

Schedule A: HME Pumper Specifications

== HME WSF 1871W Cab & Chassis - 6.001 ==

NFPA 1901

The National Fire Protection Association "Standard for Automotive Fire Apparatus, current Edition, is hereby adopted and made a part of these specifications, the same as if it were written out in full detail, with the exception of the section dealing with "Equipment Recommended for Various Types of Apparatus". Bidders shall provide the equipment specifically requested herein and the buyer shall supply the rest before the apparatus is put into service.

APPARATUS VOCATION AND BASIC ATTRIBUTES

When completed this HME Ahrens-Fox fire apparatus shall have the following attributes:

Order Information:

Apparatus Builder: **HME, Incorporated**

Sales Representative: _

User Information:

End User:

Mailing Address:

City: _

State: _

Zip Code: _

F.D. Contact: _

Phone Number:

Fax Number:

Contacts email: _

Is there an overall height restriction?

**DO NOT MAKE AN ASSUMPTION ON A HEIGHT ISSUE
PLEASE ENTER THE INFORMATION**

____ - Inches ground to the top of the highest part of apparatus when fully loaded

Are there minimum angle of approach or departure angle requirements?

If so fill in the blank.

Minimum angle of approach - _____degrees

Minimum angle of departure - _____degrees

PAINT CODES AND BASIC ATTRIBUTES

Paint Information

Paint Manufacturer: **PPG is HME Standard Paint**

CAB EXTERIOR

Single Color:

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Primary color: ALF Red
Primary paint code: #71698

BODY PAINT

Color Body Panels Color: * ALF Red
Color Body Panels Code: * #71698
If the hosebed sides are painted are they the same color as the body panels?: Yes

RIMS

Color Painted Rims Color: * N/A
Color Painted Rims Code: * N/A
*Unless noted else wise the cab lower color will be used when painted rims are selected.

FRAME RAILS

Color Painted Frame Color: * N/A
Color Painted Frame Code: * N/A
*Unless noted else wise the cab lower color will be used when painted rails are selected.

BUMPER (for structural and formed steel bumpers)

Color Painted Bumper Color: * N/A
Color Painted Bumper Code: * N/A
*Unless noted else wise the cab lower color will be used when painted bumpers are selected.

ORDER CONFIRMATION

Details of construction such as, but not limited to mounting positions for siren heads, grab handles, switches, labeling and materials where not otherwise specifically detailed in the written specifications at time of order, shall be left to the discretion of the HME as the manufacturer who shall be solely responsible for the design, construction and placement of the components.

A drawing is provided as part of the order confirmation. The drawing is an overall representation of the apparatus proposed and not an exact representation of the apparatus to be built. The exact locations of accessories and/or components may be revised pending complete engineering of the custom requirements of the individual apparatus order. If there is a discrepancy between the drawing and the written order confirmation; the specifications within this order confirmation prevail.

CUSTOM CHASSIS - SINGLE SOURCE MANUFACTURER

The chassis shall be designed and manufactured by the apparatus builder in the manufacturer's facility. The manufacturer shall demonstrate evidence of manufacturing similar custom vehicles for at least fifty (50) years.

Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source shall be "a manufacturer that designs and manufactures their products using an integrated approach, including the cab and chassis, pump module, apparatus body and aerial device being fabricated and assembled on the bidder's premises". The warranties relative to the chassis, apparatus body and aerial device (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body and chassis). The bidder shall provide evidence that they comply with this requirement. No exceptions will be permitted to this section of the document.

The chassis shall be designed and manufactured for heavy duty fire service with adequate strength and capacity for all components as detailed within these specifications.

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CHASSIS FRAME

The frame shall be designed to industry standards. The manufacturer shall provide a life time frame side rail warranty to the original purchaser of the chassis. The frame rails shall be 10.5" x 3.5" x .375" heat treated steel.

The frame side rails shall be 110,000 psi minimum yield and shall have a minimum section modulus of 18.34 cu. in. calculated by using the square corner shape method. The resulting frame rail resistance to bending moment shall be 2,017,400 in. lb. per rail.

To insure the maximum clamp load for the fastener prevailing torque the crossmembers shall be bolted in place using grade 8 bolts, hardened washers, and grade C distorted thread locknuts. Flanged head fasteners shall not be acceptable. The top of the frame rails shall be free of bolt heads.

Frame engine cutouts shall be made with a plasma torch to minimize the heat affected zone of the cut. All cutouts shall have a minimum of 6 inch transitions between rail flange cut depths to reduce the stress concentrations throughout the cutout area. The root of all transition areas shall have a minimum of a 2 inch radius to reduce stress concentrations at the root.

The main frame rails and main frame crossmembers behind the pump shall be galvanized to reduce the effect of harsh road chemicals. This warranty shall be in effect for 20 years after delivery of the apparatus to the end user.

Fasteners employed to attach the main frame rails to the main frame crossmembers shall be ArmorGalv® plated to reduce the effect of harsh road chemicals.

CAB MAIN FRAME CROSSMEMBER

In addition to the rear cab support crossmember there shall be a main frame cross member mounted in the rear cab area. This cross member shall be a wide base flanged design to provide frame spacing and excellent strength to prevent paralleling. Every frame cross member shall be bolted in place using grade 8 bolts, hardened washers, and grade "C" distorted thread locknuts.

FRONT AXLE

The front axle shall be a MERITOR model "MFS-18-133A-N" with a 18,740 lb. capacity.

CRAMP ANGLE

The chassis shall have a turning cramp angle of 52-degrees. Both left and right turns have a full 52° cramp angle with tires and wheels mounted on the axle and installed in the chassis. The 52° cramp angle is achieved irrespective of options such as front suctions and disc brakes.

FRONT AXLE OIL SEALS

The front axle shall be equipped with oil bath type oil seals as supplied on the axle from the axle manufacturer. The spindles shall be equipped with transparent covers for oil level inspection.

FRONT AXLE DISC BRAKES

MERITOR DiscPlus, EX-225, air disc brakes shall be installed on the front axle. The DiscPlus air disc brakes shall provide improved fade resistance and wet weather performance. The rotors shall be vented to facilitate brake cooling.

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FRONT SUSPENSION

The front suspension shall be a pin and shackle design. Front springs shall be a minimum of ten (10) leaf elliptical type, 53" x 3-1/2" x .499" forged steel. The front springs shall have a military wrapper for safe operation. For a smooth ride the spring rate shall not exceed 3,000 lbs/in deflection.

All front spring pins shall be ground heat treated steel with grease fittings for lubrication.

The entire front suspension shall be designed for heavy duty custom fire apparatus with a capacity at ground of 18,740 lbs.

SHOCK ABSORBERS

Double acting hydraulic shock absorbers are to be installed.

STEERING SYSTEM

The steering shall be equipped with a single SHEPPARD M110 integral power steering gear. The engine shall be equipped with a gear driven pump.

A remote steel reservoir shall be provided with the ability to check the fluid level when the cab is in the lowered position.

FRONT TIRES

The front tires shall be 315/80R22.5-20PR (L) GOODYEAR G-751 MSA all weather tread, tubeless radial tires. These tires shall be mounted on 22.5" x 9.00" rims.

STANDARD LOAD RATING

The front axle GAWR using these tires shall be 18,180 lbs. @ 130 psi.

TIRE SPEED RATING

The maximum tire speed rating is 68 MPH.

ALUMINUM WHEELS

Two (2) polished aluminum wheels shall be supplied and installed on the front axle. The 22.5" x 9.00" wheels shall be highly polished on the outboard side.

FRONT WHEEL TRIM

The front axle shall be trimmed with mirror finish, 304L grade, non-corrosive stainless steel 'baby moon' hub caps with an opening for viewing the oil seal cover, and bright finished nut covers.

SINGLE REAR AXLE

The rear axle shall be a MERITOR model "RS-24-160" with a 24,000# capacity for the fire service.

MERITOR DIFFERENTIAL

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The rear axle shall contain a Meritor 160 Series differential with an 18 inch diameter ring gear utilizing hypoid-Generoid gearing and a 2-1/4 inch diameter axle shaft.

AXLE DIFFERENTIAL LUBE

The axle shall have the initial factory fill made with non-synthetic axle lube meeting the axle manufacturer's recommendations.

REAR AXLE OIL SEALS

The rear axle shall be equipped with premium oil bath type oil seals as supplied on the axle from the axle manufacturer.

REAR AXLE DISC BRAKES

MERITOR/ROCKWELL DiscPlus, EX-225, air disc brakes shall be installed on the Meritor/Rockwell single rear axle. The DiscPlus air disc brakes shall provide improved fade resistance and wet weather performance. The rotors shall be vented to facilitate brake cooling.

These disc brakes shall be rated for a maximum of 27,000# GAWR.

VEHICLE TOP SPEED

The rear axle shall be geared for a top speed of 65 to 68 mph at engine governed RPM.

NFPA TOP SPEED STATEMENT

NFPA-1901, 2016 Edition - 4.15.2 The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 MPH (105 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

NFPA-1901, 2016 Edition - 4.15.3 If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 MPH (105 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

The speed selected on this apparatus exceeds 60 MPH (105 km/hr) and the customer is aware of NFPA-1901 and the top speed that will be achieved with the finished apparatus.

Truck gearing shall be such to provide for a customer requested top speed at engine governed RPM. If the top speed exceeds NFPA requirements listed above the engine ECM will have road speed limiting programmed so the maximum attainable speed that will not exceed that limit. This is field adjustable with Cummins Insite.

SINGLE AXLE REAR SUSPENSION

The rear springs shall be a minimum of seventeen (17) main including four (4) auxiliary leaves. The rear suspension shall have a rating of 27,000 lbs. Capacity. The rear suspension shall be a "self-leveling" slipper type with a main torque leaf that contains a military wrapper. The torque leaf shall contain a bronze bushing for long service life.

The rear hangers are to be of the slipper design. For a smooth ride the rear suspension deflection rate shall not exceed 3,790 lbs. per inch.

One (1) inch diameter rear suspension U-bolts are required.

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Two (2) main frame cross members shall be mounted in the rear suspension area, bolted to the frame rail as a rear suspension support member. Each cross member shall be a wide base flanged design to provide frame spacing and excellent strength to prevent frame paralleling. Each cross member shall be bolted in place using grade 8 bolts, hardened washers, and grade "C" distorted thread locknuts.

AIR SYSTEM

An air brake system meeting the requirements of the FMVSS-121 shall be provided. The system shall consist of three (3) reservoirs with a 4,362 cu. in. volume. The air system shall consist of the following components:

Dual air system with dual gauges and a warning light and buzzer. A spring actuated parking brake built into the rear axle brakes with a manual control and warning light the in cab. These shall automatically apply in case of air system failure. A mechanical means of releasing the spring brake shall be provided in the event of total loss of air pressure.

A quick build up system shall be provided, capable of building enough air pressure to release the spring brake in less than thirty (30) seconds, when starting with the entire air system at zero pounds pressure.

The brake system shall be a split system. One (1) system serving the rear brakes and one (1) system serving the front brakes. The two (2) systems shall be connected with a double check valve that shall automatically shuttle air from the front system to the rear system should loss of air pressure occur. This system shall also modulate the amount of air so the spring brakes shall apply in direct relationship to the amount of pressure applied to the treadle valve.

The brake system shall be equipped with a Bendix SR-7 valve to provide modulated spring brakes in the event there is low air pressure in the rear axle air supply reservoir.

The spring brakes shall be piped in such a manner that if the treadle valve is depressed while the spring brakes are applied, the spring brakes shall release and remain released as long as the treadle valve is depressed. They shall reapply immediately when the treadle valve is released.

The piping in the air system shall be 2-ply nylon reinforced color coded tubing for all stationary lines.

AIR DRYER

The air system shall include a BENDIX AD-SP air dryer.

The air dryer shall have a spin off desiccant cartridge.

The air dryer shall incorporate an integral turbo cutoff valve. The turbo cutoff valve shall close the path between the air compressor and the air dryer purge valve during the compressor "unload" cycle. This shall allow the air dryer to purge the water and contaminants without any loss of turbo boost or engine horsepower.

A 12 volt heated moisture ejector shall be an integral part of the air dryer. This heater shall be thermo- statically controlled. The electrical connection for the heater shall use a sealed electrical connector to protect against moisture and corrosion.

ACCESSORY AIR RESERVOIR

One (1) 2181 cu. in. additional reservoir shall be connected to the chassis air system to provide an air supply for the pump primer. This reservoir shall include a pressure protection valve on the inlet side to allow full use of this tank without draining air from the chassis air system.

MANUAL AIR TANK DRAINS

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All air reservoirs shall have manual 1/4 turn drain valves. The drain valves shall be supplied with rubber seats to reduce air system leaks. The reservoir drain valves shall allow the accumulation of contaminants that are collected in the reservoirs to be drained off to the atmosphere.

MERITOR/ROCKWELL/WABCO ABS BRAKE SYSTEM

A four channel, single rear axle model, MERITOR/ROCKWELL/WABCO ABS Braking System shall be supplied.

A frame mounted electronic control unit (ECU) shall monitor and control wheel speed during braking. Wheel sensors, constantly monitoring wheel speed, send information to the ECU. If a wheel begins to lock the ECU transmits an electrical impulse to modulator valves that can apply, release or hold the air pressure in the brake chambers. The rapid modulation of air pressure prevents wheel lock-up and increases driver control.

This ABS system shall be a 4S/4M system with four (4) wheel speed sensors and four (4) modulator valves.

If a fault occurs in one wheel, that wheel shall have normal (non-ABS) brake function. The other wheels shall continue to provide the ABS function. If the ABS system should fail completely, the brake control shall be returned to normal (non-ABS) braking.

An ABS warning light shall be installed on the driver's dash message center. This warning light shall cycle through a test stage at the point of ignition turn on and remain illuminated until the vehicle reaches approximately four (4) MPH. The light shall illuminate in other conditions to warn of an ABS system failure and shall illuminate when the diagnostic function is activated.

MERITOR/WABCO STABILITY ENHANCEMENT SYSTEM

A Meritor / Wabco Roll Stability Control (RSC) System shall be provided on the apparatus chassis. The RSC shall assist in managing road conditions that may result in a vehicle rollover.

The RSC shall intervene to regulate the vehicle's deceleration functions by automatically reducing engine torque, engage the vehicle retarder and apply pressure to the brakes.

Electronic Stability Control (ESC) shall be included building upon the established RSC system by sensing the tendency of the vehicle to spin around and automatically applying the brakes to reduce that risk.

This system conforms to the requirements of NFPA-1901 4.13.1.2 - If the apparatus is equipped with a stability control system, the system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer, and individual wheel brake controls.

REAR TIRES

The rear tires shall be 11R22.5-16PR (H) GOODYEAR FUELMAX RTD traction tread, tubeless radial tires. These tires shall be mounted on 22.5" x 8.25" rims.

Single rear axle GAWR using these tires shall be 24,000 lbs. @ 120 psi.

TIRE SPEED RATING

The maximum tire speed rating is 75 MPH.

ALUMINUM WHEELS

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Four (4) polished aluminum wheels shall be supplied and installed on the single rear axle. The 22.5" x 8.25" wheels shall be highly polished on the outboard side.

REAR WHEEL TRIM

The rear axle(s) shall be trimmed with mirror finish, 304L grade non-corrosive stainless steel "Lincoln Hat" hub cover and bright finished nut covers.

TIRE PRESSURE MONITORING DEVICE

Each tire installed on the apparatus shall be equipped with a tire pressure monitoring device. The device shall consist of a valve stem cap with an LED tire alert to indicate tire pressure conditions. The LED will flash when the tire drops 8 psi below the factory setting.

LASER ALIGNMENT

The chassis shall have a laser alignment performed at the factory before delivery.

Toe In Front Axle - The toe in on a vehicle is set to reduce tire wear and to insure that the vehicle shall steer in a straight line. Toe in measurements are set to a positive 2.5 millimeters total, giving the vehicle 1.25 millimeters from side to side.

Toe In Rear Axle - The toe in on the rear wheels is set up slightly different in that the axle and wheels are set to ride the "crown" of the road. This is achieved by adjusting the toe to a measurement of no less than 1 millimeter, but no more than 2 millimeters. The ideal measurement is 1.5 millimeters total for both sides.

Cramp Angle - Cramp angle is set to achieve the greatest turning radius possible with the selected components of the vehicle. Each front wheel is set to zero degrees. The wheel is then turned until it reaches the steering stops. This measurement is the cramp angle.

DIESEL ENGINE

The chassis shall be powered by a Cummins diesel engine as described below:

MODEL:	L9-450
NUMBER OF CYLINDERS:	Six
BORE AND STROKE:	4.49 in (114 mm) x 5.69 in (145 mm)
DISPLACEMENT:	543 cu. in. (8.9L)
MAX HP:	450 hp (336 kW) @ 2100 RPM
TORQUE:	1250 lb-ft (1696 N-m) @ 1300 RPM
GOVERNED RPM:	2200
CURVE:	FR96230EV

Standard Equipment on the engine to include the following:

OIL FILTER:	A full flow / by-pass combination
LUBE OIL COOLER:	High efficiency non-drainback full flow cooling
FUEL FILTERS:	Two fuel filters providing 3 / 10 micron absolute filtration
STARTER:	12 volt
AIR COMPRESSOR:	A Wabco 18.7 cfm compressor shall be provided

ENGINE COOLANT RADIATOR

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The engine coolant radiator shall have sufficient capacity to perform under the engine manufacturer installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved IQA to the fire department for the apparatus.

This radiator shall have HRPOS top and bottom tanks. These tanks shall have a material thickness of 11 gauge. The top and bottom tanks shall be attached to the header assemblies with a minimum of forty (40) fasteners. These fasteners shall not exceed a center distance of 1.938 inches to reduce the possibility of tank leaks. These fasteners shall be torqued to a value of 29.5 ft-lbs.

The header plates shall be made of 16 gauge brass.

The radiator tubes shall be constructed of .0066 inch thick brass and have a dimensional size of .076 inch x .625 inch. These radiator tubes shall have welded tube seams.

The radiator shall contain three (3) rows of tubes arranged in an inline profile across the radiator core. The entire radiator shall contain (231) tubes. These tubes shall have a smooth bore to allow for radiator cleaning.

In the critically stressed area, where the radiator tubes are attached to the header plates, this joint shall be accomplished with a welding process on the coolant side. In addition to the welded joint a solder fillet joint shall occur on the air side of the core creating a continuous dual bond.

The radiator shall have a louvered serpentine type core that contains fins constructed of .0024 inch thick copper. These fins shall be spaced to a maximum density of 14 fins per inch of radiator tube. Each fin shall have a louvered surface for high cooling efficiency.

The radiator shall contain an integral coolant de-aeration tank. This tank shall be designed to remove entrapped air or gas from the coolant side of the radiator.

The radiator side rails shall have integrally designed support gussets for the transition to the header attachment.

The bottom tank of the radiator shall have a drain valve for coolant removal.

The bottom tank of the radiator shall have a transmission cooler with a plate-type design. The plates shall have internal turbulators to break up laminar oil flow across the surface. The cooler shall have 1311 square inches of surface area for water surface contact and heat transfer.

The radiator system shall be pressurized with a cap rated per the cooling system requirements of the specific engine manufacturer.

The high efficiency engine fan shall be encompassed with a radiator shroud to provide the proper air flow from the fan blade to the radiator.

The perimeter of the radiator shall have recirculation baffles to eliminate the possibility of recirculation of "hot" air to the face of the radiator core. The bottom of the radiator shall have a recirculation baffle from the radiator to the frame rails.

COOLANT RECOVERY SYSTEM

A coolant recovery system shall be installed on the chassis. This tank is designed to capture coolant overflow when the engine coolant warms and expands. As the engine cools the overflow is then pulled out of the tank and back into the radiator, thus maintaining proper coolant levels.

CHARGE AIR COOLER RADIATOR

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The engine charge-air cooler shall have sufficient capacity to perform under the engine manufacturers installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved IQA to the fire department for the apparatus.

This radiator shall have cast aluminum side tanks. These tanks shall have a material thickness of .200. These tanks shall be attached to the charge-air core with the ALBRAZE construction technique.

The external air fins shall be louvered serpentine and constructed of .006 inch thick aluminum.

The internal air fins shall be of the lance-and-offset design for greater air turbulence and higher efficiency. The internal fins are to be constructed of .010 inch thick aluminum.

The charge-air cooler shall be mounted directly in front of the engine coolant radiator. To reduce vibration rubber "iso" mounts shall be used for mounting of the charge-air cooler to the engine radiator.

The charge-air cooler shall contain thermal expansion slots to allow the expansion and contraction of the charge-air core over the wide range of temperatures that are expected in operation.

The charge air piping between the engine and charge-air cooler shall be aluminum tubing with a wall thickness of .065 inch. The system shall utilize four (4) ply silicone rubber woven Nomex hoses with stainless steel pressure bands. These bands are designed to maintain the hose shape under the pressure of the turbocharger boost air. All clamps used on the charge air piping are to be stainless steel constant torque and shall be installed at each joint.

LONG LIFE COOLANT

The coolant system shall contain a mixture to keep the coolant from freezing to a temperature of -34 degrees F.

The coolant supplied shall be Long Life Coolant compatible with the engine manufacturer's requirement.

COOLANT HOSES

The entire chassis cooling system shall have premium rubber hoses. All clamps to be stainless steel worm drive type clamps.

COOLANT SYSTEM CLAMPS

Single wire constant torque clamps shall be used for all cooling system hoses.

HEATER LINE SHUT OFF VALVES

The heater circuit shall have quarter turn shut off valves installed on both the supply and return lines to allow a complete shut off of coolant flow to the cab heaters in hot seasons of the year. These valves shall be installed in addition to the valves in the heater unit(s).

ENGINE AIR INTAKE FILTER

The engine shall be equipped with a K&N heavy duty washable intake air filter. The filter shall utilize a media that does not require oil.

ENGINE OIL

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The engine shall have the initial factory fill made with a non-synthetic engine oil meeting the engine manufacturer's recommendations.

ENGINE BRAKE

A "JACOBS" Engine Brake shall be supplied.

The Driver shall have an on/off and a high/low engine brake control switch.

Activation of the engine brake shall occur at zero throttle position. The transmission ECU shall be programmed to operate in the pre-select downshift mode to maximize the retarding power of the engine brake.

The brake lights shall illuminate when the Jacobs Brake is in operation.

The Jacobs Brake shall be inoperative when the chassis is in pump mode.

The "JACOBS" engine brake shall be covered under the standard five year Cummins engine warranty.

ENGINE FAST (HIGH) IDLE

The chassis shall be equipped with an Electronic Idle Control (EIC) for the electronic engine. Preset speed is factory adjustable.

The fast idle provision shall only function when the parking brake is set and the transmission is in neutral. Manual selection of the fast idle shall be controlled by a driver's momentary switch.

Automatic activation of the fast idle shall occur when a low voltage condition exists, the truck is in neutral and the parking brakes are applied.

Cancellation of the fast idle shall be achieved by resetting the manual switch or by depressing the service brake pedal.

AUXILIARY ENGINE COOLER

The cooling system shall have one (1) SENDURE auxiliary engine cooler mounted in the upper radiator water pipe. The apparatus shall have the fire pump water circulated to the cooler from a valve located on the apparatus pump panel.

SPARK ARRESTOR

A spark arrestor shall be installed in the chassis air intake system. This arrestor shall be mounted behind the intake grille to filter out airborne embers.

FAN DRIVE

A fully variable fan drive system shall be installed on the engine. Variable operation is required to reduce fan noise and improve response time and lower off-speed for maximum efficiency. Control of the fan operation is entirely from the engine and fan ECM with no manual override controls.

EXHAUST SYSTEM

A single exhaust pipe shall be provided for the engine. The exhaust pipe shall be supplied with a heat wrap. The wrap shall extend from the engine turbo charger to just below the frame rail.

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The exhaust tubing from the turbocharger to the exhaust after treatment device shall be stainless steel.

CUMMINS AFTERTREATMENT SYSTEM

The chassis shall be equipped with a Cummins exhaust after treatment system in compliance with MY 21.

TAILPIPE

The tailpipe shall extend from the exhaust muffler/aftertreatment device to the rear of the vehicle making a 90° bend to exit the vehicle ahead of the rear tires on the curbside of the vehicle. The end of the pipe shall be cut square or perpendicular to the exhaust pipe centerline.

The pipe shall be unpolished stainless steel.

An exhaust gas diffuser shall be furnished on the end of the tailpipe.

DIESEL EXHAUST FLUID SYSTEM

The chassis shall be equipped with a 5 gallon Shaw Development Diesel Exhaust Fluid (DEF) reservoir system. The reservoir shall contain an Multifunctional Head Unit (MFHU) that contains integrated level and temperature sensors. The MFHU also shall contain a coolant powered heater to thaw DEF in conditions below 12°F (-11°C) to meet governmental regulations. The reservoir shall be located on the left frame rail behind the front axle beneath the cab. The mounting system shall use stainless steel mounting brackets to reduce the possibility of corrosion.

TRANSMISSION

The transmission shall be an Allison 3000EVS automatic transmission with electronic controls.

The transmission shall be equipped with a lock-up control circuit that shall automatically shift the transmission into 4th gear lock-up when the pump is shifted into gear.

TRANSMISSION COOLER

An automatic transmission cooler shall be provided as an integral part located in the bottom tank of the radiator. It shall be designed to withstand 165 psi working pressure and an intermittent pressure of 250 psi. The cooler shall be of sufficient size to maintain the operating temperature within the recommended limits of the transmission manufacturer.

TRANSMISSION FLUID

The transmission shall be provided with heavy-duty transmission fluid meeting Allison specification TES-389.

FIVE SPEED PROGRAMMING

The transmission shall be programmed for five speeds.

First - 3.49
Second - 1.86
Third - 1.41
Fourth - 1.00
Fifth - 0.75
Reverse - 5.03

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The transmission shall be able to shift from first through fifth gear without operator intervention. The chassis shall be geared for the top speed in 5th gear.

AUTOMATIC NEUTRAL

The transmission shall be provided with circuitry to provide automatic neutral. Setting the parking brake commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. Requires re-selecting drive range to shift out of neutral.

After the transmission has been activated with the automatic neutral feature the shift lever must be returned to neutral and back to drive for midship pump operations.

REMOTE FLUID LEVEL SENSING

The chassis shall be equipped with an electronic low fluid level indicator system for the engine oil, transmission oil, engine coolant and power steering fluid as part of the instrumentation package. This system eliminates the need for daily checking of fluid levels with manual dipsticks.

Coolant over temperature sensors are only capable of sensing excessive coolant temperature caused by clogged radiators, malfunctioning thermostats, failed water pumps or any other "circulation" problem. Upon loss of coolant, however, these temperature sensors must try to respond to hot air which, being a poor thermal conductor, results in signals that arrive only after the engine is severely damaged.

In a like manner, under leaking oil conditions low oil pressure signals are not obtained until the oil pump is starved for oil. Since the oil pump draws liquid from the very bottom of the crankcase pan, these signals arrive only after virtually all oil has been lost. Again, the damage has already occurred.

The liquid level sensor provides an early warning that fluid is being lost and allows corrective action to be taken before damage can occur. By using a sensor to turn on an indicator light, the low fluid level condition is communicated immediately to the operator.

ENGINE COOLANT

The coolant level sensor is located in the upper radiator reservoir. The corresponding LED indicator light is included in the display module.

ENGINE OIL

The engine oil sensor is in the engine oil sump. It monitors the oil level at approximately the 50% level. The corresponding LED indicator light is located to the right of the instrument panel on the doghouse in clear view of the driver.

POWER STEERING FLUID

The power steering fluid sensor is located in the power steering fluid reservoir at the same level as the "Add" indicator on the dip stick. The corresponding LED indicator light is located to the right of the instrument panel on the doghouse in clear view of the driver.

FUNCTION

The LED indicator lights will illuminate when the ignition is placed in the ON position as a test to insure that the warning circuits are working. They will go out when the starter button is pressed if normal fluid levels are detected. One or more of

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the lights staying on indicates a low fluid level in the corresponding system(s). Any time the engine is ON and a low fluid level is detected, the appropriate light will illuminate. The sensor output will reset when the ignition is turned off.

TRANSMISSION OIL

The transmission oil sensor is in the transmission oil sump. The fluid level indicator is integrated into the shift selector. Accessing the fluid level status is dependent upon the style of shift selector provided.

The transmission fluid level status is accessed through the "mode" function of the shift selector controls. First, park the vehicle on a level surface, shift to N (Neutral), and apply the parking brake. If equipped with a pushbutton shift selector, simultaneously press the Up and Down arrow buttons. If equipped with a lever shift selector, press the display mode button one time. A code will be displayed on the shift controls indicating that the oil level is HI, LO or OK. If the level is HI or LO, the display will also indicate the number of quarts of oil necessary to be added or removed to bring the oil level into the OK range. It may also display an error code that explains why fluid level information is not available. The fluid level check may be delayed until the following conditions are met:

- The fluid temperature is above 60°C (140°F) and below 104°C (220°F).
- The transmission is in N (Neutral).
- The engine is at idle.
- The transmission output shaft is stopped.
- The vehicle has been stationary for approximately two minutes to allow the fluid to settle.

See the Care and Maintenance section of the transmission Owner's Manual for a more detailed description of the fluid check procedure along with a complete list of error codes.

DRIVELINES

Universal joints and driveshafts shall be SPICER 1760 series or equal. The driveshaft tube shall be a minimum of 4.09" diameter with a .180" tube wall thickness. The driveshaft slip joints shall be coated to reduce sliding friction and thrust under high torque loads. Permanent driveline installations shall be balanced to prevent vibration.

FUEL TANK

The fuel tank shall have a capacity of 50 gallons (US) and be D.O.T. certified. It shall be mounted with stainless steel straps bolted to the bottom frame flange to allow for easy removal. The tank construction shall be of 12 gauge steel with single fuel pickup and return tubes. The baffled tank shall be vented to prevent low vacuum and facilitate rapid filling.

The tank shall have a 2" NPT fill to the driver's side of the chassis.

The fuel tank sending unit is to be mounted to the driver's side of the fuel tank for easy replacement without removing body panels.

FUEL LINES

Polyamide fiber, nylon braided, reinforced tubing with push-on reusable fittings shall be provided for the chassis fuel lines.

FUEL/WATER SEPARATOR

The Cummins engine shall be equipped with an integrated fuel / water separator with a self venting bottom drain valve. This filter shall be able to remove up to 95% of dissolved water and up to 99% of free standing water.

ALTERNATOR

Schedule A: HME Pumper Specifications

A LEECE-NEVILLE model 4890JB, 320 amp alternator shall be installed on the engine. This alternator is internally rectified and regulated.

FIRETRUCK CAB

The apparatus shall be designed to operate in emergency conditions. These conditions require the apparatus to maneuver into confined areas and operate in extreme conditions. To facilitate in these operations a cab-over-engine design is required in order to reduce the overall length, and turning radius of the apparatus thus increasing the maneuverability.

The cab design must be such to provide safe and efficient transport of emergency personnel. The cabin shall be designed with four (4) side doors of the largest size possible and with a grab handle and step arrangement to provide ease of entry and egress.

There shall be up to six (6) positions available for occupant transport with a minimum of four (4) forward facing seating positions in the cab. The number of seats and seating locations are described in detail later in this document.

The apparatus cab shall be of the latest in automotive design, styling and appearance.

CAB MATERIALS AND CONSTRUCTION

The extruded aluminum x/ cab shall have the following material gauges as a minimum:

- Cab floor - 3/16" (.190") aluminum
- Front skin - 3/16" (.190") aluminum
- Cab side panels - 3/16" (.190") aluminum
- Cab rear wall - 3/16" (.190") aluminum
- Cab driver's floor - 3/16" (.190") aluminum
- Cab officer's floor - 3/16" (.190") aluminum
- Cab crew area floor - 3/16" (.190") aluminum
- Cab roof - 3/16" (.190") aluminum
- Cab doors - 3/16" (.190") aluminum

Roof Rail Section Extending from the front to the rear of the cab above the doors the cab shall have an extruded aluminum section. This section shall be designed to interlock with the roof sheet and incorporate the door drip molding in one single piece.

Upper Transverse Member Amid ship in the cab there shall be a boxed beam header assembly located transverse in the cab from left to right.

Front Door B-Post This vertical box section of the cab located behind each of the front doors provides the slam post for the door latch assembly. This section also is a main member in the cab skeletal system. The B-Post ties into the Upper Transverse Member to provide torsional stiffness in the open space design of the cab.

Rear Door D-Post The box assembly design of the rear door D-post provides an anchor for the rear door latch assembly. This section is the main vertical support at the cab rear corner providing the anchor point for the rear wall structural lattice network.

Roof Panel Rails - The roof panel sub-assembly shall have extruded hat section supports bonded to the roof skin. These roof hat sections shall be joined to the Cab Roof Rail Section to complete the upper cab skeletal structure. These completed Roof Panel Rails shall provide a grid for maximum roof crush and deflection strength. The roof shall support a minimum weight of 250 lbs. / sq. ft. without permanent roof deformation.

Schedule A: HME Pumper Specifications

Rear Wall Rails - The rear wall assembly shall have extruded hat section supports bonded to the wall skin. These sections shall be joined to the Roof Panel Rails and to the rear door slam post and floor provide a rear wall grid structure with maximum strength.

Cab Front Wall - The front wall of the cab shall be designed with a double wall construction to reduce the effects of exterior noise in the crew and operator compartment.

CAB DIMENSIONS

The cab shall have the following overall dimensional requirements:

- Overall Width - 100 inches
- Roof - 12" Raised
- Center of front axle to back of cab - 60 inches
- Center of front axle to front of cab - 74 inches
- Windshield area - 4,200 sq. in. minimum
- Front grille opening - 478 sq. in. minimum
- Combined side grille opening - 84 sq. in. each minimum
- Cab full tilt angle - 45 degrees minimum
- Cab full tilt height - 185 inches maximum

Cab interior dimensions shall be provided as a minimum in the following chart:

- Drivers side floor width 22 inches minimum
- Floor to the ceiling in the driver and officers area of the cab 59-1/2 inches minimum
- Floor to the top of the doghouse 28-1/2 inches maximum
- Officers side floor width 21 inches minimum
- The measurement across the floor from the rear wall to the first vertical portion of the engine enclosure shall be no less than 43 inches and the floor width from step well to step well shall be no less than 84 inches
- Floor to the ceiling in the rear of the cab 65-3/4 inches minimum

CAB DOORS

The cab entry and egress shall be designed for a firefighter in full turnout gear. Each door shall open a minimum of ninety degrees to afford the firefighter maximum space.

The doors shall be of a flush design each having exposed, one-piece, polished stainless steel hinges. The hinge shall be made of 12-gauge material with a minimum hinge pin diameter of 1/4 inch.

The door windows shall have interior and exterior glass weather seals to prevent the influx of exterior air.

The doors shall have exterior and interior paddle type latches for ease of opening with a gloved hand. The paddle latches are to have a rubber gasket, on the outside, separating the handle from the finished painted surface.

FRONT DOORS

The cab front doors shall be of the full-length design enclosing the entire step area of the cab. The door shall be a minimum of 38-1/2 inches wide and 74 inches tall. The front door windows shall have a minimum of 800 square inch area of viewing glass per door. There shall be a fixed piece of forward glass in each of the front doors.

Schedule A: HME Pumper Specifications

REAR CAB DOORS

The rear cab doors shall be similar to the forward doors and shall be located directly behind the front wheel well area. These doors shall be 86 inches high x 34 inches wide. Each door shall have a roll down rear window with a minimum glass viewing area of 670 square inches.

INTERIOR DOOR LOCKS

All doors shall have door locks with interior controls and exterior keyed door locks. The installation shall be in conformance with FMVSS 206, with specific adherence to 49 CFR 571.206 Section 4.1.3 requiring that "Each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle". All doors shall be keyed alike. The doors shall be equipped with appropriate safety interlocks to prevent accidental locking of the doors when closed.

CAB GLASS

AS-1 safety laminate glass shall be used in a two piece, wrap around design with a minimum 3760 square inches of windshield area for maximum visibility. The windshield shall have the style of a one-piece assembly with the practical installation of two pieces for lower replacement cost. The windshield shall be readily available from a nationally recognized automotive glass manufacturer that maintains local distribution outlets.

All glass shall be tinted.

All fixed glass shall be installed with a one-piece triple locked rubber lacing material. Due to long term appearance two-piece chrome trim lock lacing is not desired.

SUNVISORS

The driver and officer side of the cab shall be equipped with a sun visor. The vinyl covered visors shall be a minimum of 17-1/2" by 7".

DRIVER SIDE ELECTRICAL CABINET

An electrical cabinet designed to house the main battery electrical disconnect and facilitate the installation of an onboard battery charger or battery conditioner shall be installed inside the drivers seat riser box. A bolt on limited access; aluminum diamond plate cover shall be installed on the front side of the seat riser box. The access cover shall have a louvered section to provide proper air circulation to the installed equipment.

WINDSHIELD WIPERS

Two speed electric pantograph wipers shall be installed. These wipers shall have minimum 24" blades and have 28 1/2" wet arm electric pump washers. A 70 oz. Minimum windshield washer reservoir shall be furnished.

FASTENERS

All cab exterior fasteners shall be stainless steel type fastened to the cab with nutserts.

CAB CORROSION TREATMENT

The cab shall have a corrosion preventative material conforming to Mil Spec C-16173-C, Grade 1, applied during and after construction. A 10-year warranty against perforation due to rust or corrosion shall be furnished for the cab.

Schedule A: HME Pumper Specifications

TRANSMISSION RANGE SELECTOR

The transmission shall be controlled by an electro-mechanical lever type shift control. It shall be internally illuminated for night operation and have an internal lock (hold override button) to securely hold the shifter in the position selected.

TRANSMISSION OIL LEVEL SENSOR

The transmission shall be equipped with the oil level sensor (OLS). This sensor shall allow the operator to obtain an indication of the fluid level from the shift selector. The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

(P) 1871W - MFDxl - 12" - Aluminum Cab

EXTERIOR DOOR HANDLES - BRIGHT FINISH

The cab exterior door handles shall have a bright anodized finish.

HEATER / DEFROSTER

A 57,600 BTU heater with a three speed fan shall be mounted in the front of the cab, centered over the windshield. This heater shall have six (6) adjustable vents to assure windshield defogging.

45,000 BTU AIR CONDITIONING

A climate control system shall be furnished in the cab. The system shall consist of a 45,000 BTU air conditioning evaporator and 33,400 BTU heater centrally located on the forward slope of the raised roof.

The system is to have a 13.1 cu. in. minimum compressor mounted on the engine to provide the compressed refrigerant to the system. The compressor is to be plumbed to a heavy duty truck, triple fan air conditioning condenser mounted on the cab roof. The condensing unit shall have an aerodynamic shroud that is painted to match the color of the cab roof. There shall be an extended life filter receiver/dryer with a pressure relief valve installed to protect the system from contaminants, moisture, and high pressure. It is to have a sight glass for visual inspection and ease of service.

The evaporator shall have an externally equalized expansion valve and be thermostatically protected to prevent freeze up. Dual high performance 3-speed blowers shall provide a minimum of 650 CFM air flow. Each blower is to be controlled separately. Eight (8) downward facing adjustable diffusers with shutoff capability shall be utilized to direct the air flow through the cab.

The air conditioning controls, on/off switch, thermostat control, and blower switches shall be located on the climate control display module within reach of the driver.

The climate control system shall utilize both automatic and manual control methods.

The climate control display's system standby screen shall maintain all of the climate control functions OFF.

The climate control display's automatic operation screen shall allow the user to select a desired temperature and the climate control system shall automatically choose the temperature mode (cool or heat) and the fan speed (low, medium or high) to maintain the desired temperature.

The climate control display's manual operation screen shall allow the user to set the temperature mode (cool or heat) and the fan speed (low, medium or high) as desired.

Schedule A: HME Pumper Specifications

CAB INSULATION

Heavy duty extruded foam rubber type insulation shall be installed in the rear cab wall and ceiling to provide a proper sound and insulation barrier. The insulation shall be a minimum of 1" thick, and shall be compliant with FMVSS-302, regarding high temperature heat and smoke ratings.

EMI/RFI PROTECTION

The apparatus shall incorporate the latest designs in the electrical system with state of the art components to insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

The apparatus proposed shall have the ability to operate in the environment typically found in fire ground operations with no adverse effects from EMI/RFI.

EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring that utilizes shielding and loop back grounds where required. The apparatus shall be bonded through wire braided ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode protected to prevent transient voltage spikes.

BATTERY BOX TRAY - STAINLESS STEEL

The battery box trays shall be stainless steel to reduce the corrosive potential of the tray. The battery hold down and brackets and hardware shall also be made of stainless steel.

BATTERY BANK

A single battery system shall be provided, utilizing four (4) high cycle type Group 31 batteries.

This system shall be capable of engine start after sustaining a continuous 150 amp load for 10 minutes with the engine off (NFPA-1901).

A battery disconnect switch (Rated at not less than 450 amps continuous) shall be used to activate the system and provide power to the power panel.

BATTERY CABLES

All battery wiring shall be "GXL" battery cable capable of handling 125% of the actual load. It shall be run through a heat resistant flexible nylon "HTZL" loom rated at a minimum of 300 degrees Fahrenheit. All cable connections shall be machine crimped and soldered.

STARTING CIRCUIT

Schedule A: HME Pumper Specifications

One (1) engine start button is to be located on the lower right dash panel. It shall be wired to heavy duty solenoid rated at not less than 1100 amps. The battery indicator light is to be located directly above the start button to indicate that the battery bank is on.

BATTERY POWER BUS BARS

There shall be solid copper buss bars utilized for the direct connections between batteries. These buss bars shall be nickel plated for corrosion resistance and provided with color coded heavy shrink tube between the batteries for short circuit protection.

BATTERY CHARGER

A PRO MARINER / ON BOARD SOLUTIONS advanced electronic 4-step battery charger/power supply with a 40 amp output shall be installed, behind the driver's seat, under the rear facing SCBA if so equipped.

Since shoreline power is not always stable the charger shall be equipped with Auto-Ranging AC Input to automatically accept global voltages of 90 VAC to 270 VAC at 45-440 Hz.

Field Selectable - Use with lead/acid or gel batteries (AGM factory option). Select length of absorption charge cycle based on size of batteries.

In the 4-step charging system the charger will provide the following sequence

Step 1: Fast Charge - Charger will deliver its maximum amperage rating to the connected batteries for the fastest charge (current regulation mode) until battery voltage is raised to 14.6V (lead acid factory setting). At this time, the ProTech will shift to step 2.

Step 2: Absorption Charge - Maximizes charge and holds voltage (voltage regulation mode) at 14.6V (lead acid factory setting) for 1 to 4 hours (selectable based on battery size), while letting the batteries determine the amount of amps they can accept. This mode creates activity in the batteries, reducing sulfate buildup, and conditions the batteries for an extended life. After the programmed 1 to 4 hours have elapsed, the ProTech will shift to step 3.

Step 3: Float Mode - A precision 13.3V (lead acid factory setting) finishing voltage that maintains each battery (step-down voltage regulation mode), which is perfect for short or long storage periods and will never overcharge your batteries. ProTech will deliver its full rated output for house loads including: lighting, electronics and pumps.

Step 4: Recycle - If there are very large loads on the battery while the charger is on, the unit will recycle to the first step, ensuring that batteries stay fully charged.

One-Year Warranty - Includes lifetime repair guarantee.

Certified to - UL Marine 1236/SA

ON-BOARD ELECTRIC COMPRESSOR

A Kussmaul Auto Air model 091-9B-1 on-board air compressor shall be supplied. The 120 VAC compressor shall be designed to maintain the air pressure in the air brake system while the vehicle is not in use. A pressure switch senses when the system pressure drops and starts the compressor which then runs until pressure is restored. All ball bearing construction, lubricated for life, assures reliable operation and requires no servicing. Compressor Output: 0.76 CFM@100 PSI Pressure Switch: Adjustable Set Point-Factory set to 75 PSI Cut-in, 95 PSI Cut-out.

Schedule A: HME Pumper Specifications

The compressor shall be located behind the officer's side step well with a bolt on louvered access panel, the air compressor shall be permanently wired to the 120 VAC shore line connection.

SHORELINE AUTO-EJECT

A KUSSMAUL Super Auto Eject, model 091-55-20-120, with weatherproof cover shall be provided.

The Super Auto Eject is to be completely sealed to prevent internal contamination of the working components.

The internal switch arrangement of the Super Auto Eject shall be designed to close and open the 120-volt AC circuit after the mating connector is inserted and before the connector is removed. This design shall prevent arcing at the connector contacts to provide long life.

The electrical connection shall be provided as a 120-volt AC - 20 amp type using a NEMA 5-20P connector.

The Auto-Eject cover shall be yellow in color.

The Auto-Eject cover shall be a Kussmaul 091-55.

The Auto Eject assembly shall be mounted on the exterior of the cab behind the driver's door.

BATTERY JUMPER STUDS, DRIVER'S AND PASSENGER'S SIDE

Battery jumper studs shall be provided on the chassis. The jumper studs shall be mounted underneath the cab, on the rear of the driver's side and passenger's side battery boxes. The studs shall be connected to the chassis batteries with 1/0 color coded cables, red for the positive cable and black for the negative cable. The studs shall be protected with color coded plastic covers when not being used.

ENGINE ENCLOSURE

To further reduce the noise in the cab the engine enclosure on the inside of the cab shall be completely covered with Acoustiblok sound isolation material. The material shall be sealed at all seams with acoustical sealant.

Additionally, the engine enclosure shall be padded with an additional layer of sound and heat absorbing foam and covered with heavy duty vinyl trim upholstery to match or accent the interior of the cab.

The underside of the engine enclosure shall be covered with a sandwiched material for interior cab noise and heat rejection. This sandwiched acoustical material shall have one layer of 1/8" foam, a 3/16" single barrier and a 7/8" layer of foam to provide an overall thickness of 1-3/16". The sandwich material shall be chemically bonded to prevent layer separation. A finished surface treatment of metalized film shall be provided on the engine side of the barrier. The acoustical barrier shall be held in place with mechanical fasteners in addition to adhesive.

The insulation shall provide protection from heat and sound and shall meet and/or exceed the dBA level limits stated in the current edition of NFPA 1901.

CAB DOORS - INTERIOR TRIM

Schedule A: HME Pumper Specifications

To provided durability the interior of the cab doors shall be finished with full length aluminum panel that is finished with Zolatone high abuse paint.

INTERIOR CEILING PADDING AND TRIM

The cab front interior ceiling shall have a one-piece, removable, vinyl headliner to cover all wiring and tubing used for lights and antenna leads.

REAR WALL COVERING

The rear interior wall of the cab shall have a two-piece, removable, wall covering to finish the interior trim, cover all wiring and tubing used for lights and antenna leads.

FLOOR COVERING

The front and rear floor areas of the cab shall be covered with "HUSHCLOTH" sound barrier floormats. This floormat shall be a three ply material with a 3/16" thick open cell isolation barrier of Polyurethane, a 3/32" thick closed cell Nitrile mid barrier for section reinforcement, and a 1/16" thick embedded pebbled grain wear surface.

REAR FACING SEAT BOX COVERING

The rear facing seat box area of the cab shall be covered with "HUSHCLOTH" sound barrier floormat. This floormat shall be a three ply material with a 3/16" thick open cell isolation barrier of Polyurethane, a 3/32" thick closed cell Nitrile mid barrier for section reinforcement, and a 1/16" thick embedded pebbled grain wear surface. The seat box covering shall blend with the cab interior paint color.

REFLECTIVE MATERIAL - INTERIOR CAB DOORS

The cab front and crew doors shall have a reflective chevron panel affixed to the inside of each door. The reflective material shall be red/yellow diamond grade.

STEERING WHEEL AND COLUMN

The steering column shall be a Douglas tilt / telescopic type with an integral high beam / turn signal control switch. The column shall have self-canceling design for the turn signal switch. A 4-way warning "Hazard" light switch shall be mounted on the column. For safety, a rubber boot shall be installed to cover the steering shaft from the dash to the floor.

The steering wheel shall be an 18-inch diameter wood accent-leather wrapped 4-spoke wheel. A lever on the left side of the steering column shall control the telescopic feature.

GRAB HANDLES

One (1) molded grab handle shall be installed on the driver's side on the A Post.

One (1) additional molded grab handle shall be installed inside the cab. The handle shall be located on the officer's side on the A Post.

Two (2) additional molded grab handles shall be installed in the cab. These handles shall be located one each side on the B Posts side of the crew area doors.

RADIO COMPARTMENT

Schedule A: HME Pumper Specifications

Beneath the officer's seat there shall be a radio compartment with an interior dimensions of 19-1/2" wide x 17" long x 7" high.

CAB STEP DIMENSIONS

The front cab steps shall have the following overall dimensional requirements:

- Upper step size 10-1/4 inches deep x 29 inches front to back
- Lower step size 12 inches deep x 39 inches front to back

The rear cab steps shall have the following overall dimensional requirements:

- Upper step size 6 inches deep x 23 inches front too back
- Lower step size 9 inches deep x 21 inches front to back

INTERIOR CAB STEP TRIM

The cab steps shall be enclosed behind each door. The lower step shall be sealed from the underside of the cab to eliminate road splash from entering the step area while the vehicle is driving. The horizontal upper step surfaces shall be integral to the cab, and shall be covered with bright aluminum tread plate. the lower cab steps shall be constructed from stainless steel Laser Grip material, exceeding the requirements of NFPA-1901.

The vertical toe kick surface area of the upper cab step wells shall be covered with aluminum tread plate.

COMPARTMENT OPEN LIGHT

A Red Open Compartment Flashing Light, Whelen OS Series LED shall be mounted on the driver's side face of the overhead panel. A chrome flange is to be supplied with the light.

The light shall be wired so that the light circuit is deactivated when the parking brakes of the apparatus are applied.

A label shall be applied adjacent to the light '**DOOR OPEN**'.

DECKGUN RAISED LIGHT

A Blue Flashing Light, Whelen OS Series LED shall be mounted on the driver's side face of the overhead panel. A chrome flange is to be supplied with the light.

This light is wired with a flasher to the power panel for completion to circuit on the body.

The light circuit shall be wired so that the light circuit is deactivated when the parking brakes of the apparatus are applied.

A label shall be applied adjacent to the light '**DECKGUN RAISED**'.

Interior Lighting Group - 1871W - 1871SFO

LED Strip Light Interior Light Packages

CAB FLOOR LED STEP LIGHTING

The the steps cab shall be trimmed with a ribbed aluminum extrusion. The extrusion shall protrude as a approximately 3/4" over the floor area to provide a mounting channel and guard for an LED integrated light. The LED lighting shall

Schedule A: HME Pumper Specifications

illuminate the step area of the cab and all step lights shall be illuminated when any door is opened and the battery selector switch is in the on position.

DRIVER & OFFICER AREA LED CAB LIGHTING

There shall be a white LED strip lighting mounted above the full length of each front door in the cab. The strip light shall be mounted in an aluminum extrusion and shall face the center of the cab.

The lighting shall be operated opening a cab door.

CREW AREA WHITE LED CAB LIGHTING

There shall be a white LED strip lighting mounted above the full length of each cab crew door in the cab. The strip light shall be mounted in an aluminum extrusion and shall face the center of the cab.

The lighting shall be operated opening a cab door.

DRIVER'S / OFFICER'S DASH AND CENTER SWITCH PANEL

The housings for the driver's instrumentation and the officer's side dash enclosures shall be rugged aluminum fabrications. There shall also be a rugged aluminum housing on the top of the engine enclosure between the driver and officer side dash enclosures. On the top of the control center there shall be an access panel for maintenance and troubleshooting of devices mounted on the control center.

A master control switch to allow for pre selection of response mode functions.

The remaining switches shall be programmed and labeled with the manufacturer standards as to the custom options selected for the vehicle.

The switch panel shall be a Class 1 Smart Programmable Switch (SPS) panel installed as a multiplexed node to provide input and output information to the apparatus electrical system. The panel shall have ergonomic rubber molded switches with backlighting.

Additionally the panel shall house:

- warning light control switch panel
- siren control head - recessed
- a position for two-way radio installation.

The driver's, officer's and center dash housings shall have a black powder coated finish.

Control Center Sw Panel - Doghouse Mtg - EsKey - Aluminum Hsng

PARKING BRAKE CONTROL VALVE

The parking brake control valve shall be located in the driver's dash engine control panel.

TEMPERATURE MONITOR

Schedule A: HME Pumper Specifications

A Kussmaul Temperature Module shall be installed in the driver's area of the cab. The module shall have a built-in LED indicator to show the outside temperature in either °F. The monitor display will blink at 32°F to indicate the roads may be icy.

CUP HOLDERS

There shall be two (2) recess mounted cup holders mounted on top of the doghouse console.

MULTIPLEXED ELECTRICAL SYSTEM

The apparatus shall be equipped with a Class 1 ES-Key Management System for complete control of the electrical system devices. This management system shall be capable of performing load management functions, system monitoring and reporting, and be fully programmable for control of the electrical system.

The ES-Key system shall utilize a Controller Area Network (CAN) to provide multiplexed control signals for "real time" operation. The system shall consist of the following components:

- *Universal System Manager (USM)* - The USM device shall be the CAN network controller and provide various functions to the apparatus such as load management. The USM shall be programmed from a network interface to a PC computer.
- *Power Distribution Module(s) (PDM)* - The PDM shall be a control device on the network with a primary function as power distribution. Receiving control signals from the USM the PDM turns on and off relays providing power to its connected loads. The PDM also shall contain digital switch inputs allowing for input clustering throughout the apparatus.
- *Information Display Module* - For displaying text, warnings and diagnostics. The information Display Module shall allow the fire department to access and change load management shedding priority and maintenance text listing the routine maintenance items and lubrication capacities on the apparatus.
- *Input / Output Module* - The module shall have 16 inputs to communicate with the USM and 3 outputs for various chassis functions.

The ES-Key system shall provide diagnostic capabilities for troubleshooting the electrical system of the apparatus.

CHASSIS COLOR CODED WIRING

All chassis wiring shall be type "TXL" in accordance with S.A.E. J1128 and NFPA-1901. ALL wiring shall be **COLOR CODED** and continuously marked with the circuit number and function.

All wiring to be covered in nylon heat resistant "HTZL" loom rated at a minimum of 300 degrees F exceeding the heat requirements of NFPA-1901.

A battery "loop back" ground circuit shall be supplied for the EDS system to reduce the possible effects of Electromagnetic and Radio Frequency Interference.

The chassis cab, engine and transmission shall be electrically bonded to the chassis frame rails with braided ground straps.

ELECTRICAL SYSTEM CONNECTORS

Schedule A: HME Pumper Specifications

All multiple conductor electrical connections shall be made with Packard electrical connectors. The Packard connectors shall become mechanically locked when mated.

All single wire terminations requiring special connectors with a ring or spade terminal shall be crimped, and wrapped with heat shrink tubing.

INFORMATION DISPLAY MODULE

The Information Display Module for displaying text, warnings and diagnostics. The information Display Module shall allow the fire department to access and change load management shedding priority and maintenance text listing the routine maintenance items and lubrication capacities on the apparatus. For displaying text, warnings and diagnostics.

DUAL PORT USB CHARGING PORT

A 4.2 amp Dual USB charging port shall be installed in the driver's area of the cab. A second USB charging port shall be installed in the officer's area of the cab.

The USB charging port shall be powered with the battery power switch in the cab.

CUP HOLDERS

There shall be two (2) recess mounted cup holders mounted on top of the center dash console.

DRIVER INSTRUMENTATION AND CONTROLS

The gauges shall have red LED back lighting for enhanced visibility. Upon on initial ignition sequence a lamp check function shall illuminate the warning light telltales, the self diagnostic message center shall sequence the warning light telltales if data link communications are lost. The instrument panel shall include the following gauges and indicators.

- Electronic speedometer with LCD odometer
- Tri cluster gauge that includes:
 - Electronic tachometer
 - Engine coolant temperature gauge, with warning light and buzzer
 - Engine oil pressure gauge, with warning light and buzzer
- Transmission fluid temperature gauge, with warning light and buzzer
- Two air pressure gauges, with warning light and buzzer
- Voltmeter, with low voltage warning light and buzzer
- Fuel level gauge
- DEF fluid level
- High beam indicator light
- Parking brake set light
- Turn signal indicator lights

The lighting control panel is to be located to the left side of the instrument panel. The lighting control panel shall include the following:

- Headlight control switch
- Dash rheostat for instrumentation lighting control
- Wiper and washer control switches

Schedule A: HME Pumper Specifications

The engine control panel is to be located beneath the instrument panel on the driver's right hand side. The engine control panel shall include the following:

- Keyless ignition switch with a green pilot light
- Engine start button

The pump shift control panel (if so equipped) shall be located beneath the instrument panel on the driver's left hand side.

AUDIBLE TURN SIGNAL REMINDER

There shall be an audible alarm that shall sound when the turn signal remains flashing for a distance greater than one mile. The reminder shall not sound when the hazard lights are operating.

AUDIBLE LIGHTS ON REMINDER

There shall be an audible alarm that shall sound when the headlight switch is left in the on position and the ignition is off. The alarm shall self cancel after 2 minutes of operation.

AUDIBLE PARKING BRAKE REMINDER

There shall be an audible alarm that shall sound when the parking brakes are NOT set and the ignition is turned off. This alarm shall self cancel after 2 minutes.

The Parking Brake reminder shall sound an audible alarm when the parking brakes are set and an indicated speed of over two miles per hour occurs.

DUAL TRIP ODMETERS

There shall be two (2) trip odometers in the driver's information center. Each shall be capable of independent operation and reset. They shall be labeled Trip1 and Trip2 when the trip mileage is shown in the LCD panel.

SPEEDOMETER ACTIVATED IN PUMP MODE

The speedometer and odometer shall be activated while in pumping mode.

LOW FUEL LIGHT

A "Low Fuel" warning light and alarm shall be installed in the dash message center. This light shall illuminate when the apparatus fuel level reaches 25% of the fuel remaining.

TRANSMISSION OVERHEAT WARNING LIGHT

A transmission oil temperature light with alarm shall be provided on the dash message center.

LOW VOLTAGE WARNING

A low voltage indicator light shall be installed on the dash message center. An alarm and the dash indicator light shall activate when the system voltage drops below 11.8 volts.

AIR CLEANER RESTRICTION INDICATOR

Schedule A: HME Pumper Specifications

An air cleaner restriction indicator shall be installed in the driver's message center. The indicator shall provide visual warning when a high air restriction condition exists for a minimum of 4 seconds.

LOW COOLANT WARNING

Low coolant warning shall be accomplished through the engine electronics to provide driver warning via the engine stop warning light.

INTERMITTENT WIPER CONTROL

A rotary combination intermittent electric wiper / washer switch shall be provided on the left hand side of the driver's dash.

PARKING BRAKE CONTROL VALVE

The parking brake control valve shall be located in the driver's dash engine control panel.

TEMPERATURE MONITOR

A Kussmaul Temperature Module shall be installed in the driver's area of the cab. The module shall have a built-in LED indicator to show the outside temperature in either °F. The monitor display will blink at 32°F to indicate the roads may be icy.

No Doghouse Mounted Cupholder

No Rear Seat Base Mounted Cupholder

BACKUP CAMERA SYSTEM

There shall be a Pro-Vision RV-505A video system provided on the apparatus.

The rear camera shall contain a 1/3 color Sony CMOS with imaging in 1080p (1920 x 1080) AHD with a field of view of 130°. The camera housing shall provide a shock rating of 17.3G and have water and dust resistance to IP 69K under IEC standard EN 60529. The rear camera shall be mounted below the hosebed with a metal guard over the top and each side.

There shall be a 7" HD LCD monitor mounted on the doghouse within view of the driver.

The camera system shall activate when the vehicle transmission selector is placed in reverse.

ROAD SAFETY KIT

One (1) 2-1/2# ABC DOT Approved fire extinguisher shall be provided. The fire extinguisher shall be shipped loose with the chassis.

One (1) set of DOT approved hazard triangles shall be supplied with the chassis. They shall be stored in a plastic case and shipped loose with the chassis.

CAB CRASHWORTHINESS TEST

Dynamic tests shall be performed to evaluate the crashworthiness of the proposed vehicle cab configuration to the requirements of NFPA 1901-09 section 14.3.2.

Schedule A: HME Pumper Specifications

Cab roof strength shall be tested utilizing the dynamic preload criteria from SAE J24221 paragraph 5 specifications and procedures.

Front impact strength integrity shall be tested utilizing SAE J24202 with ECE R293 Annex 3 paragraph 4 equivalent energy.

Quasi-static roof strength shall be based on SAE J2422 paragraph 6 and ECE R293, paragraph 5 specifications and procedures.

A letter of certification shall be provided upon request by the department.

EXTERIOR GRAB HANDLES

The cab shall have extruded aluminum 24" grab handles at each door position. Molded rubber gaskets shall be installed under the grab handles to protect the painted surface of the cab.

RED WARNING LIGHT. CAB HANDRAILS

The rear door cab handrails shall contain red integrated LED lighting. The lighting shall be integrated into the grab bar, directed toward the rear of the apparatus. The LED lights shall flash with the emergency warning lights.

AMBER SIDE TURN SIGNAL. CAB HANDRAILS

The front door cab handrails shall contain amber integrated LED lighting. The lighting shall be integrated into the grab bar, directed toward the rear of the apparatus. The LED lights shall flash with the directional signals.

EXTERIOR GRAB HANDLES - BRIGHT FINISH

The cab exterior grab handles shall have a bright anodized finish.

FRONT GRILLE

A stylized full stainless steel, three dimensional stainless steel front grille shall be installed on the front cab face. The front grille shall have a radiator rock guard to assist in preventing damage to the radiator core.

The cab shall have one (1) engine air cleaner intake, on each side of the cab. These openings shall be covered with a honey comb wire screen, and a stainless steel grill.

The engine air intakes shall be located no less than 50" from the ground, in the event the apparatus is required to ford deep water.

CAB GRILLES - BRIGHT FINISH

The cab front grille and side grilles shall have a bright finish.

CAB MUDFLAPS

Mud flaps shall be installed behind the front tires. These mud flaps shall be a minimum of 22" wide to protect the underneath of the cab and body.

CAB GROUND LIGHTING - LED

Schedule A: HME Pumper Specifications

There shall be one (1) white LED strip light in an armored extrusion shall be mounted beneath each cab door. These lights shall be designed to provide illumination on areas under the driver and crew riding area exits. All cab ground lights shall automatically activate when any cab door is opened.

MIRRORS, BUS-STYLE, REMOTE

The cab mirrors shall be bus-style mirrors. The mirrors shall have a full-face main mirror. Above the main mirror a convex mirror will be attached. The flat glass head shall be remote control. The mirror heads shall have a smooth chrome plated high impact non-metallic housing.

The mirror control shall be provided on the driver's side overhead dash.

CAB SIDE WINDOWS

Two AS-2 tempered glass, fixed side windows, 26-1/2" high x 16" wide shall be furnished, one on each side behind the forward doors. All glass shall be tinted. These windows shall be installed with a one-piece triple locked rubber lacing material.

ELECTRIC WINDOWS

The four (4) roll down door windows shall be equipped with electrically operated mechanisms to control the opening and closing of the windows. Control shall be with a momentary switch in the door.

Three (3) additional switches shall be supplied in the driver's door to control all four of the power windows from the driver's position.

WINDOW TINTING

The cab side, crew door and, (cab rear if equipped) windows shall have GRAYLITE II tint (9% visible) to provide privacy and to assist in reducing the amount of heating inside the cab due to direct sunlight and unwanted glare.

UNDER CAB ENGINE MAINTENANCE LIGHTS

Two (2) LED engine maintenance lights shall be supplied beneath the cab. These lights shall illuminate automatically when the cab is tilted to the full tilt position.

STAINLESS CAB FENDERETTES

To reduce road splash on the cab sides, stainless steel fenderettes shall be installed around each the wheel opening.

STAINLESS CAB FENDERETTES - POLISHED FINISH

The cab fenderettes shall have a polished finish.

EXTERIOR REAR WALL DIAMOND PLATE OVERLAY

The cab exterior rear wall shall be covered with a single sheet of bright aluminum tread plate to protect the back of the cab from scratches.

CAB TILT SYSTEM

Schedule A: HME Pumper Specifications

The cab shall tilt a minimum of 45 degrees for ease of serving. Tilting shall be accomplished by means of a tilt pump connected to two (2) heavy duty lift cylinders. It shall be equipped with a positive locking mechanism (service lock) to hold the cab in the full tilt position. Release of the service lock shall be by means of a pull type cable assembly. The cylinders shall have a velocity fuse at the base to prevent the cab from falling in the event of a hydraulic hose failure. The cab shall be capable of tilting 90 degrees for major engine service, if necessary. The 90 degree cab tilt shall be accomplished by removing the cab cylinder pins, removing one bolt in the steering shaft, and removing the front bumper and treadplate.

The cab shall have a three (3) point cab locking system. To prevent undue stresses in the cab, the cab mounting shall incorporate a five (5) point load mounting system.

The front cab pivot/lock assemblies shall utilize four (4) radially loaded, bonded rubber, axial mounts. These mounts shall have a maximum radial load rating of 925 pounds each and a torsional rating of 25 lbs-in/deg. Two one (1) inch diameter cab pivot pins shall be installed at the front of the cab.

The rear cab lock shall be center point mounted to prevent normal twist of the chassis from affecting the cab mounting, cab structure and windshield areas of the cab. This rear cab lock shall be mounted on a chassis crossmember to provide a stable platform for the locking system. The cab lock shall be mounted to a baseplate that is fastened to rubber isolators to reduce road noise and provide additional movement of the cab lock. This locking system shall automatically open prior to the cab tilting and automatically relatch when the cab is lowered completely into the travel position.

Two (2) outboard frame mounted urethane "V" blocks shall be provided at the rear of the cab. These dual purpose mounts shall align the cab upon lowering as well as provide non-latching support for the cab in the down position. With this system, extreme chassis twist shall allow the cab to move independently of the rear cab supports, reducing the structural stress damage often caused by outboard dual cab locking systems.

An electric-over-hydraulic cab tilt pump shall be supplied. This pump shall have a remote control for cab tilting operation. The control shall be "safety-yellow" in color.

CAB TILT INTERLOCK

The cab lift system shall have a cab tilt interlock. The cab tilt shall not be able to be activated unless the master battery switch is in the on position with the parking brake set.

INTERIOR FINISH

The entire interior of the cab shall be painted with spatter paint, black in color. Black spatter paint is selected for ease of repairs when the interior is scratched.

The cab metal finish shall be covered with one coat of base self-etching primer to fill the small surface imperfections.

Then the interior of the cab is to be blocked and a coat of sealer-primer is to be sprayed to the interior finish.

Next a sealer primer is applied and shall be sanded to a smooth finish ready for final color coat application.

Two (2) coats of finished paint are to be applied to a final thickness of 4 mills.

The following interior components shall be finished in black:

- Overhead console
- Sun visors

Schedule A: HME Pumper Specifications

The interior headliner of the cab shall be black in color.

The interior rear wall covering of the cab shall be black in color.

The interior flooring material of the cab shall be black in color.

The interior door panel material of the cab shall be black in color.

The doghouse covering material in the cab shall be black in color.

The dash housing, doghouse console; when so equipped; and the officer's glove box or console shall be black in color.

CAB EXTERIOR FINISH

The exterior doors and all fixed cab glass are to be removed from the cab prior to the paint and body process beginning.

The final finish of the cab shall be to fire apparatus standards; exhibiting excellent gloss durability and color retention properties.

PREPARATION

The removal of all contaminates and oxidation is essential to the final effect of a finish system, the cab shall be precleaned with a Wax and Grease Remover and prior to evaporation, towel dried.

To remove all oxidation and foreign materials, the cab shall be sanded with a 180 grit abrasive using an orbital type disc sander.

All weld marks and other major surface imperfections shall be filled with a polyester type body filler, prior to body filler application special attention shall be given to the areas requiring filler again sanding and cleaning.

The body fillers shall be thoroughly mixed in accordance with the manufacturer's directions.

After the final coat of filler is sanded, spray polyester shall be applied in sufficient amounts as to provide a final base and sanded with abrasive paper.

PRECLEAN

Within 45 minutes of pretreat the cab must be again washed with a Wax and Grease Remover using a "Scotch brite pad". Towel dry prior to evaporation.

Special precaution shall be taken NOT to saturate any polyester body fillers with the cleaning solvents.

PRETREAT AND PRIMERS

The pretreat and primer applications shall be made in two independent steps. A combined pre-treat/primer one product application shall not be allowed as a substitute.

The prepared substrate shall be pretreated with an acid curing 2-component Transparent Primer. This pretreat shall be designed to provide corrosion protection and to create an adhesive bond between the substrate and the surface applications.

Schedule A: HME Pumper Specifications

It is critical that the body fillers not receive a saturation of solvents associated with the pretreat application. Only the pretreat over spray resulting from product application to the adjacent metal areas should be allowed to come in contact with the body fillers.

All polyester body fillers are porous, and shall absorb liquids. Solvents when absorbed not only soften but shall create swelling of the polyester filler. After sanding and later shrink the fillers shall create blemishes in the painted surfaces.

Prior to complete primer application, each area with applied body fillers be precoated with a 2-dry applications of primer (sander surfacer) of which shall be allowed to "Touch Dry" between coats. This procedure shall isolate the filled areas and protect them from subsequent product applications.

The primer (sander surfacer) shall be a poly-acrylic resin, zinc and chromate free surfacer that is designed to create a superb surface smoothness, increase the depth of color, and insure top coat gloss.

The cab after pretreat and precoat shall be primed with a 3 to 4 medium applications of a Hi-Build Tintable Surfacers.

To create a finish base that meets the rigid requirements of the fire and emergency service; the primed surface shall be dry sanded smooth thus removing all texture and surface imperfections with a 320 grit (minimum) sanding abrasive.

FINISH AND COLOR COATS

The color coat application shall consist of two to three applications of acrylic urethane color coat. After the color coat has been applied, the cabs shall be sprayed with 1.5 to 2.0 mills of clear coat finish. The clear coat finish is then sanded and buffed to remove any imperfections that can occur during the application of the color coat.

The final finish shall be free of dirt and sags and shall meet a minimum grade of 7 when compared to the "ACT" general orange peel standards by "ACT" Laboratories, Inc. Of Hillsdale, MI.

The final sanding and buffing of the clear coat shall result in a flat / glass like finish. The clear coat shall also provide a UV barrier to prevent fading and chalking.

PPG brand urethane materials will be used for the cab exterior paint.

DRIVER'S SEATING POSITION

The seat shall be H.O. Bostrom, Sierra 500, ABTS, with air ride suspension, high back seat with 5" of fore and aft slide adjustment. The seat shall have adjustments for height and ride with up to 3" of vertical travel. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

OFFICER'S SEATING POSITION

The seat shall be H.O. Bostrom, Tanker 500 Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a pivoting head rest. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

SCBA FILLER PADS

The SCBA seat is to have a filler pad installed to provide a smooth back for the firefighter when the air breathing apparatus is not in use.

SCBA SEAT BRACKET

Schedule A: HME Pumper Specifications

There shall be a H.O. Bostrom SecureAll™ self-contained breathing apparatus bracket mounted into the seat cavity.

CREW AREA - REAR FACING LEFT OUTBOARD SEAT POSITION

The seat shall be H.O. Bostrom, Tanker 500 Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a pivoting head rest. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

SCBA SEAT BRACKET

There shall be a H.O. Bostrom SecureAll™ self-contained breathing apparatus bracket mounted into the seat cavity.

CREW AREA - REAR FACING RIGHT OUTBOARD SEAT POSITION

The seat shall be H.O. Bostrom, Tanker 500 Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a pivoting head rest. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

SCBA SEAT BRACKET

There shall be a H.O. Bostrom SecureAll™ self-contained breathing apparatus bracket mounted into the seat cavity.

CREW AREA - FORWARD FACING LEFT INBOARD SEAT POSITION

The seat shall be H.O. Bostrom, Tanker 500 Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a pivoting head rest. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

SCBA SEAT BRACKET

There shall be a H.O. Bostrom SecureAll™ self-contained breathing apparatus bracket mounted into the seat cavity.

CREW AREA - FORWARD FACING RIGHT INBOARD SEAT POSITION

The seat shall be H.O. Bostrom, Tanker 500 Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a pivoting head rest. The seat shall contain a seat mounted 3-point seat belt with a shoulder belt adjustment of 4.7 inches.

SCBA SEAT BRACKET

There shall be a H.O. Bostrom SecureAll™ self-contained breathing apparatus bracket mounted into the seat cavity.

FORWARD FACING SEAT RISER AND STORAGE TRAY

The center forward facing seat(s) shall be installed on a powder coated aluminum riser. Under the seat riser there shall be an aluminum roll-out tray designed to provide safe storage for forcible entry tools in the crew area. This tray, lined with Dri-Deck, shall have a diamondplate front with a D-ring handle to provide positive lock in the closed position.

SEAT COVERING MATERIAL

The seats shall be covered in gray black Durawear™, a high strength-wear resistant, waterproof fabric.

Schedule A: HME Pumper Specifications

SEAT BELT WARNING LABELS

The cab shall be equipped with two (2) seat belt warning labels. These labels are to be in full view of the occupants in the seated position.

VEHICLE DATA RECORDER

The Apparatus shall be equipped with a Class1 "Vehicle Data Recorder and Seat Belt Warning System" (VDR/SBW) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus. The VDR/SBW will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train's J1939 data and 14.1.3.10 (Seat Belt Warning) using the Class1 "Seat Belt Input Module" for seat occupied and belt status information.

The VDR data shall be downloadable by USB cable to a computer using either Microsoft™ or Apple™ Operating Systems using Class 1/ O.E.M. supplied reporting software.

SEAT BELT WARNING SYSTEM

There shall be a seat belt indicator system supplied in the cab. The indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

A display panel shall be supplied in the dash area. The panel shall have an audible indicators and a red light display to indicate that a seat belt has not been fastened.

SEAT BELT WARNING SYSTEM - MONITOR

Mounted in the overhead console in the driver's area the indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

FRONT BUMPER

A stainless steel bumper shall be provided the full width of the cab.

BUMPER EXTENSION

The front frame extension shall be bolted directly to the main rail. The extension and main rail joint shall have a 3/8" thick side plate for reinforcement. The completed apparatus must be able to be lifted at the front bumper without structural damage to the front extension for towing of a disabled vehicle.

The front bumper face shall extend 24 inches ahead of the front face of the cab skin.

FRONT JUMPLINE DISCHARGE

A 1-1/2" discharge shall be located at the front bumper. The front discharge shall be plumbed using 2" stainless steel pipe and wire reinforced high pressure hose coupled with stainless steel fittings.

The front discharge outlet shall have a 2" quarter-turn swing out valve with the control located on pump operator's panel.

The front discharge at the bumper shall be provided with a 2" to 1-1/2" polished stainless steel, 90° swivel adapter with 1-1/2" NST male outlet.

Schedule A: HME Pumper Specifications

The jumpline swivel shall be located on top of the gravelshield adjacent to the hosewell.

AUTOMATIC DRAIN VALVE

One (1) Class 1, 3/4" automatic drain valve shall be supplied.

TOW HOOKS

Two (2) chromed tow hooks shall be provided and shall be attached directly to the front frame extension under the bumper. These tow hooks shall be attached with two Grade 8 bolts with hardened washers and Grade "C" distorted thread locknuts.

GRAVELSHIELD

A gravelshield shall be installed filling the area above the extension rails. This gravelshield shall be constructed of .125" thick NFPA non-skid, non-skid, aluminum treadplate. The gravelshield shall be supported at the front by the top flange of the steel bumper. At the rear, the gravelshield shall be supported by a steel substructure.

BRIGHT FINISH GRAVELSHIELD

The gravelshield shall have a bright finish.

CENTER HOSEWELL

A hosewell shall be mounted between the bumper extension rails in the center of the gravelshield. The hosewell shall be constructed of 11 gauge stainless steel. The hosewell shall be 31-1/2" wide x 9-1/2" deep x 19-1/2" front to back.

VINYL HOSEWELL COVER

A vinyl cover shall be provided for the hosewell. The vinyl cover shall be permanently attached at the front of the hosewell next to the front bumper. The end flap of the cover shall be fastened in accordance with NFPA 1901.

The hosewell cover shall be Brilliant Red in color.

AIR HORNS

Dual stutter tone air horns shall be recessed into the front bumper, one each side.

AIR HORN IGNITION CONTROL

To eliminate inadvertent operation the chassis air horns shall be operable only when the battery selector and ignition switch are in the "ON" position.

AIR HORN CONTROL SWITCH

The chassis air horns shall be controlled by a lanyard with a 'Y-chain'. The lanyard chain shall be mounted to the center of the overhead console within reach of both the driver and officer and shall terminate at the cab center.

AIR HORN OPERATION

The air horn and the electric horn shall be sounded simultaneously by depressing the horn button in the steering wheel.

Schedule A: HME Pumper Specifications

ELECTRONIC SIREN

A Whelen electronic siren control, model 295HFS2 full feature with 17 Scan-Lock siren tones including Radio Rebroadcast, Public Address, Manual, Wail, Yelp, Air Horn, Electronic Mechanical Siren tones and Piercer tones and hard wired microphone, shall be provided.

The siren control shall be recess mounted in the center dash within easy reach of the driver and officer.

Q2B MECHANICAL SIREN

A FEDERAL Q2B mechanical siren shall be mounted on top of the gravel shield on the left (driver's) side.

Q2B MECHANICAL SIREN

The FEDERAL Q2B mechanical siren shall have a bright finish.

MASTER WARNING LIGHT CONTROL

To eliminate inadvertent operation the mechanical siren shall be operable only when the Master Warning Light switch is in the "ON" position and the parking brake is released.

A momentary rocker switch shall be provided in the driver's switch panel for operation of the siren brake. This switch shall be backlit with the legend "SIREN BRAKE".

A second momentary switch shall be provided in easy reach of the officer for operation of the siren brake. This switch shall be labeled "SIREN BRAKE".

SIREN CONTROL SWITCHES

One (1) foot switch for the siren shall be provided on the left side of the driver's side cab floor and one (1) on the right side of the officer's side cab floor.

SIREN SPEAKER

There shall be one (1) Cast Products polished aluminum 100 watt speaker provided. The speaker shall be recessed into the left (driver's) side of the front bumper outboard of the chassis frame rails.

ONBOARD ELECTRONIC OPERATION AND MAINTENANCE MANUAL

There shall be a USB port in the vehicle cab to provide in cab access to electronic copies of the Vehicle Operation and Maintenance Manuals. The following information shall be accessible through the in cab electronic Vehicle Operations Manual (eVom™).

Operator's Manual
Construction Bill of Material Parts List
Water Tank Certification
Pump Certification
Pump Test Certification

Electrical System:

- Complete wiring schematics for the vehicle.

Schedule A: HME Pumper Specifications

- Diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined.
- Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.
- As built wiring information

Air System:

- Complete air system schematics for the vehicle.
- Diagrams of the vehicle showing the air tubing routing within the vehicle.
- Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

FIRE APPARATUS SAFETY GUIDE

Pursuant to NFPA 1901, 2016 edition, 40.20.2.3 (20) one (1)(1) copy of the latest edition of FAMA's Fire Apparatus Safety Guide shall be supplied with the apparatus.

== SilverFox & WSF Pump - Side - QMax - 6.001 ==

PUMP COMPARTMENT

The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of stainless steel tubing, angles and channels, which does not support the fire pump and or running boards. The pump compartment shall be mounted onto the chassis through rubber biscuits in a four point pattern to allow for a chassis frame twist.

Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly and shall have an approximate width of 47". The pump compartment shall be a modular design.

A stainless steel framework shall provide the support for the mounting of the pump lower panels. Stainless steel structure shall be provided as a support behind all control push-pull handles enabling a firm foundation for operation of the valve control.

An upper framework shall encompass the crosslay hose bed and walk way area for operation of the deck gun. The floor of this section shall be a bolt-on design to provide access for major repairs and or service.

RUNNING BOARDS

The running boards shall be separate from the hose body, compartments, and pump compartment so that each may flex independently of the other and to allow water to flow freely away from the running board area. Separation of the running boards and support structure from the hose body, compartments and pump compartment is desired to provide field service of the running board without major repairs to the pump compartment in the event of an accident.

The steel running board supports shall be bolted directly to the chassis frame rails to provide proper support. The running board step surface shall be covered in Laser Grip stainless steel meeting the current revision of NFPA 1901 for step requirements.

DUNNAGE COMPARTMENT OVER PUMP

Schedule A: HME Pumper Specifications

There shall be a dunnage compartment furnished on top of the pump module. The floor shall be bolted in place and removable for access to the fire pump components for major service.

DUNNAGE COMPARTMENT GRABRAILS

Two (2) bright anodized extruded aluminum grab rails shall be provided, one (1) each side of the pump house on the side of the dunnage compartment just below the top edge mounted horizontal to provide easy access to the dunnage compartment. Molded rubber gaskets shall be installed under the grab handles to protect the surface of the compartment.

PUMP COMPARTMENT WORK LIGHT

The pump compartment shall have one (1) white LED strip light across the pump panel to provide illumination of the pump compartment. The light strip shall be mounted transverse at the rear of the pump module with the light directed to the front. The light shall have a weather resistant, toggle style on/off switch located inside the pump compartment adjacent to the door hinge area. The power for the pump module light shall be switched thru the battery master switch.

PUMP SERVICE ACCESS REQUIREMENTS

It is the opinion that service access to the pump, valves, gauges and controls are of the utmost importance. Special consideration shall be taken when evaluating the pump module design of the offerer. Pump panels that offer little to no access without the use of tools shall not be considered compliant with this requirement.

PUMP CONTROL PANELS

All pump controls and gauges shall be located at the left (street) side of the apparatus and properly identified. The layout of the pump control panel shall be ergonomically efficient and systematically organized. The pump operator's panel shall be removable in two (2) main sections for ease of maintenance. The pump and gauge panels shall be constructed of 12-gauge stainless steel. The gauge panel shall contain a panel for mounting of all instruments, engine monitoring system, and pressure control system.

The gauge panel shall be a double panel door design to protect in the enclosed door all gauge tubing, switch, and control wiring. The gauge panel exterior shall be made of 12-gauge stainless steel. The inner pan shall bolt onto the stainless exterior panel. There shall be an access panel in the inner panel easily removable for control or gauge service or replacement.

The gauge panel door shall be designed as an opening pump house service door on the street (left) side of the pump house. This gauge panel door shall provide an opening minimum size of 41 inches wide by 14 inches in height.

The lower section of the panel shall contain all inlets, outlets, and drains. All push-pull valve controls shall have quarter turn locking control rods with chrome plated zinc tee handles. Guides for the push-pull control rods shall be chrome plated zinc castings securely mounted to the pump panel. Push-pull valve controls shall be capable of locking in any position.

The control rods shall pull straight out of the panel and shall be equipped with universal joints to eliminate binding.

There shall be an opening pump house service door on the curb (right) side of the pump house. This door shall provide an opening minimum size of 41 inches wide by 14 inches in height.

PUMP PANEL IDENTIFICATION TAGS

Schedule A: HME Pumper Specifications

The identification tag for each valve shall be recessed in the face of the control handle. All discharges shall have color-coded plastic identification tags, with each discharge having its own unique color. Color-coding shall include the labeling of the outlet and the drain for each corresponding discharge.

PUMP PANEL FINISH

All stainless panels used in the construction of the pump house shall have a brushed finish.

CONTROLS AND GAUGES

The following shall be provided on the pump and gauge panels in a neat and orderly fashion. The gauge panel shall include the following:

PRESSURE GOVERNOR, MONITORING, and MASTER PRESSURE DISPLAY

Fire Research InControl series TGA400-A00 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control knob shall be 2" in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 1-3/4" from the front of the control module. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring.

The following continuous displays shall be provided:

- Pump discharge; shown with four daylight bright LED digits more than 1/2" high
- Pump Intake; shown with four daylight bright LED digits more than 1/2" high
- Pressure / RPM setting; shown on a dot matrix message display
- Pressure and RPM operating mode LEDs
- Throttle ready LED
- Engine RPM; shown with four daylight bright LED digits more than 1/2" high
- Check engine and stop engine warning LEDs
- Oil pressure; shown on a dual color (green/red) LED bar graph display
- Engine coolant temperature; shown on a dual color (green/red) LED bar graph display
- Transmission Temperature; shown on a dual color (green/red) LED bar graph display
- Battery voltage; shown on a dual color (green/red) LED bar graph display.

The 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. All LED intensity shall be automatically adjusted for day and night time operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only)

The program features shall be accessed via push buttons and a control knob located on the front of the control panel. There shall be a USB port located at the rear of the control module to upload future firmware enhancements.

Schedule A: HME Pumper Specifications

Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi.

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 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.

The pressure governor, monitoring and master pressure display shall be programmed to interface with a specific engine.

PRESSURE GAUGES

Each line pressure gauge shall be mounted immediately above the control for the corresponding valve. The individual line pressure gauges for the discharges shall be 2-1/2" in diameter with white dial face gauges with black lettering and markings. The gauges shall be a compound style gauge with a vacuum/pressure range of 0 - 400 psig.

The gauges shall be fluid filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to -40 degrees F. The cases shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. The gauge accuracy for the gauge shall be plus or minus 2% mid-scale, plus or minus 3% balance, per ANSI B40.1, Grade 1A.

To prevent internal freezing and to keep contaminants from entering the gauge, the stem and bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

All line pressure gauges shall be mounted adjacent to the corresponding discharge control tee handles.

LED GAUGE LIGHTING

The 2-1/2" pressure gauges shall be equipped with LED back lighting.

PUMP PANEL LIGHTING

The pump operator's panel shall be supplied with a LED light system. LED strip lights with a stainless steel hood shall be mounted across the top of the pump panel gauges and controls.

LED strip lights with a stainless steel hood shall be provided on each side of the pump module above the side panels.

All pump module lighting shall illuminate when the parking brake is engaged.

DRAIN DISCHARGES

The 3/4 inch drain valves shall be equipped with 90-degree fittings to direct the discharge water beneath the pump module away from the pump operator's panel.

Schedule A: HME Pumper Specifications

AIR HORN ACTIVATION SWITCH

A switch shall be located on the pump panel to activate the chassis air horn. The switch shall be a momentary pushbutton type switch with a red cover. The switch shall be supplied with the proper identification label.

WATER TANK INDICATOR

Fire Research TankVision model WLA300-A00 tank indicator kit shall be installed. 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 aluminum, 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, and a data link 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.

PUMP MANUFACTURER AND MODEL

The pump shall be a Hale Q-MAX model midship pump.

PUMP CONSTRUCTION AND ASSEMBLY

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA 1901. Pump shall be free from objectionable pulsation and vibration.

The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (207 MPa). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

Pump body shall be horizontally split on a single plane in two sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis. The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance.

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

Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wraparound double labyrinth design for maximum efficiency. No exceptions.

Schedule A: HME Pumper Specifications

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

PUMP GEARBOX

The gearbox shall be assembled and tested at the pump manufacturer's factory. Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. Ft. of torque of the engine. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature

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

All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust.

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected. The shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in cab control for rapid shift shall be provided that locks in road or pump.

Three green warning lights shall be provided to indicate to the operator when the pump has completed the shift from Road to Pump position. Two green lights to be located in the truck driving compartment and one green light on pump operators panel adjacent to the throttle control. All lights to have appropriate identification/instruction plates.

PUMP RATING AND TEST REQUIREMENTS

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1500 gallons per minute (U.S. GPM), NFPA 1901 rated performance. The pump shall deliver the percentage of rated discharge at pressures indicated below:

- 100 percent of rated capacity at 150 pounds net pressure
- 70 percent of rated capacity at 200 pounds net pressure
- 50 percent of rated capacity at 250 pounds net pressure
- 100 percent of rated capacity at 165 pounds net pressure

The entire pump shall be assembled and tested at the pump manufacturer's factory. The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

ALTITUDE REQUIREMENTS

The apparatus shall be designed to meet the specified rating at 0 to 2000' altitude.

PUMP COOLING LINE

Schedule A: HME Pumper Specifications

A 3/8" cooling line shall be installed to re circulate water from the pump back through the pump transfer case, to cool the pump during prolonged pumping operations. The cooling line shall be controlled at the operator's position with a Class 1 valve.

FIRE PUMP PRIMING SYSTEM

A Trident air operated priming system shall be installed. The unit shall be of all brass and stainless steel construction. Due to corrosion exposure no aluminum or vanes shall be used in the primer design. The primer shall be three-barrel design. The primer shall automatically drain when the panel control actuator is not in operation. The connection to the pump shall have a strainer.

Performance, Safety, and NFPA Compliance

The priming system shall be capable to a vertical lift to 22 inches of mercury and shall be fully compliant to applicable NFPA standards for vertical lift. The system shall create vacuum by using air from the chassis air brake system through a three-barrel multi-stage internal "venturi nozzles" within the primer body. The noise level during operation of the primer shall not exceed 75 Db.

Air Flow Requirements

The primer shall require a minimum of 15.6 cubic foot per minute air compressor and shall be capable of meeting drafting requirements at high idle engine speed. The air supply shall be from a chassis supplied 'protected' air storage tank with a pressure protection valve. The air supply line shall have a pressure protection valve set between 70 to 80 PSIG.

Power Requirements

To reduce the electrical power requirements on the fire apparatus the priming system shall be air powered. The system shall not require annual tear-down and maintenance, an electric motor or solenoid, electrical wiring, lubrication, belt drive, or clutch assembly.

Primer Control

The primer control shall have a manually operated, panel mounted "push to prime" air valve; which will direct air pressure from the air brake storage tank to the primer body. To prevent freezing, no water shall flow to and from the panel control.

Warranty

The primer shall be covered by a five (5) year parts warranty by Trident.

PNEUMATIC PUMP SHIFT

The pump shift shall be air operated and shall incorporate an air double action piston to shift from road to pump and back. A manual or electric operated pump shift mechanism is not acceptable. The pump shift switch shall be mounted in the cab and identified as "AIR PUMP SHIFT" and include instructions permanently inscribed on the pump shift switch plate. The in-cab operating valve uses a spring loaded locking collar to prevent it from accidentally being moved.

Schedule A: HME Pumper Specifications

The pump shift control assembly shall incorporate an indicating light system, which will notify the operator when the shift has been completed to PUMP and when the chassis transmission is in correct pumping gear.

The switch that activates the lights must be mounted on the pump transmission and positioned so that the pump shift arm activates the switch only when the shift arm has completed its full travel into PUMP position. An additional indicator light shall be provided adjacent to the throttle control at the pump operator's panel to indicate a completion of the pump shift.

MECHANICAL SEAL

The fire pump shall be provided with a mechanical pump seal. One (1) only required on the suction, inboard, side of the pump. The mechanical seal shall be two inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber boot, and a tungsten carbide seat with Teflon backup seal.

ANODE SYSTEM

To reduce the effect of galvanic action the pump shall be equipped with two alloy (2) anodes. One anode is to be installed on the inlet (suction) side of the system and one anode is to be installed on the pressure (outlet) side of the system.

The anode brass cap is to be drilled with a 1/8" diameter hole to provide an indicator when the anode alloy element is to be replaced.

SUCTION PRESSURE RELIEF VALVE

Task Force Tips model #A1820 pressure relief valve shall be provided. The valve shall have an easy to read adjustment range from 90 to 300 PSI in 90, 125, 150, 200, 250, 300 PSI increments. For corrosion resistance the cast aluminum valve shall be hardcoat anodized with a powder coat interior and exterior finish. The valve shall be configured for either a Waterous or Hale pump, and have a 2" male NPT threaded discharge outlet. The unit shall be covered by a five-year warranty.

The discharge side of the intake relief valve shall be plumbed to the right side below the running boards, away from but, visible to the pump operator, and shall terminate with an unthreaded pipe. The adjustment control shall be located behind the street side pump panel.

MASTER DRAIN

The apparatus shall be equipped with a Manual Master Pump Drain for draining of the lower pump cavities, volute and selected water-carrying lines and accessories. The all brass and stainless steel construction allows for operation up to 600 psi.

THIRD PARTY PUMP TEST

The pump shall undergo third party pump test with line and/or low voltage requirements of NFPA 1901 prior to delivery of the completed apparatus. The TUV acceptance certificate shall be furnished with the apparatus on delivery.

FIRE PUMP WARRANTY

Standard 5 year warranty (Parts and Labor for the first two years, parts only years 3 - 5). See Hale warranty for full details.

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ELECTRONIC PUMP MANUALS

Two (2) sets of electronic fire pump service and operation manuals shall be provided with the completed apparatus.

LEFT SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the left side pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

LARGE DIAMETER CAP

A six (6) inch chrome plated cap with long handles shall be supplied. The cap shall be capable of withstanding 500 PSI and be trimmed with the apparatus manufacturer's logo in the center of the cap.

RIGHT SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the right side pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

LARGE DIAMETER CAP

A six (6) inch chrome plated cap with long handles shall be supplied. The cap shall be capable of withstanding 500 PSI and be trimmed with the apparatus manufacturer's logo in the center of the cap.

LEFT SIDE INTAKE

There shall be an intake located on the left (street) side rear of the pump and shall contain:

A 2-1/2" intake shall be provided. The inlet shall have a 2-1/2" quarter-turn swing-out valve. The inlet shall be provided with a 2-1/2" NST female swivel that extends through the pump panel.

The inlet valve shall have a push-pull type control handle located adjacent to the valve.

One (1) 2-1/2" chrome plated rocker lug plug with chain shall be supplied.

LEFT SIDE DISCHARGE #1

The forward discharge on the left (street) side of the pump panel shall contain:

A 2-1/2" discharge shall be provided. The discharge outlet shall have a 2-1/2" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2" NST male threads that extends through the pump panel.

DISCHARGE CAP

One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished.

LEFT SIDE DISCHARGE #2

The second from the forward discharge on the left (street) side of the pump panel shall contain:

Schedule A: HME Pumper Specifications

A 2-1/2" discharge shall be provided. The discharge outlet shall have a 2-1/2" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2" NST male threads that extends through the pump panel.

DISCHARGE CAP

One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished.

No Left Side #2R Discharge Required

RIGHT SIDE DISCHARGE #3

The forward discharge on the right (curb) side of the pump panel shall contain:

A 2-1/2" discharge shall be provided. The discharge outlet shall have a 2-1/2" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2" NST male threads that extends through the pump panel.

DISCHARGE CAP

One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished.

RIGHT SIDE DISCHARGE #4

The second from the forward discharge on the right (curb) side of the pump panel shall contain:

A 3" discharge shall be provided. The discharge outlet shall have a 3" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 3" NST male threads that extends through the pump panel.

DISCHARGE CAP

One (1) chrome plated, Class 1, 3" rocker lug cap with lug vent and chain shall be furnished.

No Right Side #4R Discharge Required

REAR PRECONNECT - RIGHT SIDE

There shall be one (1) 2-1/2" discharge outlet located on the passenger side rear of the body below the hose bed. The discharge outlet shall be plumbed with 2-1/2" ID, stainless steel pipe and high pressure hose and have a 2-1/2" quarter-turn, swing out valve with control on the pump operator's panel. There shall be a chrome plated 2-1/2" NST adapter that extends through the rear of the body. The discharge shall be provided with a chrome plated 30-degree discharge elbow.

REAR PRECONNECT - LEFT SIDE

There shall be one (1) 2-1/2" discharge outlet located on the driver side rear of the body below the hose bed. The discharge outlet shall be plumbed with 2-1/2" ID, stainless steel pipe, and have a 2-1/2" quarter-turn, swing out valve with control on the pump operator's panel. There shall be a chrome plated 2-1/2" NST adapter that extends through the rear of the body. The discharge shall be provided with a chrome plated 30-degree discharge elbow.

Schedule A: HME Pumper Specifications

TANK REAR INTAKE/DISCHARGE SLEEVE

The water tank shall be provided with one (1) 4" sleeve from the front of the tank to the rear of the tank. The sleeve shall provide access for either rear intake or rear discharge piping.

DISCHARGE CAP

One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished.

TANK REAR INTAKE/DISCHARGE SLEEVE

The water tank shall be provided with one (1) 4" sleeve from the front of the tank to the rear of the tank. The sleeve shall provide access for either rear intake or rear discharge piping.

DISCHARGE CAP

One (1) chrome plated, Class 1, 2-1/2" rocker lug cap with lug vent and chain shall be furnished.

DELUGE RISER

A 3" diameter deluge riser shall be installed above the pump. The deluge outlet shall be plumbed with a 3" quarter-turn, swing out valve and 3" ID, stainless steel piping. Deluge outlet shall have control on pump operator's panel.

DRAIN VALVE

A 1/4 turn drain valve shall be installed. The valve shall be brass with 3/4" NPT female inlet and outlet thread.

EXTEND-A-GUN

A TFT model XG18VL-PL, 18" "Extend-A-Gun" unit and mounting kit shall be provided and installed on the deck gun discharge to elevate the deck gun 18" above the travel position.

DECK GUN CONTROL - MANUAL VALVE

The 3" discharge outlet shall have a 3" slow close quarter-turn swing out valve. The discharge shall be plumbed with 3" stainless steel piping with 3" NPT male thread. Control of outlet shall be accomplished using a manual, locking control on pump operator's panel.

PUMP DUNNAGE AREA DIMENSIONS

The area behind of the crosslays shall be the dunnage area of the pump house. This area is where the deckgun riser if so equipped protrudes above the pump module. This area shall be enclosed with approximate dimensions of 68" wide x 19" deep x 32.25" front to back.

DOUBLE CROSSLAY HOSEBED

The crosslays shall be arranged on top of the pump module with the #1 crosslay toward the front of the pump house and the #2 crosslay immediately behind the first.

Schedule A: HME Pumper Specifications

#1 CROSSLAY - DOUBLE STACK

The #1 crosslay shall be equipped with a 1-1/2" male NST outlet. The crosslay shall be plumbed with 2" stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male NST thread located in the hosebed.

This crosslay bed shall be capable of carrying a minimum of two hundred feet (200') of 1-3/4" double jacketed hose. The double stack crosslay hosebed shall have inside dimensions of 8" wide x 19" tall x 72" wide.

The crosslay valve control shall be mounted on the operator's panel.

DRAIN VALVE

A 1/4 turn drain valve shall be installed. The valve shall be brass with 3/4" NPT female inlet and outlet thread.

CROSSLAY DIVIDER

A crosslay divider shall be provided between the #1 and #2 crosslay. The divider shall be constructed from 1/4" thick abraded aluminum plate mounted on a base T-extrusion that provides lower support the length of the divider. There shall be a hand hole on each side of the divider to assist the firefighter.

#2 CROSSLAY - DOUBLE STACK

The #2 crosslay shall be equipped with a 1-1/2" male NST outlet. The crosslay shall be plumbed with 2" stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male NST thread located in the hosebed.

This crosslay bed shall be capable of carrying a minimum of two hundred feet (200') of 1-3/4" double jacketed hose. The double stack crosslay hosebed shall have inside dimensions of 8" wide x 19" tall x 72" wide.

The crosslay valve control shall be mounted on the operator's panel.

DRAIN VALVE

A 1/4 turn drain valve shall be installed. The valve shall be brass with 3/4" NPT female inlet and outlet thread.

CROSSLAY HOSE GUIDES

Brushed stainless steel hose guides shall be provided on the left and right side of the crosslays.

CROSSLAY HOSEBED COVER

A vinyl coated nylon hosebed cover shall be provided over the crosslay hosebeds.

The vinyl crosslay cover shall be Midnight Black in color.

Schedule A: HME Pumper Specifications

ELKHART BALL VALVES

All discharge ball valves shall be Elkhart heavy duty swing out valve with stainless steel ball unless specified otherwise.

TANK TO PUMP

The tank to pump piping shall be capable of delivering water to the pump at a rate of five hundred (500) gallons per minute. This flow shall be sustained while pumping to a minimum of 80% of the certified tank capacity with the apparatus on level ground.

The tank to pump line shall run from the pump to the front face of the water tank and down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing. The tank to pump line shall be 3" I.D. piping with a 3" ball valve.

TANK REFILL

A 1-1/2" tank refill line shall be provided using a quarter-turn full flow ball valve controlled from the pump operator's panel with a manual locking handle. The tank refill shall be plumbed with stainless steel plumbing and flexible Victaulic couplings.

FOAM SYSTEM

A Hale "FoamLogix 2.1A" 2.1 GPM foam system shall be supplied on the apparatus. The apparatus shall be equipped with an automatic electronically controlled, direct injection, rotary gear pump, discharge side foam proportioning system. Foam proportioning operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures.

SYSTEM REQUIREMENTS

The complete foam proportioning system shall include the following:

- 1) Foam Pump
- 2) Control System
- 3) Foam Concentrate Strainer
- 4) Integral Check Valve/Injector Fitting
- 5) Flow meter
- 6) Control Cables
- 7) Low Tank Level Switch
- 8) Water Discharge Check Valves

FOAM PUMP

The foam proportioning system shall be compatible with Class A foam concentrates. The foam proportioning system shall be capable of delivering the rated foam concentrate flow with the above mentioned foam concentrate type. The foam proportioning system shall be based on an electric motor driven, rotary gear foam concentrate pump, rated at 2.1GPM (7.9 LPM) foam concentrate flow rate with maximum operating pressure of 400 PSIG (28 bar).

Schedule A: HME Pumper Specifications

The foam pump/motor assembly shall be permanently attached to an apparatus mountable base plate. A foam concentrate flow meter shall be integral to the foam concentrate pump. The foam concentrate flow meter shall provide a signal to the electronic control unit to make sure the proper amount of foam concentrate is injected into the discharge stream. The entire base plate mounted assembly shall have electrical components sealed to NEMA 4X or equal for mounting in the apparatus pump compartment or any suitable location on the apparatus.

FOAM CONCENTRATE STRAINERS

Field serviceable foam concentrate strainers shall be provided in the foam concentrate suction line. When the strainer shall not be subject to flushing water pressure a plastic bodied in-line strainer shall be used. The strainer body shall be constructed of plastic with a stainless steel mesh screen and shall be compatible with Class A foam concentrates. A shutoff valve shall be provided to enable isolation of the strainer for service. The strainer shall be mounted in the pump compartment. The strainer shall be a low pressure device and shall not be subject to flush water pressure.

Where strainers are subject to flush water pressure, panel mounted field serviceable foam concentrate strainers rated at 500 PSIG (34 BAR) minimum shall be installed on the pump panel. The strainer body shall be constructed of brass with a chrome cap and an easily removable stainless steel mesh screen for field servicing. A 1-½ inch strainer with ¾ inch NPT connection ports shall be used for Class A foam concentrate.

INJECTOR FITTING AND CHECK VALVES

To prevent contamination of the foam concentrate supply, foam concentrate shall be injected into the water pump discharge stream through an integral check valve/injector fitting. The check valve/injector fitting shall be of one piece construction of brass and stainless steel. To prevent contamination of the water pump and apparatus booster tank wafer type check valves shall be installed in the water pump discharge piping prior to the foam injection point.

FLOWMETER

A paddlewheel type flow meter shall monitor water flow in foam capable discharges. The flow meter body shall be constructed of bronze and the sensor assembly shall be locked into the tee with a pin and screw on cap. The flow meter shall have a 500 PSIG (34 BAR) pressure rating per NFPA requirements.

One (1) flow meter is required for proper operation of the foam proportioning system. Power for the flow meter sensor shall be provided through the electrically shielded cable set from the control unit. Flow meters having NPT threaded and Victaulic connections shall be used in the water discharge piping.

The flow meter selected shall be sized to adequately monitor the minimum and maximum flow expected in the foam capable discharges.

CONTROL CABLES

The cables for connection of the control unit, distribution box, flow meter sensor, flow meter display units, pressure transducers and feedback sensor shall be 100% electrically shielded molded male by female cordsets. The cordsets shall have the ability to connect together and total length shall not exceed 40 feet (12 meters). The connections shall be keyed to prevent mis-connection and improper system operation. Shielding shall be provided by an aluminized mylar shield within the PVC outer jacket. A drain wire shall be tied to one of the pins on each end of the cable. No externally attached ferrite beads shall be installed for the purpose of electrical shielding. Coupling nuts on the cordset ends shall be constructed of nickel coated brass. When properly connected the connections shall be sealed to NEMA 4X or equal.

Schedule A: HME Pumper Specifications

LOW TANK LEVEL SWITCH

A low tank level switch shall be installed in the foam concentrate tank. The low tank level sensor shall be connected to the foam proportioning system to provide protection against dry running of the foam pump. The low tank level sensor shall be mounted on the side of the foam concentrate tank. The low tank level sensor and electrical connections shall be sealed to prevent infusion of foam concentrate into the wiring and possible short circuit of the tank level sensor.

FOAM SUPPLY

The foam proportioning system shall be supplied from a separate apparatus mounted foam concentrate storage tank. The tank shall be constructed of materials compatible with foam concentrates being used in the system. Provision shall be made for installation of low tank level sensors and routing of the wiring for the sensors. Tank capacity, venting, fill opening and foam outlet plumbing connections shall be in accordance with NFPA requirements.

DOCUMENTATION

The foam proportioning system when delivered to the end user shall include a foam concentrate compatibility list and two (2) Description, Installation and Operation Manuals. The foam proportioning system shall have a one (1) year limited manufacturer's warranty.

FOAM SYSTEM

The foam system will operate as a Class A system.

SINGLE TANK FOAM TANK REFILL SYSTEM

A truck mounted 12-volt foam tank refill system shall be provided and installed on the apparatus. The refill system shall provide the ability to automatically refill the foam tank from the ground without carrying foam solution up to the foam cell in the hosebed.

The refill system shall be activated by an on/off rocker switch provided on a control panel installed on the pump panel. The foam refill system will automatically shut off when the foam tank is full. The refill system quick connection shall be located beneath the pump panel running board to prevent foam from spilling onto the running board during connection operations.

System features:

- Weather proof on/of rocker switch with integral green power on indicator light
- Red refill PUMP ON indicator light
- Automatic tank fill shutoff, vertical or side mount float switches
- Thermally protected 12-volt motor
- Relay operated motor power circuit
- 5 gpm capacity @ 8 foot lift
- Self priming pump, can run dry and re-prime itself automatically
- Composite pump head with Buna-N diaphragm
- All corrosion resistant components
- Compatible with Class A or Class B foam concentrates

Schedule A: HME Pumper Specifications

- Quick connect inlet hose with wand
- Suction inlet strainer

Two (2) 1-1/2" crosslay discharges.

One (1) front jumpline discharge.

FOAM SYSTEM CONTROLS

The system shall be equipped with an electronic control unit, suitable for installation on the pump operator panel as the single point of operation for the foam proportioning system. Incorporated within the control unit shall be a microprocessor that receives input from water flow meter while receiving foam concentrate pump output information from the foam concentrate flow meter. The microprocessor, through constant comparison of the flow signals, shall ensure the operator preset proportional amount of foam concentrate is injected into the discharge stream of the fire pump. The electronic control unit shall permit the pump operator to perform the following control and operation functions for the foam proportioning system:

Provide push-button ON/OFF control of foam proportioning system.

Provide push-button control of foam proportioning rates from 0.1% to 10.0% (1.0% on a 2.1A and 3.3 systems), in 0.1% increments.

Show real time flow rate of water or foam solution.

Show total volume of water or foam solution discharged during and after foam operations.

Show foam concentrate injection rate.

Show total amount of foam concentrate consumed.

Permit resetting of totalized values for water and foam concentrate.

Simulate water flow rates for manual operation, calibration and testing of foam system.

Enable system setup and full range system diagnostic functions.

Indicate on LED bargraph foam concentrate is being injected and the foam system capacity.

Indicate on LED bargraph when system capacity is not within design parameters.

Store independent default values for Class A foam concentrate injection.

Flash a "low concentrate" warning when the foam concentrate tank runs low.

Flash a "no concentrate" warning and shut the system off when the foam tank is empty.

Flash a "low battery" warning when battery voltage is low enough to affect system operation.

Flash a "hot" warning when system is running hot due to low voltage or radiant heat.

A distribution box shall be attached to the base plate to provide ease of installation. The distribution box shall be sealed to a NEMA 4X or equal rating to permit installation in the pump compartment. Foam concentrate flow feedback shall be provided to the control unit through the distribution box by a sensor mounted in the foam pump body. Rotors in the foam discharge side of the foam pump shall provide the targets to pulse the sensor to generate a feedback signal.

The distribution box shall receive 12 volt direct current power from the apparatus electrical system as the only source of power to operate the system and power component sensors. Control power shall be distributed to the control unit, flow meter sensor and foam concentrate feedback sensor through a conductor in the 100% electrically shielded cable sets provided by the foam proportioner manufacturer. The microprocessor in the control unit shall process input signals from the flow meter sensor and foam feedback sensor to determine the proper duty cycle for the electric motor to run. The distribution box shall provide power to the electric motor, based on signals received from the control unit, at a variable rate to ensure that the correct proportion of foam concentrate, preset by the pump operator on the control unit, is injected into

Schedule A: HME Pumper Specifications

the water pump discharge stream. The distribution box shall have a main power control switch and over current protection for the foam proportioning system. All primary electrical wires for the foam concentrate system shall be type SXL or GXL (SAE J1128) per NFPA requirements. Electrical connections shall be made using heavy duty 5/16 inch diameter studs and nuts.

HEAT EXCHANGER DISCHARGE

A gated discharge line shall be installed to provide water from the fire pump to the chassis supplied heat exchanger to assist in engine cooling during pumping operations. The heat exchanger line shall be controlled at the pump operator's panel with a needle valve.

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WATER TANK CONSTRUCTION

The tank shall have a rated capacity in U.S. gallons, complete with lifetime warranty. The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. The purpose of the notice is to inform department personnel who store or use the tank that the unit is under warranty.

The tank shall be constructed of 1/2" thick Polypropylene & Mac226 sheet stock. This material shall be non-corrosive stress relieved thermoplastic, white in color and UV stabilized for maximum protection. The tank shall be of a special configuration and is so designed to be completely independent of the body and compartments. All exterior tank joints and seams shall be extrusion welded and/or contain the Bent Edge™ and tested for maximum strength and integrity. The top of the tank is fitted with removable lifting eyes designed with a 3-to-1 safety factor to facilitate easy removal.

The transverse and longitudinal swash partitions shall be manufactured of Polypropylene & Mac226 material. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow and meet NFPA rules. All swash partitions interlock with one another and are welded to each other as well as to the walls and floor of the tank.

TANK SUMP AND CONNECTIONS

There shall be one (1) sump standard per tank. The sump shall be constructed of white Polypropylene & Mac226 and be located in the left front corner of the tank, unless specified otherwise. On all tanks that require a front suction, a schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" FNPT threaded outlet on the bottom for a drain plug. This shall be used as a combination clean out and drain. All tanks shall have an anti-swirl plate located above the dip tube.

There will be two (2) standard tank outlets: one for tank to sump suction line, and one for a tank fill line. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1,000 GPM. The addition of rear suction fittings, nurse valve fittings, dump valve fittings, and through tank sleeves to accommodate rear discharge piping must be specified. All auxiliary outlets and inlets must meet N.F.P.A. 1900 guidelines in effect at the time of manufacture.

INTERNAL FOAM TANK

A thirty (30) gallon polypropylene foam concentrate tank shall be furnished as an internal component of the booster tank. The foam tank shall have an anti-foaming fill stack and removable screen located in an accessible area. The foam tank fill tower shall be equipped with a latch, pressure/vacuum vent and have a sealed airtight cover.

Schedule A: HME Pumper Specifications

The foam tank shall be plumbed to the on board "Class A" foam system. A drain valve shall be provided at the lowest point of the foam tank. The foam tank shall drain directly to the surface below the apparatus without contacting other body or chassis components. The following labels shall be attached to the foam tank:

"CLASS A FOAM TANK FILL"

"WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM"

TANK MOUNTING

A tank mounting cradle shall be supplied. The tank mounting cradle shall consist of a minimum of seven (7) crossmembers and two (2) full tank length longitudinal members. The tank shall rest on the tank mounting sub frame, and shall be insulated from the sub-frame with a 2-1/2" wide rubber insulator. The tank shall sit cradle-mounted using four (4) corner angles of 8" x 8" x 4" x .250" welded directly to the tank sub-frame. The angles shall keep the tank from shifting left to right or front to rear. The tank is designed on the free-floating suspension principal and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The hosebed cross-braces shall act as water tank retainers. The water tank cradle shall be designed to be completely independent of the apparatus body to eliminate torsional stress loading in the body. No exception will be permitted to the tank mounting requirements.

The tank cradle shall be finish painted to match the chassis axles.

TANK REAR DISCHARGE SLEEVE

The water tank shall be provided with one (1) 4" sleeve from the front of the tank to the rear of the tank. The sleeve shall provide access for rear discharge piping.

PURCHASE INTENT

The apparatus being purchased is expected to have an 18 to 20 year service life. Based on this requirement, the department is extremely concerned that the apparatus remains structurally sound and the outward appearance remains in a "like new" condition, with minimal maintenance and upkeep, throughout the intended service life.

Aluminum apparatus bodies and differing construction designs will be reviewed and considered ONLY if the builder / manufacture provides in the respondent specifications adequate proof that procedures and materials employed in the design prevent corrosion over the intended service life. Burden of proof is on the bidder and final determination of acceptability will be solely determined by the department.

The entire body design shall be of a laser machined, bolted design to allow for ease of removal for repair or replacement, without cutting welds.

APPARATUS BODY DESIGN AND CONSTRUCTION

The apparatus body shall be built of stainless steel and shall be designed exclusively for Fire Service use. The overall body width shall be 100 inches wide and shall be constructed in accordance with current NFPA requirements. All metal work shall be free of sharp edges, objects or corners. No exceptions are allowed to this requirement.

The body design shall be fully tested with proven engineering and test techniques such as finite element analysis, stress coating, and strain gauging. Engineering and test techniques shall have been performed with special attention given to fatigue life and structural integrity of compartments and body support system.

The apparatus body shall be designed with the use of parametric modeling engineering software to ensure proper design of panel cuts and alignment of holes in mating parts. The entire apparatus body shall be a precision laser machined,

Schedule A: HME Pumper Specifications

bolted construction, properly reinforced with integral flanges eliminating the need for additional structural shapes. Hose body fabrications shall be free of all internal projections which might injure personnel or fire hose.

The pump module is to be completely separate from the main body to prevent damage due to flexing.

MODULAR BODY REQUIREMENTS

The body shall be completely modular in design allowing transfer of body components to a new chassis in the event of an accident or wear. Body components shall be removable from chassis without cutting or bending. The modular design shall also facilitate ease of repair or replacement of major or minor body parts. The mounting of the apparatus body shall be separate and distinct from the water tank mounting and the pump module mounting.

All body panels are to be laser machined on a CAM controlled laser to ensure accuracy (+/- .010"). This shall greatly enhance assembly and matching of repair parts. The body compartment floors, rear walls and roof areas shall be constructed of 12-gauge austenitic stainless steel. The vertical front and rear walls are designed with 14-gauge stainless steel. These front and rear walls are designed as a structural beam with the inclusion of the design encompassing a front and rear design that allows for installation of telescoping lights.

Interior and unexposed stainless steel panels shall be #4B finish to eliminate the need for high maintenance painted surfaces in the compartments. All exterior stainless steel panels shall have #4B finish.

The entire body shall be fabricated using precision holding fixtures to ensure accurate dimensions. Body front and rear vertical flanges shall be triple broken, providing a mounting area for rear hand rails. Major body components shall consist of right and left body sides, and rear facing compartments.

The front and rear vertical corners of the apparatus body shall be recessed to provide a mounting area for vertical hand rails and telescoping light poles. Two (2) handrails shall be provided at the left and right sides of the apparatus body mounted vertically. A full width handrail shall be mounted at the rear of the body below the hosebed.

COMPARTMENT ROOF CONSTRUCTION

Each compartment top shall have a bolt in 12-gauge stainless roof section for supporting roof loads of up to 500 pounds per square foot without permanent roof deformation. The stainless roof sections shall attach the compartment rear wall and compartment vertical sides through a fastened joint creating a full perimeter compartment attachment of the stainless roof section.

REAR FRAME EXTENSION

The rear chassis frame extension system shall consist of a interwoven dual .625" thick steel drop frame extensions with a transverse 4" x 3" x .375" thick structural channel, and dual laminated .188" thick rear compartment and tailboard support tapered angles on each side of apparatus.

The rear frame extension shall be bolted to the chassis frame utilizing Grade 8 bolts and Grade C locknuts with hardened washers. For ease in replacement of damaged components in an accident there shall be no welding of components to the chassis frame.

Two (2) tow eyes with an eye diameter of not less than 3.5" shall be attached directly to the chassis frame extensions. The tow eyes shall be fabricated of .625" thick steel.

BODY MOUNTING SYSTEM

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The front body support system shall be an integral design with .250" thick steel deep section cross member across the top of the chassis frame. The deep section cross member shall be attached to the right side and the left side lower front compartment weldments with eight (8) grade 8; 3/8 inch diameter bolts on each side of the apparatus. The front cross member shall be attached to the chassis by means of an elastomer spring mounting system with limited travel.

The lower portion of this spring mounting system shall be an integral part of the pump module frame mounting system. This design allows for maximum chassis flexing without undue stress transfer to the apparatus body.

The right and left side rear compartments shall be attached to a stainless steel rear body support. The stainless steel support shall be attached to the chassis frame extensions by means of an elastomer spring mounting system to form a modular integral body support system.

The apparatus body shall not rest upon the chassis truck rails and must be separated entirely from the steel frame of the chassis to prevent galvanic action.

Loose fitting u-bolt body mounting systems are not acceptable due to the likeliness of the apparatus body shifting or becoming detached from the chassis upon rear end impact.

COMPARTMENT INTERIOR FINISH

For better interior visibility, to reflect light better, ease of maintenance and prevent the masking of poor welds and questionable workmanship the interior of the body compartments shall remain uncoated.

EXTERIOR ROOF FINISH

The top of the compartments shall be brushed stainless steel. The roof shall contain 'Not a Stepping Surface' labeling.

REAR TAILBOARD

A rear tailboard 12" deep shall be provided at the rear from "Laser Grip" stainless steel meeting NFPA 1901 step requirements. The tailboard shall provide protection for the side body compartments and shall provide mounting for the rear ICC marker lights. It shall be bolted to the rear support structure.

REAR TAILBOARD - BRIGHT FINISH

The rear tailboard shall have a bright finish.

CHASSIS FRAME EXTENSIONS

There shall be a rear chassis drop frame extension to provide frame support for the rear of the apparatus body. This extension is to be bolted to the truck chassis as an integral part of the truck frame assembly and is to include rear tow eyes, crossmember and tailboard reinforcement.

The rear frame extension shall be finish painted to match the chassis frame.

COMPARTMENT DESIGN AND CONSTRUCTION

All compartments shall be manufactured from 12-gauge stainless steel with the vertical front and rear corner walls from 14-gauge, shall be of sweep out design and shall be bolted together. Stainless recessed round head bolts and stainless aircraft style "ESNA" nuts shall be applied with proper torque rating for each fastener. This type of construction shall

Schedule A: HME Pumper Specifications

greatly enhance the strength and ease of parts replacement in the event of damage and future modifications. Wherever possible, body bolts shall be hidden from plain view for appearance and ease of apparatus cleaning.

COMPARTMENT VENTILATION

Each compartment shall be provided with a laser cut louver to provide adequate ventilation.

VENT FILTRATION

There shall be filters provided for compartments L1, L3, R1 and R3. The protective louver covering the filter shall be removable to allow for filter changing.

The filter shall be 100% virgin nylon fiber in an open web design that is USDA approved. The filter shall be chemically treated with Dimethyl Benzyl Ammonium Saccharinate to aid in the reduction of bacteria and fungi.

WATER TANK CAPACITY

The water tank shall be rectangular in shape and shall have a maximum capacity of 1020 US gallons.

TANK LID & FILL TOWER

The tank shall have a combination vent and fill tower. The fill tower shall be constructed of 1/2" thick Polyprene & Mac226 and shall be a minimum dimension of 10"x 14" outer perimeter. The tower shall be located in the center front of the tank unless otherwise specified by the purchaser. The tower shall have a 1/4" thick removable Polyprene & Mac226; screen and a Polyprene & Mac226 hinged-type cover. Inside the fill tower, there shall be a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 pipe with a minimum ID of 4" that is designed to run through the tank, and shall be piped behind the rear axle beneath the tank.

The tank cover shall be constructed of recessed 1/2" thick Polyprene & Mac226, stress relieved, UV stabilized material. A minimum of two lifting dowels shall be drilled and tapped to accommodate the lifting eyes.

OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 4" ID, Schedule 40 PVC combination overflow/vent pipe running from the fill tower through the tank to a 4" coupling flush mounted into the bottom of the tank to allow water to overflow beneath the chassis.

BODY MODULE CAPACITIES

The total capacity of the body module exterior compartments shall be 235 cubic feet.

The body shall have an overall length of 164".

Hosebed, Double High Side Pumper Body - Ladders Thru & Beam

APPARATUS BODY HOSEBED WITH 20.5" SIDES

The hosebed shall be constructed in such a manner that will prevent damage to fire hose. The hosebed shall comply with the current NFPA requirements. The interior of the hosebed shall be free of projections such as nuts, sharp edges or

Schedule A: HME Pumper Specifications

brackets that may damage hose. The hosebed and walls shall be manufactured from stainless steel. No exceptions to this requirement are allowed.

An aluminum extrusion shall be installed over the rear opening of the hosebed to protect the body from wear. The hosebed bottom shall be fitted with removable slatted, ribbed 6" heavy-duty extruded aluminum floorboards.

HARD SUCTION TRAY - LEFT SIDE

One (1) aluminum hard suction tray shall be installed on the left side of the apparatus.

The tray shall be designed to accommodate from three to six inch hard suction hose in a ten foot length and employ a design without fasteners or clamps to hold the suction hose in place in the tray.

The tray shall be mounted on top of the high side compartment.

HARD SUCTION TRAY FINISH

The hard suction trays shall have a gray powder coated finish.

HARD SUCTION TRAY - RIGHT SIDE

One (1) aluminum hard suction tray shall be installed on the right side of the apparatus.

The tray shall be designed to accommodate from three to six inch hard suction hose in a ten foot length and employ a design without fasteners or clamps to hold the suction hose in place in the tray.

The tray shall be mounted on top of the high side compartment.

HARD SUCTION TRAY FINISH

The hard suction trays shall have a gray powder coated finish.

ADJUSTABLE HOSE BED DIVIDERS

Two (2) adjustable hosebed dividers shall be provided. Each divider shall be fabricated from .250" thick smooth aluminum plate, 5052-H32 alloy. The rear end of each divider shall have a 3" radius corner and shall be sanded and deburred to prevent damage to hose.

There shall be two hand hold openings provided. One (1) at the rear in a vertical position and one (1) approximately 24 inches in from the rear in a horizontal position.

HOSEBED COVER

A black vinyl hosebed cover shall be provided and designed to cover the entire main hosebed area. The cover shall be installed with "stretch cord type" fasteners along each side of the hosebed. A sand filled flap shall be incorporated into the rear edge of the cover.

The hosebed cover rear flap shall have a positive locking device to meet the requirements of NFPA.

LEFT SIDE COMPARTMENT DIMENSIONS

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FORWARD OF WHEEL WELL

There shall be one (1) rescue style, full height, and full depth compartment ahead of the rear wheels. It shall have approximate dimensions of 56" wide x 63" high x 24" deep.

ABOVE WHEEL WELL

There shall be one (1) high side compartment centered over the rear wheels. It shall have approximate dimensions of 52" wide x 33" high x 24" deep.

REAR OF WHEEL WELL

There shall be one (1) rescue style, full height, and full depth compartment behind the rear wheels. It shall have approximate dimensions of 51" wide x 63" high x 24" deep.

ROLL UP DOORS

There shall be (qty.) R•O•M Series IV roll-up shutter doors installed. Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

Shutter slats will feature a double wall extrusion 0.315" thick with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats will feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slat must have interlocking joints with an inverted locking flange. Slat inner seal shall be a one piece PVC extrusion; seal design will be such to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

Shutter door track shall be one piece design with integral overlapping flange to provide a clean finished look without the need of caulk. Door track shall feature an extruded Santoprene rubber double lip low profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

Shutter bottom rail shall be a one piece double wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double "V" seal to prevent water and debris from entering compartment. Bottom rail lift bar shall be a one piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125". Lift bar shall be supported by no less than two pivot blocks; pivot blocks shall be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counter balance system. Counter balance system shall be 4" in diameter and held in place by 2 heavy duty 18 gauge zinc plated plates. Counter balance system shall have 2 over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system; no foam material of any kind shall be permitted or used in this area.

ROLLUP DOOR CONSTRUCTION - LEFT SIDE

All left side compartments shall be provided with anodized roll up doors.

The left side door latches shall be non-locking stainless steel lift bars and shall be provided with a magnetic door ajar switch system.

Schedule A: HME Pumper Specifications

FENDER SIDE SKIRTS

There shall be stainless steel fender side skirts located in the area of the rear wheels. The design of the fender sides shall be a minimal length to provide maximum compartment space in the apparatus.

FUEL FILL - SIDE BODY

The fuel fill shall be located in the rear fender area on the left side of the apparatus body. The spring loaded fuel fill door shall have "Diesel Fuel" laser cut in the face of the door. There shall be a vent line from the fuel tank to beneath the fuel cap to aid in fueling of the truck.

FUEL FILL DOOR - BRIGHT FINISH

The fuel fill shall have a bright finish.

BODY FENDERS - POLISHED

The apparatus body fenders shall be made from 16 gauge stainless steel and shall be rolled, die stamped and fully removable. The stainless steel fenders and stainless fender liners shall be fastened with stainless bolts and ESNA nuts to the outer fender panel.

BODY FENDERS - POLISHED

The apparatus body fenders shall have a polished finish.

REAR AXLE MUD FLAPS

Two (2) black, anti-sail, mud flaps shall be mounted behind the rear wheels.

SCBA BOTTLE COMPARTMENTS

Seven (7) SCBA bottle tube compartments shall be provided, three (3) in the left side rear wheel well area and four (4) in the right side rear wheel area. Each compartment shall be constructed of gray roto molded storage compartment to provide SCBA scuff protection. A door seal shall be provided at the perimeter of the SCBA compartment. The doors shall be stainless steel with a stainless finger latch.

SCBA BOTTLE DOORS BRIGHT FINISH

The doors shall be brushed stainless steel with a push button trigger latch.

SCBA BOTTLE RETENTION STRAP

One (1) one-inch (1") wide loop of red webbing shall be installed in each SCBA compartment to prevent the bottle from sliding out of the compartment in the event the door is not latched for travel. 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.

RIGHT SIDE COMPARTMENT DIMENSIONS

FORWARD OF WHEEL WELL

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There shall be one (1) rescue style, full height, and split depth compartment ahead of the rear wheels. It shall have approximate dimensions of 56" wide x 63" high x 12" deep in the upper section and 24" deep in the lower section.

ABOVE WHEEL WELL

There shall be one (1) high side reduced depth compartment centered over the rear wheels. It shall have approximate dimensions of 52" wide x 33" high x 12" deep.

REAR OF WHEEL WELL

There shall be one (1) rescue style, full height, and split depth compartment behind the rear wheels. It shall have approximate dimensions of 51" wide x 63" high x 12" deep in the upper section and 24" deep in the lower section.

ROLLUP DOOR CONSTRUCTION - RIGHT SIDE

All right side compartments shall be provided with anodized roll up doors.

The right side door latches shall be non-locking stainless steel lift bars and shall be provided with a magnetic door ajar switch system.

BODY RUBRAIL / LIGHTING SYSTEM

The apparatus body shall have a bolt on extruded aluminum rub rail affixed to the side beneath each door area. Each rub rail shall be attached to the apparatus body with stand off spacers made from 1" diameter UHMW Polyethylene bar stock.

The rubrail shall be designed with an integral white LED strip light. The white LED shall be downward facing and activated with the ground light circuit.

The rubrail design shall also include a red LED strip light. The red LED strip light shall face outward and activate as a red flashing warning light when the warning lights are active.

BODY RUBRAIL BRIGHT FINISH

The apparatus body rubrail shall have a bright anodized aluminum finish.

STAINLESS STEEL APPARATUS BODY PAINTED

The following apparatus body components shall be painted job color.

The rear wheel fender panels.

The exterior surface of the hosebed side walls / coffin compartment.

The exterior surface of the hosebed / coffin compartment front wall.

APPARATUS COMPARTMENT LIGHTING

Two (2) LED, armor protected, strip lights shall be provided one (1) each side of the compartment at the door frame for each body compartment. Each body door shall have an automatic compartment light switch.

REAR WORK LIGHTS - LED

A recess mounted LED strip light with integral guard shall be supplied under the rear intermediate step.

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The lights shall be switched on when the parking brake is set and the apparatus is running with the master battery switch in the "ON" position.

LADDER STORAGE - ON BEAM

The ladders shall be mounted on the right side of the body to the right of the water tank. The ladders shall be placed into the body from the rear of the apparatus sliding into the compartment on beam. A vertically hinged door shall be provided with a non-locking "D" ring latch.

The water tank shall have a storage opening for ladder storage inside the apparatus body. This compartment shall extend from the rear of the apparatus completely through to allow the ladders to extend into the pump house for storage. The floor of the ladder compartment shall be constructed of 1" thick polypropylene material with the top of the compartment constructed of 3/4" polypropylene material. The compartment shall have approximate dimensions of 30" high x 16" wide.

The compartment shall store one (1) 24' two-section ladder, one (1) 14' roof ladder, one (1) 10' folding ladder, one (1) 6' pike pole and one (1) 10' pike pole.

Thru The Tank Ladder Group - 10-Fold, 14-Roof, 24-2 Sec

ROOF LADDER

One (1) 14' Duo-Safety model 775-A, aluminum channel rail roof ladder with folding roof hooks shall be provided with the apparatus.

ATTIC LADDER

One (1) 10' Duo-Safety model 585-A aluminum folding attic ladder shall be provided with the apparatus.

EXTENSION LADDER

One (1) 24' two-section Duo-Safety model 900A solid beam, aluminum extension ladder shall be provided with the apparatus.

Rear - Center - RR1 Full Height

REAR COMPARTMENT DIMENSIONS

There shall be one (1) full height compartment at the rear of the body. It shall have approximate dimensions of 48" wide x 62" high x 22" deep.

ROLLUP DOOR CONSTRUCTION - REAR

The rear compartment shall be provided with an anodized roll up door.

The rear door latch shall be a non-locking stainless steel lift bar and shall be provided with a magnetic door ajar switch system.

REAR BODY DIAMOND GRADE CHEVRON STRIPING

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The rear-facing vertical surfaces of the rear taillight panels and the full height rear door, visible from the rear of the apparatus, shall be equipped with six (6) inch wide diamond grade retro reflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees.

Each stripe in the chevron shall be a single color alternating between red (3M #983-72) and florescent green (3M # 983-23).

REAR HORIZONTAL HANDRAIL

There shall be a ribbed, 1-1/4" diameter, aluminum handrail supplied and installed at rear of the apparatus body horizontally along the rear edge of the hosebed area.

REAR HANDRAILS - BRIGHT FINISH

The handrails shall have a bright finish with chrome stanchions.

LIGHTING, REAR HANDRAIL

The horizontal handrail adjacent to the hosebed shall contain integrated LED lighting. The lighting shall be integrated into the grab bar, directed toward the hosebed. The assembly shall illuminated the same time as the ground lights.

The LED handrail lighting shall be white in color.

Rear - Left Side - Egress Steps - (1) folding step, (2) fixed steps

FOLDING STEPS

There shall be one (1) folding step installed on the left rear of the body in the upper position.

FOLDING STEPS - BRIGHT FINISH

The folding body steps shall have a bright finish.

Standard Folding Step

INTERMEDIATE REAR STEPS - LOWER LEFT SIDE

There shall be a rear corner step, on the left side, located adjacent to the rear compartment and shall be no less than 8" in depth and fabricated of "Laser Grip" stainless steel to meet NFPA #1901 step requirements.

INTERMEDIATE REAR STEPS - LOWER LEFT SIDE

There shall be a rear corner step, on the left side, mid position, located adjacent to the rear compartment and shall be no less than 8" in depth and fabricated of "Laser Grip" stainless steel to meet NFPA #1901 step requirements.

REAR LEFT SIDE VERTICAL HANDRAIL

There shall be a 1-1/4" diameter, aluminum handrail supplied and installed on the upper left hand side of the body inset at rear of the apparatus body.

REAR HANDRAILS - BRIGHT FINISH

Schedule A: HME Pumper Specifications

The handrails shall have a bright finish with chrome stanchions.

Rear - Right Side - Egress Steps - Ladder on Beam

INTERMEDIATE REAR STEPS - LOWER RIGHT SIDE

There shall be a rear corner step, on the right side, located adjacent to the rear compartment and shall be no less than 8" in depth and fabricated of "Laser Grip" stainless steel to meet NFPA #1901 step requirements.

INTERMEDIATE REAR STEPS - LOWER LEFT SIDE

There shall be a rear corner step, on the left side, mid position, located adjacent to the rear compartment and shall be no less than 8" in depth and fabricated of "Laser Grip" stainless steel to meet NFPA #1901 step requirements.

No Additional Steps, Folding Front of Body

FOLDING STEPS

Four (4) folding steps shall be provided on the front of the apparatus body. Steps shall be provided and installed per NFPA requirements.

No Additional Steps, Folding Front of Body

FOLDING STEPS - BRIGHT FINISH

The folding body steps shall have a bright finish.

Standard Folding Step

HOSEBED FLOODLIGHT

One (1) Maxxima MWL-36, 2100 Lumen LED hosebed floodlight with swivel and folding handle shall be mounted at the front right corner of the hosebed. There shall be a weather resistant switch on the lighthead. The light shall be activated with the parking brake.

DEEP ALUMINUM SHELVES - ADJUSTABLE

Two (2) adjustable aluminum shelves shall be installed L1 compartment.

DEEP ALUMINUM SHELVES - ADJUSTABLE

Two (2) adjustable aluminum shelves shall be installed L1 compartment.

SHALLOW ALUMINUM SHELVES - ADJUSTABLE

Four (4) adjustable aluminum shelves shall be installed one (1) each at the bottom of the shallow section of the L1, L3, R1 and R3 compartments.

ALUMINUM TRAYS - PULL OUT

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Three (3) heavy duty pullout trays shall be installed and shall be equipped with Grant slides and a gas shock to hold the tray in both the in and out positions and shall be made from .190" aluminum with a maximum capacity of 250 pounds. One (1) each are to be installed on the floor of the L1, R1 and R3 compartments.

ALUMINUM TOOL BOARDS

The rear wall of the R1, R2 and the rear wall of the R3 compartments shall be covered with FoxTrax aluminum extrusion tool mounting board.

FULL HEIGHT PULL OUT VERTICAL TOOL BOARD

Two (2) full height pull out vertical tool boards shall be installed in the L3 exterior body compartment.

Each board shall be equipped with Grant slides and a gas shock to hold the board in both the in and out positions.

The tool boards shall be made from .25" aluminum and be fully adjustable across the width of the compartment.

ALUMINUM TOOL MOUNTING EXTRUSION

Both sides of two (2) tool boards shall be covered with FoxTrax aluminum extrusion tool mounting.

APPARATUS BODY ELECTRICAL SYSTEM

All body electrical shall conform to NFPA 1901 latest edition standards. The apparatus shall be equipped with a heavy-duty 12-volt negative ground system.

All 12-volt apparatus wiring shall pass through a heavy duty power disconnect solenoid. The 12-volt control of the power disconnect switch is to be triggered by the Master Battery Disconnect.

The apparatus shall be equipped with a Class1 Es-Key Management System for complete control of the electrical system devices.

The right rear compartment shall house Power Distribution Module (PDM). The PDM shall be mounted on a removable panel in the left rear compartment with sufficient harness length to allow a technician the ability to remove the PDM and place it on a compartment shelf for diagnostics and service.

All wiring shall be color-coded and function coded to assist the technician in servicing the electrical system. All circuits shall be divided and balanced for proper load distribution. Where possible, wiring shall be routed in looms as a single harness. Heat resistant convoluted loom shall be used. Only solderless, insulated crimp automotive electrical connectors shall be used.

ICC & Ultimate Warning Light Package

CAB ICC MARKER LIGHTING

Five (5) amber Whelen OS Series LED cab face mounted clearance lights shall be supplied, mounted above the windshield.

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the front door.

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An amber diamond shaped reflector shall be mounted on the lower corner of each cab front door adjacent to the door hinge.

CAB ICC MARKER LIGHTING - BRIGHT FINISH

These lights are to be mounted in a chrome flange.

APPARATUS ICC MARKER LIGHTING

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the forward body compartment.

Five (5) red LED clearance lights shall be supplied, mounted in the rear of the apparatus.

Two (2) red LED clearance lights shall be supplied, mounted facing the side of the apparatus.

A red diamond shaped reflector shall be mounted on each lower rear corner of the apparatus body.

ICC lighting utilized and lighting positions shall be in conformance with FMVSS 108.

APPARATUS ICC MARKER LIGHTING BRIGHT FINISH

These lights shall be mounted in a chrome flange.

HEADLIGHTS

Four (4) rectangular LED headlights shall be supplied.

When the parking brake is released and the master battery switch is in the on position, the low beam head lamps shall be illuminated.

HEADLIGHT POSITION

The headlights shall be mounted in the upper position on the front of the cab to accommodate high profile front bumper items.

TURN SIGNALS

Two (2) rectangular TecNiq 6x4 LED turn signal lamps shall be mounted outboard of the front warning lights on each side. These lights shall be amber in color with arrow mask.

The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning light shall be vibration resistant and designed with fully sealed submersible electronics. The K60 is rated IP68 for dust and water resistance.

TecNiq Inc. extends a Lifetime Limited Warranty to the original purchaser that the TecNiq Inc. Lamp is free from defects in workmanship and/or materials only. See the TecNiq warranty document for details.

REAR STOP/TAIL/TURN/BACKUP LIGHTS

Schedule A: HME Pumper Specifications

There shall be a light housing provided on the rear of the apparatus that includes the stop/tail/turn and lower zone C warning lights.

The rear of the apparatus shall be equipped with TecNiq High Output K60 Series light heads.

- The top light in the assembly shall be a red LED with red lens stop/tail light.
- The upper middle light set shall be an amber LED lamp with an amber lens with an arrow mask.
- The lower middle lights shall be white LED backup lamps with clear lens.
- The lower lights shall be NFPA warning lamps as specified for lower zone C.

The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning light shall be vibration resistant and designed with fully sealed submersible electronics. The K60 is rated IP68 for dust and water resistance.

TecNiq Inc. extends a Lifetime Limited Warranty to the original purchaser that the TecNiq Inc. Lamp is free from defects in workmanship and/or materials only. See the TecNiq warranty document for details.

REAR STOP/TAIL/TURN/BACKUP LIGHTS/LOWER ZONE C - BRIGHT FINISH

The light housing shall have a chrome plated finish.

BACK-UP ALARM

A solid state electronic backup alarm shall be installed on the rear of the apparatus and wired to the backup light circuit.

One (1) license plate mounting and LED light shall be provided. The light and bracket shall be located on the rear of the apparatus.

REAR LOWER LEVEL WARNING LIGHTS

Two (2) TecNiq High Output Red LED Flashing Warning Lights model K60 lighthouse(s) shall be provided. The lighthouses shall be surface mounted and shall fit standard mounting holes secured with four (4) stainless steel screws. Wiring shall extend from the lighthouse back. The lighthouses shall be fitted with high efficiency optics and a permanently affixed lens to provide a warning light beam across all angles. The lighthouses shall be fitted with AutoSync, a feature that will automatically synchronize the flash patterns of the warning lights without additional wiring. Fully sealed, submersible electronics shall be furnished on each lighthouse. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The solid state warning light shall be vibration resistant and designed with fully sealed submersible electronics. The K60 is rated IP68 for dust and water resistance.

TecNiq Inc. extends a Lifetime Limited Warranty to the original purchaser that the TecNiq Inc. Lamp is free from defects in workmanship and/or materials only. See the TecNiq warranty document for details.

These two (2) lights fulfill the requirements for Lower Zone C lower level warning devices.

Both warning light lenses shall be red in color.

REAR LOWER LEVEL WARNING LIGHTS - BRIGHT FINISH

The lighthouses shall have a chrome bezel.

ROOF MOUNTED LIGHTBAR

Schedule A: HME Pumper Specifications

A Whelen Freedom model F4N7QLED, 72" lightbar system shall be supplied and permanently mounted on the cab roof, as far forward as possible. This lightbar system shall be supplied with twelve (12) LED elements, ten (10) red and two (2) clear.

This lightbar fulfills the requirements for Upper Zone A and in combination with the upper rear warning devices fulfills the requirements for Upper Zones B, C, and D. Any clear warning light(s) in the lightbar shall be disabled automatically for the "Blocking Right of Way" mode.

LOW LEVEL WARNING LIGHTS

Two (2) TechNiq warning lights, K60 Series, red LED lightheads with chrome bezels shall be mounted on the front of the chassis above the headlights located in the inner position on each side.

The lightheads shall be surface mounted and shall fit standard mounting holes secured with four (4) stainless steel screws. Wiring shall extend from the lighthead back. The lightheads shall be fitted with high efficiency optics and a permanently affixed lens to provide a warning light beam across all angles. The lightheads shall be fitted with AutoSync, a feature that will automatically synchronize the flash patterns of the warning lights without additional wiring. Fully sealed, submersible electronics shall be furnished on each light head. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The solid state warning light shall be vibration resistant and designed with fully sealed submersible electronics. The K60 is rated IP68 for dust and water resistance.

TecNiq Inc. extends a Lifetime Limited Warranty to the original purchaser that the TecNiq Inc. Lamp is free from defects in workmanship and/or materials only. See the TecNiq warranty document for details.

These lights fulfill the requirements for Lower Zone A lower level warning devices.

Both warning light lenses shall be red in color.

LOW LEVEL WARNING LIGHTS

Two (2) additional TecNiq warning lights, K60 Series, red LED lightheads with chrome bezels shall be mounted on the front of the chassis above the headlights located in the outer position on each side.

The lightheads shall be surface mounted and shall fit standard mounting holes secured with four (4) stainless steel screws. Wiring shall extend from the lighthead back. The lightheads shall be fitted with high efficiency optics and a permanently affixed lens to provide a warning light beam across all angles. The lightheads shall be fitted with AutoSync, a feature that will automatically synchronize the flash patterns of the warning lights without additional wiring. Fully sealed, submersible electronics shall be furnished on each lighthead. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The solid state warning light shall be vibration resistant and designed with fully sealed submersible electronics. The K60 is rated IP68 for dust and water resistance.

TecNiq Inc. extends a Lifetime Limited Warranty to the original purchaser that the TecNiq Inc. Lamp is free from defects in workmanship and/or materials only. See the TecNiq warranty document for details.

These lights supplement the requirements for Lower Zone A lower level warning devices.

Both warning light lenses shall be red in color.

FRONT INTERSECTION LIGHTS

Schedule A: HME Pumper Specifications

Two (2) TecNiq warning lights, K60 Series, red LED lightheads with chrome bezels one (1) on each side of the front bumper/gravelshield.

The lightheads shall be surface mounted and shall fit standard mounting holes secured with four (4) stainless steel screws. Wiring shall extend from the lighthead back. The lightheads shall be fitted with high efficiency optics and a permanently affixed lens to provide a warning light beam across all angles. The lightheads shall be fitted with AutoSync, a feature that will automatically synchronize the flash patterns of the warning lights without additional wiring. Fully sealed, submersible electronics shall be furnished on each lighthead. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The solid state warning light shall be vibration resistant and designed with fully sealed submersible electronics. The K60 is rated IP68 for dust and water resistance.

TecNiq Inc. extends a Lifetime Limited Warranty to the original purchaser that the TecNiq Inc. Lamp is free from defects in workmanship and/or materials only. See the TecNiq warranty document for details.

These lights fulfill the requirements for Lower Zone B & D lower level warning devices.

Both warning light lenses shall be red in color.

BUMPER SIDE WARNING LIGHTS - BRIGHT FINISH

The lights shall be mounted in a chrome plated flange.

FRONT INTERSECTION LIGHTS

Two (2) TecNiq warning lights, K60 Series, red LED lightheads mounted one (1) on each side of the body over the rear wheel.

The lightheads shall be surface mounted and shall fit standard mounting holes secured with four (4) stainless steel screws. Wiring shall extend from the lighthead back. The lightheads shall be fitted with high efficiency optics and a permanently affixed lens to provide a warning light beam across all angles. The lightheads shall be fitted with AutoSync, a feature that will automatically synchronize the flash patterns of the warning lights without additional wiring. Fully sealed, submersible electronics shall be furnished on each lighthead. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The solid state warning light shall be vibration resistant and designed with fully sealed submersible electronics. The K60 is rated IP68 for dust and water resistance.

TecNiq Inc. extends a Lifetime Limited Warranty to the original purchaser that the TecNiq Inc. Lamp is free from defects in workmanship and/or materials only. See the TecNiq warranty document for details.

These lights fulfill the requirements for Lower Zone B & D lower level warning devices.

Both warning light lenses shall be red in color.

BODY SIDE WARNING LIGHTS - BRIGHT FINISH

The lights shall be mounted in a chrome flange.

FRONT INTERSECTION LIGHTS

Two (2) TecNiq warning lights, K60 Series, red LED lightheads mounted one (1) on each side of the body over the rear wheel.

Schedule A: HME Pumper Specifications

The lightheads shall be surface mounted and shall fit standard mounting holes secured with four (4) stainless steel screws. Wiring shall extend from the lighthouse back. The lightheads shall be fitted with high efficiency optics and a permanently affixed lens to provide a warning light beam across all angles. The lightheads shall be fitted with AutoSync, a feature that will automatically synchronize the flash patterns of the warning lights without additional wiring. Fully sealed, submersible electronics shall be furnished on each lighthouse. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The solid state warning light shall be vibration resistant and designed with fully sealed submersible electronics. The K60 is rated IP68 for dust and water resistance.

TecNiq Inc. extends a Lifetime Limited Warranty to the original purchaser that the TecNiq Inc. Lamp is free from defects in workmanship and/or materials only. See the TecNiq warranty document for details.

These lights fulfill the requirements for Lower Zone B & D lower level warning devices.

Both warning light lenses shall be red in color.

BODY SIDE WARNING LIGHTS - BRIGHT FINISH

The lights shall be mounted in a chrome flange.

REAR UPPER LEVEL WARNING LIGHTS

Two (2) nine (9) inch wide Ahrens-Fox, double tier beacons shall be mounted facing rear on polished stainless steel stanchions behind the suction trays (if equipped) one (1) on the driver side and one (1) on the officer side. The beacon housings shall be finished in black powder coating.

Each beacon shall contain four (4) warning light pods each with ten (10) red LED's. There shall be two (2) pods facing the rear and two (2) pods facing each side of the apparatus.

These two (2) lights fulfill the requirements for Upper Zones B, C & D upper level warning devices.

Both warning light lenses shall be red in color.

BODY REAR SCENE LIGHTS

There shall be rear scene lights installed as high as possible on both sides of the rear of the apparatus body.

The lighting positions shall be equipped with TecNiq K90 Series scene lights. The scene light shall incorporate 18 5000K white LEDs, a clear lens for maximum output. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The coated PC board and sealed lens/reflector assembly shall provide additional protection against environmental elements. The solid state warning light shall be vibration resistant and designed with fully sealed submersible electronics. The K90 is rated IP68 for dust and water resistance. The K5000 shall have 5000 lumens.

TecNiq Inc. extends a Lifetime Limited Warranty to the original purchaser that the TecNiq Inc. Lamp is free from defects in workmanship and/or materials only. See the TecNiq warranty document for details.

The lights bezels shall have a polished or chrome plated finish.

The rear scene lights shall be operated by a switch located beneath the left rear step. If the scene light is left in the 'ON' position the lights shall automatically turn off when the truck is parking brake is released.

The scene lights shall be operated by a switch located in the driver's area of the cab.

Schedule A: HME Pumper Specifications

RIGHT FRONT QUARTZ LIGHT

The following light shall be provided mounted on the right front corner of the body:

Fire Research Spectra LED Scene Light model SPA100-Q20 lamphead shall be provided. The lamphead shall have eighty four (84) ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 12 volts DC, draw 18 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamphead angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamphead shall be no more than 5 7/8" high by 14" wide by 3 1/2" deep and have a heat resistant handle. The lamphead and mounting arm shall be powder coated. The LED scene light shall be for fire service use.

Two (2) switches shall be installed in the cab console, one (1) each to control each of the two (2) FRC Spectra LED scene lights on telescopic light poles.

The lighthouse shall be mounted on a side mount push up telescopic pole. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 1/2" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

LEFT FRONT QUARTZ LIGHT

The following light shall be provided mounted on the left front corner of the body:

Fire Research Spectra LED Scene Light model SPA100-Q20 lamphead shall be provided. The lamphead shall have eighty four (84) ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 12 volts DC, draw 18 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamphead angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamphead shall be no more than 5 7/8" high by 14" wide by 3 1/2" deep and have a heat resistant handle. The lamphead and mounting arm shall be powder coated. The LED scene light shall be for fire service use.

Fire Research -ON option switch shall be installed on the lamphead. The weatherproof on-off toggle switch shall be mounted on the lamphead.

The lighthouse shall be mounted on a side mount push up telescopic pole. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 1/2" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

IDENTIFICATION AND SAFETY LABELS

A permanent plate shall be installed in the driver's compartment to specify the quantity and type of the following fluids in the vehicle:

1. Engine oil.
2. Engine coolant.
3. Transmission fluid.
4. Pump Transmission Lubrication Fluid.
5. Pump Primer Fluid (If applicable).
6. Drive Axle Lubrication Fluid.
7. Air-conditioning refrigerant.

Schedule A: HME Pumper Specifications

8. Air-conditioning lubrication oil.
9. Power steering fluid.
10. Transfer case fluid.
11. Equipment rack fluid.
12. Air compressor system lubricant.
13. Generator system lubricant.

A permanent plate with pump performance data and serial numbers shall be installed on the pump panel.

A permanent plate shall be installed in the driver's compartment specifying the maximum number of personnel the vehicle is designed to carry per NFPA standards. It shall be located in an area visible to the driver.

An accident prevention sign stating "DANGER PERSONNEL MUST BE SEATED AND SEAT BELTS MUST BE FASTENED WHILE VEHICLE IS IN MOTION OR DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from all seating positions.

An accident prevention sign stating "DANGER DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION, DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from the rear step of the vehicle.

If an inlet located at the pump operators position is valved, it shall be provided with a permanent label with language per NFPA-1901, current edition.

WHEEL CHOCKS

One (1) pair of heavy duty, high tensile molded aluminum wheel chocks measuring 7.75" high x 8.5 wide x 15" long shall be provided with the apparatus. The wheel chocks shall have a bright yellow powder coat finish for high visibility, safety and corrosion resistance. No exception shall be allowed to these requirements.

Two chock holders shall be provided and mounted on the left side of the apparatus below the front body compartment.

HARD SUCTION HOSE

Two (2) 10' long x 6" diameter, lightweight PVC flexible suction hose shall be provided. It shall be first quality, non-collapsible type and designed for having a low friction loss which will not collapse under a vacuum of 23". The hard suction hose shall be equipped with a long handle female end and rocker lug male end couplings.

REFLECTIVE SAFETY STRIPE

A 4" wide 3M brand Scotchlite reflective stripe shall be affixed to the perimeter of the vehicle. The striping shall be placed up to 60" above ground level and shall conform to NFPA reflectivity requirements. At least 60% 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 stripe.

REFLECTIVE STRIPE COLOR

The apparatus body striping shall be white reflective.

WATER TANK WARRANTY

The water tank is to be free from defects in material and workmanship for the normal service life of the apparatus in which the water tank is installed.

Schedule A: HME Pumper Specifications

If a tank has a defect in material or workmanship covered by the warranty, the tank manufacturer shall repair at their cost, by authorized personnel or authorized third parties. The tank manufacturer shall make an effort to effectuate repair within 48 hours following initial notification of a covered defect. The tank manufacturer shall make a reasonable effort to repair tank at most convenient location to end user.

The tank manufacturer shall reimburse all reasonable costs associated with rendering the tank accessible for repair, including, but not limited to, removal and reassembly of the hose bed floor.

== Limited Warranty - Use For Contracts - 4.001 ==

HME, INC. **LIMITED WARRANTY**

Thank you for purchasing our products!

This book specifies the limited warranty offered by HME, Inc. (“**HME**”) for HME products. Please note that the applicable limited warranty depends on what product you, the original purchaser, bought. As such, not all terms contained in this book will be applicable to you. Please review the coverage(s) appropriate for your HME product before proceeding through the rest of this book.

This book is divided as follows:

Section A, General Provisions

Section B, Limited Warranties

Section C, Exclusions

Section D, Additional Provisions Applicable to All Products.

HME’s limited warranty set forth in this book will be referred to collectively as this “**Limited Warranty**” or “**HME’s Limited Warranty**”. In this Limited Warranty, the term “**you**” and “**Customer**” will refer to the original purchaser/owner of the HME products and not to any subsequent purchaser or owner.

A. GENERAL PROVISIONS

This Section A constitutes part of the Limited Warranty for all HME products.

Who and What HME’s Limited Warranty Covers

HME’s Limited Warranty only covers you, the original purchaser/owner of new HME product(s). Subsequent owners or purchasers are not covered by this Limited Warranty.

Subject to the limitations and exclusions set forth in this Section A as well as Sections B, C, and D below, HME’s Limited Warranty generally covers repair, refinish, or replacement, at the sole option of HME, of your new HME cab, chassis, apparatus, aerial or any components thereof (hereinafter “**Covered Part(s)**”) in which

Schedule A: HME Pumper Specifications

a defect in materials or workmanship appears during normal use, maintenance or service within the Warranty Period (as “**Warranty Period**” is defined in each part of this Limited Warranty).

If HME determines there is warranty coverage for a Covered Part, HME shall, at its sole option, repair, refinish, or replace (or have repaired or refinished), at HME’s factory, by HME’s representative at the location of the Covered Part, or at HME’s authorized service facility (whichever location HME designates), any Covered Part not otherwise excluded from HME’s Limited Warranty if the Covered Part proves, in HME’s opinion, to be defective and if all other terms of this Limited Warranty are complied with. The repair, refinish, or replacement of a Covered Part does not extend the life of this Limited Warranty. This Limited Warranty is valid only in the United States and Canada.

What This Limited Warranty DOES NOT Cover

This Limited Warranty is limited by the limitations and exclusions in this Section A and is also limited by the limitations and exclusions set forth in Sections B, C, and D below. The limitations and exclusions set forth in the most specific Section of this Limited Warranty shall supersede the warranty provisions in all other Sections. For example, if there is a potential paint defect, then subject to the other limitations and exclusions in this Limited Warranty, the paint limited warranty would apply in Section B(3) below rather than the general warranty in Section B(1) below.

No Replacement or Repurchase of Fire Apparatus. IF HME DETERMINES THERE IS WARRANTY COVERAGE, REPAIR, REFINISH, OR REPLACEMENT OF COVERED PARTS BY HME IS THE EXCLUSIVE REMEDY UNDER THIS LIMITED WARRANTY. **HME WILL NOT UNDER ANY CIRCUMSTANCES REPLACE A FIRE APPARATUS OR REPURCHASE THE FIRE APPARATUS FROM YOU.**

B. LIMITED WARRANTY

1. General Warranty

The Limited Warranty under this Section B(1) (the “**General Warranty**”) for Covered Parts is limited to chassis systems and components such as the driveline, cooling system, hydraulic system, suspension, air system, and climate control system, (but excludes the engine, transmission and axles); apparatus systems and components; and the aerial device and system.

Warranty Period for General Warranty

The General Warranty is in effect for a Warranty Period that continues until 36 months from the date of delivery of the new fire apparatus to the original owner, or the first 36,000 actual miles (or 57,900 actual kilometers) from the delivery date, whichever occurs first. At the time of purchase, you as the original purchaser have an option at an additional cost to extend the Warranty Period for the General Warranty for additional years up to a maximum period of 5 years from the delivery date, 100,000 miles from the delivery date, or 3,000 engine hours from the delivery date, whichever occurs first. The General Warranty is not valid if the odometer is disconnected, or its reading has been altered, or mileage cannot be determined.

2. Structural Warranty

Schedule A: HME Pumper Specifications

The Limited Warranty under this Section B(2) (the “**Structural Warranty**”) for Covered Parts is limited to the cab structure, body structure, and structural failures of aerials.

Warranty Period for Cab Structural Warranty

The Structural Warranty is in effect for a Warranty Period that continues until 10 years from the date of delivery of the completed new fire apparatus to the original purchaser, or the first 100,000 actual miles (or 161,290 actual kilometers) from the delivery date, whichever occurs first. The Structural Warranty is not valid if the odometer is disconnected, or its reading has been altered, or mileage cannot be determined.

3. Paint Warranty

The Limited Warranty under this Section B(3) (the “**Paint Warranty**”) specifically covers Paint Defects on a cab exterior finish, apparatus body panel exterior finish, or the aerial ladder assembly manufactured by HME. A Covered Part shall be considered to have “**Paint Defects**” if it is found by HME to have any loss of gloss, color retention, cracking, blistering, bubbling or flaking under normal use and with normal maintenance and cleaning. For Paint Defects, you as the original purchaser must notify HME in writing within 30 days after any claimed Paint Defect has appeared. In the case of a warranty claim, the refinish or repair of all non-warranty blemishes, if any, shall be negotiated prior to the warranty refinish or repair.

Warranty Period for Paint Warranty

The Paint Warranty is in effect for a Warranty Period that continues until the period specified below or the date of the first 36,000 actual miles (or 57,900 actual kilometers) from the delivery date. The Paint Warranty is not valid if the odometer is disconnected, or its reading has been altered, or mileage cannot be determined. At the time of purchase, you as the original purchaser have an option for an extra cost to extend the Warranty Period for the Paint Warranty for additional years up to a maximum of 5, 7, or 10 years. The Paint Warranty only covers the cost to refinish or repair Paint Defects for the specific defect and at the percentages set forth below:

Top Coat and Appearance Gloss, Color Retention, Cracking		Coating System, Adhesion, Flaking, Blistering, Bubbling	
0 to 72 months	100%	0 to 36 months	100%
73 to 120 months	50%	37 to 84 months	50%
		85 to 120 months	25%

Note: To clarify, the chart above does not extend the Warranty Period for the Paint Warranty beyond the first 36,000 actual miles (or 57,900 actual kilometers) from the delivery date. If you purchase the 5 year extended Warranty Period, then the chart above should be limited to 5 years from the delivery date and there will be no warranty after that date.

4. Chassis Frame Rail Warranty

Schedule A: HME Pumper Specifications

The Limited Warranty under this Section B(4) (the “**Frame Warranty**”) is limited to the chassis frame rail. It does not cover support brackets and hardware, such as those used for fuel tank mounting and cab mounting.

Warranty Period for Chassis Frame Rail Warranty

The Frame Warranty is in effect for a Warranty Period that continues until the date that is the expected lifetime of a new vehicle. For purposes of this Frame Warranty, the expected lifetime is 20 years from the original delivery date. This Frame Warranty is not valid if the odometer is disconnected, or its reading has been altered, or mileage cannot be determined.

5. Frame Rail & Crossmember Corrosion Protection Warranty

The Limited Warranty under Section B(5) of this Limited Warranty (the “**Corrosion Protection Warranty**”) specially covers galvanized steel corrosion on the chassis frame and crossmembers. The Corrosion Protection Warranty covers parts and labor to correct the affected area as set forth below. Annual inspections at an authorized HME service provider must be performed to keep the warranty in effect.

Upon any claim made under the Corrosion Protection Warranty, the affected area must be inspected, reviewed and approved by HME or its designated repair personnel or facility prior to any work being completed. Any authorized warranty work shall be performed only by HME or its designated repair personnel or facility. Any repairs completed by an unauthorized repair shop or personnel shall cause this Corrosion Protection Warranty to be invalid. The obligations of HME under this Corrosion Protection Warranty are limited to the cost of bringing the affected area into compliance with HME’s specifications or of removing any defects in materials or workmanship.

Warranty Period for Corrosion Protection Warranty

This Corrosion Protection Warranty is in effect for the original owner for a Warranty Period that continues until 20 years from the date of delivery of the new fire apparatus to the original owner.

6. Stainless Piping Warranty

The Limited Warranty under Section B(6) of this Limited Warranty (the “**Stainless Piping Warranty**”) includes Covered Parts that are limited to the stainless steel piping used in the construction of the fire apparatus water/foam plumbing systems.

Warranty Period for Stainless Piping Warranty

The Stainless Piping Warranty is in effect for a Warranty Period that continues until 10 years from the original delivery date, or the first 36,000 actual miles (or 57,900 actual kilometers) from the delivery date, whichever occurs first.

7. Waterway Warranty

The warranty for the waterway component is a pass-through warranty from the original manufacturer. HME does not provide a warranty for the waterway.

Schedule A: HME Pumper Specifications

C. EXCLUSIONS

The following exclusions apply to this Limited Warranty. Additional exclusions may be listed in other Sections of this Limited Warranty.

1. General Exclusions

As to all HME products, items not covered by this Limited Warranty include:

- Normal maintenance activities/items and wear parts such as lubrication, batteries, tires, filter and oil replacement, belts and hoses, brake lining and adjustment, door check strap adjustment, vehicle alignments, electrical accessories, voltage regulator, flashers, windshield wipers, etc.
- Damage caused by, but not limited to, failure to follow the required or recommended maintenance schedule, failure to maintain proper fluid and lubricant levels, failure to ensure operating parameters are maintained and failure to follow operating instructions.
- Damage caused by, but not limited to, misuse, abuse or neglect (e.g. overloading, driving over curbs, or exposure to corrosive, including but not limited to salt and/or acidic exposure, or flooded environments).
- Damage that arises outside of normal use.
- Damage caused by collision, fire, theft, vandalism, civil unrest, acts of terrorism, acts of war, acts of God, or similar casualties.
- Damage or defects with respect to Covered Parts in a vehicle that is leased or rented to a second party for compensation.
- Incidental expenses such as, but not limited to loss of use, inconvenience, loss of time, vehicle rental, towing, lodging or travel costs, etc.
- Additions or accessions not originally installed by HME, including ancillary equipment used in firefighting, and any problems resulting from such additions or accessions.
- Installation of any "aftermarket" devices or the modification of any existing system or component originally installed by HME without HME's prior express written approval and any problems resulting from such installation or modification.
- Covered Parts that have been sold by an owner other than HME before the Covered Parts become a complete vehicle.
- Any alteration of a Covered Part not authorized in writing by HME prior to alteration.
- Other specific exclusions listed in each part in this book.

2. Exclusions for General Warranty

Items not covered by the General Warranty include:

- The frame, cab structure, body structure, aerial structure, stainless piping, and paint, but each is covered by specific warranty terms as defined in their individual warranties.
- The engine, transmission, axles or components added to the chassis by another party; however, the engine, transmission, axles and/or components added to the chassis by another party may be covered by warranties issued to you from the respective component manufacturers.
- The components added to the apparatus by another party; however, these items may be covered by warranties issued to you from the respective component manufacturers.

Schedule A: HME Pumper Specifications

3. Exclusions for Structural Warranty

Items not covered by the Structural Warranty include:

- All hardware, seats, mechanical items, electrical items and paint finishes.
- Covered Parts damaged as a result of corrosion, including, but not limited to salt and/or acidic exposure.

4. Exclusions for Paint Warranty

Items not covered by the Paint Warranty include:

- Damage caused by lightning, earthquake, windstorm, hail, flood or use in a corrosive or acidic environment.
- Damage from lack of poor maintenance and cleaning.
- Gold leaf or striping except that which is affected by repair. (Gold leaf or striping affected by repair must have been installed during the manufacture of a cab to be covered under the Paint Warranty for the cab.)
- Time, loss of use of the vehicle, inconvenience, vehicle rental, lodging, food or other consequential or incidental loss that may result from a Paint Defect.
- UV paint fade.
- Cab underside
- Chassis frame rails, crossmembers and suspension
- Aerial Ladder torque box and outrigger assemblies.
- Components not painted by HME may be covered by the respective manufacturer's warranty.

5. Exclusions for Frame Warranty

Items not covered by the Frame Warranty include:

- Damage caused as a result of corrosion, including but not limited to salt, chlorides and/or acidic exposure.

6. Exclusions for Corrosion Protection Warranty

Items not covered by the Corrosion Protection Warranty include:

- Parts that have not been galvanized, including but not limited to, suspension hangers, fuel tank and mounting, and air system components.
- Transportation costs.
- Damage due to lack of specified normal maintenance and service as outlined and required in the service and operating manuals provided with the apparatus.
- Damage from accidents, abuse, physical and mechanical damage, and all other conditions not considered as "normal" operating conditions.

Schedule A: HME Pumper Specifications

D. ADDITIONAL PROVISIONS APPLICABLE TO ALL HME PRODUCTS

This Section D applies to all HME products.

Exclusive Warranty

THE LIMITED WARRANTY SET FORTH IN THIS BOOK IS THE ONLY WARRANTY APPLICABLE TO HME PRODUCTS AND IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTY BY HME, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS LIMITED WARRANTY IS FURTHER LIMITED BY THE TERMS AND CONDITIONS STATED IN THE PROVISIONS BELOW:

LIMITATION ON DAMAGES: HME shall not be liable for incidental, consequential, direct, indirect or other damages (such as, but not limited to, lost wages, attorney's fees, or lost vehicle rental expenses) that result from any breach or claim related to or arising out of (a) this Limited Warranty, (b) other warranties, if any, (c) any agreement between HME and the Customer, or (d) the HME products or any actual or alleged defect related to the HME products.

LIMITATION ON IMPLIED WARRANTIES: Any implied warranties that arise by way of applicable state or provincial law, including any implied warranty of merchantability or fitness for a particular purpose, are limited in duration to the applicable Warranty Period and are limited in scope of coverage to the Covered Parts covered by this Limited Warranty.

Third Party Representations

HME does not authorize any person to create for HME any other obligations or liability in connection with its products, and HME is not responsible for any representation, promise or warranty made by an HME Sales Representative, component or vehicle manufacturer, or other person beyond what is expressly stated in this Limited Warranty.

How to Obtain the Limited Warranty

In order to be eligible under this Limited Warranty, you **MUST** return a completed "Limited Warranty Registration" form to HME within 60 days of the date of delivery. The original purchaser/owner is responsible for submitting, either directly or with the assistance of the HME Sales Representative, a "Limited Warranty Registration" form to HME within 60 days of the date of delivery.

The "Limited Warranty Registration" form is located in both the HME Chassis Owner's Manual supplied with your new vehicle, and at the end of this Limited Warranty document. THIS LIMITED WARRANTY IS NOT VALID IF THE LIMITED WARRANTY REGISTRATION FORM IS NOT SENT TO HME WITHIN 60 DAYS AFTER THE DATE OF DELIVERY TO THE ORIGINAL PURCHASER/OWNER.

How to Get Service

To obtain warranty service, the original owner shall call HME Monday through Friday from 7:30 a.m. to 5:00 p.m. (Eastern Time) at 1-616-534-1463. Our customer service technicians can help answer questions regarding our products and services, provide information about warranty coverage and maintenance issues, help you arrange for service under third party warranties, and locate HME authorized service centers in your area. ALL LIMITED WARRANTY WORK MUST BE AUTHORIZED BY HME BEFORE REPAIRS ARE MADE. When you call for service, please have the following information available so that we may expedite your service:

Schedule A: HME Pumper Specifications

- Your HME Job Number (Found on VIN Tag)
- Original owner date of purchase
- The current actual mileage
- The current actual engine hours

If service is needed on a Covered Part, you shall be responsible for all cost associated with transporting the Covered Part to the service location HME identifies at the time HME arranges for service. NO WARRANTY CLAIM WILL BE PROCESSED OR PAID WITHOUT PROOF OF ACTUAL MILEAGE AND THE DATE OF DELIVERY TO THE ORIGINAL PURCHASER/OWNER.

Legal Remedies

Any claim or controversy arising out of or relating to this Limited Warranty, or breach thereof, shall be settled by arbitration administered by the American Arbitration Association in the State of Michigan in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The determination of the arbitrator(s) shall be in writing and shall include an explanation of the basis for the determination. The determination of the arbitrator(s) shall be final and binding and judgment upon such determination may be entered in any court having jurisdiction.

COVERAGES

General Warranty - Three (3) Years Total

Cab & Body Paint Warranty - 5 Years