will be extended 10.00" from front face of cab.

GRAVEL PAN

A gravel pan, constructed of bright aluminum treadplate, will be furnished between the bumper and cab face. The gravel pan will be properly supported from the underside to prevent flexing and vibration of the aluminum treadplate.

LIFT AND TOW MOUNTS

Mounted to the frame extension will be lift and tow mounts. The lift and tow mounts will be designed and positioned to adapt to certain tow truck lift systems.

The lift and tow mounts with eyes will be painted the same color as the frame.

TOW EYES

Two (2) painted steel tow eyes will be installed under the bumper and attached to the front frame members. The inner and outer edges of the tow eyes will have a 0.25 radius.

The tow eyes will extend down to contact the road surface before the bottom edge of the bumper.

The tow eyes will be designed and positioned to allow up to a 6,000 pound straight horizontal pull in line with the centerline of the vehicle. The tow eyes will not be used for lifting of the apparatus.

CAB

The cab will be designed specifically for the fire service and will be manufactured by the chassis builder.

The cab will be built by the apparatus manufacturer in a facility located on the manufacturer's premises.

For reasons of structural integrity and enhanced occupant protection, the cab will be of heavy duty design, constructed to the following minimal standards.

The cab will have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts) and rear wall areas. The A-pillar will be constructed of solid A356-T5 aluminum. The B-pillar and C-pillar will be constructed from 0.25" heavy

wall extrusions. The rear wall will be constructed of two (2) 4.00" x 2.00" outer aluminum extrusions and two (2) 3.00" x 2.00" inner aluminum extrusions. All main vertical structural members will run from the floor to 6.50" x 4.875" x 0.1875" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.36" thick corner casting at each of the front corners of the roof assembly.

The front of the cab will be constructed of a 0.25" thick gusset plate, covered with a 0.090" front skin (for a total thickness of 0.34"), and reinforced with a 95.00" wide x 11.13" deep x 0.50" thick cross-cab support located just below the windshield. The cross-cab support will run the full width of the cab and weld to each A-pillar, the 0.25" thick gusset plate and the front skin.

The cab floors will be constructed of 0.1875" thick aluminum plate and reinforced at the firewall with an additional 0.50" thick cross-floor support providing a total thickness of 0.6875" of structural material at the front floor area. The front floor area will also be supported with one (1) 0.50" plate bolted to one (1) 0.78" plate that also provides the mounting point for the cab lift. This tubing will run from the front of the cab to the 0.187" thick engine tunnel, creating the structure to support the forces created when lifting the cab.

The cab will be 94.75" wide (outside door skin to outside door skin) to maintain maximum maneuverability.

The forward cab section will have an overall height (from the cab roof to the ground) of approximately 103.00". The crew cab section will have a 10.00" raised roof, with an overall cab height of approximately 113.00". The overall height listed will be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension will increase the overall height listed.

The floor to ceiling height inside the crew cab will be 64.00" in the center and 69.25" in the outboard positions.

The crew cab floor will measure 40.12" from rear wall to the back side of engine tunnel.

The engine tunnel, at the rearward highest point (knee level), will measure 47.75" to the back wall.

The crew cab will be of the totally enclosed design with access doors constructed in the same manner as the driver and passenger doors.

The cab will be a full tilt cab style.

A three (3)-point cab mount system with rubber isolators will improve ride quality by isolating chassis vibrations from the cab.

INTERIOR CAB INSULATION

The cab will include 1.50" insulation in the ceiling and side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.

ENGINE TUNNEL

Engine hood side walls will be constructed of .50" aluminum. The top will be constructed of .19" aluminum and will be tapered at the top to allow for more driver and passenger elbow room.

The engine hood will be insulated for protection from heat and sound. The noise insulation keeps the dBA level within the limits stated in the current NFPA series 1900 pamphlet.

FENDER LINERS

Full circular inner fender liners in the wheel wells will be provided.

WINDSHIELD

A curved safety glass windshield will be provided with over 2,754 square inches of clear viewing area. The cab windshield will have bright trim inserts in the rubber molding holding the glass in place. Economical windshield replacement glass will be readily available from local auto glass suppliers.

All cab glass will be tinted.

SUNVISORS

Two (2) smoked Lexan® sunvisors, 8.75" x 28.00" long, will be provided. The sunvisors will be located above the windshield with one (1) mounted on each side of the cab.

WINDSHIELD WIPERS

Two (2) electric windshield wipers with washer will be provided that meet FMVSS and SAE requirements.

The washer reservoir will be able to be filled without raising the cab.

GLOVE BOX

A glove box with a drop-down door will be installed in the front dash panel in front of the officer's position.

CAB REAR WALL EXTERIOR COVERING

The exterior surface of the rear wall of the cab will be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered.

CAB LIFT

A hydraulic cab lift system will be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

The hydraulic pump will have a manual override for backup in the event of electrical failure.

Lift controls will be on a panel located on the pump panel or front area of the body in a convenient location same as #15924 recessed on pump panel officer's side.

In addition to the panel controls, a 15' remote control will be provided for raising and lowering the cab. The remote control will be stored in the cab. The receptacle for the remote control will be located on the passenger side of pump panel.

The engine will be easily accessible and capable of being removed with the cab tilted. The cab will be capable of tilting 45 degrees and 90 degrees with crane assist.

Cab will be locked down by a two (2)-point automatic spring-loaded hook mechanism that actuates after the cab has been lowered.

The hydraulic cylinders will be equipped with a velocity fuse that protects the cab from accidentally descending when the control is located in the tilt position.

For increased safety, a redundant mechanical stay arm will be provided that must be manually put in place on the driver side between the chassis and cab frame when cab is in the raised position. This device will be manually stowed to its original position before the cab can be lowered.

Cab Lift Interlock

The cab lift system will be interlocked to the parking brake. The cab tilt mechanism will be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism will be disabled.

CAB LIFT REMOTE RECEPTACLE

An additional receptacle for the cab lift remote control will be located on the front face of the bumper, on the passenger side.

GRILLE

A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, will be provided on the front center of the cab.

DOOR JAMB SCUFFPLATES

All cab door jambs will be furnished with a polished stainless steel scuffplate, mounted on the striker side of the jamb.

TRIM BAND (CAB SIDE AND DOORS)

A band of 22 gauge polished stainless steel trim will be installed on the side of the cab and cab doors. The trim band will be installed to the bottom edge of the cab and doors, up 10.00" and applied with two (2)-sided tape. A .625" self-adhesive trim strip will be applied around the perimeter of the trim band.

MOLDING (ON SIDES OF CAB)

Chrome molding will be provided on both sides of cab.

MIRRORS

Velvac®, Model 2025, low mount chrome mirrors will be mounted, one (1) on each of the cab doors. The mirror will include a replaceable 62 square inch flat glass and a 30 square inch convex glass. Overall mirror dimensions will be 8.50" wide x 13.75" high. Mirror head will have a highly polished chrome finish.

Both flat mirror heads will be adjustable by an electric remote control switch inside the cab within easy reach of the driver. Convex mirror heads will be adjusted manually.

The mirror heads will also be heated with the control within easy reach of the driver.

Each mirror will be provided with an LED directional light.

The Velvac **two (2)-year** warranty on material and workmanship and **two (2)-year** warranty on chrome finish will be provided.

DOORS

To enhance entry and egress to the cab, the forward cab doors will be a minimum of 37.50" wide x 74.25" high. The crew cab doors will be located on the sides of the cab and will be constructed in the same manner as the forward cab doors. The crew cab doors will measure a minimum of 34.88" wide x 84.25" high.

The forward cab and crew cab doors will be constructed of extruded aluminum with a nominal material thickness of .125". The exterior door skins will be constructed from .090" aluminum.

A flush mounted, chrome plated paddle type door handle will be provided on the exterior of each cab door. Each door will also be provided with an interior flush paddle handle.

The cab doors will be provided with both interior (rotary knob) and exterior (keyed) locks as required by FMVSS 206. The locks will be capable of activating when the doors are open or closed. The doors will remain locked if locks are activated when the doors are opened, then closed.

A full length, heavy duty, stainless steel, piano type hinge with a .38" pin and 11 gauge leaf will be provided on all cab doors. There will be double automotive type rubber seals around the perimeter of the door framing and door edges to ensure a weather tight fit.

A chrome handrail will be provided on the inside each front cab door, for ease of entry.

The cab steps at each cab door location will be located inside the cab doors to protect the steps from weather elements.

From bottom of the hinge to the step on the driver's and officer's door there shall be a weather stripping to fill the gap.

DOOR PANELS

There will be a full height polished stainless steel door panel installed on the inside of all cab doors. The cab door panels will be removable without disconnecting door and window mechanisms.

ELECTRIC OPERATED CAB DOOR WINDOWS

All four (4) cab doors will be equipped with electric operated windows with flush mounted automotive style switches.

The driver's side lower instrument panel will also have three (3) controls, officer's door window and both crew cab door windows.

ELECTRIC CAB DOOR LOCKS

The front driver and officer doors will have a door lock master switch. The master switches will control all cab door locks.

The rear cab doors will have the standard manual lock control.

There will be one (1) concealed switch located in an easily accessible chassis specific location that will unlock all the doors.

The lock system will include two (2) key FOBs that allow for keyless entry into the vehicle. The key FOB system will use code hopping technology for high security and be FCC part 15 compliant.

KEY PAD FOR ELECTRIC DOOR LOCKS

For improved convenience, the cab door locks will include a Trimark keypad entry system to provide complete keyless entry to the cab. There will be two (2) keypads provided, located one each side of the cab behind the front cab doors. The keypads will include visual and audio feedback to confirm activation and acknowledge correct entry code. For enhanced night time use, the keypads will be lighted. For increased security, the system will allow over 3000 possible code combinations.

CAB STEPS

The forward cab and crew cab access steps will be a full size two (2) step design to provide largest possible stepping surfaces for safe ingress and egress. The bottom steps will be designed with a grip pattern punched into bright aluminum treadplate material to provide support, slip resistance, and drainage. The bottom steps will be a bolt-in design to minimize repair costs should they need to be replaced. The forward cab steps will be a minimum 24.75" wide, and the crew cab steps will be 21.25" wide with an 8.00" minimum depth. The inside cab steps will not exceed 18.00" in height and be limited to two (2) steps. Three (3) step entrance designs will not be acceptable due to safety concerns. A slip-resistant handrail will be provided adjacent to each cab door opening to assist during cab ingress and egress.

STEP LIGHTS

For reduced overall maintenance costs compared to incandescent lighting, there will be four (4) white LED, step lights provided. The lights will be installed at each cab and crew cab door, one (1) per step, in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep.

In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

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

FENDER CROWNS

Stainless steel fender crowns will be installed at the cab wheel openings. The fender crowns will have a radius outside corner that will allow the fender crown to extend out further than the standard width crown, thus extending beyond the sidewall of the front tires and allow the crew cab doors to open fully.

CREW CAB WINDOWS

One (1) fixed window with tinted glass will be provided on each side of the cab, to the rear of the front cab door. The windows will be sized to enhance light penetration into the cab interior. The windows will measure 17.50" wide x 21.00" high.

STORAGE COMPARTMENTS

Provided on each side of the cab, to the rear of the crew cab access doors, will be a storage compartment. The compartments will be 11.25" wide x 28.00" high x 14.25" deep.

The doors will be painted aluminum, reverse hinged single pan construction with one (1) D-ring latch. A gas strut at the top corner of each door will be supplied for a door stop. Door to open as far as possible.

The compartment interior will match the body compartments.

COMPARTMENT LIGHTS

There will be no lights required in the exterior compartment.

CAB ROOF COVERING

Horizontal cab roof surfaces will be covered with bright aluminum treadplate. Edges and fastening screws will be properly caulked to prevent water from leaking under aluminum. Front and side warning lights will not be mounted on top of treadplate. The treadplate will extend and terminate next to the warning lights.

SUNVISORS

Two (2) dark lexan sunvisors will be provided, one (1) each side above the windshield.

CAB INTERIOR

The wrap-around style high impact ABS plastic cab dash fascia will be designed to provide unobstructed visibility to instrumentation. The dash layout will provide the driver with a quick reference to gauges that allows more time to focus on the road. The center console will include an easily removable cover for the defroster.

The officer side dash and center console will be a flat faced design to provide easy maintenance and will be constructed out of painted aluminum.

The engine tunnel will be padded and covered with 46 ounce leather grain vinyl resistant to oil, grease and mildew.

The headliner will be installed in both forward and rear cab sections. Headliner material will be vinyl. A sound barrier will be part of its composition. Material will be installed on aluminum sheet and securely fastened to interior cab ceiling.

Forward portion of cab headliner will provide easy access for servicing electrical wiring or for other maintenance needs without removing the entire unit.

CAB INTERIOR UPHOLSTERY

The cab interior upholstery will be dark silver gray.

INTERIOR PAINT (CAB)

A rich looking interior will be provided by painting all the metal surfaces inside the cab black, vinyl texture paint.

CAB FLOOR

The cab and crew cab floor areas will be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a .25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.

CAB DEFROSTER

There will be a 41,000 BTU defroster in the cab located under the engine tunnel.

The defroster ventilation will be built into the design of the cab dash instrument panel and will be easily removable for maintenance.

The defroster will have a 3-speed blower and temperature controls accessible to the driver and officer.

The defroster ducts will be designed to provide maximum defrosting capabilities for the front cab windows.

CAB/CREW CAB HEATER

Two (2) auxiliary heaters with 32,000 BTU each will be provided in the cab. The heaters will have a 3-speed blower and temperature controls accessible to the driver and officer. There will also be louvers located below the rear facing seat riser and below the driver and officer positions for airflow.

The heaters will be mounted, one (1) within each rear facing seat riser.

AIR CONDITIONING

A high-performance, customized air conditioning system will be furnished inside the cab and crew cab. A 19.10 cubic inch compressor will be installed on the engine.

The air conditioning system will be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 75 degrees Fahrenheit at 50 percent relative humidity within 30 minutes. The cooling

performance test will be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of four (4) hours.

A roof-mounted condenser that meets and exceeds the performance specification will be installed on the cab roof. Mounting the condenser below the cab or body would reduce the performance of the system and will not be acceptable.

An evaporator unit that meets and exceeds the performance specification will be installed in the cab, located in the center of the cab ceiling over the engine tunnel. The evaporator will include two (2) high performance cores and plenums with multiple outlets, one (1) plenum directed to the front and one (1) plenum directed to the rear of the cab.

The evaporator unit will be provided with adjustable air outlets strategically located to direct air flow to the driver, officer and crew cab area.

All hose used will be class 1 type to reduce moisture ingression into the air conditioning system.

The air conditioner refrigerant will be R-134A and will be installed by a certified technician.

The air conditioner will be controlled by a single electronic control panel. For ease of operation, the control panel will include variable adjustment for temperature and fan control and be conveniently located on the dash in clear view of the driver. The control panel will include robust knobs for both fan speed and temperature adjustment.

GRAVITY DRAIN TUBES

Two (2) condensate drain tubes will be provided for the air conditioning evaporator. The drip pan will have two (2) drain tubes plumbed separately to allow for the condensate to exit the drip pan. The standard evaporator pumps will be disabled.

GRAB HANDLE

A black rubber covered grab handle will be mounted on the door post of the driver and officer's side cab door to assist in entering the cab. The grab handle will be securely mounted to the post area between the door and windshield.

The driver's grab handle will be 3.00" higher than the officer's grab handle, to allow additional clearance between the steering wheel and grab handle.

ENGINE COMPARTMENT LIGHTS

There will be one (1) Truck-Lite Model 44308C 4.00" white LED light(s) with Model 40700 grommet(s) installed under the engine hood for use as engine compartment illumination.

These light(s) will be activated automatically when the cab is raised and deactivated when the cab is lowered.

ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there will be a door on the engine tunnel, inside the crew cab. The door will be on the rear wall of the engine tunnel, on the vertical surface. The door will be 17.75" wide x 12.75" high and be flush with the wall of the engine tunnel.

The engine oil dipstick will allow for checking only. The transmission dipstick will allow for both checking and filling. An additional tube will be provided for filling the engine oil.

The door will have a rubber seal for thermal and acoustic insulation. One (1) flush latch will be provided on the access door.

MAP BOX

A map box with four (4) bins, open from top, will be installed on the engine tunnel. The map box will be 24.00" wide x 30.00" deep x 8.00" high. The map box will be constructed of .125" aluminum and will be painted to match the cab interior.

The map box will be constructed to include a panel to enclose the space at the driver side rear edge of the engine tunnel between the map box bottom and engine tunnel.

The map box will have a permanent divider at 12.00" from the forward side of the box. The map box will have two (2) different permanent dividers splitting the compartment on each side of the permanent divider at 12.00" from the forward side of the box. A permanent divider will separate the forward portion of the map box into 11.00" wide on the driver side and 13.00" on the passenger side. The rear portion of the box will be split equally into 12.00" wide sections.

Each compartment will contain slots for movable dividers to be placed at half inch increments. The forward driver side compartment will have slots to insert dividers running forward to back. The remaining three (3) compartments will have dividers that run side to side. There will be a total of three (3) 13.00" wide dividers and 16 12.00" wide dividers.

A total of four (4) cutouts, 3.00" wide by 6.00" deep with a 3.00" curve radius will be supplied on the rear of the map box. The cutouts will terminate 2.00" from the bottom of the map box.

SEATING CAPACITY

The seating capacity in the cab will be six (6).

DRIVER SEAT

A seat will be provided in the cab for the driver. The seat design will be a cam action type, with air suspension. For increased convenience, the seat will include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control will be a towel-bar style located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat will have an adjustable reclining back. The seat back will be a high back style with side bolster pads for maximum support. For optimal comfort, the seat will be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat will be furnished with a three (3)-point, shoulder type seat belt. The seat belt tongue will be stored at waist position for quick application by the seat occupant. The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

OFFICER SEAT

A seat will be provided in the cab for the passenger. The seat design will be a cam action type, with air suspension. The seat back will be a high back style with nine (9) degree fixed recline angle and side bolster pads for maximum support. For optimal comfort, the seat will be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

The seat will be furnished with a three (3)-point, shoulder type seat belt. The seat belt tongue will be stored at waist position for quick application by the seat occupant. The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

REAR FACING DRIVER SIDE OUTBOARD SEAT

There will be one (1) rear facing seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat will be provided with 15.00" deep foam cushions designed with EVC. (elastomeric vibration control). To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

The seat back will be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will be furnished with a three (3)-point, shoulder type seat belt. The seat belt tongue will be stored at waist position for quick application by the seat occupant. The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

REAR FACING PASSENGER SIDE OUTBOARD SEAT

There will be one (1) rear facing seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat will be provided with 15.00" deep foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

The seat back will be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will be furnished with a three (3)-point, shoulder type seat belt. The seat belt tongue will be stored at waist position for quick application by the seat occupant. The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

FORWARD FACING CENTER SEATS

There will be two (2) forward facing seats provided at the center position in the crew cab. The seat backs will be high back style with nine (9) degree fixed recline angle. For optimal comfort, the seats will be provided with 15.00" deep foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seats will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

The seats will be furnished with three (3)-point shoulder type seat belts. The seat belt tongue will be stored at waist position for quick application by the seat occupant. The seat belt receptacle will be provided on a cable conveniently nested next to the seat cushion providing easy accessibility. The seat belts will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

SEAT UPHOLSTERY

All Seats Inc. 911 seat upholstery will be gray woven with black Imperial 1200 material.

AIR BOTTLE HOLDERS

All SCBA type seats in the cab will have a Ziamatic Model ULLH SCBA holder bracket. This bracket will be compliant with the current NFPA 1901 standards and will include a backplate, two (2) seats, a footplate and the Model LLS ("Load & Lock") strap to hold the bottle in the bracket. The bracket seats will be a "one size fits all" style seat and will accommodate SCBA cylinders from the high pressure 30-minute to the high pressure 60-minute. Seats will be adjustable up and down by unbolting, relocating, and rebolting in the desired position.

Provided with the SCBA seats, will be backrest inserts which cover the SCBA cavity. The insert cover will be padded and covered with the same material as the seat. A total of two (2) inserts will be provided outboard rear facing seats. The seat back insert is designed to support the firefighters back, with or without the SCBA bottle in place. The insert is held in place with two (2) elastic cords.

SEAT BELTS

All seating positions in the cab and crew cab will have red seat belts.

The belts will also include the Ready Reach® D-loop assembly to the shoulder belt system. The Ready Reach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.

SHOULDER HARNESS HEIGHT ADJUSTMENT

All seating positions furnished with three (3)-point shoulder type seat belts will include a height adjustment. This adjustment will optimize the belts effectiveness and comfort for the seated firefighter.

SEAT BELT MONITORING SYSTEM

A seat belt monitoring system (SBMS) will be provided. The SBMS will be capable of monitoring up to ten (10) seat positions indicating the status of each seat position with a green or red LED indicator as follows:

All other seats:

- Seat Occupied & Buckled = Green
- Seat Occupied & Unbuckled = Red
- No Occupant & Buckled = Red
- No Occupant & Unbuckled = Not Illuminated

Audible Alarm

The SBMS will include an audible alarm that will be activated when a red illumination condition exists and the parking brake is released, or a red illumination condition exists and the transmission is not in park.

HELMET STORAGE, PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, section 14.1.8.4.1 requires a location for helmet storage be provided.

There is no helmet storage on the apparatus as manufactured. The fire department will provide a location for storage of helmets.

CAB DOME LIGHTS

There will be four (4) Weldon 808* series, dual LED dome lights with black bezels provided. Two (2) lights will be mounted above the inside shoulder of the driver and officer and two (2) lights will be installed and located, one (1) on each side of the crew cab.

The color of the LED's will be red and white.

The white LED's will be controlled by the door switches and the lens switch.

The color LED's will be controlled by the lens switch.

OVERHEAD MAP LIGHTS

There will be two (2) white halogen, round adjustable map lights installed in the cab:

- One (1) overhead in front of the driving position.

- One (1) overhead in front of the passenger's position.

Each light will include a switch on the light housing.

The light switches will be connected directly to the battery switched power.

MAP LIGHT

There will be one (1) Sunnex®, HS76*-00, halogen map light(s) with swivel joint base provided in the cab and located same #27450 to the left of the officer. See Picture. Each map light will have a square base with an on/off switch.

The light(s) will also be provided with no additional accessory.

The light switch(es) will be connected directly to the battery switched power.

HAND HELD LIGHT

There will be four (4) 12v Streamlight, Fire Vulcan, Model #44451, lights mounted One (1) at each officers side light next to the A pillar on the dash and the drivers side just forward of the map box pointed side to side. Crew cab lights outboard forward facing position picture supplied for exact mount.
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Each light housing will be orange in color and be provided with a C4 LED and two (2) "ultra bright blue tail light LEDs" The tail light LEDs will have a dual mode of blinking or steady.

Vehicle mount with 12VDC direct wire charging rack.

Quick release buckle strap will be included.

HAND HELD SPOTLIGHT

A Specialty Lighting, Model 2150-1, hand held spotlight will be installed officer's side of cab dash as far forward as possible. see pictures. The light will be furnished with a 9 foot coil cord.

CAB INSTRUMENTATION

The cab instrument panel will consist of gauges, an LCD display, telltale indicator lights, alarms, control switches, and a diagnostic panel. The function of instrument panel controls and switches will be identified by a label adjacent to each item. Actuation of the headlight switch will illuminate the labels in low light conditions. Telltale indicator lamps will not be illuminated unless necessary. The cab instruments and controls will be conveniently located within the forward cab section directly forward of the driver. Gauge and switch panels will be designed to be removable for ease of service and low cost of ownership.

GAUGES

The gauge panel will include the following ten (10) black gauges with black bezels to monitor vehicle performance:

Voltmeter Gauge (Volts)

Low volts (11.8 VDC)

Amber indicator on gauge assembly with alarm

High volts (15 VDC)

Amber indicator on gauge assembly with alarm

Very low volts (11.3 VDC)

Amber indicator on gauge assembly with alarm

Very high volts (16 VDC)

Amber indicator on gauge assembly with alarm

Tachometer (RPM)

Speedometer (Primary (outside) MPH, Secondary (inside) Km/H)

Fuel Level Gauge (Empty - Full in fractions)

Low fuel (1/8 full)

Amber indicator on gauge assembly with alarm

Very low fuel (1/32) fuel

Amber indicator on gauge assembly with alarm

Engine Oil Pressure Gauge (PSI)

Low oil pressure to activate engine warning lights and alarms

Red indicator on gauge assembly with alarm

Front Air Pressure Gauge (PSI)

Low air pressure to activate warning lights and alarm

Red indicator on gauge assembly with alarm

Rear Air Pressure Gauge (PSI)

Low air pressure to activate warning lights and alarm

Red indicator on gauge assembly with alarm

Transmission Oil Temperature Gauge (Fahrenheit)

High transmission oil temperature activates warning lights and alarm

Amber indicator on gauge assembly with alarm

Engine Coolant Temperature Gauge (Fahrenheit)

High engine temperature activates an engine warning light and alarm

Red indicator on gauge assembly with alarm

Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions)

Low fluid (1/8 full)

Amber indicator on gauge assembly with alarm

All gauges and gauge indicators will perform prove out at initial power-up to ensure proper performance.

INDICATOR LAMPS

To promote safety, the following telltale indicator lamps will be integral to the gauge assembly and are located above and below the center gauges. The indicator lamps will be "dead-front" design that is only visible when active. The colored indicator lights will have descriptive text or symbols.

The following amber telltale lamps will be present:

Low coolant

Trac cntl (traction control) (where applicable)

Check engine

Check trans (check transmission)

Aux brake overheat (Auxiliary brake overheat)

Air rest (air restriction)

Caution (triangle symbol)

Water in fuel

DPF (engine diesel particulate filter regeneration)

Trailer ABS (where applicable)

Wait to start (where applicable)

HET (engine high exhaust temperature) (where applicable)

ABS (antilock brake system)

MIL (engine emissions system malfunction indicator lamp) (where applicable)

SRS (supplemental restraint system) fault (where applicable)

DEF (low diesel exhaust fluid level)

The following red telltale lamps will be present:

Warning (stop sign symbol)

Seat belt

Parking brake

Stop engine

Rack down

The following green telltale lamps will be provided:

Left turn

Right turn

Battery on

The following blue telltale lamp will be provided:

High beam

ALARMS

Audible steady tone warning alarm: A steady audible tone alarm will be provided whenever a warning message is present.

Audible pulsing tone caution alarm: A pulsing audible tone alarm (chime/chirp) will be provided whenever a caution message is present without a warning message being present.

Alarm silence: Any active audible alarm will be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms will intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp will act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition will enable the steady or pulsing tones respectively.

INDICATOR LAMP AND ALARM PROVE-OUT

Telltale indicators and alarms will perform prove-out at initial power-up to ensure proper performance.

CONTROL SWITCHES

For ease of use, the following controls will be provided immediately adjacent to the cab instrument panel within easy reach of the driver.

Emergency master switch: A molded plastic push button switch with integral indicator lamp will be provided. Pressing the switch will activate emergency response lights and siren control. A green lamp on the switch provides indication that the emergency master mode is active. Pressing the switch again disables the emergency master mode.

Headlight / Parking light switch: A three (3)-position maintained rocker switch will be provided. The first switch position will deactivate all parking lights and the headlights. The second switch position will activate the parking lights. The third switch position will activate the headlights.

Panel backlighting intensity control switch: A three (3)-position momentary rocker switch will be provided. The first switch position decreases the panel backlighting intensity to a minimum level as the switch is held. The second switch position is the default position that does not affect the backlighting intensity. The third switch position increases the panel backlighting intensity to a maximum level as the switch is held.

The following standard controls will be integral to the gauge assembly and are located below the right hand gauges. All switches have backlit labels for low light applications.

High idle engagement switch: A two (2)-position momentary rocker switch with integral indicator lamp will be provided. The first switch position is the default switch position. The second switch position will activate and deactivate the high idle function when pressed and released. The "Ok To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch will indicate when the high idle function is engaged.

"Ok To Engage High Idle" indicator lamp: A green indicator light will be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.

The following standard controls will be provided adjacent to the cab gauge assembly within easy reach of the driver. All switches will have backlit labels for low light applications.

Ignition switch: A three (3)-position maintained/momentary rocker switch will be provided. The first switch position will deactivate vehicle ignition. The second switch position will activate vehicle ignition. The third momentary position will disable the Command Zone audible alarm if held for three (3) to five (5) seconds. A green indicator lamp will be activated with vehicle ignition.

Engine start switch: A two (2)-position momentary rocker switch will be provided. The first switch position is the default switch position. The second switch position will activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.

4-way hazard switch: A two (2)-position maintained rocker switch will be provided. The first switch position will deactivate the 4-way hazard switch function. The second switch position will activate the 4-way hazard function. The switch actuator will be red and includes the international 4-way hazard symbol.

Heater and defroster controls.

Turn signal arm: A self-canceling turn signal with high beam headlight and windshield wiper/washer controls will be provided. The windshield wiper control will have high, low, and intermittent modes.

Parking brake control: An air actuated push/pull park brake control valve will be provided.

Chassis horn control: Activation of the chassis horn control will be provided through the center of the steering wheel.

CUSTOM SWITCH PANELS

The design of cab instrumentation will allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There will be positions for up to three (3) switch panels in the overhead console on the driver's side, up to four (4) switch panels in the engine tunnel console facing the driver, up to three (3) switch panels in the overhead console on the officer's side and up to three (3) switch panels in the engine tunnel rear facing console accessible to both driver and officer. All switches will have backlit labels for low light applications.

DIAGNOSTIC PANEL

A diagnostic panel will be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel will allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches will allow engine and ABS systems to provide blink codes should a problem exist. The diagnostic panel will include the following:

Engine diagnostic port

Transmission diagnostic port

ABS diagnostic port

SRS diagnostic port (where applicable)

Command Zone USB diagnostic port

Engine diagnostic switch (blink codes flashed on check engine telltale indicator)

ABS diagnostic switch (blink codes flashed on ABS telltale indicator)

Diesel particulate filter regeneration switch (where applicable)

Diesel particulate filter regeneration inhibit switch (where applicable)

CAB LCD DISPLAY

A digital four (4)-row by 20-character dot matrix display will be integral to the gauge panel. The display will be capable of showing simple graphical images as well as text. The display will be split into three (3) sections. Each section will have a dedicated function. The upper left section will display the outside ambient temperature. The upper right section will display odometer, trip mileage, PTO hours, fuel consumption, engine hours, and other configuration specific information. The bottom section will

display INFO, CAUTION, and WARNING messages. Text messages will automatically activate to describe the cause of an audible caution or warning alarm. The LCD will be capable of displaying multiple text messages should more than one caution or warning condition exist.

AIR RESTRICTION INDICATOR

A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm will be provided.

OFFICER SPEEDOMETER

A Class I digital display speedometer will be recessed into the instrument panel Switch position #9..

"DO NOT MOVE APPARATUS" INDICATOR

A flashing red indicator light, located in the driving compartment, will be illuminated automatically per the current NFPA requirements. 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 activate a pulsing alarm when the parking brake is released.

DO NOT MOVE TRUCK MESSAGES

Messages will be displayed on the gauge panel LCD located forward of the steering wheel directly in front of the driver whenever the Do Not Move Truck light is active. The messages will designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

The following messages will be displayed (where applicable):

- Do Not Move Truck
- DS Cab Door Open (Driver Side Cab Door Open)
- PS Cab Door Open (Passenger's Side Cab Door Open)
- DS Crew Cab Door Open (Driver Side Crew Cab Door Open)
- PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open)
- DS Body Door Open (Driver Side Body Door Open)
- PS Body Door Open (Passenger's Side Body Door Open)
- Rear Body Door Open
- DS Ladder Rack Down (Driver Side Ladder Rack Down)
- PS Ladder Rack Down (Passenger Side Ladder Rack Down)
- Deck Gun Not Stowed
- Lt Tower Not Stowed (Light Tower Not Stowed)
- Hatch Door Open
- Fold Tank Not Stowed (Fold-A-Tank Not Stowed)
- Aerial Not Stowed (Aerial Device Not Stowed)
- Stabilizer Not Stowed
- Steps Not Stowed
- Handrail Not Stowed

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 will be displayed as a caution message after the parking brake is disengaged.

SWITCH PANELS

The emergency light switch panel will have a master switch for ease of use plus individual switches for selective control. Each switch panel will contain eight (8) membrane-type switches each rated for one million (1,000,000) cycles. Panels containing less than eight (8) switch assignments will include non-functioning black appliqués. Documentation will be provided by the manufacturer indicating the rated cycle life of the switches. The switch panel(s) will be located in the overhead position above the windshield on the driver side overhead to allow for easy access.

The switches will be membrane-type and also act as an integral indicator light. For quick, visual indication the entire surface of the switch will be illuminated white whenever back lighting is activated and illuminated red whenever the switch is active. For ease of use, a two (2)-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch will be placed in the center of the switch. The label will allow light to pass through the letters for ease of use in low light conditions.

WIPER CONTROL

For simple operation and easy reach, the windshield wiper control will be an integral part of the directional light lever located on the steering column. The wiper control will include high and low wiper speed settings, a one (1)-speed intermittent wiper control with six (6)-second interval and windshield washer switch. The control will have a "return to park" provision, which allows the wipers to return to the stored position when the wipers are not in use.

SPARE CIRCUIT

There will be five (5) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires will have the following features:

The positive wire will be connected directly to the battery power.

The negative wire will be connected to ground.

Wires will be protected to 20 amps at 12 volts DC.

Power and ground will terminate behind the driver's seat, rear wall of cab on officer's side, front of the officer's seat below glove box and back wall of P3 and P1..

Termination will be with six (6) position terminal strip.

Wires will be sized to 125% of the protection.

This circuit(s) may be load managed when the parking brake is set.

SPARE CIRCUIT

There will be five (5) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires will have the following features:

- The positive wire will be connected directly to the battery power.
- The negative wire will be connected to ground.
- Wires will be protected to 15 amps at 12 volts DC.
- Power and ground will terminate (2) on the side of the instrument panel to the left of the officer, (1) in driver's position per instrument panel layout,(2) in crew cab area of the cab. One each side outboard forward facing set riser with a coil of wire, exact location at mid inspection.
- Termination will be with 15 amp, power point plug with rubber cover.

Wires will be sized to 125 percent of the protection.

The circuit(s) may be load managed when the parking brake is set.

INFORMATION CENTER

An information center employing a 7.00" diagonal color LCD display will be encased in an ABS plastic housing.

The information center will have the following specifications:

- Operate in temperatures from -40 to 185 degrees Fahrenheit
- An Optical Gel will be placed between the LCD and protective lens
- Five weather resistant user interface switches
- Black enclosure with gray decal
- Sunlight Readable
- Linux operating system
- Minimum of 400nits rated display
- Display can be changed to an available foreign language

OPERATION

The information center will be designed for easy operation for everyday use.

The page button will cycle from one screen to the next screen in a rotating fashion.

A video button will allow a NTSC signal into the information center to be displayed on the LCD. Pressing any button while viewing a video feed will return the information center to the vehicle information screens.

A menu button will provide access to maintenance, setup and diagnostic screens.

All other button labels will be specific to the information being viewed.

GENERAL SCREEN DESIGN

Where possible, background colors will be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background will be used. If a caution or warning situation arises the following will occur:

- An amber background/text color will indicate a caution condition.
- A red background/text color will indicate a warning condition.

Every screen will include the following:

- Exterior Ambient Temperature
- Time (12 or 24 hour mode)

Text Alert Center:

- The information center will utilize an "Alert Center" to display text messages for audible alarm tones. The text messages will be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages will cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" will change to indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color will be shown for all alert center messages.

Button Labels: A label for each button will exist. The label will indicate the function for each active button for each screen. Buttons that are not utilized on specific screens will have a button label with no text.

PAGE SCREENS

The Information center will include the following screens:

Load Manager Screen: A list of items to be load managed will be provided. The list will provide:

- Description of the load
- Individual load shed priority: The lower the priority number the earlier the device will be shed should a low voltage condition occur.
- Load Status: The screen will indicate if a load has been shed (disabled) or not shed.

"At a Glance" color features are utilized on this screen

Do Not Move Truck: The Do Not Move Truck screen will indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices will be indicated:

- Driver Side Cab Door
- Passenger's Side Cab Door
- Driver Side Crew Cab Door
- Passenger's Side Crew Cab Door
- Driver Side Body Doors
- Passenger's Side Body Doors
- Rear Body Door(s)
- Ladder Rack (if applicable)
- Deck Gun (if applicable)

- Light Tower (if applicable)
- Hatch Door (if applicable)
- Stabilizers (if applicable)
- Steps (if applicable)

Chassis Information: The following information will be shown:

- Engine RPM
- Fuel Level
- Battery Voltage
- Engine Coolant Temperature
- Engine Oil Pressure

"At a Glance" color features are utilized on this screen

Active Alarms List: This screen will show a list of all active text messages. The list items text will match the text messages shown in the "Alert Center". The date and time the message occurred is displayed with each message in the list.

MENU SCREENS

The following screens will be available through the Menu button:

View System Information: A detailed list of vehicle information:

- Battery Volts
- Pump Hours
- Transmission Oil Temperature
- Pump Engaged
- Engine Coolant Level
- Engine Oil Level
- Oil level will only be shown when the engine is not running
- Power Steering Level

Set daytime and nighttime Display Brightness:

- Brightness: Increase and decrease
- Default setting button

Configure Video Mode:

- Set Video Contrast
- Set Video Color
- Set Video Tint

Set Startup Screen:

- Choose the screen that will be active at vehicle power-up

Set Date & Time:

- 12 or 24 hour format
- Set time
- Set date

View Active Alarms:

- Shows a list of all active alarms
- Date and time of the occurrence is shown with each alarm
- Silence alarms
- All alarms are silenced

System Diagnostics:

- Module type and ID number
- Module version

Module diagnostics information:

- Input or output number
- Circuit number connected to that input or output
- Circuit name (item connected to the circuit)
- Status of the input or output
- Power and Constant Current module diagnostic information:
- Button functions and button labels may change with each screen.

VEHICLE DATA RECORDER

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

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A CD provided with the apparatus will include the programming to download the information from the VDR. A USB cable can be used to connect the VDR to a laptop to retrieve required information.

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 (7-12 Seating Capacity)
- Seat Belt Buckled Status - Yes/No by Position (7-12 Seating Capacity)
- Master Optical Warning Device Switch - On/Off
- Time - 24 Hour Time
- Date - Year/Month/Day

INTERCOM SYSTEM

A seven (7) position Sigtronics, Model US-67D, intercom system with dual radio interface capability at the driver, officer, and pump panel will be provided. Four (4) crew cab positions at two (2) forward facing seats and two (2) rearward facing seats will have intercom and radio listen capabilities.

System includes:

- One (1) US-67D Intercom system that includes the following:
- Six (6) Interior Headset jacks in blue boxes
- One (1) Exterior Headset jack in blue box with splash cover (Pump panel)
- Three (3) Radio Push-to-Transmit buttons in blue boxes (Driver, officer and pump panel)
- All necessary cabling

RADIO / INTERCOM INTERFACE CABLES

The apparatus manufacturer will supply and install two (2) radio interface cables before delivery of the vehicle.

The radio equipment to be used by the customer will be:

- Motorola High Power , Model Apex 6000
- Kenwood , Model TK-790

HEADSET, UNDER HELMET

There will be six (6) Sigtronics, Model SE-8, under helmet, standard headset(s) provided all cab seating ares as well as the pump panel.

Each headset will feature:

- Coiled cord with single nickel coated plug
- Noise cancelling electret microphone with wind muff
- Flexible microphone boom rotates 180 degrees for left or right dress
- Gel filled earseals
- Volume control
- 24 dB noise reduction

KNOX-BOX®

There will be one (1) Knox-Box Drug Vault #2 with WiFi sent to the apparatus manufacturers preferred installer and installed at P3 pictures to be supplied Ethernet cable also to be supplied by customer. Specific shipping requirements will be followed.

A "technician's key" will be provided by the customer for each Knox Box. The box cannot be installed without a compatible technician's key.

TWO WAY RADIO INSTALLATION

There will be two (2) customer supplied two way radio(s) sent to the apparatus manufacturers preferred radio installer to be installed SAME AS #27450 install the Kenwood in switch panel location #5 and the Motorola in switch panel #6. radio charges each side of the map box per photo in the S:drive, job photo's stage 3 job folder for this unit. per the shipping document.

No antenna mount or whip will be included in this option.

Specific radio shipping requirements will be followed.

BRACKET ONLY INSTALLATION

There shall be one (1) customer supplied Thermal Imaging camera charging bracket(s) sent to the apparatus manufacturers preferred installer to be installed Center console in cab pictures supplied in Power point in Stage 3 Job Folder.

Specific shipping requirements will be followed.

TWO-WAY RADIO CABLE INSTALLATION

There will be one (1) customer supplied 25.00' Ethernet/USB cable(s) sent to the apparatus manufacturers preferred radio installer for installation. The cable will be run Cab dash in front of the officer's dash a to P3. No other components will be installed with this option.

Specific shipping requirements will be followed.

GPS ANTENNA INSTALLATION

There will be two (2) customer supplied GPS antenna(s) sent to the apparatus manufacturers preferred installer to be installed on the roof. The antenna coax cable(s) will be run from the antenna to cab dash in front of the officer. and a connector provided, if necessary. Specific shipping requirements will be followed.

PORTABLE RADIO CHARGER INSTALLATION

There will be four (4) customer supplied portable two-way radio chargers(s) sent to the apparatus manufacturers preferred radio installer to be installed per customer instructions. Specific shipping requirements will be followed.

TRI-BAND ANTENNA

There will be one (1) Mobile Mark, Model SM-U15-1A2C, Tri-band 900/1900MHz & GPS antenna(s) located The thought here is rather than drilling multiple holes (6) in the cab roof, all antennas (6) will

mount to the bracket and (2) or maybe (3) holes at most will be drilled in the cab roof under the bracket. The bracket will be sent to you via ground mail with the two (2) 15.00' cables from each antenna terminating at center dash area .

RADIO ANTENNA MOUNT

There will be three (3) Maxrad, Model BMATM, antenna-mounting base(s) with 17.00' coax cable and weatherproof cap provided.

The mount(s) will be located on the cab roof two (2) on officer's side switch panel area, and one (1) behind the driver's seat with 5' coil of wire..

The cable will be routed to behind the driver's seat.

VEHICLE CAMERA SYSTEM

There will be a color vehicle camera system provided with the following:

- One (1) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse

The camera images will be displayed on the driver's color Mux display. Audio from the microphone on the active camera will be emitted by an amplified speaker on the ceiling behind the driver.

The following components will be included:

- One (1) SV-CW134639CAI Camera
- One (1) Amplified speaker (if applicable)
- All necessary cables

ELECTRICAL POWER CONTROL SYSTEM

The primary power distribution will be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers will be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers will be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers will be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays will be easily accessible.

Distribution centers located throughout the vehicle will contain battery powered studs for supplying customer installed equipment thus providing a lower cost of ownership.

Circuit protection devices, which conform to SAE standards, will be utilized to protect electrical circuits. All circuit protection devices will be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers will be Type-I automatic reset (continuously resetting). When required, automotive type fuses will be utilized to protect electronic equipment. Control relays and solenoid will have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

COMMAND ZONE CONTROL SYSTEM

A solidstate electronics based control system will be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network will consist of electronic modules located near their point of use to reduce harness lengths and improve reliability. The control system will comply with SAE J1939-11 recommended practices.

The control system will operate as a master-slave system whereas the main control module instructs all other system components. The system will contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system will utilize a Real Time Operating System (RTOS) fully compliant with OSEK/VDX™ specifications providing a lower cost of ownership.

For increased reliability and simplified use the control system modules will include the following attributes:

Green LED indicator light for module power

Red LED indicator light for network communication stability status

Control system self test at activation and continually throughout vehicle operation

No moving parts due to transistor logic

Software logic control for NFPA mandated safety interlocks and indicators

Integrated electrical system load management without additional components

Integrated electrical load sequencing system without additional components

Customized control software to the vehicle's configuration

Factory and field reprogrammable to accommodate changes to the vehicle's operating parameters

Complete operating and troubleshooting manuals

USB connection to the main control module for advanced troubleshooting

To assure long life and operation in a broad range of environmental conditions, the Command Zone control system modules will meet the following specifications:

Module circuit board will meet SAE J771 specifications

Operating temperature from -40C to +70C

Storage temperature from -40C to +70C

Vibration to 50g

IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and one (1) meter)

Operating voltage from eight (8) volts to 16 volts DC

The main controller will activate status indicators and audible alarms designed to provide warning of problems before they become critical.

CIRCUIT PROTECTION AND CONTROL DIAGRAM

Copies of all job-specific, computer network input and output (I/O) connections will be provided with each chassis. The sheets will indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.

ON-BOARD ADVANCED/VISUAL ELECTRICAL SYSTEM DIAGNOSTICS

The on-board information center will include the following diagnostic information:

Text description of active warning or caution alarms

Simplified warning indicators

Amber caution light with intermittent alarm

Red warning light with steady tone alarm

All control system modules, with the exception of the main control module, will contain on-board visual diagnostic LEDs that assist in troubleshooting. The LEDs will be enclosed within the sealed, transparent module housing near the face of the module. One LED for each input or output will be provided and will illuminate whenever the respective input or output is active. Color-coded labels within the modules will encompass the LEDs for ease of identification. The LED indicator lights will provide point of use information for reduced troubleshooting time without the need for an additional computer.

ADVANCED DIAGNOSTICS

An advanced, Windows-based, diagnostic software program will be provided for this control system. The software will provide troubleshooting tools to service technicians equipped with an IBM compatible computer.

The service and maintenance software will be easy to understand and use and have the ability to view system input/output (I/O) information.

INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM

A system will be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

VOLTAGE MONITOR SYSTEM

A voltage monitoring system will be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system will provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm will activate if the system falls below 11.8 volts DC for more than two (2) minutes.

DEDICATED RADIO EQUIPMENT CONNECTION POINTS

There will be three (3) studs provided in the primary power distribution center located in front of the officer for two-way radio equipment.

The studs will consist of the following:

12-volt 40-amp battery switched power

12-volt 60-amp ignition switched power

12-volt 60-amp direct battery power

There will also be a 12-volt 100-amp ground stud located in or adjacent to the power distribution center.

ENHANCED SOFTWARE

The Command Zone control system will include the following software enhancements:

All perimeter lights and scene lights (where applicable) will be deactivated when the parking brake is released.

Cab and crew cab dome lights will remain on for ten (10) seconds for improved visibility after the doors close. The dome lights will dim after ten (10) seconds or immediately if the vehicle is put into gear.

Cab and crew cab perimeter lights will remain on for ten (10) seconds for improved visibility after the doors close. The dome lights will dim after ten (10) seconds or immediately if the vehicle is put into gear.

EMI/RFI PROTECTION

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus will have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system will meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, will provide EMC testing reports from testing conducted on an entire apparatus and will certify that the vehicle meets SAE J551/2 and SAE J1113/25

Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility will be controlled by applying appropriate circuit designs and shielding. The electrical system will be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing will be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

ELECTRICAL HARNESSING INSTALLATION

All 12-volt wiring and harnessing installed by the apparatus manufacturer will conform to specification PM-QA W-101: Pierce manufacturing Wiring Harness Specification.

To ensure rugged dependability, all wiring harnesses installed by the apparatus manufacturer will conform to the following specifications:

SAE J1128 - Low tension primary cable

SAE J1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring

SAE J163 - Low tension wiring and cable terminals and splice clips

SAE J2202 - Heavy duty wiring systems for on-highway trucks

NFPA 1901 - Standard for automotive fire apparatus

FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses

SAE J1939 - Serial communications protocol

SAE J2030 - Heavy-duty electrical connector performance standard

SAE J2223 - Connections for on board vehicle electrical wiring harnesses

NEC - National Electrical Code

SAE J561 - Electrical terminals - Eyelet and spade type

SAE J928 - Electrical terminals - Pin and receptacle type A

Wiring will be run in loom where exposed, and have grommets or other edge protection where wires pass through metal. Wiring will be color, function and number coded. Wire colors will be integral to each wire insulator and run the entire length of each wire. Function and number codes will be continuously imprinted on all wiring harness conductors at 2.00" intervals. All wiring installed between the cab and into doors will be enclosed within an expandable rubber boot to protect the wiring. 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 wire ends not placed into connectors will be sealed with a heat shrink end cap. All holes made in the roof will be caulked with silicon. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof. 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. For low cost of ownership, electrical components designed to be removed for maintenance will be quickly accessible. For ease of use, a coil of wire will be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work. Corrosion preventative compound will be applied to non-waterproof electrical connectors 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. Any lights containing non-waterproof sockets in a weather-exposed area will have corrosion preventative compound added to the socket terminal area. All electrical terminals in exposed areas will have DOW 1890 protective Coating applied completely over the metal portion of the terminal. Rubber coated metal clamps will be used to support wire harnessing and battery cables routed along the chassis frame rails. Heat shields will be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust will be protected by a heat shield.

All braided wire harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date.

BATTERY CABLE INSTALLATION

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer will conform to the following requirements:

SAE J1127 - Battery Cable

SAE J561 - Electrical terminals, eyelets and spade type

SAE J562 - Nonmetallic loom

SAE J836A - Automotive metallurgical joining

SAE J1292 - Automotive truck, truck-tractor, trailer and motor coach wiring

NFPA 1901 - Standard for automotive fire apparatus

Battery cables and battery cable harnessing will be installed utilizing the following guidelines:

1. All battery cables and battery harnesses will have a permanent label attached for easy identification of the harness part number and fabrication date. For ease of identification and simplified use, battery cables will be color coded. All positive battery cables will be red in color or wrapped in red loom the entire length of the cable. All negative battery cables will be black

in color. For ease of identification, all positive battery cable isolated studs throughout the cab and chassis will be red in color.

For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus will be coated to prevent corrosion.

ELECTRICAL COMPONENT INSTALLATION

All lighting used on the apparatus will be, at a minimum, a two (2) wire light grounded through a wired connection to the battery system.

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

Six (6) 12 volt, Exide Model 31A950X1W batteries that include the following features will be provided:

- 950 CCA, cold cranking amps

- 190 amp reserve capacity

- High cycle

- Group 31

- Rating of 5700 CCA at 0 degrees Fahrenheit

- 1140 minutes of reserve capacity

- SAE Posts

Each battery case will be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover will be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery will consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

BATTERY SYSTEM

A single starting system will be provided.

An ignition switch and starter button will be located on the instrument panel.

MASTER BATTERY SWITCH

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

An indicator light will be provided on the instrument panel to notify the driver of the status of the battery system.

BATTERY COMPARTMENTS

Batteries will be stored in well-ventilated compartments that are located under the cab and bolted directly to the chassis frame. The battery compartments will be constructed of 3/16" steel plate and be designed to accommodate a maximum of three (3) group 31 batteries in each compartment. The battery hold-downs will be of a non-corrosive material. All bolts and nuts will be stainless steel.

Heavy-duty battery cables will be used to provide maximum power to the electrical system. Cables will be color-coded.

Battery terminal connections will be coated with anti-corrosion compound. Battery solenoid terminal connections will be encapsulated with semi-permanent rubberized compound.

JUMPER STUDS

One (1) set of battery jumper studs with plastic color-coded covers will be installed on the bottom of the driver's side battery box. This will provide for easy jumper cable access.

BATTERY CHARGER

There will be a Kussmaul 1200, Model 091-187-12-Remote battery charger provided. A bar graph display indicating the state of charge will be provided.

The charger will have a maximum output of 40 amps and a fully automatic regulation.

The battery charger will be wired to the AC shoreline inlet through an AC receptacle adjacent to the battery charger.

Battery charger/compressor will be D3 high on rear wall.

The battery charger indicator will be located behind the driver's door on the outside of the cab.

SHORELINE INLETS

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

The shoreline receptacle(s) will be provided with a NEMA 5-20, 120 volt, 20 amp, straight blade Kussmaul Super auto eject plug with a red weatherproof cover. The cover is spring loaded to close, preventing water from entering when the shoreline is not connected.

The unit is completely sealed to prevent road dirt contamination.

A solenoid wired to the vehicle's starter is energized when the engine is started. This instantaneously drives the plug from the receptacle.

An internal switch arrangement will be provided to disconnect the load prior to ejection to eliminate arcing of the connector contacts.

The shoreline will be connected to battery charger and engine block heater.

A mating connector body will be supplied with the loose equipment.

The shoreline receptacle will be located on the driver side of cab, above wheel.

BATTERY TRAYS

Formed fit heavy-duty roto-molded polyethylene battery trays with drain tubes will be provided for the batteries to sit in.

ALTERNATOR

A C.E. Niehoff, model C680-1, alternator will be provided. It will have a rated output current of 430 amp as measured by SAE method J56. It will also have a custom three (3)-set point voltage regulator, manufactured by C. E. Niehoff. The alternator will be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

ELECTRONIC LOAD MANAGER

An electronic load management (ELM) system will be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.

For improved reliability and ease of use, the load manager system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components will not be allowed.

The system will include the following features:

System voltage monitoring.

A shed load will remain inactive for a minimum of five minutes to prevent the load from cycling on and off.

Sixteen available electronic load shedding levels.

Priority levels can be set for individual outputs.

High Idle to activate before any electric loads are shed and deactivate with the service brake.

If enabled:

"Load Man Hi-Idle On" will display on the information center.

Hi-Idle will not activate until 30 seconds after engine start up.

Individual switch "on" indicator to flash when the particular load has been shed.

The information center indicates system voltage.

The information center includes a "Load Manager" screen indicating the following:

Load managed items list, with priority levels and item condition.

Individual load managed item condition:

ON = not shed

SHED = shed

SEQUENCER

A sequencer will be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation will allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

For improved reliability and ease of use, the load sequencing system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components will not be allowed.

Emergency light sequencing will operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights will be activated one by one at half-second intervals. Sequenced emergency light switch indicators will flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer will deactivate the warning light loads in the reverse order.

Sequencing of the following items will also occur, in conjunction with the ignition switch, at half-second intervals:

Cab Heater and Air Conditioning

Crew Cab Heater (if applicable)

Crew Cab Air Conditioning (if applicable)

Exhaust Fans (if applicable)

Third Evaporator (if applicable)

HEADLIGHTS

There will be four (4) JW Speaker, rectangular LED lights mounted in the front quad style, chrome housing on each side of the cab grille:

- The outside light on each side will contain a Model 8800-12V - DOT/ECE LB LED, low beam module.
- The inside light on each side will contain a Model 8800 -12V - DOT/ECE HB LED, high beam module.

DIRECTIONAL LIGHTS

There will be two (2) Whelen 600 series, LED combination directional/marker lights provided. The lights will be located on the outside cab corners, next to the headlights.

The color of the lenses will be the same color as the LED's.

ADDITIONAL DIRECTIONAL LIGHT

There will be two (2) Whelen, Model 60A00TAR, amber LED populated arrow directional light(s) provided one each side back of the cab.

Each light will be provided with a chrome flange.

CAB CLEARANCE/MARKER/ID LIGHTS

There will be seven (7) Truck-Lite, Model 35200Y, amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations:

- Three (3) amber LED identification lights will be installed in the center of the cab above the windshield.
- Two (2) amber LED clearance lights will be installed, one (1) on each outboard side of the cab above the windshield.
- Two (2) amber LED marker lights will be installed, one (1) on each side above the cab doors.

The lights will be mounted with no guard.

REAR ID/MARKER DOT LIGHTING

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

- Truck-Lite, Model 35017R, LED lights
- As close as practical to the vertical centerline
- Centers spaced not less than six (6) inches or more than twelve (12) inches apart.
- Red in color
- All at the same height

The four (4) clearance lights located at the rear will be installed per the following:

- Truck-Lite, Model 35017R, LED lights
- To indicate the overall width of the vehicle
- One (1) each side of the vertical centerline
- All at the same height
- As near the top as practical
- To be visible from the rear and the side
    - One (1) each side, facing the side
    - One (1) each side, facing the rear

Per FMVSS 108 and CMVSS 108 requirements.

FRONT CAB SIDE CLEARANCE/MARKER LIGHTS

There will be two (2) Truck-Lite, Model 19036Y, amber LED lights installed to the outside of the chrome wrap around bezel, one (1) on each side of the cab.

The lights will activate as clearance/marker lights with the headlight switch and directional lights with the corresponding directional circuit.

REAR FMVSS LIGHTING

The rear stop/tail and directional LED lighting will consist of the following:

- Two (2) Whelen®, Model M6BTT, red LED stop/tail lights
- Two (2) Whelen, Model M6T, amber LED arrow turn lights

The lights shall be provided with color lenses.

The lights will be mounted in a polished combination housing.

There will be two (2) Whelen Model M6BUW, LED backup lights with chrome trim provided.

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 polished stainless steel light shield will be provided over the light that will direct illumination downward, preventing white light to the rear.

LIGHTING BEZEL

There will be two (2) Whelen, Model M6FCV3P , three (3) place chromed ABS housings with Pierce logos provided for the rear M6 series stop/tail, directional, and back up lights.

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.

WARNING LIGHT FLASH PATTERN

The flash pattern of all the exterior warning lights will be set to meet the certified California, Title XIII flash pattern by either the light manufacturer's default flash pattern or by a conversion change to the certified flash pattern.

INTERMEDIATE LIGHT

There will be one (1) pair, of Truck-Lite, Model 60115Y, amber, LED, turn signal, marker lights furnished, one (1) each side, horizontally in the rear fender panel.

A stainless steel trim will be included with this installation.

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.

PERIMETER SCENE LIGHTS, BODY

There will be four (4) Truck-Lite, Model 6060C LED lights with rubber grommets provided on the apparatus as perimeter scene lights.

- Two (2) lights will be under the rear step, one (1) each side.
- Two (2) lights will be under the pump panel area, one (1) each side.

Each lights will be activated by a cab door switch.

STEP LIGHTS

Four (4) white LED step lights will be provided. One (1) step light will be provided on each side, on the front compartment face and two (2) step lights at the rear to illuminate the tailboard.

In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

These step lights will be actuated with the pump panel light switch.

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

SIDE SCENE LIGHTS

There will be one (1) Whelen, Model 9SC0ENZR LED scene light(s) with chrome flange installed on the side of the apparatus, driver's side behind crew cab door.

A control for the light(s) selected above will be the following:

a switch at the driver's side switch panel

a switch at the passenger's side switch panel

no additional switch location

no additional switch location

These lights may be load managed when the parking brake is set.

SIDE SCENE LIGHTS

There will be one (1) Whelen, Model 9SC0ENZR LED scene light(s) with chrome flange installed on the side of the apparatus, officer's side behind crew cab door.

A control for the light(s) selected above will be the following:

a switch at the driver's side switch panel

a switch at the passenger's side switch panel

no additional switch location

no additional switch location

These lights may be load managed when the parking brake is set.

12 VOLT LIGHTING

There will be one (1) Whelen Model PFP2P, 12 volt DC LED dual floodlight(s) installed on the apparatus.

The painted parts of this light assembly to be white.

The lights will be installed driver's side back of the cab.

The light(s) to be installed on a side body/surface mount push-up pole(s).

The length of the outside pole to be 20.00".

The inside pole length to be 57.00" long or as long as practical to fit in the location selected.

The light pole(s) to be installed with handle holder(s) and a not stowed sensor connected to the Do Not Move Truck Indicator Light in the cab.

The lights will be controlled by the following:

- no additional switch location.
- no additional switch location.
- a cup switch at the driver's side back of cab.
- no additional switch location.

These light(s) may be load managed when the parking brake is applied.

12 VOLT LIGHTING

There will be one (1) Whelen Model PFP2P, 12 volt DC LED dual floodlight(s) installed on the apparatus.

The painted parts of this light assembly to be white.

The lights will be installed officer's side back of cab.

The light(s) to be installed on a side body/surface mount push-up pole(s).

The length of the outside pole to be 20.00".

The inside pole length to be 57.00" long or as long as practical to fit in the location selected.

The light pole(s) to be installed with handle holder(s) and a not stowed sensor connected to the Do Not Move Truck Indicator Light in the cab.

The lights will be controlled by the following:

- no additional switch location.
- no additional switch location.
- a cup switch at the passenger's side back of cab.
- no additional switch location.

These light(s) may be load managed when the parking brake is applied.

12 VOLT LIGHTING

There will be one (1) Whelen Pioneer PFP2, 12 volt LED floodlight(s) provided on the front visor, centered.

The painted parts of this light assembly to be white.

The light will be controlled by the following:

- a switch at the driver's side switch panel.
- a switch at the passenger's side switch panel.
- no additional switch location.
- no additional switch location.

These light(s) may be load managed when the parking brake is set.

DOOR SWITCH

There will be one (1) momentary three (3) position "on/off/on" switch installed in the driver's side switch panel.

The top position will be connected to a Linear Brand, Delta 3, single channel digital transmitter to operate the front door opener.

The bottom position will be connected to a Linear Brand, Delta 3, single channel digital transmitter to operate the rear door opener.

The switch will be powered up when the battery switch is turned on. The switch will be protected by a single 8 amp circuit breaker.

The wires form the switch, with ground wires, will be terminated in two (2) boxes. Each box will be 6.00" x 6.00" x 4.50". Each box will be painted job color. The boxes will be located on the cab roof to the rear of the lightbar and on the drivers side rear catwalk..

REAR SCENE LIGHT(S)

There will be two (2) Whelen, Model 9SC0ENZR, LED scene light(s) with chrome flange(s) installed at the rear of the apparatus, two on the rear of the body up high..

The light(s) will be controlled by a switch at the driver's side switch panel, by a switch at the passenger's side switch panel and by a cup switch at the driver's side rear bulkhead.

The light(s) may be load managed when the parking brake is set.

WATER TANK

Booster tank will have a capacity of 500 gallons and be constructed of polypropylene plastic by United Plastic Fabricating, Incorporated.

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.

Longitudinal partitions will be constructed of .38" polypropylene plastic and will extend from the bottom of the tank through the top cover to allow for positive welding.

Transverse partitions will extend from 4.00" off the bottom of the tank to the underside of the top cover.

All partitions will interlock and will be welded to the tank bottom and sides.

Tank top will be constructed of .50" polypropylene. It will be recessed .38" and will be welded to the tank sides and the longitudinal partitions.

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

Construction will include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two (2) of the dowels will be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump that is 8.00" long x 8.00" wide x 6.00" deep will be provided at the bottom of the water tank.

Sump will 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.

PAINTED PLATE

A vertical plate will be welded at the upper inside area of the rear fender liners each side to conceal the water tank cradle and water tank from view through the wheel well. The plates will be painted to match the body fender liners.

Two (2) sleeves will be provided in the water tank for a 3.00" pipe to the rear.

HOSE BED

The hose bed will be fabricated of 12-gauge galvanneal steel.

The sides will not form any portion of the fender compartments.

Hose bed width will be minimum of 68.00" inside.

Upper and rear edges of side panels will have a double break for rigidity, a split tube finish will not be acceptable.

The upper inside area of the beavertails will be covered with brushed stainless steel to prevent damage to painted surface when hose is removed.

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.

Hose bed will accommodate Left to right 1000' of 4", 400' of 2.5", 200' of 2.5".

HOSEBED DIVIDER

Two (2) adjustable hosebed 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, or 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 CROSS DIVIDER

A cross-divider will be provided in the hose bed 94" from the rear edge of the hosebed . The divider will be constructed from the same material as the body, and will extend across the entire hosebed from the driver's side to the passenger's side. It will be bolted to the side sheets.

There will be one (1) additional hose bed dividers furnished.

Each divider will be constructed of a .25" brushed aluminum sheet.

Partition 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 two (2) bolts, one (1) at each end and located between 200' OF 2.50" and the backboard and the be 14" tall.

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

Flat surfaces will be sanded for uniform appearance or constructed of brushed aluminum.

HOSE DEFLECTOR

A 4.00" deep aluminum treadplate hose deflector will be provided at the rear of the hosebed above the handrail. This deflector will extend 4.00" to the rear and have an angle support.

PARTITION SNGL SHEET W/DOOR

A single sheet un-painted full length partition will be provided above the ladder storage area between the tank and the side sheet in the hose bed. This partition approximately 12.50" tall x the length of the hose bed and will be held to the otter most edge. A aluminum treadplate door with a D-handle latch latch will be provided at the rear.

HOSE BED COVER

A four (4) section full length hose bed cover, constructed of .125" bright aluminum treadplate will be furnished.The cover will be split into front and rear with each section having a left and right side. Each section will be attached with a full length stainless steel piano hinge. The sides will be slanted down.

The cover will be reinforced so that it can support the weight of a man walking on the cover.

If access to water tank fill tower is blocked by the hose bed cover, then a hinged door will be provided in it so that tank may be filled without raising cover doors.

Chrome grab handles and gas filled cylinders will be provided to assist in opening and closing the cover. A handrail is to be provided at the rear, in the center of the support, to assist in opening the cover.

SAFETY CABLE FOR HOSE BED COVER

There will be four (4) safety cable(s) provided for the hosebed cover to provide additional support.

HOSEBED RESTRAINT REAR

There will be a red vinyl flap installed at the rear of the hosebed. The flap will be attached to the top hosebed frame with Lift-a-dot fasteners. The flap will have straps that loop through footman loops at the bottom of the hosebed and fasten with spring clip and hook fasteners and chain.

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 splashguard 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 16.00" deep.

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.

Any inboard facing surfaces below the height of the hosebed will be aluminum diamondplate .

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 galvanneal steel.

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.

Compartment flooring will be 12 gauge and of the sweep out design, with the floor higher than the compartment door lip.

The compartment door opening will be framed by flanging the edges in 1.75" and bending out again .75" to form an angle.

Drip protection will be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate, or polished stainless steel.

The top of the compartment will be covered with bright aluminum treadplate rolled over the edges on the front, rear, and outward side. These covers will have the corners TIG welded.

Side compartment covers will be separate from the compartment tops.

Front facing compartment walls will be covered with bright aluminum treadplate.

All screws and bolts which protrude into a compartment will have acorn nuts on the ends 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 designed for sustaining maximum loads.

The support system will include .375" thick steel vertical angle supports bolted to the chassis frame rails with .625" diameter bolts.

Attached to the bottom of the steel vertical angles will be horizontal angles, with gussets welded to the vertical members, which extend to the outside edge of the body.

A steel frame will be mounted on the top of these supports to create a floating substructure, which results in a 500 lb equipment support rating per lower compartment.

The floating substructure will be separated from the horizontal members with neoprene elastomer isolators. These isolators will reduce the natural flex stress of the chassis from being transmitted to the body.

The isolators will have a broad load range, proven viability in vehicular applications, be of a fail safe design and allow for all necessary movement in three (3) transitional and rotational modes.

The neoprene isolators will be installed in a modified V three (3)-point mounting pattern to reduce the natural flex of the chassis being transmitted to the body.

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.

LOUVERS

Louvers will be stamped into compartment walls to provide the proper airflow inside the body compartments and to prevent water from dripping into the compartment. Where these louvers are provided, they will be formed into the metal and not added to the compartment as a separate plate.

TESTING OF BODY DESIGN

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

The 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", simulating the twisting a truck may experience when driving over a curb.

- Making a 90 degree turn while at 20 mph, simulating 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.

COMPARTMENTATION, DRIVER'S SIDE

A full height, vertically hinged, single door compartment ahead of the rear wheels will be provided. The interior dimensions of this compartment will be 34.50" wide x 67.63" high x 25.88" deep in the lower 26.00" of the compartment and 12.00" deep in the remaining upper portion. 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 30.00" wide x 63.00" high.

A positive door holder will be furnished with this compartment.

A horizontally hinged, single lift-up door compartment over the rear wheels will be provided. The interior dimensions of this compartment will be 66.50" wide x 32.88" high x 12.00" deep. The depth of the compartment will be calculated with the compartment door closed. The clear door opening of this compartment will be 59.50" wide x 28.25" high.

The lift-up door will be furnished with two (2) gas-charged cylinders to assist in the opening of the door and to maintain the door in an open position. There will be a field adjustable, three-position bracket mounted on the vertical side door opening that will allow the door to be held open at 87°, 90°, or 93°.

Closing of the door will not require releasing, unlocking, or unlatching any mechanism.

A full height, vertically hinged, double door compartment behind the rear wheels will be provided. The interior dimensions of this compartment will be 47.50" wide x 67.63" high x 12.00" deep. A section of this compartment will be 25.88" deep x 47.50" width x 28.00" height directly behind the rear wheels. 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 46.00" wide x 63.00" high.

Positive door holders will be furnished with this compartment.

COMPARTMENTATION, PASSENGER'S SIDE

A full height, vertically hinged, single door compartment ahead of the rear wheels will be provided. The interior dimensions of this compartment will be 34.50" wide x 67.63" high x 25.88" deep in the lower 26.00" of the compartment and 12.00" deep in the remaining upper portion. 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 30.00" wide x 63.00" high.

A positive door holder will be furnished with this compartment.

A horizontally hinged, single lift-up door compartment over the rear wheels will be provided.. The interior dimensions of this compartment will be 66.50" wide x 32.88" high x 12.00" deep. The depth of the compartment will be calculated with the compartment door closed. The clear door opening of this compartment will be 59.50" wide x 28.25" high.

The lift-up door will be furnished with two (2) gas-charged cylinders to assist in the opening of the door and to maintain the door in an open position. There will be a field adjustable, three-position bracket mounted on the vertical side door opening that will allow the door to be held open at 87°, 90°, or 93°. Closing of the door will not require releasing, unlocking, or unlatching any mechanism.

A full height, vertically hinged, double door compartment behind the rear wheels will be provided. The interior dimensions of this compartment will be 47.50" wide x 67.63" high x 12.00" deep. A section of this compartment will be 25.88" deep x 47.50"wide x 26.00" high directly behind the rear wheels. 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 46.00" wide x 63.00" high.

A positive door holder will be furnished with this compartment.

DOORS, SIDE COMPARTMENT

All hinged compartment doors will be lap style with double panel construction and will be a minimum of 1.50" thick. To provide additional door strength a "C" section reinforcement will be installed between the outer and interior panels.

Doors will be provided with a closed cell rubber gasket around the surface that laps onto the body. A second heavy-duty automotive rubber molding with a hollow core will be installed on the door framing that seals onto the interior panel, to ensure a weather resisting compartment.

All compartment doors will have polished stainless steel continuous hinge with a pin diameter of .25" that is bolted or screwed on with stainless steel fasteners.

All door lock mechanisms will be fully enclosed within the door panels to prevent fouling of the lock in the event equipment inside shifts into the lock area.

Doors will be latched with recessed, polished stainless steel "D" ring handles and Eberhard 106 locks.

To prevent corrosion caused by dissimilar metals, compartment door handles will not be attached to outer door panel with screws. A rubber gasket will be provided between the "D" ring handle and the door.

COMPARTMENTATION, REAR

A roll-up door compartment above the rear tailboard will be provided.

The interior dimensions of this compartment will be 40.00" wide x 40.63" high x 25.88" deep in the lower 32.38" of height and 15.75" deep in the remaining upper portion. The depth of the compartment will be calculated with the compartment door closed.

A louvered, removable access panel will be furnished on the back wall of the compartment.

The rear compartment will be open into the rear side compartments.

The clear door opening of this compartment will be 33.25" wide x 32.38" high.

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

ROLL-UP DOOR, REAR COMPARTMENT

There will be a rear roll up door. The door will be double faced aluminum construction, an anodized satin finish and manufactured by A&A Manufacturing (Gortite).

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 plus 180 to minus 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 plus 300 to minus 40 degrees Fahrenheit.

A polished stainless steel lift bar with locking key latches to be provided for each roll-up door. The keys to be Model 751 to match all compartment and cab doors. 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 roll-up door assembly will not exceed 4.00".

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

ELECTRIC DOOR LOCKS

There will be six (6) door(s) located D1, D2, D3, P1, P2 and P3 equipped with electric locks. The locks will be wired battery direct. The switch for control will be located One switch for six (D1, D2. D3, P2, R1 on cab dash and one switch located in crew cab area officer's side behind door jamb for EMS cabinet P1 and P3.. In the event of loss of power, a manual override is available.

ELECTRIC DOOR LOCKS

There will be one (1) door(s) located R1 equipped with electric locks. The locks will be wired battery direct. The switch for control will be located One switch for six (D1, D2. D3, P2, R1 on cab dash and one switch located in crew cab area officer's side behind door jamb for EMS cabinet P1 and P3. In the event of loss of power, a manual override is available.

PULL STRAP, DOORS

The two (2) compartment doors, located D2 AND P2, will be provided with pull straps.

REVERSE HINGED DOOR

The two (2) compartment doors, located D3 and P3, will have the hinge at the rear of the door.

COMPARTMENT LIGHTING

There will be seven (7) compartment(s) with two (2) Pierce LED compartment light strips. The dual light strips will be centered vertically along each side of the door framing. There will be two (2) light strips per compartment.The dual light strips will be in compartment(s): D1, D2, D3, P1, P2, P3, R1.

Any remaining compartments without light strips will have a 6.00" diameter Truck-Lite, Model: 79384 light. Each light will have a number 1076 one filament, two wire bulb.

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

ACCESS PANEL

The bright aluminum treadplate flooring on the driver's side of the cargo compartment will be hinged with quarter turn latches for access to the pump and plumbing.

MOUNTING TRACKS

There will be seven (7) sets of tracks for mounting shelf(s) in D1, D2, D3, P1, P2, P3, R1. These tracks will be installed vertically to support the adjustable shelf(s), and will be full height of the compartment. The tracks will be painted to match the compartment interior.

ADJUSTABLE SHELVES

There will be 11 shelves with a capacity of 500 pounds provided. The shelf construction will consist of .188" 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 will be (1) up high in compartment D1, D2, D3, P2. One in R1 and Three in P3 one low and two high. Add a second shelf to the lower portion of D3 Two (2) One high and one low in P1..

SLIDE-OUT FLOOR MOUNTED TRAY

There will be one (1) floor mounted slide-out tray(s) with 2.00" sides provided one (1) in the compartment behind the tank between the Drivers rear 2.5" and drivers side sheet. This tray should be 44" and the width of the compartment.. Each tray will be rated for up to 500lb in the extended position. The tray(s) will be constructed of a minimum .13" aluminum with welded corners. The finish will be painted to match compartment interior.

There will be two undermount-roller bearing type slides rated at 250lb each provided. The pair of slides will have a safety factor rating of 2.

To ensure years of dependable service, the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50lb force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

Automatic locks will be provided for both the "in" and "out" positions. The trip mechanism for the locks will be located at the front of the tray for ease of use with a gloved hand.

DRAWER ASSEMBLY

A slideout drawer assembly will be installed D3 TO BE BUILT SAME AS #27450.

The clear dimensions starting at the top of the cabinet with the first drawer will be 2.25" with a face plate that is 3.00" high x 21.00" deep. The clear dimensions of the second drawer will be 2.75" with a face plate that is 3.00" high x 21.00" deep. The clear dimensions of the third drawer will be 3.75" with a face plate that is 4.00" high x 21.00" deep. The clear dimensions of the fourth drawer will be 3.75" with a face plate that is 4.00" high x 21.00" deep. Each drawer will be the same width and not exceed 36.00".

The drawers will have a capacity of 250 pounds.

The drawers will be mounted in a cabinet housing constructed of light gray powder coated aluminum with anodized aluminum frames. The housing will be 24.00" deep, and completely enclose the drawer.

A full-length aluminum extruded rail will be provided at the top edge of each drawer. This rail will act as the latching mechanism as well as the handle for each drawer.

There will be a total of one (1) provided.

STORAGE

An enclosed weather resistant compartment will be located from the water tank to the end of the lower rear extended compartment on the D.S. above the lower rear extended rear compartment. side of body. A vertically hinged smooth aluminum door with a D-handle latch will be provided at the rear of the compartment. The storage compartment will be approximately 44.00" deep x 22.50" high x 12.25 " wide with a clear door opening of 12.50" wide x 22.25" high.

LOUVERS, DELETE, STANDARD PER COMPARTMENT

Delete the standard louvers in compartment(s) P3.

The total number of deleted louvers will be one (1).

NFPA 1901, 2009 edition, section 15.1.1 requires any enclosed external compartment will be weather resistant and ventilated and have provisions for drainage of moisture. Per fire department specification and request to have one (1) or more compartments provided without louvers, the apparatus will be non-compliant to NFPA 1901 standards at time of contract execution.

MATTING, COMPARTMENT SHELVING

Turtle Tile compartment matting will be provided in 13 shelves. The locations are, all shelves and floor trays.

The color of the Turtle Tile will be black.

PARTITION, TRANSVERSE REAR COMPARTMENT

Two (2) partitions will be bolted in place to separate driver and passenger side rear compartments from the rear tailboard compartment.

The treadplate diamonds on the rear compartment and ladder compartment will be ground smooth where the door "D" molding meets the compartment edges.

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

Hard suction hose will not be required.

HANDRAILS

The handrails will be 1.25" diameter anodized aluminum extrusion, with a ribbed design, 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.

- Two (2) handrails will be provided with one (1) above the driver side pump panel and one (1) above the passenger side pump panel.

- Two (2) vertical handrails will be provided with one (1) on both the driver's and passenger's side body, on the front bulkhead door frame.

One (1) vertical handrail, not less than 29.00" long, will be located on the driver side rear beavertail.

- Two (2) horizontal handrails will be provided below the hose bed at the rear of the apparatus, one each side.

AIR BOTTLE STORAGE INSERT

A total of three (3) inserts will be provided for the air bottle storage compartments.

The air bottle compartment will be located for officer's side double bottle compartments.

The inserts will be formed in a "W" shape to help contain the bottles.

AIR BOTTLE STORAGE (DOUBLE)

A quantity of three (3) air bottle compartments, 15.25" wide x 7.75" tall x 26.00" deep, will be provided on the driver side forward of the rear wheels, on the passenger side forward of the rear wheels and on the passenger side rearward of the rear wheels . A polished stainless steel door with a chrome plated flush lift & turn latch will be provided to contain the air bottle. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, black rubber matting will be provided.

EXTENSION LADDER

There will be a 24', two (2) section, aluminum, Duo-Safety, Series 900-A extension ladder provided.

ROOF LADDER

There will be a 14' aluminum, Duo-Safety, Series 775-A roof ladder provided.

LADDER STORAGE

The ladders will be stored between the water tank and the passenger's side compartments.

The ladders will extend into the pump compartment just to the rear of the water pump discharges.

The ladder storage area will be enclosed as practical by means of sheet metal to protect the ladders from road dirt. The ladders that extend into the pump house will also be enclosed. A black rubber boot will be provided to enclosed the ladders in the gap between the pump house and the body.

Each ladder will be stored vertically in a separate stainless steel storage trough. Each stainless steel trough will be lined with Dura-Surf nylon slides.

A bright aluminum treadplate enclosure will be provided at the rear of the body to properly contain the ladders. This enclosure will extend to the rear of the side body compartments.

The enclosure will also include a vertically hinged smooth aluminum door with a D-handle latch to access the ladders.

FOLDING LADDER

One (1) 10' aluminum, Series 585-A Duo-Safety folding ladder will be installed in a U-shaped trough inside the ladder storage compartment.

DURA-SURF LADDER SLIDES

Black Dura-Surf friction reducing material will be added to the stainless steel slides, on the bottom horizontal surfaces, of the ladder storage rack.

TRASH HOOK, 6'

One (1) pike pole 6' long Nupla trash hook/s with a fiberglass "D" handle, will be provided and located Ladder Tunnel.

PIKE POLE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) 8 ft or longer pike pole mounted in a bracket fastened to the apparatus.

The pike pole is not on the apparatus as manufactured. The fire department will provide and mount the pike pole.

The pike pole(s) will be a Akron 10' pike pole.

6 FT PIKE POLE

There will be one (1) Fire Hooks Unlimited APH-6, 6 foot pike pole(s) with fiberglass "D" handles provided.

PIKE POLE STORAGE

Stainless steel U-shaped trough be used for the storage of two (2) pike poles, with D-handle style grip, will be provided and installed in the ladder compartment. bacically two troughs welded together with divider between them on there side to be placed over the roof ladder in the ladder tunnel..

WARNING LABEL(S)

There will be two (2) label(s), indicating "NO STEP", provided top of the A/C on cab roof.

STEPS

A folding step will be provided on the front of each fender compartment. The step will be bright finished, non-skid with a luminescent coating that is rechargeable from any light source and can hold a charge for up to 24 hours. Each step will incorporate an LED light to illuminate the stepping surface. The step can be used as a hand hold with two openings wide enough for a gloved hand.

REAR STEPS

Aluminum treadplate corner steps and bright finished, non-skid folding steps will be provided at the rear. The folding steps will have a a luminescent coating that is rechargeable from any light source and can hold a charge for up to 24 hours. Each folding step will incorporate an LED light to illuminate the stepping surface. The folding steps can be used as a hand hold with two openings wide enough for a gloved hand. All steps will provide adequate surface for stepping.

SLIDE-OUT PLATFORM

Two (2) slideout platforms will be provided one each side under the pump panel. The capacity rating will be 500 lbs in the extended position. Automatic locks will be provided for both the "in" and "out" positions. The trip mechanism for the locks will be located at the front of the tray for ease of use with a gloved hand.

There will be a Whelen, part number 01-066D068-00, 2.00" round white 12 volt DC LED light provided to illuminate the ground area.

This platform will include a switch that will activate the Do Not Move Truck Indicator light in the cab when the battery switch is on, the parking brake is released and the platform is not in the stowed position.

Four (4) additional folding steps will be located two each side on the front compartment bulkheads . The step(s) will be bright finished, non-skid, with a luminescent coating. The luminescent coating is rechargeable from any light source and can hold a charge for up to 24 hours. Each step will incorporate an LED light to illuminate the stepping surface. The step(s) can be used as a hand hold with two openings wide enough for a gloved hand.

PUMP

Pump will be a Waterous CSU, 1500 gpm single (1) stage midship mounted centrifugal type.

Pump will be the class "A" type.

Pump will deliver the percentage of rated discharge at pressures indicated below:

- 100% of rated capacity at 150 psi net pump pressure.

-70% of rated capacity at 200 psi net pump pressure.

-50% of rated capacity at 250 psi net pump pressure.

Pump body will be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings).

Pump will be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping.

Pump case halves will be bolted together on a single horizontal face to minimize chance of leakage and facilitate ease of reassembly. No end flanges will be used.

Discharge manifold of the pump will be cast as an integral part of the pump body assembly and will provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency.

The three (3) 3.50" openings will be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold.

Impeller shaft will be stainless steel, accurately ground to size. It will be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller will have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply.

Bearings will be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings will be used.

Pump will be equipped with a self-adjusting, maintenance-free, mechanical shaft seal.

The mechanical seal will consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring will press against a highly polished stainless steel stationary ring that is sealed within the pump body.

In addition, a throttling ring will be pressed into the steel chamber cover, providing a very small clearance around the rotating shaft in the event of a mechanical seal failure. The pump performance will not deteriorate, nor will the pump lose prime, while drafting if the seal fails during pump operation.

Wear rings will be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

PUMP TRANSMISSION

The pump transmission will be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump will be through a high strength Morse HY-VO silent drive chain. By the use of a chain rather than gears, 50% of the sprocket will be accepting or transmitting torque, compared to two (2) or three (3) teeth doing all the work.

Drive shafts will be 2.35" diameter hardened and ground alloy steel and supported by ball bearings. The case will be designed to eliminate the need for water cooling.

AIR PUMP SHIFT

Pump shift engagement will be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control will also be located on the driver's side pump panel.

Two (2) indicator lights will be provided adjacent to the pump shift inside the cab. One (1) green light will indicate the pump shift has been completed and be labeled "pump engaged". The second green light will indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light will be labeled "OK to pump".

Another green indicator light will be installed adjacent to the hand throttle on the pump panel and indicate either the pump is engaged and the road transmission is in pump gear, or the road transmission is in neutral and the pump is not engaged. This indicator light will be labeled "Warning: Do not open throttle unless light is on".

The pump shift control in the cab will be illuminated to meet NFPA requirements.

TRANSMISSION LOCK-UP

The direct gear transmission lock-up for the fire pump operation will engage automatically when the pump shift control, in the cab, is activated.

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 cylindrical type and 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 Elkhart relief valve will be installed on the suction side of the pump preset at 125 psig.

Relief valve will have a working range of 75 psig to 250 psig.

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

Control will be located behind an access door at a side pump panel.

PRESSURE CONTROLLER

A Pierce Pressure Governor will be provided. An electric pressure governor will be provided which is capable of automatically maintaining a desired preset discharge pressure in the water pump. When operating in the pressure control mode, the system will automatically maintain the discharge pressure set by the operator (within the discharge capabilities of the pump and water supply) regardless of flow, within the discharge capacities of the water pump and water supply.

A pressure transducer will be installed in the water discharge of the pump. The transducer continuously monitors pump pressure sending a signal to the Electronic Control Module (ECM).

The governor can be used in two (2) modes of operation, RPM mode and pressure modes.

In the RPM mode, the governor can be activated after vehicle parking brake has been set.When in this mode, the governor will maintain the set engine speed, regardless of engine load (within engine operation capabilities).

In the pressure mode, the governor system can only operate after the fire pump has been engaged and the vehicle parking brake has been set. When in the pressure mode, the pressure controller monitors the pump pressure and varies engine speed to maintain a precise pump pressure. The pressure controller will use a quicker reacting J1939 database for engine control. (excluding Cat engines)

A preset feature allows a predetermined pressure or rpm to be set.

A pump cavitation protection feature is also provided which will return the engine to idle should the pump cavitate. Cavitation is sensed by the combination of pump pressure below 30 psi and engine speed above 2000 rpm for more than five (5) seconds.

The throttle will be a vernier style control, with a large control knob for use with a gloved hand. A throttle ready light will be provided adjacent to the throttle control. A large .75" RPM display will be provided to be visible at a glance.

Check engine, and stop engine indicator lights will be provided for easy viewing.

Large .75" push buttons will be provided for menu, mode, preset, and silence selections.

The water tank level indicator will be incorporated in the pressure governor.

A fuel level indicator will be incorporated in the pressure controller.

A pump hour meter will be incorporated in the pressure controller.

The pressure controller will incorporate monitoring for engine temperature, oil pressure, fuel level alarm, and voltage. Pump monitoring will include, pump gearcase temperature, error codes, diagnostic data, pump service reminders, and time stamped data logging, to allow for fast accurate trouble shooting. It will also notify the driver/engineer of any problems with the engine and the apparatus. Complete understandable messages will be provided in a 20-character display, providing for fewer abbreviations in the messages. An automatic dim feature will be included for night operations.

The pressure controller will include a USB port for easy software upgrades, which can be downloaded through a USB memory stick, eliminating the need for a laptop for software installations.

A complete interactive manual will be provided with the pressure controller.

PRIMER SYSTEM

A Waterous electric pump priming system conforming to standards outlined in the current edition of NFPA 1901 will be furnished with the apparatus.

One (1) VPO electric motor driven rotary vane primer will be provided.

One (1) VAP vacuum activated priming valve will be plumbed main pump.

One (1) momentary push-button control will be located at the pump operator's panel.

The push button control system control will operate an electric priming motor and the priming valve will automatically open during priming and close when the primer is deactivated.

THERMAL RELIEF VALVE

A Waterous Overheat Protection Manager (OPM) will be included on the pump that monitors pump water temperature and opens to relieve water to cool the pump when the temperature of the pump water exceeds 140 Degrees F (60 C) and a red warning light that is triggered when the water in the pump reaches 180 F (82 C).

The warning light will act as an additional protection device if the temperature in the pump keeps rising after the valve opens. The warning light and alarm with a test switch will be mounted on the pump operator panel.

The discharge line will be plumbed to ground.

PUMP MANUALS

Two (2) pump manuals from the pump manufacturer will be furnished in compact disc format with the apparatus. The manuals will cover pump operation, maintenance, and parts.

PLUMBING

All inlet and outlet plumbing, 3.00" and smaller, will be plumbed with either stainless steel pipe or synthetic rubber hose reinforced with high-tensile polyester braid. Small diameter secondary plumbing such as drain lines will be stainless steel, brass or hose.

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

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

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.

MAIN INLET CAPS, PROVIDED BY FIRE DEPARTMENT

NFPA 1901, section 16.6.8 requires all intakes to be provided with caps or closures capable of withstanding a hydrostatic gauge pressure of 500 psi.

The caps are not on the apparatus as manufactured. The fire department will provide both caps for the main pump inlets.

INLET VALVES WITH INTAKE RELIEF VALVE

Two (2) butterfly valves Task Force Tips Model AB7HNP-NX ball intake valve will be installed on the both the driver's side and the passenger's side main pump inlets main pump inlets. The valves will be located outside the pump panel. The intake valve will have a 4.00" FNST connection by 6.00" female NST swivel.

Valves will be manually actuated, with a handwheel.

The valve will include an adjustable relief valve.

The relief valve air bleeder drain will be plumbed through the pump panel, and terminate behind the operator's panel.

SHORT SUCTION TUBE

The suction tubes on the midship pump will have "short" suction tubes to allow for installation of adapters without excessive overhang.

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.

INLET (LEFT SIDE)

On the left side pump panel will be one (1)-2.50" auxiliary suction terminating in 2.50" National Standard Hose Thread. The auxiliary suction will be provided with strainer, chrome swivel and plug. The piping and valve will be 3.00" for this inlet.

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

ANODE, INLET

A pair of sacrificial zinc anodes will be provided in the water pump inlets to protect the pump from corrosion.

INLET CONTROL

Control for the side auxiliary inlet(s) will be located at the inlet valve.

INLET BLEEDER VALVE

A .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 piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line will run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. 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.

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.

LEFT SIDE DISCHARGE OUTLETS

There will be two (2) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with 2.50"(M) National Standard hose thread adapter.

DISCHARGE OUTLETS (RIGHT SIDE)

There will be one (1) discharge outlet with a 3.00" valve on the right side of the apparatus, terminating with 2.50" male National Standard hose thread adapter.

DISCHARGE OUTLET, 4.00"

There will be a 4.00" discharge outlet with a 4.00" Akron valve installed on the right side of the apparatus, terminating with male a 4.00" National Standard hose thread adapter. This discharge outlet will be actuated with a handwheel control at the pump operator's control panel.

An indicator will be provided to show when the valve is in the closed position.

DISCHARGE OUTLET (REAR)

There will be two (2) discharge outlets piped to the rear of the hose bed, on one (1) each side, installed so proper clearance is provided for spanner wrenches or adapters. Plumbing will consist of 2.50" piping along with a 2.50" full flow ball valve with the control from the pump operator's panel.

DISCHARGE CAPS

Chrome plated, rocker lug, caps with vinyl covered cables will be furnished for all discharge outlets.

The auxiliary inlet plugs will have vinyl covered cables.

OUTLET BLEEDERS

A .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.

LEFT SIDE OUTLET ELBOWS

The 2.50" discharge outlets, located on the left 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 elbow will be Pierce VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected.

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 elbow will be Pierce VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected.

REAR OUTLET ELBOWS

The 2.50" discharge outlets, located at the rear of the apparatus, 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 elbow will be Pierce VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected.

LARGE DIAMETER OUTLET ELBOWS

The 4.00" outlet will be furnished with a 4.00"(F) National Standard hose thread x 4.00"(M) National Standard hose thread adapter with a cap and cable.

The elbow will be the VLH, which incorporates a Pierce exclusive thread design to automatically relieve stored pressure in the line when disconnected.

REDUCER

There will be two (2) adapters with 2.50" FNST x 1.50" MNST threads and a 1.50" chrome plated cap installed on one on driver's side, one on officer's side pump 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 in to the center of the handwheel.

DELUGE RISER, W/DUAL CONTROL, XG-18 EXTEND-A-GUN

The deluge riser piping will include a 18.00" Task Force Model XG18 Extend-A-Gun extension.

This extension will be telescopic to allow the deluge gun to be raised 18.00" increasing the range of operation.

A position sensor will be provided on the telescopic piping that will activate the "do not move vehicle" light inside the cab when the monitor is in the raised position.

The riser plumbing will be gated and controlled at the pump operator's panel by a handwheel control with position indicator.

A second handwheel control without position indicator will be provided above the pump adjacent to the outlet.

Plumbing will consist of 3.00" piping and an Akron 3.00" valve, terminating on the driver's side cargo area.

Piping will be installed securely so no movement develops when the line is charged.

MONITOR

An Elkhart Model 8297 "Stinger" monitor will be properly installed on the deluge riser.

This monitor will include both the fixed base and the portable base with 4.0" NSTF swivel inlet.

The monitor will be painted to match the body.

MONITOR NOZZLE

An Elkhart #SM-1250 Select-O-Matic manual pattern control master stream nozzle will be provided.

Also included is an Elkhart ST-194 Quad stack tips and 282A shaper.

The deluge riser will have a 3.00" four (4)-bolt stainless steel flange for mounting the monitor.

CROSSLAY HOSE BEDS

Three (3) crosslays with 1.50" outlets will be provided. Each bed to be capable of carrying 200 feet of 1.75" double jacketed hose and will be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls will be at the pump operator's panel.

The center crosslay dividers will be a pan style, fabricated of .090 aluminum and will provide adjustment from side to side. The divider will be painted job color.

The remainder of the crosslay bed will be painted job color.

Stainless steel vertical scuffplates will be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) will also be equipped with a stainless steel scuffplate.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

SPEEDLAY HOSE RESTRAINT

A black 1.00" nylon webbing design with 2.00" box pattern will be provided across each end of two (2) speedlay(s) to secure the hose during travel. The webbing will be permanently attached at the top of the speedlay opening. There will be quarter turn fasteners located at the opposite end of the permanently attached webbing.

CROSSLAY COVER

A bi-fold aluminum treadplate cover, hinged at the front will be installed over the top of the crosslay/deadlay(s). It will include a latch at each end of the cover to hold it securely in place, a chrome grab handle at each end for opening and closing the cover and a foam rubber gasket where the cover comes into contact to a painted surface. The cover will be provided with no stay arm device hold open device.

CROSSLAY 8.00" LOWER THAN STD

The crosslays will be lowered 8.00" from standard.

BOOSTER HOSE REEL

A Hannay electric rewind booster hose reel will be installed over the pump in a recessed open compartment on the right side of the apparatus.

The exterior finish of the reel will be painted job color matching the body exterior.

A polished stainless steel roller and guide assembly will be mounted on the reel side of the apparatus.

Discharge control will be provided at the pump operator's panel. Plumbing to the reel will consist of 1.50" Aeroquip hose and a 1.50" valve.

Reel motor will be protected from overload with a sized automatic reset circuit breaker.

Electric rewind controls will be a rubber covered button. Locate one adjacent to the reel, and one on each pump panel.

Booster hose, 1.00" diameter and 150 feet, with chrome plated Barway, or equal couplings will be provided.

Working pressure of the booster hose will be a minimum of 800 psi.

Capacity of the hose reel will be 150 feet of 1.00" booster hose.

There will be one (1) additional polished stainless steel roller and guide assembly mounted DRIVER'S SIDE .

HUSKY 3 FOAM PROPORTIONER

A Pierce Husky® 3 foam proportioning system will be provided. The Husky 3 is an on demand, automatic proportioning, single point, direct injection system suitable for all types of Class A and B foam concentrates, including the high viscosity (6000 cps), alcohol resistant Class B foams. Operation will be based on direct measurement of water flow, and remain consistent within the specified flows and pressures. The system will automatically proportion foam solution at rates from .1 percent to 3.0 percent regardless of variations in water pressure and flow, up to the maximum rated capacity of the foam concentrate pump.

The design of the system will allow operation from draft, hydrant, or relay operation.

SYSTEM CAPACITY

The system will have the ability to deliver the following minimum foam solution flow rates at accuracies that meet or exceed NFPA requirements at a pump rating of 150 psi.

100 gpm @ 3 percent

300 gpm @ 1 percent

600 gpm @ 0.5 percent

Class A foam setting in .1 percent increments from .1 percent to 1 percent. Typical settings of 1 percent, .5 percent and .3 percent (maximum capacity will be limited to the plumbing and water pump capacity).

CONTROL SYSTEM

The system will be equipped with a digital electronic control display located on the pump operators panel. Push button controls will be integrated into the panel to turn the system on/off, control the foam percentage, and to set the operation modes.

The percent of injection will have a preset. This preset can be changed at the fire department as desired. The percent of injection will be able to be easily changed at the scene to adjust to changing demands.

Three (3) .50 tall LEDs will display the foam percentage in numeric characters. Three (3) indicator LEDs will also be included, one (1) green, one (1) red, and one (1) yellow. The LEDs will indicate various system operation or error states.

The indications will be:

Solid Green - System On

Solid Red - Valve Position Error

Solid Yellow - Priming System

Flashing Green - Injecting Foam

Flashing Red - Low Tank Level

Flashing Yellow - Refilling Tank

The control display will house a microprocessor, which receives input from the systems water flow meter while also monitoring the position of the foam concentrate pump. The microprocessor will compare the values of the water flow versus the position/rate of the foam pump, to ensure the proportion rate is accurate. One (1) check valve will be installed in the plumbing to prevent foam from contaminating the water pump.

HYDRAULIC DRIVE SYSTEM

The foam concentrate pump will be powered by an electric over hydraulic drive system. The hydraulic system and motor will be integrated into one (1) unit.

FOAM CONCENTRATE PUMP

The foam concentrate pump will be of positive displacement, self-priming; linear actuated design, driven by the hydraulic system. The pump will be constructed of brass body; chrome plated stainless

steel shaft, with a stainless steel piston. In order to increase longevity of the pump, no aluminum will be present in its construction.

A relief system will be provided which is designed to protect the drive system components and prevent over pressuring the foam concentrate pump

The foam concentrate pump will have minimum capacity for 3 gpm with all types of foam concentrates with a viscosity at or below 6000 cps including protein, fluoroprotein, AFFF, FFFP, or AR-AFFF. The system will deliver only the amount of foam concentrate flow required, without recirculating foam back to the storage tank. Recirculating foam concentrate back to the storage tank can cause agitation and premature foaming of the concentrate, which can result in system failure. The foam concentrate pump will be self-priming and have the ability to draw foam concentrate from external supplies such as drums or pails.

EXTERNAL FOAM CONCENTRATE CONNECTION

An external foam pick-up will be provided to enable use of a foam agent that is not stored on the vehicle. The external foam pick-up will be designed to allow continued operation after the on-board foam tank is empty, or the use of foam different than the foam in the foam tank.

PANEL MOUNTED EXTERNAL PICK-UP CONNECTION / VALVE

A bronze three (3)-way valve will be provided. The unit will be mounted to the pump panel. The valve unit will function as the foam system tank to pump valve and external suction valve. The external foam pick-up will be one (1) .75" male connection GHT (garden hose thread) with a cap.

PICK-UP HOSE

A .75" flexible hose with an end for insertion into foam containers will be provided. The hose will be supplied with a .75" female swivel GHT (garden hose thread) swivel connector. The hose will be shipped loose.

DISCHARGES

The foam system will be plumbed to six (6) discharges. The discharges capable of dispensing foam will be Three (3) crosslays, One (1) booster reel, two (2) rear 2.5" diescharges.

SYSTEM ELECTRICAL LOAD

The maximum current draw of the electric motor and system will be no more than 55 amperes at 12 VDC.

REFILL, SINGLE FOAM TANK

The foam system's proportioning pump will be used to fill the foam tank. This will allow use of the auxiliary foam pick-up to pump the foam from pails or a drum on the ground into the foam tank. A foam shut-off switch will be installed in the fill dome of the tank to shut the system down when the tank is full. The fill operation will be controlled by a mode in the foam system controller. While the proportioner pump is filling the tank, the controller will display a flashing yellow LED to indicate that the tank is filling. When the tank is full, as determined by the float switch in the tank dome, the pump will stop and the controller will shut the yellow LED off. If it attempted to use tank fill and the refill

valve and suction valve are in the wrong position(s), then a red LED will illuminate to indicate the improper valve position(s). When the valves are positioned properly, then filling will commence.

FOAM SYSTEM TRAINING

The fire department will order one (1) vehicle with this foam system. The operation of the foam system will be demonstrated at the plant where the apparatus was manufactured.

This demonstration will include:

- A review of the foam system manual, emphasizing key areas

- A walk around review of the system components on the finished truck

- A hands-on foam system start-up and foam discharge session

- Instructions on the use of the manual overrides

- A demonstration explaining the proper way to shutdown and flush the foam system.

FOAM TANK

The foam tank will be an integral portion of the polypropylene water tank. The cell will have a capacity of 30 gallons of foam with the intended use of Class A foam. The brand of foam stored in this tank will be Fire choke. The foam cell will not reduce the capacity of the water tank. The foam cell will have a screen in the fill dome and a breather in the lid.

FOAM TANK DRAIN

A system of 1.00" foam tank drains will be provided, integrated into the foam systems strainer and tank to foam pump valve management system. The tank to pump hoses running from the tank(s) to the panel mounted strainer will 1.00" diameter. The foam system controller will have a mode that allows for a given foam valve to be opened at will. Flow of foam from the tank valve to the strainer will be usable as a tank drain mode.

An adaptor will be supplied, that allows the 1.00" foam intake screen to assembly to be used as a drain outlet. The standard supplied 1.00" foam pick up hose will be attached to the screen assembly by way of the adapter. The drain mode will allow the operator to open and close the tank valve as required from the control head, to drain foam and re-fill foam containers through the connected hose, without foam spillage beneath the vehicle.

The foam drains on the driver's side below the running board under the rear of the cab are to be boxed in with treadplate box to match #27450.

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 MOUNTING

Pump will be mounted to a substructure which will be mounted to the chassis frame rail using rubber isolators. The mounting will allow chassis frame rails to flex independently without damage to the fire pump.

PUMP CONTROL PANELS (LEFT SIDE CONTROL)

All pump controls and gauges will be located at the left (driver's) side of the apparatus and properly identified.

Layout of the pump control panel will be ergonomically efficient and systematically organized.

The pump operator's control panel will be removable in two (2) main sections for ease of maintenance:

The upper section will contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels will be removable from the face of the pump panel for ease of maintenance. Below the sub panels will be located all valve controls and line pressure gauges.

The lower section of the panel will contain all inlets, outlets, and drains.

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.

IDENTIFICATION TAGS

The identification tag for each valve control will be recessed in the face of the tee handle.

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 directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting will be removable from the face of the pump panel for ease of maintenance. The casting will be color coded to correspond with the discharge identification tag.

All remaining identification tags will be mounted on the pump panel in chrome plated bezels.

The pump panel on the right (passenger's) side will be removable with lift and turn type fasteners.

Trim rings will be installed around all inlets and outlets.

The trim rings for the side discharge outlets will be color coded and labeled to correspond with the discharge identification tag.

PUMP PANEL CONFIGURATION

The pump panel configuration will be arranged and installed in an organized manner that will provide user-friendly operation.

PUMP AND GAUGE PANEL

The pump and gauge panels will be constructed of stainless steel with a brushed finish. A polished aluminum trim molding will be provided on both sides of the pump panel.

The passenger's side pump panel will be removable and fastened with swell type fasteners.

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.

Engine monitoring graduated LED indicators will be incorporated with the pressure controller.

COMPARTMENT, CAB LIFT CONTROL PANEL

A compartment will be provided at the pump panel, passenger's side. This compartment will be large enough to house the control panel for the cab lift. A stainless steel spring-loaded door will be provided.

AIR HORN BUTTON

An air horn control button will be provided at the pump operator's control panel. This button will be properly labeled and put within easy reach of the operator.

STAINLESS STEEL SPEAKER GRILLE

There will be one (1) polished stainless steel grille/s, for a radio speaker/s, provided and installed front of the body bulkhead on the pump panel.

The grille will be constructed with automotive type louvers, so rain and road splash are deflected. The speaker size will be university speaker.

RADIO SPEAKER

There will be a University model MM-2F radio speaker recessed into the front bulkhead near the pump panel. Wiring will extended from this speaker to FRONT OF THE BODY ON THE DRIVER'S SIDE.

SPECIAL LABEL

There will be six (6) special label/s provided and installed 2.5" left side discharges, 2.5" rear outlets, 2.5" and 4" right side outlets. 1-6 to be simaler to 15924. a second rear outlet was added to this unt. rears shall read "Driver Rear Discharge" and "Passenger Rear Discharge".. Each label will be worded as

follows, number 1 through 5 to be simular to #15924. Ecept that there is now an additional rear 2.5" discharge. the rear discharges read "Driver Rear Discharge" and "Passenger Rear Discharge"..

GAUGES, VACUUM AND PRESSURE

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

The gauges will be a minimum of 6.00" in diameter and will have white faces with black lettering, with a pressure range of 30.00"-0-600#.

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 polished stainless steel plugs. They will be marked with a label.

PRESSURE GAUGES

The individual "line" pressure gauges for the discharges will be interlube filled and manufactured by Class 1.

They will be a minimum of 2.50" in diameter and will have white faces with black lettering.

Gauges will be compound type with a vacuum/pressure range of 30.00"-0-400#.

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

FLOW METER GAUGE

There will be one (1) Class I Flowminder flow meter provided, in addition to the pressure gauge, for the foam manifold.

The flow meter will have a range appropriately suited for the diameter of the discharge and will have the "totalizer" feature provided, so the total flow can be checked at any time. The flow meter will be calibrated with the valve fully open.

WATER LEVEL GAUGE

An electric water level gauge will be incorporated in the pressure controller that registers water level by means of 9 LEDs. They will be at 1/8 level increments with a tank empty LED. The LEDs will be a bright type that is readable in sunlight, and have a full 180-degree of clear viewing.

To further alert the pump operator, the gauge will have a warning flash when the tank volume is less than 25%, and will have "Down Chasing LEDs when the tank is almost empty.

The level measurement will be ascertained by sensing the head pressure of the fluid in the tank or cell.

WATER LEVEL GAUGE, ADDITIONAL

An additional water level gauge will be provided. An Ernst sight tube water level indicator with a floating red ball will be mounted on the gauge panel with an unrestricted view for the operator.

FOAM LEVEL GAUGE

An electric foam level gauge will be provided on the operator's panel, that registers foam level by means of nine (9) LEDs. They will be at 1/8 level increments with a tank empty LED. The LEDs will be a bright type that is readable in sunlight, and have a full 180 degree of clear viewing.

To further alert the pump operator, will have a warning flash when the tank volume is less than 25 percent, and will have Down Chasing LEDs when the tank is almost empty.

The level measurement will be ascertained by sensing the head pressure of the fluid in the tank or cell. This method provides accuracy with an array of multiviscosity foams.

LIGHT SHIELD

There will be a polished, 16 gauge stainless steel light shield installed over the pump operators panel.

- 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.

There will be a green pump engaged indicator light activated on at the operator's panel when the pump is shifted into gear from inside the cab.

AIR HORN SYSTEM

Two (2) Grover Stuttertone air horns, 24.00" long, will be provided and located in the front bumper, recessed outside frame rails. The horn system will be piped to the air brake system wet tank utilizing .38" tubing. A pressure protection valve will be installed in-line to prevent loss of air in the air brake system.

AIR HORN CONTROL

The air horns will be actuated by a foot switch on the officer's side and by the horn button in the steering wheel. The driver will have the option to control the air horns or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

ELECTRONIC SIREN

A Whelen, Model: 295HFSC9, 200 watt, dual tone, 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 on a swivel bracket mounted on the headliner so that it is accessible to both the driver and officer. The swivel bracket will be capable of rotating a minimum of 180 degrees.

Siren will be actuated by a foot switch on the officer's side and by the horn button in the steering wheel. The driver will have the option to control the siren or the chassis horns from the horn button by means of a selector switch.

SPEAKER

There will be two (2) speakers provided. Each speaker will be a Whelen, Model SA122FMP, cast aluminum, 100-watt, flange mount with polished aluminum finish. Each speaker will be connected to the siren amplifier.

The speaker(s) will be recessed in the front bumper on the driver's side.

MECHANICAL SIREN, (AUXILIARY)

A Federal Q2B siren will be furnished. A siren brake button will be installed on the switch panel.

The control solenoid will be powered up after the emergency master switch is activated.

The mechanical siren will be recessed in the front bumper on the left side. The siren will be properly supported using the bumper framework.

The mechanical siren will be actuated by two (2) foot switches, one (1) located on the officer's side and one (1) on the driver's side.

A second siren brake switch will be installed on the passenger side.

LIGHTBAR, (CAB ROOF)

There will be a 88.00" Whelen Freedom, Model FNQ**LED lightbar mounted on the cab roof.

This lightbar will include the following:

- Four (4) red flashing LED modules facing forward.
- Two (2) red steady burn LED modules facing forward.
- Two (2) white flashing LED modules facing forward.
- Two (2) red flashing corner LED modules, one in each front corner.
- One (1) red flashing LED module on the end, facing the driver side.
- One (1) red flashing LED module on the end, facing the passenger side.
- One (1) Whelen, Model PE215 traffic light controller system with national standard high priority.

The color of the lenses will be clear.

There will be two (2) switches, located on a cab switch panel, to control this lightbar.

- One (1) switch will control all the warning lights.
- One (1) switch will control the traffic light controller.

The white flashing LEDs and the traffic light controller system will be disabled when the parking brake is applied.

WARNING LIGHTS (CAB FACE)

Two (2) pair of Whelen model 60*00F*R LED lights will be installed on the cab face, above the headlights, mounted in a common bezel.

The outer LEDS will be required for NFPA and will meet or exceed the NFPA required light output for the front lower zone.

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

The inner LEDs will be additional lighting.

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

There will be a switch located in the cab on the switch panel to control both sets of lights.

HEADLIGHT FLASHER

The high beam headlights will flash alternately between the left and right side.

There will be a switch installed in the cab on the switch panel to control the high beam flash. This switch will be live when the battery switch and the emergency master switches are on.

The flashing will automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set.

SIDE ZONE LOWER LIGHTING

There will be six (6) Whelen, Model 60*02F*R, flashing LED lights located at the following positions:

- Two (2) lights located, one (1) each side on the front cab corner .
    - The color of these lights will be red Super LED/red lens each side.
- Two (2) lights located, behind the crew cab door side of the cab .
    - The color of these lights will be red Super LED/rd lens each side.
- Two (2) lights located, in rear wheel well area .
    - The color of these lights will be red Super LED/red lens each side.

There will be a switch located in the cab on the switch panel to control the lights.

These lights will be installed with three (3) pairs of flange kits.

INTERIOR CAB DOOR WARNING LIGHTS

Four (4) Whelen 500 LED flashing lights will be provided. One (1) light will be located inside of each cab and crew cab door pan. Each light will be activated by the door jam switch of the associated door. The color of the lights will be red. The lights will alternately flash whenever the corresponding door is open. These lights will be mounted in a Whelen flange.

WARNING LIGHTS (SIDE)

one (1) pair of Whelen, Model 60*02F*R, LED flashing lights will be provided.

The lights will be located on High in body front corners of the body.

The color of the lights will be red Super LED/red lens.

The light will be with a flange.

The light will be activated with the side warning switch.

REAR ZONE LOWER LIGHTING

There will be two (2) Whelen, Model 60*02F*R, flashing LED warning lights located at the rear of the apparatus.

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

There will be a switch in the cab on the switch panel to control these lights.

These lights will be installed with a flange.

REAR & SIDE UPPER ZONE WARNING LIGHTS

There will be four (4) Whelen LED lights provided to meet the rear and side zone upper lighting requirements:

The following lights will be provided at the rear of the truck facing the side:

- One (1) Whelen, Model 60R02FRR, red warning light with red lens facing the driver side.
- One (1) Whelen, Model 60R02FRR, red warning light with red lens facing the passenger side.

The following lights will be provided facing the rear of the truck.

- Two (2) Whelen, Model 90RR5FRR, red warning lights with red lens facing the rear.

These lights will be installed with a flange.

There will be one (1) switch located in the cab on the switch panel to control the lights.

The rear warning lights will be mounted on stainless steel brackets with all wiring totally enclosed. These brackets will also support the clearance/marker lights.

TRAFFIC DIRECTING LIGHT

There will be one (1) Whelen model TAM65, 36.00" long x 2.84" high x 2.24" deep, amber LED traffic directing light installed at the rear of the apparatus.

The Whelen model TACTLD1 control head will be included with this installation.

The auxiliary warning mode will be activated with the control head only.

This traffic directing light will be recess mounted into the treadplate box at the rear of the apparatus.

The traffic directing light control head will be located within a heavy duty swivel bracket centered between the driver and passenger.

This swivel bracket will enable the driver access as well as the passenger.

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.

NFPA REQUIRED LOOSE EQUIPMENT, PROVIDED BY FIRE DEPARTMENT

The following loose equipment as outlined in NFPA 1901, 2009 edition, section 5.8.2 and 5.8.3 will be provided by the fire department. All loose equipment will be installed on the apparatus before placed in emergency service, unless the fire department waives NFPA section 4.21.

- 800 ft (60 m) of 2.50" (65 mm) or larger fire hose.
- 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose.
- One (1) handline nozzle, 200 gpm (750 L/min) minimum.
- Two (2) handline nozzles, 95 gpm (360 L/min) minimum.
- One (1) playpipe with shutoff and 1.00" (25 mm), 1.125" (29 mm), and 1.25" (32 mm) tips.
- One (1) SCBA complying with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services*, for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer.
- One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s).
- One (1) first aid kit.
- Four (4) combination spanner wrenches mounted in bracket(s) fastened to the apparatus.
- Two (2) hydrant wrenches mounted in brackets fastened to the apparatus.
- Four (4) ladder belts meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components* (if equipped with an aerial device).
- One (1) double female 2.50" (65 mm) adapter with National Hose threads, mounted in a bracket fastened to the apparatus.
- One (1) double male 2.50' (65 mm) adapter with National Hose threads, mounted in a bracket fastened to the apparatus.
- One (1) rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus.
- Two (2) salvage covers each a minimum size of 12 ft x 14 ft (3.7 m x 4.3 m).
- One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front.
- Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band.
- Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.

- One (1) automatic external defibrillator (AED).
- If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, will be carried mounted in brackets fastened to the apparatus.
- If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side will be carried. Any intake connection larger than 3.00" (75 mm) will include a pressure relief device that meets the requirements of 16.6.6.
- If the apparatus does not have a 2.50" National Hose (NH) intake, an adapter from 2.50" NH female to a pump intake will be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.
- If the supply hose carried has other than 2.50" National Hose (NH) threads, adapters will be carried to allow feeding the supply hose from a 2.50" NH thread male discharge and to allow the hose to connect to a 2.50" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

SOFT SUCTION HOSE

There will be no soft suction hose provided.

DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, section 5.8.3 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department will provide and mount the extinguisher.

WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, section 5.8.3 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department will provide and mount the extinguisher.

AXE, FLATHEAD, PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

AXE, PICKHEAD, PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

PAINT - BODY PAINTED TO MATCH CAB

The exterior custom cab and body painting procedure will consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom body will be thoroughly cleaned and prepared for painting. Surfaces that will not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate. Each imperfection on the exterior metal surface will be removed or filled and then sanded smooth for a smooth appearance. All seams will be sealed before painting.

2. Chemical Cleaning and Treatment - The aluminum surfaces will be properly cleaned using a four (4)-phase, high pressure and high temperature acid etching system. All steel surfaces will be properly treated using a three (3)-phase, high temperature, cleaning/phosphatizing system. Surfaces are chemically cleaned to remove all dirt, oil, grease and metal oxides to ensure the subsequent coatings bond well. An ultra pure water final rinse of 25 parts per million solids or less, will be applied to final rinse all metal surfaces at the conclusion of the metal treatment process. This final rinse ensures all chemical residues are removed and that no minerals, (salts), from the water dry onto the metal surface and remain under the primers and topcoats. These salts can lead to blistering and under film corrosion.

3. Primer/Surfacer Coats - A minimum of two (2) mil dry, (.002), of two component urethane primer/surfacer will be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. The primer is a high solids and low VOC paint.

4. Hand Sanding to Ultra Fine Finish - The primer/surfacer coat is lightly sanded with mild abrasive paper to an ultra smooth finish. This hand finish process is critical to produce the smooth mirror like finish in the topcoat.

5. Sealer Primer Coat - A two (2) component sealer primer coat is applied over the sanded primer to again build toward the final smooth finish. This layer of primer sealer also gives additional corrosion protection.

6. Topcoat Paint - Two (2) coats of an automotive grade, two component acrylic urethane paint are applied to provide the lasting beauty and durability. The acrylic urethane topcoat contains a clear coat resin chemistry that creates the high gloss and depth of image. This type of topcoat provides the best resistance against acid rain and other more common chemicals.

7. Clearcoat - Two (2) coats of an automotive grade two (2) component urethane will be applied. Lap style doors will be clear coated to match the body. Roll-up doors will not be clear coated and the standard roll-up door warranty will apply.

A cyclic corrosion test, (General Motors test GM-9540), of 40 cycles will be required before making changes to the exterior coating process. Exterior coating systems, (excluding the undercarriage components), must achieve a 1/16 or less maximum creep from the scribe for aluminum and an 1/8 or less maximum creep from the scribe for galvanneal after 40 cycles in the General Motors GM-9540 test.

Each batch of color topcoat, together with the finish painted vehicle, is tested for precise color match. Visual color match will be checked following ASTM D-1729, (American Standard Testing Methods), procedures using CIE, (International Commission on Illumination), D75 Northern Daylight light source. Instrumental color match will follow ASMT D-2244 procedures with a maximum delta E of 1.0 for whites, 1.4 for yellows, blues, greens and 1.5 for reds.

All removable items such as brackets, compartment doors, door hinges, trim, etc. will be removed and painted separately to insure paint behind all mounted items. Body assemblies that can not be finish painted after assembly will be finish painted before assembly.

The cab and the body will be painted Red #90.

Prior to reassembly and reinstallation of lights, handrails, door hardware and any miscellaneous body items, an isolation tape or gasket material will be used to prevent damage to the finish painted surfaces. A nylon washer will be installed under each acorn nut or metal screw that is fastened directly to a painted body surface.

PAINT - ENVIRONMENTAL IMPACT

Contractor will meet or exceed all current State (his) regulations concerning paint operations. Pollution control will include measures to protect the atmosphere, water and soil. Controls will include the following conditions:

- Topcoats and primers will be chrome and lead free.

- Metal treatment chemicals will be chrome free. The wastewater generated in the metal treatment process will be treated on-site to remove any other heavy metals.

- Particulate emission collection from sanding operations must have a 99.99 percent efficiency factor.

- Particulate emissions from painting operations will be collected by a dry filter or water wash process. If the dry filter means is used, it must have an efficiency rating of 98 percent. Water wash systems will be 99.97 percent efficient.

- Water from water wash booths will be reused. Solids will be removed mechanically on a continual basis to keep the water clean.

- Paint wastes are disposed of in an environmentally safe manner. They are used as fuel in kilns used in the cement manufacturing process - thereby extracting energy from a waste material.

- Empty metal paint containers will be cleaned, crushed and recycled to recover the metal.

- Solvents used in clean-up operations will be collected, recycled on-site, or sent off-site for distillation and returned for reuse. Residue from the distillation operation will be used as fuel in off-site cement kilns.

Additionally, the finished apparatus will not be manufactured with or contain products that have ozone depleting substances. Contractor will, upon demand, present evidence that his manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.

PAINT CHASSIS FRAME ASSEMBLY

The chassis frame assembly will be painted Red #90 before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

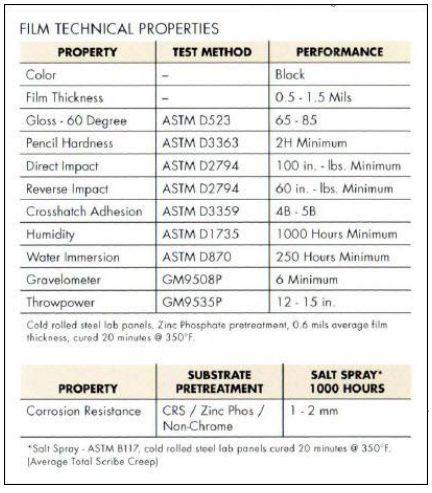
Components that are included with the chassis frame assembly that will be painted are:

- Frame rails
- Frame liners
- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Air tanks
- Fuel tank
- Castings
- Individual piece parts used in chassis and body assembly

Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails
- Two (2) frame liners

The E-coat process will meet the technical properties shown.



FILM TECHNICAL PROPERTIES

PROPERTY	TEST METHOD	PERFORMANCE
Color	–	Black
Film Thickness	–	0.5 - 1.5 Mils
Gloss - 60 Degree	ASTM D523	65 - 85
Pencil Hardness	ASTM D3363	2H Minimum
Direct Impact	ASTM D2794	100 in. - lbs. Minimum
Reverse Impact	ASTM D2794	60 in. - lbs. Minimum
Crosshatch Adhesion	ASTM D3359	4B - 5B
Humidity	ASTM D1735	1000 Hours Minimum
Water Immersion	ASTM D870	250 Hours Minimum
Gravelometer	GM9508P	6 Minimum
Throwpower	GM9535P	12 - 15 in.

Cold rolled steel lab panels, Zinc Phosphate pretreatment, 0.6 mils average film thickness, cured 20 minutes @ 350°F.

PROPERTY	SUBSTRATE PRETREATMENT	SALT SPRAY* 1000 HOURS
Corrosion Resistance	CRS / Zinc Phos / Non-Chrome	1 - 2 mm

*Salt Spray - ASTM B117, cold rolled steel lab panels cured 20 minutes @ 350°F. (Average Total Scribe Creep)

PAINTED AIR CONDITIONING COVER AND MOUNTS

The cover of the air conditioning condenser and the mounting feet will be painted to match the color of the cab roof.

COMPARTMENT INTERIOR PAINT

The compartment interior will be painted with a gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

REFLECTIVE BAND

Reflective stripes will be provided across the front of the vehicle and along the sides of the body. The reflective band will consist of a 1.00" white stripe at the top with a 1.00" gap and a 4.00" white stripe on the bottom.

The reflective band provided on the cab face will be below the headlight level.

CHEVRON STRIPING, REAR

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

The colors will be red and yellow diamond grade.

Each stripe will be 6.00" in width.

This will meet the requirements of NFPA 1901, 2009 edition, which states that 50% of the rear surface will be covered with chevron striping.

JOG(S) IN REFLECTIVE BAND

The reflective band located on each side of the apparatus body will contain two (2) jog(s) and will be angled at approximately a 45 degrees when installed.

CHEVRON, INVERTED "V" STRIPING ON CAB AND CREW CAB DOORS

There will be alternating chevron striping located on the inside of each cab and crew cab door.

The striping will consist of the following colors:

The first color will be red diamond grade

The second color will be yellow diamond grade

The size of the striping will be 4.00".

LETTERING

There will be reflective lettering, 6.00" high, with no outline or shade provided. There will be two (2) letters provided.

LETTERING

There will be genuine gold leaf lettering, 3.00" high, with highlight and shade provided. There will be 26 letters provided.

LETTERING
Twenty-one (21) to forty (40) genuine gold leaf lettering, 2.00" high, with outline will be provided.

LETTERING
There will be reflective lettering, 5.00" high, with no outline or shade provided. There will be six (6) letters provided.

LETTERING
There will be reflective lettering, 11.00" high, with no outline or shade provided. There will be four (4) letters provided.

LETTERING
There will be reflective lettering, 12.00" high, with no outline or shade provided. There will be two (2) letters provided.

MALTESE CROSS INSTALLATION
There will be one (1) pair of maltese crosses, comprised of genuine gold leaf material, provided and installed Per customer changes and photo's.

EMBLEM
There will be two (2) emblem(s), approximately 12.00" - 14.00" wide in size, installed behind crew cab door under side scene. The emblem will feature a "Flying American Flag" and an "Eagle Head".

MANUAL, FIRE APPARATUS PARTS
Two (2) custom parts manuals for the complete fire apparatus will be provided in hard copy with the completed unit.

One (1) compact disc (CD) will also be provided that will include all of the information from the above manual.

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 chassis and body model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

SERVICE PARTS INTERNET SITE

The service parts information included in this manual is also available on the Pierce website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

MANUALS, CHASSIS SERVICE

Two (2) chassis service manuals containing parts and service information on major components will be provided with the completed unit.

The manuals will contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine
- Tires
- Wheels
- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix

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

MANUALS, CHASSIS OPERATION

Two (2) chassis operation manuals will be provided.

MANUAL/S, (TRANSMISSION)

There will be one (1) additional maintenance/service manual(s) for an Allison 4000 series transmission provided.

ENGINE MANUALS
There will be one (1) set(s) of maintenance/service manuals for a Detroit Diesel DD13 engine provided.

ONE (1) YEAR MATERIAL AND WORKMANSHIP
A Pierce basic apparatus limited warranty certificate, WA0008, is included with this proposal.

ENGINE WARRANTY
A Detroit Diesel five (5) year limited engine warranty will be provided. A limited warranty certificate, WA0180, is included with this proposal.

STEERING GEAR WARRANTY
A Sheppard three (3) year limited steering gear warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.

FIFTY (50) YEAR STRUCTURAL INTEGRITY
The Pierce custom chassis frame limited warranty certificate, WA0013, is included with this proposal.

FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
The Pierce TAK-4 suspension limited warranty certificate, WA0050, is included with this proposal.

REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY
A Meritor axle limited warranty certificate, WA0046, is included with this proposal.

ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY
A Meritor Wabco™ABS brake system limited warranty certificate, WA0232, is included with this proposal.

TEN (10) YEAR STRUCTURAL INTEGRITY
The Pierce custom cab limited warranty certificate, WA0012, is included with this proposal.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION
A Pierce cab limited pro-rated paint warranty certificate, WA0055, is included with this proposal.

FIVE (5) YEAR MATERIAL AND WORKMANSHIP
The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this proposal.

CAMERA SYSTEM WARRANTY
A Pierce fifty four (54) month warranty will be provided for the camera system**.**

COMPARTMENT LIGHT WARRANTY
A ten (10) year material and workmanship limited warranty will be provided for the Pierce 12 volt DC LED strip lights**.** The warranty will cover the LED strip lights to be free from defects in material and workmanship that would arise under normal use.

A copy of the warranty certificate will be submitted with the bid package (No Exception).

TRANSMISSION WARRANTY

The transmission will have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty will be provided by Allison Transmission.

Note: The transmission cooler is not covered under any extended warranty you may be getting on your Allison Transmission. Please review your Allison Transmission warranty for coverage limitations.

TRANSMISSION COOLER WARRANTY

The transmission cooler will carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty will also be in effect for the first three (3) years of the warranty coverage and will not exceed $10,000 per occurrence. A copy of the warranty certificate will be submitted with the bid package.

WATER TANK WARRANTY

A UPF poly water tank limited warranty certificate, WA0195, is included with this proposal.

TEN (10) YEAR STRUCTURAL INTEGRITY

The Pierce apparatus body limited warranty certificate, WA0009, is included with this proposal.

ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY

A Gortite 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 satin roll up doors.

The limited warranty certificate, WA0190, is included with this proposal.

PUMP WARRANTY

A Waterous pump limited warranty certificate, WA0225, is included with this proposal.

TEN (10) YEAR PUMP PLUMBING WARRANTY

The Pierce apparatus plumbing limited warranty certificate, WA0035, is included with this proposal.

FOAM SYSTEM WARRANTY

The Husky 3 foam system limited warranty certificate, WA0231, is included with this proposal.

TEN (10) YEAR PRO-RATED PAINT AND CORROSION

A Pierce body limited pro-rated paint warranty certificate, WA0057, is included with this proposal.

ONE (1) YEAR MATERIAL AND WORKMANSHIP

The Pierce graphics fading and deterioration limited warranty limited warranty certificate, WA0168, is 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.

ENGINE INSTALLATION CERTIFICATION

The fire apparatus manufacturer will provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification will be provided at the time of bid.

POWER STEERING CERTIFICATION

The fire apparatus manufacturer will provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification will be provided at the time of bid.

CAB INTEGRITY CERTIFICATION

Pierce manufacturing will provide a cab crash test certification with this proposal. The certification states that the cab must meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29

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

- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks

- Roof Crush

The cab will be subjected to a roof crush force of 100,000 lb. This value will be 450 percent of the ECE 29 criteria, which must be equivalent to the front axle rating up to a maximum of ten (10) metric tons.

- Side Impact

The cab will be subjected to dynamic preload with a 13,275-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of energy. This test will closely represent the forces a cab will see in a rollover incident.

- Frontal Impact

The cab will withstand a frontal force produced from 65,200 ft-lb of energy using a swing-bob type platen.

The same cab will withstand all tests without any measurable intrusion into the survival space of the occupant area.

CAB DOOR DURABILITY CERTIFICATION

Robust cab doors help protect occupants. Cab doors will survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder will certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

WINDSHIELD WIPER DURABILITY CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers will survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles.* The bidder will certify that the wiper system design has been tested and that the wiper system has met these criteria.

ELECTRIC WINDOW DURABILITY CERTIFICATION

Cab window roll-up systems can cause maintenance problems if not designed for long service life. The window regulator design will complete 30,000 complete up-down cycles and still function normally when finished. The bidder will certify that sample doors and windows similar to those provided on the apparatus have been tested and have met these criteria without malfunction or significant component wear.

SEAT BELT ANCHOR STRENGTH

Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design will withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder will certify that each anchor design was pull tested to the required force and met the appropriate criteria.

SEAT MOUNTING STRENGTH

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design will be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder will certify that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

CAB DEFROSTER CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. The defroster system will clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder will certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

CAB HEATER CERTIFICATION

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters will warm the cab 77 degrees Fahrenheit from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder will certify that a substantially similar cab has been tested and has met these criteria.

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:
    - The nameplate rating of the alternator.
    - The alternator rating under the conditions specified per:
        - Applicable NFPA 1901 or 1906 (Current Edition).
    - The minimum continuous load of each component that is specified per:
        - Applicable NFPA 1901 or 1906 (Current Edition).
    - Additional loads that, when added to the minimum continuous load, determine the total connected load.
    - 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).