REQUEST FOR BID Lee Fire & Rescue Department Fire Apparatus-Pumper Issued: February 1, 2021

You are cordially invited to submit a proposal for a new Fire pumper in accordance with the attached specifications terms and conditions. Prospective respondents are advised to read this information over carefully prior to submitting a proposal.

All bids must be received by:

March 1, 2021 12:00p.m. EST

Town of Lee, NH

LEE FIRE & RESCUE DEPARTMENT

ADVERTISEMENT

The Town of Lee, New Hampshire is soliciting sealed bids from qualified suppliers for a new

Fire Pumper to furnish, supply, and deliver a Fire Pumper with a 1500 GPM pump and a 1,000

gallon capacity. Bids should be addressed to Chief Scott Nemet at the Public Safety Complex, 20 George Bennett Road, Lee, NH 03861 by 12:00pm, March 1, 2021. Bids will be opened and read aloud at that time and place.

Bidding documents and specifications will be sent via email. The Bid Package will be mailed, if requested, upon receipt of $10.00 per set to cover printing & postage.

A Bid Security of not less than 10% of the Bid Price must accompany the bid. We reserve the right to request a recent financial statement equal to a Dunn and Bradstreet Report providing evidence that the bidder is qualified to assemble the apparatus. The successful bidder will be expected to provide warranty and performance bonds and produce liability certificates.

NOTICE TO BIDDERS

Sealed bid proposals will be received by the Town of Lee, New Hampshire on the 1st Day of March, 2021 for the furnishing of a mobile fire apparatus, complete with cab and chassis, Pumper apparatus body and equipment as called for in the specifications. Bid proposals must be enclosed in a sealed envelope marked “Pumper Bid” and addressed to:

Fire Chief Scott Nemet
Lee Fire & Rescue Department
20 George Bennett Road

Lee, New Hampshire 03861

Bidders are requested to read the complete bid invitation carefully and submit their proposals in strict accordance with the following requirements.

Any questions regarding this bid invitation must be submitted in writing and be received by Chief Scott Nemet, Lee Fire & Rescue Department, a minimum of five days prior to the bid opening date. Addendums to these documents, if any, will be sent to all invited bidders.

The National Fire Protection Association Pamphlet 1901 (NFPA 1901), in its latest edition, is hereby adopted and made a part of these specifications, the same as if they were written out in full detail, insofar as they apply with the exception of the section dealing with “Equipment Recommended for Various Types of Apparatus.” Bidders shall provide only that equipment requested in these specifications.

Prices must be quoted FOB the Town of Lee. The responsibility for the apparatus and equipment shall remain with the manufacturer until final delivery to the Town of Lee and the apparatus is accepted.

Bidder shall compute pricing less Federal and State taxes.

All prices quoted under this invitation shall remain firm for 90 days following the bid open date.

The successful bidder shall provide an $8,000,000 product liability certificate in original form with the Town of Lee named as the certificate holder.

For additional information or clarification of these specifications potential bidders are authorized to call:

Scott Nemet, Fire Chief (603) 659-5411

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the Lee Fire & Rescue Department of a complete apparatus equipped as hereinafter specified. These specifications cover minimum requirements as to the type of construction and tests to which the apparatus must conform. The contractor shall be solely responsible for the design and construction of all features. The apparatus shall conform to the requirements of the current National Fire Protection Association (NFPA) Standard 1901, which is hereby incorporated herein as if set forth at length. All bidders shall provide an approximate delivery date. All electronic equipment will be as Year 2021 compliant.

QUALIFICATIONS OF THE BIDDERS

Bids will be considered only from manufacturers with an established reputation in the field of fire apparatus construction and that have been in business continuously for a minimum of ten (10) years. Each bidder shall furnish satisfactory evidence of his ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built.

Each bidder shall furnish a customer reference list, which includes at least twenty-five (25) communities in New England.

The solvency of Bidders is a prime concern of the Town. Each bidder shall furnish, if requested, a financial statement of Dunn and Bradstreet Report with the bid for review by the Town.

Any bid received from a manufacturer who has filed any form of bankruptcy in the past shall be rejected with no further explanation given or required.

The apparatus shall be manufactured in the United States of America or the bid will be rejected with no further explanation given or required.

The bidder shall design, construct, and paint the entire apparatus body at their plant. In order not to have any undivided warranty responsibilities, no sub-contracted body or paintwork shall be acceptable.

The bidder shall pay for three representatives from the Lee Fire & Rescue Department for a pre-delivery inspection at the plant. Bidder will pay for all expenses incurred during this trip.

SERVICE AND PARTS

It is the bidder's responsibility to see that his proposal arrives on time. Late proposals, email, fax or telephone bids WILL NOT be considered.

The Town of Lee reserves the right to reject any and all bids, or to accept any bids presented which meet or exceed these specifications, and which are deemed to be in their best interest, regardless of whether the accepted bid is low in amount proposed.

Each bidder shall submit detailed shop drawings and/or catalog cuts of the apparatus and equipment he is proposing. They must be in the same sequence as the call for bid specifications and contain a statement covering length of warranty on parts and labor provided by the manufacturer and length of time parts and service are available. Bidders must also supply the location of the nearest factory-certified service center.

It is the intent of these specifications to provide manufacturing and delivery of a complete and soundly engineered apparatus equipped as specified. Minor details of construction and materials are left to the discretion of the contractor, who shall be solely responsible for the design and construction features.

The manufacturer shall defend any and all suits and assume all liability for any claims against the Town for the use of patented process, device or articles forming any part of the apparatus proposed.

The successful bidder shall maintain a complete inventory including body components, electrical items, Pumper apparatus hardware, etc. and shall offer services including equipment overhaul, body fabrication, collision repair, and paint shop.

The successful bidder shall be responsible for preparing and maintaining a record file of all parts and assemblies used to manufacture the apparatus. These records shall be maintained in the factory of the bidder for the life of the apparatus. File shall contain copies of any and all reported deficiencies, all replacement parts required to maintain the apparatus and original purchase documents including specifications, contract, invoices, incomplete chassis certificates, quality control reports and final delivery acceptance documents. The Town of Lee shall have access to any and all documents contained in this file upon request.

Each bidder must submit with his proposal a BID BOND in the amount of ten per cent (10%) of the proposed amount.

The successful bidder will be required to furnish a 100% PERFORMANCE BOND.

No exceptions for any of the instructions will be allowed. Bids not submitted in accordance with these will be automatically rejected.

Successful bidder shall provide transportation for the Lee Fire Chief and two additional people in order to inspect the apparatus at the place of manufacture prior to delivery. Bidder will pay for all expenses incurred during this trip. Successful bidder will be responsible for delivery of apparatus to the Lee Fire Department, 20 George Bennett Road, Lee, NH. Successful bidder will also provide a minimum of two days training after delivery for the number of personnel designated by the Lee Fire Chief or his designate. This training will be done at the convenience of the Lee Fire & Rescue Department.

Each bidder shall show that they are in a position to render prompt service and to furnish replacement parts, and shall state the location and capabilities of authorized service agencies within a reasonable distance of the Town.

The manufacturer shall maintain an adequate inventory of replacement parts in support of authorized service agencies, and shall retain the Manufacturer's Record of Apparatus Construction Details pursuant to NFPA 1901 requirements.

PROPOSAL DRAWING

Each bidder shall submit a detailed-scaled drawing of the apparatus proposed. The drawing shall include left side view, rear view, and right side body view.

In addition, drawings of the compartment door construction and typical body sub-frame shall be provided.

PRODUCTION APPROVAL DRAWING

Two (2) sets of engineering blueprints, CAD drawn to scale specifically for this apparatus, shall be provided. The Fire Department shall review and approve these drawings prior to actual construction of the apparatus.

Both left and right side views, a rear view and a top view shall be provided. The blueprints shall also show the overall dimensions of the apparatus, proposed compartment sizes and features, and the location of all emergency warning and work lights that are to be provided by the body builder.

LIABILITY

The successful bidder shall assume all liability for the use of his patented process, device or article forming a part of the apparatus. In addition, responsibility for the apparatus and equipment shall remain with the contractor until acceptance by the Town.

Each bidder shall submit proof of the manufacturer's insurance coverage, including product liability, issued by a company or companies based in the United States of America. The minimum total amount of such coverage, exclusive of insurance coverage carried by sub-contractors (i.e. chassis manufacturer, etc.) shall be $8,000,000.00. Bids received from manufacturers who do not carry liability coverage will be rejected with no further explanation given or required.

CONTRACT AGREEMENT

These specifications, together with any other documents required herein, shall be included in the contract executed by the Town and the successful bidder. Each bidder shall submit a copy of his proposed contract form. Said contract form shall be subject to approval or modification until acceptable by both parties. The contract shall be made directly between the Town and the apparatus manufacturer. Contracts with local Dealers or Agents will not be acceptable.

The contract shall be made subject to the jurisdiction of the State of New Hampshire.

TERMS OF PAYMENT

Release of payment equal to 50% of the total cost less 10% retainage will be made upon receipt of a paid invoice for the chassis and the balance of payment will be made, less 10% retainage, upon delivery and acceptance. A Warranty Bond may be substituted for the 10% withheld.

The retainage will be held throughout the warranty period of one year. The manufacturer shall outline any discounts for other, optional pre-payment arrangements during the production process.

DELIVERY AND TRAINING

Three representatives from the Lee Fire & Rescue Department will conduct a pre-acceptance inspection at the time of delivery. A factory authorized delivery instructor shall conduct one (1) training session for designated Fire Department personnel. Training session to be eight (8) hours.

BID PROPOSAL

Each bidder's proposal shall clearly state the total price, make and model, terms of payment and delivery time in calendar days after signing of a contract. All bids must remain firm for ninety (90) days and must be signed by an authorized representative of the manufacturer.

Each bid shall be accompanied by a detailed description of the apparatus, a list of equipment to be furnished, and other construction and performance details to which the apparatus shall conform, including but not limited to, estimated weight, wheelbase, principle dimensions, transmission and axle rations. The purpose of these contractor specifications is to define what the contractor intends to furnish and deliver to the Town.

A photocopy of the Town's specifications will not be an acceptable form of Bidder's proposal.

EXCEPTIONS

It is the intent of these specifications to obtain maximum efficiency of the apparatus and equipment delivered, with emphasis on crew safety, ease of operation, resistance to corrosion, and availability of service and parts. Certain major components and features have been requested in support of this and exceptions taken in these areas will not be acceptable. Each bidder shall list all exceptions or substitutions proposed, however minor, on a separate page entitled "EXCEPTIONS" and shall furnish adequate supportive data to allow the Fire Department to determine acceptability.

WARRANTY

The successful bidder shall warrant the apparatus to be free from defects in material and workmanship for a period of one (1) year unless otherwise noted. Component parts, if found to be defective, shall be repaired or replaced without cost to the Town. This warranty shall be exclusive of the chassis, fire pump, tank, and other trade accessories, which are normally warranted by their respective manufacturers. Each bidder shall submit copies of the proposed warranties in compliance with these requirements.

GENERAL CONSTRUCTION

The GAWR and GCWR or GVWR of the chassis shall be adequate to carry the weight of the unequipped apparatus, unequipped personnel weight, and miscellaneous equipment allowance as defined in NFPA 1901. This information shall be specified in the bid.

Special consideration will be given to accessibility of various components that require periodic maintenance, ease of operations, and symmetrical proportions.

All apparatus components shall be installed in accordance with the applicable manufacturer's installation instructions.

VEHICLE STABILITY AND PERFORMANCE

The height of the fully loaded vehicle's center of gravity shall not exceed the chassis manufacturer's maximum limit.

The front to rear weight distribution of the fully loaded vehicle as defined in NFPA 1901, shall be within the limits set by the chassis manufacturer.

The apparatus shall meet the requirements of NFPA 1901 at elevations of up to 2000 feet above sea level, and while stationary on any grade of up to and including six (6) percent in any direction.

The apparatus shall meet the road worthiness requirements as defined in NFPA 1901.

MAXIMUM NOISE LEVEL

At any seat location the maximum noise level shall be 90 dba without any warning devices in operation, as measured by the test procedure defined in Title 49 of the Code of Federal Regulations (CFR), paragraph 393.35 (c) except that the test shall be performed with the vehicle traveling at a steady speed of 45 mph on a level, hard, smooth surface road.

MANUALS AND DOCUMENTATION

The contractor shall supply at time of delivery at least two (2) copies of a complete operation and service manual covering the completed apparatus as delivered and accepted, including but not limited to, the chassis, pump and wiring diagrams.

The contractor shall deliver with the apparatus all manufacturers' operations and maintenance documents supplied with components and equipment installed or supplied by the contractor.

Each operation and maintenance manual shall include a copy of the Manufacturer's Record of Apparatus Construction Details as defined in NFPA 1901, Section 2-14.

ACCEPTANCE OF BIDS

The Town reserves the right to reject any or all bids and to accept the bid that in its opinion best meets the requirements outlined herein without regard to the bidder who supplies the lowest bid.

TRADE IN

The Town would like bids to take into account a trade-in of the current engine, which is a 2000 KME International 4900 that can be reviewed at the Town of Lee Public Safety Complex.

NEW CUSTOM PUMPER

Performance Specifications

LEE FIRE & RESCUE DEPARTMENT

20 GEORGE BENNETT ROAD

LEE, NH 03861

Specification

MODEL

The chassis shall be a current model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time. Apparatus cab and body to be manufactured in the same facility.

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2022 model year.

COUNTRY OF SERVICE

The chassis shall be put in service in the country of United States of America (USA).

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis.

CAB AND CHASSIS LABELING LANGUAGE

The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English. All applicable caution, warning, and safety notice labels shall be Innovative Controls brand. Where applicable to the location within the specific layout and label package of the cab and chassis, the labels shall include decorative chrome bezels. Designs shall include bezels that fit individual labels or packaged configurations of labels in certain common locations.

The following labels shall be Innovative Controls brand, each including a decorative chrome bezel (where applicable):

- Shoreline
- Aerial Stowed
- Aerial Breakers 2
- Air Conditioner
- Cab Tilt Plate
- Air Compressor Breaker
- Battery Conditioner Breaker
- Helmet Caution
- Horn Tag
- Q2B Tag
- Load Center Plate
- Not a Step Label
- Occupancy Tag
- Do Not Move
- Occupants Must Be Seated
- Do Not Stand
- Danger Do Not Weld

- Danger--Untrained Operator
- Def Tag, including any additional labels selected in the 2907-
- Battery Direct
- Kneeling
- IFS Air Fault
- Engine Brake
- Retarder
- LR 100 Amp Node
- 300 Amp EPU
- 100 Amp Front O/R Node
- 100 Amp T/T Node
- 100 Amp RR O/R Node
- 10 Amp EPU
- Master Power
- 12 Volt Power
- Aerial Hours
- Pump In Drive
- Windshield Washer Fluid

APPARATUS TYPE

The apparatus shall be a pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 750 gallons per minute (3000 L/min). The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.

VEHICLE TYPE

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

VEHICLE ANGLE OF APPROACH PACKAGE

The angle of approach of the apparatus shall be a minimum of 8.00 degrees.

NFPA1901 Angle of Approach definition:
"To determine the angle of approach, place a thin steel strip against the front of the tires where they touch the ground or stretch a tight string from one front tire to the other at the front where they touch the ground. Determine the lowest point (component or equipment) on the vehicle forward of the front tire that would make the smallest angle of approach. Hang a plumb bob from the lowest point and mark the point on the ground where the point of the plumb bob touches. Measure the vertical distance from the ground to the point where the plumb bob was hung (distance *V*). Measure the horizontal distance from the plumb bob point to the steel strip or string running from front tire to front tire (distance *H*). Divide the vertical distance by the horizontal distance. The ratio of *V/H* is the tangent of the angle of approach. If the ratio is known, the angle of approach can be determined from a table of trigonometric functions of angles or from a math calculator. The standard requires a minimum angle of approach of 8.00 degrees: since the tangent of 8.00 degrees is 0.1405, if *V* divided by *H* is 0.1405 or larger, the angle of approach is 8.00 degrees or greater."

AXLE CONFIGURATION

The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 20,000 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 27,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

PUMP PROVISION

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location. Chassis driveline pump provisions shall include an interlock feature for automatic setting of the park brake when the vehicle is shifted into pump mode while the transmission is in neutral and the transmission output speed translates to less than 1 mph. When the conditions are met the driver side parking brake valve shall activate. Once shifted to road mode the condition for electric automatic brake engagement is no longer present and the driver's parking brake control valve shall function normally.

CAB STYLE

The cab shall be a custom, fully enclosed, LFD model with a 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19-inch-thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13-inch-thick; the rear wall and raised roof skins shall be 0.09-inch-thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 144.60 inches with 67.50 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 65.38 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 61.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.13 inches wide. The intermediate step shall measure approximately 8.50 inches deep X 32.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure approximately 11.50 inches deep X 20.44 inches wide. The intermediate step shall measure approximately 10.25 inches deep X 22.75 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.80 inches.

OCCUPANT PROTECTION

The vehicle shall include the Advanced Protection System™ (APS) which shall secure belted occupants and increase the survivable space within the cab. The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The system components shall include:

- Driver steering wheel airbag

- Driver dual knee air bags (patent pending) with energy management mounting (patent pending) and officer knee airbag.
- Large driver, officer, and crew area side curtain airbags
- APS advanced seat belt system - retractor pre-tensioners tighten the seat belts around the occupants, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries
- Heavy truck Restraints Control Module (RCM) - receives inputs from the outboard sensors, selectively deploys APS systems, and records sensory inputs immediately before and during a detected qualifying event
- Integrated outboard crash sensors mounted at the perimeter of the vehicle - detects a qualifying front or side impact event and monitors and communicates vehicle status and real time diagnostics of all critical subsystems to the RCM
- Fault-indicating Supplemental Restraint System (SRS) light on the driver's instrument panel

Frontal impact protection shall be provided by the outboard sensors and the RCM. In a qualifying front impact event, the outboard sensors provide inputs to the RCM. The RCM activates the steering wheel airbag, driver side dual knee airbags (patent pending), officer side knee airbag, and advanced seat belts for each occupant in the cab.

Rollover, side impact, and ejection mitigation shall be provided by the outboard sensors and the RCM. In qualifying rollover or side impact events the outboard sensors provide inputs to the RCM. The RCM activates the side curtain airbags and advanced seat belts for each occupant in the cab. The RCM measures roll angle, lateral acceleration, and roll rate to determine if a rollover event or side impact event is imminent or occurring.

In the event of a qualifying offset or other non-frontal impact, the RCM shall determine and intelligently deploy the front impact protection system, the side impact protection system, or both front and side impact protection systems based on the inputs received from the outboard crash sensors.

CAB FRONT FASCIA

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch-thick aluminum plate which shall be an integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

FRONT GRILLE

The front fascia shall include a box style, 304 stainless steel front grille 44.45 inches wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 732.00 square inches.

CAB UNDERCOAT

There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

CAB SIDE DRIP RAIL

There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

CAB PAINT EXTERIOR

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high-quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper followed by sealing the seams with SEM brand seam sealer.

The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene. The paint shall have a minimum thickness of 2.00 mils, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

CAB PAINT MANUFACTURER

The cab shall be painted with Sikkens Paint.

CAB PAINT PRIMARY/LOWER COLOR

The primary/lower paint color shall be PPG FBCH 930640 green.

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall be PPG FBCH 934673 white.

CAB PAINT EXTERIOR BREAKLINE

The upper and lower paint shall meet at a break line on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The break line shall curve down at the front cab corners to approximately 5.00 inches below the windshields on the front of the cab.

CAB PAINT PINSTRIPE

Where the upper and lower paint colors meet a temporary 0.50-inch-wide black pinstripe shall be applied over this break line to offer a more finished look prior to the final pinstripe being installed by the OEM.

CAB PAINT WARRANTY

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

The warranty details can be found in the chassis warranty document.

CAB PAINT INTERIOR

The visible interior cab structure surfaces shall be painted with an easy-to-clean gray texture finish.

CAB ENTRY DOORS

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13-inch aluminum plate.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38-inch pin and shall be constructed of stainless steel.

CAB ENTRY DOOR TYPE

All cab entry doors shall be full length in design to fully enclose the lower cab steps. Entry doors shall include Pollak mechanical plunger style switches for electrical component activation.

CAB INSULATION

The cab ceiling and walls shall include 1.00-inch-thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

CAB STRUCTURAL WARRANTY

The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. The warranty period shall commence on the date the vehicle is delivered to the first end user.

CAB TEST INFORMATION

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

The above tests have been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

ELECTRICAL SYSTEM

The chassis shall include a single starting electrical system which shall include a 12-volt direct current multiplexing system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311-degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275-degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

MULTIPLEX DISPLAY

The multiplex electrical system shall include a Weldon Vacuum Florescent Display (VFD) display which shall be located in the switch panel with a location specific to the customer's needs. The VFD display is a two (2) line, forty (40) character display capable of showing a wide range of data from the multiplex system.

In addition to showing system errors, the VFD shall display:

- Warning – Door Open
- Door Location
- Seat Violation
- Park Brake Released
- Emergency Master On
- Response Mode
- Emergency Master On
- Scene Mode

A momentary push button shall be located on the dash which when pressed acknowledges the current message and displays the next message. If no message is present, the VFD shall default to display the Fire Department Name.

The VFD display shall measure approximately 5.00 inches wide X 2.00 inches tall.

LOAD MANAGEMENT SYSTEM

The apparatus load management shall be performed by the included multiplex system. The multiplex system shall also feature the priority of sequences and shall shed electrical loads based on the priority list specifically programmed.

DATA RECORDING SYSTEM

The chassis shall have a Weldon Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the Weldon Multiplex electrical system. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch Position
- Time
- Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system. The laptop connection shall be a panel mounted female type B USB connection point, remotely mounted behind the switch panel.

ACCESSORY POWER

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40-amp battery direct load. One (1) power stud shall be capable of carrying up to a 15-amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud. A 225-amp battery direct power and ground stud shall be provided and installed on the chassis near the left-hand battery box for OEM body connections.

EXTERIOR ELECTRICAL TERMINAL COATING

All terminals exposed to the elements will be sprayed with a high visibility protective rubberized coating to prevent corrosion.

ENGINE

The chassis engine shall be a Cummins L9 engine. The L9 engine shall be an in-line six (6) cylinder, four-cycle diesel-powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250-foot pounds of torque at 1200 RPM with 543 cubic inches (8.9 liters) of displacement.

The L9 engine shall feature a VGT™ Turbocharger, a high-pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2021 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CK-4 low ash engine oil which shall be utilized for proper engine lubrication.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch-thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.

DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

ENGINE PROGRAMMING HIGH IDLE SPEED

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with a high-idle speed rocker switch and an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. This device shall operate only when the engine is running and the transmission is in neutral with the parking brake set. When automatically engaged the high idle shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake is released, or when the transmission is placed in neutral.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

The engine shall include programming which will govern the top speed of the vehicle.

AUXILIARY ENGINE BRAKE

A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle’s brake lights.

The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.

AUXILIARY ENGINE BRAKE CONTROL

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled through an on/off switch and a low/medium/high selector switch.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

FLUID FILLS

The engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. The engine tunnel shall include an access door to allow for engine oil, transmission fluid, and power steering fluid visual checks. The windshield washer fill shall be accessible through the front left side mid step.

ENGINE DRAIN PLUG

The engine shall include an original equipment manufacturer installed oil drain plug.

ENGINE WARRANTY

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

REMOTE THROTTLE CONTROL

A Class 1 "TPG" pressure governor pump panel control module and a pressure transducer shall be provided. Class 1 Total Pressure Governor is designed to control the engine fuel to maintain a desired pump pressure or engine speed setting along with displaying diagnostic information. The “TPG” has a pre-set button for selecting a predetermined pressure or RPM and an emergency return to idle button.

LED readouts shall display RPM, engine oil pressure, engine temperature and battery voltage. An audible alarm output shall also be part of the system.

REMOTE THROTTLE HARNESS

An apparatus interface wiring harness for the engine shall be supplied with the chassis. The midship harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection by the apparatus builder. The midship harness shall contain connectors for a Class 1

Total Pressure Governor and a multiplexed gauge. Separate circuits shall be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light. The harness shall contain interlocks that will prevent shifting to road or pump mode unless the transmission output speed translates to less than 1 mph and the transmission is in neutral. The shift to pump mode shall also require the park brake be set. The harness shall be designed for a side mount pump panel.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, governor/hand throttle controls and dash display which shall incorporate "Pump Engaged" and "OK to Pump" indicator lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.

ENGINE PROGRAMMING REMOTE THROTTLE

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

ENGINE PROGRAMMING IDLE SPEED

The engine low idle speed will be programmed at 700 rpm.

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator. This ember separator shall be designed to protect the downstream air filter from embers using a combination of unique flat and crimped metal screens packaged in a heavy-duty galvanized steel frame. This multilayered screen shall trap embers and allow them to burn out before passing through the pack.

The engine air intake system shall also include an air cleaner mounted above the radiator. This air cleaner shall utilize a replaceable dry type filter element designed to prevent dust and debris from being ingested into the engine. A service cover shall be provided on the housing, reducing the chance of contaminating the air intake system during air filter service.

The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton fully variable type fan drive with SmartClutch J-1939 CAN controller.

The variable speed fan clutch only engages at the amount needed for proper cooling to facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail-safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure. The fan speed shall include a J-1939 CAN clutch controller to receive signal from the engine control module to activate at variable rates of speed. Variable speeds shall be set through thermostatic and engine speed signals to run as efficiently and quietly as required to maintain temperature.

ENGINE COOLING SYSTEM

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall be comprised of a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, a charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injected molded polymer fan with a three (3) piece fiberglass fan shroud.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and rearward oriented sight glass to observe coolant in the system. A cold fill and observation line shall be included within the frame mounted translucent recovery bottle to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements and allows for expansion and recovery of coolant into a separate integral expansion chamber.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel “constant torque” style clamps meeting the engine manufacturer's requirements.

The radiator and charge air cooler shall be removable through the bottom of the chassis.

ENGINE COOLING SYSTEM PROTECTION

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame components.

ENGINE COOLANT

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

ELECTRONIC COOLANT LEVEL INDICATOR

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

ENGINE PUMP HEAT EXCHANGER

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.

COOLANT HOSES

The cooling system hoses shall be silicone heater hose and formed silicone coolant hoses with formed aluminized steel tubing. Bulkhead fittings shall be used where the heater hoses pass through the cab. All heater hose, silicone coolant hose, and tubing shall be secured with stainless steel constant torque band clamps.

ENGINE COOLANT OVERFLOW BOTTLE

A remote engine coolant overflow expansion bottle shall be provided in the case of over filling the coolant system. The overflow bottle shall capture the expansion fluid or overfill rather than allow the fluid to drain on the ground.

ENGINE EXHAUST SYSTEM

The exhaust system shall include an end-in end-out horizontally mounted single module after treatment device, and downpipe from the charge air cooled turbo. The single module shall include four temperature sensors, diesel particulate filter (DPF), urea dosing module (UL2), and a selective catalytic reduction (SCR) catalyst to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NOx into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be mixed and injected into the system through the DPF and SCR.

The system shall utilize 0.07-inch-thick stainless-steel exhaust tubing between the engine turbo and the DPF. Zero leak clamps seal all system joints between the turbo and DPF.

The single module after treatment through the end of the tailpipe shall be connected with zero leak clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system after treatment module shall be mounted below the frame in the outboard position.

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross-linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons and shall be mounted on the left-hand side of the chassis frame behind the batteries below the frame.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible in the top rear step.

ENGINE EXHAUST ACCESSORIES

The exhaust system shall be modified to accept a Plymovent exhaust extraction system collar.

ENGINE EXHAUST WRAP

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

TRANSMISSION

The drive train shall include an Allison model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.

TRANSMISSION FEATURE PROGRAMMING

The Allison Gen V-E transmission EVS group package number 127 shall contain the 198 vocational package in consideration of the duty of this apparatus as a pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

A transmission interface connector shall be provided in the cab. This package shall contain the following input/output circuits to the transmission control module. The Gen V-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

Function ID	Description	Wire assignment
Inputs		
C	PTO Request	142
J	Fire Truck Pump Mode (4th Lockup)	122 / 123
Outputs		
C	Range Indicator	145 (4th)
G	PTO Enable Output	130
	Signal Return	103

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

TRANSMISSION SHIFT SELECTOR

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall have a graphical Vacuum Florescent Display (VFD) capable of displaying two lines of text. The shift selector shall provide mode indication and a prognostic indicator (wrench symbol) on the digital display. The prognostics monitor various operating parameters and shall alert you when a specific maintenance function is required.

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

TRANSMISSION COOLING SYSTEM

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

TRANSMISSION DRAIN PLUG

The transmission shall include an original equipment manufacturer installed magnetic transmission fluid drain plug.

TRANSMISSION WARRANTY

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

LH PTO

A ten (10) bolt standard duty clutched drive PTO shall be installed on the transmission. Installation shall include mounting of the PTO and wiring the unit with a control switch.

LH PTO MODEL

A ten (10) bolt Chelsea model 280-GSFJP-B8RK heavy duty transmission driven PTO shall be installed. The clutched shifted PTO is designed specifically for the Allison world transmission and provides an intermittent and continuous torque rating of 265 lb. ft.

PTO LOCATION

The transmission shall have two (2) power take off (PTO) mounting locations, one (1) in the 8:00 o'clock position and one (1) in the 4:00 o'clock position.

LH PTO CONTROL

The left-hand power take off shall be controlled by the transmission. The power take off shall be activated by a locking on/off rocker switch which contains an integral light which shall illuminate upon a positive engagement of the power take off. This switch shall be located on dash.

Required operating conditions for enabling this function are:

- Throttle position is low
- Engine speed is within customer specified constant limits
- Transmission output speed is within customer specified constant limits
- Park brake set

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with MSI 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®. The drivelines shall include Meritor brand u-joints with thrust washers. The driveline shall include a half round yoke.

PUMP SHIFT CONTROLS

One (1) air pump shift control panel shall be located on the left-hand side of the engine tunnel, integrated with the shifter pod. The following shall be provided on the panel: a three (3) position control lever; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline and shall include pump instructions. An instruction plate describing the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA **16.10.1.3**. The road mode shall be selected when the control lever is in the forward position and pump mode shall be selected when the control lever is in the rearward position.

The control lever center position shall exhaust air from both pump and road sides of the pump gear box shift cylinder.

PUMP SHIFT CONTROL PLUMBING

Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 0.25-inch NPT fittings on the solenoid for attaching the customer installed pump. The air supply shall be pressure protected from service brake system.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS20121 fuel filter/water separator with a thermostatically controlled integral heater as a primary filter. The fuel filter shall have a drain valve.

An instrument panel lamp and audible alarm which indicates when water is present in the fuel-water separator shall also be included.

A secondary fuel filter shall be included as approved by the engine manufacturer.

FUEL LINES

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

ELECTRIC FUEL PRIMER

Integral to the engine assembly is an electric lift pump that serves the purpose of pre-filter fuel priming.

FUEL TANK

The fuel tank shall have a capacity of fifty (50) gallons and shall measure 35.00 inches in width X 15.00 inches in height X 24.00 inches in length.

The baffled tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00-inch NPT fill ports for right- or left-hand fill. A 0.50-inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with “U” straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

FUEL TANK MATERIAL AND FINISH

The fuel tank shall be constructed of 12-gauge stainless steel. The exterior of the fuel tank shall be natural finish.

FUEL TANK STRAP MATERIAL

The fuel tank straps shall be constructed of #304 stainless steel. The fuel tank straps shall be natural finish.

FUEL TANK FILL PORT

The fuel tank fill ports shall be offset with the left fill port located in the rearward position and the right fill port located in the middle position on the fuel tank.

FUEL TANK SERVICEABILTY PROVISIONS

The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes. The additional 8.00 feet of length shall be located above the fuel tank and shall be coiled and secured. The fuel line fittings shall be pointed towards the right side (curbside) of the chassis.

FUEL TANK DRAIN PLUG

A 0.5-inch NPT magnetic drain plug shall be centered in the bottom of the fuel tank.

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74-inch drop and a 71.00-inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle.

FRONT AXLE WARRANTY

The front axle shall be warranted by Meritor for five (5) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

FRONT WHEEL BEARING LUBRICATION

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

FRONT SHOCK ABSORBERS

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and “road sensing” shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or “road sensing” designed shocks shall not be considered.

FRONT SUSPENSION

The front suspension shall include a ten (10) leaf spring pack in which the longest leaf measures 54.00-inch-long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case-hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

STEERING COLUMN/ WHEEL

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25-inch telescopic adjustment, and an 18.00 inch, four (4) spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

POWER STEERING PUMP

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type. The power steering system shall include an oil to air passive cooler.

FRONT AXLE CRAMP ANGLE

The chassis shall have a front axle cramp angle of 48-degrees to the left and 44-degrees to the right.

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 65 with an assist cylinder.

CHASSIS ALIGNMENT

The chassis frame rails shall be measured to ensure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

REAR AXLE

The rear axle shall be a Meritor model RS-25-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 27,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.63 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR AXLE WARRANTY

The rear axle shall be warranted by Meritor for five (5) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

REAR AXLE DIFFERENTIAL CONTROL

A driver controlled differential lock shall be installed on the rear axle. This feature shall allow the main differential to be locked and unlocked when encountering poor road or highway conditions, where maximum traction is needed, for use at speeds no greater than 25 MPH. The differential lock shall be controlled by a guarded toggle switch located on the switch panel. There shall be an LED indicator light next to the switch in the switch panel to signal positive engagement of the differential control. The switch shall be labeled "do not exceed 25mph rear axle differential is locked."

VEHICLE TOP SPEED

The top speed of the vehicle shall be approximately 68 MPH +/-2 MPH at governed engine RPM.

REAR AXLE EXTERNAL VENT

The rear axle vent shall be remotely located. The axle manufacturer's vent fitting shall be removed and replaced with a vent tube with the vent fitting re-installed at the end of the tube. The body manufacturer shall be responsible for the final routing and positioning of the axle vent tube assembly.

REAR SUSPENSION

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type conventional multi-leaf spring suspension, with 57.50-inch X 3.00-inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.

The rear suspension capacity shall be rated from 21,000 to 31,500 pounds.

TIRE INTERMITTENT SERVICE RATING

The chassis shall be rated using Intermittent Service ratings provided to the emergency vehicle market by the tire manufacturers as the basis for determining the maximum vehicle load and speed.

FRONT TIRE

The front tires shall be Goodyear 315/80R-22.5 20PR "L" tubeless radial G289 WHA highway tread.

The front tire stamped load capacity shall be 20,400 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 130 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall match the stamped rating.

The Goodyear Intermittent Service Rating maximum speed capacity shall match the nominal speed rating.

The Goodyear Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without stopping for at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

REAR TIRE

The rear tires shall be Goodyear 12R-22.5 16PR "H" tubeless radial G622 RSD mixed service tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a nominal speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall be 29,020 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum speed capacity shall match the nominal speed rating.

The Goodyear Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without stopping for at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

REAR AXLE RATIO

The rear axle ratio shall be 5.13:1.

TIRE PRESSURE INDICATOR

There shall be electronic chrome LED valve caps shipped loose for installation by the OEM which shall illuminate with a red LED when tire pressure drops 8psi provided. The valve caps are self-calibrating and set to the pressure of the tire upon installation.

FRONT WHEEL

The front wheels shall be Alcoa hub piloted, 22.50-inch X 9.00-inch polished LvL One™ aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and a polished finish that lasts.

REAR WHEEL

The outer rear wheels shall be Alcoa hub piloted, 22.50-inch X 8.25-inch LvL One™ aluminum wheels with a polished outer surface. The inner rear wheels shall be Alcoa hub piloted, 22.50-inch X 8.25-inch aluminum

wheels with LvL One™ bright machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

WHEEL TRIM

The front wheels shall include stainless steel lug nut covers and stainless-steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

WHEEL GUARDS

The rear dual wheels shall include a plastic isolator approximately 0.04" thick installed between the inner and outer wheel to help prevent corrosion caused by metal to metal contact.

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include, at a minimum, a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A four (4) sensor, four (4) modulator anti-lock braking system (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply the ABS when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

A momentary rocker style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light and the light on the rocker switch shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

FRONT BRAKES

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00-inch vented rotors.

REAR BRAKES

The rear brakes shall be Meritor 16.50-inch X 7.00-inch S-cam drum type. The brakes shall feature a cast iron shoe.

PARK BRAKE

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted 6.00 inches to the left of center of the dash within easy access of the driver.

REAR BRAKE SLACK ADJUSTERS

The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

AIR DRYER

The brake system shall include a Bendix AD-9 fully self-contained air dryer which shall not require an extra purge tank or additional valves. The AD-9 system shall include a spin-off desiccant filter with a 12-volt, 75-watt thermostatically controlled heating element. The air dryer shall feature 3.9 pounds of premium, high crush strength desiccant which shall be produced with a composition that shall be more effective and longer lasting than other desiccants. It shall also offer protection against contamination and desiccant breakdown. The air dryer shall be mounted behind the battery box on the left-hand side.

FRONT BRAKE CHAMBERS

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

REAR BRAKE CHAMBERS

The rear axle shall include TSE 30/36 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 36 brake chamber has a 36.00 square inch effective area.

AIR COMPRESSOR

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

AIR GOVERNOR

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air dryer bracket.

MOISTURE EJECTORS

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.

AIR SUPPLY LINES

The air system on the chassis shall be plumbed with color coded reinforced nylon tubing air lines. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

AIR INLET CONNECTION

A Kussmaul air automatic eject connection for the shoreline air inlet shall be supplied.

AIR INLET/ AUTO EJECT CONNECTION COVER

The air auto eject connection shall be yellow in color.

AIR INLET LOCATION

The air inlet shall be installed on the left-hand side of the cab ahead of the driver's door.

AIR INLET/ OUTLET FITTING TYPE

The air connector supplied shall be a 0.25-inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25-inch Automotive style and Parker 0.25-inch 10 Series connectors.

AIR TANK SPACERS

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 1.50 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.

REAR AIR TANK MOUNTING

If a combination of wheel base, air tank quantity, or other requirements necessitate the location of one or more air tanks to be mounted rear of the fuel tank, these tank(s) will be mounted perpendicular to frame.

WHEELBASE

The chassis wheelbase shall be 203.50 inches.

REAR OVERHANG

The chassis rear overhang shall be 54.00 inches.

FRAME

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100-inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the "box method" shall not be considered.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25-inch-thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25-inch-thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.
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Any proposals not including additional reinforcement for each cross member shall not be considered.

All relief areas shall be cut in with a minimum 2.00-inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty period shall commence on the date the vehicle is delivered to the first end user.

REAR TOW DEVICE

The frame rails shall contain (3) holes per frame in a pattern specified by the OEM for mounting tow eyes at the rear of the frame at a location defined by the OEM.

FRAME CLEAR AREA

The chassis frame shall be left clear of chassis mounted components inside and outside the frame rails within the first 48.00 inches behind the cab to allow space for OEM installed components. Cross members may be installed in the clear area if required for proper frame or driveline configuration.

FRAME PAINT

The frame rails shall be hot dip galvanized prior to assembly and attachment of any components. The components that shall be galvanized shall include:

- Main frame “C” channel or channels

The frame parts which are not galvanized shall be powder coated prior to any attachment of components. Parts which shall be powder coated shall include but are not limited to:

- Steering gear bracket
- Front splayed rails and fish plates
- Bumper extensions
- Cross members
- Cross member gussets
- Fuel tank mounting brackets
- Fuel tank straps (unless material/finish is specified in 3130 subcat)
- Air tanks (unless color coded tanks are specified in 3205 subcat)
- Air tank mounting brackets
- Exhaust mounting brackets
- Air cleaner skid plate
- Radiator skid plate
- Battery supports, battery trays and battery covers

Other non-galvanized under carriage components which are received from the suppliers with coatings already applied shall include but are not limited to:

- Suspension components
- Front and rear axles

All powder coatings, primers and paint used on the non-galvanized components shall be compatible with all metals, pretreatments and primers used. The cross-hatch adhesion test per ASTM D3359 shall not have a fail of

more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.

FRONT BUMPER

The chassis shall be equipped with a severe duty front bumper constructed from structural steel channel. The bumper material shall be 0.38 thick ASTM A36 steel which shall measure 12.00 inches high with a 3.05 inch flange and shall be 99.00 inches wide with angled front corners.

The bumper shall be primed and painted as specified.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 21.00 inches ahead of the cab.

FRONT BUMPER PAINT

The front bumper shall be painted the same as the lower cab color.

FRONT BUMPER TRIM

The bumper shall include a reflective tape chevron with red and yellow stripes.

FRONT BUMPER APRON

The 21.00 inch extended front bumper shall include an apron constructed of 0.19-inch-thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

FRONT BUMPER DISCHARGE

The bumper apron shall include a 2.00-inch diameter plumbed line intended for use as a discharge trash line. The discharge line shall be routed through the left side bumper apron down the left hand rail to the area rear of the front axle, ahead of the battery box. The discharge shall terminate vertically through the left side apron inboard position with a, 2.00-inch NPT (national pipe thread) x 1.50-inch NST (national standard thread), brass Chicksan swivel to accommodate deployment of hose in different directions. The bumper apron shall feature an aluminum diamond plate Chicksan guard with two (2) rubber bump stops to prevent the Chicksan from contacting the cab.

The discharge shall pipe shall be a, 2.00-inch stainless steel schedule 10 tube. The discharge shall include a Victaulic groove for connecting to the pump on the end of the tube.

The apparatus manufacturer shall plumb the discharge pipe to the pump and shall provide all valves as required.

FRONT BUMPER COMPARTMENT CENTER

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall include a notched cover constructed of 0.19-inch-thick bright embossed aluminum tread plate. The notch shall be located in the left front portion of the cover and shall be 4.00 inches in length with a 2.00 inches wide radius.

FRONT BUMPER COMPARTMENT COVER HARDWARE

The front bumper compartment cover(s) shall include gas cylinder stays which shall hold the cover open. Each cover shall be held in the closed position via a D-ring style latch.

MECHANICAL SIREN

The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep. The siren shall include a pedestal mount to surface mount on a horizontal surface.

MECHANICAL SIREN LOCATION

The siren shall be pedestal mounted on the bumper apron on the furthest outboard section of the bumper on the driver side.

AIR HORN

The front bumper shall include two (2) Hadley brand E-Tone air horns which shall measure 21.00 inches long with a 6.00-inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

AIR HORN LOCATION

The air horns shall be recess mounted in the front bumper face, one (1) on the right side of the bumper in the inboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the inboard position relative to the left hand frame rail.

AIR HORN RESERVOIR

One (1) air reservoir, with a 1200 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

ELECTRONIC SIREN SPEAKER

There shall be one (1) Federal Signal model BP200-EF, 200-watt speaker provided. The speaker shall measure 5.50 inches tall X 7.70 inches wide X 7.80 inches deep. The speaker shall include a Federal Signal “Electric F” style grille which shall measure 6.61 inches tall X 6.78 inches wide.

ELECTRONIC SIREN SPEAKER LOCATION

The electronic siren speaker shall be located on the front bumper face on the left side outboard of the frame rail in the far outboard position.

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the frame components, shall be installed in the rearward position out of the approach angle area, bolted directly to the side of each chassis frame rail with grade 8 bolts.

CAB TILT SYSTEM

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis above the battery box.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90-inch ball and be anchored to frame brackets with 1.25-inch diameter studs.

A steel safety channel assembly, painted safety yellow shall be installed on the right-side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

CAB TILT LIMIT SWITCH

A cab tilt limit switch shall be installed. The switch will effectively limit the travel of the cab when being tilted. The limit adjustment of the switch shall be preset by the chassis manufacturer to prevent damage to the cab or any bumper mounted option mounted in the cab tilt arc. Further adjustment to the limit by the apparatus manufacturer shall be available to accommodate additional equipment.

CAB TILT CONTROL RECEPTACLE

A 25.00-foot cab tilt control harness shall be provided on the right side of frame just behind the cab. This harness shall consist of an 8.00-foot harness connected to the tilt pump and a 17.00-foot extension harness with a six (6) pin Deutsch connector with cap for mounting in a compartment in the body.

The remote-control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote-control pendant shall be shipped loose with the chassis.

CAB TILT LOCK DOWN INDICATOR

The cab dash shall include a message located within the dual air pressure gauge which shall alert the driver when the cab is unlocked and ajar. The alert message shall cease to be displayed when the cab is in the fully lowered position and the hold down hooks are secured and locked to the cab mounts.

In addition to the alert message an audible alarm shall sound when the cab is unlocked and ajar with the parking brake released.

CAB WINDSHIELD

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be installed using black self-locking window rubber.

GLASS FRONT DOOR

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished using electric actuation. The left and right front door windows shall be controlled using a switch on each respective side door window ledge. The driver's door shall also include a switch for the officer and each rear crew powered door window which shall be located on top of the door window ledge.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

GLASS TINT FRONT DOOR

The windows located in the left and right front doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS REAR DOOR RH

The rear right hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the door panel ledge and on the driver's control panel.

GLASS TINT REAR DOOR RIGHT HAND

The window located in the right-hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS REAR DOOR LH

The rear left-hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the door panel ledge and on the driver's control panel.

GLASS TINT REAR DOOR LEFT HAND

The window located in the left-hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS SIDE MID RH

The cab shall include a window on the right side behind the front and ahead of the crew door which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self-locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

GLASS TINT SIDE MID RIGHT HAND

The window located on the right-hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

CLIMATE CONTROL

A ceiling mounted combination defroster and cabin heating and air conditioning system shall be located above the engine tunnel area. The system covers and plenums shall be of severe duty design made of aluminum which shall be coated with a customer specified interior paint. The design of the system's covers shall provide quick access to washable air intake filters as well as easy access to other serviceable items.

The air delivery plenums provide targeted airflow directly to the vehicle occupants. Six (6) adjustable louvers will provide comfort for the front seat occupants and ten (10) adjustable louvers will provide comfort for the rear crew occupants.

The system shall be capable of producing up to 12 FPM of air velocity at all occupant seating positions. Separate front and rear blower motors shall be of brushless design and shall be controlled independently. It shall be capable of reducing the interior cabin air temperature from 122˚ F (+/- 3˚ F) to 80˚ F in thirty minutes with 50% relative humidity and full solar load as described in SAE J2646.

The system shall also provide heater pull up performance which meets or exceeds the performance requirements of SAE J1612 as well as defrost performance that meets or exceeds the performance requirements of SAE J381.

A gravity drain system shall be provided that is capable of evacuating condensate from the vehicle while on a slope of up to a 13% grade in any direction.

The air conditioning system plumbing shall be a mixture of custom bent zinc coated steel fittings and Aeroquip flexible hose with Aeroquip EZ-Clip fittings.

The overhead heater/defroster plumbing shall include an electronic flow control valve that re-directs hot coolant away from the evaporator, via a bypass loop, as the temperature control is moved toward the cold position.

Any component which needs to be accessed to perform system troubleshooting shall be accessible by one person using basic hand tools. Regularly serviced items shall be replaceable by one person using basic hand tools.

CLIMATE CONTROL DRAIN

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance.

CLIMATE CONTROL ACTIVATION

The heating, defrosting and air conditioning controls shall be in the center dash driver's switch panel, in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.

HVAC OVERHEAD COVER PAINT

The overhead HVAC cover shall be painted with an easy-to-clean gray texture finish.

A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted compressor. The compressor shall be compatible with R134-a refrigerant.

Refrigerant Compressor displacement: 19.1 cubic inches per revolution.

UNDER CAB INSULATION

The underside of the cab tunnel surrounding the engine shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The engine tunnel insulation shall measure approximately 0.30-inch-thick including a multi-layer foil faced glass cloth and polyester fiber layer. The foil surface acts as protection against heat, moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by acrylic pressure sensitive adhesive.

INTERIOR TRIM FLOOR

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25-inch-thick sound absorbing closed cell foam with a 0.06-inch-thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

INTERIOR TRIM

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

REAR WALL INTERIOR TRIM

The rear wall of the cab shall be trimmed with vinyl.

HEADER TRIM

The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13-inch-thick aluminum.

TRIM CENTER DASH

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13-inch-thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation. The center dash electrical access cover shall include a gas cylinder stay which shall hold the cover open during maintenance.

TRIM LH DASH

The left-hand dash shall be constructed of 5052-H32 Marine Grade, 0.13-inch-thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection the extreme duty left hand dash utilizes patent pending break away technology to reduce rigidity in the event of a frontal crash. The left-hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

TRIM RH DASH

The right-hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch-thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

ENGINE TUNNEL TRIM

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25-inch closed cell foam with a 0.06-inch-thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

The cab engine tunnel shall include a hinged aluminum access hatch with flush latches. The access hatch shall allow access to the engine compartment to check fluids.

ENGINE TUNNEL ACCESSORIES

The engine tunnel shall feature a fabricated aluminum console which shall include a large storage bin with full depth dividers and a map compartment. There shall be two (2) cup holders included in the console. One EMS cabinet to be located between the two rear facing seats constructed of Aluminum diamond plate with one adjustable shelve. Size to be determine by the committee.

POWER POINT DASH MOUNT

The cab shall include a 12-volt cigarette lighter type receptacle in the cab dash to provide a power source for 12-volt electrical equipment. The cab shall also include one (1) dual universal serial bus (USB) charging receptacle in the cab dash switch panel to provide a power source for USB chargeable electrical equipment. Each dual USB receptacle shall include two ports and shall be capable of up to a 5 Volt 2.1-amp output. Port 1 is optimized for fast charging at 1 amp. Port 2 is optimized for fast charging up to 2.1 amps, when used individually. The receptacles shall be wired battery direct.

STEP TRIM

Each cab entry door shall include a three-step entry. The first step closest to the ground shall be constructed of polished 5032 H32 aluminum Grip Strut® grating with angled outer corners. The step shall feature a splash guard to reduce water and debris from splashing in to the step. The splash guard shall have an opening on the outer edge to allow debris and water to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed with a Flex-Tred® adhesive grit surface material.

UNDER CAB ACCESS DOOR

The cab shall include an aluminum access door in the left crew step riser painted to match the cab interior paint with a push and turn latch. The under-cab access door shall provide access to the diesel exhaust fluid fill.

INTERIOR DOOR TRIM

The interior trim on the doors of the cab shall consist of an aluminum panel constructed of Marine Grade 5052-H32 0.13 of an inch-thick aluminum plate. The door panels shall include a painted finish.

DOOR TRIM CUSTOMER NAMEPLATE

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE "A" PILLAR

There shall be two (2) rubber covered 11.00-inch grab handles installed inside the cab, one on each ″A″ post at the left and right door openings. The left handle shall be located 7.88 inches above the bottom of the door window opening and the right handle shall be located 2.88 inches above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

INTERIOR GRAB HANDLE FRONT DOOR

Each front door shall include one (1) ergonomically contoured 9.00-inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

INTERIOR GRAB HANDLE REAR DOOR

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00-inch-long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

INTERIOR SOFT TRIM COLOR

The cab interior soft trim surfaces shall be gray in color.

INTERIOR TRIM SUNVISOR

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be gray in color.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted with an easy clean-to-clean gray texture finish.

HEADER TRIM INTERIOR PAINT

The metal surfaces in the header area shall be coated with an easy-to-clean gray texture finish.

TRIM CENTER DASH INTERIOR PAINT

The entire center dash shall be coated with an easy-to-clean matte gray texture finish. Any accessory pods attached to the dash shall also be painted this color.

TRIM LH DASH INTERIOR PAINT

The left-hand dash shall be painted with an easy-to-clean matte gray texture finish.

TRIM RIGHT HAND DASH INTERIOR PAINT

The right-hand dash shall be painted with an easy-to-clean matte gray texture finish.

ENGINE TUNNEL ACCESSORIES PAINT

The engine tunnel accessories shall feature an easy-to-clean gray textured finish.

DASH PANEL GROUP

The main center dash area shall include three (3) aluminum removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The panels shall be coated with a black texture finish. The center panel shall be within comfortable reach of both the driver and officer.

SWITCHES CENTER PANEL

The center dash panel shall include twelve (12) rocker switch positions in a six (6) over six (6) switch configuration in the left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SWITCHES LEFT PANEL

The left dash panel shall include eight (8) switches. There shall be six (6) switches across the top of the panel and two (2) staggered on the left-hand portion of the panel. Five (5) of the top row of switches shall be rocker type and the left one (1) shall be the headlight switch. The remaining switches shall consist of one (1) windshield wiper/washer control switch and one (1) instrument lamp dimmer switch.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SWITCHES RIGHT PANEL

The right dash panel shall include two (2) rocker switch positions in the upper left-hand portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate a digital seat position indicator with a seat position legend and integrated audible alarm in the switch panel.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds and the corresponding seat belt remains unfastened. The warning system shall also activate when any seat is occupied and the corresponding seat belt was fastened in an incorrect sequence. Once activated, the visual indicators and applicable audible alarm shall remain active until all occupied seats have the seat belts fastened.

SEAT MATERIAL

The seats shall be covered with a 45.00-ounce vinyl material. This material shall be semi- resistant to UV rays and from being saturated or contaminated by fluids.

SEAT COLOR

All seats supplied with the chassis shall be gray in color. All seats shall include red seat belts.

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom 500 Series Firefighter Sierra model seat with air suspension. The four-way seat shall feature a 3.00 inches vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK DRIVER

The driver’s seat shall include a standard seat back incorporating the all belts to seat feature (ABTS) as described above. The seat back shall recline up to 19-degrees.

SEAT MOUNTING DRIVER

The driver’s seat shall be installed in an ergonomic position in relation to the cab dash.

OCCUPANT PROTECTION DRIVER

The driver's position shall be equipped with the Advanced Protection System™ (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The driver's seating area APS shall include:

- Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the driver, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.
- Large side curtain airbag - protects the driver's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to the driver in a qualifying event by covering the window and the upper portion of the door.
- Dual knee airbags (patent pending) with energy management mounting (patent pending) - protects the driver's lower body from dangerous surface contact injuries, acceleration injuries, and from intrusion as well as locks the lower body in place so the upper body shall be shall be slowed by the load limiting seat belt.
- Steering wheel airbag - protects the driver's head, neck, and upper torso from contact injuries, acceleration injuries, and contact points with intrusive surfaces as a result of a collision.

SEAT OFFICER

The officer's seat shall be a H.O. Bostrom 500 Series Sierra seat model. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK OFFICER

The officer's seat back shall include an IMMI brand SmartDock® Gen 2 hands-free self-contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

SEAT MOUNTING OFFICER

The officer's seat shall offer a special mounting position which is 2.00 inches rearward of the standard location offering increased leg room for the occupant.

OCCUPANT PROTECTION OFFICER

The officer's position shall be equipped with the Advanced Protection System™ (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The officer's seating area APS shall include:

- Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the officer, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.
- Large side curtain airbag - protects the officer's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to the officer in a qualifying event by covering the window and the upper portion of the door.
- Knee airbags - protects the officer's lower body from dangerous surface contact injuries, acceleration injuries, and from contact points with intrusive surfaces as a result of a collision as well as locks the lower body in place so the upper body shall be slowed by the load limiting seat belt.

SEAT BELT ORIENTATION CREW

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

SEAT REAR FACING OUTER LOCATION

The crew area shall include one (1) rear facing crew seat located directly behind the right-side front seat.

SEAT CREW REAR FACING OUTER

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom 500 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be spring load hinged and compact in design for additional room. The seat shall include a "Fold and Hold" feature so that the cushion shall remain in the seated position and simply touched to flip up.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK REAR FACING OUTER

The crew area seat backs shall include an IMMI brand SmartDock® Gen 2 hands-free self-contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

SEAT MOUNTING REAR FACING OUTER

The rear facing outer seats shall offer special mounting positions which shall be 2.00 inches towards the rear wall offering additional space between the front seats and the outer rear facing seats.

OCCUPANT PROTECTION RFO

The rear facing outer seat position(s) shall be equipped with the Advanced Protection System™ (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact,

and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

Each rear facing outer seating position APS shall include:

- APS advanced seat belt system - retractor pre-tensioners tighten the seat belts around each occupant, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.
- Side curtain airbag - protects each occupant's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to each occupant in a qualifying event by covering the windows and walls adjacent to each seating position with an airbag custom designed for each cab configuration.

SEAT FORWARD FACING CENTER LOCATION

The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.

SEAT CREW FORWARD FACING CENTER

The forward-facing center seat shall be a H.O. Bostrom 500 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position. The seat and cushion shall be hinged and compact in design for additional room. The seat shall include a "Fold and Hold" feature so that the cushion shall remain in the seated position and simply touched to flip up.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK FORWARD FACING CENTER

The crew area seat backs shall include an IMMI brand SmartDock® Gen 2 hands-free self-contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder

restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

OCCUPANT PROTECTION FFC

The forward-facing center seat position(s) shall be equipped with the Advanced Protection System™ (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

Each forward-facing center seating position APS shall include:

- APS advanced seatbelt system - retractor pre-tensioners tighten the seat belts around each occupant, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.
- Side curtain airbag - provides ejection mitigation protection to each occupant in a qualifying event by covering the windows and walls adjacent to crew seating with an airbag custom designed for each cab configuration.

SEAT FRAME FORWARD FACING

The forward-facing center seating positions shall include a full width seat frame located and installed at the rear wall. The seat frame shall span the available space on the rear wall. The seat frame shall be 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19-inch-thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

SEAT FRAME FORWARD FACING STORAGE ACCESS

There shall be one (1) access point to the storage area centered on the front of the seat frame. This access point shall be covered by a hinged door to allow access for storage in the seat box.

SEAT MOUNTING FORWARD FACING CENTER

The forward-facing center seats shall be installed facing the front of the cab.

CAB FRONT UNDERSEAT STORAGE ACCESS DOOR

The right under seat storage area shall have a solid aluminum hinged door with non-locking latch.

SEAT COMPARTMENT DOOR FINISH

All underseat storage compartment access doors shall have an easy-to-clean gray texture finish.

WINDSHIELD WIPER SYSTEM

The cab shall include a triple arm linkage wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers; each shall be affixed to a radial arm. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the dual air pressure gauge shall display a "Check Washer Fluid Level" message.

CAB DOOR HARDWARE

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

DOOR LOCKS

Each cab entry door shall include a manually operated door lock. Each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

GRAB HANDLES

The cab shall include one (1) 18.00-inch three-piece knurled aluminum, anti-slip exterior assist handle, installed behind each cab door. The assist handle shall be made of extruded aluminum with a knurled finish to enable non-slip assistance with a gloved hand.

REARVIEW MIRRORS

Retrac Aerodynamic West Coast style dual vision mirror heads model 613315 shall be provided and installed each of the front cab doors.

The mirrors shall be mounted via 1.00-inch diameter tubular stainless-steel arms to provide a rigid mounting to reduce vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an integral convex mirror in the mirror head below the flat glass to provide wider field of vision. The flat and convex mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The flat and convex mirrors shall be heated for defrosting in severe cold weather conditions.

The mirror backs shall be constructed of vacuum formed chrome plated ABS plastic housings that are corrosion resistant and shall include an amber marker light. The mirrors shall be manufactured with the finest quality non-glare glass.

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a rocker switch in the mirror control panel on the left side dash.

EXTERIOR TRIM REAR CORNER

There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless-steel plate shall be affixed to the cab using two-sided adhesive tape.

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of polished aluminum.

MUD FLAPS FRONT

The front wheel wells shall have mud flaps installed on them.

CAB EXTERIOR FRONT & SIDE EMBLEMS

The cab shall include two (2) Advanced Protection System shield emblems. The emblems shall be included in the cab shipped loose components for installation by the body builder.

IGNITION

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a one-quarter turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the " ON" position.

The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

BATTERY

The single start electrical system shall include six (6) Harris BCI 31 925 CCA batteries with a 210-minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.

BATTERY TRAY

The batteries shall be installed within two (2) stainless steel battery housings with integrated slide-out trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be natural finish stainless steel.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards. The design for the slide-out feature shall include remote terminal studs for the battery cables to improve ease of maintenance.

BATTERY BOX COVER

Each battery box shall include a stainless-steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening. The battery box covers shall be un-painted.

BATTERY CABLE

The starting system shall include cables which shall be protected by 275-degree F. minimum high temperature flame retardant loom, sealed at the ends with heat shrink and sealant.

The battery terminals shall not be utilized for auxiliary connections. The only acceptable auxiliary connections shall be for the cross over link from the left bank to the right bank, power for jumper studs and starter cables. All other auxiliary connections will use remote studs mounted in the battery box area. There shall be four (4) remote studs labeled as Common Power, Common Ground, Clean Power, and Clean Ground.

BATTERY JUMPER STUD

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step, 8.00 inches apart. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure. A label stating “12V Jumper Studs” will be provided above the battery jump studs.

ALTERNATOR

The charging system shall include a 320-amp Leece-Neville 12-volt alternator. The alternator shall include a self-exciting integral regulator.

STARTER MOTOR

The single start electrical system shall include a Delco brand starter motor.

BATTERY CONDITIONER

A Kussmaul Auto Charge 40 LPC battery conditioner shall be supplied. The battery conditioner shall provide a 40-amp output for the chassis batteries and a 15-amp output circuit for accessory loads. The battery conditioner shall be mounted in the cab in the RH rear facing outer seating position.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted to the dash so it is viewable through the front windshield on the left-hand side of the cab.

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the left-hand side of the cab ahead of the front door in the upper location.

ELECTRICAL INLET

A Kussmaul 20-amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

Interior location termination shall facilitate medical compartment the wiring of a 110VAC power strip.

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a yellow cover.

HEADLIGHTS

The cab front shall include two (2) FireTech rectangular LED headlamps with high/low beam in the same housing and two (2) separate FireTech LED high beam only headlamps mounted in bright chrome bezels.

HEADLIGHT LOCATION

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model 600 4.00-inch X 6.00-inch programmable amber LED turn signals which shall be installed in chrome housing above the front warning and head lamps.

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) Tecniq S170 LED side marker lights which shall be provided just behind the front cab radius corners. The lights shall be amber with chrome bezels.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) marker lamps on the front of the vehicle designating identification and clearance. There shall be five (5) face mounted lights integrated into the scene light.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the ignition switch is in the "On" position and the parking brake is released.

GROUND LIGHTS

The ground lighting shall be activated when the parking brake is set, by the opening of the door on the respective cab side, a rocker switch in the dash panel, and when the truck is placed into reverse.

GROUND LIGHTS

Each door shall include Amdor H2O High Output LED ground lighting mounted to the underside of the cab step below each door. The lights shall be 12.00 inches in length.

LOWER CAB STEP LIGHTS

The middle step located at each door shall include a Tecniq T44 LED light which shall activate with the opening of the respective door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life.

INTERMEDIATE STEP LIGHTS

The intermediate step well area at each door shall include a TecNiq D06 LED light within a chrome housing. The Egress step lights shall provide visibility to the step well area for the first step exiting the vehicle. The Egress step lights shall activate with Entry step lighting.

UNDER BUMPER LIGHTS

There shall be two (2) 12.00 inches long Amdor Luma Bar H2O™ High Output LED ground lights mounted under the bumper. The under-bumper ground lighting shall activate with the ground lights.

LIGHTBAR PROVISION

There shall be one (1) light bar installed on the cab roof. The light bar shall be provided and installed. The light bar installation shall include a lowered mounting that shall place the light bar just above the junction box and wiring to a control switch on the cab dash.

CAB FRONT LIGHTBAR MODEL

The cab shall be provided with one (1) Whelen model F4N72 light bar. The light bar shall be 72.00 inches in length and feature eighteen (18) customizable pods.

See the light bar layout for specific details.

LIGHTBAR SWITCH

The light bar shall be controlled by a rocker switch located on the switch panel. This switch shall be clearly labeled for identification.

FRONT SCENE LIGHTS

The front of the cab shall include one (1) HiViz model FireTech FT-B-72-ML-W LED scene light installed on the brow of the cab. The light shall feature (5) five integrated marker lights.

The housing shall be powder coated white.

FRONT SCENE LIGHT LOCATION

There shall be one (1) scene light mounted center on the front brow of the cab.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by a rocker switch.

SIDE SCENE LIGHTS

The side of the cab shall include two (2) Firetech model FT-GESM Guardian Elite LED scene lights, one (1) each side which shall be surface mounted with a chrome bezel.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the cab shall be mounted in the upper mid forward portion of the 10.00 inch raised roof of the cab between the front and rear crew doors.

SIDE SCENE ACTIVATION

The scene lights shall be activated by two (2) rocker switches located in the switch panel, one (1) for each light, and by opening the respective side cab doors.

INTERIOR OVERHEAD LIGHTS

The cab shall include a Whelen brand 60CREGCS 6.00-inch diameter red/clear type round shaped LED dome lamp located over each door. The clear portion of each lamp shall be activated by opening the respective door and both the red and clear portion can be activated by individual switches on each lamp.

An additional Whelen brand 60CREGCS 6.00-inch diameter red/clear type round shaped LED dome lamp shall be provided over the engine tunnel which can be activated by individual switches on the lamp.

ENGINE COMPARTMENT LIGHT

There shall be a LED NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red Whelen Ion LED light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

The flashing red light shall be located centered left to right for greatest visibility.

The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released.

MASTER WARNING SWITCH

A master switch shall be included in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled “Master” for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the “ON” position shall automatically power up when the master switch is activated.

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) Whelen 600 series Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

INBOARD FRONT WARNING LIGHTS COLOR

The warning lights mounted on the cab front fascia in the inboard positions shall be red with a clear lens.

OUTBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) Whelen 600 series Super LED front warning lights in the left and right outboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

OUTBOARD FRONT WARNING LIGHTS COLOR

The warning lights mounted on the cab front fascia in the outboard position shall be red with a clear lens.

FRONT WARNING SWITCH

The front warning lights shall be controlled via rocker switch on the panel. This switch shall be clearly labeled for identification.

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Whelen 600 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red with a clear lens.

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted on the side of the bumper in the rearward position.

SIDE WARNING LIGHTS

The cab sides shall include two (2) Whelen 600 series Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the cab within a chrome bezel.

SIDE WARNING LIGHTS COLOR

The warning lights located on the side of the cab shall be red with clear lens.

SIDE WARNING LIGHTS LOCATION

The warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

SIDE AND INTERSECTOR WARNING SWITCH

The side and intersector warning lights shall be controlled by a rocker switch on the switch panel. This switch shall be clearly labeled for identification.

TANK LEVEL LIGHTS

There shall be two (2) Whelen Strip-Light Plus XL tank lights surface mounted within a chrome bezel.

The light strips shall feature four (4) colors of LED lights to indicate the fluid level of a tank. The lights shall change in color to indicate the water level of the tank in ¼ tank increments, the colors shall change from green indicating a full tank to blue, amber, and red as the tank level drops.

TANK LEVEL LIGHTS ACTIVATION

The tank level lights shall be pre-wired and coiled at rear of the cab for connection to the apparatus by the body builder.

TANK LEVEL LIGHTS LOCATION

There shall be water level lights mounted on each side of the cab, behind the rear cab doors.

TRAFFIC CONTROL

There shall be one (1) GTT (Global Traffic Technologies) Opticom model 795H traffic control optical emitter mounted in the lightbar on the front of the cab roof. The emitter shall be activated by a lighted rocker switch on dash and shall be deactivated when the parking brake is applied.

INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) red Whelen 500 Series TIR6™ Super-LED® warning light located on the door panel. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

STEERING WHEEL HORN BUTTON SELECTOR SWITCH

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

AUDIBLE WARNING LH FOOT SWITCH

A foot switch wired to actuate the mechanical siren(s) shall be supplied for installation in the front section of the cab for driver actuation.

MECHANICAL SIREN FOOT SWITCH LH

The mechanical siren foot switch shall be a Linemaster model 491-S.

MECHANICAL SIREN FOOT SWITCH LH LOCATION

The mechanical siren foot switch shall be located on the left-hand side accessible to the driver between the steering column and the door.

MECHANICAL SIREN FOOT SWITCH LH POSITION

The mechanical siren foot switch shall be positioned outboard of any other foot switch, if applicable.

AUDIBLE WARNING LH FOOT SWITCH BRACKET

A 30.00-degree angled foot switch bracket, wide enough to accommodate (2) foot switches, shall be installed outboard of the steering column for specified driver accessible foot switch activations.

AIR HORN AUXILIARY ACTIVATION

The air horn activation shall be accomplished by two (2) lanyard cables, one (1) on the left-hand side accessible to the driver and one (1) on the right-hand side accessible to the officer. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION

The mechanical siren shall be actuated by two (2) black push buttons in the switch panel on the dash. A red momentary siren brake rocker switch shall be provided in the switch panel on the dash.

MECHANICAL SIREN INTERLOCK

The siren shall only be active when master warning switch is on to prevent accidental engagement.

BACK-UP ALARM

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

INSTRUMENTATION

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

A twenty-eight (28) icon lightbar message center with integral LCD odometer/trip odometer shall be included. The odometer shall display up to 999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD message center screen shall be capable of custom configuration by the users for displaying certain vehicle status and diagnostic functions.

The instrument panel shall contain the following gauges:

One (1) three-movement gauge displaying vehicle speed, fuel level, and Diesel Exhaust Fluid (DEF) level. The primary scale on the speedometer shall read from 0 to 100 MPH, and the secondary scale on the speedometer shall read from 0 to 160 KM/H. The scale on the fuel and DEF level gauges shall read from empty to full as a fraction of full tank capacity. Red indicator lights in the gauge and an audible alarm shall indicate low fuel or low DEF at $1/8^{th}$ tank level.

One (1) three-movement gauge displaying engine RPM, and primary and secondary air system pressures shall be included. The scale on the tachometer shall read from 0 to 3000 RPM. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI) with a red line zone indicating critical levels of air pressure. Red indicator lights in the gauge and an audible alarm shall indicate low air pressure.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (°F) with a red line zone indicating critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate high or low system voltage. The low voltage alarm shall indicate when the system voltage has dropped below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 to 300 degrees °F with a red line zone indicating critical temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.

The light bar portion of the message center shall include twenty-eight (28) LED backlit indicators. The lightbar shall be split with fourteen (14) indicators on each side of the LCD message screen. The lightbar shall contain the

following indicators and produce the following audible alarms when supplied in conjunction with applicable configurations:

RED INDICATORS

Stop Engine - indicates critical engine fault
Air Filter Restricted - indicates excessive engine air intake restriction
Park Brake - indicates parking brake is set
Seat Belt - indicates a seat is occupied and corresponding seat belt remains unfastened
Low Coolant - indicates critically low engine coolant
Cab Tilt Lock - indicates the cab tilt system locks are not engaged.

AMBER INDICATORS

Malfunction Indicator Lamp (MIL) - indicates an engine emission control system fault
Check Engine - indicates engine fault
Check Transmission - indicates transmission fault
Anti-Lock Brake System (ABS) - indicates anti-lock brake system fault
High exhaust system temperature – indicates elevated exhaust temperatures
Water in Fuel - indicates presence of water in fuel filter
Wait to Start - indicates active engine air preheat cycle
Windshield Washer Fluid – indicates washer fluid is low
DPF restriction - indicates a restriction of the diesel particulate filter
Regen Inhibit-indicates regeneration of the DPF has been inhibited by the operator
Range Inhibit - indicates a transmission operation is prevented and requested shift request may not occur.
SRS - indicates a problem in the supplemental restraint system
Check Message - indicates a vehicle status or diagnostic message on the LCD display requiring attention.

GREEN INDICATORS

Left and Right turn signal indicators
ATC - indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system
High Idle - indicates engine high idle is active.
Cruise Control - indicates cruise control is enabled
OK to Pump - indicates the pump is engaged and conditions have been met for pump operations
Pump Engaged - indicates the pump transmission is currently in pump gear
Auxiliary Brake - indicates secondary braking device is active

BLUE INDICATORS

High Beam indicator

AUDIBLE ALARMS

Air Filter Restriction
Cab Tilt Lock
Check Engine
Check Transmission
Open Door/Compartment

High Coolant Temperature
High or Low System Voltage
High Transmission Temperature
Low Air Pressure
Low Coolant Level
Low DEF Level
Low Engine Oil Pressure
Low Fuel
Seatbelt Indicator
Stop Engine
Water in Fuel
Extended Left/Right Turn Signal On
ABS System Fault

BACKLIGHTING COLOR

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.

CLOCK

There shall be a 2.00-inch diameter Teltek digital clock installed in the switch panel on the dash. The clock shall feature a digital readout in either standard or military time. The clock shall also feature automatic brightness control and a lithium replaceable battery for back-up when power is turned off.

RADIO

A Panasonic radio with weather band, AM/FM stereo receiver, compact disc player, and four (4) speakers shall be installed in the cab. The radio shall be installed above the driver position. The speakers shall be installed inside the cab with two (2) speakers recessed overhead in the front portion of the cab rearward of the windshields and two (2) speakers on the upper rear wall of the cab.

AM/FM ANTENNA

A small antenna shall be located on the left-hand side of the cab roof for AM/FM and weather band reception.

CAMERA LEFT HAND

One (1) Audiovox Voyager heavy duty rearview teardrop shaped chrome plated housing camera shall be mounted on the driver side of the cab below the windshield ahead of the front door at approximately the same level as the cab door handles. The camera display shall activate when the left side turn signal is activated.

CAMERA RIGHT HAND

One (1) Audiovox Voyager heavy duty rearview teardrop shaped chrome plated housing camera shall be mounted on the officer side of the cab below the windshield ahead of the front door at approximately the same level as the cab door handles. The camera display shall activate when the right side turn signal is activated.

CAMERA REAR

One (1) Audiovox Voyager heavy duty box shaped HD camera shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle.

The camera system shall include a one-way communication device that shall be an integral part of the rear camera for the use of voice commands directly to the driver. The rear camera display shall activate when the vehicle's transmission is placed in reverse.

CAMERA DISPLAY

The camera system shall be wired to a 7.00-inch flip down HD monitor which shall include a color display and day and night brightness modes installed above the driver position.

COMMUNICATION ANTENNA

An antenna shall be installed on the cab. The antenna shall be a Motorola HAF4017A. The antenna shall be mounted on the right-hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment

COMMUNICATION ANTENNA CABLE ROUTING

The antenna cable shall be routed from the antenna base mounted on the roof to the area behind and underneath the right-hand front seat.

CAB EXTERIOR PROTECTION

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

FIRE EXTINGUISHER

A 2.50-pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

ROAD SAFETY KIT

The cab and chassis shall include one (1) emergency road safety triangle kit.

DOOR KEYS

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION

Diagnostic software for the Advanced Protection System shall be available for free download from the Chassis supplier website to authorized OEMs, dealers and service centers, as well as the vehicle owner.

The software has been validated to be compatible with the following RP1210 interface adapters:

- Dearborn Group DPA4 Plus
- Noregon Systems JPRO® DLA+
- Cummins INLINE5
- Cummins INLINE6

- NexIQ™ USB-Link™

The software and adapter utilize the SAE J1939-13 heavy duty nine (9) pin connector which is located below the driver's side dash to the left of the steering column.

WARRANTY

Summary of Warranty Terms:

THE FOLLOWING IS SUMMARY OF WARRANTY TERMS FOR INFORMATION ONLY. THE ACTUAL LIMITED WARRANTY DOCUMENT, WHICH IS ATTACHED TO THIS OPTION, CONTAINS THE COMPLETE STATEMENT OF THE FIRE CHASSIS LIMITED WARRANTY. RESPONSIBILITY IS TO BE ACCORDING TO THE TERMS OF THE COMPLETE LIMITED WARRANTY DOCUMENT.

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom-built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the first end user.

CHASSIS OPERATION MANUAL

There shall be two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.

ENGINE AND TRANSMISSION OPERATION MANUALS

The following manuals specific to the engine and transmission models ordered will be included with the chassis in the ship loose items:
(1) Hard copy of the Engine Operation and Maintenance manual with digital copy
(1) Digital copy of the Transmission Operator's manual
(1) Digital copy of the Engine Owner's manual

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

The cab and chassis shall include two (2) digital copies of wiring schematics and option wiring diagrams.

PAINT CONFIRMATION

There shall be a paint confirmation letter sent to the body manufacturer with paint spray outs to confirm the cab primary paint color or primary and secondary paint color as specified by the paint options.

SALES TERMS

A factory inspection trip shall be required by 5 Lee Fire Department personnel at time of completion prior to shipment to ensure apparatus construction compliance.

During the design phase of the chassis the Chassis driveline engineer shall submit the driveline layout to an OEM engineer to review the chassis design for any potential problems integrating the OEM body to the chassis. The OEM engineer shall provide approval to the driveline engineer prior to driveline bills of materials being released.

== Pumper, Midship & Top-Mount - 0.000 ==

PRE-CONSTRUCTION MEETING

A pre-construction meeting shall be held utilizing "GoToMeeting" conferencing prior to any construction processes at the Bidder's manufacturing facility. Authorized representatives of both the Purchaser and the Manufacturer shall be present (a dealer of the Manufacturer is not acceptable). The "GoToMeeting" shall be a secure online meeting with transmit and receive audio capabilities for participants.

Prior to and during the meeting the Manufacturer shall supply complete apparatus drawings and specifications for review and Purchaser approval.

CUSTOM MIDSHIP PUMPER
TANK MOUNTING

The booster tank will rest on body crossmembers that are spaced to allow no more than 530 square inches of unsupported area under the tank if the tank height is 40" or less. Where the overall height of the tank exceeds 40", crossmember spacing must be reduced to allow for not more than 400 square inches of unsupported area. In addition, the tank must be isolated from crossmembers through the use of hard rubber strips with a minimum .25" thickness x 1.50" width and a minimum of 60 durometer hardness. The rubber will be a channel shape extrusion so it interlocks over the crossmembers to prevent movement **(NO EXCEPTIONS)**.

The tank will sit cradle-mounted using four (4) corner angles approximately 4" x 4" x 6" high x .25" welded to the body crossmembers. The angles will keep the tank from shifting left to right or front to rear. The tank design is based on a free-floating suspension principal. To minimize the movement of an empty tank during vehicle operation, the hose bed slats and dividers will act as a retainer and be fastened front and rear. The tank shall be completely removable without disturbing or dismantling the apparatus body structure.

BODY CONSTRUCTION

All body framing, doors, skin, etc. shall be of all aluminum construction to enhance vehicle performance, reduce overall maintenance and maximize available payload by minimizing the body weight. For maximum strength, the body framing shall be all extruded construction.

The body shall be modular in construction, completely separate from the pump compartment, so it may easily be removable from the apparatus chassis without disturbing the fire pump. A minimum of a 1" space shall be provided between the pump compartment and the body module. Spacing is to allow for chassis flexing when driving over uneven terrain to avoid potential stress cracking.

BODY GUARDS

The left and right body side compartment front panels shall be bright aluminum treadplate.

CROSSMEMBERS

There shall be a minimum of three (3) body structural crossmembers of 3" x 2" x .25" wall thickness, 6061-T6 aluminum extruded rectangular tubing.

To eliminate corrosion, all crossmembers and structural tubing will have the ends capped and solidly welded shut on all sides to eliminate the possibility of dirt, water, and salt from entering (NO EXCEPTIONS).

UPRIGHTS

There shall be 3" x 2" x .125" wall thickness, 6061-T6 aluminum extruded rectangular tubing between the exterior side compartments. These shall be tied into the main crossmembers to give the side sheets and any equipment mounted on them adequate support.

ROOF COVE AND CORNER POSTS

For body strength, the corner posts and roof cove perimeter shall have a 1.5" radius of 6061-T6 extruded .125" aluminum. All corners shall have a 1.5" radius cast aluminum ball cap at the top corners of the body.

HOSE BODY SIDES

The hose body sides shall be reinforced with 2" x 3" x .125" 6061-T6 extruded aluminum rectangular vertical supports welded to the outside of the panels for support of ladders and equipment and shall be tied into the main crossmembers for support.

The hose bed walls shall be capped with 2″ x 2″ x .125″ aluminum tubing and wrapped on both sides with .125″ aluminum to increase the panel strength and provide for a smooth hose body.

EXTERIOR COMPARTMENTS

All general framing to be aluminum. Compartments shall be an integral part of the body construction and shall also be suspended by the floor crossmembers. The floor crossmembers shall be attached to the main body uprights located between the compartment openings.

COMPARTMENT FLOORS

Compartment floors will be 100% welded to the threshold extrusion. Floor material to be .125" smooth aluminum and to be of integral support to the front, rear and side compartment walls.

The center portion of the floor will be reinforced with an extruded aluminum channel to prevent buckling and oil-canning. To eliminate corrosion the channels will be inverted to eliminate the possibility of dirt, water, and salt from entering **(NO EXCEPTIONS)**.

DOOR THRESHOLD

The door threshold shall be constructed from a sealed box type 6061-T6 aluminum extrusion. The extrusion shall be tied into the extruded uprights and shall provide a flush "sweep-out" style floor with no lip. The extrusion shall run under the compartment floor to prevent damage when heavy equipment is dropped on the front lip of the floor. A formed-up compartment floor providing the sweep out lip area shall not be acceptable.

COMPARTMENT WALLS

The compartment sidewalls and rear wall to be .125" smooth aluminum. All compartment seams will be 100% sealed so to provide a water tight compartment.

The side compartment walls will be double wall design so all wiring can be hidden and also allow outlets, switches, reel buttons, breaker boxes, etc. to be recessed into the walls. **Separating the compartments with a single shared wall will not be acceptable. (NO EXCEPTIONS)**

COMPARTMENT FINISH

To reduce marring and scuffing, the insides of the exterior compartments shall be painted with a durable light gray spatter type coating.

SHELF & TRAY FINISH

Any shelves, trays, etc. shall be left a natural aluminum oscillated finish to allow for easy equipment mounting. The sides and forward face edges of all the roll-out items will include a 3M diamond grade red-white reflective stripe to improve safety.

PUMP COMPARTMENT

The pump compartment is to be made of all aluminum. The compartment shall be supported by aluminum extrusions; 3" x 2" at the front and 2" x 2" at the rear. Both extrusions will have a .25 wall thickness 6061-6 aluminum extruded rectangular tubing that have an integral support built in for the side panels and running boards.

The pump compartment shall be a completely separate module. A minimum of a 1" space shall be provided between the chassis cab and the pump compartment and between the pump compartment and the main body. Spacing is to allow for chassis flexing when driving over uneven terrain.

There shall be a bright aluminum diamond plate top hinged door with two (2) chrome plated lift and turn latch on the curb side for fast and clear access to the pump for service and inspection.

The pump compartment shall be mounted on breaker strips to separate the chassis frame from the aluminum pump compartment.

Any available area above the pump shall be an open storage compartment. It shall have a bright aluminum diamond plate floor in removable sections for access to the pump. The interior side walls and floor shall have an unpainted natural aluminum finish.

42" - 45" Side Mount Pump Compartment

PUMP PANELS, BLACK

Road side and curb side pump panels shall be constructed of black powder coated .125" aluminum. The pump panels shall also be removable and held in place with stainless steel fasteners. Suction and discharge openings shall be trimmed with color coded collars.

The drain handles will be installed in a separate panel to allow for easy maintenance.

PUMP GAUGE PANEL, BLACK

The pump gauge panel shall be constructed of black powder coated .125" aluminum and be located above the road side pump panel. It shall be hinged at the side to swing open for ease of service and inspection. It shall be full width of the pump panel and have two (2) chrome plated lift and turn latches.

PUMP PANEL DRAWINGS

A pump panel CAD drawing showing the proposed locations of the switches, valve controls, gauges, etc. shall be submitted to the Fire Department prior to the fabrication of these panels. This will allow the Fire Department to make minor location requests prior to the fabrication of these panels (no plumbing changes allowed).

RUNNING BOARDS

The running boards shall be constructed of .188" serrated bright aluminum treadplate. They shall be reinforced with a 2" downward break at the front, rear and outboard edges with an additional 1" minimum return break underneath the front edge for superior strength. The front corner of the running board shall be tapered to avoid injuries. For ease of replacement if damaged, the running boards shall be bolted in place. A drain gap shall be provided between the pump compartment and the running boards.

There shall be a 4" aluminum treadplate kickplate on the lower edge of each side pump panel, just above the running boards.

The running boards shall be a minimum of 13" deep, (when rub rails are present) to provide adequate clearance for externally mounted valves and appliances and to provide better footing for access to storage areas above the pump.

VALVE CONTROLS

Unless otherwise stated in these specifications, the suction and discharge valves shall be operated by remote controls. Valve control handles shall be chrome plated ergonomic handles with a color-coded function label. For each discharge with a gauge the control and gauge shall be in the same bezel for pump operator ease. (NO EXCEPTIONS)

PUMP PANEL LIGHTING, LED

An extruded aluminum shield shall be mounted above the road side gauge panel. The light shields shall be made as large as possible to provide maximum light distribution. Two (2) TecNiq #E10-W000-1 LED lights shall be furnished under the shield. Bulbs which are exposed are unacceptable. The lights shall be switched on at the pump operator's control panel.

PUMP PANEL LIGHTING, LED

An extruded aluminum shield shall be mounted above the curb side gauge panel. The light shields shall be made as large as possible to provide maximum light distribution. Three (3) TecNiq #E10-W000-1 LED lights shall be furnished under the shield. Bulbs which are exposed are unacceptable. The lights shall be switched on at the pump operator's control panel.

DISCHARGE GAUGE AND CONTROL ROD

One (1) 2.5" white faced, brass cased individual pressure gauge, liquid filled, 0-400 PSI for each discharge. Each gauge shall have a color-coded bezel with the control rod incorporated into the bezel assembly.

STEP LIGHTS, LED

Step lights shall be TecNiq #D07 LED surface mounted lights with stainless steel case. The lights shall be wired through the marker light and parking brake circuit with the locations as follows:

Each side on the inside face of the beavertail to illuminate the rear hose bed access step area.

The front of the body, on the curb side and on the road side to illuminate the running boards and side pump panel areas.

GROUND LIGHTS, LED

TecNiq model #T44-WD0B-1, 4" round LED ground lights with grommet will be installed under each stepping surface. Lights will be mounted under each pump panel running board and rear step. The lights shall be activated through the marker light and parking brake circuit.

FENDERETTES

The fenderettes shall be polished stainless steel held in place to the wheel housing with stainless steel cap screws and well-nuts for easy replacement. The fenderettes and the fasteners shall be isolated from the wheel housing to prevent electrolysis. A trim molding shall be provided between the fenderettes and wheel housing. The fenderettes shall be mounted to the body thereby affording superior protection from debris hitting the sides of the body.

BOOSTER TANK

The tank shall have a capacity of 1000 U.S. Gallons.

The booster tank shall be constructed of .50" to 1″ thick PT3™ polypropylene, a non-corrosive stress relieved thermo-plastic and UV stabilized material, black in color. The booster and/or foam tank shall be designed to be completely independent of the body and compartments. All joints and seams are to be nitrogen fused for strength and integrity. The tank construction shall include PolyProSeal™ technology wherein a sealant shall be installed between the plastic components prior to being fusion welded.

The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3™ polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design™. Tolerances in design allow for a maximum variation of 1/8″ on all dimensions.

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. The tower shall have a 1/4" thick removable polypropylene screen and a PT3™ polypropylene hinged cover. The capacity of the tank shall be engraved on the

top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4" that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction. The tank cover shall be constructed of 1/2" thick PT3™ polypropylene and UV stabilized, to incorporate a multi-piece
locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40″ apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.

The sump shall be constructed of a minimum of 1/2" PT3™ polypropylene and be located in the left front quarter of the tank, unless specified otherwise. There shall be a 3" schedule 40 polypropylene pipe installed that will incorporate a dip tube from the front of the tank to the sump location. An anti-swirl plate will be mounted inside the sump approximately 3″ above the inside floor. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug per NFPA.

TANK OVERFLOW

The vent overflow shall be a schedule 40 polypropylene pipe with a minimum I.D. of 6" that is designed to run through the tank and piped to discharge behind the rear wheels.

BOOSTER TANK WARRANTY

The tank shall carry "**THE ALL-OUT NO-FAULT LIFETIME WARRANTY**" which is to be provided by the tank manufacturer.

HOSE BED

The inside body width between panels shall be seventy (70") inches.

The capacity of the hose bed shall meet all requirements set by the N.F.P.A. Pamphlet No. 1901. There shall be a minimum of 55 cu. ft. of storage space.

The interior shall be free of any projections or sharp edges that might damage fire hose or other equipment.

The floor of the hose bed shall be .125″ aluminum formed decking with ventilation and drainage holes. The entire bed shall be easily removable from the body. The floor shall allow ample air circulation between the top of the tank, and the underside of the hose bed floor.

To reduce maintenance and eliminate paint chips, the sides of the hose body that are above the hose bed floor shall have an unpainted natural finish and a polished stainless-steel scuff strip shall be provided at the rear of the hose bed.

HOSE BED COVER

A removable heavy-duty D&S waterproof hose bed cover shall be provided. The hose bed cover shall extend over the rear of the hose bed. Rear edge of the cover shall be weighted to prevent wind damage and also include a positive hold down device to secure hose load. The front of the cover shall be held in place with "Snap" fasteners and the sides shall be held in place with bungy fasteners.

ROLL-UP COMPARTMENT DOORS

The body side compartments shall be equipped with AMDOR brand roll up doors.

The doors shall be constructed of double wall slats that provide a smooth surface on the interior of the door to prevent interference with compartment contents. The slats shall have recessed bulb type slat seals which provide a weatherproof compartment and reduce the effects of vehicle
vibration. The aluminum extrusions shall be equipped with nylon universal end shoes with positive snap-in securement's that slide in the track and side frame section. The top frame section shall include a gutter, non-marring top seal and bumper to cushion the bottom rail.

The latching mechanism will be a lift bar arrangement, which utilizes a door-wide spring-loaded bar and two (2) cam-surfaced latch points. Any roll door that exceeds a 63" high door opening from the rub rail or above 30" if over a wheel well shall include a Flex-HD pull down strap to make for easy closing.
Road Side - front to rear (Nominal door opening size.)

1. 63" high x 46" wide x 27" deep-lower, 13" deep-upper. Clear depth. Roll-up door.

2. 30" high x 57" wide x 13" deep. Clear depth. Roll-up door.

3. 63" high x 46" wide x 27" deep-lower, 13" deep-upper. Clear depth. Roll-up door.

DOOR FINISH

The body side compartment roll up doors shall have a natural anodized finish.

PAINT

The complete apparatus body and any applicable doors shall be painted. All exposed metal surfaces which are not chrome plated or polished shall be thoroughly cleaned and prepared.

To prevent corrosion and to ensure bonding of primer, the body shall be be cleaned and degreased with the paint manufacturer's recommended wax and grease remover. All irregularities in primed surfaces shall be sanded down before application of the finished coats. All removable items such as compartment doors shall be removed and painted separately.

To prevent electrolysis around fasteners, special attention must be given to how components are fastened to the exterior of body. All vendor-supplied screws shall be discarded and the manufacture shall replace them with their own stainless-steel screws. In addition, every screw hole possible that protrudes into the body shall be punched with a square hole and then a plastic insert will be installed to isolate the dissimilar metals. Where an insert cannot be used, a zinc-rich type coating will be applied to each screw before they are installed. **(NO EXCEPTION TO THIS REQUIREMENT)**

Sikkens lead free paint shall be used on the body. Consistent with this requirement and to insure optimum adhesion of final paint and long service of paint, all related materials shall be those specified by the paint

manufacturer for use with their finish. These related products shall include, but not be limited to the following: Epoxy primer, catalysts, thinners, and hardeners.

The body shall be painted the same color as the chassis.

Curb Side - front to rear (Nominal door opening size.)

4. 63" high x 46" wide x 27" deep-lower, 13" deep-upper. Clear depth. Roll-up door.

5. 30" high x 57" wide x 13" deep. Clear depth. Roll-up door.

6. 63" high x 46" wide x 27" deep-lower, 13" deep-upper. Clear depth. Roll-up door.

Paint Body (Pumper) C.S.

COMPARTMENT TOP OVERLAY

Compartment top framing shall be covered with a bright aluminum treadplate.

REAR HOSE BED ACCESS STEPS AND SUPPORT

The rear hose bed access step shall be 12" deep x 43" wide. Step material to be .188" serrated bright aluminum treadplate with the rear edge formed the same as the running boards. Step to be bolted on and easily removable in case of an accident. The rear step shall be supported by a heavy-duty sub-structure. A drain gap shall be provided between the body and the step to promote safer footing.

The maximum stepping height shall not exceed 18" with the exception of the ground to the first step which shall not exceed 24". Steps shall be capable of sustaining a static load of 500 lbs.,shall have skid resistant surfaces and have a minimum stepping area of 35 sq. in.

There shall be a warning label mounted above the rear step.

"DANGER - DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT."

BEAVERTAILS

There shall be full height beavertails located at the rear of the body. The inside of the beavertails shall be covered with .10" bright aluminum treadplate. The top section of the beavertails at the hose bed level shall be left natural finish to eliminate paint damage unloading hose.

INTERMEDIATE STEPS

Intermediate hose bed access steps fabricated from .125" serrated bright aluminum treadplate shall be located above the rear step, one (1) each side, on top of the lower side compartments.

STEP, FOLDING, CHROME PLATED

Eight (8) spring-loaded folding step(s) with NFPA compliant slip resistant surface shall be provided and installed in the location(s) specified. The step(s) shall be heavy duty chrome-plated cast zinc with a non-lit polydomed logo label and built-in white step light located above the stepping surface.

ROLL-UP COMPARTMENT DOOR

The rear compartment shall be equipped with AMDOR brand roll up door.

The door shall be constructed of double wall slats that provide a smooth surface on the interior of the door to prevent interference with compartment contents. The slats shall have recessed bulb type slat seals which provide a weatherproof compartment and reduce the effects of vehicle
vibration. The aluminum extrusions shall be equipped with nylon universal end shoes with positive snap-in securement's that slide in the track and side frame section. The top frame section shall include a gutter, non-marring top seal and bumper to cushion the bottom rail.

The latching mechanism shall be a lift bar arrangement, which utilizes a door-wide spring-loaded bar and two (2) cam-surfaced latch points. Any roll door that exceeds a 63" high door opening from the rub rail or above 30" if over a wheel well shall include a pull-down strap to make for easy closing.

DOOR FINISH

The rear compartment roll up door shall have a natural anodized finish.
Rear Compartment (Nominal door opening size)

55" high x 38" wide x 20" deep. Clear depth. Roll-up door.

APPROVAL DRAWINGS

Two (2) sets of engineering blueprints, CAD drawn to scale specifically for this apparatus, shall be provided. The Fire Department shall review and approve these drawings prior to actual construction of the apparatus.

Both left and right-side views, a rear view and a top view shall be provided. The blueprints shall also show the overall dimensions of the apparatus, proposed compartment sizes and features, booster tank position, and the location of all emergency warning and work lights that are to be provided by the body builder.

THIRD PARTY TESTING

The complete apparatus shall be third party tested and certified as a class "A" triple combination pumper. Unit shall also meet or exceed all N.F.P.A. Pamphlet No. 1901 (latest edition) specifications and standards.

PERFORMANCE REQUIREMENTS

The apparatus, when fully equipped and loaded, shall be capable of the following performance on dry, level, paved roads in good condition:

From a standing start the vehicle shall attain a true speed of 35 mph within 25 seconds.

From a steady speed of 15 mph the vehicle shall accelerate to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.

The vehicle shall attain a minimum top speed of not less than 50 mph.

The apparatus shall be able to maintain a speed of at least 20 mph on any grade up to and including six percent.

CAB TILT INSTALLATION

Installation shall be provided for the cab tilt receptacle that is shipped loose with the chassis. The receptacle shall be located on the curbside pump panel.

WHEEL COVERS, INSTALL CHASSIS FURNISHED

The chassis furnished wheel covers shall be installed on the chassis wheels.

AIR PUMP SHIFT

The chassis furnished air pump shift, located in the cab, shall be finish plumbed and wired to the pump.

TANK LEVEL INDICATOR, CHASSIS FURNISHED

The chassis furnished tank indicator(s) installation shall be completed and finish wired to the tank level sensor.

REAR VIEW CAMERA

The Camera provided by the manufacturer shall be installed at the rear of the apparatus and hooked to the flip down monitor installed in the cab.

MODIFICATIONS TO CHASSIS

The following modifications shall be performed on the chassis upon arrival at the body builder's facility:

DRIVE LINES

The original drive lines furnished with the chassis shall be reworked to fit the pump installation. The tube, if needed to be lengthened, shall be completely replaced. Splicing of the tube is not acceptable. Tube shall be D.O.M. (Drawn over Mandrel) made for drive shafts.

They shall be electrically MIG welded by a certified welder on a specially designed drive shaft fabrication machine. After welding, the drive shaft shall be checked for straightness and be dynamically balanced by computerized machinery. All drive shafts shall be balanced.

AUXILIARY COOLING SYSTEM

A Sen-Dure model #4373-1-5 supplementary remote heat exchange cooling system of brass and copper construction shall be installed. The unit shall be mounted in the pump compartment and be complete with all proper valving. Controls shall be at the pump operator's panel. Unit shall permit the use of water from the

discharge side of the pump for cooling of the coolant circulating through the engine cooling system without intermixing.

The heat exchanger shall have an added tap for a radiator fill if required, elsewhere in these specifications.

The auxiliary cooler lines shall be routed away from the engine exhaust and be properly secured to the truck frame.

FUEL FILL

The chassis furnished fuel tank shall be located aft of the rear axle. The body builder shall install the fuel fill on the road side behind the rear axle. The fuel fill shall hook up with flexible fuel hose and shall have a recessed filler with a brushed finish hinged door. A nametag shall be provided as to the type of fuel the vehicle shall use.

When possible, a rear access panel will be provided in rear compartment wall to gain access to the fuel tank sending unit.

CABINET WITH OPEN STORAGE - MESH DOOR

One (1) .125" bright aluminum treadplate cabinet(s) will be provided (located behind engine tunnel). Door will be a black open mesh nylon design, 1" web with 2" squares. The mesh door will be fastened on with SEAT BELT Buckles around the perimeter. The top of the cabinet will be flat with no lip. Cabinet opening will have a 1″ lip.

ADJUSTABLE SHELVES, INTERIOR CABINETS

One (1) adjustable shelves will be fabricated from .188" high strength 5052-H32 aluminum. The shelves are to have a bend both front and rear with one bend in the opposite direction so that the shelf is reversible to provide either a lip to retain equipment or a smooth sweep-out front.

For ease of adjustment and as additional shelving reinforcement, the shelves shall not be bolted directly to the standards but shall be supported by an angled gusset that in turn is fastened to the standards.

Heavy duty adjustable shelving standards will be furnished, one each side of cabinet. These standards are to be the infinitely adjustable type of 6061-T6 extruded aluminum.

AMDOR COMPARTMENT LED STRIP LIGHT

Compartment(s) specified shall have an Amdor LED strip light provided. The light will include a translucent lens and have lights located every 3".

EMS CABINET WITH OPEN STORAGE - MESH DOOR

One (1) .125" bright aluminum treadplate cabinet(s) will be provided (located behind driver seat Rear Facing) Cabinet opening will have a 1″ lip and be secured with a black open mesh nylon design, 1" web with 2" squares. The mesh door will be fastened on with SEAT BELT Buckles around the perimeter. Cabinet will be full height of cab.

ADJUSTABLE SHELVES, INTERIOR CABINETS

Three (3) adjustable shelves will be fabricated from .188" high strength 5052-H32 aluminum. The shelves are to have a bend both front and rear with one bend in the opposite direction so that the shelf is reversible to provide either a lip to retain equipment or a smooth sweep-out front.

For ease of adjustment and as additional shelving reinforcement, the shelves shall not be bolted directly to the standards but shall be supported by an angled gusset that in turn is fastened to the standards.

Heavy duty adjustable shelving standards will be furnished, one each side of cabinet. These standards are to be the infinitely adjustable type of 6061-T6 extruded aluminum.

AMDOR COMPARTMENT LED STRIP LIGHT

Compartment(s) specified shall have an Amdor LED strip light provided. The light will include a translucent lens and have lights located every 3".

HELMET HOLDERS

The department shall provide and install near each seat position helmet holders or store their helmets in an enclosed cabinet to meet compliance to the 2009 edition of NFPA 1901 for use inside of crew cabs. The holders shall secure traditional and contemporary style helmets without any adjustment being required.

REFLECTIVE MATERIAL

All crew compartment doors shall have a minimum of 96 square inches of reflective material affixed to the inside of each door.

12 VOLT WIRING – MULTIPLEXING, V-MUX

All of the emergency electrical equipment shall be served by circuits separate and distinct from the vehicle circuits. Body wiring shall be thermo plastic harness type, GXL (125 degree Centigrade) color and number or function coded. The wiring shall be grease, oil and moisture resistant, routed in convoluted looms and in protected locations. Wires and looms shall be neatly and securely fastened, and all apertures with proper grommets for passing wiring.

Solderless insulated crimp connectors shall be provided. Wire nut, insulation displacement, and insulation piercing connections shall not be used. All electrical connections that are exposed to the elements shall be of the heat shrink sealant type **(NO EXCEPTIONS)**.

The body electrical shall incorporate a system for controlling the electrical devices of the vehicle. This system shall utilize a Controller Area Network (CAN) protocol providing multiplexing control signals for "real time" operation. It shall consist of several modules strategically located throughout the vehicle and interconnected via "twisted pair" control wiring. Each module shall be readily available for inspection or service. The multiplexed system shall consist of a universal System Manager Control Module, Vocational Module, input/output switch modules and Power Distribution Modules **(NO EXCEPTION)**.

Junction areas with a removable aluminum cover shall be located inside the front and rear side compartments for ease of service.

A wiring trough shall be built into the upper body roof rail and above the exterior compartment doors. Easily removable panels shall be furnished to gain access to these wiring troughs.

FLUID ID PLATE

The following quantity and type of fluids used in the vehicle will be programmed on the Multiplexing display that is located in the cab:

Engine oil
Engine coolant
Transmission fluid
* Pump transmission lubrication fluid
* Pump primer fluid
Drive axle lubrication fluid
* Air-conditioning refrigerant
* Air-conditioning lubrication oil
Power steering fluid
* Cab tilt mechanism fluid
* Transfer case fluid
* Equipment rack fluid
* Air compressor system lubricant
* Generator system lubricant
Front tire cold pressure
Rear tire cold pressure
Maximum tire speed ratings

* = When applicable.

SWITCH CONTROL PANEL

There shall be a switch assembly provided on the gauge panel for switching controls.

LOW VOLTAGE ALARM - CHASSIS FURNISHED

An audible alarm and visual warning light will be installed in the cab to alert of a low voltage situation. The alarm and light will be activated when the voltage at the batteries or at the master load disconnect switch drops below 11.8 volts for more than 120 seconds.

DOOR AJAR INDICATOR LIGHT - CHASSIS FURNISHED

There shall be a chassis furnished flashing red "do not move apparatus when light is on" indicator light in the cab to indicate that a cab door, entrance door, or compartment door is not in the closed position. Light will only illuminate when the parking brake is not fully engaged.

GROUND LIGHTS

The lights under the chassis entrance doors that are provided by chassis dealer shall be activated at minimum when the doors are opened in conjunction with other chassis specifications when applicable.

FOOT SWITCH INSTALLATION

The {qty} chassis furnished foot switch(es) shall be installed on the right-hand side of the cab floor in the specified location.

APPARATUS INFORMATION LABEL

A label shall be provided in the area of the driver seat to notify the driver of the maximum amount of personnel to be carried on the vehicle as well the overall height, overall length, and the GVWR.

HELMET LABEL

A label stating "DO NOT WEAR HELMET WHILE SEATED" shall be provided and visible from each seating location.

CHASSIS EXHAUST

The chassis exhaust shall be extended just past the body side away from the pump operator. A stainless-steel exhaust deflector shall be located just above the exhaust pipe and below the body to prevent discoloration of the body side panels.

REAR TOW EYES

Two (2) heavy rear tow eyes, .75" x 4" with a 2.375" elongated hole, shall be bolted directly to the frame, located inside the compartment between the rear beavertails. They shall be furnished with stainless steel trim plates.

PAINTED TOW EYES - BLACK

Tow eyes will be painted black.

REAR SPRING SHACKLE ACCESS

The rear axle spring shackles, if equipped with grease fittings, shall have the fittings replaced with 90-degree fittings for ease of service once the body is in place.

REAR MUDFLAPS

A black hard rubber mud flap with the manufacturer's logo on it shall be installed behind the rear wheels, one (1) each side.

MAP STORAGE BOX

There will be a map storage box installed on the engine cover of the chassis separated into 3 compartments each 4" x 13". The box will be approximately 13.75" wide x 14" long x 10" deep. The map storage box will be made of black polypropylene.

FIRE PUMP

The pump shall be a Class "A" Midship Hale 1500 GPM Single Stage Model QMAX Centrifugal Fire Pump.

The pump shall deliver the percentage of rated capacity at the pressures listed below.

100% of rated capacity at 150 PSI net pump pressure
100% of rated capacity at 165 PSI net pump pressure
70% of rated capacity at 200 PSI net pump pressure
50% of rated capacity at 250 PSI net pump pressure

When dry, the pump shall be capable of taking suction and discharging water with a lift of 10 feet in not more than 30 seconds through 20 feet of suction hose of the appropriate size.

The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance specifications as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectional pulsation and vibration.

The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI. All moving parts in contact with water shall be of high-quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable. Pump body shall be horizontally split, on a single plane, in two sections, for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.

Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing to be located immediately adjacent to the impeller (on side opposite the drive unit). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

PUMP SEAL-MECHANICAL

The pump shall be equipped with self-adjusting, maintenance free MECHANICAL SHAFT SEALS that shall not require manual adjustment. These seals shall be designed in a manner that they will remain functional enough to permit continued use of the pump in the unlikely event of a seal failure.

PUMP IMPELLER

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

Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant, stainless steel, to be super-finished under packing with galvanic corrosion (zinc separators in packing) protection for longer shaft life. Pump shaft must be sealed with double lip oil seat to keep road dirt and water out of drive unit.

There shall be two (2) copies of the pump operation and maintenance manuals provided.
Drive Unit, Hale

PUMP SHIFT INDICATORS

For trucks with automatic transmissions, three (3) green indicator lights shall be provided to indicate to the pump operator when the pump has completed the shift from the Road to the Pump position.

Two (2) green lights to be located in the cab. One is to be labeled "Pump Engaged" which illuminates when the pump shift has been successfully completed. The other light is to be labeled "OK to Pump" and is to illuminate when the pump shift has been completed and the transmission is engaged in the proper pumping gear. The labeling and lights shall be included with the pump shift nameplate.

An "OK to Pump" indicator light shall also be furnished on the pump operator's control panel adjacent to the throttle control unless provided on the governor. A warning label stating "Warning: Do Not Open Throttle Unless Light Is On." shall be installed adjacent to the throttle control.

PUMP PRIMING SYSTEM

The pump priming system shall be a Hale model ESP, self-lubricating type. The priming pump shall be a positive displacement vane type 12-volt electric driven priming pump, which is to be totally enclosed to prevent dust, dirt and water from entering. It shall be furnished with a hand operated Pull-Release" bronze priming valve which automatically starts the priming pump.

MASTER DRAIN VALVE

Suitable line drains shall be mounted for properly draining all piping lines and pump. The pump shall be equipped with a single master drain valve that includes individually ported drains that do not require check valves. This drain shall also include all relief valves, auxiliary engine cooler, and pump transmission.

DRAIN VALVES - LIFT LEVER

The drain valves shall be ¾" ball brass drain valves with chrome-plated lift lever handles and ergonomic grips. Each lift handle grip shall feature built-in color-coding labels and a verbiage tag identifying each valve. The color labels shall also include valve open and close verbiage.

INTAKE RELIEF VALVE

There shall be a relief/dump valve bolted directly to the suction manifold on the pump. It shall be preset to 125 PSI and be field adjustable behind the curb side pump access door.

There shall be a permanent label affixed near the outlet which states "Intake relief valve outlet - Do not cap."

PUMP PIPING & AKRON VALVES

All discharge valves under 4" shall be Akron brand HD 8800 series. All discharge valves, 4" or larger, when specified shall be Akron 8840 series and shall be equipped with a mechanism to restrict the speed of operating the valve from full closed to full open or vice versa in less than 3 seconds. All threads shall be NST unless specified otherwise.

Discharge and suction piping shall be 100% stainless steel or where more flexibility is required, the discharge and suction lines shall be plumbed with high pressure reinforced flexible hoses which have threaded stainless steel or victaulic fittings. Victaulic couplings shall be used wherever needed to prevent vibration damage and to aid in servicing the pump and related plumbing. **Galvanized piping or fittings will not be accepted (NO EXCEPTIONS).**

MAIN SUCTION INLETS

There shall be a 6" pump manifold inlet with removable, cleanable screen furnished on each side of the body. Each side of the pump is to be provided with a short 4" long suction tube to provide better clearance for externally mounted valves and adapters. The inlets shall be furnished with long handled chrome plated female pressure caps.

TANK TO PUMP LINE

The piping from the tank to pump shall be one (1) 4" line and shall deliver not less than 500 GPM. Valve to be 4" 1/4 turn ball type with air actuator control and open-closed switch at the pump operator's control panel. A flexible line shall be used between the tank sump and the tank to pump valve. A 4" check valve shall be included in the tank to pump line.

TOTAL PRESSURE GOVERNOR

The apparatus shall be equipped with a Class1 "Total Pressure Governor" (TPG) that is connected to the Electronic Control Module (ECM) mounted on the engine. The "TPG" shall operate as a pressure sensor (regulating) governor (PSG) utilizing the engine's J1939 data for optimal resolution and response when supported by the engine manufacturer. If J-1939 engine control is not supported, then analog remote throttle control shall be provided by the TPG. The "TPG" is to operate as a pressure sensor (regulating) governor (PSG) eliminating any need for relief valve on the discharge side of the pump.

The TPG shall utilize control algorithms that minimize pressure spikes during low or erratic water supply situations. The TPG shall be backwards compatible to any engine that supplies J1939 RPM, Temperature and Oil Pressure information providing the ability to maintain a consistent fleet fire-fighting capability and reduce operator cross training and confusion.

The TPG shall have the ability to use either a 300 PSI or a 600 PSI transducer for best operation. PSG system diagnostics shall be built in and accessible by technicians. Programmable presets for RPM and Pressure settings shall be easily configurable.

The "TPG" shall also include indication of engine RPM, system voltage, engine oil pressure and engine temperature with audible alarm output for all. The "TPG" uses the J1939 data bus for engine information, requiring no additional sensors to be installed. The TPG shall use J1939 broadcast warnings for the alarm as a standard and allow the "user" to select warning values if "SOP's" dictate.

The pump engaged and "OK to pump" indicator lights shall also be displayed on the "TPG".

MASTER GAUGES

There shall be one (1) 6" white faced master pressure gauge, liquid filled, and one (1) 6" faced master vacuum gauge, liquid filled, -30-0-400 PSI. Separate labels shall be provided for each gauge.

Gauges to be backlit.

PUMP ANODES

Sacrificial anodes will be provided in the pump housing, one (1) for the discharge part of pump and one (1) for the suction part of pump.

MASTER INTAKE VALVE, MANUAL OPERATED

One (1) Hale MIV-M manual operated butterfly valve(s) with built in pressure relief valve shall be provided for the main suction inlet(s). Installation shall be on the pump suction manifold behind the pump panel.

A relief/dump valve will be incorporated into the butterfly valve(s). The valve(s) will be preset to 125 PSI and be field adjustable.

A manual handwheel shall be furnished for the valve(s) located next to the suction tube. A placard will be provided by the control handle indicating control operation. The placard shall have status lights to indicate whether the valve is open, closed or transversing from one position to another.

MASTER INTAKE VALVE, ELECTRIC OPERATED

One (1) Hale MIV-E electric operated butterfly valve(s) with built in pressure relief valve shall be provided for the main suction inlet(s). Installation shall be on the pump suction manifold behind the pump panel.

A relief/dump valve will be incorporated into the butterfly valve(s). The valve(s) will be preset to 125 PSI and be field adjustable.

An electric switch located on the operator panel shall be furnished for the valve(s). A placard will be provided by the switch indicating control operation. The placard shall have status lights to indicate whether the valve is open, closed or transversing from one position to another. A manual override shall be provided to permit operation of the electric remote-control valve in the event of abnormal operating conditions.

2-1/2" ROAD SIDE AUXILIARY INLET

One (1) auxiliary 2-1/2" NST gated suction inlet shall be provided at the road side pump panel. Valve shall be the 1/4 turn ball type with a lever style control located at the valve. The valve shall be located behind the pump panel.

The auxiliary inlet shall be equipped with a chrome swivel, removable cleanable strainer, male plug and retainer chain. An individual 3/4" bleeder drain with a quarter turn control handle shall be furnished. The drain shall be piped toward the ground.

VALVED INLET LABEL

Any valved inlet located at the pump operator's position shall be provided with a permanent label that states "Warning - serious injury or death could occur if inlet(s) is supplied by a pressurized source when the valve is closed".

2-1/2" MAIN DISCHARGE VALVE, ROAD SIDE

There shall be two (2) 2-1/2" discharge(s) provided at the road side. Discharge valve shall be 1/4 turn, full flow, drop out, self-locking type and shall be mounted behind the pump panel.

The discharge valve shall be gated with easy operating push pull controls. The outlet shall have a stainless steel NST elbow capped with a chrome plated female cap and chain. Unless otherwise specified the 2-1/2" valve shall have a 45-degree removable elbow with a 2-1/2" cap.

The discharge shall have an individual bleeder drain which shall be piped toward the ground.

2-1/2" MAIN DISCHARGE VALVE, CURB SIDE

There shall be one (1) 2-1/2" discharge(s) provided at the curb side. Discharge valve shall be 1/4 turn, full flow, drop out, self-locking type and shall be mounted behind the pump panel.

The discharge valve shall be gated with easy operating controls. The outlet shall have a stainless steel NST elbow capped with a chrome plated female cap and chain. Unless otherwise specified the 2-1/2" valve shall have a 45-degree removable elbow with a 2-1/2" cap.

The discharge shall have an individual bleeder drain which shall be piped toward the ground.

3" MAIN DISCHARGE VALVES, CURB SIDE

There shall be one (1) 3" discharge(s) provided at the curb side. Discharge valve shall be mounted behind the pump panel. Valve shall be opened with a hand wheel slow open valve.

The discharge valve shall be gated with easy operating controls. The outlets shall have a stainless steel NST elbow capped with a chrome plated female cap and chain. Unless otherwise specified the 3" valve shall have a 30-degree removable elbow with a 3" cap.

The discharge shall have an individual bleeder drain which shall be piped toward the ground.

SPECIAL DISCHARGE THREADS

When specified, special threads shall be furnished for discharges.

1.5" Crosslays shall have NPSH threads and or adapters.

DECK GUN DISCHARGE

There shall be one (1) 3" NPT discharge located above the pump for installation of a deck gun. The discharge Valve shall be a hand wheel slow open valve.

Valve to be controlled from the pump operator's panel.

A manual drain shall be provided at the lowest point of the piping and the drain shall be piped toward the ground. Drain control to be located at the pump panel.

CROSSFIRE DECKGUN PACKAGE

There shall be a XFC-62 Task Force Tips Crossfire deck gun package with extend-a-gun provided and installed on the apparatus. The package shall include the ***4″*** NH SAFE-TAK base with Crossfire monitor top, manual extend-a-gun, a halo ring master stream nozzle with quad stack tips, a 5" stream straightener and a storage bracket.

2-1/2" PRECONNECT DISCHARGE

Two (2) 2-1/2" NST discharge(s) shall be provided at the front of the hose bed. The discharge valve shall be a 2-1/2", 1/4 turn, full flow, drop out and be the self-locking type. It shall be gated with easy operating controls located on the pump operator's panel. Outlet to be furnished with a chrome 2-1/2" male NST adapter. No cap is included unless otherwise specified.

The 2-1/2" discharge shall have an individual bleeder drain with a quarter turn control handle. The drain shall be piped toward the ground.

1-1/2" FRONT PRECONNECT

There shall be one (1) 1-1/2" pre-connect located at the front bumper roadside. The discharge valve shall be a 2", 1/4 turn, full flow, drop out and be the self-locking type. It shall be gated with easy operating controls located on the pump operator's panel. The piping will be 2" with the outlet equipped with a male chrome plated 1-1/2" NSSH 90-degree swivel elbow located on top of the bumper extension.

The discharge shall have an individual bleeder 1/4 turn drain that shall be piped toward the ground.

CROSSLAYS

Two (2) 1-1/2" crosslay(s) shall be mounted above the pump. Each shall have the capacity of 200 ft. of 1-3/4" double jacket fire hose. Each crosslay shall be individually plumbed with a 2", 1/4 turn full flow drop out valve, 2" piping, and a 90 degree 1-1/2" male NST chicksan swivel adapter. Controls shall be located on the pump panel.

The crosslay compartment floor shall be fitted with aluminum flooring to allow for proper ventilation and drainage. To reduce maintenance and paint chips, the divider and crosslay sidewalls shall have an unpainted oscillated aluminum finish.

The crosslays shall have an individual bleeder drain with a quarter turn control handle. The drain shall be piped toward the ground.

If more than one (1) crosslay is provided a divider shall separate the hose loads.

CROSSLAY COVER

There shall be a heavy duty .125" bright aluminum treadplate cover over the crosslays which is to be hinged at the front. There shall be two (2) spring-loaded trigger latch devices to secure the cover in the closed position. When necessary, the cover shall also be provided with a stop to prevent it from hitting the cab.

MESH COVERS FOR CROSSLAY ENDS

Black open mesh nylon, 1" web with 2" squares shall be provided on each end of the two (2) crosslay(s). The mesh shall be fastened so it can be detached and flipped to the side for quick deployment.

ADAPTER, 4" NST x 5" STORZ 30 DEGREE

At the location(s) noted, one (1) 4" discharge outlet(s) shall be furnished with a 4" NST swivel rocker lug female x 5" Storz discharge adapter and a 5" Storz blind cap in place of the 4" elbow and cap. The final termination shall be at a 30 degree angle.
Foam System, FoamPro 2001

FOAMPRO MODEL 2001

The apparatus shall be equipped with an electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrates. The installation shall create no in-line flow restrictions and shall provide for continuous foam injection even during refill of the foam tanks. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. The system shall be equipped with a digital electronic control display, suitable for installation on the pump panel. Incorporated within the control display shall be a microprocessor that receives input from the system flowmeter(s), while also monitoring foam concentrate pump output, comparing values to ensure that the operator preset is injected into the discharge side of the fire pump.

A flowmeter shall be installed in the discharges specified to be foam capable. The gauge will display either pressure or flow by pushing a button located on the gauge housing. The gauge will be weatherproof and will have a super-bright digital read out. If more than one discharge is to be charged with foam, a manifold shall be provided which will supply the required discharges.

The digital computer control display shall enable the pump operator to perform the following control and operation functions for the foam proportioning system:

a) Provide push-button control of foam proportioning rates from 0.1% to 3.0% in 0.1% increments.
b) Show current flow-per-minute of water.
c) Show total volume of water discharged during are after foam operations and completed.
d) Show total amount of foam concentrate consumed.
e) Simulate flow rates for manual operation.
f) Perform setup and diagnostic functions for the computer control microprocessor.
g) Flash a "low concentrate" warning when the foam concentrate tank(s) runs low.
h) Flash a "no concentrate" warning and shut the foam concentrate pump off, preventing damage to the pump, should the foam tank(s) empty.

The system capacity will be as follows:

Foam Concentrate	Water Flow (gpm)
0.1%	2,600
0.2%	1,300
0.5%	520
1.0%	260

3.0% 85

A 12-volt electric motor driven positive displacement foam concentrate pump, rated up to 2.5 gpm (9 L/min.), with operating pressures up to 400 psi (28 bar), shall be installed in an exterior compartment near the apparatus pump area. A pump motor electronic driver (mounted to the base of the pump) shall receive signals from the computer control display, and power the 1/2 hp (0.40 kw) electric motor directly coupled to the concentrate pump. The pump is in a variable speed duty cycle to ensure that the correct proportion of concentrate preset by the pump operator is injected into the water stream.

Full flow check valves shall be provided to prevent foam contamination of the fire pump and water tank or water contamination of foam tank.

Components of the complete proportioning system as described above shall include:

a) Operator control and display.
b) Class 1 flowmeter(s).
c) Pump and electric motor/motor driver.
d) Wiring harness.
e) Low level tank switch.
f) MultiFlo electronic module (if more than one flowmeter is used).
g) Foam injection check valve.

The system must be installed and calibrated prior to delivery.

The following discharges shall be provided with foam:

Front bumper and both crosslays.

FOAM SYSTEM CERTIFICATION

The manufacturer shall certify the following:
1. - The foam system, as installed, complies with the foam equipment manufacturer's installation recommendations.
2. - The foam system has been calibrated and tested to meet the foam equipment manufacturers and the purchaser's performance specifications.
3. - The accuracy of the foam proportioning system meets the requirements of NFPA, section 20.11.1.

Upon delivery of the fire appartus, documentation shall be provided declaring the foam proportioning sytem, as installed, meets the requirements of NFPA sections 20.10.2 or 20.10.3 across the foam proportioning system manufacturer's declared range of waterflow, water pressure, foam percentage (or foam proportioning system capacity) , and concentrate viscosity at the test points defined in Table 20.11.1.

FOAM LEVEL INDICATOR

One (1) Innovative Controls 14 LED light foam level indicator shall be provided on the pump operator's gauge panel.

FOAM TANK

There shall be a Class A foam tank built into the booster tank with a capacity of 30 U.S. Gallons of foam concentrate.

The foam tank shall have a separate fill tower constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. Each foam fill tower shall be constructed of a colored material (green for Class A foam, yellow for Class B foam and black for other foams) indicating which tower is to receive each type of foam utilized. The capacity of the tank shall be engraved on the top of the fill tower lid.

The tower shall be located in the right front corner of the tank unless otherwise specified. The tower shall have a 1/4" thick removable polypropylene screen and a cover with a stainless-steel hinge. Inside the fill tower, approximately 1.5″ down from the top, there shall be an anti-foam fill tube that extends down to the bottom of the tank.

The foam tank shall be furnished with a pressure/vacuum vent that allows the tank to adjust automatically for changes in pressure or vacuum when filling or withdrawing foam concentrate from the tank. The vent shall not permit outside air to enter the tank freely except during operation or for normal changes in volume due to changes in temperature. The vent shall be installed in the lid of the fill tower.

A label shall be placed at or near any foam concentrate tank fill opening that specifies the type of foam concentrate the system is designed to use, any restrictions on the type of foam concentrate that can be used with the system, and a warning message that reads "Warning: Do Not Mix Brands and Types of Foam."

TANK FILL LINE

Pump to tank line shall be 2". Valve to be 2" 1/4 turn ball type with a control at the pump operators' panel. This line is to be hooked to the tank with a flexible hose as not to put any undue strain on the piping or tank.

COLOR CODED IDENTIFICATION PLATES

Each control valve, gauge and discharge outlet shall be labeled with a color-coded identification plate. For ease of viewing and quick identification, the plates shall be a minimum of .75" high x 2.5" wide. For standardization, color coding shall be in accordance with the recommendations of Section A.16.9.1 of NFPA 1901.

WARNING LABEL, PUMP OPERATOR

A sign shall be provided on the pump operators panel that states the following:

WARNING: Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.

PUMP OPERATOR'S CONTROL PANEL

All controls will be mounted so they do not exceed 72" from the operating stand and gauges will be mounted so they do not exceed 84" from the operating stand.

BACKLIT 2.5″ GAUGES

Backlighting shall be provided for ten (10) 2.5″ gauges in the specified color of either red, blue or white.

PUMP TEST ADAPTER

A pump test gauge adapter will be provided on the pump panel.

ACCEPTANCE PLATE

A third-party acceptance plate will be provided on the pump panel.

PUMP IDENTIFICATION

One (1) pump identification nameplate shall be provided on the pump panel.

WATER LEVEL INDICATOR

One (1) Innovative Controls 14 LED light water level indicator shall be provided on the pump operator's gauge panel.

WATER LEVEL INDICATOR

One (1) Innovative Controls 14 LED light water level indicator shall be provided on the pump operator's gauge panel.

HOSE LOAD

The hose bed will be sized to accommodate the Lee FD hose load.

HOSE BED DIVIDER(S)

Three (3) adjustable hose bed divider(s) shall be provided to separate the different hose loads. To reduce maintenance and eliminate paint chips all hose bed dividers shall have an unpainted buffed aluminum finish. The divider(s) shall be constructed of .18" smooth aluminum with a round radius corner at the rear. The bottom of each divider shall be welded to a heavy duty, full length slotted extrusion for extra divider rigidity.

Hose bed dividers shall have hand hold cut outs in them to aid in climbing.

BODY SPECIFICATIONS

RUBRAILS, REMOVABLE EXTRUDED CHANNEL

Rub rails will be heavy duty extruded aluminum C-channel design with a bright dipped anodized finish. The top edge of the rub rail will include a ribbed design to help hide scratches and the inside of the channel will be striped with 3M diamond grade red-white reflective tape for improved safety. The rub rails shall have a .25" drain gap and will be located under each compartment door flush with the rear step and pump compartment running boards. These shall be fastened to the threshold extrusion on for ease of service and replacement in case of damage.

FENDERS

Fenders are to be sized to allow ample clearance for tire chains. The fender liners shall extend full depth to the rear springs and be welded to the rear body panels. The fender liners are to be sealed with continuous welds to the outside and inside body panels to provide maximum strength, elimination of any pockets for the accumulation of dirt and road salt, and to provide ease of cleaning.

FENDER PANELS

The body panels above the wheel housing shall be .10" bright aluminum treadplate overlay fastened with stainless steel torx head screws for ease of replacement in case of an accident.

BODY MOUNTS - NYLON

There shall be 75,000-90,000 PSI yield high strength .625" bolts to attach the body brackets to the chassis frame, mounted so as to prevent any movement of the body.

Full length nylon sills shall be located between the chassis frame rails and the body.

COMPARTMENT VENTS

Vents shall be provided in each compartment and so located that water cannot normally enter the compartment through the openings. Vents shall be fabricated integrally into the wall of the compartment. Each compartment shall have sufficient vents to provide good air circulation to dry out compartment interiors and equipment.

MATEFLEX GRATING

Black Mateflex grating shall be installed where specified. Where appropriate the grating shall have a beveled edge facing the front of the compartment to prevent snagging while loading equipment.

STEP, FOLDING, CHROME PLATED

Four (4) spring-loaded folding step(s) with NFPA compliant slip resistant surface shall be provided and installed in the location(s) specified. The step(s) shall be heavy duty chrome-plated cast zinc with a non-lit polydomed logo label and built-in white step light located above the stepping surface.

ACCESS RAILS

Access rails shall be 1.25" diameter extruded aluminum tubing in chrome plated stanchions.

There shall be two (2) 36" long access rails mounted on the rear of the body.

There shall be four (4) 12″ grab handles one each corner of the apparatus body.

FULL WIDTH ACCESS RAIL

Access rails(s) shall be 1.25" diameter extruded aluminum tubing in chrome plated stanchions.

One (1) Full width access rail shall be mounted across back of body. *

PUMP COMPARTMENT PAINT (PAINTED JOB COLOR)

The pump and the framing of the pump compartment module shall be painted the job color. The open bin area and the crosslay above the pump shall remain in a natural finish. The pump and plumbing shall be power washed, degreased and primed prior to painting.

CAB PAINT

The cab and wheel exteriors shall be supplied in the proper color and shall not be repainted. Fire Department to use an available color from the chassis manufacturer.

UNDERCOATING

The body undercarriage shall be undercoated to provide a corrosion resistant surface and dampen road noise. This shall include the underside of the compartments, rear step, and wheel well liners. The undercarriage of the chassis shall be as is provided by the chassis manufacturer unless specified otherwise.

REFLECTIVE MATERIAL

A 3M diamond grade reflective tape shall be applied to the front face and sides of any roll-out/pull-out tray, shelf, or tool board. The reflective tape shall be in a striped pattern and alternate between red and yellow. The tape shall be laminated and the edge sealed. The stripe shall be placed to divert traffic to the back or away from the vehicle.

ENCAPSULATED GOLD LEAF LETTERING

Laminated encapsulated genuine gold leaf lettering shall be furnished on the apparatus. The lettering shall be genuine 23 carat gold leaf and have a burnished (engine turned) finish. The letters shall be encapsulated to protect them from the elements. Letters shall be outlined and drop shaded in black. Up to sixty (60) 3" high letters shall be provided. Lettering layout shall be as follows:

DECALS

A pair of U.S. flag decals shall be applied on the vehicle where specified. The flag decals shall be Scotchlite vinyl and shall be approximately 12" x 15".

DECALS

A pair of department patch decals shall be applied on the vehicle where specified. The patch decals shall be Scotchlite vinyl and shall be approximately 12" x 15". The Fire Department shall send photos for the artist to match.

REFLECTIVE STRIPING

A 6" horizontal Scotchlite reflective cab and body stripe shall be provided.

Stripe shall break at all unpainted surfaces. Where necessary, the striping material shall be applied to a smooth aluminum plate mechanically fastened to the apparatus.

DESIGNATED STANDING and WALKING SURFACE YELLOW LINE STANDARD

A YELLOW colored line (or an ORANGE colored line should apparatus primary color be yellow), shall be provided for all designated Standing and/or Walking surface edges above 48 inches (4 feet) in height. The designated line

is not required where physical features of at least 12 inches high guard the edge, making it apparent where the horizontal (Standing / Walking), surface ends. The CENTER of the YELLOW or ORANGE line to be approximately 3 inches from the edge of the drop-off.

OVERALL LENGTH REQUIREMENT

The overall length of the apparatus should not exceed 34".

OVERALL HEIGHT REQUIREMENT

The overall height of the apparatus should not exceed 10’.

OVERALL WIDTH

Overall Width = 100" + rub rails.

COMPARTMENT SIZES

WHEEL WELL COMPARTMENT

There shall be a compartment provided in the rear fender housing area as directed and sized as large as possible. Compartment shall be constructed using the wheel well structure. The compartment shall have an aluminum treadplate door and will include a spring-loaded latch.

Wheel chocks shall be stored in this compartment.

Roadside

TRIPLE SCBA BOTTLE COMPARTMENT

Two (2) SCBA bottle compartment(s) shall be provided in the rear fender housing area to accommodate three (3) SCBA bottles. The compartment shall be constructed from aluminum with the bottle storage having poly insert lining to protect scuffing of the SCBA bottles. The compartment shall have a treadplate door with a spring-loaded trigger latch.

Curbside

ROLL-OUT DRAWER, 600 LB. CAPACITY, 22" EXTENSION

One (1) roll-out drawer(s) shall be provided and mounted on Slidemaster 600 lb. capacity, model SM3 slides that extend 22". Track will have a powder coating to prevent corrosion and a spring-loaded lock to allow the drawer to lock in the open and closed position. The drawer shall be fabricated of .188" smooth aluminum and be approximately 6" high. A chrome plated handle will be installed on the center face of the tray to serve as a pull handle.

FIXED SHELVES (28" MAX DEPTH)

Four (4) fixed shelve(s) shall be provided and fabricated from .188" 5052-H32 aluminum. The shelf is to have a 1.5" lip on the front edge to retain equipment.

One shall be located at each compartment depth break.

ADJUSTABLE SHELVES (28" MAX DEPTH)

Three (3) adjustable shelve(s) shall be provided and fabricated from .188" high strength 5052-H32 aluminum. The shelves are to have a double channel break both front and rear to form a reinforced channel. The rear channel is to be bent in the opposite direction of the front so that the shelf is reversible to provide either a lip to retain equipment or a smooth sweep-out front.

For ease of adjustment and as additional shelving reinforcement, the shelves shall not be bolted directly to the standards but shall be supported by angle shelf holders that in turn are fastened to the standards.

SHELVING STANDARDS FOR ADJUSTABLE SHELVES

Seven (7) compartments shall be equipped with heavy duty adjustable shelving standards, one per wall on all depths 20" or less and two per wall on depths greater than 20". These standards are to be the infinitely adjustable type of 6061-T6 extruded aluminum, located 2" up from floor and 12" down from ceiling.

ROLL OUT TRAY, 300 LB CAPACITY, 20" EXTENSION

Two (2) roll out tray(s) shall be provided in the compartments specified. Trays shall be fabricated of .188" smooth 5052 aluminum and have a 3" high lip on two sides. The tray shall be mounted on support angles attached to the 300 lb. capacity Accuride 9308, side mount slides which have a 20" extension. A latch shall be provided within the track to hold the tray in the closed and opened position.

WIRING DIAGRAMS

Two (2) complete copies of the body electrical wiring diagrams shall be supplied with the unit.

Separate diagrams for the 12-volt DC and 120-volt AC (if applicable) electrical systems shall be provided. Diagrams shall be custom drawn for this specific apparatus. Generic wiring diagrams are not acceptable.

ELECTRICAL TESTING

Electrical continuity shall be verified from the chassis or body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes, and receptacle ground connections that are accessible to fire fighters in normal operations as per NFPA section 22.15.4.

RUNNING LIGHTS, LED

Body shall be equipped with all lighting and reflectors as required by Federal Motor Vehicle Safety Standards.

Clearance lights shall be LED type.

The license plate light shall be Ri-Tar model #M27 LED license plate light with chrome housing.

MARKER/DIRECTIONAL LIGHTS

Two (2) amber led marker/directional lights shall be provided, one each side, in rear fenderwells.

STOP, TAIL, AND TURN LIGHTS

One (1) rectangular Whelen 600 series LED amber arrow light each side of body for turn signals.

One (1) rectangular Whelen 600 series LED light with red lens each side of body for stop and tail.

BACKUP LIGHTS

One (1) Whelen 600 series maximum intensity LED light shall be provided on each side of body for the backup light, wired to the reverse circuit of the truck transmission.

AMDOR COMPARTMENT LED STRIP LIGHTS

Compartment(s) specified shall have two (2) Amdor LED strip lights with a translucent lens.

LIGHT IN PUMP COMPARTMENT

One (1) TecNiq #E10 Series LED light shall be provided in the pump compartment. Light to be switched through the gauge panel light switch. The light shall located so as to provide the best possible lighting within the compartment.

No Deck Lights Required

SCENE LIGHT

There shall be four (4) FireTech, HiViz #FT-GESM Guardian Elite LED, 12-volt surface mounted light(s) with chrome bezel(s) provided and installed as specified. The scene light(s) shall produce 12,500 measured lumens of light output with 125 watts.

The light(s) shall be activated by a switch in the cab.

SCENE LIGHT

There shall be two (2) FireTech, HiViz #FT-GSMJR Guardian Junior LED, 12-volt surface mounted light(s) with chrome bezel(s) provided and installed as specified. The scene light(s) shall produce 3,126 measured lumens of light output with 35 watts.

The light(s) shall be activated by a switch in the cab.

HANDLIGHT

Two (2) orange Streamlight Fire Vulcan LED model #44451 lantern(s) with 12-volt DC charger bases shall be furnished and installed. The Fire Vulcan® LED is a rechargeable, waterproof lantern featuring the latest in power LED technology and lithium-Ion nanotechnology batteries. The lantern includes two (2) ultra-bright blue tail-light LEDs for rear visibility and a momentary switch providing programmable access to various modes of operation. The chargers shall be wired direct to the chassis batteries.

BEACON WHELEN SUPER LED

There shall be Two Whelen NFPA zone C approved model L31HRFN Red LED beacon(s) mounted on the vehicle. The lights shall be switched in the cab.

SUPER LED, SERIES 900, RED

Four (4) Whelen series 900 Super LED red lights with clear lenses and chrome flange will be provided and mounted as follows.

Two shall be located on each side of the body next to scene lights.

SUPER LED, SERIES 600, RED

Four (4) Whelen series 600 Super LED red lights with clear lens and chrome flange will be provided and mounted as follows.

Locate one (1) light in each rear fender area and two (2) lights on the lower rear of the body.

10 KW HARRISON HYDRAULIC GENERATOR

A complete Harrison 10 KW hydraulic generator system shall be furnished and installed on the apparatus.

Generator Performance:

Rating: 10,000 watts (10 KW)
Volts: 120/240
Phase: Single
Cycles: 60 Hertz
Amp. rating: 83.3 at 120 volts
Engine speed at engagement: Idle
Engine speed after engagement: 780 RPM (minimum)

Hydraulic Drive Components

If there is sufficient room, the hydraulic pump will be mounted directly to the PTO. There shall be a triangular brace on the tail of the pump for support and to meet the PTO specifications on weight restriction.

If there is not enough room to direct mount the pump to the PTO then the pump shall be mounted to the frame rails with a drive shaft between them. The drive shaft between the generator and the power take-off shall be a tubular type, minimum outside diameter of 2" with a minimum wall thickness of .083. It shall have Spicer #1280 U-joints and be dynamically balanced to insure vibration free performance. NOTE; Solid bar stock type drive shafting is unacceptable. The drive shaft shall have a slip yoke with a minimum of 1.5" travel so that it can be easily removed. Tube shall be D.O.M. (Drawn over Mandrel) made for drive shafts.

They shall be electrically MIG welded by a certified welder on a specially designed drive shaft fabrication machine. After welding, the drive shaft shall be checked for straightness and dynamically balanced by computerized machinery. All drive shafts shall be balanced. (No exceptions.)

System Components

System components such as hydraulic hoses, the hydraulic reservoir, hydraulic cooler, etc. shall be furnished and installed in accordance with the manufacturer's recommendations and requirements.

Safety Features

The system shall be furnished with a model SA-4 high fluid temperature sensor, a model SA-3 low fluid level sensor, loading valve with time delay relay and an under-voltage shunt trip to provide for better system protection in extreme operating conditions.

Manual and Schematics

Two (2) complete parts lists, maintenance, wiring schematic, hydraulic schematic, circuit boards, voltage regulator board, and other component manuals shall be provided.

Cab Mounted Controls

In addition to the instruments and controls at the circuit breaker box location, additional controls shall be located in the chassis cab adjacent to the driver.

The following controls shall be provided in cab:

1. One (1) hydraulic generator engagement control with red pilot light.

2. One (1) engine fast idle switch.

There shall be a warning light in the cab to indicate when the PTO is engaged. An additional green light will be installed in the cab and marked "Generator PTO operational".

GENERATOR CONTROL PANEL

There shall be a generator control panel complete with one (1) voltmeter, two (2) ammeters, one (1) frequency meter, one (1) hour meter, and two (2) single pole circuit breakers. The panel shall be located near the 120/240 current breaker panel.

GENERATOR LOAD TEST

The generator shall be load tested at the body builder’s facility by a third-party testing firm. The generator shall be tested at various loads, from no load to full load to ensure reliable power delivery at various loads. The department shall be given a certificate proving completion of this test. The test shall last for two (2) hour and shall be completed after the generator has been installed on the apparatus.

120 VOLT WIRING & BREAKER PANEL

All 120-volt wiring shall be metallic or nonmetallic liquid tight flexible conduit rated at not less than 90 degree Centigrade or type SO cord with a WA suffix, rated at 600 volts at not less than 90 degree Centigrade. The cord will be number or function coded to assist in trouble shooting.

All electrical equipment shall be circuit breaker controlled from a circuit breaker control panel. A plastic engraved label will be installed near the breaker box to identify the function of each circuit breaker.

A power source specification label shall be permanently attached near the breaker box. The label shall provide the operator with the following information:

- Rated voltage and type
- Phase
- Rated frequency
- Rated Amperage
- Continuous rated watts
- Power source engine speed

HOT SHIFT PTO

The hydraulic pump shall be driven by the chassis engine VIA a "HOT SHIFT" power take off unit from the chassis transmission. The engagement control to be located in cab, and identified by name plate. A console switch will be provided with a light to indicate "Generator Engaged" and an additional green light will be provided to indicate "OK to Operate Generator".
Generator Mounted in Hosebed

LIGHT TOWER

There shall be one (1) Command Light Model #SL422A-CH Long Arm low profile extendable lighting system(s) installed as specified. The lights to be wired directly to the generator system circuit breaker panel with conduit and standard copper wire.

The lights shall telescope at 6.5' above the mounting surface and rotate 360 degrees by a remote control having a 15' umbilical cable.

The light will be equipped with four (4) Hi Viz LED HELOS 220 Volt fixtures. The entire assembly shall be white in color and painted by Command Light prior to assembly.

Instruction and warning labels shall be provided near the operating position of the light tower. A label shall also be provided that states the extended tower height from the ground and bulb replacement data.The light tower shall be equipped with a proximity switch. The switch will be wired into the "do not move apparatus when light is on" indicator light in cab and a light located in the area of the light tower controls. The lights will be activated when the light tower is not fully nested.

ELECTRIC CORD REEL

There shall be one (1) Hannay #ECR 1600 Series cord reel(s) mounted in the compartment(s) specified. The color of the reel shall be red.

The reel(s) shall be equipped with a 12-volt DC electric rewind motor. A guarded push button switch, no higher than 72" from the ground, shall be located next to the reel to activate the rewind motor. A label will be provided next to the rewind switch that states the reel type.

A label shall be provided in a readily visible location near reel. The label shall indicate:
- Current rating

- Current type
- Phase
- Voltage
- Total cable length

Locate in the dunnage area, curbside.

10/3 YELLOW SO CORD

One Hundred Fifty (150) feet of 10/3 yellow SO cord will be provided and installed as specified.

ELECTRICAL JUNCTION BOX

There shall be a total of one (1) Extenda-Lite model EJB four (4) outlet junction box(es) provided with one attached to the end of the electric cord reel(s) specified. Box to include four (4) backlit outlets with weatherproof snap covers. A mounting bracket shall be furnished on the inside of the compartment door where the cord reel is mounted to hold the connector box.

Outlet configuration will be (2) NEMA #5-20R and (2) NEMA #5-15R.

PUMP MODULE ROLLER GUIDES

To aid in pulling off and rewinding the cord, there shall be a chrome roller guide mounted on the surface of the pump module next to the reel. The guide shall have bottom, top and side rollers.
No Hannay Ball Stop Required

LADDER STORAGE

The ladders shall be located in the upper section of the high side compartment between the body side and water tank. A painted aluminum vertically hinged door to provide access to the ladders shall be located at the rear of the body. The compartment shall be designed so that each ladder can be removed without disturbing the other ladders. The ladders shall rest on Teflon slides to prevent wear and tear on the ladder rails.

Curbside

DUO-SAFETY 14' ROOF LADDER

One (1) 14 ft. Duo-Safety #775A aluminum roof ladder(s) with folding hooks shall be provided.

DUO-SAFETY 24' TWO-SECTION EXTENSION LADDER

One (1) 24 ft. Duo-Safety #900A aluminum two-section extension ladder(s), with ladder locks and rope hoist shall be provided.

DUO-SAFETY 10’ ATTIC LADDER

One (1) 10’ Duo-Safety #585 aluminum folding attic ladder with appropriate mount shall be provided and mounted as directed.

SUCTION HOSE STORAGE

The suction hoses shall be located in the upper section of the high side compartment between the body side and water tank. A painted aluminum vertically hinged door to provide access to the hoses shall be located at the rear of the body. The compartment shall be designed so that each hard-suction hose is mounted in an individual .13" smooth aluminum troughs.

Roadside

SUCTION HOSE

Two (2) suction hose(s) shall be furnished and will be Maxi-Flex 6" x 10' long type with lightweight couplings on each end. Couplings shall be NST threads with a long-handled female on one end and a rocker lug coupling on the male end.

MISCELLANEOUS EQUIPMENT

The following equipment items listed shall be furnished by the body builder with the apparatus. All equipment shall be mounted by dealer prior to delivery unless otherwise specified.

R1 Engineers Compartment

- 6”x4.5” double female double handle
- 5’-4’ storz
- (2) 4” storz to female 2.5”
- (2) 4” storz to male 2.5”
- (2) 2.5” double female
- (2) 2.5” double male
- (2) 2.5”x1.5” adaptor
- (2) 1.5” double female
- (2) 1.5” double male
- 4.5”x4” storz with handles on the 4.5” (hydrant hookup)
- (2) 2.5” gate valves to 4 storz if possible (for hydrant hookup)
- Zico hydrant wrench holder
- kochek spanner holder with scanners
- Zico mallet holder
- Ziamatic scba bracket
- Hose box with hydrant kit- poly construction with slot for 50’ length of 1 ¾”
- Knox box
- Gas meter

Loose equipment

- Halligan- firehooks unlimited pro-bar 30
- 6’ New York hook- firehooks unlimited
- 10’ New York Hook
- Bolt cutters
- Pig tool
- Closet hook

- Clappered Siamese (rural hitch)
- Blitz fire, mount and cover on rear of apparatus
- Smoke ejector- electric blow hard 12 volt rechargable
- Interior lighting- milwaukee cordless
- Salvage cover 12’ x 12’
- Bar and chain/mixed fuel mount
- Polytech map box
- Set Orange Collapsible cones
- 1.5” Adjustable Nozzle for bumper line
- 2.5 smooth bore for cross lay- Elkhart

Hose-

- 1200’ 4” Jafrib yellow
- 600’ 1 ¾” Jafline
- 300’ 3” Jafline
- 500’ 2 ½” Jafline

Rear walls of three of the upper compartment areas to be covered with PolyTech America HDPE tool mounting panels.

WHEEL CHOCKS

One (1) set (pair) of Worden Model #HWG non- folding NFPA approved type wheel chocks shall be provided. Wheel chocks will be mounted under the body in Worden underbody tracks.

MISCELLANEOUS FASTENERS

A bag of miscellaneous fasteners that was used on the construction of the apparatus will be provided with the completed unit.

CORROSION PROTECTION

A bottle of ECK corrosion prevention chemical shall be supplied loose with final delivery of the apparatus to ensure the customer will be able to place this on any screws inserted or removed from the body in the future.

NFPA REQUIRED ITEMS

It shall be the purchaser's responsibility to provide all equipment items required by NFPA 1901 that are not otherwise addressed in these specifications. These items shall be installed on the apparatus prior to it being put into active service.

WEBSITE UPDATES

Production photos of the apparatus being built will be provided by the body builder. The photos will be taken every two - three weeks as production allows and posted to a private website designed only for the Fire

Department to view. These photos will allow the Department to view the manufacturing process of the truck and possibly detect things that they may want changed earlier in the production process.