**CHASSIS SPECIFICATIONS**

**DELIVERY**

The Harvard Fire Protection District is looking for a demo engine with the following specifications with delivery from zero (0) to sixty Days (60).

**OVERALL HEIGHT**

Must not exceed ten foot six inches in height (10’ 6”).

**OVERALL LENGTH**

An overall length restriction shall not be more than thirty three (33) feet in length.

**OVERALL WIDTH**

An overall width restriction shall not exceed eight (8) foot six (6) inches.

**WHEELBASE**

A wheelbase restriction shall not exceed one hundred and eighty inches (180).

**ANGLE OF APPROACH**

The angle of approach for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901.

**ANGLE OF DEPARTURE**

The angle of departure for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901.

**CENTER OF GRAVITY**

The apparatus, prior to acceptance, will be required to meet the vehicle stability of the applicable NFPA Automotive Fire Apparatus Standard.

A calculated center of gravity shall be provided. The calculated or measured center of gravity (CG) shall be no higher that 80-percent of the rear axle track width.

**ENGINEERING BLUEPRINTS**

Manufacture must submitted "proposal" blueprints which are “representative” of the vehicle being proposed and these have been generated on computer-aided-design (CAD) equipment. The blueprints submitted shall be on "B" size paper, 11" x 17" in size and views are on 1/16" to 1" scale.

The blueprints are provided as follows:

 Left side exterior view

 Right side exterior view

 Rear exterior view

The design of the equipment is in accordance with the best engineering practices. The equipment design and accessory installation shall permit accessibility for use, maintenance and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks or other elements, which might cause injury to personnel or equipment.

All oil, hydraulic, and air tubing lines and electrical wiring shall be located in protective positions properly attached to the frame or body structure and shall have protective loom or grommets at each point where they pass through structural members, except where a through-frame connector is necessary.

Parts and components will be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operating components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for best accessibility.

**CHANGE ORDERS**

To ensure the proper engineering and construction of the purchaser's custom fire apparatus in a timely manner, the contractor shall consider the order final and complete after any changes made. It shall be understood and agreed that any changes, if approved, after the order has been released to Engineering, shall constitute a valid cause for production delay and without penalty to the contractor.

**STAINLESS STEEL SUBFRAME WARRANTY**

Subject to the provisions, limitations and conditions set forth by manufacture warranty, manufacture (hereby referred to as "seller"), hereby warrants to each original purchaser only that each new stainless steel body sub-frame (exclusive of paint finish and hardware) is structurally sound and free of all structural defects of both material and workmanship and further warrants that it will maintain such structural integrity for a period of twenty (20) years of ownership by the original purchaser. This warranty terminates upon transfer of possession or ownership by original purchaser.

This warranty is conditioned upon normal use and reasonable maintenance of such sub-frame; prompt written notice of all defects to seller or one of the seller's then authorized dealers in the area; no repair or additions there to except by seller or authorized by it; said defect not resulting from misuse, negligence, accident, remount, overloading beyond applicable weight rating by customer or third parties. If any such conditions are not complied with, this warranty shall become void and unenforceable.

Should repairs become necessary under the terms or the warranty, the extent of that repair shall be determined solely by the seller or a repair facility designated by the seller. The expense of any transportation to or from such repair facility shall be that of the purchaser and is not an item covered by this warranty.

Seller reserves the unrestricted right at any time from time to time to make changes in the design of and/or improvements on its products without thereby imposing any obligation on itself to make corresponding changes or improvements in or on its products theretofore manufactured.

EXCLUSIONS AND LIMITATIONS: THE MANUFACTURER'S WARRANTY IS PROVIDED IN PLACE OF ANY AND ALL OTHER REPRESENTATIONS OR IMPLIED WARRANTIES. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTY ON BEHALF OF MANUFACTURE OR ANY OF ITS DISTRIBUTORS OTHER THAN SET FORTH IN THIS MANUFACTURER'S WARRANTY. YOUR RIGHT TO SERVICE AND REPLACEMENT OF PARTS ON THE TERMS EXPRESSLY SET FORTH HERIN ARE YOUR EXCLUSIVE REMEDIES AND NEITHER THE MANUFACTURER NOR ANY OF ITS DISTRIBUTORS SHALL BE LIABLE FOR DAMAGES, WHETHER ORDINARY, INCIDENTAL OR CONSEQUENTIAL.

Note: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

**PAINT WARRANTY FIVE YEAR**

The PPG paint performance guarantee will cover the areas of the vehicle finished with the specified product for a period of FIVE (5) years beginning the day the vehicle is delivered to the purchaser.

The full apparatus body, manufactured and painted by manufacture, shall be covered for the following paint failures as outlined on the guarantee certificate:

* Peeling or delaminating of the topcoat and/or other layers of paint.
* Cracking or checking.
* Loss of gloss caused by cracking, checking, or hazing.
* Any paint failure caused by defective PPG Fleet Finishes, which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original purchaser.

Note: Surety bond, if required, will cover standard one year warranty period only and will not cover any extended warranties allowed by seller or other component manufacturers.

**PUMP WARRANTY**

Manufacture warrants, to the original buyer only, that products and parts will be free from defects in material and workmanship under normal use and service for a period of five (5) years from the date the product is first placed in service, provided the buyer notifies manufacture in writing, of the defect in said product within the warranty period, and said product is found by manufacture to be conforming with the aforesaid warranty.

When required in writing by manufacturer, defective products must be promptly returned by the buyer to the Manufacture plant or at such other place as may be specified by manufacture with transportation and other charges prepaid. A Return Goods Authorization (RGA) is required for all products and parts and may be requested by phone, fax or mail. The aforesaid warranty excludes any responsibility or liability of manufacture for:

1. Damages or defects due to accident, abuse, misuse, abnormal operating conditions, negligence, accidental causes or improper maintenance, or attributable to written specifications or instructions furnished by buyer;

2. Defects in products manufactured by others and furnished by manufacture hereunder, it being understood and agreed by the parties that the only warranty provided for such products shall be the warranty provided by the manufacturer thereof which, if assignable, manufacture will assign to the buyer, if requested by Buyer;

3. Any product or part, altered, modified, serviced or repaired other than by manufacture, without its prior written consent.

4. The cost of dismantling, removing, transporting, storing, or insuring the defective product or part and the cost of reinstallation.

5. Normal wear items (packing, strainers, filters, light bulbs, anodes, intake screens, etc.)

All other warranties are excluded, whether expressed or implied by operation of law or otherwise, including all implied warranties of merchantability or fitness for purpose. Manufacture shall not be liable for consequential or incidental damages directly or indirectly arising or resulting from breach of any of the terms of this limited warranty or from the sale, handling, or use of any other product or part. Manufacture liability hereunder, either for breach of warranty or for negligence, is expressly limited at manufacture option:

1. To the replacement at the agreed point of delivery of any product or part, which upon inspection by manufacture or its duly authorized representative, is found not to conform to the limited warranty set forth above, or

2. To the repair of such product or part, or

3. To the refund or crediting to buyer of the net sales price of the defective product or part.

Buyer's remedies contained herein are exclusive of any other remedy otherwise available to the buyer.

**STAINLESS STEEL PLUMBING WARRANTY**

The manufacturer shall provide a ten (10) year warranty on the stainless steel plumbing components and installation. The manufacturer shall supply details of their warranty information with their bid submission.

**COMPLETE PRINTED MANUAL**

**Manufacture** shall provide with the vehicle upon delivery, one (1) complete delivery manual. This manual shall be in a notebook type binder, with reference tabs for each section of the vehicle. A companion compact disk (CD) with all of the printed material in an electronic format (Adobe Acrobat PDF) shall be provided.

Within each section shall be:

* Individual component manufacturer instruction and parts manuals
* Warranty forms for the body
* Warranty forms for all major components
* Warranty instructions and format to be used in compliance with warranty obligations
* Wiring diagrams
* Installation instruction and drawings for major parts
* Visual graphics and electronic photos for the installation of major parts
* Necessary normal routine service forms, publications and components of the body portion of the apparatus
* Technical publications for training and instruction on major body components
* Warning and safety related notices for personnel protection
* Cab and chassis manuals on parts, service and maintenance shall be provided

**OPERATION AND FAMILIARIZATION MANUAL**

The apparatus manufacturer shall supply, at delivery, customized Operation & Familiarization Manual, complete with full-color photos of the actual, completed apparatus with each feature and control identified and its function explained.

Safety, Operation, Maintenance and Troubleshooting sections will include information about each major component of the apparatus (chassis, pump, foam system, generator, electrical devices, etc.).  The manual shall be specific to the apparatus (or group of apparatus) being delivered.

All safety and warning labels shall be represented in the manual for subsequent safety inspections to ensure their continued presence on the apparatus.

The manufacturer shall submit a sample manual with the bid proposal. Failure to do so will result in rejection of the proposal.  Reference to "on delivery" or "at pre-build" submission is not an acceptable response for the bid document.

“Similar” or “Representative” manuals will not be accepted.

**CUSTOM CHASSIS**

Custom fire truck chassis shall be furnished with the following apparatus body and equipment. See attached specifications for exact chassis configuration.

**ELECTRIC SIREN AND CONTROL**

One (1) Whelen 295HFS2 electronic siren control head with remote amplifier shall be provided and flush mounted in the switch panel with a location specific to the customer’s needs. The siren shall feature 200-watt output, hands free mode and shall be in “standby” mode awaiting instruction. The siren shall offer radio broadcast, public address, wail, yelp, or piercer tones and hands free operation which shall allow the operator to turn the siren on and off from the horn ring if a horn/siren selector switch option is also selected.

**SPEAKER**

One (1) Whelen Model #SA315P, nylon composite speaker shall be installed. The speaker shall be wired to the electric siren located in the cab.

**SPEAKER**

One (1) stainless steel grille shall be installed on the speaker.

**SPEAKER LOCATION**

The siren speaker shall be installed in the center of the apparatus bumper.

One (1) electronic siren speaker, recessed in the center of the front bumper.

**FEDERAL MECHANICAL SIREN**

One (1) Federal Signal Q2B mechanical siren shall be recess mounted onto the front bumper on the driver side. The "Q" siren shall feature a highly polished chrome grille. The siren's distinctive mechanical wail sound shall produce 123 db at 10'. The siren control switch(es) shall be installed in the cab.

**SIREN CONTROL**

One (1) siren control to activate the Federal Signal Q2B siren shall be provided on the driver's horn.

**SIREN CONTROL**

One (1) push button switch shall be installed on the officer's side of the cab dash to activate the Federal Signal Q2B siren.

**SIREN BRAKE**

Two (2) push button siren brake switches for the Federal Signal Q2B siren shall be provided, one (1) on the driver's side dash and one (1) on the officer's side dash.

**LIGHTBAR**

One (1) Whelen Ultra Freedom IV light bar shall be included with the apparatus cab. The light bar shall be a model F4N7QLED and shall be mounted on the roof of the cab, towards the front, above the windshield.

The light bar shall feature:

* A 72" light bar designed for high performance
* Two (2) red Linear Super LED corner modules
* Two (2) red 400 series Linear Super LED end cap lights
* Two (2) red 400 series Linear Super LED lights
* Two (2) white 400 series Linear Super LED lights with clear optic lenses
* Clear hard coated lenses to provide extended life/luster protection against UV & chemical stresses
* Designed in accordance with NFPA Zone A requirements

**LIGHTBAR ACTIVATION**

The front upper light bar shall be activated through the master warning switch.

**UPPER REAR WARNING LIGHTS**

One (1) pair of Whelen Super LED Micro Freedom light bars shall be installed, one each side on the upper rear of the apparatus body. The unit shall have dimensions of 4" high x 7-9/16" deep.

The driver side warning light shall be a Whelen Micro Freedom LED light, model MCFLED2R with red LED's and a clear lens.

**LENS COLOR TO BE CLEAR, LED's TO BE RED**.

The officer side warning light shall be a Whelen Micro Freedom LED light, model MCFLED2R with red LED's and clear lens.

**LENS COLOR TO BE CLEAR, LED's TO BE RED**.

**REAR WARNING LIGHT MOUNTING**

The upper rear lights shall be mounted on the upper corners of the apparatus body, one on each side.

**UPPER SIDE FRONT WARNING LIGHTS**

One (1) pair of Whelen model M9 LED warning lights shall be installed, on the upper portion of the body side, towards the front. The dimensions of the lights shall be 6-1/2" x 10-3/8".

The driver side warning light shall be a Whelen Model M9RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M9RC red Super-LEDTM with clear lens.

Each light shall be mounted with a Whelen Model M9FC chrome flange.

**UPPER SIDE REAR WARNING LIGHTS**

One (1) pair of Whelen model M9 LED warning lights shall be installed, one each side on the upper portion of the body side, towards the rear of the body. The dimensions of the lights shall be 6-1/2" x 10-3/8".

The driver side warning light shall be a Whelen Model M9RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M9RC red Super-LEDTM with clear lens.

Each light shall be mounted with a Whelen Model M9FC chrome flange.

**UPPER WING FRONT WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side one the front of the chassis cab upper wing area. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

**INBOARD WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side one the front of the chassis cab, in the inboard warning light position. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

**INTERSECTION WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed one each side of the chassis cab. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

**LOWER MID CHASSIS WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed one each side of the chassis cab, above the chassis wheels. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

**LOWER MID-BODY WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed , one each side of the apparatus, mid-body. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

**LOWER REAR SIDE WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side of the apparatus body, towards the rear of the body. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

There shall be cast aluminum step light housing provided for the warning lights. The housing shall have a pyramid tread on the top of the housing.

**LOWER REAR WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed, one each side on the lower rear of the apparatus body. The dimensions of the lights shall be 4-5/16" x 6-3/4".

The driver side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LEDTM with clear lens.

**LOW VOLTAGE ELECTRICAL SYSTEM SPECIFICATIONS**

The electrical system shall include all panels, electrical components, switches and relays, wiring harnesses and other electrical components. The electrical equipment installed by the apparatus manufacturer shall conform to current automotive electrical system standards, the latest Federal DOT standards, and the requirements of the applicable NFPA standards.

All wiring shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for the protected circuit. Voltage drops in all wiring from the power source to the using device shall not exceed 10 percent. The wiring and wiring harness and insulation shall be in conformance to applicable SAE and NFPA standards. The wiring harness shall conform to SAE J-1128 with GXL temperature properties. All exposed wiring shall be protected in a loom with a minimum 289 degree Fahrenheit rating. All wiring looms shall be properly supported and attached to body members. The electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction.

The wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection and shall be installed in accordance with the device manufacturer's instructions. Electrical connections shall be with mechanical type fasteners and large rubber grommets where wiring passes through metal panels.

The wiring between the cab and body shall be joined using Deutsche type connectors or an enclosed in a terminal junction panel area. This system will permit body removal with minimal impact on the apparatus electrical system. All connections shall be crimp-type with insulated shanks to resist moisture and foreign debris such as grease and road grime. Weather-resistant connectors shall be provided throughout to ensure the integrity of the electrical system.

There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless they are enclosed in a junction box or covered with a removable electrical panel. The wiring shall be secured in place and protected against heat, liquid contaminants and damage. Wiring shall be uniquely identified every three-inches (3") by color coding or permanent marking with a circuit function code and identified on a reference chart or electrical wiring schematic per requirements of applicable NFPA #1901 standards.

The electrical circuits shall be provided with low voltage overcurrent protective devices. Such devices shall be accessible and located in required terminal connection locations or weather resistant enclosures. The overcurrent protection shall be suitable for electrical equipment and shall be automatic reset type and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards.

The electrical system shall include the following:

* Electrical terminals in weather exposed areas shall have a non-conductive grease or spray applied. A corrosion preventative compound shall be applicable to all terminal plugs located outside of the cab or body.
* The electrical wiring shall be harnessed or be placed in a protective loom.
* Holes made in the roof shall be caulked with silicone. Large fender washers shall be used when fastening equipment to the underside of the cab roof.
* Any electrical component that is installed in an exposed area shall be mounted in a manner that will not allow moisture to accumulate in it.
* A coil of wire must be provided behind an electrical appliance to allow them to be pulled away from mounting area for inspection and service work.
* All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

The warning lights shall be switched in the chassis cab with labeled switches in an accessible location. Individual rocker switches shall be provided only for warning lights provided over the minimum level of warning lights in either the stationary or moving modes. All electrical equipment switches shall be mounted on a switch panel mounted in the cab convenient to the operator. The warning light switches shall be of the rocker type. For easy nighttime operation, an integral indicator light shall be provided to indicate when the circuit is energized. All switches shall be appropriately identified as to their function.

A single warning light switch shall activate all required warning lights. This switch will allow the vehicle to respond to an emergency and "call for the right of way". When the parking brake is applied, a "blocking right of way" system shall automatically activate per requirements of the applicable NFPA standards. All "clear" warning lights shall be automatically turned off upon application of the parking brake.

**NFPA REQUIRED TESTING OF ELECTRICAL SYSTEM**

The apparatus shall be electrically tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with delivery documentation per requirements of the applicable NFPA standards. The following minimum testing shall be completed by the apparatus manufacturer:

1. Reserve capacity test:

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a failed test.

2. Alternator performance test at idle:

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

3. Alternator performance test at full load:

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system is permitted during this test. However, if an alarm sounds due to excessive battery discharge, as detected by the system requirements in the NFPA standards, or a system voltage of less than 11.7 volts dc for more than 120 seconds is present, the test has failed.

4. Low voltage alarm test:

Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts dc for a 12 volt system shall be considered a test failure. The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

NFPA REQUIRED DOCUMENTATION

The following documentation shall be provided on delivery of the apparatus:

a. Documentation of the electrical system performance tests required above.

b. A written load analysis, including:

1. The nameplate rating of the alternator.

2. The alternator rating under the conditions.

3. Each specified component load.

4. Individual intermittent loads.

**WEATHER RESISTANT ELECTRICAL JUNCTION BOX**

The electrical junction or terminal boxes shall be weather resistant and located away from water spray conditions. In addition, the main body junction panel shall house the automatic reset breakers and relays where required. The main body junction panel shall be located in the pump compartment.

**LOAD MANAGER 2**

The apparatus shall be equipped with a Kussmaul model 091-79 Automatic Load Shedding System for performing continuous electrical load management. The Load Manager shall have the following features:

* Monitor 12-volt system and detect low voltage.
* Capability to control two (2) loads.
* Automatic reset when voltage rises.
* Adjustable voltage set point.

The load manager shall be protected against reverse polarity and shorted outputs, and be enclosed in an enclosure to enhance EMI/RFI protection. The manufacturer shall provide for all electrical loads in excess of the NFPA minimum electrical requirements that exceed the alternator output.

USE STANDARD LOAD MANAGER PROGRAMMING.

**HIGH IDLE SYSTEM**

There shall be a high idle system furnished and installed on the apparatus. The high idle system shall have an on/off switch located in the chassis on the switch console. The system shall have an interlock that will disable the solenoid if the parking brake is not completely set.

**DASH MOUNTED EMERGENCY ELECTRICAL SWITCH PANEL**

An electrical switch panel shall be designed and mounted in the cab dash area. All switches shall be provided with backlighted snap-in legend inserts.

**SWITCHES**

All emergency light switches shall be lighted, rocker style. Switches shall be internally lit when the switch circuit is in the on position. A plug-in identification label is to be provided and installed adjacent to each rocker switch with backlighting provided behind the label.

An internally lighted "master" switch shall be provided and wired through a heavy-duty relay to activate power to the emergency lights.

**BATTERY CHARGER**

One (1) Kussmaul Auto-charge 1000 model #091-215-12, 18 amp fully automatic high output battery charger shall be wired to the 12 volt battery system. The charger unit shall be mounted in a clean dry area and will be accessible for service and/or maintenance.

**BATTERY CHARGER DISPLAY**

One (1) Kussmaul model 091-194A-IND digital single battery bank voltage display shall be supplied with the charger. The display provides digital voltage and amperes readout, a 5-segment bar graph indicating output current and four (4) LED's showing battery condition.

**AUTO-EJECT**

A Kussmaul "Super Auto-Eject" 20-amp automatic disconnect device shall be provided and installed on the 110 volt shoreline connection complete with weatherproof cover and matching plug. The Auto-Eject shall be activated by the chassis starter switch to disconnect the plug. The Super Auto-Eject shall be completely sealed to prevent contamination of the mechanism by inclement weather and road conditions. The Super Auto-Eject shall have an internal switch to open and close the AC circuit after the mating connector is inserted and before the connector is removed.

The Auto Eject shall be supplied with a red cover.

**SHORE POWER PLUG**

The shore power plug shall be on the custom chassis.

**AIR HORNS**

Two (2) 24.5" Stuttertone chrome plated air horns shall be recess mounted into the front bumper on the right side. An air protection valve shall be provided in the air horn piping that will not allow the chassis air brake system to drop below 90 PSI.

**ELECTRIC TRAFFIC HORN AND AIR HORN SELECTOR SWITCH**

One (1) selector switch shall be provided on the cab's dash that will allow the chassis steering wheel horn button to activate either the electric traffic horn or air horn system.

**AIR HORN SWITCH**

One (1) switch shall be installed to activate the air horn system on the officer's side of the cab dash.

**12 VOLT POWER SOURCE**

One (1) 12 volt power and ground connection rated at 30 amps shall be provided in the rear cabinet of the chassis cab.

The power source shall be run through the chassis master battery switch and shall be deactivated when the master switch is in the "OFF" position.

**PUMP ENCLOSURE LIGHTS**

One (1) LED work light shall be provided in the pump enclosure.

The control switch shall be mounted on the light head.

**BACKUP CAMERA SYSTEM**

One (1) Federal Signal CAMSET70-NTSC-4 safety system shall be furnished utilizing a color high resolution rear camera for improved picture quality and safety surrounding the apparatus. A cast aluminum sealed rear camera enclosure shall be included with the basic package, along with military type electronic connections.

The monitor shall be a CAMLCD-70 7" and include a cable connection assembly.The system shall be capable of monitoring up to four video inputs. When the apparatus is powered up, the monitor will automatically detect and display up to four camera images on the screen as a prove out that all are working. Pressing the power button will put the system into stand-by mode. When a trigger signal is detected, reverse, signal lights, etc., that camera will become live, and the monitor will awake to display that image. When the trigger signal disappears, the monitor will return to standby mode. Manual pressing the power button a second time will awake the monitor to display all connected cameras again. The rear camera system includes one way audio to the monitor from the rear of the apparatus.

The monitor to be located overhead between the officer and the driver.

Monitor to be located overhead between the officer and the driver.

**BLIND SPOT CAMERAS**

One (1) camera(s) shall be mounted onto the side(s) of the apparatus to cover the turning blind spot(s). Each camera shall be activated by the respective signal lights, and triggered to display on the monitor. The cameras shall be Federal Signal CAMCCD-SIDENTSC and include a CAMCABLE-5 (5m/16.5ft) connection cable to the module. The housing shall be painted to match the cab exterior.

**HAND LIGHTS**

All NFPA required portable hand lights supplied by the Customer must be installed before the apparatus is placed into service.

**MARKER LIGHTS**

LED marker lights shall be installed on the vehicle in conformance to the Department of Transportation requirements.

**TAIL LIGHTS**

One (1) pair of Whelen M6 LED tail/brake lights shall be provided. The rectangular 4"x6" lights shall be red.

**TURN SIGNALS**

One (1) pair of Whelen M6 LED turn signals with populated sequential chevron arrow shall be provided.

**BACKUP LIGHTS**

One (1) pair of Whelen Series M6 LED backup lights shall be installed on the rear of the apparatus body. The dimensions shall be 4" x 6" and the lens color shall be clear.

**FOUR LIGHT HOUSING**

One (1) pair of chrome plated tail light housings shall be supplied. Each housing shall be designed to hold four (4) Whelen M6 rear lights located at the lower rear corners of the body.

**MID BODY TURN SIGNALS**

One (1) pair of Weldon amber LED round, side marker light assemblies shall be mounted at mid-body near the rear wheel axle.

**FRONT BUMPER GROUND LIGHTS**

Two (2) ground lights LED lights shall be installed under the front bumper.

**CAB STEP LIGHTS**

There shall be LED cab step lights supplied below the chassis cab doors. The lights shall be mounted below the cab doors and illuminate the chassis cab steps. There shall be two (2) LED lights located on each side of the chassis cab.

**PUMP PANEL GROUND LIGHTS**

Two (2) LED ground lights shall be installed under the pump panel running boards. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.

**MID BODY GROUND LIGHTS**

Two (2) LED ground lights shall be installed under the mid-body of the apparatus. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.

**REAR STEP GROUND LIGHTS**

Two (2) LED ground lights shall be installed under rear step of the apparatus.

**REAR BODY GROUND LIGHTS**

Two (2) LED ground lights shall be installed under the compartments located behind the rear wheels. One (1) light shall be located on the driver's side and one (1) light located on the officer's side of the apparatus.

The ground lights shall automatically activate when the parking brake is applied.

**REAR TAILBOARD LIGHTS**

Two (2) LED step lights with clear lens shall be installed to illuminate the step surfaces at the rear of the apparatus body.

**STEP LIGHT**

One (1) LED step light with clear lens shall be installed to illuminate the side running boards.

The step/walkway light switch shall be installed and wired to the parking brake.

**DECK LIGHTS - REAR**

The deck lights shall be installed at the rear of the hose bed.

One (1) Unity Model #AG spotlight and one (1) Unity Model #AG floodlight, with 35 watt bulbs shall be installed. The lights shall have an "on-off" switch.

**SCENE LIGHT**

Four (4) Whelen M6ZC Series Super-LED 6-3/4" x 4-5/16" gradient scene light(s) shall be provided. The steady burn scene light shall incorporate Linear Super-LED and Smart LED technology.

The M6ZC shall be furnished with a chrome trim ring, a rubber gasket, screws, and screw grommets for installation. The M6ZC shall have the ability to be installed as a surface mount scene light.

Voltage: +12v

Size: H=4.31",W=6.70", D=1.40"

Amp Draw: 2.0 Amps

Lens Color: Clear

SCENE LIGHT LOCATION

Two (2) scene light shall be located on the left side of the apparatus body.

SCENE LIGHT LOCATION

Two (2) scene light shall be located on the right side of the apparatus body.

SCENE LIGHT SWITCHING

One (1) scene light switch with indicator shall be installed on the cab main switch panel to control all scene light(s). The switch shall be labeled "SCENE LIGHTS".

RIGHT HAND AND LEFT HAND SIDE SCENE LIGHTS TO BE SWITHCED SEPARATELY.

**SCENE LIGHT**

Two (2) Whelen M6ZC Series Super-LED 6-3/4" x 4-5/16" gradient scene light(s) shall be provided. The steady burn scene light shall incorporate Linear Super-LED and Smart LED technology.

The M6ZC shall be furnished with a chrome trim ring, a rubber gasket, screws, and screw grommets for installation. The M6ZC shall have the ability to be installed as a surface mount scene light.

Voltage: +12v

Size: H=4.31",W=6.70", D=1.40"

Amp Draw: 2.0 Amps

Lens Color: Clear

SCENE LIGHT LOCATION

Two (2) scene light shall be located on the rear of the apparatus body.

SCENE LIGHT SWITCHING

One (1) scene light switch with indicator shall be installed on the cab main switch panel to control all scene light(s). The switch shall be labeled "SCENE LIGHTS".

REAR SCENE LIGHTS TO BE SWITCHED SEPARATLEY.

**TRAFFIC ARROW LIGHT**

One (1) Whelen Model #TAL65 Traffic Advisor shall be installed. The light shall be equipped with six (6) LED lights measuring 36" in length. The unit shall be mounted at the rear of the apparatus body. The Traffic Advisor control head shall be mounted inside the cab and be accessible by the driver and officer.

The traffic arrow light shall be surface mounted below the rear intermediate step of the apparatus body.

**FLUID DATA PLAQUE**

One (1) fluid data plaque containing required information shall be provided based on the applicable components for this apparatus, compliant with NFPA Standards:

* Engine oil
* Engine coolant
* Chassis transmission fluid
* Drive axle lubricant
* Power steering fluid
* Pump transmission lubrication fluid
* Other NFPA applicable fluid levels or data as required

Location shall be in the driver's compartment or on driver's door.

**DATA & WARNING LABELS**

HEIGHT LENGTH & WEIGHT

A highly visible label indicating the overall height, length, and weight of the vehicle shall be installed in the cab dash area.

CAB SEATING POSITION LIMITS

The label shall also include the seating positions for firefighters. A weight allowance of 250 pounds for each shall be factored into the gross vehicle weight rating of the chassis.

NO RIDE LABEL

One (1) "NO RIDERS" label shall be applied on the vehicle at the rear step area or other applicable areas. The label shall warn personnel that riding in or on these areas, while the vehicle is in motion is prohibited.

CAB SEATING POSITION LIMITS

One (1) label shall be installed in the cab to indicate seating positions for firefighters. A weight allowance of 250 pounds for each shall be factored into the gross vehicle weight rating of the chassis.

HELMET WARNING TAG

One (1) label shall be installed in the cab, visible from each seating position. The label shall read "CAUTION: DO NOT WEAR HELMET WHILE SEATED." Helmets must be properly stowed while the vehicle is in motion according to the current edition of NFPA 1901.

**REAR TOWING PROVISIONS**

There shall be two tow eyes furnished under the rear of the body and attached directly to the chassis frame rails. There shall be a reinforcement spreader bar connecting the two tow eyes. Tow eyes are to be constructed of 3/8" plate steel with a 4" I.D. hole, large enough for passing through a tow chain end hook.

The tow plates shall be painted black.

**BUMPER**

The chassis shall feature a heavy duty bumper constructed from ASTM A36, 1/4" thick steel and painted primary job color. The bumper shall be 12" high by 102" wide with two inch (2") flanges and chamfered corners.

Integral heavy duty steel bumper "wings" shall extend from the bumper to the cab.

The bumper shall be mounted to a twenty-four inch (24") long chassis frame extension.

A contoured apron / gravel shield fabricated from NFPA compliant, slip-resistant polished aluminum shall enclose the area between the bumper and the cab.

**TOW HOOKS**

Two (2) tow hooks shall be mounted to the bumper extension under the bumper towards the forward section of the extension. The tow hooks shall be steel and shall be painted black.

**HUB AND LUG NUT COVERS**

The apparatus shall have chrome or stainless steel hub and lug nut covers on the front and single rear axles.

**TIRE PRESSURE INDICATOR, RWTG1235**

There shall be a tire pressure indicator, p/n RWTG1235, at each tire’s valve stem on the vehicle that shall

Indicate if there is insufficient pressure in the specific tire.

**EXHAUST HEAT SHIELD**

A heat shield shall be installed under the body in the areas where the exhaust system is routed.

**REAR MUD FLAPS**

One (1) pair of black mud flaps shall be installed behind the rear wheels.

**INTERIOR CABINET**

There shall be one (1) forward facing cabinet installed on the rear wall of the cab. The cabinet shall be constructed of smooth aluminum plate with minimum interior dimensions of 40" Wide x 20" Deep and as tall as the application allows.

Hinged, smooth aluminum doors shall be installed on the cabinet. One (1) push to release latch shall be installed.

 **Exterior Finish, Cabinet, To Match Cab Interior**

The cabinet’s exterior finish shall match the interior finish of the chassis cab.

The cabinet’s interior shall have a natural finish.

Two (2) adjustable shelf shall be installed in the interior cab compartment. The shelf shall be constructed from aluminum.

COMPARTMENT LIGHTS

Two (2) vertically mounted LED strip lights shall be installed inside the compartment. The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup and each light shall be approximately 30" in length.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

**AIR SHORELINE CONNECTION**

One (1) Kussmaul automatic "Air Eject" shall be provided for connection to an external air source to maintain the pressure in the chassis air brake system. The unit shall automatically activate when the engine is started, disconnecting the airline from the vehicle.

Air Auto Eject to be located over front wheel well, driver's side.

**AIR SHORELINE COVER**

One (1) Kussmaul automatic "Air Eject" shall be provided with a hinged cover.

Cover to be red in color.

**MIDSHIP FIRE PUMP DRIVESHAFTS AND INSTALLATION**

The mid-ship PTO fire pump shall be installed and shall include installation of the fire pump, modification and/or fabrication of new drivelines and all pump-mounting brackets. The PTO drive shaft(s) shall be spin balanced prior to final installation.

**FIRE PUMP**

A fire pump shall be mounted and installed. The mid-ship pump system shall have a rated capacity of 1500 GPM and shall meet all applicable sections of NFPA standards. The pump shall be constructed and mounted in accordance with the following specifications.

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

100% of rated capacity at 150 pounds net pressure

 70% of rated capacity at 200 pounds net pressure

 50% of rated capacity at 250 pounds net pressure

100% of rated capacity at 165 pounds net pressure

**PUMP DRIVE SYSTEM**

Fire pump shall incorporate high strength helical gear drive single stage transmission. Pump drive system shall be with a heavy-duty PTO system bolted directly to the chassis transmission. There shall be a heavy-duty drive shaft furnished from the PTO to the mid-ship pump transmission.

**PRIMER SYSTEM**

 Shall have a primer system that is compatible for the fire pump on apparatus.

**ADDITIONAL PRIMER VALVE ACTUATOR**

An additional primer pump actuator shall be installed on the specified intake plumbing. This additional actuator shall allow air to be purged from the intake piping to the fire pump during normal pumping, prior to the intake valve being opened. This actuator shall activate the standard electric primer installation.

This extra push-pull control shall be located on the pump operator's panel with a "Pull to Prime - Push to Close" label to indicate which intake line shall be utilized.

**PRESSURE GOVERNOR AND MONITORING DISPLAY**

One (1) pressure governor and monitoring display kit shall be provided on the pump panel. The kit shall include a control module, pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6 3/4" high by 4 5/8" wide by 1 3/4" deep. Inputs for monitored information shall be from a J1939 databus or independent sensors.

The following continuous displays shall be provided:

* CHECK ENGINE and STOP ENGINE warning LEDs
* Engine RPM; shown with four daylight bright LED digits more than 1/2" high
* Engine OIL PRESSURE; shown on an LED bar graph display in 10 psi increments
* Engine TEMPERATURE; shown on an LED bar graph display in 10 degree increments
* BATTERY VOLTAGE; shown on an LED bar graph display in 0.5 volt increments
* PSI / RPM setting; shown on a dot matrix message display
* PSI and RPM mode LEDs
* THROTTLE READY LED.

A dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. The brightness of the displays shall be automatically adjusted for day or night viewing.

The program shall store the accumulated operating hours for the pump and engine, previous incident hours, and current incident hours in a non-volatile memory. Stored elapsed hours shall be displayed at the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

* High Engine RPM
* Pump Overheat
* High Transmission Temperature
* Low Battery Voltage (Engine Off)
* Low Battery Voltage (Engine Running)
* High Battery Voltage
* Low Engine Oil Pressure
* High Engine Coolant Temperature

The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A control knob that uses optical technology shall adjust pressure or RPM settings. It shall be 2" in diameter with no mechanical stops, a serrated grip, and have a red idle push button in the center.

A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

**CHASSIS FUEL GAUGE**

One (1) fuel tank level gauge, shall be installed on the pump panel.

**PTO FIRE PUMP SHIFT**

The power-take-off driven fire pump shall be equipped with a Hot-Shift electrically operated PTO engagement in the cab.

The system shall include applicable the NFPA standard interlocks, pump shift and OK TO PUMP indicator lights in the cab and pump panel. The fire pump system shall be equipped with an interlock system shall be provided to ensure that the pump drive system components are properly engaged in the pumping mode of operation so that the pumping system can be safely operated.

**PUMP ANODES**

There shall be sacrificial, zinc anodes in the pump steamer ports which shall protect the pump and piping from electrolysis. These anodes shall also act as screens.

**PUMP PLUMBING SYSTEM**

The fire pump plumbing system shall be of rigid stainless steel pipe or flexible piping with stainless steel fittings. Mechanical grooved couplings shall be installed to permit flexing of the plumbing system and allow for quick removal of piping or valves for service. Flexible hose couplings shall be threaded stainless steel or mechanical grooved coupling connections.

The fire pump and plumbing shall be hydrostatically tested in compliance to applicable sections of NFPA standards. The test results shall be included in the delivery documentation.

**FIRE PUMP MASTER DRAIN**

The fire pump plumbing system and fire pump shall be piped to a single push-pull type master pump drain assembly.

**ADDITIONAL LOW POINT DRAINS**

The plumbing system shall be equipped with additional low point manually operated drain valves to allow total draining of the fire pump plumbing system. These valves shall be accessible from the side of the vehicle and labeled.

**STAINLESS STEEL INTAKE MANIFOLD**

The suction manifold assembly shall be fabricated with Schedule #10 type 304 stainless steel. All threaded fittings shall be a minimum of Schedule 10 stainless steel. The suction manifold assembly shall have radiused sweep elbows to minimize water turbulence into the suction volute. The suction manifold shall be welded and pressure tested prior to installation. The stainless steel manifold assembly shall be attached to the pump intake volute with a heavy-duty, flexible Victaulic coupling.

The stainless steel manifold assembly shall have a ten (10) year warranty.

**STAINLESS STEEL DISCHARGE MANIFOLD**

The discharge manifold assembly shall be fabricated with minimum of Schedule #10 Type 304 stainless steel. All threaded fittings shall be a minimum of Schedule #40 stainless steel. The discharge manifold assembly shall have radiused sweep elbows to minimize water turbulence. The manifold shall be welded and pressure tested prior to installation. The stainless steel manifold inlet shall be attached to the pump discharge and have additional brackets as required to support the discharge manifold, valves and related components.

The stainless steel manifold assembly shall have a ten (10) year warranty.

**FIRE PUMP & PLUMBING SYSTEM PAINTING**

The fire pump and plumbing system shall be painted by the fire apparatus manufacturer. The fire pump and the plumbing shall be painted metallic silver.

**HOSE THREADS**

The hose threads shall be National Standard Thread (NST) on all base threads on the apparatus intakes and discharges.

**GATED 6" INTAKE -- LEFT SIDE PUMP PANEL**

One (1) 6" gated suction intake shall be installed behind the left side pump panel. Intake shall be gated with an Akron Model 7960, with 9323 controller, electrically operated 6" butterfly valve, controlled at the pump operator's panel. The valve operating mechanism shall prevent movement of the valve from the fully closed position to the fully open position or vice versa, in less than three seconds. The valve control shall have a colored identification label.

A pressure dump/relief valve shall be included that is factory preset at 125 PSI and field adjustable from 75 to 250 PSI. The pressure dump/relief valve shall provide over-pressure protection for the suction hose even when the intake valve is closed. The outlet of the dump/relief valve shall be 2.5" in diameter to allow directing the discharge flow away from the pump operator's position.

An inlet fitting with 6" NST thread shall be provided, complete with a removable strainer screen.

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift, to open and push down, to close.

One (1) 6" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped long handles.

**RIGHT SIDE -- 6" UNGATED INTAKE**

One (1) 6" un-gated suction intake shall be installed on the right side pump panel to supply the fire pump from an external water supply. The intake shall be provided with a removable screen.

One (1) 6" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped long handles.

**WATER TANK TO PUMP LINE**

One (1) 3" water tank to the rear mounted fire pump line shall be provided with a full flow quarter turn ball valve, 4" piping, and with flex hose and stainless steel hose clamps. The tank to pump line shall be equipped with a check valve to prevent pressurization of the water tank.

The line shall be flow tested during the fire pump testing and shall meet applicable requirements of NFPA standards.

The tank to pump valve shall be controlled at the pump operator's panel.

The valve shall be an Akron 8000 Series three-inch (3") valve with a stainless ball.

One (1) Akron valve equipped with a manually operated pull rod, with quarter-turn locking feature shall be provided on the intake. The handle shall be equipped with a color-coded name plate.

**FIRE PUMP TO WATER TANK FILL LINE**

One (1) 2" fire pump to water tank refill and pump bypass cooler line shall be provided. The valve shall be a full flow quarter turn ball valve with 2" piping and flex hose to tank. The valve control handle shall have a nameplate located near the valve control.

The valve shall be an Akron 8000 Series two-inch (2") valve with a stainless ball.

One (1) Akron valve equipped with a manually operated pull rod, with quarter-turn locking feature shall be provided on the intake. The handle shall be equipped with a color-coded name plate.

**FIRE PUMP COOLING**

The fire pump shall be equipped with 3/8" cooling line from the pump to the water tank. This re-circulation line shall be controlled by a pump panel control valve with nameplate label noting it as the "fire pump bypass cooler". There shall be a check valve installed in the pump cooler line to prevent tank water from back flowing into the pump when it is not in use.

**FIRE PUMP COOLING**

The fire pump shall be equipped thermal bypass cooling system. The system shall automatically dump water through a .375" discharge line to the ground when pump water temperature exceeds 120 degrees. A warning light and alarm shall be installed on the pump panel with proper label installed. The valve shall be equipped with an integral strainer and shall reset automatically.

**CHASSIS ENGINE HEAT EXCHANGER COOLING SYSTEM**

The apparatus shall be equipped with a heat exchanger for supplementary chassis engine cooling during fire pump operations. A manually opened valve, mounted at the operator's panel, shall direct water from the fire pump to the heat exchanger that is mounted in the engine radiator cooling hose. The system shall provide cooling water from the fire pump to circulate around the engine radiator coolant without mixing or coming in direct contact with the engine coolant. The unit shall be installed by the chassis manufacturer and connected to the plumbing system by the fire apparatus manufacturer.

A nameplate label shall be installed on the pump panel noting "engine cooling system" with "on-off" opening directions noted.

**HEAT EXCHANGER PIPING SYSTEM**

The heat exchanger system shall be piped with silicone type hoses.

**UNDERWRITERS LABORATORIES FIRE PUMP TEST**

The pump shall undergo an Underwriters Laboratories Incorporated test per applicable sections of NFPA standards, prior to delivery of the completed apparatus.

The UL acceptance certificate shall be furnished with the apparatus on delivery.

**FIRE PUMP TEST LABEL**

A fire pump performance and rating label shall be installed on the fire apparatus pump panel. The label shall denote levels of pump performance and testing completed at factory. These shall include GPM at net pump pressure, RPM at such level, and other pertinent data as required by applicable NFPA standards. In addition, the pressure control device, tank to pump flow tests, and other required testing shall be completed.

In addition, the entire pump, suction and discharge passages shall be hydrostatically tested to a pressure as required by applicable NFPA standards. The pump shall be fully tested at the pump manufacturer's factory to the performance specifications as outlined by applicable NFPA standards. Pump shall be free from objectionable pulsation and vibration.

If applicable, the fire pump shall be tested and rated as follows:

 100% of rated capacity at 150 pounds net pressure.

 70% of rated capacity at 200 pounds net pressure.

 50% of rated capacity at 250 pounds net pressure.

 100% or rated capacity at 165 pounds net pressure.

**GATED 6" INTAKE -- FRONT RIGHT BUMPER**

One (1) front right side bumper gated suction intake with 5" piping shall be provided. Intake pipe shall be provided with drain valves mounted at all low points of plumbing.

Intake shall be gated with an air operated 5" butterfly valve, with control at the pump operator's panel. The valve operating mechanism shall prevent movement of the valve from the fully closed position to the fully open position or vice versa, in less than three seconds. The valve control shall have a colored identification label.

A pressure dump/relief valve shall be included that is factory preset at 125 PSI and field adjustable from 75 to 250 PSI. The pressure dump/relief valve shall provide over-pressure protection for the suction hose even when the intake valve is closed. The outlet of the dump/relief valve shall be 2.5" in diameter to allow directing the discharge flow away from the pump operator's position.

An inlet fitting with 5" IPT x 6" NST thread shall be provided, complete with a removable strainer screen. The front intake plumbing shall be bolted to the pump and be assembled with Victaulic type couplings.

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift, to open and push down, to close.

**FRONT RIGHT SIDE INTAKE -- VERTICAL ABOVE BUMPER**

The front suction 5" piping shall extend vertical, then straight-forward above the bumper level. The piping shall be stainless steel with Victaulic couplings installed.

**FRONT 90 DEGREE SUCTION 6" ELBOW**

The front intake shall be equipped with a 6" painted brass 90 degree swivel adapter. The elbow shall be equipped with 5" NPT female thread x 6" NST male thread.

The suction elbow shall be painted to match the color of the exterior body.

Or be easily adapted to finished engine.

**LEFT SIDE -- 2-1/2" GATED INTAKE**

One (1) 2-1/2" gated suction intake shall be installed on left side pump panel to supply the fire pump from an external water supply. The control valve shall be a quarter turn ball valve and shall have 2-1/2" NST female thread of chrome plated brass.

The intake shall be equipped with a ¾" drain and bleeder valve. A nameplate label and removable screen shall be installed.

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

One (1) 2-1/2" chrome plated plug shall be provided. The threads shall be NST and the plug shall be equipped rocker lugs and chain or cable securement.

The valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

The valve shall be equipped with one (1) manually operated, swing-type manual control located adjacent the intake. The valve shall be equipped with a color-coded name plate.

**TWO (2) 1-1/2" CROSSLAY DISCHARGES**

Two (2) pre-connect 1-3/4" hose cross lays shall be installed over pump enclosure, with quarter turn 2" diameter ball valves. The outlets shall be a 2" NPT female swivel x 1-1/2" male NST hose threads.

The cross lay hose beds shall have smooth aluminum sides. The hose bed decking shall be constructed with slots integrated into the hose bed floor.

Each hose bed shall provide for a minimum capacity of 200 feet of 1-3/4" diameter double jacket hose with nozzle, for hose provided by the fire department.

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

The specified valve shall be an Akron 8000 Series two-inch (2") valve with a stainless ball.

For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

Two (2) 2-1/2" IC discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

**CROSSLAY HINGED COVER WITH END FLAPS**

The cross lay hose bed shall be equipped with a single aluminum diamond plate hinged cover with vinyl end flaps with hook & loop fasteners. The cover shall have rubber bumpers, latching devices, and lift up handle on each end of the cover.

The hose bed cover shall be labeled, "Not a Standing or Walking Surface", per NFPA.

The vinyl cover shall be black in color.

**CROSSLAY HOSE BED TRIM**

The cross lay hose bed shall be equipped stainless steel trim, one on each end of the hose bed.

**CROSSLAY HOSEBEDS**

Cross lay discharges shall be "LOW MOUNTED" above the lower pump panel.

**LEFT SIDE PUMP PANEL -- 2-1/2" DISCHARGE**

Two (2) 2-1/2" discharge shall be installed on the left side pump panel area and shall be controlled by a quarter turn ball valve. The discharge shall have 2-1/2" NST male hose threads. A color coded nameplate label shall be provided adjacent the control handle.

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

Two (2) chrome plated reducing adapter with rocker lugs shall be provided with 2-1/2" NST rigid female x 1-1/2" NST male hose threads.

Two (2) chrome plated elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" NST male hose threads.

Two (2) 1-1/2" NST rocker lug chrome plated vented cap and cable or chain securement shall be

The specified valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

Two (2) 2-1/2" IC discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

**RIGHT SIDE PUMP PANEL -- 2-1/2" DISCHARGE**

One (1) 2-1/2" discharge shall be installed on the right side pump panel area and shall be controlled by a quarter turn ball valve. The discharge shall have 2-1/2" NST male hose threads. A color coded nameplate label shall be provided adjacent the control handle.

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

One (1) chrome plated reducing adapter with rocker lugs shall be provided with 2-1/2" NST rigid female x 1-1/2" NST male hose threads.

One (1) chrome plated elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" NST male hose threads.

One (1) 1-1/2" NST rocker lug chrome plated vented cap and cable or chain securement shall be provided.

The specified valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

One (1) 2-1/2" IC discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

**RIGHT SIDE PUMP PANEL -- 4" DISCHARGE**

One (1) 4" discharge shall be installed on the right side pump panel area and shall be controlled by a full flow 4" slow-close quarter turn ball valve. The discharge shall have 4" NST male hose threads. A color coded nameplate label shall be provided adjacent the control handle.

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

One (1) lightweight aluminum elbow with 30 degree slant shall be provided. Threads shall be 5" Storz with lugs and manual locks x 4" female swivel NST with rocker lugs.

One (1) 5" lightweight aluminum Storz cap with cable or chain securement shall be provided.

The specified valve shall be an Akron 8000 Series four-inch (4") valve.

One (1) Akron valve equipped with an Akron manually operated hand wheel control with dial type position indicator shall be provided on the specified 4" discharge. A color-coded name plate installed over the valve control.

One (1) 2-1/2" IC discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

**LEFT SIDE FRONT OF HOSEBED -- 2-1/2" DISCHARGE**

One (1) 2-1/2" discharge shall be installed to the left side front of hose bed area and controlled by a quarter turn ball valve on the pump panel. The discharge shall have 2-1/2" NPT x 2-1/2" NST male hose threads. An engraved nameplate label shall be provided adjacent the control handle.

A Class 1 automatic type 3/4" bleeder valve shall be installed.

One (1) chrome plated reducing adapter with rocker lugs shall be provided with 2-1/2" NST rigid female x 1-1/2" NST male hose threads.

The specified valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

One (1) 2-1/2" IC discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

**REAR LEFT SIDE -- 2-1/2" DISCHARGE**

One (1) 2-1/2" discharge shall be installed on the left side rear panel of the apparatus body and shall be controlled by a quarter turn ball valve on the pump panel. The discharge shall have 2-1/2" NPT x 2-1/2" NST male hose threads. The outlet shall be equipped with an engraved nameplate label shall be installed adjacent the valve control handle.

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift to open and push down to close.

One (1) chrome plated reducing adapter with rocker lugs shall be provided with 2-1/2" NST rigid female x 1-1/2" NST male hose threads.

One (1) chrome plated elbow with rocker lugs shall be provided with 2-1/2" NST swivel female x 2-1/2" NST male hose threads.

One (1) 1-1/2" NST rocker lug chrome plated vented cap and cable or chain securement shall be provided.

The specified valve shall be an Akron 8000 Series two and one half-inch (2-1/2") valve with a stainless ball.

For valve actuation, the specified discharge shall be equipped with a side mount valve control. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and signage. The gear-control rod, double laminated locking clips, and rod housing shall be stainless steel and provide true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall eliminate rod deflection, never need lubrication and ensure consistent long-term operation.

The control assembly shall include a decorative chrome-plated zinc panel mounted bezel with recessed color-coded label.

One (1) 2-1/2" IC discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

**3" MONITOR DISCHARGE**

One (1) 3" discharge shall be piped to the area over the pump enclosure with 3" NPT male threads provided. The pipe shall be equipped with Victaulic couplings (if necessary) and shall be properly secured to prevent movement when a monitor or deck gun is attached. The quarter turn ball valve shall be controlled on pump panel.

A color coded nameplate label shall be provided adjacent the valve control handle.

An Innovative Controls ¾” cast bronze quarter-turn drain/bleeder valve shall be installed. The valve shall be complete with a chrome plated bronze ball, reinforced Teflon seals, and blow-out proof stem rated to 600 PSI. A chrome plated zinc handle shall be provided on each drain valve complete with a recessed ID label provision. The handle shall lift, to open and push down, to close.

The specified valve shall be an Akron 8000 Series three-inch (3") valve with a stainless ball.

One (1) Akron valve equipped with a manually operated pull rod, with quarter-turn locking feature and a manual slow-close device shall be provided on the specified discharge. The handle shall be equipped with color-coded name plate.

One (1) 2-1/2" IC discharge pressure gauges (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

**PORTABLE MONITOR**

A portable lightweight monitor package consisting of monitor top, stacked tips, stream straightener and base shall be supplied.

**PORTABLE DECK GUN MONITOR TOP**

A portable monitor shall be provided. This top only portion with quick release swivel joint shall be designed for use on truck mounted risers . The monitor shall include safety devices that include a locking button which locks the quick release lever when monitor is pressurized, and a 1/4 turn rotational lever lock that secures the horizontal rotation and provides a visual indication that the monitor rotation is locked.

The monitor shall have a 3-1/4" waterway for delivery of up to 1250 GPM with low friction loss. Vertical elevation shall be controlled through use of a hand wheel controlled stainless steel worm gear which allows full travel to the safety stop point of 35 degrees above horizontal with seven rotations of the wheel. When positioned on a truck mounted riser the monitor shall be able to be used below the 35 degree stop point through release of the spring loaded safety pin.

An automatic drain to remove remaining water and avoid freezing shall be included. Integral stainless steel stream straightener and pressure gauge shall be included. The monitor shall be configured with a Crossfire inlet and 2-1/2" male NH outlet.

**MONITOR STORAGE BRACKET**

A storage bracket and mounting screws shall be supplied. The bracket shall be constructed from stainless steel include a quick release retention strap and be designed for horizontal or vertical installation. The bracket is designed for storage of the monitor.

**PORTABLE MONITOR BASE**

A portable monitor base shall be provided. The base shall be constructed from hardcoat anodized aluminum and have a red powder coat interior and exterior finish. The inlet shall be configured with two (2) 2-1/2" female NH swivel rocker lug couplings with two-way clapper valve.

**STREAM STRAIGHTENER**

A stream straightener shall be supplied. The straightener shall be constructed from extruded aluminum with internal vanes designed to reduce turbulence and increase the reach of smooth bore water streams. The device shall be five (5) inches in length and have 2-1/2" female NH rigid inlet and 2-1/2" male NH rigid outlet.

**MASTER STREAM STACK TIP SET**

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

**MONITOR STORAGE BRACKET**

Monitor storage bracket and mounting screws shall be supplied. The bracket shall be constructed from stainless steel include a quick release retention strap and be designed for horizontal or vertical installation.

**TELESCOPING MONITOR PIPE**

One (1) A manually telescoping waterway shall be installed. The waterway shall be capable of being lowered to deck level (or into a monitor well) for storage and transportation and shall be capable of being raised to an extended height of 12" by lifting a quick release latch located at the base of the extension tube. This latching device shall be capable of locking the waterway in either the raised or lowered position while maintaining the ability to horizontally rotate the monitor device 360 degrees.

A sensor shall be located on the waterway that signals a 12 volt indicator light installed in the cab to illuminate to indicate that the monitor is raised.

The aluminum riser shall have a 3" waterway; hardcoat anodized finish and be furnished with a 3" Victaulic inlet and a 3" male NPT outlet.

**SIDE MOUNT PUMP ENCLOSURE**

The side mount pump enclosure shall be removable and supported from the chassis frame rails. This enclosure will allow independent flexing of the pump enclosure from the body and allow for quick removal. The support structure shall be constructed of extruded aluminum tubing and angle.

All pump suction and discharge controls are to be mounted on the driver side pump operator's panel so as to permit operation of the pump from a central location. The fire pump, valves and controls shall be accessible for service and maintenance as required by applicable sections of NFPA standards.

The "master" gauges shall be suitably enclosed and mounted on a full pump compartment width "hinged" gauge panel constructed of the same material as the pump operators control panel, allowing access to the backside of all gauges and gauge lines. The individual gauges shall be mounted in line with the control handle or adjacent to the control handle. Panel is to include a stainless steel piano hinge, flush mounted chrome plated trigger latch, and stainless steel cable end stops. Electrical wiring and all gauge lines shall be properly tie wrapped to prevent kinking or cutting of the lines when the panel is opened.

The following controls and equipment as specified in the specifications, shall be provided on the pump panel or within the pump enclosure:

* Primer.
* Pump and plumbing area service lights.
* Pressure control device and throttle control.
* Fire pump and engine instruments.
* Pump intakes and discharge controls.
* Master intake and discharge gauges.
* Tank fill control.
* Tank suction control.
* Water tank level gauge.
* Pump panel lights.

**CROSSLAY**

The area atop the pump enclosure shall be notched for the installation of a crosslay hose bed. The hosebed shall have smooth sides and a perforated floor to allow for drainage. Provisions shall be provided to secure hose and equipment per requirements of applicable NFPA standards.

**OPEN DUNNAGE COMPARTMENT**

One (1) open compartment shall be located on the top of the pump module. The compartment will be constructed as large as space permits with removable slip resistance floor material or decking in the base of the compartment.

**LEFT SIDE RUNNING BOARD**

The left side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.

The running board shall be constructed of aluminum treadplate with grip style inserts, bolted in place with stainless steel fasteners. The step surfaces shall be with compliance to applicable sections of NFPA requirements.

**RIGHT SIDE RUNNING BOARD**

The right side mount pump panel shall be equipped with side running board. The running board will extend along the width of the pump enclosure from the forward end of the body module to behind the chassis cab.

The running board shall be constructed of aluminum treadplate with grip style inserts, bolted in place with stainless steel fasteners. The step surfaces shall be in compliance with applicable sections of NFPA requirements.

**PUMP ENCLOSURE ACCESS DOOR**

A pump panel access door shall be provided on the upper right side of the side mount pump enclosure. The door shall be constructed of 14 gauge #304 brushed stainless steel with push button type latches.

**PUMP PANEL -- SIDE MOUNT**

The pump operator's panel, along with the lower left hand and right hand pump panels shall be constructed of aluminum material and be fastened to the pump enclosure with 1/4" stainless steel bolts.

The instrument area shall have a stainless steel continuous hinge that shall swing for easy access to gauges.

**LEFT SIDE PUMP PANEL**

The pump panel installed on the left hand side of the pump enclosure shall be fastened to the pump enclosure with 1/4" stainless steel bolts.

**RIGHT SIDE PUMP PANEL**

The pump panel installed on the right hand side of the pump enclosure shall be fastened to the pump enclosure with 1/4" stainless steel bolts.

**PUMP PANEL COLOR TRIM PANELS**

Innovative Controls intake and discharge trim rings shall be installed to the apparatus with mounting bolts. These bezel assemblies will be used to identify intake and discharge ports with color and verbiage. These trim rings are designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The specified assemblies feature a chrome-plated panel-mount bezel with durable UV resistant polycarbonate inserts. These UV resistant polycarbonate graphic inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. All insert labels shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards

**PUMP COMPARTMENT HEATER SYSTEM**

The interior of the pump enclosure shall be equipped with a minimum of 15,000 BTU hot water heater system. The unit shall be piped to the chassis radiator system with standard heater hose. The hose shall be properly clamped and secured in place, and be properly protected from engine exhaust or mechanical damage.

The heater unit shall be equipped with a 12-volt blower fan with control located on the pump operator's panel.

**PUMP ENCLOSURE HEAT PAN**

A removable casing constructed of galvanized steel, completely enclosing the underside of the pump compartment and heated by the engine exhaust shall be provided. The heat pan assembly shall include individual panels that can be easily removed from there mounting locations. The two outer slide-out panels shall be bolted in place.

**BODY AND PUMP HOUSE FLEX JOINT RUBBER GASKET**

A flexible rubber gasket shall be installed between the pump compartment and the apparatus body. This gasket will be designed to seal the pump compartment to the apparatus body as tightly as practical. This gasket is necessary for winter operation in extremely cold climates.

**INTAKE / DISCHARGE RUBBER GASKET**

All intakes, discharges and specified drain handles extending through the side pump panels shall have a rubber grommet installed for heat retention.

**LABELS**

Safety, information, data, and instruction labels for apparatus shall be provided and installed at the operator's instrument panel.

The labels shall include rated capacities, pressure ratings, and engine speeds as determined by the certification tests.The no-load governed speed of the engine, as stated by the engine manufacturer, shall also be included.

The labels shall be provided with all information and be attached to the apparatus prior to delivery.

**COLOR CODED PUMP PANEL LABELING AND NAMEPLATES**

Discharge and intake valve controls shall be color coded in compliance to guidelines of applicable sections of NFPA standards.

Innovative Controls permanent type nameplates and instruction panels shall be installed on the pump panel for safe operation of the pumping equipment and controls.

**MIDSHIP PUMP PANEL LIGHTS -- LEFT SIDE**

Three (3) Whelen Strip-Lite Series Super-LED lights or equal LED lights with clear lenses shall be installed under an instrument panel light hood on the left side pump panel. The lights shall be controlled by a switch located on the operator's instrument panel.

**MIDSHIP PUMP PANEL LIGHTS -- RIGHT SIDE**

Three (3) Whelen Strip-Lite Series Super-LED lights or equal LED lights with clear lenses shall be installed under an instrument panel light hood on the right side pump panel. The lights shall be controlled by a switch located on the operator's instrument panel.

**PUMP ENGAGED LIGHT**

One (1) pump panel light shall be illuminated at the time the fire pump is engaged into operation. The remaining lights shall be controlled by a switch located on the operator's instrument panel.

**MASTER DISCHARGE AND INTAKE GAUGES**

Two (2) 6" diameter IC discharge pressure and intake gauges (0-600 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauges will be located on the pump instrument panel.

The master gauges shall have clear scratch resistant molded crystals with captive O-ring seals shall be used to ensure distortion free viewing and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40F to +160F. Each gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A polished chrome-plated brass bezel shall be provided to prevent corrosion and protect the lens and gauge case.

**TEST TAPS**

Test taps for pump intake and pump pressure shall be provided on the pump instrument panel and be properly labeled.

**WATER TANK GAUGE**

One (1) Fire Research TankVision Pro model tank indicator kit shall be installed on the pump panel. The kit shall include an electronic indicator module, a pressure sensor, and a 10' sensor cable. The indicator shall show the volume of water in the tank on nine (9) easy to see super bright LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of Polycarbonate/Nylon material, and have a distinctive blue label.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, six (6) programmable colored light patterns to display tank volume, adjustable brightness control levels and a datalink to connect remote indicators. Low water warnings shall include flashing LEDs at 1/4 tank, down chasing LEDs when the tank is almost empty, and an output for an audio alarm.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the water tank near the bottom. No probe shall place on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

**AIR HORN PUSH-BUTTON**

One (1) push button with a label shall be installed on the pump instrument panel to operate the air horns.

**WATER TANK - 1000 GALLON**

The apparatus shall be equipped with a one-thousand (1000) gallon polypropylene water tank. The tank shall be equipped with a four-inch (4") overflow pipe (a six-inch (6") overflow pipe shall be provided if required by dump valve installation).

**WATER TANK**

The apparatus shall be equipped with a "T" shaped tank.

**WATER TANK FILL TOWER**

A fill tower measuring approximately 10” x 10” square shall be provided on the water tank up to and including 1000 gallons total capacity.

The apparatus shall be equipped with a polypropylene water tank. The tank body and end bulkheads shall be constructed of .75" thick, polypropylene, nitrogen-welded and tested inside and out. Tank construction shall conform to applicable NFPA standards. The tank shall carry a lifetime warranty.

The transverse and longitudinal .375" thick swash partitions shall be interlocked and welded to each other as well as to the walls of the tank. The partitions shall be designed and equipped with vent holes to permit air and liquid movement between compartments.

The .5" thick cover shall be recessed .375" from the top of the side walls. Hold down dowels shall extend through and be welded to both the covers and the transverse partitions, providing rigidity during fast fill operations. Drilled and tapped holes for lifting eyes shall be provided in the top area of the booster tank.

A combination vent/water fill tower shall be provided at front of the tank. The 0.5" thick polypropylene fill and overflow tower shall be equipped with a hinged lid and a removable polypropylene screen. The overflow tube shall be installed in fill tower and piped with a minimum schedule 40 PVC pipe through the tank.

The water tank sump shall be located in the forward area of the tank. There will be a schedule 40 polypropylene tank suction pipe from the front of the tank to the tank sump. The tank drain and clean out shall be located in the bottom of the tank sump. The sump shall have a minimum 3" threaded outlet on the bottom to be used for a combination clean out and drain.

The pump to tank refill connection shall be a sized to mate with tank fill discharge line. A deflector shield inside the tank will also be provided.

 The tank shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross member spacing must be decreased to allow for not more than 400 square inches of unsupported area.

The tank must be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of 1/4” x 1” and a hardness of approximately 60 durometer. The rubber must be installed so it will not become dislodged during normal operation of the vehicle. Additionally, the tank must be supported around the entire bottom outside perimeter and captured both in the front and rear as well as side to side to prevent tank from shifting during vehicle operation.

A picture frame type cradle mount with a minimum of 2" x 2" x 1/4” mild steel, stainless steel, or aluminum angle shall be provided or the use of corner angles having a minimum dimension of 4" x 4" x 1/4” by 6” high are permitted for the purpose of capturing the tank.

Although the tank is designed on a free floating suspension principle, it is required that the tank have adequate vertical hold down restraints to minimize movement during vehicle operation. If proper retention has not been incorporated into the apparatus hose floor structure, an optional mounting restraint system shall be located on top of the tank, half way between the front and the rear on each side of the tank. These stops can be constructed of steel, stainless steel or aluminum angle having minimum dimensions of 3" x 3" x 1/4” and shall be approximately 6” to 12” long. These brackets must incorporate rubber isolating pads with a minimum thickness of 1/4” inch and a hardness of 60 durometer affixed on the underside of the angle. The angle should then be bolted to the body side walls of the vehicle while extending down to rest on the top outside edge of the upper side wall of the tank.

Hose beds floors must be so designed that the floor slat supports extend full width from side wall to side wall and are not permitted to drop off the edge of the tank or in any way come in contact with the individual covers where a puncture could occur. Tank top must be capable of supporting loads up to 200 lbs per sq. foot when evenly distributed. Other equipment such as generators, portable pumps, etc. must not be mounted directly to the tank top unless provisions have been designed into the tank for that purpose. The tank shall be completely removable without disturbing or dismantling the apparatus structure.

The water tank shall be certified for the capacity of the water tank prior to delivery of the apparatus. This capacity shall be recorded on the manufacturer's record of construction and the certification shall be provided to the purchaser when the apparatus is delivered.

 **FOAM**

 Unit shall have class A and Class B foam system.

**HOSEBED SINGLE AXLE**

The hose bed compartment deck shall be constructed entirely from maintenance-free, extruded aluminum slats. The slats shall have an anodized, radiused ribbed top surface. The slats shall be of widths approximately 3/4'' high x 6" wide and shall be welded into a one-piece grid system to prevent the accumulation of water and allow ventilation to assist in drying hose.

The apparatus hose body shall be properly reinforced without the use of angles or structural shapes and free from all projections that might injure the fire hose.

The main apparatus hose body shall run the full length of the apparatus body from behind the pump panel area to the rear face of the body.

The upper rear interior of the hose body on the right and left sides shall be overlaid with brushed stainless steel to protect the painted surface from damage by hose couplings.

**HOSE BED STORAGE CAPACITY**

The hose bed shall be designed to have a storage capacity for a minimum of 55 cubic feet of fire department supplied fire hose.

**ALUMINUM HOSEBED DIVIDER**

One (1) adjustable hosebed divider constructed of .250" aluminum shall be installed on the apparatus.

**BULKHEAD DIVIDER**

There shall be a full width smooth aluminum bulkhead behind the fill tower(s).

**HOSEBED COVER**

Shall be a hose bed cover to meet or exceed NFPA minimum.

**MAIN HOSEBED DIVIDER**

One (1) stationary hosebed divider shall be provided in the main hosebed.

The hosebed divider shall be fabricated of 1/4" smooth aluminum sheet stock, pressed into a "T" shaped aluminum extrusion for added strength along the bottom and front edges of the divider.

Divider shall be bolted in place, front and rear, to allow for ease of removal or relocation.

**HOSEBED LED LIGHTS**

Four (4) 36" long OnScene Solutions Access LED light shall be installed and produce approximately 800 lumens per light. The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty. The light stick shall be waterproof and be connectible via a jumper wire to add additional lights in series if required.

The LED lights shall be recessed into the underside of the hinged aluminum hosebed covers to provide illumination for repacking of fire hose. The 12 volt LED lights shall be automatically controlled by a switch which activates upon opening of the door. The lights shall also be connected to the hazard light in the chassis cab to indicate when the hose bed covers are in the open position.

**STAINLESS STEEL BODY**

The body shall be fabricated of 12 gauge 304 stainless steel sheet.

The upper body shall be equipped with square corners.

**Compartment floors**

Compartments shall be of the sweep out design and to be water and dust proof. All compartments shall be made to the maximum practical dimensions to provide maximum storage capacity. To ensure maximum storage space, the apparatus shall be constructed without any void spaces between the body and the compartment walls.

**Exterior**

Compartments shall have polished aluminum drip moldings installed above the doors where necessary to prevent water from entering the compartments.

**Wheel well**

Panels shall be formed stainless steel. To fully protect the wheel well area from road debris and to aid in cleaning, a full depth wheel well liner shall be provided.

**FASTENERS**

All aluminum and stainless steel components shall be attached using stainless steel fasteners.

**Handrails and running boards**

Shall be attached using minimum 1/4" diameter machine bolt fasteners.

3/16" diameter fasteners shall only be used in nonstructural areas such as; door handles, trim moldings, gauge mounting, etc.

**ELECTROLYSIS CORROSION CONTROL**

The apparatus shall be assembled using ECK or electrolysis corrosion control, on all high corrosion potential areas, such as door latches, door hinges, trim plates, fenderettes, etc. This coating is a high zinc compound or the equivalent that shall act as a sacrificial barrier to prevent electrolysis and corrosion between dissimilar metals. This shall be in addition to any other barrier material that may be used.

All 1/4" diameter and smaller screws and bolts shall be stainless steel.

Due to the expected life of the vehicle, proposals will only be acceptable from manufacturers that include these corrosion features.

**SIDE BODY HEADER**

All high side compartment tops shall be NFPA approved non-slip treadplate with the side body header area above the compartment doors a smooth stainless steel painted surface.

**Lower or rear face compartments**

If specified shall be provided with polished aluminum drip rails.

The side body headers shall be painted.

**GALVANIZED SUB-FRAME**

The apparatus body subframe shall be constructed entirely of heavy steel structural channel material.

This steel sub frame shall carry the weight of the apparatus body, tank, water and equipment.

**SINGLE AXLE WHEEL AREA**

For ease of accessibility and maintenance, wheel well panels shall be double break formed smooth plate that is bolted in place.

To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 25") radius wheel well liner shall be provided. Wheel well liner shall be smooth stainless steel to prevent corrosion.

**FENDERETTES**

The rear wheel wells shall be radius cut for a streamlined appearance. A polished aluminum fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless steel fasteners.

**BODY WIDTH**

The overall width of the pumper body shall not exceed 100".

**HOSEBED WIDTH**

The width of the pumper body hose bed shall at least be 68".

**ROLL UP DOOR CONSTRUCTION**

Compartment doors shall be equipped with roll-up doors complete with the following features:

1” aluminum double wall slats with continuous ball & socket hinge joint designed to prevent water ingression and weather tight recessed dual durometer seals,

Double wall reinforced bottom panel with stainless steel lift bar latching system, bottom panel flange with cut-outs for ease of access with gloved hands, reusable slat shoes with positive snap-lock securement, smooth interior door curtain to prevent equipment hang-ups,

One-piece aluminum door track / side frame, top gutter with non-marring seal, non-marring recessed side seals with UV stabilizers to prevent warpage ,

Dual leg bottom seal, with all wear component material to be Type 6 Nylon.

**PULL DOWN STRAPS**

Seven (7) elastic nylon straps shall be provided and installed on each roll up door. The straps shall be secured to the side wall of the interior compartment in a way that will allow the Pull strap to contract automatically and tuck inside the compartment when closed to prevent the strap from dangling and hindering closing of the door.  When the door is the open position, the straps shall be installed so that they are fully extended as to not interfere with removing items from the compartment. For the ease of locating, the straps shall be bright orange in color.

**LEFT FRONT COMPARTMENT**

There shall be one (1) full height compartment located ahead of the rear wheels. The compartment shall be equipped with a full height single natural finish roll up door.

The compartment shall be equipped with the following:

One (1) louver with filter shall be installed in the compartment.

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

**ADJUSTABLE SHELF**

One (1) adjustable shelf shall be constructed of .125” smooth aluminum plate with 1.5” formed vertical lip front & back. Shelf supports on each side to be constructed of .188” aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8” bolts and spring-loaded cam locks. If shelf is longer than 40” a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf.

**COMPARTMENT LIGHTS**

Two (2) LED lights shall be vertically mounted roll-up compartment LED door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

**LEFT OVERWHEEL COMPARTMENT**

There shall be one (1) compartment above the rear wheels. The compartment shall be equipped with a single natural finish roll up door.

The compartment shall be equipped with the following:

One (1) louver with filter shall be installed in the compartment.

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

**ADJUSTABLE SHELF**

One (1) adjustable shelf shall be constructed of .125” smooth aluminum plate with 1.5” formed vertical lip front & back. Shelf supports on each side to be constructed of .188” aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8” bolts and spring-loaded cam locks. If shelf is longer than 40” a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf.

**COMPARTMENT LIGHT**

Two LED lights shall be vertically mounted roll-up compartment LED door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

**LEFT REAR COMPARTMENT**

There shall be one (1) full height compartment located behind the rear wheels. The compartment shall be equipped with a full height single natural finish roll up door.

The compartment shall be equipped with the following:

One (1) louver with filter shall be installed in the compartment.

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

**ADJUSTABLE SHELF**

One (1) adjustable shelf shall be constructed of .125” smooth aluminum plate with 1.5” formed vertical lip front & back. Shelf supports on each side to be constructed of .188” aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8” bolts and spring-loaded cam locks. If shelf is longer than 40” a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf.

**500# ROLLOUT TRAY**

One (1) roll-out equipment tray shall be installed in the compartment. The tray with telescoping slides and cam follower bearings shall be rated to a maximum load of 500 lbs. The tray shall have a gas shock to hold the tray extended or closed. There shall be a lock to prevent movement, when the tray is in the closed position.

The tray shall be formed of .188" smooth aluminum plate, fabricated with two (2) inch sides. Reflective material measuring 1” x 6” shall be installed on each front corner both on the face and side of tray for firefighter safety.

The tray shall be mounted on floor of compartment.

To be mounted on floor of compartment.

**COMPARTMENT LIGHTS**

Two (2) LED lights shall be vertically mounted roll-up compartment LED door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

**RIGHT FRONT COMPARTMENT**

There shall be one (1) full height compartment located ahead of the rear wheels. The compartment shall be equipped with a full height single natural finish roll up door.

The compartment shall be equipped with the following:

One (1) louver with filter shall be installed in the compartment.

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

**ADJUSTABLE SHELF**

One (1) adjustable shelf shall be constructed of .125” smooth aluminum plate with 1.5” formed vertical lip front & back. Shelf supports on each side to be constructed of .188” aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8” bolts and spring-loaded cam locks. If shelf is longer than 40” a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf.

**500# ROLLOUT TRAY**

One (1) roll-out equipment tray shall be installed in the compartment. The tray with telescoping slides and cam follower bearings shall be rated to a maximum load of 500 lbs. The tray shall have a gas shock to hold the tray extended or closed. There shall be a lock to prevent movement, when the tray is in the closed position.

The tray shall be formed of .188" smooth aluminum plate, fabricated with two (2) inch sides. Reflective material measuring 1” x 6” shall be installed on each front corner both on the face and side of tray for firefighter safety.

The tray shall be mounted to the compartment floor.

To be mounted to the compartment floor.

**COMPARTMENT LIGHTS**

Two (2) LED lights shall vertically mounted roll-up compartment LED door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

**RIGHT HIGH SIDE COMPARTMENTS**

There shall be one (1) compartment above the rear wheels. The compartment shall be equipped with a single natural finish roll up door.

The compartment shall be equipped with the following:

One (1) louver with filter shall be installed in the compartment.

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

**SWING-OUT ALUMINUM TOOL BOARD**

One (1) swing-out vertical tool board assembly constructed of .188" smooth aluminum shall be provided with locks for holding it in the "in" and "out" positions.

The tool board shall have a grab handle, for easy access with a gloved hand.

**COMPARTMENT LIGHT**

Two (2) LED lights shall be vertically mounted roll-up compartment LED door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

**RIGHT REAR COMPARTMENT**

There shall be one (1) full height compartment located behind the rear wheels. The compartment shall be equipped with a full height single natural finish roll up door.

The compartment shall be equipped with the following:

One (1) louver with filter shall be installed in the compartment.

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

**ADJUSTABLE SHELF**

One (1) adjustable shelf shall be constructed of .125” smooth aluminum plate with 1.5” formed vertical lip front & back. Shelf supports on each side to be constructed of .188” aluminum and bolted to an aluminum extrusion (mounted vertically) by use of 3/8” bolts and spring-loaded cam locks. If shelf is longer than 40” a reinforcement by aluminum gusset is to be placed full-length on bottom of shelf.

**COMPARTMENT LIGHTS**

Two (2) LED lights vertically mounted roll-up compartment LED door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

**REAR BODY CONFIGURATION**

The rear of the apparatus body shall be of the flat back design.

**REAR CENTER COMPARTMENT**

There shall be one (1) low compartment located at the rear of the apparatus. The compartment shall be equipped with a low natural finish roll up door. The compartment shall be open to the rear side compartments, providing a transverse compartment at the rear of the truck.

The compartment shall be equipped with the following:

One (1) louver with filter shall be installed in the compartment.

**ADJUSTABLE SHELVING TRACKS**

The compartments shall be equipped with two (2) aluminum adjustable tracks, vertically mounted, that are bolted in place for adjustable shelving and equipment mounting.

**COMPARTMENT LIGHT**

Two (2) LED lights shall be vertically mounted roll-up compartment LED door lights shall be installed one each side of the door opening. The compartment lights shall be integrated into the roll-up door tracks with the light actuation with the door opening.

The lights shall have a polycarbonate lens to eliminate breakage from impact and eliminate heat buildup.

The compartment light will be controlled by a magnetic "On-Off" switch located on each compartment door.

**REAR STEP - 16” BOLT-ON**

A 16" deep step surface shall be provided at the rear of the apparatus body, bolted in place and easily removable for replacement or repair. The tailboard shall be constructed of .188" aluminum diamond plate or equal non-slip surface in compliance with NFPA #1901 standards. The tailboard shall be spaced away from the body to allow drainage and help prevent corrosion.

A label shall be provided warning personnel that riding on the rear step while the apparatus is in motion is prohibited.

**REAR STEP GRATING**

The rear step shall be provided with grip style inserts, bolted in place with stainless steel fasteners and shall comply with NFPA #1901 standards. The gripping surface shall be up to 20” wide.

**SLIDE OUT VERTICAL LADDER MOUNTINGS**

The ladder shall slide into the right rear of the apparatus, through the right side of the body. The vertically mounted slide in assembly shall be an integral part of the body and accessible through a hinged door.

The hinged door shall be constructed of smooth material, with chevron striping applied to match the rear of the apparatus body.

**INTERNAL FOLDING ATTIC LADDER MOUNTING**

An internal mounting shall be provided for the specified folding attic ladder.

The mounting shall be located in the ladder tunnel, right side rear.

Mount in ladder tunnel right side rear.

**LADDER SOURCE**

New ground ladders shall be provided by the body builder.

**PIKE POLE MOUNTING BRACKET**

Two (2) tube shall be provided for pike pole mounting. The tube shall have a 2" interior diameter and shall be mounted in the ladder tunnel.

**PIKE POLE SOURCE**

The pike poles shall be provided by the body builder.

**HARD SUCTION MOUNTING**

There shall be provisions for hard suction to be mounted on pumper.

**SUCTION HOSE SOURCE**

New suction hose shall be provided by the body builder.

**FOLDING STEPS LEFT SIDE FRONT**

Three (3) folding steps of die cast high-strength zinc/aluminum alloy, plated with a superior automotive grade chrome finish shall be provided. The greater than 42 sq. in. serrated non-skid step traction area also offers an oversized non-slip grasp hand-hold. A heavy duty stainless steel spring design firmly holds the step in the open or closed positions. A rubber stop prevents any transit noise and rattles in the closed position. Step lighting shall be from a LED light mounted above the step.

The step has been third part tested to assure conformation of NFPA 1901 and FHA, 49CFR specifications for stepping surfaces and handhold.

The step shall be installed on the left side front compartment face.

**FOLDING STEPS RIGHT SIDE FRONT**

Three (3) folding steps of die cast high-strength zinc/aluminum alloy, plated with a superior automotive grade chrome finish shall be provided. The greater than 42 sq. in. serrated non-skid step traction area also offers an oversized non-slip grasp hand-hold. A heavy duty stainless steel spring design firmly holds the step in the open or closed positions. A rubber stop prevents any transit noise and rattles in the closed position. Step lighting shall be from a LED light mounted above the step.

The step has been third part tested to assure conformation of NFPA 1901 and FHA, 49CFR specifications for stepping surfaces and handhold.

The step shall be installed on the right side front compartment face.

**HANDRAIL TOP OF BODY SIDES**

Two (2) extruded aluminum non-slip handrails, approximately 12" in length, shall be provided and mounted, one (1) each side at the top of the body sides, at the front of the apparatus body.

**FRONT BODY PROTECTION PANELS**

Aluminum tread plate overlays and panels shall be installed on the front corners of the body. The material shall be bolted in place and sealed to prevent any moisture entry between the overlay and the body structure.

**FRONT BODY PROTECTION PANELS**

Aluminum tread plate overlays and panels shall be installed on the front of the body compartment from the lower edge to the top of the compartment doors.

**REAR BODY PROTECTION PANELS**

The rear body panels of the body shall be a smooth material, to allow for the proper application and installation of a "Chevron" stripe on the rear.

**FOLDING STEPS LEFT SIDE REAR**

Four (4) folding steps of die cast high-strength zinc/aluminum alloy, plated with a superior automotive grade chrome finish shall be provided. The greater than 42 sq. in. serrated non-skid step traction area also offers an oversized non-slip grasp hand-hold. A heavy duty stainless steel spring design firmly holds the step in the open or closed positions. A rubber stop prevents any transit noise and rattles in the closed position. Step lighting shall be from a LED light mounted above the step.

The step has been third part tested to assure conformation of NFPA 1901 and FHA, 49CFR specifications for stepping surfaces and handhold.

The steps shall be installed on the rear left side of the body.

**FOLDING STEPS RIGHT SIDE REAR**

Two (2) folding steps of die cast high-strength zinc/aluminum alloy, plated with a superior automotive grade chrome finish shall be provided. The greater than 42 sq. in. serrated non-skid step traction area also offers an oversized non-slip grasp hand-hold. A heavy duty stainless steel spring design firmly holds the step in the open or closed positions. A rubber stop prevents any transit noise and rattles in the closed position. Step lighting shall be from a LED light mounted above the step.

The step has been third part tested to assure conformation of NFPA 1901 and FHA, 49CFR specifications for stepping surfaces and handhold.

The steps shall be installed on the rear right side of the body.

**REAR INTERMEDIATE STEP**

An intermediate fixed step shall be provided at the rear of the apparatus body, bolted in place and easily removable for replacement or repair. The intermediate step shall be constructed of .188” polished aluminum diamond plate or equal non-slip surface in compliance with NFPA #1901 standards and be approximately 8” deep x 68” wide.

**HANDRAIL REAR STEP**

Two (2) extruded aluminum non-slip handrails, approximately 30" in length, shall be provided and vertically mounted on the rear of the apparatus, one (1) on each side of the body.

**HANDRAIL BELOW HOSEBED**

One (1) extruded aluminum non-slip handrail, approximately 48” in length, shall be provided and horizontally mounted below the hosebed on the rear of the apparatus.

**EXTRUDED ALUMINUM RUB RAILS**

Full body length polished aluminum rub rails shall be bolted in place on the lower right and left body sides. The side rub rails shall be a heavy extruded aluminum "C" channel.

**NYLON SPACERS FOR RUB RAILS**

There shall be nylon spacers provided between the rubrail and the body. This shall allow wash out and replacement in the event of damage.

**WHEEL WELL PROVISION LOCATION**

The wheel well provisions shall be located on the left side of the apparatus, ahead of the rear wheels.

One (1) breathing air cylinder storage, dual compartment shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless steel door shall be provided.

Two (2) one-inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

**WHEEL WELL PROVISION LOCATION**

The wheel well provisions shall be located on the left side of the apparatus, behind of the rear wheels.

**FUEL FILL DOOR**

A Fire Shopp Inc. fuel fill access assembly shall be provided on the left side rear wheel well area. The assembly shall include a brushed stainless steel fuel fill enclosure door and a black polymer fuel assembly. A label indicating DIESEL FUEL ONLY shall be applied.

**WHEEL WELL PROVISION LOCATION**

The wheel well provisions shall be located on the right side of the apparatus, ahead of the rear wheels.

One (1) Breathing air cylinder storage, dual compartment shall be provided and located in the rear wheel well of the apparatus body.

The cylinder storage compartment shall be constructed entirely of black polymer. The door assemblies shall be provided with a gasket between door and body side, bolted in-place and removable for repair or replacement.

Compartment shall be provided with SCBA cylinder scuff protection. A brushed stainless steel door shall be provided.

Two (2) one-inch (1") wide loop of black webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in case of door failure. The loop shall be mounted, centered in the compartment and shall hang within one-inch (1") of the compartment floor to allow the bottle to pass by the strap when the bottle is placed in the compartment. The strap shall loop over the valve.

**CHASSIS CAB SHORELINE RECEPTACLES**

Receptacles shall be wired to the shoreline for the charging of portables. Location shall be decided by manufacture due to being a DEMO unit.

**120V ELECTRIC RECEPTACLE -- STRAIGHT BLADE**

Two (2), 120-volt 20 amp straight blade, 3-prong duplex receptacles with spring loaded weatherproof covers shall be provided.

One (1) receptacle shall be located behind driver's seat and one (1) receptacle shall be located behind officer's seat.

The electric receptacle shall be located inside the front portion of the cab.

One (1) behind driver's seat and one (1) behind officer's seat.

**POWER DISTRIBUTION**

One (1) 15 amp power distribution strip with six (6) receptacles shall be provided. The strip shall be powered by the chassis shore line power.

Inside Forward Facing EMS Cabinet

**BODY PAINT PROCESS**

All bright metal fittings, if unavailable in stainless steel shall be heavily chrome plated. Iron fittings shall be copper plated prior to chrome plating. If applicable, any and all accessory times shall be removed from the body prior to cleaning and painting. Any accessory items that are to be painted, shall be painted separately and installed after the body is painted and cured.

All seams shall be caulked, both inside and along the exterior edges, with a urethane automotive sealant to prevent moisture from entering between any body panels.

**APPARATUS COLOR**

The color shall be determined by manufacture due to being a DEMO unit.

**INTERIOR COMPARTMENT FINISH**

The interiors of up to eight (8) body compartments shall be left a natural finish.

**TOUCH-UP PAINT**

One (1) two (2) ounce bottle of touch-up paint shall be furnished with the completed truck at final delivery.

**SIMULATED GOLD LEAF LETTERING**

The lettering shall be applied in simulated gold leaf material, shaded in black and encapsulated in clear Mylar.

A quantity of seventy-five (75), four (4) inch letters are to be placed on the cab and on the body as directed by fire department.

**APPARATUS DOOR GRAPHICS**

Two (2) custom door graphics designed primarily with artistic features shall be proposed for installation on the apparatus.

**REFLECTIVE STRIPING**

A 1" x 4" x 1" wide 3M brand Scotchlite reflective multi-stripe shall be affixed to the perimeter of the vehicle. There shall be a 1" gap between each of the stripes. Striping shall conform to applicable NFPA requirements. At least 50% of the perimeter length of each side and width of the rear, and at least 25% of the perimeter width of the front of the vehicle shall have reflective striping.

The striping shall be applied in a large "Z" pattern.

**COLOR OF STRIPING MATERIAL**

The color of the 3M brand striping material shall be white.

**CHEVRON STRIPING**

The front bumper shall have 3M reflective red and yellow striping installed. The chevron style striping shall be applied at a 45-degree upward angle.

**CHEVRON STRIPING**

The entire rear portion of the body shall have Oralite V98 reflective red and yellow striping installed. The chevron style striping shall be applied at a 45-degree upward angle pointing Oralite V98 reflective red and yellow striping installed. The chevron style striping shall be applied at a 45-degree upward angle pointing

Front bumper shall be wrapped in Oralite V98 reflective red and yellow striping installed. The chevron style striping shall be applied at a 45-degree upward angle pointing

**WHEEL CHOCKS WITH MOUNTS**

A pair of Zico Model SAC-44 Quic-Chok folding wheel chocks shall be provided and mounted under the apparatus body with model SQCH-44H horizontal mounting brackets.

**ROOF LADDER**

One (1) 14 foot aluminum roof ladder with folding steel roof hooks on one end and steel spikes on the other end shall be provided on the apparatus. The ladder shall meet or exceed all latest NFPA Standards.

**EXTENSION LADDER**

One (1) A 24 foot two (2) section aluminum extension ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA standards.

**FOLDING LADDER**

One (1) A 10 foot folding aluminum ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA Standards.

The folding ladder shall be mounted in the ladder tunnel right side rear.

Mount in the ladder tunnel right side rear.

**PIKE POLE**

One (1) 6' pike pole with round handle shall be provided. The pike pole shall be of fiberglass construction.

The pike pole shall be mounted in ladder tunnel right side rear.

Mount in ladder tunnel right side rear.

**PIKE POLE**

One (1) 10' pike pole with round handle shall be provided. The pike pole shall be of fiberglass construction.

The pike pole shall be mounted in ladder tunnel right side rear.

 Mount in ladder tunnel right side rear.

**SUCTION HOSE**

Two (2), 6.0" x 10 foot lengths of PVC flexible suction hoses shall be supplied. The suction hoses shall have light weight couplings provided.

**HOSE COUPLINGS**

Light weight aluminum couplings shall be provided on the suction hose. A long handle female swivel shall be provided on one end and a rocker lug male shall be provided for the other end.

**EMERGENCY ROAD KIT**

One (1) DOT emergency kit shall be provided with the completed apparatus and shall include a 2.5 BC fire extinguisher and three reflective triangles.